DRAFT
ENVIRONMENTAL IMPACT REPORT

Significant Natural Resource Areas Management Plan

PLANNING DEPARTMENT
CASE NO. 2005.1912E

STATE CLEARINGHOUSE NO. 2009042102

AUGUST 2011

SAN FRANCISCO
PLANNING
DEPARTMENT

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Written comments should be sent to:
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DATE: August 31, 2011
TO: Distribution List for Significant Natural Resource Areas Management Plan Project
FROM: Bill Wycko, Environmental Review Officer
SUBJECT: Request for the Final Environmental Impact Report for the Significant Natural Resource Areas Management Plan Project (2005.1912E)

This is the Draft of the Environmental Impact Report (EIR) for the Significant Natural Resource Areas Management Plan Project. A public hearing will be held on the adequacy and accuracy of this document. After the public hearing, the Planning Department will prepare and publish a document titled "Comments and Responses" that will contain a summary of all relevant comments on this Draft EIR and our responses to those comments. It may also specify changes to this Draft EIR. Those who testify at the hearing on the Draft EIR will automatically receive a copy of the Comments and Responses document, along with a notice of the date reserved for certification of the EIR; others may receive such copies and notice on request or by visiting our office. This Draft EIR together with the Comments and Responses document will be considered by the City Planning Commission in an advertised public meeting(s) and certified as a Final EIR if deemed adequate.

After certification, the Planning Department will modify the Draft EIR as specified by the Comments and Responses document and print both documents in a single publication called the Final EIR. The Final EIR will add no new information to the combination of the two documents except to reproduce the certification resolution. The Final EIR will simply provide the information in one, rather than two, documents. Therefore, if you receive a copy of the Comments and Responses document in addition to this copy of the Draft EIR, you will technically have a copy of the Final EIR.

We are aware that many people who receive the Draft EIR and Comments and Responses have no interest in receiving virtually the same information after the EIR has been certified. To avoid expending money and paper needlessly, we would like to send copies of the Final EIR to private individuals only if they request them. If you would like a copy of the Final EIR, please fill out and mail the postcard provided inside the back cover to the San Francisco Planning Department within two weeks after certification of the EIR. Any private party not requesting a Final EIR by that time will not be mailed a copy. Public agencies on the distribution list will automatically receive a copy of the Final EIR.

Thank you for your interest in this project.

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LIST OF APPENDICES (PROVIDED ON ENCLOSED CD)

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ADRP	archaeological data recovery plan
AE	Aesthetics
AF	Agriculture and Forest Resources
AMP	archaeological monitoring program
AQ	Air Quality
ARB	California Air Resources Board
BA	Balboa
BAAQMD	Bay Area Air Quality Management District
BG	Billy Goat Hill
BH	Bernal Hill
BI	Biological Resources
BMP	best management practice
BO	biological opinion
BP	Brooks Park and Lakeview/Ashton Mini Park
BV	Buena Vista Park
C-APE	CEQA Area of Potential Effect
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CH	Corona Heights
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CP	Cultural and Paleontological Resources
CRHR	California Register of Historical Resources
CRLF	California red-legged frog
dbh	diameter at breast height
DBI	Department of Building Inspection
DC	Duncan-Castro
DP	Dorothy Erskine
DPA	dog play area
ED	Everson/Digby
EE	Environmental Evaluation
EIR	Environmental Impact Report
EM	Edgehill Mountain
EP	Environmental Planning
EPA	US Environmental Protection Agency
ERO	Environmental Review Officer
ESA	Endangered Species Act
FARR	Final Archaeological Resources Report
FEMA	Federal Emergency Management Agency
FI	15^{th} Avenue Steps
FIRM	Flood Insurance Rate Map
FP	Fairmount Park
GC/OH	Glen Canyon Park and O'Shaughnessy Hollow
GGNRA	Golden Gate National Recreation Area

ACRONYMS AND ABBREVIATIONS

GGRH	Golden Gate Heights Park, Grandview Park, Hawk Hill, and Rock Outcrop
GHG	greenhouse gas
GIS	Geographic Information System
GR	General Recommendations
HRE	historical resources evaluation
HRER	historic resource evaluation response
HY	Hydrology and Water Quality
HZ	Hazards and Hazardous Materials
IB	India Basin Shoreline Park
IG	Interior Greenbelt
IPM	Integrated Pest Management
KH	Kite Hill
LM	Lake Merced
LS	locally sensitive
LTS	Less Than Significant Impact
LTS/M	Less Than Significant Impact with Mitigation
LU	Land Use and Land Use Planning
MA	management area
MBTA	Migratory Bird Treaty Act
MD	Mount Davidson
ME	Mineral and Energy Resources
MLD	Most Likely Descendant
MMT	million metric tons
$MMTCO_2e$	million gross metric tons of CO_2e
MP	McLaren Park
mph	miles per hour
msl	above mean sea level
NAHC	Native American Heritage Commission
Natural Areas	Significant Natural Resource Areas
NFIP	National Flood Insurance Program
NI	No Impact
NMFS	National Marine Fisheries Service
NOP	Notice of Preparation
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OSHA	Occupational Safety and Health Administration
OW	Golden Gate Park Oak Woodlands
PL	Pine Lake
PM_{10}	inhalable particulate matter
$PM_{2.5}$	fine particulate matter
PP	Palou-Phelps
PS	Potentially Significant Impact
RE	Recreation
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
S	Significant Impact
SB	Senate Bill
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SFGS	San Francisco garter snake
SFHA	special flood hazard area

ACRONYMS AND ABBREVIATIONS

SFPUC	San Francisco Public Utilities Commission
SFRPD	San Francisco Recreation and Park Department
SMCMVCD	San Mateo County Mosquito and Vector Control District
SNRAMP	Significant Natural Resource Areas Management Plan
SP	Sharp Park
SU	Significant and Unavoidable Impact
SU/M	Significant and Unavoidable Impact with Mitigation
SWMP	stormwater management plan
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TK	Tank Hill
TAC	toxic air contaminant
TP	Twin Peaks
TSS	total suspended solids
UCMP	University of California Museum of Paleontology
URBEMIS	Urban Land Use Emissions Model
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
VP	Bayview Park
WPA	Works Progress Administration
WS	Wind and Shadow

GLOSSARY

A Horizon—In a soil profile, the mineral horizon that forms at the surface or below an O horizon (dark-colored surface accumulation of organic matter). Characterized by the accumulation of decomposed organic matter mixed with solid mineral grains, however the mineral portion of the matrix is dominant. Typically darker in color than underlying horizons.

A zone—A FEMA Flood Zone designation for high risk zones, with a 1% annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones on the FEMA Flood Insurance Rate Map.

Adaptive management—A flexible, learning-based approach to managing complex ecosystems.

Ambient air—Outside air; any portion of the atmosphere not confined by walls and a roof.

Ambient noise—The background noise in an area or environment, being a composite of sounds from many sources near and far.

Anaerobic process—A process which only occurs in the absence of molecular oxygen.

Architectural resource—The preferred term to refer to a building or structure.

Attainment—A designation used when an area meets an air quality standard.

B Horizon—In a soil profile, the mineral horizon that forms below and A, E (matrix characterized by loss of clay, soluble iron, soluble aluminum, organic matter, or some combination of these), or O horizon and shows little or no evidence of the original sediment or rock structure and is primarily characterized by illuvial concentrations of clay, iron, aluminum, humus, carbonates, gypsum, or silica.

Basal area—A measure, typically in square feet per acre, of the area covered by trees within a given urban forest. Basal area is used as an index of tree production.

Carbon sequestration—The removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, forests, and soils) through physical or biological processes, such as photosynthesis.

CEQA area of potential effects (C-APE)—The geographic area or areas within which the proposed project may directly indirectly cause alterations in the character or use of historical resources, if any such properties exist. The C-APE is influenced by the scale and nature of a proposed project and may be different for different kinds of effects caused by the project. The C-APE is likely to be the location physically inspected for cultural resources.

Cherry picker—A maneuverable vertical boom with an open bucket or cage at the end from which a worker can perform aerial work such as pruning trees or repairing electrical lines.

Chippage—Flakes resulting from the process of human modification to lithic materials.

Cultural resource—A generic term that may be used to refer to architectural resources, archaeological resources, and/or traditional cultural properties, or sacred sites regardless of National Register of Historic Place or California Register of Historical Resources evaluation.

Diameter at breast height (dbh)**—**A standard means of tree measurement, with the diameter of the trunk measured at breast height, defined as 4.5 feet above the forest floor on the uphill side of the tree.

Discharge—The flow of surface water into a stream or canal or the outflow of groundwater from a flowing artesian well, ditch, or spring. Also refers to the discharge of liquid effluent from a facility.

Ecological restoration—The process of repairing damage caused by humans to natural systems.

Ecotone—A transitional zone between two vegetation communities that contains the characteristic species of each community.

GLOSSARY

Escape habitat—Natural or man-made features that allow animals to avoid predators or other threats.

Expansive soils—Soils or rocks characterized by clayey material that shrinks and swells as it dries or becomes wet, respectively. Expansive soils are subject to changes in volume and settlement in response to wetting and drying, often resulting in severe damage to structures.

Extirpate—To remove or destroy totally.

Farmlands of Significance

Prime Farmland is land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed.

Farmland of Statewide Importance is land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production.

Unique Farmland does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has been used for the production of specific high-economic-value crops.

Farmland of Local Importance is either currently producing crops or has the capability of production but does not meet the criteria of the categories above.

Grazing Land is land on which the vegetation is suited to the grazing of livestock.

Floodplain—Land adjacent to a watercourse over which water flows in times of flood. The limits of the floodplain are defined by the peak level of a 1-in-100-year return period flood.

Fossil fuel—A general term for subsurface combustible geologic deposits of organic materials, formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the Earth's crust over hundreds of millions of years.

Freeboard—The space between the top of the transported materials and the top of the truck that is transporting the materials.

Fugitive dust—Fugitive emissions generally refer to those emissions that are released to the atmosphere by some means other than through a stack or tailpipe.

Greenhouse gas—A gas which traps solar radiation, such as carbon dioxide.

Ground-Borne vibration—The noise that is manifested inside a building or structure as a result of vibrations produced by a source located outside the building (and its foundations) and transmitted as vibration through the ground between the source and the building.

Groundwater recharge—Inflow to aquifers from precipitation, infiltration, through-flow, or other means that replaces groundwater lost through pumping or other forms of discharge. The process of water being added to the saturated zone *or* the volume of water added by this process.

Hazardous materials—Defined in Section 25501(h) of the California Health and Safety Code, are materials that, because of their quantity, concentration, or physical or chemical characteristics, pose a substantial present or potential hazard to human health and safety or to the environment if released to the workplace or environment.

GLOSSARY

Hazardous waste—Any material that is relinquished, recycled, or inherently waste-like and falls under Title 22 of the California Code of Regulations, Division 4.5, Chapter 11 contains regulations for the classification of hazardous wastes. A waste is considered a hazardous waste if it is toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damages materials), or reactive (causes explosions or generates toxic gases) in accordance with the criteria established in Article 3. Article 4 lists specific hazardous wastes, and Article 5 identifies specific waste categories, including hazardous wastes, as defined by the Resource Conservation and Recovery Act, non-Resource Conservation and Recovery Act hazardous wastes, extremely hazardous wastes, and special wastes.

Herbaceous—Having the texture, color, and other characteristics of an ordinary foliage leaf; not woody.

Historic landscape—Landscapes or areas that are either 1) associated with an event or series of events of historical note; or 2) represent the visual perception of a particular period of civilization, a way of life, or patterns of living.

Historic resource—An ambiguous term that is sometimes used to refer to architectural resources or archaeological resources of the historic era.

Historical resource—Any property that is either listed in or eligible for listing in the California Register of Historical Resources.

Hydrology—The science that deals with the waters above and below land surfaces; their occurrence, circulation, and distribution, both in time and space; their biological, chemical, and physical properties; and their reaction with their environment, including their relation to living beings.

Integrated pest management—The use of multiple treatment methods to control undesirable weeds and other pests.

Integrity (archaeological or architectural)—A resource's "intactness" and the extent to which it resembles its original form.

Lateral Spreading—landslides that commonly form on gentle slopes and that have rapid fluid-like flow movement, like water.

Liquefaction—The process of changing soil and unconsolidated sediments into water mixture immediately following an earthquake; often results in foundation failure, with sliding of the ground under buildings and structures.

Native—Grown, produced, or originating from a particular geographic area.

Neotropical migrant—A bird that breeds in North America and spends the nonbreeding season in warmer climates, often in Central and South America.

Nonnative—Not originating from the current geographic area.

Paleontological resource—Fossilized remains or traces of animals, plants, and invertebrates, including their imprints, from a previous geological period.

Particulate matter—Tiny solid or liquid particles, generally soot and aerosols.

Passive recreation—Recreational activities that occur in a natural setting and that require minimal site development or facilities. Under passive recreation, the importance of the environment or setting for the activities is greater than in developed or active recreation settings.

Pathogen—A disease-causing agent, especially a living microorganism such as a bacterium or fungus.

Riparian—land next to a natural watercourse such as a river or stream. Riparian areas support vegetation that provides important wildlife habitat, as well as important fish habitat when it overhangs the bank.

GLOSSARY

Rookery—Colony or aggregation of animals of the same species.

Roosting habitat—Natural or man-made features on which birds perch to rest or sleep.

Sacred site—Locality of traditional significance or importance to a Native American community.

Scenic highway—A highway from which a high quality scenic natural landscape can be seen by travelers and with little intrusion by development.

Scenic resource—The visible physical features on a landscape.

Scenic vista—A visually appealing distant view.

Scrub—Low trees or shrubs collectively.

Sediment Load—The total quantity of sediment, as measured by dry weight or volume, that moves past a site during a given time.

Sedimentation—The deposition of material suspended in a stream system, whether in suspension (suspended load) or on the bottom (bedload).

Sensitive receptor—People or institutions with people that are particularly susceptible to illness from environmental pollution, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise.

Sensitive species—Species that are listed on the California Native Plant Society plant list or *Inventory of Rare and Endangered Vascular Plants*.

Siltation—Sediment influx from either erosion or from sediment carried into a water body by inflowing rivers and tributaries.

Social trail—An undesignated, user-developed pathway that has developed through use of a Natural Area.

Special status species—Species that are accorded special status because of their recognized rarity or vulnerability to habitat loss or population decline. Some of these species receive specific protection in federal or state endangered species legislation. Others have been designated sensitive species or species of special concern on the basis of adopted policies of federal, state, or local resource agencies. These species are referred to collectively as special-status species.

Subsidence—A lowering of the land surface in response to subsurface weathering, collapse or slow settlement of underground mines, or the production of subsurface fluids such as ground water or oil.

Suspended particulates (PM_{10} and $PM_{2.5}$)—Particulate matter is a class of air pollutants that consists of solid and liquid airborne particles in an extremely small size range. Particulate matter is measured in two size ranges: PM_{10} for particles less than 10 microns in diameter, and $PM_{2.5}$ for particles less than 2.5 microns in diameter.

Topsoil—Surface soil usually including the organic layer in which plants have most of their roots and which a farmer turns over in plowing.

Understory—The shrubs and plants growing beneath the main canopy of a forest or stand of trees.

Unique archaeological resource—An archaeological property that meets the criteria listed in Section 21083.2 of the California Public Resources Code. An archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge there is a high probability that it meets one of a set of criteria.

Urban forest—A significant stand of nonindigenous trees.

GLOSSARY

V zones—A FEMA Flood Zone designation for high risk zones that consist of coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones on the FEMA Flood Insurance Rate Map.

Viewshed—The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

Wetland—A zone periodically or continuously submerged or having high soil moisture, which has aquatic or riparian vegetation components and is maintained by water supplies significantly in excess of those otherwise available through local precipitation.

Williamson Act—Also known as the Land Conservation Act of 1965, this act provides for lowered property taxes for lands maintained in agricultural and certain open space uses. Under a Williamson Act contract, generally the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least 10 years. In return, the land is taxed at a rate based on the agricultural production of the land, rather than its real estate market value.

Windthrow—The effects of wind on a stand of trees.

Wind-toughened edge trees—Trees in a stand that have become tough or resistant to the wind.

I. SUMMARY

I.A PROJECT SYNOPSIS

Fragments of unique plant and animal habitats within San Francisco and Pacifica, known as Significant Natural Resource Areas (Natural Areas), have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). In the late 1990s, the SFRPD developed a Natural Areas Program to protect and manage these Natural Areas for the natural and human values they provide. The Natural Areas Program mission is to preserve, restore, and enhance the remnant Natural Areas and to promote environmental stewardship of these areas. On January 19, 1995, the San Francisco Recreation and Park Commission approved the first Significant Natural Resource Areas Management Plan; see Appendix E for a copy of this plan.

Over the course of several years, the SFRPD developed a new Significant Natural Resource Areas Management Plan (SNRAMP), with the final draft plan based on the 1995 plan published in February 2006. This SNRAMP contains detailed information on the biology, geology, and trails within 32 Natural Areas, 31 of which are in San Francisco and one of which (Sharp Park) is in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years.

The SNRAMP delineates the acreage within each Natural Area into management area categories based on management priorities—MA-1, MA-2, and MA-3. The management area categories represent differing levels of sensitivity, species presence, and habitat complexity. The SNRAMP prescribes both general management activities that apply to all Natural Areas and management activities specific to each Natural Area.

I.B SUMMARY OF PROJECT ALTERNATIVES

A number of alternatives were analyzed that would avoid or substantially lessen some of the significant effects of the project. These alternatives, based on public comments received during the Notice of Preparation scoping period, are fully addressed in Chapter VII (Alternatives) of this document, include the following:

- No Project Alternative—Under this alternative, the SFRPD would continue with management activities authorized under the 1995 management plan.
- Maximum Restoration Alternative—This alternative seeks to restore native habitat and convert nonnative habitat to native habitat wherever possible throughout the Natural Areas, including all management areas.

- Maximum Recreation Alternative—This alternative seeks to restore and improve recreational access to the Natural Areas wherever it does not interfere with the continued existence of native species and federally or state-listed sensitive species.
- Maintenance Alternative—This alternative seeks to maintain the current distribution of native and nonnative habitat and species throughout the Natural Areas. Under this alternative, there would be no conversion of nonnative habitat to native habitat; other features of the Natural Areas also would be retained.

The Maximum Restoration Alternative is the Environmentally Superior Alternative.

Table 1 summarizes the effects of the proposed project and alternatives.

I.C AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

The Environmental Planning (EP) Division of the San Francisco Planning Department has prepared this Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) (*California Public Resources Code*, Sections 21000-21177) and the Guidelines for Implementation of the California Environmental Quality Act (*California Code of Regulations*, Title 14, Sections 15000-15387). It evaluates environmental impacts associated with the project, identifies feasible mitigation measures to reduce these impacts to a less than significant level, and includes improvement measures to further reduce impacts identified as less than significant.

EP issued a Notice of Preparation (NOP) for the proposed project and published an environmental review notice in the *San Francisco Examiner* and *Pacifica Tribune* on April 22, 2009. During the 30-day public review period for the NOP, which began on April 22, 2009, and ended on May 26, 2009, comment letters were received from public agencies and individuals. Additional comments were also received during the May 12 and May 14, 2009, public scoping meetings. The NOP, Initial Study, and scoping report are included in Appendix A (Notice of Preparation and Scoping Report) of this EIR, and are considered in the EIR analyses, where appropriate.

Throughout the scoping process, 45 sets of scoping comments were received. Comments on the NOP addressed the following topics and are summarized in the scoping report in Appendix A:

- Sharp Park Golf Course
- General Project
- General CEQA
- General Environmental

Table 1
Summary of Environmental Effects

	Proposed Project	Maximum Restoration Alternative	Maximum Recreation Alternative	Maintenance Alternative	No Project Alternative
Land Use and Land Use Planning	LTS	LTS	LTS	LTS	NI
Aesthetics	LTS	LTS	LTS	LTS	LTS
Cultural and Paleontological Resources	SU/M	SU/M	LTS/M	LTS/M	LTS/M
Cultural and Paleontological Resources (Cumulative)	SU	SU	LTS	LTS	LTS
Wind and Shadow	LTS	LTS	LTS	LTS	LTS
Recreation	LTS/M	LTS/M	LTS	LTS	LTS
Recreation (Cumulative)	SU	SU	LTS	LTS	LTS
Biological Resources	LTS/M	LTS/M	LTS/M	LTS/M	LTS/M
Biological Resources (Cumulative)	SU	SU	LTS	LTS	LTS
Hydrology and Water Quality	LTS/M	LTS/M	LTS/M	LTS/M	LTS/M
Hazards and Hazardous Materials	LTS/M	LTS/M	LTS/M	LTS/M	LTS/M
Agriculture and Forest Resources	LTS	LTS	LTS	LTS	LTS
Air Quality	SU/M	SU/M	SU/M	SU/M	LTS
Air Quality (Cumulative)	SU/M	SU/M	SU/M	SU/M	LTS

LEGEND:

SU = Significant and unavoidable impact
SU/M = Significant and unavoidable impact with mitigation
LTS/M = Less than significant impact with mitigation
LTS = Less than significant impact
NI = No impact

- Cumulative Impacts
- Land Use and Land Use Planning
- Aesthetics
- Cultural and Paleontological Resources
- Transportation and Circulation
- Noise
- Air Quality
- Wind and Shadow
- Recreation
- Utilities and Service Systems
- Biological Resources
- Geology and Soils
- Hydrology and Water Quality
- Hazards and Hazardous Materials.

The Draft EIR has considered the CEQA-related concerns and other issues raised through the scoping process. These issues are addressed in Chapter V (Environmental Setting and Impacts) and Section VI.F (Effects Found Not to be Significant).

The following resources are addressed in this EIR:

- Land use and land use planning (Section V.B);
- Aesthetics (Section V.C);
- Cultural and paleontological resources (Section V.D);
- Wind and shadow (Section V.E);
- Recreation (Section V.F);
- Biological resources (Section V.G);
- Hydrology and water quality (Section V.H);
- Hazards and hazardous materials (Section V.I);
- Agriculture and forest resources (Section V.J); and
- Air quality (Section V.K).

The following resources are addressed only in the Initial Study:

- Population and housing;
- Public services; and
- Mineral and energy resources.

For the following resources found to have less than significant effects in the Initial Study, additional or clarifying text is provided to address the concerns expressed in comments received during the NOP scoping process:

- Transportation and circulation (Section VI.F.1);
- Noise (Section VI.F.2);
- Greenhouse gas emissions (Section VI.F.3);
- Utilities and service systems (Section VI.F.4); and
- Geology and soils (Section VI.F.5).

I.D SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table 2 summarizes the significant environmental impacts of the proposed project, mitigation measures, and the impact level following mitigation. Throughout this table, the following identifiers are used to identify the impacts and mitigation measures:

- LU – Land Use and Land Use Planning
- AE – Aesthetics
- CP – Cultural and Paleontological Resources
- WS – Wind and Shadow
- RE – Recreation
- BI – Biological Resources
- HY – Hydrology and Water Quality
- HZ – Hazards and Hazardous Materials
- AF – Agriculture and Forest Resources
- AQ – Air Quality
- ME – Mineral and Energy Resources

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
LAND USE AND LAND USE PLANNING			
Impact LU-1 Implementation of programmatic projects under the SNRAMP would not physically divide an existing community	LTS	Not applicable	LTS
Impact LU-2 Implementation of routine maintenance activities under the SNRAMP would not physically divide an existing community	LTS	Not applicable	LTS
Impact LU-3 Implementation of the Sharp Park restoration activities under the SNRAMP would not physically divide an existing community	LTS	Not applicable	LTS
Impact LU-4 Implementation of programmatic projects under the SNRAMP would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact LU-5 Implementation of routine maintenance activities under the SNRAMP would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project	LTS	Not applicable	LTS
Impact LU-6 Implementation of the Sharp Park restoration activities under the SNRAMP would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project	LTS	Not applicable	LTS
Impact LU-7 Implementation of programmatic projects under the SNRAMP would not have a substantial impact upon the existing character of the vicinity	LTS	Not applicable	LTS
Impact LU-8 Implementation of routine maintenance activities under the SNRAMP would not have a substantial impact upon the existing character of the vicinity	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact LU-9 Implementation of the Sharp Park restoration activities under the SNRAMP would not have a substantial impact upon the existing character of the vicinity	LTS	Not applicable	LTS
Impact LU-10 The proposed project, in combination with other planned and foreseeable future projects, would not result in a cumulatively considerable significant impact related to land use and land use planning	LTS	Not applicable	LTS
AESTHETICS			
Impact AE-1 Implementation of programmatic projects under the SNRAMP would not have a substantial adverse effect on a scenic vista	LTS	Not applicable	LTS
Impact AE-2 Implementation of routine maintenance under the SNRAMP would not have a substantial adverse effect on a scenic vista	NI	Not applicable	NI

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact AE-3 Implementation of Sharp Park restoration under the SNRAMP would not have a substantial adverse effect on a scenic vista	LTS	Not applicable	LTS
Impact AE-4 Implementation of programmatic projects under the SNRAMP would not substantially damage scenic resources	LTS	Not applicable	LTS
Impact AE-5 Implementation of routine maintenance under the SNRAMP would not substantially damage scenic resources	NI	Not applicable	NI
Impact AE-6 Implementation of Sharp Park restoration under the SNRAMP would not substantially damage scenic resources	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact AE-7 Implementation of programmatic projects under the SNRAMP would not substantially degrade the visual character or quality of the Natural Areas and their surroundings	LTS	Not applicable	LTS
Impact AE-8 Implementation of routine maintenance under the SNRAMP would not substantially degrade the existing visual character or quality of the Natural Areas and their surroundings	NI	Not applicable	NI
Impact AE-9 Implementation of Sharp Park restoration under the SNRAMP would not substantially degrade the existing visual character or quality of the Natural Areas	LTS	Not applicable	LTS
Impact AE-10 The proposed project, in combination with other planned and foreseeable future projects, would not result in a cumulatively considerable significant impact on aesthetics	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
CULTURAL AND PALEONTOLOGICAL RESOURCES			
Impact CP-1 Implementation of programmatic projects under the SNRAMP would result in a substantial adverse change in the significance of historical architectural resources, including historic landscapes	LTS/M	**M-CP-1: Consultation with the San Francisco Planning Department** The SFRPD would coordinate with the San Francisco Planning Department's Historic Preservation Planners and would submit plans before constructing stabilizing and erosion control measures that require installation of structures, such as gabions, near any potentially eligible resources. The Planning Department would assist in determining if any proposed construction or other activities would impact identified historic resources under CEQA on a site-by-site basis; if such impacts may occur, the project would be required to be redesigned to avoid significant impacts to historic architectural resources. The Planning Department also would assess potential impacts on any historic landscapes that are present.	LTS
Impact CP-2 Invasive tree and vegetation removal and planting activities, as part of programmatic projects, would not result in a substantial adverse change in the significance of historic landscapes or urban forests	LTS	Not applicable	LTS
Impact CP-3 Invasive tree and vegetation removal activities as part of programmatic projects under the SNRAMP would not result in a substantial adverse change in the significance of the Golden Gate Park Historic District contributing sites	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact CP-4 Invasive tree and vegetation removal and planting activities under the SNRAMP would not result in a substantial adverse change in the significance of historic landscapes or urban forests	LTS	Not applicable	LTS
Impact CP-5 Invasive tree and vegetation removal as part of routine maintenance under the SNRAMP would not result in a substantial adverse change in the significance of the Golden Gate Park Historic District contributing sites	LTS	Not applicable	LTS
Impact CP-6 Implementation of the Sharp Park restoration activities that include raising holes 10, 14, 15, and 18 would not result in a substantial adverse change in the significance of the Sharp Park Golf Course, a historic resource under CEQA	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact CP-7	SU/M	**M-CP-7: Documentation of the Sharp Park Golf Course**	SU
Implementing restoration activities to close Hole 12 of the Sharp Park Golf Course would result in a substantial adverse change in the significance of the golf course, a historic resource under CEQA		The SFRPD would document, or would retain a consultant to document, Sharp Park Golf Course before the wetland restoration activities take place. The National Park Service has published guidance for preserving cultural landscapes in Preservation Brief 36: Protecting Cultural Landscapes, Planning, Treatment and Management of Historic Landscapes and in the more complete Secretary of the Interior's Standards for Treatment of Historic Properties Guidelines for the Treatment of Cultural Landscapes. The appropriate level of documentation would be selected by a qualified professional who meets the standards for history, architectural history, or architecture (as appropriate) set forth by the Secretary of the Interior's Professional Qualification Standards, (36 CFR, Part 61). The documentation would consist of the following: • Full sets of measured drawings depicting existing or historic conditions of the Sharp Park Golf Course; • Digital photographs of Sharp Park Golf Course; • A written history and description of Sharp Park Golf Course and its alterations. The professional historian would prepare the documentation and submit it for review and approval by a San Francisco Planning Department Preservation Specialist. The documentation would be disseminated to the San Francisco Library History Room and the SFRPD Headquarters.	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact CP-8 Implementation of the Sharp Park restoration activity to construct a post and rail fence along the seawall of the golf course would not cause a substantial adverse change in the significance of the Sharp Park Golf Course, a historic resource under CEQA	LTS	Not applicable	LTS
Impact CP-9 Implementation of the Sharp Park restoration activity that requires modification of the Sharp Park Golf Course to create upland habitat on the east side of the lagoon and shorten or narrow Holes 10 and 13 would be a substantial adverse change in the significance of the golf course, a historic resource under CEQA	SU/M	M-CP-7 applies to this impact	SU
Impact CP-10 Implementation of programmatic projects under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources in Natural Areas of high archaeological sensitivity	LTS/M	**M-CP-10: Archaeological Monitoring Program for Programmatic Projects in Natural Areas with High Archaeological Sensitivity, Routine Maintenance Activities at Tank Hill and Lake Merced, and the Sharp Park Restoration Project** The following archaeological monitoring program (AMP) mitigation measure is required in order to avoid any potential adverse effect on accidentally discovered buried or submerged archaeological or historical resources as defined in CEQA Guidelines Section 15064.5(a)(c), as a result of SNRAMP programmatic projects in Natural Areas of high archaeological sensitivity and	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		routine maintenance activities at Tank Hill and Lake Merced. In addition, based on a reasonable potential that archeological resources may be present within the C-APE of the Sharp Park restoration project, the following measures shall be undertaken to avoid any potentially significant adverse effect from the Sharp Park restoration on archaeological resources. Before implementation of the SNRAMP and the Sharp Park restoration project, the SFRPD shall retain a qualified archaeological consultant from the San Francisco Planning Department's pool of qualified archaeological consultants, as provided by the Department archaeologist. The archaeological consultant will prepare one or multiple AMPs that addresses the following impacts on archaeological resources: 1) programmatic projects in Natural Areas with high archaeological sensitivity, 2) routine maintenance activities in Tank Hill and Lake Merced Natural Areas, and 3) the Sharp Park restoration project. All plans and reports prepared by the consultant shall be submitted first and directly to the Environmental Review Officer (ERO) for review and comment and shall be considered draft reports subject to revision until final approval by the ERO. Any AMP and/or data recovery programs required by this measure could suspend SNRAMP activities covered under this mitigation measure for up to four weeks. At the direction of the ERO, the suspension of construction could be extended beyond four weeks only if such a suspension were the only feasible means to reduce impacts to a less than significant level on a significant archaeological resource, as defined in CEQA Guidelines Sect. 15064.5 (a)(c). *Archaeological monitoring program*. The AMP will minimally include the following provisions: • The archaeological consultant, SFRPD, and ERO will meet and consult on the scope of each AMP reasonably before implementation of the SNRAMP. The ERO, in consultation with the Project Archaeologist, will determine what programmatic projects in which high-sensitivity Natural Areas and what routine maintenance activities in Tank Hill and Lake	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		Merced Natural Areas shall be archaeologically monitored. Additionally, the ERO and Project Archaeologist will determine which activities and portions of the Sharp Park restoration project will be archeologically monitored. In most cases, any ground-disturbing activities, such as demolition, excavation, grading, utilities installation, site remediation, etc. shall require archaeological monitoring because of the potential risk these activities pose to archaeological resources and to their depositional context; • The archaeological consultant will advise all project contractors and Natural Areas Program staff to be on the alert for evidence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of discovery of an apparent archaeological resource. A standard EP ALERT Sheet will be issued to participating project contractors and Natural Areas Program staff. Additionally, Natural Areas Program staff will advise all project volunteers of the potential for archaeological resources; • The archaeological monitors will be on the project site according to a schedule agreed on by the archaeological consultant and the ERO until the ERO has, in consultation with the archaeological consultant, determined that project construction would have no effects on significant archaeological deposits; • The archaeological monitor will record and be authorized to collect soil samples and artifactual/ecofactual material warranted for analysis; and • If an intact archaeological deposit is encountered, all ground-disturbing activities in the vicinity of the deposit should cease. The archaeological monitor will be empowered to temporarily redirect project activities and heavy equipment until the deposit is evaluated. The archaeological consultant will immediately notify the ERO of the encountered archaeological deposit. After making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, the archaeological consultant will present the findings to the	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		ERO. If the ERO, in consultation with the archaeological consultant, determines that a significant archaeological resource is present and that it could be adversely affected by the project, at the discretion of the SFRPD, the situation shall be resolved by one of the following actions: • The project shall be redesigned so as to avoid any adverse effect on the significant archaeological resource, or • An archaeological data recovery program shall be implemented, unless the ERO were to determine that the archaeological resource is of greater interpretive value than research significance and that interpretive use of the resource were feasible. If the ERO requires an archaeological data recovery program to mitigate for adverse effects on the significant archaeological resource, it shall be conducted in accordance with an archaeological data recovery plan (ADRP). The project archaeological consultant, SFRPD, and ERO shall meet and consult on the scope of the ADRP. The archaeological consultant shall prepare a draft ADRP and submit it to the ERO for review and approval. The ADRP shall identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain; that is, the ADRP would identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods were practical. The ADRP shall include the following elements: • *Field Methods and Procedures.* Descriptions of proposed field strategies,	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		procedures, and operations; • *Cataloguing and Laboratory Analysis.* Description of selected cataloguing system and artifact analysis procedures; • *Discard and Deaccession Policy.* Description of and rationale for field and post-field discard and deaccession policies; • *Interpretive Program.* Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program. • *Security Measures.* Recommended security measures to protect the archaeological resource from vandalism, looting, and unintentional damage; • *Final Report.* Description of proposed report format and distribution of results; and • *Curation.* Description of the procedures and recommendations for curating any recovered data having potential research value, identifying appropriate curation facilities, and summarizing the accession policies of the curation facilities. *Final Archaeological Resources Report.* The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods used in the archaeological monitoring or data recovery program. Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the draft final report. Copies of the Draft FARR shall be sent to the ERO for review and approval. Once the FARR is approved, copies shall be distributed as follows: • One copy to the NWIC with a copy of the transmittal sent to the ERO;	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		and • Three copies to the EP division of the San Francisco Planning Department; EP shall also receive one unlocked, searchable PDF copy of the FARR on a CD or DVD, along with copies of any formal site recordation forms (CA DPR 523 series) and documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest or interpretive value, the ERO may require a different final report content, format, and distribution than that presented above.	
Impact CP-11 Implementation of programmatic projects under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources in Natural Areas of moderate and low archaeological sensitivity	LTS/M	**M-CP-11: Accidental Discovery** Prior to any ground disturbing activity resulting from implementation of the SNRAMP, including Natural Areas of moderate and low archaeological sensitivity, a copy of EP's standard archaeological alert sheet will be issued to project staff. The project sponsor shall distribute the Planning Department archaeological resource "ALERT" sheet to the involved Natural Areas Program staff and volunteers, project prime contractor, any project subcontractors (including, but not limited to, demolition, excavation, grading, etc. firms), and any utilities firm involved in ground-disturbing activities. Prior to any ground-disturbing activities being undertaken, each contractor (or Natural Areas Program staff for projects without contractors) is responsible for ensuring that the "ALERT" sheet is circulated to all field personnel, including machine operators, field crew, supervisory personnel, etc. The project sponsor shall provide the ERO with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) confirming that all field personnel have received copies of the "ALERT" sheet. Should any indication of an archaeological resource be encountered during any soils disturbing activity of the project, the project Head Foreman and/or SFRPD shall immediately notify the ERO and immediately suspend any soils disturbing activities in the vicinity of the discovery until the ERO has determined what additional measures should be undertaken.	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		If the ERO determines that an archaeological resource may be present within the project site, SFRPD shall retain the services of an archaeological consultant from the pool of qualified archaeological consultants maintained by the Planning Department archaeologist. The archaeological consultant shall advise the ERO as to whether the discovery is an archaeological resource, retains sufficient integrity, and is of potential scientific, historical, or cultural significance. If an archaeological resource is present, the archaeological consultant shall identify and evaluate the archaeological resource. The archaeological consultant shall make a recommendation as to what action, if any, is warranted. Based on this information, the ERO may require, if warranted, specific additional measures to be implemented by SFRPD. Measures might include: • Preservation *in situ* of the archaeological resource; • An AMP; or • An archaeological testing program. If an AMP or archaeological testing program is required, it shall be consistent with the EP division guidelines for such programs and as described above under M-CP-10. The ERO may also require that SFRPD immediately implement a site security program if the archaeological resource is at risk from vandalism, looting, or other damaging actions. The project archaeological consultant shall submit a FARR to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the AMP and/or ADRP. Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report. Copies of the Draft FARR shall be sent to the ERO for review and approval. Once approved by the ERO, copies of the FARR and associated items (i.e. site record forms) shall be distributed in the same numbers and to the same recipients outlined in M-CP-10.	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact CP-12	LTS/M	M-CP-11 applies to this impact	LTS
Implementation of routine maintenance under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources in any of the Natural Areas, with the exception of Lake Merced and Tank Hill Natural Areas		**M-CP-12: Annual Archaeological Sensitivity Training for Natural Areas Program Staff Involved with Routine Maintenance Activities in all Natural Areas** SFRPD staff working within the Natural Areas will be trained by a qualified archaeologist regarding the potential for archaeological resources within the Natural Areas and how to identify such resources. The training will also include a review of penalties for looting and disturbance of these resources. At a minimum, the training will include the following: • Assigned archaeological sensitivity level of each Natural Area; • A discussion of the potential to encounter archaeological resources; • Instructions for how to identify archaeological resources; • Instructions for reporting observed looting, disturbances of known archaeological resources, or the presence of a previously unidentified archaeological site; • An overview of the AMP for routine maintenance activities and accidental discovery procedures in the Natural Areas (see M-CP-10 and M-CP-11, respectively); and • An overview of M-CP-18, Treatment of Human Remains and Associated or Unassociated Funerary Objects. It shall be the responsibility of SFRPD Natural Areas Program staff, at the beginning of any management activities involving persons outside of the Natural Areas Program, to educate volunteers or other personnel on the potential to encounter archeological resources and instructions for reporting the presence of potential resources to SFRPD Natural Areas Program staff.	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact CP-13 Implementation of routine maintenance under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources in the Lake Merced and Tank Hill Natural Areas	LTS/M	M-CP-10 and M-CP-12 apply to this impact	LTS
Impact CP-14 Implementation of the Sharp Park restoration efforts under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources	LTS/M	M-CP-10 applies to this impact	LTS
Impact CP-15 Implementation of programmatic projects under the SNRAMP would directly or indirectly destroy paleontological resources or unique geological formations	LTS/M	**M-CP-15: Coordination with EP Regarding Paleontological Resources Prior to Implementation of Programmatic Projects** To mitigate the potential for the SNRAMP to affect paleontological resources, this mitigation measure will apply to programmatic projects. The SFRPD shall coordinate with EP prior to conducting any programmatic projects that would result in ground disturbance. In such instances, EP shall review the proposed activities to determine if ground-disturbing activities could occur at or near bedrock or other geologic features of CEQA significance. If such features exist and could be affected by project activities, a training program will be conducted and an alert sheet will be disseminated to all field personnel. Any paleontological training will be conducted by a qualified paleontologist and will discuss the potential for such resources to exist in the Natural Area(s) and how to identify such resources. The training will also include a review of penalties for looting and disturbance of these resources. Alert sheets will be	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		issued for all such projects and will include the following: • A discussion of the potential to encounter paleontological resources; • Instructions for reporting observed looting of a paleontological resource; and • Instructions that if a paleontological deposit were encountered within a project area, all ground-disturbing activities in the vicinity of the deposit shall cease and the ERO shall be notified immediately. When unanticipated paleontological resources are encountered during programmatic project activities, all project activities shall stop, and a professional paleontologist shall be hired to assess the find and its significance. The findings shall be presented to the ERO who would decide the additional steps to be taken before work in the vicinity of the deposit is authorized to continue.	
Impact CP-16 Implementation of routine maintenance under the SNRAMP would directly or indirectly destroy paleontological resources or unique geological formations	LTS/M	**M-CP-16: Avoidance of Surface Bedrock in Routine Maintenance Activities** To mitigate the potential for the SNRAMP to affect paleontological resources the following mitigation measure will apply to routine maintenance activities. Natural Areas Program staff and volunteers will avoid ground-disturbing activities in areas where surface bedrock exists. If routine maintenance activities cannot avoid bedrock, SFRPD will implement M-CP-15, discussed above.	LTS
Impact CP-17 Implementation of Sharp Park restoration activities under the SNRAMP would directly or indirectly destroy paleontological resources or unique geological formations	LTS/M	**M-CP-17: Paleontological Training Program and Alert Sheet for the Sharp Park Restoration Project** To mitigate the potential for the Sharp Park restoration project to affect paleontological resources, the SFRPD shall arrange for a paleontological training by a qualified paleontologist regarding the potential for such resources to exist in the restoration area and how to identify such resources. The training shall also include a review of penalties for looting and disturbance of these resources. An alert sheet shall be issued and will include	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		the following: • A discussion of the potential to encounter paleontological resources; • Instructions for reporting observed looting of a paleontological resource; and • Instruct that if a paleontological deposit were encountered within a project area, all soil-disturbing activities in the vicinity of the deposit shall cease and the ERO would be notified immediately. If an unanticipated paleontological resource is encountered during project activities, all project activities shall stop, and a professional paleontologist shall be hired to assess the find and its significance. The findings shall be presented to the ERO who would decide the additional steps to be taken before work in the vicinity of the deposit was authorized to continue.	
Impact CP-18 Implementation of programmatic projects under the SNRAMP would disturb human remains	LTS/M	**M-CP-18: Human Remains, Associated or Unassociated Funerary Objects.** The treatment of human remains and of associated or unassociated funerary objects discovered during any ground-disturbing activity shall comply with applicable State and Federal Laws, including immediate notification of the Coroner of the City and County of San Francisco (or San Mateo County Coroner if found at Sharp Park) and in the event of the Coroner's determination that the human remains are Native American remains, notification of the NAHC who shall appoint a Most Likely Descendant (Pub. Res. Code Sec. 5097.98). The archaeological consultant, SFRPD, and Most Likely Descendant shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (CEQA Guidelines. Sec. 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, curation, possession, and final disposition of the human remains and associated or unassociated funerary objects.	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact CP-19 Implementation of routine maintenance under the SNRAMP would disturb human remains	LTS/M	M-CP-18 applies to this impact	LTS
Impact CP-20 Implementation of Sharp Park restoration activities under the SNRAMP would disturb human remains	LTS/M	M-CP-18 applies to this impact	LTS
Impact CP-21 The proposed project, in combination with other planned and foreseeable future projects, would have a cumulatively considerable significant impact related to cultural and paleontological resources	SU/M		SU
WIND AND SHADOW			
Impact WS-1 Implementation of the programmatic projects under the SNRAMP would not result in significant ground-level wind hazards and windthrow risks	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact WS-2 Implementation of the routine maintenance activities under the SNRAMP would not result in significant ground-level wind hazards and windthrow risks	LTS	Not applicable	LTS
Impact WS-3 Implementation of the Sharp Park Restoration under the SNRAMP would not result in ground-level wind hazards and windthrow risks	NI	Not applicable	NI
Impact WS-4 The proposed project, in combination with other planned and foreseeable future projects, would not have a cumulatively significant impact related to wind and shadow	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
RECREATION			
Impact RE-1 Implementation of programmatic projects under the SNRAMP would not have a substantial adverse effect on the use of recreation facilities in neighborhood and regional parks or other recreation facilities	LTS	Not applicable	LTS
Impact RE-2 Implementation of routine maintenance activities under the SNRAMP would not have a substantial adverse effect on the use of recreation facilities in neighborhood and regional parks or other recreation facilities	NI	Not applicable	NI
Impact RE-3 Implementation of the Sharp Park restoration activities under the SNRAMP would not have a substantial adverse effect on the use of recreation facilities in neighborhood and regional parks or other recreation facilities	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact RE-4 Implementation of programmatic projects under the SNRAMP would not have a substantial adverse effect on the physical characteristics of existing recreation facilities	LTS	Not applicable	LTS
Impact RE-5 Implementation of routine maintenance projects under the SNRAMP would not have a substantial adverse effect on the physical characteristics of existing recreation facilities	LTS	Not applicable	LTS
Impact RE-6 Implementation of the Sharp Park restoration activities under the SNRAMP would have a substantial adverse effect on the physical characteristics of existing recreation facilities	LTS/M	**M-RE-6: Restoration of the Sharp Park Golf Course to 18 Playable Holes** The SFRPD would coordinate with a golf course consultant and would restore the playability of the Sharp Park Golf Course, which would involve replacing Hole 12 either on the west (Option 1) or east (Option 2) side of Highway 1. Replacing the hole on the west side of Highway 1 may also require moving an additional hole west of the highway to retain playability and flow of the course, thereby increasing the number of holes west of the highway to 15 and decreasing to three the number of holes to the east. Creating a new hole east of Highway 1 would decrease the number of holes west of the highway to 13 and increase to five the number of holes to the east. The determination of where the replacement hole is constructed and whether additional holes need to be moved would require additional environmental review.	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact RE-7 The proposed project, in combination with other planned and foreseeable future projects, would result in a cumulatively considerable significant impact related to recreation	SU	None available	SU
BIOLOGICAL RESOURCES			
Impact BI-1 The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on special status plant species	LTS/M	**M-BI-1a: Protection of Protected Species and Riparian and Wetland Habitat** Where there is potential for protected species or their habitats (plants, birds, terrestrial, and aquatic species) or other protected habitats, namely riparian and wetland habitat (as protected by California Department of Fish and Game, California Coastal Commission, San Francisco Bay Regional Water Quality Control Board and/or US Army Corps of Engineers) to be affected directly or indirectly by a programmatic project, the SFRPD will prepare and provide for ERO review a compliance plan that details the proposed project, whether any protected species, protected species habitat, riparian habitat, or wetland habitat exists, the appropriate life histories of such resources (as applicable to special status species), and how the project will achieve compliance with this mitigation measure, including details as to how the SFRPD will first avoid, then minimize and if necessary restore, and/or compensate for any impacts to protected species and/or their habitats or other regulated habitats. Where there is potential for impacts to protected species and/or riparian and wetland habitats that are regulated by state, federal and/or local agencies, the compliance plan shall identify those agencies, and the SFRPD shall coordinate with all applicable resource agencies to obtain the appropriate permits and/or consultation as required by state or federal law. This mitigation measure requires SFRPD to implement the following, subject to modification through the regulatory approval	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		processes required for an individual project: 1. To avoid disturbance to protected species, their habitats, and riparian or wetland habitat, the following measures will be implemented by the SFRPD: a. For protected species, a qualified SFRPD biologist shall survey for suitable habitat within the project area before the project begins, according to US Fish and Wildlife Service and California Department of Fish and Game protocol for the protected species having the potential to occur. If no protocol exists, surveys shall be conducted according to generally accepted survey methods. If individuals were found or if it is determined that the potential exists for protected species to be present, the SFRPD shall redesign the proposed project to avoid impacts on protected species. Avoidance/minimization measures shall include conducting project activities during periods of the species lifecycle when the species would not be affected or may be minimally affected by project activities. If it is infeasible to avoid disturbance of protected species, the SFRPD will contact the US Fish and Wildlife Service or California Department of Fish and Game and undertake appropriate consultation according to the California Endangered Species Act or Endangered Species Act (unless an existing Biological Opinion is already in place and the proposed activities fall under the actions of that Biological Opinion, as may be the case for impacts to the mission blue butterfly at Twin Peaks). Any additional requirements agreed to during consultation with the US Fish and Wildlife Service and California Department of Fish and Game, or other regulatory agencies, to protect the species would be implemented, including restoration and compensation, where required. b. Where there is potential for wetland or riparian areas to be affected by programmatic activities, the SFRPD shall coordinate with California Department of Fish and Game, California Coastal Commission, San Francisco Bay Regional Water Quality Control	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		Board, US Army Corps of Engineers and/or other applicable agencies to determine the jurisdictional boundaries of protected riparian and wetland habitat. SFRPD shall apply for all appropriate permits for effects to riparian areas and wetlands (including, but not limited to, US Army Corps of Engineers 404 permits, California Department of Fish and Game Section 1602 permits, San Francisco Bay Regional Water Quality Control Board 401 Water Quality Certifications, and coastal development permits). Any additional requirements to protect riparian and wetland habitat resulting from the regulatory approval processes would be implemented, including restoration and compensation, where required. c. As discussed in Section III.E.5, new trails would be designed to avoid sensitive species habitat and riparian and wetland habitat. Where habitat for protected species or riparian and wetland habitat cannot be avoided, the programmatic project would be required to restore and/or compensate for habitat losses in accordance with measures 4 and 5 of this mitigation measure. Restoration and/or compensation shall be required at a minimum of a 1:1 ratio of habitat affected to habitat restored and/or compensated. 2. To minimize disturbance to protected species, their habitat, and wetland and riparian habitat, as a result of programmatic projects, the following minimization measures will be implemented by SFRPD, as applicable. a. Post signs or install flagging and temporary fencing around protected species habitats and riparian and/or wetland habitats that are not being directly restored. No activities shall be allowed within fenced areas, including moving equipment, storing materials, or temporarily stockpiling soils. All exclusion fencing will be removed when work in the project area is completed. b. Where stream crossings are necessary, temporary stream crossings will be located in previously disturbed areas lacking riparian vegetation, pools, side ponds or other sensitive habitats unless	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		otherwise permitted by natural resource agencies for habitat improvement activities or hazard abatement. At a minimum, all temporarily impacted areas shall be restored to their previous condition. c. In or near riparian or wetland habitat, programmatic project activities shall be limited to the dry season (generally April 15 to October 15) and include protective practices such as the use of geotextile cushions and other materials if heavy equipment will result in rutting or soil displacement (i.e. timber pads, prefabricated equipment pads, thick vegetative slash, geotextile fabric) and/or vehicles with balloon tires shall be employed. d. Where protected species are potentially present, a biological monitor shall be required (as determined after appropriate consultation with US Fish and Wildlife Service and California Department of Fish and Game) during implementation of the proposed project. The biological monitor shall survey for protected species to ensure avoidance of those species, wherever feasible; where avoidance is not feasible, the monitor would relocate any species throughout implementation of the programmatic project, as permitted by natural resource agencies. The exact relocation sites and requirements for relocation shall be determined through consultation/coordination with US Fish and Wildlife Service and/or California Department of Fish and Game. 3. To minimize impacts from the continued use of the Natural Areas on protected species, their habitats, and riparian and wetland habitat, the SFRPD shall undertake the following: a. If visitor use of the Natural Areas is resulting in impacts on protected species, their habitat and/or riparian and wetland habitat, the SFRPD shall post signs or install fences along trails to protect those habitats. Fences would allow public access on designated trails but would discourage dogs and people from drifting off-trail. If use continues to adversely impact protected species, their habitats, riparian and/or	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		wetland habitat, the SFRPD shall reroute trails and/or restore affected habitat to avoid continued impacts of human disturbance. b. Dog play areas within the Natural Areas shall continue to be evaluated in accordance with the SFRPD's Dog Policy and shall be monitored for adverse effects to biological resources. If substantial adverse impacts to protected species are confirmed, the SFRPD shall take actions to protect those species, which may include installing signs, fencing, or protections including, but not limited to, decommissioning dog play areas, in accordance with the SFRPD Dog Policy. 4. Where disturbance of protected species, their habitat, or riparian or wetland habitat cannot be avoided or sufficiently minimized, the SFRPD shall restore the habitat functions and services of areas that are subject to disturbance during programmatic project activities at a minimum of a 1:1 ratio, in accordance with a detailed restoration plan or plans prepared by a qualified restoration ecologist and would be consistent with all required permits. Final restoration plans would include the following: a. Detailed work descriptions for the restoration actions; and b. Ecologically based criteria that shall be used to determine whether the restoration project(s) were achieving identified performance objectives. A schedule for monitoring and reporting on monitoring results shall be included, as agreed upon in coordination with applicable permitting agencies, and as needed to verify whether the vegetation is fully established. The final restoration plan may include the following: • Detailed description of restoration activities; • Restoration goals; • Restoration work plan; • Management and maintenance plan;	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		• Success criteria and performance indicators; • Monitoring plan; and • Site protection measures. 5. Where avoidance and minimization measures are not sufficient to prevent a programmatic project from permanently removing protected species habitat, riparian, and/or wetland habitat and on- or off-site restoration or enhancement is not practicable, SFRPD shall provide compensatory mitigation for the impacts created at a minimum of a 1:1 ratio, unless otherwise determined by natural resources agencies. Examples include mitigation banking, in-lieu funds to parks for their restoration, or off-site preservation. Such activities would be evaluated in subsequent environmental reviews. **M-BI-1b: Protection of Locally Significant Plant Species during Implementation of Programmatic Projects** Where there is potential to impact locally significant plant species and SFRPD has not substantially enhanced the habitat for that species through restoration activities implemented by the SNRAMP already, SFRPD shall undertake the following measures to avoid and minimize impacts to locally significant plant species: • A qualified SFRPD biologist shall survey suitable habitat within the project area before the project begins. If locally significant plant species are found, the SFRPD shall redesign the proposed project to avoid or minimize impacts on locally significant plant species. • Where impacts to locally significant plant species cannot be avoided, SFRPD shall harvest the seeds of, or salvage, the affected species and use collected plants or seeds to enhance and/or restore similar habitat within the Natural Areas or outside of the Natural Areas, if necessary. To the extent feasible, habitat enhancement or restoration shall take place at sites already planned for other mitigation for the project or as part of other	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		restoration activities carried out by SFRPD; if habitat is not suitable at those sites, habitat enhancement or restoration shall be carried out at appropriate nearby sites through strategies such as transplantation, relocation or seed harvest. Enhancement and/or restoration of locally significant plant species habitat shall be designed to meet a minimum of a 1:1 ratio of affected plants/habitat to enhanced and/or restored habitat.	
Impact BI-2 The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on special status bird species	LTS/M	M-BI-1a applies to this impact	LTS
Impact BI-3 The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on other protected terrestrial wildlife species (other than bird species)	LTS/M	M-BI-1a applies to this impact	LTS
Impact BI-4 The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on protected aquatic species	LTS/M	M-BI-1a applies to this impact	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact BI-5 Implementation of routine maintenance activities under the SNRAMP would result in a substantial adverse effect on special status species	LTS/M	**Measure M-BI-5: Protection of Special Status Species during Routine Maintenance** The SFRPD shall avoid disturbance to biological resources by undertaking the following measures during routine maintenance activities: • Natural Areas Program staff and/or SFRPD staff engaged in routine maintenance activities as part of the SNRAMP shall receive annual training on the special status species that occur within the Natural Areas. The training shall identify the special status species that occur within the Natural Areas, their life history, measures to be implemented to avoid impacts to those species, and the proper protocol for encountering special status species. The SFRPD shall confirm that all SFRPD staff engaged in routine maintenance activities as part of the SNRAMP has been trained appropriately. • An education program for other field personnel (e.g. volunteers) shall be conducted by the SFRPD staff before field activities begin at a new site that has the potential to contain special status species. The field education program will consist of a brief presentation by persons knowledgeable in the applicable special status species and will include identifying the locations of protected species and locally significant plant species and an explanation of the measures being taken to avoid these species. The SFRPD shall confirm that all workers and volunteers have been trained appropriately. • Disturbance of special status plant species shall be avoided. SFRPD staff shall conduct a reconnaissance survey of maintenance areas prior to undertaking routine maintenance activities to ensure that no special status plant species are present. If such species are found to be present, activities in those areas would be relocated or modified so as to avoid potentially affecting those species. SFRPD staff shall ensure that all volunteers and others involved in maintenance or restoration activities follow protection protocols.	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		• Vehicle operators shall use existing access roads and would remain outside of habitat supporting protected species to the extent feasible. • All vehicles shall be brought in clean and free of weeds to prevent the spread or introduction of invasive plant species. • Protected terrestrial and aquatic species impacts shall be avoided during routine maintenance activities by implementing the following measures: o **California Red-Legged Frog and San Francisco Garter Snake:** These species both potentially occur at the Sharp Park upper canyon. The following measures shall apply to this Natural Area: ▪ To avoid disturbance of these species, maintenance work shall not occur in the vicinity of ponds and wetlands between November 15 and April 15, the breeding season for California red-legged frog and the season when San Francisco garter snakes are inactive in their winter burrows. ▪ If maintenance cannot be avoided during the abovementioned time period, the SFRPD staff will conduct reconnaissance surveys of maintenance areas prior to undertaking maintenance work to ensure that no California red-legged frogs or San Francisco garter snakes are present. ▪ Vegetation in all maintenance areas will be progressively cleared by hand equipment to a height of 4 inches and checked for the presence of snakes prior to disturbance and prior to equipment or vehicles entering the sites. Once vegetation is cleared, an additional pre-activity survey for the San Francisco garter snake and California red-legged frog shall be conducted in the maintenance area. ▪ In the event that a California red-legged frog or San Francisco garter snake is encountered, all field work shall immediately stop. Field personnel shall notify the onsite SFRPD staff member who will confirm the species has moved outside of the work	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		zone, or the work zone shall be adjusted to avoid the species. ▪ SFRPD staff shall provide verbal notification to the US Fish and Wildlife Service and/or to the local California Department of Fish and Game warden or biologist (as applicable) within one working day of the encounter. The SFRPD shall follow up with written notification to the US Fish and Wildlife Service and/or California Department of Fish and Game (as applicable) within five working days. Maintenance activities in the location of the encounter would be prohibited until SFRPD has contacted and properly consulted with US Fish and Wildlife Service and/or California Department of Fish and Game. Field personnel shall submit all observations of protected species to the California Natural Diversity Database. o **Western Pond Turtle:** This species occurs at Lake Merced and Sharp Park and may occur at Pine Lake. The following measures shall apply to these Natural Areas: ▪ To avoid disturbance of this species, routine maintenance work shall be avoided within wetlands, ponds and adjacent uplands, between May 15 and July 15, the nesting season for western pond turtles. ▪ If maintenance work cannot be avoided during the abovementioned time period, the SFRPD staff shall conduct reconnaissance surveys of maintenance areas prior to undertaking maintenance work to ensure that no western pond turtles or their nests are present. ▪ In the event that a western pond turtle is encountered, all field work shall immediately stop. Field personnel shall notify the onsite SFRPD staff member who will confirm the species has moved outside of the work zone, or the work zone shall be adjusted to avoid the species. ▪ SFRPD staff shall provide verbal notification to the local	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		California Department of Fish and Game warden or biologist (as applicable) within one working day of the encounter. The SFRPD shall follow up with written notification to California Department of Fish and Game within five working days. Maintenance activities in the location of the encounter would be prohibited until SFRPD has contacted and properly consulted with California Department of Fish and Game. Field personnel shall submit all observations of protected species to the California Natural Diversity Database. o **San Francisco Dusky-Footed Woodrat:** This species occurs in the Sharp Park upper canyon. The following measure shall apply to this Natural Area: ▪ SFRPD staff will conduct reconnaissance surveys of maintenance areas prior to undertaking maintenance work to identify locations of woodrat middens. ▪ To avoid disturbance of the San Francisco dusky-footed woodrat, no vegetation shall be cleared within a 10-foot buffer of an active or potentially active woodrat middens. o **Western Red Bat:** If an occupied or active roost is identified during maintenance activities, the roost shall not be disturbed. No maintenance work within 150 feet of the potentially occupied roost shall occur until it has been determined that bats are no longer using the site. ▪ In the event that a western red bat is encountered, all field work shall immediately stop. Field personnel shall notify the onsite SFRPD staff member who shall confirm that the species has moved outside of the work zone, or the work zone shall be adjusted to avoid the species. ▪ SFRPD staff shall provide verbal notification to the local California Department of Fish and Game warden or biologist (as applicable) within one working day of the encounter. The SFRPD	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		shall follow up with written notification to California Department of Fish and Game within five working days. Maintenance activities in the location of the encounter would be prohibited until SFRPD has contacted and properly consulted with California Department of Fish and Game. Field personnel shall submit all observations of protected species to the California Natural Diversity Database. o **Mission Blue Butterfly:** This species occurs at Twin Peaks and Sharp Park. The following measures shall apply to these Natural Areas: ▪ To avoid impacts to this species, SFRPD shall adhere to the long-term management and monitoring guidelines as described in the Recovery Action Plan for the Mission Blue Butterfly at Twin Peaks Natural Area and the corresponding Biological Opinion and as agreed to with the US Fish and Wildlife Service. These guidelines include conducting vegetation removal by manual, mechanical and chemical treatments that would be applied consistent with the SFRPD Integrated Pest Management program, such as hand pulling, cutting and grubbing. To avoid impacts from trampling of host plants by recreational users, the SFRPD shall continue to conduct regular maintenance on the existing trail network including trimming trailside vegetation and replacing trail base materials.	
Impact BI-6 Implementation of the Sharp Park restoration activities under the SNRAMP would have a substantial adverse effect on special status species	LTS/M	**M-BI-6a: Protection of Protected Species during Implementation of the Sharp Park Restoration Project** The SFRPD shall implement the following, subject to modification during the required regulatory approval processes: **Avoidance Measures:** • The number of access routes, the size of staging areas, and the total area of activity would be the minimum necessary to achieve the project goals and to the extent feasible access routes shall be located in upland	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		areas; • Vehicle and equipment operators would use existing access roads and would remain outside of wetlands and riparian areas that are not integral to the restoration project; • After surveying the construction site for special status species in accordance with this mitigation measure, silt fencing or exclusion fencing would be placed around the project and staging areas to reduce the potential for animals to enter the construction site. Fencing will be monitored throughout construction to ensure no snakes, frogs, or turtles enter the area; fencing will meet California Department of Fish and Game specifications so as to avoid impacts to species potentially getting trapped in the fence. • No restoration and construction shall occur between November 15 and April 15, the breeding season for California red-legged frog and the season when San Francisco garter snakes are inactive in their winter burrows, although shrubs and willow posts may be planted by hand after the first rains, and weeds may be removed within 15 feet of aquatic areas during these times; • Before moving any vehicles that remain stationary for longer than 30 minutes, the biological monitor would inspect those vehicles to ensure that no animals had crawled beneath them for cover; • During project activities, all trash that could attract predators would be properly contained, removed from the work site, and disposed of regularly. Following project completion, all trash and construction debris would be removed from work areas. **Pre-Construction Activities:** • A worker education program shall be implemented to familiarize workers, including all vehicle operators, of the importance of avoidance of harm to special-status species and the proper protocol should a protected species be encountered. The training shall include a discussion of the importance	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		of maintaining speed limits and respecting exclusion zones. The SFRPD and its construction contractor shall confirm that all workers have been trained appropriately. • Two weeks prior to the commencement of work activities and immediately prior to commencement of work, a qualified biologist will survey aquatic habitat that is suitable for the California red-legged frog, San Francisco garter snake, and western pond turtle that would be affected by the project. If individuals in any life stages of these species are found, the biologist will contact the US Fish and Wildlife Service and/or California Department of Fish and Game to determine whether relocating any life stages is appropriate. Collection of frogs, snakes, and turtles would be done with hand nets, and shall be relocated to areas of appropriate habitat; • Upland vegetation in all construction areas will be progressively cleared by hand equipment to a height of 4 inches and checked for the presence of protected species prior to disturbance and prior to construction equipment or vehicles entering the sites. Once vegetation is cleared, an additional pre-activity survey for the San Francisco garter snake, western pond turtles, and California red-legged frogs will be conducted in the impact area. • Prior to construction near wetlands or ponds, all rodent burrows in the construction area will be hand excavated until the burrows terminate or to a maximum depth of 30 centimeters in areas where soil or fill will be removed or placed. **Biological Monitor:** • A biological monitor familiar with the identification and life history of California red-legged frog, San Francisco garter snake, western pond turtle, and other potentially present protected species, and with the appropriate agency authorization, shall be designated to periodically inspect onsite compliance with all mitigation measures.	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		• The biological monitor shall perform a daily survey of the entire project area during construction activities. During these surveys, the monitor shall inspect the exclusion fencing for individuals trapped within the fence and determine the need for fence repair. Throughout the duration of the project, the monitor shall continue to perform daily fence surveys and compliance reviews at the project site. The monitor shall be designated prior to project implementation and shall have at least one specialty environmental monitor on call, with a valid 10(a)(1)(A) permit to handle listed species. The specialty monitor shall direct all personnel in regards to interactions with protected species, perform authorized species relocations, and supervise all reporting on such species. • Bullfrog monitoring will occur and egg masses detected shall be removed. **M-BI-6b: Protection of Protected Species during Maintenance of the Sharp Park Restoration Project** The SFRPD shall implement the following, subject to modification during the required regulatory approval processes: • To avoid disturbance of the San Francisco garter snake, California red-legged frog and western pond turtle, maintenance work shall not occur in the vicinity of ponds and wetlands between November 15 and April 15, the breeding/nesting season for California red-legged frog and the season when San Francisco garter snakes are inactive in their winter burrows. • If maintenance cannot be avoided during the abovementioned time period, the Natural Areas Program will conduct reconnaissance surveys of maintenance areas prior to undertaking maintenance work to ensure that no California red-legged frogs, western pond turtles or San Francisco garter snakes are present. • Heavy equipment would remain outside of wetlands to the extent feasible. If it is infeasible to avoid wetlands, no heavy equipment shall be used within wetlands between October 15 and April 15.	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		• In the event that a California red-legged frog, western pond turtle or San Francisco garter snake is encountered, all work shall immediately stop. Field personnel shall notify the onsite SFRPD staff member who will confirm that the species has moved outside of the work zone, or the work zone shall be adjusted to avoid the species. • SFRPD staff shall provide verbal notification to the US Fish and Wildlife Service and/or to the local California Department of Fish and Game warden or biologist (as applicable) within one working day of the encounter. The SFRPD shall follow up with written notification to the US Fish and Wildlife Service and/or California Department of Fish and Game (as applicable) within five working days. Maintenance activities in the location of the encounter would be prohibited until SFRPD has contacted and properly consulted with US Fish and Wildlife Service and/or California Department of Fish and Game. Field personnel shall submit all observations of protected species to the California Natural Diversity Database.	
Impact BI-7 The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on sensitive natural communities	LTS/M	M-BI-1a applies to this impact	LTS
Impact BI-8 Implementation of routine maintenance under the SNRAMP would not result in a substantial adverse effect on sensitive natural communities	LTS	Not applicable	LTS
Impact BI-9	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Implementation of the Sharp Park restoration activities under the SNRAMP would not have a substantial adverse effect on sensitive natural communities			
Impact BI-10 The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on wetlands	LTS/M	M-BI-1a applies to this impact	LTS
Impact BI-11 Implementation of routine maintenance under the SNRAMP would not result in a substantial adverse effect on wetlands	LTS	Not applicable	LTS
Impact BI-12 Implementation of the Sharp Park restoration activities under the SNRAMP would have a substantial adverse effect on wetlands	LTS/M	**M-BI-12a: Protection of Wetlands during the Sharp Park Restoration Project** The SFRPD shall obtain all applicable permits from San Francisco Bay Regional Water Quality Control Board, California Coastal Commission, US Army Corps of Engineers, and California Department of Fish and Game for impacts to wetland habitat. Measures identified in these permits shall be applied, in addition to the following measures, unless otherwise specified by resource agencies: • Except for those areas directly being restored, a minimum 100-foot buffer surrounding all wetlands, ponds, streams, drainages, and other aquatic	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		habitats located on or within 100 feet of the project site shall be clearly designated on the final project construction plans and marked on the site with orange construction fencing or silt fencing. If the area is on a slope, silt fencing or other comparable management measures will be installed to prevent polluted runoff, as well as equipment, from entering the buffer area. Signs shall be installed every 100 feet on or adjacent to the buffer fence that read, "Environmentally Sensitive Area – Keep Out." Fencing and management measures shall be installed and inspected prior to project implementation and maintained throughout the restoration period. No equipment mobilization, grading, clearing, storage of equipment or machinery, vehicle or equipment washing, or similar activity, may occur until a representative of the SFRPD has inspected and approved the fencing and/or management measures installed around these features; • Vehicle and equipment operators would use existing access roads and would remain outside of wetlands and riparian areas that are not directly associated with habitat restoration. Project construction and staging areas would be delineated with construction fencing and shall avoid wetland habitat to the maximum extent feasible; • All vehicles would be brought in clean and free of weeds to prevent the spread or introduction of invasive plant species. Vehicles and equipment would be fueled, maintained, and parked at least 100 feet from wetlands. Each morning, operators would inspect all equipment that requires the use of fuel or fluids for leaks; • Silt barriers, such as sand bags, silt fences/curtains, or basins, would be installed before the project begins; • Wet sediments taken from the wetlands would be stockpiled so water could drain or evaporate before removal. Stockpiles would be placed in upland areas with the perimeters protected by best management practices to avoid polluted runoff; • All soil stockpiles shall be protected against wind and rainfall erosion at all times. Plastic sheeting or other similar material shall be used to cover	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		soils and would be securely anchored by sandbags or other suitable means. At no time would any stockpiled materials be allowed to erode into any water body or drainage facility or onto any roadway; and • Ground disturbing construction and maintenance activities shall be avoided during the rainy season and consistent with Mitigation Measure M-BI-6a. **M-BI-12b: Laguna Salada Restoration Project Wetland Mitigation Plan** Consistent with the requirements for a Section 401 water quality certification permit, the SFRPD shall prepare a mitigation plan. Additionally, because this is a restoration project, the California Coastal Commission may require an objective performance evaluation to determine project success which would include a monitoring program and methods for evaluating performance, which could be accomplished through implementation of the wetland mitigation plan. The wetland mitigation plan shall include, at a minimum, a description of the following: • Proposed project's physical and biological impacts; • Mitigation goals; • Mitigation work plan; • Management and maintenance plan; • Success criteria and performance indicators • Monitoring plan; and • Site protection measures. The components of the above mitigation plan may be altered, supplemented, or deleted during the San Francisco Bay Regional Water Quality Control Board's review process, as the San Francisco Bay Regional Water Quality Control Board has final authority over the terms of the water quality certification.	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact BI-13 The SNRAMP and implementation of programmatic projects under the SNRAMP would not have a substantial adverse effect on fish and wildlife movement, migratory corridors, or nursery sites	LTS	Not applicable	LTS
Impact BI-14 Implementation of routine maintenance activities under the SNRAMP would not have a substantial adverse effect on fish and wildlife movement, migratory corridors and nursery sites	LTS	Not applicable	LTS
Impact BI-15 Implementation of Sharp Park restoration activities under the SNRAMP would have a substantial adverse effect on fish and wildlife movement, migratory corridors and nursery sites	LTS/M	M-BI-6a, M-BI-6b, M-BI-12a, and M-BI-12b apply to this impact	LTS
Impact BI-16 The SNRAMP and implementation of	NI	Not applicable	NI

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
programmatic projects under the SNRAMP would not conflict with any local policies or ordinances protecting biological resources			
Impact BI-17 Implementation of routine maintenance activities under the SNRAMP would not conflict with any local policies or ordinances protecting biological resources	NI	Not applicable	NI
Impact BI-18 Implementation of Sharp Park restoration activities under the SNRAMP would not conflict with any local policies or ordinances protecting biological resources	NI	Not applicable	NI
Impact BI-19 The proposed project, in combination with other planned and foreseeable future projects, would not have a cumulatively considerable significant impact related to biological resources	SU	None available	SU

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
HYDROLOGY AND WATER QUALITY			
Impact HY-1 Implementation of programmatic projects under the SNRAMP would violate water quality standards or otherwise degrade water quality	LTS/M	M-HZ-13 applies to this impact **M-HY-1: Implementation of Stormwater Pollution Prevention Measures** Construction projects that do not drain to San Francisco's combined sewer system and involve one or more acres of land disturbance are required to obtain coverage under the NPDES General Permit for Stormwater Discharges Associated with Construction Activity. In accordance with the NPDES General Permit requirements, the SFRPD or its contractors would submit a notice of intent to the SWRCB's Division of Water Quality, would develop a SWPPP, and would implement site-specific BMPs to prevent discharges of nonpoint source pollutants in construction-related stormwater runoff to storm drains and water bodies. As required by the NPDES General Construction Permit, trained and certified persons would prepare the SWPPPs and would conduct inspections to ensure the effectiveness of the BMPs. Listed below are BMPs that would be implemented at the Natural Areas to meet the minimum requirements of the NPDES General Construction Permit. These measures may be altered, supplemented, or deleted during the SFBRWQCB's review process, as it has final authority over the terms of the SWPPP. Other programmatic projects shall implement the following measures, where applicable to a project, unless other equally or more effective measures are determined to be necessary during future project-specific environmental review. These projects are those on less than one acre and that do not require a NPDES General Construction Permit or that drain to San Francisco's combined sewer system and are regulated by the SFPUC. a. <u>Schedule to Avoid or Minimize Impacts</u> • Schedule construction to minimize ground disturbance during the rainy season; • Sequence construction activities to minimize the amount of time that	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		soils remain disturbed; • Stabilize all disturbed soils as soon as possible following the completion of ground-disturbing work in any area of the project site; • Provide plans to stabilize soil with vegetation or physical means in the event rainfall is expected; and • Install erosion and sediment control best management practices prior to the start of any ground-disturbing activities. b. Erosion and Sediment Controls • Preserve existing vegetation in areas where no construction activity is planned or where construction activity will occur at a later date; • Stabilize and revegetate disturbed areas as soon as possible after construction with planting, seeding, and/or mulch (e.g., straw or hay, erosion control blankets, hydromulch, or other similar material), except in actively cultivated areas; • Install silt fences, coir rolls, and other suitable measures around the perimeter of the construction zone, staging areas, storm drains, temporary stockpiles, spoil areas, stream channels, swales, down-slope of all exposed soil areas, and other locations determined necessary to prevent off-site sedimentation; • Install temporary slope breakers during the rainy season on slopes greater than 5 percent where the base of the slope is less than 50 feet from a water body, wetland, or road crossing, at spacing intervals required by the San Francisco Bay Regional Water Quality Control Board; • Use filter fabric or other appropriate measures to prevent sediment from entering storm drain inlets; and • Detain and treat stormwater and water produced by construction site dewatering using sedimentation basins, sediment traps (when water	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		is flowing and there is sediment), baker tanks, or other measures to ensure that discharges to receiving waters meet applicable water quality objectives. c. <u>Housekeeping</u> • Store all equipment, materials, fuels, lubricants, solvents, and other possible contaminants away from waterways and in secured locations; • Check equipment for leaks regularly; • Wash construction equipment in a designated enclosed area regularly; and • Refuel all vehicles and equipment at least 100 feet from any water bodies d. <u>Waste Management and Hazardous Materials Pollution Control</u> • Remove trash and construction debris from the project area daily; • Locate sanitary facilities a minimum of 300 feet from water bodies; • Maintain sanitary facilities regularly; • Maintain spill containment and cleanup equipment onsite and properly label and dispose of wastes; • Locate waste collection areas close to construction entrances and away from roadways, storm drains, and water bodies; • Inspect trash receptacles and other waste and debris containers regularly for leaks and remove and properly dispose of any hazardous materials and liquid wastes placed in these containers; and • Train construction personnel in proper material delivery, handling, storage, cleanup, and disposal procedures.	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		e. Best Management Practices Inspection, Maintenance, and Repair • Inspect all best management practices regularly to confirm proper installation and function; • Inspect all stormwater best management practices daily during storms; • Inspect sediment basins, sediment traps, and other detention and treatment facilities regularly throughout the construction period; • Provide sufficient devices and materials (e.g., silt fence, coir rolls, and erosion blankets) throughout project construction to enable immediate repair or replacement of failed best management practices; and • Inspect all seeded and revegetated areas regularly for failures and remediate or repair them immediately. f. Post-construction Best Management Practices • Revegetate all temporarily disturbed areas as required after construction; • Remove any remaining construction debris and trash from the project site and area on project completion; • Phase the removal of temporary best management practices as necessary to ensure stabilization of the site; • Maintain post-construction site conditions to avoid any unintended drainage channels, erosion, or areas of sedimentation; and • Correct post-construction site conditions as necessary to comply with the stormwater pollution prevention plan and any other pertinent San Francisco Bay Regional Water Quality Control Board requirements.	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact HY-2 Implementation of routine maintenance activities under the SNRAMP would violate water quality standards or otherwise degrade water quality	LTS/M	M-HZ-14 applies to this impact	LTS
Impact HY-3 Implementation of the Sharp Park restoration under the SNRAMP would violate water quality standards or otherwise degrade water quality	LTS/M	M-BI-1a, M-BI-12b, HY-1, and HZ-13 apply to this impact	LTS
Impact HY-4 Implementation of the programmatic projects under the SNRAMP would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge	LTS	Not applicable	LTS
Impact HY-5 Implementation of routine maintenance under the SNRAMP would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge	NI	Not applicable	NI

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact HY-6 Implementation of the Sharp Park restoration under the SNRAMP would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge	LTS	Not applicable	LTS
Impact HY-7 Implementation of the programmatic projects under the SNRAMP would result in substantial erosion or siltation	LTS/M	M-HY-1 applies to this impact	LTS
Impact HY-8 Implementation of the routine maintenance activities under the SNRAMP would not result in substantial erosion or siltation	LTS	Not applicable	LTS
Impact HY-9 Implementation of the Sharp Park restoration under the SNRAMP would not result in substantial erosion or siltation	LTS/M	M-HY-1 applies to this impact	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact HY-10 Implementation of the programmatic projects under the SNRAMP would not result in flooding	LTS	Not applicable	LTS
Impact HY-11 Implementation of routine maintenance activities under the SNRAMP would not result in flooding	NI	Not applicable	NI
Impact HY-12 Implementation of the Sharp Park restoration under the SNRAMP would not result in flooding	LTS	Not applicable	LTS
Impact HY-13 Implementation of the programmatic projects under the SNRAMP would affect stormwater runoff quantity or quality	LTS/M	M-HY-1 applies to this impact	LTS
Impact HY-14 Implementation of the routine maintenance activities under the SNRAMP would not substantially affect stormwater runoff quantity or quality	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact HY-15 Implementation of the Sharp Park restoration under the SNRAMP would affect stormwater runoff quantity or quality	LTS/M	M-BI-1a, HY-1, and HZ-13 apply to this impact	LTS
Impact HY-16 The proposed project, in combination with other planned and foreseeable future projects, would not have a cumulatively considerable significant impact related to hydrology and water quality	LTS	Not applicable	LTS
HAZARDS AND HAZARDOUS MATERIALS			
Impact HZ-1 Implementation of programmatic projects under the SNRAMP would not result in significant impacts on public safety from windthrow effects	LTS	Not applicable	LTS
Impact HZ-2 Implementation of the programmatic projects under the SNRAMP would not increase the mosquito and tick population	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact HZ-3 Implementation of the routine maintenance activities under the SNRAMP would not result in significant impacts on public safety from windthrow effects	LTS	Not applicable	LTS
Impact HZ-4 Implementation of the routine maintenance activities under the SNRAMP would not increase the mosquito and tick population	NI	Not applicable	NI
Impact HZ-5 Implementation of the Sharp Park restoration activities under the SNRAMP would not impact public safety from windthrow effects	NI	Not applicable	NI
Impact HZ-6 Implementation of the Sharp Park restoration activities under the SNRAMP would not result in a significant increase in the mosquito and tick population	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact HZ-7 Implementation of the programmatic projects under the SNRAMP would not create a significant hazard through the use of pesticides for vegetation control	LTS	Not applicable	LTS
Impact HZ-8 Implementation of the programmatic projects under the SNRAMP would not disturb lead-contaminated soil	NI	Not applicable	NI
Impact HZ-9 Implementation of the routine maintenance activities under the SNRAMP would not create a significant hazard through the use of pesticides for vegetation control	LTS	Not applicable	LTS
Impact HZ-10 Implementation of the routine maintenance activities under the SNRAMP would not disturb lead-contaminated soil	NI	Not applicable	NI

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact HZ-11 Implementation of the Sharp Park restoration activities under the SNRAMP would not create a significant hazard through the use of pesticides for vegetation control	LTS	Not applicable	LTS
Impact HZ-12 Implementation of the Sharp Park restoration under the SNRAMP would not disturb lead-contaminated soil	NI	Not applicable	NI
Impact HZ-13 Implementation of the programmatic projects under the SNRAMP would not create significant hazard to the public or the environment through accident conditions involving the release of hazardous materials into the environment	LTS/M	**M-HZ-13: Emergency Response Plan for Accidental Releases of Hazardous Materials** To reduce impacts from the accidental release of hazardous materials, the SFRPD shall prepare an emergency response plan for the Sharp Park restoration and each programmatic project that uses gasoline- or diesel-powered equipment before the project began. The plan shall include emergency procedures for hazardous materials releases. These procedures shall include requirements for the necessary personal protective equipment, spill containment procedures, and worker training to respond to accidental spills and releases. The plan shall also require equipment to be refueled at least 100 feet from any streams or water bodies. During the implementation of programmatic projects, all hazardous materials, including any hazardous wastes, shall be used, stored, transported, and disposed of in accordance with local, state, and federal hazardous materials regulations. Developing and implementing the plan will ensure the proper storage and use of hazardous materials, proper response to accidental releases, and worker training, all of which will minimize contamination from hazardous materials.	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact HZ-14 Implementation of the routine maintenance activities under the SNRAMP would not create significant hazard to the public or the environment through accident conditions involving the release of hazardous materials into the environment	LTS/M	**M-HZ-14: General Emergency Response Plan for Routine Management Activities Using Gasoline- or Diesel-Powered Equipment** To reduce impacts from accidental releases of hazardous materials, the SFRPD shall prepare a general emergency response plan to address routine management activities that use gasoline- or diesel-powered equipment. The plan shall include emergency procedures for hazardous materials releases with requirements for the necessary personal protective equipment, spill containment procedures, and worker training to respond to accidental spills and releases. The plan shall also require equipment to be refueled at least 100 feet from any streams or water bodies. During routine maintenance, all hazardous materials, including any hazardous wastes, shall be used, stored, transported, and disposed of in accordance with local, state, and federal hazardous materials regulations. Developing and implementing the plan will ensure the proper storage and use of hazardous materials, proper response to accidental releases, and worker training, all of which will minimize contamination from hazardous materials.	LTS
Impact HZ-15 Implementation of the Sharp Park restoration under the SNRAMP would not create significant hazard to the public or the environment through accident conditions involving the release of hazardous materials into the environment	LTS/M	M-HZ-13 applies to this impact	LTS
Impact HZ-16 Implementation of programmatic projects under the SNRAMP would not result in substantial fire hazards	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact HZ-17 Implementation of the routine maintenance activities under the SNRAMP would not result in substantial fire hazards	LTS	Not applicable	LTS
Impact HZ-18 Implementation of the Sharp Park restoration activities under the SNRAMP would not result in substantial fire hazard impacts	LTS	Not applicable	LTS
Impact HZ-19 The proposed project, in combination with other planned and foreseeable future projects, would not result in a cumulatively considerable significant impact related to hazards and hazardous materials	LTS	Not applicable	LTS
AGRICULTURE AND FOREST RESOURCES			
Impact AF-1 Implementation of the programmatic projects under the SNRAMP would not have a substantial adverse effect on zoning for forest land or timberland	NI	Not applicable	NI

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact AF-2 Implementation of routine maintenance activities under the SNRAMP would not have a substantial adverse effect on zoning for forest land or timberland	NI	Not applicable	NI
Impact AF-3 Implementation of the Sharp Park restoration under the SNRAMP would not have a substantial adverse effect on zoning for forest land or timberland	NI	Not applicable	NI
Impact AF-4 Implementation of the programmatic projects under the SNRAMP would not have a substantial adverse effect on the loss or conversion of farmland or forest land	LTS	Not applicable	LTS
Impact AF-5 Implementation of the routine maintenance activities under the SNRAMP would not have a substantial adverse effect on the loss or conversion of forest land	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact AF-6 Implementation of the Sharp Park restoration under the SNRAMP would not have a substantial adverse effect on the conversion of forest land	NI	Not applicable	NI
Impact AF-7 The proposed project, in combination with other planned and foreseeable future projects, would not have a cumulatively considerable substantial adverse effect related to agriculture and forest resources	LTS	Not applicable	LTS
AIR QUALITY			
Impact AQ-1 Programmatic projects under the SNRAMP would result in substantial fugitive dust emissions	LTS/M	**M-AQ-1: Fugitive Dust Reduction** The SFRPD would implement the requirements of the Dust Control Ordinance for all programmatic projects that are outside of San Francisco to reduce fugitive dust emissions. For projects less than half an acre, the SFRPD would comply with the general dust control requirements listed in Section 106.3.2.6.3(c) of the San Francisco Building Code, which are: • Water all active construction areas sufficiently to prevent dust from becoming airborne. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water must be used if required by Article 21, Section 1100 et seq. of the San Francisco Public Works Code. If not required, reclaimed water should be	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		used whenever possible. • Provide as much water as necessary to control dust (without creating runoff) in any area of land clearing, earth movement, excavation, drillings, and other dust-generating activity. • During excavation and dirt-moving activities, wet sweep or vacuum the streets, sidewalks, paths, and intersections where work is in progress at the end of the workday. • Cover any inactive (no disturbance for more than seven days) stockpiles greater than ten cubic yards or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base, and soil with a 10 mil (0.01 inch) polyethylene plastic or equivalent tarp and brace it down or use other equivalent soil stabilization techniques. • Use dust enclosures, curtains, and dust collectors as necessary to control dust in the excavation area. For projects greater than half an acre, in addition to the general dust control requirements above, the SFRPD would prepare a site-specific dust control plan that requires the project sponsor to: • Submit a map to the director of the San Francisco Department of Public Health, showing all sensitive receptors within 1,000 feet of the site; • Wet down areas of soil at least three times per day; • Provide an analysis of wind direction, and install upwind and downwind particulate dust monitors; • Record particulate monitoring results; • Hire an independent third party to conduct inspections and keep a record of those inspections; • Establish shutdown conditions based on wind, soil migration, and other factors;	

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		• Establish a hotline for surrounding community members who may be affected by project-related dust; • Limit the area subject to construction activities at any one time; • Install dust curtains and windbreaks on the property lines, as necessary; • Limit the amount of soil in hauling trucks to the size of the truck bed, and secure the load with a tarpaulin; • Enforce a 15-mile per hour speed limit for vehicles entering and exiting construction areas; • Sweep affected streets with water sweepers at the end of the day; • Install and use wheel washers to clean truck tires; • Stop construction activities when winds exceed 25 miles per hour; • Apply soil stabilizers to inactive areas; and • Sweep off adjacent streets to reduce particulate emissions.	
Impact AQ-2 The routine maintenance activities under the SNRAMP would not result in substantial fugitive dust emissions	LTS	Not applicable	LTS
Impact AQ-3 The Sharp Park restoration under the SNRAMP would result in substantial fugitive dust emissions	LTS/M	M-AQ-1 applies to this impact	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Impact AQ-4 Programmatic projects under the SNRAMP would contribute substantially to an existing or projected air quality violation and would result in a net increase of criteria pollutants for which the project region is in nonattainment under an applicable federal, state, or regional ambient air quality standard	SU/M	**M-AQ-4: Construction Contract Specification to Reduce Construction Vehicle Emissions** The SFRPD will consult with EP before implementing each programmatic project. Under EP's direction, the SFRPD will either conduct a refined air quality analysis prior to project implementation, or EP will provide a list of all feasible mitigation measures to incorporate into the construction specifications to reduce construction vehicle emissions. If SFRPD were to conduct a refined air quality analysis and find that construction-related criteria air pollutant emissions would be below the Bay Area Air Quality Management District thresholds, SFRPD would not be required to incorporate mitigation measures into the project's construction specifications. The following mitigation measures are examples of mitigation measures that EP might direct the SFRPD to incorporate into construction specifications for the Sharp Park restoration project or the programmatic projects. • For programmatic projects between 2011 and 2015, use Tier 3 equipment with best available control technology where feasible. For programmatic projects conducted after 2015, use Tier 4 equipment or interim Tier 4 equipment equipped with best available control technology where such equipment exists. • Use temporary power provided by the Pacific Gas & Electric Company instead of diesel generators; where it is not possible to plug into the electric grid, use Tier 3 diesel generators and air compressors. • Use concrete batched from local plants to limit concrete trucks' travel time and the amount of diesel exhaust emitted. • Minimize idling times by either shutting equipment and vehicles off when not in use or limiting the maximum idling time to five minutes or less (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Provide clear signage of idling rules for construction workers at all access points. • Use on-road haul trucks model year 2007 or later.	SU

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
		• Maintain and properly tune construction equipment in accordance with manufacturer's specifications. Have all equipment checked by a certified mechanic to determine that equipment is running in proper condition prior to operation.	
Impact AQ-5 The routine maintenance activities under the SNRAMP would not contribute substantially to an existing or projected air quality violation and would not result in a net increase of criteria pollutants for which the project region is in nonattainment under an applicable federal, state, or regional ambient air quality standard	LTS	Not applicable	LTS
Impact AQ-6 The Sharp Park restoration under the SNRAMP would contribute substantially to an existing or projected air quality violation and would result in a net increase of criteria pollutants for which the project region is in nonattainment under an applicable federal, state, or regional ambient air quality standard	SU/M	M-AQ-4 applies to this impact	SU
Impact AQ-7	LTS	Not applicable	LTS

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Programmatic projects under the SNRAMP would not expose sensitive receptors to substantial pollutant concentrations			
Impact AQ-8 Routine maintenance under the SNRAMP would not expose sensitive receptors to substantial pollutant concentrations	LTS	Not applicable	LTS
Impact AQ-9 Sharp Park restoration under the SNRAMP would not expose sensitive receptors to substantial pollutant concentrations	LTS	Not applicable	LTS
Impact AQ-10 Implementation of the proposed project in combination with past, present, and reasonably foreseeable projects in the vicinity would result in cumulatively considerable significant air quality impacts	SU/M	M-AQ-4 applies to this impact **M-AQ-10: Cumulative Health Risk Analysis for Programmatic Projects** As part of the environmental review for all programmatic projects, the SFRPD will conduct a cumulative site-specific health risk analysis to determine if nearby sensitive receptors would be affected by those projects in combination with other known sources (e.g., roadway sources and permitted stationary sources) and existing construction projects within 1,000 feet. Based on the results of those analyses, EP would determine the need for and the scope of additional measures to reduce health risk impacts from construction activities. Mitigation measures to reduce construction-related health risks could include those listed under M-AQ-4.	SU

Table 2
Summary of Environmental Impacts and Mitigation Measures

Impact	Impact Significance	Mitigation Measures	Impact Significance With Mitigation
Improvement Measure from the Initial Study			
		I-ME-1 Consistent with the 2005 California Energy Action Plan II priorities for reducing energy use, the SFRPD would ensure that energy-efficient equipment is used to the extent practicable during project implementation.	

LEGEND:

SU = Significant and unavoidable impact
SU/M = Significant and unavoidable impact with mitigation
LTS/M = Less than significant impact with mitigation
LTS = Less than significant impact
NI = No impact

II. INTRODUCTION

The Environmental Planning (EP) Division of the San Francisco Planning Department has prepared this Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Sections 21000-21177) and the *Guidelines for Implementation of the California Environmental Quality Act* (California Code of Regulations, Title 14, Sections 15000-15387). It evaluates environmental impacts associated with the project, identifies feasible mitigation measures to reduce the impacts to a less than significant level, and includes improvement measures to further reduce impacts identified as less than significant.

This EIR meets the CEQA requirements to (1) assess the expected direct, indirect, and cumulative impacts of the project; (2) identify means of avoiding, minimizing, or mitigating potential significant adverse environmental impacts; and (3) evaluate a reasonable range of alternatives to the project, including the No Project Alternative.

The proposed project is the San Francisco Recreation and Park Department (SFRPD) implementation of its Significant Natural Resource Areas Management Plan (SNRAMP; SFRPD 2006). The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance for 32 Natural Areas in San Francisco and Pacifica over the next 20 years.

II.A PROJECT-LEVEL REVIEW

The most common type of EIR examines the environmental impacts of a specific project. This level of CEQA review focuses primarily on the changes in the environment that would result from a project and examines all phases of the project, including planning, construction, and operation (CEQA Guidelines Section 15168).

Project-level review has been selected as the appropriate level of CEQA review for the SNRAMP's routine maintenance activities and the Sharp Park restoration activities. These components of SNRAMP have been developed to a sufficient level of detail to allow project-level environmental review.

II.B PROGRAM-LEVEL REVIEW

Program-level CEQA review is used in environmental analyses for a series of actions that can be characterized as one large project because they are logically related. The series of actions can be related geographically, or be logical parts in the chain of contemplated actions. Program-level

review is used in connection with the issuance of rules, plans, or other general criteria to govern the conduct of a continuing program.

Programmatic review is also appropriate for individual activities carried out under the same authorizing statutory or regulator authority, that have generally similar environmental effects which can be mitigated in similar ways (CEQA Guidelines Section 15168).

Program-level review has been selected as the appropriate level of CEQA review for the SNRAMP's large-scale projects because these projects are long-term projects that have not been fully developed to enable project-level environmental review. Once funding is available for long-term projects, additional design and development of the project would commence, allowing for a greater understanding of project-level environmental impacts. Per CEQA Guidelines Section 15168(c), subsequent activities in the program must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared. If the agency finds that pursuant to CEQA Guidelines Section 15162, no new effects could occur or no new mitigation measures would be required, the agency can approve the activity as being within the scope of the project covered by the program EIR, and no new environmental document would be required.

However, if upon subsequent environmental review of programmatic projects it was determined that the activity would have effects not examined in the program EIR, a new environmental document would be required.

II.C ENVIRONMENTAL REVIEW PROCESS

The SFRPD filed an Environmental Evaluation (EE) application with EP that initiated the environmental review process outlined below. The EIR process provides an opportunity for the public to review and comment on the project's potential environmental effects and to further inform the environmental analysis.

As a first step in complying with the procedural requirements of CEQA, EP used the Notice of Preparation (NOP) and Initial Study process to determine whether any aspect of the project, either individually or cumulatively, may cause a significant effect on the environment and, if so, to narrow the scope of the environmental analysis.

EP issued the NOP and Initial Study on April 22, 2009, and filed it with the California Office of Planning and Research, State Clearinghouse. An environmental review notice associated with the NOP was published in the *San Francisco Examiner* and *Pacifica Tribune* on April 22, 2009. The NOP

Notice of Availability was sent to more than 2,400 interested parties. The NOP initiated a 30-day public review period that ended on May 26, 2009; its purpose was to solicit comments on the scope and content of the environmental analysis contained in the EIR. In addition, EP held two public scoping meetings on May 12 and 14, 2009, to solicit further comments on the scope and content of the environmental analysis to be included in the EIR. The NOP, Initial Study, and scoping report are included in Appendix A of this EIR.

After an internal development period, EP will issue the Draft EIR for public review. This Draft EIR public review and comment period is intended to solicit public comment on the information presented in the Draft EIR. Public hearings also will be scheduled during the public review period on the Draft EIR.

II.D PUBLIC COMMENTS

Comments were received from public agencies and individuals during the scoping period and during the two public scoping meetings.

Throughout the scoping process, 45 sets of scoping comments were received. A scoping report summarizing scoping comments and how they are addressed in the EIR is included in Appendix A of this EIR. Comments on the NOP addressed the following topics:

- Sharp Park Golf Course;
- General Project:
- General CEQA;
- General Environmental;
- Cumulative Impacts;
- Land Use and Land Use Planning;
- Aesthetics;
- Cultural and Paleontological Resources;
- Transportation and Circulation;
- Noise;
- Air Quality;
- Wind and Shadow;

- Recreation;
- Utilities and Service Systems;
- Biological Resources;
- Geology and Soils;
- Hydrology and Water Quality; and
- Hazards and Hazardous Materials.

The Draft EIR has considered the CEQA-related concerns and other issues raised through the scoping process. These issues are addressed in Chapter V (Environmental Setting and Impacts) and Section VI.F (Effects Found Not to be Significant).

II.E PUBLIC REVIEW OF THE DRAFT EIR

The Draft EIR is available for public review at the Planning Department offices at 1660 Mission Street, 1st Floor Planning Information Counter. The Draft EIR is also available through the EP web site: http://www.sf-planning.org/index.aspx?page=1828. The documents referenced in this Draft EIR are available for public review at the San Francisco Planning Department, 1650 Mission Street, Fourth Floor, (415) 558-6378.

After the Draft EIR is published, there will be a 45-day public review and comment period to solicit public comment on the information presented in the Draft EIR. This period is from August 31, 2011, through October 17, 2011. Additionally, a public hearing on this Draft EIR will be held at the San Francisco Planning Commission on October 6, 2011. Prior to the public hearing at the Planning Commission, the Historic Preservation Commission will have the opportunity to hear the project and prepare written comments to be forwarded to the Planning Commission on September 21, 2011.

Reviewers are invited to submit written comments on the Draft EIR. Written comments should be submitted to:

Bill Wycko
Environmental Review Officer
SNRAMP EIR
City and County of San Francisco
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

II.F ORGANIZATION OF THE EIR

This EIR has been organized for ease of use and reference. To help the reader locate information of particular interest, the following is a brief summary of the contents of the EIR:

- **Chapter I (Summary)**—The Summary chapter includes a brief project description, a summary of significant project impacts and mitigation measures, a summary of project alternatives, and areas of controversy and issues to be resolved.
- **Chapter II (Introduction)**—The Introduction chapter includes the type and purpose of the EIR, a summary of the environmental and public review process, and a brief outline of this document's organization.
- **Chapter III (Project Description)**—The Project Description chapter provides a detailed description of the project, including its location, components, and characteristics. The Project Description also includes approval requirements and intended uses of the EIR.
- **Chapter IV (Plans and Policies)**—The Plans and Policies chapter discusses the project's consistency with applicable plans and policies.
- **Chapter V (Environmental Setting and Impacts)**—The Environmental Setting and Impacts chapter discusses the existing conditions, project impacts, and mitigation and improvement measures for the nine resources addressed in detail in this EIR. The impact discussion includes the significance thresholds used to evaluate the nature or magnitude of environmental impacts, significance conclusions, and feasible mitigation measures that would avoid, minimize, or mitigate significant or potentially significant environmental impacts.
- **Chapter VI (Other CEQA Issues)**—As required by Section 15126.2 of the CEQA guidelines, this chapter summarizes growth-inducing impacts, significant and unavoidable environmental impacts, irreversible changes to the environment, and significant impacts of the project. This chapter also discusses areas of known controversy, issues to be resolved, and effects found not to be significant.
- **Chapter VII (Alternatives)**—The Alternatives chapter analyzes alternatives to the project, including the required No Project Alternative, compares their environmental effects with those of the project, and identifies the environmentally superior alternative. Alternatives evaluated in this chapter include the No Project Alternative, the Maximum Restoration Alternative, the Maximum Recreation Alternative, and the Maintenance Alternative.

- **Chapter VIII (References)**—The References chapter includes bibliographic information for reference materials cited throughout the document.
- **Chapter IX (EIR Preparers and Persons and Organizations Contacted)**—This chapter identifies the individuals responsible for preparation of this EIR, as well as the persons and organizations contacted during preparation of the EIR.

Acronyms and Abbreviations and a Glossary are provided at the end of the Table of Contents.

Appendices and a fold-out list of the General Recommendations are provided at the end of the document.

III. PROJECT DESCRIPTION

III.A INTRODUCTION

III.A.1 Background

While San Francisco is by and large a densely developed urban area, fragments of unique plant and animal habitats, known as Significant Natural Resource Areas (Natural Areas), have been preserved within the parks of San Francisco and Pacifica that are managed by the SFRPD. In the late 1990s, the SFRPD developed a Natural Areas Program to protect and manage these Natural Areas for the natural and human values they provide. The Natural Areas Program mission is to preserve, restore, and enhance the remnant Natural Areas and to promote environmental stewardship of these areas. On January 19, 1995, the San Francisco Recreation and Park Commission approved the first Significant Natural Resource Areas Management Plan.

Over the course of several years, the SFRPD updated and expanded the level of detail in the 1995 plan, ultimately resulting in a new Significant Natural Resource Areas Management Plan (SNRAMP, SFRPD 2006), with a final draft plan published in February 2006. The San Francisco Recreation and Park Commission approved the final draft plan for CEQA evaluation in August 2006. This SNRAMP contains detailed information on the biology, geology, and trails within 32 Natural Areas, 31 in San Francisco and one (Sharp Park) in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years. The proposed project is the SFRPD's implementation of the SNRAMP.

Specific management issues include:

- Loss of special status or unusual native species or habitats;
- Loss of diversity and components of a healthy ecosystem;
- Effect of nonnative invasive species on the local native flora and fauna;
- Erosion of Natural Areas from inappropriately located or constructed trails and access roads;
- Effect of human uses (recreation, poor trail location or too many trails, and a general increase in use) that conflict with conservation values; and
- Effects of feral animals and domestic pets on native flora and fauna.

III.A.2 Overview of the 1995 Management Plan

Below is a summary of the plan's general policies and management actions (SFRPD 1995):

- **Vegetation**
  - Maintain and promote indigenous plant species,
  - Control or remove invasive species,
  - Provide fire breaks where appropriate and maximize indigenous vegetation for fire control,
  - Use indigenous vegetation for erosion control,
  - Protect species listed as rare, threatened, or of special concern,
  - Remove exotic plants that adversely affect indigenous plant growth,
  - Enhance riparian areas,
  - Reforest or replant areas to maintain diversity, and
  - Preserve habitat that supports wildlife;
- **Wildlife**
  - Monitor wildlife,
  - Consult with other agencies on habitat enhancement,
  - Cooperate with other agencies to address issues of such nuisances as feral cats, domestic dogs, and feral geese, and
  - Develop educational programs with other agencies for wildlife protection;
- **Water Resources**
  - Maintain or improve water quality,
  - Protect riparian zones from erosion and sedimentation,
  - Maintain drainage and erosion prevention devices along roads and service trails,
  - Control drainage and runoff from roads,
  - Establish and maintain tule encroachment zone around lakes, and
  - Use proper controls when applying aquatic herbicides;

- **Geotechnical/Soils**
  - Minimize erosion along roads and trails,
  - Seed or plant bare soils with indigenous vegetation,
  - Stabilize embankments where it is not in conflict with habitat,
  - Minimize access on unstable slopes,
  - Cooperate with adjacent property owners to minimize erosion and runoff,
  - Clear landslide debris on park property, and
  - Install retaining devices where necessary to stabilize slopes;
- **Education**
  - Promote natural resource management among SFRPD staff,
  - Develop nature programs to promote recreation and education values,
  - Develop education programs aimed at private property owners, and
  - Develop education programs with the San Francisco Unified School District;
- **Public Use**
  - Develop guidelines for pathways and trails and for interpretive signs,
  - Control dirt bike and off-road use, and
  - Encourage community participation in a public stewardship program.

III.B INTENDED USES OF THE EIR

An EIR is an informational document that is intended to inform the public and the decision makers of the environmental consequences of a proposed project and to present mitigation measures and feasible alternatives to avoid or reduce the adverse environmental effects of that project. This EIR examines the potential significant physical environmental impacts that could result from implementation of the proposed project. This EIR is both a program and project EIR, in that it analyzes some portions of the SNRAMP at a programmatic level and some portions at a project-specific level. Because the specific details of the programmatic projects, as defined in Section III.E, are not known, those projects are analyzed at the program level; once individual programmatic projects are proposed and specific details are available, additional environmental review will be conducted, as appropriate. There is sufficient detail for project-level analysis of the routine

maintenance activities, defined in Section III.E, and the Laguna Salada habitat restoration activities proposed at Sharp Park, as detailed in Section III.F.23.

Before any discretionary project approvals may be granted for the project, the Planning Commission must certify the EIR as adequate, accurate, and complete. This Draft EIR will undergo a public review period, during which time the Planning Commission will hold a public hearing on the Draft EIR. Prior to the Planning Commission hearing, the Historic Preservation Commission will have an opportunity to review and provide written comments to the Planning Commission on the adequacy of the Draft EIR at a duly noticed public hearing. Following the close of the public comment period, EP will prepare and publish a Comments and Responses document containing a summary of all substantive comments received that raise environmental issues and EP's responses to those comments. The Comments and Responses document may also contain specific changes to the Draft EIR text. The Draft EIR, together with the Comments and Responses document, including revisions to the Draft EIR, if any, will be considered by the Planning Commission in a public meeting and presented to the Planning Commission for certification. No approvals or permits may be issued before certification of the EIR.

Following certification of the EIR, the Recreation and Park Commission would consider the final SNRAMP for approval and would adopt CEQA findings for the project. If the SNRAMP is approved, the SFRPD would then implement the SNRAMP in compliance with the Mitigation Monitoring and Reporting Program.

In addition to compliance with CEQA, the SFRPD anticipates that the proposed project will be subject to additional compliance and permitting requirements administered by various federal, state, and local resource agencies. These potentially required regulatory approvals are presented in Table 3.

Table 3
Potentially Required Regulatory Approvals

Agency	Permit/Approval	Applicable Natural Areas
US Fish and Wildlife Service (USFWS)	• Incidental take authorization in accordance with the Endangered Species Act (ESA)	• Bayview Park, India Basin Shoreline Park, Lake Merced, Sharp Park, Twin Peaks
	• Review for compliance with the Migratory Bird Treaty Act (MBTA)	• All
US Army Corps of Engineers (USACE)	• Permit under Section 404 of the Clean Water Act, which regulates wetlands and other Waters of the United States	• Sharp Park, Lake Merced, Glen Canyon and O'Shaughnessy Hollow, Bayview Park
California Department of Fish and Game (CDFG)	• Take authorization in accordance with the California Endangered Species Act (CESA)	• Lake Merced, Sharp Park
	• Lake or streambed alteration agreement under Section 1602 of the California Fish and Game Code	• Glen Canyon Park and O'Shaughnessy Hollow, Lake Merced, Pine Lake, Sharp Park
California Coastal Commission	• Coastal development permit, in accordance with the California Coastal Act	• Sharp Park
San Francisco Bay Regional Water Quality Control Board (SFBRWQCB)	• Water quality certification under Section 401 of the Clean Water Act	• Sharp Park
State Water Quality Control Board (SWQCB)	• National Pollutant Discharge Elimination System general construction activity permit under Section 402 of the Clean Water Act	• All
Bay Conservation and Development Commission	• Permit in accordance with the McAteer-Petris Act and the California Coastal Act	• India Basin Shoreline Park
City and County of San Francisco	• Coastal development permit, in accordance with the California Coastal Act	• Balboa and Lake Merced
City of Pacifica Local Coastal Land Use Program	• Coastal development permit, in accordance with the California Coastal Act	• Sharp Park (west of Highway 1 and outside the Laguna Salada wetland complex)

III.C PROJECT OBJECTIVES

The SNRAMP identifies a number of objectives and goals of the Natural Areas Program on pages 1-3 to 1-4 and 2-1 and 2-2 of the plan. While these objectives and goals guided the content of the SNRAMP itself, CEQA requires that an EIR identify the objectives sought by implementing the proposed project. For purposes of CEQA, the project objectives are as follows:

- To identify issues and impacts adversely affecting ecosystem functions and biological diversity;
- To identify, prioritize, and implement restoration and management actions designed to promote the functioning of San Francisco's native[1] ecosystem, including the maintenance and enhancement of native biodiversity;
- To identify and prioritize monitoring of natural resources to support an adaptive management[2] approach;
- To provide guidelines for passive recreation[3] compatible with San Francisco's natural resources;
- To provide guidelines for education, research, and stewardship programs; and
- To restore the Laguna Salada wetland complex for the benefit of special status species.

III.D PROJECT LOCATION

The 32 Natural Areas are scattered mostly throughout the central and southern portions of San Francisco and constitute approximately four percent of the total city area; one Natural Area is in Pacifica. The areas range in size from less than one acre to almost 400 acres and include such popular locations as Twin Peaks and portions of Glen Canyon Park. Many of these areas support sensitive plant and animal species and habitats. Most are used as recreational open spaces by residents and visitors. While mostly owned by the SFRPD, some Natural Areas are managed by other public and private entities; for properties that the SFRPD does not own and manage, management agreements are in place to guide activities at some of those Natural Areas. The SNRAMP will guide activities on properties owned or maintained by the SFRPD through its Natural Areas Program. Figure 1 is an overview map of the Natural Areas.

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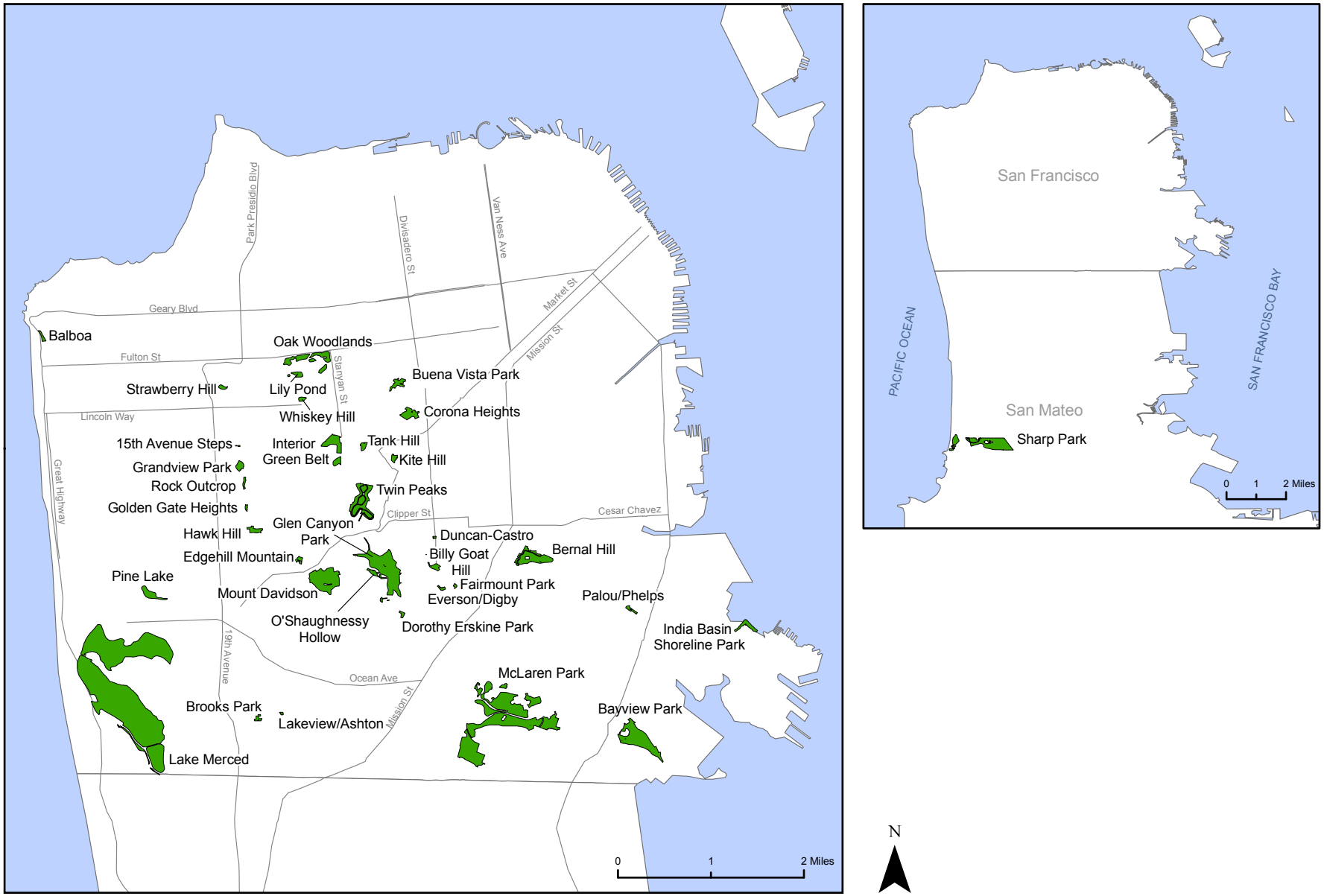
[1] Native—Grown, produced, or originating from a particular geographic area.

[2] Adaptive management—A flexible, learning-based approach to managing complex ecosystems.

[3] Passive recreation—Recreation that occurs in a natural setting and that requires minimal site development or facilities. Under passive recreation, the importance of the environment or setting for the activities is greater than in developed or active recreation settings.



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The 32 Natural Areas total approximately 1,107 acres and range in size from 0.3 acres (15th Avenue Steps) to 395 acres (Lake Merced).

Natural Area

Roadway

Natural Areas

Tetra Tech, Inc

Figure 1

Detailed maps of each Natural Area depicting the designated management areas described below can be found in Appendix B.

III.E PROJECT OVERVIEW

The *Significant Natural Resource Areas Management Plan, Final Draft* (SFRPD 2006) is incorporated by reference into this description of the project. During the development of this EIR, the SFRPD has modified management activities to address evolving management concerns and changes in conditions at the Natural Areas; these modifications are summarized in Section III.G; a memorandum documenting these modifications will be appended to the final draft SNRAMP and is included in Appendix J. The final SNRAMP will also incorporate the mitigation measures identified in this EIR.

As envisioned, the SNRAMP will provide the framework for long-term management of the Natural Areas. One goal is to provide resource managers with a framework that can be used for the next 20 years. During this period, restoration actions will be taken within the framework of an evolving urban fabric, and monitoring will determine the success of those actions and influence future actions. The SNRAMP outlines both routine maintenance and programmatic projects within the Natural Areas.

III.E.1 Objectives and Goals of the SNRAMP

Section III.C lists the CEQA objectives of the proposed project. The SNRAMP, however, identified a number of additional goals and objectives. The objectives of the SNRAMP are as follows:

- To inventory biological resources in Natural Areas, which will inform planning, restoration, and management;
- To develop a geographic information system database containing baseline information for each of the Natural Areas;
- To identify issues and impacts adversely affecting ecosystem functions and biological diversity;
- To identify and prioritize restoration and management actions designed to promote the functioning of San Francisco's native ecosystem, including the maintenance of native biodiversity;
- To identify and prioritize monitoring of natural resources to support an adaptive management approach;

- To provide guidelines for passive recreation that is compatible with San Francisco's natural resources; and
- To provide guidelines for education, research, and stewardship.

Summarized below are the goals of the SNRAMP.

Conservation and Restoration Goals

- To identify natural resources;
- To maintain viable populations of all special status species;[4]
- To maintain and enhance native plant and animal communities;
- To maintain and enhance local biodiversity;
- To reestablish native community diversity, structure, and ecosystem function where degraded;
- To improve Natural Area connectivity; and
- To decrease the extent of invasive exotic species.

Education Goals

- To provide services that will enable all age groups to better understand the values of the Natural Areas, including ecosystem functions and socioeconomic values;
- To provide learning opportunities to students in the San Francisco Unified School District; and
- To provide diverse outdoor classroom opportunities.

Research Goals

- To provide a research framework and research opportunities to schools and universities that will lead to an enhanced understanding of the natural systems and an informed adaptive management approach;
- To contribute to the scientific understanding of local natural systems; and

[4] Special status species—Species that are accorded special status because of their recognized rarity or vulnerability to habitat loss or population decline. Some of these species receive specific protection in federal or state endangered species legislation. Others have been designated sensitive species or species of special concern on the basis of adopted policies of federal, state, or local resource agencies or conservation groups (e.g., the California Native Plant Society, Audubon Society, etc). These species are referred to collectively as special status species.

- To contribute to the field of restoration ecology and other applied sciences.

Stewardship Goals

- To develop and support opportunities for public stewardship of Natural Areas;
- To foster neighborhood stewardship and volunteer groups; and
- To provide diverse opportunities for participation by stewardship groups.

Recreation Goals

- To provide opportunities for passive recreation, such as hiking and nature observation, that are compatible with conservation and restoration goals; and
- To improve and develop a recreation trail system that provides the greatest amount of accessibility while protecting natural resources.

Monitoring Goals

- To establish a long-term monitoring program to:
  - Identify the species on which monitoring should focus;
  - Detect increases and declines in abundance, distribution, or health of special status species;
  - Detect significant changes in acreage of native communities, wildlife habitats, and invasive species;
  - Detect significant increases and declines in native species richness;
  - Assess success of restoration in achieving conservation and restoration goals; and
  - Provide an adaptive management framework for evaluating changes (e.g., conceptual model).

Design and Aesthetic Goals

- Where possible, to develop aesthetically pleasing landscapes that are consistent with surrounding landscapes and that create natural transitions, especially where adjacent parklands and traditionally landscaped areas abut Natural Areas;

- To maintain and develop viewpoints and viewsheds[5] to enhance park experiences; and
- Where possible, to design and maintain landscapes to discourage the accumulation of trash and illegal encampments.

Safety Goal

- To design and maintain landscapes that promote public safety.

III.E.2 Description of the Management Areas

The management areas (MAs) addressed in the SNRAMP represent differing levels of sensitivity, species presence, and habitat complexity within the 32 Natural Areas. Three levels of MAs have been defined as MA-1, MA-2 and MA-3, and the acreage of each Natural Area is divided among these three categories. MA-1, MA-2, and MA-3 areas make up approximately 18, 39, and 43 percent of the total Natural Areas, respectively. In general, MA-1 areas are the most biologically rich and represent the priority areas for conservation and management activities, where management actions provide the greatest conservation benefit. MA-2 areas are the next most important conservation areas and offer the greatest opportunity for habitat restoration. MA-3 areas are the least biologically sensitive areas, yet offer unique opportunities for conservation and enhancement. As additional resources become available, management activities may shift to MA-2 or MA-3 areas. Individual maps of the Natural Areas showing the designated management areas and proposed actions within those management areas are included in Appendix B.

Portions of Natural Areas designated MA-1 are those that:

- Support listed species or special status species;
- Provide habitat for a significant number of sensitive species of plants or animals;
- Contain a relatively high portion of native plants or plant richness;
- Contain unique remnant native vegetation (such as native grasslands or wetlands[6]);
- Contain habitats or species most likely to be impacted by human use;
- May support vegetation assemblages of limited distribution (locally or regionally); or
- Contain erosion-prone areas.

[5] Viewshed—The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

[6] Wetland—A zone periodically or continuously submerged or having high soil moisture, which has aquatic or riparian vegetation components and is maintained by water supplies significantly in excess of those otherwise available through local precipitation.

Management actions within areas designated MA-1 may include:

- The most focused restoration work, possibly to the degree of manipulating individual plants and vegetation series;
- Reintroduction of sensitive species;
- Tree removal in conformance with forestry statements (Appendix F of the SNRAMP);
- Implementation of erosion-control measures as problems arise, including the closure of informal and social trails;[7] and
- Prohibition of planting nonnative[8] species.

Areas designated MA-2 areas are comparatively more resilient to human disturbance than MA-1 areas, and their criteria for designation include:

- Important habitats, such as coastal scrub, wetlands, native grasslands;
- Remnant native vegetation of otherwise widespread plant communities, such as coyote brush, scrub, blackberry scrub;
- Habitats or species moderately susceptible to human impact;
- Habitat for local native wildlife species, such as resident and migratory bird species;
- Native vegetation with some nonnative elements; or
- Buffer areas for MA-1s.

Management actions within areas designated as MA-2 may include the following:

- Management focused on maintaining native plant communities;
- Reintroduction of sensitive plants;
- Tree removal that is limited to a prescribed number of acres or trees in compliance with forestry statements (Appendix F of the SNRAMP);
- Implementation of erosion control measures as problems arise, including closing informal and social trails; and
- Prohibition on planting nonnative species.

[7] Social trail—An undesignated user-developed pathway through a Natural Area.

[8] Nonnative—Not originating from the current geographic area.

The remaining lands within the Natural Areas are those designated as MA-3, which are the least sensitive. Specific criteria for areas to be designated MA-3 include:

- Absence (current or historic) of sensitive plants or animals but where there are some native plants and habitat for wildlife species;
- Predominance of nonnative vegetation that serves as a buffer for MA-1 and MA-2 areas from surrounding developed recreational and other land uses; or
- Unusual geological features.

Management actions within areas designated as MA-3 include:

- Activities to promote the health and diversity of urban forests[9] and the wildlife habitat they provide;
- Prohibition on (re)introduction of sensitive species;
- Few restrictions on recreational use (subject to the standard park rules and codes); and
- Implementation of erosion control measures as problems arise, including the closure of informal and social trails.

Implementation of the SNRAMP would prioritize activities at MA-1 areas, then MA-2 areas, then MA-3 areas. Removal of vegetation would be followed by revegetation with species appropriate for that location.

III.E.3 Description of Natural Areas Program Management

The Natural Areas Program staff is composed of biologists, ecologists, and natural resource managers that conduct routine maintenance within the Natural Areas on a daily basis. The Natural Areas Program staff of approximately ten gardeners would continue to conduct the management actions at the Natural Areas. The Natural Areas Program also uses groups of volunteers that range in size from 10 to 50 people.

For larger projects, generally defined as programmatic projects in this EIR, the SFRPD Natural Areas Program or Capital Division staff would hire a contractor and would oversee the contractor's work to ensure that those projects are carried out in conformance with the Mitigation Monitoring and Reporting Program requirements established in this EIR. The Natural Areas Program staff would

[9] Urban forest—A significant stand of nonindigenous trees.

require that the contractor provide a work plan addressing erosion control, species awareness and management, and other environmental considerations.

III.E.4 Adaptive Management Approach

The strategy for managing Natural Areas is based on adaptive management, which is a flexible learning-based approach to managing complex ecosystems. Adaptive management recognizes that some uncertainty exists about the nature of ecosystems and the organisms and processes that define them. Adaptive management, as applied to natural systems, involves a continuous cycle of systematically monitoring biodiversity and other ecosystem goals, and reassessing the plans, strategies and goals, methods, and questions that underlie the management approach. Land managers then use this information to evaluate successes and failures of management actions and to refine techniques and approaches. In this approach, adaptive management is executed in three phases. First, site-specific issues and recommendations are developed. Second, a plan based on these recommendations and on priorities assigned by the Natural Areas Program is implemented. Third, a monitoring program is implemented to evaluate the plan's site-specific success and, based on the information gathered, the implementation strategies, priorities, and methods are modified, as necessary.

III.E.5 Management Practices

Integrated Pest Management

Integrated Pest Management (IPM) is the use of multiple treatment methods to control undesirable weeds and other pests. While IPM has a range of meanings and is subject to various interpretations, the Natural Areas Program defines it as the optimal integration of management methods to control pests with the least possible hazard to people, property, and the environment. The Natural Areas Program uses a least toxic decision making model in its vegetation management. Although the IPM process has been formally adopted by many public and private organizations, it continues to evolve as management strategies are fine-tuned and innovative new pest control methods are found to be effective.

IPM is a multistep ecologically based approach that enables staff to make decisions about where, when, and how resources should be best allocated to control pests. Conventional pest control methods attempt to control the symptoms of a pest problem, but IPM is a proactive strategy that focuses on identifying and reducing, or eliminating, the root cause of a pest problem. IPM implements effective, long-term management solutions through the use of a broad range of expertise, a combination of treatment methods, and comprehensive monitoring and evaluation.

In accordance with Chapter 39 of the San Francisco Administrative Code, the Natural Areas Program employs IPM as its strategy for preventing new and managing existing pest infestations. Four general weed management strategies exist: prevention, containment, reduction, and eradication; each of these results in a different level of weed control and reflects available resources. The Natural Areas Program's policy is to use the least-toxic control methods whenever feasible and practical.

Factors that make manual and/or mechanical methods impractical include:

- Direct threats to human health and safety (e.g., steep, inaccessible, unstable slopes, significant poison oak infestations, etc.);
- Large infestations requiring ongoing repeated strenuous physical labor, such as picking and lifting, that may cause injury to staff, contract field crews, or volunteers; and
- Areas where access, human trampling, or soil disturbance may directly or indirectly damage native plant communities, affect wildlife, or cause soil erosion.

Management methods to be employed by the Natural Areas Program include:

- Physical control methods, which range from hand-pulling weeds to the use of hand and mechanical tools to uproot, girdle, or cut plants;
- Biological control, which involves revegetating cleared areas and introducing native plants in an area to encourage competition with weeds;
- Chemical control, which involves the use of herbicides to suppress wildland weeds; and
- Public education and outreach.

Only aquatic-specific herbicides (those determined safe for aquatic life) would be applied to wetlands and to areas next to water bodies.

Best Management Practices

The SNRAMP identifies best management practices (BMPs) for erosion control, pathogen[10] control, and West Nile virus.

[10] Pathogen—A disease-causing agent, especially a living microorganism such as a bacterium or fungus.

Depending on site conditions, trails may or may not be created in previously inaccessible areas, as opposed to improving existing social trails. Trail placement would be designed to avoid sensitive vegetation and habitat to the extent possible. Trail alignments in the SNRAMP are conceptual and require further refinement and site-by-site evaluation to confirm the best alignment to provide access and minimize effects on surrounding natural resources. Natural Areas Program staff would avoid disturbing undeveloped portions of Natural Areas that are not planned for restoration or other management actions.

The Natural Areas Program gardeners would continue to carry fire extinguishers in their trucks and would use appropriate fire prevention and suppression measures for more extensive tree and shrub removal. The SFRPD would continue to hold regular meetings with the San Francisco Fire Department and would coordinate management activities, such as tree removal, with that department.

Tree Removal and Replacement. Invasive trees removed in San Francisco would be replaced with native tree species at a ratio of roughly one-to-one, although not necessarily at the same location or within the same Natural Area. The SFRPD would take into consideration the views from Natural Areas when locations are being selected for new trees; locations of replacement trees in San Francisco Natural Areas would be selected to preserve views from important points. Tree removal and other activities conducted at the edges of Natural Areas may require temporary closure of sidewalks and roads. For Sharp Park in Pacifica, many of the trees would be replaced not with trees but with more appropriate native vegetation, specifically coastal scrub. Tree removal is discussed in detail in Appendix F of the SNRAMP. For accounting purposes, the SNRAMP defines a tree as any plant having a dominant vertical trunk that is over 15 feet tall; tree species less than 15 feet tall are considered seedlings or saplings in the SNRAMP. Natural Areas Program staff could remove trees that have a diameter at breast height[11] (dbh) of six inches or less; Natural Areas Program staff would coordinate with the SFRPD arborist, who would evaluate the removal of larger trees. Tree work would generally be limited to the nonbreeding season for bird species. Where tree work is required during the breeding season, surveys would be conducted before tree removal to determine the presence or absence of breeding birds, in accordance with General Recommendation GR-4b (see page 109). Typically, trees would be removed limb-by-limb, rather than felling an entire tree; limb-by-limb removal techniques would always be applied in areas adjacent to other trees or sensitive habitat unless this technique is not feasible or practical from a safety perspective. Minimally

[11] Diameter at breast height—A standard means of tree measurement, with the diameter of the trunk measured at breast height, defined as 4.5 feet above the forest floor on the uphill side of the tree.

impacting tree removal techniques would be employed and would involve removing the individual limbs of a tree, then cutting the trunk into individual sections. Tree removal would be conducted manually by someone climbing the tree or someone on a mechanical cherry picker next to the tree. If tree removal occurs in an area that is roadway-accessible, the limbs and trunk sections typically would be transported from the area by a flatbed truck; in other areas, the limbs and trunk sections would be left in place on the ground. Tree removal would leave the tree stump and root ball intact to hold the soil and minimize subsurface disturbance; stumps may be ground to below grade where necessary to avoid tripping hazards. The SFRPD would spread tree removal across targeted portions of Natural Areas and would not concentrate it in a particular location. Larger-scale tree removal (that exceeds half an acre or on average more than 20 trees), identified and analyzed as long-term programmatic projects in this EIR, would remove trees within urban forests (MA-2 and MA-3) over time and not simultaneously in one portion of a Natural Area. The SFRPD's Tree Removal Procedures require that all trees designated for removal be posted at least 30 days before removal. The public is invited to comment about the proposed removal, and the SFRPD may or may not modify its plans based on public input.

Implementing the SNRAMP would involve thinning both individual trees and small clusters of trees. In most cases, some trees within the area would be left, and the surrounding forest would remain intact. Removal of other vegetation in MA-1 areas would primarily affect individual plants within roughly half-acre plots.

Erosion Control. The erosion control BMPs applicable and appropriate to managing the Natural Areas include the following:

- Straw mulch—This method can be applied quickly in areas where long-term erosion protection is not required;
- Rolled erosion control products—These materials are supplied in rolls and are used to protect exposed soil areas from water and wind erosion;
- Wood mulch—This material is typically broadcast by hand onto exposed soil to prevent wind and water erosion;
- Silt fences—This method involves staking a permeable geotextile fabric along the contours of a slope. The bottom of the silt fence is typically trenched into the soil, allowing the fence to intercept and reduce the velocity of sediment-laden sheet flow;

- Fiber rolls—These roll materials are shaped into tubes that can be placed along the contour of a slope to intercept sediment-laden sheet flow and can also be placed around storm drain inlets; and
- Straw bales—These can be applied in much the same way as the fiber rolls, but they are taller and sturdier.

Pathogen Control. The SNRAMP identified the following BMPs to control the spread of pathogens from one area to another. For work conducted in a known site of sudden oak death infestation, tools should be cleaned and disinfected after use on infected trees and should be sanitized before use on healthy trees. Generally, to prevent the spread of aquatic pathogens, dirt and debris should be removed from equipment, and the equipment should be disinfected.

West Nile Virus. To control the spread of this mosquito-borne disease, the following BMPs are recommended:

- Educate staff about the most effective ways to avoid being bitten by mosquitoes;
- Remove small water features that contain standing water or treat those features with BT (*Bacillus thuringiensis israelensis*), a biological control agent for mosquito larvae, if the features are to remain and Public Health Services identifies a potential health hazard; and
- Encourage staff to drain any standing water that is caused by stored equipment or by temporary depressions.

III.E.6 Monitoring Plan

Monitoring activities will be designed within the conceptual framework to address the following questions:

- What is the population status of selected special status species? Where are these populations located? What are the growth trends for each of these populations and for the species as a whole within the Natural Areas?
- How successful are restoration and enhancement projects in terms of project goals? What are the best ways to measure success criteria? How do selected management activities, including restoration and conservation projects, affect the diversity and abundance of native species in relation to the diversity and abundance of invasive species within the project areas?

The following standardized protocols have been developed to address those questions:

Monitoring Populations of Special Status Species

- Monitoring special status plant species
  - Locate populations,
  - Map populations,
  - Estimate population/cover, and
  - Assess population/cover change.
- Monitoring Special Status Wildlife Species
  - Locate populations, and
  - Assess population change.

Measuring the Success of Restoration and Conservation Programs

- Qualitative methods for assessing project success
  - Timing of photo-monitoring, and
  - Location of photo-monitoring.
- Quantitative Methods for Assessing Project Success
  - Map project area,
  - Randomize samples,
  - Conduct point intercept sampling, and
  - Record and analyze.
- Tracking changes in avian and butterfly diversity and abundance
  - Qualitative methods for avian species monitoring,
  - Quantitative methods for avian species monitoring,
  - Qualitative methods for monitoring butterfly species, and
  - Quantitative methods for monitoring butterfly species.

A monitoring program can be successful only if it is applied uniformly and consistently. Once a monitoring effort has begun, the methods for collecting data must continue in the manner that they were initially implemented, or the data will not be comparable over time and between sites.

Therefore, the protocols associated with the SNRAMP monitoring plan should not be altered in any significant way.

III.F ACTIVITIES COVERED IN THIS EIR

The activities planned for the Natural Areas can generally be divided between routine maintenance and programmatic projects, as described below. In this EIR, routine maintenance is addressed at a project level, while the programmatic projects are addressed programmatically; programmatic projects would undergo additional environmental review, as appropriate, at the time they are proposed. This EIR also analyzes the Sharp Park restoration at the project-level.

III.F.1 Program-Level Activities

Programmatic projects would include the following:

- Rerouting or constructing trails, using heavy equipment (such as bobcats, backhoes, and excavators) at a typical grading depth of two feet. This activity is typically conducted by contractors.
- Stabilizing hillsides, using erosion control measures that require heavy equipment and grading and possible installation of structures, such as gabions. This activity is typically conducted by contractors.
- Undertaking initial invasive weed or tree removal projects that typically exceed half an acre (or on average 20 trees) at any one time. Trees will be removed manually and limb-by-limb, as described previously. This activity can be conducted by contractors or SFRPD staff.

While the SNRAMP may identify additional types of programmatic projects, the environmental effects of those projects are anticipated to be similar to or less than the above categories of program-level projects.

III.F.2 Project-Level Activities

Routine Maintenance

Routine maintenance would include the following:

- Removing invasive weeds by hand, either as follow-up on a previously treated site or as initial treatment in small areas (less than half an acre). This activity mostly involves the use of hand tools and volunteers, with some use of power equipment by SFRPD staff, such as

brush blades or chainsaws. Ground disturbance from this activity is typically within the top inch or so of ground around the root zone.

- Installing plants using hand tools and plants in one-gallon containers or smaller. In addition to planting, volunteers also may assist Natural Areas Program staff with installation of erosion control materials, including coir rolls, straw bales, wattles, jute netting, and straw matting. These materials are installed with pins or two- to three-foot-long wooden stakes. This activity typically disturbs up to 12 inches of surface soil.
- Removing invasive trees (mostly eucalyptus), as well as overhanging tree limbs. This activity typically occurs in places where trees are expanding into or threatening a native habitat or presenting a safety concern. Following removal, stumps are left in place, resulting in little, if any, ground disturbance. Typically, no more than 20 trees (or half an acre) are treated at one time. This removal covers saplings and any tree over 15 feet high. Trees over six inches dbh are typically removed by tree crews at a rate of one to a few trees at a time. Trees will be removed manually and limb-by-limb, as described above.
- Maintaining trails, which includes clearing deposited soil from steps, replacing or installing steps or trail edging, and rerouting and benching trails. Ground disturbance for this activity is usually six inches or less.
- Maintaining catchment basins and sediment dams through hand removal of accumulated materials.

Sharp Park Restoration

As part of the Sharp Park restoration activities, the following measures from the SNRAMP would be implemented. The full set of Sharp Park SNRAMP measures are presented in Section III.I.23 and include additional measures that may fall under either programmatic projects or routine maintenance.

- SP-4a—Implement improvements to protect and enhance the habitat for the California red-legged frog and San Francisco garter snake at Laguna Salada, including the following:
  - Create upland mounds for foraging, resting, and escape cover for the California red-legged frog and the San Francisco garter snake;
  - Dredge excess sediments and accumulated organic matter, including stands of encroaching tules, to maintain open water and fringe habitat in the wetlands complex

and use appropriate dredged material on site to create or enhance upland habitat or to increase the elevation of certain golf course fairways;

- Continue monitoring for California red-legged frogs and San Francisco garter snakes; and
- Install and maintain signs and barriers to prevent disturbance of sensitive habitat in Horse Stable Pond and Laguna Salada by dogs or other possible nuisances.

- SP-4b—Construct upland mounds in the area directly south and southeast of Laguna Salada and plant with native grasses and herbs to provide snake and frog basking sites, and to provide nesting habitat for riparian birds; and
- SP-9b—Establish a vegetation management plan for the canal connecting Laguna Salada and Horse Stable Pond that would allow channel maintenance without affecting the forktail damselfly, California red-legged frog, or San Francisco garter snake.

The improvements to protect and enhance the California red-legged frog and San Francisco garter snake at Laguna Salada under measure SP-4a are focused on restoring the marsh complex and associated uplands. These restoration activities are intended to establish conditions that more resemble previous conditions and allow for thriving populations of these listed species. Figure 2 shows the restoration project footprint and the current vegetation communities, and Figure 3 shows the conceptual plan for restoring these areas. The goals of the Sharp Park restoration are to restore and enhance the wetland and upland habitat for the benefit of the San Francisco garter snake and California red-legged frog, which will contribute to the recovery of these species, and to reduce the potential recurrence of the conditions that negatively affect the wetland complex and habitat for these species, including sedimentation, eutrophication[12] due to the accumulation of dead and decaying vegetation, and loss of open water habitat due to accumulation of sediment and the proliferation of encroaching plant species. Although the primary restoration features discussed in this section are not likely to change, some modification may occur during consultation with the USFWS and/or CDFG pursuant to the state and federal Endangered Species Acts and during other regulatory approval processes. The main components of the restoration to achieve recovery of the California red-legged frog and San Francisco garter snake populations are as follows:

[12] Eutrophication—The process by which a body of water becomes enriched in dissolved nutrients that stimulate the growth of aquatic plant life resulting in the depletion of dissolved oxygen.

- Dredging up to 60,000 cubic yards of material to remove sediment, encroaching plant species, and decaying vegetation in Laguna Salada, Horse Stable Pond, and the channel that connects the two water bodies, resulting in the conversion of freshwater marsh, willow scrub, and wet meadow wetland habitat to open water habitat;
- Recontouring freshwater marsh wetland and ruderal (disturbed) habitat along the Laguna Salada, Horse Stable Pond, and channel shorelines to create shallow water wetland habitat;
- Creating an upland and wetland habitat corridor between Horse Stable Pond and Laguna Salada;
- Converting about half an acre of wet meadow/freshwater marsh wetland to upland habitat, creating an upland refuge in the middle of Laguna Salada to provide snakes and frogs with refugia from feral cats and other terrestrial predators, and creating about an acre of replacement wetland along the northern and western edges of the lagoon in place of coastal scrub habitat; and
- Constructing up to four acres of upland mounds on landscaped grass on the east side of the lagoon and between Laguna Salada and Horse Stable Pond**.** These mounds would be placed in the area currently occupied by part of the Hole 13 fairway, which would be narrowed and reconfigured.

Some areas that are currently open water within Laguna Salada and Horse Stable Pond would be deepened by one to three feet, and parts of the eastern portions of the lagoon and pond shorelines, as well as the connector channel, would be excavated to restore open water habitat and to ensure that ample edge habitat consisting of open water/emergent vegetation interface would persist for the foreseeable future. Excavation of accumulated sediments and encroaching wetland plants would result in the conversion of vegetated wetlands to open water habitat. This deepening would be conducted using excavating equipment positioned along the shore of the two water bodies. Up to 60,000 cubic yards of material would be excavated; of this, approximately 40,000 cubic yards would be used on-site and approximately 20,000 cubic yards would be stockpiled or spread at the Sharp Park rifle range site or disposed of at the Sharp Park organic dump. Excavated dredge spoils appropriate for use as golf course substrate materials would be used on-site to raise the elevation of Holes 10, 14, 15, and 18 and to create the upland habitat on the east edge of Laguna Salada. Prior to on-site use of dredged material, the sediments to be removed as part of the wetland restoration project would be tested for elevated concentrations of sulfides and other characteristics to determine whether the sediments would serve as soils suitable for supporting desired vegetation. If the

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- Restoration Footprint
- Vehicle Access
- Golf Course
- Coastal Scrub
- Vegetated Upland
- Ruderal and Monterey Pine Habitat
- Wet Meadow
- Willow Scrub
- Unvegetated Pond/Open Water
- Freshwater Marsh
- Paved

Laguna Salada Restoration Footprint

Pacifica, California

Figure 2

Vehicle Access
Staging
North sediment basin
Raise fairways to reduce flooding
Raise hole 18 to allow 2% slope relative to hole 14
Create new wetlands
Create shallow water habitat
Convert wetland to upland habitat
Restore coastal scrub/shrub grassland community
Staging
Clubhouse
Install post and rail fence around lagoon
Excavate for open water habitat
Restore coastal scrub/shrub grassland community
Excavate for open water habitat
Vehicle turn around area
Create shallow water bench
East sediment basin

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Vehicle Access
Habitat Boundary
Fence
Raise to 10' Contour
Upland Mounds for SFGS Habitat
Remove Non-Native Trees
Restore Coastal Scrub/Shrub
New Wetlands
Shallow Water Habitat
Sediment Basin
Open Water
Staging

TETRA TECH

Laguna Salada Restoration Features

Pacifica, California

Figure 3

sediment proves unsuitable, it would be placed in a nonsensitive location or treated to render it capable of supporting the desired vegetation. Treatment may include spreading and mixing the dredged material with native soil to avoid concentrating acidic soils or adding lime to neutralize acidic soils. Excavation of the eastern portions of the lagoon, pond and the connector shoreline would convert up to six acres of freshwater marsh, willow scrub, and wet meadow wetland habitat to open water habitat.

To facilitate deepening of Laguna Salada, Horse Stable Pond, and the channel that connects them, as well as removal of encroaching bulrushes and tules, the water levels would be lowered temporarily to allow equipment to access the shoreline for removal of accumulated vegetation and sediments. This would be accomplished by operating the pumps at Horse Stable Pond to draw water through the wetland complex and out to the Pacific Ocean. It is anticipated that the water level in the wetland complex would be lowered from an approximate elevation of 7.5 feet above mean sea level (msl) to an elevation of approximately 4.5 feet msl, a decrease of 3 feet. Following lowering of the water levels, a qualified USFWS-approved biologist would survey the entire project area for California red-legged frogs and San Francisco garter snakes. If individuals are found during the survey, the biologist would relocate them to appropriate aquatic habitat, such as that near Mori Point, located south of Horse Stable Pond (or other suitable location as agreed to as part of consultation with the USFWS and/or CDFG); these activities would be conducted in coordination with the USFWS and CDFG.

An upland and wetland habitat corridor between the lagoon and the pond would be constructed with upland features designed to support the San Francisco garter snake; this action would necessitate permanently closing Hole 12 of the Sharp Park Golf Course. Sediment basins would be installed in two locations, one where Sanchez Creek enters a culvert to pass under Highway 1 and the other at the northern boundary of Sharp Park; the former sediment basin would be developed on about half an acre of the golf course (primarily upland Monterey pine habitat), and the latter sediment basin would be expanded onto about half an acre of ruderal and upland Monterey pine habitat. A post and rail fence would also be installed along the seawall to the west of the lagoon, with additional fencing around the wetland complex, to discourage human and pet intrusion into the restored habitat area.

Creating an upland refuge in the middle of the lagoon would require filling approximately half an acre of wet meadow and freshwater marsh wetlands. To compensate for this and other incidental loss of vegetated wetlands during construction, in-kind creation of approximately one acre of wetlands would occur in several upland locations around the northern and western edges of the

lagoon. The newly created wetlands would cover the same or a greater amount of area as the wetlands that would be converted to upland habitat.

During the restoration activities, temporary equipment staging and materials storage would occur at the northwest corner of Sharp Park, at or near Hole 17 of the golf course. Equipment access to the project area from the north would be from Clarendon Street, which runs along the north side of Sharp Park. Access to the southern part of the project area would be from the sea wall levee road and the dirt road near the Horse Stable Pond pump house. Following completion of each season's restoration activities (anticipated between May 1 and October 15), those staging and storage areas that are not permanently modified would be scarified, recontoured, and hydroseeded with native vegetation to approximate their pre-disturbance condition.

Creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at Laguna Salada would also involve a reconfiguration of some holes of Sharp Park Golf Course and converting a portion of the area currently occupied by the course to Natural Area. Approximately 13 acres of the golf course would be modified to create important upland habitat adjacent to the wetlands for the endangered San Francisco garter snake, to discourage frogs from depositing egg masses in locations where the resulting tadpoles may end up being stranded, and to allow for creation of new wetlands to compensate for those filled during restoration. In order to create a habitat corridor between Horse Stable Pond and Laguna Salada, Holes 10 and 13 would be slightly shortened or narrowed, and the existing Hole 12 would be permanently closed. The habitat corridor would cover approximately six acres, bringing the total of modified area at the golf course to about 19 acres.

To protect the frogs and snakes during restoration work, the SFRPD anticipates conducting the restoration activities between May 1 and October 15 and would continue to coordinate the planning and undertaking of those activities with the USFWS and CDFG; this activity period avoids the breeding season for California red-legged frog and the season when San Francisco garter snakes are inactive in their winter burrows. The SFRPD would coordinate with the San Mateo County Mosquito and Vector Control District on the proposed changes to Laguna Salada to minimize the potential for development of mosquito breeding habitat.

While management options for the Sharp Park sea wall, including a naturally managed sea wall and shoreline, have been considered by the SFRPD, those options are not proposed as part of the SNRAMP. Thus, they are not addressed in this EIR.

Following completion of the restoration activities, the SFRPD would conduct maintenance to ensure the success of those activities. The scope of the maintenance is subject to modification during consultation with the USFWS pursuant to the ESA and through other regulatory approval processes. Maintenance would include weeding and maintaining the restored areas. Maintenance of the wetland areas may include removal of encroaching or invasive plant species and additional planting of wetland plant species. As needed, the SFRPD would also conduct small-scale dredging of accumulated sediments from the wetlands using a backhoe. Maintaining the sediment basins would involve the periodic removal of accumulated sediment. Needed surveys would be coordinated with the USFWS and CDFG to ensure compliance with endangered species laws and regulations (SFRPD 2009a). Wetland functionality would be assessed using ecologically based criteria to determine success of the project objectives.

Presented in Table 4 are the approximate areas of those habitat types that are present within the restoration project footprint; this footprint and these habitats are also illustrated in Figure 2. Habitats within the footprint are potentially subject to temporary disturbance during the restoration activities. Following completion of each season's restoration activities, the disturbed areas would be scarified, recontoured, and hydroseeded with native vegetation to approximate their pre-disturbance condition, as needed based on the level of disturbance. Also summarized in Table 4 are the approximate post-restoration areas of the restoration habitat types.

Table 4
Laguna Salada Habitat Types within Restoration Footprint

Type of Habitat	Existing Acreage*	Post-Restoration Acreage*
Landscaped Golf Course	30	11
Wetlands	23	17.5
Freshwater Marsh	19.5	14
Willow Scrub	1	0.5
Wet Meadow	2.5	3
Coastal Scrub	9	27.5
Open Water	4.5	10.5
Vegetated Upland	3	3
Ruderal and Monterey Pine	0.5	0.5

*The acreages within the Figure 2 restoration footprint have been rounded to the half acre

III.G CHANGES MADE TO THE SNRAMP SINCE PUBLICATION

When the San Francisco Recreation and Park Commission approved the SNRAMP for environmental analysis under CEQA, it passed the following two amendments:

- MA-3 areas would be maintained by the SFRPD Urban Forestry staff and may be reforested with native or nonnative species. Weed and brush removal and erosion control in MA-3 areas would be undertaken in accordance with the SNRAMP.
- Where appropriate in the SNRAMP, feral cat relocation would be implemented only on a determination by the San Francisco Recreation and Park Commission that other methods of population reduction failed to adequately reduce cat populations in the Natural Areas.

During the CEQA review process, changes have been made to the activities proposed under the SNRAMP for one or more of the following reasons:

- The activity was determined to be infeasible;
- The activity has been completed under separate environmental review;
- The activity was incorrectly described;
- The activity has been re-assessed as contrary to policy; and
- Additional details and specificity have been developed for the activity.

During the CEQA review process, the following changes have been made to the SNRAMP (additional detail on these changes is provided in Appendix J):

- While General Recommendation GR-3b of the SNRAMP mentions prescribed burning, no burning is proposed;
- While General Recommendation GR-8b of the SNRAMP mentions consideration of new dog play areas (DPAs), no new DPAs are proposed as part of the project, due to the current moratorium on new DPAs;[13]

[13] There is direction from the Recreation and Park Commission not to establish new DPAs until systemwide DPA planning is completed. For the purposes of this EIR, this is considered a moratorium in that no new DPAs are reasonably foreseeable. This direction was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee.

- While Recommendation VP-8a of the SNRAMP mentions modifying the Key Avenue roadway, some of those modifications have been completed and are not proposed as part of the project;
- While Recommendation LM-7a of the SNRAMP mentions relocating a DPA at Lake Merced, no relocation of DPAs is proposed as part of the project, in compliance with the current moratorium on new DPAs;
- While Recommendation LM-8b of the SNRAMP mentions development of an environmental education center at Lake Merced, no such center is proposed;
- While Recommendation SP-12a of the SNRAMP mentions cleanup and remediation of the former rifle range at Sharp Park, those activities are not proposed as part of the project. Remediation of the rifle range is complete and the CEQA lead agency for this project is the California Department of Toxic Substances Control;
- Additional details were developed for the SNRAMP BMPs, the program-level activities and routine maintenance activities proposed under the SNRAMP;
- For General Recommendation GR-4b, the bird breeding season was changed from April to September 1 to February 1 to August 31;
- For General Recommendation GR-15c, the following language was added to the end of the description: "retain snags and dead branches on live trees, unless they are a hazard to public safety or contain significant harmful insect or disease infestations;"
- For Recommendation VP-7b, the following text was added: "(note that this new entryway may not be feasible given the steepness of the slopes);"
- For Recommendation CH-1e, the following text was added: "(note that a portion of these trees on the north side of Corona Heights were removed in August 2010 because they were determined to be hazardous);"
- For Recommendation DP-1b, the number of existing eucalyptus trees was changed from 120 to 100;
- For Recommendations DP-2a, GC/OH-4a, and LM-3a the text was changed so that tree removal is prohibited within 150 feet of an occupied bird nest, rather than within 500 feet;
- For Recommendation IG-2a, the following text was added: "(note that this work was completed in June 2011);"

- For Recommendation LM-3b, heron nesting areas were added to the list of areas that could require closure of social trails to reduce disturbance of such areas;
- For Sharp Park, the bulleted text under SP-4a was modified and deleted. Under SP-4c, language was added indicating that the goal is to ensure that red-legged frog egg masses remain hydrated. SP-4e, SP-6a, SP-6b, and SP-9c were deleted, and the remaining measures were re-labeled. SP-10a was modified to specify that the subject trenches are located north of Sharp Park Road. The discussion of recommended management actions were modified to add a detailed description of the Laguna Salada wetland complex restoration activities;
- The Everson/Digby Natural Area was added as the 32nd Natural Area in the Natural Areas Program;
- For General Recommendation GR-8a, Lake Merced was removed from the list of DPAs whose boundaries and locations would be retained;
- For Recommendation IB-1c, California seablite (*Suaeda californica*) was added to the list of plants whose populations should be augmented;
- Recommendation IG-2b was modified to clarify that only appropriate social trails would be formalized and inappropriate trails would be eliminated;
- For Recommendation MP-9b, monitoring was expanded to include the Geneva Avenue DPA;
- For Recommendation PL-1b, the phrase associated with the Pine Lake Park Improvement Project was removed, as that project has been completed;
- For Recommendation PL-7a, the number of dedicated access points to Pine Lake was changed from two to one;
- For Recommendation TK-2a, language was added indicating that installed vegetation would include oaks; and
- For Recommendation TP-3a, the following text was added: "Explore options with the San Francisco Municipal Transit Agency to convert a portion of Twin Peaks Boulevard to a multi-use trail."

III.H General Recommendations for all Natural Areas

This section presents management recommendations common throughout the various Natural Areas. For use while reading this EIR, a fold-out list of the General Recommendations (GRs) is included at the end of this document. Site-specific recommendations are presented in Section III.I.

Invasive Plant Control and Revegetation

- GR-1a—Reduce invasive plant populations;
- GR-1b—Where native plant seed banks do not exist or have diminished, appropriate native species may be used for revegetation. Plant native species to approximate the diversity, cover, and density of adjacent habitats or of reference sites in similar habitats;
- GR-1c—Conduct restoration during the appropriate time of the year and at an appropriate scale to avoid impacts on wildlife and to minimize erosion;
- GR-1d—In areas where it may not be feasible to reduce large infestations of invasive vegetation immediately, conduct containment actions along the interface between native and nonnative habitats;
- GR-1e—Annually monitor MAs, restoration areas, and other sensitive habitats for undesired plant species.

Sensitive Plant Species

- GR-2a—Prioritize invasive weed reduction and management in areas supporting sensitive species or other vegetation series;
- GR-2b—Give sensitive species priority in revegetation and reintroduction activities throughout Natural Areas;
- GR-2c—Protect areas of sensitive species and vegetation series of limited distribution from human disturbance;
- GR-2d—Closely monitor plant populations and vegetation series of limited distribution;
- GR-2e—Continue to work with the scientific community to better understand key biological factors affecting the survival and reproduction of sensitive species and to better inform adaptive management decision making.

Native Grasslands

- GR-3a—monitor annually, if feasible, native grasslands and control invasive species;
- GR-3b—Explore alternative methods of grassland management for large grassland expanses, such as prescribed burning, livestock grazing, and use of motorized equipment.

  (Note: The SNRAMP no longer is proposing prescribed burning. The SNRAMP will be updated to reflect this change. Should the SFRPD later determine prescribed burning to be a desirable and feasible method for managing native grasslands, a separate environmental

review would be required to comply with CEQA, and applicable permits and other regulatory agency approvals would be obtained.)

Breeding Bird Habitat

- GR-4a—Conduct annual breeding bird surveys, if resources are available, using the standard point count or transect method, to develop a list of species nesting in Natural Areas;
- GR-4b—Conduct vegetation management activities outside the breeding season (February 1 to August 31) if breeding birds could be affected, unless the following specific conditions are met: projects begun before the breeding season have already disturbed the area, or a breeding bird survey is conducted first. If active nests (or large abandoned stick nests) of a sensitive species are discovered, a 150-foot-radius avoidance buffer would be centered on the nest site(s) to prevent the nesting birds from being disturbed by power tools. Weeds may be pulled by hand no closer than 50 feet from the nest;
- GR-4c—If surveys indicate that parasitism by brown-headed cowbirds is a significant problem, consult with the CDFG and the USFWS to determine proper protocols to minimize the negative effects of this species on breeding birds;
- GR-4d—Use material from brush and tree trimming to increase nesting or escape habitat[14] for ground-dwelling birds and to mitigate any loss of habitat from other vegetation clearing;
- GR-4e—Create corridors of shrubs between landscaped areas and Natural Areas to provide cover and transitional habitat for birds and other wildlife.

Avian Foraging Habitat

- GR-5a—Prevent invasive shrubs and trees from colonizing grasslands.

Avian Cavity Nesting Habitat

- GR-6a—Leave snags and dead branches on live trees, unless they are a hazard to public safety or contain significant harmful insect or disease infestations;
- GR-6b—Provide nest boxes for native species where natural cavities are absent or in limited supply;
- GR-6c—Provide nest boxes for wood ducks at Impound Lake (a sub-lake of Lake Merced), Sharp Park, and Pine Lake.

[14] Escape habitat—Natural or man-made features that allow animals to avoid predators or other threats.

Predators

- GR-7a—Implement the feral cat control policy from the Quail Recovery Plan approved by the San Francisco Commission on the Environment;
- GR-7b—Develop outreach materials to educate neighbors and users of Natural Areas about feral cats;
- GR-7c—Undertake control of non-cat predators only where they are concentrated in such a manner that they are having a substantial effect on native wildlife populations.

Dog Use

- GR-8a—Retain the boundaries and locations of seven DPAs in Natural Areas (Corona Heights, Pine Lake Park, Golden Gate Park Southeast, McLaren Park Crocker Amazon, McLaren Park Geneva, Golden Gate Park Northeast, and Buena Vista Park) and modify two DPAs (Shelley Drive Loop at McLaren Park and Bernal Hill) to protect sensitive habitat areas;
- GR-8b—Match on-leash and off-leash dog use with the sensitivity of the habitat when considering new DPAs within or next to Natural Areas;

  (Note: An underlying assumption of this EIR is that there would be no new DPAs because there is direction from the Recreation and Park Commission not to establish new DPAs until systemwide DPA planning is completed. For the purposes of this EIR, this is considered a moratorium in that no new DPAs are reasonably foreseeable. This direction was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee. Should new DPAs be proposed at some point, the appropriate level of CEQA analysis would be undertaken, and applicable permits and other regulatory agency approvals would be obtained.)
- GR-8c—Restrict dogs from three sensitive habitat areas (a portion of Gray Fox Creek at McLaren Park, habitat used by the San Francisco garter snake or California red-legged frog at Sharp Park, and the water at Pine Lake).

Small Mammal Habitat

- GR-9a—Preserve during vegetation management activities any brush, logs, rocks, and other natural elements that function as habitat for small mammals and place them at appropriate locations within the Natural Areas.

Invertebrate Habitat

- GR-10a—As invasive plants are removed, install native plants or seeds that are beneficial to local insects;
- GR-10b—In MA-3 grasslands, maintain some invasive plant species that are host plants for local butterflies and other native insects.

Trails and Views

- GR-11a—Maintain and improve primary designated trails;
- GR-11b—Encourage users to stay on the trails in all Natural Areas;
- GR-11c—Routinely monitor Natural Areas for new social trails and close or reroute any trails that impact sensitive species or sensitive habitat or that contribute to erosion;
- GR-11d—Maintain viewsheds to maintain and enhance public recreation;
- GR-11e—Consider adding amenities, such as overlooks and seating areas, when evaluating overall trail use.

Erosion Control

- GR-12a—Revegetate steep slopes that have very thin vegetation to promote general soil stability;
- GR-12b—Reduce erosion risk during the transition between removing invasive species and growth of native species that replace them, including gradual implementation of restoration efforts.

Safety

- GR-13a—Discourage establishment of vegetation with high fire hazard ratings, such as French broom and eucalyptus stands, next to homes and other structures;
- GR-13b—Maintain clear passageways by removing encroaching vegetation and maintaining sight lines to increase safety on trails.

Education

- GR-14a—Continue to network with local schools and research institutions to provide environmental education resources and opportunities for school children in San Francisco and Pacifica;

- GR-14b—Develop appropriate signage that explains the importance of natural resources, ecosystem functions, management activities and goals, and public involvement contacts;
- GR-14c—Develop education materials that discuss the impacts of feeding wildlife and wild animals and the problems with releasing unwanted pets into Natural Areas;
- GR-14d—Conduct special outreach to adjacent property owners about the impacts mentioned in GR-14c.

Urban Forests

- GR-15a—Maintain urban forests within the MA-3 areas with a basal area[15] per acre of between 200 and 600 square feet (this would provide a shaded forest environment);
- GR-15b—Maintain a stocking rate that will perpetuate the urban forest and promote forest health;
- GR-15c—To promote forest health, focus tree removal on dead or dying trees, trees with disease or insect infestations, storm-damaged or hazardous trees, and trees that are suppressed because of overcrowding; retain snags and dead branches on live trees, unless they are a hazard to public safety or contain significant harmful insect or disease infestations;
- GR-15d—Do not plant sensitive species in MA-3 urban forests;
- GR-15e—Remove invasive Cape (*Delairea odorata*), English (*Hedera helix*), and Algerian ivy (*Hedera algeriensis*) and Himalayan blackberry (*Rubus discolor*) to promote and maintain urban forest health in MA-3 areas;
- GR-15f—Consult the SFRPD arborist when tree removals or plantings are proposed in MA-3 urban forests;
- GR-15g—Plant trees and shrubs in the urban forests that promote species diversity and improve wildlife habitat; and
- GR-15h—Use San Francisco-approved insecticides to treat cut stumps.

III.I SPECIFIC RECOMMENDATIONS FOR EACH NATURAL AREA

The *Significant Natural Resource Areas Management Plan, Final Draft* (SFRPD 2006) is incorporated by reference into this description of the proposed project. The information presented below for each of

[15]Basal area—A measure, typically in square feet per acre, of the area covered by trees within a given urban forest. Basal area is used as an index of tree production.

the Natural Areas is grouped into sections on general description, management areas, and recommended management actions. The systemwide recommendations that apply to the entire Natural Area are presented first, followed by site-specific recommendations, including an alphabetical code unique to each Natural Area; the GRs referenced in the discussions below are described in Section III.H and are included in a fold-out list at the end of this document for use while reading this EIR. Where appropriate, the changes to the SNRAMP summarized in Section III.G are also listed in applicable subsection of Sections III.H and III.I. As presented in the SNRAMP, a number of the Natural Areas have been grouped in this section; as a result, the 32 Natural Areas are addressed in 27 subsections below. Table 5 is an overview of the management activities proposed for each of the Natural Areas. Figure 1 is an overview of the Natural Areas, and individual maps of the Natural Areas are included in Appendix B.

III.I.1 Balboa (BA)

General Description

The 1.8-acre Balboa Natural Area, also referred to as Sutro Dunes and Parcel 4, is at the corner of Balboa Street and the Great Highway in western San Francisco. The National Park Service (NPS) currently maintains the Balboa Natural Area for the City and County of San Francisco under the terms of a Cooperative Management Agreement approved in 2007. It is in the southern corner of the Sutro Heights Park and is across the Great Highway from Ocean Beach and the Pacific Ocean; it also is next to NPS lands administered by the Golden Gate National Recreation Area (GGNRA). This all-sand area has one of the few foredune communities in San Francisco. An elevated boardwalk provides public access and is intended to keep people out of the sensitive sand dune vegetation.

Management Areas

The 1.1-acre MA-1 area of the Balboa Natural Area includes restored dune scrub habitat and sensitive species. The 0.7-acre MA-2 area is a sandy substrate area with potential for expansion of the dune community. There is no MA-3 area at the Balboa Natural Area.

Table 5
Summary of Natural Areas Management Plan

Natural Area Site	Park Acreage	Natural Area Acreage*	Management Area (acres)				Invasive Trees			Trails (feet)				Dog Play Areas (acres)			
			MA-1	MA-2	MA-3	Total MA[1]	Existing	To Remove	To Remain	Existing	To Close/ Relocate	To Create	Resulting	Existing	To Remove	To Remain	Monitor**
Balboa	1.8	1.8	1.1	0.7	0	1.8	0	0	0	637	90	0	547				
Bayview Park	43.9	43.9	8.2	15.8	19.7	43.7	6,000	511	5,489	8,496	1,439	1,020	8,077				
Bernal Hill	24.3	24.3	7.6	5.8	10.7	24.1	100	0	100	12,239	4,544	464	8,159	21.0	6.0	15.0	No
Billy Goat Hill	3.5	3.5	0.6	1.1	1.6	3.3	20	0	20	2,600	745	0	1,855				
Brooks Park	3.5	2.0	0.8	0.9	0.3	2.0	20	3	17	1,340	456	0	884				
Buena Vista Park	36.1	6.1	0	6.1	0	6.1	140	10	130	3,741	0	0	3,741	1.0	0	1.0	Yes
Corona Heights	12.6	9.6	2.9	2.5	4.2	9.6	200	15	185	6,701	1,845	0	4,856	0.4	0	0.4	No
Dorothy Erskine Park	1.5	1.5	0.2	0.3	1.0	1.5	100	14	86	771	0	0	771				
Duncan-Castro	0.5	0.5	0.3	0.1	0.1	0.5	0	0	0	333	0	0	333				
Edgehill Mountain	2.3	2.3	0	0.9	1.4	2.3	300	0	300	747	0	438	1,185				
Everson/Digby	1.2	1.2	0.9	0.1	0.2	1.2	0	0	0	0	0	0	0				
Fairmount Park	0.7	0.7	0	0	0.7	0.7	100	0	100	187	0	0	187				
Glen Canyon Park and O'Shaughnessy Hollow***	72.6	63.8	8.1	33.0	22.4	63.5	6,000	120	5,880	23,242	3,653	0	19,589				
Golden Gate Heights	6.0	0.8	0.2	0.5	0.1	0.8	30	0	30	559	390	188	357				
Golden Gate Park Oak Woodlands	1,021.0	26.2	0.7	25.5	0	26.2	900	82	818	24,844	12,381	0	12,463	2.8	0	2.8	Yes
Grandview Park	4.0	4.0	0.9	2.4	0.7	4.0	25	5	20	1,722	409	0	1,313				
Hawk Hill	4.5	4.5	1.4	3.0	0	4.4	10	0	10	1,609	692	0	917				
India Basin Shoreline Park	11.8	6.2	3.2	2.8	0	6.0	0	0	0	1,885	0	0	1,885				
Interior Greenbelt	19.4	16.5	0	1.8	14.7	16.5	5,800	140	5,660	935	0	620	1,555				
Kite Hill	2.7	2.7	0.6	0.5	1.6	2.7	10	0	10	1,957	398	0	1,559				
Lake Merced	614.0	395.0	60.8	101.8	231.5	394.1	12,000	134	11,866	11,106	3,319	365	8,152	5.0	5.0	0	
Lakeview/Ashton Mini Park	0.5	0.5	0.1	0.2	0.2	0.5	0	0	0	651	0	0	651				
McLaren Park	312.6	165.3	34.9	68.3	61.4	164.6	19,500	809	18,691	59,185	15,681	0	43,504	61.7	8.3	53.4	Yes
Mount Davidson	40.2	40.2	8.8	11.0	20.1	39.9	11,000	1,600	9,400	15,456	2,867	0	12,589				
Palou-Phelps	2.5	2.1	0.8	0.4	0.8	2.0	40	2	38	1,049	527	496	1,018				
Pine Lake	30.3	8.4	1.0	3.8	3.6	8.4	1,000	0	1,000	3,157	608	13	2,562	3.3	0	3.3	No
Rock Outcrop	1.6	1.6	0.8	0.7	0	1.5	0	0	0	0	0	0	0				
Tank Hill	2.9	2.9	1.5	0.6	0.7	2.8	50	0	50	2,672	1,411	0	1,261				
Twin Peaks	34.1	31.1	12.6	14.3	3.8	30.7	88	3	85	8,741	2,303	501	6,939				
15th Avenue Steps	0.3	0.3	0	0.2	0	0.2	0	0	0	0	0	0	0				
San Francisco Subtotal	**2,312.9**	**869.5**	**159.0**	**305.1**	**401.5**	**865.6**	**63,433**	**3,448**	**59,985**	**196,562**	**53,758**	**4,105**	**146,909**	**95.2**	**19.3**	**75.9**	
Sharp Park (Pacifica)	411.0	237.2	35.0	125.1	76.5	236.6	54,000	15,000	39,000	14,741	653	1,792	15,880				
Total	**2,723.9**	**1,106.7**	**194.0**	**430.2**	**478.0**	**1,102.2**	**117,433**	**18,448**	**98,985**	**211,303**	**54,411**	**5,897**	**162,789**	**95.2**	**19.3**	**75.9**	

*The total acreages for the management areas do not exactly match the Natural Areas acreages. The Natural Areas acreages are based on vegetation series within each Natural Area where the geographic information system data was precisely clipped to the Natural Area boundary. Management areas were created by mapping their boundaries in the field with a GPS unit. This data was then edited by Natural Areas Program staff to match Natural Areas boundaries. This process created minor errors when the management area appeared to line up with the Natural Area boundary but in fact was off by a small amount. The average error is about 0.1 acre and never more than 0.8 acre. As would be expected, the error is largest in the larger Natural Areas because they have relatively longer boundaries.

**The SFRPD would monitor dog use and impacts on oak woodlands at Buena Vista and Golden Gate Park Oak Woodlands and impacts on small wildflower meadows in McLaren Park.

***Glen Canyon Park and O'Shaughnessy Hollow are two different Natural Areas; they are grouped together in this table, as they are in the SNRAMP.

Recommended Management Actions

At Balboa, GR-1, GR-2, GR-4, GR-7, GR-9, and GR-11 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Balboa Natural Area:

- BA-1a—Contain and reduce herbaceous[16] invasive plants and prevent invasive tree species from becoming established;
- BA-1b—Revegetate using appropriate native plants in those areas where invasive plants have been removed;
- BA-1c—Augment existing populations of sensitive plant species; and
- BA-1d—Reintroduce rare plants.

III.I.2 Bayview Park (VP)

General Description

Bayview Park is in southeast San Francisco and is east of Candlestick Point State Park and Candlestick Park. Developed areas within the 43.9-acre Natural Area are limited to paved trails, which are also used as access roads. This is one of the more diverse Natural Areas with vegetation that includes grasslands, scrub, tree-dominated areas, and a large number of sensitive plant species. The vegetation provides suitable habitat for resident and migratory bird species, reptiles, mammals, and amphibians. The extensive grasslands provide habitat for butterflies and other insects, including the endangered mission blue butterfly (*Icaricia icarioides missionensis*). It also contains historic Works Progress Administration features.

Management Areas

The 8.2-acre MA-1 area is native grassland and scrub habitats that support the highest numbers of sensitive species. The 15.8-acre MA-2 area also may contain sensitive species and habitats and may act as buffers for the more sensitive areas. The 19.7-acre MA-3 area includes urban forests and invasive scrub.

[16] Herbaceous—Having the texture, color, and other characteristics of an ordinary foliage leaf; not woody.

Recommended Management Actions

At Bayview Park, GR-1 through GR-4, GR-6, GR-7, and GR-9 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended:

- VP-1a—Reduce and contain herbaceous and woody invasive plants;
- VP-1b—Remove approximately 511 of the estimated 6,000 invasive trees (primarily blue gum eucalyptus) to enhance sensitive species habitats;
- VP-1c—Protect and maintain existing native habitats;
- VP-1d—Augment existing sensitive plant populations;
- VP-1e—Reintroduce populations of sensitive plant species to help prevent extinctions of these species in San Francisco;
- VP-2a—Install coast live oak seedlings and other native plants in gaps and openings in the eucalyptus forest;
- VP-3a—Construct a small berm to create a seasonal wetland and detention basin, if capital funds are made available;
- VP-4a—Maintain and improve habitat for the pinion mouse;
- VP-5a—Augment existing silver bush lupine (*Lupinus albifrons*), summer lupine (*Lupinus formosus*), and varied lupine (*Lupinus* sp.) populations;
- VP-6a—Install signs and temporary barriers along the roadway to discourage off-road motorcycle riding;
- VP-7a—Construct a pedestrian trail connecting to the historic Works Progress Administration trail;
- VP-7b—Develop a new entryway on the southern side of the park (note that this new entryway may not be feasible given the steepness of the slopes);
- VP-8a—Remove the berm on the downhill side of Key Avenue and regrade the entire roadway so that the uphill side is higher than the downhill side, if funds are made available (note that portions of this management action have been completed);
- VP-8b—Remove material in major downslope gullies and replace it with brush that is highly compacted;
- VP-8c—Build a small berm south of Key Avenue at the base of the main soil slip;

- VP-9a—Create a detailed and complete erosion control plan before beginning work on the large gully near the summit; work would include the following:
  - Installing a minimum of two check-dams within the upper portion of the gully,
  - Creating soil berms and troughs between these two structures,
  - Removing soil from the upper edges of the gully to create a 1:1 slope,
  - Installing a staked brush pile or brush box immediately below the upper edge of the gully,
  - Installing one or two staked brush bundles in the vegetated swale leading into the gully from the direction of the radio tower,
  - Installing rice straw bales along all edges of the gully, and
  - Hand broadcasting the entire area with the appropriate native grass seed once construction is complete and before the fall rains; and
- VP-10a—Restrict access to sensitive mission blue butterfly habitat if these habitat areas continue to be damaged.

III.I.3 Bernal Hill (BH)

General Description

Bernal Hill is in the Bernal Heights neighborhood in central San Francisco. A microwave radio transmission station, not owned by the SFRPD, is in a fenced enclosure at the hill's summit. Other than a paved access road, the 24.3-acre Natural Area is primarily grassland. A designated DPA is on and above Bernal Heights Boulevard, which circumnavigates the Natural Area.

Management Areas

The 7.6-acre MA-1 area includes the slopes of Bernal Hill where native grasslands and sensitive species are found. The 5.8-acre MA-2 area serves as a buffer between the MA-1 area and urban forest. The 10.7-acre MA-3 area is that portion of the Natural Area that does not support sensitive species or native grasslands.

Recommended Management Actions

At Bernal Hill, GR-1 through GR-4 and GR-7 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Bernal Hill Natural Area:

- BH-1a—Reduce and contain herbaceous and woody invasive plants;
- BH-1b—Revegetate using appropriate native plants where invasive plants have been removed;
- BH-1c—Focus sensitive plant species management and conservation on existing habitat areas;
- BH-1d—Maintain the urban forest-grassland mosaic in currently forested areas below the road;
- BH-2a—Encourage people and dogs to stay on designated trails and discourage them from climbing the steep slopes and causing erosion on the north side of the Natural Area; and
- BH-3a—Retain on- and off-leash dog use of the entire Natural Area and limit off-leash activities to the relatively flat areas to avoid sensitive plant species, reducing the off-leash DPA from 21 to 15 acres.

III.I.4 Billy Goat Hill (BG)

General Description

The 3.5-acre Billy Goat Hill Natural Area is in the Diamond Heights area, east of Glen Canyon Park. The Natural Area is composed mainly of grasslands. Billy Goat Hill provides important habitat for native plants and populations of sensitive plant species, grassland habitat, and suitable habitat for a variety of bird species and special-status butterfly species.

Management Areas

The MAs have been delineated based on the presence of rich native grasslands. The 0.6-acre MA-1 area supports the richest array of species, as well as more intact habitat than the 1.1-acre MA-2 area, which surrounds the MA-1 and buffers it. The MA-2 area is itself surrounded on three sides by the 1.6-acre MA-3 area, which includes tree and grassland communities.

Recommended Management Actions

At Billy Goat Hill, GR-1 through GR-4, GR-7, and GR-9 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Billy Goat Hill Natural Area:

- BG-1a—Reduce and contain woody and herbaceous invasive plants;

- BG-1b—Revegetate using appropriate native plants, enhance and diversify existing grasslands as appropriate, augment the existing rare or uncommon grassland plant species, slowly replace the nonnative grassland with a grassland dominated by native species, maintain and enhance the native scrub community, and plant native grassland and scrub species into the appropriate areas using diversity, cover, and density targets generated from reference sites around San Francisco;
- BG-1c—Maintain a periphery of tall trees and diversify areas at the grassland interface with wildlife-enhancing species, and design, maintain, and enhance a grassland-scrub-tree mosaic; and
- BG-2a—Create and protect a complex mosaic of grassland and scrub with a variety of plant species that will provide shelter, food, and nesting areas for local wildlife.

III.I.5 Brooks Park and Lakeview/Ashton Mini Park (BP)

General Description

Brooks Park and Lakeview/Ashton Mini Park (also informally known as Orizaba Rocks) are in southwestern San Francisco in the Merced Heights and Ingleside Heights neighborhoods. Brooks Park, which fronts on Shields Street between Victoria and Vernon Streets, is a 3.5-acre park, two acres of which are part of the Natural Area. The 0.5-acre Lakeview/Ashton Mini Park Natural Area is a rocky outcrop at the dead ends of Ashton and Orizaba Avenues and Lakeview and Shields Streets. Both of these Natural Areas contain grasslands.

Management Areas

The Brooks Park and Lakeview/Ashton Mini Park Natural Areas are dominated by grasslands, and the relative quality of the grasslands define the MA-1, MA-2, and MA-3 areas. The 0.9-acre MA-1 areas encompass two grasslands at Brooks Park and one area at Lakeview/Ashton Mini Park. The 1.1-acre MA-2 areas are the grasslands surrounding the MA-1 areas and serve as buffers between the MA-1 and the MA-3 areas. The 0.5-acre MA-3 areas are on the periphery in both parks and represent the least sensitive grassland areas.

Recommended Management Actions

At Brooks Park and Lakeview/Ashton Mini Park, GR-1 through GR-4, GR-7, and GR-10 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Brooks Park and Lakeview/Ashton Mini Park Natural Areas:

- BP-1a—Contain and reduce herbaceous and woody invasive plants;
- BP-1b—At Brooks Park, remove three cypress trees and prevent establishment of invasive trees in all areas;
- BP-1c—Revegetate with appropriate native plants using diversity, cover, and density targets generated from reference sites within and around San Francisco; and
- BP-1d—Consider augmenting sensitive species at Lakeview/Ashton Mini Park and introducing sensitive species within suitable locations at Brooks Park.

III.I.6 Buena Vista Park (BV)

General Description

The 36.1-acre Buena Vista Park is in central San Francisco, just north of Corona Heights, and is bounded in part by Haight Street on the north; Buena Vista Avenue East and Buena Vista Avenue West loop around the park and form the eastern, southern, and western boundaries. The 6.1-acre Buena Vista Park Natural Area is on the northern side of the park and supports one of the most extensive coast live oak forests within San Francisco. The remainder of the park is covered almost exclusively by mixed exotic forest. There is a designated DPA in the northwest corner of Buena Vista Park in the oak woodland.

Management Areas

The 6.1-acre MA-2 area includes coast live oak woodlands in the northern portion of the park. There are no MA-1 or MA-3 areas.

Recommended Management Actions

At Buena Vista Park, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, GR-11, GR-13, and GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Buena Vista Park Natural Area:

- BV-1a—Reduce woody and herbaceous invasive plants and understory[17] plants and prevent invasive trees from becoming established;
- BV-1b—Remove approximately 10 eucalyptus and acacia trees out of 140 invasive trees, revegetate areas with appropriate dune scrub and oak trees to promote creation of a multi-

[17] Understory—The shrubs and plants growing beneath the main canopy of a forest or stand of trees.

aged stand, and use diversity, cover, and density targets generated from reference sites around San Francisco to develop planting plans;

- BV-1c—Consider reintroducing rare or uncommon plant species;
- BV-2a—Create complex multistoried habitat by removing invasive species in the understory and planting species that provide food and nesting resources and increase structural diversity by planting native vegetation that is different in height at maturity than vegetation in the existing habitats;
- BV-2b—Install a permanent water source within or next to the Natural Area in an area that would not be easily accessible to off-leash dogs or subject to undesirable human use and ensure that artificial water sources can be drained periodically to remove bullfrogs;
- BV-3a—Augment winter and late-fall fruiting shrubs; and
- BV-4a—Consider implementing protective measures or relocating the DPA outside of oak woodlands if necessary to protect nesting bird habitat.

III.I.7 Corona Heights (CH)

General Description

Corona Heights is in the central portion of San Francisco and is bounded roughly by Flint Street, Roosevelt Way, and 16th Street. The Corona Heights Playground and the Randall Museum are within the southern portion of the park. Of the park's 12.6 acres, the Natural Area covers approximately 9.6 acres and is composed of grasslands, with scrub and tree-dominated areas around its edges. A fenced DPA is next to the northwest portion of the Natural Area.

Management Areas

The 2.9-acre MA-1 areas include three areas with sensitive species and habitats. The 2.5-acre MA-2 areas are buffers around the MA-1 areas. The 4.2-acre MA-3 areas include urban forest and grasslands around the Natural Area perimeter.

Recommended Management Actions

At Corona Heights, GR-1 through GR-4, GR-7, GR-9 through GR-13, and GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Corona Heights Natural Area:

- CH-1a—Contain and reduce herbaceous and woody invasive plants and prevent invasive tree species from becoming established;
- CH-1b—Augment existing populations of sensitive plant species through seeding or planting;
- CH-1c—Reintroduce populations of rare plant species to help prevent local extinctions of these species in San Francisco;
- CH-1d—Maintain diverse native grassland in areas where invasive plants have been removed. Maintain and enhance oak woodlands;
- CH-1e—Remove 15 Monterey pines (*Pinus radiata*) (note that a portion of these trees on the north side of Corona Heights were removed in August 2010 because they were determined to be hazardous);
- CH-2a—Create complex multistoried habitat that provides food sources and nesting, roosting, and escape habitat for a variety of species; and
- CH-2b—Increase the extent of oak woodland habitat to create habitat for wildlife, particularly birds.

III.I.8 Dorothy Erskine (DP)

General Description

Dorothy Erskine Park is near the southern end of Glen Canyon Park at the intersection of Baden Street and Martha Avenue in central San Francisco. The 1.5-acre Natural Area is mostly forested. Most remnant plant areas and important wildlife habitat are associated with the grassland and mixed exotic forests on the steep north-facing slopes, which are inaccessible due to the presence of a safety fence at the top of the slope. There is one main trail and access route through the Natural Area.

Management Areas

The 0.2-acre MA-1 areas contain remnant grassland and wildflower habitats. The 0.3-acre MA-2 areas include remnant scrub habitat and serve as buffers to the MA-1 areas. The 1.0-acre MA-3 areas are composed of urban forests.

Recommended Management Actions

At Dorothy Erskine, GR-1, GR-2, GR-4, GR-7, GR-9, GR-13, and GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Dorothy Erskine Natural Area:

- DP-1a—Reduce and contain herbaceous and woody invasive plants and prevent invasive trees from becoming established;
- DP-1b—Remove approximately 14 of the estimated 100 eucalyptus trees;
- DP-1c—Revegetate with appropriate native plants those areas where invasive plants have been removed to maintain and enhance the native grassland and scrub communities;
- DP-1d—Reintroduce silk tassel bush (*Garrya elliptica*) to prevent the countywide extinction of this sensitive plant species; and
- DP-2a—Survey the site for red-tailed hawk nests before tree removal. If an occupied nest is found, conduct tree removal activities no closer than 150 feet from the nest.

III.I.9 Duncan-Castro (DC)

General Description

Duncan-Castro is in the central portion of San Francisco and is northeast of the intersection of Castro and Duncan Streets. The 0.5-acre Natural Area is predominantly grassland, with an ornamental planting area along Duncan Street.

Management Areas

The 0.3-acre MA-1 area includes rock outcrops, red fescue prairie, and portions of the annual grassland with sensitive plant species populations. The 0.1-acre MA-2 area has less diverse grasslands and rock outcrops on the south and west sides of the Natural Area. The 0.1-acre MA-3 area includes ornamental vegetation and forest along the eastern edge of the Natural Area.

Recommended Management Actions

At Duncan-Castro, GR-1 through GR-4, GR-7, GR-9, GR-10, GR-13, and GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Duncan-Castro Natural Area:

- DC-1a—Contain and reduce herbaceous and woody invasive plants and prevent invasive tree species from becoming established;

- DC-1b—Maintain and diversify grasslands and maintain and enhance tree cover in the northeast part of the Natural Area;
- DC-1c—Enhance the native scrub community; and
- DC-2a—Determine whether two pipelines crossing the Natural Area are still in service or abandoned, then bury, reroute, or remove them, as appropriate.

III.I.10 Edgehill Mountain (EM)

General Description

Edgehill Mountain is northwest across Portola Drive from Mount Davidson in central San Francisco. The 2.3-acre, forested Natural Area is bordered by Kensington and Edgehill Ways. The area is accessed from Shangrila Way and Knockash Hill. Edgehill Mountain is a blue gum eucalyptus (*Eucalyptus globulus*) forest that supports small populations of sensitive plants and provides habitat for sensitive bird species.

Management Areas

The 0.9-acre MA-2 areas are at the center of the Natural Area and include coastal scrub and prairie grassland habitats. The 1.4-acre MA-3 areas include the remaining urban forests. There are no MA-1 areas.

Recommended Management Actions

At Edgehill Mountain, GR-1, GR-2, GR-4, GR-7, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Edgehill Mountain Natural Area:

- EM-1a—Reduce and contain herbaceous and woody invasive plants and prevent invasive trees from becoming established;
- EM-1b—Replace dead and dying trees with native species typical of coastal bluff scrub and oak woodland habitats;
- EM-1c—Revegetate with appropriate native plant species in those areas where invasive plants have been removed to maintain and enhance existing scrub and grassland habitats;
- EM-1d—Augment existing sensitive plants to prevent extinction of rare or uncommon plant species; and

- EM-2a—Develop two new entrances and trails through the Natural Area, one entering at Kensington Way and one entering at Edgehill Way.

III.I.11 Fairmount Park (FP)

General Description

Fairmount Park is southeast of Billy Goat Hill in central San Francisco. The 0.7-acre Natural Area is mostly forested and is at the intersection of Fairmount and San Miguel Streets.

Management Areas

The 0.7-acre MA-3 area is an urban forest. There are no MA-1 or MA-2 areas.

Recommended Management Actions

At Fairmount Park, GR-1, GR-3, GR-4, GR-7, GR-11, GR-12, GR-13, and GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Fairmount Park Natural Area:

- FP-1a—Contain and reduce herbaceous and woody invasive plants and
- FP-1b—Focus tree regeneration on the north and south sides, leaving fewer trees on the east side where views are to be preserved and helping to screen existing homes from view.

III.I.12 Glen Canyon Park and O'Shaughnessy Hollow (GC/OH)

General Description

Glen Canyon Park and O'Shaughnessy Hollow are south of Twin Peaks, between the Diamond Heights and Miraloma neighborhoods, in an area formally referred to as the San Miguel Hills. The approximately 70-acre Glen Canyon Park has 60 acres designated as a Natural Area. O'Shaughnessy Hollow is a 3.8-acre Natural Area. O'Shaughnessy Boulevard separates the two Natural Areas, with Glen Canyon Park to the east and O'Shaughnessy Hollow to the west. Recreation facilities in Glen Canyon Park include the Silver Tree Day Camp, a community recreation center, ball fields, playgrounds, and formal and informal trails. There are no developed areas within O'Shaughnessy Hollow.

Management Areas

The 8.1-acre MA-1 areas contain high concentrations of native plants within the grasslands or sensitive species at Glen Canyon Park. The O'Shaughnessy Hollow MA-1 areas include sensitive

plant species habitat. The 33-acre MA-2 areas include the scrub-covered western slopes and the riparian[18] corridor in Glen Canyon Park, and areas are designated to provide buffers around the grassland MA-1 areas. The O'Shaughnessy Hollow MA-2 areas support a mix of native-dominated scrub and grassland habitats. MA-3 areas (22.4 acres) include portions of Glen Canyon Park covered with urban forest, the invasive annual grassland in the extreme northern corner, and a corridor along the gravel access road.

Recommended Management Actions

At Glen Canyon Park and O'Shaughnessy Hollow, GR-1 through GR-7, GR-8c, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Glen Canyon Park and O'Shaughnessy Hollow Natural Areas:

- GC/OH-1a—Reduce woody and herbaceous invasive plants and understory plants and prevent invasive trees from becoming established;
- GC/OH-1b—Revegetate with appropriate native plants to approximate the diversity, cover, and density of adjacent habitat;
- GC/OH-1c—Augment existing rare or uncommon species to maintain these species and enhance their chances of survival;
- GC/OH-1d—Consider reintroduction of sensitive species;
- GC/OH-1e—Remove approximately 120 of the estimated 6,000 invasive blue gum eucalyptus (*Eucalpytus globulus*) trees in Glen Canyon Park to maintain and enhance native habitats;
- GC/OH-2a—Thin sections of the overstory within the riparian corridor and reduce invasive plants in the understory;
- GC/OH-2b—Prevent willows from encroaching on open water and create new and stable pool habitats;
- GC/OH-3a—Protect sensitive habitats and prevent erosion by closing social trails to the northwestern rock outcrop in Glen Canyon Park, discontinuing rock climbing, and closing social trails in O'Shaughnessy Hollow;

[18] Riparian—Land next to a natural watercourse such as a river or stream. Riparian areas support vegetation that provides important wildlife habitat, as well as important fish habitat when it overhangs the bank.

- GC/OH-4a—Avoid removing trees with red-tailed hawk or great horned owl nests and prohibit tree removal within 150 feet of occupied nests;
- GC/OH-4b—Protect and preserve open grassland habitat through vegetation management and control of invasive species;
- GC/OH-5a—Remove invasive species bordering native coastal scrub;
- GC/OH-5b—Plant native vegetation of differing heights to increase structural diversity of coastal scrub habitats;
- GC/OH-5c—Manage open pools as in GC/OH-2a-b and GC/OH-7e and make these pools inaccessible to the public;
- GC/OH-6a—Consider the requirements of amphibians when creating open pools under GC/OH-2;
- GC/OH-7a—Document the presence or absence of forktail damselfly in Glen Canyon Park;
- GC/OH-7b—Reintroduce forktail damselfly in Glen Canyon Park if it is not observed in the next five years;
- GC/OH-7c—Remove and trim vegetation along the asphalt channel to create appropriate habitat for the forktail damselfly, if it is observed or reintroduced;
- GC/OH-7d—Remove willows along the asphalt channel to reduce shading of water, if the forktail damselfly is observed or reintroduced;
- GC/OH-7e—Control vegetation within the asphalt channel to create open water and emergent vegetation, if the forktail damselfly is observed or reintroduced;
- GC/OH-7f—Consider requirements of the forktail damselfly when creating new pools in Islais Creek;
- GC/OH-8a—Annually evaluate the populations of sensitive butterflies within the park;
- GC/OH-8b—Install larval host plants and nectar sources as part of revegetation;
- GC/OH-9a—Monitor the dog impact on wetlands and Islais Creek channel and consider appropriate restrictions (including fencing) to keep dogs out of the creek channel and wetlands;

- GC/OH-9b—Install boardwalks in wet marshy locations along the Islais Creek loop trail to prevent damage to resources and increased sedimentation[19] in the creek;
- GC/OH9c—Trim willows along formal trails to allow ease of access, thereby limiting the perceived need to create new trails;
- GC/OH-10a—Fill gullies in the access road with gravel to help minimize the input of sediment from the gravel access road, outslope the road the next time it is graded or resurfaced to allow uniform flow of runoff from the hillside across the road to the creek and to eliminate ponding and reduce gullying in the road, evaluate and replace the culverts as necessary, and consider paving the access road;
- GC/OH-10b—Close and revegetate social trails that are next to or crossing the creek, in accordance with GR-11, and install bridges or stabilize stream banks with well-designed steps that lead to stepping-stones to cross the creek for any creek crossings that would remain in use;
- GC/OH-10c—Maintain the sediment dam and consider installing new sediment traps on the lower reach of the creek; and
- GC/OH-10d—Consider a long-term solution for the unstable and eroding bank of Islais Creek immediately below Silver Tree Day Camp.

III.I.13 Golden Gate Heights Park, Grandview Park, Hawk Hill, and Rock Outcrop (GGRH)

General Description

The Natural Areas at Grandview Park, Rock Outcrop, Golden Gate Heights Park, and Hawk Hill all belong to a remnant ridgetop sand dune system in the western portion of San Francisco, in the mid-Sunset or Sunset Heights area. Because these sites have similar characteristics and management issues, they have been combined into this single section. The 4-acre Grandview Park is at 15th Avenue and Moraga Street. Just south of Grandview Park is the 1.6-acre Rock Outcrop, between 14th and Funston Avenues. Continuing south, Golden Gate Heights Park, which contains a 0.8-acre Natural Area, is between Funston, 12th, and 14th Avenues. Of the four parks, the 4.5-acre Hawk Hill at the intersection of Rivera Street and Funston Avenue is the farthest south. These parks are surrounded by dense urban development.

[19] Sedimentation—The deposition of material suspended in a stream system, whether in suspension (suspended load) or on the bottom (bedload).

Management Areas

The 3.3-acre MA-1 areas include sensitive species, rich dune habitats, and grasslands. Three areas on Grandview, two areas on Rock Outcrop, one area at Golden Gate Heights, and one area at Hawk Hill have been designated as MA-1. The 6.6-acre MA-2 areas contain less-sensitive but important habitat, and they usually surround the MA-1 areas, providing buffers to the more sensitive habitats within MA-1 areas. The 0.8-acre MA-3 areas designated at Grandview and Golden Gate Heights contain areas of invasive tree species.

Recommended Management Actions

At the Natural Areas at Grandview Park, Rock Outcrop, Golden Gate Heights Park, and Hawk Hill, GR-1 through GR-4, GR-7, and GR-11 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for these sites:

- GGRH-1a—Contain and reduce herbaceous and woody invasive plants, removing them in such a way that avoids erosion, and then plant native species;
- GGRH-1b—Augment existing sensitive plants to maintain these species and enhance their chances of survival;
- GGRH-1c—Reintroduce populations of sensitive plant species to help prevent countywide extinctions of these species;
- GGRH-1d—Prevent invasive trees from becoming established and remove trees only at Grandview Park, where approximately five trees will be removed from the upper slope;
- GGRH-1e—Reduce invasive vegetation, plant native species to approximate the diversity, cover, and density of adjacent habitat or reference plots in similar habitats at other parks and target habitat types as follows:
    - At Grandview, maintain and enhance dune scrub, a dune scrub mosaic, and cypress tree-scrub mosaic,
    - At Rock Outcrop, maintain and enhance the dune scrub-rock outcrop plant communities,
    - At Golden Gate Heights, maintain and enhance dune scrub, maintain a diversified understory and plant forest gaps with wildlife friendly species within the urban forest, consider removing the asphalt pad at the entryway and installing a native plant demonstration garden, and

  - At Hawk Hill, maintain and enhance the dune scrub communities with scattered open sand for annual plant recruitment;

- GGRH-1f—Remove vegetation and replant with native species in small noncontiguous patches where soil erosion could occur;
- GGRH-2a—Limit access to the 917 linear feet of designated trails to protect sensitive habitat and consider installing fencing at Hawk Hill if necessary;
- GGRH-2b—Consider using the dune-step system as a biotechnical control measure to help control soil movement and allow for revegetation that would better withstand foot traffic on the steep dune slopes;
- GGRH-3a—Route users away from eroding areas and sensitive habitats to the 1,313 linear feet of designated trails and install temporary or permanent fencing at Grandview Park if necessary;
- GGRH-3b—Install soil retaining boxes on the downhill side of the landings to help minimize erosion at Grandview Park; and
- GGRH-4a—Develop a new approximately 188-foot trail at the edge of the forest to replace the trail that is causing erosion and close the 390-linear-foot social trail through the dunes (Golden Gate Heights).

III.I.14 Golden Gate Park Oak Woodlands (OW)

General Description

The 26.2-acre Oak Woodlands Natural Area is in the northeast corner of the 1,021-acre Golden Gate Park, between Fulton Street and Lincoln Way. In addition to the large oak woodland bounded by Stanyan Street, Fulton Street, and 6th Avenue, the Natural Areas in Golden Gate Park include Whiskey Hill, Strawberry Hill, and Lily Pond. The individual areas that compose this Natural Area represent the few places where native trees persist in the Natural Areas Program system. Two DPAs are within or next to the Natural Area, one where North Willard Street intersects with Fulton Street (Golden Gate Park Northeast DPA) and one next to Whiskey Hill (Golden Gate Park Southeast DPA).

Management Areas

The 0.7-acre MA-1 areas contain sensitive plant species. The 25.5-acre MA-2 areas are oak woodlands. There are no MA-3 areas.

Recommended Management Actions

At Oak Woodlands, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Oak Woodlands Natural Area:

- OW-1a—Contain and reduce herbaceous and woody invasive plants and prevent invasive tree species from becoming established;
- OW-1b—Reduce invasive vegetation within the oak woodlands to increase and diversify the native understory;
- OW-1c—Augment and reintroduce native plant species;
- OW-1d—Remove approximately 82 of the approximately 900 invasive blue gum eucalyptus (*Eucalyptus globulus*) trees;
- OW-2a—Redesign the organic material dump site and install traffic barricades at the edge of the slope to reduce damage to downslope oak trees;
- OW-3a—Remove invasive understory vegetation and replace it with native species typical of an oak woodland understory; and
- OW-4a—Monitor use and impacts of Golden Gate Park Northeast DPA and install signs and protective devices to delineate the boundaries of both DPAs.

III.I.15 India Basin Shoreline Park (IB)

General Description

India Basin Shoreline Park is in southeast San Francisco next to Hunters Point Boulevard at the shore of San Francisco Bay. Comprising 6.2 of the park's 11.8 acres, the Natural Area is the only one that borders San Francisco Bay. It contains a segment of the Bay Trail, shoreline access for fishing and water-dependent recreation, tidal salt marsh wetlands, and suitable habitat for shore birds and foraging raptors. The park supports a large and multispecies collection of waterfowl from fall through spring and birds protected under the Migratory Bird Treaty Act. It also contains the endangered plant California seablite (*Suaeda californica*).

Management Areas

The 3.2-acre MA-1 area consists of salt marsh wetland. The 2.8-acre MA-2 areas include a buffer between restored wetlands and upland habitat, annual grasslands, scrub, and oak habitat areas under development. There are no MA-3 areas.

Recommended Management Actions

At India Basin Shoreline Park, GR-1 through GR-4, GR-7, and GR-13 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the India Basin Shoreline Park Natural Area:

- IB-1a—Monitor the salt marsh for smooth cordgrass (*Spartina alterniflora*) and other invasive species and reduce and contain infestations of upland invasive species;
- IB-1b—Remove invasive species from wetland and upland areas and maintain and enhance upland areas as a grassland-coastal scrub mosaic;
- IB-1c—Augment populations of alkali heath (*Frankenia salina*), marsh gumplant (*Grindelia stricta* var. *angustifolia*), and California seablite (*Sueada californica*) by direct seeding or planting;
- IB-2a—Maintain and enhance existing grassland-scrub mosaic;
- IB-2b—Install low-growing plants to create a partially vegetated screen between the trail and the buffer area;
- IB-3a—Increase vegetation density in the area of the trail to reduce erosion on the face of the levee; and
- IB-4a—Restrict access to sensitive salt marsh habitat if damage to these areas occurs, including installing low trailside fencing.

III.I.16 Interior Greenbelt (IG)

General Description

Interior Greenbelt is on Mount Sutro, south of Golden Gate Park and north of Twin Peaks in central San Francisco. Of the two parcels that make up the 16.5-acre Natural Area, the northern parcel (which abuts the University of California San Francisco property) is accessed at the end of Edgewood Street and at the corner of Stanyan Street and Belgrave Avenue. The southern parcel is south across Clarendon Street from the northern parcel and is accessed at the ends of Mt. Spring and Saint Germain Streets. Both parcels are urban forests.

Management Areas

The 1.8-acre MA-2 areas are in the northern parcel and support sensitive plants. The 14.7-acre MA-3 areas include the urban forests outside the MA-2 areas. There are no MA-1 areas.

Recommended Management Actions

At Interior Greenbelt, GR-1, GR-2, GR-4, GR-7, GR-9, GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Interior Greenbelt Natural Area:

- IG-1a—Reduce and contain herbaceous invasive plants and prevent invasive trees from becoming established;
- IG-1b—Remove approximately 140 of the estimated 5,800 blue gum eucalyptus trees (*Eucalyptus globulus*);
- IG-1c—Revegetate using appropriate native plants in those areas where invasive plants have been removed to maintain and enhance the existing scrub mosaic communities;
- IG-1d—Augment existing populations of sensitive plants;
- IG-1e—Reintroduce rare plants to reduce the potential for local extinction of sensitive species in San Francisco;
- IG-2a—Develop a new trail linking existing secondary trails with trails on the University of California property (note that this work is underway and is expected to be completed in June 2011); and
- IG-2b—Formalize existing social trails where appropriate and eliminate where not.

III.I.17 Kite Hill (KH)

General Description

Kite Hill is a grassy knoll in the central portion of San Francisco, near the intersection of 19th and Yukon Streets. Most of the 2.7-acre Natural Area is grassland, with an ornamental garden north of the corner of 19th and Yukon Streets.

Management Areas

The 0.6-acre MA-1 area has native scrub series, rock outcrops, and annual grasslands with high native species diversity. The 0.5-acre MA-2 area buffers the MA-1 area and includes native landscaping along the Yukon Street frontage. The 1.6-acre MA-3 area has grasslands in the eastern portion of the Natural Area.

Recommended Management Actions

At Kite Hill, GR-1 through GR-4, GR-7, and GR-9 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Kite Hill Natural Area:

- KH-1a—Contain and reduce herbaceous and woody invasive plants and prevent invasive tree species from becoming established;
- KH-1b—Maintain and diversify grasslands, with the initial focus on areas where native species are dominant;
- KH-1c—Install showy native vegetation near the road and access points;
- KH-1d—Reintroduce populations of rare plant species to help prevent local extinctions of these species in San Francisco;
- KH-1e—Maintain and enhance the grassland-scrub oak woodland ecotone[20] to increase habitat diversity and value to wildlife; and
- KH-2a—Revegetate a large area of exposed soil surrounding a small group of apple trees by hand-broadcasting the appropriate seed mixture and by applying mulch to the area. Install signs explaining the benefits of this revegetation.

III.I.18 Lake Merced (LM)

General Description

Lake Merced is in the southwest portion of San Francisco and is roughly bordered by John Muir Drive, Skyline Boulevard, and Lake Merced Boulevard. The San Francisco Public Utilities Commission (SFPUC) owns Lake Merced, and the SFRPD maintains the recreational uses under the terms of a memorandum of understanding between the two departments. Recreation at the lake includes boating, fishing, golfing, jogging, bicycling, skeet shooting, and picnicking. Lake Merced is made up of four connected sub-lakes: North, East, South, and Impound. A designated DPA on the north side of East Lake is in an area informally known as the Mesa. The Natural Area covers approximately 395 of the lake's 614 acres and generally encompasses the lake, the bordering freshwater marsh wetland, and upland vegetation.

[20] Ecotone—A transitional zone between two vegetation communities that contains the characteristic species of each community.

Management Areas

The 60.8-acre MA-1 areas include double-crested cormorant rookeries,[21] a portion of the Mesa that supports sensitive plant species, Impound Lake and its associated wetlands, and tule marsh around East, North, and South Lakes. The 101.8-acre MA-2 areas include the water of East Lake, which supports western pond turtles, and the habitat between the marshes and the Natural Area boundary. The 231.5-acre MA-3 areas include urban forests and North and South Lakes.

Recommended Management Actions

At Lake Merced, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Lake Merced Natural Area:

- LM-1a—Contain and reduce herbaceous and woody invasive plants and plant native species;
- LM-1b—Remove approximately 134 of the estimated 12,000 invasive blue gum eucalyptus (*Eucalyptus globulus*) trees, a little more than one percent of the total inventory, to maintain and enhance native habitats;
- LM-1c—Prevent the establishment of invasive tree species to maintain and enhance coastal wetland scrub;[22]
- LM-1d—Maintain and enhance sensitive habitats;
- LM-2a—Augment existing sensitive plants to maintain these species and enhance their chances of survival;
- LM-2b—Reintroduce populations of rare plant species to help prevent countywide extinctions of these species;
- LM-3a—Remove trees in such a way as to avoid removing those used by raptors, cormorants, and herons and remove no trees within 150 feet of occupied nests;
- LM-3b—Consider closing social trails near cormorant nesting colonies, hawk nests, and heron nesting areas if trail usage appears to disrupt nesting. Install signs at rental boat launch locations asking boaters to remain at least 30 feet from the edge of the marsh between February 1 and August 31;

[21] Rookery—Colony or aggregation of animals of the same species.
[22] Scrub—low trees or shrubs collectively.

- LM-3c—Remove invasive understory vegetation when bird nests are not active;
- LM-3d—Locate and map raptor nests during inactive periods;
- LM-4a—Maintain and enhance important bird nesting and foraging habitat to include removal of invasive species and natural recruitment of preferred species;
- LM-5a—Create more open grassland habitat through vegetation management and control of invasive species;
- LM-5b—Remove iceplant to create openings where native grasslands and grassland/scrub mosaics could be established;
- LM-6a—Remove invasive vegetation and enhance native scrub and grassland species in upland sandy soils next to East Lake to allow for western pond turtle nesting. Create piles of logs or rocks to increase and improve basking habitat;
- LM-6b—Protect the western pond turtle by periodically trapping and removing nonnative turtle species;
- LM-6c—Restrict public access to the East Lake water and shoreline from April 1 to August 31 to avoid disturbing breeding turtles;
- LM-7a—Relocate the DPA to a different area to avoid disturbing breeding birds in the current location;

  (Note: The SFRPD determined following completion of the final draft SNRAMP that, due to ongoing disturbance of breeding birds, this DPA should be closed, rather than monitored. This DPA would be closed in accordance with the SFRPD Final Dog Policy (SFRPD 2002) and SFPUC's Lake Merced Watershed Report (SFPUC 2011). Due to the San Francisco moratorium on new DPAs, the Lake Merced DPA couldn't be relocated to a new location, so it would only be removed. Restoration of the site would continue, following removal of the DPA.)
- LM-8a—Implement GR-14;
- LM-8b—Consider participating in the development of an environmental education center;

  (Note: Constructing and operating an environmental education center is no longer proposed as part of the SNRAMP. The SNRAMP will be updated to reflect this change. Should those activities be proposed at some point, the appropriate level of CEQA analysis would be undertaken, and applicable permits and other regulatory agency approvals would be obtained.)

- LM-8c—Maintain existing interpretive signs at key locations;
- LM-9a—Treat small-scale erosion gullies with such measures as gully plugs, brush boxes, energy dissipaters, and water bars and plant these areas with native vegetation to prevent soil erosion;
- LM-9b—Coordinate with the San Francisco Department of Public Works and other agencies about programs to address large-scale erosion gullies;
- LM-10a—Create an educational program for golf course staff; and
- LM-10b—Install informational and interpretive signs next to Lake Merced, along the periphery of Harding Park Golf Course, indicating that the area is sensitive wildlife habitat and install temporary barriers along sensitive areas during large golf tournaments.

III.I.19 McLaren Park (MP)

General Description

McLaren Park covers 312.6 acres near the southeast corner of San Francisco and is bisected by Mansell Street. Sunnydale and Visitacion Avenues cross the southern half of the park, while John F. Shelley Drive crosses the northern half. Recreational facilities within the park include over 11 miles of trails, tennis courts, ball fields, a golf course, picnic areas, and an amphitheater. Three designated DPAs are within the park, two within and one next to the Natural Area. The Natural Area covers 165.3 acres and is made up of grassland, scrub, and tree-dominated vegetation series.

Management Areas

The 34.9-acre MA-1 areas include sensitive riparian habitat, grassland habitat, marsh habitat, and an area of diverse grasslands supporting sensitive plant species. The 68.3-acre MA-2 areas may also contain sensitive species[23] and habitats and act as buffers between the MA-1 areas and the adjacent urban forest. These areas are being restored, and trees and shrubs are being removed, and native species are being planted. The 61.4-acre MA-3 areas include urban forests, grasslands, and forest-grassland mosaics.

[23] Sensitive species—Species that are listed on the California Native Plant Society plant list or *Inventory of Rare and Endangered Vascular Plants*.

Recommended Management Actions

At McLaren Park, GR-1 through GR-4, GR-6, GR-7, and GR-9 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the McLaren Park Natural Area:

- MP-1a—Reduce and contain herbaceous and woody invasive plants;
- MP-1b—Remove approximately 809 of the estimated 19,500 invasive blue gum eucalyptus (*Eucalpytus globulus*) trees to enhance sensitive species habitats;
- MP-1c—Revegetate, using appropriate native plants in those areas where invasive plants have been removed;
- MP-1d—Augment existing sensitive plants to prevent the extinction of rare or uncommon grassland plants in McLaren Park;
- MP-1e—Reintroduce rare plant species to help prevent local extinction of sensitive species in San Francisco;
- MP-2a—Increase the patch size of willow and coastal scrub by removing invasive species that border these areas and allowing natural recruitment into the newly opened areas;
- MP-2b—Increase the structural diversity of habitats by planting native vegetation that is different in height from the existing plants;
- MP-2c—Restrict foot traffic in the Gray Fox Creek area;
- MP-3a—Remove fruiting plants only in the very early spring before nesting starts but after wintering birds have left;
- MP-4a—Install spring boxes or small artificial pool habitats associated with springs and seeps to enhance amphibian habitat;
- MP-5a—Continue to control emergent vegetation in Yosemite Marsh to prevent cattails from completely clogging the open water areas;
- MP-5b—Continue to allow the development of an unmowed grass buffer along the channel between Yosemite Marsh and the recreation area;
- MP-5c—Routinely monitor the San Francisco forktail damselfly population;
- MP-5d—Create an environmental education program for all SFRPD personnel that work at McLaren Park;

- MP-5e—Protect the San Francisco forktail damselfly at Yosemite Marsh by not adding any fish to the pond;
- MP-6a—Conduct an annual evaluation of the mission blue butterfly population;
- MP-6b—Install larval host plants and nectar sources as part of revegetation efforts;
- MP-7a—Install signs and temporary barriers along the roadway to protect sensitive areas from off-road vehicles;
- MP-8a—Restrict access to sensitive habitat areas if damage continues;
- MP-9a—Eliminate dog access to a portion of Gray Fox Creek and convert the area around the creek to an on-leash area, resulting in the loss of 8.3 acres of DPA; and
- MP-9b—Monitor native grassland and wildflower areas within the remaining off-leash area of the Shelley Loop and Geneva Avenue DPAs.

III.I.20 Mount Davidson (MD)

General Description

Mount Davidson is in south-central San Francisco just south of Portola Drive and partly next to Juanita Avenue, Dalewood Way, and Molimo Drive in the Miraloma neighborhood. Forests dominate the landscape, covering three-quarters of the 40.2-acre Natural Area. Developed facilities are minimal. Mount Davidson is a highly visible focal point within San Francisco and supports a diverse array of habitats, plants, and animals.

Management Areas

The 8.8-acre MA-1 areas include two areas on the east-facing slope where the native Franciscan coastal scrub (huckleberry and reed grass) and grasslands are found and another area in the understory of the eucalyptus forest where populations of Pacific reed grass persist. The 11-acre MA-2 areas may also contain sensitive species, and its habitats serve as buffers between the extensive urban forests and the MA-1 areas. At Mount Davidson, the 20.1-acre MA-3 area is composed entirely of urban forest.

Recommended Management Actions

At Mount Davidson, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Mount Davidson Natural Area:

- MD-1a—Reduce woody and herbaceous invasive plants, prevent invasive tree species from establishing, and reduce understory plants;
- MD-1b—Remove approximately 1,600 invasive blue gum eucalyptus trees of the estimated 11,000 invasive trees to maintain and enhance native habitats;
- MD-1c—Revegetate using appropriate native plants, enhance and diversify existing grasslands and coastal scrub habitats, and plant the understory and forest gaps, in accordance with GR-15;
- MD-1d—Augment existing rare or uncommon species to maintain these species and enhance their chances of survival;
- MD-1e—Reintroduce populations of rare plant species to help prevent countywide extinctions of these species;
- MD-2a—Remove invasive species bordering native scrub, and connect isolated patches of shrubs with plantings and brush piles;
- MD-2b—Plant native species of differing heights to increase structural diversity;
- MD-3a—Remove fruiting invasive plants after breeding season and after native replacements mature to fruiting stage; and
- MD-4a—Consider establishing a permanent water source for birds and other native animals and provide breeding habitat for amphibians.

III.I.21 Palou-Phelps (PP)

General Description

Palou-Phelps Park covers 2.5 acres near the intersection of Palou and Phelps Streets in southeastern San Francisco. The park has a playground area at the northern entry. The 2.1-acre Natural Area has a vegetated slope made up primarily of grasslands.

Management Areas

The 0.8-acre MA-1 area is rich grassland above the playground that includes purple needlegrass (*Nassella pulchra*) prairie. The 0.4-acre MA-2 area supports natural resources and serves as a buffer for the MA-1 area. The MA-3 0.8-acre area contains invasive scrub series and trees in the eastern portion of the Natural Area.

Recommended Management Actions

At Palou-Phelps, GR-1 through GR-4, GR-7, and GR-9 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Palou-Phelps Natural Area:

- PP-1a—Reduce and contain herbaceous and woody invasive plants and prevent invasive trees from becoming established;
- PP-1b—Revegetate with appropriate native plants those areas where invasive vegetation has been removed;
- PP-1c—Reintroduce sensitive plants;
- PP-1d—Maintain the existing mosaic of urban forest and grassland; and
- PP-2a—Close an unsafe social trail segment leading southeast from the playground and investigate the best possible route to reach the southern portion of the Natural Area.

III.I.22 Pine Lake (PL)

General Description

The 8.4-acre Pine Lake Natural Area is within the 30.3-acre Pine Lake Park. The Natural Area is bounded in part by Wawona Way on the north and Crestlake Drive on the west and south sides. The eastern edge of Pine Lake abuts the Stern Grove Park Recreation Area. Surrounded on three sides by an urban forest, Pine Lake (or Laguna Puerca), with a water surface area of approximately 1.7 acres, is one of the few natural lakes in San Francisco. Most of Pine Lake's undeveloped areas are covered with nonnative blue gum eucalyptus (*Eucalyptus globulus*) forest. A designated DPA exists in the meadow to the east of the Natural Area.

Management Areas

The one-acre MA-1 area at Pine Lake is associated with the wetland habitat in the lake. The 3.8-acre MA-2 area includes the bulk of the open water, willow habitat, and buffer area around the MA-1 area. The 3.6-acre MA-3 areas are those that are less sensitive and not a priority for direct management; they include the urban forest on the slopes that surround Pine Lake.

Recommended Management Actions

At Pine Lake, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Pine Lake Natural Area:

- PL-1a—Reduce populations of invasive plants, including understory plants, periodically remove water primrose to preserve the open water of Pine Lake, prevent invasive trees from becoming established, and prune invasive trees to create light windows to encourage plant growth in the understory;
- PL-1b—Revegetate with appropriate native plants that are consistent with the diversity, cover, and density of reference plots in similar habitats around San Francisco, enhance and diversify existing wetlands and willow riparian areas, and develop and maintain a continuous riparian corridor to Pine Lake at the base of the slope on the south side of the Natural Area to increase available habitat for birds;
- PL-2a—Locate and map raptor nests during inactive periods, avoid removing trees used by raptors, and prohibit tree removal activities within 150 feet of occupied nests;
- PL-3a—Remove invasive species to increase the patch size of willows and coastal scrub and create larger habitat units by encouraging willows to form a continuous riparian corridor to the lake;
- PL-3b—Install native plants of different height from existing habitats to increase structural diversity;
- PL-3c—Install native hydrophytic vegetation that provides cover and foraging habitat for resident and migratory waterfowl along the degraded shoreline of Pine Lake;
- PL-4a—Determine the presence, population, and reproduction status of western pond turtles at Pine Lake;
- PL-4b—Relocate any western pond turtles to the higher-quality habitat at Lake Merced;
- PL-5a—Consider reintroducing Pacific chorus frogs into Pine Lake;
- PL-5b—Consult with the California Department of Fish and Game before introducing any species;
- PL-6a—Reopen the concrete trail on the western end of the Natural Area if it allows safe public access, otherwise close the concrete trail and develop a nearby alternate route; remove old concrete and revegetate the site;
- PL-6b—Maintain and improve 2,144 linear feet of primary trails throughout the Natural Area and reroute or close degraded areas and social trails;

- PL-7a—In accordance with the Sigmund Stern Grove and Pine Lake Park Improvement Plan, provide one dedicated access point to Pine Lake (one at the beach at the east end and one overlooking the lake at the west end) and reduce uncontrolled shoreline access;
- PL-7b—Restrict dog access to the lake; and
- PL-7c—Post signs informing public of rules at the lake prohibiting dog access in the lake.

III.I.23 Sharp Park (SP)

General Description

The 411-acre Sharp Park is in the town of Pacifica in San Mateo County. The park borders the Pacific Ocean and is bisected by Highway 1. The Sharp Park Golf Course and Laguna Salada are on the western side of Highway 1. An archery range and extensive canyon are on the eastern side. Sharp Park Road cuts through the northern edge of Sharp Park, east of Highway 1. Sanchez Creek originates in the upper canyon of Sharp Park and approximately bisects the park in an east-west direction. Sharp Park is one of the largest SFRPD parks and is surrounded by significant open spaces. Mori Point, recently acquired by the GGNRA, borders the southwestern edge, and the Sweeney Ridge GGNRA borders the park on the southeastern and eastern edges. The northern side of Sharp Park is bordered by undeveloped areas within the cities of Pacifica and San Bruno.

The Natural Areas account for 237.2 acres within Sharp Park and encompass the upper canyon areas, portions of Sanchez Creek, and the Laguna Salada wetlands and associated vegetation. The vegetation of Sharp Park is dominated by invasive forest and a golf course, but the park also contains significant areas of wetlands and scrub vegetation.

Management Areas

The Sharp Park management areas include the wetlands associated with Laguna Salada and Horse Stable Pond, grassland and scrub areas, and the urban forests of the canyon. The 35-acre MA-1 areas include three areas in the upper canyon and three in the Laguna Salada area. The 125.1-acre MA-2 areas surround each MA-1 in the upper canyon, may also contain sensitive species and habitats, and provide buffers between the extensive urban forests and the MA-1 areas. Many of the MA-2 areas in the upper canyon also support diverse assemblages of scrub and riparian vegetation that provide important structural diversity. The 76.5-acre MA-3 areas at Sharp Park include most of the areas that are dominated by invasive trees but that are lacking the understory complexity found in the MA-2 areas.

Recommended Management Actions

At Sharp Park, GR-1, GR-2, GR-4, and GR-6 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Sharp Park Natural Area:

- SP-1a—Reduce woody and herbaceous invasive plants, prevent invasive tree species from being established, and reduce invasive understory plants;
- SP-1b—Remove approximately 15,000 invasive blue gum eucalyptus of the estimated 54,000 invasive trees to maintain and enhance native habitats;
- SP-1c—Revegetate using appropriate native plants, enhance and diversify existing wetlands, creek grasslands, and coastal scrub habitats to approximate the diversity, cover, and density of reference sites around San Francisco, and plant the understory and forest gaps in accordance with GR-15;
- SP-1d—Augment existing rare or uncommon grassland species to maintain these species and enhance their chances of survival;
- SP-1e—Consider reintroducing sensitive species;
- SP-2a—Implement a control program for feral pigs;
- SP-3a—Preserve natural or biodegradable elements (branches, trees, and logs) during vegetation management and remove other materials;
- SP-4a—Implement improvements to protect and enhance the habitat for the California red-legged frog and San Francisco garter snake at Laguna Salada, including the following (this action is addressed as part of the Sharp Park restoration project in Section III.F.2):
    - Create upland mounds for foraging, resting, and escape cover for the California red-legged frog and the San Francisco garter snake;
    - Dredge excess sediments and accumulated organic matter, including stands of encroaching tules, to maintain open water and fringe habitat in the wetlands complex and use appropriate dredged material on site to create or enhance upland habitat or to increase the elevation of certain golf course fairways;
    - Continue monitoring for California red-legged frogs and San Francisco garter snakes; and
    - Install and maintain signs and barriers to prevent disturbance of sensitive habitat in Horse Stable Pond and Laguna Salada by dogs or other possible nuisances.

- SP-4b—Construct upland mounds in the area directly south and southeast of Laguna Salada and plant with native grasses and herbs to provide snake and frog basking sites, and to provide nesting habitat for riparian birds (this action is addressed as part of the Sharp Park restoration project in Section III.F.2);
- SP-4c—Continue to maintain water levels in Horse Stable Pond so that red-legged frog egg masses remain hydrated;
- SP-4d—Remove any bullfrogs, an invasive species, that are found in Laguna Salada or Horse Stable Pond;
- SP-6a—Develop a plan for safe public access for San Francisco archers to the upper canyon and nearby GGNRA lands;
- SP-7a—Make 33.3 acres of Arrowhead Pond, Laguna Salada, and Horse Stable Pond off limits to dogs to prevent access to sensitive habitats; if this is not effective, use fencing to close social trails in these areas;
- SP-8a—For the purpose of protecting these species, educate golf course staff about the importance of identifying California red-legged frogs, San Francisco garter snakes, and forktail damselflies and their habitats;
- SP-9b—Establish a vegetation management plan for the canal connecting Laguna Salada and Horse Stable Pond that would allow channel maintenance without affecting the forktail damselfly, California red-legged frog, or San Francisco garter snake (this action is addressed as part of the Sharp Park restoration project in Section III.F.2).
- SP-9c—Work with golf course maintenance staff to incorporate native plants within bank stabilization efforts along Sanchez Creek where it flows through the golf course;
- SP-10a—Backfill trenches on the north side of Sharp Park Road with nearby loose soil, replant with appropriate native vegetation;
- SP-11a—Develop and implement a comprehensive plan to control the erosion in the extensive area of eroded badlands in the isolated northern portion of the park bounded by the loop in Sharp Park Road; and
- SP-12a—Work with other divisions of the SFRPD as necessary to facilitate cleanup and remediation of the former rifle range.

(Note: Because these cleanup and remediation activities are part of a separate process led by the SFRPD Capital Division, are complete, and have been evaluated under a separate CEQA review, they are not addressed as part of the SNRAMP in this EIR)

SFRPD would continue to use pumps to manage water levels in Horse Stable Pond to conserve the California red-legged frog by conducting post-rainfall inspections of the pond for California red-legged frog egg masses and making any pumping changes necessary to prevent stranding and other impacts to egg masses, if found to be present.

This EIR addresses the project-level impacts from both Laguna Salada routine maintenance and the Laguna Salada restoration activities at Sharp Park as part of the Sharp Park restoration analysis; routine maintenance within other parts of the park are addressed at the project-level; other programmatic projects at Sharp Park are evaluated programmatically.

III.I.24 Tank Hill (TK)

General Description

Tank Hill is in central San Francisco on Twin Peaks Boulevard near Golden Gate Park. The Natural Area is a 2.9-acre grassy knoll rich in local plant species. The property is publicly accessible via a wooden stairway from Twin Peaks Boulevard and a retained-earth stairway at the end of Belgrave Street.

Management Areas

The 1.5-acre MA-1 areas are grassland and rock outcrops that support sensitive species. The 0.6-acre MA-2 areas buffer the MA-1 areas. The 0.7-acre MA-3 areas include tree-dominated habitats and steep slopes in the southern portion of the Natural Area.

Recommended Management Actions

At Tank Hill, GR-1, GR-2, GR-4, GR-7, and GR-9 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Tank Hill Natural Area:

- TK-1a—Contain and reduce herbaceous and woody invasive plants;
- TK-1b—Augment populations of sensitive plant species;
- TK-1c—Reintroduce sensitive plant species;

- TK-1d—Revegetate areas where invasive plants have been removed with appropriate native species;
- TK-1e—Prevent establishment of invasive tree species; and
- TK-2a—Following control of invasive species, install native scrub and oaks.

III.I.25 Twin Peaks (TP)

General Description

The 31.1-acre Twin Peaks Natural Areas are north of Mount Davidson and south of Buena Vista Park and Corona Heights. To the north of Twin Peaks are Sutro Tower, a San Francisco Fire Department reservoir, and a parking lot for one of the most popular vista points in San Francisco (popularly known as Christmas Tree Point). The Fire Department property, Christmas Tree Point, and other open space to the north contain Natural Areas, which, when combined with SFRPD property, make a much larger and more viable habitat area. The Natural Areas at Twin Peaks essentially encompass the entire area, except for the roads, viewpoints, and the reservoir.

Twin Peaks has a north-south orientation and is divided into several discontinuous sections by Twin Peaks Boulevard, which winds along its slopes. Twin Peaks' west-facing slopes receive substantial fog and strong winds, while the east-facing slopes receive more sun and warmth. The vegetation is primarily a mix of intergrading patches of grassland and scrub. Twin Peaks offers spectacular views of the surrounding Bay Area and is a world-famous tourist attraction. Twin Peaks receives a high level of recreational use and contains a segment of the Bay Ridge Trail.

Management Areas

Four management areas have been designated at Twin Peaks. The 12.6-acre MA-1 areas include rich native grasslands and sensitive species habitat, including mission blue butterfly habitat. Much of the 14.3-acre MA-2 areas are coastal scrub areas. There are two 3.8-acre MA-3 areas, most of which are along the boundary of the Twin Peaks Natural Area, next to the surrounding residential neighborhoods.

Recommended Management Actions

At Twin Peaks, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Twin Peaks Natural Area:

- TP-1a—Contain and reduce woody and herbaceous invasive plants;

- TP-1b—Augment existing rare or uncommon plant species to help ensure the continued presence of these species, and consider reintroducing sensitive species;
- TP-1c—Maintain and enhance existing grassland habitats using diversity, cover, and density targets generated from reference sites around San Francisco, plant native grassland and scrub species, and maintain toyon, oak, and coastal scrub in the tree-dominated areas on the park's edges;
- TP-1d—Prevent invasive tree species from becoming established and remove three pine trees out of 88 existing invasive trees;
- TP-2a—Continue to monitor the mission blue butterfly population;
- TP-2b—Augment host plant populations whenever possible;
- TP-3a—Maintain existing fences to route park users to safe and designated trails and develop safe pedestrian access along Twin Peaks Boulevard, including developing approximately 500 feet of new trails, if they are required. Explore options with the San Francisco Municipal Transit Agency to convert a portion of Twin Peaks Boulevard to a multi-use trail;
- TP-3b—Install signs at all formal access points to show that trails are for foot use only, monitor the use of trails within the area, and install appropriate fencing to prevent wheeled-vehicle access to sensitive habitats if necessary;
- TP-3c—Install signs at known habitat areas of the mission blue butterfly indicating on-trail and on-leash access only and consider lining the trail with fences; and
- TP-4a—Consider restricting access to or fencing 5.9 acres of mission blue butterfly habitat next to or surrounding the trails.

III.I.26 15th Avenue Steps (FI)

General Description

The 0.3-acre 15th Avenue Steps Natural Area is in the Golden Gate Heights area of San Francisco and is the extension of 15th Avenue, between Kirkham and Lawton Streets. Access is via a set of concrete stairs bisecting the Natural Area, which supports native oak trees and habitat for a variety of resident and migratory bird species.

Management Areas

The 0.2-acre MA-2 area includes coast live oak trees and California blackberry scrub on both sides of the concrete stairs. There are no MA-1 and MA-3 areas.

Recommended Management Actions

At 15th Avenue Steps, GR-1, GR-2, GR-4, GR-7, GR-9, GR-11, and GR-12 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the 15th Avenue Steps Natural Area:

- FI-1a—Allow for recruitment of native plants, enhance existing habitats, contain and reduce herbaceous and woody species, remove invasive plants and replace with appropriate dune species; and
- FI-1b—Maintain and enhance oak woodland and coastal scrub communities.

III.I.27 Everson/Digby (ED)

General Description

The Everson/Digby property was recently determined to be a Natural Area and was not addressed in the SNRAMP. The 1.2-acre Everson/Digby Natural Area is undeveloped open space between Everson Street and Digby Street in the Diamond Heights area of San Francisco, east of Glen Canyon Park. The vegetation of is composed primarily of grasslands with shrubs and trees along its lower (northern) boundary. This Natural Area provides important habitat for native plants, grassland habitat, regionally significant San Francisco city views, and suitable habitat for a variety of bird species. A paved sidewalk runs along Digby Street at the upper (southern) boundary of the Natural Area.

Management Areas

The management areas at the Everson/Digby Natural Area have been delineated based on the presence of diverse native grasslands. The 0.9-acre MA-1 area supports a rich array of species including California poppy (*Eschscholzia californica*), purple needle grass (*Nassella pulchra*), and California melica (*Melica californica*), and is more intact habitat than the 0.1-acre MA-2 area that borders Digby Street. The 0.2-acre MA-3 areas include tree and shrub communities.

Recommended Management Actions

At Everson/Digby, GR-1, GR-3, GR-4, GR-7, GR-9, GR-10, GR-11, GR-12, and GR-13 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Everson/Digby Natural Area:

- ED-1a—Reduce and contain herbaceous and woody invasive species, including radish, fennel, and annual grasses in all management areas. Prevent the establishment of invasive trees in grasslands;
- ED-1b—Revegetate areas where invasive species have been removed using appropriate native plants. Enhance and diversify existing grasslands. Augment the existing uncommon grassland plant species such as silver lupine (*Lupinus albifrons* var. *collinus*) in MA-1a. Within MA-2a, gradually replace the existing nonnative grassland with a native grassland including California poppy (*Eschscholzia californica*), purple needle grass (*Nassella pulchra*), and California melica (*Melica californica*). Using diversity, cover, and density targets generated from reference sites within and around San Francisco, plant native grassland species in the appropriate areas; and
- ED-1c—Contain or reduce acacia (*Acacia dealbata*), broom (*Genista monspessulana*), cotoneaster (*Cotoneaster* sp.), and fennel (*Foeniculum vulgare*) in MA-3a areas and diversify the grassland interface with wildlife-enhancing species and design.

IV. PLANS AND POLICIES

This section identifies and discusses applicable regional and local land use plans and policies relevant to the proposed project. The focus of this section is the San Francisco land use plans and policies. San Francisco land use plans and policies are primarily applicable to projects within the jurisdictional boundaries of San Francisco, although in some cases they may apply to projects outside San Francisco. This information is relevant to the evaluation of impacts of the proposed project with respect to specific significance criteria under CEQA that require analysis of the compatibility of a proposed project with certain aspects of local land use plans and policies.

The Natural Areas are scattered throughout the central and southern portions of the San Francisco and constitute four percent of the total city area. Sharp Park is in the city of Pacifica. Most Natural Areas are owned and managed by the SFRPD; the Balboa Natural Area is owned by San Francisco and is managed by the NPS, while the SFPUC owns, and SFRPD manages, the Lake Merced Natural Area.

The SFRPD is guided by the San Francisco City Charter along with other city plans and policies. These plans include the *San Francisco General Plan*, which sets forth the comprehensive, long-term land use policy for the San Francisco, and the *San Francisco Sustainability Plan*, which addresses the long-term sustainability of the city. In addition the SFRPD has created the Natural Areas Program to support and develop a community-based habitat restoration program. The plans and policies applicable to the proposed project, as well as other relevant plans and policies, are discussed herein.

This chapter discusses the project's inconsistencies, if any, with applicable plans and policies that may result in physical environmental effects. If no inconsistencies are found, the discussion lists the plans that were reviewed and states that no inconsistencies were identified.

Policy conflicts do not, in and of themselves, indicate a significant environmental effect within the meaning of CEQA, in that the intent of CEQA is to determine physical effects associated with a project. Many of the plans of the City and County of San Francisco and the other relevant jurisdictions contain policies that address multiple goals pertaining to different resource areas. To the extent that physical environmental impacts of a proposed project may result from conflicts with one of the goals related to a specific resource topic, such impacts are analyzed in this EIR in that respective topical section, such as Section V.G, Biological Resources, and Section V.K, Air Quality.

IV.A APPLICABLE PLANS AND POLICIES

IV.A.1 San Francisco General Plan

One of the basic goals of the *San Francisco General Plan* is "coordination of the growth and development of the City with the growth and development of adjoining cities and counties and of the San Francisco Bay Region." The general plan consists of ten issue-oriented plan elements—Air Quality, Arts, Commerce and Industry, Community Facilities, Community Safety, Environmental Protection, Housing, Recreation and Open Space, Transportation, and Urban Design. The plan elements relevant to the proposed project are briefly described below. There are also 16 Area Plans for San Francisco that address development within each of those geographic areas. The Area Plans near the Natural Areas include Bayview Hunters Point and Western Shoreline.

Air Quality Element

This element promotes the goal of clean air planning through objectives and policies aimed at adherence to air quality regulations, focusing development near transit services, and advocating alternatives to the private automobile.

Environmental Protection Element

This element addresses the impact of urbanization on the natural environment. The element promotes the protection of plant and animal life and freshwater sources and speaks to the responsibility of San Francisco to provide a permanent, clean water supply to meet present and future needs and to maintain an adequate water distribution system.

Recreation and Open Space Element

This element promotes the goal of preserving and protecting open spaces. Policy 2.13 of the General Plan requires the City to preserve and protect the Significant Natural Resource Areas. Policy 13 includes natural resource areas and naturalistic areas as potential protection and preservation areas. The policy identifies the following criteria used to determine a Significant Natural Resource Area: (1) sites that are undeveloped, relatively undisturbed remnants of San Francisco's original landscape that either support diverse and significant indigenous plant and wildlife habitats or contain rare geologic formations or riparian zones; (2) sites that contain rare, threatened, or endangered species or areas likely to support these species; and (3) areas that are adjacent to other protected natural resource areas. The policy further stipulates that management plans be developed for each of the Natural Areas. Specifically, the policy describes the need to:

- Identify Natural Areas and inventory them;
- Identify the presence of natural resources;
- Describe practices such as exotic plant species removal; and
- Identify policies governing access and recreational uses to ensure that natural resource values are not diminished by public use.

Urban Design Element

This element concerns the physical character and order of the City and the relationship between people and their environment. It provides a general plan, responding to issues relating to City pattern, conservation, major new development, and neighborhood environment.

Western Shoreline Area Plan

The policies of the San Francisco Local Coastal Program were incorporated into the general plan as part of this area plan. Applicable area plan policies include the following:

- Objective 5: Preserve the recreational and natural habitat of Lake Merced.
  - Policy 5.1: Preserve in a safe, attractive and usable condition the recreational facilities, passive activities, playgrounds and vistas of the Lake Merced area for the enjoyment of citizens and visitors to the city.
  - Policy 5.2: Maintain a recreational pathway around the lake designed for multiple use.
  - Policy 5.3: Allow only those activities in the Lake Merced area which will not threaten the quality of the water as a standby reservoir for emergency use.
  - Policy 5.4: As it becomes obsolete, replace the police pistol range on the southerly side of South Lake with recreational facilities.

As described above, the *San Francisco General Plan* addresses such elements as air quality, community safety (including protection from geologic and seismic hazards), and environmental protection (including protection of water resources and biological resources and addressing recreation and open space).

The project proposes to restore and manage the Natural Areas. Although the project could result in negative impacts to natural systems in the short term, mitigation measures would minimize those potential impacts, and management actions are intended to result in net long-term benefits to natural systems. Implementation of the project would identify natural resources and maintain and

preserve native plant and animal communities and local biodiversity. No inconsistencies with the *San Francisco General Plan* were identified.

IV.A.2 San Francisco Priority Policies

In November 1986, the voters of San Francisco approved Proposition M, the Accountable Planning Initiative, which added Section 101.1 to the City Planning Code to establish eight Priority Policies. These policies, and the sections of the Initial Study checklist addressing the environmental issues associated with the policies, are: (1) preservation and enhancement of neighborhood-serving retail uses; (2) protection of neighborhood character (Question 1c, Land Use and Land Use Planning); (3) preservation and enhancement of affordable housing (Question 3b, Population and Housing, with regard to housing supply and displacement issues); (4) discouragement of commuter automobiles (Questions 5a,b, and f, Transportation and Circulation); (5) protection of industrial and service land uses from commercial office development and enhancement of resident employment and business ownership (Question 1C, Land Use and Land Use Planning); (6) maximization of earthquake preparedness (Questions 13a-d, Geology and Soils); (7) landmark and historic building preservation (Question 4a, Cultural and Paleontological Resources); and (8) protection of open space (Questions 8a and b, Wind and Shadow, and Questions 9a and c, Recreation). Prior to issuing a permit for any project which requires an Initial Study under CEQA, prior to issuing a permit for any demolition, conversion, or change of use, and prior to taking any action which requires a finding of consistency with the *San Francisco General Plan*, the City is required to find that the proposed project or legislation would be consistent with the Priority Policies. As noted above, the consistency of the proposed project with the environmental topics associated with the Priority Policies is discussed in Chapter V, Environmental Setting and Impacts, Chapter VI, Other CEQA Issues, and the project's Initial Study (Appendix A), providing information for use in the case report for the proposed project. The case report and approval motions for the proposed project would contain the Planning Department's comprehensive project analysis and findings regarding consistency of the proposed project with the Priority Policies.

No inconsistencies with the Priority Policies were identified.

IV.A.3 Sustainability Plan for San Francisco

The *Sustainability Plan for San Francisco* (CCSF 1996b) was endorsed by the San Francisco Board of Supervisors in 1997. Although the Board has not committed the City to perform the actions addressed in the plan, the plan serves as a blueprint for sustainability, with many of its individual proposals requiring further development and public comment should they be proposed for implementation. The underlying goals of the plan are to maintain the physical resources and

systems that support life in San Francisco and to create a social structure that will allow such maintenance. It is divided into 15 topic areas, 10 that address specific environmental issues (Air Quality; Biodiversity; Energy, Climate Change and Ozone Depletion; Food and Agriculture; Hazardous Materials; Human Health; Parks, Open Spaces and Streetscapes; Solid Waste; Transportation; and Water and Wastewater), and five that are broader in scope and cover many issues (Economy and Economic Development; Environmental Justice; Municipal Expenditures; Public Information and Education; and Risk Management). Each topic area in the plan has a set of indicators that are to be used over time to determine whether San Francisco is moving in a sustainable direction in that particular area. The Biodiversity section, which includes 39 specific actions, addresses the goals of increased ecological understanding, protection, and restoration of remnant natural ecosystems; increased habitat value in developed and naturalistic areas; and collection, organization, and development of historic information on habitat and biodiversity.

The *Sustainability Plan for San Francisco* was developed to address San Francisco's long-term environmental sustainability, and it adopted many of the goals and objectives of the 1995 Significant Natural Resource Areas Management Plan. As such, no inconsistencies with the *Sustainability Plan for San Francisco* were identified.

IV.A.4 Natural Areas Program

The mission of the Natural Areas Program is two-fold: to restore and enhance remnant Natural Areas and to develop and support community-based stewardship of these areas (CCSF 2008c). Recognizing the functions and value of these Natural Areas and the need to protect and restore them, SFRPD agreed to support and develop a community-based habitat restoration program, today known as the Natural Areas Program. No inconsistencies with the Natural Areas Program were identified.

IV.A.5 San Francisco Dog Policy

The SFRPD is the steward of wide-ranging unique landscapes and makes decisions on land management practices. The SFRPD's Dog Policy (SFRPD 2002) reflects the SFRPD Strategic Plan, input from community stakeholder groups, San Francisco Municipal Codes, the 1998 Dog Task Force recommendations, and the best and most relevant efforts of established dog park designs and policies. The SFRPD welcomes dogs on leashes in most of its parks; dogs are allowed off-leash in 19 designated areas. Existing and proposed sites will need to be evaluated in the context of this policy. Dogs are not allowed in some areas, as noted in Section 3.1 (Location) of the policy. The policy supports continued and increased education about how to be a responsible park user with a pet.

The SFRPD's Dog Policy excludes dogs (on- and off-leash) from sensitive habitat areas, such as sensitive wildlife areas (e.g., breeding habitat for birds), sensitive remnant native plant communities (e.g., wetlands), sensitive plant populations (e.g., locally rare wildflower species), and high erosion prone areas, and excludes them temporarily from restoration areas. This policy attempts to reconcile conflicting priorities between dog walkers and other recreational uses. As such, no inconsistencies with the SFRPD's Dog Policy were identified.

IV.A.6 San Francisco Bay Basin (Region 2) Water Quality Control Plan

Water for recreation and habitat is associated with the Natural Areas. The San Francisco Bay Basin (Region 2) Water Quality Control Plan contains water quality regulations adopted by the San Francisco Bay Regional Water Quality Control Board. It has been approved by the State Water Resources Control Board, the Office of Administrative Law, and US Environmental Protection Agency (EPA) (SFBRWQCB 2007). It also contains statewide regulations adopted by the State Water Resources Control Board and other state agencies that refer to activities regulated by the board. No inconsistencies with the San Francisco Bay Basin (Region 2) Water Quality Control Plan were identified.

IV.A.7 San Francisco Bay Plan

The San Francisco Bay Plan guides the protection and development of the bay and its tributary waterways, marshes, managed wetlands, salt ponds, and shoreline (San Francisco Bay Conservation and Development Commission 2008). A major plan proposal is to develop waterfront parks and recreation facilities. New shoreline parks, beaches, marinas, fishing piers, scenic drives, and hiking or bicycling pathways should be provided in many areas. The bay and its shoreline offer particularly important opportunities for recreational development in urban areas where large concentrations of people live close to the water but are shut off from it. Highest priority should be given to recreational development in these areas as an important means of helping to immediately relieve urban tensions. No inconsistencies with the San Francisco Bay Plan were identified.

IV.A.8 Climate Action Plan for San Francisco

The Climate Action Plan for San Francisco (San Francisco Department of the Environment and San Francisco Public Utilities Commission 2004):

- Provides background information on the causes of climate change and projections of its impacts on California and San Francisco from recent scientific reports;
- Presents estimates of San Francisco's baseline greenhouse gas emissions inventory and reduction target;

- Describes recommended emissions reduction actions in the key target sectors - transportation, energy efficiency, renewable energy, and solid waste management – to meet the 2012 goal; and
- Presents next steps required over the near term to implement the plan.

No inconsistencies with the Climate Action Plan were identified.

IV.A.9 Urban Forestry Ordinance

The San Francisco Urban Forestry Ordinance defines landmark trees, significant trees, street trees, and hazard trees. It also outlines protections for landmark trees, significant trees, and street trees. No landmark trees are proposed for removal under the SNRAMP. Should tree removal include significant trees or street trees, the permits required under this ordinance would be obtained before removal. No inconsistencies with this ordinance were identified.

IV.A.10 Pacifica Local Coastal Land Use Plan

Pacifica's Local Coastal Land Use Plan (City of Pacifica 1980b) serves as the land use plan for the City of Pacifica's coastal zone and was written in accordance with the policies of the California Coastal Act of 1976. A portion of the Sharp Park coastal zone west of Highway 1 and outside the Laguna Salada wetland complex is under the jurisdiction of Pacifica's Local Coastal Land Use Plan. The Local Coastal Land Use Plan was developed by the City of Pacifica with extensive participation by local residents. It was adopted in 1980, and is undergoing an update, expected to be completed in 2012. The Local Coastal Land Use Plan includes 33 Coastal Act policies, most of which are applicable to particular General Plan elements. The policies cover such topics as access, facilities, recreation, habitat protection, scenic and visual qualities, and cultural resources. No inconsistencies with the Pacifica Local Coastal Land Use Plan were identified.

IV.A.11 Bay Area 2010 Clean Air Plan

The Bay Area Air Quality Management District, in cooperation with the Metropolitan Transportation Commission, the Association of Bay Area Governments, and the Bay Conservation and Development Commission, prepared the Bay Area 2010 Clean Air Plan (BAAQMD 2010a). This plan is required because the Bay Area is designated as nonattainment for the state ozone and particulate matter standards and includes all feasible measures to reduce emissions of ozone precursors and to reduce transport of those precursors to neighboring air basins. The Clean Air Plan outlines a plan to improve Bay Area air quality and to protect public health. The three-part strategy includes reducing emissions and decreasing ambient concentrations of harmful pollutants; safeguarding public health by reducing exposure to air pollutants that pose the greatest health

risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and reducing greenhouse gas (GHG) emissions to protect the climate. The 2010 Clean Air Plan control strategy includes 55 control measures that address stationary sources, mobile sources, transportation control, land use and local impacts, and energy and climate. No inconsistencies with the Bay Area 2010 Clean Air Plan were identified. Compliance with the 2010 Clean Air Plan is further addressed in Section V.K, Air Quality.

IV.A.12 California Coastal Act

The California Coastal Act applies to projects that result in the diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes occurring in the coastal zone. The act limits these activities to certain types of projects (restoration projects, for example, are included among the permitted projects) and stipulates criteria under which development is permitted. Chapter 3 of the act details the coastal resources planning and management policies (Sections 30200 to 30265.5). The act also permanently established the California Coastal Commission (CCC).

The portion of the Sharp Park Natural Area extending 1,000 feet inland from the levee is within the coastal zone and falls within the jurisdiction of the CCC; proposed SNRAMP activities within the coastal zone may require a coastal development permit. The Balboa Natural Area also is within the coastal zone and the jurisdiction of the CCC; however, none of the proposed SNRAMP activities at this Natural Area would require a coastal development permit. The India Basin Shoreline Park is within the coastal zone and under the jurisdiction of the Bay Conservation and Development Commission; however, none of the proposed SNRAMP activities at this Natural Area would require a coastal development permit.

The California Coastal Act includes specific policies that address issues such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works. The policies of the act are the statutory standards that apply to planning and regulatory decisions made by the commission and by local governments, pursuant to the act. Implementation of the act's policies is accomplished primarily through the preparation of local coastal programs that include land use plans. To ensure that coastal resources are effectively protected in light of changing circumstances, such as new information and changing development pressures and impacts, the CCC is required to review each certified local coastal program at least once every five years.

For the resources evaluated in Chapter V of this EIR, the applicable California Coastal Act policies are presented below, and the project's consistency with those policies is evaluated. No inconsistencies with the California Coastal Act were identified.

Aesthetics

The California Coastal Act policy applicable to aesthetics is the following:

- Protecting scenic and visual qualities of coastal areas (Section 30251).

Sharp Park borders the Pacific Ocean. Restoration activities would alter and restore scenic resources (e.g., land, water, vegetation, animals, structures, and other features). Promoting the natural integrity of the area would ultimately reestablish the local native scenic resources typical of the Natural Area. This would not diminish general scenic views and would still be compatible with the local setting. The overall visual landscape of the coastline would not be degraded. Restoration at Sharp Park would not be inconsistent with the California Coastal Act.

Cultural and Paleontological Resources

The California Coastal Act policy applicable to cultural and paleontological resources is the following:

- Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required (Section 30244).

To mitigate the adverse impacts of the Sharp Park restoration project on archaeological and paleontological resources, this EIR identifies Mitigation Measures M-CP-10 and M-CP-17; thus, the project is not inconsistent with the policies of the California Coastal Act.

Recreation

The California Coastal Act policies applicable to recreation resources for this project are the following:

- Providing and maintaining maximum access and recreation opportunities for all the people (Section 30210);
- Protecting the availability of water-oriented recreation activities not provided at inland water areas (Section 30220);

- Protecting oceanfront land suitable for recreational use unless anticipated demand for that use is already provided for in the area (Section 30221); and
- Encouraging boating activities on coastal waters (Section 30224).

The proposed management actions at India Basin Shoreline Park include activities to manage the health of the vegetation. Implementation of these actions is not anticipated to impede shoreline access for fishing and water-dependent recreation, such as boating, at this Natural Area because access points would remain open and recreational activities would continue during management action implementation. Other policies relevant to recreation would not be impacted by proposed activities at this Natural Area.

The Sharp Park restoration project involves modifying and restoring the Laguna Salad wetland complex. To achieve this, approximately 19 acres of the Sharp Park Golf Course would be modified. Although modification of the Sharp Park Golf Course may deter some people from using it, the golf course would still be open to the public, continuing to maximize recreation activities in the Natural Area. Additionally, the golf course and the Laguna Salada area do not currently provide access to the shoreline, so access would be unaffected by the restoration activities at Sharp Park. Access to the shoreline is available via Mori Point, immediately south of Sharp Park. Other California Coastal Act policies relevant to recreation would not be impacted by the restoration at Sharp Park.

Based on the above, the project is not inconsistent with the policies of the California Coastal Act.

Biological Resources

The California Coastal Act policies applicable to biological resources are the following:

- Maintaining, enhancing, and restoring marine resources (Section 30230);
- Maintaining and restoring biological productivity and quality of coastal waters and water bodies to benefit marine organisms and protection of human health (Section 30231);
- Limiting and controlling the diking, filling, and dredging of coastal waters and water bodies (Section 30233); and
- Protecting environmentally sensitive habitat areas from significant disruption of habitat values (Section 30240).

The Sharp Park restoration project involves modifying the Laguna Salada wetland complex. It does not involve activities that would affect marine resources. Modifications to Laguna Salada, including

any filling and dredging of water bodies under this project would be done for restoration purposes and to improve the quality of habitat used by the state and/or federally protected San Francisco garter snake, California red-legged frog, and western pond turtle populations. While the project would cause temporary disruptions to habitat during the seasonal restoration activities, those activities would ultimately increase the value of habitat for the protected San Francisco garter snake and California red-legged frog populations, and thus the project is not inconsistent with the objectives of the California Coastal Act.

Hydrology and Water Quality

The California Coastal Act policies applicable to hydrology and water quality are the following:

- Maintaining and restoring biological productivity and quality of coastal waters and water bodies to benefit marine organisms and protection of human health (Section 30231);
- Protecting against spills of petroleum products and other hazardous substances (Section 30232); and
- Limiting and controlling the diking, filling, and dredging of coastal waters and water bodies (Section 30233).

The Sharp Park restoration project involves modifying the Laguna Salada wetland complex. Both the project and the mitigation measures identified in this section would maintain and improve both the short-term and long-term quality of waters that are hydraulically connected to the ocean. The project includes mitigation measures to avoid and minimize the effects of petroleum spills. The dredging of water bodies under this project would be done for restoration purposes and to improve the quality of habitat used by local San Francisco garter snake, California red-legged frog, and western pond turtle populations. As such, this project is not inconsistent with the California Coastal Act policies listed above.

Hazards and Hazardous Materials

The California Coastal Act policies applicable to hazards and hazardous materials are the following:

- Protecting against the spillage of crude oil, gas, petroleum products, or hazardous substances (Section 30232); and
- Minimizing risks from new development to life and property in areas of high fire hazard (Section 30253).

To reduce impacts from the accidental release of hazardous materials, the SFRPD shall prepare an emergency response plan for the Sharp Park restoration, as detailed in Mitigation Measure M-HZ-13. Developing and implementing the plan will ensure the proper storage and use of hazardous materials, proper response to accidental releases, and worker training, all of which will minimize contamination from hazardous materials.

As Sharp Park and a few Natural Areas within San Francisco are classified as moderate to high fire hazard zones, tree and invasive weed removal as part of the programmatic projects would reduce the potential fire hazards within these areas. Further, tree removal would be carefully coordinated, fire suppression equipment would be located on-site, and no prescribed burning is planned within the Natural Areas. Motorized equipment used during restoration would increase the risk of fire. Workers involved in the restoration activities would carry fire extinguishers in their trucks and would use appropriate fire prevention and suppression measures during restoration.

Restoration at Sharp Park would not be inconsistent with the California Coastal Act.

IV.B PACIFICA PLANS AND POLICIES

While the SFRPD and the SNRAMP are not subject to City of Pacifica plans and policies, they are presented in this section for informational purposes.

IV.B.1 Pacifica General Plan

The City of Pacifica General Plan (City of Pacifica 1980a) reviewed planning options for the city and includes nine mandatory elements—land use, circulation, scenic highways, housing, noise, conservation, open space, seismic safety, and safety—and three additional elements—community facilities, historic preservation, and community design. The Policy Plan contains the recommendations of each element, while the Land Use Plan represents the conclusion of the interaction among these element studies. The Land Use Element was revised in 1987, the Open Space and Recreation Element was revised in 1984, and the Seismic Safety and Safety Element was updated in 1983. The comprehensive General Plan update is not expected to be complete until 2012. No inconsistencies with the Pacifica General Plan were identified.

IV.B.2 Pacifica Logging Ordinance

City of Pacifica Ordinance 636-C.S. defines logging as removing, destroying, or harvesting 20 or more trees in one year from a parcel or from contiguous parcels under the same ownership. It defines a tree as any tree six inches in diameter as measured 12 inches from the ground. This ordinance prohibits logging operations unless one of the following conditions is met:

- Said operations are in conjunction with a city permit(s) requiring planning commission and/or city council approval, at which time said operations shall be evaluated and approved or denied at a duly noticed public hearing by the commission and /or council, concurrently with the other permit(s).
- Said operations are necessary immediately for the safety of life or property, as determined by the director of public works or his/her designee.
- Said operations occur on city-owned property and are necessary immediately to maintain public health and safety.

Because the SFRPD and the SNRAMP are not subject to City of Pacifica plans and policies, no city permits would be required for tree removal at Sharp Park.

IV.B.3 Pacifica Heritage Tree Preservation Code

Pacifica Municipal Code Title 4, Chapter 12, Preservation of Heritage Trees, defines a heritage tree as 1) a tree within the City of Pacifica, exclusive of eucalyptus, which has a trunk with a circumference of 50 inches (approximately 16 inches in diameter) or more, measured at 24 inches above the natural grade; or 2) a tree or grove of trees, including eucalyptus, designated by resolution of the city council to be of special historical, environmental, or aesthetic value. The code states that no person shall cut down, destroy, remove, or move a heritage tree, or engage in new construction within the dripline of a heritage tree growing on private property or city-owned property, without a permit. Because the SFRPD and the SNRAMP are not subject to City of Pacifica plans and policies, no city permits would be required for tree removal at Sharp Park.

IV.C SAN MATEO COUNTY PLANS AND POLICIES

While the SFRPD and the SNRAMP are not subject to San Mateo County plans and policies, they are presented in this section for informational purposes.

The Significant Tree Ordinance of San Mateo County requires a permit for cutting down, removing, poisoning, or otherwise killing or destroying or causing to be removed any significant tree or community of trees on any private property. The ordinance defines a significant tree as any live woody plant rising above the ground with a single stem or trunk of a circumference of 38 inches or more measured at four and a half feet vertically above the ground or immediately below the lowest branch, whichever is lower, and having the inherent capacity of naturally producing one main axis continuing to grow more vigorously than the lateral axes. In certain zoning districts, the definition includes all trees in excess of 19 inches in circumference. It defines a community of trees as a group

of trees of any size that are ecologically or aesthetically related to each other such that loss of several of them would cause a significant ecological, aesthetic, or environmental impact in the immediate area.

V. ENVIRONMENTAL SETTING AND IMPACTS

V.A INTRODUCTION

Based on the Initial Study published on April 22, 2009, the San Francisco Planning Department determined that an EIR was required. The preparers of the Initial Study determined that the project effects on the following resources would either be less than significant or that there is no potential occurrence of impacts that were not addressed in the Initial Study analysis, and thus they would require no further analysis: population and housing, transportation and circulation, noise, utilities and service systems, public services, geology and soils, and mineral and energy resources. CEQA does not require further assessment of the environmental effects that would be less than significant; therefore, these resources are not discussed in the EIR (see Appendix A for the Initial Study). The proposed project's effects on land use and land use planning, wind and shadow, hazards and hazardous materials, and agricultural resources also were determined to be less than significant in the Initial Study. These topics are included in the EIR to assist the reader, to provide details about the proposed project, or to respond to scoping comments.

Sections V.B through V.K of this EIR contains a discussion of the potential environmental impacts of implementing the SNRAMP, including the existing site conditions, type and magnitude of project-level and cumulative environmental impacts, feasible mitigation measures that would reduce or avoid identified significant adverse environmental impacts, and feasible improvement measures that would further reduce the magnitude of less than significant impacts. Except as supplemented in Sections V.B through V.K, the existing site condition information from the SNRAMP is incorporated by reference.

V.A.1 Comments Received on the Notice of Preparation

During the 30-day public review period for the NOP, which began on April 22, 2009, and ended on May 26, 2009, comment letters were received from public agencies and individuals, as discussed in Chapter II of this EIR. Additional comments were also received during the May 12 and May 14, 2009 scoping meetings. The NOP, the NOP comment letters, and scoping meeting transcript are included in Appendix A (Notice of Preparation, Initial Study, and Scoping Report) of this EIR and were considered in the EIR analyses.

V.A.2 Scope of the EIR

The following environmental resources are discussed in detail in this EIR:

- Land use and land use planning (Section V.B);
- Aesthetics (Section V.C);

- Cultural and paleontological resources (Section V.D);
- Wind and shadow (Section V.E);
- Recreation (Section V.F);
- Biological resources (Section V.G);
- Hydrology and water quality (Section V.H);
- Hazards and hazardous materials (Section V.I);
- Agriculture and forest resources (Section V.J); and
- Air quality (Section V.K).

All impacts determined to be less than significant are briefly discussed in Chapter VI of this EIR.

V.A.3 Format of the Environmental Analysis

Each environmental topic in Sections V.B through V.K of this EIR presents a program-level and project-level analysis of the Significant Natural Resource Area Management Plan's direct and indirect environmental impacts on the environment. Each section includes a description of the environmental setting and impacts. The impacts discussion includes the significance criteria, project-level impacts and proposed mitigation and improvement measures, and cumulative impacts.

This EIR uses the following terms to describe the level of significance of identified impacts:

- Significant Impact—A significant effect is defined by Section 15382 of the CEQA Guidelines as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment … [but] may be considered in determining whether the physical change is significant." As defined in this EIR, a significant impact exceeds the defined significance criteria and would result in significant and unavoidable impacts, either with or without feasible mitigation.
    - Significant and Unavoidable Impact (SU)—This is an impact that exceeds the defined significance criteria and cannot be reduced through compliance with local, state, and federal laws and regulations or by implementation of all feasible mitigation measures.

  - Significant and Unavoidable Impact with Mitigation (SU/M)—This is an impact that exceeds the defined significance criteria; it can be reduced through compliance with local, state, and federal laws and regulations or by implementation of all feasible mitigation measures, but it cannot be reduced to a less than significant level.

- Less Than Significant Impact with Mitigation (LTS/M)—This is an impact that could exceed the defined significance criteria, but it can be eliminated or reduced to a less than significant level through implementation of the identified mitigation measures.
- Less Than Significant Impact (LTS)—This is an impact that does not exceed the defined significance criteria or that would be eliminated or reduced to a less than significant level through compliance with local, state, and federal laws and regulations.
- No Impact (NI)—No adverse changes to or impacts on the environment are expected.

V.A.4 Cumulative Impact Analysis

CEQA requires that EIRs discuss a project's potential contribution to cumulative impacts, in addition to project-specific impacts. Section 15130(a)(1) of the CEQA Guidelines states that a "cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts." Other projects include past, present, and reasonably foreseeable future projects.

Section 15130(b)(1) of the CEQA Guidelines states that the approach to the cumulative impact analysis may be based on either of the following approaches or on a combination thereof:

- A list of past, present, and probable future projects producing related or cumulative impacts or
- A summary of projections contained in an adopted general plan or related planning document designed to evaluate regional or areawide conditions.

For the purposes of this EIR, the analysis of the potential for the project's incremental effects to be cumulatively considerable is based on a list of related projects identified by San Francisco and neighboring jurisdictions. This list includes those San Francisco Planning Department projects within a quarter mile of a Natural Area that are active or that were closed on or after January 1, 2009. The list also includes General Plan area plans within a quarter mile of each Natural Area. The analysis is also based on reasonably anticipated buildout of the *San Francisco General Plan* or other planning documents, depending on the specific impact being analyzed.

The geographic scope of the cumulative impact analyses and the specific related projects that are included in the analyses may also vary, depending on the specific environmental issue being analyzed. The cumulative context for each cumulative impact analysis is designated in each technical section of this EIR.

CEQA requires that an EIR include a discussion of cumulative impacts to determine whether they are significant. If a cumulative impact is significant, the project's incremental effects must be analyzed to determine if their contribution to the cumulative impact is considerable. In accordance with Section 15065(a)(3) of the CEQA Guidelines, this determination is based on an assessment of the project's incremental effects viewed in combination with the effects of past, present, and foreseeable future related projects. The existence of a current significant cumulative impact does not necessarily mean that the project's contribution to that impact must be significant. Instead, a project's contribution to a significant cumulative impact is significant only if it is cumulatively considerable.

CEQA recognizes that the analysis of cumulative impacts need not be as detailed as the analysis of project-level impacts but instead should "be guided by the standards of practicality and reasonableness" (Section 15130[b] of the CEQA guidelines). The discussion of cumulative impacts must reflect the severity of the impacts and the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone.

This EIR presents a cumulative impact analysis only when the project's incremental effect would result in a cumulative impact that is less than significant, less than significant with mitigation, significant and unavoidable, or significant and unavoidable with mitigation.

V.B LAND USE AND LAND USE PLANNING

For informational purposes, this topic is included in the EIR to assist the reader and to respond to scoping comments. This section describes the plans and policies that guide use of the lands within the Natural Areas and evaluates the potential for environmental impacts from the proposed management activities. None of the management activities propose to change the general land use within the Natural Areas; therefore, this analysis focuses on consistency with applicable plans and policies and compatibility with surrounding land uses.

Comments related to land use and land use planning received during the NOP scoping process included concerns about:

- Project consistency with Pacifica regulations and plans, specifically the Local Coastal Land Use Plan;
- New policies in the Pacifica General Plan update that could impact the SNRAMP; and
- Effects on land use from restricting recreational access to the Natural Areas.

V.B.1 Regulatory Setting

In California, land use is regulated through local plans and policies, including those described below that are associated with the proposed project.

San Francisco General Plan

In San Francisco, the overall planning framework is set by the San Francisco General Plan, which consists of ten plan elements. General plans are intended to identify features that are unique to each region and to identify policies that preserve and reinforce unique values of the community. Each element identifies objectives and is supported by policy statements and explanations. In addition, eleven neighborhoods have area plans that recognize unique characteristics and strengths of the neighborhoods and introduce objectives and policy statements at the neighborhood level. The concepts of the General Plan are implemented through the zoning code and administrative review processes.

An important value of San Franciscans is represented by Objective 7 of the Environmental Protection Element (CCSF 2004): "Assure that the land resources in San Francisco are used in ways that both respect and preserve the natural values of the land and serve the best interests of all of the city's citizens."

Another policy statement is Objective 1 of the Environmental Protection Element: "Achieve a proper balance among the conservation, utilization, and development of San Francisco's natural resources."

The Recreation and Open Space Element (CCSF 2007a) guides policies over hiking and bicycle trails and advocates developing additional trails along San Francisco Bay (the Bay Trail), on ridgelines, and along the coast and linking these trails with those in adjacent counties. It defines various classes of open space, including city-serving (for example, Golden Gate Park and McLaren Park), district-serving (larger than 10 acres), neighborhood-serving (less than 10 acres and more than 4 acres), and subneighborhood-serving (generally an acre or less).

Objective 2 of the Recreation and Open Space Element states "Develop and maintain a diversified and balanced citywide system of high quality public open space." It is supported by Policy 2.8: "Develop a recreational trail system that links city parks and public open space, ridge lines and hilltops, the Bay and ocean, and neighborhoods, and ties into the regional hiking trail system." The plan identifies several city parks where future segments of these trails should be developed. The Bay Trail is a resource for pedestrians and bicyclists and passes through the India Basin Natural Area. Of the San Francisco Natural Areas, trails would increase at Edgehill Mountain and Interior Greenbelt. Trails would be created at an additional seven San Francisco Natural Areas, and many informal social trails would be closed.

Policy 2.9, "Maintain and expand the urban forest," acknowledges the role of urban forests in enhancing the quality of life in San Francisco. The text clarifies the need for replacing mature trees and promotes the need for a "major reforestation effort" in the larger city parks. It calls for a systematic inventory of the urban forest, tree replanting, and plant material diversification.

Policy 2.13 is to "Preserve and protect significant natural resource areas." It specifically addresses the natural resource area management plan and calls for preserving native plant habitats, inventorying natural areas, and protecting natural areas "to ensure that the natural resource values are not diminished or impacted by public use."

Under Policy 3.5, this element calls for extending the reforestation program within Golden Gate Park "throughout the park to ensure vigorous forest tree growth . . . ." Regarding Bayview Park, this section calls for better pedestrian access, which is echoed in the proposed project.

Policy 4.3, "Renovate and renew the City's parks and recreational facilities," acknowledges the need for ongoing assessment and renewal of San Francisco's open space resources.

The San Francisco Recreation and Park Commission has adopted additional policies pertaining to certain parks, such as the master plans for Buena Vista Park, Glen Canyon Park, Golden Gate Park, McLaren Park, and Pine Lake Park.

There is currently a Draft Update of the Recreation and Open Space Element out for review and is expected to be adopted in late 2011. The Draft Update references the SNRAMP as a Related Plan and Agency Program. Many of the policies from the existing Recreation and Open Space Element are included in the Draft Update, including Policy 2.8, regarding developing and enhancing the City's recreational trail system.

The Golden Gate Park Master Plan

The Golden Gate Park Master Plan (SFRPD 1998) identifies three policies that are relevant to the proposed removal of invasive trees. Policy A addresses naturalistic parkland as follows: "Naturalistic parkland comprises the largest land category in Golden Gate Park, and must be preserved to protect the pastoral character of the park and to ensure the retention of park open space. Naturalistic parkland is the predominant landscape of the park and gives the park its visual character."

The second objective of the plan mandates protecting and renewing the park landscape. Policy B places priority on preserving and renewing the park's forestry. It calls for "Removal of hazardous, diseased and dying trees; replacement with appropriate tree species." Another goal is to "Maintain the designated indigenous oak preserves for their natural and historical values as the only remaining indigenous woodlands in the park, and preserve existing oak trees in other areas." Policy E focuses on forested indigenous oak preserves and calls for them to be carefully managed to promote their preservation.

California Coastal Act

The California Coastal Act of 1976 contains policies for the coastal zone regarding development and conservation activities. The portion of the Sharp Park Natural Area extending 1,000 feet inland from the levee is within the coastal zone and falls within the jurisdiction of the CCC; proposed SNRAMP activities within the coastal zone may require a coastal development permit. The Balboa Natural Area also is within the coastal zone and the jurisdiction of the CCC; however, none of the proposed SNRAMP activities at this Natural Area would require a coastal development permit. The India Basin Shoreline Park is within the coastal zone and the jurisdiction of the Bay Conservation and Development Commission; however, none of the proposed SNRAMP activities at this Natural Area

would require a coastal development permit. Section 30001.5 of the California Coastal Act sets forth the five following goals:

> (a) Protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources.
>
> (b) Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the state.
>
> (c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners.
>
> (d) Assure priority for coastal-dependent and coastal-related development over other development on the coast.
>
> (e) Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

These policies are used to determine the "adequacy of local coastal plans" and the "permissibility of proposed developments." Public agencies implementing activities occurring outside of the coastal zone that could have an impact on resources within the coastal zone shall also "consider the effect of such actions on coastal zone resources in order to assure that these policies are achieved."

City of Pacifica Local Coastal Land Use Plan

The Local Coastal Land Use Plan (City of Pacifica 1980b) is the land use plan for the City of Pacifica's coastal zone and was written in accordance with the policies of the California Coastal Act of 1976. The current Local Coastal Land Use Plan was adopted in 1980, and the City of Pacifica is undergoing a General Plan Update process, which also includes an update to the Local Coastal Land Use Plan. The final version of the Local Coastal Land Use Plan is expected in 2011. In July 2010, the City of Pacifica made available a Pacifica General Plan Existing Conditions and Key Issues report for public comment. That report included key issues to be addressed in the updated plans. Key Issue 8 acknowledges that the current 1980 Local Coastal Plan will need to be updated because some Coastal Act policies have changed.

Pacifica's Coastal Zone extends from the eastern edge of Highway 1 to the Pacific Ocean and contains six coastal neighborhoods. Coastal zone neighborhood designations and descriptions used in the Local Coastal Land Use Plan were developed in conjunction with the City's General Plan. A

portion of the Sharp Park coastal zone west of Highway 1 and outside the Laguna Salada wetland complex is included within the Sharp Park Municipal Golf Course/West Fairway Park/Mori Point/Rockaway Beach neighborhood; the remainder of the Sharp Park coastal zone is within the jurisdiction of the CCC. This neighborhood area is described as the largest undeveloped area in the Coastal Zone, with Laguna Salada providing an important habitat area for the San Francisco garter snake. Protection of the highly sensitive San Francisco garter snake habitat is listed as one of the primary issues of concern associated with the neighborhood.

The Local Coastal Land Use Plan includes 33 Coastal Act policies. Policy Number 18 establishes protection for "environmentally sensitive habitat area" from "any significant disruption of habitat values," and states "only uses dependent on such resources shall be allowed within such areas." Additionally, "development in areas adjacent to environmentally sensitive habitat areas…shall be sited and designed to prevent impacts which would significantly degrade such areas," and the continuance of habitat areas is the goal for development adjacent to habitat areas.

Policy Number 24 calls for the "scenic and visual qualities" of coastal areas to be "considered and protected as a resource of public importance." Therefore, any permitted development should be considerate of ocean and scenic coastal areas, natural landforms, the character of surrounding areas, and where feasible, should "restore and enhance visual quality in visually degraded areas."

In the Plan Conclusions Section of the Local Coastal Land Use Plan, the San Francisco garter snake habitat is also referenced under the rare and endangered species: habitat protection topical area section. Sharp Park Lagoon and Marsh is identified as one of two wetland areas that should be under a management plan. According to this section, primary habitats are defined as "necessary for the survival and propagation of the garter snake," and "primary secondary or support areas to the identified primary habitat areas shall be defined by investigating biologists." In terms of any proposed development, "a secondary habitat buffer should ensure that the "San Francisco garter snake and other sensitive plant or animal species will not be affected." Secondary habitat area or buffer area uses are limited to "pedestrian access paths, fences necessary to protect the habitat from intrusion by people and domestic animals and other similar uses which either have beneficial effects or at least no significant adverse effects on the primary habitat as determined by the reporting biologist."

Pacifica General Plan

While Pacifica's General Plan is not applicable to Sharp Park activities, this section is an informational discussion of that plan.

The City of Pacifica is undergoing a General Plan Update process. The final version of the General Plan is expected in 2011. In July 2010, the City of Pacifica made available a Pacifica General Plan Existing Conditions and Key Issues report for public comment. The report doesn't include any polices and summarizes the existing 1980 General Plan in addition to providing updated data on existing conditions. The report lists key issues to be "discussed with City staff, decision makers, and community members, and ultimately addressed through policies in the updated General Plan." The most relevant in relation to the SNRAMP are Key Issues 6 and 8. Key Issue 6 is "Adding Open Space," which recognizes that open space is mainly under the auspices of Golden Gate National Recreation Area, the County and State parks systems, and the City and County of San Francisco and therefore open space additions must be considered in terms of "local and regional benefit and environmental protection." Key Issue 8 acknowledges that the current 1980 Local Coastal Plan will need to be updated because some Coastal Act policies have changed.

The City of Pacifica General Plan (City of Pacifica 1980a) includes nine mandatory elements—land use, circulation, scenic highways, housing, noise, conservation, open space, seismic safety, and safety—and three additional elements—community facilities, historic preservation, and community design. The Land Use Element was revised in 1987, the Open Space Element was revised in 1984, and the Seismic Safety and Safety Element was updated in 1983. The Land Use Element includes a policy dictating continued cooperation "with other public agencies and utilities in applying compatible uses for their lands, right-of-ways, and easements." In addition to the general land use guidelines, specific neighborhoods are also discussed. The element calls for the portion of East Sharp Park just north of Sharp Park to be designated with a land use of open space residential and highlights the importance of managing future use of the area because of its "potential impact on the City and County of San Francisco's Sharp Park and on the views from Sharp Park Road." Additionally, the Land Use Element includes the coastal zone neighborhood land use descriptions and maps used in the Local Coastal Land Use Plan and specifically the Sharp Park Municipal Golf Course/West Fairway Park/Mori Point/Rockaway Beach neighborhood discussed previously. As noted above, a small portion of the Sharp Park coastal zone is within the jurisdiction of Pacifica; the remainder is within the jurisdiction of the CCC.

The Scenic Highways Element includes provisions for developing, establishing, and protecting scenic highways. Pacifica's Scenic Highways Element has two goals. The first is "preserving, maintaining, and enhancing the visual qualities of the City's scenic corridors," and the second is "making the residents of the City more aware of the City's scenic resources." This emphasis on scenic vistas is supported by the goals of the SNRAMP. The Scenic Highway Element provides for eligible roadways to be selected on the following grounds: designating on the Select Street System

Map or in the General Plan scenic quality and ability to connect areas of recreational or historic interest, providing continuous flow of traffic, and including bicycle/pedestrian routes wherever possible.

The first three policies of the Conservation Element focus on the conservation of trees, indigenous rare and endangered species, and significant neighborhood trees. "Native forestation" and "appropriate trees and vegetation" are also encouraged. The Conservation Element also identifies Laguna Salada as the only wetland area in Pacifica and as habitat for the San Francisco garter snake; for this reason, Laguna Salada is identified for protection because of its unique status habitat for the San Francisco garter snake.

The purpose of the Open Space Element is to address open space in a comprehensive fashion and to encourage recognition of open space as a limited and valuable resource. Pacifica defines open space as "any area which provides recreation, significant visual assets for the City, or is vital for the preservation of irreplaceable natural resources," and retaining open space for the purpose of preserving natural resources is a priority. Compatible land uses are described as "those which preserve natural resources (including animal habitat), provide for the managed production of resources, provide for outdoor recreation, and provide for the public's health and safety (including areas which require special management or regulation because of inherent hazardous conditions, such as earthquake faults, unstable soils, steep slopes and similar limiting qualities)." Open space should also be balanced in relation to development, public safety, and the scale and character of neighborhood areas.

Additionally, the Open Space Element includes guidance to "protect visual amenities," and Action Program 3 of the Open Space Element states "Views of open space are as important as access to open space."

The Seismic Safety and Safety Element identifies portions of Sharp Park Golf Course as being subject to flooding but to a lesser extent than San Pedro Creek. This element also identifies the City as having emergency plans established to manage the needs following an emergency.

The Historic Preservation Element identified four historic sites within Sharp Park—Laguna Salada and Marsh, Sharp Park Golf Course and Clubhouse, Trees in Sharp Park, and Fairway Park World War II Alien Detention Camp. In accordance with its requirements, the element is implemented by a historic ordinance, which also establishes a Pacifica Historic Sites Advisory Committee tasked with reviewing proposed changes to sites and structures. A map in the Historic Preservation Element

shows the general location of the Trees in Sharp Park as toward the east end of the Natural Area. Based on conversations with the Pacifica Planning and Public Works Departments, there no other references or ordinances that identify or pertain to the historic trees in Sharp Park.

The Community Design Element relates Pacifica's distinctive conditions to the general and expected patterns of growth. One of the policies included in the element is to "protect the City's irreplaceable scenic and visual amenities."

The Community Design Element also establishes guidelines and principles for more specific planning actions. For hillside developments, the guidelines are intended to minimize a development's impact on the terrain and to ensure the safety of residents. Guideline Number 1 is "Preserve 'visually significant' slopes and ridgelines, maintain natural open space between areas of development, [and] set aside and preserve natural features." Guideline Number 6 is "Landscape developed areas to blend with the natural landscape and require minimum maintenance and water." Guideline Number 7 is "Minimize the disruption of existing plant life," and Guideline Number 8 is "Phase grading and construction to coincide with periods of dry weather."

V.B.2 Environmental Setting

The 32 Natural Areas exist in parks or portions of parks. In some cases, Natural Areas abut private property in urban uses, as described in Chapter III, Project Description. Most are used as recreational open spaces by residents and visitors. Thirty-one of the Natural Areas are within San Francisco, and the Sharp Park Natural Area is in Pacifica. Sharp Park is owned and operated by the SFRPD. Each of the 32 Natural Areas is described in Chapter III and throughout this EIR.

V.B.3 Impacts

Significance Thresholds

A proposed project would have a significant land use and land use planning impact if it were to result in the following:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or
- Have a substantial impact on the existing character of the vicinity.

Impacts Addressed in the Initial Study

The Initial Study and NOP did not address the significance of the SNRAMP's potential to affect land use and land use planning. Therefore, this EIR evaluates the impacts of the SNRAMP's management actions for each of the 32 Natural Areas as they relate to land use and land use planning. Land use and land use planning impacts are identified based upon the CEQA significance criteria set forth on page 176.

Significant Natural Resource Areas Management Plan Impacts

Community Division

Programmatic Impacts

Impact LU-1: Implementation of programmatic projects under the SNRAMP would not physically divide an existing community. (Less than Significant)

The implementation of programmatic projects (large-scale tree removal, large-scale erosion control projects, trail development or rerouting, or other projects involving an increased recreational use of an area) would occur within the boundaries of defined Natural Areas. Most Natural Areas are currently used as recreational open spaces by residents and visitors. The SNRAMP would not alter the existing land use pattern of the project sites and vicinity. The SNRAMP activities would not introduce new land uses and would take place within existing Natural Areas; therefore, the SNRAMP would not physically divide any established community and the impact would be ***less than significant***.

Project-level Impacts (Routine Maintenance)

Impact LU-2: Implementation of routine maintenance activities under the SNRAMP would not physically divide an existing community. (Less than Significant)

The implementation of routine maintenance activities (removing invasive plants, installing plants, removing trees, maintaining trails, and maintaining catchment basins and sediment) within Natural Areas would not alter the existing land use of the project sites and vicinity. Routine maintenance under the SNRAMP would not result in activities or features that would physically divide existing communities surrounding the Natural Areas; therefore, the impact would be ***less than significant***.

Project-level Impacts (Sharp Park Restoration)

Impact LU-3: Implementation of the Sharp Park restoration activities under the SNRAMP would not physically divide an existing community. (Less than Significant)

Sharp Park restoration activities as outlined in Chapter III would result in the conversion of portions of the Sharp Park Golf Course to wetland and upland habitat for the San Francisco garter snake and California red-legged frog. However, the restoration activities do not include construction of any features that would divide Sharp Park and the existing community. Restoration activities at Sharp Park under the SNRAMP would not physically divide an existing community, and the impact would be ***less than significant***.

Land Use Plan or Policy Conflict

Programmatic Impacts

Impact LU-4: Implementation of programmatic projects under the SNRAMP would not conflict with any applicable land use plan, policy, or regulation that was adopted for the purpose of avoiding or mitigating an environmental impact. (Less than Significant)

Applicable plans for the project site and vicinity are discussed in Section V.B.1 and include the San Francisco General Plan, the Golden Gate Park Master Plan, California Coastal Act, and the Pacifica Local Coastal Land Use Plan; the Pacifica General Plan is not applicable but is discussed in this EIR for informational purposes. The San Francisco General Plan represents many different goals and the ones most relevant to land use under the SNRAMP are those for open space, trails, parks, and recreational facilities. The SNRAMP would generally be consistent with the San Francisco General Plan as outlined in Section V.B.1, including Policy 2.13, to "preserve and protect significant natural resource areas." In particular, the SNRAMP proposes trail improvements that are consistent with the Recreation and Open Space Element's trail objectives. Trails would increase at Edgehill Mountain and Interior Greenbelt, and trails would be created at an additional seven San Francisco Natural Areas. While the overall length of trails would be reduced across the 32 Natural Areas, those being removed are problematic because they are social trails, redundant, or near sensitive species or habitat. The programmatic projects would not change the land use of the Natural Areas, and there are no obvious conflicts with the San Francisco General Plan. These projects would not restrict recreational access to or within the Natural Areas.

The Golden Gate Park Master Plan contains policies related to preservation, and the SNRAMP does not pose any significant conflicts with the Golden Gate Park Master Plan. The San Francisco

Sustainability Plan establishes targets or standards with a focus on improving the City's physical environment in specific areas, and the SNRAMP does not represent any obvious conflicts.

In Setting V.B.1, the California Coastal Act and the Pacifica Local Coastal Land Use Plan and the Pacifica General Plan were discussed. Most Sharp Park tree removal would occur in the upper canyon. As stated in the SNRAMP, the upper canyon is outside the coastal zone and therefore a coastal development permit is not required. The California Coastal Act governs activities within and affecting the coastal zone, and SNRAMP actions are consistent with California Coastal Act policies protecting and maintaining the coastal zone environment and balancing recreation and conservation. The Pacifica Local Coastal Land Use Plan is concerned with the protection of environmentally sensitive habitats and scenic and visual qualities of coastal areas; the SNRAMP programmatic projects at Sharp Park are expected to improve sensitive habitats and would not alter the coastal area.

The City of Pacifica General Plan's Conservation Element's emphasizes "native forestation" and "appropriate trees and vegetation" and the SNRAMP objectives of removing nonnative trees and replacing them with other native vegetation are consistent with the Conservation Element. The Conservation Element also identifies San Francisco garter snake habitat for protection, and the SNRAMP recommends that access to the San Francisco garter snake habitat at Sharp Park be restricted. The goals of the SNRAMP are compatible with the Open Space Element's guidance to "protect visual amenities" and statement that "views of open space are as important as access to open space." The SNRAMP's erosion control goals are consistent with the Community Design Element's emphasis on preserving natural features and natural open space, such as visually significant slopes and ridgelines. Finally, the Historic Preservation Element identifies four historic sites within Sharp Park, but there is no further information to suggest a conflict with SNRAMP actions.

The implementation of programmatic projects would not conflict with any applicable plans and policies; therefore, the impact would be ***less than significant***.

Project-level Impacts (Routine Maintenance)

Impact LU-5: Implementation of routine maintenance activities under the SNRAMP would not conflict with any applicable land use plan, policy, or regulation that was adopted for the purpose of avoiding or mitigating an environmental impact. (Less than Significant)

As discussed above, the SNRAMP activities do not conflict with applicable land use plans. Routine maintenance would not change the land use of the Natural Areas, and there are no obvious conflicts with the San Francisco General Plan; it would not restrict recreational access to or within the Natural Areas. Regarding the Pacifica Local Coastal Land Use Plan, routine maintenance activities would not alter the Sharp Park coastal area. The routine maintenance activities under the SNRAMP aim to preserve and maintain Natural Areas and do not alter the Natural Areas in a way that would conflict with applicable plans and policies; therefore, the impact would be ***less than significant***.

Project-level Impacts (Sharp Park Restoration)

Impact LU-6: Implementation of the Sharp Park restoration activities under the SNRAMP would not conflict with any applicable land use plan, policy, or regulation that was adopted for the purpose of avoiding or mitigating an environmental impact. (Less than Significant)

Applicable plans include the San Francisco General Plan, California Coastal Act and the Pacifica Local Coastal Land Use Plan. The restoration project would not restrict recreational access to or within Sharp Park. The Sharp Park restoration activities would be consistent with the San Francisco General Plan, which is outlined in Section V.B.1. In particular, restoring the wetland complex would help achieve Policy 2.13, to "preserve and protect significant natural resource areas." This project would not change the land use of the Natural Area, and there are no obvious conflicts with the San Francisco General Plan.

The California Coastal Act and Pacifica Local Coastal Land Use Plan are concerned with the protection of environmentally sensitive habitats and scenic and visual qualities of coastal areas. The restoration activities would enhance environmentally sensitive habitats and maintain coastal visual qualities. This area is within the coastal zone; therefore, a coastal development permit is required.

While not applicable to the management activities at Sharp Park, the Pacifica General Plan is discussed for informational purposes. The restoration activities would be consistent with the Conservation Element of the Pacifica General Plan because the proposed restoration involves removal of only a few individual, nonnative trees and enhancement of habitat for rare and endangered species.

Similar to the actions taken at the other 31 Natural Areas, the Sharp Park restoration activities would not result in changes to land use and would not conflict with plans, policies, or regulations of a jurisdictional agency; therefore, the impact would be ***less than significant***. The potential impacts of restoration on the historic Sharp Park Golf Course and Clubhouse are discussed in Section V.D, Cultural and Paleontological Resources.

Existing Character

Programmatic Impacts

Impact LU-7: Implementation of programmatic projects under the SNRAMP would not have a substantial impact upon the existing character of the vicinity. (Less than Significant)

The programmatic projects planned under the SNRAMP (large-scale tree removal, large-scale erosion control projects, trail development or rerouting, or other projects involving an increased recreational use of an area) would introduce restoration activities at Natural Areas. The programmatic projects include changes to vegetation and trails at 32 Natural Areas. At some parks, the change in tree coverage would be minimal (two percent of trees), while in others it would be more noticeable (20 percent of trees). In Natural Areas where large numbers of trees would be removed, the removal would be gradual and would return the vegetation to a state more consistent with the area's original character. Overall, 18,448 invasive trees would be removed, representing 16 percent of the invasive trees in the Natural Areas. At Natural Areas other than Sharp Park, 3,448 invasive trees (approximately 5 percent of the invasive trees in those Natural Areas) would be replaced one-to-one with native trees. There are no projects that would result in a change in land use. Given that there are no proposed changes to the land use and the tree removal and replacement is limited, there would be no substantial impact upon the existing character of the vicinity. Additional information regarding visual impacts and recreation impacts of the proposed project are discussed in V.C, Aesthetics, and V.F, Recreation.

Sharp Park is one of the largest SFRPD parks and is primarily surrounded by open space. The Pacific Ocean represents the western boundary. The Mori Point GGNRA property borders the southwestern edge, and the Sweeney Ridge GGNRA property borders the park on the southeastern and eastern edges. Undeveloped areas within the cities of Pacifica and San Bruno constitute the northern boundary. At Sharp Park, approximately 15,000 invasive trees would be removed and replaced with other native vegetation and approximately 39,000 invasive trees would remain. The proposed tree removal would occur primarily in remote areas of the Natural Area and would not be noticeable enough to alter the character of the Natural Area or of the vicinity. The impact of tree

removal as seen from points outside of Sharp Park is discussed further in V.C, Aesthetics, and recreation impacts associated with the SNRAMP are discussed in V.F, Recreation. Given the similarity of land uses in the vicinity and no proposed changes to the land use, there would be no substantial impact upon the existing character of the vicinity.

The proposed programmatic projects under the SNRAMP would not result in a substantial change in the existing character of the vicinity for each Natural Area; therefore, the impact would be ***less than significant***.

Project-level Impacts (Routine Maintenance)

Impact LU-8: Implementation of routine maintenance activities under the SNRAMP would not have a substantial impact upon the existing character of the vicinity. (Less than Significant)

Routine maintenance activities (removing invasive plants, installing plants, removing trees, maintaining trails, and maintaining catchment basins and sediment) would maintain the existing land uses of the Natural Areas and their presence within the surrounding communities. In the context of maintenance projects already occurring in the Natural Areas as a result of the 1995 plan and the scale of the proposed activities, the project would not result in a substantial change in the character of the vicinity. There are no proposed changes to land use as part of the routine maintenance activities under the SNRAMP; therefore, there would be no substantial impact upon the existing character of the vicinity, and the impact would be ***less than significant***.

Project-level Impacts (Sharp Park Restoration)

Impact LU-9: Implementation of the Sharp Park restoration activities under the SNRAMP would not have a substantial impact upon the existing character of the vicinity. (Less than Significant)

Sharp Park is one of the largest SFRPD parks and is primarily surrounded by open space. While the proposed restoration activities would modify the wetland complex, those changes would not alter the overall character of the Natural Area or of the vicinity. Given the similarity of land uses in the vicinity and no proposed changes to the land use as part of the Sharp Park restoration, there would be no substantial impact upon the existing character of the vicinity, and the impact would be ***less than significant***.

Cumulative Impacts

Impact LU-10: The proposed project, in combination with other planned and foreseeable future projects, would not result in a cumulatively considerable significant impact related to land use and land use planning. (Less than Significant)

As discussed above, the project would conform to the adopted goals, policies, and plans for the San Francisco and Pacifica. The proposed project would result in the implementation of management plans for actions within the Natural Areas. Surrounding land uses would not be affected. The proposed project would not result in changes to the Natural Areas that would divide an existing community, conflict with plans and policies established for protecting the environment, nor would the SNRAMP result in substantial impacts on land use character; therefore, the project would not contribute to a cumulative impact on land use and land use planning.

V.C AESTHETICS

This section is a description of the aesthetics of the Natural Areas and an evaluation of the potential for environmental impacts from the proposed management activities. While the natural features of each Natural Area have aesthetic value, this analysis focuses on those Natural Areas with the greatest potential for significant impacts on their aesthetic appeal.

Comments related to aesthetics received during the NOP scoping process included concerns about the following:

- The effects of Mount Davidson tree removal on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion;
- Use of a scientific evaluation of aesthetics to address the effects of tree removal, such as on Mount Davidson;
- The impacts on views from the surrounding residences as a result of the three Sharp Park Golf Course scenarios;
- Adverse aesthetic impacts from poor maintenance of the Natural Areas.

V.C.1 Regulatory Setting

San Francisco General Plan

Map 1 in the Urban Design Element in the San Francisco General Plan identifies important vista points to be protected (CCSF 2005a). The Urban Design Element in the San Francisco General Plan also contains a map of Outstanding and Unique Areas, further described under Section V.C.2.

The San Francisco General Plan does not identify protected scenic vistas in the Recreation and Open Space Element or the Transportation Element (CCSF 2007a, 2005b), nor does the City of Pacifica General Plan identify protected scenic vistas in the Scenic Highways Element, the Conservation Element, the Open Space Element, or the Community Design Element (City of Pacifica 1980a). Also, there is no designated state or county scenic highway[1] near the proposed project (California Department of Transportation 2008). Highway 1 is an eligible State Scenic Highway.

[1] Scenic highway—a highway from which a high quality scenic natural landscape can be seen by travelers and with little intrusion by development.

The following principles for city pattern relating to parks are found in the Urban Design Element of the San Francisco General Plan (CCSF 2005a):

- "Where large parks occur at tops of hills, low-rise buildings surrounding them will preserve views from the park and maintain visibility of the park from other areas of the city. Comment: Areas around Mount Davidson and Twin Peaks have a pattern of low development. The hilltops are therefore citywide focal points of natural landscape, functioning much as Telegraph Hill's summit does in the North Beach area."
- "Landscaped pathways can visually and functionally link larger open spaces to neighborhoods. Comment: The roadside planting of Park Presidio and Sunset Boulevard, and the landscape connections between Mount Sutro, Twin Peaks, Laguna Honda and Glen Canyon are examples of a system that links parks and other open spaces to one another. Such linkages, creating strong defining features, can be extended to other parts of the city."

The General Plan notes the importance to residents and visitors of general scenic vistas, such as those involving ridgelines and beaches.

California Coastal Act

The California Coastal Act includes specific policies that address issues such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works. Those policies applicable to aesthetics are discussed in Section IV.A.12.

V.C.2 Environmental Setting

Scenic Vistas

A scenic vista is a visually appealing view of the distant broad landscape. Map 1 in the Urban Design Element in the San Francisco General Plan identifies important vista points to be protected (CCSF 2005a). These specific vista points are throughout the City and include Natural Areas, such as Mount Davidson and Buena Vista Park. Also, almost all of the Natural Areas include trails, most of which provide general scenic views, such as those along the coast. Sharp Park borders the Pacific Ocean and is described in greater detail below under the Scenic Resources and Visual Character or Quality discussion.

The Golden Gate Park design is essentially a sequence of changing vistas. Some vistas provide long distance views, while others provide shorter views of spaces that bend out of sight, suggesting continuation and enticing the visitor. With few exceptions, the vistas are internal and contained by a dense perimeter planting to shield the surrounding city from view. Some vistas have been lost as plantings have matured. According to the Golden Gate Park Master Plan, where appropriate, historic vistas should be restored, such as the panoramic views from the top of Strawberry Hill (SFRPD 1998).

Scenic Resources and Visual Character or Quality

Scenic resources[2] are the visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features). The Urban Design Element of the San Francisco General Plan also contains a map of Outstanding and Unique Areas (CCSF 2005a) that includes Telegraph Hill, Russian Hill, Pacific Heights, Buena Vista and Upper Market, and Dolores Heights. Parks are part of the special components that make these areas outstanding and unique. The Buena Vista and Upper Market area includes or is next to Buena Vista Park, Corona Heights, and Tank Hill Natural Areas.

The visual character or quality of the Natural Areas is characterized as being undeveloped, being used for various designated purposes, and being surrounded by an urban environment. The Natural Area settings are described in detail in the SNRAMP (SFRPD 2006).

Described below are the Natural Areas with the greatest potential for aesthetics impacts due to the amount of tree removal that is proposed:

- *Sharp Park* borders the Pacific Ocean and is bisected by Highway 1. Laguna Salada and most of the Sharp Park Golf Course are on the western side of Highway 1; an archery range, the golf course, and extensive canyon are on the eastern side. Sanchez Creek originates in the upper canyon of Sharp Park and approximately bisects the park in an east-west direction. This park is surrounded by significant open spaces, including Mori Point and Sweeney Ridge. The Natural Areas account for approximately 237 acres within Sharp Park and encompass the upper canyon areas, portions of Sanchez Creek, and the Laguna Salada wetlands and associated vegetation. The vegetation of Sharp Park is dominated by invasive forest and a golf course, but also contains significant areas of wetlands and scrub vegetation (SFRPD 2006).

[2] Scenic resource—the visible physical features on a landscape

- *Mount Davidson*, the highest point in San Francisco, is in south-central San Francisco. Elevations range from approximately 600 to 900 feet above sea level. Developed facilities are minimal and include trails, access roads, a bus turnaround, Works Progress Administration (WPA) stairs and retaining walls, a water tank, and the cement cross (owned by the Council of Armenian-American organizations of Northern California and not part of the Natural Area). Forests dominate the landscape at Mount Davidson, covering three-quarters of the Natural Area (SFRPD 2006). As a highly visible focal point within the City that supports a diverse array of habitats, plants, and animals, Mount Davidson has high natural resource and recreational values for the citizens of San Francisco, include City views, high levels of recreational trail use, and extensive urban forest (SFRPD 2006).
- *McLaren Park* is near the southeast corner of San Francisco. Elevations in McLaren Park range from approximately 100 and 125 feet above mean sea level in the southern and northern corners of the park to just over 525 feet above mean sea level along Mansell Street. Recreation facilities within McLaren Park include over 11 miles of trails, tennis courts, ball fields, a golf course, picnic areas, overlooks, and an amphitheater. The Natural Area at McLaren Park is composed of grassland, scrub, and tree-dominated vegetation series. As one of the largest Natural Areas in the City, McLaren Park has high natural resource and recreation values for San Franciscans, including trails, scenic views, and extensive grasslands (SFRPD 2006).
- *Bayview Park* is in southeast San Francisco, east of Candlestick Point State Park and Candlestick Park. Developed areas within the Natural Area are limited to paved trails. The 43.9-acre Natural Area at Bayview Park encompasses the entire hill, except for the radio transmitters and private land on the northern and southern boundaries. Bayview Park is one of the more diverse Natural Areas, with vegetation that includes grasslands, shrub, and tree-dominated areas and a large number of sensitive plant species (SFRPD 2006).

  As a highly visible focal point within the City that supports a diverse array of habitats, Bayview Park has high natural resource and recreational values for the citizens of San Francisco that include recreation trails; historic WPA features; 360-degree views, including views of the City, San Francisco Bay, San Bruno Mountain, and downtown San Francisco; and extensive grasslands (SFRPD 2006).

As described in Section III.E.1, the design and aesthetic goals for the Natural Areas are as follows:

- Where possible, to develop aesthetically pleasing landscapes that are consistent with surrounding landscapes and that create natural transitions, especially where adjacent parklands and traditionally landscaped areas abut Natural Areas;
- To maintain and develop viewpoints and viewsheds to enhance park experiences; and
- Where possible, to design and maintain landscapes to discourage the accumulation of trash and illegal encampments.

Policy 1.5 in the Urban Design Element in the San Francisco General Plan emphasizes the special nature of each district through distinctive landscaping and other features (CCSF 2005a). This involves preserving what landscaping is there and installing or encouraging new landscaping.

V.C.3 Impacts

Significance Thresholds

A proposed project would have a significant aesthetics impact if it were to result in the following:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including trees, rock outcroppings, and other features of the built or natural environment, that contribute to a scenic public setting; or
- Substantially degrade the visual character or quality of the site and its surroundings.

Impacts Addressed in the Initial Study

In the Initial Study (Appendix A), no impacts related to the following criterion were identified:

- Create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties.

As a result, this CEQA significance criterion is not evaluated further in this EIR.

Significant Natural Resource Areas Management Plan Impacts

A visual quality analysis is somewhat subjective and considers the project in relation to the surrounding visual character, heights and building types of surrounding uses, its potential to obstruct public scenic views and its potential to create light and glare. (The proposed project does not include outdoor or indoor lighting or other components that would create new sources of light

or glare.) A proposed project would have an effect on the visual landscape if it were to cause a substantial demonstrable adverse change. With respect to scenic resources involving changes to vegetation, long-term impacts would involve the permanent loss of vegetation or the relatively long time needed for newly planted trees to reach the size of the trees they replaced; short-term impacts involve the relatively short time needed for replacement vegetation to mature.

The intensity of the impact depends, in part, on viewers and their sensitivity to changes to scenic resources at a Natural Area. Residents, for example, normally are sensitive to changes in their surroundings, as are recreational users of Natural Areas. However, roadway travelers might not be as sensitive because changes to the environment are in view for only a short time, and travelers are generally en route to other destinations.

Scenic Vistas

Programmatic Impacts

Impact AE-1: Implementation of programmatic projects under the SNRAMP would not have a substantial adverse effect on a scenic vista. (Less than Significant)

The proposed project does not include permanent human-made structures that would obstruct general scenic vistas, such as those involving ridgelines or vistas of San Francisco from Natural Area trails, described above under the Scenic Vistas discussion of Section V.C.2. The proposed project would not permanently restrict access to general scenic vistas. Although the removal of invasive trees would be noticeable, the trees would be replaced with either native trees or other native vegetation, such as native scrub or grassland species. As described in Section III.E.5 (page 92), the SFRPD would select the locations of replacement trees in the San Francisco Natural Areas to preserve views from important points. Because no general scenic vistas would be substantially altered or access to those vistas restricted, the project would have ***less than significant*** impacts on general scenic vistas.

Specific important viewpoints (identified above under the Scenic Vistas discussion of Section V.C.2), from which vistas are available, would also be affected by the project. These points are throughout the City and include Natural Areas, such as Mount Davidson. Approximately 95 percent of the trees proposed for removal in the SNRAMP are on Mount Davidson and in Sharp Park, McLaren Park, and Bayview Park. Although the removal of invasive trees would be noticeable, the trees in the San Francisco Natural Areas would be replaced with either native trees or other native vegetation, such as native scrub or grassland species, while ensuring that the views from important points are

preserved, as detailed in Section III.E.5 (page 92). While the one-to-one tree replacement ratio would not increase the total number of trees present, specific vistas would likely be altered by planted trees because site-specific conditions are unlikely to allow the new native trees to be planted in the exact same locations as the removed invasive trees. However, in some locations, trees would be replaced by native scrub or grassland species, which would open up views that are currently blocked by trees. No specific scenic vistas would be substantially altered through implementation of the SNRAMP; therefore, the programmatic projects would have ***less than significant*** impacts on scenic vistas.

Project-level Impacts (Routine Maintenance)

Impact AE-2: Implementation of routine maintenance under the SNRAMP would not have a substantial adverse effect on a scenic vista. (No Impact)

Routine maintenance activities involving invasive weed and tree removal, plantings, and maintenance of trails, catchment basins, and sediment dams are described in Section III.F.2. The scale of the routine maintenance would not be sufficient to substantially alter scenic vistas. Also, these activities already occur within the Natural Areas; therefore, there would be ***no impact*** on scenic vistas by routine maintenance.

Project-level Impacts (Sharp Park Restoration)

Impact AE-3: Implementation of Sharp Park restoration under the SNRAMP would not have a substantial adverse effect on a scenic vista. (Less than Significant)

The main components of the restoration are as follows, from Section III.F.2 (page 99):

- Dredging to remove sediment and decaying vegetation in Laguna Salada, Horse Stable Pond, and the channel that connects the two water bodies;
- Recontouring the shoreline to create shallow water habitat;
- Creating a habitat corridor between Horse Stable Pond and Laguna Salada;
- Creating an upland peninsula in the middle of the lagoon to provide snakes and frogs with refuge from feral cats and other predators; and
- Constructing upland mounds on the east side of the lagoon and between Laguna Salada and Horse Stable Pond.

The proposed project does not include permanent human-made structures that would obstruct general scenic vistas, such as those involving ridgelines. The proposed project would not permanently restrict access to Sharp Park vistas. Although the removal of invasive vegetation would be noticeable, the vegetation would be replaced, while ensuring that the views from important points are preserved. No vistas would be substantially altered; therefore, the Sharp Park restoration would have ***less than significant*** impacts on scenic vistas.

Scenic Resources

Scenic resources are the visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features). Changes to specific scenic resources of concern, such as vegetation, are described below.

Programmatic Impacts

Impact AE-4: Implementation of programmatic projects under the SNRAMP would not substantially damage scenic resources. (Less than Significant)

The proposed project would alter scenic resources within the Natural Areas. This would involve, for example, contouring the topography of an area differently and removing certain invasive vegetation to enhance habitat and establish native vegetation. Changes in vegetation include removing and replanting shrubs, bushes, and grasses and removing and replanting trees.

Impacts on scenic resources involving shrubs, bushes, and grasses would be noticeable and include diminished shrub, bush, and grass cover and altered composition and structure of this vegetation. Any adverse impacts on scenic resources involving removal of shrub, bush, and grasses would diminish as replanted vegetation matures.

Impacts on scenic resources involving trees would be noticeable and include diminished trees and altered composition and structure of this vegetation. Figures 4, 5, and 6 show the existing conditions and simulations of tree removal for Sharp Park and Mount Davidson, which have the highest number of trees planned for removal; in these figures, the red circles indicate the areas where noticeable tree removal is expected to occur. These figures simulate the anticipated results of tree removal from publicly accessible locations. The assumption is that the SFRPD intends to spread overall tree removal across the forested portion of a Natural Area and would not concentrate it in a particular location. Approximately 95 percent of all of the trees removed under the SNRAMP

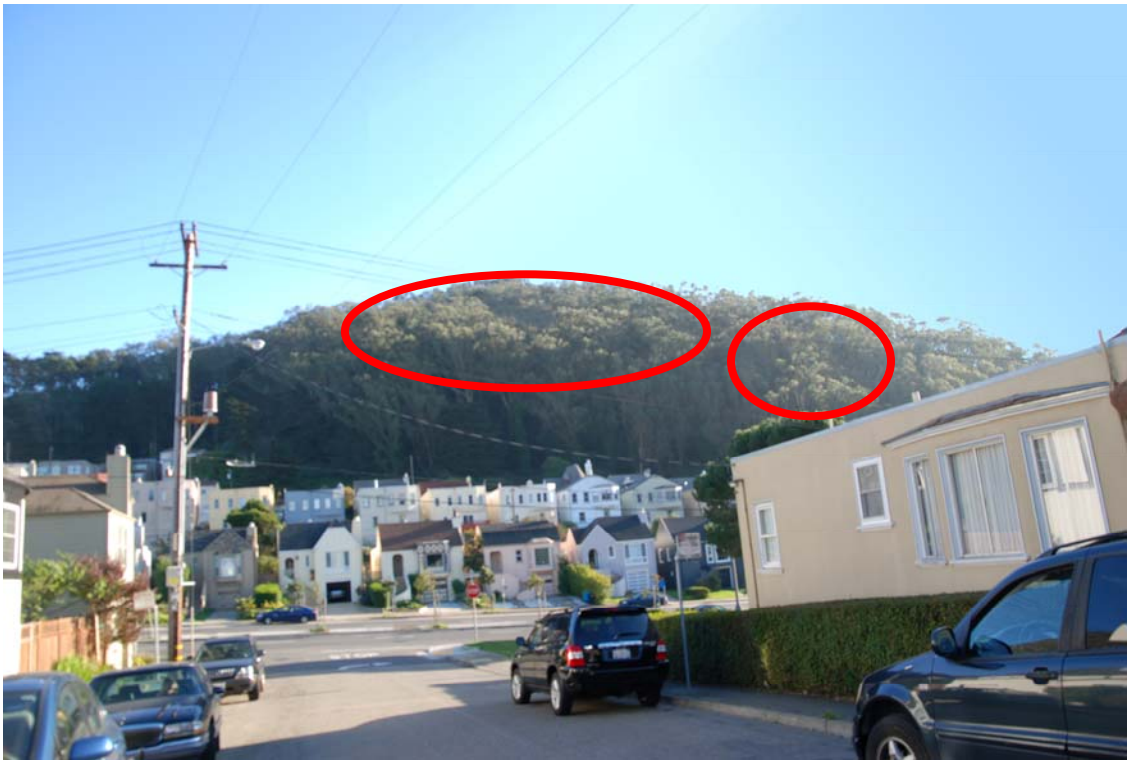
Figure 4: Sharp Park at Archery Site

Existing Conditions

Simulated Conditions

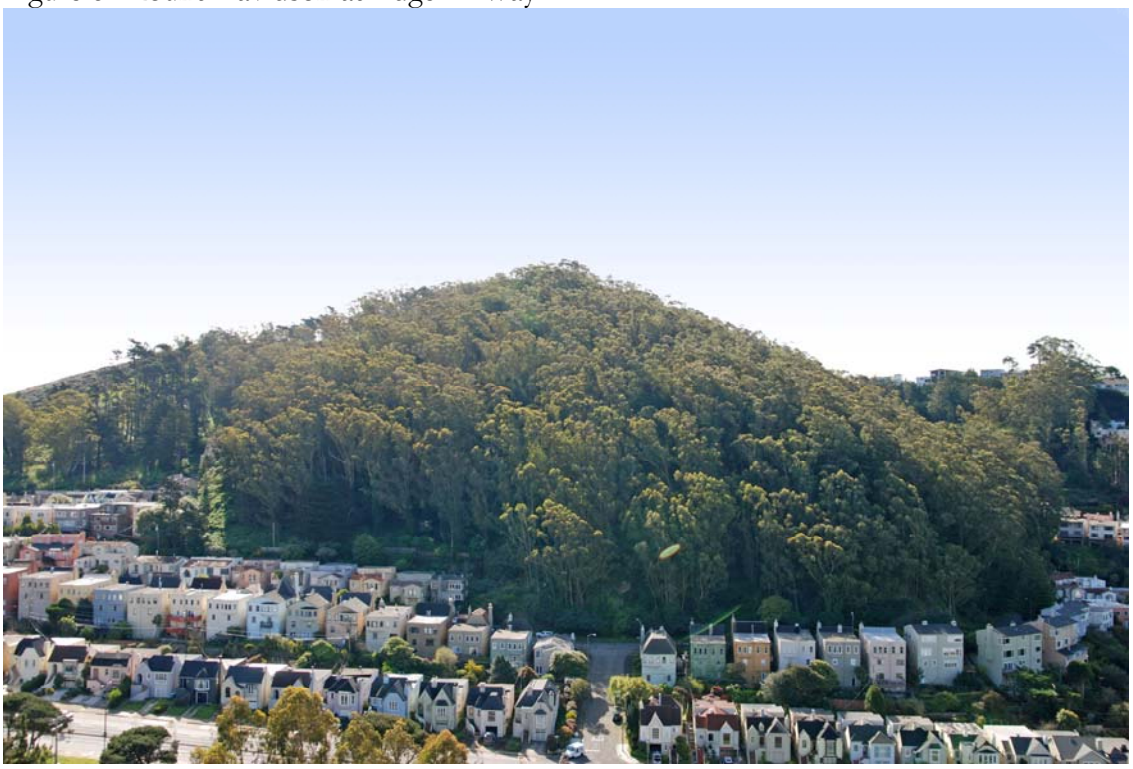
Figure 5: Mount Davidson at Twin Peaks Blvd at Panorama Drive

Existing Conditions



Simulated Conditions

Figure 6: Mount Davidson at Edgehill Way



Existing Conditions

Simulated Conditions

are on Mount Davidson and in Sharp Park, McLaren Park, and Bayview Park. Removing clusters of 20 or more trees on over half an acre would still leave the surrounding forest and its aesthetic value intact. Also, no Landmark Trees would be removed or altered. Furthermore, the large-scale removal of trees would occur over time and not simultaneously in a particular portion of a Natural Area, thereby making the loss of trees less perceptible. As shown in the visual simulations, most of the impacts would not be visible from distant viewpoints but would require a viewer to be close to the tree removal areas. From close-range locations, the overall vegetated character of the areas would be retained. The impacts would be long-term because of the relatively long time needed for newly planted trees to reach the size of the trees they replace. However, as shown in Figures 4, 5, and 6, in long-range views, tree removal would be unnoticeable.

Although scenic resources would be altered, over time, revegetation and the progression of natural processes would gradually reduce the magnitude of these impacts. Except for MA-3 forests, where both native and nonnative species would be used, all removed vegetation would be replaced with native vegetation that is more appropriate for the area's precipitation pattern, water availability, animal populations, and local ecosystems, thereby allowing the new vegetation to thrive more successfully than the invasive vegetation. It would also establish necessary habitat used by native fauna, which are associated with wildlife viewing. Promoting the natural integrity of the areas would ultimately reestablish the native scenic resources typical of the local Natural Area.

Because of the relatively short maturation time, there would be ***less than significant*** impacts involving shrub, bush, and grass cover by programmatic projects. Although some individuals may feel that any tree removal is an adverse effect, aesthetics are subjective, and the proposed project is not expected to result in a demonstrable adverse change; therefore, the impacts of tree removal by programmatic projects would be ***less than significant*** and would diminish as trees mature. Also, because the vegetation is better suited to local conditions, it is expected to require less maintenance and, therefore, less intrusion on the natural landscape by maintenance personnel and equipment. There would be fewer of the long-term improvements described above for MA-3 forests because replanting would not involve just native species, but also nonnative species.

Project-Level Impacts (Routine Maintenance)

Impact AE-5: Implementation of routine maintenance under the SNRAMP would not substantially damage scenic resources. (No Impact)

Routine maintenance activities involving invasive weed and tree removal, plantings, and maintenance of trails, catchment basins, and sediment dams are described in Section III.F.2. The

scale and nature of the routine maintenance would not be sufficient to substantially damage individual scenic resources. Also, these activities already occur within the Natural Areas; therefore, there would be ***no impact*** on scenic resources by routine maintenance.

Project-Level Impacts (Sharp Park Restoration)

Impact AE-6: Implementation of Sharp Park restoration under the SNRAMP would not substantially damage scenic resources. (Less than Significant)

The proposed project would alter scenic resources, for example, by recontouring some of the golf course holes and portions of the wetland complex and by converting vegetated areas to open water habitat. Changes in vegetation include removing certain invasive vegetation to enhance habitat and establish native vegetation. Changes to scenic resources involving vegetation would be noticeable and include diminished vegetation cover and altered composition and structure. These adverse impacts on scenic resources would diminish as the planted vegetation matures. Establishing more locally-native vegetation as a result of the Sharp Park restoration would improve scenic resources by emphasizing mature native vegetation more consistent with the local native landscape desired by the Natural Areas Program. Also, because the vegetation is better suited to local conditions, it is expected to require less maintenance and, therefore, less intrusion on the natural landscape by maintenance personnel and equipment. As a result, there would be ***less than significant*** impacts on scenic resources from Sharp Park restoration.

Visual Character or Quality

The impact criterion pertaining to scenic resources above discussed changes to specific scenic resources (such as vegetation). This criterion focuses on the broader visual character or quality of the Natural Areas. As defined above, the visual character or quality of the Natural Areas is characterized as being undeveloped, being used for various designated purposes (such as recreation), and being surrounded by an urban environment. After implementation of projects under the SNRAMP, the overall visual setting of the Natural Areas would still be characterized as undeveloped, used for various designated purposes, and surrounded by an urban environment. However, during construction, the visual setting of the Natural Areas would be altered by the presence of construction equipment. Construction-related impacts are short term, temporary and would not result in long term adverse impacts to the visual character of the Natural Areas.

Programmatic Impacts

Impact AE-7: Implementation of programmatic projects under the SNRAMP would not substantially degrade the visual character or quality of the Natural Areas and their surroundings. (Less than Significant)

The proposed project would be required to comply with the policies in the Urban Design Element of the San Francisco General Plan. During implementation of the proposed project, equipment such as trucks and bulldozers would be visible in and around the Natural Areas. The presence of the equipment and project activities would detract from the overall setting of the areas; while these impacts are normally negligible in urban settings, the scenic nature of the Natural Areas makes them an issue of concern for the proposed project. Heavy equipment use would be required in such areas as Sharp Park and may be used at Mount Davidson, McLaren Park, and Bayview Park, where vegetation would be removed on a large scale. Less visible equipment would also be part of project activities and would include, for example, community-based volunteer groups weeding and restoring the areas using hand tools. There would be short-term impacts on the overall setting of the Natural Areas due to the presence of equipment and equipment use would be limited in duration. Although the equipment and project activities would detract from the overall setting of the areas, the equipment and these types of activities are not considered out of place or new to these Natural Areas because the areas currently require maintenance and are surrounded by developed lands (urban areas). In all parks, including Natural Areas, equipment is used for maintenance, and the proposed activities would not be substantially different from the types of activities that are normally required to make repairs or improvements. The proposed project, however, would likely have more equipment than typical maintenance equipment and activities. There would be ***less than significant*** adverse impacts on the visual character or quality of the Natural Areas by programmatic projects because these impacts would be limited to the duration of construction and would involve equipment and activities similar to typical maintenance equipment and activities that already occur.

Project-Level Impacts (Routine Maintenance)

Impact AE-8: Implementation of routine maintenance under the SNRAMP would not substantially degrade the existing visual character or quality of the Natural Areas and their surroundings. (No Impact)

Routine maintenance activities involving invasive weed and tree removal, plantings, and maintenance of trails, catchment basins, and sediment dams are described in Section III.F.2. The scale of the routine maintenance would not be sufficient to substantially degrade the visual

character or quality of the Natural Areas. Also, these activities already occur within the Natural Areas; therefore, there would be ***no impact*** on the visual character and quality of the Natural Areas.

Project-Level Impacts (Sharp Park Restoration)

Impact AE-9: Implementation of Sharp Park restoration under the SNRAMP would not substantially degrade the existing visual character or quality of the Natural Areas. (Less than Significant)

During implementation of the proposed project, equipment such as trucks and bulldozers would be visible. The presence of the equipment and project personnel would detract from the overall setting of the area. Less visible equipment would also be part of project activities and include, for example, community-based volunteer groups weeding and restoring the areas using hand tools. Impacts on the overall setting of the Natural Areas would be temporary because the presence of equipment and project personnel would be limited in duration. Therefore, similar to the analysis of programmatic projects, there would be ***less than significant*** adverse impacts on the visual character or quality of the area from Sharp Park restoration project.

Cumulative Impacts

Impact AE-10: The proposed project, in combination with other planned and foreseeable future projects, would not result in a cumulatively considerable significant impact on aesthetics. (Less than Significant)

Cumulative impacts on visual resources would occur during construction and operation of cumulative projects over the course of the SNRAMP's 20-year implementation. The geographic context for the analysis of visual resources is limited to the area surrounding the Natural Areas. As a result, cumulative projects relevant to this analysis typically involve construction activities, such as the Hunters Point Shipyard/Candlestick Park Redevelopment project.

Cumulative development projects in the vicinity of Natural Areas involve construction activities and would involve equipment such as trucks and bulldozers, which would be visible. The presence of construction equipment and activities from cumulative projects would detract from the visual resources associated with Natural Areas. Although equipment and project personnel would detract from the visual resources, they are not considered out of place or new to these Natural Areas or to the surrounding urban environment. Depending on the amount, type, and timing of construction of cumulative projects, cumulative impacts on visual resources could range from short term to long

term. Given the size and nature of the cumulative projects, any adverse cumulative impacts on aesthetic resources would be less than significant.

Operation and maintenance activities of the cumulative projects could involve vegetation changes. Vegetation would likely be removed to accommodate cumulative project needs. The removal of vegetation under cumulative projects would diminish visual resources by decreasing the amount of natural vegetation. Initially, impacts on visual resources, such as diminished vegetation and its altered composition and structure, would be noticeable. However, the contribution from other cumulative projects to enhancing or diminishing the visual character or quality of the areas would depend on their permanent removal or addition of vegetation to the landscape. For example, depending on the cumulative project, trees may need to be planted or replaced, which would reduce cumulative adverse impacts; other types of vegetation, such as shrubs, bushes, and grass, may not require replacement. Also, larger SFPUC cumulative projects may require planting/revegetation plans; consequently, assuming cumulative projects did not reduce the overall amount of vegetation, cumulative adverse impacts involving vegetation would be short term and long term but not significant.

With the uncertain timing of the SNRAMP, it may or may not be implemented in a timeframe that contributes to the impacts of the other cumulative projects. The proposed project is designed to eventually improve the visual character and quality of the areas by establishing vegetation that is more consistent with the native character desired by the Natural Areas Program. As a result, initial project activities would result in adverse impacts similar to the cumulative projects. These include, for example, equipment and activities detracting from the visual resources, as well as diminished vegetation and its altered composition and structure. However, as vegetation matures, the proposed project's contribution to cumulative adverse impacts on visual resources would lessen. Over time, promoting the natural integrity of the Natural Areas would ultimately reestablish the native scenic resources typical of the local Natural Area, resulting in a ***less than significant*** contribution to cumulative impacts.

V.D CULTURAL AND PALEONTOLOGICAL RESOURCES

This section describes the cultural and paleontological resources of the Natural Areas and the potential for the proposed project to impact those resources. To support this analysis, an archaeological sensitivity assessment of the Natural Areas (King 2010), a historical resources evaluation (HRE) of Sharp Park Golf Course (Mates 2011), and historic resource evaluation responses (HRERs) for Sharp Park and Mount Davidson (CCSF 2011a, 2011b) were completed. The HRE and HRERs are included in Appendix C. The archaeological sensitivity assessment is a legally confidential document.

Comments related to cultural and paleontological resources received during the NOP scoping process included concerns about the following:

- Recognizing the Sharp Park Golf Course as a significant historic architectural resource;
- Consideration of the history of the Sharp Park Golf Course, which was designed by Allister MacKenzie, with the club house designed by Willis Polk's design firm; and
- Mount Davidson park and monument as important historic entities that should be recorded and documented for listing on the California Register of Historical Resources; keeping any historical trails created and enhanced as part of the WPA projects maintained and open.

V.D.1 Regulatory Setting

Under CEQA, cultural resources[1] listed on, or determined to be eligible for listing on, the California Register of Historical Resources (CRHR) or a local register are those that must be given consideration in the CEQA process. The CRHR is in the California Code of Regulations, Title 14, Chapter 11.5. According to this code, properties listed on or formally determined to be eligible for listing on the National Register of Historic Properties (NRHP) are automatically eligible for listing on the CRHR. A resource is generally considered to be historically significant under CEQA if it meets the criteria for listing on the CRHR.

The CRHR criteria closely parallel those of the NRHP, and historic significance is judged by applying both sets of criteria. The NRHP criteria are identified as Criterion A through Criterion D and the CRHR criteria as Criterion 1 through Criterion 4. The NRHP guidelines state that a historic resource's "quality of significance in American history, architecture, archeology, engineering and

[1] Cultural resource—A generic term that may be used to refer to architectural resources, archaeological resources, traditional cultural properties, or sacred sites regardless of NRHP or CRHR evaluation.

culture" is determined by meeting at least one of four main criteria. Properties may be significant at the local, state, or national level:

Criterion A: Association with events or trends significant in the broad patterns of our history;

Criterion B: Association with the lives of significant individuals;

Criterion C: A property that embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or that possesses high artistic values;

Criterion D: Has yielded, or is likely to yield, information important to history or prehistory.

In general, Criterion D is used to evaluate historic sites and archaeological resources.

Under the CRHR criteria, each resource must be determined to be significant at the local, state, or national level under one of the four criteria paraphrased below:

Criterion 1: Resources associated with important events that have made a significant contribution to the broad patterns of our history;

Criterion 2: Resources associated with the lives of persons important to our past;

Criterion 3: Resources that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master;

Criterion 4: Resources that have yielded, or may be likely to yield, information important in prehistory or history.[2]

A resource is considered eligible for inclusion on the CRHR, and therefore a potential historical resource under CEQA, if it is at least 45 years of age. To be eligible for listing to the CRHR under Criteria 1, 2, or 3, an archaeological resource must contain artifact assemblages, features, or stratigraphic relationships associated with important events or important persons, or be exemplary of a type, period, or method of construction. To be eligible under Criterion 4, a resource need only show the potential to yield important information.

[2] California Public Resources Code, Sections 4850 through 4858; California Office of Historic Preservation, "Instructions for Nominating Historical Resources to the California Register of Historical Resources," August 1997.

CEQA requires that the effects of a project on an archaeological resource be taken into consideration. CEQA recognizes archaeological resources as being potential instances of a "unique archaeological resource" or of a "historical resource." However, it must first be determined if the archaeological resource is a historical resource, that is, if the archaeological resource meets the criteria for listing on the CRHR. An archaeological resource that qualifies as a historical resource under CEQA generally qualifies for listing under Criterion 4 of the CRHR. An archaeological resource may qualify for listing under Criterion 4 when it can be demonstrated that it could significantly contribute to questions of scientific/historical importance. The research value of an archaeological resource can be evaluated only within the context of the prehistoric/historical background of the site of the resource and within the context of prior archaeological research related to the property type.

Artifacts, objects, or sites that do not meet the above criteria are not considered unique archaeological resources. Impacts on archaeological resources that are not unique and those that do not qualify for listing on the CRHR or a local register receive no further consideration under CEQA.

Paleontological resources include fossilized remains or traces of animals, plants, and invertebrates, including their imprints, from a previous geological period. Collecting localities and the geologic formations containing those localities are also considered paleontological resources. They represent a limited, nonrenewable, and impact-sensitive scientific and educational resource.

Impacts on Native American burials are considered under California Public Resources Code 15064.5(d)(1). The SFRPD's treatment of human remains and of associated or unassociated funerary objects discovered during any soils-disturbing activity would comply with applicable state laws.

Historical architectural resources under CEQA are buildings, structures, or objects, including historic landscapes. The National Park Service's *Preservation Brief 36* defines a cultural landscape as "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other values." There are four general types of cultural landscapes, one of which is the historic designed landscape. National Park Service *National Register Bulletin 18*, "How to Evaluate and Nominate Designed Historic Landscapes," defines a historic designed landscape as one that "has significance as a design or work of art; was consciously designed and laid out by a master gardener, landscape architect, architect, or horticulturalist to a design principle, or an owner or other amateur using a recognized style or tradition in response or reaction to a recognized style or tradition; has a historical association with a significant person, trend, or event, etc. in landscape gardening or landscape architecture; or a significant relationship to the theory or practice of landscape architecture." *Bulletin*

18 goes on to list golf courses as an example of grounds designed or developed for outdoor recreation or sports that fall under the category of a designed historic landscape. Therefore, Sharp Park Golf Course was evaluated for its historic significance as a designed historic landscape.

The CEQA Area of Potential Effect (C-APE) is the area for which impacts on cultural resources under CEQA are analyzed for a proposed project. Different C-APEs were used to determine the potential impacts on archaeological resources and historical architectural resources that could result from the proposed project. The C-APE for archaeological resources was defined for the proposed project to include the surface and subsurface areas that would be directly affected by ground disturbance and project activities and is generally considered to be the boundary of each Natural Area. The architectural C-APE also includes the boundary of each Natural Area, but was established to also address nearby historical resources that could be indirectly affected. In general, the architectural C-APE includes historical resources from which the Natural Areas and their associated activities would be audible or visible. Examples of historical resources within the Natural Areas are historic landscapes, historic furniture (such as park benches and water fountains), and built resources (such as staircases, walls, and street lights, and any buildings or structures, such as bridges and restrooms).

California Coastal Act of 1976

The California Coastal Act applies to projects that result in the diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes occurring in the coastal zone. The act limits these activities to certain types of projects (restoration projects, for example, are included among the permitted projects) and stipulates criteria under which development is permitted. The California Coastal Act also includes specific policies that address issues such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works. Those policies applicable to cultural and paleontological resources are discussed in Section IV.A.12.

V.D.2 Environmental Setting

To determine project impacts on the various types of cultural resources, records searches were requested in June and October 2008 from the California Historical Resources Information System's Northwest Information Center (NWIC) at Sonoma State University (File Nos. 07-1792 and 08-0414). A third records search was requested in November 2009 for the newly added Everson/Digby Natural Area (File No. 09-0630). Additionally an archaeological sensitivity assessment for all of the

Natural Areas (King 2010), an HRE for the Sharp Park Golf Course (Mates 2011), and HRERs for the Sharp Park and Mount Davidson Natural Areas (CCSF 2011a, 2011b) were completed based on these records searches and additional research.

All of the Natural Areas were covered by a study of pre-Spanish ecology of the Bay Area (Mayfield 1978). Previous overviews (general discussions of resources that did not include field surveys) and field surveys (field studies completed specifically to identify archaeological or historic architectural resources) have been conducted within nine of the 32 Natural Areas. The Balboa Natural Area has been partially addressed in two overviews (Mayer 1995; Olmsted and Olmsted 1979) and one linear field survey[3] (Chavez and Ramsey 1979). Bayview Park has been completely covered by a regional overview (Hupman and Chavez 2001) and was partially covered by a linear field survey (Hupman and Chavez 2004). Everson/Digby has been fully covered by three overviews (Espey, Huston, & Associates and Dames & Moore 1993; Milliken 1983; Rudo 1982); no field surveys have been conducted in the Natural Area. Hawk Hill has been fully covered by an archaeological field survey (CCSF 1987). India Basin Shoreline Park has been addressed by one cultural resource overview (Gualtieri and Wall 1987), one archaeological field survey (Praetzellis et al. 1994), and one linear archaeological field survey (Hupman and Chavez 1995). Lake Merced has been partially addressed in one regional cultural resource overview (Shoup and Baker 1981), three field surveys (David Chavez and Associates 1993; Heid 1964; Willer and Albee 1957), and one subsurface testing project (Chavez 1988). Palou-Phelps has been partially covered by three linear archaeological field surveys (BioSystems Analysis 1989; Nelson et al. 2002; Sawyer et al. 2000). Pine Lake Natural Area is part of the historic district of Stern Grove and Pine Lake Park and has been entirely covered by a cultural landscape report, with register evaluations that included both archaeological and architectural field surveys (Bradley and Corbett 2004). The preparers of the cultural landscape report determined that Pine Lake Park appears to be eligible as a historic district under NRHP Criterion A and CRHR Criterion 1 at the local level of significance because of its association with settling the western portion of San Francisco, the state-wide eucalyptus boom, WPA-related park and recreation construction in San Francisco during the Great Depression, the Stern Grove Festival, and with the development of recreation facilities in San Francisco. Also, Pine Lake Natural Area was partially covered by a separate archaeological field survey (EDAW and Ward and Associates 2006). Sharp Park has had nine overviews and surveys within and next to it, according to the NWIC database. The Natural Area itself has been partially covered by four archaeological field surveys (Cartier 1984; Melandry 1977; Orlins and Schwaderer 1994; Pastron 2008), two linear archaeological field surveys

[3] The term "linear field survey" is used to refer to a field survey that was limited to a corridor, such as for pipelines, utilities, and roads.

(Clark 2006; Moratto 1974), and one archaeological field survey with a historic study and register evaluation (Clark 2007). The San Francisco Planning Department provided an additional survey report, Pastron (2008), specific to the Sharp Park Rifle Range. The other 23 Natural Areas have not been covered by a field survey or a cultural resource overview specific to those areas. These Natural Areas include: 15th Avenue Steps, Bernal Hill, Billy Goat Hill, Brooks Park, Buena Vista Park, Corona Heights, Dorothy Erskine Park, Duncan-Castro, Edgehill Mountain, Fairmont Park, Glen Canyon Park, Golden Gate Heights, Golden Gate Park Oak Woodlands, Grandview Park, Interior Green Belt, Kite Hill, Lakeview/Ashton Mini Park, McLaren Park, Mount Davidson, O'Shaughnessy Hollow, Rock Outcrop, Tank Hill, and Twin Peaks.

Based on the records searches, the archaeological sensitivity assessment, HRE, and HRER, nine Natural Areas contain documented archaeological or architectural cultural resources (Balboa, Bayview Park, Bernal Hill, Brooks Park, Corona Heights, Lake Merced, Mount Davidson, Sharp Park, and Tank Hill). An additional seven Natural Areas (15th Avenue Steps, Buena Vista Park, Golden Gate Park Oak Woodlands, India Basin Shoreline Park, Palou-Phelps, Pine Lake, and Twin Peaks) do not contain documented resources but have cultural resources in the vicinity of the C-APE. No archaeological or architectural resources were documented within or near the remaining 16 Natural Areas.

Architectural Resources

Based on the NWIC records search results, one historic building, the Golden Gate Park Conservatory (CA-SFR-37H [P-38-0037]), is next to the Golden Gate Park Oak Woodlands Natural Area (Oak Woodland, Lily Pond, and Whiskey Hill). Historic canal features associated with the Spring Valley Water Company's water system (CA-SFR-102H [P-38-0093]) are within the Lake Merced Natural Area. The Pine Lake Natural Area is part of the Stern Grove and Pine Lake Park (P-38-4472) historic district. Natural Areas are within the following historic districts:

- *Stern Grove and Pine Lake Park.* As stated above, the historic district of Stern Grove and Pine Lake Park are eligible for listing in the NRHP and CRHR under Criteria A and 1.
- *Golden Gate Park.* Golden Gate Park Oak Woodlands Natural Area is within the Golden Gate Park historic district, which is listed on the NRHP. The Natural Areas of Lily Pond, Whiskey Hill, and Strawberry Hill are within the Golden Gate Park Historic District and all are contributing sites to the historic district (except Whiskey Hill Natural Area which is not named in the nomination form). Golden Gate Park historic district is significant under Criterion C for its landscape architecture as one of the pioneering examples of the large

urban park (Nelson 2003). Secondarily, the park has regional significance under Criterion A for social history as the first naturalistic landscape park in the western United States (Nelson 2003).

The Natural Areas that contain urban forest stands, as described in the SNRAMP in Appendix F, are Lake Merced, Glen Canyon Park, Bayview Park, McLaren Park, Mount Davidson, Interior Greenbelt, Dorothy Erskine Park, Corona Heights, and Sharp Park. None of the urban forests in these Natural Areas have been evaluated for their historic significance as potential historic resources. As such, the forest stands in these Natural Areas are treated as potentially historic urban forests or historic landscapes. Impacts on these urban forests are discussed in Section V.D.3.

Through coordination with the SFRPD and the San Francisco Planning Department's Preservation Specialists, additional cultural resources, primarily architectural, were identified that were not found through the NWIC records search (review for potential historic-period buildings or structures through the NWIC database is not comprehensive). This includes the Golden Gate Park Historic District, which incorporates Oak Woodlands Natural Area. This historic district was listed on the NRHP in October 2004 (NRIS 2008; Nelson 2004) and is therefore included on the CRHR as well. GIS data provided by the Planning Department indicate that numerous historic-aged buildings and structures are next to almost all of the Natural Areas. The Mount Davidson Cross is one of these resources; the cross is privately owned and is not part of the Mount Davidson Natural Area. The absence of this resource and other resources in the NWIC database indicates that the resource has not yet been formally documented and submitted to the California Office of Historic Preservation. Because of its historic age (45 years or older), the Mount Davidson Cross is considered a potential historical resource. To be formally determined a historical resource, the cross would need to be recorded and evaluated for eligibility for listing on the CRHR, in consultation with the San Francisco Planning Department's Preservation Specialists. Mount Davidson is also the location of WPA stairs and retaining walls (SFRPD 2006), which have been found to be eligible for listing on the CRHR under Criteria 1 and 3 (NRHP Criteria A and C) (Tetra Tech 2010).

Sharp Park appears to be the most sensitive Natural Area for cultural resources, based on the extent of documented historic activity there and the determination that Sharp Park Golf Course is a historic resource (Tetra Tech 2010). Sharp Park Natural Area is the location of a former 1930s State Relief Camp (Pastron 2008). As part of the camp's efforts to improve the local economy, San Franciscans "were paid 25 cents a day to plant trees, for example, along the valley bounded by Fairway Park and Sharp Park Road" (Hunter et al. 2002, *in* Pastron 2008). Many of these trees may still exist within the Sharp Park Natural Area. Sharp Park is also the location of the former Sharp Park Temporary

Detention Center used during World War II. The facility was one of two that held the largest number of Japanese individuals during this time. Following official closure of the detention center in 1946, a firing range was opened in 1952 but was closed in 1988 for safety concerns (Pastron 2008). One brick-and-wood structure, with a concrete porch, stairs, asphalt apron, and flagpole, as well as another similar but smaller building that once functioned as a restroom, have been identified and are associated with the detention center. Both buildings were believed to have been associated with the former rifle range. Pastron (2008) also documented a report by a member of the Pacifica Historical Society of isolated concrete stairs, possibly remnants of the State Relief Camp or the Detention Center.

In 2011, an HRE was completed by Tetra Tech, on behalf of the Planning Department, to evaluate the historical significance Sharp Park Golf Course. Sharp Park Golf Course was determined eligible for the CRHR and the NRHP under Criteria 1 and A, respectively, for its association with the growth of recreational golf in San Francisco and under Criteria 3 and C, respectively, as a historic landscape. The HRE resulted in the determination that Sharp Park Golf Course meets the criteria for listing on the NRHP for its significance under Criteria A and C and for listing on the CRHR under Criteria 1 and 3. The property's period of significance is from 1929 to 1932, which represent the construction dates for the course's original design.

Sharp Park Golf Course is significant under Criterion A/1, as a resource associated with important events that have made a significant contribution to the broad patterns of our history, because the course's construction is associated with the need within San Francisco for a third municipal golf course. The construction and development of Sharp Park Golf Course was a direct result of the overcrowding at Harding and Lincoln Park municipal courses and the City's desire to build a third course to accommodate San Francisco golfers. The construction of Sharp Park Golf Course represents a development pattern within the City of San Francisco and within the U.S. in general, in which golf was an increasingly popular sport. The years between 1910 and the late 1930s have been called the "golden age of golf" in the U.S. due to the fact that many of the great golf course architects designed courses during this period. Many of the courses, like Sharp Park Golf Course, are still in use today. The construction of Sharp Park Golf Course is directly associated with the growing popularity of recreational golf within the U.S. during the early twentieth century.

Sharp Park Golf Course is also significant under Criterion C/3, as a resource that embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master. The course is significant for its architecture and landscape architecture—a public golf course constructed between 1929 and 1932. Sharp Park Golf Course contains many distinctive elements of

its type, a golf course constructed on the oceanside, on sandy dunes, with original seaside holes that provide water hazards as part of the game. The course was designed by a well-known architect, with nuances, style, and innovation that enhanced golf courses constructed during this period in the U.S., many of which were private. The original layout of the golf course included holes featuring multiple tees, double fairways, cross bunkering, fairways in sand dunes, and several holes bordering Laguna Salada. Cypress trees dotted the setting. Although the course has been modified, it is common to modify a living landscape, although efforts to keep the fairways' general original course design were always in effect. Twelve of the original 18 holes are part of the current design, and two fairways are original but without original greens.

The golf course is also the work of a master. While there are other examples of Mackenzie's work that are more well known, Sharp Park Golf Course is an example of his idea of the perfect surroundings for a golf course—holes surrounded by sand dunes next to the seashore. Although alterations have been made to the course, during the period of significance the course retained Mackenzie's routing, surprise elements, and hole and fairway locations.

The clubhouse is a good example of an Eclectic architectural style, with Mission and Spanish elements, improved by the WPA during the Great Depression. The clubhouse was built to serve the golfers of Sharp Park Golf Course, is directly associated with the golf course, and is considered a historical character-defining feature of the golf course. It is a good representation of its architectural type and period, and its alterations have not diminished its historic integrity, as discussed below. The golf course clubhouse has consistently been used as a clubhouse for Sharp Park golfers, as was its original purpose. The presence of the golf course clubhouse helps to convey the historic character of the entire golf course.

Sharp Park Golf Course's character-defining features are the original features and design of the golf course clubhouse, the original permanent maintenance building, and the course's original layout, including the 12 remaining original holes (current holes 1, 2, 3, 8, 9, 10, 11, 13, 14, 15, 17 and 18) and original landscape features. The cypress trees that line the fairways also contribute to its significance, although none of the specific shrubs or trees on the property are considered contributors. The property's noncontributing features are the practice green, the maintenance trailers, the cart paths, the four holes that were moved to the east side of Highway 1, and other alterations that occurred after the period of significance. The golf course is therefore considered a historic resource under CEQA.

Historical architectural resources not yet evaluated for CRHR or NRHP eligibility were identified through the abovementioned NWIC records searches and correspondence with San Francisco Planning Department's Preservation Specialists. No historical architectural resources listed in Article 10 or Article 11 of the San Francisco Planning Code are within the architectural C-APE (CCSF 2003a; CCSF 2003b). One San Francisco Landmark Tree, a blue elderberry, is in the Bernal Hill Natural Area at the corner of Folsom Street and Bernal Heights Boulevard. The overwhelming majority of the proposed project's architectural C-APE have not been previously surveyed for historical architectural resources. As such, the presence of historical architectural resources within most of the architectural C-APE of the proposed project is unknown.

Archaeological Resources

Given the lack of field surveys and recorded archaeological sites within the Natural Areas, an archaeological sensitivity assessment was used to better assess the potential for the proposed project to impact archaeological resources.

Table 6 summarizes the assessed sensitivity of each Natural Area for subsurface and surface archaeological resources. The assessments were primarily deductive, based on site density, survey coverage, proximity to prehistoric and historic-era natural resources, extent of disturbances, and the presence of buried landforms suitable in age for human occupation in the Bay Area (Late Pleistocene, Holocene, or historic), and depositional environments suitable for preserving

Table 6
Archaeological Sensitivity of Natural Areas

Natural Area	Considerations	Archaeological Sensitivity
15th Avenue Steps	• Comparatively low site density in surrounding area; • Possible historic rock quarry and possibility for prehistoric use; • No survey coverage; • Limited natural resources; • Holocene landform; • Moderate natural and human disturbances.	Moderate
Balboa	• Comparatively high site density in surrounding area; • Redeposition of Golden Gate Park landfill may include subsurface archaeological resources associated with the Midwinter International Exposition; • Evidence of high rate of historic activity; • Partial survey coverage; • Active Holocene landform; • Extensive natural and human disturbances.	High
Bayview Park	• Comparatively high site density in surrounding area;	Moderate

Table 6
Archaeological Sensitivity of Natural Areas

Natural Area	Considerations	Archaeological Sensitivity
	• Possible historic rock quarry and possibility for prehistoric quarrying of outcrops; • Evidence of high rate of historic activity; • Minimal survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Extensive natural and human disturbances; • Productive surrounding natural environment, including freshwater source and associated productive riparian habitats.	
Bernal Hill	• Comparatively moderate site density in surrounding area; • Possible historic rock quarry and possibility for prehistoric quarrying of outcrops; • Evidence of high rate of historic activity; • No survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Moderate natural and human disturbances; • Productive surrounding natural environment, including freshwater source and associated riparian habitats.	Moderate
Billy Goat Hill	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops; • No survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Minimal natural and human disturbances; • Situated between three historic freshwater sources and associated productive riparian habitats.	Low
Brooks Park	• Comparatively low site density in surrounding area; • Possible historic rock quarry and possibility for prehistoric quarrying of outcrops; • No survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Minimal natural and human disturbances; • Near freshwater source and associated productive riparian habitats.	Low
Buena Vista Park	• Comparatively moderate site density in surrounding area; • No survey coverage; • Minimal soil/sediment depth over Holocene landform; • Moderate natural and human disturbances; • Next to freshwater source, associated productive riparian habitats, and other productive environments.	Moderate

Table 6
Archaeological Sensitivity of Natural Areas

Natural Area	Considerations	Archaeological Sensitivity
Corona Heights	• Comparatively moderate site density in surrounding area; • Possible historic rock quarry and possibility for prehistoric quarrying of outcrops; • No survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Moderate natural and human disturbances; • Next to freshwater sources, associated productive riparian habitats, and other productive environments.	Moderate
Dorothy Erskine Park	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops; • No survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Minimal natural and human disturbances; • Near freshwater sources and associated productive riparian habitats.	Low
Duncan-Castro	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops and exposures; • No survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Minimal natural and human disturbances; • Near freshwater sources and associated productive riparian habitats.	Low
Edgehill Mountain	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops and exposures; • No survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Moderate natural and human disturbances.	Low
Everson/Digby	• Comparatively low site density in surrounding area; • No survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Minimal natural and human disturbances; • Near freshwater sources and associated productive riparian habitats.	Moderate

Table 6
Archaeological Sensitivity of Natural Areas

Natural Area	Considerations	Archaeological Sensitivity
Fairmount Park	• Comparatively low site density in surrounding area; • No survey coverage; • Varied soil/sediment depth over pre-Holocene landform; • Moderate natural and human disturbances; • Near freshwater sources and associated productive riparian habitats.	Low
Glen Canyon Park	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops; • No survey coverage • Thin to deep sediments and soils over pre-Holocene landform; alluvial deposition; • Minimal natural and human disturbances; • Includes and is next to freshwater sources and associated productive riparian habitats.	High
Golden Gate Heights Park	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops; • No survey coverage; • Limited natural resources; • Holocene landform; • Moderate natural and human disturbances.	Low
Golden Gate Park Oak Woodlands (Lily Pond)	• Comparatively low site density in surrounding area; • Quarried lake may be historic, and Midwinter International Exposition-related deposits are possible; • No survey coverage; • Minimal soil/sediment depth over Holocene landform; • High degree of natural and human disturbances; • Limited natural resource availability.	Low
Golden Gate Park Oak Woodlands (Oak Woodlands and Strawberry Hill)	• Comparatively low site density in surrounding area; • Midwinter International Exposition-related deposits are possible; • No survey coverage; • Minimal soil/sediment depth over Holocene landform; • High degree of natural and human disturbances; • Limited natural resource availability.	Low
Golden Gate Park Oak Woodlands (Whiskey Hill)	• Comparatively low site density in surrounding area; • Midwinter International Exposition-related deposits are possible; • No survey coverage; • Extremely deep soil/sediment depth over Holocene landform; • High degree of natural and human disturbances; • Limited natural resource availability.	Moderate
Grandview Park	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of exposures; • No survey coverage; • Limited natural resources; • Pre-Holocene landform;	Low

Table 6
Archaeological Sensitivity of Natural Areas

Natural Area	Considerations	Archaeological Sensitivity
	• Moderate natural and human disturbances.	
Hawk Hill	• Comparatively low site density in surrounding area; • Complete survey coverage; • Limited natural resources; • Holocene landform and historic artificial fill; • Moderate natural and human disturbances.	Low
India Basin Shoreline Park	• Comparatively low site density in surrounding area; • Partial survey coverage; • Historic fill material over Holocene bay and estuarine mud; • Minimal natural and human disturbances of historic fill.	Moderate
Interior Greenbelt	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of exposures; • No survey coverage; • Pre-Holocene landform with soils varying in depth; • Minimal natural and human disturbances of historic fill; • Includes seasonal freshwater source and associated productive riparian habitats.	High
Kite Hill	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops; • No survey coverage; • Thin soils over pre-Holocene landform; • Minimal natural and human disturbances; • Within proximity to freshwater sources and associated productive riparian habitats.	Low
Lake Merced	• Comparatively high site density in Natural Area and surrounding area; • Partial survey coverage; • Holocene landforms with historic-era fill materials; • Moderate natural and human disturbances; • Includes major freshwater source and associated productive riparian/wetland habitats.	High
Lakeview/Ashton Mini Park	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops; • No survey coverage; • Minimal soil/sediment depth over pre-Holocene landform; • Minimal natural and human disturbances; • Near freshwater source and associated productive riparian habitats.	Low
McLaren Park	• Comparatively low site density in surrounding area; • Historic quarries are within the Natural Area and possibility for prehistoric quarrying of outcrops; • No survey coverage; • Varied soil/sediment depth over pre-Holocene landforms; • Moderate overall degree of natural and human disturbances;	High

Table 6
Archaeological Sensitivity of Natural Areas

Natural Area	Considerations	Archaeological Sensitivity
	• Comparatively numerous freshwater sources and associated riparian habitats within park and productive resource areas available.	
Mount Davidson	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops; • Highest peak in area likely to draw human activity; • No survey coverage; • Unknown soil/sediment depth over pre-Holocene landform; • Minimal degree of natural and human disturbances; • Near freshwater source and associated productive riparian habitats.	Moderate
O'Shaughnessy Hollow	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of outcrops. • No survey coverage; • Thin to deep sediments and soils over pre-Holocene landform; • Minimal natural and human disturbances; • Next to freshwater sources and associated productive riparian habitats.	High
Palou-Phelps	• High comparative site density in surrounding area; • Minimal survey coverage; • Minimal soil/sediment depth over pre-Holocene landform and historic fill materials; • Moderate natural and human disturbances; • Productive surrounding natural environment, including freshwater source and associated riparian habitats.	High
Pine Lake	• Moderate comparative site density in surrounding area; • Partial survey coverage; • Holocene landforms with historic-era fill materials; • Minimal natural and human disturbances; • Includes freshwater source and associated productive riparian/wetland habitats; major natural resources nearby.	High
Rock Outcrop	• Comparatively low site density in surrounding area; • Possibility for prehistoric quarrying of exposures; • No survey coverage; • Limited natural resources; • Pre-Holocene landform with almost no soils; • Minimal natural and human disturbances.	Low

Table 6
Archaeological Sensitivity of Natural Areas

Natural Area	Considerations	Archaeological Sensitivity
Sharp Park	• Comparatively high site density in and around Natural Area; • Partial survey coverage; • High degree of available natural resources; • Holocene landforms with soils no deeper than one foot; • High degree of human disturbances and moderate natural disturbances.	High
Tank Hill	• Comparatively low site density in surrounding area; • Unrecorded Spring Valley Water Company water tank foundation pad is within the Natural Area; • No survey coverage; • Thin soils over pre-Holocene landform and historic-era fill materials; • Moderate natural and human disturbances; • Near freshwater sources and associated productive riparian habitats.	High
Twin Peaks	• Comparatively low site density in surrounding area; • No survey coverage; • Thin soils over pre-Holocene landforms; • Extensive natural and human disturbances; • Limited natural resource availability.	Low

Source: King 2010

archaeological resources. Note that these evaluations are meant only as a preliminary assessment of surface and subsurface sensitivity for planning purposes and do not take into consideration proposed management actions at individual Natural Areas. Ground-truthing or additional, more detailed site-specific research may provide different results.

Native American Consultation

The Native American Heritage Commission (NAHC) was contacted to determine the presence of sacred sites[4] within or near the project areas that could qualify as historical or unique archaeological resources or contain human burials. The NAHC responded on June 19, 2008, that no such resources were identified in their files; however, the NAHC did provide a list of five Ohlone/Costanoan groups and individuals traditionally affiliated with the region that may be able to identify undocumented resources. SFRPD mailed consultation letters to the suggested contacts on July 17, 2008 (Appendix C). At the time of this publication, no responses had been received.

[4] Sacred site—locality of traditional significance or importance to a Native American community.

Paleontological Resources

A paleontological records search[5] was requested through the University of California Museum of Paleontology (UCMP). The records search results indicated the presence of five vertebrate localities within two miles of Sharp Park, all to the north or east (Holroyd 2008). These include vertebrate, mammal, and bird specimens all within Pleistocene formations. There are also a number of invertebrate fossil localities recorded in San Francisco, but none in or next to the Natural Areas. No known paleontological resources are within or next to any of the Natural Areas (Holroyd 2008), but these results may indicate the lack of paleontological surveys in the area.

V.D.3 Impacts

Significance Thresholds

A proposed project would have a significant impact on cultural and paleontological resources if it were to result in the following:

- Cause a substantial adverse change in the significance of a historical resource, as defined in §15064.5 of the CEQA Guidelines, including those resources listed in Article 10 or Article 11 of the San Francisco Planning Code;
- Cause a substantial adverse change in the significance of an archaeological resource, in accordance with §15064.5 of the CEQA Guidelines;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

Impacts Addressed in the Initial Study

The Initial Study and NOP did not address the significance of the SNRAMP's potential to affect cultural and paleontological resources. Therefore, this EIR evaluates the impacts of the SNRAMP's management actions for each of the 32 Natural Areas as they relate to cultural and paleontological resources. Cultural and paleontological resource impacts are identified based on the CEQA significance criteria set forth on this page.

[5] Paleontological resource—fossilized remains or traces of animals, plants, and invertebrates, including their imprints, from a previous geological period.

Significant Natural Resource Areas Management Plan Impacts

The potential for and the degree of impacts on archaeological resources are based on the archaeological sensitivity of each Natural Area, weighed against the varying types of activities proposed in the SNRAMP and the severity of surface disturbance involved. As outlined in Table 7 below, nine Natural Areas have a high level of sensitivity, ten have a moderate level (including the Whiskey Hill portion of the Golden Gate Park Oak Woodlands Natural Area), and 14 have a low level of sensitivity (including the Lily Pond, Oak Woodlands, and Strawberry Hill portions of Golden Gate Park Oak Woodlands Natural Area). Table 8 outlines three categories of surface disturbance, as defined by Wildesen (1982:Table 2.1).

Table 7
Distribution of the Natural Areas Across Archaeological Sensitivity Levels

Archaeological Sensitivity	Natural Areas	
Low	1. Billy Goat Hill 2. Brooks Park 3. Dorothy Erskine Park 4. Duncan-Castro 5. Edgehill Mountain 6. Fairmount Park 7. Golden Gate Heights Park 8. Golden Gate Park Oak Woodlands (Lily Pond, Oak Woodlands, and Strawberry Hill only)	9. Grandview Park 10. Hawk Hill 11. Kite Hill 12. Lakeview/Ashton Mini Park 13. Rock Outcrop 14. Twin Peak
Moderate	1. 15th Avenue Steps 2. Bayview Park 3. Bernal Hill 4. Buena Vista Park 5. Corona Heights	6. Everson/Digby 7. Golden Gate Park Oak Woodlands (Whiskey Hill only) 8. India Basin Shoreline Park 9. Mount Davidson
High	1. Balboa 2. Glen Canyon Park 3. Interior Greenbelt 4. Lake Merced 5. McLaren Park	6. O'Shaughnessy Hollow 7. Palou-Phelps 8. Pine Lake 9. Sharp Park 10. Tank Hill

Table 8
Definitions of Surface Disturbance Categories

Category	Definition
Severe	• Removal of litter, disturbance of soil greater than 2.5 centimeters deep. • Removal of the litter, A horizon,[6] a portion of the B horizon[7]; burial of the soils surface by at least 0.25 centimeters of soil material; or severe compaction of the mineral soil. • Where A horizons are disrupted sufficiently to expose B horizons. • Surface soil removed and subsoil exposed.
Moderate	• Removal of litter, soil disturbed to less than 2.5-centimeter depth.
Slight	• No removal of litter or soil. • Litter disrupted sufficiently to expose, partly or wholly, mineral soil. • Litter removed, soil exposed; litter and soil mixed 50-50; soil on top of litter or slash. • Undisturbed litter and topsoil still in place. • Litter; no compaction.

Source: Wildesen (1982:Table 2.1)

Note: 2.5 centimeters = approximately 1 inch.

Architectural Resources

Programmatic Impacts

Impact CP-1. Implementation of programmatic projects under the SNRAMP would result in a substantial adverse change in the significance of historical architectural resources, including historic landscapes. (Less than Significant with Mitigation)

Stabilizing hillsides by constructing erosion control measures, such as gabions, has the potential to alter historic landscapes by adding modern structures in the portion of a Natural Area where the action occurs. Because none of the Natural Areas have been evaluated for their potential to be historic landscapes, these historic resources could be present within one or more Natural Area. Also, assessing the impacts to a specific potentially historic landscape is not feasible without specific

[6]A Horizon—In a soil profile, the mineral horizon that forms at the surface or below an O horizon (dark-colored surface accumulation of organic matter). Characterized by the accumulation of decomposed organic matter, mixed with solid mineral grains, but the mineral portion of the matrix is dominant. Typically darker in color than underlying horizons.

[7]B Horizon—In a soil profile, the mineral horizon that forms below an A, E (matrix characterized by loss of clay, soluble iron, soluble aluminum, organic matter, or some combination of these), or O horizon. Horizon B shows little or no evidence of the original sediment or rock structure and is primarily characterized by illuvial concentrations (dissolved or suspended soil materials in one area) of clay, iron, aluminum, humus, carbonates, gypsum, or silica.

project details. As such, construction of erosion control structures may cause a substantial adverse change in the significance of such a historical resource, resulting in a significant adverse impact. Mitigation Measure M-CP-1 calls for determining if any proposed construction would impact historic resources under CEQA on a site-by-site basis and identifying measures to avoid any significant impacts to eligible historic architectural resources. As a result of implementation of M-CP-1, impacts to historical architectural resources from programmatic projects would be ***less than significant***. Other than the tree removal discussed below, no other management actions are expected to affect architectural resources.

M-CP-1: Consultation with the San Francisco Planning Department

The SFRPD would coordinate with the San Francisco Planning Department's Preservation Specialists and would submit plans before constructing stabilizing and erosion control measures that require installation of structures, such as gabions, near any potentially eligible resources. The Planning Department would determine if any proposed construction or other activities would impact historic resources under CEQA on a site-by-site basis; if such impacts may occur, the project would be required to be redesigned to avoid significant impacts to historic architectural resources.

Impact CP-2. Invasive tree and vegetation removal and planting activities, as part of programmatic projects, would not result in a substantial adverse change in the significance of historic landscapes or urban forests. (Less than Significant)

Several of the management activities proposed in the SNRAMP could adversely affect any present historical architectural resources. In addition to those discussed above, adverse effects could also result from vegetation changes within a Natural Area that may alter potential historic landscapes. Such changes include tree removal, which is proposed for 15 of the 32 Natural Areas and affects approximately 16 percent of the invasive trees in urban forests (San Francisco Park and Recreation Department 2006). As mentioned above, the Natural Areas that contain urban forest stands are Lake Merced, Glen Canyon Park, Bayview Park, McLaren Park, Mount Davidson, Interior Greenbelt, Dorothy Erskine Park, Corona Heights, and Sharp Park. These stands have not been evaluated for their historic significance; therefore, they are treated as potentially historic urban forests or historic landscapes.

Impact AE-1 in the Aesthetics section addresses the tree removal at Mount Davidson and Sharp Park and concludes that invasive tree and vegetation removal would not be noticeable at these Natural Areas and therefore it would not materially affect their significance as historic resources. Impacts to these potential historic resources through tree removal, which is detailed in Chapter III

and in the Urban Forestry Statements in Appendix F of the SNRAMP, could be beneficial to potential historic urban forests or historic landscapes because removing trees (through thinning and group selection) while maintaining the existing forest (which would occur in MA-3) would improve the health of the forest by relieving crowding and encouraging growth (SFRPD 2006). Other Natural Areas would experience less tree removal than Sharp Park and Mount Davidson, and, as a result, would experience lower impacts.

An HRER was prepared for Mount Davidson, and it was determined that invasive tree and vegetation removal as well as planting activities will not result in any significant changes to the historic landscape at Mount Davidson (CCSF 2011a). Selective tree removal would help to restore the historic balance of tree species within the forest and preserve its historic character. The project would not cause a substantial adverse change in the significance of the resource such that the significance of the resource would be materially impaired. For the other San Francisco Natural Areas containing urban forest stands, there would be a relatively lower amount of tree removal than Mount Davidson, and, as a result, similar or lower impacts to potentially historic landscapes.

Based on the above, invasive tree and vegetation removal would not result in a substantial adverse change in the significance of historic landscapes or historic forests and this impact would be ***less than significant***.

Impact CP-3. Invasive tree and vegetation removal activities as part of programmatic projects under the SNRAMP would not result in a substantial adverse change in the significance of the Golden Gate Park Historic District contributing sites. (Less than Significant)

Actions at Golden Gate Park Oak Woodlands Natural Area may affect Strawberry Hill and Lily Pond, both contributing sites within the Golden Gate Park Historic District and part of the Natural Area (Whiskey Hill is within the historic district but does not contribute to it). The proposed project activities at these sites in the Natural Area involve removing invasive trees and enhancing oak woodlands and scrub. Although activities may continue to transform the character of the forest canopy, they would contribute to a process that has been occurring over time and as a result, the proposed project would not significantly impact the Natural Area sites as contributors to the district. Since the individual Natural Area sites would not be significantly impacted, the overall character of the Golden Gate Park Historic District also would not be significantly impacted by the proposed project activities. Also, because plants and trees are living organisms that contribute to historic designed landscapes of each site and therefore to the district as a whole, change is a normal condition that has occurred over the history of the district and therefore would not diminish the

historic integrity of the park, a historic cultural landscape. Tree removal activities within this Natural Area would restore the area to more resemble its historic condition. As such, proposed tree removal would have a ***less than significant*** impact on the Golden Gate Park Historic District contributing sites.

Project-level Impacts (Routine Maintenance)

Impact CP-4. Invasive tree and vegetation removal and planting activities under the SNRAMP would not result in a substantial adverse change in the significance of historic landscapes or urban forests. (Less than Significant)

Minor tree and vegetation removal associated with routine maintenance would improve the health of the forest by relieving crowding and encouraging growth. Tree removal, as discussed in Impact CP-2, for programmatic projects, would not result in a significant impact to any potential historic landscapes. Therefore, routine maintenance activities including tree and vegetation removal and tree planting, would have a ***less than significant*** impact on historic landscapes or urban forests within the Natural Areas.

Impact CP-5. Invasive tree and vegetation removal as part of routine maintenance under the SNRAMP would not result in a substantial adverse change in the significance of the Golden Gate Park Historic District contributing sites. (Less than Significant)

Impacts of routine maintenance activities associated with invasive tree and vegetation removal would be similar to those described under Impact CP-3; however, routine maintenance would involve smaller scale tree and vegetation removal. Tree removal activities within this Natural Area would restore the area to more resemble its historic condition. As such, routine maintenance activities such as tree removal would have a ***less than significant*** impact on the Golden Gate Park Historic District and contributing sites.

Project-Level Impacts (Sharp Park Restoration)

Impact CP-6. Implementation of the Sharp Park restoration activities that include raising holes 10, 14, 15, and 18 would not result in a substantial adverse change in the significance of the Sharp Park Golf Course, a historic resource under CEQA. (Less than Significant)

As discussed in Section V.D.2, Sharp Park Golf Course meets the criteria for listing on the NRHP and CRHR for its significance under Criteria A and C and for listing on the CRHR under Criteria 1 and 3.

At Sharp Park, excavated dredged spoils appropriate for use as golf course substrate materials would be used on-site to raise Holes 10, 14, 15, and 18 and to create the upland habitat on the east edge of Laguna Salada. Although Holes 10, 14, 15, and 18 are included in Sharp Park Golf Course's character-defining features because these holes are some of the original features and design of the clubhouse, raising Holes 10, 14, 15, and 18 would not have a significant impact on the historical character-defining features of the golf course because the holes would remain in place and alterations would be made only to elevate the holes, which would not impact the historic integrity of the fairways. The holes would retain their appearance and therefore there would be a ***less than significant*** impact on the golf course from raising holes at the Sharp Park Golf Course.

Impact CP-7. Implementing restoration activities to close Hole 12 of the Sharp Park Golf Course would result in a substantial adverse change in the significance of the golf course, a historic resource under CEQA. (Significant and Unavoidable Impact with Mitigation)

The closure of Hole 12 at Sharp Park would have significant impacts on the historic character-defining features of the golf course because it would eliminate an original hole and fairway on the west side of the course, along the ocean. Hole 12 was originally designed as a 262-yard fairway. The hole was shortened in the early 1960s and was renumbered. Although Hole 12 has been altered from its original design, its closure and conversion to a habitat corridor would be a significant impact on the golf course because Hole 12 was included as part of the golf course design since its inception. The hole had always been at the edge of the lagoon or backed against the seawall. Using the area for habitat conservation and not as part of the golf course changes the boundaries of the golf course and its historic design. Therefore, closing Hole 12 would be a significant impact to the Sharp Park Golf Course. While replacing Hole 12 elsewhere on the course could be seen as a potential mitigation measure in that it would retain the course as an 18-hole facility, replacing it in a location other than its current location still diminishes its historical integrity as a character-defining feature of the golf course and would not sufficiently reduce the impact to less than significant. Implementing Mitigation Measure M-CP-7 would reduce the magnitude of this impact, but it would not sufficiently reduce it to a less than significant level. No additional feasible mitigation measures have been identified; therefore, closing Hole 12 would result in a ***significant and unavoidable*** impact on the Sharp Park Golf Course.

M-CP-7: Documentation of the Sharp Park Golf Course

The SFRPD would document, or would retain a consultant to document, Sharp Park Golf Course before the wetland restoration activities take place. The National Park Service has published guidance for preserving cultural landscapes in Preservation Brief 36: Protecting Cultural

Landscapes, Planning, Treatment and Management of Historic Landscapes and in the more complete Secretary of the Interior's Standards for Treatment of Historic Properties Guidelines for the Treatment of Cultural Landscapes. The appropriate level of documentation would be selected by a qualified professional who meets the standards for history, architectural history, or architecture (as appropriate) set forth by the Secretary of the Interior's Professional Qualification Standards, (36 CFR, Part 61). The documentation would consist of the following:

- Full sets of measured drawings depicting existing or historic conditions of the Sharp Park Golf Course;
- Digital photographs of Sharp Park Golf Course;
- A written history and description of Sharp Park Golf Course and its alterations.

The professional historian would prepare the documentation and submit it for review and approval by a San Francisco Planning Department Preservation Specialist. The documentation would be disseminated to the San Francisco Library History Room and the SFRPD Headquarters.

Impact CP-8. Implementation of the Sharp Park restoration activity to construct a post and rail fence along the seawall of the golf course would not cause a substantial adverse change in the significance of the Sharp Park Golf Course, a historic resource under CEQA. (Less than Significant)

The Sharp Park restoration proposes a post and rail fence which would be installed along the seawall, to the west of the lagoon, with additional fencing around the wetland complex to discourage human and pet intrusion into the restored habitat area. This fence would alter the visual appearance of the seawall and would add a modern element to the golf course. The seawall is not an original feature of the golf course but was constructed during its period of significance and would be a modern element within the historic setting of the course. Although construction of a fence would add a modern element to the course, it would not alter a historic character-defining feature of the course. Therefore, constructing a post and rail fence would have a ***less than significant*** impact on the golf course.

Impact CP-9. Implementation of the Sharp Park restoration activity that requires modification of the Sharp Park Golf Course to create upland habitat on the east side of the lagoon and shorten or narrow Holes 10 and 13 would be a substantial adverse change in the significance of the golf course, a historic resource under CEQA. (Significant and Unavoidable Impact with Mitigation)

Modifying approximately 13 acres of the golf course to create upland habitat along the east side of the lagoon to provide San Francisco garter snake upland habitat would require slightly shortening or narrowing Holes 10 and 13. The habitat corridor would be approximately six acres, bringing the total of modified area at the golf course to about 19 acres. These changes would substantially alter historic character-defining features, Holes 10 and 13. Implementing Mitigation Measure M-CP-7 would record the golf course in its existing condition and reduce the magnitude of this impact; however, M-CP-7 would not reduce it to less than significant. No additional feasible mitigation measures have been identified; therefore, shortening and narrowing Holes 10 and 13 would result in a ***significant and unavoidable*** impact on the Sharp Park Golf Course.

Archaeological Resources

Programmatic Impacts

Impact CP-10. Implementation of programmatic projects under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources in Natural Areas of high archaeological sensitivity. (Less than Significant with Mitigation)

Several of the programmatic project activities proposed in the SNRAMP could adversely affect archaeological resources, for example, rerouting or constructing trails, using heavy equipment, installing new structures, and removing weeds. Ground-disturbing activities could disturb surface and subsurface resources that would substantially alter the significance of an archaeological resource, resulting in a significant adverse impact.

The potential for adverse impacts is congruent with the expectation of legally-significant archaeological resources[8] within a Natural Area and the extent or nature of sub-surface disturbance involved with the project. Significant impacts are most likely to occur in the Natural Areas with high archaeological sensitivity—Balboa, Glen Canyon Park, Interior Greenbelt, Lake Merced, McLaren Park, O'Shaughnessy Hollow, Palou-Phelps, Pine Lake, Sharp Park, and Tank Hill.

[8] By the expression "legally-significant archaeological resource" is meant an archaeological resource that qualifies as an "historical resource" (Public Res. Code 15064.5(c))or as a "unique archaeological resource" (Public Res, Code 21083.2)under CEQA.

Therefore, programmatic project activities could have significant impacts on legally-significant archaeological resources, principally in areas of high archaeological sensitivity. With implementation of Mitigation Measure M-CP-10 for all programmatic projects in high sensitivity Natural Areas, impacts on archaeological resources would be ***less than significant***.

M-CP-10: Archaeological Monitoring Program for Programmatic Projects in Natural Areas with High Archaeological Sensitivity, Routine Maintenance Activities at Tank Hill and Lake Merced, and the Sharp Park Restoration Project

The following archaeological monitoring program (AMP) mitigation measure is required in order to avoid any potential adverse effect to archaeological resources as defined in CEQA Guidelines Section 15064.5(a)(c), as a result of SNRAMP programmatic projects in Natural Areas of high archaeological sensitivity and routine maintenance activities at Tank Hill and Lake Merced (see Impact CP-13). In addition, based on a reasonable potential that archeological resources may be present within the C-APE of the Sharp Park restoration project, the following measures shall be undertaken to avoid any potentially significant adverse effect from the Sharp Park restoration on archaeological resources (see Impact CP-14).

Before implementation of the SNRAMP and the Sharp Park restoration project, the SFRPD shall retain a qualified archaeological consultant from the San Francisco Planning Department's pool of qualified archaeological consultants, as provided by the Department archaeologist. The archaeological consultant will prepare one or multiple AMPs that addresses the following impacts on archaeological resources: 1) programmatic projects in Natural Areas with high archaeological sensitivity, 2) routine maintenance activities in Tank Hill and Lake Merced Natural Areas, and 3) the Sharp Park restoration project.

All plans and reports prepared by the consultant shall be submitted first and directly to the ERO for review and comment and shall be considered draft reports subject to revision until final approval by the ERO. Any AMP and/or data recovery programs required by this measure could suspend SNRAMP activities covered under this mitigation measure for up to four weeks. At the direction of the ERO, the suspension of construction could be extended beyond four weeks only if such a suspension were the only feasible means to reduce impacts to a less than significant level on a significant archaeological resource, as defined in CEQA Guidelines Sect. 15064.5 (a)(c).

Archaeological monitoring program. The AMP will minimally include the following provisions:

- The archaeological consultant, SFRPD, and ERO will meet and consult on the scope of each AMP reasonably before implementation of the SNRAMP. The ERO, in consultation with the Project Archaeologist, will determine what programmatic projects in which high-sensitivity Natural Areas and what routine maintenance activities in Tank Hill and Lake Merced Natural Areas shall be archaeologically monitored. Additionally, the ERO and Project Archaeologist will determine which activities and portions of the Sharp Park restoration project will be archeologically monitored. In most cases, any ground-disturbing activities, such as demolition, excavation, grading, utilities installation, site remediation, etc. shall require archaeological monitoring because of the potential risk these activities pose to archaeological resources and to their depositional context;
- In addition, the archaeological consultant will advise all project contractors and Natural Areas Program staff to be on the alert for evidence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of discovery of an apparent archaeological resource. A standard EP ALERT sheet will be issued to participating project contractors and Natural Areas Program staff. Additionally, Natural Areas Program staff will advise all project volunteers of the potential for archaeological resources;
- The archaeological monitors will be on the project site according to a schedule agreed on by the archaeological consultant and the ERO until the ERO has, in consultation with the archaeological consultant, determined that project construction would have no effects on significant archaeological deposits;
- The archaeological monitor will record and be authorized to collect soil samples and artifactual/ecofactual material warranted for analysis; and
- If an intact archaeological deposit is encountered, all ground-disturbing activities in the vicinity of the deposit should cease. The archaeological monitor will be empowered to temporarily redirect project activities and heavy equipment until the deposit is evaluated. The archaeological consultant will immediately notify the ERO of the encountered archaeological deposit. After making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, the archaeological consultant will present the findings to the ERO.

If the ERO, in consultation with the archaeological consultant, determines that a significant archaeological resource is present and that it could be adversely affected by the project, at the discretion of the SFRPD, the situation shall be resolved by one of the following actions:

- The project shall be redesigned so as to avoid any adverse effect on the significant archaeological resource, or
- An archaeological data recovery program shall be implemented, unless the ERO were to determine that the archaeological resource is of greater interpretive value than research significance and that interpretive use of the resource were feasible.

If the ERO requires an archaeological data recovery program to mitigate for adverse effects on the significant archaeological resource, it shall be conducted in accordance with an archaeological data recovery plan (ADRP). The project archaeological consultant, SFRPD, and ERO shall meet and consult on the scope of the ADRP. The archaeological consultant shall prepare a draft ADRP and submit it to the ERO for review and approval. The ADRP shall identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain; that is, the ADRP would identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods were practical.

The ADRP shall include the following elements:

- *Field Methods and Procedures*. Descriptions of proposed field strategies, procedures, and operations;
- *Cataloguing and Laboratory Analysis*. Description of selected cataloguing system and artifact analysis procedures;
- *Discard and Deaccession Policy*. Description of and rationale for field and post-field discard and deaccession policies;
- *Interpretive Program*. Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program.

- *Security Measures*. Recommended security measures to protect the archaeological resource from vandalism, looting, and unintentional damage;
- *Final Report*. Description of proposed report format and distribution of results; and
- *Curation*. Description of the procedures and recommendations for curating any recovered data having potential research value, identifying appropriate curation facilities, and summarizing the accession policies of the curation facilities.

Final Archaeological Resources Report. The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods used in the archaeological monitoring or data recovery program. Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the draft final report.

Copies of the Draft FARR shall be sent to the ERO for review and approval. Once the FARR is approved, copies shall be distributed as follows:

- One copy to the NWIC with a copy of the transmittal sent to the ERO; and
- Three copies to the EP division of the San Francisco Planning Department; EP shall also receive one unlocked, searchable PDF copy of the FARR on a CD or DVD, along with copies of any formal site recordation forms (CA DPR 523 series) and documentation for nomination to the NRHP/CRHR.

In instances of high public interest or interpretive value, the ERO may require a different final report content, format, and distribution than that presented above.

Impact CP-11. Implementation of programmatic projects under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources in Natural Areas of moderate and low archaeological sensitivity. (Less than Significant with Mitigation)

The types of programmatic project activities described under Impact CP-10 may similarly impact archaeological resources within Natural Areas of moderate or low archaeological sensitivity. However, significant impacts on archaeological resources are less likely to occur in moderately sensitive Natural Areas: 15th Avenue Steps, Bayview Park, Bernal Hill, Buena Vista Park, Corona Heights, Everson/Digby, Golden Gate Park Oak Woodlands (Whiskey Hill area only), India Basin Shoreline Park, and Mount Davidson. Impacts are least likely to occur in Natural Areas with low

archaeological sensitivity—Billy Goat Hill, Brooks Park, Dorothy Erskine Park, Duncan-Castro, Edgehill Mountain, Fairmount Park, Golden Gate Heights Park, Golden Gate Park Oak Woodlands (Lily Pond, Oak Woodlands, and Strawberry Hill only), Grandview Park, Hawk Hill, Kite Hill, Lakeview/Ashton Mini Park, Rock Outcrop, and Twin Peak Natural Areas.

As in high sensitivity Natural Areas, any disturbance of documented, undocumented, or unevaluated archaeological sites within the Natural Areas would constitute a significant impact if the resource is determined to be CRHR-eligible. Further, there are potential cultural resources within some of the moderately sensitive Natural Areas. These are resources, such as rock quarries, that have been identified elsewhere as "old" or "historic," but for which current research efforts have not been able to determine an establishment date or history. Therefore, it is unclear at this time if these resources are in fact 45 years or older. In other instances, there is increased potential for re-deposited archaeological resources, such as remnants or refuse from the Midwinter International Exposition, but a definitive determination of their presence is not possible at this time.

Therefore, programmatic project activities could have significant impacts on archaeological resources in areas of moderate to low archaeological sensitivity. With implementation of Mitigation Measure M-CP-11, which requires that an alert sheet be disseminated to all contractors, staff, and volunteers on site and addresses accidental discovery of an archaeological resource in Natural Areas, impacts on archaeological resources would be ***less than significant***.

M-CP-11: Accidental Discovery

Prior to any ground disturbing activity resulting from implementation of the SNRAMP, including Natural Areas of moderate and low archaeological sensitivity, a copy of EP's standard archaeological alert sheet will be issued to project staff. The project sponsor shall distribute the Planning Department archaeological resource "ALERT" sheet to the involved Natural Areas Program staff and volunteers, project prime contractor, any project subcontractors (including, but not limited to, demolition, excavation, grading, etc. firms), and any utilities firm involved in ground-disturbing activities. Prior to any ground-disturbing activities being undertaken, each contractor (or Natural Areas Program staff for projects without contractors) is responsible for ensuring that the "ALERT" sheet is circulated to all field personnel, including machine operators, field crew, supervisory personnel, etc. The project sponsor shall provide the ERO with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) confirming that all field personnel have received copies of the "ALERT" sheet.

Should any indication of an archaeological resource be encountered during any soils disturbing activity of the project, the project Head Foreman and/or SFRPD shall immediately notify the ERO and immediately suspend any soils disturbing activities in the vicinity of the discovery until the ERO has determined what additional measures should be undertaken.

If the ERO determines that an archaeological resource may be present within the project site, SFRPD shall retain the services of an archaeological consultant from the pool of qualified archaeological consultants maintained by the Planning Department archaeologist. The archaeological consultant shall advise the ERO as to whether the discovery is an archaeological resource, retains sufficient integrity, and is of potential scientific, historical, or cultural significance. If an archaeological resource is present, the archaeological consultant shall identify and evaluate the archaeological resource. The archaeological consultant shall make a recommendation as to what action, if any, is warranted. Based on this information, the ERO may require, if warranted, specific additional measures to be implemented by SFRPD. Measures might include:

- Preservation *in situ* of the archaeological resource;
- An AMP; or
- An archaeological testing program.

If an AMP or archaeological testing program is required, it shall be consistent with the EP division guidelines for such programs and as described above under M-CP-10. The ERO may also require that SFRPD immediately implement a site security program if the archaeological resource is at risk from vandalism, looting, or other damaging actions.

The project archaeological consultant shall submit a FARR to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the AMP and/or ADRP. Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report.

Copies of the Draft FARR shall be sent to the ERO for review and approval. Once approved by the ERO, copies of the FARR and associated items (i.e. site record forms) shall be distributed in the same numbers and to the same recipients outlined in M-CP-10.

Project-Level Impacts (Routine Maintenance)

Impact CP-12. Implementation of routine maintenance under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources in any of the Natural Areas. (Less than Significant with Mitigation)

Routine maintenance activities at Lake Merced and Tank Hill Natural Areas are addressed under Impact CP-13. Routine maintenance at all other Natural Areas are addressed below.

Several of the routine maintenance activities proposed in the SNRAMP could adversely affect archaeological resources in the Natural Areas through ground disturbance. Specifically, these activities include removing weeds, installing plants, and performing some trail maintenance (such as installing and repairing steps or trail edging and rerouting and benching trails), resulting in slight to severe surface disturbance as defined in Table 7. Similar to programmatic projects (see Impact CP-10), the potential for impacts from these kinds of activities is congruent with the level of sensitivity and degree of disturbance. Leaving the stumps of removed trees in place would not affect archaeological resources. As discussed in Section III.E.5, tree stump grinding, when necessary, would be contained to the stump itself and would not affect the surrounding areas where archaeological materials may exist.

Although routine maintenance, particularly plant installation and trail maintenance, may include severe levels of surface disturbance, they are typically smaller in scale than programmatic project activities. Therefore, significant impacts from routine maintenance could occur but would be limited in extent.

Therefore, routine maintenance could have significant impacts on archaeological resources. Potential impacts to archeological resources could be reduced to ***less than significant*** with implementation of M-CP-11, which addresses potential effects to unanticipated archaeological resources, and implementation of M-CP-12, which would require archaeological sensitivity training.

M-CP-12: Annual Archaeological Sensitivity Training for SFRPD Staff Involved with Routine Maintenance Activities in all Natural Areas

SFRPD staff working within the Natural Areas will be trained by a qualified archaeologist regarding the potential for archaeological resources within the Natural Areas and how to identify such resources. The training will also include a review of penalties for looting and disturbance of these resources. At a minimum, the training will include the following:

- Assigned archaeological sensitivity level of each Natural Area;
- A discussion of the potential to encounter archaeological resources;
- Instructions for how to identify archaeological resources;
- Instructions for reporting observed looting, disturbances of known archaeological resources, or the presence of a previously unidentified archaeological site;
- An overview of the AMP for routine maintenance activities and accidental discovery procedures in the Natural Areas (see M-CP-10 and M-CP-11, respectively); and
- An overview of M-CP-18, Treatment of Human Remains and Associated or Unassociated Funerary Objects.

It shall be the responsibility of SFRPD Natural Areas Program staff, at the beginning of any management activities involving persons outside of the Natural Areas Program, to educate volunteers or other personnel on the potential to encounter archeological resources and instructions for reporting the presence of potential resources to SFRPD Natural Areas Program staff.

Impact CP-13. Implementation of routine maintenance under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources in the Lake Merced and Tank Hill Natural Areas. (Less than Significant with Mitigation)

Impacts on archaeological resources and human remains in Lake Merced and Tank Hill would be the same as described under Impact CP-12. However, since these two Natural Areas include documented archaeological resources within their management areas that could be affected by routine maintenance activities, primarily ground disturbances of any level, impacts in these Natural Areas and to these particular resources are more likely.

With implementation of Mitigation Measure M-CP-12, which requires an annual training program for Natural Areas Program staff implementing routine maintenance in all Natural Areas, as well as Mitigation Measure M-CP-10, which requires an AMP for these Natural Areas, impacts on archaeological resources from routine maintenance in Lake Merced and Tank Hill would be ***less than significant***.

Project-Level Impacts (Sharp Park Restoration)

Impact CP-14. Implementation of the Sharp Park restoration efforts under the SNRAMP would result in a substantial adverse change in the significance of archaeological resources. (Less than Significant with Mitigation)

Although Sharp Park Natural Area has been identified as one of high archaeological sensitivity, the area affected by the proposed restoration activities does not include known archaeological resources. This is despite the fact that the location is a productive natural environment that likely drew prehistoric and historic populations. The project area has been severely disturbed by creation of the golf course, and the Holocene deposits in this area today extend no deeper than one foot from the surface (King 2010). Based on these factors, the specific restoration portion of Sharp Park is considered to be moderate in archaeological sensitivity. Proposed restoration efforts could significantly impact unidentified or buried archaeological resources but are less likely to do so in this location than in areas farther up the canyon. With implementation of Mitigation Measure M-CP-10, which requires an AMP, Sharp Park restoration project impacts on archaeological resources would be ***less than significant***.

Paleontological Resources and Unique Geological Formations

Programmatic Impacts

Impact CP-15. Implementation of programmatic projects under the SNRAMP would directly or indirectly destroy paleontological resources or unique geological formations. (Less than Significant with Mitigation)

The UCMP records search results indicated that there are no known paleontological resources within or next to the Natural Areas (Holroyd 2008). Many of the Natural Areas are on shallow or exposed bedrock, and project activities may affect those geologic features. Additionally, five localities have been identified within two miles of Sharp Park, making that Natural Area relatively more sensitive for paleontological resources. In general, ground-disturbing activities that reach bedrock, including those that require modification of bedrock, such as terracing, grading, or drilling into bedrock, could impact unknown paleontological resources, potentially destroying a unique paleontological resource. Such impacts would be more likely to occur in areas where bedrock is shallow or at the surface, where activities would be completed closer in depth to the bedrock, and where any geologic features or paleontological resources are present. As such, significant impacts as a result of ground-disturbing activities could result from SNRAMP programmatic projects. With

implementation of Mitigation Measure M-CP-15, potential impacts on geologic features or paleontological resources would be ***less than significant.***

M-CP-15: Coordination with EP Regarding Paleontological Resources Prior to Implementation of Programmatic Projects

To mitigate the potential for the SNRAMP to affect paleontological resources, this mitigation measure will apply to programmatic projects. The SFRPD shall coordinate with EP prior to conducting any programmatic projects that would result in ground disturbance. In such instances, EP shall review the proposed activities to determine if ground-disturbing activities could occur at or near bedrock or other geologic features of CEQA significance. If such features exist and could be affected by project activities, a training program will be conducted and an alert sheet will be disseminated to all field personnel.

Any paleontological training will be conducted by a qualified paleontologist and will discuss the potential for such resources to exist in the Natural Area(s) and how to identify such resources. The training will also include a review of penalties for looting and disturbance of these resources. Alert sheets will be issued for all such projects and will include the following:

- A discussion of the potential to encounter paleontological resources;
- Instructions for reporting observed looting of a paleontological resource; and
- Instructions that if a paleontological deposit were encountered within a project area, all ground-disturbing activities in the vicinity of the deposit shall cease and the ERO shall be notified immediately.

When unanticipated paleontological resources are encountered during programmatic project activities, all project activities shall stop, and a professional paleontologist shall be hired to assess the find and its significance. The findings shall be presented to the ERO who would decide the additional steps to be taken before work in the vicinity of the deposit is authorized to continue.

Project-Level Impacts (Routine Maintenance)

Impact CP-16. Implementation of routine maintenance under the SNRAMP would directly or indirectly destroy paleontological resources or unique geological formations. (Less than Significant with Mitigation)

Impacts on paleontological resources from routine maintenance are similar to those described under Impact CP-15. Given that routine maintenance activities are smaller in scale and less likely to reach

depths of paleontological resources or unique geological formations, significant impacts are accordingly less likely to occur. With the implementation of Mitigation Measure M-CP-16, which requires avoidance of surface bedrock, impacts of routine maintenance on paleontological resources or unique geological formations would be ***less than significant***.

M-CP-16: Avoidance of Surface Bedrock in Routine Maintenance Activities

To mitigate the potential for the SNRAMP to affect paleontological resources the following mitigation measure will apply to routine maintenance activities. Natural Areas Program staff and volunteers will avoid ground-disturbing activities in areas where surface bedrock exists. If routine maintenance activities cannot avoid bedrock, SFRPD will implement M-CP-15, discussed above.

Project-Level Impacts (Sharp Park Restoration)

Impact CP-17. Implementation of Sharp Park restoration activities under the SNRAMP would directly or indirectly destroy paleontological resources or unique geological formations. (Less than Significant with Mitigation)

The Sharp Park Natural Area has been identified as sensitive for paleontological resources. Restoration activities include dredging, recontouring, excavating, and deepening open water areas around the lagoon, creating sediment basins, and creating compensation wetlands. The depths are not known for these ground-disturbing activities and some may reach Pleistocene deposits that may contain paleontological resources or a unique geological formation; therefore, it is anticipated that excavation associated with the restoration at Sharp Park could encounter paleontological resources, potentially resulting in a significant impact. With implementation of M-CP-17, Sharp Park restoration impacts on paleontological resources would be ***less than significant***.

M-CP-17: Paleontological Training Program and Alert Sheet for the Sharp Park Restoration Project

To mitigate the potential for the Sharp Park restoration project to affect paleontological resources, the SFRPD shall arrange for a paleontological training by a qualified paleontologist regarding the potential for such resources to exist in the restoration area and how to identify such resources. The training shall also include a review of penalties for looting and disturbance of these resources. An alert sheet shall be issued and will include the following:

- A discussion of the potential to encounter paleontological resources;
- Instructions for reporting observed looting of a paleontological resource; and

- Instruct that if a paleontological deposit were encountered within a project area, all soil-disturbing activities in the vicinity of the deposit shall cease and the ERO would be notified immediately.

If an unanticipated paleontological resource is encountered during project activities, all project activities shall stop, and a professional paleontologist shall be hired to assess the find and its significance. The findings shall be presented to the ERO who would decide the additional steps to be taken before work in the vicinity of the deposit was authorized to continue.

Human Remains

Programmatic Impacts

Impact CP-18: Implementation of programmatic projects under the SNRAMP would disturb human remains. (Less than Significant with Mitigation)

Soil-disturbing activities resulting from implementation of the SNRAMP may affect human burials, human remains, and associated or unassociated burial goods. Human remains, burials, and burial items are frequently associated with prehistoric Native American occupation/activity sites or may occur independently of such sites. With implementation of Mitigation Measure M-CP-18, impacts of programmatic projects activities resulting from implementation of the SNRAMP on human remains would be ***less than significant***.

M-CP-18: Human Remains, Associated or Unassociated Funerary Objects

The treatment of human remains and of associated or unassociated funerary objects discovered during any ground-disturbing activity shall comply with applicable State and Federal Laws, including immediate notification of the Coroner of the City and County of San Francisco (or San Mateo County Coroner if found at Sharp Park) and in the event of the Coroner's determination that the human remains are Native American remains, notification of the NAHC who shall appoint a Most Likely Descendant (MLD) (Pub. Res. Code Sec. 5097.98). The archaeological consultant, SFRPD, and MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (CEQA Guidelines. Sec. 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, curation, possession, and final disposition of the human remains and associated or unassociated funerary objects.

Project-Level Impacts (Routine Maintenance)

Impact CP-19. Implementation of routine maintenance under the SNRAMP would disturb human remains. (Less than Significant with Mitigation)

There is a possibility that intact burials exist within the Natural Areas, and routine maintenance activities, particularly those involving moderate to severe surface disturbance in moderately to highly sensitive Natural Areas, may encounter and impact those resources. The archaeological sensitivity levels outlined above can be applied to the possibility of human remains in the Natural Areas. Ground-disturbing activities, similar to those identified under Impacts CP-12 and CP-13, could disturb burials as well, resulting in potentially significant impacts on human remains. With implementation of Mitigation Measure M-CP-18, the impacts of routine maintenance on human remains would be ***less than significant***.

Project-Level Impacts (Sharp Park Restoration)

Impact CP-20. Implementation of Sharp Park restoration activities under the SNRAMP would disturb human remains. (Less than Significant with Mitigation)

There is a possibility that intact burials exist within the Sharp Park restoration footprint. This impact is equivalent to that discussed for archaeological resources in Impact CP-14. Therefore, restoration may have significant impacts on human remains. With implemention of Mitigation Measure M-CP-18, impacts of the Sharp Park restoration on human remains would be ***less than significant***.

Cumulative Impacts

Impact CP-21: The proposed project, in combination with other planned and foreseeable future projects, would have a cumulatively considerable significant impact related to cultural and paleontological resources. (Significant and Unavoidable)

Cumulative projects, such as the Sharp Park Recycled Water project, the San Andreas Pipeline Number 3 project, the Water System Improvement Program Groundwater Project B, the SFPUC Sunset Supply Pipeline Vegetation project, and the ground disturbing projects at McLaren Park, involve construction and development at Sharp Park, McLaren Park, and Lake Merced. All three Natural Areas were determined to have high archaeological sensitivity (King 2010), and Sharp Park also includes historic architectural and potential historic landscape resources, including the Sharp Park Golf Course (a historic resource) and urban forests. The cumulative projects also involve construction and development in the vicinity of Natural Areas, such as the 15th Avenue Steps, Corona Heights, Lily Pond, and Buena Vista Park, such as the 1427 11th Avenue project, the SFRPD

Grandview Park Restoration Work project, 2299 Market Street project, the 1000 Great Highway – 811 Stanyan Street project, SFRPD Golden Gate Park Beach Chalet Soccer Fields, 37-39 Lloyd Street project and Carona Heights project. As with all projects that include ground disturbance, modern development, retaining wall repair, protective fencing installation, structure demolition, such as greenhouses, or historical resource removal or alteration (e.g., addition to or demolition of CRHR-eligible or CRHR-listed resources), such as the Japanese Tea Garden project, the SFRPD Buena Vista Park Improvement project, and the San Francisco Botanical Garden project, there is a potential for cumulative projects in the region to impact cultural and paleontological resources. In general, cumulative projects that involve construction of undeveloped land, extending construction deeper than current development, or developing new topographic features (such as trails) have the potential to impact archaeological and paleontological resources. New construction or modifications to buildings near or next to Natural Areas also have the potential to impact historic architectural resources by modifying historical resources or placing new construction within the historic landscape of a historical resource. Development near Natural Areas may also cumulatively impact potential historic, architecturally significant areas and historic landscapes. These impacts are particularly possible for the culturally and paleontologically sensitive Sharp Park-area cumulative projects, which include constructing a new recycled water pump station (Sharp Park Recycled Water project), and development of residential and commercial properties. Given that cultural and paleontological resources are nonrenewable, the historic landscape and regional archaeology of San Francisco and the Peninsula, in addition to a specific resource, can also be cumulatively impacted by projects. Implementing the City's various area plans would likely require taking into consideration cultural and paleontological resource management and implementing measures that would protect them. The impacts resulting from cumulative projects, as described above, could result in significant cumulative effects on cultural and paleontological resources in the San Francisco region. However, it is expected that all of these projects would be evaluated under CEQA and that their impacts would be mitigated to less than significant. With implementation of the mitigation measures to protect archeological resources as identified in this EIR, the proposed project's contribution to any cumulatively significant archaeological resources impact would be ***less than significant***.

Mitigation Measure M-RE-1 would require SFRPD to coordinate with a golf course consultant to restore the playability of the Sharp Park Golf course. However, if any reconfiguration of the course resulted in additional holes east of Highway 1, this would result in a significant impact on the historical significance of Sharp Park Golf Course, further contributing to significant cumulative impacts. Reconfiguration of the golf course holes to resemble its original layout (replacement holes west of Highway 1) would reduce cumulative impacts on the golf course. This reconfiguration

would result in a total of 15 holes on the west side of Highway 1 and three holes on the east side. Mitigation Measure M-RE-1 would be beneficial to the Sharp Park Golf Course because it would restore some of the elements in the original design of this course, such as coast side holes. This mitigation measure would change the layout of the holes, but the new holes would be in areas of the course where holes were situated in the original design, and would be in keeping with the historic boundaries of the golf course.

The proposed project, in combination with the cumulative projects, would have a significant and unavoidable impact on cultural resources, in particular architectural resources, as described under Impacts CP-7 and CP-9. The modifications to the historic Holes 10, 12, and 13 under the Sharp Park restoration plan would substantially affect the historical significance of Sharp Park Golf Course. This is both a significant and unavoidable adverse effect at the project level and cumulatively. As a result, the project's contribution to this significant and unavoidable cumulative impact would be cumulatively considerable.

V.E WIND AND SHADOW

Wind is included in the EIR because there were NOP comments regarding the wind-related effects of the project. Shadow impacts were adequately analyzed in the Initial Study (Appendix A), and no NOP comments related to shadows were received; as such, shadow impacts are not analyzed in the EIR.

Comments related to wind and shadow that were received during the NOP scoping process included concerns about the following:

- Effects of Mount Davidson tree removal on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion;
- Effects of Mount Davidson tree removal on fires that could be fanned by westerly winds;
- Impacts of removing trees and vegetation on increased wind in and beyond the park itself;
- Removing eucalyptus trees that grow in the sandy soil and withstand the fierce winds blowing off the Pacific Ocean. Studies in the Presidio have shown that eucalyptus trees slow the wind down at least 30 percent.

V.E.1 Regulatory Setting

Federal/State

There are no applicable federal or state regulations related to wind for this proposed project.

Regional/Local

San Francisco Planning Code

Planning Code Section 148 establishes two comfort criteria and one hazard criterion for assessing wind impacts of development projects in San Francisco. The comfort criteria are based on pedestrian-level wind speeds that include the effects of turbulence and are known as "equivalent wind speeds." Section 148 of the Planning Code establishes an equivalent wind speed of seven miles per hour (mph) for seating areas and 11 mph for areas of substantial pedestrian use. New buildings and additions to buildings may not cause ground-level winds to exceed these levels more than 10 percent of the time year round between 7:00 AM and 6:00 PM. If existing wind speeds exceed the comfort level, new buildings and additions in these areas must be designed to reduce ambient wind speeds to meet the requirements. Section 148 and Section 249 (c)(9) also establish a hazard criterion,

which is an equivalent wind speed of 26 mph for a single full hour, not to be exceeded more than once during the year. New buildings in governed areas cannot exceed this standard.

To provide a comfortable wind environment for people in San Francisco, development projects would be subject to specific comfort criteria. The Planning Code specifically outlines these criteria for areas that typically experience wind exceedances, specifically the Downtown Commercial (C-3) District and each of the following special use districts: Folsom and Main, Van Ness Avenue, and South of Market. While these criteria are not applicable to the proposed project, which does not involve buildings or structures in the downtown areas, they serve as a general point of reference regarding the impact analysis in this EIR.

V.E.2 Environmental Setting

The climate of the San Francisco Bay Area is characterized by a Mediterranean pattern of cool and mild temperatures along the coast, dry summers, and small fluctuations in seasonal temperatures. The Pacific High, a mass of cold air situated between San Francisco and Hawaii, dominates the weather much of the year. In the winter, the Pacific High moves southward, bringing wet stormy weather into the Bay Area (Gilliam 1966). In the summer, it moves northward, blocking the rains and causing an upwelling of cold offshore water along the central coast of California. This upwelling produces a thick layer of coastal fog that is drawn inland through San Francisco Bay when temperatures in the Central Valley rise. These east/west gradients of fog, precipitation, and temperature, coupled with the highly variable topography in San Francisco, produce strong microclimatic effects. Not only do weather conditions vary from one side of San Francisco to the next but from block to block, depending on the terrain and the degree of exposure.

Planetary wind systems, normally called prevailing winds, are large moving air masses that dominate whole areas and show constant directional characteristics, varying only with the movement of high- or low-pressure systems and with the seasons of the year. In many locations these are the dominant winds, particularly on exposed hilltops, shorelines facing the prevailing winds, open plains or plateaus, floors of open valleys running parallel to the prevailing winds, or the windward side of gently sloping hills. Local winds, by contrast, are caused by temperature differences created by local topographic conditions.

Winds are horizontal flows of air that blow from areas of high pressure to areas of low pressure. Wind strength depends on the difference between the high- and low-pressure systems and the distance between them (CCSF 2008d). A steep pressure gradient results from a large pressure difference or short distance between these systems and causes high winds. High winds are defined

as those that last longer than one hour at greater than 39 miles per hour (mph) or for any length of time at greater than 57 mph (CCSF 2008d). In San Francisco, high winds associated with cyclonic systems and their cold fronts occur in the winter, generally between November and March. All of San Francisco is subject to strong southeasterly winds associated with powerful winter cold fronts (CCSF 2008d).

Long-term wind data in San Francisco are available from historical wind gauge records from the US Weather Bureau weather stations above the old Federal Building at 50 United Nations Plaza and at San Francisco International Airport. Everyday wind climatology is defined using wind statistics of anemometers, which measure wind speed, in the northern portion of San Francisco Bay.

The dominant wind direction is known to shift with locations around the bay. Winds can fluctuate greatly depending on the time of year and the time of day. During winter, winds change markedly, becoming milder and less dominated by the west-northwesterly winds. Winds also change significantly during the day, typically intensifying from late morning until reaching an average peak of 20 knots (23 mph) in the late afternoon, diminishing in the evening.

Wind conditions can affect pedestrian safety on sidewalks and in other public areas, as follows (Lawson and Penwarden 1975):

- Winds up to 4 mph have no noticeable effect on pedestrians;
- Winds from 4 to 8 mph are felt on the face;
- Winds from 8 to 13 mph cause clothing to flap and extend a light flag mounted on a pole;
- Winds from 13 to19 mph raise loose paper, dust, and dry soil;
- Winds from 19 to 26 mph are felt on the body;
- Winds of 26 to 34 mph render umbrellas difficult to use, make walking steadily difficult, and cause unpleasant noise;
- Winds over 34 mph make it difficult for a person to maintain balance, and gusts at this speed can blow a person over.

V.E.3 Impacts

Significance Thresholds

A proposed project would have a significant wind impact if it were to alter wind in a manner that substantially affects public areas.

The San Francisco Planning Code includes a wind hazard criterion and pedestrian comfort criteria for evaluating wind impacts of a proposed building within four defined areas of San Francisco. The code has established a hazard level of a 26 mph-equivalent wind speed for a single hour of the year for certain downtown areas. It is generally understood that only buildings about 100 feet or taller in San Francisco would result in adverse wind effects at street levels that could achieve a hazard level wind speed.

While this wind hazard level is not applicable to the proposed project, which does not involve buildings or structures within the downtown areas, that level serves as a general point of reference regarding the impact analysis in this EIR.

Impacts Addressed in the Initial Study

In the Initial Study (Appendix A), impacts related to the following criterion were identified as not significant:

- Create new shadows in a manner that substantially affects outdoor recreation facilities or other public areas.

As a result, this CEQA significance criterion is not evaluated further in this EIR.

Significant Natural Resource Areas Management Plan Impacts

A total of 18,448 trees would be incrementally removed as part of the management activities; of these trees, approximately 15,000 would be removed from Sharp Park. In general, tree removal would be focused on dead or dying trees, trees with disease or insect infestations, storm-damaged or hazardous trees, and trees that are suppressed because of overcrowding. Further, trees would typically be thinned over large areas, which would result in the removal of smaller trees and saplings.

Trees are proposed to be removed from 15 of the 32 Natural Areas: Bayview Park, Brooks Park, Buena Vista Park, Corona Heights, Dorothy Erskine Park, Glen Canyon Park and O'Shaughnessy Hollow, Golden Gate Park Oak Woodlands, Grandview Park, Interior Greenbelt, Lake Merced, McLaren Park, Mount Davidson, Palou-Phelps, Twin Peaks, and Sharp Park. This section does not address wind impacts in certain Natural Areas because trees targeted for removal are isolated individuals or small groups scattered throughout these Natural Areas, and this removal is not expected to have noticeable wind effects. These Natural Areas are Palou-Phelps, Brooks Park, Buena Vista Park, Grandview Park, and Twin Peaks. Natural Areas that do not include any tree removal

are Balboa, Bernal Hill, Billy Goat Hill, Duncan-Castro, Edgehill Mountain, Everson/Digby, Fairmont Park, Golden Gate Heights, Hawk Hill, India Basin Shoreline Park, Kite Hill, Lakeview/Ashton Mini Park, Pine Lake, Rock Outcrop, Tank Hill, and 15th Avenue Steps. No wind hazard impacts would result from the proposed project in any of these Natural Areas.

This analysis addresses wind impacts that would result from the proposed tree removals in each Natural Area. Large-scale tree removal is addressed only for Natural Areas where removal may exceed half an acre or more than 20 trees at one time; routine maintenance tree removal is evaluated at all Natural Areas where tree removal is proposed, except the five excluded Natural Areas, Palou-Phelps, Brooks Park, Buena Vista Park, Grandview Park, and Twin Peaks.

Trees could be removed on a large scale at Bayview Park, Glen Canyon Park and O'Shaughnessy Hollow, Golden Gate Park Oak Woodlands, Interior Greenbelt, Lake Merced, McLaren Park, Mount Davidson, and Sharp Park. Routine maintenance tree removal could occur at these Natural Areas plus Corona Heights and Dorothy Erskine Park.

Windthrow[1] is used to describe the effects of wind on a stand of trees. When the wind blows a tree over, this action is called windthrow. When trees are removed from a stand, windthrow can increase if wind-toughened edge trees are removed, exposing the interior of the stand to unusual wind conditions. Windthrow is a natural part of forest ecosystems.

The following discussion focuses on ground-level wind hazards and windthrow risks or instances where tree removal could substantially alter windthrow rates for a given stand. Public safety hazards associated with windthrow are discussed in Section V.I, Hazards and Hazardous Materials. Wind hazard impacts resulting from the proposed project were analyzed for public areas, such as residential areas, sidewalks, and trails.

Programmatic Impacts

Impact WS-1: Implementation of the programmatic projects under the SNRAMP would not result in significant ground-level wind hazards and windthrow risks. (Less than Significant)

The proposed programmatic projects do not include any aboveground structures that would alter wind. Programmatic projects include tree removal projects that exceed half an acre at any one time

[1]Windthrow—The effects of wind on a stand of trees.

or more than 20 trees at one location. Tree removal of wind-toughened edge trees[2] could expose the interior of a stand of trees to wind conditions that they are not adapted to. Trees removed within San Francisco would be replaced at a one-to-one ratio, although not necessarily at the same location or within the same Natural Area. In Sharp Park, trees would be removed in the upper canyon in an inaccessible area and would be replaced with native grassland and scrub species. Trees would be removed in accordance with the Urban Forestry Statements in Appendix F of the SNRAMP. In general, tree removal in the Natural Areas is planned to take individual trees or very small groups of trees in forest and scrub habitats to avoid altering the wind conditions and increasing ground-level wind hazards.

Bayview Park

Five hundred eleven trees would be removed at Bayview Park, with 5,489 trees to remain. Bayview Hill is relatively exposed to winds blowing in from San Francisco Bay or southerly storm winds. However, the risk of ground-level wind hazards and windthrow at Bayview Park is minimal because there are no homes, sidewalks, or trails near enough to be affected. Most of the tree removal would be well below the trails or more than 100 feet from trails. With much of the removal planned to occur along the edges of stands, there could be an increase in ground-level wind hazards along trails and an increase in windthrow if a large number of trees were removed at once. Most of the stands at Bayview Park are expected to be relatively wind toughened due to their level of wind exposure. To minimize the potential increase in ground-level wind hazards and windthrow, trees would be removed from forest edges gradually, in accordance with the SNRAMP. This would avoid creating an edge gap large enough that wind speed would become a substantial problem within the stand. Further, the removal of dead or aging trees would reduce the potential windthrow hazards. Therefore, increases in wind levels and windthrow hazards at Bayview Park as a result of the programmatic projects would be ***less than significant***.

Glen Canyon Park and O'Shaughnessy Hollow

One hundred twenty of an overall 6,000 trees would be removed at Glen Canyon Park. Trees to be removed are mostly on the slope near O'Shaughnessy Boulevard. Only selected trees would be removed, which would not substantially affect the density of the urban forest or result in high wind speeds. Further, trees would be gradually removed; therefore, trees to be removed would not expose nearby residential areas, sidewalks, and trails to increased ground-level wind hazards.

[2]Wind-toughened edge trees—Trees in a stand that have become tough or resistant to the wind.

The potential windthrow hazards to people from removing trees at Glen Canyon Park would be minimal because most of the trees are downslope of residences surrounding the Natural Area. Additionally, Glen Canyon Park is within a canyon and is sheltered from strong prevailing westerly winds. Windthrow is likely to occur naturally within the stand and along its edges. However, tree removal would not increase potential hazards of these events. This area is sheltered from prevailing winds, so removing trees from this stand is not likely to increase windthrow and cause significant wind impacts. Therefore, programmatic projects would have ***less than significant*** wind impacts at Glen Canyon Park.

Golden Gate Park Oak Woodlands

Eighty-two trees would be removed from Golden Gate Park Oak Woodlands, with 818 trees to remain. Individual trees are expected to be selected for removal from within the stands of this Natural Area. The Golden Gate Park Oak Woodlands is one of the few places within the Natural Areas system where a large stand of native trees persists. Implementation of the SNRAMP at the Golden Gate Park Oak Woodlands would not change significantly the overall look of the park and would enhance native oak woodland by preventing invasive tree species from becoming established. Removing dead or aging trees would reduce the potential windthrow hazards; therefore, tree removal as part of the programmatic projects of the SNRAMP would not result in high wind speeds or windthrow hazards. Any increase in wind levels at Golden Gate Park Oak Woodlands as a result of the programmatic projects would be ***less than significant***.

Interior Greenbelt

One hundred forty trees would be removed from Interior Greenbelt, with 5,860 trees to remain. Individual trees are expected to be selected for removal from within the stands of this Natural Area. Most of the trees to be removed are near the eastern boundary and the western tip of this Natural Area. There would not be a substantial change in edge conditions or an increase in wind exposure in any of the areas where trees are to be removed. The site is on the northeast-facing slope of Mount Sutro and is protected from the prevailing westerly winds. Therefore, programmatic projects at the Interior Greenbelt would not result in high wind speeds. Further, there are no houses, sidewalks, or trails close enough to the tree removal areas to increase the risk from windthrow or ground-level wind hazards. For this reason, any increase in wind levels at Interior Greenbelt as a result of the programmatic projects would be ***less than significant***.

Lake Merced

At Lake Merced, 134 of the approximately 12,000 trees would be removed from stands surrounding the lake, as part of the management activities. Removal would be focused near "the Mesa" and next

to the golf course on the eastern shore of South Lake. The closest existing and proposed trails are approximately 100 feet from the trees to be removed. In general, the potential ground-level wind hazard is minimal because there are no residential areas or sidewalks near the stands where trees would be removed, and trails are not next to the tree removal areas. Therefore, trees would not be removed near public areas, and wind impacts at Lake Merced would be ***less than significant***.

Most of the trees at Lake Merced are relatively exposed to the prevailing westerly winds, resulting in wind-hardened trees throughout the stand. Windthrow likely occurs naturally within the stands and along their edges, and proposed tree removal is not expected to substantially increase the potential for windthrow hazards because most of the trees to remain are wind hardened. Further, the removal of dead or aging trees would reduce the potential windthrow hazards. Any increase in ground-level wind hazards and windthrow would be minimal at Lake Merced, and wind impacts resulting from the proposed programmatic projects would be ***less than significant***.

McLaren Park

Eight hundred five of the 19,500 trees would be removed at McLaren Park. Tree removal at McLaren Park is planned mostly for individual trees or small groups of trees within grasslands. In the area downslope of Mansell Street, near the water tanks, the overall plan is to remove enough trees to preserve the grasslands and allow coastal scrub and oak woodland communities to become established. This would involve thinning the stand, which would leave the edges intact and would not result in a substantial change in ground-level wind hazards and windthrow. Also, this area is sheltered from the prevailing westerly winds by the topography of McLaren Park and by trees lining the adjacent golf course. Therefore, programmatic projects at McLaren Park would not result in high wind speeds and would not substantially alter wind patterns; any increase in wind levels at McLaren Park as a result of the programmatic projects would be ***less than significant***.

Mount Davidson

At Mount Davidson, 1,600 trees would be removed as part of the management activities, and 9,400 trees would remain. Most of the trees would be removed from the center of this Natural Area. Removing trees at Mount Davidson would not create ground-level wind hazards near residential areas because of the trees' locations within the stand or away from homes. Ground-level wind hazards also would not increase along the trails of Mount Davidson because mostly small and medium trees would be selectively removed. Some trees within the restoration zones would remain, as would most of the trees on the wind-hardened edges. Therefore, tree removal would not substantially decrease the density of the urban forest, expose the trails to excess wind, or result in high wind speeds.

Prevailing winds at Mount Davidson are from the west and southwest, so removing edge trees on the west side of the park could increase the rate of windthrow within the stand; however, no trees are proposed to be removed in these areas, minimizing or avoiding windthrow impacts in those locations. The forest grassland ecotone is not subject to prevailing winds, and trees could be removed from the forest edge without increasing the windthrow risk. Some windthrow is likely to occur naturally within the stand and its edges, but removing trees from Mount Davidson is not expected to substantially alter the windthrow rates. Further, the removal of dead or aging trees would reduce the potential windthrow hazards. Therefore, wind levels at Mount Davidson resulting from the programmatic projects would not substantially increase ground-level hazards or alter the windthrow rates. Therefore, wind impacts of the programmatic projects at Mount Davidson would be ***less than significant***.

Sharp Park

Fifteen thousand trees would be removed at Sharp Park, with 39,000 trees to remain. Trees to be removed are near the eastern border and in the center of the park, away from the golf course. Tree removal in some areas would be between 50 and 75 percent of the stand, depending on the area; no trees would be removed in other areas. The risk to people from a potential increase in ground-level wind hazard is minimal because these areas are inaccessible to the park visitors and no residences or sidewalks are near the trees to be removed. Therefore, the gradual removal of trees would not substantially increase wind speeds in public areas.

The windthrow rates at Sharp Park may be relatively higher following tree removal. This Natural Area is exposed to the strong westerly winds that funnel up off the beach and through the canyon. However, the trees would not be removed all at once, and gradual removal would not substantially elevate windthrow rates. Even if windthrow were to increase substantially in this portion of the Natural Area, the risk to people is minimal because there are no residences or sidewalks and very few visitors to this Natural Area, and the canyon east of the archery range is inaccessible. Therefore, increase in wind levels at Sharp Park resulting from the programmatic projects would be ***less than significant***.

Project-level Impacts (Routine Maintenance)

Impact WS-2: Implementation of the routine maintenance activities under the SNRAMP would not result in significant ground-level wind hazards and windthrow risks. (Less than Significant)

As part of routine maintenance, trees could be removed at the Natural Areas analyzed under the programmatic projects above. During routine maintenance, individual or groups of fewer than 20

trees would be removed in areas that are less than half an acre. Removed trees would mostly be those that are decaying and aging and that would likely fall naturally over time. Tree removal during routine maintenance in the Natural Areas analyzed under the programmatic projects would not create significant windthrow hazards because the bulk of the stands would remain intact. Further, the removal of dead or aging trees would reduce the potential windthrow hazards. Therefore, tree removal would not increase ground-level wind hazards near any residential areas or trails in these Natural Areas. Wind impacts at these Natural Areas resulting from routine maintenance would be ***less than significant***.

Corona Heights

Fifteen trees would be removed at Corona Heights, with 185 trees to remain. Trees selected for removal would be isolated individuals scattered through the Natural Area. Because only 15 trees are planned to be removed, the bulk of the stand would remain intact. Further, most trees to be removed are at the northeast slope, below the ridge at Corona Heights, and are somewhat sheltered from the prevailing westerly winds. There are also aging and dying trees that would likely fall naturally. Tree removal in this location would not increase ground-level wind hazards to any residential areas or trails in Corona Heights and would not result in high wind speeds. Further, tree removal would not create any windthrow hazards because a very small number of trees is planned to be removed, and the bulk of the stand would remain intact. As with any forest, windthrow is likely to occur naturally within the stand and at its edges, and tree removal under routine maintenance would not increase this potential. Further, the removal of dead or aging trees would reduce the potential windthrow hazards. Therefore, wind impacts at Corona Heights resulting from routine maintenance would be ***less than significant***.

Dorothy Erskine Park

Dorothy Erskine Park supports approximately 100 trees, 14 of which are planned for removal. The trees would be removed from the northeastern tip and the center of this Natural Area. These areas are somewhat sheltered from the prevailing westerly winds by stands that would remain. Further, removal of individual trees would not affect the density of the urban forest at Dorothy Erskine Park. The selection of individual trees would not create situations where the nearby residential area's sidewalks and trails are exposed to high winds or where the remaining stand is exposed to wind conditions that are substantially different from current levels. Removal of dead or aging trees would reduce the potential windthrow hazards and is not expected to increase ground-level wind hazards or windthrow. As such, tree removal would not result in high wind speeds and would not increase ground-level wind hazards on nearby residents or expose trees in a stand to high winds. Therefore,

the potential ground-level wind hazard and windthrow that would result from routine maintenance would be ***less than significant***.

Project-Level Impacts (Sharp Park Restoration)

Impact WS-3: Implementation of the Sharp Park restoration under the SNRAMP would not result in ground-level wind hazards and windthrow risks. (No Impact)

A few individual trees may be removed as part of the wetland and upland habitat restoration, but no ground-level wind hazard or windthrow would result. As such, Sharp Park restoration would result in ***no impact*** from wind hazards and windthrow risks.

Cumulative Impacts

Impact WS-4: The proposed project, in combination with other planned and foreseeable future projects, would not have a cumulatively significant impact related to wind and shadow. (Less than Significant)

The geographic context for an analysis of cumulative impacts from wind effects is limited to the area near the project sites. None of the reasonably foreseeable future developments in these areas include structures with heights greater than 100 feet, which would intercept a large volume of wind and result in high wind speeds in the Natural Areas. The Hunters Point Shipyard/Candlestick Park Redevelopment could result in wind impacts on Bayview Hill with the construction of high-rise buildings. However, in compliance with the requirements of the San Francisco Planning Code, this is expected to minimize the level of wind impacts from high-rise construction to less than significant levels. The EIR prepared for the Hunters Point Shipyard/Candlestick Park Redevelopment includes a mitigation measure for building design wind analysis. The measure requires a wind study for buildings higher than 100 feet. The study is to assist in identifying design changes that would mitigate the adverse wind conditions to below the threshold of 26-mph-equivalent wind speed for a single hour of the year. Implementation of appropriate design changes would reduce hazardous wind effects on pedestrians to a less than significant level. Other cumulative projects include the University of California San Francisco Mount Sutro Open Space Reserve Management Plan, which proposes management actions for the 61-acre forest that include thinning of the forest, native plant restoration and enhancement, and removal of nonnative trees and plants and conversion to native species. Tree removal could increase the ground level wind speed in this area, possibly exposing areas to high winds and therefore resulting in high wind impacts. However, one of the objectives of the project is minimizing windthrow hazards and improving the health of the remaining trees.

Therefore, the Mount Sutro project would not contribute significantly to the wind hazards within the project area.

Under cumulative conditions without the proposed project, wind speeds in the vicinity of the other Natural Areas would not significantly increase, and the project contribution to cumulative wind impacts would not be considerable. Therefore, cumulative wind impacts would be ***less than significant***.

V.F RECREATION

This section describes the recreation activities within the Natural Areas and evaluates the potential for the proposed management activities to result in environmental impacts. Due to the diversity of attractive natural features, topography, and proximity to San Francisco, each of the 32 Natural Areas identified in the SNRAMP are valued for their recreational opportunities. As such, these lands support a substantial amount of outdoor recreation use by both local residents and visitors to the area.

Comments related to recreation received during the NOP scoping process included concerns about:

- The quality of the public recreation experience;
- Consideration of bicycling trails;
- Effects of off-leash dog areas on recreational resources;
- Effects of the introduction of endangered/threatened species on recreational opportunities, public access, and the administration of local public lands;
- Effects of restricting access and limiting activity uses in Natural Areas on recreation.

V.F.1 Regulatory Setting

Federal Regulations

There are no applicable federal regulations related to recreation for the proposed project.

State Regulations

California Coastal Act

The California Coastal Act includes specific policies that address issues such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works. The act also permanently established the California Coastal Commission. The policies of the act are the statutory standards that apply to planning and regulatory decisions made by the commission and by local governments, pursuant to the act. Implementation of the act's policies is accomplished primarily through the preparation of local coastal programs that include land use plans. To ensure that coastal resources are effectively protected in light of changing circumstances, such as new information and changing development pressures and impacts, the

commission is required to review each certified local coastal program at least once every five years. The only Natural Areas with recreation resources that fall within the jurisdiction of the California Coastal Act are India Basin Shoreline Park and Sharp Park.

Regional and Local Regulations

San Francisco Bay Plan

The San Francisco Bay Plan (Bay Plan) contains policies pertaining to the development of parks and recreational facilities in and near the Bay and public access to the Bay. The Bay Plan identifies priority use(s) for the Bay shoreline, an area defined as 100 feet inland from the mean high water line. These priority uses are identified on the plan maps and are defined as Ports, Water-related Industry, Water-oriented Recreation, Airports, and Wildlife Refuges. The only Natural Area with recreation resources that overlap the Bay shoreline is India Basin Shoreline Park.

Golden Gate Park Master Plan

Golden Gate Park is a 1,017-acre urban park located on the northern part of the San Francisco peninsula. The Golden Gate Park Master Plan contains objectives and policies to be used as guidelines for preservation, use, and development of the park. Objectives in the plan pertain to land use and activities, landscape preservation and renewal, park circulation, buildings, structures, and monuments, recreational uses and facilities, park management and security, and community involvement. Golden Gate Park contains the 26-acre Oak Woodlands Natural Area.

San Francisco General Plan, Recreation and Open Space Element

The Revised Draft Recreation and Open Space Element of the General Plan of the City and County of San Francisco was released for public review in the summer of 2011. The Revised Draft incorporates public and agency comments received since the release of the initial draft plan in May 2009. The revised draft contains objectives and policies regarding the short-term and long-term management of the open space network in the City and County of San Francisco as well as acting as a resource and planning guide for agencies with open space holdings in the City and County of San Francisco. Thirty-one of the 32 Natural Areas fall within the jurisdiction of the Recreation and Open Space Element of the General Plan for the City and County of San Francisco and must therefore be in compliance with the General Plan. The only Natural Area that falls outside the jurisdiction of the General Plan is the Sharp Park Natural Area, which is in San Mateo County.

San Francisco Dog Policy

The SFRPD released the Final Dog Policy in May 2008, which established designs and policies for specific parks that support off-leash dog use. The Dog Policy provides specific rules and regulations concerning dog use on lands within the City limits, including DPA siting criteria, boundaries, amenities, required signage, and specific criteria each dog must meet before entering an area, such as vaccinations and age requirements. There are 19 designated areas that support off-leash dog use within San Francisco, seven of which are Natural Areas. They are Bernal Hill, Buena Vista Park, Corona Heights, Oak Woodlands, Lake Merced, McLaren Park, and Pine Lake.

V.F.2 Environmental Setting

The predominant types of passive recreation activities that take place in Natural Areas are walking, hiking, running, dog walking, and nature watching. Active recreation is not supported by the Natural Areas, but some biking does take place on the paved trails around Lake Merced. Almost all of the Natural Areas include hiking trails, and most provide scenic views of San Francisco. Walking and biking trails were identified as one of the most important recreation facility needs for San Francisco residents, according to the 2004 SFRPD Recreation Assessment (SFRPD 2004). Of the individuals surveyed for that assessment, 67 percent participated in running or walking, the highest percentage for any of the 26 activities identified in the survey. Other activities that San Francisco residents participate in included visiting nature areas (61 percent, second on the activities list), bicycling (38 percent, fifth on the activities list), volunteering (22 percent, tenth on the activities list), and dog walking (20 percent, twelfth on the activities list).

For the purposes of the SNRAMP, recreation facilities refer primarily to trails, DPAs, and lakes within the 32 Natural Areas analyzed in this EIR.

As described in Section III.E.1, the recreation goals for the Natural Areas are as follows:

- To provide opportunities for passive recreation uses (e.g., hiking and nature observation) that are compatible with conservation and restoration goals; and
- To improve and develop a recreation trail system that provides the greatest accessibility, while protecting natural resources.

Approximately 211,303 feet (40.0 miles) of trails exist within the Natural Areas. This includes primary (those officially designated as main routes into a Natural Area from large neighborhoods, main roadways, or parking areas) and secondary trails (those officially designated as routes and social trails that have not been officially designated and are usually trails created by users). There

are 95.2 acres of SFRPD DPAs within the Natural Areas that are designated off-leash areas for dogs. In addition, the Sharp Park Natural Area in Pacifica surrounds the Sharp Park Golf Course and archery range, which are not part of the Natural Area. The 18-hole golf course is at the foot of Sharp Park Road, bisected by Highway 1, and covers approximately 120 acres of the 411-acre Sharp Park.

V.F.3 Impacts

Significance Thresholds

A proposed project would have a significant recreation impact if it were to result in the following:

- Increase the use of neighborhood and regional parks or other recreation facilities such that the physical deterioration of the facilities would be substantial or accelerated;
- Include recreation facilities or require the construction or expansion of recreation facilities that might have an adverse physical effect on the environment; or
- Physically degrade existing recreation resources.

Trails and trail-related activities are a main component of recreation within the Natural Areas, and trail users generally benefit from the presence of natural resources. As such, the SNRAMP provides recommendations to develop site stewardship and recreation uses compatible with natural resource protection. Three of the major actions proposed by the SNRAMP that would impact recreation are modifying and closing trails, reducing space allotted for DPAs, and continuing to allow off-leash dog recreation in areas where the Natural Areas' resources have the potential to deteriorate. As a result, paved, social, and hiking trails, as well as DPAs are the primary recreation facilities discussed in the impacts section. In addition to these actions, proposed modifications to the Sharp Park Golf Course are also discussed in this analysis.

The SNRAMP outlines an adaptive management approach (Section III.E.4). Through this process, the ongoing management of recreation facilities in the Natural Areas would be monitored to ensure that the recreation goals and the intent of the adaptive management process are being met. This would be achieved by evaluating the success of site-specific recreation facility recommendations that are in this impacts section and are outlined in Section III.I.

Impacts Addressed in the Initial Study

The Initial Study and NOP did not address the SNRAMP's potential to affect recreational resources. Therefore, this EIR evaluates the impacts of the SNRAMP's management action for each of the 32

Natural Areas as they relate to recreational resources. Recreational impacts are identified based upon the CEQA significance criteria set forth on page 255.

Significant Natural Resource Areas Management Plan Impacts

Impacts related to the second CEQA significance threshold identified above, related to adverse physical impacts of new or expanded recreation facilities, are addressed in the other sections of Chapter V; proposed project is a recreation/management project and as such this EIR evaluates the physical environmental impacts of the SNRAMP on the natural environment in the other Chapter V sections. For the other two CEQA significance thresholds, this analysis addresses the potential impacts of the proposed SNRAMP's programmatic projects followed by project-level impacts (routine maintenance and the Sharp Park restoration activities).

Increased Use of Neighborhood and Regional Parks

Programmatic Impacts

Impact RE-1: Implementation of programmatic projects under the SNRAMP would not have a substantial adverse effect on the use of recreation facilities in neighborhood and regional parks or other recreation facilities such that increased physical deterioration of those facilities would occur. (Less than Significant)

Programmatic projects with the potential to affect recreational resources include trail related activities and modifications to dog play areas, as addressed below.

Trails

According to the SFRPD Recreation Assessment, the condition of many SFRPD facilities is deteriorating, and the recreation facilities most important to residents are walking, running and visiting nature (SFRPD 2004). As a programmatic project, the SNRAMP calls for closing 54,411 feet (10.31 miles) of social trails and creating 5,897 feet (1.1 miles) of new trails, resulting in a net decrease of 48,514 feet (9.2 miles), or 23.0 percent of the trails with Natural Areas. Trail closures would focus primarily on eliminating social trails because they are considered unsafe, to protect sensitive species or habitat, or to prevent soil erosion. It is unlikely that closing social trails, redundant trails, or trails near sensitive species or habitat would deter a substantial number of people from using Natural Areas and increase the use of other recreational facilities because general access would remain unimpeded and may improve through the creation of new trails and improving existing trails. Therefore, it is unlikely that closing trails in Natural Areas would

substantially increase the use of other recreational facilities to an extent that would result in substantial deterioration or the acceleration of deteriorating conditions at those facilities.

To accommodate the recreating public, approximately 1.1 miles of new trails would be created, and existing primary trails would be improved to provide a more manageable trail system with greater access and easier navigation through the parks. An improved trail system in Natural Areas could result in an increase in visitor use by making them more attractive and accessible to more types of users.

The new trail locations in the SNRAMP are conceptual and require further refinement and evaluation when resources become available to construct them. While the basic concept for primary and secondary trails would continue to guide trail creation in the Natural Areas, the exact routes and configurations may be subject to further refinements, based on topography and other site-specific conditions.

The construction of new trails could impact trail users in the short-term by altering the landscape and introducing noise and equipment that diminish the recreational experience. However, these impacts would be temporary and limited in extent and duration. In the long-term, trail users would benefit from improved trail conditions and from potential connections with the existing City street bicycle system, resulting in direct beneficial impacts. Therefore, construction of new trails would have a ***less than significant*** impact on recreational resources.

Dog Play Areas

Of the 95.2 acres of DPAs within the Natural Areas, 19.3 acres (20.3 percent) are proposed for closure (Recommendations GR-8a, GR-8b, and GR-8c). This accounts for 16.4 percent of the total acres of SFRPD-maintained DPAs. Under the SNRAMP, SFRPD would remove the Lake Merced DPA and would decrease the area of two DPAs, one on Bernal Hill and the other in McLaren Park. These DPAs are in areas with high erosion potential and sensitive vegetation or habitat, and additional protection is required. Although the Lake Merced DPA would be closed in accordance with the SFRPD Final Dog Policy (SFRPD 2002) and SFPUC's Lake Merced Watershed Report (SFPUC 2011), all Natural Areas would still be open to on-leash dog use. The SNRAMP also calls for monitoring the potential impact of DPAs on oak woodlands at Buena Vista Park, Golden Gate Park Northeast, and MA-1 areas of the McLaren Park Shelley Loop. At Bernal Hill, at least 2.5 acres of the proposed closures are largely inaccessible due to slopes of between 45 and 90 degrees. The possibility for an increase in users at the DPAs in McLaren Park and on Bernal Hill depends on the current and reasonably foreseeable future use of the DPAs and enforcement of the citywide dog

policy. According to the SFRPD Final Dog Policy (SFRPD 2002), DPAs should be reviewed every three years for, among other things, degradation of the area. Similarly, the likelihood that Lake Merced recreation users would use other DPAs within or outside of the Natural Areas largely depends on the users' proximity to another DPA; the next closest DPA is at Pine Lake, less than one mile north of Lake Merced. As the distance between a user and a DPA increases, the likelihood that the user would visit that DPA decreases. Thus, it is unlikely that DPAs within and outside of the Natural Areas would experience increased use to the point of physical degradation from the loss of 19.3 acres distributed among three DPAs; the remaining six DPAs (Bernal Hill, Buena Vista Park, Corona Heights, Golden Gate Park Oak Woodlands, McLaren Park, and Pine Lake) would have 75.9 acres available for off-leash use. The closure of the Lake Merced DPA would have two potential direct, adverse long-term impacts: reducing access to DPA users and concentrating DPA users into the areas that remain open. However, because the DPA at Lake Merced is not heavily used and the Bernal Hill and McLaren Park DPA reductions represent a small portion of otherwise large DPAs, the increase in DPA users at other areas would not be substantial enough to result in the physical deterioration or accelerated deterioration of recreational facilities. As a result, the programmatic activities related to dog use would have a ***less than significant*** impact with respect to the physical deterioration of recreation facilities from increased use.

Project-Level Impacts (Routine Maintenance)

Impacts RE-2: Implementation of routine maintenance activities under the SNRAMP would not have a substantial adverse effect on the use of recreation facilities in neighborhood and regional parks or other recreation facilities such that increased physical deterioration of those facilities would occur. (No Impact)

While improving primary trails in Natural Areas could encourage use, regular routine maintenance of trails, such as clearing deposited soil from steps and replacing steps or trail edging, would help mitigate any deterioration of those facilities; routine maintenance is not likely to increase use of recreational facilities outside the Natural Areas, for example by deterring visitors from using the Natural Areas. Such activities as removing invasive weeds and trees and maintaining trails and catchment basins are not considered activities that would deter the recreating public from visiting the Natural Areas. Rather, routine maintenance activities would likely enhance the recreation experience offered by the Natural Areas. As a result, the proposed routine maintenance activities would not be expected to increase the use of the neighborhood or regional parks, and the proposed routine maintenance activities would have ***no impact*** related to the physical deterioration of such recreation facilities.

Project-Level Impacts (Sharp Park Restoration)

Impact RE-3: Implementation of the Sharp Park restoration activities under the SNRAMP would not have a substantial adverse effect on the use of recreation facilities in neighborhood and regional parks or other recreation facilities such that increased physical deterioration of those facilities would occur. (Less than Significant)

The habitat restoration effort proposed to take place at Sharp Park would modify about 19 acres of the golf course. The impact of the Sharp Park restoration activities on the golf course is addressed further below under Impact RE-6. The restoration effort entails removing a hole and reducing the size of other holes, which could affect the playability and might deter people from using the Sharp Park Golf Course, potentially resulting in an increased use of other nearby golf courses. There are approximately 16 public and municipal golf courses within reasonable driving distance of the Sharp Park Golf Course (the farthest is 32 road miles away), 12 of which are on the San Francisco peninsula. Ten courses, including the closest course (Harding Park) at approximately eight miles north of Sharp Park, offer a full 18 holes, and the remaining six offer nine holes. Visitation to these public golf courses may increase slightly during the short-term restoration of Sharp Park and renovation of the golf course. However, due to the relatively large number of nearby golf courses, and because any increase in visitation would be dispersed among the many other public and municipal golf courses along the San Francisco peninsula, Sharp Park restoration activities are not expected to result in a substantial increase of users at any one golf course such that physical deterioration would be expected to occur. Also, increased use of other golf courses would not exceed the maximum daily capacity established by those courses. Based on the above, the proposed habitat restoration efforts at Sharp Park would result in a ***less than significant*** impact on other nearby golf courses.

Physical Degradation of Existing Recreation Facilities

Programmatic Impacts

Impact RE-4: Implementation of programmatic projects under the SNRAMP would not have a substantial adverse effect on the physical characteristics of existing recreation facilities. (Less than Significant)

One of the objectives of the proposed project is to provide guidelines for recreational uses compatible with San Francisco's natural resources. These guidelines are intended to promote passive recreation, including improving and developing a recreational trail system within the Natural Areas. As such, the SNRAMP calls for the creation of 5,897 feet (1.1 miles) of new trails and

the closure or rerouting of 54,411 feet (10.31 miles) of trails. However, trail access would be maintained in all Natural Areas. Creating new trails and closing some existing social trails could enhance the recreation experience offered by the Natural Areas by upgrading trails to be more user friendly through increased accessibility and improved trail conditions.

The creation of new trails is not expected to have an adverse impact on fishing and water access at Lake Merced and India Basin. Current levels of access to the lakes would remain over the long-term, and fishing would continue to be offered in these Natural Areas.

As a result, the proposed project would not limit access to, or result in the physical deterioration of the Natural Areas or any other recreation facilities. For the reasons stated above, the impact of the SNRAMP on recreational resources would be considered ***less than significant***.

Project-Level Impacts (Routine Maintenance)

Impact RE-5: Implementation of routine maintenance projects under the SNRAMP would not have a substantial adverse effect on the physical characteristics of existing recreation facilities. (Less than Significant)

Impacts on recreation facilities from routine maintenance are similar to those described above under Impact RE-2. Routine maintenance may create short-term disturbance of recreation facilities, but over the long-term it would enhance those facilities, resulting in a ***less than significant*** impact with respect to the physical deterioration of recreational resources.

Project-Level Impacts (Sharp Park Restoration)

Impact RE-6: Implementation of the Sharp Park restoration activities under the SNRAMP would have a substantial adverse effect on the physical characteristics of existing recreation facilities. (Less than Significant with Mitigation)

The proposed habitat restoration effort at Sharp Park would modify about 19 acres of the Sharp Park Golf Course. The golf course is on the western side of Sharp Park, and restoration would primarily affect the layout of the golf course holes, including Holes 10, 12, 14, 15, and 18 on the eastern edge of Laguna Salada. The proposed habitat corridor between Horse Stable Pond and Laguna Salada also would be constructed requiring Holes 10 and 13 to be slightly shortened or narrowed and Hole 12 to be closed. This habitat corridor would be approximately six acres, bringing the total of modified area at the golf course to about 19 acres. Although the approximately 19 acres includes both playable and unplayable space, removing a hole would affect the playability of the 18-hole course,

significantly affecting this recreation facility. However, with implementation of M-RE-6, which calls for retaining the golf course as an 18-hole course, this impact would be reduced to ***less than significant***. CEQA requires an analysis of impacts of mitigation measures (CEQA Guidelines Section 15126.4(a)(1)(D)); therefore, pages 264 through 269 address the impacts of M-RE-6.

Due to the location of the archery range on the opposite side (eastern side) of Sharp Park, the archery range would not be impacted by the proposed Sharp Park restoration project.

M-RE-6: Restoration of the Sharp Park Golf Course to 18 Playable Holes

The SFRPD shall coordinate with a golf course consultant to restore the playability of the Sharp Park Golf Course, which would involve replacing Hole 12 either on the west (Option 1) or east (Option 2) side of Highway 1. Replacing the hole on the west side of Highway 1 may also require moving an additional hole west of the highway to retain playability and flow of the course, thereby increasing the number of holes west of the highway to 15 and decreasing to three the number of holes to the east. Creating a new hole east of Highway 1 would decrease the number of holes west of the highway to 13 and increase to five the number of holes to the east. The determination of where the replacement hole is constructed and whether additional holes need to be moved would require additional environmental review.

Cumulative Impacts

Impact RE-7: The proposed project, in combination with other planned and foreseeable future projects, would result in a cumulatively considerable significant impact related to recreation. (Significant and Unavoidable)

The geographic scope of this analysis includes San Francisco and Pacifica. Cumulative projects that would have an impact on recreation resources include those that reduce the overall recreation experience provided by the Natural Areas. This includes projects that may result in a significant increase in the regional population resulting in overcrowding of the Natural Area, a decrease in currently available recreation opportunities, consequently putting increased pressure that is unable to be absorbed by other Natural Areas, or a physical or visual change in the landscape that adversely impacts the appeal of a Natural Area. Implementation of the proposed GGNRA Dog Management Plan may further restrict dog access and off-leash areas within GGNRA land holdings, including Fort Funston (near Lake Merced), Milagra Ridge (near Sharp Park), Mori Point (near Sharp Park), and Sweeney Ridge (near Sharp Park). In addition, the SNRAMP proposes to close the Lake Merced DPA and reduce the size of the DPAs at Bernal Hill and McLaren Park. On-leash dog use would still be allowed at these and all other Natural Areas. The combined reductions in off-

leash areas proposed by the GGNRA and the SFRPD could result in an increase in dog use at the remaining Natural Areas. An increase in dog use at the Natural Areas could accelerate the physical deterioration of those DPAs and the Natural Areas in general. Given the speculative nature of the increased level of use that could result from these proposals, the impacts to recreation are conservatively determined to be significant from the combined cumulative projects. The contribution of the SNRAMP project to this potentially significant impact would be cumulatively considerable, specifically as a result of the closure of the Lake Merced DPA.

DPAs within the Natural Areas would continue to be evaluated in accordance with the SFRPD's Dog Policy; the SFRPD would monitor DPAs for their effects on the Natural Areas and develop solutions to any identified issues. These established procedures are considered adequate, and further monitoring procedures would not be expected to reduce the impact. The potentially significant impact to recreational resources as a result of increased use resulting from cumulative actions could be mitigated by adding a new DPA at a nearby Natural Area or other nearby property. However, as discussed in this document, there is a current moratorium[1] on new DPAs, and the mitigation therefore would not be feasible. As a result, this impact would be ***significant and unavoidable***.

The Natural Areas are within parks throughout San Francisco and in Pacifica. They are insulated from the urban environment and are open environments composed of vegetation, trails, lakes, and geologic features. Most of the projects that may cumulatively impact recreation resources within Natural Areas are residential/commercial developments and recreation facility construction occurring outside the Natural Areas. New developments could bring additional recreation users to the Natural Areas, which could increase the use of those natural areas, resulting in some crowding, degrading the overall passive recreation experience over time. The residential/commercial development that would have the greatest potential impact on cumulative recreation resources is the Candlestick Point-Hunters Point Shipyard Phase II Development project, which would have a permanent workforce of over 10,000 people and provide housing for over 25,000 residents. The Natural Areas most affected by the Candlestick Point-Hunters Shipyard project are Bayview and India Basin Shoreline Park, both of which are in eastern San Francisco. These areas offer recreation trail uses, views of the City, and abundant wildlife observation. Bayview Park is a popular Natural

[1]There is direction from the Recreation and Park Commission not to establish new DPAs until systemwide DPA planning is completed. For the purposes of this EIR, this is considered a moratorium in that no new DPAs are reasonably foreseeable. This direction was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee.

Area where most public use is confined to a looping primary paved path that is in generally good condition. However, this paved path is experiencing minor erosion issues due to use, which may further deteriorate if increased visitation and use were to occur as a result of the Candlestick Point project and without regular maintenance. Natural open space is included as part of the Candlestick Point project, which would offer additional public recreational opportunities, reducing the potential for overuse of the Natural Areas due to the anticipated increase in population from the Candlestick project. India Basin Shoreline Park is also a popular Natural Area that offers shoreline access to the Bay for fishing, kayaking, and other water-dependent recreation. Improvements to this Natural Area are ongoing and include the addition of picnic tables, pathway improvements, landscaping, irrigation, and wetland restoration and creation.

Some of the key goals identified in the SNRAMP include those related to conservation and restoration, environmental stewardship, monitoring the health of the Natural Areas, as well as aesthetic viewsheds. Regular maintenance activities, such as those discussed in Impact RE-2 above, would help achieve these goals and minimize any potential cumulative impacts of additional development around the Natural Areas. In addition to aforementioned improvements and regular maintenance, as a part of the SFRPD Trails Program, trails would be improved with SFRPD- and/or grant-funded capital projects. Trail improvement in areas surrounding the 32 Natural Areas would dissipate recreation users throughout the trail system and overall would enhance the experience of passive recreation users, resulting in a beneficial and ***less than significant*** cumulative impact on recreational facilities.

Other potential projects proposed outside the SNRAMP include creating additional recreation opportunities at McLaren Park (outside the Natural Area) and Oak Woodlands in Golden Gate Park. Additionally, replacing existing turf fields with new artificial turf and adding new amenities such as benches, bleachers, picnic tables, barbeque pits, new maintenance sheds, and new pedestrian pathways (at such locations as Buena Vista Park, Lily Pond, Oak Woodlands, Strawberry Hill, and Whiskey Hill Natural Areas) could shift some passive activities and visitors away from some of the recreation areas in these Natural Areas. However, these projects are designed to improve the recreation experience in these areas, making the overall cumulative impact on recreational resources beneficial and ***less than significant.***

V.F.4 Impacts of Mitigation Measures

Implementation of Mitigation Measure M-RE-6 could result in additional environmental impacts; other mitigation measures identified in this EIR would not result in environmental impacts. In accordance with CEQA and CEQA Guidelines Section 15126.4(a)(1)(D), impacts of mitigation measures must be addressed.

M-RE-6: Restoration of the Sharp Park Golf Course to 18 Playable Holes

The SFRPD would coordinate with a golf course consultant and would restore the playability of the Sharp Park Golf Course, which would involve replacing Hole 12 either on the west (Option 1) or east (Option 2) side of Highway 1. Replacing the hole on the west side of Highway 1 may also require moving an additional hole west of the highway to retain playability and flow of the course, thereby increasing the number of holes west of the highway to 15 and decreasing to three the number of holes to the east. Creating a new hole east of Highway 1 would decrease the number of holes west of the highway to 13 and increasing to five the number of holes to the east. The determination of where the replacement hole is constructed and whether additional holes require moving would be evaluated under a separate environmental review.

Implementation of Mitigation Measure M-RE-6 could result in additional environmental impacts. While it is speculative to precisely identify all potential impacts related to its implementation, discussed below are the types of impacts that could result from the range of activities under this mitigation measure.

Land Use and Land Use Planning

Implementing M-RE-6 would change the layout of the golf course holes and ensure playability of the Sharp Park Golf Course. This would not impact land use and land use planning.

Aesthetics

This mitigation measure would occur within the area of the existing golf course. While trees and other vegetation may be removed, alterations to the landscape under this mitigation measure would be consistent with the existing use and character of the area. No buildings or structures would be constructed that could block or alter general scenic vistas. No new lighting would be installed that could alter nighttime darkness or create glare. As a result, there would be less than significant impacts on aesthetics.

Population and Housing

Implementation of the Mitigation Measure M-RE-6 would have no impacts on population and housing because it would only reconfigure the golf course within the Sharp Park area and not induce population growth or result in displacement of houses or people.

Cultural and Paleontological Resources

Impacts on archaeological resources and human remains would be similar to those identified under Impacts CP-16 and CP-22, but more likely to occur as a result of this mitigation measure because there is the potential for ground disturbance outside the existing landscaped golf course and east of Highway 1.

Impacts on paleontological resources would be the same as those identified under Impact CP-19.

Impacts on historical resources, specifically the Sharp Park Golf Course, would result in significant impacts if any reconfiguration of the course resulted in additional holes east of Highway 1. Adding holes on the east side of the freeway diminishes the historic integrity of the landscape because it changes the balance of holes that were originally on the east and west side of Highway 1 and creates a hole in an area that was not originally planned and not originally part of the Mackenzie-designed course. As a result, these impacts could be significant and unavoidable. Increasing the number of holes west of Highway 1 would be beneficial to the Sharp Park Golf Course because it would restore some of the elements that Mackenzie had implemented in his original design of this course, such as coast side holes. This mitigation measure would change the layout of the holes, but the new holes would be in areas of the course where Mackenzie situated holes in his original design, and would be in keeping with the historic boundaries of the golf course. As a result, impacts to architectural historic resources could be less than significant if the hole is placed west of Highway 1.

Transportation and Circulation

Implementation of this mitigation measure would have no impact on roadway capacity or level of service near the project area. The reconfiguration activities would result in a temporary increase of construction vehicles. However, this increase would be minor and is not expected to result in a substantial impact on the nearby roadways Therefore, impacts on transportation and circulation would be less than significant.

Noise

The replacement of Hole 12 to restore the playability of the Sharp Park Golf Course would result in additional construction activities potentially on either side of Highway 1. Noise generated from

these construction activities would be on the north side of the golf course, at least 500 feet away from residential areas. Further, potential noise impacts are expected to be discontinuous and of short duration during the day time. Therefore, noise impacts would be less than significant.

Air Quality

This mitigation measure could result in additional air pollutant emissions on the east and west sides of Highway 1. Because the SFRPD would comply with the San Francisco Dust Control Ordinance and submit a dust control plan, impacts from fugitive dust emissions would be less than significant. Because of the nature and timeline for these activities, these emissions may exceed the daily criteria pollutant thresholds of significance established by the Bay Area Air Quality Management District (BAAQMD). As would be done for the Sharp Park restoration, the SFRPD would implement mitigation measures to reduce the impacts of these emissions. However, even with the implementation of those measures, criteria pollutant levels may remain above the BAAQMD daily threshold and could result in significant and unavoidable air quality impacts. Although the degree of excavation and cut and fill to maintain the playability of the golf course is unknown, it is anticipated that the level of activity would be lower than that associated with the Sharp Park restoration activities. A quantitative health risk assessment of the Sharp Park restoration activities indicated that the BAAQMD health risk thresholds would not be exceeded; therefore, health risk impacts on sensitive receptors from this mitigation measure also would be less than significant. Equipment exhaust could occasionally emit odors attributed to gasoline combustion, but these odors would be less than significant.

Greenhouse Gas Emissions

Increased construction vehicles and equipment operation under this mitigation measure would contribute short-term emissions to the annual increases in GHGs. The BAAQMD has not identified a significance threshold for construction-related GHG impacts. Rather, the BAAQMD recommends consideration of best management practices, including the use of alternative fueled equipment and recycling or reuse of construction waste or demolition materials. All municipal projects are required to comply with the City's Construction Demolition and Debris Ordinance. The Construction Demolition and Debris Ordinance requires recycling or diversion of at least 75 percent of construction waste. SFRPD would be required to comply with these applicable regulations. Furthermore, as discussed in Section VI, Other CEQA Issues, the Sharp Park restoration activities are anticipated to result in construction-related GHG emissions on the order of 796 metric tons of carbon dioxide equivalents. Although the degree of excavation and cut and fill to maintain the playability of the golf course is unknown, any construction-related GHG emissions would be

negligible compared to annual emissions within the region, and all municipal projects would be required to comply with the aforementioned City regulations, ensuring that any impacts would be less than significant.

Wind and Shadow

Implementation of M-RE-6 may result in tree removal, which is not expected to alter wind patterns or result in a net increase in shadow. Any tree removal would not be anticipated to increase ground-level wind speeds substantially. Further, the mitigation measure would not result in new structures and therefore would not have the potential to increase shadow on open spaces. Therefore, the mitigation measure would have no impacts related to wind and shadow.

Utility and Service Systems

Implementation of M-RE-6 would not increase the demand related to wastewater treatment, water supply, or stormwater drainage. Further, no additional solid waste would be generated as a result of this mitigation measure. Therefore, it would have no impacts on utility and service systems.

Public Services

This mitigation measure would not result in the increase of population and therefore would not require the need for new or expansion of existing public services; therefore, it would have no impacts on public services.

Biological Resources

The impacts to biological resources as a result of Mitigation Measure M-RE-6 may include the additional removal of trees on the east side of Highway 1 to accommodate potential new hole construction. The potentially impacted environment east of Highway 1 is composed primarily of urban forest which is dominated by nonnative tree species. Creating a new hole to the west of Highway 1 would require the conversion of a small amount of coastal scrub habitat which has been identified as a sensitive natural community. These activities would have temporary impacts as well as potential long-term impacts, specifically potential for disturbance of special status bird species and the removal of coastal scrub habitat. With implementation of biological mitigation measures identified in Section V.G, such as M-BI-1a and M-BI-1b, M-BI-5, and M-BI-13, the impacts from this mitigation measure would be reduced to less than significant.

Geology and Soils

This mitigation measure may result in short-term disturbance of soils and vegetation that could increase the erosion potential within the active project areas. This potential would be minimized by

the use of the erosion control BMPs included as part of the SNRAMP. Over the long-term, disturbed areas would be revegetated or otherwise landscaped, resulting in negligible net changes in the erosion potential following completion of the mitigation actions. As a result, the impacts on geology and soils would be less than significant.

Hydrology and Water Quality

Under this mitigation measure, the golf course boundary may be expanded into the Natural Area. Hydrologic and water quality impacts could result from activities associated with this land conversion. One of the potential areas where expansion could occur is between the seawall and Laguna Salada south of current Hole 16, although expansion could also potentially occur east of Highway 1. Short-term impacts on water quality could occur if soil or spilled fuels or other substances were transported from new construction sites to Laguna Salada or Sanchez Creek via storm water runoff. Such occurrences would be prevented or minimized by implementation of construction storm water BMPs in accordance with National Pollutant Discharge Elimination System (NPDES) permit requirements and Mitigation Measure M-HZ-13. Expansion of the golf course into new areas could alter existing drainage and infiltration patterns, either increasing or reducing storm water runoff. Due to the small land areas involved and because the golf course would involve a change in vegetation cover rather than any increase in impervious surface area, any change in runoff volume is likely to be insignificant to flooding potential. As the amount of land area devoted to golf course use would not change significantly, the net quantities of agricultural chemicals (fertilizers, herbicides) used on the golf course, and the net loading to surface water or groundwater is not expected to change significantly. Therefore, this mitigation measure would have a less than significant effect.

Hazards and Hazardous Materials

Implementation of M-RE-6 would not have significant impacts on hazards and hazardous materials. Replacement of Hole 12 would require the use of motor vehicles which includes the use of hazardous materials such as fuel, oil, solvents, and lubricants. Hazardous materials would be used in marginal quantities, and activities involving hazardous materials and hazardous waste would be conducted in accordance with strict health and safety standards mandated by the Occupational Safety and Health Administration (OSHA). Further, with the implementation of M-HZ-13, which requires the preparation of an emergency response plan, potential impacts related to the transport, use, or release of hazardous materials would further ensure that impacts of this mitigation measure would be less than significant.

Mineral and Energy Resources

The Natural Areas are not designated areas of significant mineral deposits. Therefore, implementation of M-RE-6 would have no impacts on mineral resources. Use of energy resources, such as diesel and gasoline, is expected to be minor and is considered a less than significant impact. Additionally, implementing Improvement Measure I-ME-1 to increase energy efficiency and Mitigation Measure M-AQ-4 to limit idling of diesel-fueled vehicles would reduce the potential impacts on the use of energy resources.

Agriculture and Forest Resources

Implementation of M-RE-6 would have no impacts on agriculture or forest resources because there are no farmlands at Sharp Park. Further, any removal of trees to replace Hole 12 would not impact zoning of forest land or timberland and would not result in a substantial loss or conversion of forest land. Tree removal would not include trees designated for commercial harvest. Further, tree removal would be in a very small area that would not result in a substantial conversion of the urban forest to non forest use. The Sharp Park Golf Course would continue to be used for recreational activities. Therefore, implementation of M-RE-6 would have no impacts on agriculture and forest resources.

V.G BIOLOGICAL RESOURCES

This section describes the biological resources of the Natural Areas and the potential for the proposed project to impact those resources. The environmental setting information is largely based on the data generated and gathered for the SNRAMP (SFRPD 2006); additional sources of information are cited in the text and are listed in Chapter VIII, References.

Comments related to biological resources received during the NOP scoping process included concerns about the following:

- The use of wood chips on wildlife, including bees and birds, some of which use dirt areas for dust baths;
- India Basin Shoreline waterfowl species that are present from fall through spring;
- Great blue herons at Lake Merced;
- The impacts on several nesting bird species from having access to Lake Merced's East Lake shoreline between September 1 and March 31;
- Non-breeding birds that use the Natural Areas during some part of the year;
- An updated inventory of all species of concern;
- Effects of mosquito control measures on the California red-legged frog population and on residential neighbors of Sharp Park;
- Impacts of tree removal on bird and wildlife habitat;
- Impacts of Sharp Park activities on the long-term survival and recovery of the San Francisco garter snake;
- Effects of dog impacts on plants and wildlife;
- Impacts on common wildlife from clearing underbrush and blackberry;
- Failure to replace eucalyptus trees with native plants;
- Discussion of important bird habitat at Interior Greenbelt for yellow warblers, Steller's jays, bush-tits, song sparrows, owls, and red-tailed hawks and impacts on sensitive bird species living in or using the Interior Greenbelt from the removal of eucalyptus trees and brush;
- Impacts of new trails through sensitive natural areas and wildflower fields;
- Impacts on endangered species that use Sharp Park lands;
- Impacts on beach areas used for roosting and breeding;

- Impacts on newts in the pond in east Sharp Park;
- Effects of ecosystem changes;
- Impacts of tree removal at Mount Davidson and Sharp Park;
- Impacts of off-leash dog areas in sensitive Natural Areas;
- Impacts on people, animals, and insects from herbicide application;
- Impacts on amphibians from chloramine in the water; and
- Impacts from leaving tree stumps on the ground that create a breeding medium for mosquitoes, which are vectors of dog and cat heartworm.

V.G.1 Regulatory Setting

Federal Regulations

Endangered Species Act of 1973

The Endangered Species Act (ESA) (16 USC, 1531-1543) and subsequent amendments establish legal requirements for the conservation of endangered and threatened species and the ecosystems they depend on.

Section 7 of the ESA requires federal agencies, in consultation with, and with the assistance of, the Secretary of the Interior or the Secretary of Commerce, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or to destroy or adversely modify critical habitat for these species. The USFWS and National Marine Fisheries Service (NMFS) share responsibilities for administering the ESA. Regulations governing interagency cooperation under Section 7 are found at 50 CFR, Part 402. The biological opinion (BO) issued at the conclusion of formal Section 7 consultation may include a statement authorizing a take (i.e., to harass, harm, pursue, hunt, wound, kill) that may occur incidental to an otherwise legal activity.

Section 9 of the ESA lists those actions that are prohibited, including take of listed species of fish and wildlife without special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, such as breeding, feeding, or sheltering. "Harass" is further defined as actions that create the likelihood of injury to listed species to an extent that significantly disrupts normal behavior patterns, which include breeding, feeding, and sheltering.

Clean Water Act

The Clean Water Act (33 USC, 1251-1376) establishes legal requirements for restoring and maintaining the chemical, physical, and biological integrity of the nation's waters.

Section 401 of the Clean Water Act requires an applicant for a federal license or permit that allows activities that discharge to waters of the United States to obtain a state certification that the discharge complies with other provisions of the Clean Water Act. The Regional Water Quality Control Boards administer the certification program in California.

Section 404 of the Clean Water Act establishes a permit program, administered by the U.S. Army Corps of Engineers (USACE), regulating the discharge of dredged or fill material into waters of the United States, including wetlands. An area is classified as a wetland under Section 404 of the Clean Water Act if it contains all three of the following parameters: hydric soils, hydrophytic vegetation, and wetland hydrology.

Implementing regulations by the USACE are found at 33 CFR, Parts 320-330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the EPA in conjunction with the USACE (40 CFR, Part 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

In order to be protected under Sections 404 and 401 of the Clean Water Act, wetlands and other waters of the US must be classified as one of the following:

- Traditional navigable waters;
- Wetlands next to traditional navigable waters;
- Nonnavigable tributaries of traditional navigable waters that are relatively permanent, where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); or
- Wetlands that directly abut the tributaries described in the previous bullet (USACE 2008).

The USACE would decide jurisdiction over the following waters, based on a fact-specific analysis, to determine whether they have a significant nexus with a traditional navigable water:

- Nonnavigable tributaries that are not relatively permanent;

- Wetlands next to nonnavigable tributaries that are not relatively permanent; or
- Wetlands next to but that do not directly abut a relatively permanent nonnavigable tributary.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC, 703-711) implements a treaty signed by the United States, Canada, Mexico, and Japan that makes it unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or kill migratory birds. The law also applies to the removal of nests (such as swallow nests on bridges) occupied by migratory birds during the breeding season. The MBTA states that it is unlawful to take these species, their nests, their eggs, or their young anywhere in the United States.

Noxious Weed Act of 1974

This act provides for the control and management of nonindigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health. Under this act, the Secretary of Agriculture has the authority to designate plants as noxious weeds and to inspect, seize, and destroy products and to quarantine areas, if necessary, to prevent the spread of such weeds.

State Laws and Regulations

California Environmental Quality Act

CEQA (PRC. 21000 et seq.) was enacted in 1970 to provide for full disclosure of environmental impacts to the public before state and local public agencies issue a permit. With regard to biological resources, CEQA gives consideration to "sensitive" (or "special status") plants, in addition to federally or state listed species. Sensitive species also include wildlife species of special concern listed by the CDFG. Sensitive species include plants on the California Native Plant Society's (CNPS) List 1A (presumed extinct), List 1B (rare, threatened, or endangered in California and elsewhere; eligible for state listing), or List 2 (rare, threatened, or endangered in California but more common elsewhere; eligible for state listing). To be conservative, CNPS List 3 (plants for which more information is needed) and List 4 (plants of limited distribution) are also considered sensitive.

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code 2050 et seq.) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates state agencies to not approve projects that would jeopardize the

continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under CESA. For projects that affect a species listed under both CESA and the federal ESA, compliance with the federal ESA would satisfy CESA if the CDFG were to determine that the federal incidental take authorization is consistent with CESA under Fish and Game Code Section 2080.1. For projects that would result in a take of only a state listed species, the applicant must apply for a take permit under Section 2081(b) of the CESA.

Native Plant Protection Act

California's Native Plant Protection Act (Fish and Game Code, 1900-1913) requires all state agencies to use their authorities to carry out programs to conserve endangered and rare native plants. Provisions of the Native Plant Protection Act prohibit the taking of listed plants from the wild and require notification to the CDFG at least 10 days in advance of any change in land use. This allows the CDFG to salvage listed plant species that would otherwise be destroyed. The applicant is required to conduct botanical inventories and consult with the CDFG during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

California Fish and Game Code, Sections 1600-1616

Under these sections of the Fish and Game Code, CDFG jurisdiction is determined to occur within the water body of any natural river, stream, or lake. The term stream, which includes creeks and rivers, is defined in Title 14, CCR, Section 1.72. The applicant is required to notify CDFG before constructing any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When a fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

California Fish and Game Code, Sections 3511, 4700, 5515, and 5050

The classification of fully protected species was the state's initial effort to identify and provide additional protection to those animals that were rare or that faced possible extinction. Lists were created for fish, amphibians and reptiles, birds, and mammals. Most of the species on these lists have subsequently been listed under either the state or federal endangered species act or both, although there are several exceptions, including the golden eagle.

The Fish and Game Code sections dealing with fully protected species state that these species "...may not be taken or possessed at any time and no provision of this code or any other law would be construed to authorize the issuance of permits or licenses to take any fully protected" species, although take may be authorized for necessary scientific research. This language arguably makes the "fully protected" designation the strongest and most restrictive regarding the take of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFG to authorize the taking of those species for necessary scientific research, including efforts to recover fully protected, threatened, or endangered species. The San Francisco garter snake, which occurs at the Sharp Park Natural Area, is listed as fully protected under the Fish and Game Code.

California Fish and Game Code, Sections 3503 and 3513

Section 3503 prohibits the take and possession of any bird egg or nest, except as otherwise provided by this code or subsequent regulations. Further, Section 3513 provides for the adoption of the MBTA's provisions. As with the MBTA, this state code offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of nongame migratory birds. The administering agency for these sections is the CDFG.

California Coastal Act

The California Coastal Act applies to projects that result in the diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes occurring in the coastal zone. The act limits these activities to certain types of projects (restoration projects, for example, are included among the permitted projects) and stipulates criteria under which development is permitted. Under the act, an area is classified as a wetland if it meets only one or more of the three parameters required by Section 404 of the Clean Water Act's definition of a wetland: hydric soils, hydrophytic vegetation, or wetland hydrology. The portion of the Sharp Park Natural Area extending 1,000 feet inland from the sea wall levee is in the coastal zone; of this area, the portion surrounding Laguna Salada and Horse Stable Pond falls within the jurisdiction of the California Coastal Commission, with the remainder under the City of Pacifica's Local Coastal Program. The proposed Sharp Park wetland restoration activities in the coastal zone would require a coastal development permit from the California Coastal Commission.

The Balboa Natural Area, the Lake Merced Natural Area, and the India Basin Shoreline Park Natural Areas are also within the coastal zone. None of the proposed routine maintenance activities at these Natural Areas are expected to require a coastal development permit. For programmatic projects, the SFRPD would determine the need for a coastal development permit at which time project details are known and a specific project is proposed. Although within the coastal zone,

shoreline areas within San Francisco Bay, including the India Basin Shoreline Park Natural Area, are under the jurisdiction of the Bay Conservation and Development Commission, which regulates shoreline development and other activities within 100 feet of the Bay shoreline. For programmatic projects at India Basin Shoreline Park, the need for a Bay Conservation and Development Commission permit would be determined at which time a specific project is proposed.

Regional and Local Regulations

The regional and local plans that contain policies protecting biological resources in the Natural Areas include the following and are discussed in more detail in Section IV, Plans and Policies:

- San Francisco General Plan, including the Draft Update of the Recreation and Open Space Element;
- Golden Gate Park Master Plan;
- San Francisco Sustainability Plan;
- Endangered Species Compliance Plan for the Sharp Park Golf Course;
- City of Pacifica General Plan;
- City of Pacifica Local Coastal Land Use Plan; and
- City of San Francisco Urban Forestry Council Landmark Tree Ordinance.

The SFRPD and the SNRAMP are not subject to the City of Pacifica's regulations protecting biological resources, such as its logging ordinance; for informational purposes, these regulations are presented in Section IV.B. However, activities may be subject to the Local Coastal Land Use Plan. No Habitat Conservation Plans or Natural Community Conservation Plans overlap with the Natural Areas. The goals of the SNRAMP are discussed in Chapter III, Project Description.

V.G.2 Environmental Setting

As discussed in Chapter III, the 32 Natural Areas are scattered mostly throughout the central and southern portions of San Francisco and constitute approximately four percent of the total city area; one Natural Area is in Pacifica. Most of the Natural Areas are used as recreational open spaces by residents and visitors. There are a number of designated trails and DPAs within the Natural Areas. As a result, although these are Natural Areas, use has impacted the habitat within the Natural Areas.

Other than a wetland delineation (described below), no additional field surveys were performed in preparation of this EIR to characterize the biological resources in the Natural Areas. Biological information for the Natural Areas is available in the SNRAMP and was based on extensive previously conducted field surveys performed specifically to characterize the biological resources in the Natural Areas; the information in the SNRAMP is assumed to have not changed substantially because the SFRPD conducted extensive surveys of the Natural Areas for preparation of the SNRAMP and ongoing maintenance activities have not revealed any new information that is not reflected in this EIR.

Special Status Species

The analysis of special status species in this EIR addresses all special status species anticipated to occur within each of the Natural Areas. For this EIR, special status species are those that are 1) legally protected by the CDFG, the USFWS, or the MBTA or 2) are locally significant sensitive species, including species on the National Audubon Society's Watch List or those under threat of local extirpation, as determined by the Yerba Buena chapter of the CNPS or the Golden Gate chapter of the National Audubon Society. State and federally listed species known to occur or that have been recorded historically in Natural Areas are presented in Table 9.

Legally protected species include species that are federally listed as endangered, threatened, or candidate species (USFWS 2009), that are state listed as endangered, rare, threatened, California fully protected, or species of special concern (CDFG 2009), or that are listed in the MBTA (protected species). Protected species also include those listed as 1A or 1B on the CNPS plant list; that is, the 1A list is for plants presumed to be extinct in California, and the 1B list is for plants that are rare or endangered in California and elsewhere (CNPS 2009). Protected species deserve special consideration and are therefore treated differently from locally significant species.

CEQA Guidelines Section 15380 further provides that a plant or animal species may be treated as rare or endangered even if it is not on one of the official lists but otherwise meets the criteria for an endangered or rare species (e.g., it is likely to become endangered in the foreseeable future). For this reason, this EIR also addresses locally significant species, which include species on CNPS List 2 (rare, threatened, or endangered in California but more common elsewhere and eligible for state listing), CNPS List 3 (plants for which more information is needed), and List 4 (plants of limited distribution). Locally significant species also include species on the National Audubon Society's Watch List or those under threat of local extirpation, as determined by the Yerba Buena chapter of

Table 9
State and Federally Listed Species That May Occur Within the Natural Areas

Common Name	*Scientific Name*	Federal/State/ CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Invertebrates				
Bay checkerspot butterfly	*Euphydryas editha bayensis*	FT/--/--	Native grasslands on outcrops of serpentine soil. Primary host plant is *Plantago erecta*; secondary host plants are *Orthocarpus densiflorus* and *O. purpurscens*.	P/Reported from Mount Davidson and Twin Peaks in 1980. Not currently present at either Natural Area.
Mission blue butterfly	*Icaricia icarioides missionensis*	FE/--/--	Grasslands. Larval host plants include *Lupinus albifrons*, *L. variicolor*, and *L. formosus.*	C/Reported at Sharp Park and McLaren Park in 1988 and at Bayview Park in 2001. Currently breeds on Twin Peaks and has been recorded in the Sharp Park upper canyon.
San Francisco silverspot butterfly	*Speyeria callippe callippe*	FE/--/--	Coastal scrub. Host plant is *Viola pedunculata*.	P/Historical population on Twin Peaks is presumed extirpated.[1]

Federal Status
FE = Endangered. Species in danger of extinction throughout all or a significant portion of its range.
FT = Threatened. Species likely to become endangered within foreseeable future throughout all or a significant portion of its range.
FPD = Proposed delisting.

California State Status
SE = Endangered. Species whose continued existence in California is jeopardized.
ST = Threatened. Species, although not presently threatened with extinction, that is likely to become endangered in the foreseeable future.
CSC = Species of Concern.
SFP = State Fully Protected under Sections 3511 and 4700 of the Fish and Game Code.
SR = State Rare.

California Native Plant Society
1A = Plants presumed extinct in California.
1B = Plants that are rare or endangered in California and elsewhere.

Occurrence
P = Potential
C = Confirmed
U = Unlikely

*Indicates species that may occur at Sharp Park only.

[1] Extirpate—to remove or destroy totally.

Table 9
State and Federally Listed Species That May Occur Within the Natural Areas (*continued*)

Common Name	*Scientific Name*	Federal/State /CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Reptiles and Amphibians				
California red-legged frog	*Rana aurora draytonii*	FT/CSC/--	Lowlands and foothills in or near permanent sources of deep water, with dense, shrubby, or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development.	C/Historically observed at Lake Merced, believed to be extirpated. Recently observed at Sharp Park.
San Francisco garter snake	*Thamnophis sirtalis elegans*	FE/SE, SFP/--	Freshwater marshes, ponds, and slow-moving streams. Prefers dense cover and water depths of at least one foot.	C/Reported near Horse Stable Pond in Sharp Park in 2008.
Western pond turtle	*Clemmys marmorata*	--/CSC/--	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Needs basking sites and upland habitat for egg-laying.	C/Presently occurs at Lake Merced and Sharp Park. Historically occurred at Pine Lake; however, presumed extirpated at this location.
Fish				
Tidewater goby*	*Eucyclogobius newberryi*	FPD (FE)/CSC/--	Shallow lagoons and lower stream reaches. Needs fairly still but not stagnant water and high oxygen levels.	P/Historically collected (1895), not recently observed in San Francisco.
Central California coast steelhead*	*Oncorhynchus mykiss irideus*	FT/--/--	Cold flowing freshwater.	P/Not available.
Birds				
Bank swallow	*Riparia riparia*	--/ST/--	Requires vertical banks/cliffs with fine-textured sandy soils near streams, rivers, lakes, and the ocean to dig a nesting hole.	C/Currently nests at Fort Funston and forages over Lake Merced.
California black rail	*Laterallus jamaicensis coturniculus*	--/ST/--	Freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays.	P/Historically reported, not recently observed in San Francisco.
Double-crested Cormorant	*Phalacrocorax auritus*	--/CSC/-	Nests on coastal cliffs and in trees.	C/Presently nests at Lake Merced.
Salt marsh common yellowthroat	*Geothlypis trichas sinuosa*	--/CSC/--	Saltwater and freshwater marshes. Requires thick cover for foraging and dense vegetation for nesting.	C/Presently occurs at Lake Merced and Sharp Park.

Table 9
State and Federally Listed Species That May Occur Within the Natural Areas (*continued*)

Common Name	*Scientific Name*	Federal/State /CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Yellow warbler	*Dendroica petechia*	--/CSC/--	Riparian woodlands.	C/Observed at Lake Merced in spring 2000, breeding undocumented.
Mammals				
American badger	*Taxidea taxus*	--/CSC/--	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Digs burrows and preys on burrowing rodents.	P/Not available.
Big free-tailed bat*	*Nyctinomops macrotis*	--/CSC/--	Needs high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	P (foraging habitat)/Not available.
Pallid bat*	*Antrozous pallidus*	--/CSC/--	Deserts, grasslands, shrublands, woodlands, and forests.	P (foraging habitat) /Not available.
San Francisco dusky-footed woodrat*	*Neotoma fuscipes annectens*	--/CSC/--	Forest habitat of moderate canopy and moderate to dense understory.	C/Observed in Sharp Park.
Western red bat	*Lasiurus blossevillii*	--/CSC/--	Roosts primarily in trees, 2-40 feet above the ground. For foraging, prefers habitat edges and mosaics with trees that are protected from above and open below.	C/Recorded in Golden Gate Park (2000), and at Mount Davidson, Twin Peaks, Pine Lake, and McLaren Park.
Plants				
Adobe sanicle	*Sanicula maritime*	--/SR/1B	Meadows and seeps, grasslands, chaparral, and coastal prairie.	P/Not available.
Alkali milk-vetch	*Astragalus tener* var. *tener*	--/--/1B	Low ground, alkali flats, and flooded lands; in annual grassland, playas, or vernal pools between 1 and 170 meters elevation.	P/Not available.
Beach layia	*Layia carnosa*	FE/SE/1B	On sparsely vegetated, semistabilized coastal dunes, usually behind foredunes, between 0 and 75 meters elevation.	P/Historically reported from San Francisco, location not well mapped, presumed extirpated.
Bent-flowered fiddleneck*	*Amsinckia lunaris*	--/--/1B	Woodlands and grasslands between 50 and 500 meters elevation.	P/Not available.
California seablite	*Suaeda californica*	FE/--/1B	Restricted to the upper intertidal zone of coastal salt marsh along the perimeter of a bay.	C/Recorded at India Basin.

Table 9
State and Federally Listed Species That May Occur Within the Natural Areas (*continued*)

Common Name	*Scientific Name*	Federal/State /CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Choris' popcorn-flower	*Plagiobothrys chorisianus* var. *chorisianus*	--/--/1B	Chaparral, coastal scrub, coastal prairie. On mesic sites between 15 and 100 meters elevation.	P/Not available.
Coast yellow leptosiphon*	*Leptosiphon croceus*	--/--/1B	Coastal bluff scrub and coastal prairie between 10 and 150 meters elevation.	P/Not available.
Coastal marsh milk-vetch*	*Astragalus pycnostachyus* var. *pycnostachyus*	--/--/1B	Mesic sites in dunes or along streams or coastal salt marshes between 0 and 30 meters elevation.	P/Not available.
Coastal triquetrella	*Triquetrella californica*	--/--/1B	Coastal bluff scrub or coastal scrub habitats. Grows on moss growing on soil between 10 and 100 meters elevation.	C/Recorded on Tank Hill and several other locations within San Francisco.
Compact cobwebby thistle	*Cirsium occidentale* var. *compactum*	--/--/1B	On dunes and on clay in chaparral; also in grassland, coastal prairie, and coastal scrub. Found between 5 and 155 meters elevation.	P/Historically recorded near Lake Merced.
Crystal Springs lessingia*	*Lessingia arachnoidea*	--/--/1B	Coastal sage scrub, grasslands, and woodlands. Found on grassy slopes on serpentine; also along roadsides. Between 60 and 200 meters elevation.	P/Not available.
Dark-eyed gilia	*Gilia millefoliata*	--/--/1B	Coastal dunes between 2 and 20 meters elevation.	P/Historically recorded within San Francisco.
Dune gilia	*G. capitata* ssp. *chamissonis*	--/--/1B	Coastal dunes and coastal scrub between 2 and 200 meters elevation.	C/Presently occurs at Hawk Hill and Lake Merced.
Fragrant fritillary	*Fritillaria liliacea*	--/--/1B	Coastal scrub, grassland, and coastal prairie between 3 and 410 meters elevation.	C/Presently occurs at Bernal Heights.
Franciscan onion*	*Allium peninsulare* var. *franciscanum*	--/--/1B	Woodlands and grasslands, on dry hillsides. Found on clay soils or serpentine between 100 and 300 meters elevation.	P/Not available.
Franciscan thistle	*C. andrewsii*	--/--/1B	Coastal bluff scrub, broadleaved upland forest, coastal scrub. Sometimes serpentine seeps. Between 0 and 135 meters elevation.	P/Historically recorded within San Francisco.

Table 9
State and Federally Listed Species That May Occur Within the Natural Areas (*continued*)

Common Name	*Scientific Name*	Federal/State /CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Hairless popcorn flower	*Plagiobothrys glaber*	--/--/1A	Alkali meadows, seeps, coastal salt marshes, and swamps between 5 and 180 meters elevation.	P/Not available.
Hickman's cinquefoil*	*Potentilla hickmanii*	FE/SE/1B	Freshwater marshes, seeps, and small streams in open or forested areas along the coast. Found between 5 and 125 meters elevation.	P/Not available.
Kellogg's horkelia	*Horkelia cuneata* ssp. *Sericea*	--/--/1B	Closed-cone coniferous forest, coastal scrub, chaparral, old dunes, coastal sandhills. Between 10 and 200 meters elevation.	P/Recorded within San Francisco.
Marin checker lily	*Fritillaria lanceolata* var. *tristulis*	--/--/1B	Coastal scrub, coastal bluff scrub, or coastal prairie between 15 and 150 meters elevation.	P/Not available.
Marin western flax	*Hesperolinon congestum*	FT/ST/1B	In serpentine barrens and in serpentine grassland and chaparral at 30 and 365 meters elevation.	U/Historically recorded on Mount Davidson.
Marsh microseris	*Microseris paludosa*	--/--/1B	Closed-cone coniferous forest, woodlands, and grasslands between 5 and 300 meters elevation.	P/Not available.
Marsh sandwort	*Arenaria paludicola*	--/--/1B	Grows up through dense mats of *Typha* spp., *Juncus* spp. and *Scirpus* spp. in freshwater marshes and swamps between 10 and 170 meters elevation.	P/Not available.
Pale yellow hayfield tarplant	*Hemizonia congesta* ssp. *Congesta*	--/--/1B	Valley and foothill grassland (sometimes roadsides) between 20 and 560 meters elevation.	P/Not available.
Pappose tarplant*	*Centromadia parryi* ssp. *parryi*	--/--/1B	Vernally mesic, often alkaline sites in coastal prairie, meadows, seeps, coastal salt marshes, and grassland. Found between 2 and 420 meters elevation.	P/Not available.
Point Reyes bird's-beak	*Cordylanthus maritimus* ssp. *Palustris*	--/--/1B	Coastal salt marsh with *Salicornia* spp., *Distichlis* spp., and *Spartina* spp. between 0 and 15 meters elevation.	P/Habitat exists at India Basin Park.

Table 9
State and Federally Listed Species That May Occur Within the Natural Areas (*continued*)

Common Name	*Scientific Name*	Federal/State /CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Point Reyes horkelia*	*Horkelia marinensis*	--/--/1B	Sandy flats and dunes near the coast, in grassland or scrub plant communities between 5 and 30 meters elevation.	P/Not available.
Robust spineflower*	*Chorizanthe robusta* var. *robusta*	FE/--/1B	Sandy terraces and bluffs or in loose sand in coastal habitats between 3 and 120 meters elevation.	P/Not available.
Rose leptosiphon	*Leptosiphon rosaceus*	--/--/1B	Coastal bluff scrub between 0 and 100 meters elevation.	P/Not available.
Round-headed Chinese houses	*Collinsia corymbosa*	--/--/1B	Dunes and coastal prairie between 10 and 30 meters elevation.	P/Not available.
San Francisco Bay spineflower	*Chorizanthe cuspidata* var. *cuspidate*	--/--/1B	Coastal scrub and coastal dunes on sandy slopes and terraces between 5 and 550 meters elevation.	C/Presently occurs at Fort Funston, Golden Gate Heights, and Lake Merced.
San Francisco campion	*Silene verecunda* ssp. *Verecunda*	--/--/1B	Coastal scrub, grassland, coastal bluff scrub, chaparral, coastal prairie at elevations between 30 and 645 meters.	C/Presently occurs at Mount Davidson and Rock Outcrop.
San Francisco collinsia	*Collinsia multicolor*	--/--/1B	Closed-cone coniferous forest and coastal scrub between 30 and 250 meters elevation.	C/Presently occurs at Bayview Park.
San Francisco gumplant	*Grindelia hirsutula* var. *maritime*	--/--/1B	Coastal scrub and grasslands between 15 and 400 meters elevation.	C/Presently occurs at Mount Davidson, Twin Peaks, Corona Heights, and Balboa Natural Area.
San Francisco lessingia	*Lessingia germanorum*	FE/SE/1B	Open sandy soils relatively free of competing plants, between 20 and 125 meters elevation.	P/Historically recorded at Lake Merced. Only current population found in the Presidio.
San Francisco owl's-clover	*Triphysaria floribunda*	--/--/1B	Coastal prairie and grassland between 10 and 160 meters elevation.	P/Historically recorded near Lake Merced.
San Francisco popcorn-flower	*Plagiobothrys diffuses*	--/SE/1B	Grassland and coastal prairie with marine influence between 60 and 485 meters elevation.	P/Not available.
San Mateo woolly sunflower*	*Eriophyllum latiobum*	FE/SE/1B	Woodlands between 45 and 150 meters elevation. Found on and off serpentine.	P/Not available.

Table 9
State and Federally Listed Species That May Occur Within the Natural Areas (*continued*)

Common Name	*Scientific Name*	Federal/State /CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Santa Cruz microseris	*Stebbinsoseris decipiens*	--/--/1B	Broadleaved upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub. Found in open areas in loose or disturbed soils between 10 and 500 meters elevation.	P/Not available.
Western leatherwood*	*Dirca occidentalis*	--/--/1B	On mesic, brushy slopes. Mostly in mixed evergreen and foothill woodland communities between 3 and 550 meters elevation.	P/Not available.
White-rayed pentachaeta	*Pentachaeta bellidiflora*	FE/SE/1B	Open, dry, rocky slopes and grassy areas, often on soils derived from serpentine bedrock. Found between 35 and 620 meters elevation.	P/Not available.

Sources: CDFG 2009; USFWS 2009; CNPS 2009; SFRPD 2008b.

Federal Status
FE = Endangered. Species in danger of extinction throughout all or a significant portion of its range.
FT = Threatened. Species likely to become endangered within foreseeable future throughout all or a significant portion of its range.
FPD = Proposed delisting.

California State Status
SE = Endangered. Species whose continued existence in California is jeopardized.
ST = Threatened. Species, although not presently threatened with extinction, that is likely to become endangered in the foreseeable future.
CSC = Species of Concern.
SFP = State Fully Protected under Sections 3511 and 4700 of the Fish and Game Code.
SR = State Rare.

California Native Plant Society
1A = Plants presumed extinct in California.
1B = Plants that are rare or endangered in California and elsewhere.

Occurrence
P = Potential
C = Confirmed
U = Unlikely

*Indicates species that may occur at Sharp Park only.

the CNPS or the Golden Gate chapter of the National Audubon Society. The SFRPD has worked closely with such groups as the CNPS and the Audubon Society to develop a list of locally significant species. The CNPS and Golden Gate Audubon Chapter lists are in draft form and are presented in Appendix D. Currently the SFRPD does not have data on the locations of all locally significant species with the potential to occur within the Natural Areas.

The species from all lists are important for local conservation efforts and thus are analyzed in this EIR. However, impacts on federal, state, and CNPS 1A and 1B listed species are given additional consideration because of their protected status by federal and/or state laws.

Recovery Action Plan for the Mission Blue Butterfly

There is currently only one recovery action plan and associated Biological Opinion in effect for SFRPD operations in the Natural Areas. The Recovery Action Plan for the Mission Blue Butterfly (*Icaricia icarioides missionensis*) at Twin Peaks Natural Area (SFRPD 2009d) was initiated after a series of monitoring efforts suggested that the population of mission blue butterflies at Twin Peaks was extremely low. The Twin Peaks Natural Area is a relatively intact remnant of San Francisco's indigenous landscape, containing a mix of coastal scrub and grassland habitats. The grasslands at Twin Peaks currently support several colonies of lupine (*Lupinus albifrons* and *L. variicolor*), which are known host plants for the mission blue butterfly larvae. The Recovery Action Plan includes the relocation of individuals from populations at nearby San Bruno Mountain, the initiation of a captive rearing program, implementation of specific habitat enhancement activities, and the continued monitoring of reintroduction success. This plan was approved by the USFWS in 2009. The SFRPD manages the Twin Peaks Natural Area as prescribed in the Recovery Action Plan, which includes measures regarding habitat restoration and management, trash and debris removal, and recreation trail use and maintenance. The SFRPD continues to adhere to the Trail Maintenance and Construction BMPs and conducts annual monitoring of mission blue butterfly eggs and larvae each spring.

Habitat Types

Habitat types within the Natural Areas include annual grassland, perennial grassland, wetland, other herbaceous vegetation, northern Franciscan coastal scrub, central dune scrub, central coast riparian scrub, nonnative scrub, mosaic, native forest, nonnative forest, and "other," which is a general category for areas that either are not dominated by vegetation or are dominated by ornamental vegetation. These correspond roughly to the classification system of Sawyer et al. (2009). Special status species that may use these habitat types are presented in Table 9.

Riparian Habitat, Wetlands, and Other Sensitive Habitats

The sensitive habitats and natural communities identified in this EIR include riparian habitat, wetlands, and those identified in the SNRAMP, in local or regional plans, policies, or regulations, or by the CDFG or USFWS. Coastal scrub, while not identified as sensitive habitat in local or regional plans, policies, or regulations, or by the CDFG or USFWS, was identified in the SNRAMP as a sensitive habitat.

Riparian habitat within the Natural Areas consists of willow scrub, which can be found within the central coast riparian scrub vegetation type. This habitat type occurs at Glen Canyon Park, Lake Merced, McLaren Park, and Sharp Park.

Several different types of wetlands are present within the Natural Areas, such as free-flowing creeks (Glen Canyon Park and Sharp Park), tidal salt marsh wetland (India Basin), open water (Lake Merced, Pine Lake, and Sharp Park), wet meadow (Bayview Park, Lake Merced, McLaren Park, and Sharp Park), willow scrub, and freshwater marsh (Lake Merced, McLaren Park, Pine Lake, and Sharp Park).

A wetland delineation was conducted for the Laguna Salada wetland complex at Sharp Park. Most of the wetlands delineated were characterized as freshwater marsh (19.5 acres), followed by wet meadow (2.5 acres) and willow scrub (1 acre) (SFRPD 2008a). These areas meet the USACE's technical criteria for classification as wetlands. The unvegetated open water (4.5 acres) met the USACE technical criteria for "other waters of the US." due to the presence of an ordinary high water mark. Although wetland delineations have not been conducted in areas other than Sharp Park within the Natural Areas, other wetland types in these areas likely meet the USACE technical criteria for wetlands or other waters of the US.

Areas that meet the USACE technical criteria for wetlands or other waters of the US may be protected under Section 1600 of the California Fish and Game Code and thus may be regulated by the CDFG. In addition, these areas are considered wetlands and thus are protected, under the California Coastal Act. However, these areas may or may not be protected by Section 404 of the Clean Water Act, depending on whether they are one of the following:

- Traditional navigable waters;
- Wetlands next to traditional navigable waters;
- Non-navigable tributaries of traditional navigable waters that are relatively permanent; or

- Wetlands that directly abut the tributaries described in the previous bullet.

Under the California Coastal Act, an area is classified as a wetland if it meets only one of the three parameters required by Section 404 of the Clean Water Act's definition of a wetland: hydric soils, hydrophytic vegetation, or wetland hydrology. Some wetlands may also meet criteria as "waters of the state" and be regulated by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). Additionally, wetlands meeting CCC criteria may also occur at Lake Merced and India Basin which are both within the coastal zone jurisdiction. The SNRAMP maps all wetland features throughout the Natural Areas. Although not evaluated as to whether they meet USACE jurisdiction standards, all wetland features have been identified. A wetland delineation of each of these areas would be required prior to implementation of programmatic projects to determine the exact jurisdiction of the USACE, SFBRWQCB or CCC. It is expected that no additional wetland areas within the Laguna Salada wetland complex would be identified based on the SFBRWQCB and CCC classifications.

Several types of other sensitive habitat exist within the Natural Areas, including coastal scrub, dune habitat, oak woodlands, and native grasslands. These were all conspicuous components of the historic San Franciscan landscape and are considered regionally sensitive due to acreage lost to urban development, high value to special status species, and lack of recruitment (within oak woodlands). Table 10 presents the locations of riparian, wetland, and other sensitive habitat types in the Natural Areas.

The SFRPD's Final Dog Policy (SFRPD 2002) excludes dogs (on- and off-leash) from sensitive habitat areas, such as sensitive wildlife areas (e.g., breeding habitat for birds), sensitive remnant native plant communities (e.g., wetlands), sensitive plant populations (e.g., locally rare wildflower species), and high erosion-prone areas and excludes them temporarily from restoration areas. This policy attempts to reconcile conflicting priorities between dog walkers and other recreational uses.

Native Resident and Migratory Fish

Native resident and migratory fish are limited in the Natural Areas but do exist in Lake Merced and Pine Lake. Native resident fish in Lake Merced are hitch (*Lavinia exilicauda*), hardhead (*Mylopharadon conocephalus*), Sacramento blackfish (*Orthodon microlepidotus*), Sacramento sucker (*Catostomus occidentalis*), threespine stickleback (*Gasterosteus aculeatus*), prickly sculpin (*Cottus asper*), and Sacramento perch (*Archoplites interruptus*). Rainbow trout (*Oncorhynchus mykiss*) are present in Lake Merced, but there is no spawning habitat for them in the lake, so they cannot reproduce.

Table 10
Sensitive Habitat Types Identified in the SNRAMP

	Natural Area																								
	Lake Merced	**Glen Canyon Park**	**Sharp Park**	**McLaren Park**	**O'Shaughnessy Hollow**	**Twin Peaks**	**Hawk Hill**	**Oak Woodlands***	**Balboa**	**Buena Vista**	**Strawberry Hill***	**Corona Heights**	**Lily Pond***	**Whiskey Hill***	**15th Avenue Steps**	**Everson-Digby**	**Mount Davidson**	**Rock Outcrop**	**Brooks Park**	**Duncan-Castro**	**Bayview Park**	**Palou-Phelps**	**Bernal Hill**	**Pine Lake**	**India Basin**
Habitat Type																									
Riparian	X	X	X	X			X											X			X		X	X	
Coastal scrub	X	X	X	X	X	X		X				X			X		X		X		X			X	
Dune	X						X	X	X		X							X							
Oak Woodland	X	X	X	X		X		X		X	X	X									X				
Native Grasslands	X	X	X	X	X	X						X	X	X	X	X		X	X	X	X	X	X		
Wetlands	X	X	X	X	X																X			X	X

*Part of the Golden Gate Park Oak Woodlands Natural Area

Ongoing stocking occurs to maintain this fishery. Threespine stickleback are found at Pine Lake. The one migratory fish found in the Natural Areas is coho salmon (*O. kisutch*), which was historically recorded at Lake Merced (Appendix D); coho salmon are federally listed as threatened along the northern California coast and as endangered along the central California coast, but they are not listed in the project area. Lake Merced has been disconnected from the ocean for many years and coho salmon are no longer present at this Natural Area. No fish are known to exist in Laguna Salada or Horse Stable Pond at Sharp Park.

Migratory Birds

Many migratory birds use the Natural Areas for foraging, nesting, and perching habitat, as the Natural Areas provide habitat in an area that is otherwise highly urbanized. Migratory birds that use the Natural Areas are presented in Appendix D.

Some of the larger Natural Areas, such as Lake Merced, McLaren Park, and Sharp Park, provide a complex mosaic of habitats that migratory and resident birds use for foraging, nesting, and roosting and thus are more important bird habitat than the smaller natural areas. In particular, Lake Merced provides open water, freshwater marsh, riparian, and upland habitats that are heavily used by bird species. This location serves as an important resting area for migratory birds and is a nesting area for approximately 50 species of resident birds (SFRPD 2006). Almost 70 species of birds have been documented nesting within the Lake Merced area, and several of these are of special concern or locally rare or are neotropical migrants.

Among the Natural Areas, India Basin is the only one that borders San Francisco Bay and provides the only habitat for migratory shorebirds. There are ten species of birds that are considered locally sensitive that have been observed at India Basin, and several of these are not found at other Natural Areas: black oystercatcher (*Haematopus bachmani*), pelagic cormorant (*Phalacrocorax pelagicus*), Brandt's cormorant (*P. penicillatus*), and pigeon guillemot (*Cepphus columba*). None of the locally significant species that have been observed are known to breed at India Basin. The restored wetlands and mudflats support nesting American avocet (*Recurvirostra americana*) and killdeer (*Charadrius vociferus*). If restored, the more extensive saltgrass/pickleweed area could provide habitat for California black rail (*Laterallus jamaicensis coturniculus*) and California clapper rail (*Rallus longirostris obsoletus*), both protected under the state and federal Endangered Species Acts.

Smaller Natural Areas, such as Hawk Hill and Grandview Park, may provide suitable nesting and foraging habitat for small songbirds and may support a prey base for foraging raptors.

Wildlife Corridors

Overall, the Natural Areas provide a mosaic of habitats that are accessible to mobile wildlife species, particularly birds. They offer foraging, nesting, and roosting habitats for many species as they travel within San Francisco and beyond.

Lake Merced is the largest freshwater coastal lake and wetland system between the Pescadero Marsh in south San Mateo County and the Point Reyes Peninsula in Marin County. As such, it provides refuge for many migratory birds, as described previously.

Sharp Park is bordered in part by undeveloped areas, including Sweeny Open Space and Milagra Ridge, which allows it to serve as a relatively undisturbed corridor for wildlife, particularly birds. Sharp Park's connectivity to high-quality natural habitats also allows it to support medium size and large mammals, including numerous general wildlife species, such as the black-tailed deer (*Odocoileus hemionus columbianus*), bobcat (*Lynx rufus californicus*), common porcupine (*Erethizon dorsatum epixanthum*), coyote (*Canis latrans*), and mountain lion (*Puma concolor californicus*).

Glen Canyon Park, Twin Peaks, and the Interior Greenbelt also serve as important wildlife corridors.

Native Wildlife Nursery Sites

All of the Natural Areas support potential or confirmed native bird nesting habitat and potential breeding habitat for other wildlife species. Native birds that may nest within the Natural Areas are shorebirds, songbirds, and raptors and include such habitats as nonnative forests, grasslands, riparian scrub, and mudflats.

V.G.3 Impacts

Significance Thresholds

As stated in Appendix G, the Environmental Checklist Form, of the CEQA Guidelines, a proposed project would have a significant biological resources impact if it were to result in any of the following:

- A substantial adverse effect, either directly or indirectly through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations or by the CDFG or USFWS;
- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFG or USFWS;

- A substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including marsh, vernal pool, and coastal wetlands), through direct removal, filling, hydrological interruption, or other means;
- Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites; or
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

For the purpose of this EIR, the definition of "substantial," as used in the significance criteria threshold above, has three principal components, each of which contributes to the determination of impacts on biological resources and their significance:

- Magnitude and duration of the impact (e.g., substantial/not substantial)
- Uniqueness of the affected resource (rarity); and
- Susceptibility of the affected resource to disturbance

The evaluation of significance must also include the interrelationship of these three components. For example, a relatively small-magnitude of impact on a protected species could be considered significant because the species is rare and believed to be very susceptible to disturbance. Conversely, a natural community such as California annual grassland is not necessarily rare or sensitive to disturbance, and thus a much larger magnitude of impact might be required to result in a significant impact. Impacts on biological resources are considered significant when project-related habitat modifications (e.g., trail modification, erosion control measures, or large-scale vegetation removal) could reduce special status species populations to the extent that they become locally less numerous; impacts on habitats are considered significant where the habitats could not continue to support viable populations of associated plant and animal species as a result of project implementation. Impacts may also be considered significant where they would result in the direct injury or mortality of protected species. Potentially significant impacts are those that might not be sufficiently reduced through nondiscretionary regulatory requirements. For impacts determined to be either significant or potentially significant, the SFRPD would need to implement mitigation measures to reduce the potential level of an impact to less than significant.

Impacts Addressed in the Initial Study

In the Initial Study (Appendix A), no significant impacts related to the following criteria were identified:

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

As a result, this CEQA significance criterion is not evaluated further in this EIR.

Significant Natural Resource Areas Management Plan Impacts

Most project activities would benefit biological resources over the long term, as project management actions aim to achieve the following:

- Maintain viable populations of all special status species;
- Maintain and enhance native plant and animal communities;
- Maintain and enhance local biodiversity;
- Reestablish native community diversity, structure, and ecosystem function where degraded;
- Improve natural area connectivity; and
- Decrease the extent of invasive exotic species cover.

Overall, project activities would protect and enhance special status species habitat, riparian habitat, wetlands, migratory wildlife habitat, nursery sites, and other sensitive habitats in the Natural Areas.

Projects implemented under the SNRAMP can be categorized as either routine maintenance or programmatic projects involving large-scale weed removal, large-scale erosion control projects, trail modification, or other projects involving an increased use of an area. Trail modification projects may include the creation of new trails, the rerouting of existing trails, or the decommissioning of trails. For this analysis, programmatic projects are considered to be those that are greater than half an acre, whereas routine maintenance projects are considered to be those under half an acre. Routine maintenance activities are similar to those daily maintenance activities currently being conducted by the SFRPD. Impacts associated with programmatic projects are analyzed at the programmatic level. Additional environmental review of those projects would be undertaken, in accordance with CEQA requirements, once funding is available and preliminary design of specific projects has been completed or other additional project level details are developed. In addition, programmatic impacts of the SNRAMP (e.g., use of the Natural Areas) are also addressed in the programmatic

analysis. Impacts associated with routine maintenance and the Sharp Park restoration project are analyzed at the project level.

The purpose of the Sharp Park restoration project is to enhance the Laguna Salada wetland complex in a manner that provides higher quality habitat for the San Francisco garter snake and one of its primary food sources, the California red-legged frog. As such, the Sharp Park restoration project, consistent with the California Fish and Game Code, is intended as a recovery action for the San Francisco garter snake.

All routine maintenance activities proposed in the Laguna Salada wetland complex are discussed below in the sections addressing the Sharp Park restoration project.

Before implementing the proposed Sharp Park restoration, the SFRPD would be required to undertake the following, consistent with state and federal laws:

- Prepare a Biological Assessment and consult with the USFWS to obtain a Biological Opinion and incidental take permit in accordance with the ESA;
- Coordinate with CDFG for a consistency determination for federally and state protected species (San Francisco garter snake and California red legged frog)
- Apply for a take permit for state-only listed species (western pond turtle) pursuant to Section 2081(b) of the CESA;
- Obtain a permit from the US Army Corps of Engineers under Section 404 of the Clean Water Act;
- Obtain a water quality certification from the SFBRWQCB under Section 401 of the Clean Water Act;
- Obtain a Streambed Alteration Agreement from the CDFG under Section 1602 of the California Fish and Game Code; and
- Obtain a Coastal Development Permit, as required by the CCC.

These regulatory requirements may also apply to other programmatic activities in the SNRAMP. At the time a specific project is proposed, the SFRPD would determine the appropriate regulatory requirements.

Special Status Species

Programmatic Impacts

Impact BI-1: The SNRAMP and implementation of programmatic projects proposed under the SNRAMP would have a substantial adverse effect on special status plant species. (Less than Significant with Mitigation)

Programmatic project activities include invasive weed and tree removal, trail modification, and large-scale erosion control measures. Vegetation removal and ground disturbance associated with heavy equipment use as part of these activities have the potential to inadvertently remove special status plant species that may occur in the Natural Areas and could directly impact habitat for protected and locally significant plant species. In addition, the use of herbicides and pesticides for vegetation removal could directly impact protected and locally significant plant species in the area. Operational impacts associated with the SNRAMP include increased foot traffic in areas of new trail creation, which could increase trampling of any protected and locally significant plant species if present next to new trails. The continued use of DPAs may impact protected and locally significant species by trampling, erosion, or defecation. Table 9 above lists the protected species (CNPS List 1B and 1A) and the Natural Areas they occur in or where they may potentially occur. The following protected plant species have been identified as occurring in the Natural Areas: California seablite (*Suaeda californica*) at India Basin; coastal triquetrella (*Triquetrella californica*) at Tank Hill; dune gilia (*Gilia capitata* ssp. *chamissonis*) at Hawk Hill and Lake Merced; fragrant fritillary (*Fritillaria liliacea*) at Bernal Heights; San Francisco Bay spineflower (*Chorizanthe cuspidate* var. *cuspidate*) at Golden Gate Heights and Lake Merced; San Francisco campion (*Silene verecunda* ssp. *verecunda*) at Mount Davidson and Rock Outcrop; San Francisco collinsia (*Collinsia multicolor*) at Bayview Park; and San Francisco gumplant (*Grindelia hirsutula* var. *maritima*) at Mount Davidson, Twin Peaks, Corona Heights and Balboa. Other Natural Areas may contain suitable habitat for other protected plant species and may have historically supported protected plant species. The SFRPD maintains a GIS database with all recorded locations of protected and special status plants within the Natural Areas.

In addition, the SNRAMP identifies other plant species that may be classified as locally significant. Appendix D includes a list of locally significant plant species and the Natural Areas they occur in.

Protected Species

Invasive Vegetation Removal. Removing invasive vegetation under programmatic projects could result in the inadvertent removal of protected species that may occur in the Natural Areas. Disturbance

associated with the removal of invasive species at or near the locations of protected plant species habitat, could directly impact those species through removal or crushing. As a result of the potential injury or mortality to protected species, vegetation removal as part of programmatic projects could have significant adverse impacts on protected species. The SFRPD would avoid significant impacts to protected plant species by implementing Mitigation Measure M-BI-1a, which requires pre-activity surveys for protected plant species during the proper blooming period to confirm their presence or absence in a project area. If a population of a protected species were present in the disturbance footprint, Mitigation Measure M-BI-1a requires the SFRPD to avoid impacts to these species wherever feasible. Where avoidance is not feasible, Mitigation Measure M-BI-1a requires that the SFRPD would adhere to the following procedures: 1) minimize impacts on protected plant species by, for example, installing exclusion fencing or other appropriate minimization measures; 2) restore impacted areas, which for plants, may include collecting seed from the species affected and replanting the site after disturbance; or 3) compensate for loss of these plant species; this may be accomplished by enhancing the habitat or planting seeds at other locations within or outside of the Natural Areas. This measure would reduce impacts to protected plant species by avoiding and minimizing impacts to the degree feasible and mitigating for any loss of protected plant species either through habitat restoration and enhancement or compensation. By implementing Mitigation Measure M-BI-1a, short-term programmatic project impacts from vegetation removal on protected plant species would be ***less than significant***.

Of the Natural Areas where known populations of protected plant species occur, invasive trees are proposed to be removed from Lake Merced, Mount Davidson, Bayview Park, Twin Peaks, and Corona Heights. Tree removal could impact the protected dune gilia, San Francisco spineflower, San Francisco campion, San Francisco gumplant, and San Francisco collinsia. Impacts from removing invasive trees from these Natural Areas are the same as those described in the previous paragraph. With implementation of Mitigation Measure M-BI-1a, short-term programmatic project impacts to protected plant species from the removal of invasive trees also would be ***less than significant***.

The use of herbicides and pesticides for invasive vegetation removal projects could directly impact protected plant species in the area by direct mortality through inadvertent exposure. Chemicals are intended to be used on invasive nonnative vegetation and not on special status species. The SFRPD staff, knowledgeable in the location of all special status species, would apply the herbicides and pesticides, the toxicity of which is further discussed in Section V.I.3 (page 388). Because these treatment methods would be used only to prevent the spread of nonnative invasive species and other pests, impacts would ultimately benefit protected species by removing competing vegetation, thereby providing a higher quality habitat. The elimination of nonnative species would provide a

greater area of suitable habitat for native species to naturally recruit and thrive. To minimize the potential impacts of herbicide application, the SFRPD would adhere to the City's IPM Program, in which pesticide use in the Natural Areas would be as little as possible to achieve the desired results and carefully monitored. The SFRPD would use the least toxic methods and materials that are appropriate for the environment in which they are applied (this is detailed in Section III.E.5 on page 90). As a result, short-term impacts to protected plant species by the use of herbicides and pesticides as part of programmatic projects would be ***less than significant***.

Invasive species removal projects would replace the removed invasive trees and other vegetation with native plants, thus improving native habitats and reducing competition from invasive species. Additionally, one of the primary goals of the SNRAMP is to protect and restore sensitive habitats; to this end, the SNRAMP includes recommended actions for augmenting special status plant populations, such as VP-1d[2] and EM-1d[3], which recommends augmenting sensitive plant populations to prevent extinction of rare or uncommon plants, and CH-1c,[4] which recommends reintroducing populations of rare plant species. As a result, protected plant species populations may increase, so long-term impacts on protected plant species from vegetation removal are anticipated to be beneficial.

Trail Modification. Of the Natural Areas where known populations of protected plant species occur, new trail creation is proposed at Lake Merced, Bernal Heights, Golden Gate Heights, and Bayview Park. Trail creation at these Natural Areas could impact the following protected plant species: dune gilia, San Francisco Bay spineflower, fragrant fritillary, and San Francisco collinsia. Ground-disturbing activities associated with the use of heavy equipment to reroute trails and construct new trails could directly impact habitat for protected plant species; this could result in the inadvertent removal of these species. Indirect impacts to protected species could occur through the creation of new trails; this would increase foot traffic in an area, thus increasing the instances of these plant species located next to new trails being trampled. However, as stated in Section III.E.5 (page 92), as part of the BMPs used by the SFRPD, new trail placement and construction access routes would be designed to avoid sensitive vegetation and habitats, thus avoiding short-term construction and long-term operational impacts on protected plant species. Furthermore, M-BI-1a, as discussed above, requires that plant surveys be conducted and that avoidance and minimization measures be employed that include the installation of exclusion fencing or other appropriate minimization

[2]VP-1d—Augment existing sensitive plant populations

[3]EM-1d—Augment existing sensitive plants to prevent extinction of rare or uncommon plant species

[4]CH-1c—Reintroduce populations of rare plant species to help prevent local extinctions of these species in San Francisco

measures, the restoration of impacted areas (which may include collecting seed from protected plant species affected, salvaging affected plants, and replanting the site after disturbance), or compensating for the loss of protected species (this may be accomplished by enhancing the habitat and/or planting protected plant seeds at other locations in or outside of the Natural Areas). With the SNRAMP's proposed avoidance and minimization measures for trail creation and mitigation measures outlined in M-BI-1a, impacts to protected species from trail modification would be ***less than significant***.

Erosion Control. Large-scale erosion control projects may result in ground disturbance, which could directly impact habitat for protected plant species and could inadvertently remove protected plant species in the Natural Areas. Erosion control projects identified in the SNRAMP are to occur at Bayview Park, Glen Canyon/O'Shaughnessy Hollow, and Sharp Park. Of these, Bayview Park is the only Natural Area with the recorded presence of a protected plant species, San Francisco collinsia, which is found in closed-cone coniferous forest and coastal scrub habitat. Habitat for other protected plant species may occur at the other Natural Areas. As a result, large-scale erosion control projects may significantly impact protected plant species. Implementing Mitigation Measure M-BI-1a would require the SFRPD to take measures to avoid, minimize, restore, or compensate for impacts to special status plants from large-scale erosion control projects. With implementation of Mitigation Measure M-BI-1a, programmatic project impacts on protected plant species from large-scale erosion control projects would be ***less than significant***.

Other Impacts to Protected Species

Continued use of existing trails could directly impact protected plant species through trampling and could introduce invasive plant species. This could result in an indirect impact on protected plant species through the degradation of habitat quality. As a result, implementation of the SNRAMP would have potentially significant impacts on these species. Implementing Mitigation Measure M-BI-1a requires that SFRPD post signs or install fences along trails in sensitive habitat areas if impacts on vegetation are observed as a result of visitors straying from trails. Additionally, Mitigation Measure M-BI-1a also requires that the SFRPD consider rerouting trails if necessary to avoid impacts on protected species. With implementation of Mitigation Measure M-BI-1a, impacts from the continued use of trails on protected plant species would be ***less than significant***.

DPAs in certain Natural Areas may be impacting protected plant species by trampling, erosion, or defecation. DPAs in Natural Areas that contain known populations of protected plant species include Bernal Hill and Lake Merced. Protected plant species at these Natural Areas that could be

impacted by dogs are fragrant fritillary, dune gilia and San Francisco Bay spineflower. Dog activity in DPAs is an existing use, and the SNRAMP does not propose increasing this activity; however, closing or reducing DPAs under the SNRAMP could intensify dog use in the remaining DPAs. In addition, because resources to enforce leash laws are limited, dogs would likely continue to be let off leash in parts of Natural Areas outside of DPAs, even though that activity is prohibited. As a result, dogs may currently be impacting and may continue to impact protected plant species in or near DPAs. Pet owners may contribute to disturbance via trampling. As a result, implementation of the SNRAMP could have significant adverse impacts on these species. The dune gilia and San Francisco Bay spineflower are only located at Lake Merced; under LM-7a,[5], the SNRAMP proposes to close this DPA. Due to the current restrictions on new DPAs, the DPA at Lake Merced would not be relocated as stated in recommended management action LM-7a, in which case it would be removed, restoration of the site would continue following removal, and these two protected species would not be impacted. With implementation of Mitigation Measure M-BI-1a, which requires fencing or decommissioning DPAs, programmatic impacts of dog use on protected plant species would be ***less than significant***.

Locally Significant Species. Impacts on locally significant species from programmatic project activities would be similar to those described for protected species. Impacts to these special status species could also be significant. If a significant population of a locally significant plant species were present in the disturbance footprint, Mitigation Measure M-BI-1b requires the SFRPD to avoid impacts on these species wherever feasible. Where avoidance is not feasible, Mitigation Measure M-BI-1b requires that SFRPD minimize impacts and restore the habitat in impacted areas. With implementation of Mitigation Measure M-BI-1b, impacts from programmatic project activities on locally significant plant species would be ***less than significant***.

M-BI-1a: Protection of Protected Species and Riparian and Wetland Habitat

Where there is potential for protected species or their habitats (plants, birds, terrestrial, and aquatic species) or other protected habitats, namely riparian and wetland habitat (as protected by CDFG, CCC, SFBRWQCB and/or USACE) to be affected directly or indirectly by a programmatic project, the SFRPD will prepare and provide for ERO review a compliance plan that details the proposed project, whether any protected species, protected species habitat, riparian habitat, or wetland habitat exists, the appropriate life histories of such resources (as applicable to special status species), and how the project will achieve compliance with this mitigation measure, including details as to how the SFRPD will first avoid, then minimize and if necessary restore, and/or compensate for any

[5]LM-7a—Relocate the DPA to a different area to avoid disturbing breeding birds in the current location

impacts to protected species and/or their habitats or other regulated habitats. Where there is potential for impacts to protected species and/or riparian and wetland habitats that are regulated by state, federal and/or local agencies, the compliance plan shall identify those agencies, and the SFRPD shall coordinate with all applicable resource agencies to obtain the appropriate permits and/or consultation as required by state or federal law. This mitigation measure requires SFRPD to implement the following, subject to modification through the regulatory approval processes required for an individual project:

1. To avoid disturbance to protected species, their habitats, and riparian or wetland habitat, the following measures will be implemented by the SFRPD:

    a. For protected species, a qualified SFRPD biologist[6] shall survey for suitable habitat within the project area before the project begins, according to USFWS and CDFG protocol for the protected species having the potential to occur. If no protocol exists, surveys shall be conducted according to generally accepted survey methods. If individuals were found or if it is determined that the potential exists for protected species to be present, the SFRPD shall redesign the proposed project to avoid impacts on protected species. Avoidance/minimization measures shall include conducting project activities during periods of the species lifecycle when the species would not be affected or may be minimally affected by project activities. If it is infeasible to avoid disturbance of protected species, the SFRPD will contact the USFWS or CDFG and undertake appropriate consultation according to the CESA or ESA (unless an existing Biological Opinion is already in place and the proposed activities fall under the actions of that Biological Opinion, as may be the case for impacts to the mission blue butterfly at Twin Peaks). Any additional requirements agreed to during consultation with the USFWS and CDFG, or other regulatory agencies, to protect the species would be implemented, including restoration and compensation, where required.

    b. Where there is potential for wetland or riparian areas to be affected by programmatic activities, the SFRPD shall coordinate with CDFG, CCC, SFBRWQCB, USACE and/or other applicable agencies to determine the jurisdictional boundaries of protected riparian and wetland habitat. SFRPD shall apply for all appropriate permits for effects to riparian areas and wetlands (including, but not limited to, USACE 404

[6] A SFRPD biologist knowledgeable about protected species occurring within the area proposed for disturbance. If no SFRPD biologists are familiar with the protected species occurring in the area proposed for disturbance, the SFRPD would be required to obtain a qualified biologist to conduct protected species surveys.

permits, CDFG Section 1602 permits, SFBRWQCB 401 Water Quality Certifications, and coastal development permits). Any additional requirements to protect riparian and wetland habitat resulting from the regulatory approval processes would be implemented, including restoration and compensation, where required.

c. As discussed in Section III.E.5 (page 92), new trails would be designed to avoid sensitive species habitat and riparian and wetland habitat. Where habitat for protected species or riparian and wetland habitat cannot be avoided, the programmatic project would be required to restore and/or compensate for habitat losses in accordance with measures 4 and 5 of this mitigation measure. Restoration and/or compensation shall be required at a minimum of a 1:1 ratio of habitat affected to habitat restored and/or compensated.

2. To minimize disturbance to protected species, their habitat, and wetland and riparian habitat, as a result of programmatic projects, the following minimization measures will be implemented by SFRPD, as applicable.

   a. Post signs or install flagging and temporary fencing around protected species habitats and riparian and/or wetland habitats that are not being directly restored. No activities shall be allowed within fenced areas, including moving equipment, storing materials, or temporarily stockpiling soils. All exclusion fencing will be removed when work in the project area is completed.

   b. Where stream crossings are necessary, temporary stream crossings will be located in previously disturbed areas lacking riparian vegetation, pools, side ponds or other sensitive habitats unless otherwise permitted by natural resource agencies for habitat improvement activities or hazard abatement. At a minimum, all temporarily impacted areas shall be restored to their previous condition.

   c. In or near riparian or wetland habitat, programmatic project activities shall be limited to the dry season (generally April 15 to October 15) and include protective practices such as the use of geotextile cushions and other materials if heavy equipment will result in rutting or soil displacement (i.e. timber pads, prefabricated equipment pads, thick vegetative slash, geotextile fabric) and/or vehicles with balloon tires shall be employed.

   d. Where protected species are potentially present, a biological monitor shall be required (as determined after appropriate consultation with USFWS and CDFG) during implementation of the proposed project. The biological monitor shall survey

for protected species to ensure avoidance of those species, wherever feasible; where avoidance is not feasible, the monitor would relocate any species throughout implementation of the programmatic project, as permitted and approved by natural resource agencies. The exact relocation sites and requirements for relocation shall be determined through consultation/coordination with USFWS and/or CDFG.

3. To minimize impacts from the continued use of the Natural Areas on protected species, their habitats, and riparian and wetland habitat, the SFRPD shall undertake the following:

    a. If visitor use of the Natural Areas is resulting in impacts on protected species, their habitat and/or riparian and wetland habitat, the SFRPD shall post signs or install fences along trails to protect those habitats. Fences would allow public access on designated trails but would discourage dogs and people from drifting off-trail. If use continues to adversely impact protected species, their habitats, riparian and/or wetland habitat, the SFRPD shall reroute trails and/or restore affected habitat to avoid continued impacts of human disturbance.

    b. DPAs within the Natural Areas shall continue to be evaluated in accordance with the SFRPD's Dog Policy and shall be monitored for adverse effects to biological resources**.** If substantial adverse impacts to protected species are confirmed, the SFRPD shall take actions to protect those species, which may include installing signs, fencing, or protections including, but not limited to, decommissioning DPAs, in accordance with the SFRPD Dog Policy.

4. Where disturbance of protected species, their habitat, or riparian or wetland habitat cannot be avoided or sufficiently minimized, the SFRPD shall restore the habitat functions and services of areas that are subject to disturbance during programmatic project activities at a minimum of a 1:1 ratio, in accordance with a detailed restoration plan or plans prepared by a qualified restoration ecologist and would be consistent with all required permits. Final restoration plans would include the following:

    a. Detailed work descriptions for the restoration actions; and

    b. Ecologically based criteria that shall be used to determine whether the restoration project(s) were achieving identified performance objectives. A schedule for monitoring and reporting on monitoring results shall be included, as agreed upon in coordination with applicable permitting agencies, and as needed to verify whether the vegetation is fully established. The final restoration plan may include the following:

- Detailed description of restoration activities;
- Restoration goals;
- Restoration work plan;
- Management and maintenance plan;
- Success criteria and performance indicators;
- Monitoring plan; and
- Site protection measures.

5. Where avoidance and minimization measures are not sufficient to prevent a programmatic project from permanently removing protected species habitat, riparian, and/or wetland habitat and on- or off-site restoration or enhancement is not practicable, SFRPD shall provide compensatory mitigation for the impacts created at a minimum of a 1:1 ratio, unless otherwise determined by natural resources agencies. Examples include mitigation banking, in-lieu funds to parks for their restoration, or off-site preservation. Such activities would be evaluated in subsequent environmental reviews.

M-BI-1b: Protection of Locally Significant Plant Species during Implementation of Programmatic Projects

Where there is potential to impact locally significant plant species and SFRPD has not substantially enhanced the habitat for that species through restoration activities implemented by the SNRAMP already, SFRPD shall undertake the following measures to avoid and minimize impacts to locally significant plant species:

- A qualified SFRPD biologist shall survey suitable habitat within the project area before the project begins. If locally significant plant species are found, the SFRPD shall redesign the proposed project to avoid or minimize impacts on locally significant plant species.
- Where impacts to locally significant plant species cannot be avoided, SFRPD shall harvest the seeds of, or salvage, the affected species and use collected plants or seeds to enhance and/or restore similar habitat within the Natural Areas or outside of the Natural Areas, if necessary. To the extent feasible, habitat enhancement or restoration shall take place at sites already planned for other mitigation for the project or as part of other restoration activities carried out by SFRPD; if habitat is not suitable at those sites, habitat enhancement or restoration shall be carried out at appropriate nearby sites through strategies such as transplantation, relocation or seed harvest. Enhancement and/or restoration of locally

significant plant species habitat shall be designed to meet a minimum of a 1:1 ratio of affected plants/habitat to enhanced and/or restored habitat.

Impact BI-2: The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on special status bird species. (Less than Significant with Mitigation)

Similar to impacts on protected and locally significant plant species (Impact BI-1), vegetation removal, trail modification, and the use of herbicides and pesticides have the potential to directly affect nesting birds and habitat for special status bird species that may occur in the Natural Areas or result in direct impacts, such as injury, mortality, or destruction of nests for those species protected by the MBTA and California Fish and Game Code and other protected bird species. Under the proposed project, approximately five percent, or 3,329, of the invasive trees within the MA-1 and MA-2 areas in San Francisco would be removed and replaced with native trees; in Sharp Park, approximately 28 percent, or 15,000, of the invasive trees within the MA-1 and MA-2 management areas would be removed and replaced with other native vegetation; these trees may provide nesting habitat for bird species protected under the MBTA and the California Fish and Game Code.

State and federally listed bird species have been recorded nesting at Sharp Park and Lake Merced. The double-crested cormorant (*Phalacrocorax auritus*) presently nests at Lake Merced and the salt marsh common yellowthroat (*Geothlypis trichas sinuosa*) presently occurs at Lake Merced and Sharp Park. The yellow warbler (*Dendroica petechia*) and bank swallow (*Riparia riparia*) have also been observed at Lake Merced. The double-crested cormorant nests on coastal cliffs and in trees. The salt marsh common yellowthroat requires saltwater or freshwater marsh and dense vegetation for nesting. The yellow warbler requires riparian woodlands and the bank swallow requires vertical cliffs near water bodies. Bird species protected by the MBTA may occur at these and other Natural Areas.

Invasive Vegetation Removal. Removing invasive vegetation under programmatic projects could result in unintended impacts on protected bird species or their nests that may be present in the Natural Areas. Disturbance associated with the removal of invasive weeds and trees could directly impact those species and other bird species through injury, mortality, or destruction of nests. As a result, vegetation removal as part of programmatic projects could have significant adverse impacts on these species. The double-crested cormorant, which nests on coastal cliffs and in trees, and the salt marsh common yellowthroat, which requires dense riparian or wetland vegetation for nesting, are known to nest at Lake Merced. Tree removal activities proposed at Lake Merced include the

removal of 134 invasive trees with 11,866 trees remaining. The small percentage of trees being removed would have a short-term impact through disturbance and potential destruction of nests on the salt marsh common yellowthroat but would not result in any long-term habitat loss for this species. There would be no impacts from vegetation removal on the double-crested cormorant because LM-3a in the SNRAMP calls for avoiding removal of trees used by cormorants and prohibits removing trees within 150 feet of occupied nests. The yellow warbler and bank swallow have been observed foraging over Lake Merced, but have not been observed nesting there and would therefore not be impacted by invasive vegetation removal at Lake Merced. In compliance with the MBTA, the SFRPD would avoid harming or removing the nests of these species and any migratory bird species. Implementation of GR-4b in the SNRAMP (page 109) would ensure that all vegetation management activities would be conducted outside the breeding season for bird species (February 1 through August 31, as designated by CDFG), unless these activities had already begun before the breeding season and had already removed nesting habitat, or if a breeding bird survey was conducted prior to vegetation removal activities and had determined that no nesting birds were present. If active nests (or large abandoned stick nests) are discovered as part of the breeding bird survey, a 150-foot-radius avoidance buffer would be centered on the nest sites to prevent the nesting birds from being disturbed by power tools. Weeds may be pulled by hand no closer than 50 feet from the nest. Measure GR-4b in the SNRAMP would ensure that direct impacts to nesting birds, including special status bird species, would be avoided and minimized. In accordance with Mitigation Measure M-BI-1a, SFRPD would be required to consult with appropriate regulatory agencies when there is potential for protected bird species to be affected by a programmatic project. Additionally, where protected or nesting bird habitat is temporarily or permanently removed, Mitigation Measure M-BI-1a would ensure that measures are taken to restore or compensate for indirect impacts as a result of habitat loss. With implementation of these measures and compliance with the MBTA, short-term impacts from programmatic vegetation removal on protected and nesting bird species would be ***less than significant.***

Invasive vegetation removal projects would replace the removed invasive trees and other vegetation with native plants, thus improving native habitat conditions and reducing competition from invasive species. As a result of habitat enhancement, the populations of protected bird species may increase. As such, the long-term programmatic project impacts from vegetation removal on protected bird species are expected to be beneficial.

The use of herbicides and pesticides for large-scale weed removal projects could potentially impact protected bird species in the area over the short-term through the inadvertent removal of habitat. Due to the low toxicity of the herbicides and pesticides that would be applied, accumulation in the

environment would not likely result in adverse impacts to protected bird species. Because these treatment methods would be used only to control undesirable weeds and pests in order to prevent the spread of nonnative invasive species and other pests, their use would have limited impacts on habitat for protected bird species. Due to the selective application of these treatment methods, birds could use other suitable vegetation that would be preserved adjacent to the treatment areas. The removed vegetation would be replaced with native vegetation, which would tend to provide higher quality habitat. The elimination of nonnative species would provide a greater area of suitable habitat for native species to naturally recruit and thrive, thus impacts to protected birds are expected to be beneficial over the long-term. To minimize impacts, the IPM Program (page 90) would employ the least-toxic decision-making model in its vegetation management and thus would only impact target invasive plant species, leaving viable habitat intact and avoiding direct impacts to birds from pesticide and herbicide use. Therefore with the implementation of the IPM Program and native species revegetation as part of the SNRAMP, impacts from herbicide and pesticide use on protected and nesting bird species would be ***less than significant***.

Trail Modification. The creation of new trails may require ground disturbing activities and the use of heavy equipment, and could increase foot traffic in an area, which could result in an increase in noise and disturbance to protected bird species as well. In compliance with the MBTA, the SFRPD would avoid harming or removing the nests of these species and any migratory bird species. Measure GR-4b (page 109) in the SNRAMP requires that vegetation management activities be conducted outside the breeding season (February 1 to August 31), unless these activities had already begun before the breeding season and had already removed nesting habitat or if a breeding bird survey was conducted prior to vegetation removal activities and had determined that no nesting birds were present. If active nests (or large abandoned stick nests) of a sensitive species are discovered, a 150-foot-radius avoidance buffer would be centered on the nest site(s) to prevent the nesting birds from being disturbed by power tools. Weeds may be pulled by hand no closer than 50 feet from the nest. This measure ensures that direct impacts to nesting birds, including special status bird species, would be avoided. With the implementation of Measure GR-4b and compliance with the MBTA, impacts from programmatic trail modification projects on special status bird species would be ***less than significant.***

Dog Play Areas. The DPA located at Lake Merced may be impacting special status bird species by the disturbance to nesting birds that may occur from the presence of dogs. Protected bird species that presently occur at Lake Merced include the double-crested cormorant, salt marsh common yellowthroat, yellow warbler, and bank swallow. The double-crested cormorants are known to nest next to the mesa, which is where the existing Lake Merced DPA is located. DPAs are an existing use,

and the SNRAMP does not propose increasing this activity. As a result, dogs may currently be impacting and may continue to impact protected or nesting birds within the DPA. However, recommended management action LM-7a of the SNRAMP requires the relocation of the DPA to a different area to avoid disturbing breeding birds in the current location. The Lake Merced DPA would not be relocated at this time due to the current restrictions on new DPAs, in which case it would be removed and restoration of the site would continue following removal. With implementation of this measure, impacts to protected or nesting birds at Lake Merced would be beneficial and ***less than significant***. Other Natural Areas may similarly experience impacts to biological resources as a result of continued dog use. These impacts may be potentially significant if, for example, dog use results in direct impacts to breeding birds (i.e., mortality, harassment, etc.). However, with implementation of Mitigation Measure M-BI-1a, which requires measures to reduce impacts of DPAs on special status species, programmatic impacts of dog use on special status bird species at all other Natural Areas would be ***less than significant***.

Locally Significant Species. Locally significant bird species occurring in the Natural Areas may be impacted by the above programmatic project activities. Some habitat loss may occur as a result of project activities. However, the goal of the SNRAMP is to improve habitat quality for all native wildlife within the Natural Areas and given the amount of habitat that would remain and be restored, ***no impacts*** would occur to locally significant bird species. If nesting locally significant bird species are present, in compliance with the MBTA, the SFRPD would avoid damaging or removing the nests of these species and any migratory bird species. Additionally, GR-4b in the SNRAMP (page 109), as described above, would ensure that impacts from programmatic project activities to nesting locally significant birds would be ***less than significant***.

Impact BI-3: The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on other protected terrestrial wildlife species (other than bird species). (Less than Significant with Mitigation)

Similar to impacts on special status bird species (Impact BI-2), invasive weed and tree removal, trail modification, and implementation of large-scale erosion control measures have the potential to directly affect habitat for other protected terrestrial species (e.g., invertebrates and mammals) that may occur in the Natural Areas or result in direct impacts, such as injury or mortality to protected terrestrial species.

Mission Blue Butterfly. Impacts to protected butterfly species could occur from disturbances to their host plants through invasive vegetation removal and trail modification activities. While the Bay

checkerspot butterfly, mission blue butterfly, and San Francisco silverspot butterfly have historically occurred within the Natural Areas, the mission blue butterfly is the only protected butterfly species that has been recorded in the Natural Areas in recent years. This butterfly is known to breed at Twin Peaks and has been recorded in the upper canyon at Sharp Park, and its host plants include *L. albifrons*, *L. varicolor*, and *L. fomosus*. Programmatic project activities at Twin Peaks include the removal of 83 invasive trees as well as the closure of 2,303 feet of trail and the creation of 501 feet of trail. These activities would result in vegetation removal and could require the use of heavy equipment that may adversely impact areas containing the host plants, which would result in habitat loss and potential mortality of the mission blue butterfly, a significant adverse impact. Programmatic project activities at Sharp Park that occur within mission blue butterfly habitat include invasive plant removal. These activities could result in significant impacts on protected butterflies at Twin Peaks and Sharp Park. The SFRPD currently operates under the Recovery Action Plan for Mission Blue Butterfly at Twin Peaks Natural Area and the associated Biological Opinion. The SFRPD continues to adhere to the Trail Maintenance and Construction BMPs and conducts annual monitoring of mission blue butterfly eggs and larvae each spring. In addition to current operations, the implementation of Mitigation Measure M-BI-1a would require pre-activity surveys. If a population of protected butterfly species or suitable habitat is present in or adjacent to the disturbance footprint or has the potential to occur within the areas disturbed, Mitigation Measure M-BI-1a requires the SFRPD to consult with the USFWS and to, in the following order, avoid potential impacts to this species, minimize impacts, restore the species' habitat, or, if necessary, compensate for impacts to these species. With the implementation of M-BI-1a, short-term programmatic project impacts on protected butterflies would be ***less than significant.***

The programmatic projects at Twin Peaks would replace the removed invasive trees and other vegetation with native plants, thus improving native habitat conditions and reducing competition from invasive species. Recommended management actions TP-2a[7] and TP-2b[8] call for the population of mission blue butterflies to be monitored as well as for augmenting host plant populations whenever possible. As a result of habitat improvements, the populations of protected butterfly species may increase. Additionally, the SFRPD will continue to adhere to the maintenance and monitoring strategies as stated in the Mission Blue Butterfly Recovery Action Plan. As such, the long-term programmatic project impacts on protected butterflies are anticipated to be beneficial.

[7]TP-2a—Continue to monitor the mission blue butterfly population
[8]TP-2b—Augment host plant populations whenever possible

San Francisco Dusky-Footed Woodrat. The San Francisco dusky-footed woodrat, which inhabits forests with moderate canopy and moderate to dense understory, has been recorded in the upper canyon at Sharp Park. Under the proposed programmatic project, invasive vegetation removal at Sharp Park would include the removal of invasive trees and vegetation within the MA-1 and MA-2 management areas. Sharp Park programmatic project activities also include the closure of 653 feet of trail and the creation of 1,792 feet of trail. Tree removal, trail modification and large-scale erosion control measures that require the use of heavy equipment could result in habitat loss and potential mortality of this species, which would be a significant impact. With implementation of Mitigation Measure M-BI-1a, pre-activity surveys would be required. If woodrats or woodrat middens are present in the disturbance footprint, Mitigation Measure M-BI-1a requires the SFRPD to avoid impacts to this species to the greatest degree practicable. If avoidance is not feasible, M-BI-1a requires SFRPD to minimize impacts to woodrats, restore woodrat habitat, and if necessary compensate for loss of woodrats and/or their habitat. With the implementation of M-BI-1a, programmatic project impacts on the San Francisco dusky-footed woodrat would be ***less than significant.***

Western Red Bat. The western red bat has been recorded at Golden Gate Park, Mount Davidson, Twin Peaks, Pine Lake, and McLaren Park. Western red bats roost primarily in the foliage of large shrubs and trees. Bat mortality or habitat destruction could result from removing invasive trees and other vegetation. Tree removal in the winter or spring and early summer could affect winter hibernacula or maternity roosts for the western red bat. With implementation of Mitigation Measure M-BI-1a, pre-activity surveys would be required. If western red bats or roosting trees are present in the disturbance footprint, Mitigation Measure M-BI-1a requires the SFRPD to avoid, minimize, restore, or compensate for impacts to these species. With the implementation of M-BI-1a, programmatic project impacts on the western red bat would be ***less than significant***.

Impact BI-4: The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on protected aquatic species. (Less than Significant with Mitigation)

Invasive vegetation removal, use of heavy equipment or installation of permanent structures within aquatic habitat (including riparian areas and wetlands), and the use of herbicides and pesticides have the potential to impact habitat for protected aquatic species and/or to injure or kill protected aquatic species expected to occur in those areas (e.g., San Francisco garter snake, California red-legged frog, western pond turtle). These activities could also adversely impact water quality, by increasing the rate of sedimentation and turbidity, which could affect aquatic species and their

habitat by limiting the amount of oxygen in the water as well as reducing visibility. No protected species beyond those listed below are expected to be affected by project activities at Sharp Park, including common newts or other species that may inhabit Arrowhead Lake in the eastern portion of Sharp Park. Specific impacts on these species associated with the Sharp Park restoration project are assessed under Impact BI-6.

California Red-Legged Frog. California red-legged frogs have been identified at Sharp Park and historically at Lake Merced; the population at Lake Merced is presumed to be extirpated (EIP Associates 2000**)**. This species requires habitat near permanent sources of deep water, with dense, shrubby or emergent vegetation. California red-legged frogs have been identified within Sharp Park at both Laguna Salada and the upper canyon. Impacts to California red-legged frogs associated with the Laguna Salada restoration project are addressed under Impact BI-6. Programmatic project activities in the upper canyon at Sharp Park that would impact California red-legged frogs include the removal of invasive trees, large-scale erosion control projects, and the use of herbicides and pesticides. While use of herbicides and pesticides could affect water quality when applied near water bodies, the SNRAMP IPM program would apply only aquatic-specific herbicides to wetlands and to areas next to water bodies (page 91), minimizing the effects of this treatment method on water quality and aquatic species. At Sharp Park, the continued mosquito treatments by the San Mateo County Mosquito and Vector Control District (SMCMVCD) would not substantially affect the California red-legged frog because the SMCMVCD employs pesticides for control at the larval stage that are less toxic to the environment, are highly specific to mosquitoes, and are applied to smaller areas. Sharp Park tree removal, erosion control projects, and the use of heavy equipment associated with these activities could result in the crushing of frogs, increased turbidity of water within the wetlands from disturbed soils, and removal of wetland vegetation. These activities could result in the temporary loss of habitat and potential mortality of this species, a significant impact. Implementing Mitigation Measure M-BI-1a would ensure that measures are taken to avoid and minimize direct impacts on California red-legged frogs and their habitat during implementation of programmatic projects by avoiding construction activities during the breeding season, installing flagging and temporary fencing around the frog habitat, and restoring habitat when necessary. Implementing Mitigation Measure M-BI-1a would also ensure that a biological monitor is present during project activities as required by CDFG and USFWS, if there is a potential for California red-legged frogs to occur in the project area. The biological monitor would be responsible for relocating the species out of harm's way, in accordance with direction from the natural resource agencies. Mitigation Measure M-BI-1a would ensure that proper consultations were conducted with the USFWS and CDFG for potential impacts on California red-legged frogs and that any additional

measures required by these agencies were implemented. Therefore, with implementation of Mitigation Measures M-BI-1a, short-term programmatic impacts on California red-legged frogs would be ***less than significant.***

The programmatic projects would replace the removed invasive trees and other vegetation with native plants appropriate to a given habitat, or would otherwise improve aquatic habitat conditions, potentially improving the health of the California red-legged frog populations. As such, the long-term programmatic project impacts on this species are expected to be beneficial.

San Francisco Garter Snake. San Francisco garter snakes have been identified at Sharp Park. The snake's habitat requirements include freshwater marshes, ponds and slow-moving streams with dense cover and water depths of at least one foot. San Francisco garter snakes have been identified within Sharp Park at Laguna Salada and have the potential to occur at the irrigation pond in the upper canyon. Impacts to San Francisco garter snakes associated with the Laguna Salada restoration project are addressed under Impact BI-6. Programmatic project activities at Sharp Park that would impact San Francisco garter snakes include large-scale erosion control projects and the use of herbicides and pesticides. While use of herbicides and pesticides could affect water quality when applied near water bodies, the SNRAMP IPM program would apply only aquatic-specific herbicides to wetlands and to areas next to water bodies (page 91), minimizing the effects of this treatment method on water quality and aquatic species. The heavy equipment associated with erosion control projects could crush snakes, disturb soils and increase the turbidity of water within the wetlands, and remove wetland vegetation. These activities could result in the temporary loss of habitat and potential mortality of this species, a significant impact. Implementing Mitigation Measures M-BI-1a would ensure that measures are taken to avoid and minimize direct impacts on the San Francisco garter snake and its habitat during implementation of programmatic projects. In compliance with M-BI-1a, programmatic projects would be required to avoid impacts to the San Francisco garter snake, which may include conducting activities outside the time in which garter snakes are inactive in their winter burrows, as well as installing flagging and temporary fencing around snake habitat. Following programmatic project activities, Mitigation Measure M-BI-1a also ensures that any temporary or permanent impacts to this species' habitat are restored or compensated for. Mitigation Measure M-BI-1a requires that a biological monitor be present during project activities, as required by CDFG and USFWS, if there is a potential for San Francisco garter snakes to occur in the project area. The biological monitor would be responsible for relocating the species out of harm's way, in accordance with direction from the resource agencies. Mitigation Measure M-BI-1a would require the SFRPD to consult with the USFWS and CDFG prior to implementing any programmatic project with the potential to affect San Francisco garter snakes and that additional measures required by

these agencies be implemented. Therefore, with implementation of Mitigation Measures M-BI-1a, programmatic impacts on San Francisco garter snakes would be ***less than significant.***

The programmatic projects would replace the removed invasive trees and other vegetation with native plants appropriate for a given habitat or would otherwise improve aquatic habitat conditions, thereby improving the health of the San Francisco garter snake population. As such, the long-term programmatic project impacts on this species are anticipated to be beneficial.

Western Pond Turtle. Western pond turtles occur at Sharp Park and Lake Merced. They have been historically reported at Pine Lake. Recommended management action PL-4b[9] proposes to relocate this species to Lake Merced, if found at Pine Lake. Therefore, this species is considered potentially present at Pine Lake. Any relocation efforts would be coordinated with the appropriate agency to minimize any adverse effects. Western pond turtle habitat includes ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. This species requires basking sites and upland habitat for egg-laying. Western pond turtles have been identified within Sharp Park at Laguna Salada and have the potential to occur near the irrigation pond in the upper canyon. Impacts to western pond turtles associated with the Laguna Salada restoration project are addressed under Impact BI-6. Programmatic project activities at these Natural Areas that could impact western pond turtles include the removal of invasive vegetation within wetlands at Lake Merced, large-scale erosion control projects at Lake Merced and Sharp Park and the use of herbicides and pesticides. While use of herbicides and pesticides could affect water quality when applied near water bodies, the SNRAMP IPM program would apply only aquatic-specific herbicides to wetlands and to areas next to water bodies (page 91), minimizing the effects of this treatment method on water quality and aquatic species. Programmatic project activities and the heavy equipment associated with these activities could result in the crushing of turtles, increased turbidity of water within the wetlands from disturbed soils, and removal of wetland vegetation. The resulting impact from the temporary loss of habitat and potential mortality of this species would be significant. Implementing Mitigation Measures M-BI-1a would require pre-activity surveys, would ensure that measures are taken to avoid and minimize direct impacts on western pond turtle habitat during implementation of programmatic projects, and require that affected habitat be restored. Implementing Mitigation Measure M-BI-1a would also ensure that a biological monitor is present during project activities as required by CDFG, if there is a potential for western pond turtles to occur in the project area. The biological monitor would be responsible for relocating the species out of harm's way, in accordance with direction from the resource agencies. Mitigation Measure M-BI-1a would ensure that proper

[9] PL-4b—Relocate any western pond turtles to the higher-quality habitat at Lake Merced

consultations were conducted with CDFG for potential impacts on western pond turtles and that additional measures required by these agencies were implemented. Therefore, with implementation of Mitigation Measures M-BI-1a, short-term programmatic impacts on western pond turtles would be ***less than significant***.

The programmatic projects would replace the removed invasive trees and other vegetation with native plants appropriate to a given habitat, or would otherwise improve aquatic habitat conditions, improving the health of the western pond turtle population. As such, the long-term programmatic project impacts on this species are expected to be beneficial.

Project-Level Impacts (Routine Maintenance)

Impact BI-5: Implementation of routine maintenance activities under the SNRAMP would result in a substantial adverse effect on special status species. (Less than Significant with Mitigation)

Routine maintenance activities that could impact special status species include the removal of invasive weeds by hand, the installation of plants, the removal of invasive trees, trail maintenance, and the maintenance of catchment basins and sediment dams. Impacts to special status species as a result of these activities could result from ground disturbance, noise, vegetation removal and trampling. While these types of activities and impacts are similar to those proposed as part of the programmatic projects, the scope of routine maintenance would occur on a much smaller scale. For purposes of this EIR, invasive vegetation removal under routine maintenance would typically occur on less than half an acre and involve removing 20 or fewer trees, while vegetation removal as part of programmatic projects would typically involve areas greater than half an acre or removal of more than 20 trees.

The goals of routine maintenance activities are to maintain trails as well as remove invasive weeds and trees and other vegetation and replant these areas with native plants. Routine maintenance activities are intended to gradually improve native habitat conditions by reducing competition from invasive species. Recommended actions within the SNRAMP include specific actions for the majority of the Natural Areas to augment special status plant species through replanting, the reintroduction of species in areas they are known to have historically occurred, as well as maintaining existing populations. As a result of habitat improvements, the populations of special status species may increase. As such, routine maintenance is anticipated to result in long-term beneficial impacts to biological resources.

Impacts of routine maintenance activities within the Laguna Salada wetland complex are addressed under Impact BI-6.

Plants. Protected plant species occur at India Basin, Tank Hill, Hawk Hill, Lake Merced, Bernal Heights, Golden Gate Heights, Mount Davidson, Bayview Park, Twin Peaks, Corona Heights and the Balboa Natural Area. As described in Section III.F.2 (page 96), the proposed routine maintenance activities include the removal of invasive weeds which would be done by hand in areas of up to half an acre. Ground disturbance from this activity would occur within the top inch of ground around the root zone. Tree removal would occur manually, limb-by-limb, with no more than 20 trees (less than half an acre) being removed at one time. Planting would be done using hand tools with plants in one-gallon containers or smaller. Trail maintenance would include clearing deposited soil from steps, replacing or installing steps or trail edging, and rerouting and benching trails. Ground disturbance for this activity is usually six inches or less. All routine maintenance activities would be conducted by, or overseen by, the Natural Areas Program staff, a division of the SFRPD, which is composed of biologists, ecologists, and natural resource managers who are knowledgeable about both the ecology and presence/locations of special status species within the Natural Areas. Routine maintenance activities that involve removing invasive vegetation, planting, herbicide and pesticide application and trail maintenance activities could result in the inadvertent damage or mortality of the protected and locally significant plants that may occur in the Natural Areas through removal or crushing, resulting in significant impacts. Implementing Mitigation Measure M-BI-5 would reduce impacts to special status plant species by avoiding disturbance to special status plant species through an education program for SFRPD staff and field personnel, avoiding direct impacts to special status plants, and limiting activities in the vicinity of special status plant species to the minimum necessary to achieve the maintenance goals. As a result, the impacts of routine maintenance activities on special status plant species would be ***less than significant***.

Birds. Protected and locally significant bird species may occur at all Natural Areas. As described in Section III.F.2 (page 97), the removal of invasive trees (mostly eucalyptus), as well as overhanging tree limbs, will occur manually and would use minimally invasive limb-by-limb removal techniques. Following removal, stumps would be left in place, resulting in little, if any, ground disturbance. Typically, no more than 20 trees (or half an acre) are treated at one time. Tree removal as part of routine maintenance would include removal of saplings and any tree over 15 feet high. Trees over six inches dbh would be removed by tree crews at a rate of one to a few trees at a time. Routine maintenance activities that involve the removal of invasive weeds and trees could also result in the inadvertent damage or mortality of nesting birds that may occur in the Natural Areas. Measure GR-4b proposed in the SNRAMP (page 109) would require that vegetation management

activities be conducted outside the breeding season (February 1 to August 31), unless a nesting bird survey was conducted prior to maintenance activities and confirmed that no active nests were present within the maintenance area. If active nests (or large abandoned stick nests) are discovered, maintenance activities would be limited to removal of vegetation by hand no closer than 50 feet from the nest. Measure GR-4b in the SNRAMP would ensure that direct impacts to nesting birds, including special status bird species, would be avoided. As a result, the impacts of routine maintenance activities on protected or locally significant bird species would be ***less than significant***.

Terrestrial Wildlife. Protected terrestrial wildlife includes the mission blue butterfly, which occurs at Twin Peaks and in the upper canyon of Sharp Park, and the western red bat which occurs at Golden Gate Park, Mount Davidson, Twin Peaks, Pine Lake and McLaren Park. The dusky-footed woodrat also occurs in the upper canyon of the Sharp Park Natural Area. Routine maintenance activities that involve the removal of invasive trees and trail maintenance could result in the inadvertent injury or mortality of protected terrestrial wildlife that may occur in these Natural Areas. As a result, routine maintenance activities could have significant adverse impacts on these species. Implementing Mitigation Measure M-BI-5 would reduce impacts to wildlife by avoiding impacts to protected wildlife species. Mitigation Measure M-BI-5 requires that SFRPD conduct an annual training program for SFRPD's Natural Areas Program staff and Natural Areas Program staff conduct an education program for field personnel. The education program would ensure that all field personnel are properly trained on the proper protocol should a protected species be encountered. Mitigation Measure M-BI-5 further limits activities where there is the potential to impact special status wildlife species to the minimum necessary to achieve the goals of individual maintenance actions. In addition, long-term vegetation management and maintenance strategies are outlined in the Mission Blue Butterfly Recovery Action Plan. Implementation of Mitigation Measure M-BI-5 requires continued compliance with the Mission Blue Butterfly Recovery Action Plan's measures to avoid and minimize impacts to this species as a result of routine maintenance activities. Avoidance and minimization measures include habitat restoration from seeding and planting, the removal of invasive vegetation surrounding lupines and trail closures in which maintenance activities would not occur during overwintering periods. Mitigation Measure M-BI-5 also includes measures to avoid impacts to western red bats from maintenance activities by avoiding work within a 150 foot buffer of trees in which roosting western red bats have been encountered. Mitigation Measure M-BI-5 also requires measures to avoid impacts to San Francisco dusky-footed woodrats by avoiding maintenance work within a 10-foot buffer of active or potentially active woodrat middens. As a result, the impacts of routine maintenance activities on protected terrestrial wildlife species would be ***less than significant***.

Aquatic Species. Protected aquatic species include the California red legged frog, which occurs at Sharp Park, including the upper canyon, and has historically been recorded at Lake Merced, but is thought to be extirpated from that site (EIP Associates 2000); the western pond turtle, which occurs at Sharp Park and Lake Merced; and the San Francisco garter snake, which occur only at Sharp Park, including the upper canyon. The western pond turtle has historically been documented at Pine Lake, although it is believed to be extirpated at that site. If found at Pine Lake, the SNRAMP proposes that the SFRPD relocate this species to Lake Merced. Any relocation efforts would be coordinated with the appropriate agency to minimize any adverse effects. Therefore, western pond turtle is considered potentially present at Pine Lake. Impacts to California red-legged frog, western pond turtle and San Francisco garter snake as a result of maintenance activities following completion of the restoration activities at Laguna Salada are addressed under Impact-BI-6. Routine maintenance activities that involve the maintenance of catchment dams and sediment basins would occur at Glen Canyon and McLaren Park. These Natural Areas do not contain protected aquatic species, so these activities would have no impact on protected aquatic species.

Some weed removal activities may occur within aquatic habitat and this disturbance has the potential to impact habitat for protected aquatic species and/or to injure or kill protected aquatic species expected to occur in those areas, resulting in potentially significant impacts. Implementing Mitigation Measure M-BI-5 would avoid impacts to aquatic species by avoiding and minimizing disturbance through an education program for field personnel and limiting activities where there is the potential to impact protected aquatic species to the minimum necessary to achieve the goals of individual maintenance actions. Mitigation Measure M-BI-5 requires that work take place outside of the designated breeding/nesting season for protected aquatic species. If this is not feasible, pre-activity reconnaissance surveys would be required to determine the presence or absence of protected aquatic species within the work zone. In the event a protected aquatic species is encountered during work activities, Mitigation Measure M-BI-5 requires field work to stop immediately and the onsite SFRPD staff member be notified. SFRPD would confirm that the species has moved outside of the work zone, or the work zone shall be adjusted to avoid the species. Additionally, SFRPD staff would be required to provide verbal notification to the USFWS and/or to the local CDFG warden or biologist within 24 hours of the sighting. As a result, the impacts of routine maintenance activities on protected aquatic species would be ***less than significant***.

M-BI-5: Protection of Special Status Species during Routine Maintenance

The SFRPD shall avoid disturbance to biological resources by undertaking the following measures during routine maintenance activities:

- Natural Areas Program staff and/or SFRPD staff engaged in routine maintenance activities as part of the SNRAMP shall receive annual training on the special status species that occur within the Natural Areas. The training shall identify the special status species that occur within the Natural Areas, their life history, measures to be implemented to avoid impacts to those species, and the proper protocol for encountering special status species. The SFRPD shall confirm that all SFRPD staff engaged in routine maintenance activities as part of the SNRAMP has been trained appropriately.
- An education program for other field personnel (e.g. volunteers) shall be conducted by the SFRPD staff before field activities begin at a new site that has the potential to contain special status species. The field education program will consist of a brief presentation by persons knowledgeable in the applicable special status species and will include identifying the locations of protected species and locally significant plant species and an explanation of the measures being taken to avoid these species. The SFRPD shall confirm that all workers and volunteers have been trained appropriately.
- Disturbance of special status plant species shall be avoided. SFRPD staff shall conduct a reconnaissance survey of maintenance areas prior to undertaking routine maintenance activities to ensure that no special status plant species are present. If such species are found to be present, activities in those areas would be relocated or modified so as to avoid potentially affecting those species. SFRPD staff shall ensure that all volunteers and others involved in maintenance or restoration activities follow protection protocols.
- Vehicle operators shall use existing access roads and would remain outside of habitat supporting protected species to the extent feasible.
- All vehicles shall be brought in clean and free of weeds to prevent the spread or introduction of invasive plant species.
- Protected terrestrial and aquatic species impacts shall be avoided during routine maintenance activities by implementing the following measures:
    - **California Red-Legged Frog and San Francisco Garter Snake:** These species both potentially occur at the Sharp Park upper canyon. The following measures shall apply to this Natural Area:
        - To avoid disturbance of these species, maintenance work shall not occur in the vicinity of ponds and wetlands between November 15 and April 15, the breeding season for California red-legged frog and the season when San Francisco garter snakes are inactive in their winter burrows.

- If maintenance cannot be avoided during the abovementioned time period, the SFRPD staff will conduct reconnaissance surveys of maintenance areas prior to undertaking maintenance work to ensure that no California red-legged frogs or San Francisco garter snakes are present.
- Vegetation in all maintenance areas will be progressively cleared by hand equipment to a height of 4 inches and checked for the presence of snakes prior to disturbance and prior to equipment or vehicles entering the sites. Once vegetation is cleared, an additional pre-activity survey for the San Francisco garter snake and California red-legged frog shall be conducted in the maintenance area.
- In the event that a California red-legged frog or San Francisco garter snake is encountered, all field work shall immediately stop. Field personnel shall notify the onsite SFRPD staff member who will confirm the species has moved outside of the work zone, or the work zone shall be adjusted to avoid the species.
- SFRPD staff shall provide verbal notification to the USFWS and/or to the local CDFG warden or biologist (as applicable) within one working day of the encounter. The SFRPD shall follow up with written notification to the USFWS and/or CDFG (as applicable) within five working days. Maintenance activities in the location of the encounter would be prohibited until SFRPD has contacted and properly consulted with USFWS and/or CDFG. Field personnel shall submit all observations of protected species to the California Natural Diversity Database (CNDDB).

o **Western Pond Turtle:** This species occurs at Lake Merced and Sharp Park and may occur at Pine Lake. The following measures shall apply to these Natural Areas:

- To avoid disturbance of this species, routine maintenance work shall be avoided within wetlands, ponds and adjacent uplands, between May 15 and July 15, the nesting season for western pond turtles.
- If maintenance work cannot be avoided during the abovementioned time period, the SFRPD staff shall conduct reconnaissance surveys of maintenance areas prior to undertaking maintenance work to ensure that no western pond turtles or their nests are present.

- In the event that a western pond turtle is encountered, all field work shall immediately stop. Field personnel shall notify the onsite SFRPD staff member who will confirm the species has moved outside of the work zone, or the work zone shall be adjusted to avoid the species.
- SFRPD staff shall provide verbal notification to the local CDFG warden or biologist (as applicable) within one working day of the encounter. The SFRPD shall follow up with written notification to CDFG within five working days. Maintenance activities in the location of the encounter would be prohibited until SFRPD has contacted and properly consulted with CDFG. Field personnel shall submit all observations of protected species to the CNDDB.

o **San Francisco Dusky-Footed Woodrat:** This species occurs in the Sharp Park upper canyon. The following measure shall apply to this Natural Area:

- SFRPD staff will conduct reconnaissance surveys of maintenance areas prior to undertaking maintenance work to identify locations of woodrat middens.
- To avoid disturbance of the San Francisco dusky-footed woodrat, no vegetation shall be cleared within a 10-foot buffer of an active or potentially active woodrat middens.

o **Western Red Bat:** If an occupied or active roost is identified during maintenance activities, the roost shall not be disturbed. No maintenance work within 150 feet of the potentially occupied roost shall occur until it has been determined that bats are no longer using the site.

- In the event that a western red bat is encountered, all field work shall immediately stop. Field personnel shall notify the onsite SFRPD staff member who shall confirm that the species has moved outside of the work zone, or the work zone shall be adjusted to avoid the species.
- SFRPD staff shall provide verbal notification to the local CDFG warden or biologist (as applicable) within one working day of the encounter. The SFRPD shall follow up with written notification to CDFG within five working days. Maintenance activities in the location of the encounter would be prohibited until SFRPD has contacted and properly consulted with CDFG. Field personnel shall submit all observations of protected species to the CNDDB.

- **Mission Blue Butterfly:** This species occurs at Twin Peaks and Sharp Park. The following measures shall apply to these Natural Areas:
  - To avoid impacts to this species, SFRPD shall adhere to the long-term management and monitoring guidelines as described in the Recovery Action Plan for the Mission Blue Butterfly at Twin Peaks Natural Area and the corresponding Biological Opinion and as agreed to with the USFWS. These guidelines include conducting vegetation removal by manual, mechanical and chemical treatments that would be applied consistent with the SFRPD IPM program, such as hand pulling, cutting and grubbing. To avoid impacts from trampling of host plants by recreational users, the SFRPD shall continue to conduct regular maintenance on the existing trail network including trimming trailside vegetation and replacing trail base materials.

Project-Level Impacts (Sharp Park Restoration)

Impact BI-6: Implementation of the Sharp Park restoration activities under the SNRAMP would have a substantial adverse effect on special status species. (Less Than Significant with Mitigation)

The improvements to protect and enhance the California red-legged frog and San Francisco garter snake at Laguna Salada under measure SP-4a are focused on restoring the marsh complex and associated uplands. Restoration of the Laguna Salada wetland complex would occur during the dry season. Summarized below are the main features of the project to restore the Laguna Salada wetland complex and associated uplands at Sharp Park (these are further detailed in Section III.F.2):

The main components of the restoration are as follows:

- Dredging up to 60,000 cubic yards of material to remove sediment and decaying vegetation in Laguna Salada, Horse Stable Pond, and the channel that connects the two water bodies, resulting in the conversion of freshwater marsh, willow scrub, and wet meadow wetland habitat to open water, achieving no net loss of Waters of the US (as defined by the Clean Water Act);
- Recontouring freshwater marsh wetland and ruderal (disturbed) habitat along the Laguna Salada, Horse Stable Pond, and channel shorelines to create shallow water habitat; this recontouring would achieve no net loss of Waters of the US (as defined by the Clean Water Act);

- Creating an upland and wetland habitat corridor between Horse Stable Pond and Laguna Salada in the area currently occupied by the Sharp Park Golf Course;
- Converting about half an acre of wet meadow/freshwater marsh wetland to an upland refuge in the middle of the lagoon to provide snakes and frogs with refugia from feral cats and other predators; creating about an acre of replacement wet meadow wetland along the northern and western edges of the lagoon in place of coastal scrub habitat, achieving no net loss of wetland habitat; and
- Constructing up to four acres of upland mounds on landscaped grass on the east side of the lagoon and between Laguna Salada and Horse Stable Pond**.** These mounds would be placed in the area currently occupied by the Hole 13 fairway, which would be narrowed and reconfigured.

During the restoration activities, temporary equipment staging and materials storage would occur on about an acre at the northwest corner of Sharp Park, at or near Hole 17 of the golf course. Equipment access to the project area from the north would be from Clarendon Street, which runs along the north side of Sharp Park. Access to the southern part of the project area would be from the sea wall levee road and the dirt road near the Horse Stable Pond pump house (see Figure 2 in Chapter III).

To facilitate deepening of Laguna Salada and Horse Stable Pond, and the channel that connects them, the water levels would be lowered temporarily to allow equipment to access the shoreline. Following lowering of the water levels, a qualified USFWS-approved biologist would survey the entire project area for California red-legged frogs, San Francisco garter snakes, and western pond turtles. If individuals are found during the survey, the biologist would relocate them to appropriate aquatic habitat, such as that near Mori Point, located south of Horse Stable Pond; these activities would be conducted in coordination with the USFWS and CDFG to minimize any adverse effects.

An upland and wetland habitat corridor between the lagoon and the pond would be constructed with upland features designed to support the San Francisco garter snake. Sediment basins would be installed in two locations, one where Sanchez Creek enters a culvert to pass under Highway 1 and the other located at the northern boundary of Sharp Park; the former sediment basin would be developed on about half an acre of the golf course (primarily upland Monterey pine habitat), and the latter sediment basin would be expanded onto about half an acre of ruderal and upland Monterey pine habitat. A fence would also be installed along the seawall to the west of the lagoon,

with additional fencing around the wetland complex, to discourage human and pet intrusion into the restored habitat area.

The majority of the restoration footprint shown in Figure 2 is subject to temporary disturbance during the restoration activities. Following completion of restoration activities, those areas that are not permanently modified would be scarified, recontoured, and hydroseeded with native vegetation to approximate their pre-disturbance condition.

The restoration goals and actions are presented in Section III.F.2 and further detailed in the Sharp Park Conceptual Restoration Alternatives Report (SFRPD 2009a), included in Appendix I. Heavy equipment and ground-disturbing activities associated with the project activities listed above could injure or kill the San Francisco garter snake, California red-legged frog, and western pond turtle, which have been observed in and near aquatic habitat at Sharp Park (SFRPD 2008b). In addition, an increase in noise and human presence during restoration may also adversely impact these species. Limited tree removal at Sharp Park may adversely impact special status bird species. The San Francisco dusky-footed woodrat occurs at Sharp Park, but is limited to the upper canyon and would not be impacted by the restoration activities. Implementing the Sharp Park restoration project would alter the hydrology of the wetland system over the long term, which would improve habitat quality for special status aquatic species. These alterations are intended to benefit special status species (California red-legged frog, western pond turtle and San Francisco garter snake) by restoring and increasing their habitat and providing better connectivity to adjacent habitat. Temporary impacts have the potential to occur within the entire project footprint (see Figure 2). Impacts that could occur during restoration include temporary habitat loss and disturbance as well as an increase in the potential for direct injury or mortality. Over the long-term, impacts to these species at Sharp Park are expected to be beneficial. Permanent impacts would occur through the loss of 5.5 acres of freshwater marsh and 0.5 acres of willow scrub. These losses will be compensated by the increase of 5.5 acres of open water and the addition of one acre of wet meadow.

Following completion of the restoration activities, the SFRPD would conduct maintenance to ensure the success of those activities. The scope of the maintenance is subject to modification during consultation with the USFWS pursuant to the ESA. Temporary impacts from maintenance would occur from weeding and maintaining the restored areas. Maintenance of the wetland areas may include removal of invasive and encroaching plant species and additional planting of wetland plant species. As needed, the SFRPD also would conduct small-scale dredging of accumulated sediments from the wetlands using a backhoe or similar equipment. Maintaining the sediment basins would involve the periodic removal of accumulated sediment. Temporary impacts to California red-legged

frog, San Francisco garter snake and western pond turtle may occur as result of maintenance activities.

Prior to implementing the proposed Sharp Park restoration activities, the SFRPD would consult with CDFG and USFWS and prepare a Biological Assessment and obtain a Biological Opinion and incidental take permit from the USFWS pursuant to the ESA.

Due to their occurrence within the Laguna Salada wetland complex, the only protected species expected to be affected by the restoration project are the San Francisco garter snake, California red-legged frog, western pond turtle, and salt marsh common yellowthroat.

San Francisco Garter Snake. During the restoration activities, impacts to San Francisco garter snakes could occur from construction activities, including the dredging and recontouring of wetlands, which could result in the temporary loss of both basking and foraging habitat for the San Francisco garter snake. Temporary impacts and possible mortality of individuals would also occur from the conversion of approximately half an acre of wet meadow wetlands to an upland refuge in the middle of the lagoon. Temporary impacts of the restoration activities would result in disturbance to feeding, dispersal and breeding behavior and may affect snake burrows. Noise and vibration may also disturb San Francisco garter snakes. The removal of large vegetation may disturb or harm the snakes by causing them to move out of their resident habitat, possibly causing injury or mortality due to lack of adequate forage or cover. To compensate for this disturbance and conversion of habitat, in-kind creation of approximately one acre of wetlands, which would serve as San Francisco garter snake habitat, would occur in several upland locations around the northern and western edges of the lagoon. The goal of converting some wetland habitat to uplands is to increase the currently limited basking, foraging, and refugia habitat for the San Francisco garter snake. Impacts to San Francisco garter snakes could occur from construction activities involving vehicle traffic and the use of heavy equipment which could result in direct mortality of individuals. The habitat disturbance and injury and mortality described above would be a significant impact on San Francisco garter snakes.

Implementing Mitigation Measure M-BI-6a requires a pre-activity survey to identify snakes and snake habitat. It also includes a worker education program to train all workers on how to identify and avoid harm to San Francisco garter snakes. Prior to construction equipment or vehicles entering the site, vegetation will be cleared by hand equipment to a height of 4 inches and checked for the presence of snakes. Additionally, prior to construction near wetlands and ponds, rodent burrows in the construction areas will be hand excavated in order to ensure absence of snakes. No restoration

activities would occur between November 15 and April 15, and a biological monitor would be present during construction activities, in addition to an on-call specialty environmental monitor with a valid 10(a)(1)(A) permit to handle San Francisco garter snakes and relocate them to an area consisting of suitable habitat if needed. Any relocation efforts would be coordinated with the appropriate agency to minimize any adverse effects. Mitigation Measure M-BI-6a would ensure that measures are taken to avoid impacts to San Francisco garter snakes during construction by the use of silt fencing or exclusion fencing around the project and staging areas and all onsite restoration. This measure would reduce temporary construction impacts by avoiding and minimizing impacts to San Francisco garter snakes to a degree sufficient to ensure no injury or mortality of individuals to the maximum extent feasible. With implementation of M-BI-6a, the short-term impacts of Sharp Park restoration on the San Francisco garter snake would be ***less than significant***.

Over the long-term, the Laguna Salada restoration project would result in beneficial impacts to San Francisco garter snake by creating upland sites adjacent to aquatic sites that will provide basking habitat and refugia for the snakes near their foraging habitat. The enhancements to the wetland areas would increase breeding and foraging habitat for the San Francisco garter snakes. The conversion of freshwater marsh habitat to open water would discourage the growth of dense stands of bulrush and cattails which overgrow the wetlands thus diminishing habitat quality for the California red legged frog, the primary food source for the San Francisco garter snake.

California Red-Legged Frog. During restoration, impacts to California red-legged frogs from the Sharp Park restoration project would be similar to those described above for San Francisco garter snakes. Temporary impacts from construction activities would result in the disturbance of feeding, breeding, and dispersal behaviors. The removal of encroaching vegetation may disturb California red-legged frogs sheltering within the plants. Project activities that may cause California red-legged frogs to move out of their resident habitat may cause injury or mortality due to lack of adequate forage or cover. Impacts also would occur from construction activities involving vehicle traffic and the use of heavy equipment which could result in direct mortality of individuals. Short-term impacts of construction activities that result in injury, mortality and habitat disturbance would result in significant impacts on the frog. Implementing Mitigation Measure M-BI-6a includes pre-activity surveys, a worker education program, a biological monitor during construction activities, in addition to an on-call specialty environmental monitor with a valid 10(a)(1)(A) permit to handle California red-legged frogs and relocate as needed, and additional avoidance and minimization measures which include vegetation being cleared by hand equipment to a height of 4 inches and checked for the presence of frogs prior to construction and vehicles entering the site. Any relocation efforts would be coordinated with the appropriate agency to minimize any adverse effects. These

measures would reduce impacts to California red-legged frogs from restoration activities. As described above, Mitigation Measure M-BI-6a would ensure that measures are taken to effectively move individuals out of harm's way. This measure would reduce the impact to California red-legged frogs by avoiding and minimizing impacts sufficiently to ensure no injury or mortality of individual frogs to the maximum extent feasible.

Additionally, California red-legged frogs may be adversely affected by increased sedimentation caused by runoff associated with the project activities. Erosion control measures such as straw mulch, sediment traps, and wattles would be installed to eliminate the potential for sediment discharge in to the wetlands during the construction process, as described under Mitigation Measure M-HY-1. Implementing Mitigation Measures M-HY-1 and M-BI-6a, which includes measures to install silt fencing would reduce impacts to California red-legged frogs from sedimentation during restoration by avoiding and minimizing impacts to the California red-legged frog and its habitat to sufficiently avoid injury or mortality of the frog. With implementation of M-BI-6a and M-HY-1, the short-term impacts of Sharp Park restoration activities on the California red-legged frog would be ***less than significant.***

Over the long-term, the Laguna Salada restoration project would result in beneficial impacts to California red-legged frogs by converting freshwater marsh, where tadpoles are often unable to penetrate the dense vegetation and where female frogs may lay their eggs only to be left stranded above water, to open water habitat. The removal of dense emergent vegetation will allow for a higher quality of breeding habitat for the frogs which will result in an increased survival of egg masses and tadpoles. The conversion of freshwater marsh habitat to open water would discourage the growth of dense stands of bulrush and cattails that have overgrown the wetlands and reduced the quality of habitat for California red-legged frogs.

Western Pond Turtle. During the restoration activities, impacts to the western pond turtle from the Sharp Park restoration project would be similar to those described above for California red-legged frog. However, because the restoration activities may occur during the western pond turtle nesting season, the magnitude of those impacts would be greater for this species. Temporary impacts from construction activities would result in the disturbance of feeding, breeding, aestivation sites and dispersal behaviors. The removal of nonnative vegetation may disturb western pond turtles sheltering within the plants as well as remove basking sites along the wetland banks. Increased sedimentation could adversely affect shallow water habitat for hatchlings as well as basking sites along the banks. These would result in significant impacts to western pond turtles. Implementing Mitigation Measures M-HY-1 (erosion control measures) and M-BI-6a, which includes a worker

education program, pre-activity surveys, a biological monitor during construction activities and avoidance and minimization measures, including the use of silt or exclusion fencing around project and staging areas and the hand clearing of upland vegetation prior to vehicles entering the site, would reduce short-term impacts to western pond turtles from Sharp Park restoration activities to ***less than significant.***

Over the long-term, the Laguna Salada restoration project would result in beneficial impacts to western pond turtles. The removal of dense emergent vegetation would allow for a higher quality of breeding habitat for the turtles. Additional upland mounds would improve habitat quality by providing suitable basking sites. The conversion of freshwater marsh habitat to open water would discourage the growth of dense stands of bulrush and cattails that have overgrown the wetlands and reduced the quality of habitat for western pond turtles.

Salt Marsh Common Yellowthroat. Construction activities associated with the restoration project could result in the temporary disturbance of the salt marsh common yellowthroat as a result of vegetation removal and an increase in noise, vehicle traffic, and human presence. This is the only protected bird species known to nest at Sharp Park. The salt marsh common yellowthroat requires saltwater or freshwater marsh habitat with dense vegetation for nesting. The Laguna Salada restoration project may result in temporary impacts to this species through the disturbance and loss of nesting habitat from construction activities. Of the existing 19.5 acres of freshwater marsh, 14 acres would remain following restoration. While some habitat would be lost as a result of project activities, the majority of the freshwater marsh habitat would not be impacted, and sufficient saltmarsh common yellowthroat habitat would remain undisturbed. Limited tree removal would also occur as part of the restoration project, but is not expected to significantly impact this species because this species is not known to nest in the vegetation that is proposed for removal (Monterey pine). These impacts would be temporary and would not result in a substantial loss of salt marsh common yellowthroat habitat. Implementing GR-4b of the SNRAMP requires that all vegetation management activities be conducted outside the breeding season for bird species (February 1 through August 31, as designated by CDFG), unless these activities had already begun before the breeding season and had already removed nesting habitat or a breeding bird survey was conducted prior to vegetation removal activities and had determined that no nesting birds were present. If active nests (or large abandoned stick nests) are discovered as part of the breeding bird survey, a 150-foot-radius avoidance buffer would be centered on the nest sites to prevent the nesting birds from being disturbed by construction activities. As a result, the Sharp Park restoration would result in ***less than significant*** impacts to the salt marsh common yellowthroat.

Over the long-term, the Laguna Salada restoration project would result in beneficial impacts to the salt marsh common yellowthroat. The removal of dense stands of cattails and bulrush would temporarily impact salt marsh common yellowthroat habitat. However, following restoration, biodiversity surrounding the wetland complex is anticipated to increase, creating a higher quality nesting habitat for the salt marsh common yellowthroat.

Maintenance Activities. As described in more detail beginning on page 98, the restoration project is a recovery action for the San Francisco garter snake. Maintenance would occur following completion of the Sharp Park restoration project. The scope of the maintenance is subject to some modification during consultation with the USFWS pursuant to the ESA. Maintenance would include weeding and maintaining the restored areas. Maintenance of the wetland areas may include removal of invasive and encroaching plant species and additional planting of wetland plant species. As needed, the SFRPD also would conduct small-scale dredging of accumulated sediments from the wetlands using a backhoe. Maintaining the sediment basins would involve the periodic removal of accumulated sediment. Impacts to special status species associated with maintenance activities would be potentially significant and similar to routine maintenance impacts. Significant impacts to protected species could occur from ground disturbance through trampling, vegetation removal, and sediment removal. Implementing Mitigation Measure M-BI-6b, designed to avoid disturbance caused by maintenance activities performed by the Natural Areas Program staff to the maximum extent feasible, would ensure that impacts from and maintenance of the Sharp Park restoration project are avoided or minimized, resulting in ***less than significant*** impacts**.**

M-BI-6a: Protection of Protected Species during Implementation of the Sharp Park Restoration Project

The SFRPD shall implement the following, subject to modification during the required regulatory approval processes:

Avoidance Measures:

- The number of access routes, the size of staging areas, and the total area of activity would be the minimum necessary to achieve the project goals and to the extent feasible access routes shall be located in upland areas;
- Vehicle and equipment operators would use existing access roads and would remain outside of wetlands and riparian areas that are not integral to the restoration project;
- After surveying the construction site for special status species in accordance with this mitigation measure, silt fencing or exclusion fencing would be placed around the project and

staging areas to reduce the potential for animals to enter the construction site. Fencing will be monitored throughout construction to ensure no snakes, frogs, or turtles enter the area; fencing will meet CDFG specifications so as to avoid impacts to species potentially getting trapped in the fence.

- No restoration and construction shall occur between November 15 and April 15, the breeding season for California red-legged frog and the season when San Francisco garter snakes are inactive in their winter burrows, although shrubs and willow posts may be planted by hand after the first rains, and weeds may be removed within 15 feet of aquatic areas during these times;
- Before moving any vehicles that remain stationary for longer than 30 minutes, the biological monitor would inspect those vehicles to ensure that no animals had crawled beneath them for cover;
- During project activities, all trash that could attract predators would be properly contained, removed from the work site, and disposed of regularly. Following project completion, all trash and construction debris would be removed from work areas.

Pre-Construction Activities:

- A worker education program shall be implemented to familiarize workers, including all vehicle operators, of the importance of avoidance of harm to special-status species and the proper protocol should a protected species be encountered. The training shall include a discussion of the importance of maintaining speed limits and respecting exclusion zones. The SFRPD and its construction contractor shall confirm that all workers have been trained appropriately.
- Two weeks prior to the commencement of work activities and immediately prior to commencement of work, a qualified biologist will survey aquatic habitat that is suitable for the California red-legged frog, San Francisco garter snake, and western pond turtle that would be affected by the project. If individuals in any life stages of these species are found, the biologist will contact the USFWS and/or CDFG to determine whether relocating any life stages is appropriate. Collection of frogs, snakes, and turtles would be done with hand nets, and shall be relocated to areas of appropriate habitat;
- Upland vegetation in all construction areas will be progressively cleared by hand equipment to a height of 4 inches and checked for the presence of protected species prior to disturbance and prior to construction equipment or vehicles entering the sites. Once vegetation is

cleared, an additional pre-activity survey for the San Francisco garter snake, western pond turtles, and California red-legged frogs will be conducted in the impact area.

- Prior to construction near wetlands or ponds, all rodent burrows in the construction area will be hand excavated until the burrows terminate or to a maximum depth of 30 centimeters in areas where soil or fill will be removed or placed.

Biological Monitor:

- A biological monitor familiar with the identification and life history of California red-legged frog, San Francisco garter snake, western pond turtle, and other potentially present protected species, and with the appropriate agency authorization, shall be designated to periodically inspect onsite compliance with all mitigation measures.
- The biological monitor shall perform a daily survey of the entire project area during construction activities. During these surveys, the monitor shall inspect the exclusion fencing for individuals trapped within the fence and determine the need for fence repair. Throughout the duration of the project, the monitor shall continue to perform daily fence surveys and compliance reviews at the project site. The monitor shall be designated prior to project implementation and shall have at least one specialty environmental monitor on call, with a valid 10(a)(1)(A) permit to handle listed species. The specialty monitor shall direct all personnel in regards to interactions with protected species, perform authorized species relocations, and supervise all reporting on such species.
- Bullfrog monitoring will occur and egg masses detected shall be removed.

M-BI-6b: Protection of Protected Species during Maintenance of the Sharp Park Restoration Project

The SFRPD shall implement the following, subject to modification during the required regulatory approval processes:

- To avoid disturbance of the San Francisco garter snake, California red-legged frog and western pond turtle, maintenance work shall not occur in the vicinity of ponds and wetlands between November 15 and April 15, the breeding/nesting season for California red-legged frog and the season when San Francisco garter snakes are inactive in their winter burrows.
- If maintenance cannot be avoided during the abovementioned time period, the Natural Areas Program will conduct reconnaissance surveys of maintenance areas prior to

undertaking maintenance work to ensure that no California red-legged frogs, western pond turtles or San Francisco garter snakes are present.

- Heavy equipment would remain outside of wetlands to the extent feasible. If it is infeasible to avoid wetlands, no heavy equipment shall be used within wetlands between October 15 and April 15.
- In the event that a California red-legged frog, western pond turtle or San Francisco garter snake is encountered, all work shall immediately stop. Field personnel shall notify the onsite SFRPD staff member who will confirm that the species has moved outside of the work zone, or the work zone shall be adjusted to avoid the species.
- SFRPD staff shall provide verbal notification to the USFWS and/or to the local CDFG warden or biologist (as applicable) within one working day of the encounter. The SFRPD shall follow up with written notification to the USFWS and/or CDFG (as applicable) within five working days. Maintenance activities in the location of the encounter would be prohibited until SFRPD has contacted and properly consulted with USFWS and/or CDFG. Field personnel shall submit all observations of protected species to the CNDDB.

Sensitive Natural Communities

The sensitive natural communities identified in Table 9 are important biological resources because they and the plants and wildlife they support have been identified as complexes that are worthy of protection in the SNRAMP. As discussed on page 85, the SNRAMP project management actions related to sensitive natural communities aim to 1) maintain and enhance local biodiversity, 2) reestablish native community diversity, structure, and ecosystem function where degraded, and 3) decrease the extent of invasive exotic species cover, achieving long-term beneficial impacts to sensitive natural communities.

Programmatic Impacts

Impact BI-7: The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on sensitive natural communities. (Less than Significant with Mitigation)

For purposes of this EIR, sensitive natural communities in the Natural Areas consist of riparian, native grassland, oak woodland, coastal dune and scrub, and wetland habitats. The habitat types in the Natural Areas are listed in Table 9. Impacts to wetland habitat are analyzed separately under Impact BI-10. The impacts of implementing programmatic projects are similar to those discussed under Impacts BI-1 through BI-4, with respect to changes in vegetation. Any construction (e.g., use

of heavy equipment) or installation of permanent structures within these sensitive habitats, or the use of herbicides and pesticides near these areas, have the potential to impact sensitive natural communities. Large-scale invasive vegetation removal (either by hand or though herbicide application) may also result in incidental impacts to sensitive natural communities. As discussed under Impact BI-1, herbicides are intended to be used on invasive, nonnative vegetation, and are not intended for use on special status plants or sensitive natural communities. One of the purposes of invasive vegetation removal is to promote conditions that support native plants and the sensitive natural communities they thrive within. One of the goals of the SNRAMP is to restore natural community diversity. This includes recommended actions to replant native vegetation, as well as sensitive and rare species in order to increase their populations within the Natural Areas. Therefore, although there may be short term temporary impacts to native plant species, encroaching vegetation removal is expected to result in a net benefit to sensitive natural communities.

Riparian Habitat. Impacts to riparian habitat within the Natural Areas would occur from ground-disturbing activities and the use of heavy equipment during invasive vegetation removal, trail modification, and large-scale erosion control measures. Potential impacts include the loss of riparian vegetation due to direct removal or damage from heavy equipment. Heavy equipment use may also cause soil compaction, thus reducing the quality of riparian habitat. Where vegetation is removed or crushed as a result of project activities in or near riparian habitat, invasive plant species could become established. However, as discussed above, a goal of invasive vegetation removal is to provide more suitable habitat for native plants, therefore invasive vegetation removal is anticipated to result in a net benefit to native plants and the sensitive natural communities within which they live. Riparian habitat has been identified at the following Natural Areas: Lake Merced, Glen Canyon, Sharp Park, McLaren Park, Hawk Hill, Rock Outcrop, Bayview Park, Bernal Hill and Pine Lake. Of these Natural Areas, tree removal would occur at Lake Merced and Bayview Park**.** Large-scale erosion control projects could impact riparian habitat at Sharp Park, Bayview Park and Glen Canyon Park. The creation of new trails is proposed at all of the above-listed Natural Areas, with the exception of Rock Outcrop. As described in Section III.E.5 (page 92), the SFRPD would design new trails to avoid sensitive vegetation and habitat to the extent possible, including riparian habitat.

While the goals of the SNRAMP are to protect sensitive habitats, impacts from large-scale erosion control projects could affect riparian habitat by reducing it in quality and functionality. The impacts of programmatic projects on riparian habitat that is considered protected by USACE, RWQCB or CCC regulations could be significant depending on the degree and severity of the impact. Implementing Mitigation Measure M-BI-1a requires SFRPD to avoid riparian habitat to the extent

feasible. If avoidance is infeasible, Mitigation Measure M-BI-1a requires the installation of flagging and temporary fencing around riparian habitat that is not being directly restored, or worked within, in order to avoid damage or further disturbance. Where impacts to riparian habitat as a result of large-scale erosion control projects would occur, Mitigation Measure M-BI-1a would require coordination with the applicable regulatory agencies (for example, CCC, RWQCB and USACE) to determine the jurisdictional boundaries of protected riparian habitat and that the SFRPD apply for all appropriate permits. Additionally, riparian restoration and compensation would occur where needed. Mitigation Measure M-BI-1a also requires that fences be installed along existing trails in sensitive habitat areas if impacts on sensitive habitat were observed as a result from visitors straying from the trails. Additionally, the SFRPD would consider rerouting those trails. Implementing Mitigation Measure M-BI-1a would ensure that measures are taken to avoid and minimize impacts on riparian habitat to the greatest degree practicable, and that SFRPD restore riparian habitat when minimization is not sufficient, resulting in a ***less than significant*** impact.

Native Grassland Habitat. Impacts to native grassland habitat within the Natural Areas could occur from ground-disturbing activities, such as the use of heavy equipment for large-scale erosion control projects. As discussed under Section III.E.5, the SFRPD would design new trails to avoid sensitive vegetation and habitat to the extent possible. Any impacts to native grasslands as a result of trail creation would be short-term, temporary, and limited in extent. Therefore, trail creation is not anticipated to result in a significant impact to native grasslands. The SNRAMP includes the restoration of decommissioned trails, which would result in long-term net benefits to native grassland habitat throughout the Natural Areas. Additionally, as described above under Riparian Habitat, invasive vegetation removal is anticipated to result in beneficial impacts to sensitive natural communities. Therefore, the following analysis focuses on impacts to native grasslands that could result from large-scale erosion control projects.

Potential impacts to native grasslands, as a result of large-scale erosion control projects include the loss of native grassland habitat if plants are directly removed, as well as the reduction in quality and functionality if damaged during project activities. Although incidental temporary disturbance to native grassland habitat may result from erosion control activities, as part of the SNRAMP, these activities would be followed by the replanting of native vegetation, resulting in long-term beneficial impacts. For example, large scale erosion control is proposed within native grasslands at Bayview Park. Under the SNRAMP recommended management action VP-9a,[10] following construction

[10] VP-9a—Create a detailed and complete erosion control plan before beginning work on the large gully near the summit

activities associated with the erosion control project, the site would be seeded with native grasses. In addition, many actions identified in the SNRAMP are directed at restoring native grasslands. Therefore, should implementation of an individual programmatic project result in temporary disturbances or even a loss in native grassland habitat, on the whole, the actions in the SNRAMP are designed to protect native grasslands and would result in an overall increase of native grassland habitat. Therefore, programmatic project impacts on native grasslands would be offset by restoration activities in the SNRAMP and the resulting impacts to native grasslands would be ***less than significant***.

Oak Woodland Habitat. While oak trees would not be removed as part of the programmatic projects, invasive vegetation removal within oak woodland understory would occur. The manual removal of invasive vegetation surrounding oak trees would not be sufficient to cause oak tree damage or death or result in habitat conversion. The removal of invasive vegetation would ultimately benefit oak woodland habitat by eliminating competition from nonnative species. Additionally, many of the recommended management actions of the SNRAMP include oak woodland restoration. Therefore, ***no impact*** to oak woodlands resulting from programmatic project activities would occur.

Coastal Dune and Scrub Habitat. Coastal dune habitat has been identified at the following Natural Areas: Lake Merced, Hawk Hill, Oak Woodlands, Balboa, Strawberry Hill, and Rock Outcrop. Coastal scrub habitat has been identified at the following Natural Areas: Lake Merced, Glen Canyon Park, Sharp Park, McLaren Park, O'Shaughnessy Hollow, Twin Peaks, Oak Woodlands, Corona Heights, 15th Avenue Steps, Mount Davidson, Brooks Park, Bayview Park, and Pine Lake. Impacts to coastal dune and scrub habitat within the Natural Areas could occur from ground-disturbing activities, such as invasive weed and tree removal, trail modification and the use of heavy equipment.

As discussed above the SFRPD would design new trails to avoid sensitive vegetation and habitat. Therefore, trail creation is not anticipated to result in a significant impact to dune and scrub habitat. Any impacts to these habitats as a result of trail modification would be short-term, temporary, and limited in extent. Trailside planting of native vegetation would occur following the creation of new trails. The SNRAMP includes the restoration of about ten miles of decommissioned social trails, which would result in a net benefit to coastal scrub habitat to the extent that those trails are located in such habitat. Additionally, as described above, invasive vegetation removal is anticipated to result in beneficial impacts to sensitive natural communities.

Management actions in the SNRAMP are designed to maintain and enhance coastal dune and scrub habitat. Therefore, should implementation of an individual programmatic project result in temporary disturbances or even a loss in dune or scrub habitat, on the whole as with impacts to native grasslands, the actions in the SNRAMP are designed to protect these habitats and would result in an overall increase coastal dune and scrub habitat. Therefore, programmatic project impacts on coastal dune and scrub would be offset by restoration activities and the resulting impacts to coastal dune and scrub habitats would be ***less than significant.***

Project-Level Impacts (Routine Maintenance)

Impact BI-8: Implementation of routine maintenance under the SNRAMP would not result in a substantial adverse effect on sensitive natural communities. (Less than Significant)

Routine maintenance impacts for wetlands are analyzed under Impact BI-11. Routine maintenance activities that could impact sensitive natural communities include the removal of invasive weeds by hand in areas of less than a half an acre, the installation of plants, the removal of invasive trees, trail maintenance, and the maintenance of catchment basins and sediment dams. Impacts to sensitive natural communities as a result of these activities could result from ground disturbance, vegetation removal, and trampling. Ground disturbance from hand-weeding would occur within the top inch of ground around the root zone and is not anticipated to result in substantial impacts to sensitive natural communities. Tree removal would be minimally invasive, occurring manually, limb-by-limb, with no more than 20 trees (less than half an acre) being removed at one time. Planting would be done using hand tools with plants in one-gallon containers or smaller. Trail maintenance would include clearing deposited soil from steps, replacing or installing steps or trail edging, and rerouting and benching trails. Ground disturbance from these activities are usually six inches and up to twelve inches. Maintenance of catchment basins could result in incidental trampling of riparian vegetation. However, any impacts to individual plants would be minimal and would not be anticipated to substantially affect sensitive natural communities. Recommended actions within the SNRAMP include revegetation with native species, which would ultimately benefit sensitive natural communities throughout the Natural Areas.

Furthermore, all routine maintenance activities will be conducted or overseen by the Natural Areas Program staff which is composed of biologists, ecologists, and natural resource managers who are knowledgeable about both the ecology and presence/locations of sensitive natural communities within the Natural Areas. Due to the small scale and manual nature of the routine maintenance activities, any impacts to individual plant species are expected to have minimal short-term effects on the sensitive communities in which they occur. Long-term beneficial impacts to the sensitive natural

communities would be expected as a result of these maintenance activities, which include the removal of invasive vegetation and replacement with native vegetation. As a result, the impacts of routine maintenance activities on sensitive natural communities would be ***less than significant***.

Project-Level Impacts (Sharp Park Restoration)

Impact BI-9: Implementation of the Sharp Park restoration activities under the SNRAMP would not have a substantial adverse effect on sensitive natural communities. (Less than Significant)

The only sensitive natural communities in the Sharp Park restoration area are coastal scrub, riparian and wetland habitats. Impacts on protected wetland habitats from Sharp Park restoration activities are analyzed under Impact BI-12. The restoration goals and actions are described in detail in Section III.F.2 (Page 97) and in the Sharp Park Conceptual Restoration Alternatives Report (SFRPD 2009a), included in Appendix I. Sharp Park restoration would not adversely impact any sensitive riparian habitat because project activities would occur outside the riparian zone.

Short-term, temporary impacts to coastal scrub habitat would occur from ground disturbance as a result of vehicle traffic and heavy equipment use. Permanent impacts to coastal scrub habitat would occur from restoration activities that include the conversion of up to one acre of habitat to wetlands on the west side of the lagoon; this loss would be more than offset by the creation of 19.5 acres of additional scrub habitat within the restoration footprint, in particular scrub habitat proposed for the corridor between Laguna Salada and Horse Stable Pond and on the southwest side of Laguna Salada. Following restoration of the Laguna Salada wetland complex, temporarily impacted coastal scrub habitat to the west of the lagoon would be restored. Therefore, impacts of the Sharp Park restoration on sensitive natural communities would be ***less than significant***.

Maintenance would also occur following the Sharp Park restoration project Maintenance would include weeding and maintaining the restored areas. Maintenance of the wetland areas may include removal of invasive plant species and additional planting of wetland plant species. As needed, the SFRPD would also conduct small-scale dredging of accumulated sediments from the wetlands using a backhoe. Maintaining the sediment basins would involve the periodic removal of sediment. These activities would not result in the removal of or damage to coastal scrub habitat. As a result, maintenance activities would have ***no impact*** on sensitive natural communities**.**

Wetlands

Programmatic Impacts

Impact BI-10: The SNRAMP and implementation of programmatic projects under the SNRAMP would have a substantial adverse effect on wetlands. (Less than Significant with Mitigation)

Vegetation removal and ground-disturbing activities associated with the project could result in direct and indirect impacts on wetlands at Lake Merced, Glen Canyon/O'Shaughnessy Hollow, Bayview Park, Pine Lake, India Basin, and Sharp Park, the only Natural Areas where they are known to occur. Programmatic project activities that occur within these Natural Areas could adversely impact wetlands as a result of invasive vegetation removal within the wetlands and adjacent uplands. As described in Section III.E.5, the SFRPD would design new trails to avoid sensitive vegetation and habitat to the degree feasible. No trail creation is planned in or adjacent to wetland habitat. However, modifications to existing trails through riparian and wetland habitat could result in temporary or permanent adverse impacts to wetland habitat. Where wetland habitat is impacted by trail modifications, trailside native vegetation would be replanted. Invasive tree removal may occur within wetlands at Lake Merced. Tree removal would result in a temporary adverse impact to wetlands through soil compaction from vehicle equipment, the potential loss of wetland vegetation from the tree removal processes, and increased sedimentation of the wetlands. Large-scale erosion control measures would occur at Glen Canyon/O'Shaughnessy Hollow, Bayview Park and Sharp Park. These construction projects have the potential to impact wetland habitat through disturbance from construction activities, loss of wetland habitat, and increased sedimentation of the wetlands. As such, programmatic projects may have a significant impact on wetlands. Implementing Mitigation Measures M-BI-1a requires that measures are taken avoid and minimize impacts to wetlands from programmatic projects. Implementing Mitigation Measure M-BI-1a requires that construction and vehicle traffic in and around wetlands be limited to the maximum extent possible. Temporary exclusion fencing would be used to protect wetland habitat, and projects would be conducted during the spring and summer to avoid saturated or ponded wetlands and streams. Where wetland disturbance cannot be avoided, Mitigation Measure M-BI-1a requires restoration of the site, which would include the replanting of native vegetation and/or maintaining the hydrologic connections which characterize the wetland. Mitigation M-BI-1a would also require the acquisition of Section 401 and 404 permits from the USACE for those Natural Areas where wetlands may be affected by project activities. Where necessary, restoration, enhancement, or compensatory mitigation would be required to offset any temporary and/or permanent impacts to

wetlands. With implementation of M-BI-1a, impacts on wetlands as a result of programmatic projects would be ***less than significant***.

Project-Level Impacts (Routine Maintenance)

Impact BI-11: Implementation of routine maintenance under the SNRAMP would not result in a substantial adverse effect on wetlands. (Less than Significant)

The potential impacts of routine maintenance on wetlands could result from a small level of ground disturbance from the removal of invasive weeds by hand in areas of less than half an acre, planting, the removal of invasive trees or limbs, trail maintenance and the maintenance of catchment basins and sediment dams. The following Natural Areas have been identified in the SNRAMP as containing wetlands, although no formal USACE wetland delineation has been conducted (with the exception of Sharp Park): Lake Merced, Sharp Park upper canyon, Glen Canyon/O'Shaughnessy Hollow, Bayview Park, Pine Lake and India Basin.

Routine maintenance activities may result in minimal disturbance as a result of invasive vegetation removal and the maintenance of catchment basins and sediment dams. These impacts would be temporary and are not anticipated to result in permanent impacts to the quality and extent of wetlands. Overall, routine maintenance is expected to have a beneficial impact on wetlands by eliminating invasive species, augmenting native wetland communities, and reducing soil erosion by planting native vegetation. Therefore, impacts of routine maintenance activities on wetlands would be ***less than significant***.

Project-Level Impacts (Sharp Park Restoration)

Impact BI-12: Implementation of the Sharp Park restoration activities under the SNRAMP would have a substantial adverse effect on wetlands. (Less than Significant with Mitigation)

Restoring the Laguna Salada wetland complex would affect wetland habitat during construction activities, which include the use of heavy equipment for vegetation and sediment removal and other earthmoving activities. These activities would result in the short-term disturbance of wetlands and long-term conversion of wetlands to open water habitat and upland habitat. As shown in Table 11, there would be an overall decrease in the amount of wetlands from the Sharp Park restoration project.

Table 11
Laguna Salada Wetland Habitat Types within the Restoration Footprint

Type of Habitat	Existing Acreage*	Post-Restoration Acreage*
Freshwater Marsh	19.5	14.0
Willow Scrub	1.0	0.5
Wet Meadow	2.5	3.0
Total:	**23**	**17.5**

*Rounded to the half acre

Short-term impacts associated with the Laguna Salada restoration project include soil compaction and vegetation loss as a result of vehicle and heavy equipment use in and around the wetlands. As described in Section III.F.2 (page 104), following completion of each season's restoration activities, these areas would be scarified, recontoured, planted and hydroseeded with native vegetation to approximate their pre-disturbance condition, as needed based on the level of disturbance.

Long-term impacts to wetlands at Sharp Park would occur as a result of restoration activities that would include dredging existing wetlands and recontouring the shoreline to create optimal habitat for California red-legged frog and San Francisco garter snake. These activities would result in a loss of approximately 5.5 acres of freshwater marsh. Wetland habitat would be altered through the conversion of up to half an acre of wet meadow wetland and freshwater marsh to upland habitat through the creation of an upland refuge in the middle of the lagoon to provide breeding and basking habitat for snakes and frogs. Up to one acre of replacement wet meadow wetland would be created along the northern and western edges of the lagoon (See Table 11).

The project proposes to convert existing vegetated wetland to open water habitat consistent with historical conditions of the Laguna Salada wetland complex, which previously provided productive San Francisco garter snake and California red-legged frog habitat. Over the years, cattails and other vegetation have encroached into the historically open water habitat, converting this habitat to freshwater marsh and/or wet meadow and limiting its value as breeding habitat for the California red-legged frog. Removing accumulated sediments and encroaching vegetation would reverse the effects of a trend that would eventually result in the conversion of the remaining open water to vegetated wetland and ultimately conversion of those wetlands to upland. The project proposes to convert vegetated wetland habitat back to open water, resulting in a permanent loss of vegetated wetland. This conversion of wetland to open water habitat would not result in a loss of waters of the US and would be consistent with the historical conditions of Laguna Salada. Freshwater marsh habitat at Laguna Salada is currently dominated by dense stands of cattails (*Typha angustifolia*) and

bulrush (*Scirpus* sp.). These species tend to form monostands and prevent the growth of other species. By converting these wetlands to open water, not only will a higher quality habitat be created for protected species, but the biodiversity of native wetland vegetation along the periphery of the open water will increase. This condition would be more consistent with historical conditions of the wetland complex that allowed for a productive population of San Francisco garter snake. Overall, there would be no net loss of waters of the US as a result of the restoration activities. Restoration activities would be consistent with the ultimate goals of the Sharp Park restoration, which are to enhance habitat quality for protected species and other native wildlife, in addition to diversifying existing wetlands. The Sharp Park restoration project would restore and enhance the biological functionality of the wetland and upland complex to better support the various species present within that habitat system and would not be considered a substantial adverse effect to the Laguna Salada wetland complex. As a result, the Sharp Park restoration project is expected to result in long-term beneficial impacts to the wetland complex. However, as discussed above, implementation of the Sharp Park restoration would result in short-term construction-related impacts to wetlands, which would be significant. Mitigation Measures M-BI-12a and M-BI-12b have been identified to reduce construction-related impacts to less than significant. These mitigation measures are further described below.

Prior to implementing the proposed Sharp Park restoration activities, the SFRPD would be required to obtain a USFWS Biological Opinion, SFBRWQCB Section 401 water quality certification, a USACE Section 404 permit, and a coastal development permit from the California Coastal Commission; a CDFG streambed alteration agreement may also be required. These resource agencies may require protective wetland measures in addition to Mitigation Measures M-BI-12a and M-BI-12b, as discussed below.

Implementing Mitigation Measure M-BI-12a requires the SFRPD to limit impacts on wetlands and water quality. Mitigation Measure M-BI-12b requires SFRPD to prepare a mitigation plan as part of the application for Section 401 water quality certification. Mitigation Measure M-BI-12a also incorporates requirements of both Sections 401 and 404 of the Clean Water Act and the CCC. Mitigation Measure M-BI-12b requires that the SFRPD prepare a monitoring program which would ensure that success criteria would be established to ensure that restoration of the Laguna Salada wetland complex is achieving the project objectives. Success criteria may include annual goals for the percent cover of native wetland vegetation, limitations on the amount of invasive species cover permissible, and the presence of hydric soils and wetland hydrology. With implementation of Mitigation Measures M-BI-12a and M-BI-12b, the Sharp Park restoration would not have a

substantial adverse effect on wetlands protected under Section 404 of the Clean Water Act, resulting in a ***less than significant*** impact.

Maintenance would occur following the Sharp Park restoration project. Monitoring for wetland functionality would include assessing ecologically based criteria such as the dominance of wetland vegetation, the presence of hydric soils or evidence of hydrology to determine success of the project objectives. Maintenance of the wetland areas may include removal of invasive and encroaching plant species and additional planting of wetland species. Maintaining the sediment basins would involve the periodic removal of accumulated sediment. As needed, the SFRPD would also conduct small-scale dredging of accumulated sediments from the wetlands using a backhoe or similar equipment. These maintenance activities have the potential to impact wetland habitat by disturbing and damaging wetland vegetation, resulting in significant impacts on a regular basis. Implementing Mitigation Measure M-BI-12a requires the SFRPD to limit impacts on wetlands and water quality. With implementation of Mitigation Measures M-BI-12a and M-BI-12b, implementation of the Sharp Park restoration project maintenance activities would be ***less than significant***.

M-BI-12a: Protection of Wetlands during the Sharp Park Restoration Project

The SFRPD shall obtain all applicable permits from SFBRWQCB, CCC, USACE, and CDFG for impacts to wetland habitat. Measures identified in these permits shall be applied, in addition to the following measures, unless otherwise specified by resource agencies:

- Except for those areas directly being restored, a minimum 100-foot buffer surrounding all wetlands, ponds, streams, drainages, and other aquatic habitats located on or within 100 feet of the project site shall be clearly designated on the final project construction plans and marked on the site with orange construction fencing or silt fencing. If the area is on a slope, silt fencing or other comparable management measures will be installed to prevent polluted runoff, as well as equipment, from entering the buffer area. Signs shall be installed every 100 feet on or adjacent to the buffer fence that read, "Environmentally Sensitive Area – Keep Out." Fencing and management measures shall be installed and inspected prior to project implementation and maintained throughout the restoration period. No equipment mobilization, grading, clearing, storage of equipment or machinery, vehicle or equipment washing, or similar activity, may occur until a representative of the SFRPD has inspected and approved the fencing and/or management measures installed around these features;
- Vehicle and equipment operators would use existing access roads and would remain outside of wetlands and riparian areas that are not directly associated with habitat restoration.

Project construction and staging areas would be delineated with construction fencing and shall avoid wetland habitat to the maximum extent feasible;

- All vehicles would be brought in clean and free of weeds to prevent the spread or introduction of invasive plant species. Vehicles and equipment would be fueled, maintained, and parked at least 100 feet from wetlands. Each morning, operators would inspect all equipment that requires the use of fuel or fluids for leaks;
- Silt barriers, such as sand bags, silt fences/curtains, or basins, would be installed before the project begins;
- Wet sediments taken from the wetlands would be stockpiled so water could drain or evaporate before removal. Stockpiles would be placed in upland areas with the perimeters protected by BMPs to avoid polluted runoff;
- All soil stockpiles shall be protected against wind and rainfall erosion at all times. Plastic sheeting or other similar material shall be used to cover soils and would be securely anchored by sandbags or other suitable means. At no time would any stockpiled materials be allowed to erode into any water body or drainage facility or onto any roadway; and
- Ground disturbing construction and maintenance activities shall be avoided during the rainy season and consistent with Mitigation Measure M-BI-6a.

M-BI-12b: Laguna Salada Restoration Project Wetland Mitigation Plan

Consistent with the requirements for a Section 401 water quality certification permit, the SFRPD shall prepare a mitigation plan. Additionally, because this is a restoration project, the CCC may require an objective performance evaluation to determine project success which would include a monitoring program and methods for evaluating performance, which could be accomplished through implementation of the wetland mitigation plan. The wetland mitigation plan shall include, at a minimum, a description of the following:

- Proposed project's physical and biological impacts;
- Mitigation goals;
- Mitigation work plan;
- Management and maintenance plan;
- Success criteria and performance indicators
- Monitoring plan; and
- Site protection measures.

The components of the above mitigation plan may be altered, supplemented, or deleted during the SFBRWQCB's review process, as the SFBRWQCB has final authority over the terms of the water quality certification.

Fish and Wildlife Movement, Migratory Corridors, and Nursery Sites

Programmatic Impacts

Impact BI-13: The SNRAMP and implementation of programmatic projects under the SNRAMP would not have a substantial adverse effect on fish and wildlife movement, migratory corridors, or nursery sites. (Less than Significant)

Programmatic project activities include vegetation removal consisting of invasive weed or tree removal and ground-disturbing activities associated with the use of heavy equipment for trail modification and implementation of large-scale erosion control measures. These activities have the potential to directly impact wildlife movement, migratory corridors, or nursery sites.

Migratory fish are limited in the Natural Areas. Coho salmon is the only identified migratory fish, recorded in Lake Merced. Lake Merced has been disconnected from the ocean for several decades; therefore, this species is not expected to occur here. Implementation of programmatic projects is not expected to impact migratory or resident fish.

Many migratory birds use the Natural Areas for foraging, nesting, and perching habitat, as the Natural Areas provide habitat in an area that is otherwise highly urbanized. All of the Natural Areas support potential or confirmed native bird nesting and foraging habitat, which includes nonnative forests, grasslands, and riparian scrub. Migratory birds that use the Natural Areas are presented in Appendix D. Removing a large area of vegetation would have a temporary adverse impact on migratory species that may use the habitat, potentially disturbing nesting or foraging behaviors. Following the removal of invasive vegetation, replanting with native vegetation would occur, thus restoring habitat quality for migratory species. While resulting in some ground disturbance and habitat loss, the development of trails would be relatively minor and would not significantly fragment wildlife movement corridors. Long-term beneficial impacts to migratory birds would occur as a result of invasive vegetation removal by creating a higher quality habitat. Measure GR-4b ensures vegetation management activities occur outside the breeding season (February 1 to August 31) if breeding birds could be affected, unless the following specific conditions are met: projects begun before the breeding season have already disturbed the area, or a breeding bird survey is conducted first. If active nests (or large abandoned stick nests) of a sensitive species are discovered,

a 150-foot-radius avoidance buffer would be centered on the nest site(s) to prevent the nesting birds from being disturbed by power tools. Weeds may be pulled by hand no closer than 50 feet from the nest. These measures, combined with the short-term nature of vegetation or ground disturbance incurred by programmatic project activities, would ensure that potential impacts of programmatic projects on wildlife movement and migratory corridors would be ***less than significant***.

Project-Level Impacts (Routine Maintenance)

Impact BI-14: Implementation of routine maintenance activities under the SNRAMP would not have a substantial adverse effect on fish and wildlife movement, migratory corridors and nursery sites. (Less than Significant)

Routine maintenance activities include the removal of invasive weeds by hand in areas of less than a half an acre, revegetation, the removal of invasive trees, trail maintenance, and the maintenance of catchment basins and sediment dams. These activities are not expected to interfere with wildlife movement and migratory corridors.

Nursery sites have the potential to be impacted from vegetation removal that is conducted as part of routine maintenance. As part of the project, SFPRD would conduct tree removal activities using previously described minimally invasive techniques. Tree removal would be conducted limb-by-limb and would leave the tree stump and root ball intact to hold the soil and minimize subsurface disturbance; stumps may be ground to below grade where necessary to avoid tripping hazards. Measure GR-4b ensures vegetation management activities occur outside the breeding season (February 1 to August 31) if breeding birds could be affected, unless the following specific conditions are met: projects begun before the breeding season have already disturbed the area, or a breeding bird survey is conducted first. If active nests (or large abandoned stick nests) of a sensitive species are discovered, a 150-foot-radius avoidance buffer would be centered on the nest site(s) to prevent the nesting birds from being disturbed by power tools. Weeds may be pulled by hand no closer than 50 feet from the nest. These measures, combined with the small area of vegetation or ground disturbance incurred by routine maintenance activities, would not significantly alter nursery sites and would not interfere with wildlife movement. Therefore, potential impacts of routine maintenance on fish and wildlife movement, migratory corridors, and nursery sites would be ***less than significant***.

Project-Level Impacts (Sharp Park Restoration)

Impact BI-15: Implementation of Sharp Park restoration activities under the SNRAMP would have a substantial adverse effect on fish and wildlife movement, migratory corridors and nursery sites. (Less than Significant with Mitigation)

Sharp Park is bordered in part by undeveloped areas, including Sweeny Open Space, Mori Point, and Milagra Ridge, which allows it to serve as a relatively undisturbed corridor for wildlife, particularly birds. The potential impacts on fish and wildlife movement, migratory corridors, and nursery sites as a result of the Sharp Park restoration include the temporary disturbance from human presence as well as the disturbance of foraging and nesting habitat from vegetation removal, dredging open water, recontouring the shoreline, and constructing upland mounds.

These Sharp Park activities may result in significant temporary impacts on wildlife movement due to equipment and human presence and the amount of disturbance from earthmoving and dredging activities; however, the restoration project would ultimately result in long-term beneficial impacts on wildlife movement by improving habitat quality for native species and allowing for greater habitat connectivity between Sharp Park and contiguous areas. The project also includes creating an upland and wetland habitat corridor between Laguna Salada and Horse Stable Pond to support the San Francisco garter snake. Additionally, maintenance would also occur following the Sharp Park restoration project. These efforts would ensure achievement of the goals of the restoration project, which include greater wildlife connectivity within Sharp Park and with contiguous areas. Mitigation Measures M-BI-6a, M-BI-6b, M-BI-12a and M-BI-12b would minimize the potential temporary impacts to wildlife movement within the Laguna Salada wetland complex by implementing protection measures to avoid and minimize impacts to protected species as well as wetland and riparian areas. These measures require pre-construction surveys, worker education programs, biological monitoring, exclusion fencing, consultation with the USFWS and CDFG, and a wetland mitigation plan. With implementation of Mitigation Measures M-BI-6a, M-BI-6b, M-BI-12a and M-BI-12b, impacts of Sharp Park restoration activities and associated maintenance activities on fish and wildlife movement, migratory corridors, and nursery sites would be ***less than significant***.

Conflicts with Local Plans and Policies

Programmatic Impacts

Impact BI-16: The SNRAMP and implementation of programmatic projects under the SNRAMP would not conflict with any local policies or ordinances protecting biological resources. (No Impact)

The SFRPD developed the SNRAMP and its management actions in compliance with all applicable local policies and ordinances protecting biological resources; all programmatic projects would also be designed to comply with these protective measures. These include tree protection ordinances, such as the San Francisco Urban Forestry Ordinance. Several Landmark Trees are found in or near the Natural Areas, but would not be disturbed or removed by any of the programmatic projects. These include a blue elderberry tree (*Sambucus mexicana*) within Bernal Hill, a Canary Island Date Palm (*Phoenix canariensis*) near Palou-Phelps, and a New Zealand Christmas Tree (*Metrosideros excelsus*) adjacent to the Interior Greenbelt. Management actions would not conflict with these or other applicable policies or ordinances. As a result, the programmatic projects would have ***no impact*** due to conflicts with local policies or ordinances.

Project-Level Impacts (Routine Maintenance)

Impact BI-17: Implementation of routine maintenance activities under the SNRAMP would not conflict with any local policies or ordinances protecting biological resources. (No Impact)

The SNRAMP management actions were developed in compliance with all applicable local policies and ordinances protecting biological resources; as a result, routine maintenance would have ***no impact*** due to conflicts with local policies or ordinances.

Project-Level Impacts (Sharp Park Restoration)

Impact BI-18: Implementation of Sharp Park restoration activities under the SNRAMP would not conflict with any local policies or ordinances protecting biological resources. (No Impact)

The SNRAMP management actions were developed in compliance with all applicable local policies and ordinances protecting biological resources; as a result, the Sharp Park restoration activities would have ***no impact*** due to conflicts with local policies or ordinances.

Cumulative Impacts

Impact BI-19: The proposed project, in combination with other planned and foreseeable future projects, would result in a cumulatively considerable significant impact related to biological resources. (Significant and Unavoidable)

Projects that temporarily disturb or permanently remove open space and wildlife habitat include the Candlestick Point-Hunters Point Shipyard Phase II Development and 150 acres of proposed residential development and 85,000 square feet of proposed commercial development in Pacifica. These projects may remove and fragment habitat, possibly resulting in increased use of the Natural Areas by common and special status wildlife, making those areas more critical for biological conservation efforts. Additional recreation facilities also are proposed at McLaren Park and Oak Woodlands in Golden Gate Park. The cumulative projects also include construction and development in the vicinity of such Natural Areas as the 15th Avenue Steps, Corona Heights, and the San Francisco Botanical Garden (Lily Pond and Buena Vista Park). As with all projects that include ground disturbance, development, or vegetation removal, there is potential to adversely impact biological resources. An increase in pedestrian traffic in the Natural Areas over time may result in impacts to special status plant species and sensitive natural communities due to trampling; however, improved trail systems, fencing, and signs would reduce any such impacts. In combination with the SNRAMP, the cumulative regional projects proposed to occur within the vicinity of several Natural Areas would have potentially significant adverse impacts on biological resources over both the short-term and the long-term. The goal of the SNRAMP is to preserve and maintain open space in the region and the mitigation measures identified previously in this section would be implemented to protect biological resources; as a result, the SNRAMP would not result in a cumulatively considerable adverse impact on biological resources.

Implementation of the proposed GGNRA Dog Management Plan may further restrict dog access and off-leash areas within GGNRA land holdings. In addition, the SNRAMP proposes to close the Lake Merced DPA and reduce the size of the DPAs at Bernal Hill and McLaren Park; on-leash dog use would still be allowed at these and all other Natural Areas. The reductions in off-leash areas proposed by the GGNRA could result in an increase in both on-leash and off-leash dog use at the Natural Areas. The actions proposed by the GGNRA and the SNRAMP could result in concentrated dog use within the remaining off-leash areas. Increased use may result in impacts to biological resources within the Natural Areas DPAs, including disturbance of breeding birds and damage to special status plants. The cumulative combination of proposed dog management for the Natural Areas and the GGNRA project could result in indirect significant impacts on biological resources in

the Natural Areas. The comparative contributions of the each project to this potentially significant cumulative impact cannot be determined based on the speculative nature of the behavioral and physical factors contributing to that determination. The potentially significant impact to biological resources as a result of increased use resulting from cumulative actions could be mitigated by adding a new DPA at a nearby Natural Area or other nearby property. However, there is a current moratorium[11] on new DPAs, and the mitigation therefore would not be feasible. As a result, it is conservatively concluded that the proposed project's contribution would be potentially ***significant and unavoidable***.

Overall, potential net cumulative long-term impacts on biological resources associated with the SNRAMP are expected to be beneficial. Implementing the plan's measures would increase the amount of wildlife habitat, would preserve and augment special status species and sensitive habitats, would improve habitat connectivity and biodiversity, would reduce nonnative and invasive vegetation, and would increase native vegetative cover. Other existing and future foreseeable cumulative projects in the area that would add to these beneficial effects include the SFRPD trails program, which would improve trails to protect natural resources and sensitive habitats, and the SFRPD forestry program, which would focus on native tree planting and restoration.

[11] There is direction from the Recreation and Park Commission not to establish new DPAs until systemwide DPA planning is completed. For the purposes of this EIR, this is considered a moratorium in that no new DPAs are reasonably foreseeable. This direction was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee.

V.H HYDROLOGY AND WATER QUALITY

Comments related to hydrology and water quality received during the NOP scoping process included concerns about the following:

- Effects of off-leash dogs on water contamination at Pine Lake, Buena Vista Park, Lake Merced, and McLaren Park;
- Effects of reducing or ceasing irrigation at Sharp Park Golf Course on the salinity of Laguna Salada, Horse Stable Pond, and their associated wetlands;
- Effects of reducing or ceasing irrigation at Sharp Park Golf Course on the strength and integrity of the seawall;
- Effects on drainage patterns and flood hazards in Sharp Park and adjacent residential areas;
- Effects of sea level rise on the western portion of Sharp Park;
- Runoff effects from removing trees at Mount Sutro Forest;
- Effects of herbicides on groundwater;
- Increased water consumption required for the native plantings;
- Effects of tree removal on drainage patterns in all Natural Areas; and
- Drainage from Horse Stable Pond to the beach, including water level of the outflow pipe, pump capacity, pump condition, water level and capacity of the gravity outflow line, and the operational status of the gravity outflow line.

V.H.1 Regulatory Setting

Federal

Clean Water Act

The US Army Corps of Engineers and the EPA regulate the discharge of dredged or fill material into waters of the United States, including wetlands, under Section 404 of the Clean Water Act (33 USC, Section 1344). Waters of the United States are defined in Title 33 CFR, Part 328.3(a), and include a range of wet environments, such as lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds. Activities in waters of the United States regulated under Section 404 include fill for development, water resource projects (such as dams and levees), infrastructure developments (such as highways and airports), and mining projects. Section 404 requires a federal license or permit before dredged or

fill material may be discharged into waters of the United States, unless the activity is exempt from regulation.

Section 401 of the Clean Water Act (33 USC, Section 1341) applies to any applicant for a federal license or permit to conduct any activity that may discharge a pollutant into waters of the United States. It requires the applicant to obtain a certification from the state in which the discharge originates or would originate, or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters where the discharge originates or would originate. This ensures that the discharge will comply with the applicable effluent limitations and water quality standards. A certification obtained for the construction of any facility must also pertain to the subsequent operation of the facility. The responsibility for protecting water quality in California rests with the State Water Resources Control Board and its nine RWQCBs. The SFBRWQCB would conduct Section 401 Water Quality Certification for all Corps of Engineers Section 404 permit decisions related to the SNRAMP. This is to ensure consistency with state water quality regulations.

Section 402 of the federal Clean Water Act authorizes the EPA to regulate water quality in California by controlling the discharge of pollutants to water bodies from point sources (a municipal or industrial discharge at a specific location or pipe) and nonpoint sources (diffuse runoff of water from adjacent land uses) through the NPDES. Federal regulations issued in November 1990 and revised in 2003 expanded the authority of the State Water Resources Control Board to permit stormwater discharges from municipal storm sewer systems, industrial processes, and construction sites that disturb areas larger than one acre. Within the San Francisco limits, NPDES permits are administered by the SFBRWQCB.

Construction that disturbs one acre or more of land and construction on smaller sites that are part of a larger project must comply with the California State Water Resources Control Board General Permit for Discharges Associated with Construction Activity (NPDES General Construction Permit), which regulates stormwater leaving construction sites. Site owners must notify the state, prepare and implement a stormwater pollution prevention plan (SWPPP), monitor the effectiveness of the plan, and perform regular reporting to the SFBRWQCB.

State

Porter-Cologne Water Quality Control Act

Article 4 Waste Discharge Requirements of the Porter-Cologne Act (Section 13260) requires that any person discharging waste or proposing to discharge waste that could affect the quality of the waters

of the state, other than into a community sewer system, shall file with the appropriate RWQCB a report of the discharge. The RWQCB determines if a project should be regulated under the Porter-Cologne Act based on the likelihood that it would pose any threat to water quality. Placing clean fill in waters of the state is considered pollution because it could alter water quality, which may adversely affect its beneficial uses.

California Coastal Act of 1976

Section 30233 (Article 4) of the California Coastal Act applies to projects that result in diking, filling, or dredging open coastal waters, wetlands, estuaries, and lakes in the coastal zone. This section limits these activities to certain types of projects (restoration projects, for example) and stipulates criteria under which development is permitted (for example, those disposing of dredge and spoils shall avoid significant disruption to marine and wildlife habitats and water circulation; if carried out in a wetland, they should maintain and enhance the functional capacity of the wetland; and projects should be designed so as not to impede the continued delivery of sediments to the littoral zone [shallow coastal waters]). The California Coastal Act includes specific policies that address issues such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works. Those policies applicable to hydrology and water quality are discussed in Section IV.A.12.

Regional/Local

Water Quality Control Plan for the San Francisco Bay Basin

The SFBRWQCB regulates water quality in San Francisco Bay under the Porter-Cologne Water Quality Control Act through regulatory standards and objectives in the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan; SFBRWQCB 2009b). The Basin Plan identifies existing and potential beneficial uses and provides numerical and narrative water quality objectives to protect those uses. The Basin Plan identifies the following existing beneficial uses for the San Francisco Bay: ocean, commercial, and sport fishing; estuarine habitat; industrial service apply; fish migration; navigation; preservation of rare and endangered species; water contact recreation; noncontact water recreation; shellfish harvesting; and wildlife habitat.

The beneficial uses of Lake Merced identified in the Basin Plan are cold and warm freshwater habitat, fish spawning, wildlife, and contact and noncontact recreation. Municipal use for emergency

water supply is identified as a potential beneficial use. The SFPUC is implementing a water quality monitoring program at Lake Merced.

The State of California and EPA identify central San Francisco Bay, Islais Creek, and Lake Merced as impaired water bodies. The pollutants impairing the central San Francisco Bay, as they appear on the 2006 Section 303(d) list of impaired water bodies (the latest EPA-approved list), in addition to selenium and exotic species, are chlordane, DDT, dieldrin, dioxin and furan compounds, mercury, polycyclic aromatic hydrocarbons, and polychlorinated biphenyls in sediments (EPA 2007).

The SFBRWQCB has developed total maximum daily loads for polychlorinated biphenyls and mercury. In 2008, the SFBRWQCB recommended adding to the list of water quality impairments trash along the shoreline of San Francisco Bay (SFBRWQCB 2009a). The EPA has not yet approved the 2008 list.

Pollutants identified as impairing water quality in Islais Creek are ammonia, chlordane, dieldrin, hydrogen sulfide, polycyclic aromatic hydrocarbons, and sediment toxicity.

Pollutants contributing to impairment of Lake Merced water quality are low dissolved oxygen and low pH (acidity).

Along the Pacific Coast, a number of San Mateo County streams are identified as impaired due to coliform bacteria; however, Sanchez Creek is not among the streams listed.

San Francisco Public Utilities Commission Municipal Stormwater Permit

Most of San Francisco is served by a combined storm sewer system, where stormwater, along with residential and commercial sewage, is directed to treatment plants before being released to San Francisco Bay or the Pacific Ocean. There are, however, some areas in San Francisco that are served by a separate storm sewer. In these areas, stormwater that goes into street storm drains flows directly to receiving water bodies, such as the bay, ocean, and local lakes. The SFPUC has developed a stormwater management plan (SWMP) to manage stormwater in those areas of San Francisco that are served by separate storm and sewer collection systems. The SWMP describes specific programs that the SFPUC will implement to minimize stormwater pollution in these areas, which account for about 10 percent of San Francisco. The SWMP will be implemented to ensure that San Francisco is in compliance with state water quality mandates. These mandates are commonly referred to as Phase II regulations, which municipalities must comply with in order for stormwater discharges to be covered under California's General Permit for the Discharge of Stormwater from Small Municipal

Separate Storm Sewer Systems Water Quality Objective, No. 2003-0005-DWQ (Small MS4, or Phase II, General Permit). The SFBRWQCB approved San Francisco's SWMP in January 2004.

The SWMP applies only to areas of San Francisco that are served by separate storm and sewer systems; these are areas where the water that goes down storm drains discharges directly into water bodies. The only areas in San Francisco for which the SWMP applies are Lake Merced, Lobos Creek, Pine Lake in Stern Grove, and Stow Lake, Middle Lake, and Elk Glen Lake in Golden Gate Park.

For discharges associated with construction, coverage under the NPDES General Construction Permit is required if the area disturbed is part of the municipal stormwater system and disturbs one or more acres of soil or is part of a larger development that disturbs one or more acres of land.

Coverage under the NPDES General Construction Permit is not required for regular maintenance performed within the original line, grade, or capacity of a facility (for example, slurry sealing a parking lot). Coverage under the NPDES General Construction Permit is also not required for projects in areas of San Francisco that drain to the combined sewer system. However, the SFPUC requires that all construction sites must implement BMPs to prevent illicit discharge into the combined sewer and that all contractors have a sediment and erosion control plan for projects that are within the Combined Sewer System. The expectation is that SNRAMP projects will have to comply with both the state General Construction Permit (for Sharp Park restoration) and the SFPUC's discharge requirements to the combined sewer system.

V.H.2 Environmental Setting

This section describes the hydrology and water quality conditions in the project sites and vicinity and evaluates the potential for the project to result in environmental impacts from surface water and groundwater quality and flooding. The project sites are the 32 Natural Areas identified in the SNRAMP. Thirty-one of these Natural Areas are in San Francisco, and the thirty-second, Sharp Park, is in Pacifica, approximately six miles south of San Francisco along the Pacific Ocean.

Climate

The climate in the San Francisco Bay Area is generally characterized as a Mediterranean pattern of cool and mild temperatures along the coast, with higher temperatures inland, cool wet winters, and relatively warm dry summers. San Francisco receives approximately 21 inches of precipitation a year, mostly between October and April. For precipitation measurements, a "water year" is typically considered to run from October 1 through September 30. Average monthly temperatures range from 50.3 degrees Fahrenheit in January to 62.3 degrees in September (SFRPD 2006). Temperature and

moisture gradients exist within San Francisco, with cooler temperatures and wetter conditions in the western part of the city and warmer temperatures and slightly drier conditions in the eastern part. The temperature and moisture gradients, coupled with diverse topography, result in microclimates throughout San Francisco. The climate in Pacifica is similar to the climate in the western portion of San Francisco.

Regional Hydrology

San Francisco is surrounded on three sides by water, with San Francisco Bay to the east and north and the Pacific Ocean to the west. San Francisco and Pacifica are in the San Francisco Bay watershed, US Geological Survey (USGS) hydrologic unit code 18050004 (EPA 2009a). The California State Water Resources Control Board and the nine RWQCBs manage water quality in California and administer federal water pollution control laws. The state board administers water rights and water pollution control, while the RWQCBs conduct planning, permitting, and enforcement. Within this context, San Francisco and Pacifica are in the San Francisco Bay Basin, which is administered by the SFBRWQCB and covers approximately 4,500 square miles. The SFBRWQCB has developed a water quality control plan (Basin Plan) for the San Francisco Bay region, dividing the basin into several hydrologic planning areas. Most of San Francisco and Pacifica are in the San Mateo Coastal Hydrologic Planning Area, although the northern and western portions of San Francisco are in the Central Hydrologic Planning Area (SFBRWQCB 1995).

Many of the Natural Areas do not contain water bodies; the Natural Areas that have or will have permanent surface water features are Bayview Park (proposed detention basin/seasonal wetland), Lake Merced, Pine Lake, India Basin Shoreline Park (San Francisco Bay), McLaren Park, Glen Canyon Park and O'Shaughnessy Hollow (Islais Creek), and Sharp Park (Sanchez Creek, Arrowhead Lake, Laguna Salada, and Horse Stable Pond). Next to the Golden Gate Park Oak Woodlands are Stow Lake and Lily Pond. Lake Merced is the only surface water body in the Natural Areas that the SFBRWQCB identifies as a significant surface water body (SFBRWQCB 1995). The water bodies associated with each of these Natural Areas are described below.

Lake Merced

With an area of about 30 acres, Lake Merced in southwestern San Francisco is the largest freshwater lake in the city (Metcalf & Eddy 2008). It contains the largest expanse of wetland habitat in San Francisco and provides refuge for thousands of migratory birds (SFRPD 2006). The lake overlies the North Westside Basin Aquifer, and the lake level reflects groundwater elevations in the shallow aquifer. During the past 80 years, for a variety of reasons, including variations in rainfall and runoff, groundwater pumping, and changes in sources of inflow, water levels in Lake Merced have

fluctuated over a range of about 23 feet (Metcalf & Eddy 2008). The maximum recorded elevation was at about 24.5 feet above mean sea level, an elevations falling to about 1.5 feet above mean sea level. In response to concerns about falling lake levels during the 1980s and 1990s and declines in the underlying aquifer, a number of management actions have been undertaken aimed at stabilizing the lake level, including reducing groundwater pumping from the Westside Aquifer and recharging the lake with stormwater. Management of the lake level and water quality is the responsibility of the SFPUC, which is developing a Lake Merced Watershed Plan. Furthermore, the North Westside Basin Groundwater Management Plan (SFPUC 2005) calls for ensuring that pumping groundwater wells in the basin does not lead to declines in water levels in Lake Merced or Pine Lake. The SFPUC, in collaboration with North San Mateo County Sanitation District, initiated the Lake Merced Pilot Stormwater Enhancement Project in 2003 to use stormwater in the Vista Grande Canal, which would normally flow to the ocean, to recharge Lake Merced. The Vista Grande Canal runs parallel to John Muir Drive near the southwest shoreline of South Lake and Impound Lake. The stormwater is treated by filtration through a riparian buffer along the shoreline of the lake.

Pine Lake

Pine Lake, with a surface area of about 1.7 acres, occupies a narrow forested depression between sand dunes west of Sigmund Stern Grove and is one of the few natural lakes in San Francisco. The lake was originally known as Laguna Puerca or, alternatively, as Mud Lake, perhaps owing to fluctuating seasonal water levels. Sigmund Stern Grove and Pine Lake are on the southern boundary of the Parkside District, which was originally founded in 1905 (Brandi and LaBounty 2008). The watershed of Pine Lake is currently about 35 acres but historically was larger, draining the western slope of Mount Davidson. Although the drainage area of the lake has been reduced by urban development and diversion of runoff to storm sewers, like Lake Merced, Pine Lake is maintained by groundwater levels in the North Westside Basin Aquifer, which underlies both lakes.

Among the hydrologic issues confronting Pine Lake are fluctuating water levels, bank erosion, water quality degradation from urban runoff, and nutrient loading that can result in algae growth followed by decay and reductions in dissolved oxygen levels.

San Francisco Bay

India Basin Shoreline Park is in southeastern San Francisco and borders San Francisco Bay, which is identified as an impaired water body, as described above.

Stow Lake

Stow Lake encircles Strawberry Hill, part of the Golden Gate Park Oak Woodlands Natural Area, in the northeast corner of Golden Gate Park (SFRPD 2006). Stow Lake is not in the Natural Area but receives runoff from Strawberry Hill.

Lily Pond

Lily Pond, in the Golden Gate Park Oak Woodlands Natural Area, is south of the Conservatory of Flowers. The pond occupies a quarried depression next to the Natural Area. It receives runoff from the Natural Area but is not within the boundary of the Natural Area.

McLaren Park

McLaren Park lies on a ridge between three watersheds. A small part of the western side of the park surrounding Excelsior Middle School drains to the west into the Islais Creek watershed. The northern portion of the park, generally the part north of Mansell Street, lies within the Yosemite Creek Basin, the area historically drained by Yosemite Creek, which ran north of Bayview Hill and Candlestick Park, to Yosemite Slough on San Francisco Bay. Today, except for remnants of the headwater drainage in McLaren Park, most of the drainage network of Yosemite Creek has been diverted to underground storm sewers. The combined storm sewers collect stormwater and sanitary sewage and transport it via force mains and tunnels to the Southeast Water Pollution Control Plant (SFPUC 2009a).

The most notable surface water features in McLaren Park are in the Yosemite Creek watershed. These include Yosemite Marsh, a small natural wetland within the Natural Area of the park, near the intersection of Oxford and Bacon Streets; Gray Fox Creek, which drains to the north, in the direction of McNab Lake, along the south side of the amphitheater; McNab Lake, a small artificial impoundment that borders the Natural Area in the northeast corner of the park, near the Louis Sutter Playground; and a reservoir, surrounded on three sides by the Natural Area, on the northwest side of the park (SFRPD 2006). Yosemite Marsh and Gray Fox Creek each lie at the head of branches of the former Yosemite Creek (Ramirez-Herrera et al. 2006).

The southern half of McLaren Park is in the Sunnydale Basin/Visitacion Valley watershed, which drains to San Francisco Bay south of Candlestick Point. This watershed is considerably smaller than the watershed of Yosemite Creek and therefore historically contained smaller and less competent streams (Ramirez-Herrera et al. 2006; SFPUC 2007b).

Islais Creek

The Islais Creek Basin, which extends south to Daly City and drains most of the southeast quadrant of San Francisco, covers an area of nearly 7,000 acres (SFPUC 2009b). Until the late 1800s, Islais Creek provided about 85 percent of San Francisco's drinking water (SFPUC 2007a). With urban growth, nearly all of the streams that drain the basin have been undergrounded. The last remaining aboveground reach of the creek drains the upper portion of Glen Canyon Park. The Glen Canyon Park reach is an intermittent stream but supports willows and other riparian vegetation. The creek enters a five-foot-diameter underground culvert at the lower end of Glen Canyon Park and continues underground in the combined storm and sanitary sewage conveyance system to the Southeast Water Pollution Control Plant. This plant discharges treated wastewater to San Francisco Bay via the concrete-lined Islais Creek Channel, just north of Islais and Napoleon Streets, east of Interstate 280 (SFPUC 2009b).

Sanchez Creek

Sanchez Creek is in Sharp Park in Pacifica. It originates on a ridge above the park and flows through the park to Horse Stable Pond near the Pacific Ocean. Sanchez Creek feeds Arrowhead Lake, which is a former irrigation reservoir in the upper canyon. Sanchez Creek is directed through culverts in the lower part of the park (SFRPD 2006).

Arrowhead Lake

Arrowhead Lake is in the eastern portion of Sharp Park, in the upper reaches of the watershed near the archery range. It formerly served as a reservoir to store irrigation water for the park in the dry season.

Laguna Salada and Horse Stable Pond

Laguna Salada, in the western portion of Sharp Park, is a large brackish lake, occupying approximately 27 acres. Laguna Salada is up to 7.5 feet deep under typical conditions, which is when there are no storms (SFRPD 2009a). Laguna Salada was originally a coastal lagoon with intermittent periods of connection and disconnection with the ocean. Construction of a berm and then a levee in the 1940s and 1980s resulted in permanently preventing direct tidal influence, except for rare events when storms overtop or breach the levee (SFRPD 2006).

Horse Stable Pond is south of Laguna Salada and consists of an open water pond and a freshwater wetland. It is connected to Laguna Salada via an approximately 1,000-foot-long channel that was constructed to drain water from the lagoon to the pond, and together these three features form a wetland complex. In addition to water from Laguna Salada, Horse Stable Pond receives water from

Sanchez Creek from the east. Horse Stable Pond is shallower and smaller than Laguna Salada, and typical water depths range from one to three feet. Seven wetland series are found around and within Laguna Salada. Flood waters in the wetland complex are drained by pumps in Horse Stable Pond, which pump water into the Pacific Ocean during the winter, when water levels in the pond get too high (SFRPD 2009a).

The *Report for the Hydrologic Assessment and Ecological Enhancement Feasibility Study: Laguna Salada Wetland System* (KHE 2009) was prepared for the SFRPD to improve the understanding of the hydrologic processes that affect the distribution of ecological habitats in the Laguna Salada wetland system and flooding of the adjacent golf course. The assessment characterized the variability of water level fluctuations from year to year in the Laguna Salada wetland system. Hydrologic monitoring at the site documented water level fluctuations over a range of 3.2 feet from April 2008 through February 2009. Observers noted a gradual recession of the water surface elevation in Laguna Salada, from 7.3 feet (NAVD 88) in May 2008 to 6.1 feet in October 2008. Rainfall in early November 2008 quickly filled Laguna Salada, and the water surface elevation remained near seven feet through the early winter (NAVD 88). A storm in mid-February 2009 increased the water surface to 9.3 feet (KHE 2009).

Results from a water budget investigation reveal that the system is supplied with adequate water to fill the ponds even in dry years. The hydrologic assessment and a previous hydrologic site assessment (Philip Williams & Associates et al. 1992) were both completed during multiyear droughts. The assessments reflect worst-case scenarios with respect to water supply and water quality in the Laguna Salada wetlands. However, conditions observed and monitored during these studies reflect suitable conditions to sustain desired ecological habitats (KHE 2009).

Variability of water levels in the wetlands from year to year is low due to the operation of the pumping station. Early spring water levels in the ponds are consistent among dry, normal, and wet water years because the water level is controlled by the pumping station. Dry season losses due to evapotranspiration and seepage do not likely vary much year to year. Surface water inflows associated with winter storms provide the primary source of water to the wetland system. Groundwater inflow exceeds groundwater outflow (seepage); as a result, groundwater inflows contribute to the overall water budget of the system, and dry season water level recession occurs at a slightly slower rate than would be expected due to evapotranspiration losses alone (KHE 2009).

The hydraulic connectivity of the wetland system was evaluated by monitoring concurrent water surface elevations in Laguna Salada and the Horse Stable Pond. The connector channel enables

hydraulic exchange of water between the pond areas at water surface elevations greater than 6.2 feet (NAVD 88). The connector channel limits the rate at which water can be exchanged between the two pond areas. Dense vegetation growth in the channel creates hydraulic friction, which slows the movement of water (KHE 2009).

The seasonal variation of salinity in the wetland system was monitored to characterize conditions and to assess potential impacts of saltwater encroachment. Salinity is a concern because of its potential to affect the survival of sensitive species that use this wetland habitat. During the monitoring period, salinity in the pond areas ranged between 0.7 and 2.5 parts per thousand. Salinity in Laguna Salada appears uniform and well mixed. The total mass of dissolved salts in the wetland system increased by eight percent during the monitoring period. Relatively saline groundwater, with a salinity of 15 parts per thousand, was observed in the sandy flat between Laguna Salada and the seawall; however, measured groundwater gradients indicate net groundwater movement in this area is westward or from Laguna Salada toward the ocean. The small net increase observed in the total mass of dissolved salts may be explained by short-term encroachments of salt water toward the wetlands or concentration of salts by evaporation of relatively fresh (low salinity) sources. However, the observed increase falls within the likely range of uncertainty associated with the accuracy of data sources and the mass balance calculations. Any encroachment of salt water in recent years has not produced cumulative effects on the salinity of the pond areas. Salinity observed in 2008 ranged within the values reported in the Draft Laguna Salada Resource Enhancement Plan for observations in 1990-1991 (KHE 2009).

A modeling system was developed to integrate the rainfall-runoff, flood routing, and pond storage characteristics of the wetland system. Findings from the modeling investigation illustrate the water level responses to a range of storms, based on conditions at the site. The model provides an analytical tool that can be used in future investigations to evaluate the potential impacts on flood hazards from various conceptual design alternatives (KHE 2009).

Flood Protection

The Federal Emergency Management Agency (FEMA) issued a preliminary flood insurance rate map (FIRM) for San Francisco in 2007. FEMA anticipates publishing a revised preliminary FIRM in 2011. FIRMs identify flood-prone areas, including those that are subject to inundation during a flood having a one percent chance of occurrence in a given year (also known as a base flood or 100-year flood). FEMA refers to a floodplain that is at risk from a flood of this magnitude as a special flood hazard area (SFHA). SFHAs are further delineated with such designations as Zone A or Zone V. Moderate flood-prone areas are designated by Zone B or Zone X. Zone B is areas subject to a 1 in 500

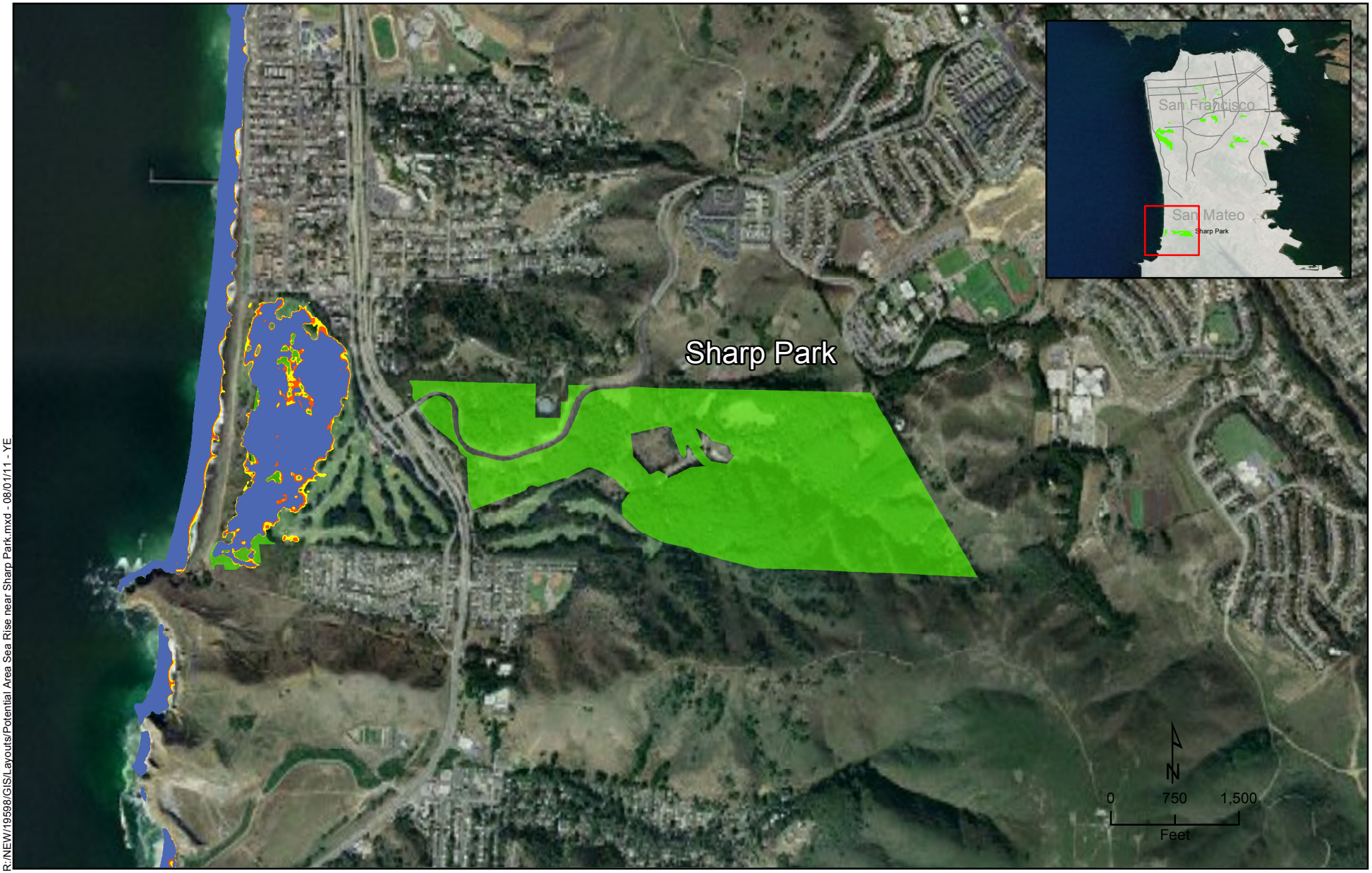
chance of flooding in a given year, or flooding to a depth of less than one foot. According to the preliminary map, the only Natural Area in San Francisco within a preliminary SFHA is India Basin, which is in Zone V (an area of coastal flooding subject to wave hazards). Because FEMA has not yet published a final FIRM, San Francisco adopted the preliminary flood zones identified in FEMA's preliminary FIRM in Final Draft Interim Floodplain maps, which were published in July 2008 (CCSF 2008e).

Currently, San Francisco does not participate in the National Flood Insurance Program (NFIP). On June 10, 2008, the Board of Supervisors introduced a floodplain management ordinance to govern construction and substantial improvements in flood-prone areas of San Francisco and to authorize San Francisco's participation in the NFIP. The ordinance includes a requirement that any construction or substantial improvement of structures in a designated flood zone must meet the flood damage minimization requirements in the ordinance, pending publication of a final FIRM by FEMA. The NFIP regulations allow a local jurisdiction to issue variances to its floodplain management ordinance under certain narrow circumstances, without jeopardizing the local jurisdiction's eligibility in the NFIP. The ordinance was revised at FEMA's request, and the the final ordinance was passed by the Board of Supervisors on September 23, 2010 (CCSF 2010a).

Flood hazard zones in Sharp Park, which is outside the corporate limits of San Francisco, are identified in a FIRM published in 1987 (FEMA 1987). The FIRM identifies Laguna Salada and the lower reach of Sanchez Creek as Zone A (areas with a one percent annual chance of flooding). A larger area that includes a portion of the golf course southeast of Laguna Salada is identified as Zone B (areas subject to a 1 in 500 chance of flooding in a given year, or flooding to a depth of less than one foot). Recent computer modeling performed for this project indicates the potential for more widespread flooding of the golf course next to Laguna Salada (KHE 2009), including inundation as a result of sea level rise.

Sea Level Rise

Sea levels have risen over seven inches along the California coast in the past century and are projected to rise another 12 inches by 2040 and as much as 4.6 feet by 2100, in response to global climate change (California Natural Resources Agency 2009). Sea level rise could increase flooding potential in coastal areas. The two Natural Areas at greatest risk of flooding from this projected sea level rise are Sharp Park and India Basin; Figures 7 and 8 illustrate potential sea level rise of 50 centimeters (1.6 feet), which could occur around mid-century.



R:/NEW/19598/GIS/Layouts/Potential Area Sea Rise near Sharp Park.mxd - 08/01/11 - YE

The projected sea level rise of 150 centimeters.

Natural Area

Roadway

10 yr recurrence interval

50 yr recurrence interval

100 yr recurrence interval

TETRA TECH

Potential Sea Level Rise near Sharp Park

Figure 7

R:/NEW/19598/GIS/Layouts/Potential Area Sea Rise for San Francisco Bay.mxd - 08/01/11 - YE

The projected sea level rise of 150 centimeters.

Natural Area

Roadway

10 yr recurrence interval

50 yr recurrence interval

100 yr recurrence interval

TETRA TECH

Potential Sea Level Rise for San Francisco Bay

Figure 8

Sea level rise will put additional stress on the seawall at Sharp Park and could result in more frequent overtopping (SFRPD 2009a). Rising sea levels will also result in higher groundwater levels near the coast, as the water table rises to maintain net groundwater outflow to the ocean. Higher groundwater levels will reduce storage capacity of Laguna Salada somewhat and will require more frequent or increased rates of pumping to maintain the water level in Laguna Salada below the elevation at which flooding impacts could occur.

The Sharp Park Seawall Evaluation (Arup 2009) summarizes the results of efforts to assess and rank the current condition of the seawall, evaluates performance in five years and under projected sea-level rise in years 2040, 2060, and 2100, and assesses salt water intrusion into the wetlands. During the site assessment, no signs of seawater penetration through the seawall were observed. However, elevated salinity levels and a seep have been reported near the western edge of Horse Stable Pond, at the southern end of the seawall. This is the location of an abandoned drainage pipe, and it is possible that seawater is seeping along the drainage pipe during high tides (Arup 2009).

While portions of the seawall are in fair to good condition, mainly in armored areas, there are other portions of the seawall that are in poor condition. Significant erosion rills, near-vertical slope faces, and beach sand within two feet of the seawall are all issues that negatively affect the condition of the wall. If improvements are not performed to alleviate these conditions, it is very likely that the seawall would be overtopped and breached during a 100-year storm or as a result of future sea level rise (Arup 2009).

India Basin is the only Natural Area in San Francisco that borders San Francisco Bay. Elevations in the park range from sea level to approximately 25 feet above sea level. There are approximately 2.8 acres of tidal wetland in the 6.2-acre Natural Area (SFRPD 2006). A 4.6-foot sea level rise in this area would likely submerge the wetland, but upland areas would likely not be affected by the projected increase in sea level.

Water Quality

Islais Creek, Lake Merced, and San Francisco Bay next to India Basin are identified as impaired water bodies under Section 303(d) of the Clean Water Act. This is because they contain pollutants above levels considered consistent with their designated beneficial uses. The law requires determination of total maximum daily loads of the pollutants that cause the impairment and implementation of plans to maintain loadings below these levels.

V.H.3 Impacts

Significance Thresholds

A proposed project would have a significant hydrology and water quality impact if it were to result in the following:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of nearby wells would drop to a level that would not support land uses or planned uses for which permits have been granted);
- Substantially alter the drainage pattern of the site or area, including altering the course of a stream or river, in a manner that would result in substantial on-site or off-site erosion or siltation;
- Substantially alter the drainage pattern of the site or area, including altering the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in on-site or off-site flooding;
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
- Otherwise substantially degrade water quality.

Impacts Addressed in the Initial Study

In the Initial Study in Appendix A, impacts related to the following criteria were identified as not significant:

- Place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or FIRM or other authoritative flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; and
- Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mud flow.

As a result, these CEQA significance criteria are not evaluated further in this EIR.

Significant Natural Resource Areas Management Plan Impacts

While the SFRPD has considered management options for the Sharp Park seawall, including a naturally managed seawall and shoreline, those options are not proposed as part of the SNRAMP and would require additional CEQA review before they could be implemented. As such, they are not addressed in this EIR.

SNRAMP activities that could have a significant impact on water quality (programmatic projects and Sharp Park restoration) are generally mitigated, based on the following categories:

- Ground-disturbing actions (such as clearing, grading, grubbing, and excavation) on one or more acres of land that would require compliance with the conditions of the state NPDES General Construction Permit, which includes development of a SWPPP;
- Ground-disturbing actions of less than one acre of land that drains to local water bodies and that are not covered by the NPDES General Construction Permit but require erosion control and stormwater pollution prevention measures to comply with state discharge requirements and to maintain consistency with the SFPUC State-approved SWMP; or
- Ground-disturbing activities that could result in discharges to San Francisco's combined sewer system, regulated by the SFPUC under San Francisco's municipal NPDES stormwater permit, which requires erosion control and stormwater pollution prevention measures.

Many of the Natural Areas, including Glen Park and McLaren Park, are in drainages that discharge to a combined sewer system, while others, such as India Basin, Pine Lake, and Lake Merced, are not. Construction that involves discharges to combined sewer systems is not covered under the NPDES general construction permit because the stormwater in these systems is treated at wastewater treatment plants. Discharges to combined sewer systems in San Francisco are regulated by the SFPUC under San Francisco's municipal NPDES stormwater permit.

In addition, for the Sharp Park restoration, the SFRPD would obtain the appropriate permits and regulatory approvals for dredge and fill activities under Sections 401 and 404 of the Clean Water Act; these requirements may also apply to other SNRAMP activities. Conditions of approval may include measures to protect water bodies from increased turbidity and suspended sediments, as well as to avoid overall water quality degradation. These approvals are discussed further in Section V.G, Biological Resources.

Water Quality

Programmatic Impacts

Impact HY-1: Implementation of programmatic projects under the SNRAMP would violate water quality standards or otherwise degrade water quality. (**Less than Significant with Mitigation**)

Ground-disturbing activities can expose soils to erosion, increasing the amount of sediment in runoff from the site, which may ultimately discharge to surface water bodies. Project activities that would involve ground disturbance and therefore could increase erosion and sediment loading to stormwater runoff include removing large nonnative trees and other invasive vegetation, creating trails, and implementing large-scale erosion control projects. Short-term ground disturbance may occur where slopes or drainages are modified, even when the modification is designed to reduce erosion in the long term. Erosion that results in an increase in sediment load to receiving water bodies could result in significant water quality impacts.

While these activities could contribute some sediment to water bodies in or near the Natural Areas, the proposed activities would be implemented in a way to lessen the impacts on water quality. As discussed in Section III.E.5 (page 92), tree removal would be selective, would be implemented gradually over several years, would involve limb-by-limb removal, and would leave tree stumps and root balls intact; areas around the remaining stumps would be revegetated. Other types of vegetation would be removed selectively and would include revegetation of the affected areas. Ground disturbance would be further reduced by minimizing the use of heavy equipment and relying on manual techniques to remove vegetation.

Trail creation and erosion control projects would involve soil disturbance and may also remove vegetation, resulting in short-term increases in the potential for soil erosion. To reduce the erosion potential, slopes would be stabilized and revegetated. BMPs to reduce or prevent soil erosion would be used in areas where ground-disturbing activities take place, including installing silt fences and straw wattles to slow sediment movement and by using run-on controls to divert surface runoff from work areas. The specific erosion control measures to be implemented for each programmatic project would be in accordance with General Recommendations GR-12a (revegetate steep slopes) and GR-12b (phased invasive species removal to reduce erosion).

However, substantial erosion that results in an increase in sediment load to receiving waters could result in significant impacts on water quality. Mitigation Measure M-HY-1 requires the SFRPD to implement applicable pollution avoidance measures, erosion and sediment controls, hazardous

waste management, post-construction BMPs, and other water quality protection measures. Mitigation Measure M-HY-1 would ensure that measures are taken to reduce potential water quality impacts, unless equally or more protective measures are identified during project specific environmental review. As a result, the impacts of programmatic projects on water quality resulting from sediment discharge to water bodies would be ***less than significant***.

Pesticide and herbicide use in the Natural Areas would be in accordance with the SFRPD's Integrated Pest Management (IPM) Program and San Francisco's Integrated Pest Management Ordinance, which are described in Section III.E.5 (page 90) and further detailed in Chapter 4 of the SNRAMP (SFRPD 2006). As stated in the SNRAMP, the Natural Areas Program uses a least toxic decision making model in its vegetation management, and workers applying herbicides are trained and required to follow the manufacturer's label (SFRPD 2006).

The primary herbicides used by the SFRPD in the Natural Areas are glyphosate (under the trade names Roundup, Aquamaster, and Rodeo), imazapyr (Habitat and Polaris), triclopyr (Garlon), and aminopyralid (Milestone). Glyphosate, the primary product used, is a broad spectrum, nonselective systemic herbicide that is effective against weeds; it has low toxicity to wildlife but moderate toxicity to fish (Monsanto 2005). Roundup binds tightly to soil, which reduces the potential for migration to surface water or groundwater. Garlon is a selective systemic herbicide that controls broadleaf weeds without harming grasses. It degrades quickly in the environment and has low toxicity to aquatic species (Dow 2009). Garlon is being phased out from use in Natural Areas and is only used for invasive plants in biologically diverse grasslands due to its target specificity. As described in Section III.E.5, only aquatic-specific herbicides, such as Rodeo, Aquamaster, and Habitat, would be applied to wetlands and to areas next to water bodies.

In 2004, the Natural Areas Program accounted for less than 10 percent of the overall SFRPD pesticide use, even though the Natural Areas account for approximately 25 percent of the land managed by the SFRPD (SFRPD 2006). Pesticides would be used as infrequently as possible in the Natural Areas to achieve the desired results. Pesticide use would be carefully monitored, would involve the use of least toxic methods and materials that are appropriate to the environment in which they are applied, and would adhere to the IPM Program. As a result, water quality impacts from herbicide and pesticide use as part of programmatic projects would be ***less than significant***.

Water quality could also be impacted by spills of petroleum products, such as gasoline, diesel, or hydraulic oil used in powered equipment, or of other contaminants that might be used in the project area. Released to the environment, these materials could contaminate and degrade the quality of

surface water bodies in the Natural Areas, resulting in a significant impact. Mitigation Measure M-HY-1 involves implementing stormwater pollution prevention measures designed to avoid polluted runoff and minimize impacts on water quality. Additionally, Mitigation Measure M-HZ-13 requires SFRPD to prepare an emergency response plan for accidental releases of hazardous materials and that equipment be refueled at least 100 feet from a water body, further reducing potential water quality impacts.

With implementation of Mitigation Measures M-HY-1 and M-HZ-13, the impacts of programmatic projects on water quality would be reduced to ***less than significant***.

M-HY-1: Implementation of Stormwater Pollution Prevention Measures

Construction projects that do not drain to San Francisco's combined sewer system and involve one or more acres of land disturbance are required to obtain coverage under the NPDES General Permit for Stormwater Discharges Associated with Construction Activity. In accordance with the NPDES General Permit requirements, the SFRPD or its contractors would submit a notice of intent to the SWRCB's Division of Water Quality, would develop a SWPPP, and would implement site-specific BMPs to prevent discharges of nonpoint source pollutants in construction-related stormwater runoff to storm drains and water bodies. As required by the NPDES General Construction Permit, trained and certified persons would prepare the SWPPPs and would conduct inspections to ensure the effectiveness of the BMPs.

Listed below are BMPs that would be implemented at the Natural Areas to meet the minimum requirements of the NPDES General Construction Permit. These measures may be altered, supplemented, or deleted during the SFBRWQCB's review process, as it has final authority over the terms of the SWPPP.

Other programmatic projects shall implement the following measures, where applicable to a project, unless other equally or more effective measures are determined to be necessary during future project-specific environmental review. These projects are those on less than one acre and that do not require a NPDES General Construction Permit or that drain to San Francisco's combined sewer system and are regulated by the SFPUC.

a. <u>Schedule to Avoid or Minimize Impacts</u>

- Schedule construction to minimize ground disturbance during the rainy season;
- Sequence construction to minimize the amount of time that soils remain disturbed;

- Stabilize all disturbed soils as soon as possible following the completion of ground-disturbing work in any area of the project site;
- Provide plans to stabilize soil with vegetation or physical means in the event rainfall is expected; and
- Install erosion and sediment control BMPs before starting any ground-disturbing activities.

b. Erosion and Sediment Controls

- Preserve vegetation in areas where no construction is planned or where construction will occur at a later date;
- Stabilize and revegetate disturbed areas as soon as possible after construction with planting, seeding, or mulch (e.g., straw or hay, erosion control blankets, hydromulch, or other similar material), except in cultivated areas;
- Install silt fences, coir rolls, and other suitable measures around the perimeter of the construction zone, staging areas, storm drains, temporary stockpiles, spoil areas, stream channels, swales, down-slope of all exposed soil areas, and other locations determined necessary to prevent off-site sedimentation;
- Install temporary slope breakers during the rainy season on slopes greater than 5 percent, where the base of the slope is less than 50 feet from a water body, wetland, or road crossing, at spacing intervals required by the SFBRWQCB;
- Use filter fabric or other appropriate measures to prevent sediment from entering storm drain inlets; and
- Detain and treat stormwater and water produced by construction site dewatering using sedimentation basins, sediment traps (when water is flowing and there is sediment), baker tanks, or other measures to ensure that discharges to receiving waters meet applicable water quality objectives

c. Housekeeping

- Store all equipment, materials, fuels, lubricants, solvents, and other possible contaminants away from waterways and in secured locations;
- Check equipment for leaks regularly;
- Wash construction equipment in a designated enclosed area regularly; and

- Refuel all vehicles and equipment at least 100 feet from any water bodies.

d. Waste Management and Hazardous Materials Pollution Control

- Remove trash and construction debris from the project area daily;
- Locate sanitary facilities a minimum of 300 feet from water bodies;
- Maintain sanitary facilities regularly;
- Maintain spill containment and cleanup equipment on-site and properly label and dispose of wastes;
- Locate waste collection areas close to construction entrances and away from roadways, storm drains, and water bodies;
- Inspect trash receptacles and other waste and debris containers regularly for leaks and remove and properly dispose of any hazardous materials and liquid wastes placed in these containers; and
- Train construction personnel in proper material delivery, handling, storage, cleanup, and disposal procedures.

e. BMP Inspection, Maintenance, and Repair

- Inspect all BMPs regularly to confirm proper installation and function;
- Inspect all stormwater BMPs daily during storms;
- Inspect sediment basins, sediment traps, and other detention and treatment facilities regularly throughout the construction period;
- Provide sufficient devices and materials (e.g., silt fence, coir rolls, and erosion blankets) throughout project construction to enable immediate repair or replacement of failed BMPs; and
- Inspect all seeded and revegetated areas regularly for failures and remediate or repair them immediately.

f. Post-Construction BMPs

- Revegetate all temporarily disturbed areas as required after construction;
- Remove any remaining construction debris and trash from the project site and area on project completion;

- Phase the removal of temporary BMPs as necessary to ensure stabilization of the site;
- Maintain post-construction site conditions to avoid any unintended drainage channels, erosion, or areas of sedimentation; and
- Correct post-construction site conditions as necessary to comply with the SWPPP and any other pertinent SFBRWQCB requirements.

Project-Level Impacts (*Routine Maintenance*)

Impact HY-2: Implementation of routine maintenance activities under the SNRAMP would violate water quality standards or otherwise degrade water quality. (Less than Significant with Mitigation)

The potential to violate water quality standards or degrade water quality from routine maintenance is considered minimal because of the small scale and low intensity of ground disturbance from these activities. Weeds and trees would be removed, plants would be installed, and trails would be maintained predominately using hand tools, without large mechanized equipment, and in small increments; this would avoiding soil erosion and other waste discharges and the potential to degrade water quality. Weed removal would be phased in in small increments, and areas would be stabilized and revegetated where needed to avoid bare soils. Trees would be removed limb-by-limb, tree stumps and root balls would be left intact, and areas around the remaining stumps would be revegetated. Trails would be maintained using hand tools to compact eroded soil and to clear overgrown or fallen vegetation, with the intent of preserving the basic functionality of the trails. Typically, only one to a few workers would be present at a time in a Natural Area, further reducing the likelihood of erosion impacts.

Pesticides and herbicides may be used as part of routine maintenance in the Natural Areas to control invasive vegetation and other pests. Introduced pollutants from herbicides applied in the Natural Areas could degrade water quality, although incidences are unlikely due to the controlled manner and small scale of use. Use of these materials would be in accordance with the IPM Program and San Francisco's Integrated Pest Management Ordinance, which are described in Section III.E.5 (page 90) and are further detailed in Chapter 4 of the SNRAMP (SFRPD 2006). Under the SNRAMP, only aquatic-specific herbicides would be applied to wetlands and to areas next to water bodies. As stated in the SNRAMP, the Natural Areas Program uses a least toxic decision making model in its vegetation management, and those applying herbicides are trained and are required to follow the manufacturer's label (SFRPD 2006). Pesticide use in the Natural Areas would have less than significant environmental impacts to water quality because SFRPD would use as little pesticide as

possible to achieve the desired results, would be carefully monitored, would involve the use of the least toxic methods and materials that are appropriate to the environment in which they are applied, and would adhere to the IPM Program.

Introduction of pollutants from inadvertent spills of petroleum products could degrade water quality. The likelihood of substantial spills of petroleum products is low because maintenance activities would rely primarily on manual methods, and only small equipment, such as chain saws and mowers, and small quantities of associated fuels would be used. However, any spills near or in water bodies could have a significant impact on water quality. Implementing Mitigation Measure M-HZ-14, which calls for preparation of a general emergency response plan for routine management activities using gasoline- or diesel-powered equipment, would reduce this impact to ***less than significant***.

For the reasons described above, routine maintenance activities would have ***less than significant*** impacts on water quality with implementation of Mitigation Measure M-HZ-14 (described in Section V.I.3).

Project-Level Impacts (*Sharp Park Restoration*)

Impact HY-3: Implementation of the Sharp Park restoration under the SNRAMP would violate water quality standards or otherwise degrade water quality. (Less than Significant with Mitigation)

The Sharp Park restoration program would result in short-term deterioration in water quality in Laguna Salada and Horse Stable Pond during project activities that disturb bottom sediments.

Approximately 60,000 cubic yards of sediment spoils are expected to be generated by deepening Horse Stable Pond and Laguna Salada by about one to three feet and deepening the connecting channel between the two water bodies. To the extent possible, depending on the amount of organic matter entrained in the dredged material, some of this dredged material would be placed on the golf course or would be used to create upland habitat. Soil disturbance or placement of dredge material in upland areas could result in enhanced erosion until vegetation cover stabilizes the soils.

Dredged materials could result in potential impacts on water quality through conversion of the chemical characteristics of the soil after exposure to oxygen. Coastal lagoons, such as Laguna Salada and Horse Stable Pond, are sometimes favorable environments for the accumulation of sulfide minerals from biological decay and lack of oxygen. The sulfides can be converted to sulfuric acid

when exposed to atmospheric oxygen by dredging them and placing them on the ground surface. Although not expected to significantly alter surface water pH, acidic soils could have undesirable localized effects on sensitive aquatic habitat. As described in Section III.F.2 (page 99), sediments would be tested to determine if elevated concentrations of sulfides are present and if the sediments could serve as soils suitable for supporting desired vegetation. Treatment of acidic soils may include spreading and mixing the dredged material with native soil to avoid concentrating acidic soils, placing the dredged material in a nonsensitive location, or treating the dredged material with lime to neutralize the acid.

Dredging would be regulated by the SWRCB and SFBRWQCB through Section 401 of the Clean Water Act. The intent of this regulation is to prevent any degradation of water quality that would impair beneficial uses of the receiving water bodies. The SFRPD would be required to obtain a Section 401 water quality certification and to implement Mitigation Measures M-BI-12a and 12b, which include measures to avoid, minimize and restore affected wetlands and waters of the state (described in Section V.G.3).

Under typical dry season conditions, inflow from the watershed to Laguna Salada is not sufficient to trigger pumping from Horse Stable Pond to the Pacific Ocean. Under normal conditions, water levels in both water bodies tend to decline during the dry season. As part of the Laguna Salada restoration project, Laguna Salada and Horse Stable Pond would be drained before the dredging and deepening begin. Dredging would be conducted during the dry season (April 15 through October 15), when inflow to Laguna Salada is lowest. Lowering the water levels of Laguna Salada and Horse Stable Pond would provide additional storage capacity to contain inflow that may occur during construction and would help reduce the amount of wet sediment to be managed. As a result, the SFRPD does not propose to discharge water from Laguna Salada or Horse Stable Pond to the Pacific Ocean during restoration.

Historic rainfall records for Pacifica indicate that storms capable of generating significant runoff occasionally occur during the dry season. In the event that significant runoff occurs during construction, excess runoff would be managed in accordance with conditions established during the Section 404 and 401 regulatory approval processes for the project. Since it is desirable to maintain the low water levels in Laguna Salada and Horse Stable Pond during dredging activities, if permissible under the permits, excess runoff may be pumped to the Pacific Ocean. Discharge of suspended sediment to the ocean is not expected to adversely impact ocean waters, and sediment discharge is a natural function of all streams. Alternatively, excess runoff could be stored in Laguna Salada during dredging to avoid the need for discharge to the Pacific Ocean.

After construction, a monitoring program would be designed and implemented, as described in Mitigation Measure M-BI-12b, which would ensure that water quality is suitable for survival of the aquatic species of concern. This measure also would ensure that water quality is adequate to meet any discharge requirements that may be required for the project. Impacts on water quality from disturbance of sediment during dredging would be ***less than significant*** by avoiding discharges during construction or ensuring that sediment-laden water is discharged in compliance with the permits issued for the project and by monitoring water quality to demonstrate that it is suitable for aquatic species (M-BI-12b).

Use of heavy equipment near Laguna Salada for dredging and restoring wetlands could result in spilled fuels, hydraulic fluid, or lubricants. In accordance with Mitigation Measure M-HZ-13, a project emergency response plan would be prepared, identifying training and spill prevention and control equipment and procedures that must be implemented by work crews at the site. Implementing M-HZ-13 would reduce water quality impacts from potential contaminant spills or releases to ***less than significant***.

Disturbance of more than one acre of land would trigger the need for a NPDES General Construction Permit, which requires a qualified stormwater or erosion control professional to prepare a SWPPP. M-HY-1, Implementation of Stormwater Pollution Prevention Measures, would avoid and minimize impacts on water quality from disturbance of upland areas during construction, through such measures as ensuring the work is done during the dry season; implementing erosion and sediment control BMPs; ensuring that hazardous materials and hydrocarbons are managed properly; and ensuring that disturbed soils are revegetated or otherwise stabilized. Therefore, with implementation of M-HY-1, any stormwater impacts would be ***less than significant***.

Groundwater

Programmatic Impacts

Impact HY-4: Implementation of the programmatic projects under the SNRAMP would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (Less than Significant)

The proposed project does not include any activities that would require the use of groundwater. Actions designed to reduce erosion by slowing the rate of runoff could increase infiltration of runoff, potentially increasing groundwater recharge.

The foliage of large trees on some forested areas, such as Mount Davidson and the Interior Greenbelt, can capture and condense the moisture in fog. The condensed moisture precipitates, creating conditions analogous to a light rain. In areas where this occurs, this fog-derived moisture can contribute significantly to soil moisture and at times may produce runoff and groundwater recharge, which supports understory vegetation growth. Therefore, removing large trees in sufficient numbers could reduce precipitation in these areas. However, the project calls for removing a relatively small percentage of trees and replanting trees, which would be implemented gradually, resulting in minor reductions in fog-capture precipitation, compared to current conditions. In Sharp Park, where a larger percentage of the trees within the Natural Area (about 27 percent of the invasive trees) would be removed, the amount of precipitation captured by these trees represents a relatively small percentage of the total precipitation that falls in the watershed and ultimately recharges groundwater. While the reduction in the tree canopy might have a localized impact on soil moisture beneath the trees, it is not likely to significantly affect groundwater levels. Therefore, programmatic projects would result in ***less than significant*** impacts on groundwater.

Project-Level Impacts (*Routine Maintenance*)

Impact HY-5: Implementation of routine maintenance under the SNRAMP would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (No Impact)

Routine maintenance would not require use of groundwater and is not expected to impact groundwater levels; therefore, routine maintenance would have ***no impact*** on groundwater.

Project-Level Impacts (*Sharp Park Restoration*)

Impact HY-6: Implementation of the Sharp Park restoration under the SNRAMP would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge. (Less than Significant)

In Sharp Park, the Laguna Salada wetland system is naturally maintained by groundwater during periods of low surface water inflow, such as during the summer. At these times, the water elevation in Horse Stable Pond and Laguna Salada represents the groundwater table. Groundwater flow from the watershed to the ocean maintains the pond elevations above sea level. Over the course of the year, surface inflows to Laguna Salada exceed groundwater inflows to Laguna Salada by 600 percent (KHE 2009). Some of the excess surface water inflow is lost to evaporation and uptake by plants,

some flows as groundwater to the sea, and some is pumped to the ocean during periods of high inflow.

If the water level of Laguna Salada or Horse Stable Pond were lowered below the elevation of the groundwater table, groundwater levels in the surrounding aquifer would be depressed and salt water from the ocean would migrate inland (salt water intrusion). The operation of pumps to control water levels in Horse Stable Pond and Laguna Salada would be designed to maintain water levels for the protected species and would also reduce the frequency of flooding of the golf course. Water levels in Laguna Salada and Horse Stable Pond would not be drawn down more than necessary to prevent flooding and would therefore not draw down groundwater levels, such that salt water would intrude.

Although the project would have an impact on groundwater levels by maintaining the elevation of the ponds, the groundwater impacts would be ***less than significant*** because the Sharp Park restoration project would not deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in groundwater volume or a lowering of the local groundwater table.

Erosion and Siltation

Programmatic Impacts

Impact HY-7: Implementation of the programmatic projects under the SNRAMP would result in substantial erosion or siltation. (Less than Significant with Mitigation)

The potential for erosion to impact surface water quality has been described and analyzed under Impact HY-1. Some of the proposed project activities, such as repairing gullies, recontouring or repaving roads, and implementing stream bank erosion control measures, might initially increase erosion, but they are anticipated to have long-term erosion reduction benefits. Vegetation removal/replacement and trail creation may slightly alter drainage patterns at the different Natural Areas and might even lead to a temporary increase in stormwater runoff until new vegetation becomes established. However, the small scale of these activities would not result in substantial erosion or siltation. The potential for erosion would be ***less than significant*** through implementation of the GR-12a (revegetate steep slopes) and GR-12b (phased invasive species removal to reduce erosion) erosion control measures and the erosion and sediment control BMPs described in M-HY-1, Implementation of Stormwater Pollution Prevention Measures.

Project-Level Impacts (*Routine Maintenance*)

Impact HY-8: Implementation of the routine maintenance activities under the SNRAMP would not result in substantial erosion or siltation. (Less than Significant)

As discussed in HY-2, routine maintenance would involve minimal potential for soil disturbance and is not expected to cause substantial erosion or siltation that would affect adjacent water bodies. The potential is minimal for routine maintenance to violate water quality standards or to degrade water quality because of the small scale and low intensity of ground disturbance associated with these activities. Weeds and trees will be removed, plants will be installed, and trails will be maintained predominately using hand tools, without large mechanized equipment, and in small increments; this would avoid soil erosion and waste discharges and the potential to degrade water quality. Weed removal would be phased in small increments, and areas would be stabilized and revegetated where needed to avoid bare soils. Trees would by removed limb-by-limb, tree stumps and root balls would be left intact, and areas around the remaining stumps would be revegetated. Trails would be maintained using hand tools to compact eroded soil and to clear overgrown or fallen vegetation, with the intent of preserving the basic functionality of the trails. Typically, only one to a few workers would be present at a time in a Natural Area, further reducing the likelihood of erosion impacts. Therefore, erosion and siltation impacts from routine maintenance would be ***less than significant***.

Project-Level Impacts (*Sharp Park Restoration*)

Impact HY-9: Implementation of the Sharp Park restoration under the SNRAMP would not result in substantial erosion or siltation. (Less than Significant with Mitigation)

Within Sharp Park, the SNRAMP proposes to create shallow pools in Laguna Salada by thinning the tule vegetation and removing vegetation in Horse Stable Pond and in the channel that connects Laguna Salada to the pond. Additionally, wetland complex restoration would include dredging to remove sediment and decaying vegetation, recontouring the shoreline to create shallow water habitat, creating an upland refuge in the middle of Laguna Salada, and constructing upland mounds on the east side of Laguna Salada. The project calls for deepening the open water areas of Laguna Salada and Horse Stable Pond by one to three feet and extensively excavating the eastern portion of Laguna Salada and Horse Stable Pond to restore open water habitat.

During construction, ground-disturbing activities, modification of the contours of the shoreline and perimeter of Laguna Salada, and use of construction equipment, could result in short-term erosion

or siltation impacts. These impacts would be mitigated through preparation and implementation of a SWPPP, as described in M-HY-1. With implementation of Mitigation Measure M-HY-1, short-term erosion and siltation impacts of Sharp Park restoration activities would be ***less than significant***.

Restoration activities are intended to reverse the effects of past siltation. Installing sediment traps, including one at the mouth of Sanchez Creek upstream of Horse Stable Pond and one at the north end of Laguna Salada, would reduce the rate of siltation of these two water bodies, resulting in long-term ***less than significant*** impacts.

Flooding

Programmatic Impacts

Impact HY-10: Implementation of the programmatic projects under the SNRAMP would not result in flooding. (Less than Significant)

There are no activities included in the project that would significantly alter the drainage pattern of the sites or that would substantially increase runoff such that flooding would occur, with the possible exception of modifying the wetland complex in Sharp Park, as discussed below.

In Sharp Park, removing eucalyptus trees in the upland area would increase incident rainfall that reaches the ground and could increase the rate of runoff into Sanchez Creek, the main drainage for this watershed. However, the increase is not expected to be substantial in comparison to the size of the drainage area and considering the normal range of runoff volume; additionally, the area would be revegetated following tree removal. Over time, the proposed project would reduce surface runoff by dispersing water more widely over the ground surface and slowing runoff velocities, thereby increasing infiltration. Therefore, the flooding impacts of the programmatic projects would be ***less than significant***.

Project-Level Impacts (*Routine Maintenance*)

Impact HY-11: Implementation of routine maintenance activities under the SNRAMP would not result in flooding. (No Impact)

Routine maintenance is not expected to alter stormwater flows, to reduce the capacity of stormwater conveyances, or to alter drainage patterns in a way that might lead to increased potential for flooding in any of the Natural Areas. Therefore, there would be ***no impact*** on flooding from routine maintenance.

Project-Level Impacts (*Sharp Park Restoration*)

Impact HY-12: Implementation of the Sharp Park restoration under the SNRAMP would not result in flooding. (Less than Significant)

Flooding of Sharp Park Golf Course has been a recurring problem since the 1940s. The pump system in Horse Stable Pond was installed in 1941 to control the water level in Laguna Salada by pumping water from the pond into the Pacific Ocean. One objective of pumping is to reduce the drawdown of the pond from December through March in order to create suitable habitat for the California red-legged frog to reproduce (SFRPD 2006). Another objective is to prevent excessive flooding of the golf course so that red-legged frogs would not lay their eggs high above the normal shoreline of Laguna Salada during floods, which would make them vulnerable to predators, and to maintain water levels that sustain tadpoles through metamorphosis. Computer modeling of storm scenarios shows that the pump capacity is likely to be exceeded at a frequency of about once every two years (SFRPD 2009a).

The golf course floods whenever the pumps in Horse Stable Pond are not able to keep up with the inflow from the watershed. Because the watershed east of Highway 1 is much larger than the golf course, most of the runoff from the watershed drains via Sanchez Creek to Horse Stable Pond. As water levels rise in Horse Stable Pond, water flows through the connecting channel into Laguna Salada. The capacity of Laguna Salada would be slightly increased through dredging that is proposed for Sharp Park, but the increase in volume would be small compared to the amount of runoff generated by a moderate to large storm. Therefore, changes to Laguna Salada would not significantly alter the frequency of flooding, which is regulated primarily by the rate at which the pumps in Horse Stable pond are able to discharge water to the ocean and by the intensity of rainfall in the watershed that governs the rate at which water is delivered to Horse Stable Pond via Sanchez Creek. Proposed regrading and filling of topographic depressions on the land surrounding Laguna Salada could allow more complete drainage to Laguna Salada and prevent localized ponding in low-lying areas.

Overall, implementing the project would not substantially alter the drainage pattern of the site or area and would not substantially increase the rate or amount of surface runoff so as to cause additional flooding, resulting in ***less than significant*** flooding impacts from the Sharp Park restoration project.

Stormwater Runoff

Programmatic Impacts

Impact HY-13: Implementation of the programmatic projects under the SNRAMP would affect stormwater runoff quantity or quality. (Less than Significant with Mitigation)

Programmatic project activities would not create a net increase in impervious surfaces and would not contribute additional runoff that would exceed the capacity of existing or planned stormwater drainage systems. Over time, programmatic projects, such as vegetative plantings, stream bank stabilization, and erosion control, would reduce impervious surfaces and the amount of water flowing to storm drains or water bodies and would increase infiltration into the ground. Thus, the project would result in a net benefit by reducing stormwater quantity.

As described under Impact HY-1, programmatic projects may impact stormwater runoff during construction of individual projects or while implementing larger scale tree or vegetation removal. The specific erosion control measures to be implemented for each programmatic project would be in accordance with General Recommendations GR-12a (revegetate steep slopes) and GR-12b (phased invasive species removal to reduce erosion). In addition, applicable pollution avoidance measures, erosion and sediment controls, hazardous waste management, post-construction BMPs, and other water quality protection measures listed in Mitigation Measure M-HY-1 would be implemented to improve stormwater runoff quality, unless equally or more protective measures are identified during project-specific environmental review. As a result, the impacts of programmatic projects on stormwater quality would be ***less than significant***.

Project-Level Impacts (*Routine Maintenance*)

Impact HY-14: Implementation of the routine maintenance activities under the SNRAMP would not substantially affect stormwater runoff quantity or quality. (Less than Significant with Mitigation)

Routine maintenance would not change conditions in the Natural Areas and result in a net increase in impervious surfaces, and no changes to stormwater runoff quantity are expected.

As described above for HY-2, the potential for routine maintenance to degrade water quality is minimal because of the small scale and low intensity of ground disturbance. Weeds and trees would be removed, plants would be installed, and trails would be maintained predominately using hand

tools, without large mechanized equipment, and in small increments, thus avoiding soil erosion and other waste discharges and the potential to degrade water quality.

Also as described in HY-2, routine maintenance could contribute to contamination of surface runoff as a result of inadvertent spills or use of chemicals, such as pesticides. However, the impacts would be reduced to be ***less than significant*** by implementing Mitigation Measure M-HZ-14, which requires preparation of a general emergency response plan for routine management activities using gasoline- or diesel-powered equipment and by implementing the SFRPD's Integrated Pest Management Program.

Project-Level Impacts (*Sharp Park Restoration*)

Impact HY-15: Implementation of the Sharp Park restoration under the SNRAMP would affect stormwater runoff quantity or quality. (Less than Significant with Mitigation)

In Sharp Park, overland flow and runoff mostly drains into Sanchez Creek. None of the restoration project activities would increase impervious surfaces or would contribute runoff water that would exceed the capacity of an existing or planned stormwater drainage system. Therefore, the Sharp Park restoration would have ***less than significant*** impacts from creating or contributing runoff water.

As discussed in HY-3, construction proposed for the Laguna Salada wetland complex could result in erosion and potential sediment discharges and would require the use of heavy diesel-powered equipment near Laguna Salada. It is possible for such sediments to be transported in runoff and for equipment to leak oil and fluids that would be washed into the receiving water bodies, which would constitute a significant impact. However, implementing Mitigation Measures M-HY-1, Implementation of Stormwater Management Measures, M-HZ-13, Preparation of Emergency Response Plan for Accidental Releases of Hazardous Materials, and M-BI-12a and M-BI-12b, which require measures to protect wetland and riparian communities, would ensure that potential pollution impacts from construction and equipment would be ***less than significant***.

As described under HY-3, there is a potential for sediments dredged from Laguna Salada and placed on land to leach acids or other constituents that may be present in the dredged sediment to the adjacent surface water. Although not expected to be substantial, the potential for these effects would be evaluated by testing the sediments before dredging, as described in Section III.F.2 (page 99). If necessary, the sediment would be managed to reduce the chemical effects, and dredged sediment stockpiles would be protected from wind and water mobilization by using erosion control and

stockpile BMPs included in M-HY-1, Implementation of Stormwater Management Measures. This would result in a ***less than significant*** impact on the quality of stormwater runoff.

Cumulative Impacts

Impact HY-16: The proposed project, in combination with other planned and foreseeable future projects, would not have a cumulatively considerable significant impact related to hydrology and water quality. (Less than Significant)

The geographic context for the analysis of cumulative impacts on hydrology and water quality includes areas that are within a quarter mile of the Natural Areas and multiple projects in Pacifica that may impact Sharp Park. Cumulative projects could result in impacts to water quality through the discharge of sediment or other pollutants (for example, petroleum hydrocarbons, herbicides and pesticides, metals, and pharmaceuticals) to waterways or through increased erosion.

Overall, potential net cumulative long-term impacts on hydrology and water quality from the SNRAMP are expected to be beneficial by reducing erosion and therefore the potential for water quality impacts, as well as reducing flooding on the Sharp Park Golf Course.

A number of projects have been implemented, are planned, or are being conducted on a pilot scale that could impact groundwater elevations and quality in the North Westside Basin in San Francisco. These projects also could affect water elevations and water quality in Pine Lake and Lake Merced. Conjunctive use of groundwater in the North Westside Basin could alter water levels in the lakes, likely making lake levels more stable, which is consistent with the goals of the project. Continued or expanded use of stormwater to recharge Lake Merced may also help to stabilize the lake level. Recycled treated wastewater reharging the North Westside Basin aquifer could also help to maintain and stabilize lake levels, reducing reliance on natural recharge to replenish the aquifer. Lake elevations might be maintained at higher elevations than in previous years, resulting in the need to alter or adapt operation and maintenance of the lakes and shorelines to future conditions that differ from current conditions. The proposed project would not contribute to any groundwater effects associated with these projects.

The SFPUC is evaluating low impact design projects (2009a, 2009b, 2009c) to help reduce the frequency of spills of untreated sanitary wastewater from the combined sewer systems in the Islais Creek, Yosemite Creek, and Sunnydale Basins. Proposed SNRAMP projects also include infiltration or storage of stormwater in open space areas, such as McLaren Park, Glen Canyon Park, and other Natural Areas, to reduce the quantity of runoff that enters the combined sewer system. In

combination with low impact design projects throughout San Francisco, implementation of these SNRAMP projects would make a cumulatively beneficial contribution to reducing the potential for wastewater spills to the San Francisco Bay.

Management actions proposed for the Mount Sutro Open Space Preserve, which is next to, and to the east of, the Interior Greenbelt Natural Area, could result in cumulative hydrologic impacts in conjunction with the proposed project. Opponents of initial plans to remove invasive trees and invasive understory vegetation to increase recreation access to the Mount Sutro Open Space Preserve have expressed concern that removing trees would reduce capture and precipitation of moisture from fog, resulting in drier conditions on the forest floor. The prevailing wind direction is westerly, and trees on the Mount Sutro Open Space Preserve may also block wind and protect trees in the Interior Greenbelt. Current plans for the Mount Sutro Open Space Preserve call for demonstration projects in limited areas to evaluate the effects of tree and vegetation removal. Tree removal from the SNRAMP program would be phased and would primarily involve thinning forested areas. Removed trees would be replaced with native trees and vegetation to preserve the function of the forested areas. Based on the relatively small percentage of trees proposed to be removed in the demonstration project and the smaller number of trees to be removed from the Interior Greenbelt Natural Area, the potential contribution of hydrologic impacts from the SNRAMP in combination with these other projects is not considered to be cumulatively considerable (***less than significant***).

Proposed development projects in Pacifica include residential development of approximately 261 units on an estimated 150 acres and commercial development of approximately 85,000 square feet of building space. All of these projects could increase surface runoff and erosion and increase sedimentation in the Sanchez Creek watershed, which would increase sediment in the wetland complex. The SFPUC Recycled Water Project would also discharge to Sanchez Creek. Because the project would implement erosion and sediment control measures in Sharp Park, including installing sedimentation basins at the mouth of Sanchez Creek and on the north side of the wetland complex, the project would help to reduce cumulative impacts on water quality from these other projects. Therefore, the project is expected to have a cumulatively beneficial impact on water quality and hydrology in the Sanchez Creek watershed.

During the 20-year project planning period for the project, the sea level is expected to rise less than one foot. Although sea level rise may continue over time, a sea level rise at India Basin Shoreline Park of less than one foot during the project's 20-year planning period is unlikely to result in significant flooding or salt water intrusion impacts. Similarly, a small rise in sea level is not expected

to impact Balboa, which lies inland of the Ocean Beach seawall. An increase in sea level may lead to a rise in regional groundwater levels in the coastal aquifer. The elevation of Lake Merced would need to rise proportionally to maintain the existing hydraulic balance and barrier to salt water intrusion into the aquifer. There is adequate freeboard above the current lake elevation of Lake Merced to accommodate the anticipated rise in sea level without inducing flooding or increasing potential for salt water intrusion. At Sharp Park, sea level rise would increase the base level elevations of Laguna Salada and Horse Stable Pond. Fresh water must continue to discharge to the ocean underground, and in order for this to happen, the elevation of the water table would rise in proportion to the rise in sea level. The freshwater/saltwater interface, which is a zone of mixing, would move inland somewhat. Salinity in Laguna Salada may increase, especially during dry periods when outflow of fresh groundwater from the watershed above Sharp Park is lowest. The magnitude of sea level rise during the project planning period would probably be too small to result in significant erosion of the sea wall, but the effects are difficult to predict. Higher sea levels will result in faster erosion of the rocky headlands and would probably change the beach profile in front of the sea wall, which in turn may lead to erosion of the foot of the seawall, especially during the winter, when wave runup is greatest and beach sand is normally depleted.

Over a longer term, sea level rise is expected to continue, and could rise to levels that would cause significant impacts. Because these impacts would be experienced on a regional scale, the efforts to mitigate these impacts would be addressed through future projects on the regional scale.

Among the cumulative effects on water resources of sea level rise are increased frequency of flooding of low-lying areas, increased salt water intrusion in coastal wetlands, increased coastal erosion, and increased potential for contamination of receiving waters because of inundation of areas containing hazardous substances. One approach to mitigating these and similar long-term cumulative effects is to move vulnerable development and activities out of low-lying coastal areas and to encourage coastal and shoreline uses, such as open space, that can accommodate sea level rise. In general, Natural Areas are expected to have low impacts on water resources and therefore are not expected to contribute to the cumulative impacts on water quality that may result from sea level rise, resulting in a less than cumulatively considerable (***less than significant***) contribution to sea level rise impacts.

V.I HAZARDS AND HAZARDOUS MATERIALS

The topic of hazards and hazardous materials was discussed in the Initial Study. However, due to comments received during the NOP scoping period, this section has been included in the EIR to address the following additional topics that required clarification or additional analysis:

- Concerns regarding mosquito-borne disease vectors;
- Herbicide application;
- Hazardous soils contaminants; and
- Fire hazards.

Comments about hazards and hazardous materials received during the NOP scoping process concerned the following:

- Effects on the California red-legged frog and on residential neighbors from Sharp Park;
- Aerial spraying for mosquito control;
- Impacts of herbicide application on people, animals, and insects;
- Effects of hazardous materials used to control mosquitoes and invasive species;
- Effects of creating habitat that encourages mosquito breeding, increasing the public health risk from West Nile virus;
- Effects of leaving tree stumps on the ground that would create an ideal breeding medium for treehole mosquitoes, as well as other types of mosquitoes;
- Impacts of prohibiting pesticide use on mosquito populations, especially the mosquito carrying the West Nile virus;
- The potential for tree removal to dry out the Mount Sutro Forest and alter the wind patterns, increasing the fire hazard for homes near the forest;
- The observation that restored landscape of native grassland and dune scrub is not less flammable than the nonnative species that would be removed;
- Public safety issues at every park, especially at Sharp Park;
- Possible effects of toxic lead in the soil east of Highway 1 leaching into the groundwater and the stream in the canyon and flowing to Laguna Salada wetlands, contaminating restoration sites; and

- Removal of nonnative plants and trees enhancing habitat for small mammals that carry ticks and cause the spread of Lyme disease.

V.I.1 Regulatory Setting

Federal

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act provides federal control of pesticide distribution, sale, and use. The EPA was given authority under the act to study the consequences of pesticide usage and to require users (farmers, utility companies, and others) to register when purchasing pesticides. Later amendments to the law required users to take exams for certification as applicators of pesticides. All pesticides used in the United States must be registered (licensed) by the EPA. Registration assures that pesticides will be properly labeled and that if used in accordance with specifications, they will not cause unreasonable harm to the environment.

Clean Water Act

The Clean Water Act is the cornerstone of surface water quality protection in the United States. The act does not deal directly with groundwater or with water quantity issues. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

State

At the state level, the Department of Toxic Substances Control administers laws and regulations related to hazardous waste and hazardous substances, in accordance with Division 20, Chapters 6.5 and 6.8, of the California Health and Safety Code and CCR, Title 22. The SFBRWQCB enforces laws and regulations governing releases of hazardous substances and petroleum, in accordance with Division 20, Chapters 6.7, 6.75, and 6.8, of the California Health and Safety Code (Sections 25100, 25200, and 25300 et seq.), and the Porter Cologne Water Quality Control Act (Division 7, Section 13100 et seq., of the California Water Code) and CCR, Title 23. In particular, the SFRWQCB focuses on all petroleum releases and those hazardous substance releases that may impact groundwater or surface water.

In addition, the California Department of Public Health is responsible for ensuring that facilities that use, store, or dispose of radiological materials are properly investigated, decontaminated, and decommissioned or licensed, or that they are properly exempted from such requirements, in accordance with state and federal laws and regulations. These include the state Radiation Control Law (California Health and Safety Code, Section 114960 et seq., and CCR Title 17, Division 1, Chapter 5).

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

In January 1996, the California Environmental Protection Agency adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program. The program has six elements: Hazardous Materials Release Response Plans and Inventories; California Accidental Release Prevention Program; Underground Storage Tank Program; Aboveground Petroleum Storage Act Program; Hazardous Waste Generator and Onsite Hazardous Waste Treatment (tiered permitting) Programs; and California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements. The program is implemented at the local level. The San Francisco Department of Public Health is the Certified Unified Program Agency responsible for the implementation of this program through its local oversight program.

California Coastal Act

The California Coastal Act includes specific policies that address issues such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works. Those policies applicable to hazards and hazardous materials are discussed in Section IV.A.12.

V.I.2 Environmental Setting

Conventional control methods attempt to address the symptoms of a pest problem. The Natural Areas Program employs IPM, a multistep ecologically based approach that enables staff to make decisions regarding where, when, and how resources should be best allocated to control pests. IPM is a proactive strategy that focuses on identifying and reducing, or eliminating, the root cause of a pest problem and implementing effective long-term management solutions by using a range of expertise, a combination of treatment methods, and a comprehensive monitoring and evaluation process. The IPM program complies with the San Francisco IPM Ordinance which promotes nonchemical use strategies and the elimination of all but exempted pesticides. The ordinance requires that those who apply pesticides to be trained and to follow the manufacturer's label. San

Francisco has posting requirements for pesticide use, which include notifying the local community about the pesticides planned for the area four days before the application.

The San Francisco Department of the Environment oversees and implements IPM practices citywide. The SFPRD staff has mandatory annual pesticide use training that includes personal protective equipment, labels, spill response, and safe transport and use of pesticides.

Vegetation Control

Current management methods used in the Natural Areas Program include the following:

- Physical control methods, which range from hand pulling weeds to the use of hand and mechanical tools to uproot, girdle, or cut plants;
- Biological control, which involves revegetating cleared areas and introducing native plants to compete/outcompete with weedy species;
- Chemical control, which involves the use of herbicides to suppress wildland weeds, in compliance with the San Francisco Pest Management Ordinance;
- Treatment of tree stumps with San Francisco-approved pesticides (such as Roundup and Garlon); and
- Public education and outreach.

Mosquito and Tick Control

The SFRPD coordinates with the San Francisco Department of the Environment to control mosquitoes and insects in the Natural Areas within San Francisco. The San Francisco Department of the Environment implements the San Francisco IPM program to control mosquitoes and to prevent insect-borne diseases, including the West Nile virus. The city's program emphasizes the elimination of breeding habitat and the use of least-toxic larvicides to target mosquitoes at their most vulnerable stage, before they emerge as adults (San Francisco Department of the Environment 2005). As indicated above, San Francisco has posting requirements for pesticide use. These requirements include notifying the local community about the pesticides planned to be used in the area four days before the application.

SMCMVCD provides mosquito and insect control at Sharp Park. The SMCMVCD has programs for the control of mosquitoes and ticks, including mosquito-borne diseases such as the West Nile virus. The SMCMVCD's integrated pest management for mosquito control includes a preventive approach, underground source control, and mosquito control within pools, ponds, fountains,

marshes, and creeks. The SMCMVCD's integrated management includes controlling mosquitoes in their immature stages before emerging as biting adults (SMCMVCD 2009). Further, the SMCMVCD programs include a Lyme disease program, a tick prevention and removal program, and a tick-borne diseases program (SMCMVCD 2009). The SMCMVCD uses mainly the following mosquito larva treatments:

- Golden Bear 1111—A refined petroleum distillate that breaks down in a few days. It is applied to the surface of standing water and causes mosquito larvae to drown.
- Methoprene—A juvenile growth hormone that targets specific mosquito larvae. When methoprene is applied to the water, it keeps the larvae in a juvenile stage.
- *Bacillus thuringiensis israelis*—A bacteria that is toxic to mosquito larvae. The bacteria causes the stomach lining of mosquito larvae to rupture, ultimately killing the larvae.
- Mosquito fish (*Gambusia affinis*)—These fish eat mosquito larvae.

Fire Hazards

Most of the Natural Areas are classified as Urban Unzoned fire hazard areas by the California Department of Forestry and Fire Protection (California Department of Forestry and Fire Protection 2009). Glen Canyon Park, Mount Davidson, Bayview Park, and Lake Merced are in areas with a fire hazard severity rating of moderate (California Department of Forestry and Fire Protection 2009). Sharp Park is within an area classified as high fire hazard and is next to areas classified as "very high fire hazard severe zone" by the California Department of Forestry and Fire Protection (City of Pacifica 1980a; California Department of Forestry and Fire Protection 2009).

Lead in Soils

The SFRPD used to maintain a rifle range in Sharp Park. This facility has been closed for over 13 years. Located near the archery club, this facility is outside of the Natural Areas at Sharp Park. A soil and groundwater investigation identified the presence of lead, polycyclic aromatic hydrocarbons, antimony, and arsenic (DTSC 2009). The Department of Toxic Substances Control issued a Notice of Exemption on August 5, 2009, for the removal action work plan for consolidation of lead-contaminated soil at the former Sharp Park Rifle Range. Implementation of the work plan involves the excavation of approximately 12,000 to 16,000 cubic yards of contaminated soil, which would be placed on-site and covered with imported clean soil (DTSC 2009). These cleanup and remediation activities have been completed.

V.I.3 Impacts

Significance Thresholds

A proposed project would have a significant hazards and hazardous materials impact if it were to result in any of the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; or
- Expose people or structures to a significant risk of loss, injury, or death involving fires.

Impacts Addressed in the Initial Study

In the Initial Study (Appendix A), impacts related to the following criteria were identified as not significant:

- Emit hazardous emissions or be handled within a quarter mile of an existing or proposed school;
- Be located on a site that is included on a list of hazardous materials sites compiled in accordance with Government Code, Section 65962.5, and, as a result, would create a significant hazard to the public or the environment;
- Be a safety hazard for people residing or working in the project area within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport;
- Be a safety hazard for people residing or working in the vicinity of a private airstrip that is in the project area; and
- Impair implementation of or interfere with an adopted emergency response plan or emergency evacuation plan. As a result, these CEQA significance criteria are not evaluated further in this EIR.

SNRAMP impacts concerning windthrow hazards and their effects on public safety are addressed below and in Section V.E, Wind and Shadow.

Public Health and Safety Hazards

Programmatic Impacts

Impact HZ-1: Implementation of programmatic projects under the SNRAMP would not result in significant impacts on public safety from windthrow effects. (Less than Significant)

Windthrow effects associated with tree removal projects that exceed half an acre at any one time could result in falling trees, creating a public safety hazard for visitors and nearby residents. Tree removal could affect wind patterns, which could increase windthrow hazards. However, as discussed in Section V.E, Wind, tree removal would not substantially change wind patterns, so windthrow hazards would not cause a significant risk to humans and nearby residents. In general, tree removal would be focused on dead or dying trees, trees with disease or insect infestations, storm-damaged or hazardous trees, and trees that are suppressed because of overcrowding. Removing trees may benefit public safety because damaged and dying trees may be at greater risk of falling and injuring visitors or residents. Alterations in wind patterns and impacts of ground-level wind hazards on pedestrians are analyzed in Section V.E, Wind. Tree removal under the programmatic projects would result in ***less than significant*** windthrow effects on public safety.

Impact HZ-2: Implementation of the programmatic projects under the SNRAMP would not increase the mosquito and tick population. (Less than Significant)

Programmatic projects would not change the depth or shape of water bodies. As noted in Section III.E.5, to control the spread of mosquito-borne diseases, the SFRPD would implement the following BMPs:

- Educate staff about the most effective ways to avoid being bitten by mosquitoes;
- Remove small water features that contain standing water or treat those features with *Bacillus thuringiensis israelis*, a biological control agent for mosquito larvae, if the features were to remain and Public Health Services were to identify a potential health hazard; and
- Encourage staff to drain any standing water in stored equipment or temporary depressions.

With the implementation of these BMPs, impacts of programmatic projects from mosquitoes and ticks would be ***less than significant***.

Project-Level Impacts (Routine Maintenance)

Impact HZ-3: Implementation of the routine maintenance activities under the SNRAMP would not result in significant impacts on public safety from windthrow effects. (Less than Significant)

Windthrow associated with routine maintenance tree removal would result in public safety hazards on visitors or nearby residents similar to those of the programmatic projects. Due to the reduced level of tree removal, the magnitude of the impacts would be smaller. During routine maintenance, only invasive trees and overhanging tree limbs would be removed and only in places where trees are expanding into or threatening native habitat or are a safety concern. Removing trees and limbs may benefit public safety because damaged and dying trees may be at greater risk of falling and injuring visitors or residents. Typically, individuals or small groups of trees would be removed; therefore, windthrow hazards from project-level activities would cause a ***less than significant*** risk to people and nearby residents.

Impact HZ-4: Implementation of the routine maintenance activities under the SNRAMP would not increase the mosquito and tick population. (No Impact)

Routine maintenance would not change the depth or shape of water bodies, so it would not create areas of standing water that could lead to an increase the mosquito or tick population. As such, routine maintenance would have ***no impact*** on public health from mosquitoes and ticks.

Project-Level Impacts (Sharp Park Restoration)

Impact HZ-5: Implementation of the Sharp Park restoration activities under the SNRAMP would not impact public safety from windthrow effects. (No Impact)

The Sharp Park restoration would not result in windthrow that would cause public safety hazards. A few individual trees may be removed as part of the wetland and upland habitat restoration. Further, the proposed restoration would be in Laguna Salada and away from visitors and residents. Therefore, Sharp Park restoration would have ***no impact*** on public safety with respect to windthrow. The impacts of tree removal in other parts of Sharp Park are addressed under Impact HZ-1 above.

Impact HZ-6: Implementation of the Sharp Park restoration activities under the SNRAMP would not result in a significant increase in the mosquito and tick population. (Less than Significant)

Changes to the depth, shape, and vegetation of Laguna Salada as part of the proposed Sharp Park restoration could increase the mosquito population in that area. The SMCMVCD would continue to

control mosquitoes at Laguna Salada; as discussed in Section III.F.23, the SFRPD would coordinate with the SMCMVCD on the proposed changes to Laguna Salada to minimize the potential for developing mosquito breeding habitat. Over the past several years, sediments have accumulated in Laguna Salada and enhanced the growth of cattails; cattail and tule stands provide ideal habitat for tule mosquitoes. Management activities include thinning stands of tules, which would reduce the habitat of tule mosquitoes. Also, the SMCMVCD would continue to implement the IPM program to control Lyme disease and tick-borne diseases. Further, the SFRPD would implement the BMPs stated in Section III.E.5 to control the spread of mosquito-borne disease. Therefore, Sharp Park restoration would result in ***less than significant*** impacts from mosquitoes and ticks.

Hazardous Material Use

Programmatic Impacts

Impact HZ-7: Implementation of the programmatic projects under the SNRAMP would not create a significant hazard through the use of pesticides for vegetation control. (Less than Significant)

Using herbicides to control invasive species and enhance the growth of native habitats during programmatic projects could have adverse impacts on wildlife, groundwater, and the local population. Impacts from the use of herbicides on wildlife and surface water are discussed in Section V.G, Biological Resources, and Section V.H, Hydrology and Water Quality. The type of control method used for plant pests in the Natural Areas is under the discretion of the SFRPD Natural Areas Program. The program's policy is to comply with the San Francisco IPM Ordinance, which promotes nonchemical control strategies and the elimination of all but exempted pesticides.[1] The Natural Areas Program formalized restoration guidelines in Native Habitat Restoration: A Guide for Citizen Involvement in San Francisco Natural Areas (SFRPD 2000). This document covers preferred removal techniques for 15 invasive species and is intended primarily for use by community groups. Ultimately, human resources, site conditions, and level of infestation would determine the type of control method used.

Factors that make manual and mechanical methods impractical and chemical treatments preferable are as follows:

[1] Pesticide is a general term to describe any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Pests can be insects, mice and other animals, unwanted plants (weeds), fungi, or microorganisms, like bacteria and viruses. The term pesticide includes herbicides, insecticides, fungicides, and various other substances used to control pests (EPA 2011a).

- Direct threats to human health and safety (e.g., steep, inaccessible unstable slopes and significant poison oak infestations);
- Large infestations requiring ongoing repeated strenuous physical labor, such as picking and lifting, that may injure staff, contract field crews, or volunteers; and
- Areas where access, human trampling, or soil disturbance may directly or indirectly damage native plant communities or cause soil erosion.

Despite the emphasis on hand, mechanical, and alternative methods of removal, herbicides are used to control invasive weeds in Natural Areas, especially when other methods are not feasible. As noted above, in compliance with the San Francisco IPM Ordinance, the Natural Areas Program staff undergo annual training on the use of herbicides and on BMPs to avoid impacts on the local population, wildlife, and other resources, such as surface water. Herbicide application would comply with the principles of IPM, which uses multiple treatment methods to control undesirable weeds and other pests. Of the over 40 approved pesticides used by the SFRPD, the Natural Areas Program would likely continue to use pesticides similar to those currently used,[2] classified by the San Francisco Department of the Environment under the medium hazard and high hazard categories. Further, as part of the BMPs under the SNRAMP, and in order to avoid adverse impacts on wildlife and water quality, the staff would apply only aquatic-specific herbicides to areas next to water bodies; aquatic-specific herbicides are those determined safe for aquatic life. As indicated above, pesticides would be implemented only when other means, such as physical or biological control, would not be sufficient. Further, in compliance with the San Francisco IPM Ordinance, the San Francisco Department of Environment would oversee and implement the IPM plan. Those who apply pesticides would be trained and required to follow the manufacturer's label. Also, in compliance with the IPM Ordinance, signs alerting the public of a scheduled spray would be posted in a prominent location three days before the application and would remain up for four days after the application. All use of pesticides would be recorded by the SFRPD and forwarded to the San Francisco Department of the Environment. Further, the Natural Areas Program would use pesticides that are the least toxic option that effectively controls the weed. Therefore, impacts from applying herbicides as part of the IPM for programmatic projects under the SNRAMP would be ***less than significant***.

[2] The primary herbicides currently used by the SFRPD in the Natural Areas are Roundup, Aquamaster, and Rodeo (active ingredient: glyphosate), Habitat and Polaris (active ingredient: imazapyr), Garlon (active ingredient: triclopyr), and Milestone (active ingredient: aminopyralid)..

Impact HZ-8: Implementation of the programmatic projects under the SNRAMP would not disturb lead-contaminated soil. (No Impact)

Lead-contaminated soil was identified in the archery club near the Sharp Park Natural Area. However, soils contaminated with lead are outside the Natural Area, and the proposed programmatic projects would not result in any activities that would disturb the lead-contaminated soil or increase the potential of lead migration into the groundwater or adjacent streams. Therefore, programmatic projects would have ***no impact*** with respect to disturbing lead-contaminated soil.

Project-Level Impacts (Routine Maintenance)

Impact HZ-9: Implementation of the routine maintenance activities under the SNRAMP would not create a significant hazard through the use of pesticides for vegetation control. (Less than Significant)

Use of herbicides during routine maintenance would have impacts similar to those discussed under programmatic projects. However, impacts from routine maintenance would be of a smaller magnitude because herbicides would be used in smaller quantities and on smaller areas. Therefore, impacts from the use of herbicides during routine maintenance would be ***less than significant***.

Impact HZ-10: Implementation of the routine maintenance activities under the SNRAMP would not disturb lead-contaminated soil. (No Impact)

Routine maintenance would have impacts from soils contaminated with lead or lead migration into groundwater similar to those described under the programmatic projects. Therefore, routine maintenance would have ***no impact*** with respect to disturbing lead-contaminated soil.

Project-Level Impacts (Sharp Park Restoration)

Impact HZ-11: Implementation of the Sharp Park restoration activities under the SNRAMP would not create a significant hazard through the use of pesticides for vegetation control. (Less than Significant)

The Sharp Park restoration may require the use of herbicides for vegetation removal and control. The impacts would be similar to those described under Impact HZ-7. The SFRPD would be more restrictive in its selection of herbicides to be employed during Sharp Park restoration activities to ensure that the health and recovery of the California red-legged frog and San Francisco garter snake are not compromised. As a result, the impacts from applying herbicides as part of the Sharp Park restoration project would be ***less than significant***.

Impact HZ-12: Implementation of the Sharp Park restoration under the SNRAMP would not disturb lead-contaminated soil. (No Impact)

Soils contaminated with lead are outside the Sharp Park restoration area. The proposed project would not result in any activities that would disturb the lead-contaminated soil near the archery club or increase the potential of lead migration into the groundwater or adjacent streams. Therefore, ***no impacts*** are expected with respect to disturbing lead-contaminated soil from Sharp Park restoration.

Hazardous Material Accidents

Programmatic Impacts

Impact HZ-13: Implementation of the programmatic projects under the SNRAMP would not create significant hazard to the public or the environment through accident conditions involving the release of hazardous materials into the environment. (Less than Significant with Mitigation)

Programmatic projects could result in accidental release of hazardous materials into the environment. Programmatic projects would require the use of motor vehicles and motorized equipment for management activities, such as tree removal, weeding, erosion control, and trail construction. Hazardous materials[3] likely to be used during the programmatic projects include fuel, oil, solvents, and lubricants for equipment and equipment maintenance. Hazardous materials would be used in marginal quantities and would be stored off-site. Any activities involving hazardous materials and hazardous waste[4] would be conducted in accordance with strict health and safety standards mandated by OSHA. However, accidental release of hazardous materials to the environment and nearby water bodies is considered a potentially significant impact. With implementation of M-HZ-13, impacts involving the transportation, disposal, or release of hazardous materials would be ***less than significant***.

[3] Hazardous materials—Defined in Section 25501(h) of the California Health and Safety Code, these are materials that, because of their quantity, concentration, or physical or chemical characteristics, pose a substantial present or potential hazard to human health and safety or to the environment if released to the workplace or environment.

[4] Hazardous waste—Any material that is relinquished, recycled, or inherently waste-like and falls under Title 22 of the California Code of Regulations. Division 4.5, Chapter 11, contains regulations for classifying hazardous wastes. A waste is considered hazardous if it causes human health effects, has the ability to burn, causes severe burns or damages materials, or causes explosions or generates toxic gases, in accordance with the criteria established in Article 3. Article 4 lists specific hazardous wastes, and Article 5 identifies specific waste categories, including hazardous wastes, as defined by the Resource Conservation and Recovery Act, non-Resource Conservation and Recovery Act hazardous wastes, extremely hazardous wastes, and special wastes.

M-HZ-13: Emergency Response Plan for Accidental Releases of Hazardous Materials

To reduce impacts from the accidental release of hazardous materials, the SFRPD shall prepare an emergency response plan for the Sharp Park restoration and each programmatic project that uses gasoline- or diesel-powered equipment before the project began. The plan shall include emergency procedures for hazardous materials releases. These procedures shall include requirements for the necessary personal protective equipment, spill containment procedures, and worker training to respond to accidental spills and releases. The plan shall also require equipment to be refueled at least 100 feet from any streams or water bodies. During the implementation of programmatic projects, all hazardous materials, including any hazardous wastes, shall be used, stored, transported, and disposed of in accordance with local, state, and federal hazardous materials regulations. Developing and implementing the plan will ensure the proper storage and use of hazardous materials, proper response to accidental releases, and worker training, all of which will minimize contamination from hazardous materials.

Project-Level Impacts (Routine Maintenance)

Impact HZ-14: Implementation of the routine maintenance activities under the SNRAMP would not create significant hazard to the public or the environment through accident conditions involving the release of hazardous materials into the environment. (Less than Significant with Mitigation)

Potential impacts related to the accidental release of hazardous materials from routine maintenance are similar to those described for programmatic projects. However, the scale and magnitude of these impacts would be smaller for routine maintenance. Smaller quantities of hazardous materials would be used, and the duration of hazardous materials use is expected to be shorter and more intermittent. However, accidental release of these substances to the environment and nearby water bodies is considered a potentially significant impact. M-HZ-14 requires preparation of a general emergency response plan for accidental releases of hazardous materials during routine maintenance and that equipment be refueled at least 100 feet from a water body. With the implementation of M-HZ-14, impacts involving the accidental release of hazardous materials during routine maintenance would be ***less than significant***.

M-HZ-14: General Emergency Response Plan for Routine Management Activities Using Gasoline- or Diesel-Powered Equipment

To reduce impacts from accidental releases of hazardous materials, the SFRPD shall prepare a general emergency response plan to address routine management activities that use gasoline- or

diesel-powered equipment. The plan shall include emergency procedures for hazardous materials releases with requirements for the necessary personal protective equipment, spill containment procedures, and worker training to respond to accidental spills and releases. The plan shall also require equipment to be refueled at least 100 feet from any streams or water bodies. During routine maintenance, all hazardous materials, including any hazardous wastes, shall be used, stored, transported, and disposed of in accordance with local, state, and federal hazardous materials regulations. Developing and implementing the plan will ensure the proper storage and use of hazardous materials, proper response to accidental releases, and worker training, all of which will minimize contamination from hazardous materials.

Project-Level Impacts (Sharp Park Restoration)

Impact HZ-15: Implementation of the Sharp Park restoration under the SNRAMP would not create significant hazard to the public or the environment through accident conditions involving the release of hazardous materials into the environment. (Less than Significant with Mitigation)

Potential impacts related to the accidental release of hazardous materials from the Sharp Park restoration are similar to those described for programmatic projects. Accidental release of these substances to the environment and nearby water bodies is considered a potentially significant impact. However, as required under Impact HZ-13 to reduce impacts from accidental hazardous materials releases from programmatic projects, M-HZ-13 involves preparation of an emergency response plan for accidental releases of hazardous materials and that equipment be refueled at least 100 feet from a water body. With the implementation of M-HZ-13, impacts involving the accidental release of hazardous materials during Sharp Park restoration would be ***less than significant***.

Fire Hazards

Programmatic Impacts

Impact HZ-16: Implementation of programmatic projects under the SNRAMP would not result in substantial fire hazards. (Less than Significant)

Programmatic projects include invasive weed and tree removals that exceed half an acre at any one time. Removed trees would include those that are diseased and dying, thereby reducing easily combustible fuel loads. Also, implementing recommendation GR-13a would reduce the presence of vegetation with high fire hazard ratings, such as dense and aging French broom and eucalyptus. Tree and invasive weed removal would reduce the amount of available fuel for fires. More important, timber thinning would increase the space between trees, reducing the ability of a fire to

rapidly spread. Additionally, the management activities would result in healthier trees that are less susceptible to stress from drought; healthy trees are less likely to catch fire than dying trees with dead limbs and needles. However, chain saws and other motorized equipment would increase the risk of fire. Natural Areas Program gardeners carry fire extinguishers in their trucks and would use appropriate fire prevention and suppression measures for more extensive tree and shrub removal. The SFRPD would continue to hold regular meetings with the San Francisco Fire Department and would coordinate management activities, such as tree removal, with that department. As Sharp Park and a few Natural Areas within San Francisco are classified as moderate to high fire hazard zones, tree and invasive weed removal as part of the programmatic projects would reduce the potential of fire hazards within these areas. Further, tree removal would be carefully coordinated, fire suppression equipment would be located on-site, and no prescribed burning is planned within the Natural Areas. Because of this, programmatic projects would have ***less than significant*** fire hazard impacts.

Project-Level Impacts (Routine Maintenance)

Impact HZ-17: Implementation of the routine maintenance activities under the SNRAMP would not result in substantial fire hazards. (Less than Significant)

Routine maintenance includes invasive weed and tree removal in areas of less than half an acre. Similar to the impacts described under the programmatic projects, routine maintenance would reduce the presence of vegetation with high fire hazard ratings, such as dense and aging French broom and eucalyptus. Therefore, tree and invasive weed removal would reduce the amount of available fuel for fires. As such, routine maintenance would result in ***less than significant*** fire hazard impacts.

Project-Level Impacts (Sharp Park Restoration)

Impact HZ-18: Implementation of the Sharp Park restoration activities under the SNRAMP would not result in substantial fire hazard impacts. (Less than Significant)

The Sharp Park restoration would include removing certain invasive vegetation to enhance habitat and establish native vegetation. Motorized equipment used during restoration would increase the risk of fire. Workers involved in the restoration activities would carry fire extinguishers in their trucks and would use appropriate fire prevention and suppression measures during restoration. Therefore, the Sharp Park restoration would have ***less than significant*** impacts from fire hazards.

Cumulative Impacts

Impact HZ-19: The proposed project, in combination with other planned and foreseeable future projects, would not result in a cumulatively considerable significant impact related to hazards and hazardous materials. (Less than Significant)

Risks from hazardous materials impacts, including the use of pesticides, are generally localized and site specific, with the exception of those resulting from the transportation of hazardous materials. These risks are generally site specific, so the geographic context for the analysis of the use of hazardous materials and fire hazards is limited to the area surrounding the project site, while cumulative impacts from transporting hazardous materials are analyzed for projects along the transportation routes. As a result, relevant cumulative projects typically involve demolition and construction activities, such as the Hunters Point Shipyard/Candlestick Point Redevelopment project.

Cumulative development and building projects could generate hazardous wastes, such as asbestos from friable building materials, lead-based paint on building surfaces, and polychlorinated biphenyls in lighting fixtures. In addition, previously unknown contamination, possibly the result of improper disposal or housekeeping, may be discovered as structures are demolished. The cumulative effects of demolishing and constructing buildings could expose construction workers to health or safety risks through exposure to hazardous materials, although the individual workers potentially affected would vary from project to project. Hazards and hazardous materials associated with the cumulative projects are anticipated to be discrete and confined to the boundaries of the cumulative project sites. The proposed project would not contribute to these cumulative impacts because the project does not include demolition and new construction.

Although existing, proposed, and reasonably foreseeable development could have unique hazardous materials considerations, the developers would be required to comply with the range of federal, state, and local statutes and regulations applicable to the use, transport, and disposal of hazardous materials. Future project proponents also would be required to comply with the future regulatory programs of applicable enforcement agencies. Compliance with these federal, state, and local laws and regulations pertaining to hazardous materials management would be sufficient to minimize health and safety risks to workers and users of the Natural Areas.

Assuming cumulative projects are conducted in compliance with all applicable statutes and regulations, the overall hazards and hazardous materials cumulative impact would be less than significant. Although it would involve the use and transport of hazardous materials, such as fuel for

maintenance equipment and pesticides, the proposed project would comply with all applicable statutes and regulations. Further, implementing the project mitigation described above would reduce the project's impact contribution from the transportation, disposal, or release of hazardous materials to ***less than significant***.

The proposed project, in combination with other cumulative projects, would contribute to reducing the potential impacts of fire hazards. Other projects, such as the seismic upgrade of the Auxiliary Water Supply System and the Mount Sutro Open Space Reserve Management Plan, would similarly contribute to reducing fire hazard impacts. The seismic upgrade of the Auxiliary Water Supply System would improve the emergency response during fires within San Francisco. The Mount Sutro project would reduce the potential for fire hazards in Mount Sutro by thinning and removing hazardous trees in that area. Therefore, the risk of fire hazards resulting from the proposed project in combination with other cumulative projects would be ***less than significant***.

V.J AGRICULTURE AND FOREST RESOURCES

Agricultural resources have been adequately analyzed in the Initial Study prepared for the proposed project in April 2009 and are not analyzed in this EIR. Amendments to the CEQA guidelines that became effective on March 18, 2010, included several checklist items to address greenhouse gases and their impacts on the environment. In particular, the agriculture and forest resources section was revised to include analysis of the direct and indirect loss of forest land and compliance with state laws pertaining to forestry. This section analyzes the impacts of the proposed project on the forest resources.

No comments related to agriculture and forest resources were received during the NOP scoping process.

V.J.1 Regulatory Setting

Federal

No federal regulations related to agricultural and forest resources are applicable to the proposed project.

State

The California Public Resources Code 12220 defines forest as land that can support ten percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. California Public Resource Code 4526 defines timberland as land other than that owned by the federal government and land designated by the California Board of Forestry and Fire Protection as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species are determined by the board on a district[1] basis, after consultation with the district committees and others (California Public Resource 25 Code 4526).

The California Coastal Act includes specific policies that address lands suitable for agricultural and timber purposes adjacent or near the coast and provides direction on potential retention or conversion of these lands. Although Sharp Park borders the Pacific Ocean, it does not contain any primary or suitable agricultural lands, and no trees are used as timber; this is described in greater

[1] "District" means a forest district.

detail below in Section V.J.2. Therefore, the proposed restoration effort at Sharp Park is in compliance with the California Coastal Act.

Local

San Francisco

The *San Francisco General Plan* includes Policy 2.9, which is "Maintain and expand the urban forest," as follows:

> Many of the city-maintained trees have reached maturity and need to be replaced. This is particularly true in the City's older parks, where many trees are dead or visibly decaying. A major reforestation effort should be undertaken by the City in many of the larger parks, on other City properties, and some major public streets. The magnitude of this effort is beyond the current scope of existing tree maintenance programs and budgets. A farsighted program should be developed to adequately maintain San Francisco's urban forest and to ensure a legacy of green in the century ahead.

The policy states that a reforestation program should include the following major program elements:

- *Systematic Inventory.* The database elements should include geographic location, tree species, size, age, and disease classes, and other information as may be necessary.
- *Planting, Tree Replanting, and Maintenance.* The species or variety planted in any area should be chosen for design objectives identified in the Urban Design Element of the General Plan, as well as the tree's ability to thrive in the area's microclimate and soil conditions. Guidelines should be developed, as appropriate, for required tree removal. Removal of large areas of naturalistic tree plantings will require treatment significantly different from that used to remove overmature or diseased street trees. When large or overmature trees have been removed, reforestation should proceed as soon as practical. However, a certain number of dead trees should be left standing for their habitat value, if they are not a safety hazard.
- *Wood Waste Management and Utilization.* Tree removal and reforestation would generate a significant amount of wood and waste products. A program should be developed to use the wood and effectively manage the waste generated. Sale of merchantable timber, cord lumber, wood chips, and bark chips could help to offset the cost of the reforestation program and would reduce the solid waste problem that tree removal and maintenance generates.

City of Pacifica

As a general guide, the *City of Pacifica General Plan* states that the "long-term productivity of soils and timberlands shall be protected and conversions of coastal commercial timberlands in units of commercial size to other uses of their division into units of noncommercial size shall be limited to providing for necessary timber processing and related facilities."

V.J.2 Environmental Setting

The 32 Natural Areas are scattered mostly throughout the central and southern portions of San Francisco and constitute approximately four percent of the total city area; one area is in Pacifica. They range in size from less than one acre to almost 400 acres. Most of these areas are used as recreational open spaces by residents and visitors. Overall there are an estimated 118,000 trees within the Natural Areas, approximately 54,000 of which are in Sharp Park, leaving 64,000 within San Francisco.

Forest Land

California is composed of a diverse landscape of over 100 million acres. Thirty-three million acres are characterized as forests, over which there is a broad range of forest types and species (California Board of Forestry and Fire Protection 2008). The area of forests in California is split roughly evenly between private and public ownership; 45 percent is private, 52 percent is federal, and three percent is state or local government (California Board of Forestry and Fire Protection 2008). The state Public Resource Code 12220 defines forest land as land that can support ten percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources including biodiversity, water quality, and recreation.

The forest sector is unique in that it is the only sector that removes carbon dioxide (CO_2) from the atmosphere and sequesters it over the long term. Carbon sequestration is the process by which atmospheric carbon dioxide is absorbed by trees and other vegetation through photosynthesis and is stored as carbon in trunks, branches, foliage, roots, and soils. Forests are both a sink and a source of carbon dioxide. Carbon storage in forests and wood products provides a carbon sink, while decay and wildfire ultimately release the absorbed carbon under the natural cycle of forest growth, senescence (aging), and regeneration. Normally when trees die, the stored carbon is released into the atmosphere through decomposition. However, if the biomass from removed trees is used as feedstock for power plants, GHG emissions that would have occurred with other fuel sources are displaced (California Board of Forestry and Fire Protection 2008).

The forest sector represents complex biological systems that are inherently highly variable and difficult to quantify and predict. Furthermore, forests are anticipated to respond to climate change in complex and uncertain ways. It will be challenging to manage forests to enhance sequestration capacity across a landscape that is itself changing in response to climate (California Board of Forestry and Fire Protection 2008). Current projections of sequestration rates under various climate change scenarios show both increases and decreases in carbon storage, depending on various assumptions. To date, few analyses of the potential for additional sequestration over time have considered the future effects of climate change (EPA 2011b).

Carbon dioxide emissions for the California forest sector in 2004 were estimated at approximately 4.9 million metric tons (MMT) from disturbances such as fires and harvesting and 4.5 MMT from the decomposition of forest products in landfills and composting facilities. Atmospheric CO_2 removal by forests was estimated at -14.1 MMT (the minus sign denotes removal of CO_2 from the atmosphere). Taken together, atmospheric CO_2 removals and emissions represent a sector-wide net flux of approximately -4.7 MMT CO_2 for the combination of public and private lands (California Board of Forestry and Fire Protection 2008).

The California Climate Action Registry adopted an Urban Forestry protocol in August 2008 (California Board of Forestry and Fire Protection 2008). The protocol provides guidance to account for and report GHG emissions reductions associated with a planned set of tree planting and maintenance to permanently increase carbon storage in trees. This protocol found that atmospheric CO_2 reductions due to trees result from a number of processes: sequestering carbon in live trees, maintaining sequestered CO_2 in removed trees by storing it in wood products, reducing GHG emissions by conserving energy used for space heating and cooling, or displacing GHG emissions by using urban tree residue as bioenergy fuel; at the same time, GHGs released through tree care and decomposition must be accounted for (California Board of Forestry and Fire Protection 2008).

The principles that guide forest carbon management, based on the state Board of Forestry and Fire Protection Work Plan, recognize that optimal carbon storage may be achieved by enhancing forest stocks, by increasing longevity and reuse of wood products, and by reducing losses from insects, pathogens, and wildfires. The three major agents affecting California's forest are wildfire, insects and disease, and human development/use (California Board of Forestry and Fire Protection 2008).

Climate change in the forest sector can alter disturbance regimes by affecting the timing, frequency, and magnitude of wildfires, pest infestations, and other agents of disturbance (Dale et al. 2001). The resiliency of a forest refers to its ability to recover from disturbance and is a measure of its overall

health. Improving forest and range (grassland) resiliency means that systems are better able to store carbon and resist extreme climatic events. Obtaining better resiliency requires forest management that, among other things, promotes a diverse mix of tree species and a broad range of age classes and that maintains optimum densities for forest health and growth. Promoting resilience increases the ability of a system to withstand negative impacts without losing its basic functions (California Board of Forestry and Fire Protection 2008).

Once trees die or are cut down, they begin to decompose and return stored carbon to the atmosphere. The rate of decomposition differs greatly based on the fate of the wood. Wood that is chipped and applied as mulch decomposes relatively quickly, while wood salvaged for use in wood products can survive 50 years or more, before gradually decomposing. The combustion of gasoline and diesel fuels by vehicle fleets and by such equipment as chainsaws, chippers, stump removers, and leaf blowers also contributes to GHG emissions. CO_2 released by equipment during tree planting, maintenance, and other program-related activities is equivalent to about 2 to 5 percent of the annual CO_2 reductions obtained through sequestration and reduced power plant emissions[2] (California Climate Action Registry 2008). Also, tree maintenance results in healthier trees that have a better potential to sequester CO_2 for a longer term.

Trees are an important resource to the people of San Francisco and to the varied wildlife species that use the urban forests within the City. As important a resource as the trees are, the species that are present throughout the Natural Areas are almost entirely nonnative, and most are also invasive.

V.J.3 Impacts

Significance Thresholds

A proposed project would have a significant agricultural and forest resources impact if it were to result in the following:

- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resource Code section 12220[g]) or timberland (as defined in Public Resource Code section 4526);

[2] Urban forests have two indirect effects on atmospheric CO_2 and other greenhouse gases. First, trees around buildings can reduce heating and air conditioning use, thereby reducing emissions of GHGs associated with the consumption of electricity, natural gas, and fuel oil. Second, normally when trees die, if the biomass from removed trees is used as feedstock for power plants, GHG emissions that would have occurred with other fuel sources are displaced.

- Cause the loss of forest land or convert forest land to nonforest use; or
- Involve other changes in the environment, which, due to their location or nature, could convert farmland to nonagricultural use or convert forest land to nonforest use.

Impacts Addressed in the Initial Study

In the Initial Study (included in Appendix A), impacts related to the following criteria were identified as not significant:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use;
- Conflict with existing zoning for agricultural use; and
- Involve other changes to the environment which could result in conversion of Farmland of Statewide Importance to non-agricultural use.

As a result, these CEQA significance criteria are not evaluated further in this EIR.

Significant Natural Resource Areas Management Plan Impacts

Trees are proposed to be removed from 15 of the 32 Natural Areas: Bayview Park, Brooks Park, Buena Vista Park, Corona Heights, Dorothy Erskine Park, Glen Canyon Park and O'Shaughnessy Hollow, Golden Gate Park Oak Woodlands, Grandview Park, Interior Greenbelt, Lake Merced, McLaren Park, Mount Davidson, Palou-Phelps, Twin Peaks, and Sharp Park. The trees targeted for removal in five of these Natural Areas (Buena Vista Park, Grandview Park, Oak Woodlands, Palou-Phelps, Brooks Park, and Twin Peaks) are not considered to be urban forests (SFRPD 2006).

Zoning for Forest Land or Timberland

Programmatic Impacts

Impact AF-1: Implementation of the programmatic projects under the SNRAMP would not have a substantial adverse effect on zoning for forest land or timberland. (No Impact)

There are no known uses of trees within the Natural Areas for timberland. Therefore, large-scale tree removal would have no impacts on timberland. Large-scale tree removal is defined as exceeding half an acre or more than 20 trees at any one time. Large-scale tree removal of urban forest could occur at Bayview Park. Glen Canyon Park and O'Shaughnessy Hollow, Interior Greenbelt, Lake Merced, McLaren Park, Mount Davidson, and Sharp Park. As noted above, the state Public Resources Code 12220 defines forest land as land that can support 10 percent native tree cover of

any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources including biodiversity, water quality, and recreation. Although vegetation in some Natural Areas may not meet this criterion (because vegetation composition may be less than 10 percent native), they are considered as such for purposes of this analysis. Large-scale tree removal would not include native trees. New planted trees would be native trees. Further, most of the Natural Areas are used as recreational open spaces by residents and visitors and would continue to be used for that purpose. Further, the SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years. The mission of the program is two-fold: to preserve, restore, and enhance remnant Natural Areas and to develop and support community-based site stewardship of these areas. Therefore, the proposed tree removal under programmatic projects would not conflict with zoning or cause forest land or timberland to be rezoned. The proposed tree removal under programmatic projects would even better support the conditions of forest land by removing dead and dying trees and thinning trees to achieve a healthier forest density. Also, there would be no change in the zoning of the Natural Areas. As such, the proposed tree removal under programmatic projects would have ***no impacts*** on forest land and timberland zoning.

Project-level Impacts (Routine Maintenance)

Impact AF-2: Implementation of routine maintenance activities under the SNRAMP would not have a substantial adverse effect on zoning for forest land or timberland. (No Impact)

Trees removal as part of the routine maintenance activities affects less than half an acre and less than 20 trees at any one time. Routine maintenance tree removal could occur at all of the Natural Areas listed above under large-scale tree removal, plus Corona Heights and Dorothy Erskine Park. Impacts of tree removal during routine maintenance activities would be similar to those described above under programmatic projects. Tree removal would focus on dead or dying trees and tree thinning would allow promotion and establishment of a native understory, decrease the site dominance of invasive species, and improve the health of the forest by relieving crowding. Also, there would be no change in the zoning of the Natural Areas. Therefore, tree removal under the routine maintenance activities would not conflict with zoning or cause forest land or timberland to be rezoned. Proposed tree removal as part of routine maintenance activities would have ***no impacts*** on forest land and timberland zoning,

Project-level Impacts (Sharp Park Restoration)

Impact AF-3: Implementation of the Sharp Park restoration under the SNRAMP would not have a substantial adverse effect on zoning for forest land or timberland. (No Impact)

A few individual trees may be removed as part of the wetland and upland habitat restoration. As such, the Sharp Park restoration would have ***no impact*** on zoning for forest land or timberland.

Loss or Conversion of Farmland or Forest Land

Programmatic Impacts

Impact AF-4: Implementation of the programmatic projects under the SNRAMP would not have a substantial adverse effect on the loss or conversion of farmland or forest land. (Less than Significant)

Natural Areas of San Francisco

Because no farmland is present within the Natural Areas, no impacts to this resource would occur from the programmatic projects. Invasive trees removed in San Francisco would be replaced with native tree species at a ratio of roughly one-to-one, although not necessarily at the same location or within the same Natural Area, where other native vegetation instead would be planted. Additional shrubs and grasses also would be planted.

Tree removal in San Francisco would not convert forest land to nonforest land and would not change the existing environment to result in the loss of farmland or forest land. Tree removal in MA-3 urban forests would follow the general urban forest management practices (GR-15), which focus on the removal of dead or dying trees with disease or insect infestations, storm-damaged or hazardous trees, and trees that are suppressed because of overcrowding. These stressed trees do not sequester carbon at the same rate as healthy trees. The sequestration life of trees is about 20 years, after which they sequester carbon at much lower rates. Additionally, isolated trees or small stands of trees would be removed in MA-1 and MA-2 areas for conservation purposes. Removed trees in MA-1 and MA-2 areas would be replaced on a one-to-one basis and additional shrubs and grasses would be planted; therefore, vegetation would increase within the Natural Areas of San Francisco.

Tree removal could affect the forest carbon sequestration process (this topic is discussed in detail in Section E.7 of the Initial Study in Appendix A). Sequestration depends on tree growth and mortality, which in turn depends on species composition, age, structure, and forest health. Newly planted trees accumulate carbon rapidly for several decades, and then the annual increase in sequestered carbon

declines. Old trees can release as much carbon dioxide from decay as they sequester from new growth; however, at the same time they serve as valuable carbon sinks. When trees are stressed they can lose their normal ability to absorb carbon dioxide. Hence, healthy, vigorous growing trees will absorb more CO_2 than will trees that are diseased or otherwise stressed. Management goals in MA-1 forests are approximately 50 to 100 square feet of basal area per acre after trees are removed. The goal for the MA-2 stands is slightly higher basal areas, ranging from approximately 100 to 200 square feet per acre. Tree removal under programmatic projects would prioritize dead or dying trees and would maintain a healthy forest and therefore help in maintaining the carbon sequestered by the urban forest. The total number of trees would not change within the Natural Areas of San Francisco, and the amount of carbon sequestered would increase in the long term from replacing dead, dying, and diseased trees. Therefore, implementation of the programmatic projects in San Francisco would have ***less than significant*** impacts on the loss or conversion of forest land.

Sharp Park

For tree removal in Sharp Park, many of the trees would be replaced not with trees but with more appropriate native vegetation, as identified in the SNRAMP. The area subject to tree removal is not considered forest land under Public Resource Code 12220 because it contains no native tree cover. Approximately 15,000 trees in Sharp Park would be removed from MA-1 and MA-2 areas. Not all trees in MA-1 and MA-2 areas would be removed. Some scattered large individuals would remain in order to minimize large-scale disturbance and disruption to wildlife and to promote a natural conversion to native scrub habitats. The long-term goal in the MA-1 and MA-2 areas is to slowly convert those areas to native scrub and grassland habitats or oak woodlands. In most cases this conversion would take significantly longer than the 20-year life of the SNRAMP. As trees are removed, the canyon slopes at Sharp Park would gradually support fewer trees and more scrub habitats. The overall character of the canyon would remain that of a wooded area for a long time following tree removal as older trees are allowed to naturally age and die. While a high number of trees would be replaced with native vegetation at Sharp Park, a conversion toward nonforest habitat, those areas would still be maintained as vegetated landscapes capable of carbon sequestration. Further, as most of the trees removed would be older trees, those trees do not act as good sinks for carbon compared to actively growing trees. The active growing period of urban trees is 20 years, depending on tree species, planting density, and location (IPCC 2007). As documented in Section E.7 of the Initial Study in Appendix A, based on research studies, grassland and scrub habitat could act as a significant carbon sink (Conant et al. 2001). The California Registry is

developing flexible mechanisms to address reversals[3] if removed trees are not replaced (California Climate Action Registry 2008).

Although the proposed programmatic projects would convert urban forest into grass and scrub land in Sharp Park, it would not affect the general use of those areas. Over the long term, those areas would still be vegetated and used as open spaces for recreation and would not be developed. Tree removal would focus on dead and dying trees that do not sequester carbon at the same rate as healthy trees. Further, conversion of forest land to grassland and scrub habitat would not result in conversion of land to uses that do not sequester carbon, such as new developments, and would not significantly impact the carbon sequestration process within the project area because other plants also sequester carbon. Therefore, the proposed programmatic projects would have ***no impact*** on farmland or forest land conversion.

Project-level Impacts (Routine Maintenance)

Impact AF-5: Implementation of the routine maintenance activities under the SNRAMP would not have a substantial adverse effect on the loss or conversion of farmland or forest land. (Less than Significant)

Because no farmland is present within the Natural Areas, no impacts to this resource would occur from routine maintenance. Under routine maintenance activities, trees would be removed in areas less than half an acre and affect fewer than 20 trees at one time. Tree removals as part of the routine maintenance activities would have similar impacts on urban forest conversion and carbon sequestration as those described under the programmatic projects for the Natural Areas of the San Francisco and Sharp Park. However, these impacts would be of a smaller scale and magnitude. Therefore, the impacts of tree removal under the routine maintenance activities on farmland or forest land conversion would be ***less than significant***.

Project-level Impacts (Sharp Park Restoration)

Impact AF-6: Implementation of the Sharp Park restoration under the SNRAMP would not have a substantial adverse effect on the conversion of forest land (No Impact)

Because no farmland is present within the Natural Areas, no impacts to this resource would occur from the Sharp Park restoration project. A few individual trees may be removed as part of the

[3] Reversal is sequestered CO_2 that is released back to the atmosphere.

wetland and upland habitat restoration. As a result, implementation of the Sharp Park restoration would have ***no impact*** on the loss or conversion of farmland or forest land.

Cumulative Impacts

Impact AF-7: The proposed project, in combination with other planned and foreseeable future projects, would not have a cumulatively considerable substantial adverse effect related to agriculture and forest resources. (Less than Significant)

The geographic scope of this analysis covers San Francisco and Pacifica. Cumulative projects that would have an impact on urban forests include the planning projects that would result in the creation of new open spaces or add a substantial number of trees, such as the Candlestick Point-Hunters Point Shipyard, Executive Park, and Glen Canyon Park projects. As an example, the Candlestick Point-Hunters Point Shipyard development will add approximately 10,000 trees. Further, the SFRPD Forestry Program includes tree planting and restoration within the San Francisco neighborhood parks. Other cumulative projects, such as the Mount Sutro Open Space Reserve Management Plan (Mount Sutro), include removal of hazardous trees and forest thinning projects as a fire mitigation measure. Among the objectives of the Mount Sutro project are replacing highly flammable eucalyptus trees with more fire resistant species, increasing age diversity of trees, and improving the health and safety of the remaining trees. That project includes removing an average of 18 trees per acre in an area with a density of 280 trees per acre. Other cumulative projects might result in the removal of a few individual trees. None of the cumulative projects would convert urban forests to nonforest use. Further, San Francisco trees are protected by the San Francisco Urban Forestry Ordinance which requires the replacement of removed trees on a one-to-one basis. Further, new developments are required to plant one tree for every 20 feet of street frontage pursuant to the Planning Code Section 132 of the Green Landscape Ordinance. Therefore, cumulative projects in San Francisco would not result in significant impacts to the conversion of the urban forest.

Removal of trees in Pacifica is subject to the logging and heritage tree ordinances; these ordinances do not apply to the SFRPD or Sharp Park. Although cumulative projects in Pacifica could result in tree removal, project proponents would have to comply with the local ordinances. Therefore, cumulative tree removal projects in Pacifica would not have significant impacts on the conversion of the urban forest.

As discussed above, the proposed project would not contribute considerably to cumulative impacts on forest land or timberland. As a result, cumulative impacts on forest land and timberland would be ***less than significant.***

V.K AIR QUALITY

The purpose of the BAAQMD Guidelines is to assist lead agencies in evaluating the air quality impacts of projects and plans proposed in the San Francisco Bay Area Air Basin. The Guidelines provide procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements. Using the 1999 BAAQMD CEQA Air Quality Guidelines, which were in effect at the time of its publication, the NOP/Initial Study prepared for the proposed project addressed air quality and found impacts to be less than significant. Subsequent to publication of the NOP/Initial Study, the BAAQMD issued revised guidelines that supersede the 1999 BAAQMD CEQA Air Quality Guidelines (BAAQMD 2011a). Therefore, this section of the EIR discusses the adopted 2011 BAAQMD CEQA Air Quality Guidelines and CEQA air quality thresholds of significance.

Comments about air quality received during the NOP scoping process concerned the following:

- The effects of prescribed burns on air pollution.

Prescribed burns are no longer proposed as part of the SNRAMP.

V.K.1 Regulatory Setting

Federal Ambient Air Quality Standards

The 1970 Clean Air Act (last amended in 1990) requires that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants will be controlled in order to achieve all ambient air quality standards (Table 12) by the deadlines specified in the Clean Air Act. The ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, known as sensitive receptors, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above the ambient air quality standards before adverse health effects are observed.

In general, the Bay Area Air Basin experiences low concentrations of most pollutants when compared to federal standards, except for inhalable and fine particulate matter (PM_{10} and $PM_{2.5}$), for which standards are exceeded periodically.

Table 12
State and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Concentration	National Concentration
Ozone	8 Hours	0.070 ppm (137 µg/m^3)	0.075 ppm
	1 Hour	0.09 ppm (180 µg/m^3)	
Carbon Monoxide	8 Hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide	1 Hour	0.18 ppm (339 µg/m^3)	0.100 ppm
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide	24 Hours	0.04 ppm (105 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	
	24 Hours	50 µg/m3	150 µg/m^3
Particulate Matter – Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m3	15 µg/m^3
	24 Hours		35 µg/m^3
Sulfates	24 Hours	25 µg/m^3	
Lead	Calendar Quarter		1.5 µg/m^3
	30 Day Average	1.5 µg/m^3	
Hydrogen Sulfide	1 Hour		
Vinyl Chloride (chloroethene)	24 Hours	0.010 ppm (26 µg/m^3)	
Visibility Reducing particles	8 Hour (10:00 to 18:00 Pacific time)		

ppm = parts per million
mg/m^3 = milligrams per cubic meter
µg/m^3 = micrograms per cubic meter

Source: BAAQMD 2011b

In June 2004, the Bay Area was designated as a marginal nonattainment area of the national 8-hour ozone standard. The EPA lowered the national 8-hour ozone standard from 0.80 to 0.75 parts per million effective May 27, 2008. EPA will issue final designations based upon the new 0.75 parts per million ozone standard soon. The Bay Area Air Basin is in attainment for other criteria pollutants, with the exception of the 24-hour standards for PM_{10} and $PM_{2.5}$, for which the Bay Area is designated "Unclassified."

State Ambient Air Quality Standards

Although the federal Clean Air Act established national ambient air quality standards, individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established, and because of the unique meteorological characteristics in California, there is considerable diversity between the state and national ambient air quality standards. California ambient standards tend to be at least as protective as national ambient standards and are often more stringent (Table 12).

In 1988, California passed the California Clean Air Act (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on state ambient air quality standards rather than the federal standards. The Bay Area Air Basin is designated as "nonattainment" for state ozone, PM_{10}, and $PM_{2.5}$ standards. The Bay Area Air Basin is designated as "attainment" for most other pollutants, such as nitrogen oxides (NOx), reactive organic gases (ROG), and carbon monoxide (CO).

The federal and state ambient air quality standards are presented in Table 12.

Air Quality Planning Relative to State and Federal Standards

Air quality plans developed to meet federal requirements are referred to as State Implementation Plans. The federal and state Clean Air Acts require plans to be developed for areas designated as nonattainment (with the exception of areas designated as nonattainment for the State PM_{10} standard). On September 15, 2010, the BAAQMD, in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments, adopted the *2010 Clean Air Plan* (BAAQMD 2010a), which replaced the *Bay Area 2005 Ozone Strategy*.

The *2010 Clean Air Plan* updated the *2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone; provide a control strategy to reduce ozone, particulate matter, toxic air contaminants, and greenhouse gases in a single, integrated plan; review progress in improving air quality in recent years; and establish emission control measures to be adopted or implemented in the 2010 – 2012 time frame. The control strategy includes stationary-source control measures to be implemented through BAAQMD regulations; mobile-source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the Metropolitan Transportation Commission, local governments,

transit agencies, and others. The *2010 Clean Air Plan* represents the Bay Area's most recent triennial assessment of the region's strategy to attain the state one-hour ozone standard.

Air Resources Board Idling Regulations

In 2005, the California Air Resources Board (ARB) approved a regulatory measure to reduce emissions of toxic and criteria air pollutants by limiting the idling of new heavy-duty diesel vehicles. The regulations generally limit idling of commercial motor vehicles (including buses and trucks) within 100 feet of a school or residential area for more than five consecutive minutes or periods aggregating more than five minutes in any one hour. Buses or vehicles also must turn off their engines upon stopping at a school and must not start their engines more than 30 seconds before beginning to depart from a school. Additionally, Senate Bill 351 (SB 351) (adopted in 2003) prohibits locating public schools within 500 feet of a freeway or busy traffic corridor.

Regional/Local Air Quality Planning

Bay Area Air Quality Management District

BAAQMD is the regional agency with jurisdiction over air quality regulations within the nine-county Bay Area Air Basin. The Association of Bay Area Governments, Metropolitan Transportation Commission, county transportation agencies, cities and counties, and various nongovernmental organizations also join in efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies, as well as implementation of extensive education and public outreach programs.

BAAQMD is responsible for attaining and/or maintaining air quality in the Bay Area Air Basin within federal and State air quality standards. Specifically, BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the Air Basin and to develop and implement strategies to attain the applicable federal and State standards.

In 1999, BAAQMD adopted its *CEQA Air Quality Guidelines* as a guidance document to provide lead government agencies, consultants, and project proponents with uniform procedures for assessing air quality impacts and preparing the air quality sections of environmental documents for projects subject to CEQA. In May 2011, BAAQMD published an updated and revised version of its *CEQA Air Quality Guidelines*, which includes updates to the revised thresholds of significance adopted by its board in June 2010. BAAQMD is recognized as the regional agency with special expertise in air quality; therefore, the Air District's guidelines and thresholds are commonly used in CEQA analysis, and are normally relied upon by the Planning Department for its significance determinations.

San Francisco General Plan Air Quality Element

The *San Francisco General Plan* (*General Plan*) includes the 1997 Air Quality Element, which includes the following objectives:

Objective 1: Adhere to state and federal air quality standards and regional programs.

Objective 2: Reduce mobile sources of air pollution through implementation of the Transportation Element of the *General Plan.*

Objective 3: Decrease the air quality impacts of development by coordination of land use and transportation decisions.

Objective 4: Minimize particulate matter emissions from road and construction sites.

Objective 5: Link the positive effects of energy conservation and waste management to emission reductions.

San Francisco Clean Construction Ordinance

San Francisco Ordinance 70-07, which adds San Francisco Administrative Code Article 6.25, amends San Francisco Administrative Code Article 6.67, and adds San Francisco Environment Code Article 411, is known as the Clean Construction Ordinance. The ordinance requires that contractors on public works construction projects that take 20 days or more to complete reduce vehicle emissions by (1) using a blend of at least 20 percent biodiesel in off-road vehicles and construction equipment and (2) using construction equipment with engines that meet Tier 2 standards or use best available control technology. Many of the programmatic projects would be subject to the Clean Construction Ordinance; however, the Sharp Park restoration project would not be subject to this ordinance.

San Francisco Dust Control Ordinance

San Francisco Health Code Article 22B, and *San Francisco Building Code* Section 106.A.3.2.6, collectively the Construction Dust Control Ordinance, requires that all site preparation work, demolition, or other construction activities within San Francisco that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specified dust control measures whether or not the activity requires a permit from the Department of Building Inspection. The Director of Department of Building Inspection may waive this requirement for activities on sites less than one half-acre that are unlikely to result in any visible wind-blown dust.

For project sites greater than one half-acre in size, the Ordinance requires that the project sponsor submit a Dust Control Plan for approval by the San Francisco Health Department. The SFRPD

would be required to comply with the Ordinance and submit a Dust Control Plan for the Sharp Park restoration project and many of the programmatic projects.

V.K.2 Environmental Setting

Criteria Air Pollutants

As required by the 1970 federal Clean Air Act, the EPA has identified six criteria air pollutants that are pervasive in urban environments and for which state and federal health-based ambient air quality standards have been established. EPA calls these pollutants criteria air pollutants because the agency has regulated them by developing specific public-health-and-welfare-based criteria as the basis for setting permissible pollutant levels. Ozone, CO, particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead are the six criteria air pollutants.

The San Francisco Bay Area Air Basin is currently designated as a nonattainment area for state and national ozone standards, state and national $PM_{2.5}$, and state PM_{10}. For other criteria pollutants, such as NO_2, CO, and SO_2, the San Francisco Bay Area Air Basin is designated as an in attainment or is unclassified. Table 13 presents the current federal and state attainment status for the San Francisco Bay Area Air Basin.

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving ROG and NOx. The main sources of ROG and NOx, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal.

Table 13
State and National Attainment Status

Pollutant	Averaging Time	California Attainment Status	National Attainment Status
Ozone	8 Hours	N	N
	1 Hour	N	
Carbon Monoxide	8 Hours	A	A
	1 Hour	A	A
Nitrogen Dioxide	1 Hour	A	U
	Annual Arithmetic Mean		A
Sulfur Dioxide	24 Hours	A	
	1 Hour	A	A
Inhalable Particulate Matter (PM_{10})	Annual Arithmetic Mean	N	
	24 Hours	N	U
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	N	A
	24 Hours		N
Sulfates	24 Hours	A	
Lead	Calendar Quarter		A
	30 Day Average	A	
Hydrogen Sulfide	1 Hour	U	
Vinyl Chloride (chloroethene)	24 Hours	No information available	
Visibility Reducing Particles	8 Hour (10:00 to 18:00 Pacific time)	U	

N = nonattainment
A = attainment
U = unclassified

Source: BAAQMD 2011b

Particulate Matter

Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from manmade and natural sources. Particulate matter is measured in two size ranges: PM_{10} for particles less than 10 microns in diameter, and $PM_{2.5}$ for particles less than 2.5 microns in diameter. In the Bay Area, motor vehicles generate about half of the air basin's particulates through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facility operations, and ground-disturbing activities, such as construction, are other sources of such fine particulates. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the state Air Resources Board (ARB), studies in the United States and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks," and studies of children's health in California have demonstrated

that particle pollution "may significantly reduce lung function growth in children." The ARB also reports that statewide attainment of particulate matter standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California.

Among the criteria pollutants that are regulated, particulates appear to represent a serious ongoing health hazard. As long ago as 1999, the BAAQMD was reporting, in its *CEQA Air Quality Guidelines*, that studies had shown that elevated particulate levels contribute to the death of approximately 200 to 500 people per year in the Bay Area. High levels of particulates have also been known to exacerbate chronic respiratory ailments, such as bronchitis and asthma, and have been associated with increased emergency room visits and hospital admissions.

Nitrogen Dioxide

NO_2 is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from a contribution to ozone formation, nitrogen oxides, including NO_2, can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. The federal 1-hour standard was recently made more stringent by the EPA with a statistical form that allows some hours to exceed the standard before triggering a nonattainment designation. Vehicle exhaust is a dominant urban source of NO_2, and concentrations of NO_2 near major roads can be appreciably higher than those measured at monitors in the current regional monitoring network. Table 13 shows that the standard for NO_2 is being met in the Bay Area. However, existing monitoring methods must be revised by 2013 to determine compliance with the new federal standards.

Sulfur Dioxide

SO_2 is a colorless acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease.

Lead

Leaded gasoline (phased out in the United States beginning in 1973), paint (on older houses, cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources

of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects; children are at special risk. Some lead-containing chemicals cause cancer in animals.

Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Potential human health effects of TACs include birth defects, neurological damage, cancer, and mortality. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

TACs do not have ambient air quality standards, but are regulated by the BAAQMD using a risk-based approach. This approach uses a health risk assessment to determine what sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis in which human health exposure to toxic substances is estimated, and considered together with information regarding the toxic potency of the substances, to provide quantitative estimates of health risks. 2008 TAC emissions for San Francisco and San Mateo Counties (the counties in which the proposed project would take place) are shown in Table 14. TACs for which data were not available for either county are not included in Table 14.

Table 14
Toxic Air Contaminants, San Francisco and San Mateo Counties

Toxic Air Contaminant	Total Emissions, San Francisco County (pounds per year)	Total Emissions, San Mateo County (pounds per year)
Acetaldehyde	0.22	7.50
Acrylonitrile	ND	32.33
Ammonia (NH_3)	166.03	28,537.46
Arsenic (all)	1.36	0.22
Benzene	507.78	3,230.81
Benzyl chloride	ND	62.96
Beryllium (all)	0.80	0.10
Cadmium	3.48	0.43
Carbon tetrachloride	ND	12.85
Cellosolve	57.64	277.00
Cellosolve acetate	380.54	27.34
Chlorinated dioxins & furans	0.00	0.00
Chloroform	496.81	2,109.70
Chromium (hexavalent)	0.07	0.04
Dichlorobenzene	31.38	578.69
Diesel Engine Exhaust Particulate	6,345.76	6,999.34
Dioxane, 1,4-	ND	62.78
Ethyl chloride	ND	70.28
Ethylbenzene	636.18	7,229.00

Table 14
Toxic Air Contaminants, San Francisco and San Mateo Counties

Toxic Air Contaminant	Total Emissions, San Francisco County (pounds per year)	Total Emissions, San Mateo County (pounds per year)
Ethylene dibromide	ND	15.03
Ethylene dichloride	ND	75.77
Ethylene glycol	1,539.67	747.10
Ethylene oxide	2.00	0.04
Ethylidene chloride	ND	835.62
Formaldehyde	15,932.76	6,548.89
Hexane	71.85	4,742.73
Hydrochloric acid mist	ND	99.60
Hydrogen Chloride (HCl)	ND	24,287.12
Hydrogen Fluoride (HF)	ND	1.34
Hydrogen Sulfide (H_2S)	7,529.52	18,204.58
Isophorone	ND	9.32
Isopropyl alcohol	41,633.98	102,518.21
Lead (all)	4.10	0.46
Manganese	4.53	0.55
Mercury (all)	0.96	2.03
Methyl alcohol	1,788.10	2,888.59
Methyl cellosolve	4.24	ND
Methyl tertiary-butyl ether	ND	12.82
Methylene chloride	1,588.82	19,584.50
Naphthalene	0.11	8.07
Nickel	54.92	6.71
PAHs (benzo[a]pyrene equivalent)	0.85	0.00
Perchloroethylene	50,256.75	50,400.75
Phenol	128.24	16.23
Propylene glycol monomethyl ether	693.56	96.90
Selenium	ND	0.08
Styrene	4,745.83	13,368.91
Tetrachloroethane, 1,1,2,2-	ND	66.61
Toluene	15,018.74	39,746.92
Trichloroethane, 1,1,1- (without dioxane)	ND	4,955.35
Trichloroethane, 1,1,1- (with dioxane)	94.12	1,078.16
Trichloroethylene	127.73	2,226.30
Vinyl chloride	ND	717.27
Vinylidene chloride	ND	17.40
Xylene	16,470.01	26,544.89

ND = no data

Source: BAAQMD 2008

Diesel Particulate Matter

The ARB identified diesel particulate matter as a toxic air contaminant in 1998, primarily based on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of diesel particulate matter are higher near heavily traveled highways. The estimated cancer risk from

exposure to diesel exhaust is much higher than the risk associated with any other toxic air pollutant routinely measured in the region.

Recent air pollution studies have shown an association between respiratory and other non-cancer health effects and proximity to high traffic roadways. The ARB community health risk assessments and regulatory programs have produced air quality information about certain types of facilities for consideration by local authorities when siting new residences, schools, day care centers, parks and playgrounds, and medical facilities (i.e., sensitive land uses, or "receptors"). Sensitive land uses deserve special attention because children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the non-cancer effects of air pollution. There is also substantial evidence that children are more sensitive to cancer-causing chemicals (ARB 2005).

In 2000, the ARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. As part of the Plan, the ARB in 2008 approved a new regulation for existing heavy-duty diesel vehicles that will require retrofitting and replacement of vehicles (or their engines) over time such that by 2023, all vehicles must have a 2010 model year engine or equivalent. Additional regulations apply to new trucks and to diesel fuel. With new controls and fuel requirements, 60 trucks built in 2007 would have the same soot exhaust emissions as one truck built in 1988 (Pollution Engineering 2006). Despite these reductions, the ARB recommends that proximity to sources of diesel particulate matter emissions be considered in the siting of new sensitive land uses. The ARB notes that these recommendations are advisory and should not be interpreted as defined "buffer zones," and that local agencies must balance other considerations, including housing and transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary, ARB's position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level.

Roadway-Related Pollutants

Motor vehicles are responsible for a large share of air pollution, especially in California. Vehicle tailpipe emissions contain diverse forms of particles and gases, and also contribute to particulates by generating road dust and through tire wear. Epidemiologic studies have demonstrated that people living in proximity to freeways or busy roadways have poorer health outcomes, including increased asthma symptoms and respiratory infections and decreased pulmonary function and lung development in children. Air pollution monitoring done in conjunction with epidemiological studies

has confirmed that roadway related health effects vary with modeled exposure to particulate matter and nitrogen dioxide. In traffic-related studies, the additional non-cancer health risk attributable to roadway proximity was seen within 1,000 feet of the roadway and was strongest within 300 feet. As a result, the ARB recommends that new sensitive land uses not be located within 500 feet of a freeway or urban roads carrying 100,000 vehicles per day.

Sensitive Receptors

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Population subgroups sensitive to the health effects of air pollutants include the elderly and the young, population subgroups with higher rates of respiratory disease such as asthma and chronic obstructive pulmonary disease, and populations with other environmental or occupational health exposures (e.g. indoor air quality) that affect cardiovascular or respiratory diseases. Land uses such as schools, children's day care centers, hospitals, and nursing and convalescent homes are considered to be the most sensitive to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Parks and playgrounds are considered moderately sensitive to poor air quality because persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality; however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically reduces overall exposure to pollutants. Residential areas are considered more sensitive to air quality conditions compared to commercial and industrial areas because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality conditions.

V.K.3 Impacts

Significance Thresholds

A proposed project would have a significant air quality impact if it were to result in any of the following:

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal, state, or regional ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation; or

- Expose sensitive receptors to substantial pollutant concentrations.

Impacts Addressed in the Initial Study

In the Initial Study (Appendix A), impacts related to the following criteria were identified as not significant:

- Conflict with or obstruct implementation of the applicable air quality plan; and
- Create objectionable odors affecting a substantial number of people.

As a result, odors are not evaluated further in this EIR. As discussed in the Regulatory Setting section, since the completion of the Initial Study, BAAQMD, in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments, adopted the *2010 Clean Air Plan,* which replaced the *Bay Area 2005 Ozone Strategy*. The following discussion addresses compliance with the *2010 Clean Air Plan.*

The *2010 Clean Air Plan* provides a control strategy to reduce ozone, particulate matter, TACs, and greenhouse gases and represents the Bay Area's most recent triennial assessment of the region's strategy to attain the state one-hour ozone standard (see Section V.K.1, Regulatory Setting, for more information). The proposed project, which involves management of the Natural Areas and includes reintroduction of sensitive species, tree removal in conformance with forestry statements, and erosion control measures, would not conflict with the *2010 Clean Air Plan* or obstruct implementation of the plan; therefore, there would be no impact and no additional analysis is required.

Significant Natural Resource Areas Management Plan Impacts

This section addresses the impacts of the project during activity phases related to construction, operation, and routine maintenance. Construction impacts were assessed quantitatively for the Sharp Park Natural Area because those restoration activities are expected to be the largest of the programmatic projects undertaken under the SNRAMP. Other programmatic projects were assessed qualitatively based on the outcome of the analyses of the Sharp Park restoration activities. Operational or routine maintenance impacts were assessed qualitatively. Operational activities, including routine maintenance, would be similar to current activities conducted in the Natural Areas and therefore would not result in a substantial net increase in fugitive dust, criteria air pollutant emissions, or health risks.

The results of the quantitative construction analysis of the Sharp Park restoration activities were compared to the 2011 BAAQMD *CEQA Air Quality Guidelines* significance thresholds for construction-related activities for criteria air pollutant emissions. The new guidelines also include significance thresholds for operational activities; however, because operational impacts would result in negligible increases of criteria air pollutant emissions, these thresholds would not be exceeded and are not discussed further.

For ROG, NOx, and $PM_{2.5}$ (exhaust emissions only), a construction-related net increase of 54 pounds per day would be considered significant, while for PM_{10} (exhaust emissions only), a net increase of 82 pounds per day would be considered significant. There are no quantitative thresholds for construction dust emissions; instead, impacts are considered less than significant if best management practices are employed to control dust during construction activities, including demolition and excavation. The BAAQMD has identified a list of recommended BMPs for controlling fugitive dust to ensure that dust-related impacts are reduced to less than significant.

For health risks and hazards resulting from emissions of toxic air contaminants during project construction, BAAQMD has identified quantitative significance thresholds. The thresholds for project-specific impacts are an increase in lifetime cancer risk equal to or greater than 10 chances in one million, an increase in the non-cancer risk equal to or greater than a chronic or acute Hazard Index[1] of 1.0, or an increase in the annual average concentration of $PM_{2.5}$ equal to or greater than 0.3 micrograms per cubic meter. BAAQMD also recommends cumulative thresholds of 100 in one million cancer risk, a Hazard Index greater than 10.0, and an increased $PM_{2.5}$ concentration greater than 0.8 micrograms per cubic meter. BAAQMD has also determined that projects that comply with a qualified community risk reduction plan would result in a less than significant health risk impact; however, no jurisdiction in the San Francisco Bay Area has completed a qualified community risk reduction plan.

The principal sources of pollutants during the Sharp Park restoration would be the emissions generated by heavy equipment and construction vehicles used during project activities. Exhaust emissions resulting from the restoration activities were estimated using the Urban Land Use Emissions Model (URBEMIS) model and compared to the BAAQMD significance thresholds.

[1] Acute and chronic exposure to non-carcinogens is expressed as a Hazard Index, which is the ratio of expected exposure levels to acceptable reference exposure levels.

For the health risk assessment related to use of diesel-powered equipment during the Sharp Park restoration, hazardous air pollutant impacts on sensitive receptors were assessed using the EPA's Industrial Source Code Short Term Version 3 dispersion model and meteorological data from the Fort Funston meteorological station (the nearest meteorological station approximately 10 miles north of the proposed project). The nearest sensitive receptor was assumed to be at the project boundary to provide a conservative exposure assessment that would be applicable to other programmatic projects. Cancer and non-cancer health risks were calculated using the ARB's Hot Spots Analysis Reporting Program and compared to the BAAQMD criteria to determine if they would be significant. Potential cancer risk was calculated using age-sensitivity factors[2] from the concentrations produced from the air modeling analysis. Cancer risk was weighted by a factor of 10 for exposure that occurs to an individual from the third trimester of gestation (the period of development of young from conception until birth) to two years of age, and by a factor of three for exposures that occur from two years through 15 years of age. These weighing factors were applied equally to all carcinogens.

Fugitive Dust

Programmatic Impacts

Impact AQ-1: Programmatic projects under the SNRAMP would result in substantial fugitive dust emissions. (Less than Significant with Mitigation)

Programmatic projects proposed under the SNRAMP would result in fugitive dust emissions primarily during construction activities. In response to the need for consistent control measures to reduce fugitive dust during construction, the San Francisco Board of Supervisors approved a series of amendments to the San Francisco Building and Health Codes generally referred hereto as the Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008), with the intent of reducing the quantity of dust generated during site preparation, demolition and construction work in order to protect the health of the general public and of onsite workers, minimize public nuisance complaints, and to avoid orders to stop work by the Department of Building Inspection.

The San Francisco Construction Dust Control Ordinance (Dust Control Ordinance) was adopted in July 2008. Under this ordinance, all site preparation work, demolition, and other construction activities in San Francisco must comply with specific dust control measures. The Dust Control

[2] Age-sensitivity factors were identified in accordance with the guidelines set by the Office of Environmental Health and Hazard Assessment.

Ordinance requires project sponsors and contractors responsible for construction activities to control construction dust on the site or implement other practices that result in equivalent dust control that are acceptable to the director of the San Francisco Department of Public Health.

For projects less than half an acre, the project proponent must comply with the general dust control requirements listed in Section 106.3.2.6.3(c) of the San Francisco Building Code, which are:

- Water all active construction areas sufficiently to prevent dust from becoming airborne. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour (mph). Reclaimed water must be used if required by Article 21, Section 1100 et seq. of the San Francisco Public Works Code. If not required, reclaimed water should be used whenever possible.
- Provide as much water as necessary to control dust (without creating runoff) in any area of land clearing, earth movement, excavation, drillings, and other dust-generating activity.
- During excavation and dirt-moving activities, wet sweep or vacuum the streets, sidewalks, paths, and intersections where work is in progress at the end of the workday.
- Cover any inactive (no disturbance for more than seven days) stockpiles greater than ten cubic yards or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base, and soil with a 10 mil (0.01 inch) polyethylene plastic or equivalent tarp and brace it down or use other equivalent soil stabilization techniques.
- Use dust enclosures, curtains, and dust collectors as necessary to control dust in the excavation area.

For projects larger than half an acre, the Dust Control Ordinance requires the project sponsor to submit a dust control plan for approval by the San Francisco Department of Public Health before a building permit can be issued by the San Francisco Department of Building Inspection. For project sites that are larger than half an acre and located within 1,000 feet of sensitive receptors, the project sponsor must develop a site-specific dust control plan to be approved by the director of the San Francisco Department of Public Health. The site-specific dust control plan requires the project sponsor to:

- Submit a map to the director of the San Francisco Department of Public Health, showing all sensitive receptors within 1,000 feet of the site;
- Wet down areas of soil at least three times per day;

- Provide an analysis of wind direction, and install upwind and downwind particulate dust monitors;
- Record particulate monitoring results;
- Hire an independent third party to conduct inspections and keep a record of those inspections;
- Establish shutdown conditions based on wind, soil migration, and other factors;
- Establish a hotline for surrounding community members who may be affected by project-related dust;
- Limit the area subject to construction activities at any one time;
- Install dust curtains and windbreaks on the property lines, as necessary;
- Limit the amount of soil in hauling trucks to the size of the truck bed, and secure the load with a tarpaulin;
- Enforce a 15-mph speed limit for vehicles entering and exiting construction areas;
- Sweep affected streets with water sweepers at the end of the day;
- Install and use wheel washers to clean truck tires;
- Stop construction activities when winds exceed 25 mph;
- Apply soil stabilizers to inactive areas; and
- Sweep off adjacent streets to reduce particulate emissions.

Project sponsors are required to designate an individual to monitor compliance with dust control requirements.

The SNRAMP is a City project and construction would be carried out by SFRPD and City contractors. Pursuant to Health Code Article 22B, Section 1247, "All departments, boards, commissions, and agencies of the City and County of San Francisco that authorize construction or improvements on land under their jurisdiction under circumstances where no building, excavation, grading, foundation, or other permit needs to be obtained under the San Francisco Building Code shall adopt rules and regulations to insure that the same dust control requirements that are set forth in this Article are followed." The Construction Dust Ordinance contains the BAAQMD-recommended BMPs. Thus, compliance with Article 22B and all adopted rules and regulations will ensure that potential dust-related air quality impacts would be reduced to less than significant.

The construction activities of programmatic projects in San Francisco would be subject to the Dust Control Ordinance; therefore, impacts from construction-related fugitive dust emissions would be ***less than significant.***

Programmatic projects outside San Francisco are not subject to the Dust Control Ordinance; therefore, those projects that include grading or other activities that could generate fugitive dust could result in significant fugitive dust emissions. With implementation of Mitigation Measure M-AQ-1, which would require the SFPRD to comply with the provisions of the Dust Control Ordinance for programmatic projects outside San Francisco, the impact of fugitive dust emissions from programmatic projects outside San Francisco would be reduced to ***less than significant.***

M-AQ-1: Fugitive Dust Reduction

The SFRPD would implement the requirements of the Dust Control Ordinance for all programmatic projects that are outside of San Francisco to reduce fugitive dust emissions.

For projects less than half an acre, the SFRPD would comply with the general dust control requirements listed in Section 106.3.2.6.3(c) of the San Francisco Building Code, which are:

- Water all active construction areas sufficiently to prevent dust from becoming airborne. Increased watering frequency may be necessary whenever wind speeds exceed 15 mph. Reclaimed water must be used if required by Article 21, Section 1100 et seq. of the San Francisco Public Works Code. If not required, reclaimed water should be used whenever possible.
- Provide as much water as necessary to control dust (without creating runoff) in any area of land clearing, earth movement, excavation, drillings, and other dust-generating activity.
- During excavation and dirt-moving activities, wet sweep or vacuum the streets, sidewalks, paths, and intersections where work is in progress at the end of the workday.
- Cover any inactive (no disturbance for more than seven days) stockpiles greater than ten cubic yards or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base, and soil with a 10 mil (0.01 inch) polyethylene plastic or equivalent tarp and brace it down or use other equivalent soil stabilization techniques.
- Use dust enclosures, curtains, and dust collectors as necessary to control dust in the excavation area.

For projects greater than half an acre, in addition to the general dust control requirements above, the SFRPD would prepare a site-specific dust control plan that requires the project sponsor to:

- Submit a map to the director of the San Francisco Department of Public Health, showing all sensitive receptors within 1,000 feet of the site;
- Wet down areas of soil at least three times per day;
- Provide an analysis of wind direction, and install upwind and downwind particulate dust monitors;
- Record particulate monitoring results;
- Hire an independent third party to conduct inspections and keep a record of those inspections;
- Establish shutdown conditions based on wind, soil migration, and other factors;
- Establish a hotline for surrounding community members who may be affected by project-related dust;
- Limit the area subject to construction activities at any one time;
- Install dust curtains and windbreaks on the property lines, as necessary;
- Limit the amount of soil in hauling trucks to the size of the truck bed, and secure the load with a tarpaulin;
- Enforce a 15-mph speed limit for vehicles entering and exiting construction areas;
- Sweep affected streets with water sweepers at the end of the day;
- Install and use wheel washers to clean truck tires;
- Stop construction activities when winds exceed 25 mph;
- Apply soil stabilizers to inactive areas; and
- Sweep off adjacent streets to reduce particulate emissions.

Project-level Impacts (Routine Maintenance)

Impact AQ-2: The routine maintenance activities under the SNRAMP would not result in substantial fugitive dust emissions. (Less than Significant)

Routine maintenance activities would be similar to current activities conducted in the Natural Areas and therefore would not result in a substantial increase of fugitive dust. Also, the type and scale of

routine maintenance activities would create relatively small amounts of dust. Therefore, the impacts of fugitive dust emissions from routine maintenance at the San Francisco Natural Areas would be ***less than significant***.

Project-level Impacts (Sharp Park Restoration)

Impact AQ-3: The Sharp Park restoration under the SNRAMP would result in substantial fugitive dust emissions. (Less than Significant with Mitigation)

The Sharp Park restoration activities are outside San Francisco and therefore are not subject to the Dust Control Ordinance. Construction-related activities could result in significant fugitive dust emissions. As described for the programmatic projects, implementing Mitigation Measure M-AQ-1 would require the SFPRD to comply with the provisions of the Dust Control Ordinance, as described under Impact AQ-1. The project site is over half an acre and therefore, in accordance with M-AQ-1, would require preparation of a dust control plan and implementation of the requirements of that plan. With implementation of M-AQ-1, the impact of fugitive dust emissions from the Sharp Park restoration activities would be ***less than significant.***

Criteria Air Pollutants

Programmatic Impacts

Impact AQ-4: Programmatic projects under the SNRAMP would contribute substantially to an existing or projected air quality violation and would result in a net increase of criteria pollutants for which the project region is in nonattainment under an applicable federal, state, or regional ambient air quality standard. (Significant and Unavoidable with Mitigation)

Programmatic projects would include trail construction, hillside stabilization, erosion control measures, and tree removal projects that exceed half an acre at any one time. The Sharp Park restoration is considered the largest of the projects that would be proposed under the SNRAMP. Therefore, criteria air pollutant emissions resulting from other programmatic projects are expected to be less than those resulting from the Sharp Park restoration; however it is speculative to determine how much less air pollutants would be generated by programmatic projects at this time because programmatic projects proposed under the SNRAMP lack specific details and have not been developed to a point that enables a quantitative air quality analysis. A criteria air pollutant analysis of the Sharp Park restoration project was conducted for the project-level analysis in the SNRAMP and for purposes of conservative analysis, provides information on expected criteria air pollutant impacts from other programmatic projects proposed under the SNRAMP. As discussed in Impact

AQ-6, NOx average daily emissions for the Sharp Park restoration project would be 153 pounds per day, which exceeds the BAAQMD construction threshold of 54 pounds per day. The SFRPD would implement Mitigation Measure M-AQ-4 (revised from the Initial Study), which requires the use of best available control technology for construction equipment to be included in SFRPD contract specifications, to reduce the impacts of NOx emissions during the Sharp Park restoration and for programmatic projects.

For purposes of conservative analysis, it is assumed that other programmatic projects would be similar to the Sharp Park restoration activities and would result in similar emissions and therefore criteria air pollutant impacts would be significant. However, as discussed above, the details of the other programmatic projects are not yet known and actual emissions from a given programmatic project could result in substantially lower criteria pollutant emissions. For this reason, M-AQ-4 allows the SFRPD to perform a refined air quality analysis prior to implementation of each programmatic project to determine if the pollutant minimizing contract specifications are necessary. If this refined analysis is not conducted, then Mitigation Measure M-AQ-4 requires the SFRPD to incorporate into its construction specifications measures to reduce construction vehicle emissions. The proposed mitigation measure would reduce NOx emissions but may not reduce emissions to below the BAAQMD significance threshold. Using Tier 3 or similar engines would be the most effective way to reduce NOx emissions for each programmatic project. The South Coast Air Quality Management District has performed an assessment of the effectiveness of Tier 3 engines and estimated that a 39 percent emission reduction is possible from replacement of Tier 2 with Tier 3 heavy equipment (South Coast Air Quality Management District 2010). If a 39 percent NOx reduction were achievable, the estimated 153 pounds per day would be reduced to 93 pounds per day, which still exceeds the BAAQMD threshold of 54 pounds per day. Therefore, given the uncertainty regarding the level of construction required for programmatic projects and the effectiveness of M-AQ-4 to reduce criteria air pollutant emissions to below BAAQMD's significance thresholds, NOx emissions resulting from programmatic projects may remain above the BAAQMD daily threshold and could result in ***significant and unavoidable*** criteria air pollutant impacts.

M-AQ-4: Construction Contract Specification to Reduce Construction Vehicle Emissions

The SFRPD will consult with EP before implementing each programmatic project. Under EP's direction, the SFRPD will either conduct a refined air quality analysis prior to project implementation, or EP will provide a list of all feasible mitigation measures to incorporate into the construction specifications to reduce construction vehicle emissions. If SFRPD were to conduct a refined air quality analysis and find that construction-related criteria air pollutant emissions would

be below the BAAQMD thresholds, SFRPD would not be required to incorporate mitigation measures into the project's construction specifications. The following mitigation measures are examples of mitigation measures that EP might direct the SFRPD to incorporate into construction specifications for the Sharp Park restoration project or the programmatic projects.

- For programmatic projects between 2011 and 2015, use Tier 3 equipment with best available control technology where feasible. For programmatic projects conducted after 2015, use Tier 4 equipment or interim Tier 4 equipment equipped with best available control technology where such equipment exists.
- Use temporary power provided by the Pacific Gas & Electric Company instead of diesel generators; where it is not possible to plug into the electric grid, use Tier 4 diesel generators and air compressors.
- Use concrete batched from local plants to limit concrete trucks' travel time and the amount of diesel exhaust emitted.
- Use on-road haul trucks model year 2007 or later.
- Maintain and properly tune construction equipment in accordance with manufacturer's specifications. Have all equipment checked by a certified mechanic to determine that equipment is running in proper condition prior to operation.

Project-level Impacts (Routine Maintenance)

Impact AQ-5: Routine maintenance activities under the SNRAMP would not contribute substantially to an existing or projected air quality violation and would not result in a net increase of criteria pollutants for which the project region is in nonattainment under an applicable federal, state, or regional ambient air quality standard. (Less than Significant)

Routine maintenance would include removal of invasive weeds and trees and maintenance of trails and catchment basins. Routine maintenance activities would be similar to current activities conducted in the Natural Areas. Therefore, these activities would not result in a net increase of criteria air pollutant emissions. As such, routine maintenance activities would result in ***less than significant*** criteria air pollutant impacts.

Project-level Impacts (Sharp Park Restoration)

Impact AQ-6: The Sharp Park restoration under the SNRAMP would contribute substantially to an existing or projected air quality violation and would result in a net increase of criteria pollutants for which the project region is in nonattainment under an applicable federal, state, or regional ambient air quality standard. (Significant and Unavoidable with Mitigation)

The Sharp Park restoration would be conducted between May 1 and October 15. The restoration activities would include two main sources of criteria air pollutant emissions:

- Construction Equipment – Construction requires usage of heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and
- Vehicles – Transport vehicles travelling to and from the site, including delivery trucks hauling materials and automobiles carrying workers, generate exhaust emissions.

Criteria pollutant emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ generated during the restoration activities would incrementally add to the regional atmospheric loading of these pollutants. The BAAQMD *CEQA Air Quality Guidelines* recommend the quantification of project-related exhaust emissions and comparison of the emissions to its quantitative significance thresholds. Therefore, average daily exhaust emissions that would be associated with the Sharp Park restoration have been estimated and are presented in Table 15.

Table 15
URBEMIS Results for Sharp Park Restoration Criteria Air Pollutant Emissions (average daily emissions in pounds per day)

Criteria Air Pollutant	Sharp Park Restoration Criteria Air Pollutant Emissions	BAAQMD Thresholds for Construction Emissions
ROG	13	54
NOx	153	54
PM_{10} Exhaust	3.4	82
$PM_{2.5}$ Exhaust	3.1	54

As shown in Table 15, short-term construction emissions from implementation of the Sharp Park restoration project would not exceed the BAAQMD significance thresholds, except for NOx emissions, for which the restoration activities would result in an average of 153 pounds per day. Although the San Francisco Bay Area Air Basin is designated as an attainment area for NOx, daily

exceedance of the BAAQMD significance threshold would be considered a significant impact. NOx is also an ozone precursor, meaning that it can react with other molecules in the atmosphere to form ozone. Therefore, exceedance of the BAAQMD significance threshold for NOx may result in increases of ozone, for which the Bay Area is designated as a marginal nonattainment area. The SFRPD would implement Mitigation Measure M-AQ-4 to limit construction vehicle emissions, thereby reducing the impacts of NOx emissions during the Sharp Park restoration. However, even with the implementation of M-AQ-4, NOx emissions would remain above the BAAQMD daily threshold. Therefore, criteria air pollutant impacts from Sharp Park restoration would be ***significant and unavoidable***.

Following completion of the restoration activities, there would be negligible emissions from maintenance activities over the long term, and operational criteria air pollutant impacts would be ***less than significant***.

Sensitive Receptors

Programmatic Impacts

Impact AQ-7: Programmatic projects under the SNRAMP would not expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)

The Sharp Park restoration would be the largest of the programmatic projects that would be expected to occur under the SNRAMP. Based on the health risk analysis presented for Sharp Park below under Impact AQ-9, hazardous air pollutants generated by the restoration activities would not exceed the significance thresholds of 10 in a million cancer risk and Hazard Index of 1.0 (see air quality report in Appendix H). Further, the restoration activities would not exceed the annual average threshold for $PM_{2.5}$ of 0.3 micrograms per cubic meter. The analysis conducted for the Sharp Park restoration project conservatively assumed a residential child receptor would be located at the Sharp Park construction boundary for the duration of construction activities, allowing the results of this analysis to inform the analysis for programmatic projects proposed under the SNRAMP. Given that this analysis concluded that there would be no significant impacts to the most sensitive receptors from the largest of projects carried out by the SNRAMP, other programmatic projects would also result in health risk impacts that are below the BAAQMD thresholds for cancer risk, hazard index, and $PM_{2.5}$. As such, health risks associated with the programmatic projects would be ***less than significant***.

Project-level Impacts (Routine Maintenance)

Impact AQ-8: Routine maintenance under the SNRAMP would not expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)

Routine maintenance activities are expected to be substantially similar to current operations within the Natural Areas, and negligible changes are anticipated in the routine maintenance emissions of hazardous air pollutants and their associated health risks, such as from the use of gasoline- or diesel-powered equipment. Therefore, these activities would not be expected to expose sensitive receptors to substantial pollutant concentrations. As such, routine maintenance impacts related to health risk impacts on sensitive receptors would be ***less than significant***.

Project-level Impacts (Sharp Park Restoration)

Impact AQ-9: Sharp Park restoration under the SNRAMP would not expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)

A quantitative health risk assessment was performed to determine if sensitive receptors would be exposed to substantial pollutant concentrations from the Sharp Park restoration activities. Although the adjacent residential areas located at approximately 300 feet to the north and southeast of Laguna Salada were the nearest identified sensitive receptors, for purposes of the health risk assessment, the nearest sensitive resident child receptor was assumed to be at the project boundary to provide a conservative exposure assessment that would be applicable to other programmatic projects. Health risks associated with diesel particulate matter, $PM_{2.5}$, and TAC emissions from the restoration activities were evaluated in accordance with the BAAQMD CEQA Air Quality Guidelines. The health risk analysis used the EPA's Industrial Source Code Short Term Version 3 dispersion model and meteorological data from the Fort Funston meteorological station (the nearest meteorological station to the proposed project). Dispersion modeling results for cancer and non-cancer health risks were calculated using the ARB's Hot Spots Analysis Reporting Program and compared to the BAAQMD health risks thresholds. As presented in Table 16, hazardous air pollutant emissions resulting from the restoration activities would be below the BAAQMD health risk thresholds for cancer risks, non-cancer risks, and annual average $PM_{2.5}$ concentrations; therefore, Sharp Park restoration activities would have ***less than significant*** impacts associated with health risks.

Table 16
Health Risk Assessment Results for Sharp Park Restoration

Source	Cancer Risk (per million)	Chronic Hazard Index	Acute Hazard Index	Annual Average $PM_{2.5}$ (micrograms per cubic meter)
Sharp Park Restoration	0.62	0.0025	0.0088	0.04
BAAQMD Thresholds for Construction Emissions	Less than 10	Less than 1.0	Less than 1.0	Less than 0.3

Cumulative Impacts

Impact AQ-10: Implementation of the proposed project in combination with past, present, and reasonably foreseeable projects in the vicinity would result in cumulatively considerable significant air quality impacts. (Significant and Unavoidable with Mitigation)

The geographic scope of this analysis covers San Francisco and Pacifica. Cumulative projects that would have an impact on air quality are those that would generate fugitive dust, emit criteria air pollutants, and/or result in emissions that could increase health risks to sensitive receptors. Most of the cumulative projects listed in Appendix G involve some amount of construction, demolition, or renovation and thus would generate fugitive dust and criteria pollutant emissions that could increase health risks. Many of these projects are relatively small, such as additions to existing buildings, renovation of existing buildings, and small construction projects such as construction or demolition of one or two buildings. Large projects that could involve a substantial amount of construction, renovation, or demolition, are the California Pacific Medical Center project and the Candlestick Point-Hunters Point Shipyard Phase II Development Project. All of the cumulative projects would be required to comply with the emissions thresholds and other regulatory requirements of the BAAQMD, and those projects in San Francisco would be required to comply with the San Francisco Dust Control Ordinance.

Programmatic Projects

The programmatic projects would result in less than significant fugitive dust impacts because the SFRPD would comply with the applicable provisions of the San Francisco Dust Control Ordinance. Compliance with the Dust Control Ordinance is required by law, therefore, sponsors of cumulative projects in San Francisco would also be required to comply with this ordinance and therefore would not contribute significantly to fugitive dust emissions and cumulative fugitive dust impacts would be ***less than significant***. Programmatic projects at Sharp Park would be required to comply with M-

AQ-1 and would therefore not result in a considerable contribution to any potentially significant cumulative fugitive dust impacts.

The programmatic projects would result in significant unavoidable air quality impacts as a result of exceeding the BAAQMD thresholds for NOx emissions. BAAQMD considers projects that exceed the criteria air pollutant thresholds to also result in a considerable contribution to cumulative criteria air pollutant emissions. Implementing M-AQ-4 would reduce the impacts of the programmatic projects NOx emissions; however, the impacts would not be reduced to a level below significance. Therefore, cumulative impacts of the programmatic projects associated with criteria air pollutants would be ***significant and unavoidable***.

The cumulative health risks of programmatic projects could vary significantly, primarily because roadway and other stationary sources within 1,000 feet of the project boundary would be different for each location and could change over time. Additionally, the locations of the closest sensitive receptors would depend on the boundaries of individual construction activities. Because of this uncertainty, it was assumed that cumulative health risk impacts at the maximally exposed individual for any particular programmatic project would be significant. Implementing Mitigation Measure M-AQ-10 would require that a cumulative site-specific health risk analysis be performed and appropriate mitigation measures be applied before each programmatic project could be implemented. However, due to the uncertainty of the effectiveness of the mitigation measures at reducing health risks below the relevant thresholds, cumulative health risk impacts from programmatic projects are assumed to be ***significant and unavoidable***.

M-AQ-10: Cumulative Health Risk Analysis for Programmatic Projects

As part of the environmental review for all programmatic projects, the SFRPD will conduct a cumulative site-specific health risk analysis to determine if nearby sensitive receptors would be affected by those projects in combination with other known sources (e.g., roadway sources and permitted stationary sources) and existing construction projects within 1,000 feet. Based on the results of those analyses, EP would determine the need for and the scope of additional measures to reduce health risk impacts from construction activities. Mitigation measures to reduce construction-related health risks could include those listed under M-AQ-4.

Routine Maintenance

As discussed previously, routine maintenance activities are expected to be substantially similar to current maintenance operations within the Natural Areas and negligible impacts from fugitive dust, criteria air pollutants, and health risk impacts to sensitive receptors. The impacts of routine

maintenance when added to other cumulative impacts are not expected to contribute considerably to any significant cumulative air quality impacts; sponsors of cumulative projects would be responsible for reducing air quality impacts below the level of significance for their project impacts, and the emissions contribution of routine maintenance activities in the regional and cumulative context would not be considerable.

Sharp Park Restoration

The Sharp Park restoration activities would result in less than significant fugitive dust impacts because the SFRPD would be required to implement M-AQ-1, which requires preparation and implementation of a dust control plan; that plan would contain all of the BAAQMD recommended BMPs to control fugitive dust. Since the Sharp Park restoration project would include the BAAQMD-recommended BMPs, it would not be anticipated to result in a considerable contribution to any cumulative fugitive dust impacts as a result of past, present or reasonably foreseeable projects. Therefore, cumulative fugitive dust impacts would be ***less than significant***.

The Sharp Park restoration activities would result in significant unavoidable air quality impacts as a result of exceeding the BAAQMD thresholds for NOx emissions. BAAQMD considers projects that exceed the criteria air pollutant thresholds to also result in a considerable contribution to cumulative criteria air pollutant emissions. Implementing M-AQ-4 would reduce the impacts of the Sharp Park restoration NOx emissions. However, the impacts would not be reduced to a level below significance. Therefore, cumulative impacts associated with criteria air pollutants would be ***significant and unavoidable***.

Cumulative health risks of the Sharp Park restoration activities were calculated by adding the emissions from restoration activities at Sharp Park to all roadway and stationary sources within 1,000 feet of the project boundary. The main roadway emissions near Laguna Salada are from Highway 1.[3] The Sharp Park golf course also operates a gasoline dispensing station that is used for golf cart refueling. The refueling station is the only stationary source identified within 1,000 feet of the project's construction activities. Based on a review of the BAAQMD stationary source database, the Sharp Park refueling station would not be a significant source of health risks to nearby sensitive receptors, and risks from this source are considered negligible; furthermore, this station is located

[3] Health risks from Highway 1 were estimated based on BAAQMD Roadway Screening Tables for Highway 1 in San Mateo County (April 2011). The distance between construction activities and Highway 1 was conservatively estimated to be no closer than 400 feet. Using the BAAQMD screening tables, cancer, non-cancer and annual average $PM_{2.5}$ risks were extrapolated for a distance of 400 feet. The BAAQMD screening tables are available online at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. Accessed August 17, 2011.

over 500 feet from the nearest identified sensitive receptor, which is the nearest residence. The BAAQMD's thresholds for cumulative health risks are whether cumulative risks as a result of project construction, stationary and mobile sources exceed a cancer risk of 100 in a million, a hazard index of 10, and an annual average $PM_{2.5}$ concentration of 0.8 microgram per cubic meter. As presented in Table 17 below, cumulative health risk impacts from all roadway and stationary sources of TAC emissions and $PM_{2.5}$ would result in a lifetime cancer risk of 2.22 chances in one million, a Chronic Hazard Index of 0.0045, and an increase in the annual average concentration of $PM_{2.5}$ of 0.061 micrograms per cubic meter. These cumulative health risk levels would not exceed BAAQMD's cumulative construction thresholds for cancer and non-cancer risks and annual average $PM_{2.5}$ emissions. Therefore, cumulative health risk impacts associated with Sharp Park restoration would be ***less than significant***.

Table 17
Cumulative Health Risk Assessment Results for Sharp Park Restoration

Source	Cancer Risk (per million)	Chronic Hazard Index	Annual Average $PM_{2.5}$ (microgram per cubic meter)
Sharp Park Restoration	0.62	0.0025	0.04
Highway 1	1.6	0.002	0.021
Cumulative	**2.22**	**0.0045**	**0.061**
BAAQMD Cumulative Threshold	100	10	0.8

VI. OTHER CEQA ISSUES

Section 15126.2 of the CEQA Guidelines requires that an EIR discuss growth-inducing impacts, significant unavoidable impacts, significant irreversible impacts, and significant environmental impacts of the proposed project. These topics, along with areas of known controversy and issues to be resolved and effects found not to be significant, are discussed in the subsections below.

VI.A GROWTH-INDUCING IMPACTS

Due to the nature of its management activities, the proposed project has little potential to induce economic growth or population growth and construction of associated support facilities in the surrounding community. At most, continued improvement of the Natural Areas and their facilities may increase the appeal of the neighborhoods in which they are located. This is more likely to result in minor population shifts within San Francisco and Pacifica neighborhoods, as opposed to population growth. The project would not substantially increase the number of employees within the Natural Areas Program or otherwise lead to economic growth, and it would not induce population growth.

VI.B SIGNIFICANT UNAVOIDABLE IMPACTS

As discussed in Section V and summarized in Table 2 in Section I, the significant unavoidable impacts of the proposed project would be:

- Significant unavoidable impacts to the historic integrity associated with Sharp Park Golf Course from closing Hole 12 and modifying Holes 10 and 13;
- Significant unavoidable impacts from NOx criteria pollutant emissions, which could exceed the BAAQMD daily threshold even with the implementation of mitigation;
- Significant unavoidable cumulative impacts related to physical deterioration of recreational facilities resulting from increased dog use due to the implementation of the SNRAMP and the GGNRA Dog Management Plan; and
- Significant unavoidable cumulative impacts related to special status plant and wildlife species from increased dog use due to the implementation of the SNRAMP and the GGNRA Dog Management Plan.

None of the other significant impacts resulting from the proposed project are unavoidable; the mitigation measures available to reduce impacts to less than significant also are described and summarized in those sections.

VI.C SIGNIFICANT IRREVERSIBLE IMPACTS

Apart from consumption of nonrenewable resources, the proposed project would have no irreversible impacts. The modifications to the Natural Areas proposed under the SNRAMP do not preclude opportunities for future modification of those areas.

Implementing the management activities would require motorized equipment and vehicles, which would consume nonrenewable fuels (diesel and gasoline). The quantities of these fuels used by the project work crews are expected to be minor and similar to those currently used; under the SNRAMP, the use of these fuels would not substantially increase. Improved Natural Areas may also encourage more local, nonmotorized forms of recreation, potentially resulting in minor reductions in vehicle miles traveled, thus reducing fuel consumption. Project compliance with the San Francisco Clean Construction Ordinance also would reduce fuel consumption. Additionally, implementing Improvement Measure I-ME-1, to increase energy efficiency, and Mitigation Measure M-AQ-4, to limit idling of diesel-fueled vehicles, would further reduce the consumption of nonrenewable resources. The improvement measure is described in the Initial Study (included in Appendix A) and in the Summary of Environmental Impacts and Mitigation Measures (Table 2 in Chapter I).

None of the irreversible impacts would be considered significant.

VI.D SIGNIFICANT ENVIRONMENTAL IMPACTS

As discussed in Section V, the proposed project is expected to have significant environmental impacts on cultural and paleontological resources (Section V.D), recreation (Section V.F), biological resources (Section V.G), hydrology and water quality (Section V.H), hazards and hazardous materials (Section V.I), and air quality (V.K). These impacts are also summarized in Table 2 in Chapter I.

VI.E AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

Comments on the NOP were grouped into the following categories and are summarized in the scoping report in Appendix A (and in Chapter V and Section VI.F):

- Sharp Park Golf Course;
- General project;
- General CEQA;
- General environmental;
- Cumulative impacts;

- Land use and land use planning;
- Aesthetics;
- Cultural and paleontological resources;
- Transportation and circulation;
- Noise;
- Air quality;
- Wind and shadow;
- Recreation;
- Utilities and service systems;
- Biological resources;
- Geology and soils;
- Hydrology and water quality; and
- Hazards and hazardous materials.

The Draft EIR has considered the CEQA-related concerns and other issues raised through the scoping process. These issues are addressed in Section V (Environmental Setting and Impacts) and Section VI.F (Effects Found Not to be Significant).

VI.F EFFECTS NOT FOUND TO BE SIGNIFICANT

The effects not found to be significant are discussed in more detail in the Initial Study in Appendix A. The following resources are addressed only in the Initial Study:

- Population and housing;
- Public services; and
- Mineral and energy resources.

The following resources are addressed in this EIR:

- Land use and land use planning (Section V.B);
- Aesthetics (Section V.C);
- Cultural and paleontological resources (Section V.D);

- Wind and shadow (Section V.E);
- Recreation (Section V.F);
- Biological resources (Section V.G);
- Hydrology and water quality (Section V.H);
- Hazards and hazardous materials (Section V.I); and
- Agriculture and forest resources (Section V.J); and
- Air Quality (Section V.K).

For the following resources found to have less than significant effects in the Initial Study, additional or clarifying text is provided below to address the concerns expressed in comments received during the NOP scoping process.

VI.F.1 Transportation and Circulation

Comments related to traffic and circulation received during the NOP scoping process included concerns about the following:

- Traffic, air pollution, and global warming effects from people driving farther to walk their dogs in legal off-leash areas, if existing DPAs are closed.

In response to scoping comments, additional discussion of this resource is provided below.

Implementation of the proposed project could result in a minor increase in vehicle trips from Natural Areas Program staff vehicles and visitors due to increased use of the Natural Areas. However, as discussed in the Initial Study (Appendix A, Section E.5), the increase in vehicle trips generated by the workers, volunteers, and visitors to the Natural Areas would be minimal and would not be significant. The proposed project would result in the reduction or closure of DPAs within the Natural Areas. This could result in increased vehicle trips from people visiting other available DPAs that are not within walking distance of the closed DPA. The DPAs that would be affected by the proposed project are at Bernal Hill, McLaren Park, and Lake Merced. The existing DPA at Bernal Hill is approximately 21 acres. The proposed project would partially modify this area by reconfiguring and reducing it by 17 percent. At McLaren Park, DPAs would be reduced by 14 percent. The existing DPAs at this park are 61.7 acres. At Bernal Hill and McLaren Park, the reduction in the DPAs would not result in substantial changes in access or allowed uses. Therefore,

it is not anticipated that users of these DPA would have to access other DPAs in the area and result in new or modified vehicle trips.

At Lake Merced, a designated five-acre DPA is located at the north side of the East Lake. This DPA would be closed as a result of the project. This closure may prompt users to access another DPA in the area. Fort Funston, located approximately 8,000 feet (about 1.5 miles) from the existing Lake Merced DPA, has approximately 200 acres open for off-leash dog use. Current users of the Lake Merced DPA could either walk or drive to the Fort Funston dog area. This could result in a slight increase in the number of vehicles along Lake Merced Boulevard. However, this increase would be minimal considering that the number of dog owners presently using this DPA is minor (San Francisco Dog Owners Group 2009). Also, dog owners could use the Pine Lake DPA, approximately half a mile north of Lake Merced. Therefore, the closure of the five-acre DPA would not significantly increase the number of vehicle trips in the vicinity. As such, reducing or reconfiguring the DPAs as part of this proposed project would not result in significant traffic impacts from increased vehicle trips.

The Natural Areas could experience increased use because of the improved trail system. However, it is expected that the increase use would mostly be from users living near the Natural Areas. Those users would either walk or drive for very short distances using secondary roads. Therefore, the potential increase in the number of users of the Natural Areas would not significantly increase the number of vehicle trips in the vicinity. As such, transportation impacts of the proposed project would be less than significant.

VI.F.2 Noise

Comments related to noise received during the NOP scoping process included concerns about the following:

- The effects of tree removal at Mount Davidson on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion.

In response to scoping comments, additional discussion of this resource is provided below.

Implementation of the proposed project would result in temporary noise sources generated from equipment use. However, as discussed in the Initial Study (Appendix A, Section E.6), it would not result in significant noise impacts because project implementation would not require extensive use

of heavy equipment, and equipment use is expected to be discontinuous and of very short duration during the daytime. Heavy equipment, such as haulers, may be used during trail construction. However, use of this equipment would also be of short duration during the daytime. Use of noise-generating heavy equipment would be temporary and limited in duration; therefore, noise impacts would be less than significant.

Removal of trees at Mount Davidson could increase the long-term noise levels for nearby residents. A total of 1,600 trees would be removed at Mount Davidson. Trees to be removed would be located in the middle of the forest and within an area close to Juanita Way. As described in the Urban Forestry Statements of the SNRAMP, trees to be removed would be individually selected. If trees to be removed are selected in groups, group selection implemented to create openings within dense forests would leave the rest of the forest intact. Trees to be removed in the middle of the forest are located in the center of Mount Davidson at approximately 400 feet from residences. Although trees to be removed near Juanita Way are located at approximately 50 feet from nearby residences, those trees are surrounded by a very dense forest that extends more than 300 feet. Tree removal at Mount Davidson would not affect the density or the depth of the forest. Further, tree removal at Mount Davidson would not expose the residents to a nearby noise source such as a highway or a busy road. Portola Drive, located at approximately 150 feet north of Mount Davidson, and the residences along Juanita Way experience noise levels above 70 decibels. Tree removal at Mount Davidson would be to the west and south of Juanita Way and would not increase the noise exposure of the residences along Juanita Way from Portola Drive. Therefore, removal of the trees at Mount Davidson would not expose the nearby residences to new, long-term noise sources. Long-term noise impacts on noise-sensitive receptors would be less than significant.

VI.F.3 Greenhouse Gas Emissions

This section covers the analysis of GHG emissions because this proposed project was analyzed in the Initial Study prior to the adoption of new CEQA thresholds of significance for greenhouse gas emissions on March 18, 2010 and the BAAQMD's 2011 *CEQA Air Quality Guidelines* (BAAQMD 2011a). BAAQMD's 2011 *CEQA Air Quality Guidelines* do not define a project-level GHG threshold for construction-related emissions. The operational GHG emissions threshold for non-stationary sources is compliance with a qualified GHG reduction strategy or a quantitative metric of 1,100 metric tons of carbon dioxide equivalents (CO_2e)[1] per year, or 4.6 metric tons CO_2e per service

[1] Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

population.[2] The proposed project was reevaluated under these revised significance criteria, and as discussed below, potential GHG impacts would continue to be less than significant.

GHG emissions for the SNRAMP activities in San Francisco, within 31 of the 32 Natural Areas, were assessed qualitatively. The qualitative analysis included a determination of whether the SNRAMP activities in San Francisco comply with San Francisco's qualified GHG reduction strategy, *Strategies to Address Greenhouse Gas Emissions in San Francisco*. This determination was made through the completion of the *Greenhouse Gas Analysis: Compliance Checklist* for the 31 Natural Areas (CCSF 2011c). GHG emissions within the 31 Natural Areas in San Francisco were found not to be significant. The GHG checklist can be applied to all projects within San Francisco; therefore, it cannot be applied to activities at Sharp Park. For the Sharp Park Natural Area, GHG emissions resulting from the Sharp Park restoration activities were modeled and were found to be less than significant.

Operational GHG emissions of the proposed project would result from routine maintenance activities. However, because proposed operations are expected to be substantially similar to current operations, negligible changes are anticipated in the operation emissions of GHG. As a result, impacts resulting from GHG emissions during operations are expected to be less than significant.

An increase in traffic, as discussed above in Transportation and Circulation, could contribute to the cumulative impacts of global climate change. The GHG emissions of individual projects cannot be shown to have any material effect on global climate, and is therefore assessed in the cumulative context. The Intergovernmental Panel on Climate Change (IPCC 2007) has stated that "difficulties remain in attributing temperature on smaller than continental scales and over time scales of less than 50 years. Attribution at these scales, with limited exceptions, has not yet been established." As discussed under Transportation and Circulation above and in the Initial Study (Appendix A, Section E.5), the proposed project would result in a minimal increase in vehicle trips by workers, volunteers, visitors, and by users of the DPAs that would be closed or reduced within the Natural Areas. The proposed project contribution to GHG emissions would be negligible; therefore, the proposed project would not generate sufficient emissions of GHGs to contribute considerably to the cumulative effects of GHG emissions.

Comments related to greenhouse gas emissions received during the NOP scoping process included concerns about the following:

[2] Service population is defined as the total number of resident and employees.

- Native plants not being more effective in removing carbon dioxide;
- Global warming effects from tree removal;
- Traffic, air pollution, and global warming effects from people driving farther to legal off-leash areas if existing DPAs were closed;
- Uncited claims in the Initial Study that young trees have long-term carbon sequestration capacities, which results in a net greenhouse gas benefit;
- Effects of releasing carbon stored in 18,500 trees to be removed, compared to whatever benefit there may be in replacing some of the trees;
- The effects of prescribed burns on carbon release and air pollution;
- The effects on greenhouse gas emissions from converting acres of trees into grassland. The US Department of Agriculture reports that tree cover is less than 12 percent of San Francisco's area, yet trees remove about 19 percent more air pollution than shrubs in San Francisco.
- Quantification of the carbon sequestration effects of removing seedlings and saplings, in addition to the designated removal of 18,500 trees;
- Death of many native trees if sudden oak death continues to spread;
- Uncited claim that grassland above 50 degrees latitude reflects more sun than forest canopies;
- Application of the reflected light argument, which is based on the comparison between dark forests and the reflected light of snow in northern latitudes, to the local climate where there is no snow;
- Carbon sequestering abilities of the forest are not reduced by increased temperatures; and
- Lack of carbon sequestration benefit if nonnative plants and trees were removed from 25 percent of all park acreage in San Francisco and it proves impossible to successfully grow native plants in those locations.

In response to scoping comments received, additional discussion related to greenhouse gas emissions is provided below.

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The

accumulation of GHGs has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor.

While the primary GHGs occur naturally in the atmosphere, CO_2, methane, and nitrous oxide are largely emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes. Greenhouse gases are typically reported in CO_2e units.

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity (California Climate Change Portal undated).

The ARB estimated that in 2008 California produced about 478 million gross metric tons of CO_2e ($MMTCO_2e$), or about 525 million US tons (ARB 2010b). The ARB found that transportation is the source of 37 percent of the California's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 24 percent, and industrial sources at 19 percent. Commercial and residential fuel use (primarily for heating) accounted for 9 percent of GHG emissions (ARB 2010b). In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) and the industrial and commercial sectors are the two largest sources of GHG emissions, each accounting for approximately 36 percent of the Bay Area's 95.8 $MMTCO_2e$ emitted in 2007 (BAAQMD 2010b). Electricity generation accounts for approximately 16 percent of the Bay Area's GHG emissions followed by residential fuel usage at 7 percent, off-road equipment at 3 percent and agriculture at 1 percent (BAAQMD 2010b).

Regulatory Setting

In 2006, the California legislature passed Assembly Bill 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

Pursuant to AB 32, ARB adopted a Scoping Plan[3] in December 2008, outlining measures to meet the 2020 GHG reduction limits. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 "business as usual" emissions levels, or about 15 percent from today's levels (ARB 2010a). The Scoping Plan estimates a reduction of 174 $MMTCO_2e$ (about 191 million US tons) from the transportation, energy, agriculture, forestry, and high global warming potential sectors, as shown in Table 18. ARB has identified an implementation timeline for the GHG reduction strategies in the Scoping Plan (ARB 2008). Some measures may require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Additionally, some emissions reductions strategies may require their own environmental review under CEQA or the National Environmental Policy Act.

Table 18
GHG Reductions from the AB 32 Scoping Plan Sectors

GHG Reduction Measures By Sector	GHG Reductions ($MMTCO_2e$)
Transportation Sector	62.3
Electricity and Natural Gas	49.7
Industry	1.4
Landfill Methane Control Measure (Discrete Early Action)	1
Forestry	5
High Global Warming Potential GHGs	20.2
Additional Reductions Needed to Achieve the GHG Cap	34.4
Total	**174**
Other Recommended Measures	
Government Operations	1-2
Methane Capture at Large Dairies	1
Water Sector Measures	4.8
Green Buildings	26
High Recycling/Zero Waste • Commercial Recycling • Composting • Anaerobic Digestion • Extended Producer Responsibility • Environmentally Preferable Purchasing	9
Total	**42.8-43.8**

Source: ARB 2008

[3] As of this writing, a California superior court ruling was pending that holds that ARB failed to comply with CEQA when it adopted the Scoping Plan. The ruling, if finalized, would prohibit implementation of the Scoping Plan until ARB fulfills its CEQA requirements, which could delay implementation of AB 32, scheduled for January 2012 (Horowitz 2011).

AB 32 also anticipates that local government actions will result in reduced GHG emissions. ARB has identified a GHG reduction target of 15 percent from current levels for local governments themselves and notes that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions.

The Scoping Plan relies on the requirements of SB 375 to implement the carbon emission reductions anticipated from land use decisions. SB 375 was enacted to align local land use and transportation planning to further achieve the state's GHG reduction goals. SB 375 requires regional transportation plans, developed by Metropolitan Planning Organizations, to incorporate a "sustainable communities strategy" in their regional transportation plans that would achieve GHG emission reduction targets set by ARB. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. SB 375 would be implemented over the next several years and the Metropolitan Transportation Commission's 2013 Regional Transportation Plan would be its first plan subject to SB 375.

Senate Bill 97 (SB 97) required the Office of Planning and Research to amend the state CEQA guidelines to address the feasible mitigation of GHG emissions or the effects of GHGs. In response, the Office of Planning and Research amended the CEQA guidelines to provide guidance for analyzing GHG emissions. Among other changes to the CEQA Guidelines, the amendments add a new section to the CEQA Checklist (CEQA Guidelines Appendix G) to address questions regarding the project's potential to emit GHGs.

BAAQMD is the primary agency responsible for air quality regulation in the nine county San Francisco Bay Area Air Basin. As part of its role in air quality regulation, BAAQMD has prepared CEQA air quality guidelines to assist lead agencies in evaluating air quality impacts of projects and plans proposed in the San Francisco Bay Area Air Basin. The guidelines provide procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements. In May 2011, the BAAQMD released updated *CEQA Air Quality Guidelines* that include thresholds of significance for GHG emissions. The Office of Planning and Research's amendments to the CEQA Guidelines as well as BAAQMD's *CEQA Air Quality Guidelines* and thresholds of significance have been incorporated into this analysis accordingly.

Individual projects contribute to the cumulative effects of climate change by directly or indirectly emitting GHGs during construction and operational phases. Direct operational emissions include

GHG emissions from new vehicle trips and area sources (natural gas combustion). Indirect emissions include emissions from electricity providers, energy required to pump, treat, and convey water, and emissions associated with landfill operations.

The proposed SNRAMP activities would include the use of heavy equipment for trail construction, slope stabilization, tree removal, and other activities that use fuels**.** Therefore, the proposed project would contribute to annual long-term increases in GHGs as a result of increased operations associated with energy use.

As discussed above, the BAAQMD has adopted CEQA thresholds of significance for projects that emit GHGs, one of which is a determination of whether the proposed project is consistent with a Qualified Greenhouse Gas Reduction Strategy, as defined in the *CEQA Air Quality Guidelines*. On August 12, 2010, the San Francisco Planning Department submitted a draft of the City and County of San Francisco's *Strategies to Address Greenhouse Gas Emissions* to the BAAQMD; the document was finalized in November 2010 (CCSF 2010c). This document presents a comprehensive assessment of policies, programs and ordinances that collectively represent San Francisco's Qualified Greenhouse Gas Reduction Strategy in compliance with the BAAQMD's *CEQA Air Quality Guidelines* and thresholds of significance.

San Francisco's GHG reduction strategy identifies a number of mandatory requirements and incentives that have measurably reduced greenhouse gas emissions including, but not limited to, increasing the energy efficiency of new and existing buildings, installation of solar panels on building roofs, implementation of a green building strategy, adoption of a zero waste strategy, a construction and demolition debris recovery ordinance, a solar energy generation subsidy, incorporation of alternative fuel vehicles in the City's transportation fleet (including buses and taxis), and a mandatory composting ordinance. The strategy also identifies 42 specific regulations for new development that would reduce a project's GHG emissions.

San Francisco's climate change goals as identified in the 2008 Greenhouse Gas Reduction Ordinance are as follows:

- By 2008, determine the City's 1990 GHG emissions, the baseline level with reference to which target reductions are set;
- Reduce GHG emissions to 25 percent below 1990 levels by 2017;
- Reduce GHG emissions to 40 percent below 1990 levels by 2025; and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

The City's 2017 and 2025 GHG reduction goals are more aggressive than the State's GHG reduction goals as outlined in AB 32 and are consistent with the state's long-term (2050) GHG reduction goals. San Francisco's *Strategies to Address Greenhouse Gas Emissions* identifies the City's actions to pursue cleaner energy, energy conservation, alternative transportation and solid waste policies, and concludes that San Francisco's policies have resulted in a reduction in GHG emissions below 1990 levels, meeting statewide AB 32 GHG reduction goals. As reported, San Francisco's 1990 GHG emissions were approximately 8.26 $MMTCO_2e$ and 2005 GHG emissions are estimated at 7.82 $MMTCO_2e$, representing an approximately 5.3 percent reduction in GHG emissions below 1990 levels.

The BAAQMD reviewed San Francisco's *Strategies to Address Greenhouse Gas Emissions* and concluded that the strategy meets the criteria for a Qualified GHG Reduction Strategy as outlined in BAAQMD's CEQA Guidelines and stated that San Francisco's "aggressive GHG reduction targets and comprehensive strategies help the Bay Area move toward reaching the State's AB 32 goals, and also serve as a model from which other communities can learn (BAAQMD 2010c)."

Based on the BAAQMD's 2011 *CEQA Air Quality Guidelines*, projects that are consistent with San Francisco's *Strategies to Address Greenhouse Gas Emissions* would result in a less than significant impact with respect to GHG emissions. Furthermore, because San Francisco's strategy is consistent with AB 32 goals, projects that are consistent with San Francisco's strategy would also not conflict with the state's plan for reducing GHG emissions. Applicable requirements are shown in Table 19.

In addition to complying with the City's regulations, the 2008 Greenhouse Gas Reduction Ordinance requires that all City Departments prepare an annual department-specific climate action plan.

The SFRPD actions to reduce operational greenhouse gas emissions toward the City's goal of an 80 percent reduction by 2050 include the following:

- Energy Efficiency and Conservation: The SFRPD is working with the Energy Efficiency Services of the SFPUC to reduce energy use through the selection of operational equipment such as electrical fixtures and sprinkler heads, design standards enforcement, and use of the San Francisco Greening Checklist for exterior spaces.
- Renewable Energy Generation: The SFRPD is working with the SFPUC to assess its facilities' solar potential and identify potential co-generation sites.

Table 19
Regulations Applicable to the Proposed Project

Regulation	Project Requirement
Mandatory Recycling and Composting Ordinance (Environment Code, Chapter 19)	Minor quantities of solid waste and recyclable material would be generated during the management of the Natural Areas. Unless it can be used to create wildlife habitat, all large woody debris generated by the Natural Areas Program would be composted in Golden Gate Park; vegetation debris from Sharp Park would be disposed of at the Sharp Park organic dump. The wood chips may be used to suppress understory invasive vegetation or could be used as beneficial mulch on other revegetation projects in the Natural Areas. Also, large tree trunks may be left on site if they provide habitat value, or they may be used for recreational or maintenance purposes within the Natural Area.
San Francisco Green Building Requirements for construction and demolition debris recycling (SF Building Code, Chapter 13C)	Minor quantities of solid waste and recyclable material would be generated during the management of the Natural Areas.
San Francisco Clean Construction Ordinance (Ordinance 70-07)	Contractors on public works construction projects that take 20 days or more to complete must reduce vehicle emissions that contribute to GHG accumulation by (1) using a blend of at least 20 percent biodiesel in off-road vehicles and construction equipment and (2) using construction equipment with engines that meet Tier 2 standards or use best available control technology.

- Information Technology: Information technology energy conservation measures include power management tools for all personal computers and monitors. The SFRPD plan includes full compliance by the third quarter of fiscal year 2010 with the City's adopted policy of the Committee on Information Technology.
- Green Building: The SFRPD plan includes compliance with the City's Environmental Code to achieve Leadership in Energy and Environmental Design certification.
- Fleets and Fuel: The SFRPD has identified specific plans to retire older vehicles to achieve fuel savings, maintenance cost savings, and lower residual costs for older vehicles. Further, the SFRPD only purchases clean light-duty passenger cars and trucks.
- Employee Commute: The SFRPD plan includes measures to reduce vehicle trips traveled by promoting alternative transportation incentives to its employees.
- Zero Waste: The SFRPD is close to realizing its goal of 100 percent compliance with the City's recycling initiative.
- Green Product Purchasing: The SFRPD uses the City's Approved Catalog to purchase environmentally conscious products.

- Carbon Sequestration: The SFRPD promotes the City's urban forestry program through tree planting campaigns and supports other City departments in their participation in the urban forestry program.
- Community Wide Emissions: The SFRPD actions include providing community support to reduce greenhouse gas emissions through programs related to recycling, biodiversity, bicycling, and community education. To encourage recycling, the SFRPD is currently posting signs at all facilities to educate users on the importance of recycling and directing them on where to place their recyclables. For biodiversity, the NAP and SFRPD volunteer programs maintain and enhance natural biodiversity at many of our park sites. Related to bicycling, the SFRPD will promote bicycling to and within SFRPD facilities by installing bike parking racks and SF Bicycle Route maps at all facilities and by providing bicycle access and program information on the SFRPD website and other publications. The community education efforts include holding recycling education seminars at SFRPD recreation facilities.

Depending on a proposed project's size, use, and location, a variety of controls are in place to ensure that a proposed project would not impair the state's ability to meet statewide GHG reduction targets outlined in AB 32, nor impact the City's ability to meet San Francisco's local GHG reduction targets. Given that: (1) San Francisco has implemented regulations to reduce greenhouse gas emissions specific to municipal projects; (2) San Francisco's sustainable policies have resulted in the measured success of reduced greenhouse gas emissions levels; (3) San Francisco has met and exceeded AB 32 greenhouse gas reduction goals for the year 2020; (4) current and probable future state and local GHG reduction measures will continue to reduce a project's contribution to climate change; and (5) San Francisco's *Strategies to Address Greenhouse Gas Emissions* meets BAAQMD's requirements for a Qualified GHG Reduction Strategy, projects that are consistent with San Francisco's regulations would not contribute significantly to global climate change. The proposed project would be required to comply with these requirements, and was determined to be consistent with San Francisco's *Strategies to Address Greenhouse Gas Emissions.* As such, the proposed SNRAMP activities within San Francisco would result in a less than significant impact with respect to GHG emissions.

The proposed activities for the Sharp Park restoration include the use of heavy equipment for creating shallow pools within existing wetlands, dredging excess sediments, and grading to prevent flooding. GHG emissions resulting from the Sharp Park restoration were calculated using URBEMIS. The URBEMIS model is populated with assumptions regarding timing of restoration activities and the number, type, and operating hours of equipment are based on the number and

type of equipment as specified by the project sponsor. The model returns the CO_2 emission rates for all equipment, deliveries, and worker activity involving on-road and off-road gasoline and diesel fuel use. For other GHGs, such as methane and nitrous oxide rates are assumed to comprise 95 percent of CO_2e emissions based on the Environmental Protection Agency findings (EPA 2005). In addition, this analysis assumed that all heavy duty construction equipment is diesel or gasoline powered and no substantial electrically-powered pieces of construction equipment are envisioned as necessary, based on the project description. The results indicate that approximately 21,777 pounds per day of CO_2e would be emitted during the implementation of these activities. The proposed Sharp Park restoration would increase the activity on site with the activities spanning potentially 5.5 months. With the increased activity, the proposed project would contribute to annual long-term increases in GHG emissions. Increased GHG emissions occur as a result of increased heavy duty vehicle and equipment associated with construction activities. During the 5.5-month construction period, the Sharp Park wetland restoration project would emit 21,777 lbs per day of CO_2e, which is equivalent to a total of 1,630 metric tons of CO_2e. Because BAAQMD's 2011 *CEQA Air Quality Guidelines* do not define a project-level GHG threshold for construction-related emissions, there is no applicable significance threshold to which to compare this estimate. Thus, GHG emissions of the Sharp Park restoration would result in a less than significant impact. The Sharp Park restoration is considered the largest of the programmatic projects. Therefore, GHG emissions resulting from other individual programmatic projects in the Sharp Park Natural Area are expected to be less than those resulting from the restoration project.

Routine maintenance activities would be similar to current activities and would not result in a net increase of GHG emissions. As such, routine maintenance activities would result in less than significant GHG impacts.

Vegetation Sequestration of Carbon

Removal of urban trees could have a GHG impact. Urban trees can help mitigate climate change by sequestering atmospheric carbon in tissue and by reducing energy use in buildings, consequently reducing carbon dioxide emissions from fossil fuel-based power plants. However, net carbon sequestration[4] can be negative if carbon emissions from decomposition are greater than the amount sequestered by healthy trees. An estimated 117,453 trees are within the project area. The project includes removal and replacement of approximately 18,448 trees, 97 percent of which are within the

[4]Carbon sequestration—the removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, forests, and soils) through physical or biological processes, such as photosynthesis.

MA-1[5] and MA-2[6] urban forests. Trees would be removed to promote forest health, and removal would focus on dead or dying trees, trees with disease or insect infestations, storm-damaged or hazardous trees, and trees whose growth is suppressed by overcrowding. Large tree trunks may be left on site if they provide habitat value, or they may be used for recreation or maintenance within the Natural Areas. Unless it can be used to create wildlife habitat, for erosion control, or trail maintenance, all large woody debris generated by the Natural Areas Program would be composted in Golden Gate Park. Although old large trees are good at storing carbon, they are not as effective as young trees at taking up carbon (Oxarart and Monroe 2007). Replacing dead, dying, and diseased trees that have limited capability to sequester carbon with young saplings that have long-term carbon sequestration capabilities would result in a net GHG benefit.

Further, most of the trees within the Natural Areas are nonnative and most are also invasive. The invasive forests within the Natural Areas are predominantly eucalyptus, although cypress, pine, and acacia also occur (SFRPD 2006). The long-term goal in MA-1 and MA-2 is to slowly convert those areas to native scrub, grassland habitats, or oak woodlands. According to an urban forest assessment for San Francisco, the total number of trees in San Francisco is 669,000. San Francisco trees and shrubs remove an estimated 260 tons of air pollution (carbon monoxide, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide) per year. San Francisco trees sequester 5,200 tons of carbon dioxide annually, which is equivalent to the annual amount of carbon emitted by 3,100 cars (USDA 2007). San Francisco trees are estimated to store 196,000 tons of carbon, or the annual amount of carbon emitted by 118,000 cars (USDA 2007).

As trees die and decay, they release much of the stored carbon to the atmosphere. Thus, carbon storage is an indication of the amount of carbon that can be lost if trees are allowed to die and decompose. Of all the species in San Francisco, eucalyptus trees store and sequester the most carbon (approximately 24.4 percent of the total carbon stored and 16.3 percent of all sequestered carbon). Trees removed in the Natural Areas in San Francisco would be replaced at a one-to-one ratio, although not necessarily in the same location. Eucalyptus trees would be replaced with native trees. Although the net effect on carbon sequestration capacity is unknown for the proposed replacement of mature eucalyptus with native saplings, replacing dying trees with healthy trees typically enhances the carbon sequestration process. In fact, one of the urban forest management strategies to help improve air quality is to increase the number of healthy trees. Further, among mitigation measures recommended by the Intergovernmental Panel on Climate Change is forest management,

[5]MA-1 represents the priority areas for conservation and management activities.
[6]Areas designated MA-2 are comparatively more resilient to human disturbance than MA-1 areas.

and particularly selection of tree species that sequester the most carbon (IPCC 2007). As such, tree replacement is expected to result in a net increase in the amount of carbon sequestered within the Natural Areas. The total number of trees would not change within the Natural Areas of San Francisco and the amount of carbon sequestered would increase in the long term from replacing dead, dying, or diseased trees. According to the California Registry, dead trees must be replaced within one year of removal. This timeframe allows for planting to occur at the appropriate time of the year. Therefore, the project would not conflict with San Francisco's Greenhouse Gas Ordinance. Further, the project would not conflict with California's goal of reducing GHG emissions set forth by the timetable established in AB32[7]. Therefore, the proposed project would result in less than significant individual and cumulative impacts from GHG emissions and the associated carbon sequestration impacts.

Trees removed in Sharp Park would be replaced with native grassland and scrub species. The California Registry is developing flexible mechanisms to address reversals if removed trees are not compensated by planting replacement trees. According to a study presented at the American Geophysical Union's meeting, grasslands above 50 degrees latitude reflect more sun than forest canopies, thereby keeping temperatures lower by an average of 0.8 degree Celsius (Jha 2006). However, in the tropics, forests cool the planet by an average of 0.7 degree Celsius (Jha 2006). Research studies have concluded that grassland and scrub habitat could act as a significant carbon sink (Hu et al. 2001; Conant et al. 2001). Therefore, replacing the trees to be removed in Sharp Park with grassland and scrub habitat would not result in a substantial increase in GHG emissions from the loss of CO_2 sequestration, and impacts from GHG emissions would be less than significant.

VI.F.4 Utilities and Service Systems

Comments related to utilities and service systems received during the NOP scoping process included concerns about the following:

- Addressing the requirements of Administrative Code Chapter 63, including reporting, planning, and receiving approval from the San Francisco Public Utilities Commission; and
- Analysis of additional water use, as any irrigation in Natural Areas would be new and incremental.

[7] In 2006, the California legislature passed Assembly Bill No. 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

In response to scoping comments, additional discussion of this resource is provided below.

While no data has been collected on water use specific to the Natural Areas, recently compiled data on water consumption by the parks in which Natural Areas are located provide a general indication of water consumption levels. For the 18 Natural Areas parks for which data were available, the average daily demand for the peak month was 4.815 million gallons per day; the annual average daily demand was 2.831 million gallons per day (SFRPD 2009b). Also, the capacity of the irrigation water systems and the water supplies serving the Natural Areas has not been quantified. However, no problems have been reported regarding overconsumption of available resources, and no restrictions have been placed on water use within the Natural Areas. Because the level of management activities is expected to vary throughout the 20-year implementation period for the SNRAMP, it is not possible to quantify the increase in water demand or the increase in the size of the areas requiring irrigation. Most management activities are expected to require only short-term irrigation; for example, reintroducing native plant species and replacing trees would involve irrigation only until the plants become established. This short-term irrigation would be accomplished using water trucks because most Natural Areas do not have irrigation systems. Native species are more adapted to local climate and tend to be more drought resistant and require less irrigation. The anticipated irrigation needs would be met by existing water supply capacity and would not require new or expanded water supply resources.

The proposed project would require additional irrigation water only to establish vegetation and would not require water for the ongoing maintenance of currently landscaped areas, and would not involve applying for an irrigation water meter; therefore, it is not required to comply with Chapter 63, *Limitation on Water Use for Landscaping in New Developments and Landscaping Renovations*[8] of the San Francisco Administrative Code and the proposed project would have less than significant impacts on utilities and service systems.

[8] The purpose of Chapter 63 of the San Francisco Administrative Code is to promote efficient water use in new and renovated landscaping by utilizing proper landscape design, management and efficient irrigation equipment and techniques. This ordinance also satisfies the requirements of the Government Code concerning Water Conservation.

VI.F.5 Geology and Soils

Comments related to geology and soils received during the NOP scoping process included concerns about the following:

- The effects at Pine Lake (and likely Buena Vista Park, Lake Merced, and McLaren Park), including off-leash dogs that cause erosion and destroy restoration sites and dog and feral cat waste that contaminates soil and water;
- The effects at Lake Merced that result from leaving cypress and pine trees along steep banks that cannot support them and resulting soil removal and erosion caused by them falling;
- The effects of tree removal at Mount Davidson on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion
- The erosion effects on neighboring homes from tree removal;
- The erosion effects of removing 54,000 trees in Sharp Park;
- The landslides and earth movement that would result from tree removal at Mount Sutro Forest;
- The need for a forester to evaluate the erosion impacts from cutting trees down;
- The erosion effects from removing trees and nonnative plants;
- The benefits of eucalyptus trees, including that they actually grow in the sandy soil and withstand the fierce winds blowing off the Pacific Ocean. Studies have shown that eucalyptus trees slow the wind down at least 30 percent in the Presidio;
- The erosion effects in Sharp Park, including that from the plan to remove 15,000 trees; and
- The effects on the surrounding neighborhoods from tree removal and sand hill destabilization.

In response to scoping comments, additional discussion of this resource is provided below.

Geology and soils existing conditions and impacts of the project were evaluated in the Initial Study, and the project was found to have either no impact or less than a significant impact for all of the significance criteria. The main activities of the project that might impact geology and soils include implementing erosion control measures; removing nonnative trees and other vegetation and replacing them with native and special status species; and regrading, recontouring, or repaving roads. The Natural Areas at greatest risk of soil erosion due to project activities include Bayview

Park, Glen Canyon Park and O'Shaughnessy Hollow, India Basin Shoreline Park, and Lake Merced. BMPs that would be implemented as part of the project are identified in the SNRAMP and discussed briefly in Chapter III (Project Description) of this EIR. These include the following:

- Straw mulch, wood mulch, and rolled erosion control products to protect exposed soil from water and wind erosion
- Silt fences, fiber rolls, and straw bales, which would be placed around the contours of slopes to intercept sediment-laden sheet flow to remove sediment from the runoff. Fiber rolls may also be placed around storm drain inlets to reduce the amount of sediment discharging to those inlets.

In addition to these BMPs, additional practices outlined in the SNRAMP specifically designed to minimize erosion include removing only small areas of vegetation at any one time (GR-1c), and, to the extent possible, performing work that involves exposure of large areas of soil during the dry season (GR-12b). None of the geology and soils effects were found to be significant.

VII. ALTERNATIVES

CEQA requires that an EIR include sufficient information about each alternative to allow meaningful analysis and comparison with the proposed project. It also requires discussion of the effects of the alternatives, but in less detail than for the proposed project. As such, both the description of the alternatives and the discussion of the impacts of those alternatives focus on their similarities and differences from those of the proposed project.

The alternatives for this EIR took into account the suggestions received during the EIR scoping process related to modifying the proposed project. They were developed in accordance with CEQA Guidelines, Section 15126.6, and provide a reasonable range of alternatives that feasibly attain most of the basic project objectives but would avoid or substantially lessen the significant impacts of the SNRAMP.

The purpose of the alternatives analysis under CEQA is to consider potentially feasible alternatives to the proposed project that are capable of avoiding or substantially lessening the significant effects of the project and that will foster informed decision making and public participation.

The alternatives presented and analyzed in this chapter were developed to meet most, but may not meet all, of the CEQA-defined project objectives identified in Section III.C and are generally potentially feasible. This EIR identifies four alternatives to the proposed project—the Maximum Restoration Alternative, the Maximum Recreation Alternative, the Maintenance Alternative, and the No Project Alternative (the last of which is required under CEQA Guidelines, Section 15126.6). In the sections that follow, these alternatives are described and analyzed for each of the CEQA environmental topics. In Section VII.F is a discussion of the alternatives considered but rejected.

Table 20 provides a general description of the project alternatives compared to the proposed SNRAMP. They are alternatives to the proposed project's programmatic actions, as well as alternatives to the Sharp Park project, covered at the project-level in this EIR. These differences would be articulated in modifications to the SNRAMP if an alternative was selected. Routine maintenance was found to result in less than significant impacts, or less than significant with mitigation, so the alternatives do not include different maintenance level activities. Additionally, dead, diseased, and hazardous trees removed under all alternatives would be consistent with tree maintenance health and safety goals of the Natural Areas Program. No new DPAs would be created under any of the project alternatives, consistent with the SFRPD's current moratorium on new DPAs.

Table 20
SNRAMP Alternatives Comparison

Management Actions	Proposed SNRAMP Project	No Project	Maximum Restoration	Maximum Recreation	Maintenance
SNRAMP Project Alternatives					
Habitat restoration	Habitat would be restored, as described for each of the Natural Areas in the SNRAMP.	Habitat would be restored, as described in the 1995 management plan. The No Project Alternative would promote indigenous plant species, would remove exotic species, and would enhance riparian areas on a smaller scale than under the proposed project, but it would be more general throughout the Natural Areas.	The Maximum Restoration Alternative includes more programmatic restoration and would extend focused restoration of native plant communities to not only MA-1 areas but also more aggressively in MA-2 and MA-3 areas. MA-3 areas under this alternative would include reintroduction of native plants and habitats where appropriate.	Under the Maximum Recreation Alternative, habitat would be restored as described for each Natural Area in the SNRAMP, except that funding would be prioritized for recreation and over time would result in implementing less of the restoration projects identified by the Natural Areas Program. Restoration for the Sharp Park wetland complex is discussed below.	The Maintenance Alternative includes less restoration work than under the proposed project. Restoration work under the Maintenance Alternative would be designed to preserve the existing distribution and abundance of vegetation assemblages.
Invasive tree and vegetation removal	The proposed project includes 5 percent invasive tree removal in San Francisco Natural Areas and 28 percent removal at Sharp Park. The SNRAMP also would remove other invasive vegetation. Additional vegetation and trees would be removed during implementation of programmatic projects.	The No Project Alternative does not include the programmatic projects identified for the proposed project, and management actions would be driven by the 1995 management plan. Therefore, the No Project Alternative would result in moderately less invasive tree removal, compared to the proposed project. Tree removal would be limited to invasive trees that could adversely affect indigenous plant growth.	The Maximum Restoration Alternative includes moderately more invasive and exotic tree and vegetation removal, compared to the proposed project.	The Maximum Recreation Alternative includes substantially less invasive tree and vegetation removal, compared to the proposed project. Tree removal would be limited to those necessary to meet the Natural Areas Program tree health and safety goals and those trees required to be removed to create new trails or other recreation facilities.	The Maintenance Alternative includes moderately less invasive tree and vegetation removal, compared to the proposed project. The goals of tree and vegetation removal would be to maintain the existing distribution and abundance of vegetation assemblages.

Table 20
SNRAMP Alternatives Comparison

Management Actions	Proposed SNRAMP Project	No Project	Maximum Restoration	Maximum Recreation	Maintenance
Public access and trail modifications	The proposed project includes closing 54,411 feet of trails and creating 5,897 feet of new trails.	The No Project Alternative includes substantially less trail closure and no new trail creation.	The Maximum Restoration Alternative includes closing additional trails in MA-1 and MA-2 areas. Access to most trails would remain within MA-3 areas. The Maximum Restoration Alternative does not include any new trail creation.	The Maximum Recreation Alternative includes closing some but not all informal and social trails, as described for the proposed project. This alternative would result in moderately more trail creation in MA-2 and MA-3 areas and would allow for greater multiuse of trails in Natural Areas, compared to the proposed project.	The Maintenance Alternative would maintain the current trail system, and no trails would be closed or created.
DPA reductions	The proposed project includes a 20 percent reduction in DPA acreage.	The No Project Alternative would not close or reduce the acreage of existing DPAs.	The Maximum Restoration Alternative includes moderately greater reduction in DPA acreage, focusing on reducing DPA acreage in MA-1 and MA-2 areas.	The Maximum Recreation Alternative would not close or reduce the acreage of existing DPAs. There would be no new DPAs, in accordance with the City's moratorium on new DPAs.	The Maintenance Alternative would not close or reduce the acreage of existing DPAs.
Project Level Alternatives					
Sharp Park Wetland Complex Restoration at Laguna Salada	Restoration would occur as described in the SNRAMP; loss of 5.5 acres of wetlands, dredging of Laguna Salada, modification of 19 acres of the Sharp Park Golf Course to provide upland habitat for the San Francisco garter snake.	The No Project Alternative does not include restoration of Laguna Salada. However, existing conditions would be maintained at Laguna Salada by removing any additional accumulated sediment and tules during the April 15 to October 15 dry season. Natural Areas Program staff would continue	The Maximum Restoration Alternative includes more aggressive restoration of the Laguna Salada wetland complex, compared to the proposed project. This alternative would extend restoration outside the Natural Area boundary and would restore an additional five acres of habitat for the California red-legged frog and San Francisco garter	The Maximum Recreation Alternative includes restoring Laguna Salada, but restoration would be confined to the geographic limits of the Natural Area and would not encroach into the Sharp Park Golf Course. Laguna Salada would be dredged under this alternative.	The Maintenance Alternative does not include restoration of Laguna Salada, but existing conditions would be maintained at Laguna Salada by removing any additional accumulated sediment and tules during the April 15 to October 15 dry season. Natural Areas Program staff would continue

Table 20
SNRAMP Alternatives Comparison

Management Actions	Proposed SNRAMP Project	No Project	Maximum Restoration	Maximum Recreation	Maintenance
		monitoring and relocating California red-legged frogs during the rainy season. The No Project Alternative would continue with restoration outside the Natural Area boundary at Horse Stable Pond, in accordance with the GGNRA Biological Opinion.	snake, for a total of approximately 24 acres of restored habitat. Compared to the proposed project, this alternative would result in additional upland habitat on the northeast edge of Laguna Salada and additional dredging of the Laguna Salada wetland complex water bodies.		monitoring and relocating California red-legged frogs during the rainy season. The Maintenance Alternative would continue with restoration outside the Natural Area boundary at Horse Stable Pond, in accordance with the GGNRA Biological Opinion.

VII.A NO PROJECT ALTERNATIVE

VII.A.1 Description

Under this alternative, the SFRPD would continue with management activities authorized under the 1995 management plan (Appendix E and incorporated by reference into this description of the No Project Alternative). This alternative includes activities similar to those outlined for the proposed project. However, the No Project Alternative differs from the proposed project in that programmatic projects would not occur under the 1995 management plan. Therefore, habitat restoration and invasive tree and vegetation removal under the No Project Alternative would likely be smaller in scale. The No Project Alternative would result in fewer trails closed and no new trails created. The No Project Alternative would not close or reduce the size of DPAs. Over time, this alternative likely would result in Natural Areas with characteristics largely similar to those under the proposed project; however, restoration and enhancement actions would be smaller in scale under the No Project Alternative. Activities at Laguna Salada in the Sharp Park Natural Area would be limited to removing accumulated sediment and tules by hand or other low-impact means during the April 15 to October 15 dry season. Laguna Salada would not be dredged, and during the rainy season Natural Areas Program staff would continue monitoring for the California red-legged frog, in compliance with the state and federal ESAs. The No Project Alternative would continue, with restoration work outside the Natural Area near Horse Stable Pond, as authorized by the GGNRA Biological Opinion. These activities include removing invasive plant species by hand. Restoration also includes revegetating the site with coastal grassland and scrub habitat that is optimal habitat for the San Francisco garter snake.

The No Project Alternative would not meet the project objectives because it would not implement a comprehensive program for managing the Natural Areas to maintain and enhance biodiversity and provide appropriate recreation opportunities. Moreover, the No Project Alternative would not restore Laguna Salada, as stated in the project objectives.

Below is a summary of the 1995 management plan's general policies and management actions (SFRPD 1995).

- **Vegetation**
  - Maintain or promote indigenous plant species
  - Control or remove invasive species

- Provide fire breaks where appropriate and maximize indigenous vegetation for fire control
- Use indigenous vegetation for erosion control
- Protect species listed as rare, threatened, or of special concern
- Remove exotic plants, which adversely affect indigenous plant growth
- Enhance riparian areas
- Reforest or replant areas to maintain diversity
- Preserve habitat that supports wildlife

- **Wildlife**
  - Monitor wildlife
  - Consult with other agencies on habitat enhancement
  - Cooperate with other agencies to address issues of such species as feral cats, domestic dogs, and feral geese
  - Develop educational programs with other agencies for wildlife protection
- **Water Resources**
  - Maintain or improve water quality
  - Protect riparian zones from erosion and sedimentation
  - Maintain drainage and erosion prevention devices along roads and service trails
  - Control drainage and runoff from roads
  - Establish and maintain tule encroachment zone around lakes
  - Use proper controls when applying aquatic herbicides
- **Geotechnical/Soils**
  - Minimize erosion along roads and trails
  - Seed or plant bare soils with indigenous vegetation
  - Stabilize embankments where not in conflict with habitat
  - Minimize access on unstable slopes
  - Cooperate with adjacent property owners to minimize erosion and runoff issues

- Clear landslide debris on park property
- Install retaining devices where necessary to stabilize slopes

- **Education**
  - Promote natural resource management among SFRPD staff
  - Develop nature programs to promote recreational and educational values
  - Develop education programs aimed at private property owners
  - Develop education programs with San Francisco Unified School District
- **Public Use**
  - Develop guidelines for pathways and interpretive signs for trails
  - Control dirt bike and off-road use
  - Encourage community participation in a public stewardship program

Compared to the proposed project, the No Project Alternative would involve moderately less invasive tree and vegetation removal and closure of fewer trails. The No Project Alternative would not result in new trails because routine maintenance would be limited to that described in Section III.F.2. Consistent with the SFRPD moratorium,[1] the No Project Alternative would not create any new DPAs.

VII.A.2 Impacts

Land Use and Land Use Planning

The No Project Alternative consists of a continuation of the recommendations in SFRPD's 1995 plan, which identified 28 Natural Areas and defined objectives, policies, and management actions. No site-specific management plans for the 32 Natural Areas would be implemented under the No Project Alternative. Activities would be similar in scale to the routine maintenance activities described for the proposed project and that currently occur under the Natural Areas Program. This alternative would not physically divide an established community, would not conflict with an applicable land use plan, policy, or regulation, and would not impact the character of the vicinity. This alternative would have no impact on land use and land use planning.

[1] There is direction from the Recreation and Park Commission not to establish new DPAs until systemwide DPA planning is completed. For the purposes of this EIR, this is considered a moratorium in that no new DPAs are reasonably foreseeable. This direction was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee.

Aesthetics

The No Project Alternative would improve the presence of native vegetation and would decrease the presence of invasive nonnative vegetation. Compared to the proposed project, the No Project Alternative would moderately reduce the total amount and scale of invasive tree and vegetation removal because the scope of those activities would be limited to levels similar to those described in Section III.F.2 for routine maintenance. Tree removal would be limited to dead, diseased, and hazardous trees and those necessary to meet the goals of the 1995 Management Plan (1995 Management Plan action: Remove exotic plants that adversely affect indigenous plant growth) and would continue to promote conversion to landscape elements found naturally in the Natural Areas. As with the proposed project, this alternative would not have a substantial adverse effect on a scenic vista or substantially degrade the visual character or quality of the site and its surroundings. Additionally, project activities would not substantially damage scenic resources of the natural or built environment, and aesthetic impacts of the No Project Alternative would be less than significant.

Cultural and Paleontological Resources

Under the No Project Alternative, management of the Natural Areas and the cultural and paleontological resources in them would continue under the current management plan, which does not include the mitigation measures afforded those resources under the proposed project. The No Project Alternative does not include programmatic projects and therefore would result in fewer soil-disturbing activities and less potential to affect cultural and paleontological resources. Without implementation of the mitigation measures identified for the proposed project, specifically mitigation measure M-CP-12, which was developed for routine maintenance activities, this alternative would result in greater impacts on cultural and paleontological resources, with respect to ground-disturbing activities. These potentially significant impacts could be reduced to less than significant by implementing mitigation measures similar to those developed for the proposed project.

The No Project Alternative includes vegetation management activities that are similar in size and scale to routine maintenance activities identified for the proposed project. As with the impacts of routine maintenance identified for the proposed project, vegetation removal and restoration under the No Project Alternative would have less than significant impacts on historic landscapes and the Golden Gate Park Historic District.

The No Project Alternative does not include the restoration of the Laguna Salada wetland complex, and actions at Laguna Salada would be limited to hand removal of accumulated sediments, tules,

and invasive plants; therefore, the No Project Alternative would not affect buried or submerged cultural and paleontological resources. Furthermore, the No Project Alternative would not encroach into the Sharp Park Golf Course or modify the golf course in any way and would therefore have no effect on the historical character of the Sharp Park Golf Course.

Wind and Shadow

Under this alternative, altering wind patterns in and near the Natural Areas is expected to be slightly less than that described under the proposed project because this alternative does not include large-scale (greater than half an acre) tree removal. Although this alternative seeks to remove invasive and exotic vegetation, it also calls for replanting native vegetation to maintain diversity; however, such restoration would likely occur on a smaller scale. As with the proposed project, this alternative would not result in significant ground-level wind hazards or wind throw impacts. Selected trees would be removed, which would not result in high ground-level wind speeds. Additionally, dead, diseased, and hazardous trees would be removed under the No Project Alternative, consistent with tree maintenance health and safety goals of the Natural Areas Program; therefore, this alternative would have less than significant wind impacts. Similar to the proposed project, the No Project Alternative does not include any aboveground structures that would create new shadows; therefore, the No Project Alternative would not result in any shadow impacts.

Recreation

Under this alternative, the management direction outlined in the 1995 plan would continue to be implemented. The public use management actions identified in the 1995 management plan have three guidelines for recreation facility management: develop guidelines for pathways and interpretive signs for trails, control dirt bike and off-road use, and encourage community participation in a public stewardship program. These recreation-specific management actions are general and are not site specific, compared to the management actions outlined in the SNRAMP. However, the No Project Alternative does not include programmatic projects and therefore would not result in new trail creation. In the long term, the No Project Alternative may result in a similar number of trail miles within the Natural Areas, as compared to the proposed project, because although the No Project Alternative would not result in new trails, it would close substantially fewer trails. As with the proposed project, the No Project Alternative would not increase the use of neighborhood or regional parks such that these resources would be substantially deteriorated. The No Project Alternative would continue maintaining trails, so trail-related activities would not result in the physical deterioration of recreational resources. As a result, the No Project Alternative would have less than significant impacts on recreation.

The No Project Alternative would not close or reduce any of the existing DPAs and would therefore not increase the use of other DPAs or result in the physical deterioration of recreation facilities. The DPAs identified for closure or reduction have been identified as those that experience the greatest impacts from dogs on sensitive plant and wildlife species and their habitats. (The impact of the No Project Alternative on biological resources is discussed below.) In addition, the GGNRA Dog Management Plan would restrict dogs on GGNRA lands, which may result in potentially significant and unavoidable cumulative impacts from the deterioration of the Natural Areas DPAs. However, the No Project Alternative would not reduce the size or number of DPAs in the Natural Areas and so would contribute considerably to potentially significant cumulative recreation impacts from deterioration of the Natural Areas as a result of dog restrictions.

Under the No Project Alternative, minor maintenance would be conducted in Laguna Salada in the Sharp Park Natural Area and at Horse Stable Pond. This would not encroach on the golf course or otherwise modify the golf course, which would retain its playability. Therefore, the No Project Alternative would have no impact on recreation resources at Laguna Salada from restoration. While the proposed project would have a significant impact on the golf course, it would be mitigated by M-RE-6 and so is not a significant unavoidable impact of the project. However, without the restoration proposed under the SNRAMP, the Sharp Park Golf Course would continue to be flooded during the rainy season and would continue to require seasonal closures.

Biological Resources

Under this alternative, the current management program would continue, allowing for some habitat improvements and routine maintenance as time, staffing, and money allow; however, this would be on a smaller scale than under the proposed SNRAMP because the No Project Alternative does not include the programmatic projects that were identified for the proposed project. Wildlife and vegetation could be disturbed in the short term through habitat improvement activities, such as promoting indigenous species and controlling invasive species. Long-term habitat improvements under the No Project Alternative would continue, but because these activities would be smaller in scale, the No Project Alternative would be less effective at maintaining native plant communities and controlling invasive vegetation. Under the No Project Alternative, no new trails would be created and the acreage of DPAs would not be reduced. Activities at Laguna Salada would include hand removal of tules and accumulated sediment during the dry season and monitoring and relocation of California red-legged frog egg masses during the rainy season. Invasive plant removal and revegetation near Horse Stable pond would continue according to the GGNRA Biological Opinion.

The following is a discussion of the potential biological resources impacts of the No Project Alternative on special status plant and wildlife species, nesting birds, sensitive natural communities and wetlands, and fish and wildlife movement.

Special Status Plant Species. Special status plant species occur throughout the Natural Areas, as discussed in Section V.G., Biological Resources. The No Project Alternative does not include large-scale programmatic projects, and restoration would be smaller in scale and similar to that described for routine maintenance under the proposed project. This alternative includes some vegetation removal and restoration activities that could affect both protected plant species and locally significant plant species through inadvertent removal. Given that the No Project Alternative does not include large-scale programmatic projects and would therefore not require the use of heavy equipment for restoration, impacts on special status plant species from habitat restoration and invasive plant removal would be substantially less under the No Project Alternative. However, it is possible that Natural Areas Program staff or their volunteers may inadvertently remove or destroy special status plant species during maintenance and restoration. These impacts would be mitigated to less than significant by incorporating M-BI-1a and M-BI-1b, which would require the SFRPD to conduct an annual biological training program identifying the types and location of special status plant species that occur throughout the Natural Areas and avoiding direct impacts on those species.

The No Project Alternative would not close or reduce the acreage of DPAs in the Natural Areas. Observation indicates that off-leash dog play and exercise, such as running at high speed, is causing soil erosion and plant damage that affects special status plant species in the DPAs. Use of DPAs at Lake Merced and Bernal Hill could impact protected plant species. Continued use of these DPAs by off-leash dogs would continue to impact special status plant species, resulting in significant impacts on special status plants. Impacts on special status plant species could be reduced or avoided by actions identified in the SNRAMP to close DPAs or modify areas to on-leash dog use only. However, without those specific actions identified in the SNRAMP to close or reduce off-leash dog use, impacts on special status plant species from dogs would continue.

As discussed above, the No Project Alternative does not include large-scale programmatic habitat restoration or invasive species removal; therefore, habitat restoration under the No Project Alternative would be less effective. Encroachment of invasive species and conversion of native habitat to nonnative habitat would be more likely under the No Project Alternative and could threaten the continued existence of sensitive plant species, especially those of limited distribution in the Natural Areas. This potentially significant impact of the No Project Alternative could be

mitigated only by implementing the restoration activities identified in the SNRAMP; therefore, the long-term impacts on special status plant species would be potentially significant.

No special status plant species occur in the Laguna Salada wetland complex in the Sharp Park Natural Area; therefore, restoration at Laguna Salada under the No Project Alternative would have no effect on special status plant species.

Special Status Wildlife Species. Special status wildlife species in the Natural Areas include the mission blue butterfly at Twin Peaks and McLaren Park, the California red-legged frog and San Francisco garter snake at Laguna Salada in Sharp Park, the California red-legged frog, San Francisco garter snake, and San Francisco dusky-footed woodrat in the upper canyon of Sharp Park, the western pond turtle at Sharp Park and Lake Merced, and the western red bat in Golden Gate Park Oak Woodlands, Mount Davidson, Twin Peaks, Pine Lake, and McLaren Park. The Natural Areas also support nesting special status bird species, which include the double-crested cormorant at Lake Merced and the salt marsh common yellowthroat at Lake Merced and Sharp Park.

The No Project Alternative includes smaller scale restoration activities and vegetation removal. These activities, although smaller in scale and without heavy equipment, could still affect special status wildlife species. For example, removing trees in the upper canyon of the Sharp Park Natural Area could disturb or otherwise affect the San Francisco dusky-footed woodrat or its habitat. Impacts on special status species could be reduced to less than significant by implementing Mitigation Measure M-BI-5, which would require the SFRPD to conduct an annual biological training program, identifying the types and location of special status wildlife species that occur throughout the Natural Areas and avoiding impacts on those species. In addition, implementing management action GR-4b, identified for the proposed project, would be required to reduce impacts on special status bird species and to comply with the federal MBTA. Implementing management action GR-4b requires vegetation management to be conducted outside the nesting season to the extent possible. If this is not possible, GR-4b would require a bird survey to be conducted before vegetation removal and to avoid active nests. Implementing M-BI-1a and GR-4b would reduce impacts on special status bird species to less than significant.

The No Project Alternative would not close or reduce the acreage of DPAs in the Natural Areas. Dog use in the DPAs may affect special status wildlife species, including special status birds at Lake Merced and McLaren Park. Continued use of these DPAs by off-leash dogs would continue to impact special status wildlife species, resulting in significant impacts. Impacts on wildlife species could be reduced or avoided by actions identified in the SNRAMP to close DPAs or to modify areas

to be for on-leash dogs only. However, without those specific actions identified in the SNRAMP to close or reduce off-leash dog use, impacts on special status wildlife species from dogs would otherwise be considered significant and unavoidable.

Activities at Sharp Park would continue as they do currently, and restoration would be limited to removing tules and accumulated sediment by hand. The No Project Alternative also calls for removing invasive vegetation and restoring the area near Horse Stable Pond, which is outside the boundaries of the Sharp Park Natural Area. Impacts on protected species at Laguna Salada from these activities could be avoided by implementing M-BI-6a, which would require the SFRPD to conduct an annual biological training program identifying the types and location of special status wildlife species that occur at Laguna Salada and avoiding impacts on those species. Avoidance would include removing tules and sediment during the dry season when the special status species at Sharp Park are less likely to be present.

If the SFRPD decides to take no action, as a result of ongoing natural processes, conditions at the Laguna Salada wetland complex would continue to degrade and be less hospitable to the western pond turtle, California red-legged frog, and San Francisco garter snake, due to increased sedimentation and eutrophication (a condition of dissolved nutrients in a water body promoting plant life, such as algae, which deplete the water's oxygen levels). Substantial deterioration of California red-legged frog, San Francisco garter snake, and western pond turtle habitat could affect the habitat elements required by the species to maintain a viable breeding population. Restoration of the Laguna Salada wetland complex on the scale of the proposed project (which is not included as part of the No Project Alternative), with implementation of mitigation measures developed for the proposed project, is intended to enhance the special status species habitat that may continue to degrade if no action is taken.

Direct impacts on California red-legged frog could occur from continued flooding of the golf course during the rainy season, which may result in red-legged frog egg masses being produced in the high water and stranded after rainstorms. If reauthorized by the USFWS and the CDFG, the SFRPD would continue to monitor and move egg masses deposited outside the Laguna Salada wetland complex to suitable habitat within the wetland complex during the rainy season if flooding results in a risk of stranding.

Migratory Birds. Tree and vegetation removal under the No Project Alternative would be smaller in scale and would not require the use of heavy equipment. The No Project Alternative would also not create new trails, so impacts on migratory birds would be less than those identified for the proposed

project. However, these activities could still disturb migratory birds and destroy active nests. As with the proposed project, the No Project Alternative would be required to comply with the federal MBTA, which prevents the take or destruction of birds and their nests. Compliance with the MBTA would reduce impacts on migratory birds to less than significant. Implementation of management action GR-4b requires vegetation to be removed outside the breeding season to the extent possible and, if that is not possible, requires a pre-construction nesting bird survey and avoidance measures. This would ensure compliance with the MBTA. By implementing these measures and compliance with the MTBA, impacts on migratory birds, including special status bird species, would be less than significant.

Sensitive Natural Communities and Wetlands. The No Project Alternative includes smaller scale restoration activities and vegetation removal. Although they would be smaller in scale and would not include the use of heavy equipment, these activities could still affect sensitive natural communities and wetlands through direct removal of vegetation that comprises the sensitive natural community. Impacts on sensitive natural communities and wetlands would be temporary and in the long term would result in beneficial impacts. That is because the goals of the Natural Areas Program are to protect and enhance native ecosystems, including sensitive natural communities. However, because restoration activities would be smaller in scale, they would be less effective at controlling invasive vegetation, and, in the long-term, impacts on sensitive natural communities and wetlands would be less beneficial than under the proposed project. Temporary impacts of restoration and vegetation removal in sensitive natural communities would be reduced by implementing the following management actions identified in the 1995 management plan:

- Maintain or improve water quality
- Protect riparian zones from erosion and siltation
- Seed or plant bare soils with indigenous vegetation
- Stabilize embankments where not in conflict with habitat
- Install retaining devices where necessary to stabilize slopes
- Enhance riparian areas

In addition, work in the riparian zone or wetlands would require permits from the RWQCB, USACE, or CDFG, which would include avoidance and minimization measures. Impacts on riparian and wetland habitats, sensitive natural communities, and wetlands would be reduced to less than significant by implementing Mitigation Measures M-BI-1a and M-BI-1b. These require that measures

be taken to avoid and minimize impacts on wetlands by limiting construction and vehicle traffic to the maximum extent. Temporary exclusion fencing would be used to protect wetland habitat, and projects would be conducted during the spring and summer to avoid saturated or ponded wetlands and streams.

The No Project Alternative would not close or reduce the acreage of DPAs in the Natural Areas. Dogs observed in the DPAs are affecting sensitive natural communities, including riparian habitat at McLaren Park. Continued use of these DPAs by off-leash dogs would continue to impact sensitive natural communities, resulting in significant impacts. Impacts on sensitive natural communities could be reduced or avoided by actions identified in the SNRAMP to close DPAs or to modify areas to on-leash dog use only. However, without those specific actions identified in the SNRAMP to prohibit or reduce off-leash dog use, impacts on sensitive natural communities from dogs would otherwise be considered significant and unavoidable.

Fish and Wildlife Movement. The No Project Alternative includes restoration and vegetation removal similar in scale to that identified under the proposed project as routine maintenance. As with the proposed project, these activities would occur regularly in the Natural Areas and would not significantly alter nursery sites, habitat corridors, or wildlife movement. Actions identified in the No Project Alternative are intended to enhance riparian areas and indigenous plant species and would result in long-term beneficial impacts. Due to the limited size of restoration activities and ground disturbance under the No Project Alternative, potential impacts on migratory corridors, wildlife movement, and nursery sites would be less than significant.

Cumulative Impacts. Cumulative impacts on biological resources from the GGNRA Dog Management Plan are similar to those under the proposed project. Under the No Project Alternative, impacts on biological resources in DPAs identified for closure or reduction under the SNRAMP would continue. However, because the No Project Alternative would not close or reduce any of the DPAs, there would be no increase in use of other DPAs attributable to the project. Because of this, any additional impacts on biological resources from the project in Natural Area DPAs would not occur, so impacts on biological resources would be less than cumulatively considerable under the No Project Alternative.

Hydrology and Water Quality

Under this alternative, the current management program would continue, providing some erosion control and water quality protection for the Natural Areas. Programmatic actions, such as large-scale tree removal, slope stabilization, and trail creation, would not occur under the No Project

Alternative. Impacts on water quality, the quality of stormwater runoff, erosion, and siltation are similar to those described under routine maintenance for the proposed project. Under the No Project Alternative, the scale of restoration activities are similar to those for routine maintenance under the proposed project. Those activities would not result in significant impacts on hydrology or water quality by implementing those measures identified for the proposed project. Specifically, even minor restoration, using gasoline-powered equipment, such as chainsaws and weed whackers, could result in the accidental release of gasoline or other fluids. Accidental release of these fluids during restoration near water bodies could result in significant impacts on water quality or stormwater runoff. However, by implementing Mitigation Measure M-HZ-14 identified for the proposed project, which requires the SFRPD to develop and implement an emergency response plan for the accidental release of fuels and other hazardous fluids, these impacts would be mitigated to less than significant.

The No Project Alternative also includes measures to control erosion along roads and trails, to minimize access to unstable slopes, and to seed or plant bare soils with indigenous vegetation, resulting in less than significant erosion and sedimentation impacts.

As a result of ongoing natural processes, water quality conditions at the Laguna Salada wetland complex would continue to degrade due to increased sedimentation and eutrophication (a condition of dissolved nutrients in a water body promoting plant life, such as algae, which deplete the water's oxygen levels), resulting in potentially significant long-term impacts on the water quality of Laguna Salada. These long-term impacts could be reduced to less than significant by implementing the proposed restoration of Laguna Salada. Additionally, the No Project Alternative would not relieve the incidence of golf course flooding, resulting in seasonal flooding and closure of the golf course, as discussed in the analysis of the impacts of the No Project Alternative on recreation resources. The No Project Alternative does not include dredging Laguna Salada, so associated impacts on water quality would not occur.

Hazards and Hazardous Materials

Under this alternative, impacts from hazardous materials are similar to those described for routine maintenance under the proposed project. As with the proposed project, restoration activities that require the use of gasoline-powered equipment, including chainsaws and weed whackers, could result in the accidental release of gasoline. This could result in potentially significant impacts on vegetation and water courses. Impacts from the accidental release of hazardous materials could be reduced to less than significant by implementing an emergency response plan, as identified in mitigation measure M-HZ-14. Further, impacts from the use of pesticides and herbicides, lead

contamination, and wildfires are also similar to those described under routine maintenance activities for the proposed project. This is because the SFRPD would be implementing similar management practices while using pesticides that would reduce the potential to impact nearby human populations, wildlife, and groundwater to less than significant.

Reforestation under the No Project Alternative could increase the potential for wildfires. However, this alternative would provide fire breaks and vegetation with low flammability or low fuel volume in areas of high fire hazards. Therefore, the No Project Alternative would result in less than significant wildfire impacts.

At Laguna Salada, under the No Project Alternative, tule stands would be removed by hand. The actions at Laguna Salada would be limited in scale and are anticipated to be less effective at controlling tules, thereby continuing to provide habitat for tule mosquitoes. The San Francisco Department of the Environment and the San Mateo County Mosquito and Vector Control District would continue to implement their programs for controlling and preventing mosquitoes, ticks, and insect-borne diseases, which would reduce the potential for insect-borne diseases to less than significant.

Agriculture and Forest Resources

Similar to the proposed project, this alternative would have no impacts on agricultural resources. The No Project Alternative would remove dead, dying, and diseased trees or trees that pose a public safety hazard. In addition, this alternative would remove exotic trees that could adversely affect indigenous plants species. Overall, this alternative includes moderately less tree removal and seeks to maintain diversity through reforestation. As with the proposed project, this alternative would have less than significant agriculture and forest resources impacts.

Air Quality

The types of air quality impacts under the No Project Alternative would be similar to those described for the routine maintenance under the proposed project. This is because restoration activities would be similar in scale and do not include long-term programmatic projects that would require the use of heavy equipment. As described under the proposed project, routine maintenance activities are similar to current activities conducted in the Natural Areas and therefore would not result in a net increase of fugitive dust, criteria air pollutant emissions, or health risks. As such, air quality impacts under the No Project Alternative would be less than significant. Cumulative air quality impacts could occur from other ongoing or reasonably foreseeable projects near the Natural

Areas. However, as the No Project Alternative would not result in a net increase in air pollutants, this alternative would not result in a considerable contribution to cumulative air quality impacts.

Other Resource Areas

Population and Housing

As with the proposed project, the No Project Alternative does not involve activities that would induce substantial population growth or create the need for constructing replacement housing. There would be no population and housing effects from this alternative.

Transportation and Circulation

Transportation and circulation impacts from implementing this alternative are slightly less than those described under the proposed project. As the No Project Alternative would not reduce or close any DPAs, no additional vehicle trips are expected as a result of people traveling by car to other DPAs.

Noise

Noise impacts under this alternative are less than those described under the proposed project because the No Project Alternative does not include programmatic projects that would require the use of heavy equipment for large-scale projects. The continued use of gasoline-powered equipment, including chainsaws and weed whackers, would be similar in duration and intensity to current activities and to those described under routine maintenance for the proposed project. Therefore, noise impacts under this alternative would be less than significant.

Greenhouse Gas Emissions

Activities under the No Project Alternative are similar to those described for the routine maintenance under the proposed project and similar types and amounts of gasoline-powered equipment would be used. As described under the proposed project, routine maintenance activities would be similar to current activities conducted in the Natural Areas and therefore would not result in a net increase of GHG emissions. Therefore, the No Project Alternative would result in less than significant impacts from GHG emissions.

Utilities and Service Systems

As with the proposed project, reintroducing native species and replacing trees would require irrigation until they become established; however, irrigation needs would be met by existing water supply capacity and would not require new or expanded water supply resources. Water use for irrigation would be slightly lower under the No Project Alternative because restoration would be

smaller in scale. The No Project Alternative does not involve activities that would affect landfill capacity, solid waste regulations, and operation or relocation of local utilities. Impacts of the No Project Alternative on utilities and service systems be less than significant.

Public Services

As with the proposed project, the No Project Alternative does not involve activities that would require construction or modification of public service facilities, nor would activities under the No Project Alternative increase police or fire emergency response times. Therefore, there would be no public services impacts from the No Project Alternative.

Geology and Soils

The No Project Alternative includes restoration activities and vegetation removal that are similar in scale to routine maintenance activities under the proposed project. These activities would not increase seismic or landslide hazards, would not cause a geologic unit to become unstable, would not substantially change the topography of a Natural Area, and would not result in substantial soil erosion.

As with the proposed project, there is a potential for strong ground shaking at all Natural Areas from a nearby earthquake. The No Project Alternative does not include any activities that would increase the exposure of people or structures to adverse effects from seismic ground-shaking or seismic failure. Similar to the proposed project, this alternative would not have the potential to increase landslide hazards because restoration activities and vegetation removal would be limited in scale to activities similar to those described under routine maintenance for the proposed project. In addition, the No Project Alternative would result in beneficial impacts by reducing the risk from potential landslides through management actions identified for minimizing erosion and stabilizing slopes and other embankments.

The No Project Alternative includes measures to minimize erosion and revegetate bare soils. While restoration under this alternative would initially disturb soils, those activities would not cause a geologic unit or soil to become unstable, resulting in a less than significant impact. While this alternative includes activities that would disturb the ground, the magnitude and location of those activities would not be sufficient to substantially change the topography, to impact any unique geologic or physical features of the Natural Areas, or to result in substantial soil erosion. Therefore, impacts of the No Project Alternative on geology and soils would be less than significant.

Mineral and Energy Resources

As with the proposed project, use of motorized equipment and vehicles for management activities under this alternative would consume fuel (diesel and gasoline), but those consumption amounts are expected to be minor and similar to current consumption levels. None of the activities under this alternative would result in the loss of availability of a mineral resource or mineral resource recovery site. Similar to the proposed project, the mineral and energy resources effects of the No Project Alternative would be less than significant.

VII.B MAXIMUM RESTORATION ALTERNATIVE

VII.B.1 Description

Under this alternative, the SFRPD would restore native habitat and convert nonnative habitat to native habitat wherever possible throughout the Natural Areas, including all management areas. The Maximum Restoration Alternative prioritizes activities related to endangered species protection and recovery and maximum enhancement of biodiversity. Compared to the proposed project, this alternative emphasizes the restoration of native habitat over recreational uses and nonnative habitat. Over time, this alternative would likely result in Natural Areas with a greater amount of native habitat and habitat supporting native species and special status plants and wildlife, not only in MA-1 management areas but also in MA-2 and MA-3 areas. As the Maximum Restoration Alternative would prioritize habitat restoration over recreation, this alternative would close additional trails in MA-1 and MA-2 areas, with most trails in the MA-3 areas. No new trails would be created under this alternative.

Under the Maximum Restoration Alternative, programmatic projects would focus on restoring habitat and removing invasive species. The Natural Areas Program would extend focused restoration of native plant communities not only to MA-1 areas but would more aggressively restore native plant communities in MA-2 and MA-3 areas; the reintroduction of native plants and habitats would extend into MA-3 areas. The Maximum Restoration Alternative would increase the amount of invasive tree and vegetation removal, replacing these areas with native plants.

The Maximum Restoration Alternative would further reduce the amount of DPA acreage, as compared to the proposed project, focusing on closing or reducing the DPA acreage in MA-1 and

MA-2 areas. Consistent with the SFRPD moratorium[2] on new DPAs, this alternative would not add any new DPAs to the Natural Areas.

The Maximum Restoration Alternative includes more extensive habitat restoration at the Laguna Salada wetland complex than the proposed project. Similar to the proposed project, this alternative would extend restoration outside the Natural Area boundary but also would restore up to an additional five acres of habitat for the California red-legged frog and San Francisco garter snake. In total, the Maximum Restoration Alternative would restore approximately 24 acres of land for the benefit of these threatened and endangered species. The more extensive recovery efforts include creating additional upland habitat on the northeast edge of Laguna Salada and additional dredging of the water bodies at the Laguna Salada wetland complex.

In summary, the Maximum Restoration Alternative would accomplish the following:

- Reduce off-leash dog use
- Reduce public access
- Increase removal of nonnative trees and other nonnative vegetation
- Include a greater amount of coastal scrub, native grassland, wetland and riparian and oak/native woodland habitat restoration
- Increase the ability for the Natural Areas to support native plants and special status plants and wildlife
- Expand restoration of the Laguna Salada marsh complex

The Maximum Restoration Alternative meets some, but not all, of the project objectives presented in Section III.C. Specifically, the Maximum Restoration Alternative does not meet the objective related to recreation, as the Maximum Restoration Alternative would provide additional restrictions on public use and access of the Natural Areas.

[2] There is direction from the Recreation and Park Commission not to establish new DPAs until systemwide DPA planning is completed. For the purposes of this EIR, this is considered a moratorium in that no new DPAs are reasonably foreseeable. This direction was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee.

VII.B.2 Impacts

Land Use and Land Use Planning

The Maximum Restoration Alternative would result in the greatest amount of restored, created, and enhanced native habitat in all three types of management areas (MA-1, MA-2 and MA-3) and a reduction in the amount of land devoted to recreation. Recreation would still occur in all Natural Areas, but informal trails and social trails in the most sensitive areas would be closed. Routine maintenance under this alternative would be similar in scale to that described for the proposed project and that currently occurs under the Natural Areas Program. As with the proposed project, this alternative would not physically divide an established community, conflict with applicable land use plans, policies, or regulations, or have a substantial impact on the character of the vicinity. This alternative would have less than significant land use and land use planning impacts.

Aesthetics

The Maximum Restoration Alternative would have aesthetic impacts similar to those under the proposed project but with moderately more invasive vegetation and tree removal projects. Therefore, although the types of aesthetic impacts are similar to those of the proposed project, the magnitude of those impacts on scenic resources in the Natural Areas and on the visual character or quality of the Natural Areas would be greater than under the proposed project because the Maximum Recreation Alternative would result in more changes to vegetation. However, invasive tree and vegetation removal would be followed by revegetation with native plants, so, overall, the Natural Areas would continue to be characterized as relatively undeveloped landscapes that allow for recreation. As evidenced in the visual simulations under the proposed project at Sharp Park and Mount Davidson, tree removal would not result in noticeable changes to the visual character or quality of the Natural Areas and would not have a substantial adverse effect on a scenic vista. Even with a moderately greater number of trees removed, as proposed under the Maximum Restoration Alternative, tree removal, which would be followed by revegetation with native trees and other native plants, would not significantly affect scenic views or vistas and would not result in a substantial demonstrable impact on the visual character or quality of the Natural Areas. Similar to the proposed project, under the Maximum Restoration Alternative, new trees would be placed in the Natural Areas to preserve important viewsheds and vistas. As such, the Maximum Restoration Alternative would have less than significant aesthetics impacts.

Cultural and Paleontological Resources

Under the Maximum Restoration Alternative, impacts on cultural and paleontological resources are similar to those under the proposed project and possibly greater as a result of more aggressive habitat restoration, which would remove more nonnative and invasive vegetation. However, those

impacts resulting from recreation aspects of the SNRAMP, such as trail construction, would be removed, so impacts on cultural and paleontological resources under the Maximum Restoration Alternative would be relatively similar to those of the proposed project. Programmatic large-scale projects and routine maintenance activities would continue to have the potential for significant impacts on cultural and paleontological resources; however, these impacts would be reduced to less than significant by implementing mitigation measures similar to those developed for the proposed project.

The Maximum Restoration Alternative includes would remove more invasive trees and vegetation than the proposed project and would revegetate these areas with native plants, resulting in greater alterations to the vegetation in the Natural Areas. However, the scale of vegetation changes in potentially eligible historic landscapes or forests would be relatively minor in a given Natural Area and would not result in a substantial adverse impact on the Golden Gate Park Historic District or contributing sites. Implementation of programmatic projects, such as the construction of erosion control structures, could result in a substantial adverse change to the significance of a historic resource. However, impacts on historic resources from programmatic projects would be mitigated to less than significant by implementing M-CP-1, which would require the SFRPD to avoid installing any such structures that would have an adverse effect on any potentially eligible historic resources.

Under the Maximum Restoration Alternative, the magnitude of impacts on the Sharp Park Golf Course's historical architectural resources would be greater than under the proposed project because the conversion of additional land to Natural Areas would increase the magnitude of the alterations to the historical character-defining features of the Sharp Park Golf Course. As for the proposed project, the available mitigation measures would not sufficiently reduce this impact below the level of significance, resulting in significant and unavoidable impacts. The significant impacts of the Sharp Park restoration under this alternative on eligible and identified historic resources are similar to those under the proposed project, although greater in magnitude, and could be reduced by implementing mitigation measures similar to those developed for the proposed project. However, Mitigation Measure M-RE-1 and Measure CP-7 would not reduce impacts to less than significant, and, similar to the proposed project, impacts of the Maximum Restoration Alternative on the character-defining features of the Sharp Park Golf Course would be significant and unavoidable.

Impacts on archaeological and paleontological resources at the Sharp Park Natural Area could be greater in magnitude, given that the restoration project area outside of the proposed Natural Area boundary has not been studied, and the presence or sensitivity of the additional area is unknown. The additional ground-disturbing activities associated with restoration under this alternative could

have significant impacts on subsurface resources, but they could be reduced to less than significant by implementing mitigation measures similar to those developed for the proposed project.

Wind and Shadow

Under this alternative, there would be a greater potential increase in the alteration of wind patterns within and near the Natural Areas, due to increased invasive tree removal. However, implementation of this alternative would also adhere to the tree removal guidelines in Section III.E, including one-for-one replacement of trees in San Francisco Natural Areas, and would follow the Urban Forestry Statements of the SNRAMP for tree removal techniques and system-wide practices. Therefore, although the potential for altering wind patterns would be higher than under the proposed project, the estimated impacts would still be less than significant. Similar to the proposed project, this alternative does not include any aboveground structures that would create new shadows; therefore, it would result in no shadow impacts.

Recreation

This alternative has impacts similar to those discussed for the proposed project. However, implementing management actions that restore native habitat throughout all Natural Areas would take precedent over implementing management actions for recreation facilities. Compared to the proposed project, this alternative involves no new trails in the Natural Areas, thereby providing reduced recreation opportunities. The Natural Areas Program would continue to promote passive recreation.

This alternative would further reduce the size of existing DPAs, so it could increase the use of the remaining DPAs, potentially resulting in greater physical deterioration of recreation facilities, compared to the proposed project. As with the proposed project, these impacts are expected to be less than significant. Within the cumulative timeframe, the GGNRA Dog Management Plan also would restrict dog use on GGNRA lands that may result in potentially significant and unavoidable cumulative impacts associated with the physical deterioration of the Natural Areas DPAs. As with the proposed project, this alternative could make a considerable contribution to the cumulative recreation impact of increased dog use on recreation resources, resulting in a significant and unavoidable impact.

As with the proposed project, while the amount of trail coverage would be reduced, trail access would be maintained in all Natural Areas, resulting in less than significant impacts on those recreation facilities. The impacts on the Sharp Park Golf Course identified under the proposed project would be greater under this alternative because of the increased amount of golf course

property converted to Natural Area for wetland restoration; this potentially significant impact could be reduced to less than significant by implementing mitigation measures similar to those developed for the proposed project.

Biological Resources

This alternative would have the greatest long-term beneficial impacts on biological resources compared to the other alternatives. The greatest extent of land would be restored from nonnative to native habitat, thus improving habitat and biodiversity for common plants and wildlife, special status species, and migratory species. This alternative involves removing moderately more invasive trees and creating no new trails. In the short term, this alternative would substantially disturb habitats by increased human presence, noise, trampling, and machinery from invasive vegetation removal and other programmatic restoration projects. Additional tree removal would increase the potential to impact nesting birds. However, as under the proposed project, the overall percentage of trees removed would still be small relative to the total number of trees left in place, so long-term impacts on birds would be less than significant. Compared to the proposed project, the Laguna Salada wetland complex restoration project would be expanded to include more habitat beyond the Natural Areas boundary (up to five acres). These restoration activities would result in short-term impacts on special status species and sensitive wetland and riparian habitat during construction but would result in long-term beneficial impacts on California red-legged frog and San Francisco garter snake species by increasing their habitat through additional wetland conversion and habitat restoration. The same mitigation measures discussed under the proposed project would be implemented under the Maximum Restoration Alternative, reducing impacts on biological resources to less than significant with mitigation. Cumulative impacts on biological resources as a result of the GGNRA Dog Management Plan are similar to the proposed project and could be significant; however, unlike the proposed project, this alternative is not anticipated to result in a considerable contribution to cumulative biological resources impacts because it would protect biological resources to the greatest extent.

Compared to the proposed project, this alternative includes additional restoration and management actions that would improve habitat for protected species and native species. Vegetation and wildlife could experience greater short-term disturbance and greater long-term habitat improvements from the greater amount of invasive vegetation removed and native vegetation planted.

The following discusses the potential biological resources impacts of the Maximum Restoration Alternative on special status plant and wildlife species, nesting birds, sensitive natural communities and wetlands, and fish and wildlife movement.

Special Status Plant Species occur throughout the Natural Areas, as discussed in Section V.G, Biological Resources. As with the proposed project, protected plant species could be inadvertently removed or destroyed during the programmatic and routine removal of invasive vegetation, resulting in a significant impact. These impacts would be mitigated to less than significant by incorporating M-BI-1a , M-BI-1b, and M-BI-5, which require the Natural Areas Program staff to conduct an annual biological training program identifying the types and location of special status plant species that occur throughout the Natural Areas and avoiding direct impacts on those species. For programmatic projects M-BI-1a and M-BI-1b require SFRPD to first avoid impacts on special status plants. If avoidance measures are infeasible, these mitigation measures require the SFRPD to minimize impacts on special status plants, to restore impacted areas, and to compensate for losses of protected plant species.

This alternative would further reduce DPA acreage in MA-1 and MA-2 areas, which are most sensitive. Although closing DPAs in MA-1 and MA-2 areas may increase DPA use in MA-3 areas, MA-3 areas are the least sensitive and are not likely to be near special status plant species. Overall, closing DPAs in MA-1 and MA-2 areas would protect special status plant species more than the proposed project, resulting in greater long-term beneficial impacts.

The Sharp Park restoration would not affect special status plant species because none are known to occur in the Laguna Salada wetland complex.

Special Status Wildlife Species in the Natural Areas are the Mission Blue butterfly at Sharp Park and McLaren Park; the California red-legged frog and San Francisco garter snake at Laguna Salada in Sharp Park; the California red-legged frog and San Francisco dusky-footed woodrat in the upper canyon of Sharp Park; the western pond turtle at Sharp Park and Lake Merced; and the western red bat in Golden Gate Park, Mount Davidson, Twin Peaks, Pine Lake, and McLaren Park. The Natural Areas also support special status bird species, addressed in the Migratory Birds section below.

Programmatic projects and routine maintenance under this alternative may have greater impacts on these species through short-term disturbance associated with the increased vegetation removal and revegetation. However, these impacts would be temporary and in the long term are anticipated to result in beneficial impacts on these species. Similar to the proposed project, these impacts could be reduced to less than significant by implementing Mitigation Measures M-BI-1a, which require Natural Areas Program staff to conduct an annual biological training program identifying the types and location of special status wildlife species that occur throughout the Natural Areas and avoiding direct impacts on them.

Reducing DPA acreage may increase impacts on special status wildlife species in or next to the remaining DPAs by increasing the use of those DPAs. Potential impacts on special status wildlife species could be reduced by actions identified in the SNRAMP to close DPAs or modify use of DPAs in those areas, in accordance with the SFRPD Dog Policy. On the other hand, closing DPAs in the most sensitive habitat areas, MA-1 and MA-2 areas, may also protect specific wildlife species that are likely to occur within or in proximity to DPAs in those areas.

Sharp Park restoration under this alternative may have greater short-term impacts on special status wildlife species due to the greater project area that would be disturbed during restoration. Similar to the proposed project, these impacts could be reduced to less than significant by implementing Mitigation Measure M-BI-6. Over the long term, this alternative would result in greater amount of habitat restored for protected species, in particular the San Francisco garter snake.

Migratory Birds. As under the proposed project, programmatic vegetation removal and other ground-disturbing activities may affect migratory and nesting bird species. With the increase in vegetation removal, this alternative would have a greater potential to affect migratory birds. This alternative would also include measure GR-4b in the SNRAMP, which would ensure that vegetation is managed outside the breeding season (February 1 through August 31), unless these activities had already begun before the breeding season and had already disturbed the area, or a breeding bird survey had been completed first. By implementing M-BI-1 and GR-4b, impacts on special status bird species would be reduced to less than significant. As with the proposed project, vegetation removal as part of routine maintenance also may affect migratory bird species; this impact would be reduced to less than significant by implementing measure GR-4b in the SNRAMP. Sharp Park restoration would also implement measure GR-4b of the SNRAMP before any vegetation is removed, reducing potential migratory bird impacts to less than significant.

Sensitive Natural Communities and Wetlands. The greater amount of programmatic vegetation removal and replacement under this alternative would increase short-term disturbance of sensitive natural communities and wetlands, compared to the proposed project. While these impacts would be temporary, implementing Mitigation Measure M-BI-1 would reduce temporary impacts on riparian and wetlands by requiring avoidancee and minimization measures. In addition, those projects involving work in the riparian zones or wetlands would require permits from the San Francisco Bay RWQCB, the USACE, or CDFG, which may include additional avoidance and minimization measures. Over the long term, this alternative would result in the greatest amount of protection and restoration of sensitive natural communities, particularly coastal scrub, coastal dune, and oak

woodland habitats, and may result in greater amount of wetland and riparian habitat throughout the Natural Areas.

This alternative would further reduce DPA acreage, focusing on MA-1 and MA-2 areas, which are the most sensitive. Although closing DPAs in MA-1 and MA-2 areas may increase DPA use in MA-3 areas, MA-3 areas are the least sensitive and are not likely to be near sensitive natural communities. Overall, closing DPAs in MA-1 and MA-2 areas would protect sensitive natural communities more than under the proposed project. Additionally, any observed impacts of dog use on sensitive natural communities could be reduced by actions identified in the SNRAMP to close DPAs or modify use of those areas, in accordance with the SFRPD Dog Policy.

Native grassland and coastal scrub habitat at Sharp Park would increase as a result of the efforts to create additional upland areas for the San Francisco garter snake. The Sharp Park wetland impacts under this alternative are similar to those of the proposed project and would be mitigated to less than significant by implementing Mitigation Measure M-BI-12a and M-BI-12b.

Fish and Wildlife Movement. Greater invasive vegetation removal under this alternative may have greater temporary impacts on migratory bird habitat, compared to the proposed project. This potentially significant impact would be mitigated by implementing measure GR-4b of the SNRAMP. Over the long term, the native vegetation replacement activities would likely result in beneficial impacts on migratory birds and their habitat.

As with the proposed project, short-term disturbance of the Laguna Salada wetland complex as part of Sharp Park restoration would have significant impacts on wildlife movement and migratory corridors. Implementing Mitigation Measure M-BI-6a and M-BI-6b would reduce this impact to less than significant.

Cumulative Impacts. The combined reductions in Natural Area DPAs and off-leash areas under the GGNRA Dog Management Plan would increase use of the remaining off-leash areas, resulting in cumulatively significant impacts on biological resources in or near those areas. While this alternative seeks to protect biological resources to the greatest extent, like the proposed project, this alternative would also close DPAs, which combined with the actions proposed by the GGNRA could result in concentrated dog use within the remaining off-leash areas. Increased use may result in impacts to biological resources within the Natural Areas DPAs, including disturbance of breeding birds. The cumulative combination of proposed dog management for the Natural Areas and the GGNRA project could result in indirect significant impacts on biological resources in the Natural Areas.

Similar to the proposed project, the comparative contributions of each project to this potentially significant cumulative impact cannot be determined based on the speculative nature of the behavioral and physical factors contributing to that determination, and this alternative's contribution is conservatively determined to be ***significant and unavoidable***.

Hydrology and Water Quality

This alternative involves more programmatic invasive vegetation removal and native vegetation replacement than under the proposed project. The reduction in trail coverage under this alternative would concentrate use of existing trails, possibly requiring more maintenance of those trails, but would reduce the potential for erosion from construction and use of new trails. More tree removal would expose more of the ground surface to short-term direct impacts of erosion caused by rainwater and runoff until replacement vegetation was established. This greater amount of tree removal also would increase the potential for short-term soil disturbance and resulting runoff. However, as under the proposed project, the overall percentage of trees removed would still be small relative to the total number of trees left in place. Invasive trees removed from San Francisco Natural Areas would be replaced with native trees. Also, as under the proposed project, trees would be removed gradually, using methods designed to minimize soil disturbance, root-balls would left in place, and new vegetation cover would be planted to fill exposed areas. Potential spills of gasoline or other petroleum products from motorized equipment used for the programmatic projects also may affect water quality. By implementing Mitigation Measures M-HY-1 and M-HZ-13, as discussed under the proposed project, the water quality impacts under this alternative would be reduced to less than significant.

Routine maintenance also may result in accidental releases of gasoline or other petroleum products from motorized equipment used for those activities. Implementing Mitigation Measure M-HZ-14, as discussed under the proposed project, would reduce to less than significant potential water quality impacts from the accidental release of petroleum products.

Compared to the proposed project, the Laguna Salada wetland complex would be expanded to include up to five acres of additional habitat restoration beyond the Natural Area boundary, which could result in additional short-term impacts on water quality from erosion and sedimentation; however, in the long term, reduced sediment loading is expected as adjacent areas stabilize. By implementing Mitigation Measures M-HY-1 and M-HZ-13, as discussed under the proposed project, the water quality impacts of Sharp Park restoration under this alternative would be reduced to less than significant.

Hazards and Hazardous Materials

Under this alternative, impacts related to the use of hazardous materials are similar to those described for the proposed project. Because of the similarity of programmatic activities, the impacts from mosquitoes and ticks, herbicides, and lead contamination would also be less than significant. The SFRPD would implement similar management practices for use of pesticides that would reduce the potential to impact nearby human populations, wildlife, and groundwater. Also, the San Francisco Department of the Environment and the San Mateo County Mosquito and Vector Control District would continue to implement their current programs for pesticide use and for controlling or preventing mosquitoes, ticks, and insect-borne diseases. Due to the increased vegetation removal and replacement, the impacts of wind throw and wildfires would be greater than under the proposed project but are still considered less than significant. Similar to the proposed project, this alternative's programmatic projects could increase the potential for hazardous materials release. Implementing Mitigation Measure M-HZ-13, which requires developing and implementing emergency response plans, would reduce those impacts to less than significant.

Routine maintenance also may result in accidental releases of gasoline or other petroleum products from motorized equipment. As for the proposed project, implementing Mitigation Measure M-HZ-14 would reduce this impact to less than significant.

Potential hazardous material impacts resulting from the Sharp Park restoration project under this alternative are similar to those under the proposed project and would be reduced to less than significant by implementing Mitigation Measure M-HZ-13.

Agriculture and Forest Resources

Similar to the proposed project, this alternative would have no impacts on agricultural resources. This alternative seeks the maximum amount of restoration, so more invasive trees and vegetation may be removed and replaced with native trees, grassland habitat, and scrub habitat, compared to the proposed project. This alternative would remove a greater amount of invasive trees, but it would enhance native habitat. As with the proposed project, this alternative would result in less than significant impacts from tree removal and native vegetation replacement and would have no impact from conflicting with zoning for forest land and timberland.

Air Quality

The Maximum Restoration Alternative likely would emphasize the improvement of native habitat over recreation and includes increased urban forest removal and increased restoration of areas supporting native plants and animals. This alternative could result in programmatic air quality

impacts similar to those described under the proposed project. As for the proposed project, impacts from fugitive dust emissions and health risk impacts would be less than significant; however, programmatic projects could result in significant unavoidable impacts by exceeding the BAAQMD thresholds for NOx emissions. Similar to the proposed project, the contribution from this project to regional air quality would be cumulatively considerable, resulting in a significant and unavoidable cumulative impact.

As with the proposed project, routine maintenance under this alternative is expected to occur at a level similar to what it is now and would result in less than significant air quality impacts.

The increased Sharp Park restoration would result in significant unavoidable impacts by exceeding the BAAQMD thresholds for NOx emissions, similar to the proposed project. These impacts would be reduced by implementing Mitigation Measure M-AQ-4, but not to a level of insignificance; therefore, criteria air pollutant impacts under this alternative are similar to those of the proposed project and would be significant and unavoidable. The restoration project is expected to have less than significant impacts on fugitive dust emissions and health risk impacts.

Other Resource Areas

Population and Housing

As with the proposed project, the Maximum Restoration Alternative does not involve activities that would induce substantial population growth or create the need for replacement housing. There would be no population and housing effects from this alternative.

Transportation and Circulation

Transportation and circulation impacts from implementing this alternative are similar to those described under the proposed project. However, as this alternative would seek a maximum restoration of the Natural Areas, it could result in greater closures and reductions in size of DPAs in the Natural Areas. Therefore, users of closed or reduced DPAs may be required to use other DPAs, potentially increasing the number of vehicle trips to and from them. Although the exact number of vehicle trips that would result under this alternative cannot be quantitatively estimated, a small percentage of the DPA users are expected to access other DPAs on a daily basis using personal vehicles. Therefore, the increase in vehicle trips under this alternative would be less than significant.

Noise

Noise impacts under this alternative are similar to those described under the proposed project. Similar types and amounts of equipment would be used, so noise impacts would be less than significant.

Greenhouse Gas Emissions

The Maximum Restoration Alternative would result in Natural Areas with less urban forest, compared to the proposed project. With more tree removal and less forest acreage, less carbon may be sequestered than under the proposed project; however, as discussed for the proposed project, shrubs and grasses are also significant sources of carbon sequestration. While impacts related to GHG emissions under the Maximum Restoration Alternative could be greater than those described under the proposed project, the SFRPD would comply with the *Greenhouse Gas Analysis: Compliance Checklist* for activities in the City and County of San Francisco and applicable regulations to reduce impacts from GHGs; therefore, the Maximum Restoration Alternative impacts related to GHG emissions would be less than significant.

Utilities and Service Systems

Compared to the proposed project, reintroducing native species and replacing trees would have greater short-term irrigation water needs for establishing vegetation under this alternative; however, irrigation needs would be met by existing water supply capacity and would not require new or expanded water supply resources. The Maximum Restoration Alternative does not involve any activities that would affect landfill capacity, solid waste regulations, and operation or relocation of local utilities. Therefore, impacts on utilities and service systems would be less than significant.

Public Services

As with the proposed project, the Maximum Restoration Alternative does not involve any activities that would require constructing or modifying public service facilities, so there would be no public service impacts from this alternative.

Geology and Soils

Compared to the proposed project, this alternative would result in greater ground disturbance from increased restoration. The resulting increased potential for soil erosion would be addressed by the erosion control measures called for in the SNRAMP. There is a potential for strong ground shaking at all Natural Areas from a nearby earthquake. Under this alternative, the increased likelihood that people or structures would experience adverse effects from strong ground shaking would be less than significant because the potential increased user population would not be exposed to an

increased potential for ground failure in the Natural Areas. This alternative would have less than significant landslide effects because it includes measures that would minimize erosion and reduce the risk from potential landslides. While activities under this alternative would disturb soils, those activities would not cause a geologic unit or soil to become unstable, resulting in a less than significant impacts. This alternative includes activities that would result in ground disturbance, but the magnitude and location of those activities would not be sufficient to substantially change the topography or any unique geologic or physical features of the Natural Areas. As a result, the geology and soils effects of this alternative would be less than significant.

Mineral and Energy Resources

Compared to the proposed project, use of motorized equipment and vehicles for management activities under this alternative would consume similar amounts of fuel as the proposed project, and those consumption amounts are expected to be minor. None of the activities under this alternative would result in the loss of availability of a mineral resource or mineral resource recovery site. The mineral and energy resources effects of this alternative would be less than significant.

VII.C MAXIMUM RECREATION ALTERNATIVE

VII.C.1 Description

The Maximum Recreation Alternative would restore and improve access to the Natural Areas for recreation wherever it does not interfere with the continued existence of native vegetation and federally or state-listed sensitive species. Compared to the proposed project, this alternative focuses restoration in MA-1 areas and prioritizes recreation opportunities in MA-2 and MA-3 areas. Over time, less habitat identified by the SNRAMP would be restored, while all or most of the recreation-related projects, such as trail network improvement, would be implemented. As such, the Maximum Recreation Alternative includes substantially less invasive tree and vegetation removal, thereby resulting in a long-term increase in the presence of nonnative species and a reduction in native habitat. Tree and vegetation removal would be limited to that necessary to meet the Natural Areas Program tree maintenance health and safety goals and those trees required to be removed for trail creation or other projects providing additional recreation facilities (picnic areas and playgrounds).

The Maximum Recreation Alternative would close informal and social trails in MA-1 areas but not all informal and social trails in MA-2 and MA-3 areas. This alternative includes moderately more trail creation in MA-2 and MA-3 areas than the proposed project and would also allow mountain biking and horseback riding where those uses would not conflict with special status species and their habitats (both protected species and locally significant species). Over time, the Maximum

Recreation Alternative would result in Natural Areas with a greater amount of trail coverage, less native plant and animal habitat, and a greater amount of nonnative urban forest coverage. The Maximum Recreation Alternative would not close or reduce DPAs, but no new DPAs would be created in the Natural Areas, consistent with the SFRPD moratorium[3] on new DPAs. Large-scale programmatic projects would occur under this alternative, but most of those projects would be to provide new trails or other recreation facilities in the Natural Areas.

The Maximum Recreation Alternative includes restoration of the wetland complex at Laguna Salada. However, restoration would differ from the proposed project in that it would be limited to the geographic limits of the Natural Area; restoration would not encroach on the golf course operations, except as required for temporary construction. The primary focus of restoration at the Laguna Salada wetland complex under this alternative is to remove tules, cattails, and excess sediment and organic matter, requiring dredging of Laguna Salada. Sediment traps or a sediment basin, or both, would be installed at Laguna Salada. Compared to the proposed project, this alternative would result in less edge and upland habitat for the San Francisco garter snake.

In summary, the Maximum Recreation Alternative would:

- Not close or reduce existing DPAs
- Add trails to inaccessible areas, such as the west slope of Glen Canyon
- Preserve some of the social trails identified in the SNRAMP for decommissioning
- Create or modify trails to increase multiuse activities, such as mountain biking and horses
- Establish new recreation facilities, such as playgrounds and picnic areas
- Restore less habitat, resulting in a greater presence of nonnative vegetation
- Restore only the areas in the geographic limits of the Natural Area surrounding the Laguna Salada marsh complex

The Maximum Recreation Alternative meets some, but not all, of the project objectives presented in Section III.C. In particular, the Maximum Recreation Alternative does not meet the objective related to enhancement of the native ecosystem and biodiversity because this alternative would result in an

[3] There is direction from the Recreation and Park Commission not to establish new DPAs until systemwide DPA planning is completed. For the purposes of this EIR, this is considered a moratorium in that no new DPAs are reasonably foreseeable. This direction was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee.

overall decrease in habitat restoration and management of the Natural Area's resources as compared to the proposed project. The Maximum Recreation Alternative would only include restoration/enhancement of Laguna Salada within the geographic limits of that Natural Area, providing more limited benefits to special status species, as compared to the proposed project.

VII.C.2 Impacts

Land Use and Land Use Planning

The Maximum Recreation Alternative provides maximum recreational use in Natural Areas and would result in less habitat restoration. This alternative would not physically divide an established community. Similar to the Maximum Restoration Alternative, this alternative would impact only the internal use of the Natural Areas by prioritizing recreation.

By prioritizing recreation and providing greater opportunities for a wider variety of recreation, the Maximum Recreation Alternative would restore less habitat, potentially conflicting with San Francisco Recreation and Open Space Element Policy 2.13, which states that "native plant habitats should be preserved and efforts undertaken to remove exotic plant species from these areas." If recreation goals are prioritized, resulting in less habitat restored, preservation of habitats supporting native plants and animals may be reduced. Additionally, Policy 2.13 of the Recreation and Open Space Element references the 1995 plan as containing "policies governing access and recreational use and enjoyment of protected natural areas to ensure that the natural resource values are not diminished or impacted by public use." However, Policy 1 of the Environmental Protection Element calls for achieving "a proper balance among the conservation, utilization, and development of San Francisco's natural resources." While the Recreation and Open Space Element protects native habitats in the Natural Areas, the General Plan also contains policies to ensure a balance between the protection of natural resources and access to those resources. The Maximum Recreation Alternative would increase in recreation opportunities, which could result in less habitat protection and restoration to the extent that management goals do not interfere with the continued existence of special status species, including federally or state-listed species. Although portions of some of the Natural Areas may eventually accommodate more recreational uses, this alternative, as proposed, would not result in a significant impact from conflicting with General Plan policies or other policies or regulations governing the protection of natural resources.

The Maximum Recreation Alternative would increase recreation opportunities in Natural Areas. Given that recreation is a current use in the Natural Areas, providing additional recreation opportunities would not result in substantial changes to the land use, and there would be no

substantial impact on the character of the Natural Areas or their vicinity. This alternative would have less than significant land use and land use planning impacts.

The proposed restoration at Laguna Salada in the Sharp Park Natural Area would not physically divide an established community, conflict with an applicable land use plan, policy, or regulation, or impact the character of the vicinity. The Laguna Salada restoration, as proposed under this alternative, would have no impact on land use and land use planning.

Aesthetics

The Maximum Recreation Alternative would improve recreational access to the Natural Areas wherever this does not interfere with the continued existence of special status species and their habitats. Compared to the proposed project, this alternative would result in additional recreation facilities (e.g., additional trails and picnic areas) and in some Natural Areas would allow for additional recreation opportunities, including mountain biking and horseback riding, resulting in greater use of the Natural Areas over time. This alternative would also result in less invasive tree and vegetation removal and less large-scale habitat restoration projects, including invasive species removal. Under the Maximum Recreation Alternative, the visual character of the Natural Areas would consist of a greater presence of recreation and nonnative vegetation. Although this outcome may be undesirable from the perspective of preserving the native vegetation in the Natural Areas, it would not substantially degrade the visual character of the Natural Areas because the Natural Areas would continue to be characterized as relatively undeveloped landscapes that provide recreation opportunities. The Natural Areas Program would continue routine maintenance, which would ensure that recreation would not substantially degrade the visual quality of the Natural Areas. As with the proposed project, construction of recreation facilities would require subsequent environmental review; however, new trails and other similar facilities, such as picnic areas, would not substantially damage scenic resources of the natural or built environment. Similar to the proposed project, the Maximum Recreation Alternative would not result in a substantial adverse effect on a scenic vista, and impacts on aesthetic resources under this alternative would be less than significant.

Cultural and Paleontological Resources

Under the Maximum Recreation Alternative, impacts on cultural and paleontological resources are similar to those described under the proposed project. However, impacts from restoration would be lessened or removed. This quantitatively lower level of impact would be offset by an increase in impacts from additional recreation facilities, such as the establishment of new trails. These

potentially significant impacts could be reduced to less than significant by implementing mitigation measures similar to those developed for the proposed project.

The Maximum Recreation Alternative includes large-scale programmatic projects, most of which would consist of construction of new trails and other recreation facilities. These projects would require subsequent environmental review once specific alignments and location of those facilities are developed. However, similar to the proposed project, construction of those facilities would not result in a substantial adverse impact on historic landscapes or forests and would not result in a substantial adverse impact on the Golden Gate Park Historic District or contributing sites. Implementation of other types of programmatic projects, such as the construction of erosion control structures, could result in a substantially adverse change to the significance of a historic resource. However, impacts on historic resources, as a result of programmatic projects, would be mitigated to less than significant by implementing M-CP-1, which would require the SFRPD to avoid installing any structures that would have an adverse effect on potentially eligible historic resources. Therefore, by implementing mitigation measures identified for the proposed project, impacts on historic resources would be less than significant.

At the Sharp Park Natural Area, restoration of the Laguna Salada wetland complex would be limited to the geographic boundary of the Natural Area and would not modify the layout of the Sharp Park Golf Course. Impacts on buried or submerged cultural or paleontological resources under the Maximum Recreation Alternative are similar to the proposed project and could be reduced to less than significant by implementing Mitigation Measure M-CP-7. Given that restoration would be confined to the Natural Area boundary, the Maximum Recreation Alternative would not modify the Sharp Park Golf Course and would have no effect on the historical character of the golf course.

Wind and Shadow

Compared to the proposed project, the Maximum Recreation Alternative would result in substantially less invasive tree removal. Tree removal would be limited to dead, diseased, and hazardous trees, consistent with SFRPD tree maintenance health and safety goals. Additionally, some trees may be removed for the construction of new trails and other recreation facilities. Under the Maximum Recreation Alternative, tree removal techniques would follow the Urban Forestry Statements of the SNRAMP. As with the proposed project, this alternative would not result in significant ground-level wind speeds or wind throw impacts, so it would have less than significant wind impacts.

The Maximum Recreation Alternative may include construction of aboveground recreation facilities, including picnic areas and playgrounds. These facilities would not create new shadows that would substantially affect outdoor recreation activities, and shadow impacts under the Maximum Recreation Alternative would be less than significant.

Recreation

The Maximum Recreation Alternative would prioritize recreation facility construction over habitat restoration. In addition, this alternative would allow for multiuse of trails for mountain biking and horseback riding where those uses would not conflict with protection of special status species and their habitats (both protected species and locally significant species). Compared to the proposed project, the Maximum Recreation Alternative would not close or reduce DPAs. As such, the Maximum Recreation Alternative would increase use of the Natural Areas. However, under this alternative, Natural Areas Program staff would continue routine maintenance, which would ensure that the physical deterioration of recreation facilities (trails, DPAs, and other facilities) would not be substantially degraded.

As discussed above, the Maximum Recreation Alternative would not close or reduce DPAs in the Natural Areas and would therefore not contribute to more intense use of other DPAs, as a result of displaced dog owners. However, the GGNRA Dog Management Plan would restrict dog use on GGNRA lands, potentially increasing dog use in the Natural Areas, which may result in the deterioration of the Natural Areas DPAs. Because this alternative would not close or reduce DPAs, unlike the proposed project, the Maximum Recreation Alternative would not contribute to potentially significant cumulative impacts from increased dog use, resulting in the deterioration of DPAs in the Natural Areas. Therefore, the Maximum Recreation Alternative's contribution to potentially cumulatively significant impacts on recreational resources would be less than cumulatively considerable.

At the Sharp Park Natural Area, restoration of the Laguna Salada wetland complex would be limited to the geographic boundary of the Natural Area and would not encroach on the Sharp Park Golf Course or modify the golf course in any way. Therefore, the Maximum Recreation Alternative would have no impact on recreational resources at Sharp Park as a result of restoration. Restoration at Laguna Salada would include removing tules, cattails, and excess sediment and organic matter and would require dredging of Laguna Salada. Sediment traps or a sediment basin, or both, would also be installed in Laguna Salada. These improvements would increase the capacity of Laguna Salada to accommodate runoff during the rainy season, reducing the potential for, and extent of, seasonal flooding of the golf course.

Biological Resources

The Maximum Recreation Alternative would be least effective at improving habitats in the Natural Areas. Special status species, riparian areas, sensitive habitats, wetlands, migratory species and corridors, and nursery sites would be protected as required by federal, state, and local laws. Compared to the proposed project, this alternative emphasizes creating multiuse trails over protecting and restoring native habitat (excluding special status species and their habitats). However, under the Maximum Recreation Alternative, funding would be prioritized for recreation (trail creation, for example) over habitat restoration. Over time, fewer of the habitat restoration projects identified by the Natural Areas Program would be implemented; as such, the Maximum Recreation Alternative includes substantially less invasive tree and vegetation removal, thereby resulting in a long-term increase in nonnatives and a reduction in native habitat. Tree and vegetation removal would be limited to that necessary to meet the Natural Areas Program tree maintenance health and safety goals and those trees required to be removed for trail creation or other projects providing additional recreation facilities (picnic areas and playgrounds). Over time, the Maximum Recreation Alternative would result in Natural Areas with a greater number of trails, less native plant and animal habitat, and a greater amount of nonnative urban forest and invasive species.

Below is a discussion of the potential biological resources impacts of the Maximum Recreation Alternative on special status plant and wildlife species, nesting birds, sensitive natural communities and wetlands, and fish and wildlife movement.

Special Status Plant Species occur throughout the natural areas, as discussed in Section V.G, Biological Resources. The Maximum Recreation Alternative includes large-scale programmatic projects, most of which would construct new trails and other recreation facilities, although some large-scale projects to improve native habitat would still occur. Large-scale programmatic projects would require subsequent environmental review once specific alignments and locations of those facilities and restoration projects are developed. However, similar to the proposed project, large-scale programmatic projects could result in significant impacts on special status plant species (both protected species and locally significant species). In addition, the Maximum Recreation Alternative includes routine maintenance, as described under the SNRAMP. It is possible that Natural Areas Program staff, volunteers, or contractors for large-scale programmatic projects may inadvertently remove or destroy special status plant species during maintenance and restoration and other programmatic projects. These impacts would be mitigated to less than significant by incorporating mitigation measures M-BI-1a and M-BI-1b, as identified for the proposed project. M-BI-1a, required

for all programmatic projects would require that, before implementing programmatic projects, the SFRPD conduct special status plant surveys identifying the location of all sensitive plants in the project footprint. M-BI-1a also requires the SFRPD to avoid impacts on those plant species to the extent feasible, through such actions as realigning trails and minimizing trail development in high quality special status plant habitat. If avoidance mechanisms are not possible, M-BI-1 requires the installation of flagging and temporary fencing that restricts SFRPD contractor access to sensitive areas during programmatic projects. Where avoidance and minimization measures are not adequate to reduce impacts on special status plant species, M-BI-1a further requires habitat restoration or compensation for impacts on special status plant species. Furthermore, M-BI-5 would reduce impacts on special status plant species that may occur as a result of routine maintenance by requiring the SFRPD to conduct annual biological training, identifying the types and location of special status plant species that occur throughout the Natural Areas and avoiding direct impacts on those species.

The Maximum Recreation Alternative would not close or reduce the acreage of DPAs in the Natural Areas. Observation indicates that dogs in the DPAs are affecting special status plant species, including those at Lake Merced and Bernal Hill. Continued use of these DPAs by off-leash dogs would continue to impact special status plant species, resulting in significant impacts on special status plants. Impacts on special status plant species could be reduced or avoided by actions identified in the SNRAMP to close DPAs or to modify areas to on-leash dog use only. However, without those specific actions identified in the SNRAMP to close or reduce off-leash dog use, impacts on special status plant species from dog use would otherwise be considered significant and unavoidable.

The Maximum Recreation Alternative would result in a more trails created and diversity in trail users. Over the long term, increased use of the Natural Areas could result in a greater impact on special status plant species than the proposed project by increasing human disturbance, presence, trampling, and the spread of weeds in Natural Areas. These potentially significant impacts could be reduced to less than significant by implementing management actions identified in the SNRAMP, such as GR-2c (protect sensitive species and vegetation from human disturbance) and mitigation measures identified for the proposed project, including M-BI-1a, which requires the SFRPD staff to limit public access in areas where special status plant species are being affected by posting signs or installing exclusionary fencing. By implementing these measures, impacts of the Maximum Recreation Alternative on special status plant species would be less than significant.

As discussed above, the Maximum Recreation Alternative would be less effective at improving special status species and native habitats in the Natural Areas than under the proposed project. Over time, the Maximum Recreation Alternative would result in Natural Areas with less native plant and animal habitat and a greater level of nonnative urban forest and invasive species coverage. This alternative, however, would not prohibit large-scale habitat restoration and invasive tree removal and therefore would be more beneficial by preserving and enhancing special status plant species habitat than either the No Project or Maintenance Alternatives. Additionally, as with all alternatives considered in this EIR, the Maximum Recreation Alternative would protect special status plant species as required by federal, state, and local laws during implementation of programmatic projects and routine maintenance. However, the lack of focus on restoring native habitats and removing invasive species under the Maximum Restoration Alternative could threaten the continued existence of sensitive plant species in the Natural Areas, especially those of limited distribution in the Natural Areas. The potentially significant impact of the Maximum Recreation Alternative could only be mitigated by implementing the restoration activities identified in the SNRAMP; therefore, the long-term impacts on special status plant species could be significant.

No special status plant species occur in the Laguna Salada wetland complex in the Sharp Park Natural Area. Therefore, restoration at Laguna Salada under the Maximum Recreation Alternative would have no effect on special status plant species.

Special Status Wildlife Species in the Natural Areas are listed above under the biological resources analysis for the No Project Alternative and in Section V.G, Biological Resources.

The impacts of programmatic projects under the Maximum Recreation Alternative are similar to those described for the proposed project. The Maximum Recreation Alternative would prioritize recreation projects over habitat restoration or invasive tree removal projects and, over the long term, would be the less beneficial than the proposed project. This alternative, however, would not prohibit large-scale habitat restoration and invasive tree removal and therefore could be more beneficial by preserving and enhancing special status wildlife species habitat than either the No Project or Maintenance Alternatives. Large-scale programmatic projects would require subsequent environmental review once specific alignments and location of those facilities and restoration projects are developed. However, similar to the proposed project, large-scale programmatic projects could result in significant impacts on special status wildlife species. In addition, the Maximum Recreation Alternative includes routine maintenance, as described under the proposed SNRAMP. It is possible that Natural Areas Program staff, volunteers, or contractors for large-scale programmatic projects may inadvertently affect special status wildlife species during maintenance and restoration

and other programmatic projects. Potential impacts on special status wildlife would be mitigated to less than significant by incorporating Mitigation Measures M-BI-1a and M-BI-1b, as identified for the proposed project. M-BI-1a would be required for all programmatic projects and would require that, before implementing programmatic projects, the SFRPD survey the project site, according to applicable special status species survey protocols, to identify whether any such species occur in the project footprint or could otherwise be affected by the project. M-BI-1a also requires the SFRPD to avoid impacts on those species to the extent feasible, through such actions as realigning trails (to avoid, for example, woodrat nests) and minimizing trail development in high quality special status wildlife habitat. If avoidance mechanisms are not possible, M-BI-1a requires the installation of flagging and temporary fencing that restricts SFRPD contractor access to sensitive areas during implementation of programmatic projects. Where avoidance and minimization measures are not adequate to reduce impacts on special status wildlife species and their habitats, M-BI-1a further requires habitat restoration or compensation of impacts on these species. Furthermore, M-BI-5 would reduce impacts on special status wildlife that may occur as a result of routine maintenance by requiring the SFRPD to conduct annual biological training to identify the types and location of those species that occur throughout the Natural Areas and avoiding impacts on special status wildlife species.

In addition, implementing management action GR-4b identified for the proposed project would be required to reduce impacts on special status bird species and to comply with the federal MBTA. Implementing management action GR-4b requires vegetation management to be conducted outside of the breeding season to the extent possible. If this is not possible, GR-4b would require a bird survey to be conducted before vegetation is removed and to avoid active nests. Implementing M-BI-1a and GR-4b would reduce impacts on special status bird species to less than significant.

The Maximum Recreation Alternative would not close or reduce DPAs in the Natural Areas. Dog use in the DPAs may affect special status wildlife species and nesting birds, including those at Lake Merced and McLaren Park. Continued use of these DPAs by off-leash dogs would continue to impact special status wildlife species and nesting birds, resulting in significant impacts on special status wildlife. Impacts on special status wildlife species and nesting birds could be reduced or avoided by actions identified in the SNRAMP to close DPAs or modify areas to on-leash dog use only. However, without those specific actions identified in the SNRAMP to close or reduce off-leash dog use, impacts on special status wildlife species and nesting birds from dog use would otherwise be considered significant and unavoidable.

The Maximum Recreation Alternative would result in a greater amount of trail creation and diversity in trail users. Over the long term, increased use of the Natural Areas could result in a greater impact on special status wildlife than under the proposed project by increasing human disturbance and presence. Increased human use could also result in more litter and intentional disturbance to wildlife. These potentially significant impacts could be reduced to less than significant by implementing management actions identified in the SNRAMP: GR-11c (routinely monitor Natural Areas for new social trails and close or reroute any trails that impact sensitive species or sensitive habitat or that contribute to erosion) and mitigation measures identified for the proposed project, including M-BI-1a (require Natural Areas Program staff to limit public access in areas where special status plant species are being affected by posting signs or installing exclusionary fencing). By implementing these measures, impacts of the Maximum Recreation Alternative on special status wildlife species would be less than significant.

Overall, the Maximum Recreation Alternative would be less effective at improving special status species and native habitats in the Natural Areas than the proposed project and would likely result in Natural Areas with less native plant and animal habitat and a greater amount of nonnative urban forest and invasive species coverage. This alternative, however, would not prohibit large-scale habitat restoration and invasive tree removal. As with all alternatives considered in this EIR, the Maximum Recreation Alternative would protect special status wildlife species, as required by federal, state, and local laws, during programmatic projects and routine maintenance. However, the lack of focus on restoring native habitats and removing invasive species under the Maximum Restoration Alternative could threaten the continued existence of special status wildlife species in the Natural Areas, especially those with limited distribution. This potentially significant impact of the Maximum Recreation Alternative could only be mitigated by implementing the restoration activities identified in the SNRAMP; therefore, in the long term, impacts on special status wildlife species could be significant.

The Laguna Salada wetland complex would be restored under the Maximum Recreation Alternative. However, restoration would differ from the proposed project in that activities would be limited to the geographic boundaries of the Sharp Park Natural Area and therefore would not be as extensive. Restoration at Laguna Salada would include removing tules, cattails, and excess sediment and organic matter and would require dredging of Laguna Salada. Sediment traps and a sediment basin, or both, would also be installed in Laguna Salada. Additional upland habitat for the San Francisco garter snake would be created where this additional habitat is contained in the Natural Area boundary. Restoration could result in short-term construction impacts on special status wildlife species. However, these impacts could be reduced to less than significant by implementing

mitigation measures identified for the proposed project, specifically implementation of M-BI-1a. In the long term, restoration of Laguna Salada under this alternative would result in less edge and upland habitat being restored and would be less beneficial for the California red-legged frog and San Francisco garter snake. However, the Maximum Recreation Alternative would improve the current conditions for these species, but to sufficiently achieve recovery of the San Francisco garter snake and California red-legged frog under the Maximum Recreation Alternative, restoration at a scale similar to that under the proposed project would be required. Overall, restoration would increase the capacity of the Laguna Salada wetland complex to accommodate runoff during the rainy season, reducing the potential for, and extent of, seasonal flooding of the golf course. If reauthorized by the USFWS and the CDFG, the SFRPD would continue to monitor and move egg masses deposited outside the Laguna Salada wetland complex to suitable habitat within the wetland complex during the rainy season if flooding results in a risk of stranding.

Migratory Birds. Tree and vegetation removal under the Maximum Recreation Alternative would be smaller in scale than the proposed project because it would be limited to those necessary to maintain forest health and safety and limited to those required to be removed for creating new trails or other recreation facilities. However, tree and vegetation removal under the Maximum Recreation Alternative could still disturb migratory birds and destroy active nests. As with the proposed project, the Maximum Recreation Alternative would be required to comply with the federal MBTA, which prevents the take or destruction of birds and their nests. Compliance with the MBTA would reduce impacts on migratory birds to less than significant. Implementing management action GR-4b, which requires vegetation to be removed outside the breeding season to the extent possible, and if not possible, requires a pre-construction nesting bird survey and avoidance measures, would ensure compliance with the MBTA. By implementing these measures and complying with the MBTA, impacts on migratory birds, including special status bird species, would be less than significant. Impacts on nesting birds as a result of DPAs are addressed above under special status wildlife species.

Sensitive Natural Communities and Wetlands. Under the Maximum Recreation Alternative, the SFRPD would favor recreation facilities over habitat restoration and invasive species removal. In the long term, the Maximum Recreation Alternative would restore native habitat, including sensitive natural communities (such as native grasslands) and would be less effective at controlling invasive vegetation.

Construction-related impacts on sensitive natural communities and wetlands from programmatic projects under the Maximum Recreation Alternative are similar to those under the proposed project.

They would require implementing the erosion control BMPs identified for the proposed project to reduce erosion and impacts of erosion on water quality. Trail creation and other programmatic projects would include the use of heavy equipment and could affect sensitive natural communities and wetlands through direct removal of vegetation that comprises the sensitive natural community. Impacts on sensitive natural communities and wetlands would be temporary and could be reduced to less than significant by implementing mitigation measure M-BI-1a.

The Maximum Recreation Alternative would not close or reduce the acreage of DPAs in the Natural Areas. Observation indicates that dogs are affecting sensitive natural communities in the DPAs, including riparian habitat at McLaren Park. Continued use of these DPAs by off-leash dogs would continue to impact sensitive natural communities, resulting in significant impacts. Impacts on sensitive natural communities could be reduced or avoided by actions identified in the SNRAMP to close DPAs or to modify areas to on-leash dog use only. However, without those specific actions identified in the SNRAMP to close or reduce off-leash dog use, impacts on sensitive natural communities from dogs would otherwise be considered significant and unavoidable.

Fish and Wildlife Movement. The Maximum Recreation Alternative favors implementing recreation facilities over habitat restoration. Over time, the Maximum Recreation Alternative would result in Natural Areas with a greater amount of trail coverage, less native plant and animal habitat, and a greater amount of nonnative urban forest coverage. In effect, the Maximum Recreation Alternative would result in greater fragmentation of habitat and a higher incidence of human disturbance to wildlife species. However, the Natural Areas would remain relatively undeveloped and would continue to serve as corridors for wildlife movement. There would not be significant impacts on migratory corridors, wildlife movement, or nursery sites.

Cumulative Impacts on biological resources as a result of the GGNRA Dog Management Plan would be similar to those of the proposed project. These impacts are potentially significant, but the Maximum Recreation Alternative would not close or reduce any of the DPAs and would therefore not have the potential to increase the use of other DPAs or result in additional impacts on biological resources as a result of consolidating the use of dogs in Natural Areas DPAs. Dog use in the Natural Areas would continue to have project-level significant impacts on biological resources; however, because the Maximum Recreation Alternative would not close or reduce any DPAs, it would not have a considerable contribution to this cumulatively significant biological resources impact.

Hydrology and Water Quality

Under this alternative, impacts on hydrology and water quality would be similar to but slightly greater than the impacts described for the proposed project. This is because this alternative would favor creating recreation facilities over habitat restoration, including large-scale erosion control projects. In addition, the Maximum Recreation Alternative would add new trails to inaccessible areas, such as slopes along Glen Canyon, and would allow for multiuse activities, including mountain biking and horseback riding. Natural Areas Program staff would continue with routine maintenance, as described in the SNRAMP.

Large-scale programmatic trail creation projects, especially trails on slopes, could increase erosion and may affect water quality or stormwater quality. Impacts on water and stormwater quality, erosion, and siltation are similar to those described for programmatic projects under the proposed SNRAMP. Impacts on hydrology and water quality could be reduced to less than significant by implementing the erosion control BMPs identified for the SNRAMP, as applicable for each programmatic project. Additionally, programmatic projects, including trail creation using heavy or other gasoline-powered equipment could result in the accidental release of gasoline or other fluids. If this were to happen during implementation of programmatic projects or routine maintenance, it could have significant impacts on water or stormwater quality. However, mitigation measures M-HZ-13 and M-HZ-14 require the SFRPD to develop and implement an emergency response plan for the accidental release of fuels and other hazardous fluids for programmatic projects and routine maintenance; therefore, these impacts would be mitigated to less than significant.

In the long term, the Maximum Recreation Alternative would result in more intense use of the Natural Areas as a result of additional trails and from allowing more intensive uses, such as mountain biking and horseback riding, potentially increasing erosion, which may affect nearby water and stormwater quality. Potential long-term impacts could be mitigated by implementing measures identified in the SNRAMP, as follows:

- Management action GR-11c (routinely monitor Natural Areas for new social trails and close or reroute any trails that impact sensitive species or sensitive habitat or that contribute to erosion);
- Management action GR-12a (revegetate steep slopes that have very thin vegetation to promote general soil stability); and
- The erosion control BMPs identified in the SNRAMP, as applicable, when areas are found to be experiencing erosion as a result of more intense use of the Natural Areas.

By implementing the actions identified in the proposed project, potential impacts on water quality fro, increased erosion would be reduced to less than significant.

At the Laguna Salada wetland complex in the Sharp Park Natural Area, restoration would include removing tules, cattails, and excess sediment and organic matter. It would require dredging and installing sediment traps or a sediment basin, or both, in Laguna Salada. Construction-related impacts on hydrology and water quality are similar to the proposed project and could be reduced to less than significant by implementing mitigation measure HY-1. In the long term, restoration at Laguna Salada under the Maximum Recreation Alternative would be beneficial as these activities would reduce sedimentation or eutrophication of the wetland complex. Restoration proposed for Laguna Salada under the Maximum Recreation Alternative would increase the capacity of Laguna Salada to accommodate runoff during the rainy season, reducing the potential for, and extent of, seasonal flooding of the golf course.

Hazards and Hazardous Materials

Hazards and hazardous materials impacts under the Maximum Recreation Alternative are similar to those of the proposed project. Programmatic projects, including trail creation, as well as routine maintenance that requires diesel- or gasoline-powered equipment, including heavy-duty construction vehicles, chainsaws and weed whackers, could result in the accidental release of gasoline. This could have significant impacts on vegetation and water courses. Impacts from the accidental release of hazardous materials could be reduced to less than significant by implementing an emergency response plan, as identified in Mitigation Measures M-HZ-13 and M-HZ-14. Further, impacts from pesticides and herbicides, lead contamination, and wildfires would be similar to those described for the proposed project, as the SFRPD would implement similar management practices while using pesticides that would reduce the potential to impact the nearby human populations, wildlife, and groundwater to less than significant.

Although the Maximum Recreation Alternative would result in a greater use of the Natural Areas, this would not significantly increase the potential for wildfires. Therefore, the Maximum Restoration Alternative would result in less than significant wildfire impacts.

Restoration at Laguna Salada includes dredging the wetland complex and removing cattails and tules and would therefore remove habitat for tule mosquitoes. Similar to the proposed project, the San Francisco Department of the Environment and the San Mateo County Mosquito and Vector Control District would continue to implement current programs for controlling and preventing

mosquitoes and ticks that would reduce the potential for insect-borne diseases to less than significant.

Agriculture and Forest Resources

Similar to the proposed project, this alternative would have no impacts on agricultural resources. The Maximum Recreation Alternative would remove dead, dying, and diseased trees or trees that pose a public safety hazard. In addition, creating new trails and other recreation facilities may remove additional trees throughout the Natural Areas. Overall, this alternative includes substantially less invasive tree removal. As with the proposed project, this alternative would have less than significant agricultural and forest resources impacts.

Air Quality

The air quality impacts under the Maximum Recreation Alternative are similar to those described for the proposed project. Programmatic projects, including creating additional trails and other recreation facilities, would require the use of heavy equipment. The magnitude and scale of activities under this alternative are similar to those described under the proposed project. As with the proposed project, the impacts from fugitive dust emissions and health risk impacts would be less than significant, as described in Section V.K; however, programmatic projects could result in significant unavoidable impacts by exceeding the BAAQMD thresholds for NOx criteria pollutant emissions. Therefore, the Maximum Restoration Alternative would result in significant unavoidable air quality impacts with regard to criteria pollutants and less than significant impacts with regard to fugitive dust and health risks. Similar to the proposed project, the contribution from this project to regional air quality would be cumulatively considerable, resulting in a significant and unavoidable cumulative criteria air pollutant impacts.

Other Resource Areas

Population and Housing

As with the proposed project, the Maximum Recreation Alternative does not involve activities that would induce substantial population growth or create the need for replacement housing. There would be no population and housing effects from this alternative.

Transportation and Circulation

Transportation and circulation impacts from this alternative are similar to those described under the proposed project. However, as this alternative would seek to improve access to recreation in the Natural Areas, this would result in a higher number of visitors. Therefore, the number of vehicle

trips is expected to be higher under this alternative. However, most of the visitors would either walk, bike, or drive short distances from locations close to the Natural Areas. Even with the improvement of the recreational areas, the increase in visitors to the Natural Areas and associated increase in vehicle trips would not result in a significant increase in traffic that could affect the traffic load and capacity of the street system or exceed the level of service for designated roads or highways. Therefore, the transportation and circulation impacts under this alternative are expected to be less than significant.

Noise

Similar to the proposed project, construction of programmatic projects, including new trails and other recreation facilities under this alternative could result in temporary increases in noise levels. Construction-related noise impacts would be discontinuous, would be of very short duration, and would occur during daytime hours, consistent with applicable construction noise ordinances. Therefore, construction noise impacts would be less than significant. Over the long term, the Maximum Recreation Alternative would increase use of the Natural areas, potentially increasing noise levels. However, noise impacts are not expected to exceed current standards or expose persons living near the Natural Areas to substantial noise impacts. Therefore, the Maximum Recreation Alternative would have less than significant noise impacts.

Greenhouse Gas Emissions

Greenhouse gas emissions under the Maximum Recreation Alternative are similar to those of the proposed project, except that this alternative may result in additional emissions from increased visitor use. The Maximum Recreation Alternative would improve access to recreation in the Natural Areas and would result in a higher number of visitors. Therefore, this alternative is anticipated to increase vehicles trips and associated greenhouse gas emissions. However, most of the visitors would either walk, bike, or drive short distances from locations close to the Natural Areas, so the Maximum Recreation Alternative would not result in a significant amount of greenhouse gas emissions from vehicle trips.

On the other hand, this alternative would result in substantially less invasive tree removal. Tree removal would be limited to those that are dying, diseased, and hazardous and only those to be removed to accommodate recreation facilities. Dead, dying, and diseased trees are not able to store accumulated carbon as efficiently as healthy trees, and after a time no longer serve as sufficient carbon sinks. Overall, the SFRPD would be required to comply with the *Greenhouse Gas Analysis: Compliance Checklist* for activities in the City and County of San Francisco and applicable regulations

to reduce impacts from greenhouse gases. Therefore, greenhouse gas emission impacts under this alternative would be similar to the proposed project and are considered less than significant.

Utilities and Service Systems

The Maximum Recreation Alternative favors constructing recreation facilities over restoring habitat, so, compared to the proposed project, this alternative would require less irrigation water. Irrigation needs would be met by existing water supply capacity and would not require new or expanded water supply resources. The Maximum Recreation Alternative does not involve activities that would affect landfill capacity, solid waste regulations, and operation or relocation of local utilities. Impacts of the Maximum Recreation Alternative on utilities and service systems would be less than significant.

Public Services

As with the proposed project, the Maximum Restoration Alternative does not involve activities that would require constructing or modifying public service facilities, nor would activities under this alternative increase police or fire emergency response times; therefore, there would be no public services impacts from this alternative.

Geology and Soils

The Maximum Recreation Alternative includes activities and that are similar in scale to programmatic project activities identified under the proposed project. These activities would not increase seismic or landslide hazards, cause a geologic unit to become unstable, substantially change the topography of a Natural Area, or result in substantial soil erosion.

As with the proposed project, there is a potential for strong ground shaking at all Natural Areas due to a nearby earthquake. The Maximum Recreation Alternative does not include any activities that would increase the exposure of people or structures to adverse effects from seismic ground-shaking or seismic failure. Similar to the proposed project, this alternative would not increase landslide hazards.

In the long term, the Maximum Recreation Alternative would result in more intense use of the Natural Areas from creating additional trails and from allowing more intensive uses, such as mountain biking and horseback riding, potentially increasing erosion. The potential long-term impacts could be reduced by implementing measures identified in the SNRAMP, as follows:

- Management actions GR-11c (routinely monitor Natural Areas for new social trails and close or reroute any trails that impact sensitive species or sensitive habitat or that contribute to erosion);
- GR-12a (revegetate steep slopes that have very thin vegetation to promote general soil stability); and
- The erosion control BMPs identified in the SNRAMP, as applicable, when areas are found to be experiencing erosion.

By implementing the erosion-control management actions identified in the proposed project, potential erosion impacts would be reduced to less than significant.

Programmatic project activities, such as creating new trails, would initially disturb soils; however, implementing erosion control measures identified as part of the proposed project would reduce the potential for construction to substantially erode soil. Also, it would prevent a geologic unit or soil from becoming unstable and so would result in a less than significant impact.

While this alternative includes activities that would result in ground disturbance, the magnitude and location of those activities would not be sufficient to substantially change the topography or to impact any unique geologic or physical features of the Natural Areas. By implementing the erosion control management actions identified for the proposed SNRAMP, erosion impacts from the Maximum Recreation Alternative would be less than significant.

Mineral and Energy Resources

Compared to the proposed project, the Maximum Recreation Alternative would increase visitor use, resulting in a minor increase in vehicle use and associated fuel. However, improved Natural Areas may also encourage more local nonmotorized forms of recreation, potentially resulting in minor reductions in vehicle miles traveled, thus reducing fuel consumption. None of the activities under this alternative would result in the loss of availability of a mineral resource or mineral resource recovery site. Similar to the proposed project, the mineral and energy resources effects of the Maximum Recreation Alternative would be less than significant.

VII.D MAINTENANCE ALTERNATIVE

VII.D.1 Description

Under the Maintenance Alternative the general components of the SNRAMP, the SFRPD would implement BMPs, adaptive management, IPM, and the monitoring plan, which are detailed in

Chapter III. Under this alternative, the SFRPD would maintain the current distribution of native and nonnative habitat and species throughout the Natural Areas. There would be no conversion of nonnative habitat to native habitat, and other features of the Natural Areas also would be retained. There would be less habitat restoration and less invasive tree and vegetation removal compared to the proposed project. Over time, this alternative likely would result in Natural Areas with habitat and recreation characteristics similar to those currently present; habitat in MA-2 and MA-3 areas would naturally convert to eucalyptus, ivy, blackberry, and invasive shrub species.

As the Maintenance Alternative would preserve the current trail system, it would not close trails or create new trails. The Maintenance Alternative would not close or reduce DPAs; however, no new DPAs would be created in the Natural Areas, consistent with the SFRPD moratorium[4] on new DPAs. Large-scale programmatic projects would occur under this alternative, but most of those projects would be directed at erosion control, with some invasive vegetation removal and no trail modifications.

Activities at Laguna Salada in the Sharp Park Natural Area would be limited to removing accumulated sediment and tules by hand or other low-impact means during the dry season (April 15 to October 15). Laguna Salada would not be dredged, and during the rainy season Natural Areas Program staff would continue monitoring for the California red-legged frog, in compliance with the state and federal ESAs.

In summary, the Maintenance Alternative would:

- Primarily employ passive management in MA-1, MA-2 and MA-3 areas to preserve the distribution and abundance of native and nonnative vegetation assemblages
- Not close or create trails
- Not close or reduce existing DPAs
- Not restore the Laguna Salada marsh complex

The Maintenance Alternative meets some, but not all of the project objectives presented in Section III.C. Specifically, the Maintenance Alternative does not meet the objectives related to enhancement

[4] There is direction from the Recreation and Park Commission not to establish new DPAs until systemwide DPA planning is completed. For the purposes of this EIR, this is considered a moratorium in that no new DPAs are reasonably foreseeable. This direction was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee.

of the native ecosystem and biodiversity and restoration of the Laguna Salada wetland complex. The Maintenance Alternative would not result in restoration projects that address the issues that may adversely affect the ecosystem functions and biological diversity in the Natural Areas. Furthermore, the Maintenance Alternative would not provide additional recreation opportunities compatible with San Francisco's natural resources. This alternative would be generally feasible.

VII.D.2 Impacts

Land Use and Land Use Planning

The Maintenance Alternative would implement fewer management actions, compared to the proposed project. Current recreation and habitat areas would remain unchanged. This alternative would not physically divide an established community because no action would be undertaken that would represent a significant physical change to the Natural Areas.

This alternative may conflict with San Francisco and City of Pacifica policies, which call for trail improvements, habitat enhancement, and native or appropriate vegetation and forestation. Policy 2.13 states that "native plant habitats should be preserved and efforts undertaken to remove exotic plant species from these areas." By limiting trail development, conservation, and restoration in the Natural Areas, certain policy goals may not be fulfilled. While the Maintenance Alternative does not fully meet the objectives of the governing land use policies, it would not result in a significant land use impact and would not alter the permitted land use.

As stated before, the Maintenance Alternative would not result in new trails or undertake significant restoration. With minimal change to the use of the Natural Areas anticipated as part of the Maintenance Alternative, there would be no substantial impact on the character of the vicinity.

In summary, the Maintenance Alternative would not physically divide an established community, conflict with land use policies, or have a substantial impact on the character of the Natural Areas and their vicinity and would have less than significant land use and planning impacts.

Aesthetics

The Maintenance Alternative would not improve the presence of native vegetation and would not increase natural landscape elements in local Natural Areas because the SFRPD would only prevent the spread of invasive nonnative vegetation and would not increase native vegetation. The Maintenance Alternative may remove exotic species and trees and would maintain the distribution and abundance of native vegetation; the types of impacts associated with those activities are similar to those of the proposed project. The impacts on scenic resources in the Natural Areas and on the

visual character or quality of the Natural Areas would be less than those of the proposed project because there would be only limited vegetation alteration. There would be less active vegetation management under the Maintenance Alternative, compared to both the No Project Alternative and the proposed project, resulting in the least alteration of the visual landscape. Because of this, the Maintenance Alternative would not result in a substantial adverse effect on a scenic vista, would not substantially degrade the visual character or quality of the site and its surroundings, and would not substantially damage scenic resources of the natural or built environment. As with the proposed project, this alternative would have less than significant impacts on aesthetics.

Cultural and Paleontological Resources

Compared to the proposed project and other alternatives, impacts on cultural and paleontological resources would be at their lowest under the Maintenance Alternative. The current condition of the Natural Areas would be maintained with considerably limited ground-disturbing activities. While reduced, this alternative would result in some ground disturbance, and the archaeological and paleontological resources impacts of those management activities could be significant. By implementing the mitigation measures identified for the proposed project, including Mitigation Measure M-CP-10, which was developed for routine maintenance at archeologically sensitive Natural Areas (Tank Hill and Lake Merced), ground-disturbing activities proposed under this alternative would also result in less than significant impacts on archaeological and paleontological resources.

This alternative includes vegetation management that is similar in scale to the routine maintenance identified for the proposed project, which would result in less than significant impacts on historic landscapes and the Golden Gate Park Historic District.

The Maintenance Alternative does not include restoring the Laguna Salada wetland complex, and actions at Laguna Salada would be limited to hand removal of accumulated sediments, tules, and the invasive plant species at Horse Stable Pond. This alternative would not encroach on the Sharp Park Golf Course or modify the golf course in any way; therefore; it would have no effect on the historical character and historical character-defining features of the Sharp Park Golf Course.

Wind and Shadow

Compared to the proposed project, fewer trees would be removed under this alternative. Further, implementation of this alternative would also adhere to the tree removal guidelines in Section III.E.5, including one-for-one replacement of trees in San Francisco Natural Areas. It would follow the Urban Forestry Statements of the SNRAMP for tree removal techniques and system-wide

practices. Similar to the proposed project, under the Maintenance Alternative, the potential for tree removal to alter wind patterns is less than significant. As with the proposed project, the Maintenance Alternative does not include any aboveground structures that would create new shadows, so it would not result in shadow impacts.

Recreation

Compared to the proposed project, the Maintenance Alternative may increase recreation opportunities in the Natural Areas because there would be no closure or conversion of recreation facilities. However, no new trails would be established either.

The Maintenance Alternative calls for minor maintenance at Laguna Salada in the Sharp Park Natural Area and at Horse Stable Pond. This would not encroach into, or otherwise modify, the golf course, and its playability would be retained. Therefore, the Maintenance Alternative would have no impact on recreation resources at Sharp Park. While the proposed project would have a significant impact on the golf course, it would be mitigated by M-RE-6 and therefore is not a significant unavoidable impact of the project. However, without the proposed restoration, the Sharp Park Golf Course would continue to be flooded during the rainy season and would continue to require seasonal closures.

This alternative would not close or reduce any of the DPAs and would therefore not increase the use of other DPAs that may result in the physical deterioration of recreation facilities. The GGNRA Dog Management Plan would restrict dog use on GGNRA lands that could result in significant and unavoidable cumulative impacts from the deterioration of the Natural Areas DPAs. However, the Maintenance Alternative would not reduce the size or number of DPAs in the Natural Areas and would therefore not contribute to any potentially significant cumulative recreation impacts from the deterioration of the Natural Areas as a result of dog use restrictions.

Different from the proposed project, the Maintenance Alternative would not require mitigation measures to achieve less than significant recreation impacts.

Biological Resources

The Maintenance Alternative likely would be the most restrictive to habitat improvements in the Natural Areas. The current distribution of native and nonnative habitat and species would be maintained, resulting in limited beneficial effects on biological resources. Maintenance to control encroaching nonnative species could impact species in the short term through increased human presence, noise, trampling, and machinery. Implementing the BMPs, the IPM program, and the

general recommendations of the SNRAMP would lessen the impacts caused by ground-disturbing activities. This alternative would not close or create new trails or reduce the acreage of DPAs, so, relative to the proposed project, it may increase recreation facilities. Activities at Laguna Salada would include hand removal of tules and accumulated sediment during the dry season and monitoring and relocating California red-legged frog egg masses during the rainy season. Invasive plant removal and revegetation at Horse Stable Pond would continue.

The following discusses the potential biological resources impacts of the Maintenance Alternative on special status plant and wildlife species, nesting birds, sensitive natural communities and wetlands, and fish and wildlife movement.

Special Status Plant Species occur throughout the Natural Areas, as discussed in Section V.G, Biological Resources. The number of large-scale programmatic projects under this alternative would be greatly reduced, compared to the proposed project, because they would be directed primarily toward erosion control, with moderately less invasive vegetation removal and no trail modifications. While the programmatic projects under this alternative could affect both protected plant species and locally significant plant species through inadvertent removal, the reduced scope of these projects would substantially reduce impacts, compared to the proposed project. Habitat maintenance would be smaller in scale and similar to that described for routine maintenance under the proposed project. However, it is possible that Natural Areas Program staff or their volunteers may inadvertently remove or destroy special status plant species during maintenance and restoration. These potentially significant impacts would be mitigated to less than significant by implementing the mitigation measures identified for the proposed project (M-BI-1a, M-BI-1b, and M-BI-5), which require the SFRPD to conduct annual biological training, identifying the types and location of special status plant species that occur throughout the Natural Areas and to avoid impacts on special status plant species. M-BI-1a and M-BI-1b would require that programmatic projects be designed to first avoid, then minimize, restore, or compensate for (if necessary) impacts on those species.

The Maintenance Alternative would not close or reduce the acreage of DPAs in the Natural Areas. Observation indicates that off-leash dog play and exercise, such as running at high speed, is eroding soil and damaging plants, which affects special status plant species in the existing DPAs, including those at Bernal Hill and Lake Merced. Continued use of these DPAs by off-leash dogs would continue to impact special status plant species, resulting in significant impacts on special status plants. These impacts could be mitigated by actions identified in the SNRAMP that call for monitoring and closing DPAs or modifying areas to on-leash dog use only where those impacts are

occurring. Without implementation of these measures in the SNRAMP, this impact would continue and may result in potentially significant impacts on special status plant species.

No special status plant species occur in the Laguna Salada wetland complex in the Sharp Park Natural Area; therefore, restoration at Laguna Salada under the Maintenance Alternative would have no effect on special status plant species.

Special Status Wildlife Species in the Natural Areas include the Mission Blue butterfly at Sharp Park and McLaren Park; the California red-legged frog and San Francisco garter snake at Laguna Salada wetland complex in Sharp Park; California red-legged frog, San Francisco garter snake, and San Francisco dusky-footed woodrat in the upper canyon of Sharp Park; western pond turtle at Sharp Park and Lake Merced; and the western red bat in Golden Gate Park, Mount Davidson, Twin Peaks, Pine Lake, and McLaren Park. The Natural Areas also support special status bird species, addressed in the migratory birds section below.

Under the Maintenance Alternative, the number and degree of programmatic projects would be much less than under the proposed project and would therefore have less of a potential to affect special status wildlife species. Maintenance under this alternative would be relatively similar to that under the proposed project. Should programmatic projects or routine maintenance be conducted in Natural Areas with special status wildlife species, there is potential for those species to be affected, potentially resulting in significant adverse impacts. However, similar to the proposed project, these impacts could be reduced to less than significant by implementing Mitigation Measures M-BI-1a and M-BI-5, which require the SFRPD to conduct annual biological training, identifying the types and location of special status wildlife species that occur throughout the Natural Areas and avoiding direct impacts on those species. Where programmatic projects are being implemented and avoidance measures are determined to be infeasible, Mitigation Measure M-BI-1a requires the SFRPD to minimize impacts on special status species, followed by restoration and compensatory mitigation, as necessary.

The Maintenance Alternative would not close or reduce the acreage of DPAs in the Natural Areas. Dog use in the DPAs may affect special status wildlife species, and continued use of these DPAs by off-leash dogs would continue to impact special status wildlife species, resulting in significant impacts. These impacts could be mitigated by actions identified in the SNRAMP that call for monitoring and closing DPAs or modifying areas to on-leash dog use only where those impacts are occurring. Without implementing these measures in the SNRAMP, this impact would continue and could result in significant impacts on special status wildlife species.

Activities at Sharp Park would continue as they do currently and restoration would be limited to hand removal of tules and accumulated sediment. Impacts on protected species at Laguna Salada could be mitigated by implementing the applicable measures described in M-BI-6a and M-BI-6b, which would require the SFRPD to educate workers, to undertake pre-activity surveys, and to initiate additional measures to avoid or minimize impacts on these species. Avoidance would include removing tule and sediment during the dry season, when these special status species are less likely to be present. By implementing mitigation measures M-BI-6a and M-BI-6b, impacts on special status wildlife species could be reduced to less than significant.

As a result of ongoing natural processes, conditions at the Laguna Salada wetland complex would continue to degrade and be less hospitable to the western pond turtle, California red-legged frog, and San Francisco garter snake, due to increased sedimentation and eutrophication (a condition of dissolved nutrients in a water body promoting plant life, such as algae, which deplete the water's oxygen levels). Substantial deterioration of California red-legged frog, San Francisco garter snake, and western pond turtle habitat could affect the habitat elements required by the species to maintain a viable breeding populaiton. Restoration of the Laguna Salada wetland complex on the scale of the proposed project, with implementation of mitigation measures developed for the proposed project, is intended to enhance the special status species habitat that may continue to degrade if no action is taken.

Without implementing the Sharp Park restoration project, direct impacts on California red-legged frog could occur from continued flooding of the golf course during the rainy season, which may result in frog egg masses being produced in the high water and being stranded after rainstorms. If reauthorized by the USFWS and the CDFG, the SFRPD would continue to monitor and move egg masses deposited outside the Laguna Salada wetland complex to suitable habitat within the wetland complex during the rainy season if flooding results in a risk of stranding.

Migratory Birds. Under the Maintenance Alternative, there would be moderately fewer invasive trees and other vegetation would be removed. With no trail creation, there would also be no vegetation removal associated with that activity. Any vegetation removal under this alternative would be to maintain the distribution and abundance of vegetation. Compared to the proposed project, the Maintenance Alternative would result in fewer temporary impacts on migratory birds and their habitat. As with the proposed project, this alternative would be required to comply with the federal MBTA, which prevents the take or destruction of migratory birds and their nests. Compliance with the MBTA would reduce impacts on migratory birds to less than significant. GR-4b requires vegetation to be removed outside of the breeding season to the extent possible, and if not possible,

requires a pre-construction nesting bird survey and avoidance measures. This would ensure compliance with the MBTA. Implementing Mitigation Measure M-BI-1a would ensure that measures are taken to avoid direct and indirect impacts on migratory bird species when implementing programmatic projects; where those impacts cannot be avoided, the SFRPD would then minimize, restore, or compensate for (if necessary) those impacts. By implementing these measures and complying with the MBTA, programmatic project impacts on migratory birds would be less than significant.

As with the proposed project, vegetation removal as part of routine maintenance also may significantly impact migratory bird species; this impact would be reduced to less than significant by implementing measure GR-4b in the SNRAMP, as described above.

Sensitive Natural Communities and Wetlands. The primary programmatic projects under the Maintenance Alternative are those for erosion control; however, some invasive vegetation may be removed. Therefore, this alternative would have the least potential to result in temporary impacts on sensitive natural communities, and those impacts would be less than significant. On the other hand, as this alternative seeks to maintain the current distribution and abundance of vegetation assemblages, it would not result in long-term beneficial impacts on sensitive natural communities.

As with the proposed project, programmatic projects could affect protected riparian and wetland habitats. By implementing Mitigation Measure M-BI-1a, the impacts would be reduced to less than significant. Mitigation Measure M-BI-1a would require the SFRPD to avoid and minimize impacts on riparian and wetland habitat. This mitigation measure also requires the SFRPD to restore or compensate for impacts on riparian and wetland habitat where impacts cannot be avoided. Therefore, by implementing Mitigation Measure M-BI-1a, impacts on sensitive natural communities (including riparian habitat) and wetlands would be less than significant.

The Maintenance Alternative would not close or reduce the acreage of DPAs in the Natural Areas. Observation indicates that dogs in the DPAs are affecting sensitive natural communities and wetlands. Continued use of these DPAs by off-leash dogs would continue to impact these areas, resulting in potentially significant impacts. Potential impacts on sensitive natural communities and wetlands could be mitigated by actions identified in the SNRAMP that call for monitoring and closing DPAs or modifying areas to on-leash dog use only, where those impacts are occurring. Without these measures in the SNRAMP, this impact would continue and could result in potentially significant impacts on these habitats.

Routine maintenance under this alternative would be similar to the current level of maintenance, and this alternative would not increase the degree of routine maintenance impacts. Therefore, as with the proposed project, impacts from routine maintenance would be less than significant.

Fish and Wildlife Movement. The Maintenance Alternative would involve limited programmatic projects. As such, the impacts associated with this alternative would be reduced, compared to the proposed project. Routine maintenance under this alternative would be similar to those under the proposed project. Due to the limited nature of these programmatic projects and routine maintenance, potential impacts on migratory corridors, wildlife movement, and nursery sites would be less than significant.

Cumulative Impacts on biological resources as a result of the GGNRA Dog Management Plan would be similar to those of the proposed project. Under the No Project Alternative, impacts on biological resources in DPAs identified for closure or reduction under the SNRAMP would continue. However, because this alternative would not close or reduce any DPAs, the Maintenance Alternative would not contribute to any cumulative biological resources impacts resulting from the GGNRA dog management plan.

Hydrology and Water Quality

The primary programmatic projects under the Maintenance Alternative are those for erosion control, with moderately less invasive vegetation removal than under the proposed project. Due to the reduction in programmatic activity relative to the proposed project, this alternative also would have reduced potential to impact hydrology and water quality. However, programmatic project activities would result in soil disturbance, and runoff could carry eroded soils to surface water, resulting in potentially significant impacts on water quality. Potential spills of gasoline or other petroleum products from motorized equipment used for the programmatic projects also may affect water quality. By implementing Mitigation Measures M-HY-1 and M-HZ-13, as discussed under the proposed project, the water quality impacts under this alternative would be reduced to less than significant.

Routine maintenance also may result in accidental releases of gasoline or other petroleum products from motorized equipment. By implementing Mitigation Measure M-HZ-14, as discussed under the proposed project, the water quality impacts under this alternative would be reduced to less than significant.

As a result of ongoing natural processes, water quality conditions at the Laguna Salada wetland complex would continue to degrade due to increased sedimentation and eutrophication (a condition of dissolved nutrients in a water body promoting plant life, such as algae, which deplete the water's oxygen levels), resulting in potentially significant long-term impacts on the water quality of Laguna Salada. These long-term impacts could be reduced to less than significant by implementing restoration sufficient to maintain or improve the current water quality levels. Without implementation of the proposed Sharp Park restoration project, this alternative could result in potentially significant impacts on the water quality of the Laguna Salada wetland complex. Additionally, this alternative would not alleviate current flooding impacts at Sharp Park, resulting in continued seasonal flooding and closure of the golf course, as discussed in the analysis of the impacts of the No Project Alternative on recreation resources.

Hazards and Hazardous Materials

The primary programmatic projects under the Maintenance Alternative are those for erosion control, with moderately less invasive vegetation removal. As such, impacts from the use of hazardous materials would be reduced, as compared to the proposed project. However, the potential for fire hazards under this alternative would be higher, as fewer trees would be removed; therefore, BMPs described in the Urban Forestry Statements of the SNRAMP (such as tree thinning) would be implemented at a lower rate in the forested areas, including in fire hazards areas classified as high or moderate. However, the SFRPD would continue to implement routine management that includes pruning dead branches and removing dead trees. Therefore, the risks of fire hazards would be less than significant. Under this alternative, as with all alternatives, equipment use could result in accidental spills of gasoline and other petroleum products used by motorized equipment. As with the proposed project, these impacts could be mitigated to less than significant by implementing Mitigation Measures M-HZ-13 and M-HZ-14, which require the SFRPD to prepare emergency response plans for accidental releases of hazardous materials. Impacts from the use of pesticides and herbicides and lead contamination are similar to those described under routine maintenance for the proposed project, as the SFRPD would be implementing similar management practices, while using pesticides that would reduce the potential to impact the nearby human populations, wildlife, and groundwater. Therefore, this alternative would have less than significant hazards and hazardous materials impacts.

At Laguna Salada, the Maintenance Alternative calls for manually removing tule stands. The actions at Laguna Salada would be limited in scale and are anticipated to be less effective at controlling tules, potentially providing habitat for tule mosquitoes. The San Francisco Department of the

Environment and the San Mateo County Mosquito and Vector Control District would continue to implement current programs for controlling and preventing mosquitoes and ticks reducing the potential for insect-borne diseases to less than significant.

Agriculture and Forest Resources

Similar to the proposed project, the Maintenance Alternative would have no impacts on agricultural resources. Unlike the proposed project, this alternative involves tree removal and replacement only to the extent necessary to maintain the current distribution and abundance of vegetation. With fewer trees removed to allow healthier trees to grow, this alternative may result in adverse effects on forest health. However, because it involves no loss or conversion of forest land or timberland, this alternative would have less than significant agriculture and forest resources impacts, as under the proposed project.

Air Quality

With the primary programmatic projects under the Maintenance Alternative limited to those for erosion control and vegetation removal, emissions of air pollutants and associated effects on air quality would be reduced, relative to the proposed project. Impacts from fugitive dust emissions and health risk impacts would be less than significant, as described for the proposed project in Section V.K; however, programmatic projects could result in significant unavoidable impacts by exceeding the BAAQMD thresholds for NOx criteria pollutant emissions. Therefore, programmatic activities under the Maintenance Alternative would result in significant unavoidable air quality impacts from criteria pollutants and less than significant impacts from fugitive dust and fewer health risks. As described under the proposed project, routine maintenance would be similar to current activities conducted in the Natural Areas and therefore would not result in a net increase of fugitive dust, criteria air pollutant emissions, or health risks. Similar to the proposed project, the contribution from this project to regional air quality would be cumulatively considerable, resulting in a significant and unavoidable cumulative air quality impact.

Other Resource Areas

Population and Housing

As with the proposed project, the Maintenance Alternative does not involve activities that would induce substantial population growth or create the need for replacement housing. There would be no population and housing effects from this alternative.

Transportation and Circulation

As the Maintenance Alternative would maintain the current distribution of the natural habitats, implementing this alternative would not change the current conditions of the transportation and circulation system. As this alternative would not reduce or close any DPAs, no additional vehicle trips are expected as a result of people traveling by car to other DPAs.

Noise

Noise impacts under this alternative are less than those described under the proposed project. Although the types of equipment could be the same, the level of use would be less than the proposed project because programmatic activities would be limited to those for controlling erosion and removing vegetation. The continued use of powered equipment, including chainsaws and weed whackers, would be similar in duration and intensity to current activities and those described under routine maintenance for the proposed project. Therefore, noise impacts under this alternative would be less than significant.

Greenhouse Gas Emissions

Activities under the Maintenance Alternative would be smaller in scale and magnitude than those described under the proposed project. This alternative would not modify habitats or land uses. Therefore, GHG emissions would be less than those described under the proposed project because there would be reduced use of motorized heavy equipment. Further, with less habitat modification and tree removal, existing carbon sequestration would not be substantially affected. Similar to the proposed project, the SFRPD would comply with the *Greenhouse Gas Analysis: Compliance Checklist* for activities in the City and County of San Francisco and applicable regulations to reduce GHG emissions. Therefore, impacts from GHG emissions under the Maintenance Alternative would be less than significant.

Utilities and Service Systems

Compared to the proposed project, this alternative would require less irrigation water, particularly for establishing new vegetation, due to the reduced level of invasive vegetation removal and replacement. Irrigation needs would be met by existing water supply capacity and would not require new or expanded water supply resources. The Maintenance Alternative does not involve activities that would affect landfill capacity, solid waste regulations, and operation or relocation of local utilities. Therefore, impacts on utilities and service systems would be less than significant.

Public Services

As with the proposed project, the Maintenance Alternative does not involve activities that would require construction or modification of public service facilities, nor would the Maintenance Alternative increase police or fire emergency response times. Therefore, there would be no public services impacts from the Maintenance Alternative.

Geology and Soils

Compared to the proposed project, this alternative would result in less ground disturbance due to reduced programmatic project activities. These activities would not increase seismic or landslide hazards, would not cause a geologic unit to become unstable, would not substantially change the topography of a Natural Area, and would not result in substantial soil erosion. Potential soil erosion would be addressed by the erosion control BMPs included in the SNRAMP. As under the proposed project, there is a potential for strong ground shaking at all Natural Areas from a nearby earthquake. Under this alternative, the increased likelihood that people or structures would experience adverse effects from strong ground shaking would be less than significant because the user population would not be exposed to an increased potential for ground failure in the Natural Areas. Landslides and erosion-related impacts are expected to be less than significant because this alternative involves less ground disturbance relative to the proposed project and includes erosion control measures. While activities under this alternative would disturb soils, those activities would not cause a geologic unit or soil to become unstable, resulting in less than significant geology impacts. While this alternative includes activities that would result in ground disturbance, the magnitude and location of those activities would not be sufficient to substantially change the topography or any unique geologic or physical features of the Natural Areas. In light of the above, the geology and soils impacts of this alternative would be less than significant.

Mineral and Energy Resources

Compared to the proposed project, motorized equipment and vehicles for management activities under this alternative would consume less fuel due to the decreased number of programmatic project activities. None of the activities under this alternative would result in the loss of availability of a mineral resource or mineral resource recovery site. Therefore, the mineral and energy resources effects of the Maintenance Alternative would be less than significant.

VII.E ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Table 21 summarizes the effects of the proposed project and alternatives. In determining the environmentally superior alternative for the proposed project, this EIR considers the environmental

Table 21
Summary of Environmental Effects

	Proposed Project	Maximum Restoration Alternative	Maximum Recreation Alternative	Maintenance Alternative	No Project Alternative
Land Use and Land Use Planning	LTS	LTS	LTS	LTS	NI
Aesthetics	LTS	LTS	LTS	LTS	LTS
Cultural and Paleontological Resources	SU/M	SU/M	LTS/M	LTS/M	LTS/M
Cultural and Paleontological Resources (Cumulative)	SU	SU	LTS	LTS	LTS
Wind and Shadow	LTS	LTS	LTS	LTS	LTS
Recreation	LTS/M	LTS/M	LTS	LTS	LTS
Recreation (Cumulative)	SU	SU	LTS	LTS	LTS
Biological Resources	LTS/M	LTS/M	LTS/M	LTS/M	LTS/M
Biological Resources (Cumulative)	SU	SU	LTS	LTS	LTS
Hydrology and Water Quality	LTS/M	LTS/M	LTS/M	LTS/M	LTS/M
Hazards and Hazardous Materials	LTS/M	LTS/M	LTS/M	LTS/M	LTS/M
Agriculture and Forest Resources	LTS	LTS	LTS	LTS	LTS
Air Quality	SU/M	SU/M	SU/M	SU/M	LTS
Air Quality (Cumulative)	SU/M	SU/M	SU/M	SU/M	LTS

LEGEND:
SU = Significant and unavoidable impact
SU/M = Significant and unavoidable impact with mitigation
LTS/M = Less than significant impact with mitigation
LTS = Less than significant impact
NI = No impact

effects of the project and project alternatives. The Maximum Recreation and Maintenance Alternatives are the environmentally superior alternatives because they have fewer unmitigated significant impacts than either the proposed project or the Maximum Restoration Alternative. Between the Maximum Recreation Alternative and the Maintenance Alternative, the Maintenance Alternative would be the environmentally superior alternative for two reasons. While the two alternatives have the same number of significant and unavoidable impacts under CEQA, the

Maintenance Alternative has fewer potential environmental effects than the Maximum Recreation Alternative. First, the Maintenance Alternative would not create new trails, the construction of which could result in impacts to sensitive habitats and other biological resources. Second, over time the Maximum Recreation Alternative would result in Natural Areas with less native plant and animal habitat and a greater amount of nonnative urban forest coverage. The Maintenance Alternative, on the other hand, would preserve the existing distribution and extent of biological resources, including sensitive habitats. For these reasons, the Maintenance Alternative is the environmentally superior alternative.

It should be noted that one of the reasons that both the Maintenance Alternative and Maximum Recreation Alternative would result in less environmental impacts than the proposed project is because these alternatives would not provide a habitat corridor between Laguna Salada and Horse Stable Pond or provide the same degree of upland habitat as the proposed project and Maximum Restoration Alternative. The construction of the habitat corridor and upland refuge would require augmenting the Sharp Park Golf Course, resulting in significant and unavoidable impacts to the golf course as a historic resource. While the habitat corridor and upland refuge result in additional cultural and historic impacts, they are features of the proposed project that were developed based on early coordination efforts with the USFWS, CDFG and consulting biological experts and determined appropriate to achieve recovery of the San Francisco garter snake population.

VII.F ALTERNATIVES CONSIDERED BUT REJECTED

During the scoping process, a public comment was received proposing a Sharp Park restoration alternative that included a model of natural flood control, outdoor recreation, environmental education, and endangered species recovery. This alternative would involve full restoration of the entire Sharp Park property, including the elimination of the golf course. This proposal was rejected as an individual alternative because it is not compatible with the 18-hole layout of the historic golf course. This alternative would, through the elimination of the Sharp Park Golf Course, result in greater significant and unavoidable impacts to cultural and recreational resources and therefore is not required to be analyzed under CEQA. In accordance with CEQA Guidelines Section 15126.6, "…alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects." In addition, an alternative that would convert the entire Sharp Park Natural Area would only address one of the many Natural Areas addressed by the SNRAMP and could not practicably be extrapolated to the other Natural Areas. While rejected as an individual alternative, components and approaches embodied by this proposal have been incorporated into the Maximum Restoration Alternative.

As part of the Sharp Park Conceptual Restoration Alternatives Report, the SFRPD proposed restoration alternatives that would be compatible with either a nine-hole layout at the Sharp Park Golf Course or with removal of the golf course entirely. These alternatives have been rejected because they are not compatible with the existing and planned 18-hole layout of the historic golf course.

Suggested alternatives or modifications to the project received during the scoping process have been considered and incorporated into the proposed project and the three project alternatives.

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IX. EIR PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

IX.A EIR PREPARERS

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IX.B PERSONS AND ORGANIZATIONS CONSULTED

Randall Dean, Archaeologist, San Francisco Planning Department, Major Environmental Analysis

Patricia Holroyd, Museum Scientist, University of California Museum of Paleontology

APPENDIX A

Notice of Preparation, Initial Study, and Scoping Report

SAN FRANCISCO
PLANNING DEPARTMENT

Notice of Preparation of an Environmental Impact Report

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
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Date:	April 22, 2009
Case No.:	**2005.1912E**
Project Title:	**Natural Areas Management Plan**
Project Size:	1,105 acres
Project Sponsor	Daniel LaForte, San Francisco Recreation and Park Department (415) 831-2742
Lead Agency:	San Francisco Planning Department
Staff Contact:	Jessica Range – (415) 575-9018 jessica.range@sfgov.org

PROJECT DESCRIPTION

Fragments of unique plant and animal habitats within San Francisco and Pacifica, known as Significant Natural Resource Areas (Natural Areas), have been preserved within parks that are managed by the San Francisco Recreation and Park Department (SFRPD). In the late 1990s, the SFRPD developed a Natural Areas Program to protect and manage these Natural Areas for the natural and human values they provide. The Natural Areas Program mission is to preserve, restore, and enhance the remnant Natural Areas and to promote environmental stewardship of these areas. On January 19, 1995, the San Francisco Recreation and Park Commission approved the first Significant Natural Resource Areas Management Plan (SNRAMP).

Over the course of several years, the SFRPD developed a new SNRAMP, with the final draft plan published in February 2006 and based on the 1995 plan. This SNRAMP contains detailed information on the biology, geology, and trails within 31 Natural Areas, 30 of which are in San Francisco and one (Sharp Park) is in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years.

A detailed project description can be found in the Initial Study attached to this Notice of Preparation.

FINDING

This project may have a significant effect on the environment and an Environmental Impact Report is required. This determination is based upon the criteria of the State CEQA Guidelines, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance), and for the reasons documented in the Environmental Evaluation (Initial Study) for the project, which is attached.

PUBLIC SCOPING PROCESS

Pursuant to the State of California Public Resources Code Section 21083.9 and California Environmental Quality Act Guidelines Section 15206, two public scoping meeting will be held to receive oral comments concerning the scope of the EIR. These meetings will be held on **Tuesday, May 12, from 6:30 pm to 9:30 pm** at **County Fair Building Auditorium in Golden Gate Park (9th Avenue and Lincoln Way)** and

Thursday, May 14, from 6:30 pm to 9:30 pm at **Pedro Point Firehouse in Pacifica (1227 Danmann Avenue).** Written comments will also be accepted at this meeting and until the close of business on **May 26, 2009**. Written comments should be sent to Bill Wycko, San Francisco Planning Department, Natural Areas Management Plan, 1650 Mission Street, Suite 400, San Francisco, CA 94103.

If you work for a responsible State agency, we need to know the views of your agency regarding the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR when considering a permit or other approval for this project. Please include the name of a contact person in your agency.

April 20, 2009
Date

Bill Wycko
Environmental Review Officer

INITIAL STUDY

Case No. 2005.0912E

SIGNIFICANT NATURAL RESOURCE AREAS MANAGEMENT PLAN

April 2009

By:
San Francisco Planning Department
San Francisco, California

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ACRONYMS AND ABBREVIATIONS

BA	Balboa
BAAQMD	Bay Area Air Quality Management District
BG	Billy Goat Hill
BH	Bernal Hill
BMP	best management practice
BP	Brooks Park and Lakeview/Ashton Mini Park
BV	Buena Vista Park
C-APE	CEQA area of potential effects
CARB	California Air Resources Board
CCSF	City and County of San Francisco
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQA	California Environmental Quality Act
CH	Corona Heights
CNPS	California Native Plant Society
CRHR	California Register of Historical Resources
CRLF	California red-legged frog
DC	Duncan-Castro
DP	Dorothy Erskine
DPA	Dog Play Area
EIR	Environmental Impact Report
EM	Edgehill Mountain
EPA	US Environmental Protection Agency
ERO	Environmental Review Officer
FARR	Final Archaeological Resources Report
FEMA	Federal Emergency Management Agency
FI	15th Avenue Steps
FIRM	Flood Insurance Rate Map
FP	Fairmount Park

ACRONYMS AND ABBREVIATIONS

GC/OH	Glen Canyon Park and O'Shaughnessy Hollow
GGNRA	Golden Gate National Recreation Area
GGRH	Golden Gate Heights Park, Grandview Park, Hawk Hill, and Rock Outcrop
GHG	greenhouse gas
GIS	Geographic Information System
GR	General Recommendations
IB	India Basin Shoreline Park
IG	Interior Greenbelt
IPM	Integrated Pest Management
KH	Kite Hill
LM	Lake Merced
LS	locally sensitive
MA	management area
MD	Mount Davidson
MEA	Major Environmental Analysis
MLD	Most Likely Descendant
MP	McLaren Park
MRZ	Mineral Resource Zone
NAHC	Native American Heritage Commission
Natural Areas	Significant Natural Resource Areas
NFIP	National Flood Insurance Program
NPS	National Park Service
NWIC	Northwest Information Center
OSHA	Occupational Safety and Health Administration
OW	Golden Gate Park Oak Woodlands
PL	Pine Lake
PM_{10}	inhalable particulate matter
$PM_{2.5}$	fine particulate matter
PP	Palou-Phelps
SFGS	San Francisco garter snake
SFHA	special flood hazard area
SFPUC	San Francisco Public Utilities Commission
SFRPD	San Francisco Recreation and Park Department
SNRAMP	Significant Natural Resource Areas Management Plan
SP	Sharp Park
TK	Tank Hill
TP	Twin Peaks
TSS	total suspended solids
UCMP	University of California Museum of Paleontology
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
VP	Bayview Park

INITIAL STUDY
(Case No. 2005.0912E—Natural Areas Management Plan)

A. PROJECT DESCRIPTION

A.1 INTRODUCTION

While San Francisco is by and large a densely developed urban area, fragments of unique plant and animal habitats within San Francisco and Pacifica, known as Significant Natural Resource Areas (Natural Areas), have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). In the late 1990s, the SFRPD developed a Natural Areas Program to protect and manage these Natural Areas for the natural and human values they provide. The Natural Areas Program mission is to preserve, restore, and enhance the remnant Natural Areas and to promote environmental stewardship of these areas. On January 19, 1995, the San Francisco Recreation and Park Commission approved the first Significant Natural Resource Areas Management Plan.

Over the course of several years, the SFRPD developed a new Significant Natural Resource Areas Management Plan (SNRAMP, SFRPD 2006), with the final draft plan published in February 2006 and based on the 1995 plan. This SNRAMP contains detailed information on the biology, geology, and trails within 31 Natural Areas, 30 of which are in San Francisco and one (Sharp Park) is in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years. The proposed project is the SFRPD's implementation of the SNRAMP.

The Major Environmental Analysis Division of the San Francisco Planning Department has prepared this Initial Study in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Sections 21000-21177) and the Guidelines for Implementation of the California Environmental Quality Act (California Code of Regulations, Title 14, Sections 15000-15387). It evaluates environmental impacts associated with the project, identifies feasible mitigation measures to reduce these impacts to a less than significant level, and includes improvement measures to further reduce impacts identified as less than significant.

This Initial Study provides a preliminary evaluation of the proposed project. Potentially significant environmental impacts of the proposed project will be addressed in detail in an Environmental Impact Report to be prepared for this project.

A.2 PROJECT OBJECTIVES AND GOALS

The objectives of the SNRAMP are as follows:

- To present the inventory of biological resources in Natural Areas, which will inform planning, restoration, and management activities;

- To develop a geographic information system database containing baseline information for each of the Natural Areas;
- To identify issues and impacts adversely affecting ecosystem functions and biological diversity;
- To identify and prioritize restoration and management actions designed to promote the functioning of San Francisco's native ecosystem, including the maintenance of native biodiversity;
- To identify and prioritize monitoring activities of natural resources to support an adaptive management[1] approach;
- To provide guidelines for passive recreational[2] uses compatible with the San Francisco's natural resources; and
- To provide guidelines for educational, research, and stewardship programs.

Summarized below are the goals of the SNRAMP.

Conservation and Restoration Goals

- To identify existing natural resources;
- To maintain viable populations of all special status species;[3]
- To maintain and enhance native plant and animal communities;
- To maintain and enhance local biodiversity;
- To reestablish native community diversity, structure, and ecosystem function where degraded;
- To improve natural area connectivity; and
- To decrease the extent of invasive exotic species cover.

Education Goals

- To provide services that will enable all age groups to better understand the values of the Natural Areas, including ecosystem functions and socioeconomic values;
- To provide opportunities for service learning to students in the San Francisco Unified School District; and

[1]Adaptive management—a flexible, learning-based approach to managing complex ecosystems.

[2]Passive recreation—recreational activities that occur in a natural setting and that require minimal site development or facilities. Under passive recreation, the importance of the environment or setting for the activities is greater than in developed or active recreation settings.

[3]Special status species—species that are accorded special status because of their recognized rarity or vulnerability to habitat loss or population decline. Some of these species receive specific protection in federal or state endangered species legislation. Others have been designated sensitive species or species of special concern on the basis of adopted policies of federal, state, or local resource agencies. These species are referred to collectively as special status species.

- To provide diverse outdoor classroom opportunities.

Research Goals

- To provide a research framework and research opportunities to schools and universities that will lead to an enhanced understanding of the natural systems and an informed adaptive management approach;
- To contribute to the scientific understanding of local natural systems; and
- To contribute to the field of restoration ecology and other applied sciences.

Stewardship Goals

- To develop and support opportunities for public stewardship of Natural Areas;
- To foster neighborhood stewardship and volunteer groups; and
- To provide diverse opportunities for participation by stewardship groups.

Recreation Goals

- To provide opportunities for passive recreational uses (e.g., hiking, nature observation) that are compatible with conservation and restoration goals and
- To improve and develop a recreational trail system that provides the greatest amount of accessibility while protecting natural resources.

Monitoring Goals

To establish a long-term monitoring program to:

- Identify the species on which monitoring should focus;
- Detect increases and declines in abundance, distribution, or health of special status species;
- Detect significant changes in acreage of native communities, wildlife habitats, and invasive species;
- Detect significant increases and declines in native species richness;
- Assess success of restoration activities in achieving conservation and restoration goals; and
- Provide an adaptive management framework for evaluating changes (e.g., conceptual model).

Design and Aesthetic Goals

- Where possible, to develop aesthetically pleasing landscapes that are consistent with surrounding landscapes and that create natural transitions, especially where adjacent parklands and traditionally landscaped areas abut Natural Areas;
- To maintain and develop viewpoints and viewsheds[4] to enhance park experiences; and

[4]Viewshed—the landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

- Where possible, to design and maintain landscapes to discourage the accumulation of trash and illegal encampments.

Safety Goal

- To design and maintain landscapes that promote public safety.

A.3 PROJECT LOCATION

The 31 Natural Areas are scattered mostly throughout the central and southern portions of San Francisco and constitute approximately four percent of the total city area; one Natural Area is in Pacifica. The areas range in size from less than one acre to almost 400 acres and include such popular locations as Twin Peaks and portions of Glen Canyon Park. Many of these areas support sensitive plant and animal species and habitats. Others include striking geologic formations. Most are used as recreational open spaces by residents and visitors. While mostly owned by the SFRPD, some remnant Natural Areas are managed by other public and private entities. Some of these properties may eventually be transferred to the SFRPD. Figure 1 is an overview map of the Natural Areas. Detailed maps of each Natural Area depicting the designated management areas described below can be found in Appendix A.

A.4 PROJECT OVERVIEW

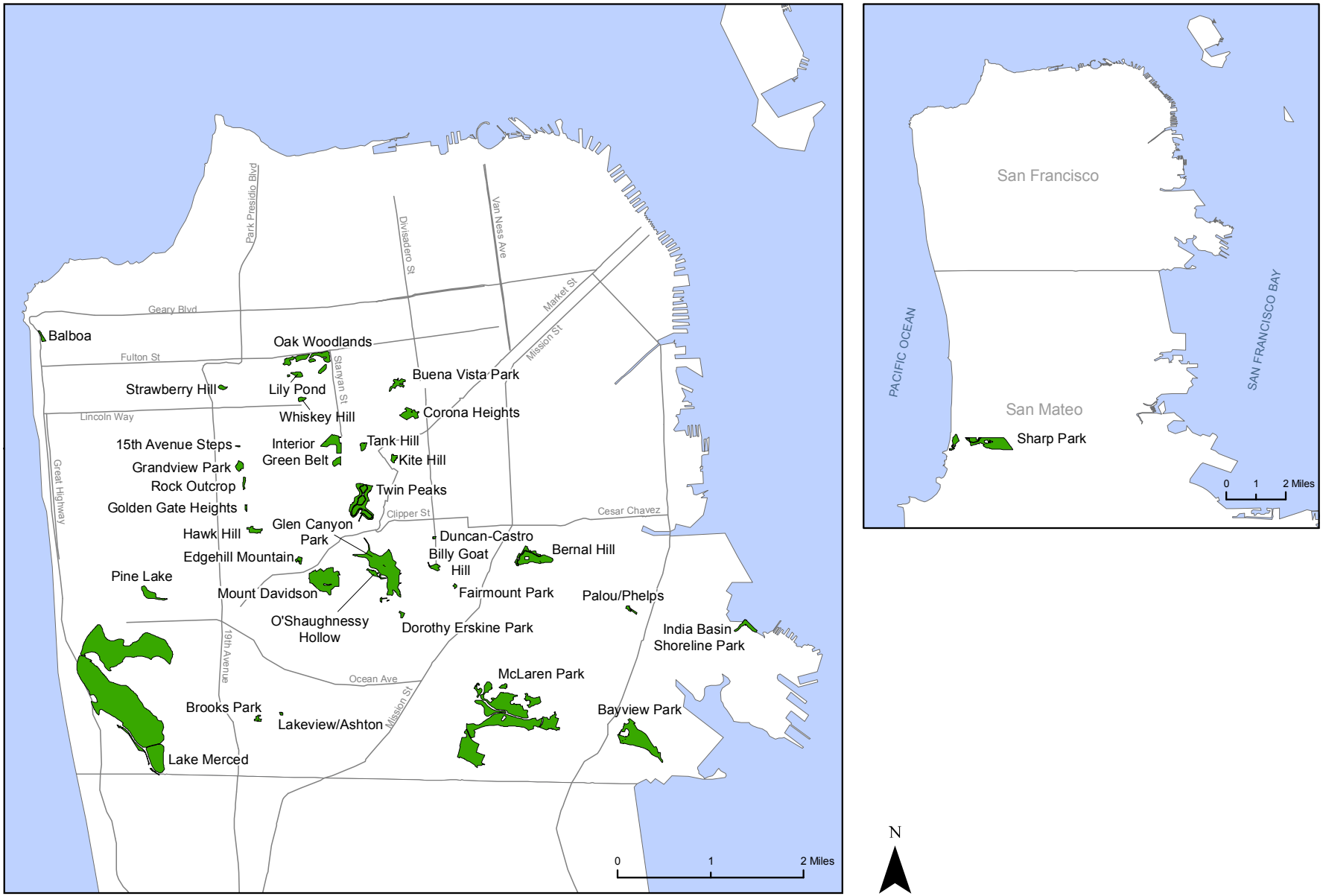
The Significant Natural Resource Areas Management Plan, Final Draft (SFRPD 2006) is incorporated by reference into this description of the project.

As envisioned, the SNRAMP will provide the framework for long-term management of the Natural Areas. One goal is to provide the resource managers with a framework that can be used for the next 20 years. During this period, restoration actions will be taken within the framework of an evolving urban fabric, and monitoring will determine the success of those actions and influence future actions.

The management areas (MAs) addressed in the SNRAMP represent differing levels of sensitivity, species presence, and habitat complexity within the 31 Natural Areas. Three levels of MAs have been defined as MA-1, MA-2 and MA-3, and the acreage of each Natural Area is divided among these three categories. MA-1, MA-2, and MA-3 areas make up approximately 18, 39, and 43 percent of the total Natural Areas, respectively. In general, MA-1 represents the priority areas for conservation and management activities, where management actions provide the greatest conservation benefit. As additional resources become available, management activities may shift to MA-2 or MA-3 areas. Individual maps of the Natural Areas showing the designated management areas are included in Appendix A.

Portions of Natural Areas designated MA-1 are those that:

- Support listed species or special status species;
- Support habitat for a significant number of sensitive species of plants or animals;
- Contain a relatively high portion of native plants or plant richness;



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The 31 Natural Areas total approximately 1,105 acres and range in size from 0.3 acres (15th Avenue Steps) to 395 acres (Lake Merced).

Natural Area

Roadway

Natural Areas

Tetra Tech, Inc

Figure 1

- Contain unique remnant native vegetation (such as native grasslands or wetlands[5]);
- Contain habitats or species most likely to be impacted by human use;
- May support vegetation assemblages of limited distribution (locally or regionally); or
- Contain erosion-prone areas.

Management actions within areas designated MA-1 may include:

- The most focused restoration work, possibly to the degree of manipulating individual plants and vegetation series;
- Reintroduction of sensitive species;
- Tree removal in conformance with forestry statements;
- Implementation of erosion-control measures as problems arise, including the closure of informal and social trails;[6] and
- Prohibition of planting nonnative species.

Areas designated MA-2 areas are comparatively more resilient to human disturbance than MA-1 areas, and their criteria for designation include:

- Important habitats, such as coastal scrub, wetlands, native grasslands;
- Remnant native vegetation of otherwise widespread plant communities, such as coyote brush, scrub, blackberry scrub;
- Habitats or species moderately susceptible to human impact;
- Habitat for local native wildlife species, such as resident and migratory bird species;
- Native vegetation with some nonnative elements; or
- Buffer areas for MA-1s.

Management actions within areas designated as MA-2 may include the following:

- Management focused on maintaining native plant communities;
- Reintroduction of sensitive plants;

[5]Wetland—a zone periodically or continuously submerged or having high soil moisture, which has aquatic or riparian vegetation components and is maintained by water supplies significantly in excess of those otherwise available through local precipitation.

[6]Social trail—an undesignated user-developed pathway through a Natural Area.

- Tree removal that is limited to a prescribed number of acres or trees in compliance with forestry statements;
- Implementation of erosion control measures as problems arise, including closing informal and social trails; and
- Prohibition on planting nonnative species.

The remaining lands within the Natural Areas are those designated as MA-3, which are the least sensitive. Specific criteria for areas to be designated MA-3 include:

- Absence (current or historic) of sensitive plants or animals but where there are some native plants and habitat for wildlife species;
- Predominance of nonnative vegetation that serves as a buffer for MA-1 and MA-2 from surrounding developed recreational and other land uses; or
- Unusual geological features.

Management actions within areas designated as MA-3 include:

- Activities to promote the health and diversity of urban forests[7] and the wildlife habitat they provide;
- Prohibition on (re)introduction of sensitive species;
- Few restrictions on recreational use (subject to the standard park rules and codes); and
- Implementation of erosion control measures as problems arise, including the closure of informal and social trails.

The Natural Areas Program staff of up to ten gardeners would continue to conduct the management actions at the Natural Areas. The Natural Areas Program also uses groups of volunteers that range in size from 10 to 50 people. The Natural Areas Program staff is composed of biologists and natural resource managers.

For larger projects, the Natural Areas Program staff would hire a contractor and would oversee the contractor's work. The Natural Areas Program staff would require a work plan addressing erosion control, species awareness and management, and other environmental considerations.

Implementation of the SNRAMP would prioritize activities at MA-1 areas, then MA-2 areas, then MA-3 areas.

Generally, invasive trees removed in San Francisco would be replaced with native tree species at a ratio of roughly one-to-one, although not necessarily at the same location. For

[7]Urban forest—a significant stand of nonindigenous trees.

Sharp Park in Pacifica, many of the trees would be replaced not with trees but with more appropriate native vegetation; the SFRPD would coordinate with the California Department of Fish and Game to determine the appropriate types of replacement vegetation. Tree removal is discussed in detail in Appendix F of the SNRAMP. For accounting purposes, the SNRAMP defines a tree as any plant having a dominant vertical trunk that is over 15 feet tall; tree species less than 15 feet tall are considered seedlings or saplings in the SNRAMP. Natural Areas Program staff would remove any tree that has a diameter at breast height[8] (dbh) of six inches or less; Natural Areas Program staff would coordinate with the SFRPD arborist, who would evaluate the removal of larger trees. Tree work would generally be limited to the nonbreeding season for bird species. Where tree work is required during the breeding season, trees would be disturbed initially before breeding to discourage nesting; alternately, surveys would be conducted before tree removal to determine the presence of breeding birds. Typically, trees would be removed limb-by-limb, rather than felling an entire tree. Tree removal would leave the tree stump and root ball intact; stumps would be ground to below grade where necessary to avoid tripping hazards. The SFRPD's tree posting policy requires that all trees over six inches dbh and designated for removal be posted at least 30 days before removal. The public is invited to comment about the proposed removal, and the SFRPD may or may not modify its plans based on public input.

Implementing the SNRAMP would involve removing both individual trees and small clusters of trees that could at a maximum range from 0.25 and 0.5 acre to create openings, leaving the surrounding forest intact. Vegetation removal in MA-1 areas would be focused on individual plants within roughly half-acre plots.

Trails typically would be created in previously inaccessible areas, as opposed to improving social trails. For tree removal and other activities conducted at the edges of Natural Areas, sidewalks and roads may have to be closed temporarily.

Wherever possible, Natural Areas Program staff would avoid undeveloped areas that are not planned for restoration or other management actions.

A.4.1 Management Approach

The primary management concerns relate to restoring and enhancing the remaining natural communities that have been adversely impacted by human activities. Human-generated impacts on natural areas include loss of native habitat, fragmentation of the natural landscape, introduction of nonnative plants and animals, and increased pressures from human use.

Specific management issues include:

- Loss of special status or unusual native species or habitats;

[8]Diameter at breast height—a standard means of tree measurement, with the diameter of the trunk measured at breast height, defined as 4.5 feet above the forest floor on the uphill side of the tree.

- Loss of diversity and components of a healthy ecosystem;
- Effect of nonnative invasive species on the local native flora and fauna;
- Erosion of natural areas from inappropriately located or constructed trails and access roads;
- Effect of human uses (recreation, poor trail location or too many trails, and a general increase in use) that conflict with conservation values; and
- Effects of feral animals and domestic pets on native flora and fauna.

Toward achieving the plan's goals, the restoration methods and practices below would be used.

Adaptive Management

The strategy for managing Natural Areas is based on adaptive management, which is a flexible learning-based approach to managing complex ecosystems. Adaptive management recognizes that some uncertainty exists about the nature of ecosystems and the organisms and processes that define them. Adaptive management, as applied to natural systems, involves a continuous cycle of systematically monitoring biodiversity and other ecosystem goals, and reassessing the plans, strategies and goals, methods, and questions that underlie the management approach. Land managers then use this information to evaluate successes and failures of management actions and to refine techniques and approaches. In this approach, adaptive management is executed in three phases. First, site-specific issues and recommendations are developed. Second, a plan based on these recommendations and on priorities assigned by the Natural Areas Program is implemented. Third, a monitoring program is implemented to evaluate the plan's site-specific success and, based on the information gathered, the implementation strategies, priorities, and methods are modified, as necessary.

A.4.2 Integrated Pest Management

Integrated Pest Management (IPM) is the use of multiple treatment methods to control undesirable weeds and other pests. While IPM has a range of meanings and is subject to various interpretations, the Natural Areas Program defines it as the optimal integration of management methods to control pests with the least possible hazard to people, property, and the environment. The Natural Areas Program uses a least toxic decision making model in its vegetation management. Although the IPM process has been formally adopted by many public and private organizations, it continues to evolve as management strategies are fine-tuned and innovative new pest control methods are found to be effective.

IPM is a multistep ecologically based approach that enables staff to make decisions about where, when, and how resources should be best allocated to control pests. Conventional pest control methods attempt to control the symptoms of a pest problem, but IPM is a proactive strategy that focuses on identifying and reducing, or eliminating, the root cause of a pest problem. IPM implements effective, long-term management solutions through

the use of a broad range of expertise, a combination of treatment methods, and comprehensive monitoring and evaluation.

In accordance with Chapter 39 of the San Francisco Administrative Code, the Natural Areas Program employs IPM as its strategy for preventing new and managing existing pest infestations. The Natural Areas IPM program has:

- Identified management goals, such as preserving biodiversity;
- Identified pests and the environmental conditions that favor their spread;
- Identified gaps in the knowledge of species biology and habitats and made efforts to increase understanding and fill these gaps;
- Established a monitoring program to determine pest population, size, occurrence, and rate of change in each ecosystem;
- Set injury levels and treatment thresholds;
- Employed effective, least-toxic pest control methods if feasible, using combinations of methods as necessary; and
- Implemented pilot programs to experiment with alternative pest control methods.

A.4.3 General Recommendations (GR)

This section presents management recommendations common throughout the various Natural Areas. For use while reading this Initial Study, a fold-out list of the general recommendations is included at the end of this document. Site-specific recommendations are presented in Section A.5.

Invasive Plant Control and Revegetation

- GR-1a—reduce invasive plant populations;
- GR-1b—where native plant seed banks do not exist or have diminished, appropriate native species may be used for revegetation. Plant native species to approximate the diversity, cover, and density of adjacent habitats or of reference sites in similar habitats;
- GR-1c—conduct restoration during the appropriate time of the year and at an appropriate scale to avoid impacts on wildlife and to minimize erosion;
- GR-1d—in areas where it may not be feasible to reduce large infestations of invasive vegetation immediately, conduct containment actions along the interface between native and nonnative habitats;
- GR-1e—annually monitor MAs, restoration areas, and other sensitive habitats for undesired plant species.

Sensitive Plant Species

- GR-2a—prioritize invasive weed reduction and management in areas supporting sensitive species or other vegetation series;

- GR-2b—give sensitive species priority in revegetation and reintroduction activities throughout Natural Areas;
- GR-2c—protect areas of sensitive species and vegetation series of limited distribution from human disturbance;
- GR-2d—closely monitor plant populations and vegetation series of limited distribution;
- GR-2e—continue to work with the scientific community to better understand key biological factors affecting the survival and reproduction of sensitive species and to better inform adaptive management decision making.

Native Grasslands

- GR-3a—monitor annually, if feasible, native grasslands and control invasive species;
- GR-3b—explore alternative methods of grassland management for large grassland expanses, such as prescribed burning, livestock grazing, and use of motorized equipment.

  (Note: The SNRAMP no longer is proposing prescribed burning would not occur. The SNRAMP will be updated to reflect this change. Should the SFRPD determine prescribed burning to be a desirable, feasible method for managing native grasslands, a separate environmental review would be required to comply with CEQA, and applicable permits and other regulatory agency approvals would be obtained.)

Breeding Bird Habitat

- GR-4a—conduct annual breeding bird surveys, if resources are available, using the standard point count or transect method, to develop a list of species nesting in Natural Areas;
- GR-4b—conduct vegetation management activities outside the breeding season (April 1 to September 1) if breeding birds could be affected, unless the following specific conditions are met: projects begun before the breeding season have already disturbed the area, or a breeding bird survey is conducted first. If active nests (or large abandoned stick nests) of a sensitive species are discovered, a 150-foot-radius avoidance buffer would be centered on the nest site(s) to prevent the nesting birds from being disturbed by power tools. Weeds may be pulled by hand no closer than 50 feet from the nest;
- GR-4c—if surveys indicate that parasitism by brown-headed cowbirds is a significant problem, consult with the California Department of Fish and Game and the US Fish and Wildlife Service to determine proper protocols to minimize the negative effects of this species on breeding birds;

- GR-4d—use material from brush and tree trimming to increase nesting or escape habitat[9] for ground-dwelling birds and to mitigate any loss of habitat from other vegetation clearing;
- GR-4e—create corridors of shrubs between landscaped areas and Natural Areas to provide cover and transitional habitat for birds and other wildlife.

Avian Foraging Habitat

- GR-5a—prevent invasive shrubs and trees from colonizing grasslands.

Avian Cavity Nesting Habitat

- GR-6a—leave snags and dead branches on live trees, unless they are a hazard to public safety or contain significant harmful insect or disease infestations;
- GR-6b—provide nest boxes where natural cavities are absent or in limited supply;
- GR-6c—provide nest boxes for wood ducks at Impound Lake (a sub-lake of Lake Merced), Sharp Park, and Pine Lake.

Predators

- GR-7a—implement the feral cat control policy from the Quail Recovery Plan approved by the San Francisco Commission on the Environment;
- GR-7b—develop outreach materials to educate neighbors and users of Natural Areas about feral cats;
- GR-7c—undertake control of non-cat predators only where they are concentrated in such a manner that they are having a substantial effect on native wildlife populations.

Dog Use

- GR-8a—retain the boundaries and locations of eight Dog Play Areas (DPAs) in Natural Areas (Corona Heights, Pine Lake Park, Golden Gate Park Southeast, McLaren Park Crocker Amazon, McLaren Park Geneva, Golden Gate Park Northeast, Buena Vista Park, and Lake Merced) and modify two DPAs (Shelley Drive Loop at McLaren Park and Bernal Hill) to protect sensitive habitat areas;
- GR-8b—match on-leash and off-leash dog use with the sensitivity of the habitat when considering new DPAs within or next to Natural Areas;

  (Note: An underlying assumption of this Initial Study is that there would be no new DPAs because there is a moratorium on them until system-wide DPA planning is completed. This moratorium was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee. Should new DPAs be proposed at some point, the appropriate level of CEQA analysis would be undertaken, and applicable permits and other regulatory agency approvals would be obtained.)

[9]Escape habitat—natural or man-made features that allow animals to avoid predators or other threats.

- GR-8c—restrict dogs from three sensitive habitat areas (a portion of Gray Fox Creek at McLaren Park, habitat used by the San Francisco garter snake or California red-legged frog at Sharp Park, and the water at Pine Lake).

Small Mammal Habitat

- GR-9a—preserve during vegetation management activities any brush, logs, rocks, and other natural elements that function as habitat for small mammals and place them at appropriate locations within the Natural Areas.

Invertebrate Habitat

- GR-10a—as invasive plants are removed, install native plants or seeds that are beneficial to local insects;
- GR-10b—in MA-3 grasslands, maintain some invasive plant species that are host plants for local butterflies and other native insects.

Trails and Views

- GR-11a—maintain and improve primary designated trails;
- GR-11b—encourage users to stay on the trails in all Natural Areas;
- GR-11c—routinely monitor Natural Areas for new social trails and close or reroute any trails that impact sensitive species or sensitive habitat or that contribute to erosion;
- GR-11d—maintain viewsheds to maintain and enhance public recreation;
- GR-11e—consider adding amenities, such as overlooks and seating areas, when evaluating overall trail use.

Erosion Control

- GR-12a—revegetate steep slopes that have very thin vegetation to promote general soil stability;
- GR-12b—reduce erosion risk during the transition between removing invasive species and growth of native species that replace them, including gradual implementation of restoration efforts.

Safety

- GR-13a—discourage establishment of vegetation with high fire hazard ratings, such as French broom and eucalyptus stands, next to homes and other structures;
- GR-13b—maintain clear passageways by removing encroaching vegetation and maintaining sight lines to increase safety on trails.

Education

- GR-14a—continue to network with local schools and research institutions to provide environmental education resources and opportunities for school children in San Francisco and Pacifica;
- GR-14b—develop appropriate signage that explains the importance of natural resources, ecosystem functions, management activities and goals, and public involvement contacts;

- GR-14c—develop education materials that discuss the impacts of feeding wildlife and wild animals and the problems with releasing unwanted pets into Natural Areas;
- GR-14d—conduct special outreach to adjacent property owners about the impacts mentioned in GR-14c.

Urban Forests

- GR-15a—maintain urban forests within the MA-3 areas with a basal area[10] per acre of between 200 and 600 square feet;
- GR-15b—maintain a stocking rate that will perpetuate the urban forest and promote forest health;
- GR-15c—to promote forest health, focus tree removal on dead or dying trees, trees with disease or insect infestations, storm-damaged or hazardous trees, and trees that are suppressed because of overcrowding;
- GR-15d—do not plant sensitive species in MA-3 urban forests;
- GR-15e—remove invasive Cape, English, and Algerian ivy and Himalayan blackberry to promote and maintain urban forest health in MA-3 areas;
- GR-15f—consult the SFRPD arborist when tree removals or plantings are proposed in MA-3 urban forests;
- GR-15g—plant trees and shrubs in the urban forests that promote species diversity and improve wildlife habitat; and
- GR-15h—use San Francisco-approved insecticides to treat cut stumps.

A.4.4 Best Management Practices

The SNRAMP identifies best management practices (BMPs) for erosion control, pathogen[11] control, and West Nile virus.

Erosion Control

The erosion control BMPs applicable and appropriate to managing the Natural Areas include the following:

- Straw mulch—this method can be applied quickly in areas where long-term erosion protection is not required;
- Rolled erosion control products—these materials are supplied in rolls and are used to protect exposed soil areas from water and wind erosion;
- Wood mulch—this material is typically broadcast by hand onto exposed soil to prevent wind and water erosion;

[10]Basal area—a measure, typically in square feet per acre, of the area covered by trees within a given urban forest. Basal area is used as an index of tree production.

[11]Pathogen—a disease-causing agent, especially a living microorganism such as a bacterium or fungus.

- Silt fences—this method involves staking a permeable geotextile fabric along the contours of a slope. The bottom of the silt fence is typically trenched into the soil, allowing the fence to intercept and reduce the velocity of sediment-laden sheet flow;
- Fiber rolls—these roll materials are shaped into tubes that can be placed along the contour of a slope to intercept sediment-laden sheet flow and can also be placed around storm drain inlets; and
- Straw bales—these can be applied in much the same way as the fiber rolls, but they are taller and sturdier.

Pathogen Control

The SNRAMP identified the following BMPs to control the spread of pathogens from one area to another. For work conducted in a known site of sudden oak death infestation, tools should be cleaned and disinfected after use on infected trees and should be sanitized before use on healthy trees. Generally, to prevent the spread of aquatic pathogens, dirt and debris should be removed from equipment, and the equipment should be disinfected.

West Nile Virus

To control the spread of this mosquito-borne disease, the following BMPs are recommended:

- Educate staff about the most effective ways to avoid being bitten by mosquitoes;
- Remove small water features that contain standing water or treat those features with BT (*Bacillus thuringiensis israelensis*), a biological control agent for mosquito larvae, if the features are to remain and Public Health Services identifies a potential health hazard; and
- Encourage staff to drain any standing water that is caused by stored equipment or by temporary depressions.

A.4.5 Monitoring Plan

Monitoring activities will be designed within the conceptual framework to address the following questions:

- What is the population status of selected special status species? Where are these populations located? What are the growth trends for each of these populations and for the species as a whole within the Natural Areas?
- How successful are restoration and enhancement projects in terms of project goals? What are the best ways to measure success criteria? How do selected management activities, including restoration and conservation projects, affect the diversity and abundance of native species in relation to the diversity and abundance of invasive species within the project areas?

The following standardized protocols have been developed to address those questions:

Monitoring Populations of Special Status Species

- Monitoring special status plant species
  - Locate populations,
  - Map populations,
  - Estimate population/cover, and
  - Assess population/cover change.
- Monitoring Special Status Wildlife Species
  - Locate populations and
  - Assess population change.

Measuring the Success of Restoration and Conservation Programs

- Qualitative methods for assessing project success
  - Timing of photo-monitoring and
  - Location of photo-monitoring.
- Quantitative Methods for Assessing Project Success
  - Map project area,
  - Randomize samples,
  - Conduct point intercept sampling, and
  - Record and analyze.
- Tracking changes in avian and butterfly diversity and abundance
  - Qualitative methods for avian species monitoring,
  - Quantitative methods for avian species monitoring,
  - Qualitative methods for monitoring butterfly species, and
  - Quantitative methods for monitoring butterfly species.

A monitoring program can be successful only if it is applied uniformly and consistently. Once a monitoring effort has begun, the methods for collecting data must continue in the manner that they were initially implemented, or the data will not be comparable over time and between sites. The protocols associated with this monitoring plan should not be altered in any significant way.

A.5 NATURAL AREAS

The Significant Natural Resource Areas Management Plan, Final Draft (SFRPD 2006) is incorporated by reference into this description of the proposed project. The information presented below for each of the Natural Areas is grouped into sections on general description, management areas, and recommended management actions. The system-wide recommendations that apply to the entire Natural Area are presented first, followed by site-specific recommendations, including an alphabetical code unique to each Natural

Area. As presented in the SNRAMP, a number of the Natural Areas have been grouped in this section; as a result, the 31 Natural Areas are addressed in 26 subsections below. Table 1 is an overview of the management activities proposed for each of the Natural Areas. Figure 1 is an overview of the Natural Areas, and individual maps of the Natural Areas are included in Appendix A.

A.5.1 Balboa (BA)

General Description

The 1.8-acre Balboa Natural Area, also referred to as Parcel 4, is at the corner of Balboa Street and the Great Highway in western San Francisco. The National Park Service (NPS) maintains the Balboa Natural Area for the City and County of San Francisco (CCSF) under the terms of a Cooperative Management Agreement approved in 2007. It is in the southern corner of the Sutro Heights Park and is across the Great Highway from Ocean Beach and the Pacific Ocean. This all-sand area has one of the few foredune communities in San Francisco. An elevated boardwalk provides public access and keeps people out of the sensitive sand dune vegetation. The SFRPD and the NPS jointly administer the Balboa Natural Area for the CCSF. This Natural Area is public land that the CCSF has dedicated for recreation and sewer system operations. It is next to NPS lands administered by the Golden Gate National Recreation Area (GGNRA).

Management Areas

The 1.1-acre MA-1 area of the Balboa Natural Area includes restored dune scrub habitat and sensitive species. The 0.7-acre MA-2 area is a sandy substrate area with potential for expansion of the dune community. There is no MA-3 area at the Balboa Natural Area.

Recommended Management Actions

At Balboa, GR-1, GR-2, GR-4, GR-7, GR-9, and GR-11 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Balboa Natural Area:

- BA-1a—contain and reduce herbaceous[12] invasive plants and prevent invasive tree species from becoming established;
- BA-1b—revegetate using appropriate native plants in those areas where invasive plants have been removed;
- BA-1c—augment existing populations of sensitive plant species; and
- BA-1d—reintroduce rare plants.

[12]Herbaceous—having the texture, color, and other characteristics of an ordinary foliage leaf. Herbaceous vegetation is not woody.having the texture, color, and other characteristics of an ordinary foliage leaf. Herbaceous vegetation is not woody.

Table 1
Summary of Natural Areas Management Plan

Natural Area Site	Park Acreage	Natural Area Acreage*	Management Area (acres)				Invasive Trees			Trails (feet)				Dog Play Areas (acres)			
			MA-1	MA-2	MA-3	Total MA[1]	Existing	To Remove	To Remain	Existing	To Close/ Relocate	To Create	Resulting	Existing	To Remove	To Remain	Monitor**
Balboa Natural Area	1.8	1.8	1.1	0.7	0	1.8	0	0	0	637	90	0	547				
Bayview Park	43.9	43.9	8.2	15.8	19.7	43.7	6,000	511	5,489	8,496	1,439	1,020	8,077				
Bernal Hill	24.3	24.3	7.6	5.8	10.7	24.1	100	0	100	12,239	4,544	464	8,159	21.0	6.0	15.0	No
Billy Goat Hill	3.5	3.5	0.6	1.1	1.6	3.3	20	0	20	2,600	745	0	1,855				
Brooks Park	3.5	2.0	0.8	0.9	0.3	2.0	20	3	17	1,340	456	0	884				
Buena Vista Park	36.1	6.1	0	6.1	0	6.1	140	10	130	3,741	0	0	3,741	1.0	0	1.0	Yes
Corona Heights	12.6	9.6	2.9	2.5	4.2	9.6	200	15	185	6,701	1,845	0	4,856	0.4	0	0.4	No
Dorothy Erskine Park	1.5	1.5	0.2	0.3	1.0	1.5	120	14	106	771	0	0	771				
Duncan-Castro	0.5	0.5	0.3	0.1	0.1	0.5	0	0	0	333	0	0	333				
Edgehill Mountain	2.3	2.3	0	0.9	1.4	2.3	300	0	300	747	0	438	1,185				
Fairmount Park	0.7	0.7	0	0	0.7	0.7	100	0	100	187	0	0	187				
Glen Canyon Park and O'Shaughnessy Hollow***	72.6	63.8	8.1	33.0	22.4	63.5	6,000	120	5,880	23,242	3,653	0	19,589				
Golden Gate Heights	6.0	0.8	0.2	0.5	0.1	0.8	30	0	30	559	390	188	357				
Golden Gate Park Oak Woodlands	1,021.0	26.2	0.7	25.5	0	26.2	900	82	818	24,844	12,381	0	12,463	2.8	0	2.8	Yes
Grandview Park	4.0	4.0	0.9	2.4	0.7	4.0	25	5	20	1,722	409	0	1,313				
Hawk Hill	4.5	4.5	1.4	3.0	0	4.4	10	0	10	1,609	692	0	917				
India Basin Shoreline Park	11.8	6.2	3.2	2.8	0	6.0	0	0	0	1,885	0	0	1,885				
Interior Greenbelt	19.4	16.5	0	1.8	14.7	16.5	5,800	140	5,660	935	0	620	1,555				
Kite Hill	2.7	2.7	0.6	0.5	1.6	2.7	10	0	10	1,957	398	0	1,559				
Lake Merced	614.0	395.0	60.8	101.8	231.5	394.1	12,000	134	11,866	11,106	3,319	365	8,152	5.0	5.0	0	Yes
Lakeview/Ashton Mini Park	0.5	0.5	0.1	0.2	0.2	0.5	0	0	0	651	0	0	651				
McLaren Park	312.6	165.3	34.9	68.3	61.4	164.6	19,500	809	18,691	59,185	15,681	0	43,504	61.7	8.3	53.4	Yes
Mount Davidson	40.2	40.2	8.8	11.0	20.1	39.9	11,000	1,600	9,400	15,456	2,867	0	12,589				
Palou-Phelps	2.5	2.1	0.8	0.4	0.8	2.0	40	2	38	1,049	527	496	1,018				
Pine Lake	30.3	8.4	1.0	3.8	3.6	8.4	1,000	0	1,000	3,157	608	13	2,562	3.3	0	3.3	No
Rock Outcrop	1.6	1.6	0.8	0.7	0	1.5	0	0	0	0	0	0	0				
Tank Hill	2.9	2.9	1.5	0.6	0.7	2.8	50	0	50	2,672	1,411	0	1,261				
Twin Peaks	34.1	31.1	12.6	14.3	3.8	30.7	88	3	85	8,741	2,303	501	6,939				
15th Avenue Steps	0.3	0.3	0	0.2	0	0.2	0	0	0	0	0	0	0				
San Francisco Subtotal	**2,311.7**	**868.3**	**158.1**	**305.0**	**401.3**	**864.4**	**63,453**	**3,448**	**60,005**	**196,562**	**53,758**	**4,105**	**146,909**	**95.2**	**19.3**	**75.9**	
Sharp Park (Pacifica)	411.0	237.2	35.0	125.1	76.5	236.6	54,000	15,000	39,000	14,741	653	1,792	15,880				
Total	**2,722.7**	**1,105.5**	**193.1**	**430.1**	**477.8**	**1,101.0**	**117,453**	**18,448**	**99,005**	**211,303**	**54,411**	**5,897**	**162,789**	**95.2**	**19.3**	**75.9**	

*The total acreages for the management areas do not exactly match the Natural Areas acreages. The Natural Areas acreages are based on vegetation series within each Natural Area where the geographic information system data was precisely clipped to the Natural Area boundary. Management areas were created by mapping their boundaries in the field with a GPS unit. This data was then edited by Natural Areas Program staff to match Natural Areas boundaries. This process created minor errors when the management area appeared to line up with the Natural Area boundary but in fact was off by a small amount. The average error is about 0.1 acre and never more than 0.8 acre. As would be expected, the error is largest in the larger Natural Areas because they have relatively longer boundaries.

**The SFRPD would monitor dog use and impacts on oak woodlands at Buena Vista and Golden Gate Park Oak Woodlands and impacts on small wildflower meadows in McLaren Park. Until the Dog Play Area at Lake Merced is removed, the SFRPD would monitor that area for impacts.

***Glen Canyon Park and O'Shaughnessy Hollow are two different Natural Areas; they are grouped together in this table, as they are in the SNRAMP.

A.5.2 Bayview Park (VP)

General Description

Bayview Park is in southeast San Francisco and is east of Candlestick Point State Park and Candlestick Park. Developed areas within the 43.9-acre Natural Area are limited to paved trails, which are also used as access roads. This is one of the more diverse Natural Areas with vegetation that includes grasslands, scrub, tree-dominated areas, and a large number of sensitive plant species. The vegetation provides suitable habitat for resident and migratory bird species, reptiles, mammals, and amphibians. The extensive grasslands provide habitat for butterflies and other insects, including the endangered mission blue butterfly (*Icaricia icarioides missionensis*). It also contains historic Works Progress Administration features.

Management Areas

The 8.2-acre MA-1 area is native grassland and scrub habitats that support the highest numbers of sensitive species. The 15.8-acre MA-2 area also may contain sensitive species and habitats and may act as buffers for the more sensitive areas. The 19.7-acre MA-3 area includes urban forests and invasive scrub.

Recommended Management Actions

At Bayview Park, GR-1 through GR-4, GR-6, GR-7, and GR-9 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended:

- VP-1a—reduce and contain herbaceous and woody invasive plants;
- VP-1b—remove approximately 511 of the estimated 6,000 invasive trees (primarily blue gum eucalyptus) to enhance sensitive species habitats;
- VP-1c—protect and maintain existing native habitats;
- VP-1d—augment existing sensitive plant populations;
- VP-1e—reintroduce populations of sensitive plant species to help prevent extinctions of these species in San Francisco;
- VP-2a—install coast live oak seedlings and other native plants in gaps and openings in the eucalyptus forest;
- VP-3a—construct a small berm to create a seasonal wetland and detention basin, if capital funds are made available;
- VP-4a—maintain and improve habitat for the pinion mouse;
- VP-5a—augment existing silver bush lupine populations;
- VP-6a—install signs and temporary barriers along the roadway to discourage off-road motorcycle riding;
- VP-7a—construct a pedestrian trail connecting to the historic Works Progress Administration trail;

- VP-7b—develop a new entryway on the southern side of the park;
- VP-8a—remove the berm on the downhill side of Key Avenue and regrade the entire roadway so that the uphill side is higher than the downhill side, if funds are made available;

  (Note: portions of this management action have been completed. Those that have not been undertaken will be addressed in the EIR.)
- VP-8b—remove material in major downslope gullies and replace it with brush that is highly compacted;
- VP-8c—build a small berm south of Key Avenue at the base of the main soil slip;
- VP-9a—create a detailed and complete erosion control plan before beginning work on the large gully near the summit; work would include the following:
  - Installing a minimum of two check-dams within the upper portion of the gully,
  - Creating soil berms and troughs between these two structures,
  - Removing soil from the upper edges of the gully to create a 1:1 slope,
  - Installing a staked brush pile or brush box immediately below the upper edge of the gully,
  - Installing one or two staked brush bundles in the vegetated swale leading into the gully from the direction of the radio tower,
  - Installing rice straw bales along all edges of the gully, and
  - Hand broadcasting the entire area with the appropriate native grass seed once construction is complete and before the fall rains; and
- VP-10a—restrict access to sensitive mission blue butterfly habitat if these habitat areas continue to be damaged.

A.5.3 Bernal Hill (BH)

General Description

Bernal Hill is in the Bernal Heights neighborhood in central San Francisco. A microwave radio transmission station, not owned by the SFRPD, is in a fenced enclosure at the hill's summit. Other than a paved access road, the 24.3-acre Natural Area is primarily grassland. A designated DPA is on and above Bernal Heights Boulevard, which circumnavigates the Natural Area.

Management Areas

The 7.6-acre MA-1 area includes the slopes of Bernal Hill where native grasslands and sensitive species are found. The 5.8-acre MA-2 area serves as a buffer between the MA-1 area and urban forest. The 10.7-acre MA-3 area is that portion of the Natural Area that does not support sensitive species or native grasslands.

Recommended Management Actions

At Bernal Hill, GR-1 through GR-4 and GR-7 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Bernal Hill Natural Area:

- BH-1a—reduce and contain herbaceous and woody invasive plants;
- BH-1b—revegetate using appropriate native plants where invasive plants have been removed;
- BH-1c—focus sensitive plant species management and conservation on existing habitat areas;
- BH-1d—maintain the urban forest-grassland mosaic;
- BH-2a—encourage people and dogs to stay on designated trails and discourage them from climbing the steep slopes and causing erosion on the north side of the Natural Area; and
- BH-3a—retain on- and off-leash dog use of the entire Natural Area and limit off-leash activities to the relatively flat areas, reducing the off-leash DPA from 21 to 15 acres.

A.5.4 Billy Goat Hill (BG)

General Description

The 3.5-acre Billy Goat Hill Natural Area is in the Diamond Heights area, east of Glen Canyon Park. The Natural Area is composed mainly of grasslands. Billy Goat Hill provides important habitat for native plants and populations of sensitive plant species, grassland habitat, and suitable habitat for a variety of bird species and special-status butterfly species.

Management Areas

The MAs have been delineated based on the presence of rich native grasslands. The 0.6-acre MA-1 area supports the richest array of species, as well as more intact habitat than the 1.1-acre MA-2 area, which surrounds the MA-1 and buffers it. The MA-2 area is itself surrounded on three sides by the 1.6-acre MA-3 area, which includes tree and grassland communities.

Recommended Management Actions

At Billy Goat Hill, GR-1 through GR-4, GR-7, and GR-9 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Billy Goat Hill Natural Area:

- BG-1a—reduce and contain woody and herbaceous invasive plants;
- BG-1b—revegetate using appropriate native plants, enhance and diversify existing grasslands as appropriate, augment the existing rare or uncommon grassland plant species, slowly replace the nonnative grassland with a grassland

dominated by native species, maintain and enhance the native scrub community, and plant native grassland and scrub species into the appropriate areas using diversity, cover, and density targets generated from reference sites around San Francisco;

- BG-1c—maintain a periphery of tall trees and diversify areas at the grassland interface with wildlife-enhancing species, and design, maintain, and enhance a grassland-scrub-tree mosaic; and
- BG-2a—create and protect a complex mosaic of grassland and scrub with a variety of plant species that will provide shelter, food, and nesting areas for local wildlife.

A.5.5 Brooks Park and Lakeview/Ashton Mini Park (BP)

General Description

Brooks Park and Lakeview/Ashton Mini Park (also informally known as Orizaba Rocks) are in southwestern San Francisco in the Merced Heights and Ingleside Heights neighborhoods. Brooks Park, which fronts on Shields Street between Victoria and Vernon Streets, is a 3.5-acre park, two acres of which are part of the Natural Area. The 0.5-acre Lakeview/Ashton Mini Park Natural Area is a rocky outcrop at the dead ends of Ashton and Orizaba Avenues and Lakeview and Shields Streets. Both of these Natural Areas contain grasslands.

Management Areas

The Brooks Park and Lakeview/Ashton Mini Park Natural Areas are dominated by grasslands, and the relative quality of the grasslands define the MA-1, MA-2, and MA-3 areas. The 0.9-acre MA-1 areas encompass two grasslands at Brooks Park and one area at Lakeview/Ashton Mini Park. The 1.1-acre MA-2 areas are the grasslands surrounding the MA-1 areas and serve as buffers between the MA-1 and the MA-3 areas. The 0.5-acre MA-3 areas are on the periphery in both parks and represent the least sensitive grassland areas.

Recommended Management Actions

At Brooks Park and Lakeview/Ashton Mini Park, GR-1 through GR-4, GR-7, and GR-10 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Brooks Park and Lakeview/Ashton Mini Park Natural Areas:

- BP-1a—contain and reduce herbaceous and woody invasive plants;
- BP-1b—remove three cypress trees and prevent establishment of invasive trees in all areas;
- BP-1c—revegetate with appropriate native plants using diversity, cover, and density targets generated from reference sites within and around San Francisco; and

- BP-1d—consider augmenting sensitive species at Lakeview/Ashton Mini Park and introducing sensitive species within suitable locations at Brooks Park.

A.5.6 Buena Vista Park (BV)

General Description

The 36.1-acre Buena Vista Park is in central San Francisco, just north of Corona Heights, and is bounded in part by Haight Street on the north; Buena Vista Avenue East and Buena Vista Avenue West loop around the park and form the eastern, southern, and western boundaries. The 6.1-acre Buena Vista Park Natural Area is on the northern side of the park and supports one of the most extensive coast live oak forests within San Francisco. The remainder of the park is covered almost exclusively by mixed exotic forest. There is a designated DPA in the northwest corner of Buena Vista Park in the oak woodland.

Management Areas

The 6.1-acre MA-2 area includes coast live oak woodlands in the northern portion of the park. There are no MA-1 or MA-3 areas.

Recommended Management Actions

At Buena Vista Park, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, GR-11, GR-13, and GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Buena Vista Park Natural Area:

- BV-1a—reduce woody and herbaceous invasive plants and understory[13] plants and prevent invasive trees from becoming established;
- BV-1b—remove approximately 10 eucalyptus and acacia trees out of 140 invasive trees, revegetate areas with appropriate dune scrub and oak trees to promote creation of a multi-aged stand, and use diversity, cover, and density targets generated from reference sites around San Francisco to develop planting plans;
- BV-1c—consider reintroducing rare or uncommon plant species;
- BV-2a—create complex multistoried habitat by removing invasive species in the understory and planting species that provide food and nesting resources and increase structural diversity by planting native vegetation that is different in height at maturity than vegetation in the existing habitats;
- BV-2b—install a permanent water source within or next to the Natural Area in an area that would not be easily accessible to off-leash dogs or subject to undesirable human use and ensure that artificial water sources can be drained periodically to remove bullfrogs;
- BV-3a—augment winter and late-fall fruiting shrubs; and

[13]Understory—the shrubs and plants growing beneath the main canopy of a forest or stand of trees.

- BV-4a—consider implementing protective measures or relocating the DPA outside of oak woodlands if necessary to protect nesting bird habitat.

A.5.7 Corona Heights (CH)

General Description

Corona Heights is in the central portion of San Francisco and is bounded roughly by Flint Street, Roosevelt Way, and 16th Street. The Corona Heights Playground and the Randall Museum are within the southern portion of the park. Of the park's 12.6 acres, the Natural Area covers approximately 9.6 acres and is composed of grasslands, with scrub and tree-dominated areas around its edges. A fenced DPA is next to the northwest portion of the Natural Area.

Management Areas

The 2.9-acre MA-1 areas include three areas with sensitive species and habitats. The 2.5-acre MA-2 areas are buffers around the MA-1 areas. The 4.2-acre MA-3 areas include urban forest and grasslands around the Natural Area perimeter.

Recommended Management Actions

At Corona Heights, GR-1 through GR-4, GR-7, GR-9 through GR-13, and GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Corona Heights Natural Area:

- CH-1a—contain and reduce herbaceous and woody invasive plants and prevent invasive tree species from becoming established;
- CH-1b—augment existing populations of sensitive plant species through seeding or planting;
- CH-1c—reintroduce populations of rare plant species to help prevent local extinctions of these species in San Francisco;
- CH-1d—maintain diverse native grassland in areas where invasive plants have been removed. Maintain and enhance oak woodlands;
- CH-1e—remove 15 Monterey pines;
- CH-2a—create complex multistoried habitat that provides food sources and nesting, roosting, and escape habitat for a variety of species;
- CH-2b—increase the extent of oak woodland habitat to create habitat for wildlife, particularly birds; and
- CH-3a—install signs and temporary barriers at access points to discourage people and dogs from going off the trails into erosion-prone areas. If signs and temporary fencing prove ineffective, install permanent fences at the base of the hill.

A.5.8 Dorothy Erskine (DP)

General Description

Dorothy Erskine Park is near the southern end of Glen Canyon Park at the intersection of Baden Street and Martha Avenue in central San Francisco. The 1.5-acre Natural Area is mostly forested. Most remnant plant areas and important wildlife habitat are associated with the grassland and mixed exotic forests on the steep north-facing slopes, which are inaccessible due to the presence of a safety fence at the top of the slope. There is one main trail and access route through the Natural Area.

Management Areas

The 0.2-acre MA-1 areas contain remnant grassland and wildflower habitats. The 0.3-acre MA-2 areas include remnant scrub habitat and serve as buffers to the MA-1 areas. The 1.0-acre MA-3 areas are composed of urban forests.

Recommended Management Actions

At Dorothy Erskine, GR-1, GR-2, GR-4, GR-7, GR-9, GR-13, and GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Dorothy Erskine Natural Area:

- DP-1a—reduce and contain herbaceous and woody invasive plants and prevent invasive trees from becoming established;
- DP-1b—remove approximately 14 of the estimated 120 eucalyptus trees;
- DP-1c—revegetate with appropriate native plants those areas where invasive plants have been removed to maintain and enhance the native grassland and scrub communities;
- DP-1d—reintroduce silk tassel bush to prevent the countywide extinction of this sensitive plant species; and
- DP-2a—survey the site for red-tailed hawk nests before tree removal. If an occupied nest is found, conduct tree removal activities no closer than 500 feet from the nest.

A.5.9 Duncan-Castro (DC)

General Description

Duncan-Castro is in the central portion of San Francisco and is northeast of the intersection of Castro and Duncan Streets. The 0.5-acre Natural Area is predominantly grassland, with an ornamental planting area along Duncan Street.

Management Areas

The 0.3-acre MA-1 area includes rock outcrops, red fescue prairie, and portions of the annual grassland with sensitive plant species populations. The 0.1-acre MA-2 area has less diverse grasslands and rock outcrops on the south and west sides of the Natural

Area. The 0.1-acre MA-3 area includes ornamental vegetation and forest along the eastern edge of the Natural Area.

Recommended Management Actions

At Duncan-Castro, GR-1 through GR-4, GR-7, GR-9, GR-10, GR-13, and GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Duncan-Castro Natural Area:

- DC-1a—contain and reduce herbaceous and woody invasive plants and prevent invasive tree species from becoming established;
- DC-1b—maintain and diversify grasslands and maintain and enhance tree cover in the northeast part of the Natural Area;
- DC-1c—enhance the native scrub community; and
- DC-2a—determine whether two pipelines crossing the Natural Area are still in service or abandoned, then bury, reroute, or remove them, as appropriate.

A.5.10 Edgehill Mountain (EM)

General Description

Edgehill Mountain is northwest across Portola Drive from Mount Davidson in central San Francisco. The 2.3-acre, forested Natural Area is bordered by Kensington and Edgehill Ways. The area is accessed from Shangrila Way and Knockash Hill. Edgehill Mountain is a blue gum eucalyptus forest that supports small populations of sensitive plants and provides habitat for sensitive bird species.

Management Areas

The 0.9-acre MA-2 areas are at the center of the Natural Area and include coastal scrub and prairie grassland habitats. The 1.4-acre MA-3 areas include the remaining urban forests. There are no MA-1 areas.

Recommended Management Actions

At Edgehill Mountain, GR-1, GR-2, GR-4, GR-7, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Edgehill Mountain Natural Area:

- EM-1a—reduce and contain herbaceous and woody invasive plants and prevent invasive trees from becoming established;
- EM-1b—replace dead and dying trees with native species typical of coastal bluff scrub and oak woodland habitats;
- EM-1c—revegetate with appropriate native plant species in those areas where invasive plants have been removed to maintain and enhance existing scrub and grassland habitats;

- EM-1d—augment existing sensitive plants to prevent extinction of rare or uncommon plant species; and
- EM-2a—develop two new entrances and trails through the Natural Area, one entering at Kensington Way and one entering at Edgehill Way.

A.5.11 Fairmount Park (FP)

General Description

Fairmount Park is southeast of Billy Goat Hill in central San Francisco. The 0.7-acre Natural Area is mostly forested and is at the intersection of Fairmount and San Miguel Streets.

Management Areas

The 0.7-acre MA-3 area is an urban forest. There are no MA-1 or MA-2 areas.

Recommended Management Actions

At Fairmount Park, GR-1, GR-3, GR-4, GR-7, GR-11, GR-12, GR-13, and GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Fairmount Park Natural Area:

- FP-1a—contain and reduce herbaceous and woody invasive plants and
- FP-1b—focus tree regeneration on the north and south sides, leaving fewer trees on the east side and helping to screen existing homes from view.

A.5.12 Glen Canyon Park and O'Shaughnessy Hollow (GC/OH)

General Description

Glen Canyon Park and O'Shaughnessy Hollow are south of Twin Peaks, between the Diamond Heights and Miraloma neighborhoods, in an area formally referred to as the San Miguel Hills. The approximately 70-acre Glen Canyon Park has 60 acres designated as a Natural Area. O'Shaughnessy Hollow is a 3.8-acre Natural Area. O'Shaughnessy Boulevard separates the two Natural Areas, with Glen Canyon Park to the east and O'Shaughnessy Hollow to the west. Recreation facilities in Glen Canyon Park include the Silver Tree Day Camp, a community recreation center, ball fields, playgrounds, and formal and informal trails. There are no developed areas within O'Shaughnessy Hollow.

Management Areas

The 8.1-acre MA-1 areas contain high concentrations of native plants within the grasslands or sensitive species at Glen Canyon Park. The O'Shaughnessy Hollow MA-1 areas include sensitive plant species habitat. The 33-acre MA-2 areas include the scrub-covered western slopes and the riparian[14] corridor in Glen Canyon Park, and areas are

[14]Riparian—land next to a natural watercourse such as a river or stream. Riparian areas support vegetation that provides important wildlife habitat, as well as important fish habitat when it overhangs the bank.

designated to provide buffers around the grassland MA-1 areas. The O'Shaughnessy Hollow MA-2 areas support a mix of native-dominated scrub and grassland habitats. MA-3 areas (22.4 acres) include portions of Glen Canyon Park covered with urban forest, the invasive annual grassland in the extreme northern corner, and a corridor along the gravel access road.

Recommended Management Actions

At Glen Canyon Park and O'Shaughnessy Hollow, GR-1 through GR-7, GR-8c, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Glen Canyon Park and O'Shaughnessy Hollow Natural Areas:

- GC/OH-1a—reduce woody and herbaceous invasive plants and understory plants and prevent invasive trees from becoming established;
- GC/OH-1b—revegetate with appropriate native plants to approximate the diversity, cover, and density of adjacent habitat;
- GC/OH-1c—augment existing rare or uncommon species to maintain these species and enhance their chances of survival;
- GC/OH-1d—consider reintroduction of sensitive species;
- GC/OH-1e—remove approximately 120 of the estimated 6,000 invasive blue gum eucalyptus trees in Glen Canyon Park to maintain and enhance native habitats;
- GC/OH-2a—thin sections of the overstory within the riparian corridor and reduce invasive plants in the understory;
- GC/OH-2b—prevent willows from encroaching on open water and create new and stable pool habitats;
- GC/OH-3a—to protect sensitive habitats and prevent erosion, close social trails to the northwestern rock outcrop in Glen Canyon Park, discontinue rock climbing, and close social trails in O'Shaughnessy Hollow;
- GC/OH-4a—avoid removing trees with red-tailed hawk or great horned owl nests and prohibit tree removal within 500 feet of occupied nests;
- GC/OH-4b—protect and preserve open grassland habitat through vegetation management and control of invasive species;
- GC/OH-5a—remove invasive species bordering native coastal scrub;
- GC/OH-5b—plant native vegetation of differing heights to increase structural diversity of coastal scrub habitats;
- GC/OH-5c—manage open pools as in GC/OH-2a-b and GC/OH-7e and make these pools inaccessible to the public;
- GC/OH-6a—consider the requirements of amphibians when creating open pools under GC/OH-2;

- GC/OH-7a—document the presence or absence of forktail damselfly in Glen Canyon Park;
- GC/OH-7b—reintroduce forktail damselfly in Glen Canyon Park if it is not observed in the next five years;
- GC/OH-7c—remove and trim vegetation along the asphalt channel to create appropriate habitat for the forktail damselfly, if it is observed or reintroduced;
- GC/OH-7d—remove willows along the asphalt channel to reduce shading of water, if the forktail damselfly is observed or reintroduced;
- GC/OH-7e—control vegetation within the asphalt channel to create open water and emergent vegetation, if the forktail damselfly is observed or reintroduced;
- GC/OH-7f—consider requirements of the forktail damselfly when creating new pools in Islais Creek;
- GC/OH-8a—annually evaluate the populations of sensitive butterflies within the park;
- GC/OH-8b—install larval host plants and nectar sources as part of revegetation;
- GC/OH-9a—monitor the dog impact on wetlands and Islais Creek channel and consider appropriate restrictions (including fencing) to keep dogs out of the creek channel and wetlands;
- GC/OH-9b—install boardwalks in wet marshy locations along the Islais Creek loop trail to prevent damage to resources and increased sedimentation[15] in the creek;
- GC/OH9c—trim willows along formal trails to allow ease of access, thereby limiting the perceived need to create new trails;
- GC/OH-10a—fill gullies in the access road with gravel to help minimize the input of sediment from the gravel access road, outslope the road the next time it is graded or resurfaced to allow uniform flow of runoff from the hillside across the road to the creek and to eliminate ponding and reduce gullying in the road, evaluate and replace the culverts as necessary, and consider paving the access road;
- GC/OH-10b—close and revegetate social trails that are next to or crossing the creek, in accordance with GR-11, and install bridges or stabilize stream banks with well-designed steps that lead to stepping-stones to cross the creek for any creek crossings that would remain in use;
- GC/OH-10c—maintain the sediment dam and consider installing new sediment traps on the lower reach of the creek; and

[15]Sedimentation—the deposition of material suspended in a stream system, whether in suspension (suspended load) or on the bottom (bedload).

- GC/OH-10d—consider a long-term solution for the unstable and eroding bank of Islais Creek immediately below Silver Tree Day Camp.

A.5.13 Golden Gate Heights Park, Grandview Park, Hawk Hill, and Rock Outcrop (GGRH)

General Description

The Natural Areas at Grandview Park, Rock Outcrop, Golden Gate Heights Park, and Hawk Hill all belong to a remnant ridgetop sand dune system in the western portion of San Francisco, in the mid-Sunset or Sunset Heights area. Because these sites have similar characteristics and management issues, they have been combined into this single section. The 4-acre Grandview Park is at 15th Avenue and Moraga Street. Just south of Grandview Park is the 1.6-acre Rock Outcrop, between 14th and Funston Avenues. Continuing south, Golden Gate Heights Park, which contains a 0.8-acre Natural Area, is between Funston, 12th, and 14th Avenues. Of the four parks, the 4.5-acre Hawk Hill at the intersection of Rivera Street and Funston Avenue is the farthest south. These parks are surrounded by dense urban development.

Management Areas

The 3.3-acre MA-1 areas include sensitive species, rich dune habitats, and grasslands. Three areas on Grandview, two areas on Rock Outcrop, one area at Golden Gate Heights, and one area at Hawk Hill have been designated as MA-1. The 6.6-acre MA-2 areas contain less-sensitive but important habitat, and they usually surround the MA-1 areas, providing buffers to the more sensitive habitats within MA-1 areas. The 0.8-acre MA-3 areas designated at Grandview and Golden Gate Heights contain areas of invasive tree species.

Recommended Management Actions

At the Natural Areas at Grandview Park, Rock Outcrop, Golden Gate Heights Park, and Hawk Hill, GR-1 through GR-4, GR-7, and GR-11 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for these sites:

- GGRH-1a—contain and reduce herbaceous and woody invasive plants, removing them in such a way that avoids erosion, and then plant native species;
- GGRH-1b—augment existing sensitive plants to maintain these species and enhance their chances of survival;
- GGRH-1c—reintroduce populations of sensitive plant species to help prevent county-wide extinctions of these species;
- GGRH-1d—prevent invasive trees from becoming established and remove trees only at Grandview Park, where approximately five trees will be removed from the upper slope;
- GGRH-1e—reduce invasive vegetation, plant native species to approximate the diversity, cover, and density of adjacent habitat or reference plots in similar habitats at other parks and target habitat types as follows:

- At Grandview, maintain and enhance dune scrub, a dune scrub mosaic, and cypress tree-scrub mosaic,
- At Rock Outcrop, maintain and enhance the dune scrub-rock outcrop plant communities,
- At Golden Gate Heights, maintain and enhance dune scrub, maintain a diversified understory and plant forest gaps with wildlife friendly species within the urban forest, consider removing the asphalt pad at the entryway and installing a native plant demonstration garden, and
- At Hawk Hill, maintain and enhance the dune scrub communities with scattered open sand for annual plant recruitment;

- GGRH-1f—remove vegetation and replant with native species in small noncontiguous patches where soil erosion could occur;
- GGRH-2a—limit access to the 917 linear feet of designated trails to protect sensitive habitat and consider installing fencing at Hawk Hill if necessary;
- GGRH-2b—consider using the dune-step system as a biotechnical control measure to help control soil movement and allow for revegetation that would better withstand foot traffic on the steep dune slopes;
- GGRH-3a—route users away from eroding areas and sensitive habitats to the 1,313 linear feet of designated trails and install temporary or permanent fencing at Grandview Park if necessary;
- GGRH-3b—install soil retaining boxes on the downhill side of the landings to help minimize erosion at Grandview Park; and
- GGRH-4a—develop a new approximately 188-foot trail at the edge of the forest to replace the trail that is causing erosion and close the 390-linear-foot social trail through the dunes (Golden Gate Heights).

A.5.14 Golden Gate Park Oak Woodlands (OW)

General Description

The 26.2-acre Oak Woodlands Natural Area is in the northeast corner of the 1,021-acre Golden Gate Park, between Fulton Street and Lincoln Way. In addition to the large oak woodland bounded by Stanyan Street, Fulton Street, and 6th Avenue, the Natural Areas in Golden Gate Park include Whiskey Hill, Strawberry Hill, and Lily Pond. The individual areas that compose this Natural Area represent the few places where native trees persist in the Natural Areas Program system. Two DPAs are within or next to the Natural Area, one where North Willard Street intersects with Fulton Street (Golden Gate Park Northeast DPA) and one next to Whiskey Hill (Golden Gate Park Southeast DPA).

Management Areas

The 0.7-acre MA-1 areas contain sensitive plant species. The 25.5-acre MA-2 areas are oak woodlands. There are no MA-3 areas.

Recommended Management Actions

At Oak Woodlands, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Oak Woodlands Natural Area:

- OW-1a—contain and reduce herbaceous and woody invasive plants and prevent invasive tree species from becoming established;
- OW-1b—reduce invasive vegetation within the oak woodlands to increase and diversify the native understory;
- OW-1c—augment and reintroduce native plant species;
- OW-1d—remove approximately 82 of the approximately 900 invasive blue gum eucalyptus trees;
- OW-2a—redesign the organic material dump site and install traffic barricades at the edge of the slope to reduce damage to downslope oak trees;
- OW-3a—remove invasive understory vegetation and replace it with native species typical of an oak woodland understory; and
- OW-4a—monitor use of Golden Gate Park Northeast DPA and install signs to delineate the boundaries of both DPAs.

A.5.15 India Basin Shoreline Park (IB)

General Description

India Basin Shoreline Park is in southeast San Francisco next to Hunters Point Boulevard at the shore of San Francisco Bay. Comprising 6.2 of the park's 11.8 acres, the Natural Area is the only one that borders San Francisco Bay. It contains a segment of the Bay Trail, shoreline access for fishing and water-dependent recreation, tidal salt marsh wetlands, and suitable habitat for shore birds and foraging raptors.

Management Areas

The 3.2-acre MA-1 area consists of salt marsh wetland. The 2.8-acre MA-2 areas include a buffer between restored wetlands and upland habitat, annual grasslands, scrub, and oak habitat areas under development. There are no MA-3 areas.

Recommended Management Actions

At India Basin Shoreline Park, GR-1 through GR-4, GR-7, and GR-13 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the India Basin Shoreline Park Natural Area:

- IB-1a—monitor the salt marsh for smooth cordgrass and other invasive species and reduce and contain infestations of upland invasive species;
- IB-1b—remove invasive species from wetland and upland areas and maintain and enhance upland areas as a grassland-coastal scrub mosaic;

- IB-1c—augment populations of alkali heath and marsh gumplant by direct seeding or planting;
- IB-2a—maintain and enhance existing grassland-scrub mosaic;
- IB-2b—install low-growing plants to create a partially vegetated screen between the trail and the buffer area;
- IB-3a—increase vegetation density in the area of the trail to reduce erosion on the face of the levee; and
- IB-4a—restrict access to sensitive salt marsh habitat if damage to these areas occurs, including installing low trailside fencing.

A.5.16 Interior Greenbelt (IG)

General Description

Interior Greenbelt is on Mount Sutro, south of Golden Gate Park and north of Twin Peaks in central San Francisco. Of the two parcels that make up the 16.5-acre Natural Area, the northern parcel (owned by the University of California San Francisco) is accessed at the end of Edgewood Street and at the corner of Stanyan Street and Belgrave Avenue. The southern parcel is south across Clarendon Street from the northern parcel and is accessed at the ends of Mt. Spring and Saint Germain Streets. Both parcels are urban forests.

Management Areas

The 1.8-acre MA-2 areas are in the northern parcel and support sensitive plants. The 14.7-acre MA-3 areas include the urban forests outside the MA-2 areas. There are no MA-1 areas.

Recommended Management Actions

At Interior Greenbelt, GR-1, GR-2, GR-4, GR-7, GR-9, GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Interior Greenbelt Natural Area:

- IG-1a—reduce and contain herbaceous invasive plants and prevent invasive trees from becoming established;
- IG-1b—remove approximately 140 of the estimated 5,800 blue gum eucalyptus trees;
- IG-1c—revegetate using appropriate native plants in those areas where invasive plants have been removed to maintain and enhance the existing scrub mosaic communities;
- IG-1d—augment existing populations of sensitive plants;
- IG-1e—reintroduce rare plants to reduce the potential for local extinction of sensitive species in San Francisco;
- IG-2a—develop a new trail linking existing secondary trails with trails on the University of California property; and

- IG-2b—formalize existing social trails.

A.5.17 Kite Hill (KH)

General Description

Kite Hill is a grassy knoll in the central portion of San Francisco, near the intersection of 19th and Yukon Streets. Most of the 2.7-acre Natural Area is grassland, with an ornamental garden north of the corner of 19th and Yukon Streets.

Management Areas

The 0.6-acre MA-1 area has native scrub series, rock outcrops, and annual grasslands with high native species diversity. The 0.5-acre MA-2 area buffers the MA-1 area and includes native landscaping along the Yukon Street frontage. The 1.6-acre MA-3 area has grasslands in the eastern portion of the Natural Area.

Recommended Management Actions

At Kite Hill, GR-1 through GR-4, GR-7, and GR-9 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Kite Hill Natural Area:

- KH-1a—contain and reduce herbaceous and woody invasive plants and prevent invasive tree species from becoming established;
- KH-1b—maintain and diversify grasslands, with the initial focus on areas where native species are dominant;
- KH-1c—install showy native vegetation near the road and access points;
- KH-1d—reintroduce populations of rare plant species to help prevent local extinctions of these species in San Francisco;
- KH-1e—maintain and enhance the grassland-scrub oak woodland ecotone[16] to increase habitat diversity and value to wildlife; and
- KH-2a—revegetate a large area of exposed soil surrounding a small group of apple trees by hand-broadcasting the appropriate seed mixture and by applying mulch to the area. Install signs explaining the benefits of this revegetation.

A.5.18 Lake Merced (LM)

General Description

Lake Merced is in the southwest portion of San Francisco and is roughly bordered by John Muir Drive, Skyline Boulevard, and Lake Merced Boulevard. The San Francisco Public Utilities Commission (SFPUC) owns Lake Merced, and the SFRPD maintains the recreational uses under the terms of a memorandum of understanding between the two

[16]Ecotone—a transitional zone between two vegetation communities that contains the characteristic species of each community.

departments. Recreation at the lake includes boating, fishing, golfing, jogging, bicycling, skeet shooting, and picnicking. Lake Merced is made up of four connected sub-lakes: North, East, South, and Impound. A designated DPA on the north side of East Lake is in an area informally known as the Mesa. The Natural Area covers approximately 395 of the lake's 614 acres and generally encompasses the lake, the bordering freshwater marsh wetland, and upland vegetation.

Management Areas

The 60.8-acre MA-1 areas include double-crested cormorant rookeries,[17] a portion of the Mesa that supports sensitive plant species, Impound Lake and its associated wetlands, and tule marsh around East, North, and South Lakes. The 101.8-acre MA-2 areas include the water of East Lake, which supports western pond turtles, and the habitat between the marshes and the Natural Area boundary. The 231.5-acre MA-3 areas include urban forests and North and South Lakes.

Recommended Management Actions

At Lake Merced, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Lake Merced Natural Area:

- LM-1a—contain and reduce herbaceous and woody invasive plants and plant native species;
- LM-1b—remove approximately 134 of the estimated 12,000 invasive blue gum eucalyptus trees, a little more than one percent of the total inventory, to maintain and enhance native habitats;
- LM-1c—prevent the establishment of invasive tree species to maintain and enhance coastal wetland scrub;[18]
- LM-1d—maintain and enhance sensitive habitats;
- LM-2a—augment existing sensitive plants to maintain these species and enhance their chances of survival;
- LM-2b—reintroduce populations of rare plant species to help prevent county-wide extinctions of these species;
- LM-3a—remove trees in such a way as to avoid removing those used by raptors, cormorants, and herons and remove no trees within 500 feet of occupied nests;
- LM-3b—consider closing social trails near cormorant nesting colonies or hawk nests if trail usage appears to disrupt nesting. Install signs at rental boat launch locations asking boaters to remain at least 30 feet from the edge of the marsh between February 1 and August 31;
- LM-3c—remove invasive understory vegetation when bird nests are not active;

[17]Rookery—colony or aggregation of animals of the same species.

[18]Scrub—low trees or shrubs collectively.

- LM-3d—locate and map raptor nests during inactive periods;
- LM-4a—maintain and enhance important bird nesting and foraging habitat to include removal of invasive species and natural recruitment of preferred species;
- LM-5a—create more open grassland habitat through vegetation management and control of invasive species;
- LM-5b—remove iceplant to create openings where native grasslands and grassland/scrub mosaics could be established;
- LM-6a—remove invasive vegetation and enhance native scrub and grassland species in upland sandy soils next to East Lake to allow for western pond turtle nesting. Create piles of logs or rocks to increase and improve basking habitat;
- LM-6b—periodically trap and remove nonnative turtle species;
- LM-6c—restrict public access to the East Lake water and shoreline from April 1 to August 31 to avoid disturbing breeding turtles;
- LM-7a—relocate the DPA to a different area to avoid disturbing breeding birds in the current location;

  (Note: Due to the CCSF moratorium on new DPAs, the Lake Merced DPA couldn't be relocated to a new location, so it would only be removed. Restoration of the site would continue, following removal of the DPA.)
- LM-8a—implement GR-14;
- LM-8b—consider participating in the development of an environmental education center;

  (Note: Constructing and operating an environmental education center are not proposed as part of the SNRAMP and the project. Should those activities be proposed at some point, the appropriate level of CEQA analysis would be undertaken, and applicable permits and other regulatory agency approvals would be obtained.)
- LM-8c—maintain existing interpretive signs at key locations;
- LM-9a—treat small-scale erosion gullies with such measures as gully plugs, brush boxes, energy dissipaters, and water bars and plant these areas with native vegetation to prevent soil erosion;
- LM-9b—coordinate with the San Francisco Department of Public Works and other agencies about programs to address large-scale erosion gullies;
- LM-10a—create an educational program for golf course staff; and
- LM-10b—install informational and interpretive signs next to Lake Merced, along the periphery of Harding Park Golf Course, indicating that the area is sensitive wildlife habitat and install temporary barriers along sensitive areas during large golf tournaments.

A.5.19 McLaren Park (MP)

General Description

McLaren Park covers 312.6 acres near the southeast corner of San Francisco and is bisected by Mansell Street. Sunnydale and Visitacion Avenues cross the southern half of the park, while John F. Shelley Drive crosses the northern half. Recreational facilities within the park include over 11 miles of trails, tennis courts, ball fields, a golf course, picnic areas, and an amphitheater. Three designated DPAs are within the park, two within and one next to the Natural Area. The Natural Area covers 165.3 acres and is made up of grassland, scrub, and tree-dominated vegetation series.

Management Areas

The 34.9-acre MA-1 areas include sensitive riparian habitat, grassland habitat, marsh habitat, and an area of diverse grasslands supporting sensitive plant species. The 68.3-acre MA-2 areas may also contain sensitive species[19] and habitats and act as buffers between the MA-1 areas and the adjacent urban forest. These areas are being restored, and trees and shrubs are being removed, and native species are being planted. The 61.4-acre MA-3 areas include urban forests, grasslands, and forest-grassland mosaics.

Recommended Management Actions

At McLaren Park, GR-1 through GR-4, GR-6, GR-7, and GR-9 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the McLaren Park Natural Area:

- MP-1a—reduce and contain herbaceous and woody invasive plants;
- MP-1b—remove approximately 809 of the estimated 19,500 invasive blue gum eucalyptus trees to enhance sensitive species habitats;
- MP-1c—revegetate, using appropriate native plants in those areas where invasive plants have been removed;
- MP-1d—augment existing sensitive plants to prevent the extinction of rare or uncommon grassland plants in McLaren Park;
- MP-1e—reintroduce rare plant species to help prevent local extinction of sensitive species in San Francisco;
- MP-2a—increase the patch size of willow and coastal scrub by removing invasive species that border these areas and allowing natural recruitment into the newly opened areas;
- MP-2b—increase the structural diversity of habitats by planting native vegetation that is different in height from the existing plants;
- MP-2c—restrict foot traffic in the Gray Fox Creek area;

[19]Sensitive species—species that are listed on the California Native Plant Society plant list or *Inventory of Rare and Endangered Vascular Plants*.

- MP-3a—remove fruiting plants only in the very early spring before nesting starts but after wintering birds have left;
- MP-4a—install spring boxes or small artificial pool habitats associated with springs and seeps to enhance amphibian habitat;
- MP-5a—continue to control emergent vegetation in Yosemite Marsh to prevent cattails from completely clogging the open water areas;
- MP-5b—continue to allow the development of an unmowed grass buffer along the channel between Yosemite Marsh and the recreation area;
- MP-5c—routinely monitor the San Francisco forktail damselfly population;
- MP-5d—create an environmental education program for all SFRPD personnel that work at McLaren Park;
- MP-5e—to protect the existing population of the San Francisco forktail damselfly at Yosemite Marsh, do not add any fish to the pond;
- MP-6a—conduct an annual evaluation of the mission blue butterfly population;
- MP-6b—install larval host plants and nectar sources as part of revegetation efforts;
- MP-7a—install signs and temporary barriers along the roadway to protect sensitive areas from off-road vehicles;
- MP-8a—restrict access to sensitive habitat areas if damage continues;
- MP-9a—eliminate dog access to a portion of Gray Fox Creek and convert the area around the creek to an on-leash area, resulting in the loss of 8.3 acres of DPA; and
- MP-9b—monitor native grassland and wildflower areas within the remaining off-leash area of the Shelley Loop DPA.

A.5.20 Mount Davidson (MD)

General Description

Mount Davidson is in south-central San Francisco just south of Portola Drive and partly next to Juanita Avenue, Dalewood Way, and Molimo Drive in the Miraloma neighborhood. Forests dominate the landscape, covering three-quarters of the 40.2-acre Natural Area. Developed facilities are minimal. Mount Davidson is a highly visible focal point within San Francisco and supports a diverse array of habitats, plants, and animals.

Management Areas

The 8.8-acre MA-1 areas include two areas on the east-facing slope where the native Franciscan coastal scrub (huckleberry and reed grass) and grasslands are found and another area in the understory of the eucalyptus forest where populations of Pacific reed grass persist. The 11-acre MA-2 areas may also contain sensitive species, and its habitats serve as buffers between the extensive urban forests and the MA-1 areas. At Mount Davidson, the 20.1-acre MA-3 area is composed entirely of urban forest.

Recommended Management Actions

At Mount Davidson, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Mount Davidson Natural Area:

- MD-1a—reduce woody and herbaceous invasive plants, prevent invasive tree species from establishing, and reduce understory plants;
- MD-1b—remove approximately 1,600 invasive blue gum eucalyptus trees of the estimated 11,000 invasive trees to maintain and enhance native habitats;
- MD-1c—revegetate using appropriate native plants, enhance and diversify existing grasslands and coastal scrub habitats, and plant the understory and forest gaps, in accordance with GR-15;
- MD-1d—augment existing rare or uncommon species to maintain these species and enhance their chances of survival;
- MD-1e—reintroduce populations of rare plant species to help prevent county-wide extinctions of these species;
- MD-2a—remove invasive species bordering native scrub, and connect isolated patches of shrubs with plantings and brush piles;
- MD-2b—plant native species of differing heights to increase structural diversity;
- MD-3a—remove fruiting invasive plants after breeding season and after native replacements mature to fruiting stage; and
- MD-4a—consider establishing a permanent water source for birds and other native animals and provide breeding habitat for amphibians.

A.5.21 Palou-Phelps (PP)

General Description

Palou-Phelps Park covers 2.5 acres near the intersection of Palou and Phelps Streets in southeastern San Francisco. The park has a playground area at the northern entry. The 2.1-acre Natural Area has a vegetated slope made up primarily of grasslands.

Management Areas

The 0.8-acre MA-1 area is rich grassland above the playground that includes purple needlegrass prairie. The 0.4-acre MA-2 area supports natural resources and serves as a buffer for the MA-1 area. The MA-3 0.8-acre area contains invasive scrub series and trees in the eastern portion of the Natural Area.

Recommended Management Actions

At Palou-Phelps, GR-1 through GR-4, GR-7, and GR-9 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Palou-Phelps Natural Area:

- PP-1a—reduce and contain herbaceous and woody invasive plants and prevent invasive trees from becoming established;
- PP-1b—revegetate with appropriate native plants those areas where invasive vegetation has been removed;
- PP-1c—reintroduce sensitive plants;
- PP-1d—maintain the existing mosaic of urban forest and grassland; and
- PP-2a—close an unsafe social trail segment leading southeast from the playground and investigate the best possible route to reach the southern portion of the Natural Area.

A.5.22 Pine Lake (PL)

General Description

The 8.4-acre Pine Lake Natural Area is within the 30.3-acre Pine Lake Park. The Natural Area is bounded in part by Wawona Way on the north and Crestlake Drive on the west and south sides. The eastern edge of Pine Lake abuts the Stern Grove Park Recreation Area. Surrounded on three sides by an urban forest, Pine Lake (or Laguna Puerca), with a water surface area of approximately 1.7 acres, is one of the few natural lakes in San Francisco. Most of Pine Lake's undeveloped areas are covered with nonnative blue gum eucalyptus forest. A designated DPA exists in the meadow to the east of the Natural Area.

Management Areas

The one-acre MA-1 area at Pine Lake is associated with the wetland habitat in the lake. The 3.8-acre MA-2 area includes the bulk of the open water, willow habitat, and buffer area around the MA-1 area. The 3.6-acre MA-3 areas are those that are less sensitive and not a priority for direct management; they include the urban forest on the slopes that surround Pine Lake.

Recommended Management Actions

At Pine Lake, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Pine Lake Natural Area:

- PL-1a—reduce populations of invasive plants, including understory plants, periodically remove water primrose to preserve the open water of Pine Lake, prevent invasive trees from becoming established, and prune invasive trees to create light windows to encourage plant growth in the understory;
- PL-1b—revegetate with appropriate native plants that are consistent with the planting plans for the Pine Lake Park Improvement Project (now underway) and with the diversity, cover, and density of reference plots in similar habitats around San Francisco, enhance and diversify existing wetlands and willow riparian areas, and develop and maintain a continuous riparian corridor to Pine

Lake at the base of the slope on the south side of the Natural Area to increase available habitat for birds;

- PL-2a—locate and map raptor nests during inactive periods, avoid removing trees used by raptors, and prohibit tree removal activities within 500 feet of occupied nests;
- PL-3a—remove invasive species to increase the patch size of willows and coastal scrub and create larger habitat units by encouraging willows to form a continuous riparian corridor to the lake;
- PL-3b—install native plants of different height from existing habitats to increase structural diversity;
- PL-3c—install native hydrophytic vegetation that provides cover and foraging habitat for resident and migratory waterfowl along the degraded shoreline of Pine Lake;
- PL-4a—determine the presence, population, and reproduction status of western pond turtles at Pine Lake;
- PL-4b—relocate any western pond turtles to the higher-quality habitat at Lake Merced;
- PL-5a—consider reintroducing Pacific chorus frogs into Pine Lake;
- PL-5b—consult with the California Department of Fish and Game before introducing any species;
- PL-6a—reopen the concrete trail on the western end of the Natural Area if it allows safe public access, otherwise close the concrete trail and develop a nearby alternate route; remove old concrete and revegetate the site;
- PL-6b—maintain and improve 2,144 linear feet of primary trails throughout the Natural Area and reroute or close degraded areas and social trails;
- PL-7a—in accordance with the Sigmund Stern Grove and Pine Lake Park Improvement Plan, provide two dedicated access points to Pine Lake (one at the beach at the east end and one overlooking the lake at the west end) and reduce uncontrolled shoreline access;
- PL-7b—restrict dog access to the lake; and
- PL-7c—post signs at the lake regarding prohibitions against dog access in the lake.

A.5.23 Sharp Park (SP)

General Description

The 411-acre Sharp Park is in the town of Pacifica in San Mateo County. The park borders the Pacific Ocean and is bisected by Highway 1. The Sharp Park Golf Course and Laguna Salada are on the western side of Highway 1. An archery range and extensive canyon are on the eastern side. Sharp Park Road cuts through the northern edge of Sharp Park, east

of Highway 1. Sanchez Creek originates in the upper canyon of Sharp Park and approximately bisects the park in an east-west direction. Sharp Park is one of the largest SFRPD parks and is surrounded by significant open spaces. Mori Point, recently acquired by the GGNRA, borders the southwestern edge, and the Sweeney Ridge GGNRA borders the park on the southeastern and eastern edges. The northern side of Sharp Park is bordered by undeveloped areas within the cities of Pacifica and San Bruno.

The Natural Areas account for 237.2 acres within Sharp Park and encompass the upper canyon areas, portions of Sanchez Creek, and the Laguna Salada wetlands and associated vegetation. The vegetation of Sharp Park is dominated by invasive forest and a golf course, but the park also contains significant areas of wetlands and scrub vegetation.

Management Areas

The Sharp Park management areas include the wetlands associated with Laguna Salada and Horse Stable Pond, grassland and scrub areas, and the urban forests of the canyon. The 35-acre MA-1 areas include three areas in the upper canyon and three in the Laguna Salada area. The 125.1-acre MA-2 areas surround each MA-1 in the upper canyon, may also contain sensitive species and habitats, and provide buffers between the extensive urban forests and the MA-1 areas. Many of the MA-2 areas in the upper canyon also support diverse assemblages of scrub vegetation that provide important structural diversity. The 76.5-acre MA-3 areas at Sharp Park include most of the areas that are dominated by invasive trees but that are lacking the understory complexity found in the MA-2 areas.

Recommended Management Actions

At Sharp Park, GR-1, GR-2, GR-4, and GR-6 through GR-15 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Sharp Park Natural Area:

- SP-1a—reduce woody and herbaceous invasive plants, prevent invasive tree species from being established, and reduce invasive understory plants;
- SP-1b—remove approximately 15,000 invasive blue gum eucalyptus of the estimated 54,000 invasive trees to maintain and enhance native habitats;
- SP-1c—revegetate using appropriate native plants, enhance and diversify existing wetlands, creek grasslands, and coastal scrub habitats to approximate the diversity, cover, and density of reference sites around San Francisco, and plant the understory and forest gaps in accordance with GR-15;
- SP-1d—augment existing rare or uncommon grassland species to maintain these species and enhance their chances of survival;
- SP-1e—consider reintroducing sensitive species;
- SP-2a—implement a control program for feral pigs;
- SP-3a—preserve natural or biodegradable elements (branches, trees, and logs) during vegetation management and remove other materials;

- SP-4a—implement improvements to protect and enhance the California red-legged frog and San Francisco garter snake at Laguna Salada, including the following
    - Create shallow pools within existing wetlands,
    - Continue monitoring California red-legged frogs and San Francisco garter snakes,
    - Remove tires from Horse Stable Pond,
    - Install signs and barriers to keep dogs out of Horse Stable Pond,
    - Separate the small peninsulas within Laguna Salada from the mainland by small canals, and
    - Restore Sanchez Creek by deepening the channel, expanding the creek corridor upstream, and buffer zones to limit human disturbance;
- SP-4b—create low mounds, planted with willows, on the western edge of Laguna Salada to serve as a visual barrier, to provide snake and frog basking sites, and to provide nesting habitat for riparian birds;
- SP-4c—reduce draw-down of Horse Stable Pond when California red-legged frog egg masses are present or maintain a stable water level during red-legged frog breeding season;
- SP-4d—remove any bullfrogs that are found in Laguna Salada;
- SP-4e—stop all golf course vehicles from using the service road from Moose Lodge to Horse Stable Pond;
- SP-5a—work with golf course staff to minimize use of chemicals;
- SP-6a—coordinate with the golf course to remove aquatic vegetation within the channel every spring and fall;
- SP-6b—remove and trim vegetation along the edges of the channel between Laguna Salada and Horse Stable Pond to allow forktail damselfly perching within sight of the water;
- SP-7a—develop a plan for safe public access for San Francisco archers to the upper canyon and nearby GGNRA lands;
- SP-8a—make 33.3 acres of Arrowhead Pond, Laguna Salada, and Horse Stable Pond off limits to dogs to prevent access to sensitive habitats; if this is not effective, use fencing to close social trails in these areas;
- SP-9a—educate golf course staff about the importance of identifying California red-legged frogs, San Francisco garter snakes, and forktail damselflies and their habitats;
- SP-9b—establish a vegetation management plan for the canal connecting Laguna Salada and Horse Stable Pond that would allow channel maintenance without affecting the forktail damselfly, California red-legged frog, or San Francisco garter snake;

- SP-9c—create a buffer zone between the Laguna Salada wetlands and the golf course fairways;
- SP-9d—work with golf course maintenance staff to incorporate native plants within bank stabilization efforts along Sanchez Creek where it flows through the golf course;
- SP-10a—backfill trenches with nearby loose soil, replant with appropriate native vegetation;
- SP-11a—develop and implement a comprehensive plan to control the erosion in the extensive area of eroded badlands in the isolated northern portion of the park bounded by the loop in Sharp Park Road; and
- SP-12a—work with other divisions of the SFRPD as necessary to facilitate cleanup and remediation of the former rifle range.

  (Note: Because these cleanup and remediation activities are part of a separate process lead by the SFRPD Capital Division, they are not addressed as part of the SNRAMP in this Initial Study.)

A.5.24 Tank Hill (TK)

General Description

Tank Hill is in central San Francisco on Twin Peaks Boulevard near Golden Gate Park. The Natural Area is a 2.9-acre grassy knoll rich in local plant species. The property is publicly accessible via a wooden stairway from Twin Peaks Boulevard and a retained-earth stairway at the end of Belgrave Street.

Management Areas

The 1.5-acre MA-1 areas are grassland and rock outcrops that support sensitive species. The 0.6-acre MA-2 areas buffer the MA-1 areas. The 0.7-acre MA-3 areas include tree-dominated habitats and steep slopes in the southern portion of the Natural Area.

Recommended Management Actions

At Tank Hill, GR-1, GR-2, GR-4, GR-7, and GR-9 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Tank Hill Natural Area:

- TK-1a—contain and reduce herbaceous and woody invasive plants;
- TK-1b—augment populations of sensitive plant species;
- TK-1c—reintroduce sensitive plant species;
- TK-1d—revegetate areas where invasive plants have been removed with appropriate native species;
- TK-1e—prevent establishment of invasive tree species; and
- TK-2a—following control of invasive species, install native scrub.

A.5.25 Twin Peaks (TP)

General Description

The 31.1-acre Twin Peaks Natural Areas are north of Mount Davidson and south of Buena Vista Park and Corona Heights. To the north of Twin Peaks are Sutro Tower, a San Francisco Fire Department reservoir, and a parking lot for one of the most popular vista points in San Francisco (popularly known as Christmas Tree Point). The Fire Department property, Christmas Tree Point, and other open space to the north contain Natural Areas, which, when combined with SFRPD property, make a much larger and more viable habitat area. The Natural Areas at Twin Peaks essentially encompass the entire area, except for the roads, viewpoints, and the reservoir.

Twin Peaks has a north-south orientation and is divided into several discontinuous sections by Twin Peaks Boulevard, which winds along its slopes. Twin Peaks' west-facing slopes receive substantial fog and strong winds, while the east-facing slopes receive more sun and warmth. The vegetation is primarily a mix of intergrading patches of grassland and scrub. Twin Peaks offers spectacular views of the surrounding Bay Area and is a world-famous tourist attraction. Twin Peaks receives a high level of recreational use and contains a segment of the Bay Ridge Trail.

Management Areas

Four management areas have been designated at Twin Peaks. The 12.6-acre MA-1a areas include rich native grasslands and sensitive species habitat, including mission blue butterfly habitat. Much of the 14.3-acre MA-2 areas are coastal scrub areas. There are two 3.8-acre MA-3 areas, most of which are along the boundary of the Twin Peaks Natural Area, next to the surrounding residential neighborhoods.

Recommended Management Actions

At Twin Peaks, GR-1, GR-2, GR-4, GR-6, GR-7, GR-9, and GR-11 through GR-14 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the Twin Peaks Natural Area:

- TP-1a—contain and reduce woody and herbaceous invasive plants;
- TP-1b—augment existing rare or uncommon plant species to help ensure the continued presence of these species, and consider reintroducing sensitive species;
- TP-1c—maintain and enhance existing grassland habitats using diversity, cover, and density targets generated from reference sites around San Francisco, plant native grassland and scrub species, and maintain toyon, oak, and coastal scrub in the tree-dominated areas on the park's edges;
- TP-1d—prevent invasive tree species from becoming established and remove three pine trees out of 88 existing invasive trees;
- TP-2a—continue to monitor the mission blue butterfly population;
- TP-2b—augment host plant populations whenever possible;

- TP-3a—maintain existing fences to route park users to safe and designated trails and develop safe pedestrian access along Twin Peaks Boulevard, including developing approximately 500 feet of new trails, if they are required;
- TP-3b—install signs at all formal access points to show that trails are for foot use only, monitor the use of trails within the area, and install appropriate fencing to prevent wheeled-vehicle access to sensitive habitats if necessary;
- TP-3c—install signs at known habitat areas of the mission blue butterfly indicating on-trail and on-leash access only and consider lining the trail with fences; and
- TP-4a—consider restricting access to or fencing 5.9 acres of mission blue butterfly habitat next to or surrounding the trails.

A.5.26 15th Avenue Steps (FI)

General Description

The 0.3-acre 15th Avenue Steps Natural Area is in the Golden Gate Heights area of San Francisco and is the extension of 15th Avenue, between Kirkham and Lawton Streets. Access is via a set of concrete stairs bisecting the Natural Area, which supports native oak trees and habitat for a variety of resident and migratory bird species.

Management Areas

The 0.2-acre MA-2 area includes coast live oak trees and California blackberry scrub on both sides of the concrete stairs. There are no MA-1 and MA-3 areas.

Recommended Management Actions

At 15th Avenue Steps, GR-1, GR-2, GR-4, GR-7, GR-9, GR-11, and GR-12 would be implemented to address management issues. In addition, the following site-specific management actions are recommended for the 15th Avenue Steps Natural Area:

- FI-1a—allow for recruitment of native plants, enhance existing habitats, contain and reduce herbaceous and woody species, remove invasive plants and replace with appropriate dune species; and
- FI-1b—maintain and enhance oak woodland and coastal scrub communities.

A.5.27 Everson/Digby Lots

A portion of the Everson/Digby Lots park was recently determined to be a Natural Area. This Natural Area was not addressed in the SNRAMP. The Environmental Impact Report will present information on the recommended management actions for this Natural Area and will analyze the potential environmental impacts associated with those actions.

B. PROJECT SETTING

CCSF covers the northern portion of the San Francisco Peninsula and encompasses an area of 49 square miles. Small fragments of a unique ecosystem called the Franciscan landscape, part of the larger Bay/Delta region, still exist in San Francisco. The Franciscan landscape developed in the wildlands that once extended from San Bruno Mountain to the Golden Gate Headlands. Its unusual combination of climatic, floristic, and geologic features supported the development of a biologically diverse assemblage of plants and animals, some of which were unique to the area. Most of the remnant fragments of the Franciscan landscape are within the Natural Areas.

The proposed project occurs across 31 Natural Areas totaling approximately 1,105 acres. Of the total Natural Areas acreage, 868 acres are in San Francisco, and 237 are in Pacifica (Sharp Park). The Natural Areas range in size from 0.3 acres (15th Avenue Steps) to 395 acres (Lake Merced). The MA-1 areas cover roughly 193 acres (17 percent), with 430 acres (39 percent) for MA-2 areas and 478 acres (43 percent) for MA-3 areas. Within the Natural Areas are approximately 117,453 trees and 211,303 linear feet of trails.

Descriptions of the project setting for each Natural Area can be found in Section A.5.

C. COMPATIBILITY WITH EXISTING ZONING AND PLANS

	Applicable	*Not Applicable*
Discuss any variances, special authorizations, or changes proposed to the Planning Code or Zoning Map, if applicable.	☐	☒
Discuss any conflicts with any adopted plans and goals of the City or Region, if applicable.	☐	☒
Discuss any approvals and/or permits from City departments other than the Planning Department or the Department of Building Inspection, or from Regional, State, or Federal Agencies.	☒	☐

This section identifies and discusses applicable regional and local land use plans and policies relevant to the proposed project. The focus of this section is the CCSF land use plans and policies. CCSF land use plans and policies are primarily applicable to projects within the jurisdictional boundaries of San Francisco, although in some cases they may apply to projects outside San Francisco. This information is relevant to the evaluation of impacts of the proposed project with respect to specific significance criteria under CEQA that require analysis of the compatibility of a proposed project with certain aspects of local land use plans and policies.

The Natural Areas are scattered throughout the central and southern portions of the CCSF and constitute four percent of the total city area. Sharp Park is in the city of Pacifica. Most Natural Areas are owned and managed by the SFRPD; Balboa is owned by CCSF and is managed by the National Park Service, while the San Francisco Public Utilities Commission owns, and SFRPD manages, Lake Merced.

The SFRPD is guided by the San Francisco City Charter along with other city plans and policies. These plans include the *San Francisco General Plan*, which sets forth the comprehensive, long-term land use policy for the CCSF, and the *San Francisco Sustainability Plan*, which addresses the long-term sustainability of the City. In addition the SFRPD has created the Natural Areas Program to support and develop a community-based habitat restoration program. These plans and policies, as applicable to the proposed project, as well as other relevant plans and policies, are discussed herein.

C.1 APPLICABLE PLANS AND POLICIES

CCSF Plans and Policies

San Francisco General Plan

One of the basic goals of the *San Francisco General Plan* is "coordination of the growth and development of the City with the growth and development of adjoining cities and counties and of the San Francisco Bay Region." The general plan consists of ten issue-oriented plan elements—Air Quality, Arts, Commerce

and Industry, Community Facilities, Community Safety, Environmental Protection, Housing, Recreation and Open Space, Transportation, and Urban Design. The plan elements relevant to the proposed project are briefly described below.

Air Quality Element. This element promotes the goal of clean air planning through objectives and policies aimed at adherence to air quality regulations, focusing development near transit services, and advocating alternatives to the private automobile.

Environmental Protection Element. This element addresses the impact of urbanization on the natural environment. The element promotes the protection of plant and animal life and freshwater sources and speaks to the responsibility of San Francisco to provide a permanent, clean water supply to meet present and future needs and to maintain an adequate water distribution system.

Recreation and Open Space Element. This element promotes the goal of preserving and protecting open spaces. Policy 2.13 of the General Plan requires the City to preserve and protect the Significant Natural Resource Areas. Policy 13 includes natural resource areas and naturalistic areas as potential protection and preservation areas. The policy identifies the following criteria used to determine a Significant Natural Resource Area: (1) sites that are undeveloped, relatively undisturbed remnants of San Francisco's original landscape that either support diverse and significant indigenous plant and wildlife habitats or contain rare geologic formations or riparian zones; (2) sites that contain rare, threatened, or endangered species or areas likely to support these species; and (3) areas that are adjacent to other protected natural resource areas. The policy further stipulates that management plans be developed for each of the Natural Areas. Specifically, the policy describes the need to:

- Identify Natural Areas and inventory them;
- Identify the presence of natural resources;
- Describe practices such as exotic plant species removal; and
- Identify policies governing access and recreational uses to ensure that natural resource values are not diminished by public use.

Urban Design Element. This element concerns the physical character and order of the City and the relationship between people and their environment. It provides a general plan, responding to issues relating to City pattern, conservation, major new development, and neighborhood environment.

Western Area Shoreline Plan. The policies of the CCSF Local Coastal Program were incorporated into the general plan as part of this area plan. Applicable area plan policies include the following:

- Objective 3: Enhance the recreational connection between Golden Gate Park and the beach frontage.
    - Policy 3.1: Strengthen the visual and physical connection between the park and beach. Emphasize the naturalistic landscape qualities of the western end of the park for visitor use. When possible eliminate the Richmond-Sunset sewer treatment facilities.
    - Policy 3.2: Continue to implement a long-term reforestation program at the western portion of the park.
    - Policy 3.3: Develop and periodically revise a master plan for Golden Gate Park to include specific policies for the maintenance and improvement of recreational access in the western portion of the park.
    - Policy 3.4: Rehabilitate the Beach Chalet for increased visitor use.
- Objective 5: Preserve the recreational and natural habitat of Lake Merced.
    - Policy 5.1: Preserve in a safe, attractive and usable condition the recreational facilities, passive activities, playgrounds and vistas of Lake Merced area for the enjoyment of citizens and visitors to the city.
    - Policy 5.2: Maintain a recreational pathway around the lake designed for multiple use.
    - Policy 5.3: Allow only those activities in Lake Merced area which will not threaten the quality of the water as a standby reservoir for emergency use.
    - Policy 5.4: As it becomes obsolete, replace the police pistol range on the southerly side of South Lake with recreational facilities.
- Objective 6: Maintain and enhance the recreational use of San Francisco's Ocean Beach shoreline.
    - Policy 6.1: Continue Ocean Beach as a natural beach area for public recreation.
    - Policy 6.2: Improve and stabilize the sand dunes where necessary with natural materials to control erosion.
    - Policy 6.3: Keep the natural appearance of the beach and maximize its usefulness by maintaining the beach in a state free of litter and debris.

- Policy 6.4: Maintain and improve the physical condition and appearance of the esplanade between Lincoln Way and the Cliff House.

- Policy 6.5: Enhance the enjoyment of visitors to Ocean Beach by providing convenient visitor-oriented services, including take-out food facilities.

- Policy 6.6: Extend the seawall promenade south to Sloat Boulevard as funds become available.

Consistency Evaluation. As described above, the *San Francisco General Plan* addresses such elements as air quality, community safety (including protection from geologic and seismic hazards), and environmental protection (including protection of water resources and biological resources and addressing recreation and open space).

The project proposes to restore and manage the Natural Areas. Although the project could impact natural systems, mitigation measures would minimize potential impacts. Implementation of the project would identify natural resources and maintain and preserve native plant and animal communities and local biodiversity. The project would, on the whole, be consistent with the *San Francisco General Plan*.

San Francisco Priority Policies

In November 1986, the voters of San Francisco approved Proposition M, the Accountable Planning Initiative, which added Section 101.1 to the City Planning Code to establish eight Priority Policies. These policies, and the sections of this Environmental Evaluation addressing the environmental issues associated with the policies, are: (1) preservation and enhancement of neighborhood-serving retail uses; (2) protection of neighborhood character (Question 1c, Land Use); (3) preservation and enhancement of affordable housing (Question 3b, Population and Housing, with regard to housing supply and displacement issues); (4) discouragement of commuter automobiles (Questions 5a,b,f and g, Transportation and Circulation); (5) protection of industrial and service land uses from commercial office development and enhancement of resident employment and business ownership (Question 1C, Land Use); (6) maximization of earthquake preparedness (Questions 13a-d, Geology, Soils, and Seismicity); (7) landmark and historic building preservation (Question 4a, Cultural Resources); and (8) protection of open space (Questions 8a and b, Wind and Shadow, and Questions 9a and c, Recreation). Prior to issuing a permit for any project which requires an Initial Study under CEQA, prior to issuing a permit for any demolition, conversion, or change of use, and prior to taking any action which requires a finding of consistency with the *San Francisco General Plan*, the City is required to find that the proposed project or legislation would be consistent with the Priority Policies. As noted above, the consistency of the proposed project with the environmental topics associated with the Priority Policies is discussed in the

Evaluation of Environmental Effects, providing information for use in the case report for the proposed project. The case report and approval motions for the proposed project would contain the Planning Department's comprehensive project analysis and findings regarding consistency of the proposed project with the Priority Policies. In addition to the *San Francisco General Plan*, some areas of the city are also addressed in specific area plans.

Sustainability Plan for San Francisco

The *Sustainability Plan for San Francisco* (CCSF 1996b) was endorsed by the San Francisco Board of Supervisors in 1997, although the Board of Supervisors has not committed the City to perform the actions addressed in the plan. The plan serves as a blueprint for sustainability, with many of its individual proposals requiring further development and public comment. The underlying goals of the plan are to maintain the physical resources and systems that support life in San Francisco and to create a social structure that will allow such maintenance. It is divided into 15 topic areas, 10 that address specific environmental issues (Air Quality; Biodiversity; Energy, Climate Change and Ozone Depletion; Food and Agriculture; Hazardous Materials; Human Health; Parks, Open Spaces and Streetscapes; Solid Waste; Transportation; and Water and Wastewater), and five that are broader in scope and cover many issues (Economy and Economic Development; Environmental Justice; Municipal Expenditures; Public Information and Education; and Risk Management). Each topic area in the plan has a set of indicators that are to be used over time to determine whether San Francisco is moving in a sustainable direction in that particular area. The Biodiversity section, which includes 39 specific actions, addresses the goals of increased ecological understanding, protection, and restoration of remnant natural ecosystems; increased habitat value in developed and naturalistic areas; and collection, organization, and development of historic information on habitat and biodiversity.

The *Sustainability Plan for San Francisco* was developed to address San Francisco's long-term environmental sustainability, and it adopted many of the goals and objectives of the 1995 Significant Natural Resource Areas Management Plan. As such, the project would be consistent with the *Sustainability Plan for San Francisco.*

Natural Areas Program

The mission of the Natural Areas Program is two-fold: to restore and enhance remnant Natural Areas and to develop and support community-based stewardship of these areas (CCSF 2008c). Recognizing the functions and value of these Natural Areas and the need to protect and restore them, SFRPD agreed to support and develop a community-based habitat restoration program, today known as the Natural Areas Program.

San Francisco Dog Policy

The SFRPD is the steward of wide-ranging unique landscapes and makes decisions on land management practices. The dog policy reflects the SFRPD Strategic Plan, input from community stakeholder groups, San Francisco Municipal Codes, the 1998 Dog Task Force recommendations, and the best and most relevant efforts of established dog park designs and policies (SFRPD 2002). The SFRPD welcomes dogs on leashes in most of its parks; dogs are allowed off-leash in 19 designated areas. Existing and proposed sites will need to be evaluated in the context of this policy. Dogs are not allowed in some areas, as noted in Section 3.1 (Location) of the policy. The policy supports continued and increased education about how to be a responsible park user with a pet.

Laguna Salada Resource Enhancement Plan

The *Draft Laguna Salada Resource Enhancement Plan* was developed to enhance the Laguna Salada wetlands (Philip Williams & Associates, et al. 1992). While providing valuable wetland habitat for a variety of vegetation and wildlife species, the site represents critical habitat for the San Francisco garter snake, San Francisco forktail damselfly, California red-legged frog, and salt marsh yellowthroat (a bird species). The main element of the enhancement plan involves dredging to remove accumulated sediments and to provide open water in areas choked by emergent vegetation.

San Francisco Bay Basin (Region 2) Water Quality Control Plan

Water for recreation and habitat is associated with the Natural Areas. The San Francisco Bay Basin (Region 2) Water Quality Control Plan contains water quality regulations adopted by the San Francisco Bay Regional Water Quality Control Board. It has been approved by the State Water Resources Control Board, the Office of Administrative Law, and US Environmental Protection Agency (EPA) (San Francisco Bay Regional Water Quality Control Board 2007). It also contains statewide regulations adopted by the State Water Resources Control Board and other state agencies that refer to activities regulated by the board.

San Francisco Bay Plan

The San Francisco Bay Plan guides the protection and development of the bay and its tributary waterways, marshes, managed wetlands, salt ponds, and shoreline (San Francisco Bay Conservation and Development Commission 2008). A major plan proposal is to develop waterfront parks and recreation facilities. New shoreline parks, beaches, marinas, fishing piers, scenic drives, and hiking or bicycling pathways should be provided in many areas. The bay and its shoreline offer particularly important opportunities for recreational development in urban areas where large concentrations of people live close to the water but are shut off from it. Highest priority should be given to recreational development in these areas as an important means of helping to immediately relieve urban tensions.

General Land Use Plans and Policies of Other Jurisdictions

Although the SFRPD is not legally bound to the land use plans and policies of other jurisdictions, non-CCSF land use plans are discussed in this section to the extent that they provide land use planning information for the jurisdictions in which the proposed project is located. This information is relevant to evaluate the impacts of the proposed project with respect to the specific significance criteria under CEQA that require an analysis of the compatibility of a proposed project with certain aspects of local land use plans and polices. These particular significance criteria are listed below along with the location in this document where the reader can find the impact evaluation:

- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan (analyzed in Section E.16, Mineral and Energy Resources, page 131);
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (analyzed in Section E.12, Biological Resources, page 98);
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (analyzed in Section E.12, Biological Resources, page 98);
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., conflict with policies promoting bus turnouts, bicycle racks, etc.), or cause a substantial increase in transit demand that cannot be accommodated by existing or proposed transit capacity or alternative travel modes (analyzed in Section E.5, Transportation and Circulation, page 74);
- Expose people to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (analyzed in Section E.6, Noise, page 76);
- For a project located within an area covered by an airport land use plan (or, where such a plan has not been adopted, within two miles of a public airport or public use airport), expose people residing or working in the project area to excessive noise levels (analyzed in Section E.6, Noise, page 76); and
- Conflict with existing zoning for agricultural use or a Williamson Act[20] contract (analyzed in Section E.17, Agriculture Resources, page 132).

[20]Williamson Act—also known as the Land Conservation Act of 1965, provides for lowered property taxes for lands maintained in agricultural and certain open space uses. Under a Williamson Act contract, generally the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least 10 years. In return, the land is taxed at a rate based on the agricultural production of the land, rather than its real estate market value.

C.2 OTHER COMPLIANCE AND PERMITTING REQUIREMENTS

In addition to compliance with CEQA, the proposed project may be subject to additional compliance and permitting requirements administered by various federal, state, and local resource agencies. These agencies include:

- The US Fish and Wildlife Service (USFWS), which enforces regulations regarding the health of wildlife and wildlife habitat, particularly in accordance with Section 7 of the Endangered Species Act (ESA) and the Migratory Bird Treaty Act (MBTA);
- The US Army Corps of Engineers (USACE), which regulates wetlands and Waters of the United States under Section 404 of the Clean Water Act;
- The California Department of Fish and Game (CDFG), which protects special status species listed under the California Endangered Species Act and regulates streambed alteration under Section 1602 of the California Fish and Game Code;
- The Bay Area Regional Water Quality Control Board (RWQCB) for a National Pollutant Discharge Elimination System general construction activity permit (and associated stormwater pollution prevention plan) and Water Quality Certification under Section 401 of the Clean Water Act. The RWQCB regulates regional water bodies and wetlands, particularly in terms of water quality, in accordance with Section 401 of the Clean Water Act;
- National Marine Fisheries Service, under Section 7 of the Endangered Species Act;
- California Air Resources Board and Bay Area Air Quality Management District;
- California Office of Historic Preservation;
- California Native American Heritage Commission;
- California Coastal Commission; and
- Bay Conservation and Development Commission.

D. SUMMARY OF ENVIRONMENTAL EFFECTS

The proposed project could potentially affect the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor.

☐ Land Use	☐ Air Quality	☐ Geology and Soils
☒ Aesthetics	☐ Wind and Shadow	☒ Hydrology and Water Quality
☐ Population and Housing	☒ Recreation	☐ Hazards/Hazardous Materials
☒ Cultural and Paleo. Resources	☐ Utilities and Service Systems	☐ Mineral/Energy Resources
☐ Transportation and Circulation	☐ Public Services	☐ Agricultural Resources
☐ Noise	☒ Biological Resources	☒ Mandatory Findings of Signif.

E. EVALUATION OF ENVIRONMENTAL EFFECTS

Under the proposed project, the SFRPD would implement the SNRAMP for 31 diverse Natural Areas, as summarized in Section A. Impacts on the Natural Areas from the proposed project vary, depending upon the type of activity proposed and the Natural Area management needs. For a given significance criterion, the project may have "Less Than Significant Impacts" in several Natural Areas and "Less Than Significant Impacts with Mitigation Incorporated" in other Natural Areas at the same time. For a given significance criterion, the highest impact level applicable to any of the Natural Areas is applied to the project as a whole for that criterion. The impact discussions for each criterion describe the general effects that would occur across the combined Natural Areas or to groups of Natural Areas, followed by discussion of impacts unique in nature or magnitude to specific Natural Areas. A general assumption that is made for the impact analysis is that increased use of the Natural Areas would result from implementing the SNRAMP, due to improved recreation resources and anticipated increases in the general population of San Francisco.

E.1 LAND USE AND LAND USE PLANNING

Topics:		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Not Applicable*
1.	**LAND USE AND LAND USE PLANNING— Would the project:**					
a)	Physically divide an established community?	☐	☐	☐	☐	☒
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒	☐
c)	Have a substantial impact upon the existing character of the vicinity?	☐	☐	☒	☐	☐

For informational purposes, this topic area will be discussed in the Environmental Impact Report.

a) Because all project activities would occur within the Natural Areas, this criterion is not applicable to the proposed project.

b) In California, land use is regulated through local plans and policies.

In San Francisco, the overall planning framework is set by the San Francisco General Plan, which consists of ten plan elements. General plans are intended to identify features that are unique to each region and identify policies that preserve and reinforce unique values of the community. Each element identifies

objectives and is supported by policy statements and explanations. In addition, eleven neighborhoods have area plans, which recognize unique characteristics and strengths of neighborhoods and introduce objectives and policy statements at the neighborhood level. The concepts of the General Plan are implemented through the zoning code and administrative review processes.

An important value of San Franciscans is represented by Objective 7 of the Environmental Protection Element (CCSF 2004): "Assure that the land resources in San Francisco are used in ways that both respect and preserve the natural values of the land and serve the best interests of all of the city's citizens."

Another policy statement is Objective 1 of the Environmental Protection Element: "Achieve a proper balance among the conservation, utilization, and development of San Francisco's natural resources."

These principles recognize the need to balance natural resources, conservation, and programming concerns. As such, there is recognition of the logic of removing nonnative species to allow for growth of indigenous plant material and preservation of the natural character of a habitat.

The Recreation and Open Space Element (CCSF 2007a) guides policies over hiking and bicycle trails and advocates developing additional trails along San Francisco Bay (The Bay Trail), on ridgelines, and along the coast, and linking these trails with those in adjacent counties. It defines various classes of open space, including city-serving (Golden Gate Park, McLaren Park), district-serving (larger than 10 acres), neighborhood-serving (less than 10 acres and more than 4 acres), and subneighborhood-serving.

Objective 2 of that element states "Develop and maintain a diversified and balanced citywide system of high quality public open space." It is supported by Policy 2.8: "Develop a recreational trail system that links city parks and public open space, ridge lines and hilltops, the Bay and ocean, and neighborhoods, and ties into the regional hiking trail system." The plan identifies several city parks where future segments of these trails should be developed.

The Bay Trail is a resource for pedestrians and bicyclists and passes through the India Basin Natural Area. Of the San Francisco Natural Areas, trails would increase at Edgehill Mountain and Interior Greenbelt. New trails would be created at an additional seven San Francisco Natural Areas.

Policy 2.9, "Maintain and expand the urban forest," acknowledges the role of urban forests in enhancing the quality of life in San Francisco. The text clarifies the need for replacement of mature trees, and promotes the need for a "major reforestation effort" in the larger city parks. It calls for a systematic inventory of the urban forest, tree replanting, and plant material diversification.

Policy 2.13 is to: "Preserve and protect significant natural resource areas." It specifically addresses the natural resource area management plan and calls for preservation of native plant habitats, inventorying natural areas, and protecting natural areas "to ensure that the natural resource values are not diminished or impacted by public use."

Under Policy 3.5, this element calls for extending the reforestation program within Golden Gate Park "throughout the park to ensure vigorous forest tree growth . . ." Regarding Bayview Park, this section calls for better pedestrian access, which is echoed in the proposed project.

Policy 4.3, "Renovate and renew the City's parks and recreational facilities," acknowledges the need for ongoing assessment and renewal of the City's open space resources.

The Recreation and Park Commission has adopted additional policies pertaining to certain parks, such as the master plans for Buena Vista Park, Glen Canyon Park, Golden Gate Park, McLaren Park, and Pine Lake Park.

The Golden Gate Park Master Plan (SFRPD 1998) identifies three policies that are relevant to the proposed removal of invasive trees. Policy A addresses naturalistic parkland as follows: "Naturalistic parkland comprises the largest land category in Golden Gate Park, and must be preserved to protect the pastoral character of the park and to ensure the retention of park open space. Naturalistic parkland is the predominant landscape of the park and gives the park its visual character."

Policy E focuses on forested indigenous oak preserves and calls for them to be carefully managed to promote their preservation.

The second objective of the plan mandates protection and renewal of the park landscape. Policy B places priority on preservation and renewal of the park's forestry. It calls for "Removal of hazardous, diseased and dying trees; replacement with appropriate tree species." Another goal is "Maintain the designated indigenous oak preserves for their natural and historical values as the only remaining indigenous woodlands in the park, and preserve existing oak trees in other areas."

The proposed project would not conflict with any land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. There would be no change in land uses and no impact under the project, which would serve the objectives of the applicable plans and policies.

c) The proposed project considers changes to vegetation and trails at 31 different Natural Areas. At some parks, the change in tree coverage would be minimal

(two percent of trees), while in others it would be more noticeable (20 percent of trees). In Natural Areas, where large numbers of trees would be removed, the removal would occur gradually and would return the vegetation to a state more consistent with the area's original character. Overall, areas identified for tree removal would result in the removal of 18,448 invasive trees, representing 16 percent of the invasive trees in the parks. At all of the Natural Areas except Sharp Park, invasive trees would be replaced with native trees (3,448 trees replaced). At Sharp Park, 15,000 invasive trees would be removed and replaced with native vegetation; approximately 39,000 invasive trees would remain. Because tree removal in portions of the Natural Areas would not be great enough to substantially alter the overall natural, unique character of the project areas, the impacts would be less than significant.

Although land use impacts would be less than significant, the Environmental Impact Report will include a discussion of land use and land use planning for background purposes.

E.2 AESTHETICS

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
	AESTHETICS—Would the project:					
a)	Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment which contribute to a scenic public setting?	☒	☐	☐	☐	☐
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area or which would substantially impact other people or properties?	☐	☐	☐	☒	☐

In this Initial Study, the Potentially Significant Impact designation is being used solely to identify those topics that will be addressed in detail in the Environmental Impact Report for this project and does not reflect the findings of any preliminary impact analysis. Those topics are being included in the Environmental Impact Report because there is not sufficient information available at this time on the potentially affected resources or site conditions.

A visual quality analysis is somewhat subjective and considers the project in relation to the surrounding visual character, heights and building types of surrounding uses, its potential to obstruct public scenic views or vistas, and its potential for light and glare. A proposed project would have an effect on the visual landscape if it were to cause a noticeable change. The amount of change may be characterized as temporary or permanent or as adverse or beneficial, and it may range from minor to major. With respect to scenic resources involving changes to vegetation, long-term impacts would involve the permanent loss of vegetation or the relatively long time needed for newly planted trees to reach the size of the trees they replaced; short-term impacts would involve the relatively short time needed for replacement shrubs, bushes, and grasses to mature.

a) A scenic vista is a visually appealing view of the distant broad landscape. The San Francisco General Plan does not identify protected scenic vistas in the Recreation and Open Space Element or the Transportation Element (CCSF 2007a and CCSF 2005b). The City of Pacifica General Plan does not identify protected scenic vistas in the Scenic Highways Element, the Conservation Element, the Open Space Element, or the Community Design Element (City of Pacifica 1980).

Also, there is no designated state or county scenic highway[21] near the proposed project (California Department of Transportation 2008).

The following principles for city pattern relating to parks are found in the Urban Design Element of the San Francisco General Plan:

- "Where large parks occur at tops of hills, lowrise buildings surrounding them will preserve views from the park and maintain visibility of the park from other areas of the city. Comment: Areas around Mount Davidson and Twin Peaks have a pattern of low development. The hilltops are therefore citywide focal points of natural landscape, functioning much as Telegraph Hill's summit does in the North Beach area."
- "Landscaped pathways can visually and functionally link larger open spaces to neighborhoods. Comment: The roadside planting of Park Presidio and Sunset Boulevard, and the landscape connections between Mount Sutro, Twin Peaks, Laguna Honda and Glen Canyon are examples of a system that links parks and other open spaces to one another. Such linkages, creating strong defining features, can be extended to other parts of the city."

The plans note the importance to residents and visitors of general scenic vistas, such as those involving ridgelines and beaches. Also, almost all of the Natural Areas include trails, most of which provide general scenic views of San Francisco.

Map 1 in the Urban Design Element in the San Francisco General Plan identifies important vista points to be protected (CCSF 2005a). These points are throughout the City and include, for example, Mount Davidson and Buena Vista Park.

The proposed project does not include permanent human-made structures that would obstruct general scenic vistas, such as those involving ridgelines or vistas of San Francisco from Natural Area trails. The proposed project would not permanently restrict access to important viewpoints (identified in Map 1 in the Urban Design Element in the San Francisco General Plan) from which general vistas are available. Invasive tree removal in San Francisco would be followed by replacement of those trees with native species at a roughly 1:1 replacement ratio, to ensure that views from important points are preserved. In some locations, trees would be replaced by native scrub or grassland species.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

[21]Scenic highway—a highway from which a high quality scenic natural landscape can be seen by travelers and with little intrusion by development.

b) Scenic resources are the visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features). The scenic resources in the Natural Areas are described in the SNRAMP (SFRPD 2006).

The proposed project would alter scenic resources within the Natural Areas. This would involve, for example, contouring the topography of an area differently and removing certain invasive vegetation to enhance habitat and establish native vegetation. The large-scale removal of vegetation in Natural Areas, such as Sharp Park, Mount Davidson, McLaren Park, and Bayview Park, would occur over time. Initially, impacts on scenic resources[22], such as diminished vegetation and altered composition and structure of vegetation, would be noticeable. The intensity of the impact would depend on the viewer and their sensitivity to changes to scenic resources at a Natural Area.

Although scenic resources would be altered, they would be altered to restore the natural integrity of the areas by removing and altering resources that are not historically consistent with the local area. Revegetation and the progression of natural processes would gradually reduce the magnitude of impacts. Generally, trees removed would be replaced with native tree species at a roughly 1:1 replacement ratio, although not necessarily at the same location. In some locations, trees would be replaced by native scrub or grassland species. All removed vegetation would be replaced with native vegetation. Promoting the natural integrity of the areas would ultimately reestablish the natural scenic resources typical of the local Natural Area. Note that no Landmark Trees would be removed or altered.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

c) The general setting of the Natural Areas is characterized as being undeveloped, being used for various designated purposes, and being surrounded by an urban environment. The setting of the areas is described in greater detail in the SNRAMP (SFRPD 2006).

As described in Section A.2, the design and aesthetic goals for the Natural Areas are as follows:

- Where possible, to develop aesthetically pleasing landscapes that are consistent with surrounding landscapes and that create natural transitions, especially where adjacent parklands and traditionally landscaped areas abut Natural Areas;
- To maintain and develop viewpoints and viewsheds to enhance park experiences; and

[22]Scenic resource—the visible physical features on a landscape.

- Where possible, to design and maintain landscapes to discourage the accumulation of trash and illegal encampments.

Policy 1.5 in the Urban Design Element in the San Francisco General Plan emphasizes the special nature of each district through distinctive landscaping and other features. This involves preserving landscaping and installing or encouraging new landscaping. The proposed project would be required to comply with the policies in the Urban Design Element.

During implementation of the proposed project, equipment, such as trucks and bulldozers, would be visible in and around the Natural Areas. The presence of the equipment and project activities would detract from the setting of the areas, resulting in impacts. However, equipment and project activities would be limited in duration and would not occur every day.

Following implementation of the proposed project's activities, the setting of the areas would generally resemble the current setting. One important aspect of the general setting that would be altered by the project's activities involves the vegetation. Initially, impacts on the general setting's vegetation, such as diminished vegetation and altered composition and structure of vegetation, would be noticeable, resulting in impacts. However, vegetation is only one aspect of the general setting. Following implementation of the proposed project's activities, the setting of the areas would ultimately resemble the existing undeveloped setting. While it would be altered, the general setting of the Natural Areas would still resemble an undeveloped area used for various purposes and surrounded by an urban environment.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

d) The proposed project does not include outdoor or indoor lighting or other components that would create new sources of light or glare and would have no impact.

This topic will not be discussed in the Environmental Impact Report.

E.3 POPULATION AND HOUSING

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
3.	**POPULATION AND HOUSING— Would the project:**					
a)	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒	☐
b)	Displace substantial numbers of existing housing units or create demand for additional housing, necessitating the construction of replacement housing?	☐	☐	☐	☒	☐
c)	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒	☐

a - c) The project does not propose the construction of new homes or businesses and therefore would not result in any direct impacts related to growth inducement. Furthermore, the project would not result in increased use of roadways or extend new infrastructure, such as water and sewer systems, to any undeveloped areas. No new businesses or houses would be constructed or demolished under the proposed project. Workers for the proposed project include up to ten Natural Areas Program gardeners and groups of volunteers of up to 50 people. Any persons that relocate to fill vacant gardener positions would have a negligible effect on the City's population. Because it is assumed that volunteers reside in the San Francisco Bay Area, the project would not induce substantial population growth, displace substantial numbers of housing units or residents, or create demand for additional housing. The project would have no impacts on population and housing.

These topics will not be discussed in the Environmental Impact Report.

E.4 CULTURAL AND PALEONTOLOGICAL RESOURCES

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
4.	**CULTURAL AND PALEONTOLOGICAL RESOURCES—Would the project:**					
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5, including those resources listed in Article 10 or Article 11 of the San Francisco *Planning Code*?	☐	☒	☐	☐	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☒	☐	☐	☐	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐	☐
d)	Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐	☐

In this Initial Study, the Potentially Significant Impact designation is being used solely to identify those topics that will be addressed in detail in the Environmental Impact Report for this project and does not reflect the findings of any preliminary impact analysis. Those topics are being included in the Environmental Impact Report because there is not sufficient information available at this time on the potentially affected resources or site conditions.

Under CEQA, cultural resources[23] listed on, or determined to be eligible for listing on, the California Register of Historical Resources (CRHR) or a local register are those that must be given consideration in the CEQA process. The CRHR is in the California Code of Regulations Title 14, Chapter 11.5. According to this code, properties listed on or formally determined eligible for listing on the National Register of Historic Properties (NRHP) are automatically eligible for listing on the CRHR. A resource is generally considered to be historically significant under CEQA if it meets the criteria for listing on the CRHR.

A resource is considered eligible for inclusion on the CRHR, and therefore a historical resource under CEQA, if it is at least 45 years of age. To be eligible for listing to the CRHR under Criteria 1, 2, or 3, a resource must contain artifact assemblages, features, or stratigraphic relationships associated with important events, or important persons, or be exemplary of a type, period, or method of construction. To be eligible under Criterion 4, a resource need only show the *potential* to yield important information.

[23]Cultural resource—a generic term that may be used to refer to architectural resources, archaeological resources, and/or traditional cultural properties.

CEQA requires that the effects of a project on an archeological resource shall be taken into consideration. CEQA recognizes archeological resources as being potential instances of a "unique archaeological resource" or of a "historical resource". However, it must first be determined if the archeological resource is a historical resource, that is, if the archeological resource meets the criteria for listing in the CRHR. An archeological resource that qualifies as a historical resource under CEQA generally, qualifies for listing under Criterion 4 of the CRHR. An archeological resource may qualify for listing under Criterion 4 when it can be demonstrated that the resource has the potential to significantly contribute to questions of scientific/historical importance. The research value of an archeological resource can only be evaluated within the context of the prehistoric/historical background of the site of the resource and within the context of prior archeological research related to the property type.

Archaeological artifacts, objects, or sites that do not meet the above criteria are not considered unique archaeological resources. Impacts on archaeological resources that are not unique and those that do not qualify for listing on the CRHR or a local register receive no further consideration under CEQA.

Paleontological resources[24] include fossilized remains or traces of animals, plants, and invertebrates, including their imprints, from a previous geological period. Collecting localities and the geologic formations containing those localities are also considered paleontological resources. They represent a limited, nonrenewable, and impact-sensitive scientific and educational resource.

Impacts on Native American burials are considered under PRC 15064.5(d)(1). When an initial study identifies the existence of, or the probable likelihood of, Native American human remains within the project, the lead agency is required to work with the appropriate Native Americans, as identified by the California Native American Heritage Commission (NAHC). The CEQA lead agency may develop an agreement with the appropriate Native Americans for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials. By implementing such an agreement, the project becomes exempt from the general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5) and the requirements of CEQA pertaining to Native American human remains.

The SFRPD's treatment of human remains and of associated or unassociated funerary objects discovered during any soils-disturbing activity would comply with applicable state laws. This would include immediate notification of the CCSF Coroner for discoveries in San Francisco County Natural Areas or the San

[24]Paleontological resource—fossilized remains or traces of animals, plants, and invertebrates, including their imprints, from a previous geological period.

Mateo County Coroner for discoveries at Sharp Park. If the Coroner were to determine that the remains are Native American, the NAHC would be notified and would appoint a Most Likely Descendant (PRC 5097.98). The archaeologist, SFRPD, and the Most Likely Descendant would make all reasonable efforts to develop an agreement for the dignified treatment of human remains and funerary objects (CEQA Guidelines Sec. 15064.5[d]). The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and funerary objects. State law allows 24 hours to reach agreement on these matters. If the Most Likely Descendants do not agree on the reburial method, the SFRPD would follow Section 5097.98(b) of the California PRC, which states "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

Different CEQA areas of potential effects (C-APEs) were used to determine the potential impacts on historical architectural and archaeological resources that could result from the proposed project. The C-APE used here for archaeological resources is considered preliminary. The C-APE for both categories of resources was defined for the proposed project as the surface and subsurface areas that would be directly affected by ground disturbance and project activities and is generally considered to be the boundary of each Natural Area. The architectural C-APE was established to also address nearby historical resources that could be indirectly affected. In general, the architectural C-APE includes historical resources from which the Natural Areas and their associated activities would be audible and/or visible.

To determine project impacts on the various types of cultural resources, a records search was requested in June 2008 from the California Historical Resources Information System's Northwest Information Center (NWIC) at Sonoma State University (File No. 07-1792). The records search indicated there are various types of cultural resources within or next to six of the 31 Natural Areas. One historic building, the Golden Gate Park Conservatory (CA-SFR-37H [P-38-0037]), is adjacent to the Golden Gate Park Oak Woodland Natural Area (oak woodland, Lily Pond, and Whiskey Hill). Historic canal features associated with the Spring Valley Water Company's water system (CA-SFR-102H [P-38-0093]) are within the Lake Merced Natural Area. The Pine Lake Natural Area is part of the historic district of Stern Grove and Pine Lake Park (P-38-4472). An archaeological site (CA-SMA-114 [P-41-116]) containing "shell midden with some bone, chert chippage[25], and fire fractured rock" (Humphreys 1969) as well as some noted historic-era glass bottles is adjacent to the Sharp Park Natural Area. At the time

[25]Chippage—flakes resulting from the process of human modification to lithic materials.

of its recording, it was remarked that the site was almost entirely destroyed by erosion and construction.

Through coordination with SFRPD and the CCSF Historic Preservation Division, additional cultural resources, primarily architectural in nature, were identified that were not found through the NWIC records search. This includes the Golden Gate Park Historic District, which incorporates oak woodland, Lily Pond, Whiskey Hill, and Strawberry Hill. The historic district was listed on the NRHP in October 2004 (NRIS 2008; Nelson 2004) and is therefore included on the CRHR as well. Geographic information system (GIS) data provided by the SFRPD indicate that numerous historic-aged buildings and structures are known to be immediately adjacent to almost all of the Natural Areas. The Mount Davidson Cross is one of these resources, and it is mapped as within Mount Davidson. The absence of this resource and other resources in the GIS database in the NWIC records search indicates that the resource has not yet been formally documented and submitted to the California Office of Historic Preservation. Because of its historic age (45 years or older), the Mount Davidson Cross is considered a potential historical resource. To be formally determined a historical resource, the cross would need to be recorded and evaluated for eligibility for listing on the CRHR, in consultation with the CCSF Historic Preservation Division. Mount Davidson is also the location of Works Progress Administration stairs and retaining walls (SFRPD 2006). Seven Natural Areas contain documented cultural resources (archaeological and/or architectural); no cultural resources were documented within or adjacent to any of the remaining 24 Natural Areas (NWIC File No. 07-1792).

No surveys for architectural, archaeological, or paleontological resources have been conducted for this project. All of the Natural Areas were covered by a study of pre-Spanish ecology of the Bay Area (Mayfield 1978). Several cultural resources overviews and pedestrian surveys have been conducted within 8 of the 31 Natural Areas (NWIC File No. 07-1792). The Balboa Natural Area has been partially addressed in two overviews (Mayer 1995; Olmsted and Olmsted 1979) and one linear field survey (Chavez and Ramsey 1979). Bayview Park has been completely covered by a regional overview (Hupman and Chavez 2001) and partially covered by a linear field survey (Hupman and Chavez 2004). Hawk Hill has been fully covered by an archaeological field survey (CCSF 1987). India Basin Shoreline Park has been addressed by one cultural resource overview (Gualtieri and Wall 1987), one archaeological field survey (Praetzellis et al. 1994), and one linear archaeological field survey (Hupman and Chavez 1995). Lake Merced has been partially addressed in one regional cultural resource overview (Shoup and Baker 1981), three field surveys (David Chavez and Associates 1993; Heid 1964; Willer and Albee 1957), and one subsurface testing project (Chavez 1988). Palou-Phelps has been partially covered by three linear archaeological field surveys (BioSystems Analysis 1989; Nelson et al. 2002; Sawyer et al. 2000). Pine Lake has been entirely covered by a cultural landscape report with register evaluations

that included both archaeological and architectural field surveys (Bradley and Corbett 2004) and partially covered by a separate archaeological field survey (EDAW and Ward and Associates 2006). Sharp Park has had nine overviews and surveys within and adjacent to it. The Natural Area itself has been partially covered by three archaeological field surveys (Cartier 1984; Melandry 1977; Orlins and Schwaderer 1994), two linear archaeological field surveys (Clark 2006; Moratto 1974), and one archaeological field survey with a historic study and register evaluation (Clark 2007). The rest of the Natural Areas have not been covered by any field survey or a cultural resource overview specific to those areas.

The NAHC was contacted to determine the presence of sacred sites[26] within or near the project areas that could qualify as historical resources or unique archaeological resources or contain human burials. The NAHC responded on June 19, 2008 that no such resources were identified by their files. However, the NAHC did provide a list of five Ohlone/Costanoan groups and individuals traditionally affiliated with the region that may be able to identify undocumented resources. SFRPD mailed consultation letters to the suggested contacts on July 16, 2008 (Appendix B). At the time of this publication, no responses had been received.

A paleontological records search was requested through the University of California Museum of Paleontology (UCMP). The records search results indicated the presence of five vertebrate localities within two miles of Sharp Park (Holroyd 2008). There are also a number of invertebrate fossil localities recorded for in San Francisco, but none within or adjacent to the Natural Areas. No known paleontological resources are within or adjacent to any of the Natural Areas (Holroyd 2008).

Architectural resources are addressed under topic a) in this Initial Study, and archaeological resources are addressed under topic b).

a) Architectural Resources. Several historical architectural resources not yet evaluated for CRHR- or NRHP-eligibility were identified through the abovementioned NWIC records search and correspondence with CCSF Historic Preservation Division staff. No historical architectural resources listed in Article 10 or Article 11 of the San Francisco Planning Code are within the architectural C-APE (CCSF 2003a; CCSF 2003b). One San Francisco Landmark Tree, a blue elderberry tree, is in the Bernal Hill Natural Area at the corner of Folsom Street and Bernal Heights Boulevard. The overwhelming majority of the proposed project's architectural C-APE has not been previously surveyed for historical architectural resources. As such, the presence of historical architectural resources within the architectural C-APE of the proposed project is unknown at this time.

[26]Sacred site—locality of traditional significance or importance to a Native American community.

Several of the proposed general and site-specific management activities proposed in the SNRAMP could adversely affect historical architectural resources, where present. In general, these primarily include vegetation changes that may alter possible historic landscapes.

Therefore, significant impacts on historical architectural resources are possible. With implementation of Mitigation Measure M-CP-1, impacts on historical architectural resources would be reduced to less than significant. Historical architectural resources will not be discussed in the Environmental Impact Report.

b) Archaeological Resources. No archaeological resources were identified by the NWIC records search as within or immediately adjacent to any of the Natural Areas. However, the overwhelming majority of the archaeological C-APE has not been previously surveyed. Additionally, MEA staff have indicated that archaeological remains not on record at the NWIC, such as the 1894 Midwinter Fair and the Sharp Park Internment Camp, are known to exist within some of the Natural Areas. As such, the presence of archaeological resources within the archaeological C-APE (surface and subsurface) of the proposed project is unknown at this time. Given that the archaeological C-APE encompasses the majority of the remaining undeveloped land in the city, there is an increased possibility that intact archaeological deposits exist within the Natural Areas. Additionally, many of the Natural Areas are located in archaeologically sensitive areas (for both prehistoric and historic-era resources) based on their proximity to productive historic habitats and resource procurement locations (such as creeks, lacustrine environments, marshes, and rock outcrops). Several of the general and site-specific management activities proposed in the SNRAMP could adversely affect archaeological resources. In general, these activities primarily include ground-disturbing activities, such as tree and weed removal, livestock grazing, and activities associated with trail development and maintenance and erosion control.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

c) Paleontological Resources and Unique Geological Formations. The UCMP records search results indicated that there are no known paleontological resources within or adjacent to the Natural Areas, and no further studies are needed (Holroyd 2008). Many of the Natural Areas are on shallow or exposed bedrock and project activities may affect those geologic features. In general, ground-disturbing activities, such as those identified above with regard to archaeological resources, that reach bedrock could possibly impact unknown paleontological resources.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

d) Human Remains. The NWIC records search did not indicate that human remains have previously been encountered within the Natural Areas, nor did it indicate the presence of any modern or historic cemeteries (Humphreys 1853; GLO 1863, 1864a, 1864b; San Mateo County Chamber of Commerce 1931; USACE 1942a 1942b; USGS 1896, 1899, 1915a, 1915b; US Surveyor General 1856, 1857, 1859, 1864, 1868, 1871, 1886). The overwhelming majority of the archaeological C-APE has not been previously surveyed for archaeological resources that may include human remains. As such, the presence of human remains within the archaeological C-APE of the proposed project is unknown at this time. Given that the archaeological C-APE encompasses the majority of the remaining undeveloped land in the City, there is a possibility that intact burials exist within the Natural Areas. As with the archaeological resources discussed above, the location of many of the Natural Areas make them sensitive for prehistoric deposits, including human burials. Ground-disturbing activities, such as those identified above under archaeological resources, would have the possibility to impact burials as well.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

E.5 TRANSPORTATION AND CIRCULATION

Topics:		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Not Applicable*
5.	**TRANSPORTATION AND CIRCULATION— Would the project:**					
a)	Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☐	☐	☒	☐	☐
b)	Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways (unless it is practical to achieve the standard through increased use of alternative transportation modes)?	☐	☐	☒	☐	☐
c)	Result in a change in air traffic patterns, including either an increase in traffic levels, obstructions to flight, or a change in location, that results in substantial safety risks?	☐	☐	☐	☒	☐
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?	☐	☐	☐	☐	☒
e)	Result in inadequate emergency access?	☐	☐	☐	☒	☐
f)	Result in inadequate parking capacity that could not be accommodated by alternative solutions?	☐	☐	☒	☐	☐
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., conflict with policies promoting bus turnouts, bicycle racks, etc.), or cause a substantial increase in transit demand which cannot be accommodated by existing or proposed transit capacity or alternative travel modes?	☐	☐	☐	☒	☐

a, b) While vehicles would be used during project implementation, the frequency of road trips by those vehicles would be minimal. Workers for the proposed project would either be the ten Natural Areas Program gardeners or periodic groups of volunteers of up to 50 people, with an average group size closer to 10 people. It is assumed that volunteers reside in the San Francisco Bay Area. Also the number and frequency of volunteer groups is expected to be similar to current levels. While visitor numbers may increase, most of the visitors would be locals who would walk or bike to the Natural Areas. As a result, the project would not exceed any level of service standard and would have less than significant impacts on traffic load and capacity of the street system.

These topics will not be discussed in the Environmental Impact Report.

c) The project sites are not in the vicinity of any airports, and the proposed project does not include any activities that would affect air traffic patterns, so there would be no impacts on air traffic.

This topic will not be discussed in the Environmental Impact Report.

d) The proposed project involves the long-term management of the Natural Areas. The proposed project does not include road designs, and therefore the increase in hazards due to design features is not applicable to this project.

This topic will not be discussed in the Environmental Impact Report.

e) Implementation of the proposed project would be within the existing Natural Areas and would not disrupt the access to any adjacent facility or residence. Therefore, no impact on emergency access would result from the proposed project.

This topic will not be discussed in the Environmental Impact Report.

f) The minimal number of trucks or other motor vehicles that would be used during the implementation of the proposed project would either park within the boundaries of the Natural Areas or in available parking spaces in the vicinity. However, the number of trucks or other vehicles that would be used is negligible (typically no more than one vehicle per day at a given Natural Area), and one public parking space at a given Natural Area may be used for a short duration during the day. The demand for parking would increase on those days when volunteer groups are involved in management activities. Impacts on parking as a result of the proposed project would be less than significant.

This topic will not be discussed in the Environmental Impact Report.

g) The proposed project does not include any activities that would affect alternative transportation facilities or use, so it would have no impacts on alternative transportation.

This topic will not be discussed in the Environmental Impact Report.

E.6 NOISE

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
6.	**NOISE—Would the project:**					
a)	Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐	☐
b)	Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒	☐
c)	Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐	☐
d)	Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐	☐
e)	For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?	☐	☐	☐	☐	☒
f)	For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	☒
g)	Be substantially affected by existing noise levels?	☐	☐	☐	☒	☐

a, d) The project would not generate noise that would exceed standards established in the local general plan or noise ordinance or applicable standards of other agencies. Equipment anticipated to be used during the project includes chain saws, power hedge trimmers, power pruners, gas-powered water pumps, augers, power drills, and cherry pickers[27]. Vehicles would primarily be pickup trucks. During project implementation, equipment operation associated with the management of the Natural Areas, such as weeding and tree removal, would temporarily increase noise levels in the immediate vicinity of the management areas. Although most of the Natural Areas are located within residential districts, the project's implementation would not require extensive use of heavy equipment. Individual pieces of equipment used would comply with the noise limits of the San Francisco Noise Ordinance (Article 29 of the San Francisco Police Code) for the Natural Areas within San Francisco and the San Mateo County noise ordinance for management activities in Sharp Park. Further, potential noise impacts are expected to be discontinuous and of very short

[27]Cherry picker—a maneuverable vertical boom with an open bucket or cage at the end from which a worker can perform aerial work such as pruning trees or repairing electrical lines.

duration during the day time. As a result, the impacts associated with noise exposure and temporary ambient noise[28] levels would be less than significant.

These topics will not be discussed in the Environmental Impact Report.

b) The project would not add to the permanent groundborne vibration resulting from the regular traffic in the vicinity of the management areas. Temporary use of the anticipated mechanical equipment would not result in significant groundborne vibration. Because trees would typically be removed limb by limb, tree removal would not cause groundborne vibrations. Additionally, trees would be removed within restricted areas, away from the visitors and nearby residents. Therefore, the project would not result in groundborne vibration or noise impacts.

This topic will not be discussed in the Environmental Impact Report.

c) Using mechanical equipment would increase noise levels, but this noise would be temporary and discontinuous, associated with tree removal, trail creation, and invasive vegetation removal. Because the noise levels are expected to be low and the project would be required to comply with the San Francisco Noise Ordinance (Article 29 of the San Francisco Police Code), the project would not result in substantial permanent increases in ambient noise levels.

These topics will not be discussed in the Environmental Impact Report.

e, f) There would be no impact on noise levels around an airport/airstrip because there are no airports/airstrips in the vicinity of the project site.

These topics will not be discussed in the Environmental Impact Report.

g) The project sites are within urbanized areas of San Francisco and Pacifica. The management of the Natural Areas would not be affected by the existing noise levels.

This topic will not be discussed in the Environmental Impact Report.

[28] Ambient noise—the background noise in an area or environment, being a composite of sounds from many sources near and far.

E.7 AIR QUALITY

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
7.	**AIR QUALITY** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**					
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒	☐
b)	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐	☐
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal, state, or regional ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐	☐
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐	☐
f)	Conflict with the state goal of reducing greenhouse gas emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32 (California Global Warming Solutions Act of 2006), such that the project's greenhouse gas emissions would result in a substantial contribution to global climate change or conflict with the San Francisco Local Greenhouse Gas Ordinance?	☐	☐	☒	☐	☐

a) The project involves management of the Natural Areas and includes reintroduction of sensitive species, tree removal in conformance with forestry statements, and erosion-control measures. None of those activities would generate air pollutants that would conflict with applicable air quality plans or standards and conflict with or obstruct implementation of current air quality plans. Therefore, no impacts related to conflicting with or obstructing implementation of the applicable air quality plan would result from the project.

This topic is not discussed in the Environmental Impact Report.

b) The proposed project is within the San Francisco Bay Area Air Basin (SFBAB) and is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). Within the SFBAB, ambient air[29] quality standards for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), inhalable

[29] Ambient air—outside air; any portion of the atmosphere not confined by walls and a roof.

and fine particulate matter[30] (PM_{10} and $PM_{2.5}$), and lead (Pb) have been set forth by both the State of California and the federal government. California has also set standards for sulfate and visibility. Because SFBAB is designated nonattainment for ozone, PM_{10}, and $PM_{2.5}$, the BAAQMD developed the 2000 Clean Air Plan and adopted the 2005 Ozone Strategy, in January 2006, as the air quality management plan for achieving the state ozone standards. No formal air quality plans are required for the state PM_{10} or $PM_{2.5}$ standards, but the BAAQMD has identified an implementation schedule for new rules and regulations to reduce particulate matter emissions.

Long-Term (Operational) Emissions

Long-term air emissions impacts are typically associated with a change in permanent use of the project site by on-site stationary sources and off-site mobile sources that substantially increase vehicle trip emissions. There are no stationary sources associated with the proposed project, and potential pollutant emissions resulting from motor vehicles accessing the project sites would be similar to what occurs currently as part of ongoing management activities and visitors to the Natural Areas. As discussed in the transportation and circulation section of this document, visitor numbers may increase, but most visitors would be local residents who walk or bike to the Natural Areas; as such, vehicle trips are not expected to increase. Therefore, no additional long-term emissions would result from implementing the proposed project, and long-term emissions impacts would be less than significant.

Short-Term (Implementation) Emissions

Air pollutant emissions associated with implementation of the proposed project would occur over the short term. Management of the Natural Areas could generate exhaust emissions that would affect local air quality and emit greenhouse gases (GHGs).

Management activities could generate combustion emissions from use of chain saws, power hedge trimmers, power pruners, gas-powered water pumps, augers, power drills, cherry pickers, brush blades, string trimmers, mowers, and motor vehicles. Exhaust emissions during implementation would vary daily as management activity levels change. The use of motorized equipment would result in localized exhaust and GHG emissions; however, those equipment types are currently used, and levels of use are expected to be similar to current levels. Due to this and the limited extent of management activities, the projected short-term emissions of criteria pollutants as a result of project activities are expected to be below emissions thresholds established by the BAAQMD, resulting in less than significant impacts. Similarly, because GHG emissions from management activities would be similar to current levels, emissions of GHGs from the project would have less than significant impacts.

[30]Particulate matter—tiny solid or liquid particles, generally soot and aerosols.

This topic is not discussed in the Environmental Impact Report.

c) Implementation of the project's components would result in minimal emissions (motor vehicles and equipment used during the management activities) and particulate matter (from fugitive dust). The project's activities in the San Francisco Natural Areas could cause a temporary increase in particulate matter emissions associated with the management activities, such as removal of trees and other invasive species and the use of light equipment and motor vehicles. Emissions associated with the management activities would vary, depending on the level of activity and specific operation. Because proposed management activities would be similar to current activities and, due to the limited nature of those activities, emissions of criteria pollutants would have less than significant impacts. The San Francisco Board of Supervisors approved a series of amendments to the San Francisco Building and Health Codes, generally referred hereto as the Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008). The amendments would reduce the quantity of dust generated during site preparation, demolition, and construction in order to protect the health of the general public and of on-site workers and to minimize public nuisance complaints. It specifies that construction managers comply with specified dust control measures during site preparation, demolition, or other construction within San Francisco that could create dust or expose or disturb more than 10 cubic yards or 500 square feet of soil. Examples of dust control are wetting down areas near soil improvement operations and limiting the areas subject to excavation and grading at any one time. The proposed project would comply with this ordinance. Therefore, impacts of fugitive dust emissions that would result from management activities at the San Francisco Natural Areas would be less than significant.

Fugitive dust emissions in Sharp Park would be similar to those in the San Francisco Natural Areas and could cause a temporary increase in particulate matter emissions. To reduce the impact of particulate matter emissions during management activities, the SFRPD would implement, as applicable and depending on the level of activity, the BAAQMD recommendations, as detailed in Mitigation Measures M-AQ-1.

Additionally, to further control exhaust in all Natural Areas, the SFRPD would implement M-AQ-2. Compliance with the San Francisco Dust Control Ordinance and implementation of the Mitigation Measures M-AQ-1 and M-AQ-2 would reduce impacts of particulate matter and exhaust to less than significant levels.

This topic is not discussed in the Environmental Impact Report.

d) Land uses such as schools, children's day care centers, hospitals, and convalescent homes are considered to be more sensitive to poor air quality than the general public because the population groups associated with these places

have increased susceptibility to respiratory distress. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are considered more sensitive to air quality conditions than commercial and industrial areas because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational areas are also considered sensitive receptors, due to the greater exposure of users to ambient air quality conditions and because the presence of pollution detracts from the user's recreational experience. The project would be within and/or adjacent to residential, school, and recreational areas, as well as commercial areas. The SFRPD would comply with Section 93115, Title 17, California Code of Regulations, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements, emission standards for operating any stationary, diesel-fueled, compression-ignition engines, and operation restrictions within 500 feet of school grounds when school is in session.

Fugitive dust[31] emissions are associated with land clearing, trail creation, and tree removal. Dust generated daily during implementation would vary substantially, depending on the level of activity, the specific operations, and weather conditions. Nearby sensitive receptors[32] and on-site workers may be exposed on a limited basis to blowing dust, depending on the prevailing wind. The BAAQMD emphasizes implementing effective and comprehensive control measures rather than detailed quantification of construction emissions. It recommends implementing all feasible control measures based on the size of the construction area and nature of activities that would occur.

Where applicable, the project proponents would comply with the Construction Dust Control Ordinance. For Sharp Park, the SFRPD would implement BAAQMD recommendations, outlined in Mitigation Measure M-AQ-1 during management activities, such as land clearing, trail creation, and tree removal. Further, the SFRPD would implement Mitigation Measure M-AQ-2 to limit exhaust emissions during applicable management activities in all the Natural Areas. By implementing these mitigation measures, fugitive dust emissions from management activities would be reduced to less than significant.

This topic will not be discussed in the Environmental Impact Report.

e) Organic material in soil can decompose through anaerobic processes[33] and generate methane and hydrogen sulfide gases, which can then be released into

[31]Fugitive dust—fugitive emissions generally refer to those emissions that are released to the atmosphere by some means other than through a stack or tailpipe.

[32]Sensitive receptors—people or institutions with people that are particularly susceptible to illness from environmental pollution, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise.

[33]Anaerobic processes—**a** process which only occurs in the absence of molecular oxygen.

the environment when the soil is exposed. Soil excavation associated with the management activities would be minimal and temporary, and therefore would not generate odors that would affect a substantial number of people. Equipment exhaust could occasionally emit odors attributed to gasoline combustion, but these odors would not be significant. Implementation of Mitigation Measure M-AQ-2 would further reduce the magnitude of this less than significant impact.

This topic will not be discussed in the Environmental Impact Report.

f) Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as a driving force for global climate change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and anthropogenic activities that alter the composition of the global atmosphere.

Individual projects contribute to the cumulative effects of climate change by emitting GHGs during demolition, construction, and operational phases. The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. (Ozone also contributes to the retention of heat, though it is not directly emitted but is formed from other gases in the troposphere, the lowest level of the earth's atmosphere.) While the presence of the primary GHGs in the atmosphere are naturally occurring, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are largely emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Carbon dioxide is the "reference gas" for climate change, meaning that emissions of GHGs are typically reported in "carbon dioxide-equivalent" measures. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs, with much greater heat-absorption potential than carbon dioxide, include hydro fluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes. There is international scientific consensus that human-caused increases in GHGs have contributed to global warming and will continue to do so, although there is uncertainty concerning the magnitude and rate of the warming. Potential global warming impacts in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years.[34] Secondary effects are likely to include a global rise in sea level, impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity.

[34]California Air Resources Board (ARB), 2006a. Climate Change website (http://www.arb.ca.gov/cc/120106workshop/intropres12106.pdf) accessed December 4, 2007.

The California Energy Commission (CEC) estimated that in 2004 California produced 500 million gross metric tons (about 550 million US tons) of carbon dioxide-equivalent GHG emissions.[35] The CEC found that transportation is the source of 38 percent of the state's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent, and industrial sources at 13 percent.[36] In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for just over half of the 85 million tons of GHG emissions in 2002 in the Bay Area. Industrial and commercial sources were the second largest contributors of GHG emissions, with about one-fourth of total emissions. Domestic sources (e.g., home water heaters and furnaces) account for about 11 percent of the Bay Area's GHG emissions, followed by power plants at 7 percent. Oil refining accounts for approximately 6 percent of the total Bay Area GHG emissions.[37]

Statewide Actions

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emissions of GHG would be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.[38]

California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), which requires the California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

AB 32 establishes a timetable for the CARB to adopt emission limits, rules, and regulations designed to achieve the intent of the act. CARB staff is preparing a scoping plan to meet the 2020 GHG reduction limits outlined in AB 32. In order to meet these goals, California must reduce its GHG by 30 percent below

[35]Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

[36]California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 - Final Staff Report*, publication # CEC-600-2006-013-SF, December 22, 2006; and January 23, 2007 update to that report. Available on the internet at: http://www.arb.ca.gov/cc/ccei/emsinv/emsinv.htm.

[37]BAAQMD, *Source Inventory of Bay Area Greenhouse Gas Emissions: Base Year 2002*, November 2006. Available on the internet at: http://www.baaqmd.gov/pln/ghg_emission_inventory.pdf.

[38]California Air Resources Board (CARB), *Climate Change Draft Scoping Plan: A Framework for Change,* June 2008 Discussion Draft. Available on the internet at: http://www.climatechange.ca.gov/index.php. Accessed July 29, 2008.

projected 2020 business as usual emissions levels, or about 10 percent from 2006's levels. In June 2008, CARB released its Draft Scoping Plan, which estimates a reduction of 169 million metric tons of CO_2-equivalents ($MMTCO_2$-eq). Approximately one-third of the emissions reductions strategies fall within the transportation sector and include the following: California Light-Duty Vehicle GHG standards, the Low Carbon Fuel Standard, Heavy-Duty Vehicle GHG emission reductions and energy efficiency, and medium and heavy-duty vehicle hybridization, high speed rail, and efficiency improvements in goods movement. These measures are expected to reduce GHG emissions by 60.2 $MMTCO_2$-eq. Emissions from the electricity sector are expected to reduce another 49.7 $MMTCO_2$-eq. Reductions from the electricity sector include building and appliance energy efficiency and conservation, increased combined heat and power, solar water heating (AB 1470), the renewable energy portfolio standard (33 percent renewable energy by 2020), and the existing million solar roofs program. Other reductions are expected from industrial sources, agriculture, forestry, recycling and waste, water, and emissions reductions from cap-and-trade programs. Local government actions and regional GHG targets are also expected to yield a reduction of 2 $MMTCO_2$-eq.[39] Measures that could become effective during implementation of the SNRAMP pertain to construction-related equipment and sustainable forest practices. Some proposed measures will require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Additionally, some emissions reductions strategies may require their own environmental review under CEQA or the National Environmental Policy Act. Applicable measures that are ultimately adopted will become effective during implementation of proposed project and the proposed project could be subject to these requirements, depending on the proposed project's timeline.

Local Actions

San Francisco has a history of environmental protection policies and programs aimed at improving the quality of life for residents and reducing impacts on the environment. The following plans, policies, and legislation demonstrate San Francisco's continued commitment to environmental protection.

Transit First Policy

In 1973, San Francisco instituted the Transit First Policy, which added Section 16.102 to the City Charter with the goal of reducing the City's reliance on freeways and meeting transportation needs by emphasizing mass transportation. The Transit First Policy gives priority to public transit investments, adopts street capacity and parking policies to discourage increased automobile traffic, and encourages the use of transit, bicycling, and walking rather than use of single-occupant vehicles.

[39] Ibid.

San Francisco Sustainability Plan

In July 1997 the Board of Supervisors approved the Sustainability Plan for the City of San Francisco, establishing sustainable development as a fundamental goal of municipal public policy.

The Electricity Resource Plan (Revised December 2002)

San Francisco adopted the Electricity Resource Plan to help address growing environmental health concerns in San Francisco's southeast community, home of two power plants. The plan presents a framework for ensuring a reliable, affordable, and renewable source of energy for the future of San Francisco.

The Climate Action Plan for San Francisco

In February 2002, the San Francisco Board of Supervisors passed the Greenhouse Gas Emissions Reduction Resolution (Number 158-02), committing the City and County of San Francisco to a GHG emissions reduction goal of 20 percent below 1990 levels by the year 2012. In September 2004, the San Francisco Department of the Environment and the Public Utilities Commission published the Climate Action Plan for San Francisco: Local Actions to Reduce Greenhouse Gas Emissions.[40] The Climate Action Plan provides the context of climate change in San Francisco and examines strategies to meet the 20 percent GHG reduction target. Although the Board of Supervisors has not formally committed the City to perform the actions addressed in the plan, and many of the actions require further development and commitment of resources, the plan serves as a blueprint for GHG emission reductions, and several actions have been implemented or are now in progress.

San Francisco Municipal Transportation Agency's Zero Emissions 2020 Plan

The SFMTA's Zero Emissions 2020 plan focuses on the purchase of cleaner transit buses, including hybrid diesel-electric buses. Under this plan hybrid buses will replace the oldest diesel buses, some dating back to 1988. The hybrid buses emit 95 percent less particle matter (or soot) than the buses they replace, they produce 40 percent less oxides of nitrogen (NOx), and they reduce GHG by 30 percent.

LEED Silver for Municipal Buildings

In 2004, the City amended Chapter 7 of the Environment code, requiring all new municipal construction and major renovation projects to achieve LEED Silver Certification from the US Green Building Council.

Greenhouse Gas Reduction Ordinance

In May 2008, San Francisco adopted an ordinance amending the San Francisco Environment Code to establish City GHG emission targets and departmental

[40]San Francisco Department of the Environment and San Francisco Public Utilities Commission, *Climate Action Plan for San Francisco*, Local Actions to Reduce Greenhouse Emissions, September 2004.

action plans, to authorize the Department of the Environment to coordinate efforts to meet these targets and to make environmental findings. The ordinance establishes the following GHG reduction limits and the target dates to achieve them:

- Determine 1990 City GHG emissions by 2008, the baseline level with reference to which target reductions are set;
- Reduce GHG by 25 percent below 1990 levels by 2017;
- Reduce GHG by 40 percent below 1990 levels by 2025; and
- Reduce GHG by 80 percent below 1990 levels by 2050.

The ordinance also specifies requirements for City departments to prepare departmental Climate Action Plans and report to the Department of the Environment GHG emissions associated with the department's activities and activities that they regulate and to prepare recommendations to reduce emissions. As part of this, the San Francisco Planning Department is required to: (1) update and amend the City's applicable General Plan elements to include the emissions reduction limits set forth in this ordinance and policies to achieve those targets; (2) consider a project's impact on the City's GHG reduction limits specified in this ordinance as part of its review under CEQA; and (3) work with other City departments to enhance the "transit first" policy to encourage a shift to sustainable modes of transportation thereby reducing emissions and helping to achieve the targets set forth by this ordinance.

GoSolarSF

On July 1, 2008, the San Francisco Public Utilities Commission (SFPUC) launched its "GoSolarSF" program to San Francisco's businesses and residents, offering incentives in the form of a rebate program that could pay for approximately half the cost of installation of a solar power system, and more to those qualifying as low-income residents.

City of San Francisco's Green Building Ordinance

On August 4, 2008, Mayor Gavin Newsom signed into law San Francisco's Green Building Ordinance for newly constructed residential and commercial buildings and renovations to existing buildings. The ordinance specifically requires newly constructed commercial buildings over 5,000 square feet, residential buildings over 75 feet in height, and renovations on buildings over 25,000 sq. ft. to be subject to an unprecedented level of LEED and green building certifications, which makes San Francisco the city with the most stringent green building requirements in the nation. Cumulative benefits of this ordinance include reducing CO_2 emissions by 60,000 tons, saving 220,000 megawatt hours of power, saving 100 million gallons of drinking water, reducing wastewater and stormwater by 90 million gallons of water, reducing construction and demolition waste by 700 million pounds, increasing the valuations of recycled materials by

$200 million, reducing automobile trips by 540,000, and increasing green power generation by 37,000 megawatt hours.[41]

The Green Building Ordinance also continues San Francisco's efforts to reduce its GHG emissions to 20 percent below 1990 levels by 2012, a goal outlined in the City's 2004 Climate Action Plan. In addition, by reducing emissions, this ordinance also furthers California's efforts to reduce GHG emissions statewide, as mandated by the California Global Warming Solutions Act of 2006.

The City has also passed ordinances to reduce waste from retail and commercial operations. Ordinance 295-06, the Food Waste Reduction Ordinance, prohibits the use of polystyrene foam disposable food service ware and requires biodegradable/compostable or recyclable food service ware by restaurants, retail food vendors, City Departments, and City contractors. Ordinance 81-07, the Plastic Bag Reduction Ordinance, requires stores in the City and County of San Francisco to use compostable plastic, recyclable paper, and reusable checkout bags.

The San Francisco Planning Department and Department of Building Inspection have also developed a streamlining process for Solar Photovoltaic (PV) Permits and priority permitting mechanisms for projects pursuing LEED Gold Certification.

The City's Planning Code reflects the latest smart growth policies and includes electric vehicle refueling stations in City parking garages, bicycle storage facilities for commercial and office buildings, and zoning that is supportive of high density mixed-use infill development. The City's more recent area plans, such as Rincon Hill and the Market and Octavia Area Plan, provide transit-oriented development policies. At the same time there is also a community-wide focus on ensuring San Francisco's neighborhoods as "livable," including the Better Streets Plan that would improve streetscape policies throughout the city, the Transit Effectiveness Plan, that aims to improve transit service, and the Bicycle Plan, all of which promote alternative transportation options. The CCSF also provides incentives to its employees to use alternative commute modes, and the CCSF recently introduced legislation that would require almost all employers to have comparable programs.

Each of the policies and ordinances discussed above include measures that would decrease the amount of GHG emitted into the atmosphere and decrease San Francisco's overall contribution to climate change.

[41]These findings are contained within the final Green Building Ordinance, signed by the Mayor on August 4, 2008.

Impacts

As previously discussed, implementing the SNRAMP would generate GHGs from the use of chainsaws, power hedge trimmers, power pruners, gas-powered water pumps, augers, power drills, cherry pickers, brush blades, string trimmers, mowers, and motor vehicles. However, the SFRPD uses these equipment types, and future levels of use for managing the Natural Areas are expected to be similar to current levels. Therefore, GHG emissions from implementing the SNRAMP would be relatively similar to current levels.

Similarly, while visitor use is generally expected to increase slightly from management activities identified in the SNRAMP, most visitors would be local residents who would walk or bike to the Natural Areas. Therefore, GHGs from vehicles used to access the Natural Areas would be relatively similar to current levels. As such, impacts of GHG emissions generated by implementing the management activities and the increased number of visitors would be less than significant.

Urban trees can help mitigate climate change by sequestering atmospheric carbon in tissue and by reducing energy use in buildings, consequently reducing carbon dioxide emissions from fossil fuel-based power plants. However, net carbon sequestration[42] can be negative if carbon emissions from decomposition is greater than the amount sequestered by healthy trees. There are an estimated 64,000 trees within the project area. The project includes the removal and replacement of approximately 3,448 trees, 97 percent of which are within the MA-1[43] and MA-2[44] urban forests. Trees would be removed to promote forest health and would focus on dead or dying trees, trees with disease or insect infestations, storm-damaged or hazardous trees, and trees whose growth is suppressed by overcrowding. Large tree trunks may be left on-site if they provide habitat value, or they may be used for recreation or maintenance within the Natural Area. Unless it can be used to create wildlife habitat, all large woody debris generated by the Natural Areas Program would be composted in Golden Gate Park. Although old large trees are good at storing carbon, they are not as effective as young trees at taking up carbon (Oxarart et al. 2007). Replacing dead, dying, and diseased trees that have limited capability to sequester carbon with young saplings that have long-term carbon sequestration capabilities would result in a net GHG benefit.

Further, most of the trees within the Natural Areas are nonnative and most are also invasive. The invasive forests within the Natural Areas are predominantly eucalyptus, although cypress, pine, and acacia also occur (SFRPD 2006). The

[42]Carbon sequestration—the removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, forests, and soils) through physical or biological processes, such as photosynthesis.

[43]MA-1 represents the priority areas for conservation and management activities.

[44]Areas designated MA-2 are comparatively more resilient to human disturbance than MA-1 areas.

long-term goal in MA-1 and MA-2 is to slowly convert those areas to native scrub, grassland habitats, or oak woodlands. According to an urban forest assessment for San Francisco, the total number of trees in San Francisco is 669,000. San Francisco trees and shrubs remove an estimated 260 tons of air pollution (CO, NO_2, O_3, PM_{10}, SO_2) per year. San Francisco trees sequester 5,200 tons of carbon dioxide annually, which is equivalent to the annual amount of carbon emitted by 3,100 cars (USDA 2007). San Francisco trees are estimated to store 196,000 tons of carbon, or the annual amount of carbon emitted by 118,000 cars (USDA 2007).

As trees die and decay, they release much of the stored carbon to the atmosphere. Thus, carbon storage is an indication of the amount of carbon that can be lost if trees are allowed to die and decompose. Of all the species in San Francisco, eucalyptus trees store and sequester the most carbon (approximately 24.4 percent of the total carbon stored and 16.3 percent of all sequestered carbon). Trees removed in the Natural Areas in San Francisco would be replaced on a one-to-one ratio, although not necessarily in the same location. Eucalyptus trees would be replaced with native trees. Although the net effect on carbon sequestration capacity is unknown for the proposed replacement of mature eucalyptus with native saplings, replacing dying trees with healthy trees typically enhances the carbon sequestration process. In fact, one of the urban forest management strategies to help improve air quality is to increase the number of healthy trees. Further, among mitigation measures recommended by the Intergovernmental Panel on Climate Change is forest management and in particular tree species selection that sequester the most carbon (IPCC 2007). As such, tree replacement is expected to result in a net increase in the amount of carbon sequestered within the Natural Areas. The total number of trees would not change within the Natural Areas of San Francisco and the amount of carbon sequestered would increase in the long term from replacing dead, dying, or diseased trees. Therefore, the project would not conflict with San Francisco's Greenhouse Gas Ordinance, which would result in less than significant individual and cumulative impacts from GHG emissions and the associated carbon sequestration impacts.

Trees removed in Sharp Park would be replaced with native grassland and scrub species. According to a study presented at the American Geophysical Union's meeting, grasslands above 50 degrees latitude reflects more sun than forest canopies, thereby keeping temperatures lower by an average of 0.8 degree Celsius. However, in the tropics, forests cool the planet by an average of 0.7 degree Celsius (Jha 2006). Research studies have concluded that grassland and scrub habitat could act as a significant carbon sink (Hu 2001; Conant 2001). Therefore, replacing the trees to be removed in Sharp Park with grassland and scrub habitat would not result in a substantial increase in GHG emissions, and impacts from GHG emissions would be less than significant.

The project would not conflict with California's goal of reducing GHG emissions set forth by the timetable established in AB32. Additionally, the project would not conflict with San Francisco's Climate Action Plan such that it would impede implementation of the local GHG reduction goals established by San Francisco's Greenhouse Gas Reduction Ordinance.

This topic will not be discussed in the Environmental Impact Report.

E.8 WIND AND SHADOW

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
8.	**WIND AND SHADOW—Would the project:**					
a)	Alter wind in a manner that substantially affects public areas?	☐	☐	☒	☐	☐
b)	Create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas?	☐	☐	☐	☒	☐

a) The project does not propose any aboveground structures that would alter wind. The project involves the preservation and restoration of the existing Natural Areas. While the CCSF has not established wind standards for recreational areas and open spaces, such as the Natural Areas, the San Francisco Planning Code has established a hazard level of 26 miles per hour for a single hour of the year for certain downtown areas. A total of 18,424 trees would be incrementally removed as part of the management activities. Of these, approximately 15,000 trees would be removed from Sharp Park. Tree removal of wind-toughened edge trees[45] could expose the interior of a stand of trees to unusual wind conditions. Trees removed within San Francisco would be replaced at a one-to-one ratio, although not necessarily in the same location. Within Sharp Park, trees would be removed in the upper canyon in an inaccessible area and would be replaced with native grassland and scrub species. Trees would be removed in accordance with the Urban Forestry Statements in Appendix F of the SNRAMP. In general, removal within the Natural Areas are planned to take individuals or very small groups of trees within existing forest and scrub habitats to avoid altering the wind conditions. As such, tree removal would not include wind-toughened edge trees and would not result in increased wind hazards or expose trees within a stand to high winds. Therefore, the potential wind hazard or windthrow[46] that would result from the project is expected to be less than significant.

This topic will not be discussed in the Environmental Impact Report.

b) Because the project does not propose any aboveground structures that would create new shadows, it would not result in shadow impacts.

This topic will not be discussed in the Environmental Impact Report.

[45]Wind-toughened edge trees—trees in a stand that have become tough or resistant to the wind.

[46]Windthrow—the effects of wind on a stand of trees.

E.9 RECREATION

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
9.	**RECREATION—Would the project:**					
a)	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	☒	☐	☐	☐	☐
b)	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☒	☐	☐	☐	☐
c)	Physically degrade existing recreational resources?	☒	☐	☐	☐	☐

In this Initial Study, the Potentially Significant Impact designation is being used solely to identify those topics that will be addressed in detail in the Environmental Impact Report for this project and does not reflect the findings of any preliminary impact analysis. Those topics are being included in the Environmental Impact Report because there is not sufficient information available at this time on the potentially affected resources or site conditions.

Recreation in the Natural Areas is generally considered to be passive recreation, that which requires no developed sites or facilities. Types of passive recreation include walking, hiking, running, dog walking, and nature watching. Almost all of the Natural Areas include trails, and most provide scenic views of San Francisco. Walking and biking trails were identified as one of the most important recreation facility needs for San Francisco residents according to the 2004 SFRPD Recreation Assessment (SFRPD 2004). Of the individuals surveyed for that assessment, 67 percent participated in running or walking, the highest percentage for any of the 26 activities identified in the survey. Other activities that San Francisco residents participate in included visiting nature areas (61 percent, second on the activities list), bicycling (38 percent, fifth on the activities list), volunteering (22 percent, tenth on the activities list), and dog walking (20 percent, twelfth on the activities list).

Because trails and trail-related activities are a main component of recreation in Natural Areas, the SNRAMP provides recommendations to develop site-stewardship and recreational uses compatible with natural resource protection. Two of the major actions proposed by the SNRAMP that would affect recreation are the modification and closure of trails and the reduction in space allotted for DPAs.

a) The project has the potential to increase the use of existing neighborhood and regional parks. According to the SFRPD Recreation Assessment, the condition of many SFRPD facilities is deteriorating, and the recreation facilities most important to residents are walking and biking trails (SFRPD 2004). The SNRAMP calls for the closure of 54,411 feet (10.31 miles) of trail. Trails could be closed because they are unsafe, because they are social trails, to protect sensitive species or habitat, or to prevent soil erosion. While some new trails would be created, the proposed project would cause a net decrease of 48,514 feet (9.2 miles), or 23.0 percent, of the trails within the Natural Areas. However, primary trails would be improved to provide a more manageable trail system with greater access and easier navigation through the parks. The Natural Areas could experience increased use because of the improved trail system.

The project calls for closing 19.3 acres (20.3 percent) of DPAs within the Natural Areas (Recommendations GR-8a, GR-8b, and GR-8c), which accounts for 16.4 percent of the total acres of SFRPD-maintained DPAs. Under the SNRAMP, the SFRPD would remove the Lake Merced DPA and would decrease the area of two DPAs, one on Bernal Hill and the other in McLaren Park. At least 2.5 acres of the proposed closures are largely inaccessible due to slopes of between 45 and 90 degrees. The possibility for the DPAs in McLaren Park and on Bernal Hill to degrade due to use being concentrated in a smaller area depends on the current and reasonably foreseeable future use of the areas. Through the SFRPD Final Dog Policy (SFRPD 2002), DPAs are to be reviewed every three years for, among other things, degradation of the area.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

b) The SNRAMP promotes passive recreation, or recreation that doesn't require the use of developed sites or facilities. Types of passive recreation include walking, hiking, running, dog walking, and nature watching. Approximately 211,303 feet (40.0 miles) of trail currently exist within the Natural Areas. This includes primary and secondary trails officially designated as routes and social trails that have not been officially designated and are usually user-created trails. The SNRAMP calls for the creation of 5,897 feet (1.1 miles) of new trails and the closure or rerouting of 54,411 feet (10.31 miles) of existing trails. As discussed above, trails could be closed because they are unsafe, because they are social trails, to protect sensitive species or habitat, or to prevent soil erosion. This is a net decrease of 48,514 feet (9.2 miles), or 23.0 percent, of trails within the Natural Areas.

The SFRPD would create new trails primarily in MA-2 and MA-3 areas. Trail placement in these areas would avoid sensitive vegetation and habitat. However, clearing trails for public use could involve removal of vegetation and cause short-term soil erosion.

Of the 95.2 acres of DPAs within the Natural Areas, 19.3 acres (20.3 percent) are proposed for closure (Recommendations GR-8a, GR-8b, and GR-8c). This accounts for 16.4 percent of the total acres of SFRPD-maintained DPAs. Under the SNRAMP, SFRPD would remove the Lake Merced DPA and would decrease the area of two DPAs, one on Bernal Hill and the other in McLaren Park. These DPAs are in areas with sensitive vegetation or habitat that require additional protection. The Lake Merced DPA would be closed in accordance with the SFRPD Final Dog Policy (SFRPD 2002). The SNRAMP also calls for the monitoring of DPAs for impact on oak woodlands at Buena Vista, Golden Gate Park Northeast, and MA-1 areas of the McLaren Park Shelley Loop.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

c) To address degradation of trails, the project proposes regular maintenance of these resources (Recommendation GR-11a). Posting interpretive signs that educate the public about the sensitive species and habitat in the area and that inform users about why off-trail use is discouraged (Recommendations GR-11c, GR-14b, and GR-14c) would prevent users from creating new social trails.

In the short-term, recreational resources, including trails, DPAs, and scenic viewing areas, could be temporarily closed for restoration efforts if necessary.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

E.10 UTILITIES AND SERVICE SYSTEMS

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
10.	**UTILITIES AND SERVICE SYSTEMS—Would the project:**					
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☐	☒
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☐	☒
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☐	☒
d)	Have sufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements?	☐	☐	☒	☐	☐
e)	Result in a determination by the wastewater treatment provider that would serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☐	☒
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒	☐
h)	Disrupt operation of or require relocation of local utilities?	☐	☐	☒	☐	☐

a – c, e) The project would not generate wastewater and would not result in the construction of new water, wastewater, or stormwater facilities or the expansions of existing facilities. Therefore, those criteria are not applicable to the project.

These topics will not be discussed in the Environmental Impact Report.

d) Reintroducing native species and replacing trees would require irrigation until they become established. However, irrigation needs would be met by existing water supply capacity and would not require new or expanded water supply resources. Therefore, impacts on water supply would be less than significant.

This topic will not be discussed in the Environmental Impact Report.

f) Minor quantities of solid waste and recyclable material would be generated during the management of the Natural Areas. Unless it can be used to create

wildlife habitat, all large woody debris generated by the Natural Areas Program would be composted in Golden Gate Park. The wood chips may be used to suppress understory invasive vegetation or could be used as beneficial mulch on other revegetation projects in the Natural Areas. Also, large tree trunks may be left on site if they provide habitat value, or they may be used for recreational or maintenance purposes within the Natural Area. As such, the project would not impact landfill capacity.

This topic will not be discussed in the Environmental Impact Report.

g) Solid waste and recyclable material would continue to be managed in accordance with federal, state, or local regulations, resulting in no impacts.

This topic will not be discussed in the Environmental Impact Report.

h) With the exception of two pipelines that cross the Duncan-Castro Natural Area and may need to be removed, relocated, or buried, no other disruption or relocation of utilities is required as part of this project. The two Duncan-Castro pipelines are at the ground surface and currently pose a safety hazard. Because any actions taken regarding these pipelines would be done in such a way as to minimize service disruptions, the project would have less than significant impacts with regards to the operation of local utilities.

This topic will not be discussed in the Environmental Impact Report.

E.11 PUBLIC SERVICES

Topics:		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*	*Not Applicable*
11.	**PUBLIC SERVICES— Would the project:**					
a)	Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any public services such as fire protection, police protection, schools, parks, or other services?	☐	☐	☐	☒	☐

a) The project would restore and manage the Natural Areas. The project does not propose any new on-site structures that would bring new residents to the project area, requiring new schools, parks, or other services. No new public services would be required. Workers for the proposed project would either be the ten Natural Areas Program gardeners or groups of volunteers of up to 50 people. The assumption is that the volunteers already reside in the San Francisco Bay Area. Potential increases in visitor use levels, as a result of improved Natural Areas and population growth, would be adequately served by the existing capabilities of service providers. Therefore, the project would not affect public services or public service providers.

This topic will not be discussed in the Environmental Impact Report.

E.12 BIOLOGICAL RESOURCES

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Not Applicable
12.	**BIOLOGICAL RESOURCES— Would the project:**					
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☒	☐	☐
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐	☐
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒	☐
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒	☐

In this Initial Study, the Potentially Significant Impact designation is being used solely to identify those topics that will be addressed in detail in the Environmental Impact Report for this project and does not reflect the findings of any preliminary impact analysis. Those topics are being included in the Environmental Impact Report because there is not sufficient information available at this time on the potentially affected resources or site conditions.

a)

Special Status Species

For this Initial Study, special status and/or sensitive species are defined as species that are legally protected by the California Department of Fish and Game (CDFG) or the US Fish and Wildlife Service (USFWS). Special status species

typically include species that are 1) federally listed as endangered, threatened, or candidate species (US Fish and Wildlife Service [USFWS] 2008a) or 2) state-listed as endangered, rare, threatened, California fully protected, or species of special concern (California Department of Fish and Game [CDFG] 2008). Sensitive species also include those listed on the California Native Plant Society (CNPS) plant list, i.e. the 1A list (plants presumed extinct in California) or 1B list (plants that are rare or endangered in California and elsewhere), or those that are found within the CNPS *Inventory of Rare and Endangered Vascular Plants* (CNPS 2008).

Special status species known to occur or that have been recorded historically in Natural Areas are listed in Table 2. In addition, a number of locally sensitive (LS) species may be found in San Francisco's Natural Areas, including species on the National Audubon Society's Watch List or those under threat of local extirpation as determined by the Yerba Buena chapter of the CNPS or the Golden Gate chapter of the National Audubon Society. The SFRPD has worked closely with such groups as the USFWS, CNPS, and the Audubon Society to appropriately manage special status species and to develop a list of LS species. The list of LS species from the CNPS and Golden Gate Audubon Chapter are in draft form at this time and are presented in Appendix C. All species from all lists are important for local conservation efforts and thus are analyzed in this Initial Study. However, impacts on federal, state, and CNPS 1B listed species are of greater concern because they are more likely to reduce populations, which could lead to species extinction.

Habitat Types

Habitat types within the Natural Areas include annual grassland, perennial grassland, wetland, other herbaceous vegetation, northern Franciscan coastal scrub, central dune scrub, central coast riparian scrub, nonnative scrub, mosaic, native forest, nonnative forest, and "other," which is a general category for areas that either are not dominated by vegetation or are dominated by ornamental vegetation. These correspond roughly to the classification system of Sawyer and Keeler-Wolfe (1995). Special status species that may use these habitat types are presented in Table 2.

Impacts on Special Status Species

Most project activities would benefit special status species and their habitats over the long-term. Management actions would aim to:

- Maintain viable populations of all special status species,
- Maintain and enhance native plant and animal communities,
- Maintain and enhance local biodiversity,
- Re-establish native community diversity, structure, and ecosystem function where degraded,

Table 2
Special Status Species That May Occur Within the Natural Areas

Common Name	*Scientific Name*	Federal/ State/ CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Invertebrates				
Bay checkerspot butterfly	*Euphydryas editha bayensis*	FT/--/--	Native grasslands on outcrops of serpentine soil. Primary host plant is *Plantago erecta* Secondary host plants are *Orthocarpus densiflorus* and *O. purpurscens*.	P/Reported from Mt. Davidson and Twin Peaks in 1980. Not currently present at either Natural Area.
Mission blue butterfly	*Icaricia icarioides missionensis*	FE/--/--	Grasslands. Larval host plants include *Lupinus albifrons, L. variicolor, and L. formosus.*	C/Reported at Sharp Park and McLaren Park in 1988 and from Bayview Park in 2001. Currently breeds on Twin Peaks
San Francisco silverspot butterfly	*Speyeria callippe callippe*	FE/--/--	Coastal scrub. Host plant is *Viola pedunculata.*	P/Historical population on Twin Peaks that is presumed extirpated.[47]

Federal Status
FE = Endangered. Species in danger of extinction throughout all or significant portion of its range.
FT = Threatened. Species likely to become endangered within foreseeable future throughout all or a significant portion of its range.
FPD = Proposed delisting.

California State Status
SE = Endangered. Species whose continued existence in California is jeopardized.
ST = Threatened. Species, although not presently threatened with extinction, that is likely to become endangered in the foreseeable future.
CSC = Species of Concern.
SFP = State Fully Protected under Sections 3511 and 4700 of the Fish and Game Code.
SR = State Rare

California Native Plant Society
1A = Plants presumed extinct in California
1B = Plants that are rare or endangered in California and elsewhere.

Occurrence
P = Potential
C = Confirmed
U = Unlikely

[47] Extirpate—to remove or destroy totally.

Table 2
Special Status Species That May Occur Within the Natural Areas *(continued)*

Common Name	*Scientific Name*	Federal/ State/ CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Reptiles and Amphibians				
California red-legged frog	*Rana aurora draytonii*	FT/CSC/--	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development.	C/Historically observed at Lake Merced. Recently observed at Sharp Park.
San Francisco garter snake	*Thamnophis sirtalis elegans*	FE/SE, SFP/--	Freshwater marshes, ponds, and slow moving streams. Prefers dense cover and water depths of at least one foot.	P/Historically reported from Sharp Park.
Western pond turtle	*Clemmys marmorata*	--/CSC/--	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Needs basking sites and upland habitat for egg-laying.	C/Presently occurs at Lake Merced. Presumed extant at Pine Lake but not recently observed.
Fish				
Tidewater goby*	*Eucyclogobius newberryi*	FPD (FE)/CSC/--	Shallow lagoons and lower stream reaches. Need fairly still, but not stagnant, water and high oxygen levels.	P/Historically collected (1895), not recently observed in San Francisco.
Central California coast steelhead*	*Oncorhynchus mykiss irideus*	FT/--/--	Cold, flowing freshwater.	P/Not available.
Birds				
Bank swallow	*Riparia riparia*	--/ST/--	Requires vertical banks/cliffs with fine-textured, sandy soils near streams, rivers, lakes and the ocean to dig a nesting hole.	C/Currently nests at Fort Funston and forage over Lake Merced.
California black Rail	*Laterallus jamaicensis coturniculus*	--/ST/--	Freshwater marshes, wet meadows, and shallow margins of saltwater marshes bordering larger bays.	P/Historically reported, not recently observed in San Francisco.
Double-crested Cormorant	*Phalacrocorax auritus*	--/CSC/-	Nests on coastal cliffs and in trees.	C/Presently nests at Lake Merced.
Salt marsh common yellowthroat	*Geothlypis trichas sinuosa*	--/CSC/--	Salt and freshwater marshes. Requires thick cover for foraging and dense vegetation for nesting.	C/Presently occurs at Lake Merced and Sharp Park.
Yellow warbler	*Dendroica petechia*	--/CSC/--	Riparian woodlands.	C/Observed at Lake Merced in spring 2000, breeding undocumented.
Mammals				
American badger	*Taxidea taxus*	--/CSC/--	Most abundant in drier, open stages of most shrub, forest, and herbaceous habitats, with friable soils. Digs burrows and preys on burrowing rodents.	P/Not available.

Table 2
Special Status Species That May Occur Within the Natural Areas *(continued)*

Common Name	*Scientific Name*	Federal/ State/ CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Big free-tailed bat*	*Nyctinomops macrotis*	--/CSC/--	Needs high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	P (foraging habitat)/Not available.
Pallid bat*	*Antrozous pallidus*	--/CSC/--	Deserts, grasslands, shrublands, woodlands, and forests.	P (foraging habitat) /Not available.
San Francisco dusky-footed woodrat*	*Neotoma fuscipes annectens*	--/CSC/--	Forest habitat of moderate canopy and moderate to dense understory.	C/Observed in Sharp Park.
Western red bat	*Lasiurus blossevillii*	--/CSC/--	Roosts primarily in trees, 2-40 feet above the ground. Prefers habitat edges and mosaics with trees that are protected from above and open below for foraging.	P/Recorded in Golden Gate Park (2000).
Plants				
Adobe sanicle	*Sanicula maritima*	--/SR/1B	Meadows and seeps, grasslands, chaparral, and coastal prairie.	P/Not available.
Alkali milk-vetch	*Astragalus tener* var. *tener*	--/--/1B	Low ground, alkali flats, and flooded lands; in annual grassland, playas, or vernal pools between 1 and 170 meters elevation.	P/Not available.
Beach layia	*Layia carnosa*	FE/SE/1B	On sparsely vegetated, semi-stabilized coastal dunes, usually behind foredunes, between 0 and 75 meters elevation.	P/Historically reported from San Francisco, location not well mapped, presumed extirpated.
Bent-flowered fiddleneck*	*Amsinckia lunaris*	--/--/1B	Woodlands and grasslands between 50 and 500 meters elevation.	P/Not available.
California seablite	*Suaeda californica*	FE/--/1B	Restricted to the upper intertidal zone of coastal salt marsh along the perimeter of a bay.	C/Recorded at India Basin.
Choris' popcorn-flower	*Plagiobothrys chorisianus* var. *chorisianus*	--/--/1B	Chaparral, coastal scrub, coastal prairie. On mesic sites between 15 and 100 meters elevation.	P/Not available.
Coastal marsh milk-vetch*	*Astragalus pycnostachyus* var. *pycnostachyus*	--/--/1B	Mesic sites in dunes or along streams or coastal salt marshes between 0 and 30 meters elevation.	P/Not available.
Coastal triquetrella	*Triquetrella californica*	--/--/1B	Coastal bluff scrub or coastal scrub habitats. Grows on moss growing on soil between 10 and 100 meters elevation.	C/Recorded on Tank Hill and several other locations within San Francisco.
Coast yellow leptosiphon*	*Leptosiphon croceus*	--/--/1B	Coastal bluff scrub and coastal prairie between 10 and 150 meters elevation.	P/Not available.

Table 2
Special Status Species That May Occur Within the Natural Areas *(continued)*

Common Name	*Scientific Name*	Federal/ State/ CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Coastal marsh milk-vetch*	*Astragalus pycnostachyus* var. *pycnostachyus*	--/--/1B	Mesic sites in dunes or along streams or coastal salt marshes between 0 and 30 meters elevation.	P/Not available.
Compact cobwebby thistle	*Cirsium occidentale* var. *compactum*	--/--/1B	On dunes and on clay in chaparral; also in grassland, coastal prairie, and coastal scrub. Found between 5 and 155 meters elevation.	P/Historically recorded near Lake Merced.
Crystal Springs lessingia*	*Lessingia arachnoidea*	--/--/1B	Coastal sage scrub, grasslands, and woodlands. Found on grassy slopes on serpentine; also along roadsides. Between 60 and 200 meters elevation.	P/Not available.
Dark-eyed gilia	*Gilia millefoliata*	--/--/1B	Coastal dunes between 2 and 20 meters elevation.	P/Historically recorded within San Francisco.
Dune gilia	*G. capitata* ssp *chamissonis*	--/--/1B	Coastal dunes and coastal scrub between 2 and 200 meters elevation.	C/Presently occurs at Hawk Hill and Lake Merced.
Fragrant fritillary	*Fritillaria liliacea*	--/--/1B	Coastal scrub, grassland, and coastal prairie between 3 and 410 meters elevation.	C/Presently occurs at Bernal Heights.
Franciscan onion*	*Allium peninsulare* var. *franciscanum*	--/--/1B	Woodlands and grasslands, on dry hillsides. Found on clay soils or serpentine between 100 and 300 meters elevation.	P/Not available.
Franciscan thistle	*C. andrewsii*	--/--/1B	Coastal bluff scrub, broadleaved upland forest, coastal scrub. Sometimes serpentine seeps. Between 0 and 135 meters elevation.	P/Historically recorded within San Francisco.
Hairless popcorn flower	*Plagiobothrys glaber*	--/--/1A	Alkali meadows, seeps, coastal salt marshes, and swamps between 5 and 180 meters elevation.	P/Not available.
Hickman's cinquefoil*	*Potentilla hickmanii*	FE/SE/1B	Freshwater marshes, seeps, and small streams in open or forested areas along the coast. Found between 5 and 125 meters elevation.	P/Not available.
Kellogg's horkelia	*Horkelia cuneata* ssp. *sericea*	--/--/1B	Closed-cone coniferous forest, coastal scrub, chaparral, old dunes, coastal sandhills. Between 10 and 200 meters elevation.	P/Recorded within San Francisco.
Marin western flax	*Hesperolinon congestum*	FT/ST/1B	In serpentine barrens and in serpentine grassland and chaparral at 30 and 365 meters elevation.	U/Historically recorded on Mount Davidson.
Marsh microseris	*Microseris paludosa*	--/--/1B	Closed-cone coniferous forest, woodlands, and grasslands between 5 and 300 meters elevation.	P/Not available.

Table 2
Special Status Species That May Occur Within the Natural Areas *(continued)*

Common Name	*Scientific Name*	Federal/ State/ CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
Marsh sandwort	*Arenaria paludicola*	--/--/1B	Grows up through dense mats of *Typha* spp., *Juncus* spp. and *Scirpus* spp. in freshwater marshes and swamps between 10 and 170 meters elevation.	P/Not available.
Pappose tarplant *	*Centromadia parryi* ssp. *parryi*	--/--/1B	Vernally mesic, often alkaline sites in coastal prairie, meadows, seeps, coastal salt marshes, and grassland. Found between 2 and 420 meters elevation.	P/Not available.
Point Reyes bird's-beak	*Cordylanthus maritimus* ssp. *palustris*	--/--/1B	Coastal salt marsh with *Salicornia* spp., *Distichlis* spp., and *Spartina* spp. between 0 and 15 meters elevation.	P/Habitat exists at India Basin Park.
Point Reyes horkelia *	*Horkelia marinensis*	--/--/1B	Sandy flats and dunes near the coast, in grassland or scrub plant communities between 5 and 30 meters elevation.	P/Not available.
Robust spineflower *	*Chorizanthe robusta* var. *robusta*	FE/--/1B	Sandy terraces and bluffs or in loose sand in coastal habitats between 3 and 120 meters elevation.	P/Not available.
Rose leptosiphon	*Leptosiphon rosaceus*	--/--/1B	Coastal bluff scrub between 0 and 100 meters elevation.	P/Not available.
Round-headed Chinese houses	*Collinsia corymbosa*	--/--/1B	Dunes and coastal prairie between 10 and 30 meters elevation.	P/Not available.
San Francisco Bay spineflower	*Chorizanthe cuspidata* var. *cuspidata*	--/--/1B	Coastal scrub and coastal dunes on sandy slopes and terraces between 5 and 550 meters elevation.	C/Presently occurs at Fort Funston, Golden Gate Heights, and Lake Merced.
San Francisco campion	*Silene verecunda* ssp. *verecunda*	--/--/1B	Coastal scrub, grassland, coastal bluff scrub, chaparral, coastal prairie at elevations between 30 and 645 meters.	C/Presently occurs at Mt. Davidson and Rock Outcrop.
San Francisco collinsia	*Collinsia multicolor*	--/--/1B	Closed-cone coniferous forest and coastal scrub between 30 and 250 meters elevation.	C/Presently occurs at Bayview Hill.
San Francisco gumplant	*Grindelia hirsutula* var. *maritima*	--/--/1B	Coastal scrub and grasslands between 15 and 400 meters elevation.	C/Presently occurs at Mount Davidson, Twin Peaks, Corona Heights, and Balboa Natural Area.
San Francisco lessingia	*Lessingia germanorum*	FE/SE/1B	Open sandy soils relatively free of competing plants, between 20 and 125 meters elevation.	P/Historically recorded at Lake Merced. Only current population found on the Presidio.
San Francisco owl's-clover	*Triphysaria floribunda*	--/--/1B	Coastal prairie and grassland between 10 and 160 meters elevation.	P/Historically recorded near Lake Merced.

Table 2
Special Status Species That May Occur Within the Natural Areas *(continued)*

Common Name	*Scientific Name*	Federal/ State/ CNPS Status	Habitat	Likelihood of Occurrence/Notes on Occurrence
San Francisco popcorn-flower	*Plagiobothrys diffusus*	--/SE/1B	Grassland and coastal prairie with marine influence between 60 and 485 meters elevation.	P/Not available.
San Mateo woolly sunflower*	*Eriophyllum latiobum*	FE/SE/1B	Woodlands between 45 and 150 meters elevation. Found on and off serpentine.	P/Not available.
Santa Cruz microseris	*Stebbinsoseris decipiens*	--/--/1B	Broadleaved upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub. Found in open areas in loose or disturbed soils between 10 and 500 meters elevation.	P/Not available.
Western leatherwood*	*Dirca occidentalis*	--/--/1B	On mesic, brushy slopes. Mostly in mixed evergreen and foothill woodland communities between 3 and 550 meters elevation.	P/Not available.
White-rayed pentachaeta	*Pentachaeta bellidiflora*	FE/SE/1B	Open, dry, rocky slopes and grassy areas, often on soils derived from serpentine bedrock. Found between 35 and 620 meters elevation.	P/Not available.

Sources: CDFG 2008; USFWS 2008; CNPS 2008

Federal Status
FE = Endangered. Species in danger of extinction throughout all or significant portion of its range.
FT = Threatened. Species likely to become endangered within foreseeable future throughout all or a significant portion of its range.
FPD = Proposed delisting.

California State Status
SE = Endangered. Species whose continued existence in California is jeopardized.
ST = Threatened. Species, although not presently threatened with extinction, that is likely to become endangered in the foreseeable future.
CSC = Species of Concern.
SFP = State Fully Protected under Sections 3511 and 4700 of the Fish and Game Code.
SR = State Rare

California Native Plant Society
1A = Plants presumed extinct in California
1B = Plants that are rare or endangered in California and elsewhere.

Occurrence
P = Potential
C = Confirmed
U = Unlikely

*Indicates species that may occur at Sharp Park only.

- Improve natural area connectivity, and
- Decrease the extent of invasive exotic species cover.

Vegetation management actions would improve structural and habitat diversity, and if feasible, special status species populations would be augmented and/or re-introduced. However, certain actions would disturb special status species and/or their habitats either directly or indirectly over the short-term. These include routine maintenance, small restoration projects, capital projects, invasive plant removal, vegetation management, visitor use, dog use, and dog play areas, and tree removal. In addition to these impacts, management actions to restore the Laguna Salada wetland at Sharp Park would disturb special status species and their habitats over the short term.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

b)

Riparian and Sensitive Habitats

Riparian habitat within the Natural Areas consists of willow scrub as described in the central coast riparian scrub vegetation type under criterion a). This habitat type occurs at Glen Canyon Park, Lake Merced, McLaren Park, and Sharp Park.

Several types of sensitive habitat exist within the Natural Areas, including California sagebrush scrub, dune habitat, oak woodlands, and native grasslands. These were all conspicuous components of the historic San Franciscan landscape, and are considered regionally sensitive due to acreage lost to urban development, high value to special status species, and for oak woodlands, lack of recruitment. Table 3 shows the locations of riparian and sensitive habitat types in the Natural Areas.

Impacts on Riparian and Sensitive Habitats

Overall, plan actions would improve riparian and sensitive habitats throughout the Natural Areas. However, habitat restoration projects, off-lease dog use, and the wetland restoration at Sharp Park could disturb riparian and sensitive habitats either directly or indirectly over the short term.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

Table 3
Riparian and Sensitive Habitat Types Within the Natural Areas

	Natural Area																					
Habitat Type	*Lake Merced*	*Glen Canyon Park*	*Sharp Park*	*McLaren Park*	*O'Shaughnessy Hollow*	*Twin Peaks*	*Hawk Hill*	*Strawberry Hill*	*Golden Gate Park Oak Woodlands*	*Balboa*	*Buena Vista*	*Corona Heights*	*Lily Pond*	*Whiskey Hill*	*15th Avenue Steps*	*Mt. Davidson*	*Rock Outcrop*	*Brooks Park*	*Duncan-Castro*	*Bayview Park*	*Palou-Phelps*	*Bernal Hill*
Riparian	x	x	x	x																x		
California sagebrush scrub	x	x	x			x																
Dune	x						x	x	x	x							x					
Oak woodland	x	x		x		x		x	x		x	x	x	x	x							
Native grasslands	x	x	x	x								x				x	x	x	x	x	x	x

Source: SFRPD 2006

c)

Wetland Habitat

Several different types of wetlands are present within the Natural Areas. A wetland delineation has been conducted at Sharp Park. Although wetland delineations have not been conducted for other wetlands within the Natural Areas, they likely fall under the jurisdiction of Section 404 of the Clean Water Act.

Wetland types within the Natural Areas include free flowing creeks (Glen Canyon Park and Sharp Park), tidal salt marsh wetland (India Basin), open water (Lake Merced, Pine Lake, and Sharp Park), wet meadow (Bayview Park, Lake Merced, McLaren Park, and Sharp Park), and freshwater marsh (Lake Merced, McLaren Park, Pine Lake, and Sharp Park). These areas are likely jurisdictional wetlands or waters of the US and are thus regulated by the US Army Corps of Engineers (USACE). Typical actions that trigger the need for Clean Water Act Section 404 compliance include dredging or filling of wetlands or portions of a wetland or bank alteration.

Impacts on Wetland Habitat

Overall, project activities would protect and enhance wetlands within the Natural Areas. However, certain actions would disturb wetlands either, directly or indirectly, over the short-term through direct removal, filling, hydrological interruption, or other means. These include habitat enhancement at Sharp Park and Glen Canyon.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

d)

Native Resident and Migratory Fish

Native resident and migratory fish are limited in the Natural Areas, but do exist at Lake Merced and Pine Lake. Native resident fish at Lake Merced include hitch (*Lavinia exilicauda*), hardhead (*Mylopharadon conocephalus*), Sacramento blackfish (*Orthodon microlepidotus*), Sacramento sucker (*Catostomus occidentalis*), threespine stickleback (*Gasterosteus aculeatus*), prickly sculpin (*Cottus asper*), and Sacramento perch (*Archoplites interruptus*). Rainbow trout (*Oncorhynchus mykiss*) are present in Lake Merced, but there is no spawning habitat for them in the lake, so they cannot reproduce. Ongoing stocking would be required to maintain that fishery. Threespine stickleback are found at Pine Lake. The one migratory fish found in the Natural Areas is coho salmon (*O. kisutch*), which was recorded at Lake Merced.

Migratory Birds

Many migratory birds use the Natural Areas for foraging, nesting, and perching habitat, as the Natural Areas provide habitat in an area that is otherwise highly urbanized and provides little habitat. Migratory birds that use the Natural Areas are presented in Appendix C.

Some of the larger Natural Areas, such as Lake Merced, McLaren Park, and Sharp Park, provide a complex mosaic of habitats that are used for foraging, nesting, and roosting by migratory and resident birds, and thus are more important bird habitat compared with the smaller natural areas. In particular, Lake Merced provides open water, freshwater marsh, riparian, and upland habitats that are heavily used by bird species. This location serves as an important resting area for migratory birds, and is a nesting area for approximately 50 species of resident birds (SFRPD 2006). Almost 70 species of birds have been documented nesting within the Lake Merced area, and several of these are of special concern, locally rare, or neotropical migrants.

Among the Natural Areas, India Basin is the only one that borders San Francisco Bay and provides the only habitat for migratory shorebirds. There are ten species of birds that are considered locally sensitive that have been observed at India Basin, and several of these are found at no other Natural Area: black oystercatcher (*Haematopus bachmani*), pelagic cormorant (*Phalacrocorax pelagicus*), Brandt's cormorant (*P. penicillatus*), and pigeon guillemot (*Cepphus columba*). None of the LS species that have been observed are known to breed at India Basin. The restored wetlands and mudflats support nesting American avocet (*Recurvirostra americana*) and killdeer (*Charadrius vociferus*). If restored, the more extensive saltgrass/pickleweed area could provide habitat for California black rail (*Laterallus jamaicensis coturniculus*) and California clapper rail (*Rallus longirostris obsoletus*), both protected under the state and federal Endangered Species Acts.

Smaller Natural Areas, such as Hawk Hill and Grandview Park, may provide suitable nesting and foraging habitat for small songbirds, and may support a prey base for foraging raptors.

Wildlife Corridors

Overall, the Natural Areas provide a mosaic of habitats that are accessible to mobile wildlife species, particularly birds. They offer foraging, nesting, and roosting habitats for many species as they travel within San Francisco and beyond.

Lake Merced is the largest freshwater coastal lake and wetland system between the Pescadero Marsh in south San Mateo County and the Point Reyes Peninsula in Marin County. As such, it provides refuge for many migratory birds, as described above.

Sharp Park is bordered by undeveloped areas, including Sweeny Open Space and Milagra Ridge, which allows it to serve as a relatively undisturbed corridor for wildlife, particularly birds. Sharp Park's connectivity to high-quality natural habitats also allows it to support medium size and large mammals, including numerous general wildlife species such as the black-tailed deer (*Odocoileus hemionus columbianus*), bobcat (*Lynx rufus californicus*), common porcupine (*Erethizon dorsatum epixanthum*), coyote (*Canis latrans*), and mountain lion (*Felis concolor californicus*).

Native Wildlife Nursery Sites

All of the Natural Areas support potential and/or confirmed nesting native bird habitat. Native birds that may nest within the Natural Areas include shorebirds, songbirds, and raptors, and include habitats such as nonnative forests, grasslands, and riparian scrub.

Impacts on Native Resident and Migratory Fish, Migratory Birds, Wildlife Corridors, and Native Wildlife Nursery Sites

Overall, plan activities would improve and connect habitats, thereby improving the ability of native resident or migratory fish or wildlife species to migrate. However, certain actions could disturb these species either directly or indirectly over the short term. These include disruption from visitor use, invasive tree removal, use of DPAs, and habitat restoration activities. In addition, management actions to restore the Laguna Salada wetland at Sharp Park could disturb native resident fish and migratory fish and wildlife species over the short term.

The potential impacts on this topic will be analyzed in the Environmental Impact Report.

e) The SFRPD would comply with all local policies and ordinances protecting biological resources. These include tree protection ordinances, such as the San Francisco Urban Forestry Ordinance. Several Landmark Trees are found in or near the Natural Areas. These include a blue elderberry tree (*Sambucus mexicana*) within Bernal Hill, a Canary Island Date Palm (*Phoenix canariensis*) near Palou-Phelps, and a New Zealand Christmas Tree (*Metrosideros excelsus*) adjacent to the Interior Greenbelt. Other applicable ordinances include the Significant Tree Ordinance of San Mateo County and Ordinance 636-C.S., which limits logging within Pacifica and applies to tree removal at Sharp Park. Management actions would not conflict with these or other applicable ordinances. As a result, there would be no impact due to conflicts with local policies or ordinances.

f) There are no adopted Habitat Conservation Plans or Natural Community Conservation Plans that apply to management of the Natural Areas. Species recovery plans have been finalized for the Bay checkerspot butterfly, mission blue butterfly, CRLF, SFGS, beach layia, Marin western flax (*Hesperolinon congestum*), San Francisco lessingia (*Lessingia germanorum*), and white-rayed

pentachaeta (*Pentachaeta bellidiflora*). These plans are ultimately designed and created to recover the species and the ecosystems on which they depend. This includes protecting and often restoring the habitat in which the species can thrive. These recovery plans would apply to some of the Natural Areas, including those where the species have been documented, including Bayview Park, Lake Merced, McLaren Park, Mount Davidson, Sharp Park, and Twin Peaks. The SFRPD's goal of species preservation and recovery is in accord with these recovery plans. Management actions in the SNRAMP would improve special status species habitat and avoid, protect, and monitor special status species (GR 1-10). As a result, there would be no impact due to conflicts with any of the approved species recovery plans.

E.13 GEOLOGY AND SOILS

Topics:	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*	*Not Applicable*
13. GEOLOGY AND SOILS— Would the project:					
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:					
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	☐	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐	☐
iv) Landslides?	☐	☐	☒	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐	☐
c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?	☐	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☐	☒
f) Change substantially the topography or any unique geologic or physical features of the site?	☐	☐	☒	☐	☐

The main activities in the proposed project that might impact geology and soils include the following:

- Implementing erosion control measures in gullies that have formed due to erosion, including regrading the gullies, emplacing compacted and staked brush, building check dams and small swales, and putting straw bale barriers in place alongside the gullies;
- Implementing erosion control measures for streambank protection, including thinning vegetation to improve riparian habitat, replanting streambanks with native and special status species, and placing erosion control blankets, mats, mulch, or wood chips on the streambank while the new vegetation establishes root;

- Removing nonnative trees and other vegetation and replacing them with native and special status species; and
- Regrading, recontouring, or repaving roads.

The overall scale of the proposed project is relatively small, and while these activities may result in some increased erosion and loss of topsoil in the Natural Areas, these impacts are generally considered less than significant.

a) i) The proposed project would not expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault. The proposed project does not involve the construction of any residences or structures that would be occupied. Ground rupture most commonly occurs along preexisting faults. No known active faults cross the Natural Areas, and the sites are not within an Alquist-Priolo Earthquake Hazard Zone (State of California 1982). Therefore, this criterion is not applicable to the proposed project.

This topic will not be discussed in the Environmental Impact Report.

a) ii) The proposed project would not expose people or structures to potential substantial adverse effects involving strong seismic shaking. The proposed project does not involve the construction of any residences or structures that would be occupied. While there is a potential for strong ground shaking at all 31 of the Natural Areas due to a nearby earthquake, the proposed project would not increase the likelihood that people or structures would experience adverse effects from strong ground shaking. As discussed in Section A, some of the goals of the SNRAMP that may impact geology and soils are a) to maintain and enhance native plant and animal communities, b) to re-establish native community diversity, structure, and ecosystem function where degraded, and c) to decrease the extent of invasive exotic species cover. The proposed project may result in increased visitor use of the Natural Areas due improvements in the Natural Areas, and in this regard, may increase the exposure of people to strong seismic shaking. Because the proposed project would not increase the potential for ground failure in these areas, it would not expose people to potential substantial adverse effects involving strong seismic shaking and would have less than significant impacts.

This topic will not be discussed in the Environmental Impact Report.

a) iii) The proposed project would not expose people or structures to potential substantial adverse effects involving seismic-related ground failure, including liquefaction[48]. According to the most current Hazard Zones Map for the City and

[48]Liquefaction—the process of changing soil and unconsolidated sediments into water mixture immediately following an earthquake; often results in foundation failure, with sliding of the ground under buildings and structures.

County of San Francisco, India Basin Shoreline Park and Lake Merced are the only two Natural Areas that are in areas where there has been a historic occurrence of liquefaction (State of California 2000). Because none of the proposed activities would expose people or structures to potential substantial adverse effects from seismic-related ground failure, the proposed project would have no impact with regard to this criterion.

This topic will not be discussed in the Environmental Impact Report.

a) iv) The proposed project would not expose people or structures to potential substantial adverse effects involving landslides. According to the most current Hazard Zones Map for the City and County of San Francisco, many of the Natural Areas are in areas where there has been a previous occurrence of landslides, or local information indicates the potential for permanent ground displacements (State of California 2000). However, none of the activities in the proposed project would expose people or structures to potential substantial adverse effects from landslides because most of the proposed activities are related to improving natural habitat and minimizing erosion and loss of topsoil. While there may be some short-term impacts related to additional erosion and loss of topsoil from the proposed management activities (removing nonnative vegetation, regrading land, maintaining and improving riparian corridors, paving or regrading roads, and creating new trails), the long-term effects of the proposed project would minimize erosion and reduce the risk from potential landslides. Therefore, the proposed project would have a less than significant impact with regard to this criterion.

b) The proposed project includes some regrading work, tree and vegetation removal and replacement, construction of a detention basin, and possibly some road modifications. All of these activities have the potential to result in erosion. Continued use of DPAs in many of the Natural Areas would result in loss of vegetation, causing topsoil to be exposed; however, the magnitude of this impact is not expected to result in significant erosion. Use of erosion control measures under GR-12b, such as fiber rolls, silt fences, and straw mulch/wood chips, may be appropriate for these areas to ensure that there are minor erosion impacts from the DPAs. The Natural Areas that have the potential to experience substantial soil erosion because of project activities include Bayview Park, Glen Canyon Park and O'Shaughnessy Hollow, India Basin Shoreline Park, and Lake Merced. Each of these is discussed below.

The proposed project also incorporates measures to address these potential impacts, resulting in less than significant impacts with regard to substantial soil erosion and topsoil loss. The general approaches that are included as part of the proposed project and would be utilized at the Natural Areas to minimize erosion include the following:

- Large-scale restoration, such as regrading, recontouring, or repaving roads, constructing a detention basin, or building check dams and swales, would be conducted during the appropriate time of year (generally during the dry season) and at an appropriate scale to minimize erosion. At any one time, the area of vegetation removal would be relatively small to minimize the potential for erosion. (GR-1c). Smaller-scale activities, such as removing weeds and invasive species and replanting, may be conducted year-round but would be conducted at a scale that is appropriate to minimize erosion.
- Work that involves exposure of large areas of soil would be completed during the dry season whenever possible. (GR-12b)
- BMPs would be implemented to reduce the erosion risk during the transition period between removal of vegetation and the establishment of replacement vegetation (GR-12b). Erosion-control BMPs incorporated into the proposed project include fiber rolls, straw bales, silt fences, and straw mulch, wood chips, and rolled erosion control products.

The SNRAMP is intended to be an active living document, using an adaptive management approach in the Natural Areas. As such, adaptations in the management approach would be made in response to changing conditions. For example, if tree replantings were not to take hold, substitute vegetation may be installed. Additionally, if management activities such as tree removal were to result in erosion within a Natural Area, best management practices, such as wood mulch, fiber rolls, and silt fences, would be implemented to minimize erosion.

Bayview Park

Activities outlined in the SNRAMP that might result in erosion or loss of topsoil include removing nonnative vegetation and replacing it with native and special status species (VP-1a through VP-1e[49] and VP-2a[50]), constructing a small berm for water storage (VP-3a[51]), and implementing erosion control measures in

[49] VP-1a—reduce and contain herbaceous and woody invasive plants;
VP-1b—remove approximately 511 of the estimated 6,000 invasive trees (primarily blue gum eucalyptus) to enhance sensitive species habitats;
VP-1c—protect and maintain existing native habitats;
VP-1d—augment existing sensitive plant populations;
VP-1e—reintroduce populations of sensitive plant species to help prevent extinctions of these species in San Francisco.

[50] VP-2a—install coast live oak seedlings and other native plants in gaps and openings in the eucalyptus forest.

[51] VP-3a—construct a small berm to create a seasonal wetland and detention basin, if capital funds are made available.

gullies (VP-9a[52]). While these activities are intended to provide long-term erosion control and natural resources diversity benefits, short-term impacts may occur during their implementation. Erosion or loss of topsoil may occur as soil is moved during regrading activities. Topsoil may be lost as trees and other vegetation are removed, and during the planting of native species. However, the general recommendations that are incorporated into the proposed project would ensure that impacts from these activities are less than significant.

Glen Canyon Park and O'Shaughnessy Hollow

Activities outlined in the SNRAMP that might result in erosion or loss of topsoil include trimming and removing willows in the wet meadow (GC/OH-1e)[53]; maintaining and improving the riparian corridor for Islais Creek by thinning willow trees, removing invasive plants, and revegetating with appropriate species (GC/OH-2a)[54]; installing instream structures, such as wingwalls to create scour and maintain pools (GC/OH-2b)[55]; removing nonnative trees and other vegetation and replacing them with native and special status species (GC/OH-1e); installing boardwalks in wet marshy locations along Islais Creek and at creek crossings (GC/OH-9b)[56]; filling gullies that have formed along the gravel access road due to erosion with gravel, maintaining water bars along the gravel access road, and if funds are available, paving or regrading the gravel access road (GC/OH-10a)[57]; maintaining the existing sediment dam or installing new sediment traps on the lower reaches of the creek, and if funds are available, excavating the soil behind the dam and repairing or replacing the dam (GC/OH-10c)[58].

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[52] VP-9a—create a detailed and complete erosion control plan before beginning work on the large gully near the summit; work would include 1) installing a minimum of two check-dams within the upper portion of the gully, 2) creating soil berms and troughs between these two structures, 3) removing soil from the upper edges of the gully to create at 1:1 slope, 4) installing a staked brush pile or brush box immediately below the upper edge of the gully, 5) install one or two staked brush bundles in the vegetated swale leading into the gully from the direction of the radio tower, 6) install rice straw bales along all edges of the gully, and 7) hand broadcast the entire area with the appropriate native grass seed once construction is complete and before the fall rains.

[53] GC-OH-1e—remove approximately 120 of the estimated 6,000 invasive blue gum eucalyptus trees in Glen Canyon Park to maintain and enhance native habitats.

[54] GC-OH-2a—thin sections of the overstory within the riparian corridor and reduce invasive plants in the understory.

[55] GC-OH-2b—prevent willows from encroaching on open water and create new and stable pool habitats.

[56] GC-OH-9b—install boardwalks in wet marshy locations along the Islais Creek loop trail to prevent damage to existing resources and increased sedimentation in the creek.

[57] GC-OH-10a—fill existing gullies in the access road with gravel to help minimize the input of sediment from the gravel access road, outslope the road the next time it is graded or resurfaced to allow uniform flow of runoff from the hillside across the road to the creek and to eliminate ponding and reduce gullying in the road, evaluate and replace the existing culverts as necessary, and consider paving the access road.

[58] GC-OH-10c—maintain the existing sediment dam and consider installation of new sediment traps on the lower reach of the creek.

While these activities are intended to provide long-term erosion control, improved habitat, and other natural resources diversity benefits, short-term impacts may occur during their implementation. Topsoil may be eroded or lost as soil is moved during regrading, road modification, and gully filling. Topsoil may be lost as trees and other vegetation are removed and when native species are planted. Much of the work at this park would occur along Islais Creek, which can carry eroded soil away, exacerbating the problem. Streambank soil can be easily disturbed during construction, including boardwalks, dams, and sediment traps. However, the general recommendations that are incorporated into the proposed project ensure that impacts from these activities would be less than significant.

India Basin Shoreline Park

Activities outlined in the SNRAMP that might result in erosion or loss of topsoil include removing invasive species from the salt marsh and upland areas (IB-1a)[59]. While these activities are intended to provide long-term erosion control, improved habitat, and other natural resources diversity benefits, short-term impacts may occur during their implementation. Minor erosion or loss of topsoil during activities on the levee may result in negligible sedimentation of San Francisco Bay. Removal of invasive species within the salt marsh can mobilize sediment, impacting water quality in the Bay. However, the general recommendations that are part of the proposed project would ensure that impacts from these activities would be less than significant.

Lake Merced

Activities outlined in the SNRAMP that might result in erosion or loss of topsoil include removing trees that are on the slopes and encroaching into wetlands that surround North, South, and East Lakes (LM-6a)[60] and treating small-scale erosion gullies with gully plugs, brush boxes, energy dissipaters, and water bars, and planting these areas with the appropriate native vegetation to restore habitat and create future erosion barriers (LM-9a)[61]. While these activities are intended to provide long-term erosion control, improved habitat, and other natural resources diversity benefits, short-term impacts may occur during their implementation. Erosion or loss of topsoil may occur as the small-scale gullies are repaired. Furthermore, tree removal along the slopes of North, South, and East Lakes has the potential to cause additional erosion in these areas. However, the general recommendations that would be implemented as part of the

[59] IB-1a—monitor the salt marsh for smooth cordgrass and other invasive species; reduce and contain infestations of upland invasive species.

[60] LM-6a—remove invasive vegetation and enhance native scrub and grassland species in upland sandy soils adjacent to East Lake to allow for western pond turtle nesting. Create piles of logs or rocks to increase and improve basking habitat.

[61] LM-9a—treat small-scale erosion gullies with measures such as gully plugs, brush boxes, energy dissipaters, and water bars, and plant these areas with native vegetation to prevent soil erosion.

proposed project would ensure that impacts from these activities would be less than significant.

This topic will not be discussed in the Environmental Impact Report.

c) The proposed project would not cause a geologic unit or soils to become unstable and would not result in on- or off-site landslide, lateral spreading[62], subsidence[63], liquefaction, or collapse. The proposed project includes some road modifications, tree and vegetation removal, construction of a detention basin, and possibly channel widening and other habitat improvement activities in creek and wetland environments. None of these activities would cause a geologic unit or soil to be come unstable, and none would result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

This topic will not be discussed in the Environmental Impact Report.

d) The proposed project would not create substantial risks to life or property because no buildings would be constructed on expansive soil[64]. The proposed project includes road modifications, tree and vegetation removal, construction of a detention basin, and possibly channel widening and other habitat improvement activities in creek and wetland environments. Because none of these activities would involve the construction of buildings on expansive soil, which could expose people or structures to risks, this significance criterion is not applicable.

This topic will not be discussed in the Environmental Impact Report.

e) The proposed project does not include any work with sewers or septic tanks, and sewers and septic tanks would not likely be installed in the Natural Areas in the future; therefore, this significance criterion is not applicable.

This topic will not be discussed in the Environmental Impact Report.

f) The proposed project would not substantially change the topography or any unique geologic or physical features of the sites. Unique geologic features of the Natural Areas include picturesque rock outcrops and some of the last remaining sand dune systems in San Francisco. Franciscan rock, associated with the tectonic margin at the western edge of California, forms outcrops at Bayview Park, Glen

[62]Lateral spreading—landslides that commonly form on gentle slopes and that have rapid fluid-like flow movement, like water.

[63]Subsidence—a lowering of the land surface in response to subsurface weathering, collapse or slow settlement of underground mines, or the production of subsurface fluids such as ground water or oil.

[64]Expansive soil—soils or rocks characterized by clayey material that shrinks and swells as it dries or becomes wet, respectively. Expansive soils are subject to changes in volume and settlement in response to wetting and drying, often resulting in severe damage to structures.

Canyon Park, O'Shaughnessy Hollow, McLaren Park, Grandview Park, Rock Outcrop, Golden Gate Heights Park, and Duncan-Castro. Rock types that occur in these areas include chert, sandstone interbedded with shale, greenstone, and serpentine, The sand dune systems are most prominent in the Grandview Park, Rock Outcrop, Golden Gate Heights Park, and Hawk Hill group of parks but also occur in Buena Vista Park, Lakeview/Ashton Mini Park and Balboa Natural Area. While the proposed project includes road modifications and some regrading and filling of gullies to minimize erosion and topsoil[65] loss, none of the project activities would substantially change the topography or any unique geologic or physical features of the Natural Areas.

This topic will not be discussed in the Environmental Impact Report.

[65]Topsoil—surface soil usually including the organic layer in which plants have most of their roots and which a farmer turns over in plowing.

E.14 HYDROLOGY AND WATER QUALITY

Topics:		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*	*Not Applicable*
14.	**HYDROLOGY AND WATER QUALITY— Would the project:**					
a)	Violate any water quality standards or waste discharge requirements?	☒	☐	☐	☐	☐
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☒	☐	☐	☐	☐
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion of siltation on- or off-site?	☒	☐	☐	☐	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☒	☐	☐	☐	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☒	☐	☐	☐	☐
f)	Otherwise substantially degrade water quality?	☒	☐	☐	☐	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map?	☐	☐	☐	☐	☒
h)	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐	☐
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐	☐
j)	Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐	☐

In this Initial Study, the Potentially Significant Impact designation is being used solely to identify those topics that will be addressed in detail in the Environmental Impact Report and does not reflect the findings of any preliminary impact analysis. Those topics are being included in the Environmental Impact Report because there is not sufficient information available at this time on the potentially affected resources or site conditions.

Many of the Natural Areas do not have water bodies, and none of the maintenance activities in these Natural Areas are intrusive enough to have significant impacts on hydrology and water quality through stormwater effects. The following Natural Areas currently have or will have water bodies and are the focus of the impact analysis in this section: Bayview Park (proposed detention basin/seasonal wetland), Lake Merced, Pine Lake, India Basin Shoreline Park (San Francisco Bay), Golden Gate Park Oak Woodlands (Stow Lake), McLaren Park, Glen Park and O'Shaughnessy Hollow (Islais Creek), and Sharp Park (Sanchez Creek and Laguna Salada).

The main activities in the proposed project that might impact water quality and flooding include the following:

- Implementing erosion control measures in gullies that have formed due to erosion, including regrading the gullies, emplacing compacted and staked brush, building check dams and small swales, and putting straw bale barriers in place along side the gullies;
- Implementing erosion control measures for streambank protection, including thinning vegetation to improve riparian habitat, replanting streambanks with native and special status species, and placing erosion control blankets, mats, mulch, or wood chips on the streambank while the new vegetation is established;
- Removing nonnative trees and other vegetation and replacing them with native and special status species; and
- Regrading, recontouring, or repaving roads.

The overall scale of the proposed project is relatively small, and while these activities may result in some increased erosion and loss of topsoil in the Natural Areas (see Section E.13, Geology and Soils), it is unlikely that these activities would cause significant impacts on hydrologic processes or water quality in most of the Natural Areas. The one exception to this is at Sharp Park, where the water bodies provide important natural habitat, and management activities may impact the hydrology and water quality of Sanchez Creek and Laguna Salada. Hydrologic and water quality impacts on Sharp Park will be fully analyzed in the Environmental Impact Report. To further lessen impacts of the management activities, the SFRPD would limit large-scale management activities, such as building check dams, regrading, recontouring, repaving roads, or constructing a detention basin to the dry season, which would minimize the potential for erosion and topsoil loss (GR-12b). Smaller scale activities, such as removing weeds and invasive species and replanting, may be conducted year-round but would be conducted at a scale that is appropriate to minimize erosion. Additionally, if such management activities as tree removal were to result in erosion within a Natural Area, best management practices, such as wood mulch,

fiber rolls, and silt fences, would be implemented to minimize erosion and to limit or eliminate associated water quality impacts.

The following sections discuss each of the significance criteria for hydrology and water quality.

a) The proposed project would have no impact with regard to violating water quality standards or waste discharge[66] requirements at most of the Natural Areas but could have a potentially significant impact by violating water quality standards or waste discharge requirements at Sharp Park; impacts on Sharp Park will be fully analyzed in the Environmental Impact Report. The few water bodies that are present in the Natural Areas are described above. The primary project activities that might impact water quality involve removal of invasive, nonnative trees and other vegetation, erosion control work performed in gullies, and stream improvement work. Any management activities that require a Section 404 permit would comply with the BMPs that are made a condition of the permit and BMPs that are proposed as part of the SNRAMP. The primary impact these activities could have on water quality would be to increase the sediment load[67], typically measured as total suspended solids (TSS). While these activities may contribute some sediment to water bodies in or near the Natural Areas, the scale of proposed activities is too small to have a substantial impact on water quality or to cause a violation of a waste discharge requirement, with the exception of Sharp Park, where project activities could have a potentially significant impact.

b) The proposed project would have a less than significant impact on groundwater supplies and groundwater recharge[68] in most of the Natural Areas but could have a potentially significant impact on groundwater supplies and groundwater recharge in Sharp Park; impacts on Sharp Park will be fully analyzed in the Environmental Impact Report. There is no removal of water, either from groundwater or any surface water bodies near the Natural Areas included in the proposed project. The proposed activities may actually increase groundwater recharge in the Natural Areas, by minimizing surface runoff and allowing more of this water to infiltrate into the ground.

c) The proposed project would have a less than significant impact from drainage pattern alterations that result in substantial erosion in most of the Natural Areas, but the project could have a potentially significant impact at Sharp Park. This impact will be fully analyzed in the Environmental Impact Report. There are no

[66]Discharge—the flow of surface water into a stream or canal or the outflow of groundwater from a flowing artesian well, ditch, or spring. Also refers to the discharge of liquid effluent from a facility.

[67]Sediment load—the total quantity of sediment, as measured by dry weight or volume, that moves past a site during a given time.

[68]Groundwater recharge—inflow to aquifers from precipitation, infiltration, through-flow, or other means that replaces groundwater lost through pumping or other forms of discharge. The process of water being added to the saturated zone *or* the volume of water added by this process.

activities included in the proposed project that would significantly alter the existing drainage pattern of the sites, and there is no significant streambed or riverbed alteration proposed in this project, with the exception of the proposed improvements to Sanchez Creek and Laguna Salada. Some of the proposed project activities, such as repairing gullies, recontouring or repaving roads, and implementing streambank erosion control measures, might initially cause some additional erosion or siltation[69] on- or off-site. Additionally, some of the vegetation removal/replacement activities and trail creation may slightly alter drainage patterns at the different Natural Areas and might cause a small increase in the rate of stormwater flow. However, these activities would not cause substantial erosion or siltation and would not significantly alter the existing drainage patterns of the sites. Over time, the proposed project is expected to reduce the amount of erosion and siltation occurring on-site and off-site and may reduce stormwater flows. Reduced erosion, siltation, and stormwater flows would result from increased vegetative cover due to the proposed plantings, erosion control measures implemented for streambank protection and gullies, and regrading and recontouring roads.

d) The proposed project would have a less than significant impact with regard to drainage pattern alterations that result in flooding in most of the Natural Areas, but the project could have a potentially significant impact at Sharp Park. This impact will be fully analyzed in the Environmental Impact Report. There are no activities included in the proposed project which would significantly alter the existing drainage pattern of the sites, or substantially increase runoff such that flooding occurs, with the exception of the proposed improvements to Sanchez Creek and Laguna Salada. Some of the proposed project activities, such as repair of gullies, recontouring or repaving roads and streambank erosion control measures might initially cause some additional surface runoff. However, these activities would not cause substantial additional surface runoff, and would not cause flooding. Over time, the proposed project is expected to reduce the amount of surface runoff by dispersing water more widely over the ground surface, thereby increasing infiltration rates.

e) The proposed project would have a less than significant impact with regard to stormwater drainage systems and polluted runoff in most of the Natural Areas but the project could have a potentially significant impact at Sharp Park. This impact will be fully analyzed in the Environmental Impact Report. The proposed project activities, such as repair of gullies, recontouring or repaving roads, and implementing streambank erosion control measures, are designed to reduce erosion, improve water quality, and improve wildlife habitat. While these activities might initially cause some additional surface runoff, with TSS as the primary pollutant, the quantity of additional runoff caused by the project

[69]Siltation—sediment influx from either erosion or from sediment carried into a water body by inflowing rivers and tributaries.

activities would not cause the capacity of existing or planned stormwater drainage systems to be exceeded, and would not be large enough to be considered a substantial source of polluted water. Additionally, the use of gasoline-powered equipment to perform some of the activities described in the SNRAMP may result in small discharges of gasoline to the ground surface. While this would be a minor source of pollution, as discussed in Section E.15, the SFRPD would implement Mitigation Measure HZ-1, which requires that if any vehicles or equipment required refueling, they would be refueled at least 100 feet from any stream or water body. Mitigation Measure HZ-1 also requires an emergency response plan to be prepared in order to address accidental release of hazardous materials. Implementation of Mitigation Measure HZ-1 would reduce potential impacts from equipments to less than significant.

f) The proposed project would have a less than significant impact with regard to otherwise degrading water quality in most of the Natural Areas, but the project could have a potentially significant impact at Sharp Park. This impact will be fully analyzed in the Environmental Impact Report. As discussed under the prior significance criteria in this section and the Geology and Soils section, the primary pollutant for the project activities would be TSS. Impacts on water quality would be concentrated locally within each Natural Area, and these impacts would be less than significant. The following water bodies might have water quality impacts due to the proposed project:

- Lake Merced;
- Islais Creek (Glen Canyon Park);
- SF Bay (India Basin Shoreline Park);
- Pine Lake;
- Two small creeks in McLaren Park;
- Stow Lake;
- Sanchez Creek (Sharp Park);
- Laguna Salada (Sharp Park); and
- A small irrigation pond, known as Arrowhead Lake, in Sharp Park.

While project activities may increase water flows in some of the creeks and water bodies located in the Natural Areas (Lake Merced, Pine Lake, Islais Creek in Glen Park), these activities would also have a less than significant impact with regard to this criterion.

g) Because there are no houses or other significant structures planned as part of the proposed project, this criterion is not applicable. The only Natural Areas within a 100-year flood hazard area are India Basin, Bayview Park, and Sharp Park, which are discussed under topic h) below.

This topic will not be discussed in the Environmental Impact Report.

h) Development in San Francisco must account for flooding potential. Areas on fill or bay mud can subside to a point at which the sewers do not drain freely during a storm (and sometimes during dry weather), and there can be backups or flooding near streets and sewers. The only Natural Areas that fall within a flood-prone area during storms are India Basin, a small portion of Bayview Park, and Sharp Park, which is outside of San Francisco. However, no structures are proposed in these areas. As required, the sponsor for the proposed project would coordinate a review with SFPUC, to determine if the project would result in ground-level flooding during storms, and would incorporate any required design measures. Therefore, the project would result in less than significant impact on flood flows.

Flood risk assessment and some flood protection projects are conducted by federal agencies, including the Federal Emergency Management Agency (FEMA) and the USACE. The flood management agencies and cities implement the National Flood Insurance Program (NFIP) under the jurisdiction of FEMA and its Flood Insurance Administration. CCSF does not participate in the NFIP, and no flood maps are published for the city. However, FEMA is preparing Flood Insurance Rate Maps (FIRMs) for San Francisco for the first time, and there is a FIRM for Sharp Park, which is outside of San Francisco. FIRMs identify areas that are subject to inundation during a flood having a one percent chance of occurrence in a given year (also known as a base flood or 100-year flood). FEMA refers to the floodplain that is at risk from a flood of this magnitude as a special flood hazard area (SFHA).

Because FEMA has not previously published a FIRM for San Francisco, there are no identified SFHAs within San Francisco's geographic boundaries. Portions of Laguna Salada and Sanchez Creek in Sharp Park are within an SFHA and are designated as Zone A (areas with a one percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage). FEMA has completed the initial phases of a study of San Francisco Bay. On September 21, 2007, FEMA issued a preliminary FIRM of San Francisco for review and comment by CCSF, which has submitted comments on the preliminary FIRM to FEMA. FEMA anticipates publishing a revised preliminary FIRM in 2009, after completing the more detailed analysis that Port of San Francisco and CCSF staff requested in 2007. After reviewing comments and appeals related to the revised preliminary FIRM, FEMA will finalize the FIRM and publish it for flood insurance and floodplain management purposes.

FEMA has tentatively identified SFHAs along San Francisco's shoreline in and along San Francisco Bay, consisting of Zone A (in areas subject to inundation by

tidal surge) and Zone V (areas of coastal flooding subject to wave hazards).[70] On June 10, 2008, the San Francisco Board of Supervisors introduced legislation to enact a floodplain management ordinance to govern construction and substantial improvements in flood prone areas of San Francisco and to authorize the City's participation in NFIP. Specifically, the proposed floodplain management ordinance includes a requirement that any construction or substantial improvement of structures in a designated flood zone must meet the flood damage minimization requirements in the ordinance. The NFIP regulations allow a local jurisdiction to issue variances to its floodplain management ordinance under certain narrow circumstances, without jeopardizing the local jurisdiction's eligibility in the NFIP. However, the particular projects that are granted variances by the local jurisdiction may be deemed ineligible for federally backed flood insurance by FEMA.

Once the Board of Supervisors adopts the Floodplain Management Ordinance, the Department of Public Works will publish flood maps for the City, and applicable City departments and agencies may begin implementing construction and substantial improvements in areas shown on the Interim Floodplain Map.

According to the preliminary map, the only Natural Area within a preliminary SFHA is India Basin, which is within Zone V (an area of coastal flooding subject to wave hazards). However, there are no structures proposed for India Basin. Additionally, the Floodplain Management Ordinance is expected to require, in general, that the first floor of structures in flood zones be constructed above the base flood elevation, or flood-proofed. Similarly, although there are portions of Sharp Park that are within an SFHA, there are no structures planned for these areas. Therefore, the project would result in less than significant impacts from structures within a 100-year flood zone.

This topic will not be discussed in the Environmental Impact Report.

i) The proposed project would have a less than significant impact with regard to exposing people or structures to a significant risk of loss, injury, or death involving flooding. Most of the Natural Areas do not have water bodies and are not located near water bodies. There are no dams near the proposed project sites, and, while India Basin Park has levees that mark the shoreline along San Francisco Bay and proposed activities for Sharp Park include constructing canals to isolate portions of Laguna Salada, none of the proposed management activities (removing nonnative vegetation, implementing erosion control BMPs on the levees, or constructing the canals) would cause failure of levees or expose people or structures to flooding. Because of the distance to structures and residences and the likely force of flow from such a release, the detention basin proposed for

[70] City and County of San Francisco, Office of the City Administrator, National Flood Insurance Program Flood Sheet, www.sfgov.org/site/uploadedfiles/risk_management/factsheet.pdf.

Bayview Park has a small enough capacity (65,000 gallons) that even a failure of the basin and release of the water would have a less than significant impact with regard to this criterion.

The bulk of the proposed activities involve removal of invasive, nonnative trees and other vegetation, with subsequent replacement of vegetation with native and special status species. Vegetation removal will be short term, and while removal of the vegetation might increase water flows in some of the creeks and water bodies in the Natural Areas (Lake Merced, Pine Lake, and Islais Creek in Glen Park), these activities would also have a less than significant impact with regard to this criterion. See additional discussion of flooding under criterion d).

This topic will not be discussed in the Environmental Impact Report.

j) The proposed project would have a less than significant impact with regard to exposing people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow. The City of San Francisco General Plan Community Safety Elements describes tsunamis as follows:

> Tsunamis are large waves in the ocean generated by earthquakes, coastal or submarine landslides, or volcanoes. Damaging tsunamis are not common on the California coast. Most California tsunamis are associated with distant earthquakes (most likely those in Alaska or South America), not with local earthquakes. Devastating tsunamis have not occurred in historic times in the Bay Area. Because of the lack of reliable information about the kind of tsunami run-ups that have occurred in the prehistoric past, there is considerable uncertainty over the extent of tsunami run-up that could occur.

India Basin is the only Natural Area that is considered to be within a tsunami hazard zone in San Francisco (CCSF 1997), but the level of risk is expected to be minor. Sharp Park is within a tsunami hazard zone, and the level of risk in that area is also expected to be minor. While the management activities included in the proposed project may result in increased use of the Natural Areas, none of the proposed project activities would increase the likelihood that people or structures would be exposed to a significant risk of loss, injury, or death due to inundation by seiche, tsunami, or mudflow. Therefore, the proposed project has a less than significant impact with regard to this criterion.

This topic will not be discussed in the Environmental Impact Report.

E.15 HAZARDS AND HAZARDOUS MATERIALS

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
15.	**HAZARDS AND HAZARDOUS MATERIALS Would the project:**					
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒	☐
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☐	☒
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐	☐
h)	Expose people or structures to a significant risk of loss, injury or death involving fires?	☐	☐	☐	☒	☐

The cleanup and remediation activities for the former rifle range at Sharp Park that are referenced in Recommendation SP-12a are part of a separate process lead by the SFRPD Capital Division; therefore, those activities are not addressed as part of the SNARMP in this Initial Study.

a) Project implementation would require the use of motor vehicles and motorized equipment for the management activities such as tree removal, weeding, erosion control, and trail construction. Additionally, pesticides would be used under the integrated pest management plan. In addition to pesticides,

hazardous materials[71] used during project implementation include fuel, oil, solvents, and lubricants used for equipment maintenance. Hazardous materials would be used in marginal quantities and would be stored off-site. Any activities involving hazardous materials and hazardous waste[72] would be conducted in accordance with strict health and safety standards mandated by the Occupational Safety and Health Administration (OSHA) and included in the integrated pest management plan, reducing the potential hazards to workers, the public, and the environment from the use, transport, and disposal of those materials and wastes. The potential release of these substances to the environment and nearby water bodies is considered a significant impact. The SFRPD would implement Mitigation Measure M-HZ-1, which requires that equipment be refueled at least 100 feet from a water body. It also requires preparation of an emergency response plan for accidental release of hazardous materials, to reduce potential impacts from the transportation, disposal, or release of hazardous materials to less than significant.

This topic will not be discussed in the Environmental Impact Report.

b) Hazardous materials would be used as part of the project implementation and integrated pest management plan, and there would be a potential for incidental spill or release of hazardous materials. Considering the scale of the management activities, incidental spills or releases of hazardous materials would be in minor quantities. However, the potential release of these substances to the environment and nearby water bodies is considered a significant impact. The SFRPD would implement Mitigation Measure M-HZ-1 to reduce potential impacts from the incidental spills of hazardous materials to less than significant.

This topic will not be discussed in the Environmental Impact Report.

c) There are 45 schools within one-quarter mile of the Natural Areas. Project activities would involve the handling of hazardous materials, such as petroleum products, pesticides, and fertilizers. Although hazardous materials would be used in small quantities and the impact from incidental release would be minor, this would be further reduced with the implementation of the Mitigation Measure M-HZ-1. Potential air pollutant emissions from the proposed project are

[71]Hazardous materials—defined in Section 25501(h) of the California Health and Safety Code, are materials that, because of their quantity, concentration, or physical or chemical characteristics, pose a substantial present or potential hazard to human health and safety or to the environment if released to the workplace or environment.

[72]Hazardous waste—any material that is relinquished, recycled, or inherently waste-like and falls under Title 22 of the California Code of Regulations, Division 4.5, Chapter 11 contains regulations for the classification of hazardous wastes. A waste is considered a hazardous waste if it is toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damages materials), or reactive (causes explosions or generates toxic gases) in accordance with the criteria established in Article 3. Article 4 lists specific hazardous wastes, and Article 5 identifies specific waste categories, including hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), non-RCRA hazardous wastes, extremely hazardous wastes, and special wastes.

addressed in Section E.7, Air Quality. To reduce potential impacts from air pollution emissions on sensitive receptors such as schools, the SFRPD would comply, as applicable, with the San Francisco Construction Dust Control Ordinance and Mitigation Measures M-AQ-1 and M-AQ-2, as described in Section E.7. Because of the minimal use of hazardous materials, potential impacts on schools from hazardous materials would be less than significant.

This topic will not be discussed in the Environmental Impact Report.

d) The project is not within any sites on the hazardous materials sites list compiled pursuant to State of California Government Code Section 65962.5 (Cortese List), nor is it within one-quarter mile of such a site (DTSC 2008). Therefore, project implementation would not create a hazard to the public or the environment.

This topic will not be discussed in the Environmental Impact Report.

e, f) Because the airport closest to the project sites, San Francisco International Airport, is approximately eight miles south of San Francisco and six miles east of Pacifica, these criteria do not apply.

These topics will not be discussed in the Environmental Impact Report.

g) Because the project implementation would be inside the boundaries of the Natural Areas, it would not impair implementation of or interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, the project would have no impacts on emergency plans.

This topic will not be discussed in the Environmental Impact Report.

h) Most of the Natural Areas are in fire hazard areas that are classified as Urban Unzoned. Glen Canyon Park, Mount Davidson, Bayview Park, and Lake Merced are in areas with a fire hazard severity rating of moderate. Management of the Natural Areas would include removing trees, including those that are diseased and dying, thereby reducing easily combustible fuel loads. Also implementing recommendation GR-13a should reduce the presence of vegetation with high fire hazard ratings, such as dense and aging French broom and eucalyptus. Tree removal would reduce the amount of available fuel for fires. More importantly, timber thinning would increase the space between trees, reducing the ability of a fire to rapidly spread. Additionally, the management activities would result in healthier trees that are less susceptible to stress from drought; healthy trees are less likely to catch fire than dying trees with dead limbs and needles. However, chain saws and other motorized equipment would increase the risk of fire. Natural Areas Program gardeners would carry fire extinguishers in their trucks, and would use appropriate fire prevention and suppression measures for larger scale tree removal. The SFRPD would continue to hold regular meetings with the San Francisco Fire Department and would coordinate management activities,

such as tree removal, with that department. Therefore, implementing the management activities at the Natural Areas would have less than significant impacts on the Natural Areas.

This topic will not be discussed in the Environmental Impact Report.

E.16 MINERAL AND ENERGY RESOURCES

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
16.	**MINERAL AND ENERGY RESOURCES— Would the project:**					
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒	☐
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒	☐
c)	Encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner?	☐	☐	☒	☐	☐

a, b) All land in San Francisco, including the project site, is designated Mineral Resource Zone 4 (MRZ-4) by the California Division of Mines and Geology (CDMG) under the Surface Mining and Reclamation Act of 1975 (CDMG undated). This designation indicates that there is inadequate information available for assignment to any other MRZ, and thus the Natural Areas are not designated areas of significant mineral deposits. Further, implementation of the project would not result in the loss of known mineral resources or affect an important mineral resource recovery site.

These topics will not be discussed in the Environmental Impact Report.

c) During the project implementation phase, fuel (diesel and gasoline) would be consumed by motorized equipment, such as two-stroke engines, and by trucks. Use of these fuels by the project work crews are expected to be minor. Improved Natural Areas may also encourage more local, nonmotorized forms of recreation, potentially resulting in minor reductions in motorized vehicle miles traveled, thus reducing fuel consumption. Use of energy and fuels by the proposed project is expected to be less than significant. Additionally, implementing Improvement Measure I-ME-1 to increase energy efficiency and Mitigation Measure M-AQ-2 to limit idling of diesel-fueled vehicles would lessen this impact.

This topic will not be discussed in the Environmental Impact Report.

E.17 AGRICULTURE RESOURCES

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
17. AGRICULTURE RESOURCES In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. **Would the project:**					
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland of Statewide Importance, to non-agricultural use?	☐	☐	☐	☐	☒

a – c) The project sites are located in the CCSF and Pacifica, which are urban areas and therefore not agricultural in nature. The California Department of Conservation does not designate any land within San Francisco or Pacifica as Williamson Act properties or important farmland.[73] The proposed project would not convert farmland to a nonagricultural use, would not conflict with agricultural zoning or Williamson Act contracts, and would not cause other changes that would lead to the conversion of Farmlands of Statewide Importance[74] to nonagricultural use. Therefore, these criteria are not applicable to the proposed project.

These topics will not be discussed in the Environmental Impact Report.

[73]San Francisco is identified as "Urban and Built-Up Land" on the California Department of Conservation *Important Farmland of California Map,* 2004 (California Department of Conservation 2004). This map is available at the Department of Conservation ftp site (ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/statewide/).

Pacifica is identified as "Built-Up Land or Incorporated City Land" on the map of San Mateo County Williamson Act 2006. This map is available at the Department of Conservation ftp site (ftp://ftp.consrv.ca.gov/pub/dlrp/WA/Map%20and%20PDF/San%20Mateo/san_mateo_2006.pdf).

[74]Farmland of Statewide Importance—land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production.

E.18 MANDATORY FINDINGS OF SIGNIFICANCE

Topics:		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact	Not Applicable
18.	**MANDATORY FINDINGS OF SIGNIFICANCE—Would the project:**					
a)	Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐	☐
b)	Have impacts that would be individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐	☐
c)	Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐	☐

In this Initial Study, the Potentially Significant Impact designation is being used solely to identify those topics that will be addressed in detail in the Environmental Impact Report for this project; it does not reflect the findings of any preliminary impact analysis. Those topics are being included in the Environmental Impact Report because there is not sufficient information available at this time on the potentially affected resources or site conditions.

a) In the short-term, the proposed project would result in temporary disturbance of upland and aquatic habitat, potentially degrading the quality of that habitat. The proposed project may also affect archaeological and paleontological resources within the Natural Areas. The potential impacts on this topic will be analyzed in the Environmental Impact Report.

b) Cumulative impacts will be analyzed in the Environmental Impact Report.

c) The proposed project's impacts on human beings are primarily related to noise, air quality, and hazards and hazardous materials. The potential impacts on this topic will be analyzed in the Environmental Impact Report.

F. MITIGATION MEASURES AND IMPROVEMENT MEASURES

This section identifies mitigation measures to reduce significant impacts to less than significant levels and improvement measures to further reduce less than significant impacts.

F.1 MITIGATION MEASURES

The SFRPD would implement the following measures to reduce significant impacts to less than significant levels.

M-CP-1

The SFRPD would conduct an architectural field survey of the Natural Areas using a qualified historian or architectural historian. California Department of Parks and Recreation 523A forms would be prepared for any historical architectural resources within the APE that have not been surveyed within five years. Completed 523A forms would be submitted to the CCSF Historic Preservation Division for review and to the California Office of Historic Preservation for inclusion in the California Historic Resource Information Database. Findings of the survey would be reported in a professional survey document that meets the Secretary of the Interior's *Standards for Historical Documentation*. The SFRPD would maintain close coordination with the CCSF Historic Preservation Division staff to ensure all historical architectural resource concerns were addressed. MEA and the SFRPD would adhere to recommendations made in the report, in consultation with the CCSF Historic Preservation Division staff. Avoiding historic architectural resources is the preferred option and may require modifying the proposed activities, for example, to avoid planting new vegetation species that are dissimilar to historic landscapes.

M-AQ-1

The BAAQMD has determined that implementation of the following control measures would mitigate PM_{10} impacts to a less than significant level. Depending on the level of activities and as applicable, the SFRPD measures to reduce PM_{10} impacts at Sharp Park may include the following:

BAAQMD Basic Control Measures

- Soil, sand, or loose materials transported on the trucks would either be covered or at least two feet of freeboard[75] would be maintained.
- All unpaved access roads, parking areas, and staging areas at the management areas would either be paved, watered three times daily, or nontoxic soil stabilizers would be applied.
- If visible soil material is carried onto adjacent public streets, adjacent streets would be swept daily (with water sweepers).

[75]Freeboard—the space between the top of the transported materials and the top of the truck that is transporting said materials.

BAAQMD Enhanced Control Measures (also applies to sites over four acres)

- As feasible, traffic speeds on unpaved roads would be limited to 15 miles per hour.
- Disturbed areas would be replanted as quickly as possible.

M-AQ-2

To limit exhaust emissions, the SFRPD would implement the following BAAQMD exhaust controls, where applicable:

- Limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) to five minutes at any location.
- Use low-sulfur fuels in all stationary and mobile equipment.

M-HZ-1

To reduce impacts from accidental release of hazardous material, the SFRPD would prepare an emergency response plan for each capital project before the project began. The plan would include emergency procedures for hazardous materials releases. These procedures would include requirements for the necessary personal protective equipment, spill containment procedures, and worker training to respond to accidental spills and releases. The plan would also require equipment to be refueled at least 100 feet from any streams or water bodies. A general emergency response plan also would be prepared to address daily management activities. During the project, all hazardous materials, including any hazardous wastes, would be used, stored, transported, and disposed of in accordance with local, state, and federal hazardous materials regulations.

F.2 IMPROVEMENT MEASURES

SFRPD may implement the following measures to further reduce less than significant impacts.

I-ME-1

Consistent with the 2005 California Energy Action Plan II priorities for reducing energy use, the SFRPD would ensure that energy-efficient equipment is used to the extent practicable during project implementation.

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H. GLOSSARY

A zone—A FEMA Flood Zone designation for high risk zones, with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones on the FEMA Flood Insurance Rate Map.

Adaptive management—A flexible, learning-based approach to managing complex ecosystems.

Ambient air—Outside air; any portion of the atmosphere not confined by walls and a roof.

Ambient noise—The background noise in an area or environment, being a composite of sounds from many sources near and far.

Anaerobic process—A process which only occurs in the absence of molecular oxygen.

Architectural resource—The preferred term to refer to a building or structure.

Attainment—A designation used when an area meets an air quality standard.

Basal area—A measure, typically in square feet per acre, of the area covered by trees within a given urban forest. Basal area is used as an index of tree production.

Carbon sequestration—The removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, forests, and soils) through physical or biological processes, such as photosynthesis.

CEQA area of potential effects (C-APE)—The geographic area or areas within which the proposed project may directly indirectly cause alterations in the character or use of historical resources, if any such properties exist. The C-APE is influenced by the scale and nature of a proposed project and may be different for different kinds of effects caused by the project. The C-APE is likely to be the location physically inspected for cultural resources.

Cherry picker—A maneuverable vertical boom with an open bucket or cage at the end from which a worker can perform aerial work such as pruning trees or repairing electrical lines.

Chippage—Flakes resulting from the process of human modification to lithic materials.

Cultural resource—A generic term that may be used to refer to architectural resources, archaeological resources, and/or traditional cultural properties.

Diameter at breast height (dbh)—A standard means of tree measurement, with the diameter of the trunk measured at breast height, defined as 4.5 feet above the forest floor on the uphill side of the tree.

Discharge—The flow of surface water into a stream or canal or the outflow of groundwater from a flowing artesian well, ditch, or spring. Also refers to the discharge of liquid effluent from a facility.

Ecological restoration—The process of repairing damage caused by humans to natural systems.

Ecotone—A transitional zone between two vegetation communities that contains the characteristic species of each community.

Escape habitat—Natural or man-made features that allow animals to avoid predators or other threats.

Expansive soils—Soils or rocks characterized by clayey material that shrinks and swells as it dries or becomes wet, respectively. Expansive soils are subject to changes in volume and settlement in response to wetting and drying, often resulting in severe damage to structures.

Extirpate—To remove or destroy totally.

Farmlands of Significance

Prime Farmland is land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed.

Farmland of Statewide Importance is land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production.

Unique Farmland does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has been used for the production of specific high-economic-value crops.

Farmland of Local Importance is either currently producing crops or has the capability of production but does not meet the criteria of the categories above.

Grazing Land is land on which the vegetation is suited to the grazing of livestock.

Floodplain—Land adjacent to a watercourse over which water flows in times of flood. The limits of the floodplain are defined by the peak level of a 1-in-100-year return period flood.

Fossil fuel—A general term for subsurface combustible geologic deposits of organic materials, formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the Earth's crust over hundreds of millions of years.

Freeboard—The space between the top of the transported materials and the top of the truck that is transporting the materials.

Fugitive dust—Fugitive emissions generally refer to those emissions that are released to the atmosphere by some means other than through a stack or tailpipe.

Greenhouse gas—A gas which traps solar radiation, such as carbon dioxide.

Ground-Borne vibration—The noise that is manifested inside a building or structure as a result of vibrations produced by a source located outside the building (and its foundations) and transmitted as vibration through the ground between the source and the building.

Groundwater recharge—Inflow to aquifers from precipitation, infiltration, through-flow, or other means that replaces groundwater lost through pumping or other forms of discharge. The process of water being added to the saturated zone *or* the volume of water added by this process.

Hazardous materials—Defined in Section 25501(h) of the California Health and Safety Code, are materials that, because of their quantity, concentration, or physical or chemical characteristics, pose a substantial present or potential hazard to human health and safety or to the environment if released to the workplace or environment.

Hazardous waste—Any material that is relinquished, recycled, or inherently waste-like and falls under Title 22 of the California Code of Regulations, Division 4.5, Chapter 11 contains regulations for the classification of hazardous wastes. A waste is considered a hazardous waste if it is toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damages materials), or reactive (causes explosions or generates toxic gases) in accordance with the criteria established in Article 3. Article 4 lists specific hazardous wastes, and Article 5 identifies specific waste categories, including hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), non-RCRA hazardous wastes, extremely hazardous wastes, and special wastes.

Herbaceous—Having the texture, color, and other characteristics of an ordinary foliage leaf. Herbaceous vegetation is not woody.

Historic landscape—Landscapes or areas that are either 1) associated with an event or series of events of historical note; or 2) represent the visual perception of a particular period of civilization, a way of life, or patterns of living.

Historic resource—An ambiguous term that is sometimes used to refer to architectural resources or archaeological resources of the historic era.

Historical resource—Any property that is either listed in or eligible for listing in the California Register of Historical Resources.

Hydrology—The science that deals with the waters above and below land surfaces; their occurrence, circulation, and distribution, both in time and space; their biological, chemical, and physical properties; and their reaction with their environment, including their relation to living beings.

Integrated pest management—The use of multiple treatment methods to control undesirable weeds and other pests.

Integrity (archaeological or architectural)—A resource's "intactness" and the extent to which it resembles its original form.

Lateral Spreading—landslides that commonly form on gentle slopes and that have rapid fluid-like flow movement, like water.

Liquefaction—The process of changing soil and unconsolidated sediments into water mixture immediately following an earthquake; often results in foundation failure, with sliding of the ground under buildings and structures.

Neotropical migrant—A bird that breeds in North America and spends the nonbreeding season in warmer climates, often in Central and South America.

Paleontological resource—Fossilized remains or traces of animals, plants, and invertebrates, including their imprints, from a previous geological period.

Particulate matter—Tiny solid or liquid particles, generally soot and aerosols.

Passive recreation—Recreational activities that occur in a natural setting and that require minimal site development or facilities. Under passive recreation, the importance of the environment or setting for the activities is greater than in developed or active recreation settings.

Pathogen—A disease-causing agent, especially a living microorganism such as a bacterium or fungus.

Riparian—land next to a natural watercourse such as a river or stream. Riparian areas support vegetation that provides important wildlife habitat, as well as important fish habitat when it overhangs the bank.

Rookery—Colony or aggregation of animals of the same species.

Roosting habitat—Natural or man-made features on which birds perch to rest or sleep.

Sacred site—Locality of traditional significance or importance to a Native American community.

Scenic highway—A highway from which a high quality scenic natural landscape can be seen by travelers and with little intrusion by development.

Scenic resource—The visible physical features on a landscape.

Scenic vista—A visually appealing distant view.

Scrub—Low trees or shrubs collectively.

Sediment Load—The total quantity of sediment, as measured by dry weight or volume, that moves past a site during a given time.

Sedimentation—The deposition of material suspended in a stream system, whether in suspension (suspended load) or on the bottom (bedload).

Sensitive receptor—People or institutions with people that are particularly susceptible to illness from environmental pollution, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise.

Sensitive species—Species that are listed on the California Native Plant Society plant list or *Inventory of Rare and Endangered Vascular Plants*.

Siltation—Sediment influx from either erosion or from sediment carried into a water body by inflowing rivers and tributaries.

Social trail—An undesignated, user-developed pathway that has developed through use of a Natural Area.

Special status species—Species that are accorded special status because of their recognized rarity or vulnerability to habitat loss or population decline. Some of these species receive specific protection in federal or state endangered species legislation. Others have been designated sensitive species or species of special concern on the basis of adopted policies of federal, state, or local resource agencies. These species are referred to collectively as special-status species.

Subsidence—A lowering of the land surface in response to subsurface weathering, collapse or slow settlement of underground mines, or the production of subsurface fluids such as ground water or oil.

Suspended particulates (PM_{10} and $PM_{2.5}$)—Particulate matter is a class of air pollutants that consists of solid and liquid airborne particles in an extremely small size range. Particulate matter is measured in two size ranges: PM_{10} for particles less than 10 microns in diameter, and $PM_{2.5}$ for particles less than 2.5 microns in diameter.

Topsoil—Surface soil usually including the organic layer in which plants have most of their roots and which a farmer turns over in plowing.

Understory—The shrubs and plants growing beneath the main canopy of a forest or stand of trees.

Unique archaeological resource—An archaeological property that meets the criteria listed in Section 21083.2 of the California Public Resources Code. An archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge there is a high probability that it meets one of a set of criteria.

Urban forest—A significant stand of nonindigenous trees.

V zones—A FEMA Flood Zone designation for high risk zones that consist of coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones on the FEMA Flood Insurance Rate Map.

Viewshed—The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

Wetland—A zone periodically or continuously submerged or having high soil moisture, which has aquatic or riparian vegetation components and is maintained by water supplies significantly in excess of those otherwise available through local precipitation.

Williamson Act—Also known as the Land Conservation Act of 1965, this act provides for lowered property taxes for lands maintained in agricultural and certain open space uses. Under a Williamson Act contract, generally the landowner agrees to limit the use of the land to agriculture and compatible uses for a period of at least 10 years. In return, the land is taxed at a rate based on the agricultural production of the land, rather than its real estate market value.

Windthrow—The effects of wind on a stand of trees.

Wind-toughened edge trees—Trees in a stand that have become tough or resistant to the wind.

I. DETERMINATION

On the basis of this initial study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental documentation is required.

Bill Wycko
Environmental Review Officer
for
John Rahaim
Director of Planning

DATE April 29, 2009

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SCOPING REPORT

for

San Francisco Natural Areas Management Plan
Environmental Analysis Services

Contract No. #4043-06/07

November 2009

Prepared for:

San Francisco Recreation and Park Department

And

San Francisco Planning Department, Major Environmental Analysis

Prepared by:

Tetra Tech, Inc.
San Francisco, California

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SECTION 1
INTRODUCTION AND SCOPING OVERVIEW

The San Francisco Planning Department is the lead agency for implementing California Environmental Quality Act (CEQA) requirements for all projects sponsored by the City and County of San Francisco or conducted within San Francisco. The San Francisco Planning Department is preparing an Environmental Impact Report (EIR) to evaluate the environmental and socioeconomic effects of implementing the San Francisco Recreation and Park Department's (SFRPD) Significant Natural Resource Areas Management Plan (SNRAMP).

As part of the EIR process, the San Francisco Planning Department undertook a scoping process from April 22 to May 26, 2009. This report includes a description of the scoping process and a summary of the public and regulatory agencies' comments received during scoping.

1.1 PROJECT DESCRIPTION AND LOCATION

Fragments of unique plant and animal habitats within the City and County of San Francisco have been preserved within parks known as Significant Natural Resource Areas (hereon referred to as Natural Areas). In the late 1990s, SFRPD developed the Natural Areas Program to protect and manage these Natural Areas for the natural and human values they provide. The Natural Areas Program mission is to preserve, restore, and enhance remnant Natural Areas and to promote environmental stewardship of them.

Over the course of several years, SFRPD developed the SNRAMP. The draft final plan, published in February 2006, contains detailed information on the biology, geology, and trails within 31 Natural Areas. Thirty of those Natural Areas are in San Francisco, and one is in Pacifica (Sharp Park). The plan is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years.

1.2 NOTICE OF PREPARATION

On April 22, 2009, the San Francisco Planning Department issued a Notice of Preparation (NOP) (see Appendix A) and distributed an Initial Study (IS) to provide more detailed information on the proposed project and the issues to be considered in the EIR. Forty-five copies of the NOP/IS were sent to interested parties. An Environmental Review Notice (see Appendix A) associated with the NOP was published in the *San Francisco Examiner* and *Pacifica Tribune* on April 22, 2009. The NOP

Notice of Availability (NOP NOA) (see Appendix A) was sent to over 2,400 interested parties. The California State Clearinghouse assigned the project the number 2009042102.

1.3 SCOPING MEETINGS

The San Francisco Planning Department held a public scoping meeting on May 12 and May 14, 2009, to solicit input from the public on the appropriate scope of the EIR, mitigation measures, and potential alternatives to the SNRAMP. The May 12 meeting was held in the County Fair Building Auditorium in Golden Gate Park, San Francisco, and was attended by 33 individuals. On May 14, the meeting was held at the Pedro Point Firehouse in Pacifica and was attended by 54 individuals.

The meetings included a presentation on the proposed project and the environmental review process, followed by a formal public comment period. Copies of the meeting materials are presented in Appendix B; transcripts of the meetings are provided in Appendix C.

1.4 WRITTEN COMMENTS

Throughout the scoping process, 45 sets of scoping comments were received. These comments are summarized in Section 2 and are reproduced in Appendix D.

SECTION 2
SCOPING COMMENTS

This section briefly summarizes the received comments and includes recommendations for addressing the comments in the EIR.

2.1 SHARP PARK GOLF COURSE

Comments

- The golf course is not harming the frogs. The number of frogs should have increased as result of ceasing pumping of ponded water and ceasing application of pesticides a few years back. (George Ambrosio)
- Will the EIR be used to satisfy CEQA review requirements for the Sharp Park Golf Course plan? (San Francisco Public Golf Alliance)
- Will the Sharp Park Golf Course plan be subject to an EIR under CEQA? If so, when? (San Francisco Public Golf Alliance)
- What permits and permitting agencies would be involved in a change of use at Sharp Park Golf Course? (San Francisco Public Golf Alliance)
- To what extent at Laguna Salada, Horse Stable Pond, and their associated wetlands created, recharged, or enhanced by irrigation at Sharp Park Golf Course? (San Francisco Public Golf Alliance)
- Over the past five years, what is the monthly volume of irrigation water used at Sharp Park Golf Course (in gallons)? (San Francisco Public Golf Alliance)
- Over the past five years, what is the monthly volume of Sharp Park Golf Course irrigation water that enters the ponds and their associated wetlands (in gallons)? (San Francisco Public Golf Alliance)
- How would complete cessation of irrigation at Sharp Park Golf Course affect the habitat of the California red-legged frog? What are the effects in low-rainfall months vs. high-rainfall months? (San Francisco Public Golf Alliance)

- How would reduced irrigation at Sharp Park Golf Course affect the habitat of the California red-legged frog? What are the effects in low-rainfall months vs. high-rainfall months? (San Francisco Public Golf Alliance)
- How would complete cessation of irrigation at Sharp Park Golf Course affect the habitat of the San Francisco garter snake? What are the effects in low-rainfall months vs. high-rainfall months? (San Francisco Public Golf Alliance)
- How would reduced irrigation at Sharp Park Golf Course affect the habitat of the San Francisco garter snake? What are the effects in low-rainfall months vs. high-rainfall months? (San Francisco Public Golf Alliance)
- How would complete cessation of irrigation at Sharp Park Golf Course affect the salinity of Laguna Salada, Horse Stable Pond, and their associated wetlands? (San Francisco Public Golf Alliance)
- How would reduced irrigation at Sharp Park Golf Course affect salinity of Laguna Salada, Horse Stable Pond, and their associated wetlands? What are the effects in low-rainfall months vs. high-rainfall months? (San Francisco Public Golf Alliance)
- What effect does groundwater generated by Sharp Park Golf Course irrigation have on the hydrostatic pressure affecting the seawall? How would complete cessation of irrigation at Sharp Park Golf Course affect the strength and/or integrity of the seawall? How would reduced irrigation at Sharp Park Golf Course affect the strength and/or integrity of the seawall? What are the effects in low-rainfall months vs. high-rainfall months? (San Francisco Public Golf Alliance)
- How is the habitat for the California red-legged frog affected by the continued existence of the seawall? (San Francisco Public Golf Alliance)
- What is the current structural condition of the seawall? Its useful life expectancy? At what point will it need to be repaired or replaced to protect the freshwater habitat of the California red-legged frog? (San Francisco Public Golf Alliance)
- Would replacing the Sharp Park Golf Course fairways with freshwater ponds increase flood dangers to residential neighborhoods north and south of the golf course in the event of storm surges that overtop the seawall? (San Francisco Public Golf Alliance)
- Would replacing the Sharp Park Golf Course fairways with freshwater ponds increase the breeding habitat for mosquitoes? If so, what measures would be necessary to protect residential neighborhoods north and south of the golf course from West Nile Virus? (San Francisco Public Golf Alliance)
- As of May 2009, what aerial spraying is permitted by law for control of mosquito larvae and adults? What aerial spraying is conducted at Sharp Park for control of mosquito larvae and adults, including timing and seasonality? Describe any other mosquito control measures used at Sharp Park. What is the effect of mosquito control measures on the California red-legged frog population? What is the effect of mosquito control measures on residential neighbors of Sharp Park? (San Francisco Public Golf Alliance)
- Would closure and regrading of the Sharp Park Golf Course to create new freshwater ponds and wetlands affect habitat for the California red-legged frog or San Francisco garter snake? Would these actions require take permits from the US Fish and Wildlife Service and the California

Department of Fish and Game? How likely is it that these agencies would grant such permits? (San Francisco Public Golf Alliance)

- What would be the source of water for the proposed freshwater ponds and wetlands at Sharp Park? (San Francisco Public Golf Alliance)
- If the Sharp Park Golf Course is closed or reduced in size, would San Francisco still purchase water from Pacifica's Calera Creek Water Recycling Plant? (San Francisco Public Golf Alliance)
- The Sharp Park Golf Course should be recognized as a significant historic architectural and cultural resource in the EIR. (San Francisco Public Golf Alliance)
- How would closure of the Sharp Park Golf Course affect its recreational users? (San Francisco Public Golf Alliance)
- If anything less than the full 18-hole golf course at Sharp Park is retained, the economic and environmental impact on my family will be great. We'll need to ferry Andrew to HMB or elsewhere to play his golf. Others will be similarly impacted. Please don't take away my golf course. (Laurie Frater)
- So as far as Sharp Park goes, I think it just needs to be dredged, cleaned out, let those frogs and snakes do their thing, allow the golfers to go around it as it has for last 70 years. (Reiner Binsfeld)
- I see no reason why we just can't coexist down at Sharp Park. (Reiner Binsfeld)
- The Sharp Park Golf Course can be retained and preserved while the environment is simultaneously enhanced. (San Francisco Public Golf Alliance)
- As Sharp Park's owner, San Francisco has a stewardship obligation to the golf course, an international masterwork. (San Francisco Public Golf Alliance)
- Maintain all of the remaining Alister McKenzie golf holes at Sharp Park. (San Francisco Public Golf Alliance)
- The easiest solutions can also be the cheapest: dredge and direct water if you're trying to save a species. Keep the golf course intact, keep the history intact. And do minimal amount of impact to the environment. (Steve Rush)
- Planning commission should look into thinning the reeds that are choking the lagoon, which would give the water more area and prevent overflowing in the golf course. This would protect the flow and keep the course playable during the wet season and enhance revenue actually for the course. (George Ambrosio)
- Is there any consideration if SFRPD is not interested in maintaining an 18-hole course in Pacifica, would they consider selling it or doing a long-term lease to the City of Pacifica so we could have some economics in the town of Pacifica? (Chuck Egiziano)
- Consider the possible partnerships with the City of Pacifica on the golf course. (Mike Pacelli)
- Keep the Golden Gate National Recreation Area out of Sharp Park. (Mitch Monroe)
- Alternatives should include leaving, modifying, or removing the Sharp Park golf course to best ensure recovery of the San Francisco garter snake and California red-legged frog. (California Native Plant Society, Yerba Buena Chapter)

- We need the maximum alternative in Sharp Park, and I think that would be a no-golf alternative. (California Native Plant Society, Yerba Buena Chapter)
- Since it was made known that public overflow of water off the course was detrimental to the frogs and the—the pesticides we're using, this has been stopped over the last two or three years. I'm sure the frogs are increasing. If they're not, it's not because of the golf course. (George Ambrosio)
- The land at Sharp Park was donated San Francisco for recreational purposes by the Murphy family and others, and I think it should continue that way. (Jack Rauch)
- Consider the impact of the decrease of golfers visiting West Sharp Park and the area, and the potential economic impact to the City of Pacifica and the impact of a loss of a public golf course serving northern San Mateo County's recreation needs as well that of San Francisco's? (Rabine Runneals)
- Consider the economic impacts of both golf and other recreational uses into the City of Pacifica. (Mike Pacelli)
- Look at how much the golf course contributes to Pacifica's economy. (Steve Sinai)
- From the socioeconomic standpoint, I think it is important that Sharp Park be kept as it is for the general community. (Allan Eisenberg)
- Would replacing the Sharp Park Golf Course fairways with freshwater ponds increase the breeding habitat for mosquitoes? If so, what measures would be necessary to protect residential neighborhoods north and south of the golf course from West Nile Virus? (San Francisco Public Golf Alliance)
- Sharp Park is designed by one of the most famous golf course architects in the world, Alister MacKenzie, one of only four architects in the Golf Hall of Fame. Would be tragic and criminal to destroy one of San Francisco's finest athletic recreation venues unnecessarily. (George Ambrosio)
- Consider the impact of the loss of a golf course, which is a historical attraction to the City of Pacifica also, and how that would affect and tie into the City of Pacifica's current efforts to take the Palmetto Avenue business district and emphasize upon the historic characteristics of that neighborhood and develop that into Pacifica's historical district, which is a current plan being developed in Pacifica here. And all of the historical references that Pacifica is attempting to draw upon for the work done in this neighborhood is all linked to the golf course and everything that the City had in that neighborhood, which is the original downtown, prior to the City's incorporation. (Rabine Runneals)
- How would closure of the Sharp Park Golf Course affect its recreational users? (San Francisco Public Golf Alliance)
- There are nine golf courses in San Francisco; there is one in Pacifica. And this is their community venue. It's the only place you can go and have a banquet just about in the entire city. Yes, you need to work to restore habitat. I believe that. Any solution to this that doesn't include golf, lacks vision. (Tony Belway)
- Keep golf in Sharp Park. There needs to be a lot of different uses in that park, more than just native plants. (Nancy Stafford)

- The deed transferring Sharp Park to San Francisco will be voided if the golf course is destroyed to create wetlands habitat. Any court reviewing those documents would find the proposed property change in violation of the transfer documents, and therefore Sharp Park would revert to the State of California. (Suzanne Valente)
- Recommend that measures around the most environmentally sensitive Sharp Park Golf Course areas (holes 12-15) consider creating native plant/no-golf areas surrounding "island" greens, relocating portions of the holes, incorporating raised causeways, restricting golf cart use, raising fairways, and temporarily closing fairways. (San Francisco Public Golf Alliance)

EIR Recommendations

Because redesigning or eliminating the Sharp Park Golf Course is a separate proposal being studied by SFRPD, it will not be included or evaluated as part of the proposed SNRAMP project analyzed in the EIR. Should changes to the Sharp Park Golf Course be proposed, they would undergo a separate regulatory review, including CEQA environmental review.

2.2 GENERAL PROJECT

Comments

- New areas should not be opened up for trail use; existing trails should be improved or closed. (Nature in the City)
- The plan should be revised to change the beginning of the nesting season from April 1 to February 15 (through July 15). The plan's practices for nesting birds should be applied to the February 15 to July 15 nesting season. Vegetation removal between January 1 and February 15 or July 15 to September 1 should be preceded by surveys for nests and nesting activity. (Golden Gate Audubon Society)
- Regarding GR-6b and c, nest boxes for cavity-nesting birds may be appropriate for woodlands with large trees, but would not be for other Natural Areas. Nest boxes should not be used to enhance nesting for nonnative species. (Golden Gate Audubon Society)
- Tree removal as described under GR-15c is not consistent with the leaving of snags and dead branches under GR-6a. This should be resolved and alternatives to guide the treatment of snags and standing dead trees should be addressed in the EIR. (Golden Gate Audubon Society)
- Regarding A5.15, India Basin Shoreline supports a large and multispecies collection of waterfowl from fall through spring. (Golden Gate Audubon Society)
- Regarding A5.18, Great Blue Herons should also be mentioned in this section. (Golden Gate Audubon Society)
- Regarding PL-2a, this measure should apply to all Natural Areas and include great horned owl, Western screech owl, and barn owl nests. (Golden Gate Audubon Society)
- The Natural Areas Management Plan and the EIR should acknowledge and be consistent with all approved San Francisco resolutions related to this project, including Resolution Number 0608-012 (and the two amendments addressing MA-3 areas and feral cats) and Resolution Number 0608-013. (Nancy Wuerfel)

- Request adding to the SNRAMP the recommendations approved by the Recreation and Park Commission on August 21, 2006, to Resolution Number 0608-012, which states "that where appropriate in the plan that feral cat relocation shall be implemented only upon a determination by the Commission that other methods of population reduction failed to adequately reduce cat populations in natural areas." (Society for the Prevention of Cruelty to Animals San Francisco)
- MA-3 areas should be treated in a manner similar to MA-2 areas. (Marnie Dunsmore)
- Discard the MA-1, MA-2, MA-3 approach to the SNRAMP. (Nature in the City)
- Our natural areas should be managed in a coherent and consistent plan for wildlife, rare plants, and ecosystem processes. The areas are already fragmented between different agencies or institutions. Further fragmentation by designing portions MA-1, MA-2, and MA-3, and allowing fewer restrictions on MA-3 will only speed up the destruction of what's left. (Nancy Rosenthal)
- If the Natural Areas Program does not embrace our forests, then cut them loose. Take them out of the natural areas. Let them be guided by the Urban Forestry Department or a division within SFRPD. (Nancy Wuerfel)
- MA-3 areas should be managed by the Natural Areas Program, not by the Bureau of Urban Forests. (Marnie Dunsmore)
- Regarding GR-15b, replant MA-3 areas with Bay Area native coast live oak savannah trees, rather than eucalyptus, Monterey pine, and Monterey cypress. (Marnie Dunsmore)
- Native grasslands, rather than eucalyptus and other trees, should be the focus of efforts to maximize carbon sequestration. (Marnie Dunsmore)
- The management plan should include development of a trail plan that interconnects Natural Areas where possible, connects Natural Areas to public transit, and maps walking routes through open spaces, parks, and urban areas. Suggested trails could connect Glen Canyon Park to Twin Peaks or to Walter Haas Park and Billy Goat Hill. (Marnie Dunsmore)
- Further evaluate the environmental impact of off-leash dog use. Natural areas cover only 27 percent of park lands. There should be room in the other 73 percent of some dog play areas. (Nancy Rosenthal)
- There is no scientific consensus to support the basic premise behind the GR-8 recommendations. (San Francisco Dog Owners Group)
- Allowing dog access to Natural Areas should be reassessed because dogs are rarely on leash and diminish the Natural Area experience. Dog play areas in Natural Areas should be reconsidered because of the lack of dog control and environmental impacts. (Marnie Dunsmore)
- Ninety percent of the off-leash dog areas in San Francisco are in the natural areas. We need to reduce some of the off-leash dog areas. (Greg Gaar)
- Sharp Park was donated to San Francisco for recreational purposes, and I'm glad to see that. I'd like to see that as a foremost consideration. (Jack Rauch)
- Somebody said 90 percent of the dog play areas on SFRPD land are in Natural Areas, and what the hell is this program for? We're supposed to be preserving our heritage, our natural heritage, and yet we're letting this stuff go on. (California Native Plant Society, Yerba Buena Chapter)

- The modification or loss of existing off-leash areas is not acceptable unless you're going to identify replacement property. (Nancy Stafford)
- Because they created the problem, the Army Corps of Engineers should fix the flooding problems at Laguna Salada. The creek at the north end of Laguna Salada should be redirected to empty into the ocean. Sanchez Creek, at the south end of Laguna Salada, should be redirected to the north end of Mori Point to benefit frogs and snakes. (Frankie Franck)
- Add bicycle trails, single-track trails, and bicycle skills areas to the trail plans for the Natural Areas. (Mitch Monroe)
- The plan should include thinning the reeds that choke Laguna Salada, which would prevent overflow on the golf course, benefiting the frogs and the course. (George Ambrosio)
- The cost of tree removal at Mount Davidson would divert limited resources from the basic maintenance of the park, degrading the public experience. (Miraloma Park Improvement Club)
- Tree removal and trail closure should be mitigated through documentation of all trees removed or felled by storms, removal of any downed trees, quarterly removal of poison oak within 10 feet of trails, maintenance and protection of Works Progress Administration trails and retaining walls, and prohibiting any Natural Areas Program activities that restrict public use or access to Mount Davidson for more than 30 consecutive days. (Miraloma Park Improvement Club)
- Alternatives that cause take of fully protected species are not feasible and cannot be assessed under CEQA; only alternatives that reduce take to zero with reasonable certainty may be assessed as feasible alternatives under CEQA. (Brent Plater)
- Restoration planning for Laguna Salada must consider the effects of climate change and likely modification of the seawall. (Brent Plater)
- A restoration proposal that creates a community-centered model of natural flood control, outdoor recreation, environmental education, and endangered species recovery has been developed and must be considered a feasible alternative in the EIR. (Brent Plater)
- The project cannot consider closing the Lake Merced dog play area (LM-7a) because the SF Recreation and Park Department made this an official off-leash area years ago and promised it to the dog-owning community. Monitoring and mitigation can be proposed, but closure cannot because it was not mentioned in the Management Plan. (San Francisco Dog Owners Group)
- The Management Plan has already been heavily compromised. (Greg Gaar)
- The Natural Areas Program is responsible for 31 natural areas, and the EIR should weigh the values of restoring the areas for maximum biodiversity enhancement, and the effect of this enhancement on the citizens, who have little chance to be exposed to other biological riches. All the natural areas within the City of San Francisco should be evaluated for their natural assets. (California Native Plant Society, Yerba Buena Chapter)
- The Natural Areas falling under Management Area-3 should not be separated from the Management Areas-1 and -2, as suggested by one commissioner. The lands under Management Area-3 are interwoven with Management Areas-1 and -2 and separating them would create administrative confusion. (California Native Plant Society, Yerba Buena Chapter)

- The impacts on Sharp Park should be analyzed separately and not as part of other public lands that lie within the City and County of San Francisco borders and land use authority. (Sierra Club Loma Prieta Chapter)
- The tri-level designation of the Natural Areas as Management Areas-1, -2, and -3 undermines the mandate of Natural Areas to regulate, restore, and steward these places and could result in a fragmented management. (Robert Bakewell)
- The cats indoors program from the American Bird Conservancy is not approved by the San Francisco Society for the Protection of Cruelty to Animals, as it is indicated in GR-7b. (Martha Hoffman)
- There is no feral cat control policy stated in the Quail Recovery Plan, as indicated in GR-7a. Any control program must be developed in coordination with San Francisco Society for the Protection of Cruelty to Animals. (L-Danyielle Yacobucci; Society for the Protection of Cruelty to Animals San Francisco)
- GR-7 continues to be very flawed and should either be removed or completely revised, in cooperation with San Francisco Animal Care and Control and San Francisco Society for the Protection of Cruelty to Animals. Alley Cat Allies (alleycat.org) should be consulted as a resource regarding feral cats. (Martha Hoffman; L-Danyielle Yacobucci; Susan Wheeler)
- There have been no scientific studies to determine the impacts of feral cats or any other predator in San Francisco natural areas. It is unacceptable to say that predators, including feral cats, play a major role, much less an "urgent" role, impacting wildlife in San Francisco parks and open spaces. (Society for the Protection of Cruelty to Animals San Francisco; L-Danyielle Yacobucci)
- Eliminating the release of cats into the wild, as indicated in GR-7b, is unrealistic. The trap-neuter-return programs, coupled with the adoption of tame cats and kittens, will decrease the population of feral cats. (Society for the Protection of Cruelty to Animals San Francisco)
- The language in GR-7c that states "minimal suffering and harm" is too subjective to be protective of animals and must be removed from the General Recommendations. (Society for the Protection of Cruelty to Animals San Francisco)
- Identify and prove the scientific measures that would be used to determine if a predator is negatively impacting a natural area. (Society for the Protection of Cruelty to Animals San Francisco)
- The proposed project is experimental and the results are unpredictable. (Morley Singer)
- The Natural Areas Program should address public safety issues in detail at every park, especially at Sharp Park. (Suzanne Valente)
- Restrictions on off-leash dogs must be enforced in natural areas and other groomed areas. (Golden Gate Audubon Society)
- I'm concerned that there be any further compromises with regards to the number of areas within the environmental review. I would hope at the end of the environmental review, we would continue to have 32 areas for consideration and for inclusion in the Natural Areas Program. (Pat Swain)

- There have been a lot of compromises made in the course of developing the master plan, and I'm hoping at this point, as you move forward, you'll try to hold yourself to that document as much as possible. (Pat Swain)
- Many of the project questions are a result of the very powerful mistrust that the neighbors have of the Natural Areas Program and skepticism of the Planning Department. We've had previous battles with the Natural Areas Program over the past 10 years, and they've demonstrated a striking indifference and callousness to neighborhood interests, to try to cut down all the trees on Tank Hill, and some years ago, trying to cut down all the trees—all the trees in Sutro Forest. (Morley Singer)
- While I think saving native plants is very important, and I support the program, I think the program is too large to be successful. I don't think it's cost-effective or practical in its current situation. One-third of park land is a lot to take away from such a large urban area. (Nancy Stafford)
- Find middle ground, instead of chopping down all the trees and replacing them all with natives. (Ethan Elias)
- Provide information on public education for plan. (L-Danyielle Yacobucci)
- I do support this plan. I don't support the scope, and I would support it if this program was more amenable to working with the neighbors and the public. (L-Danyielle Yacobucci)
- Protect the lagoon area. Remove a couple of golf holes roaming around. Focus on pulling golf away from that lagoon. And also I'd like to see some emphasis on the creek. It's a beautiful creek. It's been channelized over the years, and it was been negatively impacted when they developed the golf course. There are a lot of trees that create kind of a dead zone: eucalyptus, pine, and cypress. I would like to see you guys look at possibly some fixing up the creek, too, that Sanchez Creek. (Ron Maykel)
- We have a ton of trails here in Pacifica. When the tunnel comes in, that whole area is going to open up into trails. (Reiner Binsfeld)
- There's a big volunteer component. So in my experience with what goes on in the Oak Woodlands in Golden Gate Park, there's a big feedback that takes place between the community, school kids, environmentalists, stakeholders of all kinds, and the natural areas staff. So it's not only an adversarial situation. There isn't—there isn't some big hand coming down and telling us what to do, when to do it and how to do it. There's a lot of feedback. There's a lot of community participation. (Rob Bakewell)
- So as far as Sharp Park goes, I think it just needs to be dredged, cleaned out, let those frogs and snakes do their thing, allow the golfers to go around it as it has for last 70 years. (Reiner Binsfeld)
- People say the golfers are predators of the frogs and snakes, but really it's more like the raccoons, 'possums, and red-tailed hawks. (Daniel Lim)
- Stop using the word restore and substitute the word preserve. We already have something good. Let's just preserve what we have. (Dave Diller)
- I hear the argument about using this location for children environmental education, but this lagoon has a large area to the south of the course that is easily accessible to the public for this cause. But I see it hardly ever used by the public. There is plenty of open space area surrounding

the golf course and Mori Point, hiking, nature studies, et cetera. Not like the golf course is in the middle of urban San Francisco. (George Ambrosio)

- The Planning Commission should look into thinning the reeds that are choking the lagoon, which would give the water more area and prevent overflowing in the golf course. This would protect the flow and keep the course playable during the wet season and enhance revenue actually for the course. (George Ambrosio)
- The plan for Sharp Park is the worst of any of the San Francisco park system. It is clearly in violation of the mission statement. They do not take into consideration public safety, which includes West Nile Virus and the need to control mosquitoes, and the recent ruling by the court indicates that they no longer can spray pesticides to control adult mosquitoes. They can only drop larvicide. Clearly we cannot ensure that the public will be safe if you expand the wetlands. (Suzanne Valente)
- It's important to link that lower area, like, particularly the archery range and also where the shooting range is, that you guys clean that up, up to the upper ridges so that you can access the southern parts of Pacifica. (Mitch Monroe)
- You guys talked about volunteerism, the stewardship was part of this plan, and a group I represent is called San Francisco Urban Riders, and we've merged with Craig Dawson Mount Sutro, and we logged over 500 collected hours—man hours of volunteerism. And we plan to do a lot more. So if you guys do end up getting a project up there and want to open up a multi-use trail that's a bicycle lane, I think you'll have a lot of manpower to help get that done, and you won't have to pay for labor. (Mitch Monroe)
- The alternatives analysis should include two or three alternatives in addition to the no project alternative. Other alternatives should consider retaining all 18 holes of Sharp Park Golf Course, installing environmental sensitive habitat areas and educational panels along existing trails, and restoring temporary wetlands to prevent them from drying before tadpoles develop into adults. (Todd M. Bray)
- Include in the analysis the spread impact of certain trees, such as the Tasmanian blue gum, and the possibility of removing all the weed (nonnative) trees. (California Native Plant Society, Yerba Buena Chapter)
- Consider avoiding construction of new trails and soil disturbance where native plants exist. (California Native Plant Society, Yerba Buena Chapter)
- The decision to convert existing forest adjacent to neighboring homes to a sensitive plant museum has been made without proper scientific study or input from residents. Studies prepared by forest experts are needed to assess the impacts of forest conversion. (Denise Lapins)
- The environmental must include an alternative that analyzes the full ecological restoration of Sharp Park. The City and County of San Francisco should select the full ecological restoration alternative for Sharp Park in order to provide suitable habitat for listed species at the site and avoid legal liability to San Francisco for illegal "take" of listed species. The full ecological alternative should prioritize endangered species protection and recovery, natural flood control, outdoor recreation, and sustainable land use. The full ecological alternative should include elimination of the golf course holes that are incompatible with maximizing suitable habitat for listed and sensitive species at Sharp Park; elimination of all lawn-mowing activities and restriction

of the use of pesticides that would impact the San Francisco garter snake and the California red-legged frog; inclusion of buffer areas to prevent runoff of pesticides into aquatic habitats; ceasing all use of inorganic fertilizers and monitoring the extent of pollution from the use of nitrogen and phosphorous; ceasing existing animal burrow management policies; restriction or ceasing at a minimum between September 1 and May 31 all water pumping at Horse Stable Pond; creation of basking and hibernating/estivating habitat for the snake, frog, and western pond turtle within Laguna Salada, Horse Stable Pond, and Arrowhead Lake; controlling invasive species in Laguna Salada, Horse Stable Pond, and Arrowhead Lake, installing unobtrusive fencing along the length of the sea wall; posting interpretive signs around Sharp Park regarding the important habitat areas; removing invasive exotic plants and lawn and replanting the park and Sanchez Creek with appropriate native species. (Center for Biological Diversity)

- Select a full restoration alternative at Sharp Park. (Celeste Langille)
- We would like to see what we call a "maximum ecological restoration alternative" for the SNRAMP. (Nature in the City)
- The SFRPD must consider full restoration of Sharp Park through the CEQA process and cannot assume that the golf course will exist indefinitely. (Brent Plater)
- The EIR must address scaling back the Natural Areas Program to a few Natural Areas that can be well maintained. (San Francisco Dog Owners Group)
- The EIR should study a maximum restoration alternative for each Natural Area. (Sierra Club San Francisco Group)
- The lead criterion for Sharp Park alternatives should be protection of habitat for listed species. (Sierra Club San Francisco Group)
- The potential impacts of the proposed project are a great concern. The SFRPD should not approve this project. (Annemarie A. Donjacour)
- Additionally, the Natural Areas Program park proposal ignores the serious public safety issues that should be addressed, especially at Sharp Park. An EIR must cover the public safety issues for humans at every park in detail, as well as provide substantial, reliable, scientific evidence to justify the proposed ecosystem changes. (Suzanne Valente)
- The EIR should study the effects of unchecked growth of nonnative forests, as well as alternative management scenarios for these forests, including managing for biodiversity, thinning, and allowing the natural succession of native plant communities. (Sierra Club San Francisco Group)
- Preserve the Sutro Forest area. (Martha Hoffman).
- I think it is a great idea to look at how to divert some of that water coming off Sharp Park Road. It's just a big spillway right now, and Highway 1 and all that—and I think that could be done without damaging the creek. (Dan Briesach)
- The Natural Areas Program has its place, and it needs to be kept in that place. It cannot be allowed to trump the clear preferences of the vast majority of park land users in San Francisco. I think that the Natural Areas Program proposal for Sharp Park, as well the other park locations, intends to make major changes in the ecosystems, sometimes with no apparent benefit to wildlife and perhaps detrimental to important wildlife. (Suzanne Valente)

- Closure of the park or the entire golf course to create a natural areas wetlands restoration to benefit the red-legged frog and San Francisco garter snake is the latest proposal under consideration by SFRPD. This is pointless. US Fish and Wildlife did not designate Sharp Park as a critical habitat for the red-legged frog or San Francisco garter snake. Therefore, by the US Fish and Wildlife's own definition, whatever happens to either species in this area will have no impact upon the ultimate survival or failure of the species. There is no legal imperative for expansion of the habitat to benefit these two species. Environmental attorneys explained that there is critical habitat and everything else. So Sharp Park has the same requirements as a habitat as your home's driveway does. The Natural Areas Program report acknowledges that the quality of the habitat at Laguna Salada, Horse Stable Pond, and the adjacent wetlands remains excellent. Make the minor alterations biologists recommend and leave the rest of Sharp Park alone. (Suzanne Valente)
- Support off-road cycling in the other areas of Sharp Park, particularly up to the archery range, also up there beyond the archery range where it connects up to—up beyond the ridge. (Mitch Monroe)
- The Mount Davidson park and monument are important historic entities and should be recorded and documented in preparation for listing on the California Register of Historical Resources. Any historical trails created and enhanced as Works Progress Administration projects should be maintained and remain open. (Miraloma Park Improvement Club)
- Consider closing surfeit trails. (California Native Plant Society, Yerba Buena Chapter)
- In the event that dog activities in places such as Oak Woodlands cause significant impacts, the Natural Areas Program will have the right to require limited dog use. (Robert Bakewell)
- The eastern canyon areas of Sharp Park should be off-limits to dogs. (Celeste Langille)
- Selected alternative should not include an increase in recreational activities in Sharp Park that would result in increased vehicle traffic. (Celeste Langille)
- Consider developing multi-use trails and bicycle skill parks as sustainable uses for the open spaces and parks. (Dayton Crites; Tom Borden; Dan Schneider)
- The proposed project severely limits access to public space to protect endangered species where those species either do not exist or coexist peacefully with other uses. (Lisa Vittori)
- Restriction or elimination of dog play areas has several issues. To name a few: This decision should not be within the Natural Areas Program's jurisdiction because there has been arrangements made over time through the Dog Advisory Committee and the Dog Policy to add more dog play areas; the Natural Areas Program had initially the intention to work with the dog community when a management would be prepared and to continue using the areas for dog walking; the management plan stipulation that environmental studies should be conducted when new dog play areas are planned suggests that the existing heavy use of an area would be ignored and the analysis would consider starting with a pristine area that would be impacted by a new use. Instead of integrating native species into public spaces, the proposed project introduces threatened species and restricts access. (Lisa Vittori)
- Evaluate the impact of trails. Currently, hundreds of miles of trails criss-cross the Natural Areas. Any decision for improving or closing existing trails should be based on a comprehensive approach to trail planning. New trails through natural areas are not necessary. (Nancy Rosenthal)

- I'd like to say I'm particularly interested in McLaren Park because it's the best off-road riding in the City, and I agree with the McLaren Trail Plan in terms of closures and whatnot, except for the fact that bicycles are excluded. And I'd like to especially take issue with this issue MP-7 in the McLaren Park plan that lumps off-road motorcycles and mountain bikes together. We want to work with Natural Areas, we appreciate Natural Areas, we don't think trails—especially narrow trails going through natural areas—are damaging. (Tom Borden)
- It does scare me to have a dog just come up and rush a kid in the face. So, a de facto off-leash policy in our Natural Areas really needs to be looked at carefully. (Marnie Dunsmore)
- In the Oak Woodlands, large canopy trees are very problematic and should be removed in some places. (Robert Bakewell)
- Communicate and coordinate with the San Francisco Animal Care and Control and San Francisco Society for the Prevention of Cruelty to Animals on all policies concerning animals in San Francisco. (Martha Hoffman)
- Educational materials must address respect for all animals and plants and include the input of the San Francisco Animal Care and Control and San Francisco Society for the Prevention of Cruelty to Animals, Department of Recreation and Parks Services, and local wildlife expert Ms. Jamie Ray. (Martha Hoffman; Evan Elias)
- The restoration of Sanchez Creek should be added as a goal. The conservation and restoration goals for Sharp Park should maintain all viable populations of special status species, improve habitat and natural connectivity, and prevent introduction as well as decrease the existing amount of nonnative invasive species. (Celeste Langille)
- Evaluate management alternatives for Sharp Park. The report should provide information for making a selection that maximizes ecological and endangered species management and promotes the recovery of the San Francisco garter snake and the red-legged frog. (Nancy Rosenthal)
- The tree removal is necessary. We only support it during the non-nesting season, and we believe trees such as those used by colonial birds like herons and cormorants should be preserved. So should trees used by hawks and owls for nesting. We urge that habitat that's necessary for birds, such as California quail, spotted towhee, wren-tit, and other species restricted to coastal scrub should be established and maintained with the specific goal of continuing those specific habitat systems. (Golden Gate Audubon Society)
- We support restoration and appropriate management practices at Sharp Park that will ensure it as a viable habitat for red-legged frogs and San Francisco garter snakes. (Golden Gate Audubon Society)
- In terms of Sharp Park, we need to select the restoration alternative that maximizes the probability of protecting the snakes, that they will recover, so that the protection by the Endangered Species Act won't be necessary. The red-legged frog used to be the Jumping Frog of Calaveras County. A lot of plants and animals are becoming endangered because their habitat is strange. (California Native Plant Society, Yerba Buena Chapter)
- With feral cats, how will you implement what's described in the Quail Plan? (L-Danyielle Yacobucci)

- Replacement of the plants on the steep sand-covered areas of the Rock Outcropping at 14th Avenue, Ortega, and Pacheco Streets should be conducted in phases to avoid impacts on sand retention. (Lydia Cassorla)
- An objective study should be prepared in the future to evaluate the positive and negative impacts of feral cats in the urban environment of San Francisco. (Society for the Prevention of Cruelty to Animals San Francisco)
- Urges extra penalties for camping in Natural Areas. (Robert Bakewell)
- The management plan for Sharp Park violates the following mission statement of the SFRPD: "The San Francisco Recreation and Park Department's Mission is to provide enriching recreational activities, maintain beautiful parks and preserve the environment for the well-being of our diverse community." (Suzanne Valente)
- The management plan for Sharp Park intentionally disregards the following performance standard established in the SFRPD's Operational Plan: "The Department shall consider, among other matters, the following issues: Public safety, which shall include the reduction of environmental and other hazards, safe equipment operations, and safe pesticide use." (Suzanne Valente)
- Include new bike trails and a bicycle-specific park in the Archery Range and Shooting Range area of Sharp Park. (Mitch Monroe)
- Address motorcycles separately from bicycles. (Mitch Monroe)
- Consider the Trail Master Plan of the San Francisco Riders when planning trail closures and constructing new trails. (Mitch Monroe)
- Although the plan for the Interior Greenbelt does not indicate trail closures in that Natural Area, the Natural Areas Program is apparently closing this Natural Area to the public. The EIR must acknowledge what has actually happened and presently exists in the Natural Areas. These are omissions in the Initial Study that must be corrected in the EIR. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- Everson/Digby Lots was not subjected to a lengthy public process and therefore should not be included in this EIR. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- San Francisco's large mature trees are truly an endangered species and need to be preserved. (San Francisco Tree Council)
- The IS is mistaken that any commitment has been made to replace all removed trees with native trees. Nor would such a commitment be advisable, given that planting native trees in most of the natural areas would not be successful because they are adapted to sheltered areas that are not representative of the Natural Areas. If they were planted, they would be unlikely to survive. The EIR must evaluate the impact of proposed tree removal, based on the accurate premise that most of the trees will not be replaced. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- There is no basis upon which the IS may assume that nonnative trees designated for removal are dead or dying trees, as stated in GR-15. Tree removal designated by the SNRAMP is within Management Areas-1 and -2 areas for which GR-15 does not apply. (Karin Hu, Mary McAllister, Nancy Wuerfel)

- Removing invasive species does not necessarily enable the survival of native plants if they are no longer adapted to the conditions that have been altered by man. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- What are the details of the plan for dredging Laguna Salada and removing bulrushes, including the permitting requirements? (San Francisco Public Golf Alliance)
- What are the details of the planned creation of a buffer zone between Laguna Salada and the golf course, including the permitting requirements? (San Francisco Public Golf Alliance)

EIR Recommendations

The EIR will address these comments by modifying the project description and including in the analysis a Maximum Restoration Alternative, Maximum Recreation Alternative, and a Maintenance Alternative.

2.3 GENERAL CEQA

Comments

- In accordance with Resolution Number 0710-011, the CEQA documents must analyze impacts at all 31 Natural Areas, including quantification of effects at each Natural Area and cumulative effects on each Natural Area. (Nancy Wuerfel)
- The Initial Study does not address in Sections C.1 and C.2 the requirements of Administrative Code Chapter 63, including reporting, planning, and approval from the San Francisco Public Utilities Commission. The Initial Study does not quantify the capacity of the existing irrigation system, the amount of water needed by the project, or the square footage of land to be irrigated. It also does not include installation of water meters and San Francisco Public Utilities Commission approval of those meters. (Nancy Wuerfel)
- The Initial Study does not acknowledge that the Natural Areas Management Plan has not been approved for implementation and may be subject to further amendments and mitigation measures before approval for implementation. (Nancy Wuerfel)
- The project as outlined in the public meeting seems to ignore many of the 18 items that should be analyzed in the EIR. (Morley Singer)
- A certified arborist should evaluate impacts on trees in Mount Sutro Forest. (Morley Singer)
- Address geology and soils in the EIR. (Nancy Stafford)
- There's so many totally cockamamie things, that to leave out wind effects in the environmental impact report is striking. (Morley Singer)
- As we have in all environmental impact reports, I would like to know what the environmental impacts of a no-management plan alternative. I mean, I think that's required in the plan. (Greg Gaar)
- Address prescribed burning dangers in the EIR. High winds can cause a fire to get out of control. (San Francisco Dog Owners Group)
- Address the impact of poor maintenance in the EIR. Most areas are poorly maintained and plants die. So, that may affect future plans, too. (San Francisco Dog Owners Group)

- This is an EIR on the SNRAMP, not the Natural Areas Program. (Nature in the City)
- If you come up with a good way here to do the things that you're doing, can one of those other proposals override what you're already going to come up with? (Dave Diller)
- The EIR must reanalyze any data provided by the Natural Areas Program regarding environmental impacts of dogs to avoid misrepresentation of data and conclusions. (San Francisco Dog Owners Group)
- The impact analysis should distinguish between the effects of "free-roaming" dogs, those without human oversight, and "off-leash" dogs, those with human oversight. (San Francisco Dog Owners Group)
- The EIR needs to look at the effects of the immediate closures of the off-leash areas that are called for in this management plan, plus the effects of future closures that might be affected by an expansion of the natural areas into the off-leash areas. (San Francisco Dog Owners Group)
- The EIR must address the adverse traffic, air pollution, and global warming impacts associated with the closure of off-leash dog areas and the resulting vehicle trips to the remaining off-leash areas. (San Francisco Dog Owners Group)
- The EIR must address the impacts of overuse of remaining off-leash areas if some of the current off-leash areas are closed. If the Golden Gate National Recreation Area restricts off-leash access to its lands, this also could increase overuse of the remaining off-leash areas. (San Francisco Dog Owners Group)
- The EIR should study the effects of unchecked growth of nonnative forests, as well as alternative management scenarios for these forests, including managing for biodiversity, thinning, and allowing the natural succession of native plant communities. (Sierra Club San Francisco Group)
- Evaluate the impact of leaving 95 percent of the invasive trees in the natural areas. On Mount Davidson, where ground space is open after last winter's storm knocked down some trees, several native plants once again sprouted. Removing more of these understory-killing trees can bring back native plants and reestablish a healthy and diverse ecosystem. (Nancy Rosenthal)
- What are the environmental impacts of leaving 95 percent of the invasive trees in our natural areas? If you go to areas where you have dense eucalyptus, dense cypress, and pine, you'll find there's no biological diversity in the understory because the shading, the fog drift, it destroys the native plants that have been there for hundreds of thousands of years. (Greg Gaar)
- Identify the environmental impacts of the no action alternative. (Greg Gaar)
- The decision to convert existing forest adjacent to neighboring homes to a sensitive plant museum has been made without proper scientific study or input from residents. Studies prepared by forest experts are needed to assess the impacts of forest conversion. (Denise Lapins)
- I just want our questions on the record. They have to do with the relationship between this EIR process and the process that the Board of Supervisors asked the SFRPD to look into, a possible change of use of the golf course when we have a serious environmental question relating to that, and she may have ran through that area, but if they do anything to the golf course, that in itself will be subject to a completely separate EIR than this. (San Francisco Public Golf Alliance)

- I do favor the idea of restoring Sharp Park and restoring the city water corridor as well, and how it connects with other green spaces in the area. I would like to ask that we consider the impact of leaving as many trees as you're suggesting leaving. In my view, 95 percent is an awful lot of trees. I would like to encourage consideration of the trails and the impact that the trails have on hiking, which is increasing in importance by many studies of recreational activities, whereas other activities have gone down on the list. Consider the impact of hiking and environmental education on students and other people regarding the bigger picture, to see where humans fit into the larger frame of things. (Ellen Edelson)
- Further evaluate the environmental impact of off-leash dog use. Natural areas cover only 27 percent of park lands. There should be room in the other 73 percent of some dog play areas. (Nancy Rosenthal)
- I'd like to say I'm particularly interested in McLaren Park because it's the best off-road riding in the city, and I agree with the McLaren Trail Plan in terms of closures and whatnot, except for the fact that bicycles are excluded. And I'd like to especially take issue with this issue MP-7 in the McLaren Park plan that lumps off-road motorcycles and mountain bikes together. We want to work with Natural Areas, we appreciate Natural Areas, we don't think trails—especially narrow trails going through natural areas—are damaging. (Tom Borden)
- As of May 2009, what aerial spraying is permitted by law for control of mosquito larvae and adults? What aerial spraying is conducted at Sharp Park for control of mosquito larvae and adults, including timing and seasonality? Describe any other mosquito control measures used at Sharp Park. What is the effect of mosquito control measures on the California red-legged frog population? What is the effect of mosquito control measures on residential neighbors of Sharp Park? (San Francisco Public Golf Alliance)
- Address environmental impacts of leaving 95 percent of invasive trees in the Natural Areas. (Greg Gaar)
- Identify the impacts of periodic tree removal on the forest in its entirety. (Denise Lapins)
- The Initial Study dismisses the environmental impacts and safety issues that have been experienced in the past. (San Francisco Tree Council; Karin Hu, Mary McAllister, Nancy Wuerfel)
- The Initial Study demonstrates that the author has not understood the SNRAMP, has not visited the natural areas, and ignored basic scientific principles such as carbon sequestration. (San Francisco Tree Council; Karin Hu, Mary McAllister, Nancy Wuerfel)
- A comprehensive EIR represents an opportunity to resolve some of the controversies that the program has generated in the last 10 years of its operation. The EIR should be expanded to include several environmental issues for which the Initial Study is inadequate, inaccurate, or is inconsistent with the reality of past actions of the Natural Areas Program. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The EIR must fully analyze the tree removal issues. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The IS assumes that native plants would survive in the long term. The study does not acknowledge that the ranges of native plant populations are changing in response to global warming. (Karin Hu, Mary McAllister, Nancy Wuerfel)

- Tree removal cannot be done piecemeal. Felling one tree will impact those in the close proximity. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- At Lake Merced, over 100 trees would be removed from the eastern shore of the South Lake. This would expose an old population of huge cypress trees to wind blows at the Harding Park Golf Course. Massive tree failure could result. The EIR should indicate that the PGA Tour has been informed of the tree removal adjacent to the golf course and that the management actions in the SNRAMP will not violate the terms of the contract between the PGA Tour and the City. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The IS makes no mention of Pine Lake tree removals, nor the consequences of those removals. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The EIR must evaluate the potential for windthrow resulting from the removal of 18,500 trees. This evaluation must be done by a qualified consultant with expertise in forestry management. (Karin Hu, Mary McAllister, Nancy Wuerfel)

EIR Recommendations

The EIR will address these comments by revisiting the environmental impact analysis included in the IS.

2.4 GENERAL ENVIRONMENTAL

Comments

- What's the definition of "substantial effect"? (L-Danyielle Yacobucci)
- It's important that the SFRPD and Planning Department keep in mind the mission of the Natural Areas Program, and that's another project program, which is to preserve, restore, and enhance the remnants of Natural Areas of the city. (Paul Koski)
- What's the definition of "environment"? Let's go back to the CEQA law and find out what it intends to protect. (Nancy Wuerfel)
- Why do we possibly acquire that many nonnative trees and put them in the middle of a Natural Areas Program if indeed natural areas were defined only as remnants? (Nancy Wuerfel)
- I just want to point out—first, I want to answer some questions about Laguna Salada, you know, and the flooding. You have two things that took place there. You had where the berm blew out, pushed tons and tons of sand that came in there, and there's like a two- to three-foot-wide area where the lake is extremely shallow where the sand came in. This took place back in 1983, I think. So that is a factor that has caused—contributes to the flooding. (Ron Maykel)
- And also the tules and the cattails, these are deciduous plants. You know, they die off and then all of the thatch from these plants creates—basically assists in the build-up, which creates—makes the lake become shallower and shallower over years and years. The debris just builds up. And that's a big part of the siltation there. And I think that's one of the bigger—bigger reasons why that's happening. (Ron Maykel)
- The Corps of Engineers built the wall. When they built the wall, they blocked a natural stream that was on the north end of the park. The Corps of Engineers then changed it so that the drainage went into the Laguna Salada. They then attached all the drainage to the freeway and

everything else to that drain. So the Corps of Engineers actually put all that silt in there. Now, it's full and backing up because San Francisco hasn't done anything about it. They haven't either replaced the stream or exited the north end or anything else, which means the City of Pacifica then has to spend money pumping out the water, which doesn't make any sense to me. I don't know why Pacifica doesn't just send San Francisco a bill. (David Marshall)

- The second thing is that there's another issue, which is the recycled water. San Francisco Public Utilities Commission is supposed to kick in some money for recycled water, which will help keep the pond in a more consistent level, but as part of this new study, it's my impression that they're trying to just renege on the whole deal. (David Marshall)
- We need to get together and work to solve our common problems, which I think is painfully evident now, Laguna Salada is dysfunctional. (Dan Briesach)
- There's an overflow pipe at Horse Stable Pond that used to function, and now it's silted in. (Dan Briesach)
- I love the golf course. I want to thank the people trying to preserve the frogs and the snakes. (Chuck Egiziano)
- Consider the berm, the conditions of the berm. (Mike Pacelli)
- The City and County of San Francisco must comply with the California Coastal Act. The City of Pacifica has a certified Local Coastal Program (LCP) and the portion of Sharp Park west of Highway One is within the LCP. Therefore, a Coastal Development Permit (CDP) should be obtained for project activities affecting west Sharp Park. (City of Pacifica)
- The proposed project is subject to Pacifica's Logging Operations Ordinances, Ordinance Numbers 636 C.S. and 673 C.S. Any tree removal, destruction, or harvesting of twenty or more trees within one year is prohibited unless considered in the CDP or unless the Pacifica Public Works Director makes specific findings regarding the tree removal operations. (City of Pacifica)
- Given that Sharp Park is not listed by the US Department of the Interior Fish and Wildlife Service as critical habitat for threatened or endangered species, what is San Francisco's liability concern with respect to compliance with the Endangered Species Act conservation requirements? (Juanita Mercado; Suzanne Valente)
- Removing the 15,000 trees in Sharp Park will jeopardize the habitat of 20 special status species. The citizens of Pacifica intend to demand their city officials hold the SFRPD to the terms of Pacifica's anti-logging ordinance. (Suzanne Valente)
- The EIR should address compliance with the Pacifica Logging Ordinance. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The EIR should address compliance with the San Francisco General Plan, specifically Policy 2.9 of the Recreation and Open Space Element. (Karin Hu, Mary McAllister, Nancy Wuerfel)

EIR Recommendations

The EIR will address these comments by revisiting the environmental impact analysis included in the IS.

2.5 CUMULATIVE IMPACTS

Comments

- The EIR should analyze the cumulative impacts on the Mount Sutro Forest and the neighboring properties and residents associated with the SNRAMP and the University of California/Federal Emergency Management Agency grant proposal. (Denise Lapins; Morley Singer; Evan Elias)

EIR Recommendations

The EIR will address this comment by including this project in the cumulative impact analysis.

2.6 LAND USE AND LAND USE PLANNING

Comments

- Request that the Environmental Impact Report include an analysis of the project's consistency with the Pacifica local coastal land rules and policies and any pertinent Pacifica land use regulations. We also believe that a local coastal development permit may be required and ask that the EIR include an analysis of that requirement. (City of Pacifica)
- Pacifica is in the process of updating its general plan and local coastal plan, which could alter or modify existing land use policies or result in new policies that could impact the areas covered in the proposed Natural Areas Management Plan. (City of Pacifica)
- Contrary to what is stated in the Initial Study, the SNRAMP changes land use by restricting access to the Natural Areas. The SNRAMP has the potential to eliminate all forms of recreation other than walking on a designated path as it implements its goals. The proposal to transfer or develop joint management of Sharp Park with the Golden Gate National Recreation Area indicates the potential for ownership of Natural Areas to change in the pursuit of restoration goals. These changes in land use must be acknowledged and evaluated in the EIR. Recreation access not identified by the IS must also be evaluated by the EIR. (Karin Hu, Mary McAllister, Nancy Wuerfel)

EIR Recommendations

The EIR will address these comments by including analysis of the project's consistency with the Pacifica local coastal program and the Pacifica general plan and addressing indirect change in land use within the Natural Areas.

2.7 AESTHETICS

Comments

- Address the effects of tree removal at Mount Davidson on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion. (Miraloma Park Improvement Club)
- Preserve the beautiful forest. (Morley Singer)
- Use a scientific evaluation process with respect to recreation and aesthetics. (Andrea O'Leary)

- How would views from the surrounding residences be impacted by the three scenarios, views into the park as well as our views to the beach and the ocean? (Rabine Runneals)
- The EIR must address the adverse aesthetic impacts from poor maintenance of the Natural Areas. (San Francisco Dog Owners Group)

EIR Recommendations

The EIR will address how tree removal affects views at Mount Davidson and Sharp Park. The San Francisco Planning Department approves of the evaluation process used to analyze potential impacts. The EIR assumes proposed actions would be implemented correctly, but it cannot assume poor maintenance would occur.

2.8 POPULATION AND HOUSING

No comments were received on this topic.

2.9 CULTURAL AND PALEONTOLOGICAL RESOURCES

Comments

- The Sharp Park Golf Course should be recognized as a significant historic architectural resource in the EIR. (San Francisco Public Golf Alliance)
- The Mount Davidson park and monument are important historic entities and should be recorded and documented in preparation for listing on the California Register of Historical Resources. Any historical trails created and enhanced as Works Progress Administration projects should be maintained and remain open. (Miraloma Park Improvement Club)
- One of the things about Sharp Park is that Alister MacKenzie designed the course. That has a lot of history involved with it. Goes back to a lot of the famous golf courses that are currently being used, and I think that should be taken into consideration. (Steve Rush)
- Looking at the historical and cultural part of the environment, it is a famous golf course. Also, the clubhouse was done by the Willis Polk firm. (Kathleen Manning)

EIR Recommendations

To address these comments, a Historical Resource Evaluation Report will be prepared to evaluate the Sharp Park Golf Course and Mount Davidson. The results of that report will be incorporated into the EIR. The EIR will also address these comments by stating that redesign or elimination of the Sharp Park Golf Course is not part of the proposed project. Proposals for redesign/elimination of the golf course would be addressed in the cumulative setting.

2.10 TRANSPORTATION AND CIRCULATION

Comments

- If you close off-leash areas, people will have to drive to a park across town in order to get to a legal off-leash area. This will affect traffic, air pollution, and global-warming. (San Francisco Dog Owners Group)

EIR Recommendations

The EIR will address this comment by assessing the impacts of increased vehicle trips resulting from project implementation.

2.11 NOISE

Comments

- Address the effects of tree removal at Mount Davidson on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion. (Miraloma Park Improvement Club)

EIR Recommendations

The EIR will address noise impacts on sensitive receptors that would result from removing trees at Mount Davidson.

2.12 AIR QUALITY

Comments

- Suggesting that native plants would be more effective in the removal of carbon dioxide is absolute nonsense. (Morley Singer)
- Address global warming from tree removal. (Morley Singer)
- Closing off-leash areas will force people to drive to a park across town in order to get to a legal off-leash area. This will affect traffic, air pollution, and global warming. (San Francisco Dog Owners Group)
- Removing trees will necessarily have a negative impact on global warming. (Marnie Dunsmore)
- The author of the IS does not provide a full reference to the claim that young trees have long-term carbon sequestration, which results in a net greenhouse gas benefit. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The release of carbon stored in the 18,500 trees that would be removed would certainly swamp whatever benefit there may be in replacing some of the trees. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- Because of the cumulative effect of all the sources of carbon release predicted by the SNRAMP, the effect of prescribed burns on carbon release and air pollution must be considered by the EIR. Consideration of prescribed burns by a separate and later environmental review is not acceptable. (Karin Hu; Mary McAllister; Nancy Wuerfel)
- Carbon sequestration by trees and plants is directly proportional to their size. Therefore, a small sapling is incapable of sequestering as much carbon as a large tree, whether it is healthy or not. The US Department of Agriculture reports that tree cover is less than 12 percent of San Francisco's area, yet trees remove about 19 percent more air pollution than shrubs in San Francisco. This finding refutes the claim that converting many acres of trees into grassland will benefit air quality in San Francisco. (Karin Hu, Mary McAllister, Nancy Wuerfel)

- The removal of seedlings and saplings is incremental to the designated removal of 18,500 trees. This would result in additional reduction in carbon sequestration that should be quantified. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The IS does not consider the potential for the death of many native trees if sudden oak death continues to spread. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The author of the IS does not provide a full citation of the claim that grassland above 50 degrees latitude reflects more sun than forest canopies. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The reflected light argument is based on the comparison between dark forests and the reflected light of snow in northern latitudes. It is clearly a stretch to apply this concept to the local climate where there is no snow. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- Increased temperature on the forest does not reduce the carbon sequestering abilities of the forest that are a by-product of photosynthesis. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- If nonnative plants and trees are removed from 25 percent of all park acreage in San Francisco and it proves impossible to successfully grow native plants in those locations, there will clearly be no carbon sequestration benefit from these efforts. (Karin Hu, Mary McAllister, Nancy Wuerfel)

EIR Recommendations

The EIR will analyze the impacts on global warming and greenhouse gases that would result from removing trees, replacing mature trees with young native trees or with grassland, and the potential risk of native trees dying. Additional air pollutant emissions associated with increased vehicle trips also will be assessed, if necessary.

2.13 WIND AND SHADOW

Comments

- Address the effects of tree removal at Mount Davidson on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion. (Miraloma Park Improvement Club)
- The Sutro Forest is always damp. It sucks out water from the fog, and it's always wet in there. I sail on the bay, and maybe two days out of the year, the wind comes from the east; 363 days a year, it comes from the west. The forest is a windbreak for all of the structures east of the forest, from Parnassus Street all the way to up to the top of Twin Peaks, and if you take down the trees, then the westerly winds would just fan a fire that's coming from the forest area. (Morley Singer)
- Investigate wind patterns. (Nancy Stafford)
- When you get to the impact of removing trees, you have to look at wind, increased wind, and you have to look beyond the park itself. (San Francisco Dog Owners Group)
- The EIR must address the adverse wind impacts resulting from the removal of trees and nonnative plants. (San Francisco Dog Owners Group)
- Include in the EIR the virtues of eucalyptus trees. Those trees are unique in that they actually grow in the sandy soil and withstand the fierce winds blowing off the Pacific. Studies have

shown that eucalyptus trees slow the wind down at least 30 percent in the Presidio. (San Francisco Tree Council)

EIR Recommendations

The EIR will analyze the wind effects of removing trees, including those effects on residential neighborhoods near the Natural Areas. The analysis will also assess the ability of the replacement native trees to act as wind barriers, compared to the eucalyptus trees.

2.14 RECREATION

Comments

- Address the effects of tree removal at Mount Davidson on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion. (Miraloma Park Improvement Club)
- The cost of tree removal at Mount Davidson would divert limited resources from the basic maintenance of the park, degrading the public experience. (Miraloma Park Improvement Club)
- Consider biking trails and their impacts within the archery range and other hilly areas. More public and legal bike trails are needed. (Adam LaBarge)
- This analysis should address the whole issue of designated off-leash areas within the Natural Areas. (California Native Plant Society, Yerba Buena Chapter)
- Address the impacts of restricting public access for the protection of sensitive habitat plantings within the interior greenbelt and at the Belgrave trailhead in particular. (Denise Lapins)
- You also have to look at the impact on recreation of the introduction of the especially threatened native species. What we see at Sharp Park is that if there's a threatened or endangered species, or even a sensitive species, suddenly the federal government just gets involved, and we lose all local control of those areas, and that's not something we necessarily want to do. We have to make sure that we retain local control of our local parks. (San Francisco Dog Owners Group)
- Use a scientific evaluation process with respect to recreation and aesthetics. (Andrea O'Leary)
- Glen Park has so much urine from dogs in it that it's hard to go there. (Marnie Dunsmore)
- Introducing endangered or threatened species into areas where there are none would threaten active recreational opportunities when open space is at a premium. (Nancy Stafford)
- Contrary to what is stated in the IS, the SNRAMP changes land use by restricting access to the Natural Areas. The SNRAMP has the potential to eliminate all forms of recreation other than walking on a designated path as it implements its goals. The proposal to transfer or develop joint management of Sharp Park with the Golden Gate National Recreation Area indicates the potential for ownership of Natural Areas to change in the pursuit of restoration goals. These changes in land use must be acknowledged and evaluated in the EIR. Recreation access not identified by the IS must also be evaluated by the EIR. (Karin Hu, Mary McAllister, Nancy Wuerfel)

EIR Recommendations

The EIR will address the effects that removing and replacing trees at Mount Davidson will have on the recreational experience. The EIR will discuss funding sources for the activities proposed under the SNRAMP and any potential issues with bike trails and other recreation within the Natural Areas, including the archery range. The EIR will discuss the impacts of dog play areas on recreation and measures to minimize those impacts. The EIR will address the policies of general public access and trail access in the Natural Areas and the protection of sensitive habitats within all of the Natural Areas, including the Interior Greenbelt. The EIR will address whether the proposed management actions would restrict or otherwise affect recreation opportunities within the Natural Areas. The EIR will address the adaptive management approach, which will equally evaluate the management of recreation and any potential impacts on aesthetics within the natural areas. The EIR will address the operation and maintenance of dog play areas and its impact on Natural Area visitors.

2.15 UTILITIES AND SERVICE SYSTEMS

Comments

- The Initial Study does not address in Sections C.1 and C.2 the requirements of Administrative Code Chapter 63, including reporting, planning, and approval from the San Francisco Public Utilities Commission. The Initial Study does not quantify the capacity of the existing irrigation system, the amount of water needed by the project, or the square footage of land to be irrigated. It also does not include installation of water meters and San Francisco Public Utilities Commission approval of those meters. (Nancy Wuerfel)
- The EIR must include the analysis of additional water use. Any irrigation in Natural Areas is new and incremental. (Karin Hu, Mary McAllister, Nancy Wuerfel)

EIR Recommendations

The EIR will address these comments by including information on the capacity of the existing irrigation water system, the increase in water demand from the project, and the projected increase in the size of the areas to be irrigated. Also included will be a discussion of Administrative Code Chapter 63 and additional San Francisco Public Utilities Commission requirements.

2.16 PUBLIC SERVICES

No comments were received on this topic.

2.17 BIOLOGICAL RESOURCES

Comments

- Regarding A4.4, Best Management Practices, Erosion Control, use of wood chips for erosion control should be evaluated for impacts or wildlife, including bees and birds, some of which use dirt areas for dust baths. (Golden Gate Audubon Society)
- Regarding A5.15, India Basin Shoreline supports a large and multispecies collection of waterfowl from fall through spring. (Golden Gate Audubon Society)
- Regarding A5.18, Great Blue Herons should also be mentioned in this section. (Golden Gate Audubon Society)

- Regarding LM-6c, access to the East Lake shoreline between September 1 and March 31 would affect several nesting species, including the "San Francisco" common yellowthroat. (Golden Gate Audubon Society)
- Table 2 should not be limited to breeding birds, but include species dependant on Natural Areas during some part of the year: tri-colored blackbirds in Lake Merced during the fall and winter and brown pelicans and peregrine falcons occasionally present at Lake Merced and India Basin. (Golden Gate Audubon Society)
- The EIR should include an updated, comprehensive biological inventory of all species of concern in San Francisco, their distributions, and their population conditions. If not for the entire city, then at least for the Natural Areas. (Golden Gate Audubon Society)
- How is the habitat for the California red-legged frog affected by the continued existence of the seawall? (San Francisco Public Golf Alliance)
- As of May 2009, what aerial spraying is permitted by law for control of mosquito larvae and adults? What aerial spraying is conducted at Sharp Park for control of mosquito larvae and adults, including timing and seasonality? Describe any other mosquito control measures used at Sharp Park. What is the effect of mosquito control measures on the California red-legged frog population? What is the effect of mosquito control measures on residential neighbors of Sharp Park? (San Francisco Public Golf Alliance)
- The proposed level of tree removal at Mount Davidson would significantly impair the habitat for birds and animals. (Miraloma Park Improvement Club)
- The importance of Sharp Park for the long-term survival and recovery of the San Francisco garter snake cannot be overstated. It is the northernmost population within the species, and as climate change shifts species habitats northward, this population is the most likely to successfully adapt to changing conditions. Because it is the most genetically intact of any population, it would best serve as a source for reintroduction of the species into historic habitats. (Brent Plater)
- The EIR should include an assessment of dog impacts on plants and wildlife based on scientific studies done for urban parks, not for wilderness areas (San Francisco Dog Owners Group)
- Extensive clearing of underbrush and blackberry removal must be studied in terms of potential impacts on wildlife, such as raccoons, skunks, possums, etc. In this regard, Jamie Ray, Director of the San Francisco Wildlife Rehabilitation Program, must be consulted. (Martha Hoffman)
- A listing of all the animals present within the Natural Areas must be added to the environmental document. (Martha Hoffman)
- The are many predators other than feral cats in the Natural Areas of San Francisco, such as the western scrub-jay, common raven, American crow, Cooper's, sharp-shinned, and red-tailed hawk, owl, gray fox, striped skunk, northern raccoon, domestic cat, California ground squirrel, red fox, coyotes, feral pigs, frogs, snakes, cormorants, herons, turtles, badger, mice, rats, bobcats, and humans. (L-Danyielle Yacobucci)
- Cats in the Natural Areas of San Francisco are sterilized, fed, and monitored. (L-Danyielle Yacobucci; Susan Wheeler)
- Replacing eucalyptus trees with native plants might not be successful in a modern urban setting. (Morley Singer)

- The nonnative blackberry bushes are great habitat for many animals. Carefully consider any changes that could impact the animals living in the City parks. (Annemarie A. Donjacour)
- The IS is inaccurate with the statement that ". . . no important bird habitat has been designated in the Interior Greenbelt." The following birds were observed: yellow warblers, Steller's jays, bush-tits, song sparrows, owls, and red-tailed hawks. There are potentially more sensitive bird species living in or utilizing the Interior Greenbelt that would be negatively impacted with the removal of the eucalyptus trees and brush. (Evan Elias)
- The IS identified "no site specific wildlife related areas" within the Interior Greenbelt. This area is home to skunks, raccoons, opossums, and feral cats. The Himalayan blackberry provides nesting area and protection for these local mammals. (Evan Elias)
- The feral cats within the Interior Greenbelt behave as part of the ecosystem, not as a top predator. They are cautious and on guard in this environment, and their territory is small. The birds and mammals do not fear them, and the cats do not exhibit hunting behavior. (Evan Elias)
- What are the environmental impacts of leaving 95 percent of the invasive trees in our natural areas? If you go to areas where you have dense eucalyptus, dense cypress, and pine, you'll find there's no biological diversity in the understory because the shading, the fog drift; it destroys the native plants that have been there for hundreds of thousands of years. (Greg Gaar)
- What are the environmental impacts of cutting new trails through sensitive natural areas/wildflower fields? (Greg Gaar)
- The issue of trees, you mentioned 64,000 trees in the Natural Areas. Adolph Sutro did not plant that many trees. They have been increasing by reseeding reproduction for many decades now, and so much so that they're imperiling their own health. They're way too crowded; for their own benefit, they need thinning. And I think that the EIR ought to consider the impact both on the trees themselves, but more particularly on the biodiversity. Every year that passes, there are fewer and fewer native plants and more and more weeds. And trees can be weeds, too. (California Native Plant Society, Yerba Buena Chapter)
- What would be the impact of no nonnative animals—raccoons, possums, cats. If you remove them all, what will be that impact? How will the rodent population be affected? (L-Danyielle Yacobucci)
- What's the definition of a "native animal plant," "weed," "predator"? (L-Danyielle Yacobucci)
- What's the effect of keeping the natives—nonnatives, what will the effect be of removing all those eucalyptus trees? (L-Danyielle Yacobucci)
- Protect the animals. (Martha Hoffman)
- Look at the endangered species that use Sharp Park and how they also use those contiguous lands. (Mary Keitelman)
- Address the beach areas being used for the western snowy plover threatened under the Endangered Species Act, black oyster catcher, which I think is just not even of concern. It's on the edge, maybe being threatened. And other birds that use that beach for roosting, as well as breeding. (Mary Keitelman)

- On East Sharp Park, there's a large population of newts in the pond that drains under the freeway, and it's of concern to me and to a lot of other people that those newts are free of chloramine and able to survive and thrive. (Mary Keitelman)
- Do some kind of study on populations of San Francisco garter snake, red-legged frog. (Steve Sinai)
- The Natural Areas Program proposal would result in major changes to the ecosystem without apparent benefit to wildlife or even detriment to important wildlife. The EIR should provide scientific evidence of the benefits of the proposed ecosystem changes. (Suzanne Valente)
- Address the effects of tree removal at Mount Davidson on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion. (Miraloma Park Improvement Club)
- Address environmental impacts of off-leash dog areas and new trails within sensitive natural areas. (Greg Gaar)
- Address the impacts of herbicide application on people, animals, and insects. (Denise Lapins)
- Address chloramine in the water affecting amphibians. (Mary Keitelman)
- Removing the 15,000 trees in Sharp Park will jeopardize the habitat of 20 species of special status species. The citizens of Pacifica intend to demand their city officials hold the SFRPD to the terms of Pacifica's antilogging ordinance. (Suzanne Valente)
- Leaving tree stumps on the ground would create an ideal breeding medium for treehole mosquitoes as well as other types of mosquitoes. The western treehole mosquito is the primary vector of dog and cat heartworm in California. (Suzanne Valente)
- The EIR should analyze the impacts of herbicide use on wildlife in the Natural Areas. (Karin Hu, Mary McAllister, Nancy Wuerfel)

EIR Recommendations

The EIR will address these comments by including additional information and analysis of the suggested sensitive, invasive, and pest species, where appropriate and feasible. Further, the EIR will carefully consider the effects on biological resources caused by trail creation, herbicide application, and dog use areas.

2.18 GEOLOGY AND SOILS

Comments

- Regarding E.13, Geology and Soils, impacts once the projects are in place should be addressed in the EIR. At Pine Lake, off-leash dogs cause erosion that destroys restoration sites. Dog and feral cat waste causes soil and water contamination. These impacts also likely occur at Buena Vista Park, Lake Merced, and McLaren Park. (Golden Gate Audubon Society)
- Regarding E.13, Geology and Soils, Lake Merced, impacts of leaving cypress and pine trees along steep banks that can't support them and resulting soil removal and erosion caused by them falling should be evaluated. (Golden Gate Audubon Society)

- Address the effects of tree removal at Mount Davidson on the quality of the human experience and the hill's viewpoint, including increased noise, altered wind and fog patterns, growth of poison oak, and increased erosion. (Miraloma Park Improvement Club)
- Assess the erosion impacts on neighboring homes that would result from tree removal. (Denise Lapins)
- Address erosion impacts of the removal of 54,000 trees in Sharp Park. (City of Pacifica)
- Address landslides and earth movement that would result from tree removal at Mount Sutro Forest. (Morley Singer)
- Erosion is a significant problem in Golden Gate Heights area, the natural areas, and Grandview, and sand is a significant problem when ice plant's been removed and it goes into the neighbors' yards. (San Francisco Dog Owners Group)
- A forester should evaluate the erosion impacts from cutting trees down. (Nancy Wuerfel)
- The EIR must address the adverse erosion impacts resulting from the removal of trees and nonnative plants. (San Francisco Dog Owners Group)
- Include in the EIR the virtues of eucalyptus trees. Those trees are unique in that they actually grow in the sandy soil and withstand the fierce winds blowing off the Pacific. Studies have shown that eucalyptus trees slow the wind down at least 30 percent in the Presidio. (San Francisco Tree Council)
- Erosion in Sharp Park is a very serious issue and should be addressed immediately, especially with the plan to remove 15,000 trees. (Suzanne Valente)
- The removal of nonnative trees and vegetation prescribed by the SNRAMP is likely to exacerbate the erosion situation. The analysis should evaluate the impacts on the surrounding neighborhoods that would result from tree removal from and destabilization of sand hills. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The EIR must study past erosion sites in the Natural Areas and evaluate the SNRAMP for its potential to cause further erosion in the future. (Karin Hu, Mary McAllister, Nancy Wuerfel)

EIR Recommendations

The EIR will address these comments by including information on the measures outlined in the SNRAMP that are intended to minimize erosion during tree and vegetation removal activities, such as the Best Management Practices that are proposed in the SNRAMP. Additionally, we will incorporate our assessment of erosion effects that was presented in the Initial Study.

2.19 HYDROLOGY AND WATER QUALITY

Comments

- Regarding E.13, Geology and Soils, impacts once the projects are in place should be addressed in the EIR. At Pine Lake, off-leash dogs cause erosion that destroys restoration sites. Dog and feral cat waste causes soil and water contamination. These impacts also likely occur at Buena Vista Park, Lake Merced, and McLaren Park. (Golden Gate Audubon Society)

- To what extent are Laguna Salada, Horse Stable Pond, and their associated wetlands created, recharged, or enhanced by irrigation at Sharp Park Golf Course? (San Francisco Public Golf Alliance)
- How would complete cessation of irrigation at Sharp Park Golf Course affect the salinity of Laguna Salada, Horse Stable Pond, and their associated wetlands? (San Francisco Public Golf Alliance)
- How would reduced irrigation at Sharp Park Golf Course affect salinity of Laguna Salada, Horse Stable Pond, and their associated wetlands? What are the effects in low-rainfall months vs. high-rainfall months? (San Francisco Public Golf Alliance)
- What effect does groundwater generated by Sharp Park Golf Course irrigation have on the hydrostatic pressure affecting the seawall? How would complete cessation of irrigation at Sharp Park Golf Course affect the strength and/or integrity of the seawall? How would reduced irrigation at Sharp Park Golf Course affect the strength and/or integrity of the seawall? What are the effects in low-rainfall months vs. high-rainfall months? (San Francisco Public Golf Alliance)
- Address the proposed project impacts on drainage patterns and flood hazards within the Sharp Park area. Analyze the risk of flood hazard on Sharp Park and adjacent residential areas. (City of Pacifica)
- Address the impacts of sea-level rise on the western portion of Sharp Park. (Celeste Langille)
- Address runoff impacts that would result from tree removal at Mount Sutro Forest. (Morley Singer)
- Consider flooding in the EIR—flooding impact, including out into the neighborhood and proposed methods to prevent flooding in all three of the scenarios. (Rabine Runneals)
- Consider the impacts of the storm drainage system off Sharp Park Road, you know, the golf course area. (Mike Pacelli)
- Address the impacts of herbicides on groundwater. (Morley Singer)
- Address the increase in water consumption that would be required for the native plantings. (Morley Singer)
- The removal of 18,500 nonnative trees has the potential to significantly change drainage patterns in many Natural Areas because many are steep hills and canyons. The EIR must evaluate the impact of tree removal on existing drainage patterns in all Natural Areas. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- Provide details on the drainage from Horse Stable Pond to the beach, including water level of the outflow pipe, pump capacity, pump condition, water level and capacity of the gravity outflow line, and the operational status of the gravity outflow line. (San Francisco Public Golf Alliance)

EIR Recommendations

The EIR will address these comments by including information from the Laguna Salada hydrology study in the EIR and including information on expected sea level rise related to global climate change. Additionally, available information on the amount and type of herbicides used in the Natural Areas will be used to evaluate potential groundwater impacts from herbicides.

2.20 HAZARDS AND HAZARDOUS MATERIALS

Comments

- As of May 2009, what aerial spraying is permitted by law for control of mosquito larvae and adults? What aerial spraying is conducted at Sharp Park for control of mosquito larvae and adults, including timing and seasonality? Describe any other mosquito control measures used at Sharp Park. What is the effect of mosquito control measures on the California red-legged frog population? What is the effect of mosquito control measures on residential neighbors of Sharp Park? (San Francisco Public Golf Alliance)
- Address the impacts of herbicide application on people, animals, and insects. (Denise Lapins)
- The EIR must address the adverse impacts of herbicide application needed to control the spread of nonnative plants that results from poor maintenance of the Natural Areas. (San Francisco Dog Owners Group)
- Address the use of hazardous materials for controlling mosquitoes and what you use to keep the mosquitoes down when you increase the number and size of ponds and things like that. (San Francisco Dog Owners Group)
- The proposed activities at Laguna Salada, such as changes to the depth, shape, and vegetation, would result in the development of mosquitoes, which would necessitate the application of pesticides. The staff of the San Mateo Mosquito and Vector Control District would like to work with the Planning Department during the design phase to ensure that changes at the Laguna Salada minimize the potential for mosquito development. (San Mateo Mosquito and Vector Control District)
- The EIR must address the adverse impacts of creating habitat that encourages mosquito breeding, increasing the public health risk from West Nile Virus. (San Francisco Dog Owners Group)
- How will mosquitoes be controlled? (Rabine Runneals)
- Address the impact of increasing mosquito breeding in EIR. That's a real problem at Sharp Park. (San Francisco Dog Owners Group)
- Expanding the wetland will enhance mosquito breeding and will create an uncontrollable situation, knowing that a recent court ruling bans the San Mateo County Mosquito and Vector Abatement District from spraying pesticides to kill adult mosquitoes. (Suzanne Valente)
- Leaving tree stumps on the ground would create an ideal breeding medium for treehole mosquitoes, as well as other types of mosquitoes. The western treehole mosquito is the primary vector of dog and cat heartworm in California. (Suzanne Valente)
- Address the impacts of prohibiting pesticides use on mosquito populations, especially the mosquito carrying the West Nile Virus. The EIR should analyze the impacts of herbicide use on wildlife in the Natural Areas. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- There is no evidence of significant advantage of native trees to resist fire. The Mount Sutro Forest captures moisture from the fog, and tree removal has the potential to dry out this area and alter the wind patterns. Tree removal has the potential to increase fire hazard on the homes near the Mount Sutro Forest. (Morley Singer)

- The restored landscape of native grassland and dune scrub is not less flammable than the nonnative that would be removed. (Karin Hu, Mary McAllister, Nancy Wuerfel)
- The EIR must address the adverse impacts on adjacent homes should prescribed burning escape control. (San Francisco Dog Owners Group)
- The track record for the use of prescribed burns to support restoration efforts indicates that they can burn out of control. The EIR should analyze fire hazards and the use of prescribed burns. (Suzanne Valente)
- The Natural Areas Program should address public safety issues in detail at every park, especially at Sharp Park. (Suzanne Valente)
- Additionally, the Natural Areas Program park proposal ignores the serious public safety issues that should be addressed, especially at Sharp Park. An EIR must cover the public safety issues for humans at every park in detail, as well as provide substantial, reliable, scientific evidence to justify the proposed ecosystem changes. (Suzanne Valente)
- Consider hazardous waste in the EIR. Hazardous waste and materials should be considered because the Natural Areas Program has used pesticides to control invasive species. (Nancy Stafford)
- Toxic lead in the soil east of Highway One is a concern and should be addressed. The possibility of the lead leaching into the groundwater, the stream in the canyon, and flowing to Laguna Salada wetlands would result in the contamination of the sites that the Management Plan intends to restore. (Suzanne Valente)
- Removal of nonnative plants and trees would enhance habitat for small mammals that carry ticks and cause the spread of Lyme disease in the residential neighborhood. (Suzanne Valente)

EIR Recommendations

The EIR will address the potential increase in mosquitoes as a result of the proposed project. Further, the analysis will include the recommendations of the staff of the San Mateo Mosquito and Vector Control District, following consultation on the best measures to limit potential growth of the mosquito population in Laguna Salada. Impacts of using herbicides on the local population, on wildlife, and on groundwater will also be analyzed. The EIR will also address the potential fire hazards that would result from removing trees. Public safety within the Natural Areas will also be addressed. The level of toxic lead in the soil east of Highway One and the potential of lead flowing to Laguna Salada will be analyzed in the EIR. The EIR will also assess the potential spread of lime disease from enhancing the habitat for small mammals that carry ticks.

2.21 MINERAL AND ENERGY RESOURCES

No comments were received on this topic.

2.22 AGRICULTURAL RESOURCES

No comments were received on this topic.

Appendix A

Scoping Notices

SAN FRANCISCO
PLANNING DEPARTMENT

Notice of Preparation of an Environmental Impact Report

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

Date:	April 22, 2009
Case No.:	**2005.1912E**
Project Title:	**Natural Areas Management Plan**
Project Size:	1,105 acres
Project Sponsor	Daniel LaForte, San Francisco Recreation and Park Department (415) 831-2742
Lead Agency:	San Francisco Planning Department
Staff Contact:	Jessica Range – (415) 575-9018 jessica.range@sfgov.org

PROJECT DESCRIPTION

Fragments of unique plant and animal habitats within San Francisco and Pacifica, known as Significant Natural Resource Areas (Natural Areas), have been preserved within parks that are managed by the San Francisco Recreation and Park Department (SFRPD). In the late 1990s, the SFRPD developed a Natural Areas Program to protect and manage these Natural Areas for the natural and human values they provide. The Natural Areas Program mission is to preserve, restore, and enhance the remnant Natural Areas and to promote environmental stewardship of these areas. On January 19, 1995, the San Francisco Recreation and Park Commission approved the first Significant Natural Resource Areas Management Plan (SNRAMP).

Over the course of several years, the SFRPD developed a new SNRAMP, with the final draft plan published in February 2006 and based on the 1995 plan. This SNRAMP contains detailed information on the biology, geology, and trails within 31 Natural Areas, 30 of which are in San Francisco and one (Sharp Park) is in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years.

A detailed project description can be found in the Initial Study attached to this Notice of Preparation.

FINDING

This project may have a significant effect on the environment and an Environmental Impact Report is required. This determination is based upon the criteria of the State CEQA Guidelines, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance), and for the reasons documented in the Environmental Evaluation (Initial Study) for the project, which is attached.

PUBLIC SCOPING PROCESS

Pursuant to the State of California Public Resources Code Section 21083.9 and California Environmental Quality Act Guidelines Section 15206, two public scoping meeting will be held to receive oral comments concerning the scope of the EIR. These meetings will be held on **Tuesday, May 12, from 6:30 pm to 9:30 pm** at **County Fair Building Auditorium in Golden Gate Park (9th Avenue and Lincoln Way)** and

Thursday, May 14, from 6:30 pm to 9:30 pm at **Pedro Point Firehouse in Pacifica (1227 Danmann Avenue).** Written comments will also be accepted at this meeting and until the close of business on **May 26, 2009**. Written comments should be sent to Bill Wycko, San Francisco Planning Department, Natural Areas Management Plan, 1650 Mission Street, Suite 400, San Francisco, CA 94103.

If you work for a responsible State agency, we need to know the views of your agency regarding the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR when considering a permit or other approval for this project. Please include the name of a contact person in your agency.

April 20, 2009
Date

Bill Wycko
Environmental Review Officer

PLANNING DEPARTMENT
ENVIRONMENTAL REVIEW NOTICE

Notice is hereby given to the general public of the following actions under the Environmental Review Process. Review of the documents concerning these projects can be arranged by calling (415) 558-6378 and asking for the staff person indicated.

NOTICE OF PREPARATION OF EIR

The initial evaluation conducted by the Planning Department determined that the following project(s) may have significant effects on the environment and that an Environmental Impact Report (EIR) must be prepared.

Case No. 2005.1912E: Significant Natural Resources Areas Management Plan
In February 2006, the San Francisco Recreation and Parks Department developed the Significant Natural Resource Areas Management Plan (SNRAMP), addressing 31 Natural Areas in San Francisco and Pacifica. The SNRAMP guides natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance over the next 20 years.

The SNRAMP delineates Natural Areas into management area categories and proscribes both general management activities for all Natural Areas and activities for each Natural Area [RANGE].

Notice is hereby given to the general public as follows:

1) A Notice of Preparation of an EIR was published on April 22, 2009 by the Planning Department in connection with this project.

2) An Initial Study in connection with this project has now been prepared by the Planning Department. A copy of the report can be obtained for public review and comment at the Planning Department offices at 1660 Mission Street, 1st Floor Planning Information Center. The report can also be viewed on-line starting April 22, 2009 at www.sfgov.org/planning. Referenced materials are available for review by appointment at the Planning Department's office at 1650 Mission Street, 4th Floor. (Call 575-9018 to schedule an appointment.)

3) Public scoping meetings will be held to receive oral comments concerning the scope of the EIR on **Tuesday, May 12, from 6:30 pm to 9:30 pm** at **County Fair Building Auditorium in Golden Gate Park (9th Avenue and Lincoln Way)** and **Thursday, May 14, from 6:30 pm to 9:30 pm** at **Pedro Point Firehouse in Pacifica (1227 Danmann Avenue)**.

4) Public comments concerning the scope of the EIR will be accepted from April 22, 2009 to 5:00 p.m. on May 26, 2009. Mail written comments to the San Francisco Planning Department, Attn. Bill Wycko, Environmental Review Officer, Significant Natural Areas Management Plan NOP/IS, 1650 Mission Street, Suite 400, San Francisco, CA 94103.

SAN FRANCISCO EXAMINER

450 MISSION ST 5TH FL, SAN FRANCISCO, CA 94105
Telephone (415) 359-2723 / Fax (415) 359-2659

This space for filing stamp only

VIRNA BYRD
S.F. PLANNING DEPT
1650 MISSION ST #400
SAN FRANCISCO, CA - 94103

EXM#: 1574645

PROOF OF PUBLICATION

(2015.5 C.C.P.)

State of California)
County of SAN FRANCISCO) ss

Notice Type: GPN - GOVT PUBLIC NOTICE

Ad Description: ENVIRONMENTAL REVIEW NOTICE - PRELIMINARY MITIGATED NEGATIVE DECLARATION

I am a citizen of the United States and a resident of the State of California; I am over the age of eighteen years, and not a party to or interested in the above entitled matter. I am the principal clerk of the printer and publisher of the SAN FRANCISCO EXAMINER, a newspaper published in the English language in the city of SAN FRANCISCO, county of SAN FRANCISCO, and adjudged a newspaper of general circulation as defined by the laws of the State of California by the Superior Court of the County of SAN FRANCISCO, State of California, under date 10/18/1951, Case No. 410667. That the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

04/22/2009

Executed on: 04/22/2009
At Los Angeles, California

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Signature

PLANNING DEPARTMENT ENVIRONMENTAL REVIEW NOTICE

Notice is hereby given to the general public of the following actions under the Environmental Review Process. Review of the documents concerning these projects can be arranged by calling (415) 575-9025.

PRELIMINARY MITIGATED NEGATIVE DECLARATION

The initial evaluation conducted by the Planning Department determined that the following projects could not have a significant effect on the environment, and that no environmental impact report is required. Accordingly, a Preliminary Mitigated Negative Declaration has been prepared.

Public recommendations for amendment of the text of the finding, or any appeal of this determination to the Planning Commission (with $500 filing fee) must be filed with the Department within 20 days following the date of this notice. In the absence of an appeal, the Negative Declaration shall be made final, subject to any necessary modifications, 20 days from the date of this notice.

2007.1464E : 1036 – 1040 Mission Street - The 15,192 square foot (sf) project site at 1036 - 1040 Mission Street (Assessor's Block 3703, Lots 79 and 80) in the South of Market neighborhood is zoned C-3-G (Downtown Commercial District) and is within a 120-F height and bulk district. The proposed project includes demolition of an existing surface parking lot, and construction of a thirteen-story, 120-foot-tall building with up to 132 affordable housing units (130,000 gross square feet [gsf]), ground-floor retail/non-profit space (up to 1,300 gsf), and about 7,450 square feet of open space in a ground-floor podium-level courtyard and roof deck. No off-street parking is proposed. (CONTRERAS)

NOTICE OF PREPARATION OF EIR

The initial evaluation conducted by the Planning Department determined that the following project(s) may have significant effects on the environment and that an Environmental Impact Report (EIR) must be prepared.

2005.1912E : Significant Natural Resources Areas Management Plan In February 2006, the San Francisco Recreation and Parks Department developed the Significant Natural Resource Areas Management Plan (SNRAMP), addressing 31 Natural Areas in San Francisco and Pacifica. The SNRAMP guides natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance over the next 20 years.

The SNRAMP delineates Natural Areas into management area categories and proscribes both general management activities for all Natural Areas and activities for each Natural Area [RANGE].

Notice is hereby given to the general public as follows:

1) A Notice of Preparation of an EIR was published on April 22, 2009 by the Planning Department in connection with this project.

2) An Initial Study in connection with this project has now been prepared by the Planning Department. A copy of the report can be obtained for public review and comment at the Planning Department offices at 1660 Mission Street, 1st Floor Planning Information Center. The report can also be viewed on-line starting April 22, 2009 at www.sfgov.org/planning. Referenced materials are available for review by appointment at the Planning Department's office at 1650 Mission Street, 4th Floor. (Call 575-9018 to schedule an appointment.)

3) Two public scoping meetings will be held to receive oral comments concerning the scope of the EIR on **Tuesday, May 12 at 6:30 p.m. at the County Fair Building Auditorium in Golden Gate Park (9th Ave and Lincoln Way) and on Thursday, May 14 at 6:30 p.m. at Pedro Point Firehouse in Pacifica (1227 Danmann Ave.).**

4) Public comments concerning the scope of the EIR will be accepted from April 22, 2009 to 5:00 p.m. on May 26, 2009. Mail

★ A 0 0 0 0 0 1 1 1 4 1 6 1 ★

written comments to the San Francisco Planning Department, Attn. Bill Wycko, Environmental Review Officer, Significant Natural Areas Management Plan NOP/IS, 1650 Mission Street, Suite 400, San Francisco, CA 94103.

SAN FRANCISCO PLANNING DEPARTMENT
ENVIRONMENTAL REVIEW NOTICE

AFFIDAVIT OF PUBLICATION OF LEGAL NOTICE in the

Pacifica TRIBUNE

STATE OF CALIFORNIA } ss.

County of San Mateo

PUBLIC NOTICE

SAN FRANCISCO PLANNING DEPARTMENT

ENVIRONMENTAL REVIEW NOTICE

Notice is hereby given to the general public of the following actions under the Environmental Review Process. Review of the documents concerning these projects can be arranged by calling (415) 558-6378 and asking for the staff person indicated.

NOTICE OF PREPARATION OF EIR

The initial evaluation conducted by the Planning Department determined that the following project(s) may have significant effects on the environment and that an Environmental Impact Report (EIR) must be prepared.

Case No. 2005.1912E: Significant Natural Resources Areas Management Plan

In February 2006, the San Francisco Recreation and Parks Department developed the Significant Natural Resource Areas Management Plan (SNRAMP), addressing 31 Natural Areas in San Francisco and Pacifica. The SNRAMP guides natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance over the next 20 years.

The SNRAMP delineates Natural Areas into management area categories and proscribes both general management activities for all Natural Areas and activities for each Natural Area [RANGE].

Notice is hereby given to the general public as follows:

1) A Notice of Preparation of an EIR was published on April 22, 2009 by the Planning De-

ELAINE LARSEN declares under penalty of perjury:

That she is and at all times hereinafter mentioned was a citizen of the United States, over the age of eighteen years and a resident of Pacifica, California, and was at and during all said times the printer, Editor and Publisher of PACIFICA TRIBUNE, a newspaper published weekly in the City of Pacifica, County of San Mateo, State of California; that said newspaper is and was at all times herein mentioned, a newspaper of general circulation as that term is defined by Section 6000, 6001, and 6008 of the Government Code of the State of California, and that a judicial decree establishing the newspaper as one of general circulation has been obtained, as provided in Title 1, Division 7, Chapter 1, of said Government Code, and as provided by said sections is and was at all times herein mentioned in compliance with the requirements of Title 1, Division 7, Chapter 1, of said Government Code; that at all said times said newspaper has been established and published in said City of Pacifica, County of San Mateo, State of California, at regular intervals for more than one year preceding the first publication of the Legal Notice herein mentioned; that said Notice was set in type not smaller than nonpareil and was preceded with words printed in black face type not smaller than nonpareil describing and expressing in general terms and purport and character of the Notice intended to be given; that the Legal Notice in the above entitled matter, of which the annexed is a true printed copy, was published in said newspaper on the following dates, to wit:

April 22, 2009

that the date of the first publication of said Notice in said newspaper is

April 22, 2009

Executed on April 22, 20 09 at Pacifica, California

Elaine Larsen

SAN FRANCISCO
PLANNING DEPARTMENT

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

PUBLIC NOTICE

Availability of a Notice of Preparation of an Environmental Impact Report for Natural Areas Management Plan

Planning Department Case No. 2005.1912E

A Notice of Preparation (NOP) has been issued by the San Francisco Planning Department in connection with this project. A copy of the NOP is available for public review at the Planning Department offices at 1660 Mission Street, 1st Floor Planning Information Counter. The NOP is also available at the Planning Department web site: http://www.sfgov.org/planning/mea.

Project Description:

Fragments of unique plant and animal habitats within San Francisco and Pacifica, known as Significant Natural Resource Areas (Natural Areas), have been preserved within the parks that are managed by the San Francisco Recreation and Park Department (SFRPD). In the late 1990s, the SFRPD developed a Natural Areas Program to protect and manage these Natural Areas for the natural and human values they provide. The Natural Areas Program mission is to preserve, restore, and enhance the remnant Natural Areas and to promote environmental stewardship of these areas. On January 19, 1995, the San Francisco Recreation and Park Commission approved the first Significant Natural Resource Areas Management Plan (SNRAMP).

Over the course of several years, the SFRPD developed a new SNRAMP, with the final draft plan published in February 2006 and based on the 1995 plan. This SNRAMP contains detailed information on the biology, geology, and trails within 31 Natural Areas, 30 of which are in San Francisco and one (Sharp Park) is in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years.

The SNRAMP delineates the acreage within each Natural Area into management area categories based on the management priority—MA-1, MA-2, and MA-3. The management area categories represent differing levels of sensitivity, species presence, and habitat complexity. The SNRAMP proscribes both general management activities that apply to all Natural Areas and management activities specific to each Natural Area.

A detailed project description can be found in the Initial Study that is attached to the NOP.

Public Scoping Process:

Pursuant to the State of California Public Resources Code Section 21083.9 and California Environmental Quality Act Guidelines Section 15206, two public scoping meetings will be held to receive oral comments concerning the scope of the EIR. These meetings will be held on **Tuesday, May 12, from 6:30 pm to 9:30 pm** at **County Fair Building Auditorium in Golden Gate Park (9th Avenue and Lincoln Way)** and **Thursday, May 14, from 6:30 pm to 9:30 pm** at **Pedro Point Firehouse in Pacifica (1227 Danmann Avenue)**. Written comments will also be accepted at this meeting and until the close of business on **May 26, 2009.** Written comments should be sent to Bill Wycko, San Francisco

Planning Department, Natural Areas Management Plan, 1650 Mission Street, Suite 400, San Francisco, CA 94103.

If you work for a responsible State agency, we need to know the views of your agency regarding the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR when considering a permit or other approval for this project. Please include the name of a contact person in your agency.

If you have any questions about the **environmental review** of the proposed project, please call Jessica Range at 415-575-9018.

Appendix B

Scoping Meeting Materials

May 12 Scoping Meeting

SAN FRANCISCO
PLANNING DEPARTMENT

Agenda
Natural Areas Management Plan Environmental Impact Report
Public Scoping Meeting

County Fair Building Auditorium, Golden Gate Park
Tuesday, May 12, 6:30 PM

I. Introduction

- Meeting logistics
- Introductions to EIR Preparers and Project Sponsor
  - Jessica Range – SF Planning Department (EIR Coordinator)
  - Sarah Jones- SF Planning Department (EIR Supervisor)
  - Daniel LaForte – San Francisco Recreation and Park Department (Project Sponsor)
  - John Bock – Tetra Tech (EIR Consultant)
- Purpose of meeting
- Meeting format

II. Brief Overview of Proposed Project

- Questions on the proposed project

III. Summary of California Environmental Quality Act (CEQA) Process

- Notice of Preparation/IS (30-day public review period)
- Scoping Meeting
- Draft EIR (45-day public review period, Planning Commission hearing)
- Comments and Responses Document (approx. 14-day review)
- Final EIR Certification (Planning Commission hearing)
- Questions on the CEQA Process

IV. Public Comment

- Comments on environmental review issues from speakers who fill out a speaker card
- Time limit for each speaker

V. Final Reminders

- Submit written comments to **Environmental Review Officer, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103**, by close of business, **May 26, 2009**.
- If you have questions or comments regarding the proposed project and the environmental process, please contact **Jessica Range** at **(415) 575-9018.**

San Francisco Planning Department
EIR Public Scoping Meeting Written Comment Form
Natural Areas Management Plan
Case # 2005.1912E

If you wish to submit written comments on the above project, you may do so on this sheet (although use of this form is not required). Please submit written comments at today's public scoping meeting, or by mail to Bill Wycko, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103. **All comments must be submitted no later than 5 P.M., May 26, 2009.**

Write your comments regarding the environmental review for the project here. Use the back of the sheet or additional pages if necessary.

Name: _____

Organization (if any): _____

Address: _____

E-mail Address: _____

San Francisco Planning Department
Speaker Card

To aid in the preparation of minutes or a transcript, you are requested, but not required, to provide this information:

Please **PRINT** then give to meeting moderator

Please provide a phonetic pronunciation guide to your name if necessary

Name: _____

Organization (if any): _____

Address: _____

E-mail Address: _____

San Francisco Planning Department
Speaker Card

To aid in the preparation of minutes or a transcript, you are requested, but not required, to provide this information:

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Please provide a phonetic pronunciation guide to your name if necessary

Name: _____

Organization (if any): _____

Address: _____

E-mail Address: _____

SAN FRANCISCO
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1650 Mission St.
Suite 400
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CA 94103-2479

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415.558.6378

Fax:
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Planning
Information:
415.558.6377

EIR Public Scoping Meeting
Natural Areas Management Plan
May 12, 2009

PRINT NAME	ORGANIZATION	ADDRESS	E-MAIL ADDRESS	FUTURE NOTIFICATION METHOD
PATRICK SKAIN	PINELAKE PARK NEIGHBORHOOD ASSOC.	300 CRESTLAKE DR SF CA 94132	patskain@att.net	✓ Regular Mail __ E-mail
SALLY STEPHENS	SPOOG, GOLDEN GATE HEIGHTS NEIGHBORHOOD ASSOC	127 QUINTARA ST SF, CA 94116	STEPHENSFW@MINDSPRING.COM	__ Regular Mail ✓ E-mail
MARY ALLEN	Forest Knolls neighborhood	377 Oak Park Dr	cycler@mac.com	__ Regular Mail ✓ E-mail
BARRY LEE	self - City Resident	677-13th Ave SF CA 94118	blcsfo@gmail.com	__ Regular Mail ✓ E-mail
MORLEY SINGER	CITY RESIDENT.	177 BELGRAVE AVE, SF.	MZinger1@Comcast.net	✓ Regular Mail ✓ E-mail
David Rea	City Resident	6647 - CALIFORNIA ST SF CA 94121	drea@gmwest.com	__ Regular Mail ✓ E-mail
Craig Dawson	Mt. Sutro Stewards	1128 Irving St. SF 94122		__ Regular Mail __ E-mail
Karin Hu			brainz_ca@yahoo.com	__ Regular Mail ✓ E-mail
Isabel Wade	NPC	~~88~~ 451 Hayes St 94102	iWade@sfnpc.org	__ Regular Mail ✓ E-mail
Paul Koski	S.F. Resident, OMI member	20 Shields St 94132	pkoski7@netscape.net	__ Regular Mail ✓ E-mail
PAM HEMPHILL	DOLORES HEIGHTS IMPROVEMENT CLUB, ANIMAL COMMISSION	423 Hill St SF 94114	PAM.HEMPHILL@GMAIL.COM	__ Regular Mail __ E-mail
Andrea O'Leary	E.Q.U.P.	POBox 31304 94131	EQUP@aol.com	__ Regular Mail ✓ E-mail
NANCY ROSENTHAL				__ Regular Mail __ E-mail
Susan Wheeler	volunteer SFBBCA Feral Cat Team	230 Moncada Way SF. Ca 94127	rappwheel@aol.com	__ Regular Mail __ E-mail
Dan Murphy	Golden Gate Audubon	2945 Ulloa St SF. CA 94116	murphsf@yahoo.com	__ Regular Mail ✓ E-mail

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EIR Public Scoping Meeting
Natural Areas Management Plan
May 12, 2009

PRINT NAME	ORGANIZATION	ADDRESS	E-MAIL ADDRESS	FUTURE NOTIFICATION METHOD
Marnie Dunsmore	California Native Plant Society	118 College Ave, SF 94112	marniedunsmore@earthlink.net	✓ Regular Mail ✓ E-mail
Jake Sigg	" "	338 Ortega St SF 94122	jakesigg@earthlink.net	___ Regular Mail X E-mail
L. Yacobucci	SFSPCA	POBox 2067 Daly City	harris.rose@att.net	___ Regular Mail ~~✓ E-mail~~
A. Belway	—	631-35th Ave SF 94121	apbelway@pacbell.net	✓ Regular Mail ✓ E-mail
E. Elias	SFSPCA -	575 Belvedere St SF 94117	eeliasmail@yahoo.com	✓ Regular Mail ✓ E-mail
Greg Gaar	NATURE IN The City	440 Hazelwood SF 94127	~~Dunetansy~~ dunetansy@yahoo.com	___ Regular Mail ✓ E-mail
Linda Pomerantz			lindapomerantz@gmail.com	___ Regular Mail ✓ E-mail
JOHN R. RAUCH	SAN FRANCISCO ARCHERS	1156 VALENCIA WAY PACIFICA CA.	JNCR2@AOL.COM	✓ Regular Mail ✓ E-mail
Nancy Wuerfel	SFSPCA	2516 23rd Ave, SF. 94116	Nancenumber1@aol.com	~~✓~~ Regular Mail ___ E-mail
Martha Hoffman	SFSPCA	1750 Waller SF 94117	———	✓ Regular Mail ___ E-mail
~~Richard~~ HARRIS	S.F. PUBLIC GOLF ALLIANCE	220 ~~Montgomery~~ St. #303 SF CA 94104	richard@riskindvalley.com	___ Regular Mail ~~✓~~ E-mail
Charon Vilnai	—	260 Cresta Vista ~~Drive~~ SF, CA. 94127	charon.vilnai@yahoo.com	___ Regular Mail ✓ E-mail
ROBERT BLASDELL	—	260 Cresta Vista DR SF, CA 94127	rcblasdell7@yahoo.com	___ Regular Mail ✓ E-mail
Jan Longwell	Self	1584 Shrader St. SF 94117	jan@janlongwell.ca	___ Regular Mail ✓ E-mail
Peter Brastow	Nature in the City	PO BOX 170088 94117	peter@natureinthecity.org	___ Regular Mail ~~✓~~ E-mail

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EIR Public Scoping Meeting
Natural Areas Management Plan
May 12, 2009

PRINT NAME	ORGANIZATION	ADDRESS	E-MAIL ADDRESS	FUTURE NOTIFICATION METHOD
NANCY STAFFORD	S.F. PROFESSIONAL DOGWALKERS ASSOC	1377 16th AVE SF 94122	SFMARMALADE42@SBCGLOBAL.NET	___ Regular Mail X E-mail
ALICIA SNOW	none present	1586 Shrader St SF 94117	alicia_snow@sbcglobal.net	___ Regular Mail X E-mail
				___ Regular Mail ___ E-mail
				___ Regular Mail ___ E-mail
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415.558.6377

EIR Public Scoping Meeting
Natural Areas Management Plan
May 12, 2009

PRINT NAME	ORGANIZATION	ADDRESS	E-MAIL ADDRESS	FUTURE NOTIFICATION METHOD
Tom Borden	SF Urban Riders	24 Santa Ana Ave. S.F. 94127	tom@intrinsicdevices.com	___ Regular Mail _✓_ E-mail
				___ Regular Mail ___ E-mail
				___ Regular Mail ___ E-mail
				___ Regular Mail ___ E-mail
				___ Regular Mail ___ E-mail
				___ Regular Mail ___ E-mail
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May 14 Scoping Meeting

SAN FRANCISCO
PLANNING DEPARTMENT

Agenda
Natural Areas Management Plan Environmental Impact Report
Public Scoping Meeting

Pedro Point Firehouse, Pacifica
Thursday, May 14, 6:30 PM

I. Introduction

- Meeting logistics
- Introductions to EIR Preparers and Project Sponsor
  - Jessica Range – SF Planning Department (EIR Coordinator)
  - Sarah Jones- SF Planning Department (EIR Supervisor)
  - Daniel LaForte – San Francisco Recreation and Park Department (Project Sponsor)
  - John Bock – Tetra Tech (EIR Consultant)
- Purpose of meeting
- Meeting format

II. Brief Overview of Proposed Project

- Questions on the proposed project

III. Summary of California Environmental Quality Act (CEQA) Process

- Notice of Preparation/IS (30-day public review period)
- Scoping Meeting
- Draft EIR (45-day public review period, Planning Commission hearing)
- Comments and Responses Document (approx. 14-day review)
- Final EIR Certification (Planning Commission hearing)
- Questions on the CEQA Process

IV. Public Comment

- Comments on environmental review issues from speakers who fill out a speaker card
- Time limit for each speaker

V. Final Reminders

- Submit written comments to **Environmental Review Officer, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103**, by close of business, **May 26, 2009**.
- If you have questions or comments regarding the proposed project and the environmental process, please contact **Jessica Range** at **(415) 575-9018.**

San Francisco Planning Department
EIR Public Scoping Meeting Written Comment Form
Natural Areas Management Plan
Case # 2005.1912E

If you wish to submit written comments on the above project, you may do so on this sheet (although use of this form is not required). Please submit written comments at today's public scoping meeting, or by mail to Bill Wycko, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103. **All comments must be submitted no later than 5 P.M., May 26, 2009.**

Write your comments regarding the environmental review for the project here. Use the back of the sheet or additional pages if necessary.

Name: _____

Organization (if any): _____

Address: _____

E-mail Address: _____

San Francisco Planning Department
Speaker Card

To aid in the preparation of minutes or a transcript, you are requested, but not required, to provide this information:

Please **PRINT** then give to meeting moderator

Please provide a phonetic pronunciation guide to your name if necessary

Name: _____

Organization (if any): _____

Address: _____

E-mail Address: _____

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Speaker Card

To aid in the preparation of minutes or a transcript, you are requested, but not required, to provide this information:

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Information:
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EIR Public Scoping Meeting
Natural Areas Management Plan
May 14, 2009

PRINT NAME	ORGANIZATION	ADDRESS	E-MAIL ADDRESS	FUTURE NOTIFICATION METHOD
Kathleen Manning	Pacifica Historical Soc		MANNINGSBK@aol.com	__ Regular Mail X E-mail
Jerry Briesach	Sharp Park Golf		JTBreeze@GMAIL	__ Regular Mail ✓ E-mail
Jackie Fosberg	S.P. Womens Golf Club	120 Lomitas Av. So. S.F.		X Regular Mail __ E-mail
Tom Clifford		1122 Shoila Lane	thClifford@Comcast.Net	__ Regular Mail __ E-mail
Laurie Frater	Father of avid golfer		laurie.frater@sbcglobal.net	__ Regular Mail ✓ E-mail
Anden Frate	avid golfer	251 Berendos Avenue		__ Regular Mail __ E-mail
Steve Sinai	Pacifica resident	450 San Pablo Terrace Pacifica	SSinai@yahoo.com	__ Regular Mail X E-mail
Merrill Bobele	Loma Prieta Chapter Sierra Club	P.O. Box 2486 El Granada 94018		X Regular Mail __ E-mail
Jack Rauch	San Francisco Archers	1156 Valencia Way Pacifica CA 94044	JNCR2@AOL.COM	✓ Regular Mail ✓ E-mail
Glen E. Sievert	Sharp Park Golf Club.	283 Charing Cross Wy, Pacifica, Ca. 94044	glnsievert@yahoo.com	__ Regular Mail ✓ E-mail
Norm Regnart	Sharp Park Golf Club		nregnart@nccwd.com	__ Regular Mail __ E-mail
Allan Eisenberg	Sharp Park G. C.	2519 44th Ave SF 94116	ALLANEISENBERG@MSN.COM	__ Regular Mail __ E-mail
Steve Rush	Sharp Park GC	461 Alta Vista Dr SSF	on-site@sharkparkgolf.com	__ Regular Mail X E-mail
Ron Francis	Sharp Park Golf		pacfam5@pacbell.net	__ Regular Mail X E-mail
Robert Petty	SPGC	20 Cranham Ct Pac		X Regular Mail __ E-mail

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EIR Public Scoping Meeting
Natural Areas Management Plan
May 14, 2009

PRINT NAME	ORGANIZATION	ADDRESS	E-MAIL ADDRESS	FUTURE NOTIFICATION METHOD
ROB BAKEWELL	VOLUNTEER STEWARD FOR OAK WOODLANDS GGP PARK	863 ARGUELLO BLVD #5 SF CA 94118	ROBAKEWELL@YAHOO.COM	___ Regular Mail ✓ E-mail
CHARLES EGIZIANO	FBMG CORP	45 EASTLAKE AVE PACIFICA CA	CHUCKEGIZIANO@SBCGLOBAL.NET	___ Regular Mail ✓ E-mail
Kristy Carlson	SFurban Riders	565 A Talbot Ave Pacifica Ca	kristy_carlson@yahoo.com	___ Regular Mail ___ E-mail
MITCH MONROE	SF URBAN RIDERS	" " "	MITCH@SFDIRTCLUB.COM	___ Regular Mail ✓ E-mail
Pat GAVIN		389 Ponderosa Rd SCFC		___ Regular Mail ___ E-mail
RON MAYKEL	GGNRA CONSERVANCY	896 ROCKAWAY BEACH AVE 94044	THEMAYKELFAMILY@SBCGLOBAL.NET	___ Regular Mail ✓ E-mail
Ellen Edelson	CNPS-SF	2207 26th Ave SF 94116	e.edelson@SBCglobal.net	___ Regular Mail X E-mail
Mary Ann Nihart	City Council City of Pacifica	146 Hilton Lane, Pacifica, CA 94044	mnihart@pacbell.net	___ Regular Mail ✓ E-mail
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EIR Public Scoping Meeting
Natural Areas Management Plan
May ~~12~~, 2009
14

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CARLOS GARCIA	SHARP PARK GOLF	170 So. SPRUCE AVE So. SAN FRAN.	TEECO @ FLASH. NET	___ Regular Mail ___ E-mail
Rich CHANEY	Sharp Park Golf	19 OVIEDO PACIFICA		___ Regular Mail ___ E-mail
JOHN COBBS	self	2000 HWY 1. PACIFICA. CA 94044		X Regular Mail ___ E-mail
Mary J Pougher	PITS	716 Lockheed Dr Pacifica		___ Regular Mail ___ E-mail
John Lucchetti	SHARP PARK Golf	1032 Everglades Dr Pacifica 94044-3030		___ Regular Mail ___ E-mail
Julio Ventura	423 Alhambra Rd	So. San FRANCISCO. CA	— —	___ Regular Mail ___ E-mail
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EIR Public Scoping Meeting
Natural Areas Management Plan
May 14, 2009

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Appendix C

Scoping Meeting Transcripts

SAN FRANCISCO PLANNING DEPARTMENT

TRANSCRIPT OF

NATURAL AREAS MANAGEMENT PLAN

ENVIRONMENTAL IMPACT REPORT

PUBLIC SCOPING MEETING

COUNTY FAIR BUILDING AUDITORIUM, GOLDEN GATE PARK

TUESDAY, MAY 12, 2009, 6:30 P.M.

ATKINSON-BAKER, INC.
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REPORTED BY: KATHERINE A. CUELLAR, CSR NO. 3164
FILE NO.: A303FA8

FOR THE PLANNING DEPARTMENT:

JESSICA RANGE, EIR COORDINATOR
SARAH JONES, EIR SUPERVISOR

FOR THE RECREATION AND PARK DEPARTMENT:

DANIEL LA FORTE, PROJECT COORDINATOR
DAWN KAMALANATHAN, PLANNING DIRECTOR
LISA WAYNE

FOR TETRA TECH:

JOHN BOCK, EIR CONSULTANT
NIHAL OZTEK
MAREN ANDERSON

FOR 3D VISIONS:

KATE GILLESPIE
NICOLE WEST

TUESDAY, MAY 12, 2009, 6:30 P.M.

--o0o--

MS. RANGE: All right. Good evening, ladies and gentlemen. Welcome to the Significant Natural Areas Management Plan Environmental Impact Report Scoping Meeting.

Tonight, let me just start with the logistics. We have restrooms located right there to your left, and then we also have a drinking fountain. We also have beverages in the back. And there's four exits, and that's in case we need to leave quickly.

So, tonight I hope when you came in you signed in and got a copy of -- we have an agenda. We also have the Notice of Preparation, the one-page notice that we sent out. We also have a CEQA Process Flow Chart; that will help you when we give our presentation on CEQA. We also have a comment form so that you can make written comments to us tonight. We are accepting comments until May 26th at 5:00 p.m., close of business.

We also have a speaker card. So, if you have not done so, and you would like to speak tonight, please get a speaker card from our ladies over there, and fill it out and give it back to them, and we'll be calling people by the speaker card.

All right. I'm going to introduce myself. I'm

Jessica Range. I'm the EIR Coordinator with the San Francisco Planning Department.

This is Sarah Jones. She's the EIR Supervisor. She's also with the Planning Department.

Then we have Dawn Kamalanathan. She's with Rec & Park. We also have Daniel LaForte with Rec & Park, and we have Lisa Wayne with Rec & Park. And we have Kate Gillespie helping us with the scoping meeting this evening.

The purpose of this meeting is to take public comment on the scope of the environmental review for the Natural Areas Management Plan, and we'll get a little bit more into what "environmental review" means. We'll talk to you about the CEQA process.

Tonight, we're going to present a brief overview of the proposed project, the Natural Areas Plan, and we'll take comments at that time on -- or not comments, questions. If you have some questions on what the project is, we'll take questions then. We will then give you an overview of the CEQA process, explain where we are, and we'll take questions on CEQA at that time. Then, we will open it up to public comment.

And we do have a court reporter here to take public -- to help record the comments, so if you can please state your name when you speak, that would really

be helpful for us.

And then just a reminder: We'll be taking public comments until May 26th, close of business, and if you have any questions, you can contact myself, Jessica Range. We will have my contact information up there, or I also have business cards.

So, with that, I'm going to turn it over to Lisa Wayne, who will be giving you the overview of the project.

MS. WAYNE: Can everybody hear me okay? Great.

Thanks, everyone, for coming out.

Again, My name is Lisa Wayne, from the Recreation and Park Department Natural Areas Program.

Here we are again, and it's kind of unusual to not have an overflow room when Natural Areas is on the agenda, but we're glad you're all here today.

So, I'm tasked with basically talking about the management plan: a little bit of the history and a little bit of the conclusions. For those of you who haven't been involved in this process for a while, it will give you some background information.

Do I have some kind of clicker or --

Okay. So, natural areas -- natural areas are remnants of San Francisco's heritage -- natural heritage, and they contain wetlands, and creeks, and

sand dunes and oak woodlands, as well as urban forests, and scrub environments, and grasslands. They contain rare, and endangered, and unique species. They also have a habit for wildlife: a number of common wildlife species -- birds, butterflies, lizards, snakes, and things like that; and they also offer recreational amenities, so benches, viewing, a respite from the city, nature trails, and opportunities for environmental stewardship.

There are 32 natural areas in -- that are going to be covered by the EIR. The management plan covers 31, but since the time of the publication of the Management Plan in February 2006, we discovered another very small natural area, known as the Everson/Digby Lots, kind of near -- in the central part of the city near Billy Goat Hill and Fairmount Park. And these places range from under an acre to a few hundred acres, and as you can see all of the green spots around the map there, they're spread throughout the city, as well as in Sharp Park in the city of Pacifica in San Mateo County.

Natural areas acreage, there's some 1,105 acres covered under the Natural Areas Management Plan. About 237 of those are in Pacifica, the remainder of those are in San Francisco. And you can see the breakdowns of land versus water mass, and then the proportions of

Recreation and Park Department land that is made up of these natural areas.

The Natural Areas Program began in 1997 when a number of civic, and environmental, and community organizations lobbied the Recreation and Park Department, and then General Manager Joel Robinson, to initiate a community-based restoration program. And essentially, since that time, the staff has grown from one to nine at this point in time with a mission to preserve, and restore, and enhance remnant natural areas through community-based stewardship.

So, part of the initial selling the program to our department was to say: You can get lots and lots of volunteers and community members involved in this work. And, on average, we work with about 13,000 volunteer hours per year doing habitat restoration, erosion control, trail maintenance, and everything else you can imagine in natural areas.

The background now on the plan itself, you could almost see it back to 1991 with the adoption of the open space element of the General Plan, which is Policy 2.13, which is now being actually revised to some extent, and that plan identifies some basic policy decisions around natural areas: that they should be preserved, that they should be managed, that they should be -- you know,

recreational opportunities should be allowed as long as they're in keeping with the natural environment.

In 1995, our commission adopted the Significant Natural Resource Areas Management Plan, and the development of the plan that we're discussing today as the project for the environmental review really began in 1998, and it was a -- it's a refinement of that 1995 plan. So, as you can see, we've been working on this for a good long decade now as a department.

There's a number of other relevant plans that are also considered, and you can read more about them in the plan itself.

So, the -- did he get the keys -- no, I'm sorry. Before. One more. Okay, yeah.

So, actually, when this slide was done, it was eight years to develop. Now, I guess, we can say 10 years to develop.

There's been a number of drafts. In 2002, the citizen task force draft was released, and there are a number of advisory committees that evaluated it.

In June 2005, the public draft -- hit it again, if you would, John -- the public draft was released in 2005, and there was a six-week comment period, three major workshops that took place around this plan, and 2,700 comments were received on that plan. And from

those comments then, the final draft was prepared in February 2006, and it was approved by our commission as the project to receive environmental review. So, now, that's essentially where we are today.

The "Management Plan Goals" -- there's a number of goals that are outlined in there. There are kind of the general categories: conservation and restoration, education, research, stewardship, on down the line. And essentially, there are then different objectives within those categories. So, for example, it identifies in the "Restoration and Conservation" category to prioritize restoration work, to identify important wildlife areas, and protect and improve them, for example, working with local universities and schools to foster environmental education, and research, and so on.

So, more specifically, some of the Management Plan objectives -- I won't read through all these here, because I think I only have 10 minutes -- but essentially, develop an inventory, which we've done. It's all in a geographic information system -- looks at the plants that are found in that area, the wildlife, the soils, the trails; develop recommendations for improving wildlife habitat and sensitive species, prioritize restoration activities, develop guidelines for recreational uses, et cetera.

The organization of the plan, it's -- I forgot to bring a copy -- it's about that big (indicating), and it's organized by these chapters and numbers, and the parenthesis give the chapter numbers. So, the introductory chapters really deal with: What's the setting right now? What's it look like on the ground in these various places?

And then general recommendations that apply to many different natural areas, so having to do with, say, for example, preserving breeding-bird habitat by avoiding particular times of year for vegetation removal.

And then what may be of most interest to everyone is in Section 6, is every single natural area broken down with recommendations. And again, it has to do with plants, and animals, and trails, and other related features.

And as a way to prioritize the work for the natural areas, we broke down each natural area into management areas -- Management Areas 1, 2 and 3. And the Management Area 1 are the most sensitive, so they would contain your rare, and endangered, and unique species; Management Area 3 would be your least sensitive. So, this is a way to prioritize, again, nine staff, 1100 acres, 13,000 volunteer hours. You can kind

of do the math. It's really important to have a prioritization, so that's built into the plan.

And so, if you look in the naturalist plan at the end of each chapter, you'll find what's known as the "Management Area and Trail Plan Map." And so -- it's a little bit hard to see in this, but you can see this is Mount Davidson. The whole land mass is broken down into those red, gold and green colors that correspond to those MA1's, MA2's, and MA3's.

And each of the charts themselves that are on this page will outline a summary of the actions that would happen in each one of those specific polygons.

So, what I like to say to people is, "If you don't want to read the" -- I forgot what it is -- "800-page report, and you're interested in a particular set of natural areas, this is the place you want to go, the last page of each chapter."

So, in general, just kind of summarizing overall what the plan talks about, particularly focusing in on impact areas and summaries of more, say, controversial items, if you will, in the category of trees and vegetation, the plan identifies places for the reintroduction of sensitive species for local conservation purposes, and those are listed species as well as locally significant ones; reduction of invasive

plant cover, revegetation and replacement of trees and vegetation where invasive species are removed.

So, in the category of invasive trees, this is primarily the Tasmanian Blue Gum, and we've estimated that there's something like 64,000 invasive trees in these natural areas. Again, that's an estimate.

The plan identifies approximately 3400 of those to be removed. These numbers are rounded, and so, 95 percent of them, essentially, to remain. And in Pacifica, in the upper watershed, where you've got much higher, in many ways, conservation value, the recommended numbers of trees to remove are much higher, so 28 percent of the trees in the upper watershed.

In the category of "Animals and Wildlife," there's "Improving Habitat for Sensitive Species." So, I know there's people from Pacifica here, and we have a couple of very important sensitive species down there, but, also, it talks about more common species that we really don't find anymore in San Francisco or in very few places, like the Pacific Horse Frog.

Improving wildlife habitat, protecting nesting sites, and, to a certain extent, to modify -- to maintain but modify the off-leash dog use in parks.

Then "Trails and Access," we mapped approximately 40 miles of trails in a one-square-mile land mass, if

you can put your head around that. And the plan identifies roughly 30 miles of those trails to remain, and about -- you can't see it very well, but the red says, "Social trails to close 10.3 miles." So, about 25 percent of the social trails to close.

And social trails are shortcuts off of major trails, maybe they lead from people's backyards. They often go straight up and down hills and have issues about erosion and -- and whatnot. And then 1.1 miles of new trail.

So, that is kind of the quick-and-dirty in my ten minutes.

The Management Plan is online on our website on SFNAP.org. You click on "Natural Areas 20-Year Management Plan," and it's broken down by chapter, so if you're interested in a particular natural area, say like Glen Canyon, you can just click on "Glen Canyon" and see what the recommendations are, including the maps.

That's it. Are there any questions about my presentation or the Management Plan?

MS. KAMALANATHAN: Good evening, everyone. My name is Dawn Kamalanathan. I'm the Planning Director for the Recreation and Park Department, and I'm actually here today just to give a brief update on some legislation that many of you, or some of you, might be

aware of and have some questions on that's been working its way through the Board of Supervisors over the past week and actually passed at its second reading at the full Board of Supervisors.

This legislation that was introduced by Supervisor Mirkarimi directs the Recreation and Park Department over the next three months to develop three concept plans for the golf course at Sharp Park, and those three concept plans, one is keeping the existing 18-hole golf, the second is a partial -- a 9-hole golf course, and then some partial restoration of natural habitat, and the third concept plan is the elimination of golf as a use at Sharp Park.

The legislation further directs that the Department continue to explore with the GGNRA, and also consult with the City of Pacifica and County of San Mateo, to explore options for transferring the property to one of those entities over the long term.

So, I wanted to just kind of give an update on that legislation and where we are with it.

We are moving forward with this analysis, and we hope to present to the Rec/Park Commission and the Board of Supervisors our findings at the end of the summer. But it's important, I think, for folks to understand that any direction that the Board of Supervisors or

Rec/Park Commission gave to the Department with respect to converting the golf course in whole or in part would be addressed through a separate environmental review process from this Significant Natural Resource Areas Management Plan. So, just to make that clear, those issues will be addressed through a separate environmental review process should the Board and/or Rec/Park Commission feel it's appropriate to give us direction to pursue a change of use at the golf course.

So, I wanted to make that announcement. Okay. Great.

MS. JONES: Sara Jones. I think I'll keep going without the microphone.

Hi, I'm Sarah Jones. I work for the Planning Department, and the reason that we are involved with this process right now in Planning is that the San Francisco Planning Department is charged with conducting environmental review on all projects, public and private, within the city of San Francisco or under the jurisdiction of San Francisco.

So, we're moving on now into the discussion about why we're here tonight, which is the environmental impact report being prepared on the Natural Areas Program.

We'll go -- and what I'm going to describe to you

is just a little bit about what the California Environmental Quality Act is meant to accomplish and what you can expect to see out of this process.

So, the reason that CEQA exists, the purpose of CEQA, is to provide information to decision-makers about potential environmental effects of any kinds of projects. It is meant to be an informational document, and it is meant to provide the information that decision-makers need.

Completing a document, an environmental document, under CEQA, does not indicate any type of approval or disapproval of a project; it is simply providing information and public disclosure of the environmental effects of a project.

So, what do we look at under CEQA? What topics are we going to analyze?

You see here a list of 18 -- or 17, separate topic areas that we are required to analyze. The State sets this out for us in their guidelines that -- called the "California Environmental Quality Act Guidelines," the CEQA guidelines, and that is the State document that guides us in our work.

We have, I believe, some copies of our checklist that we use. Basically, within each of these topic areas that are covered, we have several questions that

we need to answer on -- in terms -- in order to identify the potential areas in which a project might have impact.

Some of you might have seen the initial study that was prepared for the Natural Resource Area Program. Several of these topic areas were what we call, "scoped out" in that initial study. What that document allows us to do is say -- we go through our entire checklist and determine what areas do not have potential significant environmental effects, and, you know, put out the disclosure about that, and then that allows us to then focus the actual environmental impact report on the significant impact, so we don't have to get into the issues that really aren't pertinent to a particular project.

This is an interesting process -- just as a side note, this is an interesting process for those of us in the Planning Department, because, I'm sure, as you can imagine, most of the projects we're looking at are buildings and projects where we're not too concerned about things like biological resources or other topics that are generally not pertinent in San Francisco, so, that has been an interesting project for us to be working on.

UNIDENTIFIED SPEAKER: I have a quick question on

that slide.

MS. JONES: Uh-huh.

UNIDENTIFIED SPEAKER: Is that what an EIR does, looks all of those 18 issues?

MS. JONES: Yes.

UNIDENTIFIED SPEAKER: And answers them?

MS. JONES: And answers a number -- there's several questions within each of those issue areas.

UNIDENTIFIED SPEAKER: What about the initial study? Does that still -- does that go over those 18 items?

MS. JONES: It does go over the 18 items, but for some of the items, it says there are potentially significant impacts. We're looking at that in the EIR. So, for some of the items -- and you can see our initial study either online, we have a copy here, and you can get copies from us, and you'll see --

UNIDENTIFIED SPEAKER: But if they don't do an EIR, we don't get that. You could stop now.

MS. JONES: No, we can't stop now. We can't -- we can't because we've determined that there are potentially significant environmental impacts from this project, so, under CEQA, we are required to analyze those in the EIR.

UNIDENTIFIED SPEAKER: So you'll be doing a full

EIR?

MS. JONES: Yes.

UNIDENTIFIED SPEAKER: And not a mitigated?

MS. JONES: Not a mitigated negative declaration.

In a mitigated negative declaration, you go through the same initial study, but under one of those, you determine that all potentially-significant impacts can be mitigated to a level of less-than-significant. So, you have specific measures that you put into place to say, you know, "This will reduce these impacts."

If you can come to that conclusion in your initial study, then you can go ahead and issue what's called a "mitigated negative declaration."

We did not come to that conclusion in this initial study, so that is why we put out a notice that said we are preparing an environmental impact report on this project.

UNIDENTIFIED SPEAKER: And that's here today.

MS. JONES: Yeah, that's what we're doing here.

UNIDENTIIED SPEAKER: And you mentioned that some things were eliminated for consideration. Which of those 17 things were eliminated?

MS. JONES: I am going to let Jessica answer that question, or John. I don't remember off the top of my head, so I don't want to say something incorrect.

UNIDENTIFIED SPEAKER: And on the list that is there, where is forestry?

MS. JONES: Forestry would come under "Biological Resources."

MR. BOCK: So, actually, most of the resource areas, because of things like public services, and mineral and energy resources, just aren't even germane to the topic. So, the six areas that are right now being carried forward into the EIR are land-use and land-use planning.

UNIDENTIFIED SPEAKER: Can you speak up?

MS. JONES: Yeah. Why don't you --

MR. BOCK: So, the first topic area that's being carried forward into the EIR is number one on the list, land-use and land-use planning, and that provides some of the general context for these actions that are taking place both for the property itself as well as surrounding land uses for each of the natural areas.

We're also carrying forward cultural and paleontological resources, and further down the list we're looking at recreation, because that is a central component of the management of the natural areas; also looking at biological resources, hydrology, and water quality. And then, I believe, cumulative impacts is one of the other topic areas that wasn't a focus of the

initial study that will be addressed in detail in the EIR.

MS. JONES: I also want to add that if, upon review of the initial study, you feel that we have, you know, missed something or come to -- you know, if you don't agree with the conclusion, or you think that we do need to address a point in more detail, that's part of the purpose of this scoping process. We are scoping out this next step in the analysis.

So, that's what -- you know, this is not set -- what we've said in the initial study is not the last word on the topic.

MR. BOCK: I would just add to what I said. I skipped over "Esthetics"; that's another one that we're looking at, particularly with regard to the issue of tree removal. So, we've been doing an initial simulation to show where there are some of the large-scale tree removals scheduled that will be part of the EIR analysis as well.

MS. JONES: But these are questions specifically -- or, generally, about the CEQA process --

UNIDENTIFIED SPEAKER: There are questions, yes --

MS. JONES: -- but if they're specific to the environmental review on the project, I'd rather take them in the scoping time, so --

UNIDENTIFIED SPEAKER: Well, my question is: When you say "we" are doing this environmental review, in the time the Department normally reviews the scope of structures, this is an enormously complex subject --

MS. JONES: Right.

UNIDENTIFIED SPEAKER: -- so when you say "we," who's doing it? Is there a consultant or --

MS. JONES: We have a consultant. Tetra Tech is the consultant, and John --

UNIDENTIFIED SPEAKER: Who hired them, and what are their qualifications -- special qualifications?

MS. JONES: John Bock, who just spoke, is the project manager from the consultant, and we reviewed their qualifications and selected them for the work, and, you know, you can -- we have detailed information on their qualifications, and we have their proposal that is available for review if you'd like to arrange to do that.

UNIDENTIFIED SPEAKER: Was there a competitive search for other consultants or --

MS. JONES: The consultant is actually chosen by the Recreation and Park Department. The Planning Department had input into it, but the consultants are -- -- that's the responsibility of the project sponsor, so that was -- so they managed that process.

UNIDENTIFIED SPEAKER: Did you give any specific instructions to the consultant?

MS. JONES: We gave specific -- once the consultant is hired, we give specific direction. We work -- once the consultant is hired, then they're essentially consulting to us, to the Planning Department, and we give the direction to them as to the scope and content of their work.

UNIDENTIFIED SPEAKER: And you tell them you'd like to get through, and you want to cut down acres of trees, and "You make this happen for us"?

MS. JONES: No, that's not what -- that's not our purpose here. What we're doing is, we say, "Here's the project that was defined that is being proposed by" -- in this case, a public agency. We say, "This is the project that is being proposed. Will you give us the analysis of what the environmental impact of that would be?"

UNIDENTIFIED SPEAKER: And how much does that cost?

MS. JONES: I don't recall the amount of the --

UNIDENTIFIED SPEAKER: Who pays for it?

MS. JONES: The Recreation and Park Department.

UNIDENTIFIED SPEAKER: 800,000.

UNIDENTIFIED SPEAKER: Rec & Park is sponsoring

it, and they're hiring a consultant?

MS. JONES: This is how the consultant contracts are managed for the Planning Department. We have an agreement with the consultants that they are reporting to us and not to the project sponsor.

UNIDENTIFIED SPEAKER: Someone just said that it cost $800,000. Is that --

MS. JONES: That sounds about right.

UNIDENTIFIED SPEAKER: And that's coming from the Park & Rec's budget?

MS. JONES: Yes.

UNIDENTIFIED SPEAKER: And then you're cutting and firing gardeners in Golden Gate Park?

MR. LA FORTE: Sir, if you have no specific questions about the content --

UNIDENTIFIED SPEAKER: No, sir, I have a specific question.

MR. LA FORTE: My name's Daniel LaForte. I'm a planner with the Recreation and Park Department. I manage the RFP process for the Tetra Tech contract. In their RFP, we did look for special qualifications.

MS. JONES: What's a RFP?

MR. LA FORTE: Request for Proposals.

So, we did go through that process, and we did bid out this project, and we did -- the Recreation and Park

Commission did award the contract to Tetra Tech in October of 2007. The amount of the contract that was awarded was, I believe, $722,000.

I'd be happy to share that information with any of you who ask for it.

Again, in the RFP, we did a request for specific qualifications, and we were looking for specific consultants that had a background in these kind of issues. And we felt that after reviewing Tetra Tech's proposal, that they had met those qualifications and were certainly qualified to do this work.

UNIDENTIFIED SPEAKER: Thank you.

MS. JONES: Next?

UNIDENTIFIED SPEAKER: At this point, I just wanted to clarify -- number 13 is "Geology and Soils." One of the concerns in this program is about the erosion that happens to be a part of the program, not because it of it, but it just happens to be a part of it. And I was really shocked to see that there's nothing specifically checked off. It is my understanding that that does not rise to the level in doing all of the proposed work, that geology doesn't have any --

MS. JONES: Well, that's actually -- that comment is one to raise in the -- when we actually take the scoping comments.

UNIDENTIFIED SPEAKER: Obviously, it hasn't been raised in any other way; is that correct?

MS. JONES: It was analyzed in the initial study. I don't recall off the top of my head what the conclusion in the initial study was, as to whether it was a --

UNIDENTIFIED SPEAKER: I want to make sure, because I'm curious.

MS. JONES: The initial study reached the conclusion that geology would not result in significant impact. Again, if you disagree with that conclusion, then raise it in the scoping comments, and we'll revisit the topic in the context of the EIR.

Yes?

UNIDENTIFIED SPEAKER: Was number 15, the "Hazardous Materials" --

THE REPORTER: I can't hear her.

MS. JONES: You know what? Again, this is just about the general CEQA process right now, because -- the reason that I'm trying to hold it to that is that there's a certain -- once the comments are made on the scoping, that's what's in our record and that's what we're dealing with, and we have to make sure we capture everything, and also, that's a comment period.

So, I want to give people an opportunity to ask

questions about the general environmental review process, but if you have specific issues about the review for this project, the next item on the agenda will be the opportunity to raise that.

UNIDENTIFIED SPEAKER: I'm sorry. Could you tell us what numbers you're going to been covering? Is it going to be mentioned again?

MS. JONES: Yeah. You know what --

MR. BOCK: Yeah, so there are -- the six topic areas that are being carried forward in the EIR are number one, land-use and land-use planning, number two, esthetics, number four, cultural and paleontological resources, number nine, recreation, number 12, biological resources, number 14, hydrology and water quality. And then outside of those specific resource topics, we'll also be looking at the cumulative impact, which will be looking at the impact of this project on what other projects are happening around the natural areas, and looking at the -- this total impact resulting from this combined action.

UNIDENTIFIED SPEAKER: Wind and shadow is not covered?

MR. BOCK: Wind and shadow, and all the other ones that I didn't mention, have all been screened out through the initial study process as being less than

significant for -- less than significant and mitigable impact through the -- that initial CEQA review process.

UNIDENTIFIED SPEAKER: Okay. Thank you.

MS. JONES: Just to -- you know, just to add, it is -- you know, if you want to take the opportunity, we still have about two weeks left in the scoping process. If you want to take the opportunity between now and the end of the scoping period to review the initial study, I know it's kind of onerous because it's a fairly thick document, but the best way to -- the most effective way to comment on the EIR scope is to review what the conclusions were in the initial study, and if you do that, you can submit your comments in writing. There's no different weight given to written versus oral comment, and you can -- you know, you can submit us a dissertation in written comments, and -- there's no limit.

So, I definitely encourage people to take the full opportunity that the scoping period offers to do that.

I'm going to move on and finish up this part, and then we can get to your comments.

This outlines the steps in the CEQA process. This is a brief version of this handout, which is available up at the front.

We are at the -- at the top bullet, there's a

"Notice of Preparation and Initial Study," and we are holding this scoping meeting to provide people the opportunity to comment orally if they wish to do so. We will take all of the comments that we receive during this scoping period, both written and oral, and take them into account in our preparation of the next document that we're preparing, which is the draft environmental impact report, and that's the document where we go into detail on those potentially-significant impacts, and discuss them, and look at alternatives to the project that would reduce or avoid, you know, some or all of the potentially-significant impacts.

We also have to look at a no-project alternative in terms of what would result if this project does not go forward.

We will publish that draft document, and everybody will get notice when it's available, and there will be a public hearing before the Planning Commission on that document, and, again, another opportunity to submit written comments, and then we take all of those comments that are submitted on the draft EIR and respond to them in writing in a comments and responses document, make whatever changes to the EIR are needed, and that is -- that modified document with the responses is what is brought to, again, the Planning Commission for

certification.

And by certifying an environmental document, what the Planning Commission is declaring is that the document is full, and complete, and prepared in accordance with the requirements of CEQA. So, again, it's not saying that it's a good project, or a bad project, or a project that they think should be approved; they're saying: We did the environmental review.

So, those are the steps that we will be going forward with over the next several months.

Here are some of the logistics. I think all of this information is available in one way or another up at the front, but, again, you have until May 26th to submit your comments. The Notice of Preparation is available online. If you don't have access to it that way, you can get in touch with Jessica. She can get you a copy or let you know where you can go to review one.

Also, as Lisa mentioned, you can go to the Natural Area Program website to actually look at the plan itself.

Your comments are sent to Bill Wyko. He is the Environmental Review Officer, so he's in charge of the Major Environmental Analysis Division of the Planning Department. Send him your comments. If you have any

questions, call Jessica.

And I think that about covers it.

Oh, and we'll just go over the -- how we'll conduct the public comment period.

Again, the purpose of this public comment is to get your comments onto the record, so we're not responding to the comments; we're just taking them at this time, and we'll respond to them in the environmental document. So, please, you know, obviously, general sort of kindergarten rules -- be respectful. Also, speak clearly.

We noted here that it's optional to state your name. Actually, we need you to state your name. That's the only way we know to be able to follow up with you, if necessary, and to make sure you get all the future documents.

We're going to have a three-minute time limit tonight, so if you could adhere to that, that would be great. And again, if you have more to say, you know, please submit it in writing.

And again, this is about what should be included in the environmental review document, so it's not about the merits of the Natural Resources Area Management Plan; it's about what you think we need to be analyzing on the environmental side.

So, that's it, and we'll get to your comments now.

Oh, I'm sorry.

UNIDENTIFIED SPEAKER: We still get to ask questions after this or what?

MS. JONES: Well, again, if you have any more questions about the general environmental review process, ask them now; otherwise, if you want to talk to me afterwards, that's fine, too.

MR. LA FORTE: I'll be coming around, also, with the microphone so that everyone can hear the comments, so I'll be passing around the microphone.

UNIDENTIFIED SPEAKER: This is a general question. In terms of the biological resources, will Tetra Tech be relying on information from, I guess, 1995, or will they be doing their own measurements, or what?

MS. JONES: They were -- I believe their scope involves -- excuse me, independent information gathering as well.

UNIDENTIFIED SPEAKER: What?

MS. JONES: Independent information gathering.

Since what they're analyzing is the Natural Resources Area Plan, they need to, you know, look into the issues in a different way than they did. But if you have detailed questions about that, you can definitely ask John afterwards.

UNIDENTIFIED SPEAKER: One more general question. What is the percentage of time in the EIR -- final EIR, that say you have actually incorporated public comment? Would you know a general percentage?

MS. JONES: I'm sorry?

UNIDENTIFIED SPEAKER: When people make comments, it might be worthy of being considered affecting your final recommendation. Can you tell us what that percentage of that frequency might be? Five percent of the time for incorporating public comments? 50 percent of the time?

UNIDENTIFIED SPEAKER: Would you repeat the question? I'm sorry.

MS. JONES: She wanted to know how often we actually incorporate what is said by members of the public, and I think it's more -- if there are -- you know, if there are issues that are relevant to the environmental analysis that we are not otherwise addressing, then we incorporate them. You know, it's -- I think probably every EIR we prepare is -- is directed to some degree by -- to one degree or another by issues raised by the public.

MR. BOCK: And just to build on what Sarah presented, and what's going to come out of the general presentation, the purpose for the scoping period of what

we're actually trying to do is to scope out the issues that should be addressed in the EIR.

So, we've already gone through that initial internal process. By comparing the initial study to that process, we've identified what we think are the important issues to carry forward into the full EIR analysis. If you disagree with that, or think we missed something, or there's additional information that we didn't incorporate into that analysis that we didn't identify in reviewing the initial study, then those are some of the topics that we want to hear about today and over the next couple of weeks through the period that Sarah mentioned.

As Sarah mentioned, we're not here to vote for or against implementing the plan. We're really trying to focus on the environmental issues. That's one of the reasons we were presenting that slide with those 18 topic areas. If you can make your comments either specific to those or specific to one individual natural area, that will focus our analysis on what you wanted to be addressed in the EIR.

And so, as we mentioned, we're going to start off with the first speaker. If you haven't turned in a yellow comment -- speaker comment card, please turn it in to one of the women manning the sign-in table. We've

got probably about 15 or 20 folks right now in hand, so we're going to go through this list, and please, if you can, keep it to three minutes, and speak as clearly and slowly as you can so the court reporter can report accurately all the things you're saying so we can make our documentation on that.

And so, our first speaker will be Richard Harris, and he'll be followed by Patrick Swain.

MR. HARRIS: I'm Richard Harris. I'll be speaking for the San Francisco Public Golf Alliance.

We have questions that I put in an eight-page letter that I've submitted, and so if any of the participants here are interested in those questions, see me, and I'll give you a copy of the letter.

I just want our questions on the record. They have to do with the relationship between this EIR process and the process that the Board of Supervisors asked the Park & Rec to look into a possible change of use of the golf course when we have a serious environmental question relating to that, and she may have ran through that area, but if they do anything to the golf course, that in itself will be subject to a completely separate EIR than this.

So, with that, I will submit my letter, put it on the record, and thank you very much.

MR. SWAIN: Good evening. My name's Pat Swain. I'm a member of the Pine Lake Park Neighborhood Association. I was on the Advisory Committee for the Natural Areas Program, so I met quite a few people who are here tonight, and I've heard quite a few comments with regard to the Natural Areas Program over the years.

One comment I do have to make is, I'm concerned that there be any further compromises with regards to the number of areas within the environmental review. I would hope at the end of the environmental review, we would continue to have 32 areas for consideration and for inclusion in the Natural Areas Program.

I specifically live close to Pine Lake Park. This is a rather large area under consideration. It has had a capital improvement project take place within its boundaries in the last three years, and as a result of that, a lot of the issues that were brought up in the environmental review were also at least discussed with the community over the years. Unfortunately, at the end of that process, not all of them, indeed, have been maintained, or a lot of the comments or promises made by Rec & Park lived up to. This has to do with staffing, but also the result of conflicts within various user groups.

I find the problem with the Recreation and Parks

Department, which can be problematic, particularly as to the Natural Areas Program. I would like it to be the Parks and Recreation Department in terms of dealing with natural areas, but that's not necessarily the case.

So, there have been a lot of compromises made in the course of developing the master plan, and I'm hoping at this point, as you move forward, you'll try to hold yourself to that document as much as possible.

Neglect has taken place, unfortunately, with regard to enforcement. A lot of the outcome of your review may not reach fruition in the future. There are problems with other agencies interfacing with Recreation & Parks. Last year in Pine Lake Park alone there were instances where people came in and stole ducks. We've had problems with off-leash dogs in the lake. The entire west end of the lake -- the west end of the park is supposed to be on-leash.

We've all tried to mitigate these things and work together, but the environmental review really does -- it needs to be tough on some of these issues and realistic. There's a lack of enforcement on the part of the police department. So, there are certain agencies that will fail this process. Rec & Park may be one of them. The police department certainly will be with regards to enforcement from historic perspectives.

So, I'm hoping in terms of the environmental impact report you'll be realistic, you'll be strict in terms of adhering yourself to the management plans that currently exist, and I'm really hoping at the end of this what we can find ourselves a way to move forward. All of us have interests in seeing that these areas are better. Our off-leash dog friends have interests. They have activities they want to participate in. They also have areas they want to see restored, maintained, and improved.

So I'm hoping you can pull all that together in the context of the environmental impact report. We need to have significant efforts made to try to improve these areas.

Thank you.

MR. BOCK: As I mentioned earlier, if you can keep to the time limit, that will be appreciated. We want to make sure everyone that's interested in speaking tonight gets a chance. Obviously, the speaking forum this evening is not your only opportunity to comment. You can fill out one of the comment cards and turn that in at the sign-in table, or you can send in your written comments any time over the next two weeks before the end of the comment period on May 26th.

So, our next speaker is Nancy Rosenthal followed

by Morley Singer.

MS. ROSENTHAL: Hi, I'm Nancy Rosenthal, a 27-year resident of San Francisco. The last five years I volunteered with the Natural Areas Program. I came before you two years ago to promote the NAP, and I'm here again to encourage you to proceed with the environmental impact report.

The following are concerns I would like the report to address:

Number 1, the fragmentation of natural areas. Our natural areas should be managed in a coherent and consistent plan for wildlife, rare plants, and ecosystem processes. The areas are already fragmented between different agencies or institutions. Further fragmentation by designing portions MA1, 2, and 3, and allowing less restrictions on MA3, will only speed up the destruction of what's left.

Two, evaluate the impact of leaving 95 percent of the invasive trees in the natural areas.

On Mount Davidson, where ground space is open after last winter's storm knocked down some trees, several native plants once again sprouted. Removing more of these understory-killing trees can bring back native plants and reestablish a healthy and diverse ecosystem.

Three, further evaluate the environmental impact of off-leash dog use. Ninety percent of dog play areas are in our significant natural areas. Natural areas cover only 27 percent of park lands. There should be room in the other 73 percent of some dog play areas.

Number 4, evaluate the impact of trails. Currently, hundreds of miles of trails criss-cross the natural areas. Any decision for improving or closing existing trails should be based on a comprehensive approach to trail planning. New trails through natural areas are not necessary.

Number 5, evaluate management alternatives for Sharp Park. The report should provide information for making a selection that maximizes ecological and endangered-species management and promotes the recovery of the San Francisco garter snake and the red-legged frog.

MR. BOCK: Thank you.

Our next speaker is Morley Singer, followed by Dan Murphy.

MR. SINGER: I'm speaking for a substantial number of the neighbors around the Sutro forest, and I will submit detailed comments in writing subsequently, but I'm just astounded by some of this process. I don't mean to malign the good people who are doing a complex

job up there, but is global-warming a secret, and the effect of trees? They take up carbon dioxide and give off oxygen.

There are several organizations around the city devoted to having more trees in San Francisco. Trees are precious in any city. It's a beautiful forest. The light is beautiful, it's full of birds, it's full of animals, it's full of places to walk. Why not just relax and enjoy the unique beauty of it? I don't understand any thought of cutting down trees and destroying this magnificent forest.

The second major item which I'd like to have on the record is that much of the questions here are a result of the very powerful mistrust that the neighbors have of the Natural Areas Program and skepticism of the Planning Department. We've had previous battles with the Natural Areas Program over the Past 10 years, and they've demonstrated a striking indifference and callousness to neighborhood interests, to try to cut down all the trees on Tank Hill, and some years ago, trying to cut down all the trees -- all the trees in Sutro forest.

Just in case some of you neighbors were doubtful or think I'm extreme, I have a picture here that two weeks ago a sign was put up at the Belgrave entrance to

Sutro forest that says "No Public Access." I have a picture of it if you're doubtful. Now, why would that sign go up without talking to the neighbors? There's hundreds of people in the neighborhood walk in there every day with their dogs and cause no harm in the forest.

The third major item I want to address is using the threat of fire to instill fear in people. That forest is always damp. It sucks out water from the fog, and it's always wet in there. I sail on the bay, and maybe two days out of the year, the wind comes from the east; 363 days a year, it comes from the west. The forest is a windbreak for all of the structures east of the forest, from Parnassus Street all the way to up to the top of Twin Peaks, and if you take down the trees, then the westerly winds would just fan a fire that's coming from the forest area.

There's so many totally cockamamie things, that to leave out wind effects in the environmental impact report is striking. It makes me skeptical about the qualifications and the charts given to the consultants, like "Get this through at any cost."

I don't want to take any more of my time. I'll submit a detailed comment that the neighborhood is going to oppose this project. I suggest, to save the taxpayer

money, you abort the project now. It's amazing that you spent $800,000 on the project when the city is cutting back on all kinds of essential services.

MR. BOCK: Thank you, Mr. Singer.

Our next speaker is Dan Murphy, followed by Tony Belway.

MR. MURPHY: I'm Dan Murphy, and I represent Golden Gate Audubon Society.

Golden Gate Audubon supports restoration of habitat for wildlife, particularly birds. The tree -- I'll just make a number of points here, basically.

The tree removal is necessary. We only support it during the non-nesting season, and we believe trees such as those used by colonial birds like herons and cormorants should be preserved. So should trees used by hawks and owls for nesting. We urge that habitat that's necessary for birds, such as California quail, Spotted Towhee, Wrentit, and other species restricted to coastal scrub should be established and maintained with the specific goal of continuing those specific habitat systems.

We support restoration and appropriate management practices at Sharp's Park that will ensure it as a viable habitat for red-legged frogs and San Francisco garter snakes.

And finally, we certainly agree that restrictions on off-leash dogs must be enforced in natural areas and other groomed areas as the earlier speakers mentioned.

Thank you.

MR. BOCK: Thank you.

The next speaker is Tony Belway, followed by Greg Gaar.

MR. BELWAY: My name is Tony Belway. I think I have a kind of unique perspective to this. I'm a native to San Francisco. I've lived here for more than 50 years. My wife is a school teacher at Terra Nova High School in Pacifica. We consider ourselves environmentalists: Members of the San Francisco Beekeepers, organic gardeners.

I'm also an avid golfer. I believe that we should not be making choices of golf versus the environment; that lacks vision.

What we do know is that 75, 80 years ago, an artificial ecosystem was created at Sharp Park. In that 80 years, they built housing surrounding that park for 35,000 people. The golf course and the property around there is the singlemost important community venue in that city.

Also in those 75 years, we know that frogs, salamanders, and snakes, that is where they survived, is

on the golf course in this artificial ecosystem that was created with the construction of the golf course.

We know that the property was given to the City of San Francisco specifically for this golf course. It's not nature. Golf at its best embraces nature, but it's not nature.

So, if you close Sharp Park and tear down 13,000 trees, and tear -- you'll need to also tear down the seawall if you want to make it nature -- are you going to have more lizards? Are you going to have more frogs? You're going to have another artificial ecosystem that will be different, but you can't tell nature what to do, and if you go into this thinking that you are going to -- that golf is an obstacle to make way for nature, you're just short-sighted.

There's room for everybody here. Right now there's room for the lizards, and the frogs, the salamanders, and the golfers. I know. I was out there this weekend. They worked -- the Recreation and Park Department has done a great job in reducing the use of pesticides on golf courses, working around the nesting areas. There can be more that can be done.

But I think when you look at the issues that you brought up about cultural issues, you talked about this being a community-based deal, have you talked to the

community of Pacifica? Believe me, they have their own very strong points about this. There are nine golf courses in San Francisco; there is one in Pacifica.

And this is their community venue. I know this weekend there was the major fundraiser for the Terra Nova High School athletic programs, which was a golf tournament. Next week there's one for the Cabrillo School middle school, a music program, another golf tournament at Sharp Park. It's the only place you can go and have a banquet just about in the entire city.

Yes, you need to work to restore habitat. I believe that. But I don't think that golf is an obstacle, and any solution to this that doesn't include golf, lacks vision.

MR. BOCK: Thank you for your comments.

Our next commentor is Greg Gaar, followed by Jack Rauch.

MR. GAAR: My name is Greg Gaar. I'm with Nature in the City, and I've been volunteering for the Natural Areas Program since it started in 1997. And when you go out and work with the Natural Areas Program, you learn about the impact of the invasive trees, the off-leash dogs, the non-native plants, and you realize that we're running out of time to save San Francisco's natural areas.

So, my concerns may be similar to other people who will speak here tonight, but I would like to know what the environmental impacts are of leaving 95 percent of the invasive trees in our natural areas. If you go to areas where you have dense eucalyptus, dense cypress and pine, you'll find there's no biological diversity in the understory because the shading, the fog drift, it destroys the native plants that have been there for hundreds of thousands of years.

Ninety percent of the off-leash dog areas in San Francisco are in the natural areas. We need to reduce some of the off-leash dog areas.

I love dogs. I get along better with dogs than people, as a matter of fact, but if we're going to save the less cuddly critters, like the alligator lizards, the native birds, the garter snakes, we need to reduce the off-leash dog areas in our sensitive natural areas.

I'm concerned about the cutting of new trails through sensitive natural areas -- a mile and a half of new trails to be constructed. I would like to know the environmental impact of cutting new trails through wildflower fields and how that will have an environmental impact.

The management plan has already been heavily compromised during a process over the last three or four

years, and you need to take that into consideration.

And finally, as we have in all environmental impact reports, I would like to know what the environmental impacts of a no-management plan alternative. I mean, I think that's required in the plan.

Thank you very much.

MR. BOCK: Next up is Jack Rauch, followed by Jake Sigg.

MR. RAUCH: I don't think I'll need that. Thanks.

My name is Jack Rauch -- that's spelled R-a-u-c-h -- and I live in Pacifica, and I'm also a member of San Francisco Archers, which has an archery range there in the Sharp Park property that San Francisco has in the Sharp Park area.

I'd like to say a number of things, but, first of all, thanks for the coffee this evening. That was very nice of you.

Another is that I'm encouraged by the fact that you got an outside organization to look at this closely. It saves us from pseudoscience, and people with their own agendas, and people who never saw a piece of land they think didn't belong to them and they should have control over it.

Sharp Park was donated to San Francisco for

recreational purposes, and I'm glad to see that the focus -- some focus will be there. I'd like to see that as a foremost consideration. Obviously, I'm an archer and not a golfer, but the people who donated it to San Francisco wanted it to continue in that fashion; that's why they gave the land to San Francisco, for recreational purposes.

There's no reason why changes can't be made that will accommodate the preservation of species and also the preservation of golfers. Archery, by its very nature has a very low impact on the environment, and so our ox isn't being gored here, but I think that, you know, really, recreation ought to be something that's very closely looked at. The benefits of it to all of us are enormous.

I want to thank you very much.

MR. BOCK: Next is Jake Sigg, followed by Nancy Stafford.

MR. SIGG: Jake Sigg, California Native Plant Society.

The issue of trees, you mentioned 64,000 trees in the natural areas.

UNIDENTIFIED SPEAKER: I can't hear you, Jake.

MR. SIGG: Adolph Sutro did not plant that many trees. They have been increasing by reseeding

reproduction for many decades now, and so much so that they're imperiling their own health. They're way too crowded; for their own benefit, they need thinning. And I think that the EIR ought to consider the impact both on the trees themselves, but more particularly on the biodiversity. Every year that passes, there are fewer and fewer native plants and more and more weeds. And trees can be weeds, too.

So, you know, most of that is lack of funding, but we need to reverse that trend, and we need to consider cutting far more than the minuscule amount of trees. 64,000 is really absurd.

Somebody said 90 percent of the dog-play areas on RP land are in natural areas, and what the hell is the this program for? We're supposed to be preserving our heritage, our natural heritage, and yet we're letting this stuff go on.

So, that should be addressed.

In terms of Sharp Park, we need to select the restoration alternative that maximizes the probability of protecting the snakes, that they will recover, so that the protection by the Native Species Act won't be necessary.

The red-legged frog used to be the Jumping Frog of Calaveras County. A lot of plants and animals are

becoming endangered because their habitat is strange. We need the maximum alternative in Sharp Park, and I think that would be a no-golf alternative.

MR. BOCK: Thank you. Our next speaker is Nancy Stafford, followed by Sally Stephens.

MS. STAFFORD: My name is Nancy Stafford. I'm with the San Francisco Professional Dog Walkers' Association.

To modify or -- or loss -- I mean, the modification or loss of existing off-leash areas is not acceptable unless you're going to identify replacement property. 35 to 40 percent of households have dogs nationwide. In San Francisco, I suspect that number is closer to 40 percent. As many as 150,000 dogs reside in San Francisco, and the number continues to grow. How are you going to accommodate them?

Introducing -- I want to address -- the reason such a large percentage of off-leash areas are next to natural areas is because dog owners used the land when no one else wanted to use it. It wasn't good for building on, no one wanted to go up in the hills, and the dog owners used it, and now you want to prevent us from using these areas.

Introducing endangered or threatened species into areas where there are none would threaten active

recreational opportunities when open space is at a premium. The esthetics of tree removal is only part of the equation when talking about trees. The effects of the wind patterns, existing species, erosion, all needs to be investigated; geology and soils need to be part of the equation; and hazardous waste should be considered because -- hazardous waste and materials should be considered because the Natural Areas Program has used pesticides to control invasive species.

I think that, overall, while I think saving native plants is very important, and I support the program, I think the program is too large to be successful. I don't think it's cost-effective or practical in its current situation. One-third of park land is a lot to take away from such a large urban area.

Thank you.

Oh, and I support golf in Sharp Park. I think there needs to be a lot of different uses in that park, more than just native plants.

MR. BOCK: Next is Sally Stephens, followed by Ethan Elias.

MS. STEPHENS: Hi, my name is Sally Stephens, S-t-e-p-h-e-n-s, and I'm from San Francisco Dog Owners' Group, and also Golden Gate Heights Neighborhood Association.

Several quick comments: When you talk about -- if you close areas that are currently off-leash and close them, you have to look at the environmental impact on traffic, air pollution, and global-warming, the reason being that most people walk to their neighborhood park with their dog. If you close off those neighborhood parks, they're going to have to drive to a park across town in order to get to a legal off-leash area. And Muni and public transit is not an option because you can't have dogs on the Muni during rush hour. Before and after work is the normal time for walking your dog.

In addition, the EIR needs to look at the effects of the immediate closures of the off-leash areas that are called for in this management plan, plus the effects of future closures that might be affected by an expansion of the natural areas into the off-leash areas.

The 90 percent number, by the way, is wrong. I believe the management plan is at 80 percent. Still, it's a significant amount of off-leash that's going to be lost.

In addition, I think that when you look at recreation as one of your things, you also have to look at the impact on recreation of the introduction of the especially threatened native species. What we see at Sharp Park is that if there's a threatened or endangered

species, or even a sensitive species, suddenly the federal government just gets involved, and we lose all local control of those areas, and that's not something we necessarily want to do. We have to make sure that we retain local control of our local parks.

When you get to the impact of removing trees, you have to look at wind, increased wind, and you have to look beyond the park itself. All of our parks are surrounded by densely-populated areas, lots and lots of trees. In the Golden Gate Heights area, the natural areas, and Grandview in particular, have lots of houses right around there. You have to look at the impact on the homes and the people who live around there of removing trees on wind. Also erosion is a significant one in that area, and sand is a significant problem when ice plant's been removed and it goes into the neighbors' yards.

I think you also have to look at -- the initial study said that you're going to proscribed burning. You have you to look at the impact -- potential impact on, again, these neighboring houses if you have a wildfire that goes out of control. We get really high winds there in the afternoon. Any kind of proscribed burning down there, it can be potentially quite disastrous.

And finally, if you actually look at the impact on

the -- the impact of increasing mosquito breeding. That's a real problem at Sharp Park, and that gets into the issue of these hazardous materials and what you use to keep the mosquitoes down when you increase the number and size of ponds and things like that.

And finally, just look at the impact of poor maintenance on a lot of these problems. If you look at most of these areas now, maintenance is extremely poor, lots of plants die. So, that may affect future plans, too.

Thank you very much.

MR. BOCK: Next is Ethan Elias, followed by L-Danyielle Yacobucci.

MR. ELIAS: Hi, I'm a neighbor near the Mount Sutro forest.

There seem to be a couple of groups that are clearing, but I think the natural area the Rec people have already started clearing near the Belgrave entrance where that "No Public Access" sign is posted, if it's any indication of what's to come, it looks terrible. Esthetically, it's a mess. There are stumps left. Everything's been clearcut. And the neighbors weren't notified at all.

There's a thriving biodiversity of birds in that area, and it's literally become quite silent now. It

was shocking. It was very shocking to go up there and see it, and the neighbors were completely shocked.

It also took away any privacy from one of the houses right next to the park.

I believe in native plants, and I believe in restoration, but I also believe in a middle ground, and if these eucalyptus trees were maintained and perhaps thinned, because some of them are dying, you know, we might be able to work out something where everybody could get their needs met a little bit. It seems very Draconian to me to chop down all the trees and replace them all with natives.

To be truthful, none of us are natives here. If we wanted to give San Francisco back to the Miwoks, then I'd understand, but I just think a compromise is necessary.

Thank you.

MR. BOCK: Thank you. L-Danyielle Yacobucci followed by Tom Borden.

MS. YACOBUCCI: Hi. Thanks for having us at the meeting tonight.

It's quite shocking you can cut down a tree if birds aren't nesting in it. I just think that's just outrageous. I would like the EIR to -- you need to look into that. If you take these trees down, where are the

birds going to nest?

Calling a tree a "weed" is another outrageous statement, with all due respect, I have to say. Maybe we need to include in the EIR what is a weed and what is not. That's part of my definitions problem with this document. The definitions are really lacking.

I'm glad to hear that there's going to be a full EIR. I didn't realize that.

I'd like to know what would be the impact of no non-native animals -- raccoons, possums, cats. If you remove them all, what will be that impact? How will the rodent population be affected?

Before I forget, habitat loss for humans is being lost for recreation. It's not just wild animals, native animals, non-native animals; it's humans, also.

I would like the definition of "native." What's the definition of a "native animal plant"? Is it determined by when the animal came here, started living here, transported here?

I'd really like the definition of "substantial effect." It's really important. The study, to me, was lacking -- very lacking, and I'm -- you know, we need more.

What's the definition of a "predator"?

We need definitions. We need all this stuff. We

need a really full impact study.

With feral cats, how you will implement what's described in the Quail Plan? It cannot be one person; it's got to be all the stakeholders.

We were told the plan would be left as is in 2006, and the EIR would answer all our questions, so my comment was we need a full EIR, so I'm really glad we're getting that.

I already mentioned one person in charge of the feral cat recovery, or they're calling it the "Control Plan" now? I don't think it was called the "Control Plan" and the "Quail Plan." I'll have to go back and look that up.

All's we need is clarity of what the NAP is going to do, and I don't get it in this study, and the effect of those actions. Just like somebody said they want to know what's the effect of keeping the natives -- non-natives, what will the effect be of removing all those eucalyptus trees? I mean, if they're not healthy, let's make them healthy. Why do we have to remove them?

We need potential impacts of all topics analyzed.

Education of the public. That's eventually going to be done. These materials need to be approved by public meetings to encourage stakeholders' support so you'll get support from the public. It can't be

materials only from Rec & Park. There are no good versus bad, which is usually what we hear when the educational materials come out. Respect for all plants and animals needs to be nourished and developed.

And I do support this plan. I don't support the scope, and I would support it if this program was more amenable to working with the neighbors and the public; that would be great, too.

Oh, I'm L-Danyielle Yacobucci, which you probably can't spell.

MR. BOCK: Okay, next is Tom Borden, followed by Andrea O'Leary.

MR. BORDEN: Hi, I'm Tom Borden. I'm here representing San Francisco Urban Riders. We're a bicycle advocacy group.

We'd like to see bicycle riding off paved roads in San Francisco parks decriminalized. And I am a criminal like so many other people in San Francisco. Since I moved here from 1979 from Palo Alto, I have been riding my bicycle off the paved roads in San Francisco parks.

And my point is that this is a reality, and, you know, this should really -- bicycle riding off-road should be decriminalized and managed rather than just sort of pretending like people don't do it or shouldn't do it. And that's where we've been working: We've

submitted a plan to Park & Rec.

And we're responsible people. We like to ride our bikes in the dirt, and we want to work with Park & Rec and not be antagonistic.

I'd like to say I'm particularly interested in McLaren Park because it's the best off-road riding in the city, and I agree with the McLaren Trail Plan in terms of closures and whatnot, except for the fact that bicycles are excluded. And I'd like to especially take issue with this issue MP7 in the McLaren Park plan that lumps off-road motorcycles and mountain bikes together, and that's really just -- you know, an off-road motorcycle has more than a hundred times the power than a person on a bicycle, and yet an off-road motorcycle on one pass through the park can leave a rut that you can follow without even having an Eagle Scout badge.

So, I really would like to see those two separated. Motorcycles do a tremendous amount of damage. Most of the trails that are marked for closure that appear on the map are due to motorcycle hill climbs, and we totally agree with that. We want sustainable trails that aren't damaged by people riding their bikes or walking on them.

So, really, my -- what I'd like to say is: We want to work with natural areas, we appreciate natural

areas, we don't think trails -- especially narrow trails going through natural areas, are damaging. And bicyclists will stay on the trails.

Bicyclists will work to maintain the trails. We have a high level of volunteerism. We've got 500 hours in on trails so far this year. So, we just hope that we can work with Park & Rec on this plan.

Thank you.

MR. BOCK: Thank you.

Andrea O'Leary, followed by Peter Brastow.

MS. O'LEARY: I'm Andrea O'Leary, Environmental Quality of Urban Parks.

And this has been a long time coming. I'm really happy to see this finally coming about, and I'm really glad to see that Rec & Park has selected somebody who seems to have all the professionalism that we need, because I think one of the things that's been driving the whole process has been pseudoscience. Everybody is an expert here. And so, one thing in this whole process, which is that whole advisory process, it's getting so bogged down with this whole thing about define, define, define. Well, you defined it, now start all over again, and keep defining it, and define it the way I want to hear it. And it's just madness. It's absolute madness.

So, it's really good that we are at this point here.

One of the big sticklers on this whole thing is this whole thing about, well, define "recreation." If we have 120,000 dogs, then we should have 120,000 acres for the dogs and dog activities. Well, if that's the claim, then we should have more playgrounds in some of these natural areas. We should take some of those areas that are not being respected by off-leash dog owners, where boundaries are absolutely irrelevant -- Pine Lake's a perfect example -- to design berms, naturalistic-type elements so that dogs know that's a berm and not go beyond it -- it absolutely does not work. But a playground has a defined area, which, for the most part, lots of people recognize. So, if that's the criteria, then maybe we should really think about a lot of other recreation. I'm being silly here, but that's the point, is that has to be scientific.

I think that another issue that has to be really closely looked at are some of the sort of weird things called esthetics. Well, when I look at Mount Davidson and I see all that fuzz up there, I don't think that's esthetically pleasing. When I compare it to the hills, the natural rolling hills right nextdoor to where some of our friends on Mount Davidson have been working for

years, that's beautiful. You see the contours. You see the subtleties of that hill that I think are quite beautiful and quite esthetic.

So, once again, what does that mean? Seeing dogs roaming up there on Mount Davidson may be a beautiful sight for somebody who likes that activity, but it's not going to be so beautiful for a lot of other people who are being displaced because of that.

So, I really think that we have to get out of the emotion of this, and the politics of this, and get down to the real science.

Thank you.

MR. BOCK: Thank you. Next will be Peter Brastow, followed by Marnie Dunsmore.

MR. BRASTOW: Thank you very much.

Good evening, everybody. I'm Peter Brastow, and I'm a director of Nature in the City. I also used to work at the National Park Service and the GGNRA for many years.

So, I wanted to thank the Planning Department and the Recreation and Park Department for keeping this critical environmental public process moving forward, and also I want to thank the Recreation and Park Commission for authorizing this process in 2006 and 2007.

I want to make a quick comment on something you said, Sarah.

A lot of people say this is about an EIR on the program. It's an EIR on the plan, not on the program. I often hear people say that. The program's here to stay; it's not going to go anywhere over my dead body. The program has been around for a long time, it's budgeted, and it's wonderful resource for San Franciscans. So, what we're talking about is studying the environmental impact of the plan. I just want to make that clear.

So, I want to focus some of my comments around the science to underscore some of the comments that have been already made. The Significant Natural Areas Management Plan is a scientific document by definition. One of the primary goals is to utilize all the biological data on the natural areas.

THE REPORTER: Could you slow down, please?

Could you slow down, please?

MR. BRASTOW: I've only got 16 seconds.

UNIDENTIFIED SPEAKER: We'll give you time.

MR. BRASTOW: Unfortunately, the process is anything but simple or scientific. Under the guise of desiring science, back in 2000, when the Department created a green-ribbon panel of scientific experts, it

included people who were experts in ecological restoration.

THE REPORTER: Slow down.

MR. BRASTOW: Scientists on that panel explained that the native non-species increased biodiversity because they decreased the number of species. They actually totally homogenized the whole landscape. Then, under the guise of inserting science into the process, we have this ad hoc working group who creates this management framework of MA1's, MA2's and MA3's. Well, in my opinion, this severely curtails the ability of the Natural Areas Program to manage the natural areas. I'll give you one example: Tank Hill, where, by the way, they weren't proposing to remove all the trees. It was two trees they were proposing to remove back in the 1990's.

UNIDENTIFIED SPEAKER: Actually, four trees were taken down. There were two more --

MS. JONES: Could we give the people an opportunity to comment?

MR. BRASTOW: Where was I?

So, Tank Hill, one of the areas identified as MA3, has still mostly non-native trees and some other non-native plants. And if we just sort of say this MA3 is essentially off-limits to any kind of ecological

management activity, other than sitting there, then that's not managing the hill in a conservative biological kind of way to really take care of that place.

So, I urge you strongly to discard the MA1, MA2, MA3 approach to the Natural Areas Management Plan.

And in fact, furthermore, and nobody -- I need to dispel the myth that we want to return Golden Gate Park back to the dunes. We're not going to restore that. But we would like to see what we call a "maximum ecological restoration alternative" for the Natural Areas Plan. That doesn't mean removing every single tree, but that means truly managing other areas of the plan.

Thank you.

MR. BOCK: Okay. Our next speaker is Marnie Dunsmore, followed by Martha Hoffman.

MS. DUNSMORE: I'm Marnie Dunsmore with the California Native Plant Society.

I'd just like to comment on the idea that removing trees will necessarily have a negative impact on global-warming. A lot of the results on global-warming and cutting of trees, if those trees are, in fact, replaced by grassland or another type of ecosystem, then that effect of global-warming is often nil or, in fact,

improved, so we do need to look carefully at that.

And I'd also like to comment on -- I love dogs, I've had dogs all my life, but I am a little bit -- I live near Glen Park, and I do get a little bit upset when -- by the end of the summer, in August and September, especially Glen Park, has so much urine in it that it's hard to go there, and it really detracts from the experience for dog-walkers and human beings to go there.

I do think we need to think about kids when we talk about dogs. Especially when she was small, I can't -- I've lost count of the hundreds of times that dogs have been off-leash and just -- often they're very friendly, and I love dogs and I don't really mind it, but it does scare me to have a dog just come up and rush a kid in the face. It just happened to me last week, actually, in Glen Park. And I have known children that have been attacked by dogs. They are scarred with hundreds of stitches on their face. And if you look at the statistics, it's far greater than you -- you would be shocked at the number of times that happens.

So, a de facto off-leash policy in our natural areas really needs to be looked at carefully.

Thank you.

MR. BOCK: Thank you. Next is Martha Hoffman,

followed by Paul Koski.

MS. HOFFMAN: My thoughts are not too organized. Basically, I'd like to share the comments of three people: Ethan Elias, Morley Singer, and L-Danyielle Yacobucci.

I live near the green -- I forget what it's called. I think it's called the "Interior Greenbelt," Sutro forest area, and so that's one of my main areas of concern. I'm a landscape gardener, and I'm a volunteer with the San Francisco SPCA, and I've worked up in that area on feral cat colony management for about the last six years, and I really don't want to lose that forest.

I think one of the concerns I'd like to put in for your thinking is just animal welfare. And people talk about wildlife, and I don't know what one person -- or they probably don't know what I mean when we talk about wildlife. I have a hunch we may not be talking about the same thing, like what are good animals, what are bad animals, et cetera.

I think the animals need to be protected, and that the plan needs to be very sensitive to that, and I think organizations with expertise about animals, like San Francisco Animal Care and Control and San Francisco SPCA need to be very involved in discussions that relate to any animal issues in the plan. Thanks.

MR. BOCK: Thank you.

Our next and last speaker is Paul Koski.

If you haven't filled out a speaker card and wish to speak, please fill one out and provide it to me. Thank you.

MR. KOSKI: Hi, my name is Paul Koski, and I'm a 30-plus-year resident of San Francisco currently living in the Merced Heights neighborhood, and I occasionally volunteer with the Natural Parks Area site where I live in the City. I've come to enjoy, appreciate and value these areas in the City. And listening to the comments that were made tonight, I think it's important that the Rec & Park and Planning people keep in mind the mission of Natural Parks Program, and that's another project program, which is to preserve, restore, and enhance the remnants of natural areas of the city.

And to compromise -- well, to yield to the wishes of local interests or individuals to the degree that it compromises the Natural Park Program's mission, I think, is a serious thing, so I would encourage you, when you review all of these comments and suggestions, that you keep in mind the mission of the Natural Areas Program to -- to maintain these remnants that are so vital in this very urban environment we live in.

Thank you.

MR. BOCK: I did miss a couple of comment cards, so we have next Nancy Wuerfel, followed by Susan Wheeler.

MS. WUERFEL: Good evening. My name is Nancy Wuerfel.

And I'd like to introduce a topic that hasn't been discussed today. We have not even defined the word "environment." When I looked up CEQA, I saw that there was a definition. I don't have it memorized right now, but I'd like to bring back to the fact that my recollection says that it's what is there now. And if we start looking at the fact that what's there now, this plan is pretty dramatic in changing what we've got.

So, number 1, let's go back to the CEQA law and find out what it intends to protect.

Second of all, I'd like to talk about the 340 acres of trees out of the 1100 acres in the Natural Areas Program. This is extremely important because you'd have to say to yourself, Why do we possibly acquire that many non-native trees and put them in the middle of a Natural Areas Program if indeed natural areas was defined only as remnants?

I read Policy 13. I understand what we're talking about here, but I've always questioned the need to have our forests inside of the Natural Areas Program that did

not consider those trees natural. They're not made out of plastic. For Pete's sakes, they weren't here back at some arbitrary point in time, but they're here now.

So, I think we've got a major issue. If the natural areas does not embrace our forests, then cut them loose. Take them out of the natural areas. Let them be guided by the Urban Forestry Department or a division within Rec & Park; then we'll end up having just a reduction down to a mere remnants, and then we won't have the arguments we've got here today.

But when you look at taking the Natural Areas Program and having the trees reduced so that they can become grassland, that's where this conflict starts with the trees. And I'd like to recommend that Tetra Tech very quickly start adding to the budget, if you need to, and you get a forester out there so we can start looking at erosion impacts.

And we're not just talking about esthetics. We're talking about a lot of very important issues, starting with what I just said, which is why you think that it's important to have the forests under the jurisdiction of people that don't like them.

Thank you.

MR. BOCK: Thank you.

And I understand that Susan Wheeler is not

present. So, if there are any other comment cards that I missed, please bring them up now; otherwise, we'll move forward with concluding our presentation this afternoon -- or this evening.

Okay. I want to thank everyone for coming out. I know it's a weeknight and not the easiest location to get to, but we appreciate your coming out with comments.

You still have two weeks to submit comments. You have address information on your agenda.

Your comment cards will go out.

There's also another meeting Thursday night down in Pacifica, so if you didn't get a chance to say all of your comments this evening, you can appear there as well.

And goodnight.

(Meeting concluded at 8:30 p.m.)

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN FRANCISCO)

I, Katherine A. Cuellar, CSR No. 3164, a Certified Shorthand Reporter in and for the State of California, hereby certify:

That the foregoing proceedings were taken before me at the time and place therein stated and thereafter transcribed into typewriting under my direction; and I hereby certify that the foregoing is a true record to the best of my ability.

KATHERINE A. CUELLAR, CSR No. 3164

DATED: May 12, 2009

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SAN FRANCISCO PLANNING DEPARTMENT

NATURAL AREAS MANAGEMENT PLAN

ENVIRONMENTAL IMPACT REPORT

PUBLIC SCOPING MEETING

PEDRO POINT FIREHOUSE

PACIFICA, CALIFORNIA.

THURSDAY, MAY 14, 2009

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MS. RANGE: We will attempt to start. Welcome to the Natural Areas Management Plan Environmental Impact Report Public Scoping Meeting.

I see most of you have found the refreshments in the back. There's also the restrooms located back over there. As you came in, I hope you picked up an agenda. We have an agenda, and on the back is a map showing the significant natural resource areas, 31 in San Francisco, and then we have Sharp Park.

Also is the notice of preparation of the Environmental Impact Report. This is a one-page notice that we sent out. We also have for your -- for your information an overview of the CEQA process and as well as a written comment form. We encourage you to provide written comments.

We also have a speaker card form. We will be -- we will be letting you give public comments, so please fill out a speaker card and hand it over to the ladies in the back over here, and when we open it up for public comment, we will call you by the speaker cards.

My name's Jessica Range. I'm with the San Francisco Planning Department, and I am the EIR coordinator for this project. With me tonight is Sarah Jones, the supervisor for this project, as well as Lisa Wayne with the Recreation and Parks Department, and Daniel LaForte also with Recreation and Parks Department.

We also have John Bock. Where is he? Right there in the front. He's the consultant working on the Environmental Impact Report.

So the purpose of this meeting tonight is to get public comment on the scope of the environmental analysis to be within the Environmental Impact Report. What we're going to do tonight is we're going to present to you a brief overview of the project, and we'll take questions on the project at that time. And then we'll give an overview of the CEQA process, and we'll give you time to ask private questions on the CEQA process, and then we'll open it up to public comment.

Please note we do -- we would like you to please abide by some ground rules. They're listed over there. Just to be respectful. We do have a court reporter here tonight to record your comments, so please state your name carefully, and it's not optional. Although it does say it is optional, we would like to have your name in the record so that we can respond. And we'd like you to adhere to the time limit and focus the comments on the environmental issue.

Also we would like to welcome Julie Lancelle, the mayor. Thank your for coming.

MS. LANCELLE: Sure. Thank you. Thank you for coming to Pacifica. Thank you very much.

MS. RANGE: And with that, I'll turn it over the Lisa Wayne, who will give you an overview of the project.

MS. WAYNE: Can you all hear me?

FROM THE FLOOR: No.

MS. WAYNE: No. Okay. I think maybe I'll just stand up and project.

My name is Lisa Wayne, and I work for the San Francisco Recreation and Parks Department, and I'm the manager of the Natural Areas Program for the City and County of San Francisco Recreation and Parks Department.

What I'm going do in the next 10-or-so minutes is give you a really brief overview of this Natural Areas Management Plan, which I don't have a copy of it. It's about 800 pages, okay, covers a lot of land, and so bear with me. We're going to go on a real quick ride through the nuts and bolts of the plan. And then after my 10 or 15 minutes, I can answer questions about the plan.

So natural areas are not unusual, I'm sure, for Pacificans, what they look like. For San Francisco, they're remnants of the natural landscape, wetlands and creeks and oak woodlands and sand dunes. They're habitat for rare, unique, and endangered species, as well as habitat for other more common wildlife: butterflies, lizards, salamanders, et cetera. And they also offer obviously important recreational benefits, like trails and views and

stewardship --

FROM THE FLOOR: And golf.

MS. WAYNE: -- as well as shoreline access.

One of the things I'll mention -- just because I think I know the crowd here a little bit -- the Natural Areas Management Plan, as has been defined, is exclusive of the golf course. And I can show you maps afterwards if you're interested. They're in the initial study. So it wouldn't be one of the recreational amenities that would be recognized in the plan, but we can -- I can answer questions about that for sure.

So here are the natural areas of San Francisco, the green areas. There's 32 of them overall, including down here at Sharp Park. There's one that was recently added. There was 31 when we did the plan, but there's one that had been recently added here in the middle of the city called Everson/Digby lots, and they range in size from less than one acre to a few hundred acres.

Here's just some acreage statistics. Overall there's 1105 acres of these natural areas in both San Francisco and Pacifica. So about 237 acres essentially includes the wetlands on the western edge of Sharp Park near the levy, and lots and lots of acreage past the archery range and the rifle range up in the canyon east of Highway 1.

The Natural Areas Program is essentially the management group that is responsible for overseeing these environmentally sensitive areas. It started in 1997. We have a modest staff of seven gardeners, myself, and a volunteer coordinator, and the mission of the program is to preserve, restore, and enhance natural areas through stewardship and volunteerism. And we work with about 13- -- we have about 13,000 volunteer hours every year. We've actually worked with the -- the archers in the last year several times. And once we get through all the permitting, we look forward to actually working with you folks as well on some of this habitat restoration activities.

So the program itself was envisioned as a -- as really a volunteer and community-based program and was essentially kind of sold to the Recreation and Parks Department management in a sense to say, look, if you -- if you staff this with a modest number of people, you can bring lots and lots of volunteers in to manage these areas. And that's -- that is the fact that has turned out to be the case.

Just a real brief overview. The plan itself, as I said, is an 800-page document, a lot of information. Actually, there are many events that happened before the preparation of this plan, so I'll briefly go through that. The general plan for the City of San Francisco has an open

space element that defined the protection of these natural areas and some general objectives around how to manage them.

Our Recreation and Park Commission in 1995 adopted significant Natural Resource Areas Management Plan, which is kind of further flushed out those initial objectives in the policy to 2.13. And then in 1998 we began this process of developing this -- this big plan that is the subject today, that is basically the subject that we're going to talk about today.

So actually this is an old slide. So it's been about now 10 years to develop. The -- in June, 2002, there was a citizen task force draft and was reviewed by an advisory committee, couple of advisory committees. They gave input. Then in 2005, created another draft, which had a six-week comment period. We held three workshops, of which I know that there was Pacificans that came to those as well, and we had 2,700 comments on this plan.

And what came out of that is what we're talking about today, this final draft plan that was published in February of 2006 in our commission. Basically our governing body, our board, adopted this plan as the project to undergo environmental review, which essentially brings us to today. We are initiating this environmental review today.

The management plan goes through a number of goals. There's conservation, restoration, education,

research, stewardship, all the way down to design, aesthetics, and safety. So it covers a broad range of topics and goals. So in the conservation arena, for example, it identifies, you know, the need to control invasive species and restore wildlife habitat, as an example, where to promote environment education with school groups and with universities to conduct research, for example.

So more specifically what the management plan did was we inventoried all these lands, looked at all of their biological resources, so all the plants and animals, what was there, whether they were sensitive or just common species. We looked at the geology, the hydrology, where the water bodies were, for example. And those are the main topic areas. And then I think -- sorry -- trails and sort of social uses.

Then among the kind of objectives that are attempted to achieve in the management plan is to develop recommendations for improvement of wildlife habitat, sensitive species, to prioritize these areas because, of course, it's 1100 acres. It's a lot of land with a modest number of people trying to achieve these -- these objectives.

So this plan helps to prioritize activities, identify impacts to natural resources, guides recreational,

you know, development and encouragement of recreational uses of these lands.

So the plan is organized into essentially six chapters, but Chapter 6 has many, many subchapters. One of each for each one of the 32 -- 31 natural areas. So there's a number of sort of characterization chapters, introductory chapters, that really describe the biology, that describe the soil conditions.

So general recommendations in this Chapter 5, and then site specific recommendations in Chapter 6, and try to -- I can maybe even give you the citation for where you find Sharp Park, if you're interested in that. So in that Section 6 is where the -- you would go if you wanted to see exactly what would be proposed for Sharp Park, within that subchapter.

So as I said, the natural areas, there's 1100 acres of subdivided by priority, basically based on their sensitivity or conservation importance. So the most important areas are characterized as Management Area 1. The least important from the standpoint of conservation are Management Area 3's.

So for example, endangered species habitat here in Sharp Park, for example. So the wetlands of Horse Stable Pond and Laguna Salada on the western edge of the golf course would be a Management Area 1 because, of course, it's

habitat for San Francisco garter snake and the California red-legged frog. Similarly, up in the canyon we have a little bit of grassland habitat that's -- that's habitat for mission blue butterfly, also an endangered species.

Management Area 2 is kind of the middle road. These would be the creek system that runs through the archery range and all the way back into the canyon, as well as some of these nice woodlands and scrub areas in the upper canyons. And for example, Management Area 3, for -- and the purposes for Sharp Park really are the -- the large, dense stands of eucalyptus that are pretty devoid of biological diversity, and we don't have endangered species or rare species associated with them.

So if -- if you are interested in kind of just a snapshot view of a particular natural area and what is recommended, I try to point people to this plan, which is in -- it's the last -- the last map, the last page of each natural areas chapter in the plan, and breaks up the natural areas into these coded red, the gold, and the green, based on those priority areas that what we call management areas or MA 1's, 2's, and 3's. And then down here in the box it has a code so that each one of those boxes corresponds to a place on the map. It will give you a description of what is proposed for that particular area.

So I'm going summarize just a few -- a few of the

many, many recommendations of this plan. So in the category of Trees and Vegetation, the plan identifies the re-introduction of sensitive species for local conservation purposes. So these would be listed species as well as locally significant species. They're reduction in the plant cover, including the -- the invasive blue gum Tasmanian eucalyptus tree, and revegetation or replacement, planting with native plants where the invasive species have been removed.

So in San Francisco the recommendations for tree removal are this -- so these are, again, this is all the -- the Tasmanian blue gum eucalyptus. There would be approximate -- there's approximately 64,000 blue gum eucalyptus in San Francisco. These are, again, approximate numbers. We would be proposing to remove about 5 percent of those, leaving about 60,000 trees.

At Sharp Park in the upper canyons, there's a proposal, much more aggressive proposal on eucalyptus tree removal at about 28 percent. And one of the things I want to say about that is we defined trees in this regard as any tree over 15 feet tall, which for a blue gum eucalyptus can mean a three-year-old tree that's about this big around in diameter. So many of these trees are really, by most accounts, saplings.

Also on this, you know, there's no identified

funding for this kind of scale of restoration at this point in time for -- for the management plan. So the idea here on the tree removal would be a very gradual replacement of those eucalyptus trees over -- over time, like over, like, say, a 20-year period.

So in Animals and Wildlife, improve habitats for sensitive species, some re-introductions. For example, the common Pacific chorus frog, which is dwindling all over the Bay Area, is not a listed species or anything, but it is disappearing in all these natural areas. Improving habitat for local wildlife, protecting nesting sites by not doing vegetation during breeding -- breeding season for birds. So these are a number of recommendations to help support wildlife.

And then in Trails and Access, the plan identifies a total of existing trails of 40 miles of trails, and that is essentially 40 miles of trails within one square mile area land mass. So quite a lot of trails, and many of those -- or at least a quarter of them are identified as social trails. So these are minor trails. They're shortcuts. They tend be, you know, straight up and down slopes, difficult to access. If you have been involved in sort of the Mori Point Trails Forever program, you're probably familiar with what a social trail is. So the idea here would be as these main trails are improved, the social

trails would be removed.

And to view the whole plan, we have the entire plan on line on our website. We'll show this again later down -- later down in the presentation.

And I guess one thing I forgot to mention was that within -- because this is covering such a broad area, it's hard for me to get all the slides of everything for Sharp Park.

So the -- in the category of Wildlife, the recommendations within the Natural Areas Management Plan really deal with trying to improve -- to dredge the sedimented channels within the wetlands to improve the water flow, to solve the flooding problems and also provide, you know, the benefit to the -- particularly the California red-legged frog.

Because one of the situations there is that because the waterways are clogging up with sediment, the cattails are those reeds, those reed-looking plants, are becoming more and more prevalent, and we're losing the open water around -- at Horse Stable Pond and Laguna Salada. And that is -- that is a potential negative effect on the frogs because the frogs need open water breeding sites.

So the plan has a number of recommendations like dredging the channels, creating upland habitat within and around Horse Stable Pond and Laguna Salada, restoration of

some of the ice plant areas with native habitat. Those are the kinds of things that you'll find in the recommendations for the biological restoration of Sharp Park.

Can I answer any questions on the plan? Yes, sir.

FROM THE FLOOR: Talking about the dredging and getting the cattails -- whatever you want to call them out there -- it's taken 10 years to get to this stage. How long do you project when things like that will actually happen?

MS. WAYNE: Well, that's hard to say. The question was how long -- you know, it's taken us 10 years to get to this point, and how long will it take to actually address the cattails.

This process, the environmental process, will take about a year-and-a-half and, you know, because there's so many sensitive resources down there at the lagoon, we have to be very careful about our permitting. We essentially can't touch that ground until we get clearance from the federal and state government that -- that oversees those -- that protects essentially those species. So once we have those things in place, we do have mechanism, we do have heavy equipment, we do have resources within our department to address some of these things.

Can we address them all at once? No, because some of them are going to be bigger than our current capacity -- you know, our current staffing and our current resources.

But if you get to that point, Coastal Conservancy has been interested in that property for a while. I think there will be other resources that we can bring to bear down the road. Sorry. It's --

FROM THE FLOOR: Why can't the pond be dredged and still remain a golf course?

MS. WAYNE: The pond can't be dredged until we go through permitting with the federal --

FROM THE FLOOR: Right. But if that's on the table to do that, and there are advocates to close the golf course because the pond is a natural area, why can't it be dredged and returned back to more of its natural state, and the golf course still be allowed to be there?

MS. WAYNE: And you know, Daniel LaForte will maybe take that comment because he's going to actually talk about the relationship between the current resolution on our board of supervisors and this plan.

But I will say that as it stands now, the project in the Natural Areas Plan presupposes -- it assumes that the golf course will stay. So that's the current recommendation. Now, you know, I can't guarantee that that will stay.

FROM THE FLOOR: Right.

MS. WAYNE: If you have questions about the current activities of our board of supervisor, if you can

hold those questions until after Daniel does his --

FROM THE FLOOR: Okay.

MS. WAYNE: -- but I'll answer any other questions. Might defer some of them back.

FROM THE FLOOR: One question, will a lot of the environmental work you're doing with heavy equipment -- dredging, pulling down trees -- wouldn't it have more of an impact on the environment than leaving the natural habitat the way it is?

MS. WAYNE: Well, that's why we need to do the Environmental Impact Report, to make that assessment.

FROM THE FLOOR: But isn't this the plan?

MS. WAYNE: There is a plan which is subject to and --

FROM THE FLOOR: We have not undergone environmental impact at this time?

MS. WAYNE: Right. That's what we're starting right now. That's why we're here today. So hang on. I think we have some other questions in the back. Yes, sir.

FROM THE FLOOR: What is the -- where is the funding coming from and what is the cost factor?

MS. WAYNE: We don't have a full cost assessment of -- for the whole plan. We have -- currently, I have my staff, which is those nine folks plus our minions of volunteers, and we're funded through our Open Space funding.

FROM THE FLOOR: Is this to going to cost the taxpayer money for your project?

MS. WAYNE: Is it going to cost the taxpayer money for my project?

FROM THE FLOOR: Everything's taxes.

MS. WAYNE: The Natural Areas Program is funded -- it has been funded since the mid 1990's by a -- I think it's a one-quarter of one cent taxation for every hundred dollars assessed value property tax. So -- so property owners in San Francisco pay a very small amount of money to fund the Open Space fund, of which our program is a very, very small --

FROM THE FLOOR: Is that a definite amount or -- what you're proposing now, or is it going to increase later? Are we going to get taxed more for -- do you see increasing of a cost factor?

MS. WAYNE: There's a certain baseline that the Natural Areas Program has funded that's mandated through Prop C, which passed several years ago for voters of San Francisco. So there is a baseline support for this program.

FROM THE FLOOR: Will we have any say-so on it, the taxpayer?

MS. WAYNE: On --

FROM THE FLOOR: On any increase that you're going

to come in with later.

MS. WAYNE: We're not bringing forth any tax increases from this directly. There's no -- I'm not sure -- yeah, if it's going to be an increased taxing, it will be voter approved, yeah.

FROM THE FLOOR: Yeah, I was -- like dredging, how do you protect the species that are there now when going in to dredge?

MS. WAYNE: Well, that's part of what's going to be fleshed out.

FROM THE FLOOR: What was the question?

MS. WAYNE: The question was, if you go in and dredge, how do you protect the species that are there now?

So that's part of what would be detailed in this Environmental Impact Report. So there's -- you know, depends on the species you're talking about, but there's fencing --

FROM THE FLOOR: So if you go in and -- like you say, kind of a map -- if you go in and you take so many frogs and snakes with you during the project, it's just at the other side of that they'll gain by doing that?

MS. WAYNE: Yeah. Yeah.

FROM THE FLOOR: So if you take one on the chin first, and then down the road it has --

MS. WAYNE: That's the only way we would be

allowed to do any of the work, if there's a net benefit to the species.

Yes, sir.

FROM THE FLOOR: Just got couple of questions. One, this study that you have, this is as a result of the over the 100,000-dollar Tetra Tech study --

MS. WAYNE: Yes.

FROM THE FLOOR: -- their recommendations?

MS. WAYNE: So tetra Tech is our current consultant, and I think the planning department can answer this more thoroughly for you. But Tetra Tech is our current consultant, and we had a previous consultant that worked on this plan.

FROM THE FLOOR: And just my follow-up question is, now that that study has been pretty well completed -- it was started, I believe, back in 2007 -- is it your recommendation after having studied that report, looking at all these things that you're going to do, that by your recommendations of dredging the pond and doing some simple things, keeping the golf course intact as an 18-hole golf course, that this will satisfy the needs of protecting the red-legged frog and snake?

MS. WAYNE: Well, you know, that -- that will be evaluated in this Environmental Impact Report.

FROM THE FLOOR: But you wouldn't be going forward

with all these things unless you thought this would be sufficient to --

MS. WAYNE: Yeah.

FROM THE FLOOR: -- accomplish those two things?

MS. WAYNE: We have been trying to work closely with Fish and Wildlife and Fish and Game to -- so that we're on the same page with the regulatory agencies so we're not proposing things that are way out of whack from what they would like to see in terms of protections.

FROM THE FLOOR: But, again, I'm just asking. So If you accomplish these things you set forth today and keep the golf course as basically an 18-hole course, it should satisfy the needs to protect what we're to trying to protect?

MS. JONES: Okay. Uhm, I'll see if I can answer that question. I'm with the planning department, and I'm the supervisor on Environmental Impact Report. The Environmental Impact Report, which is what we're here about today is on the Natural Resources Area Management Plan, which does assume the presence of a golf course.

So the golf course issue was not one that was on the table in the context of that plan. So that -- so this plan is meant to achieve the objectives that Rec and Park set out in terms of managing those areas that exist that are habitat areas. It is not meant to necessarily conclude that

those are the ideal conditions in which to maintain a habitat. That's not the question that's being answered.

FROM THE FLOOR: What this plan is making a recommendation and -- is there a specific recommendation to keep the 18-hole golf course or not? It's a pretty simple question.

MS. JONES: This plan does not recommend one way or another. It assumes that a golf course is there.

MS. WAYNE: Maybe if you can hold that -- if there's any more about the plan itself, Daniel will explain about the relationship to -- the concept that we're looking at as well.

Go ahead.

FROM THE FLOOR: What is the primary driver of the plan?

MS. WAYNE: So the primary driver is that our commission back in 1995 directed our department to come up with more detailed plans for all these natural areas.

FROM THE FLOOR: Why? What objective are you trying to address?

MS. WAYNE: Why do they want us to do a more detailed plan?

FROM THE FLOOR: Right. What --

MS. WAYNE: Well --

FROM THE FLOOR: -- is the end result that we're

driving at?

MS. WAYNE: Well, yeah, it's essentially a conservation document, recreation oriented document. How to manage -- how to -- what's the future look and use of all these 31 natural areas.

FROM THE FLOOR: Okay. But why are we trying to conserve?

MS. WAYNE: Well, from the City of San Francisco we have policies in place. I mean, I can throw a few of them on the slide here. We're required -- we, the city, you know, city citizenry through, you know, there's the general plan to protect these places. There's the sustainability plan from department of the environment. There's a number of plans and policies in place that the City of San Francisco says yes, it's important to protect and preserve and to restore these natural areas. Now come up with a plan for it.

FROM THE FLOOR: There must be an underlying reason for that, and here's what I'm driving at. People -- Supervisor Mirkarimi, that April 30th meeting, mentioned that the driver for these arguments was because he was primarily concerned about the liability that puts San Francisco -- or that San Francisco incurs if it's not in compliance with the Endangered Species Act.

Now, I did my research, and I said okay, what does

the Endangered Species Act ask us to comply with? It has asks us to comply with concerning threatened or endangered species on critical habitat. Okay? So next question: Is Sharp Park -- does it fall under applicable habitat?

MS. WAYNE: Okay.

FROM THE FLOOR: Looking at -- looking at documents from the Department of the Interior, it is not. There are only two units in the San Mateo County --

MS. WAYNE: Yeah.

FROM THE FLOOR: -- that qualify as natural habitat. So why are we going through the effort?

MS. WAYNE: Okay. So just one thing. This planned effort is nearly 10 years old. It way predates any of the recent -- any of the recent meetings or any of the recent resolutions.

FROM THE FLOOR: But there isn't any underlying reason why we're doing it.

MS. WAYNE: And, yes --

FROM THE FLOOR: I still don't get what that is.

MS. WAYNE: Well, I think I tried to explain that to you. Maybe we can have a -- a separate conversation about that afterwards, and I can try to explain more to you --

FROM THE FLOOR: If you tell me you have a policy, you have to tell me why do you have that policy.

MS. WAYNE: Because our decision makers and our planning department and a lot of people have come forward and said these places are valuable, and you need to manage them for their natural resources and their values.

FROM THE FLOOR: But there has to be something that defines its value, and that's what I'm driving at. What is that?

MS. WAYNE: Well, I can show you the -- I can give you references to those policies and those plans and maybe that will help you a little bit more.

FROM THE FLOOR: Yes.

MS. WAYNE: And I think the other thing to just keep in mind is that the Endangered Species Act is one driver here, but the other driver here is that the San Francisco garter snake is a fully protected species by the State of California. So what that means is that we cannot touch, we cannot dredge, we cannot solve any flooding problems, we can't do anything out there in that lagoon until we have a permission from the State. And the State will not grant that permission unless it is in the -- it is in the effort to recover or help that species.

FROM THE FLOOR: I think one more point is that it's a two-pronged criteria. One is that it's a threatened or endangered species, and second that species exists in a critical habitat, and that's my point.

MS. WAYNE: Yeah. Okay. It's -- you're right. It does not -- it's not designated as a critical habitat, but that does not negate what we have to do in terms of -- if we need to do anything on that golf course, we need to do a recovery effort. And I can -- again, I can explain the kind of detail that probably other people's eyes are glaring over -- I would be happy to talk to you about that after.

Any other questions on the plan? I'd like to have Daniel actually talk about --

MR. LAFORTE: Can I just mention one thing on that point. You know, the actions that we're taking in -- related to the Natural Areas Plan, the recommendations of Natural Areas Plan will actually ultimately benefit the golf course too. I mean, it will enable us to manage the golf course better and reduce -- by making improvements to the hydrology and dredging it out will actually reduce the incidences of flooding.

FROM THE FLOOR: Sure.

MR. LAFORTE: So it's a secondary -- a very real secondary benefit here to what we're doing.

Yes?

FROM THE FLOOR: Thank you. Where in the process of looking at these adoptions to the EIR or do -- will it -- will the conversation move around the impact on the immediate neighborhood to the golf course, especially north

of the golf course? The original ancient lake bed of Laguna Salada extends up into the neighborhood along Palmetto Avenue (unintelligible) opened floods and insufficient drainage. It's part of the drain. So we're concerned about at what point are you addressing the impact to the neighborhood in these three scenarios and how the EIR affects it and where when we input those concerns.

MS. WAYNE: So I'll answer that in two ways. So the three scenarios -- that's a good segue, and Daniel's going to give everyone some background, and we'll come back to that.

The other issue that you mentioned is, you know, related to flooding, and that's the kind of -- that's the kind of things that would be evaluated through this environmental impact.

MS. JONES: So when we get to the comment portion later on, that would be a great comment to make or write it down and submit it in writing.

FROM THE FLOOR: It's specifically what methods of preventing flooding to the neighborhood would be utilized in those three scenarios also? Is that part of this discussion?

MS. JONES: That's -- that's -- that's what Daniel is going to talk about. That's not part of this project. So that's what Daniel is going to discuss.

MS. WAYNE: I think I'll turn it over to Daniel, and I can answer more questions about the plan, but maybe this is a good time to have Daniel answer.

FROM THE FLOOR: I did have one more question. It's sort of a two-part question about the plan. That is, when is the lead contamination at the old rifle range going to be dealt with? And two, is the archery range going to be left untouched? Or is that -- that also on the table in terms of something happening to it as part of this --

FROM THE FLOOR: Can you repeat the question?

MS. WAYNE: Yeah, the question was -- if I can paraphrase -- so are there any recommendations for the archery range, and what's going to happen with the lead contamination at the rifle range?

So those -- so the lead contamination is a separate project that the -- that our department is working on, and actually actively working on. I don't know if you know the timeframe.

MR. LAFORTE: Yeah, so -- so our capital division -- Daniel LaForte. I'm a planner with the -- thank you, everyone, for coming out tonight.

My name's Daniel LaForte. I'm with the San Francisco Recreation and Parks Department. And just to comment on that, our capital division has prepared a draft removal action work plan, and we are -- that is going very

well. They are working with various state agencies in the final stages of getting their permits to implement that work plan. And I can get you some more information on when that effort will begin. I believe it's in the near future. So I think that's going very well, but I can get you more information on that.

FROM THE FLOOR: And the work in the archery range?

MS. WAYNE: Yeah, and the archery range. The Natural Areas Plan does cover the lands within and around the archery range. They're -- except, you know, sort of trail improvements and invasive plant removal and restoration, there's no -- there are no other recommendations that would directly affect the archery range.

The pond up there is an important place. As you probably know, salamanders and -- there's other -- other important species that use that area. So we do want to be sensitive on, you know, that area and what happens there. But in terms of -- there's no plans to change that land use in any way.

FROM THE FLOOR: Thank you.

MR. LAFORTE: Excuse me. If there's anyone who is standing, there are seats up front here if you need to find a seat.

Thank you, Lisa, for that presentation.

Again, my name is Daniel LaForte. I'm a planner with the Recreation and Parks Department. And as many of you know, there's been a lot of discussion of late on looking at possible scenarios to the reconfiguration of the Sharp Park golf course. And I'd like to say a few words on that and how it relates to why we're here today on the environmental analysis for the -- the significant Natural Resource Areas Management Plan.

The department was given a mandate by the City and County of San Francisco Board of Supervisors to -- which basically says that they mandated three things: one is to look at possible co-management of the golf course with -- with the GGNRA, and two is to look at possible -- to develop three concept plans.

One -- the one concept plan would look at an 18-hole golf course with maybe slight modifications to the golf course to improve hydrology as Lisa mentioned. And that is -- we are looking at that. That is a project description for the environmental document.

The other two concept plans that we are mandated to develop is, one, to look at a limited golf concept, where possibly a 9-hole golf course. And then the third, the concept plan would be to look at no-golf scenario. There would be no golf there.

And we are undertaking that effort now. We just begun. We look forward to working with the City of Pacifica and GGNRA and other stakeholders on the development of those concept plans. And we should have them developed in the next few months.

I want to make clear that any action related to those -- implementing those concept plans, with the exception of the 18-hole scenario, would require a separate environmental review. They are not going to be covered in this environmental review that we're undertaking currently.

And with that -- so I understand there's a lot of, you know, concern about the future, you know, uses of the golf course, but I wanted to make that clear that that -- that is -- would be a separate a -- separate process, and we look forward to working with the City of Pacifica on that. So thank you.

MS. JONES: Okay. Uhm, now we're going to move on to talking about what we are actually working on, doing here under the environmental review process.

My name is Sarah Jones. I work with the planning department in the major environmental analysis division. Our division of the planning department is charged with doing environmental review under the California Environmental Quality Act for basically all projects that occur on any lands within the jurisdiction of the City and

County of San Francisco. So that is where planning comes into this -- into this effort.

We have a few slides that discuss the California Environmental Quality Act, or CEQA, as it's commonly called, analysis process. So I will go through those with you, and it will also be a little bit of an idea of the documents that we prepared so far for this project.

CEQA is for the purpose of public information. It is required to conduct analysis under CEQA of the potential environmental impacts of any projects, you know, whether it be a new building or whether it even be, you know, some of the actions that are anticipated under the Natural Resource Area Management Plan. And the purpose is to inform the public and decision makers of these potential environmental effects of their projects.

Preparing a CEQA document and certifying that that document is complete does not constitute approval of any project. It is simply a required step that one needs to take in order to make sure that decisions are occurring in an informed way.

We look at a lot of topic areas under our CEQA analysis. These are spelled out by the State law that governs CEQA. There are, as you can see, 18 -- or really 17 different types of topic areas that are looked at, and within each of those topic areas we have several questions

that we need to answer.

I don't know if anybody here has gotten a chance to really review the initial study that we prepared, but you'll see that each of these topic areas is addressed. Each of the questions within these topic areas are discussed, and what we have prepared so far for this project is an initial study. What that is is that we have analyzed each topic area and identified those topics for which there are potentially significant environmental effects where we think there could be substantial adverse effects on the environment.

As you can see, we highlighted the -- and just to -- back to that -- the areas where we do think there might be substantial adverse effects are the ones that we go on to study in the Environmental Impact Report.

In the case of National Resource Area Management Plan, we are going to talk about land uses, land use planning, aesthetics. That's primarily tied to the issues around the tree removal that's proposed. We're looking at cultural and paleontological resources, historic resources, archeological. That's what's covered under that.

Recreation, again, since we're focusing on the content of the plan itself, that's going to look at dog play areas. That's going to look at trails, the recreational activities that occur within the areas now. Biological

resources, obviously, is a big topic here. Hydrology and water quality, where we'll start getting into some of those flooding issues. And then we also look at cumulative impacts of this project in association with related, you know, past, present or reasonably foreseeable future projects. So that is -- that's what we'll cover in the Environmental Impact Report.

One thing to note right now in the process we're in the scoping period for this Environmental Impact Report. Particularly upon reviewing the initial study you feel that there might be a topic area for which there are additional issues to discuss or you see a different conclusion, you know, that's the purpose of this meeting, is to take those comments, and you can also submit them in writing.

So we'll just walk through the process. We actually have some handouts that go through all the steps in the CEQA process and maybe help to explain why it always takes so long. We are right here at the beginning, the notice of preparation, saying we intend to prepare an EIR, and the initial study where we do that first read of all the potential impacts of a project. And today we're having a scoping meeting, which is required for certain projects of regional significance like this one.

After we get through this process and we conduct some more detailed analysis of those topic areas I

mentioned, we will put out our draft Environmental Impact Report. That report is circulated to the public. We have a public hearing before our planning commission. We take all of those comments that we receive on the draft Environmental Impact Report, and we prepare a comments and responses document where we address each of those comments in writing and also make any changes to the text of the EIR that are necessary. At that point we are ready to bring a final Environmental Impact Report to the planning commission to be certified as being adequate and complete and accurate.

Is that the last slide, John?

Oh, of course, this is the -- details a little more how to participate in this current process that we're in right now. We are in the scoping period. You have until May 26 to make your comments. Make them orally tonight, although we have a time limit, but -- so if you have more lengthy comments to make, then please submit them in writing. There's no different weight given to anything that's said versus written. So please feel free to submit anything in writing.

You can actually review the document that we prepared on our website. You can also, as Lisa mentioned, review the actual plan on the website that's maintained by Recreation and Parks.

Here's the address to which you can send your

written comments, and if you want any more information, you can contact Jessica. She's the coordinator for the Environmental Impact Report, and you can also e-mail your comments to her as well. So that's it.

If you have general comments or questions about the CEQA process, I'm happy to answer them now. If you have comments specifically about what you think should be addressed in the context of this EIR, then save them for the actual scoping period. During that time we just take comments. We don't respond to questions. So that's -- that's just a tip.

I see a woman in the back.

FROM THE FLOOR: Thank you, Madam Planner. General question. I'm sorry. I'm still confused. Must be a blond moment. Is flooding going to be addressed in the EIR?

MS. JONES: Any flooding that's resulting from the project would be addressed as an impact in the EIR. The existing condition of flooding, if there's existing flooding, that's part of the existing setting, and it would be described, but it's not an impact of the project.

FROM THE FLOOR: What role --

MS. JONES: I'm sorry. Did that help? Do you want to talk more afterwards so -- okay.

FROM THE FLOOR: It's just really important that I

understand that the issues of flooding, whether it be -- I mean, the existing flooding and how that originated or not, and I don't know that -- how that's going to work, just that flooding is an annual issue out here.

MS. JONES: Sure. Well -- and we would look at -- we would look at anything that resulted from the project that affected that flooding.

FROM THE FLOOR: Okay. And the problem as a result of that flooding extends far beyond defining the golf course.

MS. JONES: Sure. And that's, again, a scoping comment to make.

FROM THE FLOOR: What role does the coastal commission or County of San Mateo play?

MS. JONES: We circulate our environmental review to those agencies, and they have -- one of the purposes of this whole process is to provide information to agencies like that, some of which are decision making agencies, and some of which are interested agencies. We provide them information, and they have the opportunity to comment on what they feel they need to be addressing.

Yes?

FROM THE FLOOR: Ask you, all the things in the planning, one thing I notice is missing and -- when do you do a cost analysis of how to accomplish these things?

MS. JONES: Socioeconomic impacts are impacts under CEQA only to the degree that they result in physical impacts. So one of the areas where we often address those kinds of issues is in land use or in population and housing, although that's not such an issue here, obviously, but socioeconomic impacts in and of themselves and costs are not considered physical environmental effects. That's one thing I didn't make clear earlier on, is that CEQA is looking at the physical environmental impacts of a project.

Yes?

FROM THE FLOOR: You mentioned agencies that might be interested and that you do communicate with. Do you also communicate with the City of Pacifica in terms of the Sharp Park area?

MS. JONES: Yeah, certainly we do that.

Yes?

FROM THE FLOOR: Does the EIR incorporate climate change or global warming?

MS. JONES: Yes, that's one of the -- that's one of the topics we address in all the EIR's -- I'm sorry -- in all the environmental review processes.

FROM THE FLOOR: I wasn't going to speak up, but I just have one question from what Daniel had stated.

MR. LAFORTE: Yes.

FROM THE FLOOR: Daniel, you said that the board

of supervisors -- the direction that had been provided by the board of supervisors was to develop the concept plan in and work with the GGNRA, but I didn't hear -- I know you said that you work with the city of Pacifica, but I thought that ordinance had been approved by the board of supervisors last week said both the GGNRA and the city of Pacifica and/or the County of San Mateo, so --

MR. LAFORTE: Yes.

FROM THE FLOOR: -- I wanted to clarify that.

MR. LAFORTE: I left that out, yes.

FROM THE FLOOR: Okay. Worked very hard for that.

MR. LAFORTE: Yes, that was in the legislations. Thank you for mentioning that. Thank you.

FROM THE FLOOR: No problem. No problem.

MS. JONES: Yes?

FROM THE FLOOR: You said you had something like 31 natural areas that you were looking at. How many of those are CEQA -- are under CEQA that we have to do this kind of review for?

MS. JONES: We -- this environmental review is looking at all of the natural areas. They're all affected by the project. But we do CEQA review for everything in San Francisco. We look at downtown skyscrapers. We look at every -- everything.

FROM THE FLOOR: Of course, what are we looking at

for a timeline, then, for what's going to happen in Sharp Park and, like, McClaren Park? There's so many different areas to work with, some of them are really big and some of them are small. You know, when should we expect the draft EIR?

MS. JONES: That's partially going to depend on what -- what we hear in this scoping process because of issues are raised that take more analysis than we had originally anticipated, and that would affect the timeline, and we are working with the consultant. It's partially -- partially driven by the amount of time that they would take. I don't -- I can't -- I can't say off the top of my head what I expect the schedule to be.

MR. LAFORTE: I can comment on that. We have a draft -- a draft schedule, subject to change, as Sarah noted, but we expect to have a draft Environmental Impact Report in October, 2010.

FROM THE FLOOR: Year-and-a-half?

MS. JONES: Yes.

FROM THE FLOOR: Yeah, then the question I had, you're saying that you're responsible for part of the project you're doing, but then you've been working at this since 1995. There was no flooding in 1995. So the pond's been soaking in and getting worse, and so the lack of action is what's creating the flood. So -- but then you don't have

any responsibility for that as long as you're doing studies?

MS. JONES: We are looking at the effects of the project on the setting as it is now. Our baseline condition is basically what it -- what it is as of April or May, 2009, but we would certainly as part of that discussion of the setting discuss what led to that condition.

FROM THE FLOOR: It was in 1995 they actually were doing some dredging, and they stopped. So -- and there was no flooding at that time. So what I'm saying is that you let the pond soak in long enough, it's going to fill up the whole basin eventually. If you haven't finished the study, then apparently you're not responsible for that (unintelligible).

MS. JONES: That might be either a comment in the context of the scoping as to something that you think we need to address, or I think something maybe to discuss with Recreation and Parks.

FROM THE FLOOR: I have something to say with respect to this point, right. As a geologist, I understand hydrologic patterns, right. That area that you're talking about is a drainage area. It's the lowest point where water will naturally collect. And with water, it brings with it silt, and that's what's settling inside the pond. With all of the -- they've developed areas surrounding that point, water has nowhere to go. But there --

MS. JONES: Okay. I'm not trying to cut you off, but that is -- the comment that you're making right now is exactly the -- when we're done with the general questions about the environmental process, that's something to raise in the -- you know, as soon as we get everyone's questions, this is something to raise once we open the public scoping comments.

FROM THE FLOOR: Okay. What I don't understand is how are you going to say that the influence of the project with respect to water is this, with respect to existing conditions is this. I don't know how you can make that demarcation.

MS. JONES: I think that my understanding is that one of the purposes of the project is to address that -- that existing condition. So it would -- to the degree -- to the degree -- what we are looking at is whether the actions under the project would result in a substantial adverse effect, and that is, in this case, an increase in the flooding. So -- but again, you know, please raise this issue when we get to the next step.

Yes?

FROM THE FLOOR: Is CEQA and the management plans' definition of recreation, does it now include watching a polliwog develop into a frog, watching a snake slither along the fork, watching a piece of grass grow as the native

species? Does that part now -- is that part of the term "recreation?"

MS. JONES: The term recreation in the context of CEQA isn't -- that's not specifically defined. What we look at in terms of recreation in our analysis has to do with whether -- whether we are affecting or removing some recreational resource, whether -- whatever -- you know, whatever -- whatever we may define that to be. And, again, if you -- if you feel that those -- that that passive recreation that you mentioned should be considered within that, then please raise that in the scoping comments.

We also look at whether a project would result in greater use of a recreation area that would -- that would deteriorate -- that would hasten its deterioration.

FROM THE FLOOR: Yeah, maybe I wasn't clear. I was asking what CEQA's definition is.

MS. JONES: CEQA doesn't particularly define recreation in terms of the specific activities that it involves.

FROM THE FLOOR: Okay. Thank you.

MS. JONES: Yes.

FROM THE FLOOR: I think the point was well -- the point there that before 1995, before the reeds were thinned out, there was dredging there. It's really the city's fault that we're in this predicament to begin with right now

because they dragged their feet for the last 15 years towards this. What's happening, if the city would have kept doing what they were doing, we wouldn't be having this problem.

MS. JONES: Okay. And I'm not trying to minimize any of that commentary. I just -- you know, I think that that's -- if you feel that that's something that we should be addressing, then when we open the public scoping comments, please mention that. I'm sorry.

FROM THE FLOOR: Of course, it should be addressing that. You just brought it up here addressing.

MS. JONES: Okay.

MS. WAYNE: Maybe I can just chime in there a little bit. I know there are others in the crowd that have had a lot of history with the Recreation and Parks Department here at Sharp Park, and what happened, you know, within relatively recent -- in the last decade or so is that a lot of regulatory agencies began to look closely at what was happening at Sharp Park and the things that we were doing were in violation of the Endangered Species Act, and so to do dredging, to -- it affects wetlands, and that's permitted by the Corps of Engineers through the Clean Water Act, to do dredging, it potentially harms and kills endangered species.

And in 2005, in fact, our general manager was

served with basically a letter that, you know, was essentially -- what would you say? -- a notice of violation of the Endangered Species Act, and he and our department were basically, you know, threatened with severe fines and/or, you know, imprisonment.

So the protection's out there. I know for many, many years things were done differently, but in recent years more attention has been brought to that place and -- and we received, you know, direct communications from these regulatory agencies that we need to stop what we were doing out there.

FROM THE FLOOR: The point here is that (unintelligible) San Francisco, this created the endangered species, not -- the endangered species wasn't endangered to this extent when they were doing this. It's only become endangered since they've stopped doing that. So it was hampered by the -- going by the bureaucratic regulations really created -- further created the problem.

MS. WAYNE: Well, yeah, undoubtedly, the sedimentation is a real future threat to -- particularly to red-legged frogs, but -- but those species were categorized by the federal and state governments as endangered and threatened many, many decades ago, like, in the seventies, and, you know, since then. So -- so they have -- they were identified as, you know, in periled state long, long ago.

MS. JONES: One thing also to note is that under CEQA, we also are required to look at what's called a no-project alternative, which is a -- what would happen -- what would be the impacts of the project not taking place, or what would the scenario be if the project did not take place. So -- just so you're aware of it, we'll be looking at that as well.

FROM THE FLOOR: Actually, that was the -- seem to be contradictory to what you're proposing. The three scenarios: leaving the park alone, making a 9-hole course, or doing other dredging is actually much more harmful to the environment than leaving it as is.

MS. JONES: Well, as Daniel mentioned, the three scenarios that were -- that were discussed under that legislation, under Supervisor Mirkarimi's legislation, those are not part of the project. They are subject to a separate environmental review project request.

FROM THE FLOOR: One last question. If it all becomes part of the project, where does Sharp Park fit in in priority versus the other park areas of the group? Is that priority number one, or where does that fall in the list?

MS. JONES: That would be a question for Recreation and Parks.

MR. LAFORTE: That's a good question. There are really two paths there. There's the EIR, and then there's

the separate permitting path that we have to go through extensive steps to obtain the necessary permits to clean out and dredge the Laguna Salada, which will -- in the end will help the flooding problems that have occurred out there. And once we receive those permits from the government agencies, we can begin to do that work. It's dependent on our resources, and I can project -- you know, as we develop this process and move through the permitting process, we can have a better understanding of the conditions that we have to abide by that may, for example, escalate the cost associated with that work.

We can't -- as Sarah alluded to, it's very difficult at this time to provide estimates on the cost for a lot of this work, but as we move through the process and learn what we need to do in terms of protection of the species, barriers, relocations, you know, we don't know the full extent of the cost at this time, but we may have a better -- better answer for you as we move along this process.

MS. WAYNE: One more thing that I'll just add to that, you know, as you probably know, the golf course at Sharp Park is, you know, flooded for a good three months of the year, and you know, a lot of that is related to the protection of the red-legged frog that, you know, lays their eggs in Horse Stable Pond. And, you know, what that means

is that it's a very difficult situation for us because, of course, it's -- reduces our revenues.

So, you know, when we do get through all of this permitting, I would think that -- that attempting to solve some of the flow problems, the hydrologic and sedimentation problems are going to be relatively high on the Recreation and Parks Department's radar and priorities because, of course, you know, the flooding is somewhat related to that sedimentation and how the water flow happens. And we don't like the fact that the course closes, you know, for as long as it does over these periods of time.

So of course, our agency is just as, you know, under siege by all the economic conditions, but it's -- it's been something that we have been trying to find a solution to for a long, long time. So I can't guarantee that we would be out there the next day with our backhoes, but it is -- it is a high priority for our parks.

FROM THE FLOOR: Well, that's what I'm saying. Seems to me now that Sharp Park has become an issue, that's becoming priority of this whole project, is now let's do something with Sharp Park versus all the other wetlands, all the other areas that are in San Francisco. Now because Sharp Park has become the focal point, it's now a priority on all the rest of the projects, which I think is ridiculous. Why wouldn't the other projects be taken care

of before Sharp Park became an issue? Why is this now all become Sharp Park's priority?

MS. JONES: Is the question related to that Sharp Park is more of a priority than the other 31 natural areas in San Francisco?

FROM THE FLOOR: That is the perception.

MS. JONES: Oh, I don't think that's necessarily the case. I don't think -- you know, we -- we're trying to accomplish a lot of things on an -- on many different fronts all at once. You know what would be required at Sharp Park is, you know, can happen -- it would need to happen independent of, say, the Natural Areas Program staff because we're not backhoe drivers and, you know, heavy equipment operators. We're doing other priorities in San Francisco.

San Francisco's got a trails bond that is supposed to fund a lot of trails improvements within the city, and so they're is that motivating factor there. So it's really -- you know, tempting to go where the resources are. You know, try to maximize what we can do right now or in the near future.

FROM THE FLOOR: Well --

MS. JONES: I think this permitting for Sharp Park is somewhat more complicated than the permitting that would be required in other areas.

FROM THE FLOOR: When in your timeline do you

consider consequences of health issue and safety issues and compare them with the Environmental Impact Report?

MS. JONES: I guess you're going to have to --

FROM THE FLOOR: I mean, the isolation of any health considerations when you are in a group environment.

MS. JONES: Certainly --

FROM THE FLOOR: And also there's safety issues, those -- when do all those come together?

MS. JONES: Those issues fall under the topic areas that we discussed.

FROM THE FLOOR: We have some blank checklists, don't we?

MS. JONES: If you look at our checklist of all of -- all of the questions that we're answering or that we're trying to answer, a lot of them are related to human health and safety types of issues. So that's -- human health and safety is an issue under CEQA as much as the health and safety of non-human --

FROM THE FLOOR: So what's a reasonable timeline to expect?

MS. JONES: Well, again, as Daniel mentioned, we are anticipating publishing our draft EIR around October. I'm sorry, October of 2010.

MR. LAFORTE: I'm sorry. I misspoke earlier. We are expecting a draft EIR October, 2009.

MS. JONES: Okay. I was thinking that's an awfully long time.

Yes?

FROM THE FLOOR: One of the things I'm wondering is that idea that, say, the process is finished and can't do anything about the dredging in the pond, but we know from several reports that San Francisco's already done that, the silting problem, mainly throughout the north end, which takes all the moss from the highway and roadway and feeds it into the pond. So why instead of worrying about the frog and dredging don't you just take care of getting that water to go somewhere else, get it pumped out.

MS. JONES: That would be a question --

FROM THE FLOOR: Has nothing to do with frogs.

MR. LAFORTE: All of these issues are going to be looked at in the Environmental Impact Report. We're performing, you know, hydrologic studies, sedimentation budgets, imaging maps, a lot of technical studies that will evaluate the flooding issues at Sharp Park.

FROM THE FLOOR: I'm not talking about flooding issues. I'm just talk back sedimentation --

MR. LAFORTE: Run-off sediment.

FROM THE FLOOR: -- sedimentation's a problem. You know where the problem is coming from, the north end of the park where streets and everything are emptying all their

sediment into the pond.

MR. LAFORTE: We'll identify the inputs and -- possibly, and, again, that would be analyzed in the EIR and mitigated for.

I should mention that the Natural Areas Plan -- the recommendations in the Natural Areas Plan call for -- call for dredging and clearing out the Laguna Salada. Once EIR is completed, that will allow us to begin that work. So we are, you know, taking the necessary steps to take action at Laguna Salada.

FROM THE FLOOR: I'm not talking about dredging, just talking stopping the water that's going into the lake.

MS. JONES: That would be something to suggest in the context of your comments on the scope of the EIR, something to look at in our alternatives analysis.

Are these still general CEQA questions, or should we move on to the --

FROM THE FLOOR: My question, I think, is more for Daniel. In terms of the permitting process and the EIR process, are they on parallel tracks, or do you have to finish EIR before you can go asking for your permits?

MR. LAFORTE: They are on parallel tracks. So we are -- our goal is to complete them around the same time.

FROM THE FLOOR: Okay.

MR. LAFORTE: Again, there's a lot of variables

involved in that, but that is how we began this effort, and that is our goal, to have permits in hand around the time of the EIR is certified.

FROM THE FLOOR: Thank you.

MS. JONES: In the back.

FROM THE FLOOR: If GGNRA comes on board here, do their rules -- are they -- are their rules going to render your hard work redundant?

MS. JONES: Uhm, other agencies would rely on the environmental analysis that we are conducting. Uhm, I don't know what you mean exactly by GGNRA coming on board. What exactly you're referring to in terms of --

FROM THE FLOOR: I see them as kind of a predatory group.

MS. JONES: Oh, in terms of whether they take over the -- they would -- they would basically need to, you know, to adopt independently certify the environmental work that we do.

Any more? Oh, hi.

FROM THE FLOOR: Yeah, is Supervisor Mirkarimi aware that you've done all this that work on the natural areas, and if so, why is he asking now to do it again? It's already taken 10 years. And is he intending to use this information in his request for habitat restoration.

MS. WAYNE: Well, I can't speak to the motivations

of the supervisor, but I can tell you that we -- he is aware of this plan. He has been for a long, long time, and we're trying to keep him apprised of our moving forward with this environmental review and its relationship to the cost benefit analysis of these three scenarios.

MS. JONES: Yes?

FROM THE FLOOR: Just again to clarify, so in your estimation, the planning department, when you complete the EIR in October of '09, does that in essence satisfy Objective 1, how to keep Sharp Park golf course with all of the recommendations that you make in order to keep our species? Does that satisfy that first part of this?

MS. JONES: Well, first of all, October of '09 would be the publication of draft EIR, and then there's a comment period, so that's for clarification. That's just the details.

FROM THE FLOOR: All right.

MS. JONES: My understanding is that the policy analysis that's going to be done of the 18-hole, 9-hole, no golf course options is looking at issues that go beyond the scope of our CEQA analysis, and they are looking into some of these socioeconomic issues that may even be covering that. Somebody asked about a few minutes ago. So to that degree, I think that this EIR is not fully going to answer those questions that need to be explored in the context of

that --

FROM THE FLOOR: Just the one. Just the first one now. Not -- because we're not talking about your study of the EIR destroying anything. We're not really talking about -- we're talking about protecting what we have basically, and enhancing it as such, but by keeping it an 18-hole golf course. The other two, which will come later on, that's a different issue. We'll talk about a later.

But right now we're just talking about doing the things that you studied and keeping the 18-hole golf course would satisfy the first objective. What else is going to be studied?

MS. JONES: Well, I really -- you know, our purpose here is not to satisfy any of the objectives having to do with the golf course analysis, so I don't -- that's not something that is in our scope of our environmental analysis on the Natural Areas Program. So that's -- that's a separate process, and, obviously, the information that's gained in this will help inform that, but we are not making any effort to satisfy any of the objectives of that effort.

FROM THE FLOOR: So it's not an integrated effort at all?

MS. JONES: This is a separate project. So we have to look at the overall setting, and we have to look at cumulative factors, but this is its own project.

MR. LAFORTE: As just -- just add a little bit to that. You know, there will be some -- some what comes out of this will be some improvements to the wetlands that will ultimately benefit the species in keeping -- under the scenario of 18-hole golf course. That is part of this effort, yes.

FROM THE FLOOR: Is that more to keep that than to try to get rid of it?

MS. JONES: There's no intent either way under this EIR about the golf course. It's assuming that golf course exists. Yes?

FROM THE FLOOR: Does the CEQA have intention to turn around and make a 9-hole golf course?

MS. JONES: I'm sorry. I need everybody to keep quiet so I can hear.

FROM THE FLOOR: Does the city of San Francisco have an intention to turn around and build 9-hole golf course down the line?

FROM THE FLOOR: Can you repeat the question, please?

MR. LAFORTE: Your question was, so if something changes down the line, how would that affect the golf course?

FROM THE FLOOR: To make it 9-hole instead of 18.

MR. LAFORTE: Yeah, okay. So I should make clear

that, you know, things change, anything can happen. I mean, projects can change, and if that's the case, then we would take the necessary steps to address a change in the project, and we would -- we would look at -- you know, we would need to look at how that affects the environmental review process.

And Sarah, maybe you could address in the event that the project would change, how would you address that.

MS. JONES: Well, it sounds like your question's whether the city intends to change it to a 9-hole golf course, and that's -- you know, I don't believe there is an intent one way or another with regard to the golf course. That's why there's a policy study that's being conducted by the park department.

If a project does change during the course of the environmental review, which is sort of a separate issue -- if a project were to change, we would -- you know, we need to address the impact of the changed projects. You know, we're not going to rely on an out-of-date project description essentially, although we would basically need to talk about whether the changes were covered under the scope of our review. But, again, the number of holes on the golf course is not something that is being driven by this EIR in any way.

FROM THE FLOOR: Because, you know, if they want

to make a 9-hole golf course, it's going to cost them a lot of money. Instead the problem they got to date, it's minor. They cannot address Sharp Park golf course. Very simple, the problem they got today is something only that maybe somebody over there tell them what to do, how to do it, and let them do it, and won't be no more problem. The water they got that come on the golf course, it can be cured. It can be adjusted, and they will have no more problem like they have years and years and years ago. Why all the ones in the last few years that we have these problem.

MS. JONES: Okay.

FROM THE FLOOR: We never had those problems before.

MS. JONES: Okay. It sounds --

FROM THE FLOOR: Why now?

MS. JONES: It sounds like maybe it's time to move on to the scoping comments on the scope of this EIR because people seem to want to talk about that. So let's start, and if anybody has any more questions about CEQA, Jessica and I will be around afterwards.

Let's just go over how we want to run this part of it. Please be respectful. People might say something you don't agree with, but that's -- you know, that's why everybody gets a chance to speak. State your name so that the court reporter can accurately get it, and also we can

keep up with you in the future and get you information as we go along.

Speak clearly. Stick with our time limit. We have a three-minute time limit and we have a very visible clock up there for you to see. And most of all, focus your comments on what you think should be in the scope of this EIR, on the Natural Resource Area Management Plan, not the golf course.

So that is the -- that's the story. And has anybody who wants to speak turned in their speaker cards? Okay. Great. So John will get that going. Thanks a lot.

MR. BOCK: Great. Thank you, Sarah. So as we mentioned, in order to speak tonight we ask you to fill out a card. I've got just under 20 cards filled out already. So if you haven't filled one out and you're interested in speaking, please drop one at the sign-in table.

And we are going to keep it to a three-minute limit. We ran a little bit long in the opening presentations and questions and answers, so we're trying to give everyone an opportunity to speak tonight, so we're going ask you to adhere to that.

I do have one gentleman who was unable to stick around, so he asked me to read his comments into the record. That's Mr. Laurie Frater.

"If anything less than the full 18-hole golf

course is retained, the economic and environmental impact on my family will be great. We'll need to ferry Andrew to HMB or elsewhere to play his golf. Others will be similarly impacted. Please don't throw out the baby with the bath water. Andrew says please don't take away my golf course. Thank you."

So our first public commenter will be Mary Keitelman, followed by Ron Maykel. Mary Keitelman.

MS. KEITELMAN: Thank you. I don't think this is on. Testing. It's not on. Test. Test. Test.

Thank you for having this here in Pacifica. I just want to make a couple of comments and hope that they are addressed. My guess is, from what I've heard, you're already addressing them, regarding the Sharp Park, one of the 31 areas that you're looking at. I live here in Pacifica. My name is Mary Keitelman, and I'm interested in Pacifica aspect of it particularly. Okay.

Number one, chloramine in the water affecting amphibians. If it's there -- and I don't know if it is, and I would like that that be addressed so that there is no chloramine affecting them.

Number two, and I think you're probably doing this already as well, however the property gets looked at, the other properties that are abutting it, such as Mori Point or anything else that's near it, I hope that you will look at

the endangered species that use Sharp Park and how they also use those contiguous lands and think of it as a whole picture. My guess is you probably do.

And let's see, third thing is I hope that the beach will be looked at for the western snowy plover threatened under the Endangered Species Act, black oyster catcher, which I think is just not even of concern. It's just a very -- it's on the edge maybe being threatened. And other birds that use that beach for roosting, as well as, you know, well, breeding.

And then let's see. The last item, on East Sharp Park there's a large population of newts in the pond that drains under the freeway, and it's of concern to me and to a lot of other people that those newts are free of chloramine and able to survive and thrive. There are a lot of other animals there as well, but I think those newts are very vulnerable.

Thank you. That's it.

MR. BOCK: Thank you.

And I apologize if I misstate anyone's name, but Ron Maykel is next, followed by Reiner Binsfeld.

MR. MAYKEL: Yeah. Hi. My name is Ron Maykel. I've lived in Pacifica for many, many years, almost 30 years, as a matter of fact. First I want to thank San Francisco Natural Areas for making the city program

(unintelligible). You guys have a good program going in the city. As a matter of fact, I'd like to see the city council members spend some time in your program. Could use a little bit of education in that area.

I just want to point out -- first, I want to answer some questions about the lagoon, you know, and the flooding. You have two things that took place there. You had where the berm blew out, pushed tons and tons of sand that came in there, and there's like a two- to three-foot wide area where the lake is extremely shallow where the sand came in. This took place back in 1983, I think. So that is a factor that has caused -- contributes to the flooding.

And also the tules and the cattails, these are deciduous plants. You know, they die off and then all of the thatch from these plants creates -- basically assists in the build-up, which creates -- makes the lake become shallower and shallower over years and years. The debris just builds up. And that's a big part of the siltation there. And I think that's one of the bigger -- bigger reasons why that's happening.

The other -- you know, I really want to see this lagoon area protected. I would like to see -- there's a couple of golf holes roaming around. I would like to see those removed. I think that we really need to focus on pulling golf away from that lagoon. And also I'd like to

see some emphasis on the creek. It's a beautiful creek. It's been channelized over the years, and it has been negatively impacted when they developed the golf course. There's a lot of trees that create kind of dead zone: eucalyptus, pine, and cypress. I would like to see you guys look at possibly some fixing up the creek, too, that Sanchez Creek.

At any rate, that's all I have to say. Thank you very much for your time.

MR. BOCK: Thank you for your comments.

Reiner Binsfeld followed by Steve Rush.

MR. BINSFELD: I just like to say I appreciate you guys coming today. And you know, I think we're all for the environment. We all are. And I see no reason why we just can't co-exist down at Sharp Park. There's no reason to get in there, and the lagoon's huge. You know, you can clean it out, and snakes and frogs can do what they do. Just making it environmentally, you know, protected area. Nobody goes in there. Golfers don't go there. Environmentalists, scientists, everybody stay out.

There's no reason why we can't co-exist. As he said, we had a big storm in '83, and those frogs and snakes took a hit, and they still be able to come back to the numbers that they have today on their own.

I'd also to like to address -- you're saying

trails. The park is absent in trails. We have a ton of trails here in Pacifica. I use them all. They're fantastic. I go up old Higgins Road here yesterday, which is our old Highway 1. It's a fantastic walk. I was up for almost two-and-a-half hours, and I barely scratched that whole area.

We also have Sweeney Ridge, which is just vast. It's huge. Of course, Mori's Point, which is fantastic. Rockaway Beach. And also let you know that when the tunnel comes in, that whole area is going to open up into trails.

So come 2012, my God, we're just going to get miles and miles of new trails. So as far as Sharp Park goes, I think it just needs to be dredged, cleaned out, let those frogs and snakes do their thing, allow the golfers to go around it as it has for last 70 years, and I think there's no reason why we just can't co-exist and, you know, make this thing work.

MR. BOCK: Great. Thank you for your comments.

Steve Rush followed by Rob Bakewell.

MR. RUSH: Hello. Thank you. My last name is Rush. I come from a history of Americans. Two of my family members are Declaration of Independence signers, and I'm a history buff. And one of the things about Sharp Park is that Alister MacKenzie designed the course. That has a lot of history involved with it. Goes back to a lot of the

famous golf courses that are currently being used, and I think that should be taken into consideration.

Secondly, I have -- my profession is an inspector, and a lot of what I teach people when I go around inspecting their homes is drainage. Drainage, how to maintain their property, and sometimes the easiest thing -- the most simplest things are the most correct ways to correct a problem, which too much time and effort into something, it can actually cause much more problems.

So I think that the easiest solutions can also be the cheapest: dredge and direct water if you're trying to save a species. Keep the golf course intact, keep the history intact. And do minimal amount of impact to the environment and do the things that it takes minimally, and it won't cost the taxpayer a lot of money doing it.

MR. BOCK: Next is Rob Bakewell, followed by Elizabeth Claycomb.

MR. BAKEWELL: Hi, everybody. Nice to see you, Lisa. A whole lot of stepping here in front of me.

I"m currently the volunteer steward, the volunteer steward for the Oak Woodlands in Golden Gate Park, and I'm involved in Natural Areas Program for several years. And I submitted written comments, but I'd just like to say one thing, which is natural areas, there's a big volunteer component. So in my experience with what goes on in the Oak

Woodlands in Golden Gate Park, there's a big feedback that takes place between the community, school kids, environmentalists, stakeholders of all kinds, and the natural areas staff. So it's not only an adversarial situation. There isn't -- there isn't some big hand coming down and telling us what to do, when to do it, and how to do it. There's a lot of feedback. There's a lot of community participation. So I just want to make that clear.

The Oak Woodlands is somewhat of a different situation than Sharp Park, but you know, we've had -- we have tree issues. We have trail issues. We have dog issues and so on, and so far we've been able to work those out and added a lot of value to Golden Gate Park and really improve the public safety. That's been a big issue in Oak Woodlands, and public safety is improved dramatically.

I spoke to the Richmond District police captain today, and he thanked us for our efforts. So if any one of you want to talk to me about what it's like to participate in the natural areas, you can talk to me after the meeting.

Thank you.

MR. BOCK: Thank you.

Elizabeth Claycomb followed by Daniel Lim.

MS. CLAYCOMB: Good evening, Lisa, Jessica, Sarah, Daniel, John, Mayor Lancelle, Council Member Nyhart, Brayland, Planning Commissioner Clifford and members of the

public. Thank you very much for the opportunity to speak tonight.

The City of Pacifica is pleased that the initial study acknowledges that the City of Pacifica has land use policies and regulations that may be germane to the proposed Natural Areas Management Plan. We respectfully request that the Environmental Impact Report include an analysis of the project's consistency with the Pacifica local coastal band rules and policies, and any pertinent Pacifica land use regulations. We also believe that a local coastal development permit may be required and ask that the EIR include an analysis of that requirement.

In addition, it might be of interest to note that Pacifica is in the process of updating its general plan and local coastal plan, which could alter or modify existing land use policies or result in new policies that could impact the areas covered in the proposed Natural Areas Management Plan.

Thank you very much.

MR. BOCK: Thank you, Elizabeth.

Daniel Lim followed by Dave Diller.

MR. LIM: Thank you for hearing us. My name is Daniel Lim.

Sharp Park golf course was built in the early 1920's, designed by Alister MacKenzie, as you may know. The

areas in dispute are the brackish marsh that floods every January through April. As a matter of fact, the area is still closed today, but the area is open when the frogs hatch and the water recedes. When the sea wall was put in it created a (unintelligible) the marsh. Prior to that was a saltwater lagoon, very similar to some of the beaches along the California coast like San Gregorio Beach, which is one example of salt water kind of lake. It's a good place right now for the frogs and snakes from Mori Point to move up.

The golfers have co-existed for over 70 years with the frogs and the snakes. Why do you insist on fixing something that isn't really broken? I'm sure it can be improved, most definitely. Every year the rains flood the course and many of the holes are flooded, and those holes are closed, and the pots that are usually there removed -- aren't used until frogs hatchery -- has hatched their eggs and moved on.

People say the golfers are predators of the frogs and snakes, but really it's more like the raccoons, 'possums and red tailed hawks. I beg you, please let the Sharp Park continue so we can co-exist with nature.

Thank you.

MR. BOCK: Thank you.

Next we'll have Dave Diller, followed by

David Marshall.

FROM THE FLOOR: Can you hold the mic really close.

MR. DILLER: That's all right. I'll speak loud enough. you'll be able to hear me.

Good evening. Thank you for allowing me to speak to you. One thing that I wished would stop, and that is the use of the word restore and substitute the word preserve. We want to preserve what we have. Every time I hear the word restore, it says to me taking something that we have, getting rid of it, and restoring. We already have something good. Let's just preserve what we have.

The one question that I still have not gotten answered, and I think there still is a lot of confusion, we have one proposal which you are studying -- however you want to phrase it -- it's going to study how to -- I know you don't want to talk about the golf course, but with what's there, how to preserve what's there and then to enhance our red-legged frog and San Francisco garter snake by dredging, by doing some of the things that you were talking about.

There are two other proposals on the table, and what's confusing to me -- and I know to a lot of people -- which of these proposals will take precedence? If you come up with a good way here, which I know you're going to, how to do the things that you're doing, can one of those other

proposals override what you're already going to come up with? That's what we're concerned about because you are doing a very careful study. It's been studied since 2007. We're almost to the conclusion of it, as I understand it. You're going to come up with some great ideas, great ways to preserve what we have, and then we're going to come up with two other possible studies, such as nine holes or close the golf course. Could one of those take priority over what you've already done? And that's what I would like addressed and answered because that's, I think, why most of the people are here.

We want to work in cooperation with you to do the things that you're doing now. But the other alternatives -- you already have a good plan, you don't need to come up with another one. That's what we're getting at.

Already over $400,000, as I understand it, has been spent. I know you don't want to talk about how much these continued studies with Tetra Tech are going to cost, but I suspect it's going to be another 400-, 500-, 600- or whatever it's going come up to. So I just hope that at some point when you finish this study, those can be addressed because we want to know where we go from here.

Thank you.

MR. BOCK: Thanks for your comments.

David Marshall followed by George Ambrosio.

MR. MARSHALL: Hi. My name is David Marshall.

Couple of things. First of all, I heard some people earlier talking about how rains came in 1983 and filled in the pond. It's not true. Indeed, waves did come up, but the problem was that when that happened, the Corps of Engineers built the wall. When they built the wall, they blocked a natural stream that was on the north end of the park.

I have pictures of it from 1941, and the flow is natural all the way down. The Corps of Engineers then changed it so that the drainage went into the Laguna Salada. They then attached all the drainage to the freeway and everything else to that drain. So the Corps of Engineers actually put all that silt in there.

What happens is that that gets full, and it's starts backing up and flooding the streets of Pacifica. Now, it's full in backing up because San Francisco hasn't done anything about it. They haven't either replaced the stream or exited the north end or anything else, which means the city of Pacifica then has to spend money pumping out the water, which doesn't make any sense to me. I don't know why Pacifica doesn't just send San Francisco a bill.

I understand that these studies take a long time, and I -- you know, I think that lot of the work that you're doing is very good. But I think that one of the problems

that I have with this is you have a study -- that pro study or 93 pages -- it says the north end is silting up, and that's what's causing the silt and cattails and things in the pond. And I think they got that from part of your 800 pages of -- 93 pages you got of 800 pages. So we're getting around a thousand pages of absolute no action. Nobody has done anything, and the problem is getting worse and worse.

Now we get people coming out on the golf course going, well, the water level's here. I'm making a mark there. That's where the pond goes to. Pretty soon the pond's going to be all the way down to City Hall. So I think that that's one thing.

The second thing is that there's another issue which is the recycled water. San Francisco PUC is supposed to kick in some money for recycled water, which will help keep the pond in a more consistent level, but as part of this new study, it's my impression that they're trying to just renege on the whole deal. So I think San Francisco's got some serious responsibility for taking care of some of these things and don't have to wait until the end of this report.

Thank you.

MR. BOCK: Thank you for your comments.

Next we have George Ambrosio followed by

Dan Briesach.

MR. AMBROSIO: Thank you. By the way, I'm a 32-year Park and Rec employee. I'm a golfer and an environmentalist. A member of the Loma Prieta chapter of the Sierra Club and the Greenpeace society. If I thought the golf course was detrimental to the frogs and snakes, I would be in the forefront of opposition to the golf course. But I know differently.

Since it was made known that public overflow of water off the course was detrimental to the frogs and the -- the pesticides we're using, this has been stopped over the last two or three years. I'm sure the frogs are increasing. If they're not, it's not because of the golf course. The golf course is not what's harming the frogs. This is a red herring argument. Many golf course goes through environmental sensitive areas. Bodega Bay, Teal Bend in Sacramento, Modern Bay in San Lorenzo and Stonebrae in Hayward, which has been -- just got built over a little over a year ago, which is prime red-legged frog territory. Still built the golf course.

I hear the argument about using this location for children environmental education, but this lagoon has a large area to the south of the course that is easily accessible to the public for this cause. But I see it hardly ever used by the public. There is plenty of open

space area surrounding the golf course and Mori Point, hiking, nature studies, et cetera. Not like the golf course is in the middle of urban San Francisco.

The planning commission -- I wrote this before I came here, but I'm glad you're on the same page. The planning commission should look into thinning the reeds, choking the lagoon, which would give the water more area and prevent overflowing in the golf course. This would protect the flow and keep the course playable during the wet season and enhance revenue actually for the course.

Sharp Park is a -- is an art, is a work of art, designed by one of the most famous golf course architects in the world, Alister MacKenzie, one of only four architects in the Golf Hall of Fame. Would be tragic and criminal to destroy one of San Francisco's finest athletic recreation venues unnecessarily.

Thanks for the three minutes. We usually only get two, and I really appreciate being here.

MR. BOCK: Thanks for your comments.

Dan Briesach followed by Kathleen Manning.

MR. BRIESACH: Good evening, everybody. Thank you, folks for coming down to Pacifica. We appreciate it. We like to be involved in the situation. I like to thank you especially. I know how much hard work you've put in the Natural Areas Plan -- you and probably everybody else, but I

know how long you've worked on it.

I'm glad that the EIR is coming out now, at least there's an effort right now because it ties in with Supervisor Mirkarimi's three-option plan, which I think a lot of the people here thought we were going to discuss tonight. But it works -- it ties in anyway with the Natural Areas Management Plan, and I'm very glad to see, and I want to repeat that I think the most important part of this -- well, I'd like to say that the environmental people that are here tonight and the golf people that are here tonight really need to get together and work to solve our common problems, which I think is painfully evident now, is the lagoon is dysfunctional. And that's where the efforts really need to go. If we can solve the lagoon problems, that in itself will improve the habitat and will improve the golf course, and it will solve some of Pacifica's flooding problems down at that end. So I think that's where the main focus should be. And certainly it fits in here because that certainly would improve the natural area and, you know, improve California natives and all those kinds of things you're working on.

And I'd also like to say that -- one man was saying that the drainage coming in down off the road -- ever since they put in Sharp Park Road, I guess about 1985, the drainage has just been ripping through that golf course and

they're just dumping it in there. I think it is a great idea to look at how to divert some of that water coming off Sharp Park Road. It's just a big spillway right now, and Highway 1 and all that -- and I think that could be done without damaging the creek.

We don't want to just turn the whole thing into an underground pipeline. So the creek is very viable. It's working fine for that watershed that's there, but the drainage coming off the road is really something, and it's causing silt problems and of course flooding.

So I hope that also if you look at -- there's an overflow pipe at Horse Stable Pond that used to function, and now it's silted in, and with the tules and -- the whole thing is dysfunctional. But there is an overflow pipe there. It used to work so that we didn't have to pump. It used to just flow.

Anyway, thanks a lot for coming down. People in Pacifica appreciate being involved. Thank you.

MR. BOCK: Thanks for your comments.

Kathleen Manning followed by Cliff Smethers.

MS. MANNING: Hi, thank you. I'm from the -- Kathleen Manning from the Pacifica Historical Society. And we have a long history in Pacifica of caring for the environment and for protecting and really cherishing the environment. The history the last -- since the city was

founded in '59, we've done tons of things to keep the hills green and to do wonderful things.

Now, the historical society is very proud of the wonderful golf course we have here. Looking at the historical and cultural part of the environment, it is a famous golf course, and we've heard from people all over the world that have said, "Please keep that golf course. Keep the Alister MacKenzie golf course." And we've heard from different societies, and it's been very, very interesting to see the number of people that care about that.

And also I wanted to mention that the clubhouse was done by the Willis Polk firm. So those are some of our reasons that we care about that part of the environment.

Thank you.

MR. BOCK: Great. Our next speaker will be Mitch Monroe followed by Chuck Egiziano. So we'll have Chuck Egiziano.

MR. EGIZIANO: Hi. My name is Chuck Egiziano, and I'm a retiree in Pacifica, and I love the golf course. And if you -- if it disappears, I guess I'd have to leave Pacifica. I want to thank the people trying to preserve the frogs and the snakes on behalf -- excuse me -- on behalf of all the bird life out there because they sure make a feast out of all the little frogs as soon as they start coming out. And the hawks and ravens and seagulls really enjoy

them full life.

I had a question is -- and you said that this is really not the Parks and Recs end of the spectrum, that is Parks and Recs motivated by dollars in this whole scenario in considering changing the golf course, the size of it or limiting it, and the -- I guess eventually we'll get around to that.

And the second question I had is, is there any consideration if the Parks and Rec is not interested in maintaining an 18-hole course in Pacifica, would they consider selling it or doing a long-term lease to the city of Pacifica so we could have some economics in the town of Pacifica? We don't have a lot of money being generated in this little town, so that's basically all I wanted to ask.

MR. BOCK: Thank you.

Our next speaker is Jack Rauch followed by Suzanne Valente. Suzanne is the last speaker card I have. So if anyone else is interested in speaking, please turn in your cards now.

MR. RAUCH: My name is Jack Rauch, and I am a resident of Pacifica and also a San Francisco archer. I want to thank you very much for coming here and explaining this to us today the way this process is going to go. I'm encouraged by the fact that recreation is a focal point for discovery.

I want to remind everybody that the land at Sharp Park was donated to the city -- to San Francisco for recreational purposes by the Murphy family and others, and I think it should continue that way. I look forward to the report.

I'm also encouraged by the fact that you've retained an outside firm to do the study. I'm very much concerned about the pressures put on people by environmental groups, many of whom don't know what they're talking about. I find it quite distressing when I read things in the newspaper that are simply not true. So I welcome Tetra Tech and the studies that you're -- that you're doing. Again, I want to reiterate that this is recreational land, and I think it should continue in that vein.

Thank you very much.

MR. BOCK: Next up will be Suzanne Valente followed by Robine Runneals.

MS. VALENTE: Good evening. There is a widespread perception that the Natural Areas Program is spinning out of control and it has overreached far beyond its goal of preserving the remnants of natural vegetation still left standing at SF park lands, and now engaging in a campaign of restoration ecology in which overwhelmingly human modified or created landscapes are being removed to allow for the recreation of -- re-creation of natural ones, or more

accurately, a small from thereof. The Natural Areas Program has its place, and it needs to be kept in that place. It cannot be allowed to trump the clear preferences of the vast majority of park land users in San Francisco.

That's not my rhetoric. That's the rhetoric of Arthur M. Shapiro, professor of evolution, ecology, and entomology from the center of population biology at U.C. Davis. He -- I think he echos the thoughts of many people in this audience and outside this room, but we just don't have the credentials to say it. But what I can say tonight is that I think that the NAP proposal for Sharp Park as well the other park locations intends to make major changes in the ecosystems, sometimes with no apparent benefit to wildlife and perhaps detriment to important wildlife.

Additionally, the NAP park proposal ignores the serious public safety issues that should be addressed, especially at Sharp Park. And EIR, if it intends to conform to the precautionary principles, which was adopted in 2003 by the City of San Francisco, must cover the public safety issues for humans at every park in detail, as well as provide substantial, reliable, scientific evidence to justify the proposed ecosystem changes.

Closure of the park or the entire golf course to create a natural areas wetlands restoration to benefit the

red-legged frog and San Francisco garter snake is the latest proposal under consideration by SFRPD. This is pointless. U.S. Fish and Wildlife did not designate Sharp Park as a critical habitat for the red-legged frog or SF garter snake. Therefore, by the U.S. Fish and Wildlife's own definition, whatever happens to either species in this area will have no impact upon the ultimate survival or failure of the species. There is no legal imperative for expansion of the habitat to benefit these two species.

Environmental attorneys explained that there is critical habitat and everything else. So Sharp Park has the same requirements as a habitat as your home's driveway does. The NAP report acknowledges that the quality of the habitat at Laguna Salada, Horse Stable Pond, and the adjacent wetlands remains excellent. Make the minor alterations biologists recommend and leave the rest of Sharp Park alone.

The plan for Sharp Park is the worst of any of the SF park system. It is clearly in violation of the mission statement. Uhm, they do not take into consideration public safety, which includes West Nile Virus and the need to control mosquitoes and the recent ruling by the court indicates that they no longer can spray pesticides to control adult mosquitoes. They can only drop larvicide. Clearly we cannot ensure that the public be will be safe if you expand the wetlands.

Thank you.

MR. BOCK: Our next speaker is Rabine Runneals, followed by Mike Pacelli.

MS. RUNNEALS: My name is Robine Runneals from West Shore Park here in Pacifica, and I'd like to thank you for coming down and doing this here in town. A lot of meetings in San Francisco, a lot of people have been attending. So thank you for bringing it here.

And West Sharp Park and that golf course and Palmetto Avenue, that is the center of our city. So this is very important to all of us. Thank you.

Things that I'd like you to please consider in the EIR or CEQA is flooding impact -- flooding impact including out into the neighborhood and proposed methods to prevent flooding in all three of the scenarios.

Mosquito impact. If there is more fresh water -- well, if there's more fresh water, they're going to come, and how that will be controlled.

How would views from the surrounding residences be impacted by the three scenarios, views into the park as well as our views to the beach and the ocean.

Impact of the decrease of golfers visiting West Sharp Park and the area, and the potential economic impact to the city of Pacifica and the impact of a loss of a public golf course serving northern San Mateo County's

recreation needs as well that of San Francisco's. And the impact of the loss of a golf course, which is a historical attraction to city of Pacifica also, and how that would affect and tie into the city of Pacifica's current efforts to take the Palmetto Avenue business district and emphasize upon the historic characteristics of that neighborhood and develop that into Pacifica's historical district, which is a current plan is being developed in Pacifica here.

And all of the historical references that Pacifica is attempting to draw upon for the work done in this neighborhood is all linked to the golf course and everything that the city had in that neighborhood, which is the original downtown, prior to the city's incorporation.

Thank you.

MR. BOCK: Next we'll have Mike Pacelli followed by Mitch Monroe.

MR. PACELLI: Mike Pacelli, Pacifica resident.

I'd like to consider the impacts of the storm drainage system off Sharp Park Road, you know, the golf course area, the possible partnerships with the City of Pacifica on the golf course, the economic impacts of both golf and other recreational uses into the city of Pacifica and consideration of the berm, the conditions of the berm that are there right now.

MR. BOCK: Next we'll have Mitch Monroe followed

by Allan Eisenberg.

MR. MONROE: Hello, my name's Mitch Monroe. I'm here to support off-road cycling in the other areas of Sharp Park, particularly up to the archery range, also up there beyond the archery range where it connects up to -- up beyond the ridge. That used to be a fun trail coming off of there up through the archery range.

One of your -- one of your proposals in your plan -- I can't remember which part -- that says trails would be created in previously inaccessible areas. I think it's important to link that lower area, like, particularly the archery range and also where the shooting range is, that you guys clean that up, up to the upper ridges so that you can access the southern parts of Pacifica.

I also think it's important to keep GGNRA out of Sharp Park because they seem to be taking over all the city open spaces and kind of going over them with a fine tooth comb and sanitizing everything and turning everything into, you know, basically paved fire roads, and it's getting pretty boring out there.

You guys talked about volunteerism, the stewardship was part of this plan, and a group I represent is called SF Urban Riders and we've merged with Craig Dawson Mt. Sutro, and we logged over 500 collected hours -- man hours of volunteerism. And we plan to do a lot more. So if

you guys do end up getting a project up there and want to open up a multi-use trail that's bicycle lane, I think you'll have a lot of manpower to help get that done, and you won't have to pay for labor.

That's all I got. Thanks.

MR. BOCK: Thank you for your comments.

Allan Eisenberg followed by the Steve Sinai.

MR. EISENBERG: Hello. My name's Allan Eisenberg. I live in San Francisco. I belong to the Sharp Park golf club by choice, obviously.

In your presentation you talked about the socioeconomic issues that go to every park and facilities with -- throughout the general population to use. I'd like to point out that Sharp Park is -- is a community golf course. As a community, you can go down there almost any evening and find fellows who want to talk over there, constantly enjoying themselves with their friends, which is something that does not exist at the other two courses that are run by the City of San Francisco, 18-hole courses, which would be Harding and Lincoln.

Also Sharp Park offers the opportunity for high school teams to play golf. They cannot play golf at Harding because it's cost prohibitive. So from the socioeconomic standpoint, I think it is important that it be kept as it is for the general community.

Thank you.

MR. BOCK: Up next is Steve Sinai followed by Ellen Edelson, which is currently the last speaker card that I have. So if you haven't gotten a chance yet, please fill out a card.

MR. SINAI: Hi, everyone.

Two questions or things I'd like to look at. One's already mentioned, which is take a look at how much the golf course contributes to Pacifica's economy versus how much the (unintelligible) how much that contributes to Pacifica's economy.

Second, if you could do some kind of study on populations of San Francisco garter snake, red-legged frog. I'm hearing from the group that wants to shut down the golf course that Sharp Park is basically the only habitat for the two animals. I just can't believe that, but nobody really seems to know. So take a look at throughout San Mateo County and see what the different habitats are and how the dropping of the population of the frog, what the causes might be. Appreciate that.

Thanks.

MR. BOCK: Next up is Ellen Edelson.

MS. EDELSON: Ellen Edelson from San Francisco, and I'm with the (unintelligible). And I hate speaking in front of a group. Makes me nervous.

But I do favor the idea of restoring Sharp Park and restoring the -- I'm too nervous -- but city water corridor as well, and how it connects with other green spaces in the area. I would like to ask we consider the impact of leaving as many trees as you're suggesting leaving, see what that impact would be. That we would -- 95 percent is an awful lot of trees in my view.

I would like to encourage consideration of the trails and the impact that the trails have on hiking, which is increasing in importance by many studies of recreational activities, whereas other activities have gone down on the list. But consider the use of hiking and environmental education that would have on the students -- on the students and other people out there to see the bigger picture, to see where humans fit into the larger frame of things. I think we're very egocentric in our use of the land, and we need to use space for (unintelligible).

MR. BOCK: Thank you. That's our last speaker for the evening. So unless there's anyone else who is interested in speaking, I'll encourage you to take advantage of -- in roughly two weeks between now and the end of the public comment period that's May 26th, you're welcome to turn in any written comments you had tonight, send in a letter. We'll keep this period open until the 26th and use those comments to help frame the environmental analysis we

do in the EIR, which public review we anticipate in the fall of this year.

Thank you, everyone, for coming out, and have a good night.

---oOo---

CERTIFICATE

I, the undersigned, a Certified Shorthand Reporter for the state of California, hereby certify that the foregoing proceedings were reported by me, a disinterested person, and were thereafter transcribed under my direction into typewriting; that the foregoing is a full, complete, and true record of said proceedings.

Executed this 27th day of May, 2009.

_____
LAURA AXELSEN, CSR NO. 6173

Appendix D

Written Scoping Comments

Lydia Cassorla, MD.
1801 14th Ave
San Francisco, CA 94122

May 2, 2009

Bill Wycko
S.f. Planning Dept
Natural Areas Management Plan
1650 Mission St, Suite 400
SF, CA 94103

Dear Mr. Wycko:

I am writing concerning the SNRAMP as it relates to the steep sand covered areas of the Rock Outcropping at 14th Ave between Ortega and Pacheco Sts. I cannot attend the meeting on on May 12. Therefore I take this opportunity to express concern regarding the very unstable nature of these areas. I have no objection to modifying a different flora in this area, however as a long-term resident of the neighborhood I wish to inform you that any significant denuding of areas in preparation for this will likely have a disastrous effect on sand retention.

Also, the City does a very poor job of clearing sand in the roadway below, and this causes a traffic hazard on a narrow stretch of 14th Ave that cannot accommodate crossing traffic as is, despite being a two-way street.

If you wish to change the plants on the steep portions, it should be done very slowly over a number of years, verifying that new plants are in fact being established. Please do not allow areas more than a few feet across to be denuded of existing plants each year

Thank you.

Lydia Cassorla

Lydia Cassorla

PLEASE CONFIRM RECEIPT

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220 MONTGOMERY ST., #303
SAN FRANCISCO, CA. 94104
(415) 392-5431, ext. 203
E-MAIL: RICHARD@ERSKINETULLEY.COM

May 11, 2009

San Francisco Planning Department
Attn: Bill Wycko, Environmental Review Officer
1650 Mission St., #400
San Francisco, CA. 94103-2479

Re: Natural Areas Management Plan EIR
"Scoping Meetings," May 12 and 14, 2009
Case No. 2005.1912E
Sharp Park Golf Course

Dear Mr. Wycko,

On behalf of the San Francisco Public Golf Alliance (the "Golf Alliance"), and in response to the Planning Department's Notice of Preparation of an Environmental Impact Report, dated April 22, 2009, I submit the following comments and questions relating to Sharp Park, and in particular to the Sharp Park Golf Course.

Some, but not all of my questions will relate to an Ordinance, adopted by the San Francisco Board of Supervisors on May 5, 2009 (the "Ordinance"), amending Article 3 of the San Francisco Park Code by adding Section 3.20, to read as follows:

> Sec. 3.20 SHARP PARK. (a) No later than July 31, 2009, the Recreation and Park Department shall develop a plan, schedule and budget for restoring the habitat for the California red-legged from (rana draytonii) and the San Francisco garter snake (Thamnophis sirtalis tetrataenia) in conformance with the Endangered Species Act, 16 U.S.C. 1531, et seq., and all other regulatory requirements; and

for transferring Sharp Park to, or developing a joint management agreement with the Golden Gate National Recreation Area, and the City of Pacifica and/or the County of San Mateo, in accordance with the deed granting Sharp Park to the City and County of San Francisco and San Francisco Administrative Code Section 23.41. The Department shall base such restoration plans on the best scientific information available, and shall include alternatives that (1) retain or redesign the golf course and (2) eliminate the golf course.
(b) No later than August 31, 2009, the Department shall provide to the Clerk of the Board of Supervisors a report detailing the steps taken, and the progress made, to achieve the goals set forth in subsection (a), above."

QUESTIONS

1. Question Relating to the Ordinance and Possible Alternative Use Plans For the Sharp Park Golf Course.

1.1. To the extent that the Ordinance, adopted by the San Francisco Board of Supervisors on May 5, 2009, would result in a "plan" to "eliminate the golf course" at Sharp Park, will the Tetra-Tech Environmental Impact Report that was publicly noticed by the Planning Department's April 22, 2009 Notice of Preparation afford the environmental impact review required by CEQA?

1.2. Will any "plan" to "eliminate the golf course" that the Recreation and Park Department comes up with be subject to an EIR under CEQA? If so, when will such environmental review occur?

1.3. To the extent that the Ordinance, adopted by the San Francisco Board of Supervisors on May 5, 2009, would result in a "plan" to "redesign... the golf course" at Sharp Park, will the Tetra-Tech Environmental Impact Report that was publicly noticed by the Planning Department's April 22, 2009

Notice of Preparation afford the environmental impact review required by CEQA?

1.4. Will any "plan" to "redesign... the golf course" that the Recreation and Park Department comes up with be subject to an EIR under CEQA? If so, when will this occur?

1.5. Which governmental entity or entities have permit-granting authority for any change of use at the Sharp Park Golf Course: City of San Francisco, City of Pacifica, County of San Mateo, California Coastal Zone Commission, Army Corps of Engineers, California Fish and Game, U.S. Department of the Interior, and/or other entities? For each governmental entity with permit-granting authority over the property, please state which permits are within which entity's authority.

2. Questions Relating to golf course irrigation and its effects on the ponds and associated wetlands.

2.1. To what extent are Laguna Salada and Horse Stable Pond, and their associated wetlands, created and/or recharged and/or enhanced by irrigation at the Sharp Park Golf Course?

2.2. Over the past five (5) years, what have been the amounts of irrigation water (measured in gallons) used each month by the Golf Course?

2.3. How much of the Golf Course irrigation water, measured in gallons, and measured month-by-month over the past five (5) years, enters the ponds and their associated wetlands?

2.4. What would be the effect on the habitat of the California Red-legged Frog at Laguna Salada, and/or Horse Stable Pond, and/or their associated wetlands, of complete cessation of irrigation at the Golf Course? Does the effect differ as between low-rainfall months and high-rainfall months, and

if so, what are the effects in the different months?

2.5. What would be the effect on the habitat of the California Red-legged Frog at Laguna Salada, and/or Horse Stable Pond, and/or their associated wetlands, of reduction of irrigation at the Golf Course? Would the effect differ as between low-rainfall months and high-rainfall months, and if so, what would be the effects in the different months?

2.6. What would be the effect on the habitat of the San Francisco Garter Snake at Laguna Salada, and/or Horse Stable Pond, and/or their associated wetlands, of complete cessation of irrigation at the Golf Course? Would the effect differ as between low-rainfall months and high-rainfall months, and if so, what would be the effects in the different months?

2.7. What would be the effect on the habitat of the San Francisco Garter Snake at Laguna Salada, and/or Horse Stable Pond, and/or their associated wetlands, of reduction of irrigation at the Golf Course? Would the effect differ as between low-rainfall months and high-rainfall months, and if so, what would be the effects in the different months?

2.8. What would be the effect of complete cessation of irrigation at the Golf Course on the salinity of the water in Laguna Salada, and/or Horse Stable Pond, and/or their associated wetlands?

2.9. What would be the effect of reduction of irrigation at the Golf Course on the salinity of the water in Laguna Salada, and/or Horse Stable Pond, and/or their associated wetlands? Would the effect differ as between low-rainfall months and high-rainfall months, and if so, what would be the effects in the different months?

3. Questions relating to the Seawall.

3.1. Does the groundwater generated by irrigation at the Golf Course have any effect on the hydrostatic pressures affecting the seawall? If so, what is that effect? And if so, what would be the effects on the strength and/or integrity of the seawall of (a) complete cessation of irrigation at the Golf Course, or alternately (b) reduction in the amount of irrigation at the golf course? Would these effects differ as between low-rainfall months and high-rainfall months, and if so, what would be the effects in the different months?

3.2. Is the habitat for the California Red-legged Frog in and around Laguna Salada and/or Horse Stable Pond and/or their related wetlands affected by the continued existence of the seawall? If so, how?

3.3. What is the current structural condition of the seawall? What is its useful life expectancy? At what point will it need to be repaired or replaced in order to protect the current freshwater habitat of the California Red-legged Frog in and around Laguna Salada and/or Horse Stable Pond and/or their related wetlands?

4. Questions Relating to Potential Flooding, Disease, and Other Effects Of Alternative Uses at the Golf Course.

4.1. Would the creation of new freshwater ponds in place of existing fairway areas at the Golf Course result in increased flood-endangerment to residents of the neighborhoods north and/or south of the Golf Course, in the event of storm surges that overtop the seawall, as has happened in the past?

4.2. Would replacement of golf fairways at Sharp Park west of Highway 1 by newly-created freshwater ponds and wetlands result in increased breeding areas for mosquitoes? If so, what measures would

be necessary to protect residential neighbors north and south of the Golf Course from West Nile Virus?

4.3. As of May, 2009, what aerial spraying for mosquito larva and adult mosquito control is permitted by law, and what aerial spraying for mosquito larva and adult mosquito control is actually performed at Sharp Park; describe generally the seasons and times of this spraying. Are other measures besides aerial spraying used for mosquito and mosquito larva control at Sharp Park, and if so, please describe them. What is the effect of such mosquito and mosquito larva control on the red-legged frog population at Laguna Salada and Horse Stable Pond? What is the effect of such mosquito and mosquito larva control on residential neighbors of the Sharp Park Golf Course?

4.4. Would closure of the Golf Course, and regrading of some or all of the fairways and greens to the west of Highway 1 to create new freshwater ponds and wetlands (as has been proposed by some advocates of "habitat restoration"), disturb the current habitat for the California Red-legged Frog and/or San Francisco Garter Snake at Laguna Salada, and/or Horse Shoe Pond, and/or their currently-existing associated wetlands? Would such work require "take permits" from California Fish & Game and/or the U.S. Fish & Wildlife Service? What are the prospects that these entities would grant any such "take permits" that may be required.

4.5. Without the groundwater generated by irrigation at the Golf Course, what would be the source of water for the proposed newly-created freshwater ponds and wetlands at Sharp Park west of Highway 1?

5. Question Relating to Recycled Water Project.

5.1. It is our understanding that San Francisco has near-term future plans to replace its current freshwater irrigation of the Golf Course with

recycled water to be purchased by the City from the City of Pacifica's Calera Creek Water Recycling Plant. In the event the Golf Course were to be closed or reduced in size pursuant Recreation and Park Department plans pursuant to the Ordinance, would the City of San Francisco follow-through on its plans to purchase the recycled water? Would San Francisco have anyplace else to use that amount of recycled water in the Pacifica area? Would recycled water from the Calera Creek Water Recycling Plant be used as the water source for expanded freshwater ponds and wetlands to enhance habitat for the Red-legged Frog and San Francisco Garter Snake under an alternate-use plan for Sharp Park developed by the City of San Francisco? If not recycled water, then what would be the water source for expanded freshwater ponds at Sharp Park, in the event the golf course irrigation were to be discontinued or reduced?

6. Comment and Question Relating to Effects On Cultural and Recreational Resources.

6.1. The Initial Study of Significant Natural Resource Areas Management Plan, at page 71, states the EIR will not discuss impacts on significant architectural resources. It is the position of the San Francisco Public Golf Alliance that Sharp Park Golf Course is a significant historic architectural resource because of its age (opened in 1932), and the fact that it is one of the very few municipal golf courses designed by the preeminent golf architect Alister Mackenzie, whose adopted home was the San Francisco Bay Area. This golf course gives public course golfers the opportunity to experience and appreciate landscape architectural genius at a reasonable price in a beautiful natural setting. The golf course is accessible as well, visually, to neighbors and strollers. Moreover, there are ways to increase the public access to the golf course, by boardwalks and/or viewing platforms, that would further increase public access to the site without interfering with either the golf or the protected

species habitat. The Mackenzie heritage of this classic golf course is a point that should be addressed in the EIR.

6.2. The Sharp Park Golf Course provides public recreation and healthful outdoor exercise to over 50,000 paying customers annually, youth sports opportunities to high school team golfers, and other public recreational benefits. What would be the effect of loss of this recreational facility on its current users? How far would current users have to drive to find comparably-priced, comparable-quality golf recreational opportunities? For what percentage of current Sharp Park Golf Course users would closure of the golf course mean the end of their ability to play golf?

Thank you for your attention to these matters.

Very truly yours,

Richard Harris
San Francisco Public Golf Alliance

cc: City of Pacifica Mayor Julie Lancell
California Department of Fish and Game
U.S. Fish and Wildlife Service
Sierra Club, Loma Prieta Chapter
Committee for Green Foothills
Dawn Kamalanathan, Rec & Park Department
Sharp Park Golf Club, Dave Diller, President
San Francisco Golf Task Force
Supervisor Sean Elsbernd
Supervisor Ross Mirkarimi

CALIFORNIA NATIVE PLANT SOCIETY
Yerba Buena Chapter
338 Ortega Street, San Francisco, California 94122

To San Francisco Planning Department: Planning Case No. 2005.1912E

I spoke at the Scoping Meeting at the San Francisco County Fair Building on May 12, but I don't speak well at public meetings and wasn't able to articulate my thoughts. I ask that these written comments supersede my verbal remarks.

The City's Natural Areas Program (NAP) is responsible for 31 natural areas, but many of those areas have been severely compromised by conflicting uses. The City has made political compromises in some areas, such as Bernal Heights, and do not enforce laws in any of the 31 areas. Nevertheless, the EIR should weigh the values of restoring the areas for maximum biodiversity enhancement, and the effects of this enhancement on citizens of the city, who have little chance to be exposed to our biological riches. This review should look at the whole issue of off-leash in our natural lands. Currently 90% of dog-play-areas are on natural lands, a shocking state of affairs. Regardless of the City's ability to enforce laws, all our natural areas—ie, the remnants of the original landscape--should be evaluated for their natural assets.

For prioritization purposes the NAP divided its lands into management areas: MA-1, -2, -3. All three categories have the potential to be restored to diverse richness. One Commissioner has proposed divorcing MA-3 areas from the NAP and charge another entity with their management. This makes no sense at all. These lands are interwoven with MA-1 and MA-2 areas in a jigsaw-puzzle pattern and separating MA-3s would create administrative confusion. There is nothing to argue in favor of doing this and everything to be said against it. Fragmenting the natural lands only adds to the burdens of this already overburdened, insufficiently funded, program.

Tree plantations, such as on Mt Davidson, Glen Canyon, Lake Merced, Pine Lake, Sharp Park, Dorothy Erskine Park,and Bayview Hill have proliferated well beyond their original plantings and have had severe negative impacts on the City's biodiversity and biological health. Plan proposals for thinning are politically-motivated and absurdly low and should be reconsidered. The term "weed" as used by those engaged in ecological restoration, does not distinguish between plant life form: It can apply to a tiny annual plant as well as to trees and anything in between. Certain trees—in this case primarily the Tasmanian blue gum, *Eucalyptus globulus*—have aggressively spread beyond the original plantings and have had devastating impacts on our natural heritage. Those impacts should be analyzed, and the analysis should include the possibility of removing all of the weed trees.

There are a surfeit of trails, some of which should be closed. New trails should not be built where native plants exist, for the reason that soil disturbance is very

damaging. When soil is disturbed weeds move in to pre-empt the space, and it becomes forever after a weed patch.

Sharp Park golf course should be analyzed to ensure that the plans are scientifically-based and that they ultimately select the alternative that will ensure that the San Francisco garter snake and California red-legged frog recover. The golf alternatives should include analysis of the environmental impacts of no golf, golf, and a modified golf course.

Jake Sigg, Chair
Conservation Committee
415-731-3028

N.B. Your Public Notice states that "The SNRAMP ***proscribes*** both general management activities that apply to all Natural Areas and management activities specific to each Natural Area."

I have interpreted this as a typo for *prescribes*, and my remarks are based on that.

San Francisco Planning Department
EIR Public Scoping Meeting Written Comment Form
Natural Areas Management Plan
Case # 2005.1912E

If you wish to submit written comments on the above project, you may do so on this sheet (although use of this form is not required). Please submit written comments at today's public scoping meeting, or by mail to Bill Wycko, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103. **All comments must be submitted no later than 5 P.M., May 26, 2009.**

Write your comments regarding the environmental review for the project here. Use the back of the sheet or additional pages if necessary.

What are ENV. IMPACTS OF:
- Leaving 95% of INVASIVE trees in Natural areas?
- ~~[illegible]~~ 90% of off-Leash dog areas in Natural areas?
- Cutting new trails through Sensitive Natural areas?

Management Plan has already been heavily COMPROMISED

What are ENV. IMPACTS OF a NO Management Plan alternative?

Name: Greg Gaar

Organization (if any): Nature in the City

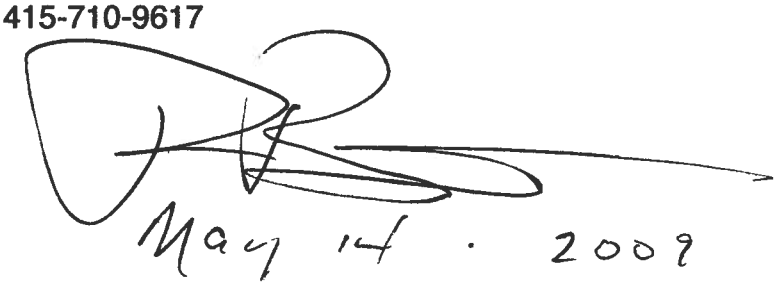
Address: 440 Hazelwood SF 94127

E-mail Address: dunetansy@yahoo.com

Re: Natural Areas SFRPD - Planning for Restoration Comments for Meeting Thurs May 14, 2209

My comments will focus with reference to my experience in Oak Woodlands - GG Park Natural Area.
I suggest that EIR of NAP management Plan take seriously the boots on the ground experience of local habitat restoration volunteers.
The removal of trees and dog issue seem to be big deals in the agenda.
My view is that Oak Woodlands are about 3 % of GG P and represent a fraction of what remains of original coast scrub/Oak Woodland habitat that predates the Park.
Our experience with tree canopy (blue gum eucs' and monterey pine/cypress and) and varieties of invasive tree species indicates that Natural Areas mandate to protect these remnant habitats trumps the often misguided attempts to " protect " trees.
In fact , in the Oak Woodlands, as far as I know , very few if any of the large canopy trees have been cut (altho they are very problematic in some place and should be thinned) , BUT a lot of the invasive ' monocultural ' shrubs and trees have been cut to enable healthy growth of original natural habitat and in fact we plant native shrubs and trees to restore aesthetic and habitat balance.
We also have cut the invasive monoculture to reduce the danger of fire (we have had fires in the OW caused by vagrant campers) and also to clear overgrown areas that provide cover for illegal camping and trash accumulation. The overlapping GG P jurisdiction (RPD - GG P management is not always on board due bureaucratic squabbling) has had a mixed record in coping with this issue.
This indicates to me that Natural Areas must have the clear authority to regulate the core of the natural area AND adjacent ' supporting ' zones, i.e. MA-1 , MA-2 , MA-3.
Therefore, I think that this ' tri - level ' natural area designation could be a recipe for undermining the mandate of Natural Areas to regulate, restore and steward these places based on science, factual evidence and, really, common sense.
In regard to dogs - as of now everyone is free to use such restored places as Oak Woodlands Coon Hollow - but if it becomes obvious that dogs digging, pooping and peeing in this place force out everybody else then Natural Areas and the majority community must have the right to require limits to dog play.
It doesn't rain for 5 months and eventually (even if dog doo is picked up) the place begins to smell like a dog toilet.
Overall, the Natural Areas mandate to restore and steward the tiny remnants of our ' original' natural habitats in this regional urban environment require some sacrifice on the part of narrow interests that don't put natural habitat front and center.
I think it is quite obvious that we continue to lose planetary biodiversity and our hands are not clean on this score - we must do better.

ROB BAKEWELL
Volunteer Steward for SFRPD Natural Areas Program
Oak Woodlands - GG Park
415-710-9617



Concerns for Sharp Park Golf Course. May 14, 2009

To whom it may concern,

I'd like to address what I feel should be the alternatives for your scoping efforts.

I think the no project alternative should be followed by two or three alternatives with various degrees of mitigation, ESHA restoration and educational panels along existing trails retaining all 18 holes of the Sharp Park golf course in some form or fashion.

There are currently plenty of access trails that can support educational displays leading up to and including Mori Point that make moot the need to reclaim large area's of the golf course to facilitate this worthy need.

The alternatives should have and include restoration/repair elements to safe guard against egg sacks being laid in temporary wetlands that are known to dry before tadpoles can develop into adults. The seasonal ponds should be mitigated to alleviate this unfortunate natural behavior if deemed necessary.

I think the golf course can be mitigated, retaining all 18 holes in some form and that restoration(s), as yet to be identified and agreed to by agencies such as the US Fish and Wildlife Service and the California Coastal Commission will insure the existing ESHA(s) will be best able to support listed species.

In closing I see no need to have an alternative with less than 18 holes, that has trustee agency approved mitigations and some sort of educational element such as properly placed panels along existing trails. Thank you for your attention to this matter.

Yours,

Todd M. Bray

Todd M. Bray
468 Donaldson
Pacifica CA 94044
650 355 6788

San Francisco Planning Department
EIR Public Scoping Meeting Written Comment Form
Natural Areas Management Plan
Case # 2005.1912E

If you wish to submit written comments on the above project, you may do so on this sheet (although use of this form is not required). Please submit written comments at today's public scoping meeting, or by mail to Bill Wycko, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103. **All comments must be submitted no later than 5 P.M., May 26, 2009.**

Write your comments regarding the environmental review for the project here. Use the back of the sheet or additional pages if necessary.

Please take into account
biking trail in the archery range
and other hilly areas. Single
track and bike impacts in that
area. We need more public
and legal bike trails.
Also - the land is in Pacifica - not SF
give it back to GGNRA

Name: [illegible]

Organization (if any): Pacifica Freeride

Address:

E-mail Address: hi-word@hotmail.com

San Francisco Planning Department
EIR Public Scoping Meeting Written Comment Form
Natural Areas Management Plan
Case # 2005.1912E

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The Endangered Species Act identifies 'critical habitat' of 'threatened or endangered species' as the focus of requiring compliance to conservation efforts. The Dept of the Interior, Fish & Wildlife Service lists the criteria for determining what is 'critical habitat' and what is excluded. From this set of criteria the DOI identifies 2 units of critical habitat zones w/in San Mateo Co: approx 37,000 acres in the Cahill Ridge area south of Pacifica & another similar sized acreage in Pescadero. None of these units include SP. In fact, characteristics of Sharp Park, such as its relatively small size with respect to acreage, its location w/in a developed urban area, qualifying it to be excluded from being a 'critical habitat'.

→ flip

Name: Juanita Mercado

Organization (if any): SPGC

Address: _____

E-mail Address: juanitamercado@earthlink.net

In his opening statements in the Apr 30 meeting, Supervisor Mirkarimi stated that the driver for introducing the ordinance to restore Sharp Park is to protect SF from the liability it incurs by not protecting the threatened or endangered species. Given that Sharp Park is not listed as a critical habitat for the threatened or endangered species, what would be the basis of a liability concern with respect to compliance to ESA conservation requirements?

San Francisco Planning Department
EIR Public Scoping Meeting Written Comment Form
Natural Areas Management Plan
Case # 2005.1912E

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Write your comments regarding the environmental review for the project here. Use the back of the sheet or additional pages if necessary.

- PLEASE CONSIDER TRAIL MASTER PLAN SUBMITTED BY SF URBAN RIDERS WHEN PLANNING TRAIL CLOSURES AND THE BUILDING OF NEW TRAILS.
- PLEASE MAKE NEW TRAILS OPEN TO BIKES
- PLEASE CONSIDER MOTOR CYCLES SEPARATE FROM BICYCLES
- CONSIDER A BICYCLE SPECIFIC PARK IN THE ARCHERY RANGE AND SHOOTING RANGE AREA OF SHARP PARK.

Name: MITCH MONROE

Organization (if any): SF URBAN RIDERS

Address: 565 TALBOT AVE 94044

E-mail Address: MITCH@SFDIRTCAB.COM

COMMENTS UPON THE SCOPE OF THE EIR FOR SFRPD'S NAP
(as submitted by Dr. Suzanne Valente, a resident of Pacifica; May 14, 2009)

The NAP proposal for Sharp Park as well as the other park locations intends to make major changes in the ecosystems with no apparent benefit to wildlife, and perhaps detriment to important wildlife. Additionally, the NAP parks proposals ignore the serious public safety issues that should be addressed, especially at Sharp Park. An EIR, if it intends to conform with the Precautionary Principle (adopted in 2003 by the City of San Francisco) *must* cover the public safety issues for humans at every park in detail, as well as provide substantial verifiable scientific evidence to justify the proposed ecosystem changes.

Closure of part or the entire golf course to create a "Natural Areas wetland restoration" to benefit the red-legged frog and San Francisco garter snake is the latest proposal under consideration by SFRPD. This is pointless. **US Fish and Wildlife did NOT designate Sharp Park as critical habitat for the red-legged frog or SF Garter snake; therefore by the USFWS' own definition, whatever happens to either species in this area will have no impact upon the ultimate survival or failure of either species. There is NO legal imperative for expansion of the habitat to benefit these two species.** Environmental attorneys explain that there is "critical habitat" and everything else, so Sharp Park has the same requirements as a "habitat" as your home's driveway does. The NAP report acknowledges that the quality of habitat at Laguna Salada, Horse Stable Pond and the adjacent wetlands remains excellent--make the minor alterations biologists recommend and leave the rest of Sharp Park alone.

This plan for Sharp Park is the worst of any in the SF Parks System. It is clearly in violation of the Mission Statement for SFRPD which follows:

"*The San Francisco Recreation and Park Department's Mission is to provide enriching recreational activities, maintain beautiful parks and preserve the environment for the well-being of our diverse community.*"

Further, the plan for Sharp Park intentionally disregards the performance standards established in the SFRPD's own Operational Plan. The Operational Plan states *"the Department shall consider, among other matters, the following issues: Public safety, which shall include the reduction of environmental and other hazards, safe equipment operations and safe pesticide use"*. Public safety should always be a first priority, and this proposal ignores public safety in three circumstances.

1) VECTOR-BORNE DISEASES

Experts say "Biohazards are the greatest threat to humankind", and among them are the diseases mosquitoes carry and pass on to the victims of their bite. The mosquito has caused more human suffering than any other organism known to mankind. One million people die from mosquito-borne diseases every year, and about half of the world's population is at risk. World history is replete with reports of the life threatening diseases transmitted by mosquitoes including West Nile Virus, Eastern Equine Encephalitis, Malaria and Dengue.

The Centers for Disease Control (CDC) cites West Nile virus as the biggest mosquito-borne threat facing Americans, just a few years after being detected in the United States. The Centers for Disease Control reports West Nile virus is spread by infected mosquitoes, and can cause serious, life-altering and even fatal disease. In 2008, CDC records show California reported a total of 445 serious West Nile cases, 15 of which resulted in deaths. California reports fully a third of all West Nile virus cases and deaths reported in the entirety of the United States. On August 15, 2005, San Francisco health officials confirmed the City's first human case of West Nile virus.

The threat of mosquito breeding in the wetlands at Sharp Park which support the red-legged frog and San Francisco garter snake is currently severe enough to warrant treatment by helicopters with larvicide, as well as

spraying with pesticides on the ground every three weeks during the mosquito "season". California Health and Safety Code mandates San Francisco pay for this mosquito control. On January 7 of this year, a court ruling effectively bans the San Mateo County Mosquito Abatement District and 45 other mosquito abatement districts in the state of California from spraying pesticides to kill adult mosquitoes. Therefore, if any mosquito larvae survive the larvicide treatment (which they have in past years with no exception) SMCMAD is helpless to protect the public from any diseases they may carry, including West Nile virus. **There is no dispute expanding the wetlands will create a situation where mosquito breeding is clearly impossible to reliably control.** Changing pesticide regulations as well as the genetic evolution of pesticide-resistant species of mosquitoes are but two reasons that this is the case.

In fact, San Francisco Recreation and Park Department acknowledges the mosquito problem in their "***System Wide Management Actions and Practices***" document pertaining to significant natural areas. Section 5, page 22 of that document states:

"*First detected in the United States in 1999, West Nile virus (WNV) is a mosquito-borne disease that is common in Africa, west Asia and the Middle East. In 2004, there were a total of 829 WNV human infections, from 23 counties in California. West Nile virus activity has been detected in all counties, but there have been no cases reported from San Francisco (DHS 2005). Although it can be fatal to birds (and even humans), most of the people infected with WNV do not exhibit any symptoms. The San Francisco Health Department currently participates in the statewide IPM program targeting WNV. In Natural Areas, two types of BMPs [Best Management Practices] are recommended:*

1. Staff should be provided education regarding the most effective way to avoid contracting WNV, which is to not get bitten by mosquitoes. Clothing such as long pants, long-sleeved shirts, and application of a mosquito repellent may all be helpful in this regard. Volunteers and site stewards working with the program should also be informed.

2. Some Natural Areas contain small water features such as abandoned tires and other refuse that holds water. These features could provide breeding habitat for mosquitoes. At times it may be feasible to remove the water from these areas or to treat the features with BT (Bacillus thuringiensis israeliensis), a safe and ready to use biocontrol treatment for mosquitoes. In other cases, removal of water cannot occur without damaging a sensitive resource."

The NAP plans for Sharp Park include cutting down 15,000 mature eucalyptus trees on the east side of Highway One in Sharp Park. Additionally, destruction of eucalyptus saplings and seedlings (these are by common definition trees) in areas designated by NAP shall be in total. NAP officials do not believe they need to be accountable to the public for the number of seedlings or saplings they remove.

These trees are targeted merely because they are defined by NAP as non-native, yet they provide habitat for 20 species of special status birds. The eucalyptus are to be cut down to create more scrub habitat. Scrub habitat exists on the hillsides all around Sharp Park! It is in abundance on Milagra and Sweeney Ridges, where it is protected and enhanced by the GGNRA (National Park Service). Why would you jeopardize the only habitat in the area for these special status birds? Also, the pattern and velocity of the winds in this area will be altered by the destruction of 15,000 mature trees as well as all others. This may well negatively affect the conditions in the remaining tree stands for those same birds should they attempt to relocate due to their displacement due to NAP. Additionally, the City of Pacifica has the ability to block this ideologically driven destruction of the ecosystem by virtue of the City of Pacifica's anti-logging ordinance and the citizens of Pacifica intend to demand their City officials hold the SFRPD to the terms of this ordinance.

CITY OF PACIFICA TREE ORDINANCES AND PERMITS

Logging Operations in Pacifica
Logging operations within the City of Pacifica are defined as any removal, destruction or harvesting of 20 or more trees within one year from any parcel or contiguous parcel in the same ownership. In reference to logging regulations, a tree is defined as any tree six inches in diameter as measured 12 inches from the ground. City of Pacifica Ordinance No. 636-C.S. prohibits logging operation unless one of the following conditions is met:

* (a)Said operations are in conjunction with a city permit(s) requiring planning commission and/or city council approval, at which time said operations shall be evaluated and approved or denied at a duly noticed public hearing by the commission and /or council, concurrently with the other permit(s).
* (b) Said operations are necessary immediately for the safety of life or property, as determined by the director of public works or his/her designee.
* (c) Said operations occur on city-owned property and are necessary immediately to maintain public health and safety.

Refer to Ordinance No. 673-c.s. for more information concerning logging operations within the City of Pacifica.

The NAP proposal for the east side of Highway One is not without its biological hazards to humans, wildlife and our pets. Excerpts from San Francisco's "Natural Areas Program" (NAP) state:
"Issue: Important elements within natural habitats for the survival of small mammals as well as reptiles and amphibians include underbrush, fallen logs…debris such as lumber, brush piles…piles of abandoned lumber may be aesthetically unpleasing but provide important refuge habitat for many species…
Recommendation: The natural or biodegradable (branches trees and logs) elements shall be preserved during vegetation management activities or replaced with brush piles."

The Western Treehole Mosquito is the primary vector of Dog and Cat Heartworm in California. The Western Treehole Mosquito is so named because its immature stages frequently develop in rot holes of tree stumps such as oaks, laurels, eucalyptus, sycamores, etc. Unfortunately, because NAP cuts down 15,000 mature eucalyptus trees and fails to remove their stumps, they have created an ideal breeding ground for the Treehole Mosquito, as well as additional breeding grounds for the aforementioned mosquitoes which carry West Nile virus.

Many dogs and cats show the first visible indications of heartworm infection only after the disease has progressed to the point where treatment is no longer feasible and death becomes imminent.

Unfortunately, there's more. Locally, urban residents are noting for the first time ticks which can transmit Lyme and other diseases upon their own person, even if they have not been outside of their immediate neighborhood. They have also noted a dramatic increase in the number of the same ticks found on their dogs and cats as compared to previous years.

"The District was contacted from residents of Belmont (near Water Dog Lake) and Pacifica with concerns about ticks in their neighborhoods. In Pacifica, questing ticks can be found in the open spaces between homes. In Belmont, western black-legged ticks were found inside a home adjoining the open space around Water Dog Lake, presumably brought in by the family cat. These instances illustrate the need to watch out for ticks even if one does not engage in outdoor activities at this time of year."
(Excerpted from SMCMAD Entomology Report, January, 2007)

A study conducted at the Institute of Ecosystem Studies in New York and published in 2006, concludes that the risk of Lyme disease is correlated positively with the prevalence of small mammal hosts and the abundance of

their food supply, not the number of deer or fluctuations in climate. The small mammal hosts carry the ticks into residential neighborhoods when they search for food and/or shelter.

CDC recommends the use of landscaping techniques to create a tick-safe zone around homes, parks, and recreational areas:

- Removal leaf litter, brushpiles and woodpiles.
- Clear tall grasses and brush.
- Place wood chips or gravel between lawns and wooded areas to restrict migration to recreational areas.

The environmental features the CDC instructs you to remove to protect you, your family and your community from ticks are precisely the environmental features these Park managers are proposing to enhance habitat for small mammals and to satisfy their obsession with the removal of non-native plants and trees.

The CDC reports that Lyme disease is the most common vectorborne disease in the United States. Since Lyme disease became nationally notifiable in 1991, the annual number of reported cases has more than doubled.

2) EROSION

The safety concern posed by erosion on the portion of Sharp Park east of Highway One is acknowledged in the NAP proposal as being serious, but is specifically designated as a problem that will be addressed as a last priority "when capital funds are made available". This is absolutely unacceptable. The erosion problems should be addressed immediately, before funds are spent on habitat creation. Further, the removal of 15,000 mature eucalyptus trees as outlined in this proposal could certainly make the erosion problem worse.

3) TOXIC LEAD IN THE SOIL

The serious safety concern posed by toxic lead in the soil (way in excess of environmental screening levels) east of Highway One has been ignored for many years, and is briefly mentioned in this report. No time table has been set for cleanup and the promise to complete cleanup has been made and broken many times before. Prior communications with the Health Department of San Mateo County have cited the cost of the cleanup as being an impediment to its undertaking.

The impact of the lead upon the wildlife in that area is another concern. The perimeter fencing around the toxic lead area is not an impediment to the entry of many small forms of wildlife which are subsequently harmed by the toxic effects of the lead.
The possibility of the lead leaching into the groundwater, the stream in the canyon and flowing to Laguna Salada wetlands across the freeway would result in the contamination of the very sites this plan spends huge amounts of money to restore. Erosion and lead contamination present clear and present dangers to the human and wildlife population living adjacent to and frequenting that area. The failure to implement NAP at Sharp Park would minimize the risk of vector-borne diseases, and the money intended for NAP would be best utilized to address the public safety issues; the erosion and the toxic lead soil and water contamination.

This EIR should not ignore the opinions of experts who do not agree with the implementation of NAP as it is currently proposed. Take for example, the following letter from an ecologist and Professor from UC Davis, Arthur M. Shapiro:

UNIVERSITY OF CALIFORNIA, DAVIS

Division of Biological Sciences
Section of Evolution and Ecology
Fax (530) 752-1449

7 May 2002

The Hon. Gavin Newsom
Chairman, Neighborhood Services Committee
San Francisco County Broad of Supervisors
City Hall, 1 Carlton B. Goodlett Place
San Francisco, CA 94102

Dear Supervisor Newsom:

Re: Natural Areas Program (Rec. & Parks)

Because of both personal friendship and professional contacts in The City, I have been following the controversy over native plants and natural areas management and the removal of exotic tree species from public lands in San Francisco. I am a professional ecologist and have been teaching at U.C. Davis for over 30 years. During that time I have trained many professional environmental scientists and consultants. My former students are scattered over a variety of government agencies at several levels, firms in the private sector, and colleges and universities form Massachusetts to Texas to Florida, as well as California. I began teaching a course on the community concept in ecology at UCD in 1972, which has always contained a section on introduced, exotic and naturalized species in community context, with examples drawn form California - long before it became fashionable. I was on the phthises committee of James Carlton, the foremost US authority on weedy marine invertebrates. I have led California Native Plant Society and Sierra Club field trips in the Sierra Nevada and Central Valley for many years and do frequent presentation on butterfly gardening. I am telling you all this to try to establish credibility, because what I am about to say will be controversial - to say the least.

There is a widespread perception that the Natural Areas Program is spinning out of control: that it has overreached far beyond its goal of preserving the remnants of natural vegetation still extant in SF parklands and is now engaged in a compaign of restoration ecology in which overwhelmingly human-modified or - created landscapes are being removed to allow for the recreation of natural ones, or - more accurately - a simulacrum thereof.

The management of public open space necessarily involves a variety of tradeoffs. In a spatially highly constrained area like San Francisco, public open space is precious, and many members of the public are very strongly committed to its well - being. My emeritus colleague Seymour Gold at Davis, as well as other researchers, long ago demonstrate that urban open-spaces users have distinct psychological needs and preferences in landscapes - and that mature trees in specific spatial configurations tend to dominate those preferences. The anthropogenic landscapes we associate with SF parklands are in fact very close to the ideal. It is not surprising that they are so loved by their users.

As a teacher of conservation biology, I know it is important. I also know that it can be carried to extremes. In an urban setting - and San Francisco is such a setting! - it has its place, but it cannot be the dominant value in open-space management. It has to be integrated into a broader context that will be not only politically palatable but in fact pleasing to the public. With a graduate student, I have recently conducted and published a study showing that regulatory styles perceived as arbitrary and authoritarian can and have pushed groups of people normally friendly to environmentalism and conservation - in our study, butterfly collectors - into anti-government positions within the so-called "Wise Use" movement. I see the same process at work in San

Francisco, where a highly educated, sophisticated, politically liberal urban population is being needlessly turned against what it perceives as "environmentalism" run amok. Sierra Club members and butterfly gardeners are beginning to talk like the ranchers I interact with in Siskiyou and Lassen Counties.

The Natural Areas Program has its place, and it needs to be kept in that place. It cannot be allowed to trump the clear preferences of the vast majority of parkland users in San Francisco. The hatred of "exotic" trees, some of which are California natives anyway, is not only ideological but sometimes verges on the pathological, and has strong overtones of xenophobia and racism (look at the anti-"exotic" rhetoric yourself!). Senile, decadent, hazardous trees are numerous and pose a public-safety and fire problem that needs to be addressed. Healthy trees in pleasing, integrated landscapes are another story. "Native" nature can be preserved and augmented without damaging the peace of mind of San Franciscans. And should be.

Sincerely,

Arthur M. Shapiro
Professor of Evolution, Ecology and Entomology
Center for Population Biology, UC Davis

Further, the deed transferring Sharp Park to San Francisco will be voided should any part of the golf course be destroyed to create wetlands habitat. The documents that transferred the land to San Francisco control state: "This grant is made upon and subject to and in consideration of the express condition that the premises hereinabove described and hereby conveyed shall be used by said City and County of San Francisco only for a public park, or public playground, to be known as the 'Sharp Park', without right to sell or dispose of the same or any part thereof for private use, or any use other than as a public park, or public playground".

Some may claim that converting Sharp Park into wildlife habitat fulfills the "public park" requirement. But the rule of law demands that the interpretation of the words in a contract be guided by the intent of the parties to the contract at the time the contract was signed. It is pretty clear what a public playground was, but what did they mean by a "public park" in 1917 when the deed was transferred? Consider the 11th Edition of the Encyclopaedia Brittanica (published 1911) in which the term PARK is defined as follows:

> **PARK** (Fr. *part;* Ital. parco; Sp. *parque;* O.Eng. *pearroc;* connected with Ger. *pferch,* fold, and *pfarrei,* district, translating med. Lat. *parochia,* parish), a word ordinarily used in two senses: (a) an enclosed tract of ground, consisting of grass-land, planted with trees and shrubs, and surrounding a large country house; ' (*b*) a similar space in or near a town, laid out ornamentally, and used by the public as an "open space" for health or recreation.

It is clear that the parties to this contract would have approved of a golf course, but NOT a wetlands habitat for the express purpose of supporting frogs and snakes.

If you go to the City of San Francisco Real Estate Department and review the correspondence leading up to the transfer of the property, it is clear that the imposition of this "public park" restriction was not a whim. On the contrary, it was an adamant demand without which the property owner refused to transfer the property.

It is clear that any Court reviewing these documents would find the proposed property change to be in violation of the transfer documents and therefore Sharp Park would revert to the State of California (as specified in the deed), who would be bound by the same restrictions. Should the State fail to meet these restrictions, the property would revert to the heirs or legal representatives of the original grantor, Samuel G. Murphey. This issue should be addressed seriously as a part of this EIR as legal challenges to any decision to remove all or a portion of the golf course will be promulgated and likely be successful.

350 O'Shaughnessy Boulevard • San Francisco, California 94127
Telephone: (415) 281-0892

Miraloma Park Improvement Club

May 16, 2009

Bill Wycko
Environmental Review Officer
San Francisco Planning Department
Natural Area Management Plan
1650 Mission St
San Francisco, CA 94103

Re: Initial Study, Significant Natural Resource Areas Plan: Mount Davidson Park

Dear Mr. Wycko,

While the Miraloma Park Improvement Club supports the creation of a natural area plan (NAP) for Mt. Davidson to help preserve the natural area on the east side of the park, we are concerned about the environmental impact of the planned tree removal and trail closure in the historic forest area. We therefore support the finding of the initial study that the proposed project may have a significant potential negative impact on Mt. Davidson Park, which is an important example of a major period of California history, and may have environmental effects that would cause substantial adverse effects on human beings. We ask that a full environmental impact report be completed and that it address the following potential impacts:

1. Clearing of the trees to the great extent proposed in the NAP would significantly reduce the quality of human experience of this unique forest and viewpoint atop San Francisco's highest hill by: (1) eliminating a buffer from substantial noise pollution from the 280 freeway, BART, and Portola Drive; (2) altering the wind and fog pattern in the park and adjoining neighborhoods, because the trees provide protection from the prevailing westerly wind and fog; (3) promoting the growth of poison oak along trails, which fills in the areas where the trees are cut down and makes the trails unsafe for public use; and (4) promoting erosion and landslides onto trails and adjoining homes, environmental damage that is prevented by the existing trees.

2. The substantial cost of removing and replacing the trees would divert limited Recreation and Parks Department resources for providing basic maintenance of Mt. Davidson Park, including litter and graffiti removal, trail maintenance, and signage. Diversion of these funds would degrade the public's experience of the park.

3. Removal of as many trees as proposed in the NAP would significantly impair the current habitat for birds and animals provided by the forest.

Additionally, we believe that the NAP should also be assessed for the appropriateness of its proposals with respect to the status of both the Park and the Mt. Davidson Cross as important historical entities. The park and monument are important examples of a major period of CA history, as the historic trees were planted on Mt. Davidson over a century ago by Mayor Adolph Sutro to celebrate the nation's first Arbor Day. Naturalist poet, Joaquin Miller, inspired the planting of the trees. The forested hill was named for George Davidson at the request of the Sierra Club. The park's creation was a three-year community effort in 1929 in order to protect the trees as a scenic resource for enjoyment by the public. If not for this historic effort to protect the trees from destruction to make way for housing, there would not be a natural area left undeveloped on the east side of Mt. Davidson. Therefore, the NAP should record and document the existing resources in preparation for listing on the California Register of Historical Resources. Furthermore, any historical trails created and enhanced as Works Progress Administration projects during the Great Depression proposed for closure by the NAP should be maintained and should remain open to the public.

Mitigation measures for any approved NAP tree removal and trail closure should include documentation of all trees removed or fallen from storm in the park; advanced public notice of any further tree removal; removal of any downed trees to maintain the aesthetic quality of the forest and park; quarterly removal of all poison oak within 10 feet of trails; and maintenance and protection of WPA trails and retaining walls. Any activity for implementation of the NAP should not restrict public use of the park or access to the historic area or viewpoints for more than 30 days at a time.

Thank you for your attention to this matter.

Dan Liberthson, Corresponding Secretary

c: Supervisor Elsbernd

San Francisco Planning Department
EIR Public Scoping Meeting Written Comment Form
Natural Areas Management Plan
Case # 2005.1912E

If you wish to submit written comments on the above project, you may do so on this sheet (although use of this form is not required). Please submit written comments at today's public scoping meeting, or by mail to Bill Wycko, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103. **All comments must be submitted no later than 5 P.M., May 26, 2009.**

Write your comments regarding the environmental review for the project here. Use the back of the sheet or additional pages if necessary.

I AM A GOLFER AND A ENVIRONMENTALIST (A SIERRA CLUB + WILDERNESS SOCIETY MEMBER). IF I THOUGHT THE GOLF COURSE WAS HARMING THE FROGS AND SNAKES I WOULD BE AT THE FOREFRONT of opposition TO THE GOLF COURSE. BUT I KNOW DIFFERENTLY.

SINCE IT WAS MADE KNOWN THAT pumping-overflowing WATER off THE GOLF COURSE WAS DETRIMENTAL TO THE FROGS AND THAT PRACTICE AS WELL AS PESTICIDE USE ENDED A FEW YEARS BACK, I'M SURE THE FROG NUMBERS HAVE INCREASED. IF THEY HAVEN'T I'M SURE ITS NOT BECAUSE of THE GOLF COURSE. THE GOLF COURSE IS NOT HARMING THE FROGS. THIS IS A RED HERRING ARGUMENT

MANY GOLF COURSES GO THROUGH ENVIRONMENT SENSITIVE AREAS. BODEGA BAY, TEALBEND (SACRAMENTO) MONARCH BAY (SAN LEANDRO) AND STONEBRAE (HAYWARD) (WHICH JUST OPENED IN PRIME RED LEGGED FROG HABITAT, ARE JUST A FEW of MANY SUCH COURSES THAT COME TO MIND.

I HEARD THE ARGUMENT ABOUT USING THE GOLF COURSE AREA BY THE LAGOON FOR CHILDREN'S ENVIRONMENT EDUCATION AND OPEN SPACE, BUT THIS LAGOON EXTENDS BEYOND THE SOUTHERN BOUNDARY of THE GOLF COURSE THAT IS EASILY ACCESSABLE TO THE PUBLIC FOR THIS CAUSE, BUT I HARDLY EVER SEEN IT USED FOR THESE ACTIVITIES.

THERE IS PLENTY of OPEN SPACE AREA SURROUNDING THE GOLF COURSE AND MOREY'S POINT FOR HIKING, BIKING, NATURE STUDY ETC IT'S NOT LIKE THE GOLF COURSE IS IN THE MIDDLE of DOWNTOWN SAN FRANCISCO.

(OVER)

Name: GEORGE AMBROSIO

Organization (if any): SAN FRANCISCO JUNIOR GOLF (32 YEAR RECREATION + PARK EMPLOYEE RETIRED)

Address: 2491 WHITMAN WAY, SAN BRUNO 94066

E-mail Address: _____

THERE IS NO REASON TO ALTER OR DESTROY THIS GREAT RECREATION FACILITY, THE PLANNING COMMISSION SHOULD LOOK INTO THINNING THE REEDS CHOKING THE LAGOON WHICH WILL GIVE MORE ROOM FOR THE WATER IN THE LAGOON. THIS WOULD PREVENT OVERFLOW ON THE GOLF COURSE WHICH WILL HELP THE FROG AND THE GOLF COURSE, MAKING IT MORE PLAYABLE DURING THE WET SEASON AND ATTRACTING MORE GOLFERS AND IMPROVING REVENUE.

SHARP PARK GC IS A WORK OF ART CREATED BY ONE OF MOST FAMOUS GOLF COURSE ARCHITECTS. MR. ALISTER MACKENZIE, ONE OF ONLY FOUR GOLF ARCHITECTS ENSHRINED IN THE GOLF HALL OF FAME.

SHARP PARK IS AND SHOULD BE ONE OF SAN FRANCISCO'S GREAT ASSETS.

IT WOULD BE TRAGIC AND CRIMINAL TO ALTER OR DESTROY ONE OF SAN FRANCISCO'S FINEST ATHLETIC RECREATIONAL VENUES UNNECESSARITY.

RECEIVED
MAY 1 9 2009
CITY & COUNTY OF S.F.
PLANNING DEPARTMENT
MEA

San Francisco Planning Department
EIR Public Scoping Meeting Written Comment Form
Natural Areas Management Plan
Case # 2005.1912E

If you wish to submit written comments on the above project, you may do so on this sheet (although use of this form is not required). Please submit written comments at today's public scoping meeting, or by mail to Bill Wycko, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103. **All comments must be submitted no later than 5 P.M., May 26, 2009.**

Write your comments regarding the environmental review for the project here. Use the back of the sheet or additional pages if necessary.

It is my understanding that prior to the seawall being built Laguna Salada Pond & Horse Stable Pond were flooded with saltwater an unfriendly habitat for both the frog & the snake. Then came the mother of all floods, the corp of engineers (army) and the sea wall with no drainage allowed for both creeks at the north end & south end of L.S. hence today's problem. Formerly both creeks emptied directly to the ocean now the water collects and creates the flooding & habitat for frogs & snakes.

The city has no $ to fix this problem. Since the Army Corps of E created the problem they should be made to rectify the situation. Since the creeks are the problem the north creek should be made to empty into the ocean. The south creek (Sanchez crk) should be redirected to the N end of Mori Point and used to help grow frogs & snakes (Diversity Group has a half a dozen ponds on site and I'm sure would welcome the freshwater.

Name: FRANKIE E FRANCK

Organization (if any): Preserve Sharp Park 18 Hole Golf Course

Address: 1064 PK Pacifica Ave, Pacifica CA 94044

E-mail Address: ffranck@earthlink.net

Thank You

GNRAMP – NOP

Dayton Crites
<dayton@sfurbanriders .org>
Sent by:
daytoncrites@gmail.com

05/20/2009 02:31 PM

To Jessica.Range@sfgov.org
cc
bcc
Subject Consider off-road bicycle use in SF's open space EIR.

Ms. Jessica Range,

I am writing you to address the EIR that will analyze various needs and uses of San Francisco natural areas. I feel that too often, the needs of recreational trail users are overlooked, especially those of mountain bike users.

I urge the government of San Francisco to consider the development of multi-use trails, and bicycle skills parks to be considered as sustainable uses of our open spaces and parks. I work closely with SF Urban Riders, a non-profit committed to working with the city to provide these resources to her citizens.

Off road cycling is a fast growing sport that already enjoys a diverse and large following in the bay area. Besides its healthy benefits to the community and users, Mountain bikers are a largely untapped resource of volunteer labor and stewardship for our public lands, as has been demonstrated in the successful partnership between sfurbanriders and mt. sutro stewards in creating San Francisco's first true multi-use trail system.

Lastly, Mountain Biking has been shown to be of equal or less detriment to trail systems than hiking, and less damaging than equestrian use. Resources that back this claim can be found here.

Please let me know you have any questions, and thank you for your time.

Sincerely,

Dayton Crites
sfurbanriders.org

CITY of PACIFICA
INCORPORATED • NOV. 22, 1957
Scenic Pacifica

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170 Santa Maria Avenue • Pacifica, California 94044-2506
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MAYOR
Julie Lancelle

MAYOR PRO TEM
Sue Digre

COUNCIL
Peter DeJarnatt
Mary Ann Nihart
James M. Vreeland, Jr.

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- **Code Enforcement**
  TEL (650) 738-7343

POLICE DEPARTMENT
TEL (650) 738-7314
FAX (650) 355-1172

PUBLIC WORKS
TEL (650) 738-3760
FAX (650) 738-9747

May 22, 2009

Mr. Bill Wycko
San Francisco Planning Department
Natural Areas Management Plan
1650 Mission Street, Suite 400
San Francisco, CA 94103

Re: Notice of Preparation of an Environmental Impact Report dated April 22, 2009 Project Title: Natural Areas Management Plan (aka Natural Resources Areas Management Plan)

Dear Mr. Wycko:

Thank you for providing this initial study and Notice of Preparation ("NOP") and for conducting a scoping meeting in our community. We appreciate the acknowledgement that since the Sharp Park property is located within the boundaries of the City of Pacifica, we are naturally very attentive to any changes or alterations proposed for this site. Upon reviewing the NOP, we noted several items related to our Land Use regulations that were not included in the NOP and that should be acknowledged in the EIR documents.

This letter serves as the response of the City of Pacifica ("Pacifica"), a Responsible Agency as defined in California Public Resources Code Section 21080.4(a) and 14 California Code of Regulations Section 15082(b), to the above referenced Notice of Preparation ("NOP").

The NOP does not identify discretionary approvals required by Pacifica for the Natural Area identified as "Sharp Park", which is located in the jurisdiction of the City of Pacifica. The City and County of San Francisco ("San Francisco") must comply with the California Coastal Act. Pacifica has a certified Local Coastal Program ("LCP") pursuant to which Pacifica enforces Coastal Act regulations in the Coastal Zone within Pacifica's boundaries. That portion of Sharp Park west of Highway One is within the Coastal Zone, and is identified in the LCP. Thus, for projects affecting west Sharp Park such as this, San Francisco needs to obtain a Coastal Development Permit ("CDP") and comply with it. Please include the CDP in the list of discretionary approvals required to be analyzed in the EIR and throughout the discussion in the document.

Further, the proposed project is subject to Pacifica's Logging Operations Ordinances, Ordinance Numbers 636 C.S. and 673 C.S. Any tree removal, destruction or harvesting of twenty or more trees within one year is prohibited unless in conjunction with a Pacifica permit (such as the CDP) or unless the Pacifica Public Works Director makes specific findings regarding the tree removal operations. Again, please include these regulations in the environmental discussion.

In addition, Topic 14, "Hydrology and Water Quality", subsections (a), (c), (d), (e) and (h) reference the need for the EIR to study the proposed project's impacts on drainage patterns and flood hazards within the Sharp Park area. Pacifica concurs that the EIR must study those potential impacts, and emphasizes the need to study the risk of flooding not only within Sharp Park itself, but whether the proposed project will result in flooding of the adjacent residential areas, and, if so, propose appropriate mitigation. In addition, the EIR should address the effect that removing 54,000 trees will have on erosion and drainage patterns.

Pacifica reserves its rights to comment in greater detail on the contents of the initial study until the City has the opportunity to review a full draft EIR.

We appreciate your attention to these matters.

Sincerely,

Julie Lancelle
Mayor

Cc: City Council
City Manager
City Attorney
City Planner

May 21st, 2009

Bill Wycko, Environmental Review Officer
SF Planning Department
Natural Areas Management Plan
1650 Mission Street, Suite 400
San Francisco, CA 94103

Dear Mr. Wycko,

Thank you so much for the enlightening Public Scoping meeting last May 14th. I very much appreciated being presented with Lisa Wayne's Management Plan and with the CEQA objectives.

My family frequently uses Glen Canyon Park and Bernal Hill for walking and enjoying the outdoors as well as introducing our daughter to the wildflowers, plants, rocks, birds and bugs that can still be found in these exceptional areas. We also enjoy exploring Billy Goat Hill, Tank Hill, Duncan-Castro and McLaren Park.

I have reviewed the SNRA Management Plan. I was encouraged to see that in the MA-1 and MA-2 areas described in the Management Plan, there will be a comprehensive effort to attempt to restore natural areas to their original state.

I would like to suggest that the MA-3 areas be treated in a manner similar to the MA-2 areas. I understand that it is imperative to move quickly to preserve the native plants and geology in the MA-1 and MA-2 areas. The MA classifications are obviously meant to prioritize this. However, in order to create a congruent landscape in the long run, the MA-3 areas should be managed congruently with the other areas.

Replant MA-3 Areas with Bay Area Native Oak Savannah Trees

As the SNRA Management Plan now stands, there is no plan to gradually replace the eucalyptus groves with native trees such as coast live oak:

Recommendation GR-15b: In order to maintain the forest as it ages, it is necessary to maintain a stocking rate that will perpetuate the urban forest and promote forest health. Over time, it will be necessary to grow a new age class of trees, which will eventually replace the existing mature canopy. This will be accomplished through natural and artificial regeneration methods. Natural regeneration refers to the seedlings and saplings that establish naturally. Blue gum eucalyptus is likely to be the primary species that regenerates naturally although the other invasive species also regenerate. Artificial regeneration refers to the planting of trees by people for management purposes. California native trees that offer the greatest value to wildlife such as Monterey cypress, Monterey pine and Douglas fir (*Pseudotsuga menziesii*) will be used. Tree planting can take advantage of openings in the urban forest canopy that are created either naturally or from other management activities.

I would ask that the decision to include Eucalyptus, Monterey Pine and Monterey Cypress in the reforestation of these GR-15b areas be reconsidered. These trees discourage the growth of an understory in the forest. Coast Live Oak savannah, so prevalent in the savannah areas of Yerba Buena Island and Palo Alto, obviously were also prevalent in San Francisco. It would be a shame not to feature these beautiful, drought tolerant, fire resistant trees and grasses in replanting efforts.

Carbon Sequestration

A concern for maximizing carbon sequestration in order not to further contribute to climate change has been expressed. I share this concern.

I would like to mention that it is increasingly apparent that deeply rooted grasslands sequester carbon permanently underground while rapidly growing trees such as eucalyptus sequester carbon temporarily and not as efficiently as native bunch grasses.

I would ask that the CEQA look carefully at this. The 2008 Hohhot World Temperate Grasslands Declaration, sponsored by the World Conservation Union, a United Nations affiliate, states:

"Considering that temperate indigenous grasslands provide critical ecological goods and services essential for life on earth as a source of food, fibre, human livelihoods and well being, cultural and biological diversity, the recharge of aquifers and the sequestration of carbon, particularly in the face of global climate change . . . we the participants of the Hohhot World Temperate Grasslands Conservation Initiative Workshop from five continents and 14 countries, declare that temperate indigenous grasslands are critically endangered and urgent action is required to protect and maintain the services they provide to sustain human life. We call upon all sectors of society to collaborate towards this goal."

The United States is a signatory of this declaration. According to the signatories of this declaration, the relative sequestration of eucalyptus forest versus native grassland is not well understood. However, it is becoming increasingly clear that native grasslands play a key role not only in carbon sequestration, but in the preservation of the world's biodiversity. It seems that the indigenous grasslands of San Francisco are critically endangered as are most of the world's grasslands.

Maintain Management of MA-3 areas in NAP

I would also ask that the MA-3 areas be managed, along with the MA-2 and MA-2 areas, in the Natural Areas Program. This will allow for management economies in the use of labor and forestry resources. The suggestion that the MA-3 areas be managed by the Bureau of Urban Forestry would be disastrous for the overall goal of the Natural Areas program.

If there is any doubt that the Bureau of Urban Forests is terribly under resourced, I would ask CEQA and the Bureau of Urban Planning to consider this example: The Bureau of

Urban Forests repeatedly claims that they do not have the funds to fix a College Avenue city sidewalk in their jurisdiction which poses a tripping and liability hazard to the city.

Again, a partitioning of the management of MA-3 areas would be disastrous for the overall goal of restoring esthetic and biological continuity to the city's natural areas.

Work toward Walkability in and between the City's Natural Areas

I was encouraged to see that the Management Plan included a vision of trail building. There are many beautiful trails in the city. Some of these are in the process of being rebuilt. I was lucky enough to be on a trail building crew in Glen Park last year.

I would suggest that an overall plan be made for the Natural Area trails. The plan should extend beyond the boundaries of the natural areas, interconnect natural areas where possible, and connect natural areas to public transit. An attempt should be made to map trails or walking routes that exist through open spaces, city parks and urban areas. They should incorporate the city's neglected stairways. Such a plan might take many years to execute, but it would mean that there are not wasted efforts with trails built to nowhere.

Some examples of potential trails that I can think of are to connect Glen Canyon Park to Twin Peaks or Glen Canyon Park with Walter Haas Park and Billy Goat Hill.

Reconsider the Impact of Off Leash Dogs

As the parent of a small child and as a life long owner of dogs, I have spent quite a while considering how the city's dog policy works in practice, rather than theory.

First, I would suggest that San Francisco does not have the rain that most North American cities have. In fact, it is a highly populated area in a near dessert. Virtually all of the rain the city gets is in the winter. The rest of the year, the city has no rain. By August, I find myself avoiding going to areas such as Bernal Hill and Glen Canyon Park because of the dog urine and general dirtiness of these areas. It is always a great relief to get the first rain.

I have also observed that most dogs are not walked on leash, even in leash areas such as Glen Park. I try to be considerate toward dogs and their owners on this matter. However, I find myself carefully assessing the breed and disposition of dogs as to their risk to my child. Many people are not as comfortable or knowledgeable with dogs. I know many people who avoid natural areas for this reason, especially parents of young children. This does represent a lost opportunity for children. They are less likely to be taken into natural areas due to the ubiquitous presence of off leash dogs.

Research does indicate that children are more likely to be bitten by a dog than an adult. Children are often at eye level to a dog. Many dog attacks are unprovoked and can result from something as simple as the dog misinterpreting eye contact or an outstretched hand.

In dog play areas, such as the road on Bernal Hill, I have found that I am increasingly uncomfortable going there. There almost always seems to be a dog fight or a dog rushing me in the legs. Many dogs are walked by dog walkers with multiple dogs and these dogs are thus poorly under control.

Again, if the intent is to allow people to experience natural areas, the current behavior of dogs and their owners is limiting this experience. The policy of allowing dogs, who are almost never on leash, access to natural areas should be reassessed. Dog Play areas should be reexamined in light of the lack of control of dogs and the environmental impact. The need to allow children to experience natural areas should be considered, not just the needs of dogs and dog owners.

I thank the Planning Department for the opportunity to express my appreciation for this planning process as we work toward a management plan of the natural areas in our beautiful city.

Most sincerely,

Marnie Dunsmore
118 College Avenue
San Francisco, California
94112

May 21, 2009

Bill Wycko
San Francisco Planning Department
Natural Areas Management Plan
1650 Mission Street, Suite 400
San Francisco, CA 94103

RE: Comments on Notice of Preparation of an EIR for
The Natural Areas Management Plan (SNRAMP)
Case Number 2005-1912E

Dear Mr. Wycko:

Enclosed are our comments on the notice of preparation of an EIR for the Natural Areas Management Plan (SNRAMP). We are a team of park advocates with a vision of the Natural Areas Program (NAP) that acknowledges the co-existence of recreation and urban natural areas, which is guided by science, that embraces a diverse biophilia, and that ensures the public's safety in our parks. Our combined experience to achieve these objectives includes:

2002 SF Recreation and Park Department, Green Ribbon Task Force for NAP plans
2002 – present CC of San Francisco, Parks, Recreation, Open Space Advisory Committee
2003 - 04 SF Department of Environment, Task Force for Quail Recovery Plan
2003 SF Board of Supervisors, NAP Citizen Advisory Committee
2004-05 SF Recreation and Park Department, members of negotiation team to revise NAP plans and plan public process in preparation for approval of plan in 2006
2007-08 SF Mayor's Open Space Task Force

The Natural Areas Program enjoys the passionate support of many citizens, as well as equally passionate citizens who question some of the strategies and methods of the program. A comprehensive Environmental Impact Report (EIR) represents an opportunity to resolve some of the controversies that the program has generated in the past 10 years of its operation. Our comments are intended to help those who prepare the EIR to answer the many questions that have been raised about the management plan. In answering those questions, we believe it will be necessary to conduct independent studies of the potential impacts on recreation, the loss of thousands of trees, exposure to hazards such as herbicides, fire, erosion and other concerns that originate with past experience with native plant restorations in the area. Since the Initial Study has not conducted such studies or taken into consideration present conditions in the natural areas, the EIR must do so now.

You have been assigned an important task, to put to rest years of concern and disappointing experiences with the Natural Areas Program. We urge you to take this task as seriously as the public does. This is the final opportunity to do so, as we have no desire to resort to legal means (as provided by CEQA) of achieving the necessary assurance of the public's safety and enjoyment in our parks.

Sincerely,
Karin Hu
Mary McAllister
Nancy Wuerfel

Comment on the Notice of Preparation of an EIR for
The Natural Areas Management Plan (SNRAMP)
Case Number 2005.1912E
May 21, 2009

The Initial Study of the environmental impacts of SNRAMP is inadequate in many respects:

- It dismisses as "insignificant" environmental impacts that have been experienced in the natural areas in the past and that caused considerable damage as well as public concern.
- It makes sweeping statements, dismissing environmental and safety issues without providing any evidence to support these dismissals
- It demonstrates that the author has either not read SNRAMP or has not understood important portions of it
- It demonstrates that the author has ignored basic scientific principles needed to analyze potential impacts, such as carbon sequestration and release
- It demonstrates that the author has not visited the natural areas and is unaware of the 10-year history of environmental and safety problems and public concern since the Natural Areas Program began to operate

The Initial Study (IS) proposes further study and analysis by an EIR of only a few environmental issues for which there "is not sufficient information available at the time on the potentially effected resources or site conditions" (IS page 61). The following comments request that the proposed EIR be expanded to include several environmental issues for which the Initial Study is inadequate, inaccurate, or is inconsistent with the reality of past actions of the Natural Areas Program both in the present and in the past 10 years of its existence.

E.1 Land Use and Land Use Planning
E.9 Recreation

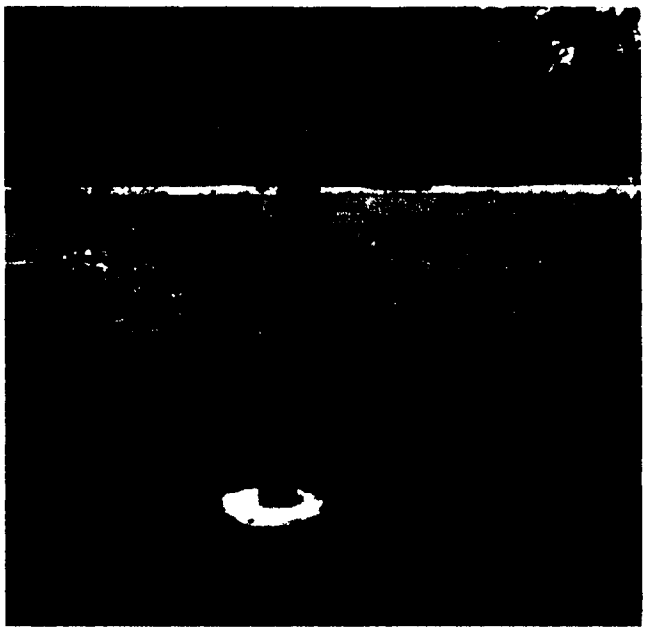
A. Changes in land use by the Natural Areas Program

"There would be no change in land uses and no impact under the project..." (IS page 59)

SNRAMP changes land use by restricting access to the natural areas:

- "Public use in all Natural Areas, unless otherwise specified, should encourage on-trail use...park signs should...include 'Please Stay on Trails...If off-trail use continues...permanent fencing shall be considered..." (SNRAMP, Recommendation GR-11, page 5-14)
- "Recreation goals: To provide opportunities for passive recreational uses (e.g., hiking, nature observation) compatible with conservation and restoration goals." (SNRAMP, Management Approach, page 2-2)
- "Some MA-1 areas may require installation of elevated boardwalks or permanent fences." (SNRAMP, page 1-5)
- 10.3 miles of 40 miles of trails within the natural areas will be closed (SNRAMP, Table 3-6)

The Recreation and Park Department has recently restricted bicycles to paved roads. There are few paved paths within the natural areas, which effectively bans bicycles from the natural areas. Plans to improve trails within the natural areas will not include paving.



Recently installed sign at the Overlook Parking lot on Mansell Street in McLaren Park

On November 19, 2008, the following comment was posted to the Natural Areas blog: "San Francisco's Significant Natural Resource Areas are now being assaulted by a new menace: mountain bikes...One thing needs to be perfectly clear: **Rec & Park Department policy prohibits bicycles in the parks except on PAVED surfaces...**The RPD should place signage at all entrances to all parks clearly prohibiting bike riding in any Significant Natural Resource Area." (sfnaturalareas.org)

"Of the San Francisco Natural Areas, trails would increase at Edgehill Mountain and Interior Greenbelt." (IS, page 58)

On April 27, 2009, the Natural Areas Program installed this sign at the only entrance to the Interior Greenbelt, one of the natural areas: **"No Public Access"**

The site-specific plan for the Interior Greenbelt does not indicate any trail closures in that natural area. In fact, the plan indicates the expansion of the existing trail (SNRAMP, page 6.23-2). Yet, the reality is that the Natural Areas Program is apparently closing this natural area to the public.

Both of these new signs in the natural areas cite Park Code 3.02 as the authority for these access restrictions. Park Code 3.02 provides: "Signs To Be Obeyed. No person shall willfully disobey the notices, prohibitions or directions on any sign posted by the Recreation and Park Commission of the Recreation and Park Department." In other words, the Natural Areas Program apparently gives itself the right to put ANY prohibition on a sign and the public is obligated to observe their prohibition.

When there is a conflict between the plans as stated in SNRAMP and the reality of what is happening in the natural areas, the latter should trump the former in the EIR evaluation. The EIR must acknowledge what has actually happened and presently exists in the natural areas.

None of these restrictions on recreational access are mentioned in E.9 Recreational element of the IS. These are omissions that must be corrected by the full EIR of the Recreational element.

B. Everson/Digby Lots should not be included in this EIR

The Initial Study announces the existence of a new natural area: "A portion of the Everson/Digby Lots park was recently determined to be a Natural Area" (IS, page 46). The Initial Study provides no information about this new natural area or what is planned for its future. Neither the Natural Areas Program website (sfnap.org) nor the Recreation and Park Department website (sfgov.org) acknowledge the existence of this new natural area, let alone provide any information about it. The Initial Study does not inform the reader if the Recreation and Park Commission has approved the designation of this natural area. Nor do we know if the visitors to and neighbors of this park are aware of this designation.

SNRAMP was subjected to a lengthy public process, including public meetings and hearings by the Commission that eventually resulted in its approval. Everson/Digby Lots have not been through this process and are therefore not ready for an EIR until this process is complete. A management plan must be written for this new natural area. After the public has considered this proposal and if the Commission approves it, it will be ready for environmental impact review.

C. Changes in land use resulting from existence/reintroduction of legally protected species

One of the objectives of the SNRAMP is the protection, enhancement, and reintroduction of sensitive species of plants and animals: "Augmenting existing populations and (re)establishing or (re)introducing additional populations where they once occurred (or were likely to have occurred) will help to ensure their continued survival in the City" (SNRAMP, page 5-3). Management actions in the MA-1 and MA-2 areas include "reintroduction of sensitive species" (SNRAMP, page 1-5). MA-1 and MA-2 areas are 623.0 acres (58%) of all natural areas. The definition of "sensitive species" includes federal and state legally protected species (SNRAMP, Table 3-6).

Consistent with that mission, the Natural Areas Program and its volunteers have successfully lobbied the Board of Supervisors to develop Sharp Park as habitat for legally protected species to be managed by the GGNRA: "This Thursday, April 30, [2009]...you'll have the opportunity to tell the Board of Supervisors to stop wasting our tax dollars operating the money-losing Sharp Park golf course. The Government Audit and Oversight Committee will consider legislation 'to develop a plan, schedule and budget for restoring Sharp Park habitat for the California red-legged frog and the San Francisco garter snake in conformance with the requirements of the Endangered Species Act, and transferring Sharp Park to, or developing a joint management agree with, the Golden Gate National Recreation Area and

making environmental findings.'" (sfnaturalareas.org) On May 5, 2009, the San Francisco Board of Supervisors unanimously approved this proposal verbatim as an "ordinance amending San Francisco Park Code Article 3 by adding Section 3.20..."

There are legally protected species in many other natural areas (SNRAMP Table 3-5), which could lead to similar changes in land use. For example, access restrictions will be required at Lake Merced to protect the Western Pond Turtle (WPT): "Recommendation LM-6c: To prevent native turtles from being disturbed during breeding season, restrict public access to the waters and shoreline of East lake between April 1 and August 31. It may be possible to achieve these access restrictions through signage. If not, temporary barriers that would prevent boat access to East Lakes could be installed." (SNRAMP, Lake Merced, page 6.1-17)

In Oregon, where the WPT is an endangered species, the recovery plan for the WPT requires restrictions on all human access—recreational and agricultural—within 500 feet of the water to protect the potential nesting range of the turtle. The recovery plan also requires that the entire potential nesting range be unshaded in order to maintain the optimal temperature for the turtle's eggs. This would require removal of all trees—native and non-native—within 500 feet of the perimeter of the East Lake and North Lakes, where the turtles have been found.

The Natural Areas Program is presently reintroducing the Mission Blue Butterfly to Twin Peaks (Oakland Tribune, 5/1/09). The Mission Blue Butterfly is a federal endangered species. The Xerxes Society lists as one of the management actions required to preserve populations of the Mission Blue, "protection from excessive recreational use." It also suggests that suppression of fire may have reduced habitat quality and negatively affected the historic population. In other words, the reintroduction of the Mission Blue on Twin Peaks has the potential to reduce recreational access and require periodic prescribed burns. The Endangered Species Act legally obligates management actions required to maintain a legally protected species, whether it has been reintroduced artificially or occurs naturally.

In addition to access restrictions defined by SNRAMP, the Natural Areas Program has identified new restrictions on recreational uses needed to protect natural areas and their resident wildlife. Therefore, the Initial Study is inaccurate to claim that the Natural Areas Program will not change land use. SNRAMP has the potential to eliminate all forms of recreation other than walking on a designated path as it implements its goals "To maintain viable populations of all special-status species" and "To maintain and enhance native plant and animal communities." (SNRAMP, Management Approach, page 2-1) The proposal to "transfer" or develop "joint management of" Sharp Park with the GGNRA, indicates the potential for ownership of natural areas to change in the pursuit of restoration goals. These changes in land use must be acknowledged and evaluated in the EIR. Recreational access restriction not identified by the Initial Study, must also be evaluated by the EIR.

E.2 Aesthetics

Most trees designated for removal will NOT be replaced with native trees

"Generally, trees removed would be replaced with native tree species at a roughly 1:1 replacement ratio, although not necessarily at the same location. In some locations, trees would be replaced by native scrub or grassland species." (IS page 63)

SNRAMP contains no such commitment to replace all trees designated for removal with native trees in the same location or any other location. In most cases, SNRAMP says specifically that the trees

designated for removal will **not** be replaced by trees, but rather with grassland and dune scrub. All designated tree removals are in MA-1 and MA-2 areas (see Attachment A).

- "The long-term goal of urban forest management in MA-1 and MA-2 areas is to slowly convert those areas to native scrub, and grassland habitats or oak woodlands." (SNRAMP, Forestry Statement, page F-1)
- "The goal in most of the MA-1 and MA-2 stands at Sharp Park is the same as for the Natural Areas within San Francisco: eventual conversion of invasive forest into grasslands and scrub." (SNRAMP, Forestry Statement, page F-6)
- Most site-specific recommendations regarding tree removal say specifically that the trees will be replaced by scrub or grassland (SNRAMP, Forestry Statement, pages F-8-F-11):
    - Lake Merced: "These openings will remain as the forests in these areas are gradually converted to low-growing coastal scrub."
    - Mt. Davidson: "...tree removal will result in the conversion of some areas of forest to scrub and grasslands."
    - Glen Canyon: "...gradually converted into scrub habitat..."
    - Bayview Park: "Tree removal will focus on the existing edge of forests to preserve existing scrub and grassland."
    - McLaren: "Grasslands will increase in magnitude and the area...will support...diverse coastal scrub."
    - Interior Greenbelt: "...these areas will be converted to coastal scrub..."
    - Dorothy Erskine: "...scrub will fill in where trees have been removed."

Only the site-specific Forestry Statement for Corona Heights predicts long-term conversion to oak woodland. And, "Within MA-1 and MA-2, these sites [of tree removals] would then be replanted with native shrub and grassland species. Within MA-3, urban forest species would be planted or encouraged (see Section 5, GR-15)" (SNRAMP, Forestry Statement, page F-3)

These long-term goals for the conversion of the urban forest to scrub and grassland are consistent with the natural history of San Francisco: "Prior to the colonization and the stabilization of dunes and introduction of invasive species, trees were not a dominant feature of the San Francisco peninsula. It is likely that scrubby coast live oaks grew on north-facing slopes in moist drainages and that buckeyes, bays, and oaks lined creek channels that flowed to the bay or ocean. However, much of the area probably resembled the coastal scrub habitats of San Bruno Mountain or the grassland-scrub mosaics of the Marin Headlands. Management of MA-1 and MA-2 is focused on the gradual conversion of these areas into native scrub and grassland habitats. This is the long-term goal." (SNRAMP, Forestry Statement, page F-1)

As one might expect, given the treeless nature of the native landscape, most native plants are not adapted to shade, as there was little shade in native San Francisco. For that reason, attempts to restore the native landscape would not be served by planting native trees. Trees create shade whether they are native or non-native. A related issue also predicts that native trees will not be a conspicuous feature in the restored natural areas: "In many Natural Areas, trees capture moisture from the coastal fog. The moisture drips onto the ground creating artificially wetter than normal conditions which favor invasive weed species." (SNRAMP, Forestry Statement, page F-1)

Because most of the natural areas are rock outcrops and sand hills that were treeless prior to the arrival of Europeans, there is little acreage within the natural areas that is capable of supporting trees that are native to San Francisco: "Two native forest series...comprise approximately 17 acres, 2 percent of total vegetation [in the natural areas]" (SNRAMP, Setting, page 3-11). Obviously, it would not be

physically possible to plant 18,500 native trees in the small areas in which they would be able to survive.

The Natural Areas Program has also demonstrated in the past that it cannot successfully replace with native trees those non-native trees that it has already removed. Nearly 10 years ago, the Natural Areas Program removed approximately 12 of the 24 non-native trees on the top of Tank Hill. The neighbors of Tank Hill were angry about their removal. The Natural Areas Program planted native trees in an attempt to satisfy the angry neighbors. These native trees did not survive, as one might expect given the windy, rocky conditions on Tank Hill to which native trees are not adapted. Alders were also planted to replace the healthy non-natives removed from the western end of Pine Lake. The Alders did not survive one year.

The Initial Study is mistaken that any commitment has been made to replace all removed trees with native trees. Nor would such a commitment be advisable, given that planting native trees in most of the natural areas would not be successful because they are adapted to sheltered areas that are not representative of the natural areas. If they were planted, they would be unlikely to survive.

Therefore, the EIR must evaluate the impact of proposed tree removal, based on the accurate premise that most will NOT be replaced.

E.7 Air Quality

A. Trees designated for removal have NOT been selected because they are not healthy

"Trees would be removed to promote forest health and would focus on dead or dying trees, trees with disease or insect infestations, storm-damaged or hazardous trees, and trees whose growth is suppressed by overcrowding." (IS page 87)

This statement is also inaccurate. A generous interpretation of this misstatement of fact is that the author of the Initial Study has confused General Recommendation GR-15 with the site-specific plans for tree removals in MA-1 and MA-2 areas. General Recommendation GR-15 says, "To promote forest health, removal of trees shall focus on the removal of dead or dying trees, trees with disease or insect infestation, storm-damaged or hazardous trees, and trees that are suppressed because of overcrowding." (SNRAMP, General Recommendations, Page 5-19) However, General Recommendation GR-15 applies **only** to non-native trees in MA-3 areas: "Urban forest stands that contain significant native plant understory and are planned for native plant and animal habitat restoration are classified as MA-1 or MA-2 and are **not considered here**. Recommendations for MA-1 and MA-2 areas are described in individual chapters in Section 6 and Appendix F [Forestry Statement] describes the species to be removed, removal methodology...and other tree removal impacts." (SNRAMP, General Recommendations, page 5-18).

Recall that all tree removals designated by SNRAMP are within MA-1 and MA-2 areas. Recommendations for their removal described within Section 6 and the Forestry Statement do **not** state that recommendations for their removal were based on their health or lack there of. Rather they were selected for removal if their removal would enhance or expand an adjacent native plant habitat. There is no basis upon which the Initial Study may assume that the non-native trees designated for removal are anything but healthy. Some may not be healthy, but that is not why they were selected for removal.

Removal of non-native trees within MA-3 areas are not specifically identified or quantified by SNRAMP. If they are removed, they would be incremental to the 18,500 trees that have been designated for removal. However, SNRAMP states clearly that management of MA-3 areas is a low

priority. Given the limitations on NAP resources, it is unlikely that any trees will be removed in MA-3 areas unless they fall down, as they do frequently.

B. SNRAMP implementation will NOT increase carbon sequestration or decrease global warming

"Although old large trees are good at storing carbon, they are not as effective as young trees at taking up carbon. Replacing dead, dying and diseased trees that have limited capability to sequester carbon with young saplings that have long-term carbon sequestration capabilities would result in a net GHG benefit." (IS page 87)

The author of the Initial Study does not provide a complete reference for this claim. A name is provided in parenthesis, but the complete citation does not appear in the list of references, so the reader is unable to verify its accuracy.

The USDA's "Urban Forest Effects Model" includes an assessment of San Francisco's urban forest. It reports that, "The amount of carbon annually sequestered is increased with healthier trees and larger diameter trees" (UFORE, page 8). In other words, a study by the US government specifically written for the City of San Francisco refutes the claim that young saplings have greater capabilities to sequester carbon than larger trees. Recall that the trees designated for removal by SNRAMP are not necessarily unhealthy. Clearly saplings are smaller than the mature trees over 15 feet tall that have been designated for removal.

Furthermore, the release of carbon stored in the 18,500 trees that would be removed would certainly swamp whatever benefit there may be in replacing some of the trees. Trees release their stored carbon as they decay. SNRAMP states that the trees would be left in place to slowly decay if they provide habitat or chipped, composted and used throughout the parks. In other words, all of the removed trees will release their sequestered carbon over time, as they decay in San Francisco's parks.

Finally, the Initial Study announces (page 11) that prescribed burns will occur in the natural areas and that the SNRAMP will be "updated to reflect this change." Fires release the stored carbon of the burned plants into the atmosphere as well as releasing particulate matter into the air. This is yet another source of increased carbon release and increased air pollution that may result from implementation of SNRAMP. Because of the accumulative effect of all the sources of carbon release predicted by the SNRAMP, the effect of prescribed burns on carbon release and air pollution must be considered by the EIR. Consideration of prescribed burns by a separate and later environmental review (as the Initial Study announces its intentions on page 11) is not acceptable.

"Although the net effect on carbon sequestration capacity is unknown for the proposed replacement of mature eucalyptus with native saplings, replacing dying trees with healthy trees typically enhances the carbon sequestration process...As such tree replacement is expected to result in a net increase in the amount of carbon sequestered within the Natural Areas" (IS page 88)

Even if it were true that only dying trees were being removed or that they would be replaced—and as noted above, neither is true—this statement is inaccurate. Carbon sequestration by trees and plants is directly proportional to their size (UFORE, Appendix III). Therefore, a small sapling is incapable of sequestering as much carbon as a large tree, whether it is healthy or not.

Furthermore, even if this statement were true, it does not take into account that within the MA-1 and MA-2 areas, the SNRAMP proposes to remove all seedlings and saplings (defined by SNRAMP as trees less than 15 feet tall) of non-native trees in order to convert these areas over time to scrub and

grassland (SNRAMP, Forestry Statement, page F-4). The removal of these seedlings and saplings are not quantified by SNRAMP because they are not defined by SNRAMP as trees (SNRAMP, Forestry Statement, page F-2). Therefore, their removal is incremental to the designated removal of 18,500 trees over 15 feet tall. In other words, countless small, young trees will be removed, reducing carbon sequestration in the natural areas further than can be quantified because their numbers are unknown.

Finally, the Initial Study assumes that all native trees—both those that presently exist and those that are planted in the future—will survive and continue to sequester carbon. The author of the Initial Study does not consider the potential for the death of many native trees if Sudden Oak Death continues to spread. It kills many species of tree that are native to San Francisco. It presently exists in Golden Gate Park. It is spreading throughout coastal California. The Nature Conservancy recently reported that more than one million trees have been killed by SOD in California.

"...grassland above 50 degrees latitude reflects more sun than forest canopies, thereby keeping temperatures lower by an average of .8 degree Celsius...grassland and scrub habitat could act as a significant carbon sink." (IS page 88)

Once again, the author of the Initial Study does not provide a complete citation for this claim, so the reader is unable to verify its accuracy. However, this reader is familiar with this claim, which will enable a response.

Ken Caldeira of Stanford University is one of the proponents of the so-called "reflected light" argument that forests might actually increase global warming by absorbing light. Caldeira's argument is based on the comparison between dark forests and the reflected light of snow in northern latitudes. The contrast between forest and snow is much greater than the contrast between forest and grass and scrub. It is clearly a stretch of the concept to apply it to the local climate where there is no snow.

Caldeira also makes it clear in his New York Times oped of January 2007 that he is not advocating for the destruction of forests: "Clear-cutting mountains to slow climate change is, of course, nuts...preserving and restoring forests is a valuable activity, regardless of its impact on climate—we need more trees, not fewer."

The Initial Study makes an illogical connection between increased temperature on the forest floor resulting from the absorption of light and the ability of the forest to sequester carbon. There is no such connection. Increased temperature on the forest floor does not reduce the carbon sequestering abilities of the forest that are a by-product of photosynthesis.

The USDA's "Urban Forest Effects Model" for the city of San Francisco also reports that the "tree cover" is less than 12% of the city's land. Yet, "Trees remove about 19 percent more air pollution than shrubs in San Francisco" (UFORE, page 7). This finding refutes the claim that converting many acres of trees into grassland will benefit air quality in San Francisco.

Furthermore, even if this argument can be applied to the local situation, it assumes that the native plant populations will survive in the long-term. The author of the Initial Study does not acknowledge that the ranges of native plant populations are changing in response to global warming: "Two-thirds of California's unique plants, some 2,300 species that grow nowhere else in the world, could be wiped out across much of their current geographic ranges by the end of the century because of rising temperatures and changing rainfall patterns according to a new study...California oaks could disappear from Central California in favor of cooler weather in the Klamath Mountains..." (Los Angeles Times, June 25, 2008)

Other researchers find that invasive weeds are frequently better adapted to conditions that are altered by man. For example, CO2 levels are higher in urban settings and promote the growth of invasive weeds that thrive in higher concentrations of CO2. Fire suppression is another means of promoting weed growth at the expense of native plan populations. "New research...suggests that invasive species, at least in some instances, aren't so much the causes of environmental degradation as eco-opportunists taking advantage of disturbed habitats." ("Can Weeds Help Solve the Climate Crisis," New York Times, June 29, 2008) In other words, simply removing invasive species does not necessarily enable the survival of native plants if they are no longer adapted to the conditions that have been altered by man.

These studies would explain the singular lack of success of the "restorations" of the Natural Areas Program for the past 10 years. Many natural areas have been planted repeatedly, only to fail repeatedly. It may not be possible to reestablish native plant populations in an urban setting that has been significantly altered by hundreds of years of human habitation.

If non-native plants and trees are removed from 25% of all park acreage in San Francisco (the size of the natural areas in SF) and it proves impossible to successfully grow native plants in those locations, there will clearly be no carbon sequestration benefit from these efforts.

Since the Initial Study has made mistaken assumptions in evaluating the impact of proposed tree removal and has not considered the question of whether or not a "restored" landscape will survive, the EIR must now fully analyze these issues. Since the author of the Initial Study has demonstrated a stunning lack of scientific knowledge regarding carbon sequestration, air quality, and global warning, a consultant with the necessary expertise must conduct the EIR.

E.8 Wind and Shadow

Tree removal HAS altered wind conditions in the natural areas resulting in windthrow hazard

"...removals within the Natural Areas are planned to take individuals or very small groups of trees within existing forest and scrub habitats to avoid altering the wind conditions. As such tree removal would not include wind-toughened edge trees and would not result in increased wind hazards or expose trees within a stand to high winds. Therefore, the potential wind hazard of windthrow that would result form the project is expected to be less than significant. (IS page 90)

It is patently false that tree removals "are planned to take individuals or very small groups of trees within existing forest and scrub habitats to avoid altering the wind conditions." Here are a few examples of the large number of trees that will be removed from small areas (SNRAMP, Forestry Statement, Appendix F-14-F-17):

- Mt. Davidson: 1,000 trees will be removed from MA-1c (3.5 acres)
- Glen Canyon: 100 trees will be removed from MA-2e (.6 acres)
- Sharp Park: 1,476 trees will be removed from MA-2j (5.6 acres)
- Corona Heights: 10 trees will be removed from MA2C (less than .01 acre)
- Bayview Park: 140 trees will be removed from MA-1d (.02 acres)
- McLaren Park: 600 trees will be removed from MA-2b (9.9 acres)
- Interior Greenbelt: 100 trees will be removed from MA-2a (1 acre)

Tree removal on this scale cannot be done piecemeal, taking only a few individual trees on separate occasions. The game of "pick-up-sticks" is a good metaphor to understand the problem. Felling one

tree will impact those in close proximity. Whether intended or not, neighboring trees are likely to be felled by the falling tree.

Removing that individual tree will not be possible unless its neighbors are also removed. One can't pick up that felled tree when other standing trees surround it. Felled trees must be dragged out. As a qualified arborist said, when expressing his opinion of the proposed selective method of tree removal, "I don't have tweezers to pick these trees out of the forest."

Leaving the felled trees on the ground until they are all destroyed is not an option because the restoration objective is to plant the bared ground with native plants, which can't be accomplished if the ground is covered with dead trees.

Even if it were true that only "very small groups of trees" will be removed, it does not follow that "tree removal would not include wind-toughened edge trees" nor that removals "would not result in increased wind hazards or expose trees...to high winds." In fact, most of the tree removals will occur on the edge of the existing forest, which is consistent with the stated goal of the removals to expand the adjacent native scrub and grassland (SNRAMP, Forestry Statement, pages F-8-F-11):

- Mt. Davidson: "Additional removals will occur...on the eastern edge of the forest."
- Bayview Park: "Tree removal will focus on the existing edge of forests..."
- McLaren Park: "...removal will occur along forest edges..."
- Interior Greenbelt: "Tree removal will focus on the eastern border and the western tip of this Natural Area..."

In addition to these narrative descriptions of the location of tree removals, SNRAMP contains detailed maps of the natural areas in Section 6 that indicate the location of the tree removals. These maps reveal the vulnerability of the remaining trees as a consequence of some of the tree removals.

We will use Lake Merced only as an example, although identical logic could be applied to many other natural areas in which large tree removals are planned. Over 100 trees will be removed from the eastern shore of the South Lake. The Harding Park Golf Course is adjacent to this shore, to the east of the lake. The wind blows from the west. The golf course is presently sheltered from the wind by the trees that will be destroyed on the eastern shore of the lake. There is an old population of huge Cypress trees on the golf course that are nearing the end of their life span of about 100 years. These trees will be exposed to wind from which they were previously sheltered. Massive tree failure could result. One hopes it will not occur during a PGA TOUR golf tournament when there are thousands of spectators on the course.

The City of San Francisco has contracted with PGA TOUR, Inc, "for certain golf tournaments at Harding Park over the 15 year period beginning 1/1/05." The contract requires strict course maintenance standards be met as an obligation to hold any tournaments at this facility. The EIR should indicate that the PGA TOUR has been informed of the tree removal adjacent to the golf course and that the management actions in SNRAMP will not violate the terms of the contract between PGA TOUR and the City.

The eastern shore of the South Lake at Lake Merced. The western edge of Harding Golf Course.

San Franciscans have had a preview of the tree failure that could be precipitated by the removal of thousands of trees in the natural areas. Pine Lake and Stern Grove Parks are contiguous parks that essentially form one park of approximately 70 acres. It has been undergoing extensive capital improvement, beginning in 2000. There is a natural area at the western end of the park, including and surrounding Pine Lake. The wind enters this park from the western end. The entire park is a narrow, upwardly slopping canyon that funnels and accelerates the wind as it travels from the western to the eastern end of the park.

In 2003, in connection with the capital project, a survey of all trees in Pine Lake/Stern Grove was conducted by a certified arborist, resulting in a Tree Management Plan identifying hundreds of hazardous trees recommended for removal.

In early 2004 approximately 20 healthy non-native trees were removed from the western end of the park to accommodate the expansion of a native plant garden that requires full sun. This removal was documented and acknowledged by RPD at an RPD Commission hearing on 5/5/2004. A few Alders were planted to replace the trees that were removed. The Alders did not survive.

The concert meadow renovation in Stern Grove was the first phase of the capital project. In connection with that project, many trees were removed to accommodate that renovation. Some had been identified by the arborist's report as hazardous. Most had not. Funding was not sufficient to remove all of the 363 hazardous trees in Stern Grove recommended for immediate "priority removal" in 2003. Most hazardous trees in Stern Grove were left in place while many healthy trees were removed to accommodate renovation of the concert meadow.

Pine Lake was the second phase of the project. In 2007 hundreds of trees—of which most were considered hazardous--were removed during the Pine Lake Project. Recall that Pine Lake is west of Stern Grove, the windward side of Stern Grove. The removal of hundreds of trees from Pine Lake exposed Stern Grove to wind from which it had previously been sheltered. Recall that hundreds of the trees remaining in Stern Grove had been deemed hazardous in 2003. Shortly after removal of hundreds of trees in Pine Lake Park trees began to fail throughout the park at an alarming rate.

On April 14, 2008, a park visitor to Stern Grove was killed by a Redwood branch about 20 feet long that fell on her and her car, destroying her car (SF Examiner, 4/30/08). The Tree Management Report of 2003 had specifically identified this branch as potentially hazardous. The Redwood tree had been topped in the past, creating an unsupported "horizontal branch with poor taper and weight" (Tree Management Report). The branch extended over a heavily used parking lot, in which the park visitor was killed. Her family has sued the City of San Francisco for the negligence that caused her death because the dangerous branch had been identified 5 years earlier and hundreds of trees to its windward side had been removed, making the branch even more vulnerable to failure (SF Examiner, 9/24/08).

About two weeks earlier, an equally large branch fell onto the road that leads to the same parking lot. Park visitors were trapped in the parking lot. They called RPD, using their cell phones, but no one came to their rescue. They finally freed themselves by dragging the branch out of the road, using a rope and a truck of one of the visitors. These visitors notified RPD of this incident and recorded the incident in a weblog created for park visitors. This was the wake-up call that could have prevented the death on April 14, 2008.

Since then there have been approximately seven major tree failures in Pine Lake/Stern Grove.

Two of the tree failures in Stern Grove/Pine Lake in the past year.

SNRAMP mentions the removal of hazardous trees at Pine Lake, noting that these removals have not been quantified by SNRAMP (Forestry Statement, page F-2). The author of the Initial Study was therefore alerted to this opportunity to evaluate the potential for dangerous windthrow subsequent to large tree removals. The Initial Study makes no mention of Pine Lake tree removals, nor the consequences of those removals.

Given this experience with large tree removals in natural areas, the conclusion of the Initial Study that, "*Therefore, the potential wind hazard of windthrow that would result form the project is expected to be less than significant*" is irresponsible and potentially tragic. There is no basis upon which the Initial Study can dismiss the potential for significant tree failure in this cavalier manner.

SNRAMP makes similar efforts to dismiss the potential for windthrow in the Forestry Statement (page F-11-F-13). It states repeatedly, "potential windthrow hazard to people is minimal because there are no residential areas near the stands where tree removals will occur." In other words, SNRAMP's sole concern is for property, not for the people visiting the parks. Some of these parks are heavily used by people. The golf course at Lake Merced and the concert meadow in Stern Grove both have thousands of people in them during special events.

Of all the many issues in this Initial Study, this refusal to consider the seriousness of tree failure and consequent danger to the public is perhaps the most egregious. After a park visitor paid with her life for this failure to mitigate the consequences of massive tree removal, RPD appears to have learned nothing from this needless loss. The EIR must evaluate the potential for windthrow resulting from the removal of 18,500 trees. This evaluation must be done by a qualified consultant with expertise in forestry management.

E.10 Utilities and Service Systems

Native plant restoration WILL require new irrigation and water use

"Reinstating native species and replacing trees would require irrigation until they become established. However, irrigation needs would be met by existing water supply capacity and would not require new or expanded water supply resources. Therefore, impacts on water supply would be less than significant. (IS page 94)

Natural areas have been established in previously undeveloped portions of the park. It is simply not true that these areas were irrigated prior to being planted with native vegetation. The naturalized, non-native vegetation does not require irrigation. Any irrigation in natural areas is new and incremental.

An adequate Initial Study would evaluate how much water over what period of time will be required to irrigate native plants and trees until they are established. It is typical of this Initial Study that no attempt is made to evaluate that need. It merely dismisses potential impacts on water supply as "less than significant" and eliminates this question from further study in the subsequent Environmental Impact Report, as it does with virtually every controversial issue. The EIR must now include the analysis of additional water use not provided by the Initial Study.

E.12 Biological Resources

A, Impact on wildlife of herbicide use by Natural Areas Program must be evaluated

"...certain actions could disturb these (wildlife) *species..." (ID page 109)*

The potential for management actions of the Natural Areas Program to impact wildlife is one of the few controversial issues that the Initial Study proposes to study further in the Environmental Impact Report. The impact of herbicide use in the natural areas on wildlife must be considered in that EIR. Herbicide use by the Natural Areas Program is not even mentioned by the Initial Study.

SNRAMP reports its use of "chemical control" as one of its "management methods:" "chemical control, which involves the use of herbicides to suppress wildland weeds" and "...herbicides are used to control invasive weeds in Natural Areas." (SNRAMP, Integrated Pest Management, page 4-4). However, it downplays the significance of that usage: "on a per-acre basis pesticide usage in the Natural Areas is significantly less than usage rates in other park maintenance programs." (page 4-5)

This apologia is ineffective for two reasons:

- The natural areas are, by definition, undeveloped areas of the park. Clearly developed areas of the park, such as lawns and landscaped areas, make greater demands for pest and weed control. Any herbicide use in previously undeveloped areas of the park is new to these areas, which prior to the establishment of the Natural Areas Program, were left untended.
- The removal of thousands of eucalyptus trees will require application of herbicides such as Garlon and Round-Up to prevent resprouting of the trees: "Tree stumps of some exotic species may be treated (hand painted or sprayed) with herbicide to prevent re-growth." (SNRAMP, Forestry Statement, page F-4) This will substantially increase the use of herbicides by the Natural Areas Program as the SNRAMP is implemented.

The affect of many herbicides (including the active ingredients in Garlon and Round-up) on declining amphibian populations is well known and documented in the literature (e.g., Tyrone Hayes, UC Berkeley). In fact, the Center for Biological Diversity sued the US Department of Fish and Wildlife regarding the use of these chemicals in the proximity of populations of the legally protected, endangered red-legged frog ("EPA to limit use of 66 pesticides," SF Chronicle, 10/20/06). In response, Fish and Wildlife has prohibited their use within a certain distance of these animals. Based on research, these chemicals are equally likely to be harmful to other amphibians such as salamanders and newts that are ubiquitous in the natural areas.

The Environmental Impact Review must evaluate the impact on wildlife of herbicide use in the natural areas on wildlife.

B. The potential impact of West Nile Virus must be evaluated

The planned expansion of wetlands at Sharp Park to support the red-legged frog may increase the mosquito population, and the potential for West Nile Virus (WNV). This raises several questions that should be addressed by the EIR. Will spraying of pesticides to control the mosquito population be prohibited to protect the red-legged frog population? If so, is there potential for an increased mosquito population to spread WNV to birds and humans? These questions should be analyzed and evaluated by the EIR.

C. Do tree removals at Sharp Park violate the Pacifica logging ordinance?

"...Significant Trees Ordinance of San Mateo County and Ordinance 636-CS, which limits logging within Pacifica and applies to tree removal at Sharp Park. Management actions would not conflict with these or other applicable ordinances. (IS page 109)

The meaning of this statement is not clear. The first sentence seems to say that the Pacifica ordinance that limits logging, applies to the removal of 15,000 trees designated by SNRAMP. The second sentence seems to say "management actions" (that is, the removal of 15,000 trees at Sharp Park) do **not** violate this ordinance. This is an unsubstantiated claim that requires explanation. The ordinance requires permits for removing more than 20 trees per year. At that rate the removal of 15,000 trees would take 750 years. Has a permit been obtained, as required by this ordinance, to remove more than 20 trees per year? The reader deserves some explanation for how the requirements of this ordinance have been satisfied, IF they have been satisfied.

D. Conflict with the General Plan

"Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? No Impact" (IS, page 87)

Tree removals designated in SNRAMP are in conflict with Policy 2.9 of the General Plan to "maintain and expand the urban forest." As we have noted earlier, 18,500 trees will be removed in the natural areas. Most will not be replaced. Most are presumed to be healthy, mature trees. In addition, countless trees less than 15 feet tall will also be destroyed to prevent the regeneration of the urban forest. The EIR must acknowledge this conflict.

E.13. Geology and Soils

Potential for further erosion problems requires further study

"The overall scale of the proposed project is relatively small, and while these activities may result in some increased erosion and loss of topsoil in the Natural Areas, these impacts are generally considered less than significant...This topic will not be discussed in the Environmental Impact Review." (IS page 112)

Once again, the Initial Study dismisses a serious, controversial issue with a cavalier wave of its invisible hand. The removal of non-native plants has caused erosion in many natural areas, and the increased removal of non-native trees and vegetation prescribed by SNRAMP is likely to exacerbate the situation.

Many of the natural areas are on sandy hills that are surrounded by residential housing. As these residential neighborhoods were developed, the sand was stabilized with non-native vegetation, such as ice plant. When the Natural Areas Program began removing the ice plant from these sandy hills, the destabilized sand inundated the surrounding neighborhoods.

On July 26, 2006, Jeff Eng, President of the Golden Gate Heights Neighborhood Association testified to the Recreation and Park Commission regarding the adoption of SNRAMP (Attachment B). One of the concerns he expressed on behalf of his association was, "That the NAP continue to protect the remnants of native vegetation without damaging surrounding private properties, for example, causing erosion and resulting blowing sand."

NAP has repeatedly denied that the removal of ice plant has destabilized sand in Golden Gate Heights. I have heard them claim in public hearings that ice plant is actually less capable of stabilizing sand than the plants that are native to the sand dunes. However, the reality of the experience of the neighbors of natural areas in Golden Gate Heights contradicts this claim. An adequate Initial Study would evaluate this concern and respond to it in a meaningful way, rather than merely wave it away, as it attempts to do.

There are also several natural areas that have experienced serious erosion in the past, although I will focus only on Lake Merced in my comments. During a heavy rain year (2004), the eastern and southern shores of the Impound Lake (one of the lakes of Lake Merced) collapsed, undermining paved trails and roads. This is just one of several areas on the shore of all four lakes of which Lake Merced is composed that have collapsed into the lake in the past.

East shore of Impound Lake at Lake Merced

The planned removal of all trees on the steep, sandy eastern shore of South Lake has the potential to precipitate a massive collapse of that shore. The trees on that shore now help to stabilize the shore. The roots of trees are responsible for holding soil in place, particularly on steep slopes. As the roots decay slowly over time, their ability to hold the soil in place slowly declines. Certified Arborist, Ray Moritz, explained the process in the context of a question about the clear-cutting of bay laurels on a steep slope: "If the stumps have been killed with an herbicide, the root matrix, and its contribution to soil cohesion will only persist for approximately five years, generally diminishing over that period. So, in that case, you have only a short time to get another soil binder established." (Ray Moritz, SF

Chronicle, 7/5/08) In a personal email communication he confirmed that the same considerations apply to eucalyptus.

Recall that the eastern shore of South Lake is the western boundary of the Harding golf course. The collapse of that shore has the potential to undermine the western side of the golf course.

The removal of 18,500 non-native trees from the natural areas has the potential to cause significant erosion in many natural areas. SNRAMP proposes the use of "wood mulch, fiber rolls, and silt fences to minimize erosion." These strategies have not been successful in preventing erosion in the past. An adequate Initial Study would either analyze this potential or recommend that it be included in the Environmental Impact Review. It does neither. The EIR must now study past erosion sites in the natural areas and evaluate the SNRAMP for its potential to cause further erosion in the future.

E.14 Hydrology and Water Quality

Potential for drainage problems requires further study

There are no activities included in the proposed project which would significantly alter the existing drainage pattern of the sites, or substantially increase runoff such that flooding occurs." (IS page 122)

It seems very unlikely that 15,000 trees can be removed from a steep canyon wall in Sharp Park without "significantly altering the existing drainage pattern." Water and sediment will drain down from this canyon into the water features on the western side of Sharp Park, where endangered species make their home.

The eucalyptus tree is notorious for its ability to absorb water. It was used early in the development of Australian agriculture to drain swamps and wetlands. Ray Moritz, Certified Arborist, says of the eucalyptus and the role it plays in erosion and drainage, "Trees, particularly Eucalyptus trees, reduce erosion in several ways. Eucalypts not only help hold the soil in place with their roots, sheltering canopies and deep ground litter, they are tremendous water pumpers. So much so that they were used throughout the world to dry out wet areas for malaria control, and got one of their mid-1800's nicknames, "the fever tree." [If Eucalypts are removed] the replacement plants [must be] well-established within five years." (private communication)

The removal of 18,500 non-native trees from the natural areas has the potential to significantly change drainage patterns in many natural areas because many are steep hills and canyons. An adequate Initial Study would either analyze this potential or recommend that it be included in the Environmental Impact Review. It does neither. The EIR must evaluate the impact of tree removals on existing drainage patterns in ALL natural areas. .

E.15 Hazards and Hazardous Materials

"Management of the Natural Areas would include removing trees, including those that are diseased and dying, thereby reducing easily combustible fuel loads. Also implementing recommendation GR-13a should reduce the presence of vegetation with high fire hazard ratings, such as dense and aging French broom and eucalyptus." (IS, page 129)

As previously noted in this comment, the 18,500 trees that have been designated for removal are not necessarily "diseased and dying." They have been selected for removal insofar as they enhance and expand native plant populations.

Secondly, the restored landscape of native grassland and dune scrub is not less flammable than the non-native that will be removed. Here are comparison data from the Hills Emergency Forum, which is a group of East Bay agencies and organizations such as UC, EBRPD, and EBMUD.

Flame lengths: the distance from the average flame tip to the middle of the burning zone at the base of the fire.

Type of Vegetation	Flame Length
Grassland	12 to 38 feet
Brush and Scrub	14 to 69 feet
Hardwoods forest (e.g., Oak)	1 to 34 feet
Monterey pine forest	2 to 7 feet
Eucalyptus forest	6 to 21 feet

Whether a plant or tree is native or non-native has nothing to do with how easily it ignites or how readily it will be burn. Here are a few quotes from experts about the flammability of grasslands and scrub:

> "The more critical concern for this vegetation type [grassland] is the rate at which grassland fires can spread and the ease of ignition. This is one of the most dangerous types of fires for fire fighter safety due to its rapid frontal speed." (Management Recommendations of Hills Emergency Forum)
>
> "Shrublands with their enhanced fuel loads produce more intense fires that are more difficult to suppress and result in somewhat larger fires." ("Fire History of the San Francisco East Bay Region and Implications for Landscape Patterns" (John E. Keeley, USGS)

It is a popular myth that eucalyptus is more flammable than other trees and native landscapes. Here are a few quotes from experts about that myth:

> "...many trees are highly fireproof, like redwoods and eucalypts..." (The Tree: A Natural History of What Trees Are, Colin Trudge)
>
> "Fire fuels (those with a diameter of ¼ inch or less) and not tree trunks are what contribute to the intensity of wildfire...the university [UC] has not reduced but compounded its wildfire danger problem in the UC hill area by replacing groves of eucalyptus trees with grassland." (Evaluation of Fire Management Plan for UC hill area by Alexander Kerr)

SNRAMP also acknowledges the important role that fire plays in the native landscape: "...fires may help native species germinate..." (SNRAMP, page 5-4). For this reason (and also to help control non-native vegetation) SNRAMP includes fires as a possible management action in Recommendation GR-3b (page 5-4).

The Initial Study announces the intention to use prescribed fires to manage the natural areas: "SNRAMP no longer is proposing prescribed burning would not occur. The SNRAMP will be updated to reflect this change." (IS, page 11) However, the Initial Study has not considered the potential hazard of employing fire as a management tool: "Should the SFRPD determine prescribed burning to be a desirable, feasible method for managing native grasslands, a separate environmental review would be required to comply with CEQA..." In other words, this Initial Study does not include the potential environmental impacts of prescribed burns.

Restoration efforts on San Bruno Mountain provide a test case for the use of prescribed burns to support restoration efforts. San Bruno Mountain has been undergoing extensive restoration efforts for many years. The focus of those efforts has been to increase the population of the Mission Blue Butterfly. As noted earlier in this comment, the San Francisco Natural Areas Program is reintroducing the Mission Blue to Twin Peaks. In 2003, a prescribed burn on San Bruno Mountain raged out of control, nearly destroying the adjacent residential neighborhoods:

> "The fire was lit Tuesday morning by the California Department of Forestry to burn off dry vegetation and restore natural habitat in San Bruno Mountain State Park...The blaze, fed by 25 mph afternoon winds, spread rapidly out of control, jumping across Guadalupe Canyon Parkway and moving southeast toward a couple of hundred homes along the mountain's eastern approach. At one point, it crossed a steep ravine and threatened the Mission Blue Drive neighborhood, where firefighters stopped the flames just spitting distance from some homes and condominiums under construction...state firefighters called for mutual aid and received dozens of reinforcements from fire departments, including Daly City, San Bruno, Brisbane, Burlingame and South San Francisco...The fire was supposed to be contained within three to five acres in the Wax Myrtle Ravine area, but it spread to about 50 acres before it was contained...said CDF Capt. Claire Frank." (San Francisco Chronicle, July 9, 2003)

In other words, the track record for the use of prescribed burns to support restoration efforts indicates that they can burn out of control. Therefore, fire hazards and the use of prescribed burns must be analyzed by this EIR. It cannot be delayed to a later date because it is inextricably related to other issues, such as air pollution and increased carbon release, contribution to global warming.

In Conclusion

The Initial Study has failed to meet the most minimal standards of CEQA. All environmental issues should be included in the Environmental Impact Review, including those not identified by the Initial Study.

There are many important environmental issues that are not mentioned in the Initial Study that must be acknowledged and analyzed:

- The increased use of herbicides required to prevent resprouting of vegetation and trees that are removed and the potential impact of that use on wildlife
- The prohibition against bicycles on unpaved trails in the natural areas
- The intention to close the golf course at Sharp Park to benefit endangered species and the potential for similar closures in other natural areas in San Francisco
- The fact that scientists have recently determined that the ranges of native plants have moved and will continue to move in response to climate change. The Environmental Impact Review must answer these questions to the public's satisfaction: "Is it still possible to sustain in San Francisco the same plants that were native to this area over 200 years ago?" and "Have the changes in air, soil and other conditions in San Francisco changed to the extent that they no longer support the plants that were native to this area over 200 years ago?"
- The EIR must acknowledge the existence of Sudden Oak Death and assess its potential to kill native trees in the natural areas.
- The EIR must acknowledge plans for prescribed burns and evaluate their impact on carbon release, air pollution, and fire hazards.

ATTACHMENT A

Tree Removals Designated by SNRAMP(over 15 feet tall)

Park	MA-1	MA-2	Total	
San Francisco				
Lake Merced	29	105	134	some trees already girdled
Mt. Davidson	1200	400	1600	about 50 trees already girdled
Glen Canyon	20	100	120	25 trees already destroyed
Grandview		5	5	
Rock Outcrop			0	
GG Hts			0	
Hawk Hill			0	
Brooks			0	
Pine Lake			0	many trees already destroyed
Twin Peaks		3	3	
Billy Goat			0	
Buena Vista		10	10	
Corona Hts	1	14	15	
Duncan-Castro			0	
Kite Hill			0	
Tank Hill			0	about 12 trees already destroyed
GG Park	32	50	82	
15th Ave Steps			0	
Bayview	355	156	511	hundreds of trees already destroyed or girdled
India Basin			0	
McLaren	135	670	805	
Palou Phelps		2	2	
Balboa			0	
Interior Greenbelt		140	140	
Erskine	5	9	14	
Edgehill			0	
Fairmont			0	
Total	1777	1664	3441	
Percent	51.64%	48.36%		
Pacifica				
Sharp Park	50	14950	15000	

Attachment B

Special Hearing on Management Plan for Natural Areas Program

Recreation and Park CommissionWednesday, July 26, 2006

8:30 am

Room 416, City Hall

The Recreation and Park Commission will decide on Wednesday, July 26, whether to accept the Management Plan drafted by the Natural Areas Program (NAP). NAP originated out of concerns about protecting remnants of plants and wildlife that were native to the San Francisco peninsula and whose numbers were dwindling. The program, however, expanded to take as a main mission the re-creation of what San Francisco looked like before "white men" came and altered the landscape by planting non-native plants. In our neighborhood, the San Francisco that existed several hundred years ago was a windy, largely treeless areas with dunes of drifting sand, with areas of "dune scrub."

NAP claims nearly one-third of all city-managed parklands as "natural areas," although the tern "native areas" is really more accurate. NAP park areas are currently quite "natural," filled with plants and trees, most of which are not native to the San Francisco peninsula. NAP wants to remove many non-native trees and plants (and animals) from these areas, and replace them with dune scrub vegetation (in our neighborhood).

NAP has claimed all of Grandview Park, the Rock Outcrop (14th and Ortega), and Hawk Hill (hillside above Hoover Middle School). They have claimed an area along the western end of Golden Gate Heights Park (above 14th Ave). The Management Plan calls for areas of "scattered, open sand" in all four parks within or adjacent to the Golden Gate Heights neighborhood. NAP plans to remove all iceplant and other non-natives that had been planted on the steep slopes of these parks to stabilize the sand and keep it from drifting and blowing. Even with the iceplant, drifting sand frequently blocks 14th Ave near the Rock Outcrop, clogs sewers, and impacts neighboring property. Property owners adjacent to these parks have told us of hard-fought battles over the years to find the right mix of plants to keep the sand in place, and of their concerns that NAP plans to remove those non-native plants could destabilize the hills, with the potential for damage to their property.

The Management Plan also calls for the removal of 3,400 healthy, non-native trees in San Francisco city parks (and an additional 15,000 trees in Sharp Park in Pacifica). The total number of trees slated for destruction is actually higher because the Management Plan defines a tree as being over 15 feet tall, and therefore doesn't include any young trees that will be removed. These trees were planted, in many cases, to provide needed windbreaks and help stabilize areas, and their loss will increase erosion and wind problems in the parks and in the surrounding neighborhoods.

The Golden Gate Heights Neighborhood Association has asked the Recreation and Park Commission to revise the NAP Management Plan to better reflect the needs of San Francisco neighborhoods. Note that the GGNHA is not calling for the end of the NAP program. We just want changes to accommodate the following concerns:

1) That the NAP continue to protect the remnants of native vegetation without damaging surrounding private properties, for example, causing erosion and the resulting blowing sand, and

2) That the proposed plans for the natural areas in San Francisco be revised so that the urban forest is maintained and increased and is not sacrificed to facilitate the introduction of native plants, and

3) That the Recreation and Park Department be responsible for developing the natural areas in a manner that is consistent with the health and safety, as well as the recreational and aesthetic preferences, of the citizens of San Francisco, and

4) That the cost of implementing a management plan for the natural areas not be at the expense of other responsibilities of the Recreation and Park Department to provide recreational programs and clean, well-maintained facilities and parks for the people of San Francisco.

GGHNA encourages all of its members to let the Recreation and Park Commission know what you think about the Management Plan for the Natural Areas Program (to see the plan, go to: http://www.parks.sfgov.org/site/recpark_index.asp?id=1896).

If possible, try to attend the Wednesday meeting and tell them of your concerns about the program's impact on our neighborhood.

Or write the Commission at:

Rec and Park Commisssion President **Gloria Bonilla** at: gloria.bonilla@sfgov.org
Commission Vice-President **Lawrence Martin** at: lawrence.martin@sfgov.org
The Natural Areas Program Manager, **Lisa Wayne** at: Lisa.Wayne@sfgov.org

or send snail mail to the
Recreation and Park Commission
501 Stanyan Street, San Francisco, CA 94117.

Thank you,

Jeff Eng

President, Golden Gate Heights Neighborhood Association

NANCY WUERFEL, 2516 23RD AVENUE, SAN FRANCISCO, CA 94116

May 21, 2009

TO: Mr. Bill Wycko

FROM: Nancy Wuerfel

RE: Notice of Preparation of an Environmental Impact Report
Natural Areas Management Plan, Case # 2005.1912E

The project that is the subject of this Initial study is not in compliance with the approved resolutions from the Recreation and Park Commission (Commission).

1. The following resolutions have not been recognized or implemented in the Natural Areas Management Plan:

At the Special Meeting of the Recreation and Park Commission held on July 26 and continued on August 21, 2006, the Commission unanimously voted to approve Resolution Number 0608-012 as follows:

RESOLVED, That this Commission does approve the Natural Resources Management Plan as amended as the proposed project to be considered under the California Environmental Quality Act (CEQA).

Prior to the vote on Resolution Number 0608-012 two amendments were passed by the Commission to the Natural Resources Management Plan. Those amendments were:

- ***The MA3 areas shall be maintained by parks and squares and urban forestry Departments and may be reforested with native or non-native species. Weed and brush removal and erosion control in MA3 areas shall be undertaken in accordance with the Natural Areas Plan.***

- ***That where appropriate in the plan that feral cat relocation shall be implemented only upon a determination by the Commission that other methods of population reduction failed to adequately reduce cat populations in natural areas.***

The Commission also voted unanimously to approve Resolution Number 0608-013 as follows:

RESOLVED, That this Commission does approve the Request for Proposals for consultant services to perform the necessary environmental analyses pursuant to the

California Environmental Quality Act on the Final Draft Significant Natural Resources Areas Management Plan as amended by Resolution Number 0608-012.

The staff have not done due diligence to determine that the project, submitted for environmental review, was the project approved by the Commission that includes the amendments as noted above. This violates the CEQA requirement for the project to comply with the San Francisco City Charter. Sections 4.102 and 4.113, of the Charter authorize the Recreation and Park Commission to approve plans and set policies for the Recreation and Park Department.

In your cover letter, you referred to the Commission's approval in 1995 of the original management plan, but you do not mention the Commission action that brought this project to the attention of your department for CEQA review. All resolutions by the Commission referable to this project should be cited, complied with, and included as reference documents.

The amended project requires changes in the draft Management Plan of 2006 that have not been made or evaluated by the consultants, since the amendments were never acknowledged. Before the scoping for the EIR is completed, the Management Plan itself must be amended according the Commission's resolution.

The following issues must be acknowledged in the revised Management Plan and any environmental impacts evaluated in the EIR:

- that the MA 1, MA 2, and MA 3 zones are an integral part of the project
- that the maintenance of the MA 3 zone, 43% of the natural areas, is not the responsibility of the Natural Areas Program
- that GR 15 governs the activities in the MA- 3 zone
- that GR-7 referencing feral cat control must now include the Commission's amendment.

2. The following resolution has not been referenced in the Initial Study.

At the Regular Meeting of the Recreation and Park Commission on October 4, 2007, the Commission unanimously voted to approve Resolution Number 0710-011

RESOLVED, That this Commission: 1) accepts the recommendation of staff and the general manager and does approve the award of a professional contract in the amount of $800,000 to Tetra Tech for the environmental analysis in support of the Draft Significant Natural Resource Areas Management Plan and to satisfy the requirements of CEQA guidelines, NEPA, and City, State and Federal regulations and 2) requests the a full EIR be conducted for the Natural Areas Plan and all 31 Natural Areas sites be analyzed.

From reading the Initial Study, it is not clear to me that "all 31 natural areas sites" were analyzed as specified. There has been no quantification of the environmental effects to be experienced at each of the 31 natural areas sites as a result of the implementation of the

Management Plan. There is no evaluation of the cumulative effects on each natural area site of the proposed project. I believe it is incumbent on the Planning Department to ensure the Commission's request is complied with.

3. The Initial Study failed to discuss, in Sections C.1 and C.2 of the report, the CEQA requirement concerning "approvals and permits from City departments other than the Planning Dept..." . Specifically, the Administrative Code CHAPTER 63: LIMITATIONS ON WATER USE FOR LANDSCAPING IN NEW DEVELOPMENTS AND LANDSCAPING RENOVATIONS was not acknowledged or discussed.

Chapter 63 requires a report, plan and approval from the SFPUC for "landscaping renovation" defined as "renovations of landscaping larger than 1,000 square feet involving the installation of a new irrigation water meter to serve landscaping that has not been served by the San Francisco Water Department in the previous five years." Page 94 of the Initial Study states "Reintroducing native species and replacing trees would require irrigation until they become established." The authors claim the irrigation needs would be met by existing water supply capacity, but do not state what that capacity amount is, or quantify the amount of water needed for implementing the Management Plan, or the define the square footage of land to be irrigated. They also seem unaware that SFPUC in now required by law to charge city departments for water that once was free, which requires meters in the parks, which requires permission from the SFPUC to install the new meters.

4. The Initial Study failed to acknowledge that the Recreation and Park Commission, so far, has only approved of the project with amendments to have an environmental review under CEQA. The Commission did not give its approval of the project to be implemented as presented in the Natural Areas Management Plan. It has reserved this decision until after the completion of the CEQA review, at which time the Commission will decide if there will be further amendments to the project and what, if any, mitigations it requires to be done. This final authority must be acknowledged.

In conclusion, the Initial Study failed to include the rulings of the Recreation and Park Commission to amend the project and to direct the analysis of all 31 natural areas, and it does not recognize the Commission's authority to render the final approval of the project. The project description must be modified to reflect the authorized amendments. Compliance with Chapter 63 must be discussed. The oversights enumerated above must be corrected, and the scope of the Environmental Impact Report sufficient to address these issues.

Cc: Recreation and Park Commission
Jared Blumenfeld, Interim General Manager, Recreation and Park Department

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LOMA PRIETA CHAPTER
San Mateo • Santa Clara • San Benito Counties

San Francisco Planning Department
Attn. Mr. Bill Wyko, Environmental Review Officer
1650 Mission St.
San Francisco, CA 94103

May 24, 2009

Re: Natural Areas Management Plan EIR
Pacifica Scoping Meeting for Sharp Park Golf Course
Case No. 2005.1912 E

Dear Mr. Wycko:

The Sierra Club's Loma Prieta Chapter encompasses the Counties of San Benito, Santa Clara and San Mateo - and the Chapter's Coastal Issues Committee has particular focus on issues involving the Coastal Zone as defined in the California Coastal Act. The Sharp Park Golf Course is situated within the City of Pacifica within San Mateo County and, additionally, within Pacifica's Coastal Zone Local Coastal Program, certified by the California Coastal Commission. The Coastal Issues Committee supports San Francisco Planning Department's recognition of Pacifica in its role as the permitting authority for any work requiring a Coastal Development Permit at Sharp Park, and that that be duly considered as part of the EIR process.

Previously, the Loma Prieta Executive Committee passed a resolution that states in pertinent part:

"THEREFORE LET IT BE RESOLVED that the Sierra Club urges the City and County of San Francisco and the San Francisco Recreation and Parks Department to fully consider habitat protection and enhancement measures within Sharp Park Golf Course that could increase and stabilize California Red-legged Frog and San Francisco Garter Snake populations."

Given the extraordinary jurisdictional issues attendant to Sharp Park, we support this particular public recreation property being evaluated by the City of San Francisco in an entirely separate manner, and not in the aggregate of the City's other golf courses and public lands that lie within San Francisco's borders and land use authority. We look forward to reviewing the completed Draft EIR analysis after the input of all of the other oversight agencies is gathered.

Thank you for providing this opportunity for comment.

Sincerely,

Merrill Bobele

Merrill Bobele
Sierra Club Loma Prieta Coastal Issues Committee

The San Francisco Tree Council

May 25, 2009

Bill Wycko, Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103-2479

Re: Expand the scope of the EIR on the Natural Areas Management Plan

Dear Mr. Wycko,

Please expand the scope of the EIR to include a proper scientific study of virtues of Eucalyptus forest as described in today SF Chronicle, by Mr. Peter Ehrlich, the foremost knowledgeable expert on Eucalyptus.

"Peter Ehrlich, the head of forestry for the Presidio Trust, which manages the interior 80 percent of the park for the Golden Gate National Recreation Area. Mr. Ehrlich came to the Presidio in 2000 after serving as the forester for Golden Gate Park.

*"Without **eucalyptus** I don't think they could have stopped the winds or the moving sands in the Presidio," Ehrlich said. "The sea foam green canopies seen as one approaches the Presidio from Marin County are a significant part of the cultural landscape of San Francisco."*

Blue gum eucalyptus trees were unique in that they would actually grow in the sandy soil and withstand the fierce winds blowing off the Pacific. They were used to establish Golden Gate Park, and in 1886, the Army began planting them on the ridges of the Presidio.

Eucalyptus trees also are very effective wind breaks, Ehrlich said. Studies have shown that they slow the wind down at least 30 percent in the Presidio.

Presidio branches out with eucalyptus swap
http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2009/05/25/MNU717JSAI.DTL
Peter Fimrite, Chronicle Staff Writer
Monday, May 25, 2009

Sincerely,

Carolyn Blair, Executive Director
San Francisco Tree Council
Member SF Urban Forest Council
2310 Powell Street, Suite 305
San Francisco, CA 94133
sftreecouncil@dslextreme.com
415-982-8793

Working Together To Preserve & Protect Our Community Urban Forest,
For Nourishment for the Soul, Consolation for the Heart
And Inspiration for the Mind

Tom Borden
<tom@intrinsicdevices.com>

05/26/2009 04:17 PM

To jessica.range@sfgov.org, bill.wycko@sfgov.org, dawn.kamalanathan@sfgov.org, lisa.wayne@sfgov.org

cc

bcc

Subject Please include off-road cycling in the NAP Recreational Trail EIR

Attention SFRPD, NAP, SF Planning Dept. and other parties involved in the Recreational Trails process:

I am a cyclist and member of SFBC and SF Urban Riders. I would like to urge you to include off-road bicycling in the scope of the Natural Areas Plan EIR. There are already lots of recreational cyclists riding in our parks and many more who would welcome the opportunity to ride on officially sanctioned trails. It is safer and more pleasurable to ride on trails in a natural setting, than on the streets where cars are an ever present danger.

I would like to see through-trails in the parks to allow cyclists to transit the city off-street as much as possible. Systems of loop riding trails should be implemented in some of the larger parks. Also, I would like to see at least one bicycle skills park built in the city. This would be an area of concentrated technical features analogous to a skateboard park, but made of wood, earth and rock. These things could be built cheaply and sustainably, largely with volunteer effort.

SF Urban Riders is a cyclist group working to promote off-road cycling venues within San Francisco. We are here to represent the interests of off-road cyclists, provide input to the city, volunteer labor, provide technical support, whatever it takes to get legitimate places to ride in the city.

Sincerely,

Tom Borden

CENTER *for* BIOLOGICAL DIVERSITY

Sent via e-mail on May 26, 2009 to bill.wycko@sfplanning.org

May 26, 2009

Bill Wycko
San Francisco Planning Department
Natural Areas Management Plan
1650 Mission Street, Suite 400
San Francisco, CA 94103

Re: Scoping comments on Natural Areas Management Plan

These are the comments of the Center for Biological Diversity on the Significant Natural Resource Areas Management Plan regarding lands managed as "natural areas" by the San Francisco Recreation and Park Department - specifically those lands at Sharp Park in Pacifica.

The environmental review for the management of the natural areas must include an alternative that provides full ecological restoration of Sharp Park. The City of San Francisco should select full ecological restoration of Sharp Park as the preferred alternative for the management plan, to comply with the Endangered Species Act, manage Sharp Park consistently with the goals of the Natural Areas Program, provide suitable habitat for listed species at the site, and avoid legal liability to San Francisco for illegal "take" of listed species.

The full ecological restoration alternative should:

Eliminate the golf course holes at Sharp Park that are incompatible with maximizing suitable habitat for listed and sensitive species at Sharp Park, specifically the San Francisco garter snake, California red-legged frog, western pond turtle, San Francisco forktail damselfly, and salt marsh common yellowthroat;

eliminate all lawn mowing activities that have the potential to cause take of the San Francisco garter snake or the California red-legged frog, or to adversely modify habitat for these species;

restrict the use of all pesticides, including fungicides, herbicides, and rodenticides, known or suspected to adversely affect the California red-legged frog or the San Francisco garter snake, and include adequate buffer areas to prevent runoff of these pesticides into all aquatic habitats;

Jeff Miller, Conservation Advocate • 351 California St., Suite 600 • San Francisco, CA 94104
Phone: 415-436-9682 x303 • Fax: 415-436-9683 • jmiller@biologicaldiversity.org

cease all use of inorganic fertilizers, and implement a nitrogen and phosphorous monitoring program to discover the extent of nitrogen and phosphorous pollution in Sharp Park water bodies;

cease existing animal burrow management policies and allow development of gopher holes and other burrows within suitable habitat as refugia for the California red-legged frog and San Francisco garter snake;

restrict or cease all water pumping at Horse Stable Pond, at a minimum ceasing all pumping activities between September 1 through May 31, and screening the pump adequately to prevent entrainment of any and all life stages of California red-legged frogs and other wildlife;

create basking and hibernating/estivating habitat for the snake, frog and western pond turtle within Laguna Salada, Horse Stable Pond, and Arrowhead Lake;

control invasive species in Laguna Salada, Horse Stable Pond, and Arrowhead Lake such as invasive fish and bullfrogs, using non-toxic control methods;

install unobtrusive fencing along the length of the sea wall, on its eastern slope, to keep recreational users from entering protected areas;

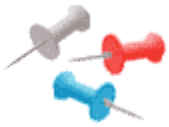
post interpretive signs around Sharp Park regarding the important habitat areas at Sharp Park and the importance of the San Francisco garter snake and the California red-legged frog; and

remove invasive exotic plants and lawn and replant the park and Sanchez Creek with appropriate native species.

The priority for management of Sharp Park should be to restore the park to its natural state as a coastal wetland, and provide more diverse recreational opportunities for the public at the site. The full ecological restoration alternative should prioritize endangered species protection and recovery, natural flood control, outdoor recreation, and sustainable land use.

Sincerely,

Jeff Miller
Conservation Advocate
Center for Biological Diversity



Bill Wycko/CTYPLN/SFGOV
05/27/2009 09:30 AM

To Jessica Range/CTYPLN/SFGOV@SFGOV
cc
bcc
Subject Fw: Mountain Bicycle Recreation to be considered in NAP EIR

----- Forwarded by Bill Wycko/CTYPLN/SFGOV on 05/27/2009 09:33 AM -----

Dayton Crites <dayton@sfurbanriders.org>
Sent by: daytoncrites@gmail.com

05/26/2009 11:24 PM

To
cc
Subject Mountain Bicycle Recreation to be considered in NAP EIR

To those it may concern,

My name is Dayton Crites, and I am one of many San Francisco citizens who values and treasures our open spaces, and does so by recreating through them on a mountain bike. I urge you to add consideration of multi-use trails and bicycle skills areas to the Natural Areas Program Environmental Impact Review.

I volunteer my time as a board member of SF Urban Riders, and as such, work with SF Urban Riders to create healthy off road cycling opportunities for all San Francisco residents. Please do not ignore this significant segment of the park users and stewards by excluding multi use trails and bicycle skills areas from the scope of the NAP EIR.

Off Road cycling is a fast-growing, healthy, and environmentally friendly recreational activity that appeals to a wide demographic. Not to mention the fiscal sense in building trails to enhance the value of our natural areas. Square foot by square foot, trails are perhaps the least expensive land value improvement that can be made due to minimal materials and maintenance costs.

There exist many federal funding sources that favor the inclusion of bicycle trails within natural areas. As a non-profit 501-c3, SF Urban Riders seeks to partner with SFRPD through identifying and procuring funding, as well as mobilizing a volunteer workforce to assist in the construction of trail systems and or bicycle parks.

To gain a sense of our vision for San Francisco's park lands, and why multi-use trails and bicycle parks offer such a wise investment for the City, please visit our website and download our proposal. Pardon the spelling error in the html link. I assure you the spelling is better in the proposal.
http://sfurbanriders.org/wordpress/lead-story/unlease-the-proposal/

Sincerely,

Dayton Crites
SF Urban Riders
415.734.7243

Donjacour family <donjaco@sbcglobal.net>
05/26/2009 11:48 PM

To jessica.range@sfgov.org
cc
bcc
Subject NAP environmental impact

Dear Ms. Range,

I just heard about the Natural Areas Program's plan to remove the current vegetation, especially Himalayan blackberry, from large areas of our city parks. As a wildlife rehabilitator and a native plant restoration volunteer, I would like to know more about this project. I understand that the proposal will be heard by the Rec and Park planning commission only. I have serious reservations about the impact that this project will have, both on the resident animals, especially mammals, and on the budget. It seems that in tough financial times Rec and Park's priorities should be on more immediate things than tearing up large swaths of animal habitat. I am very much a proponent of native plant restoration and volunteer weekly with GGNRA, but this project is misplaced and seems on a hasty path to approval. As a taxpayer I'd like to see my money spent for higher priority projects that take into account the many many animals that live in our parks. The non-native blackberry bushes are great habitat for many animals and provide food as well. We should carefully consider any changes that we make to plants that are so valuable to the animals that actually live in our city parks. We should also consdier whether the money spent on a project like this could be better spent on pressing human needs. I urge you to not approve this project. I would also like to be informed of its progress.

Sincerely,
Annemarie A. Donjacour

San Francisco Planning Department
EIR Public Scoping Meeting Written Comment Form
Natural Areas Management Plan
Case # 2005.1912E

If you wish to submit written comments on the above project, you may do so on this sheet (although use of this form is not required). Please submit written comments at today's public scoping meeting, or by mail to Bill Wycko, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103. **All comments must be submitted no later than 5 P.M., May 26, 2009.**

Write your comments regarding the environmental review for the project here. Use the back of the sheet or additional pages if necessary.

Name: Evan Elias

Organization (if any): neighbor and volunteer for SPCA

Address: 575 Belvedere St, SF, CA 94117

E-mail Address: eeliasmail@yahoo.com

Thank you for this opportunity to make comments on the scope of the EIR for the Natural Areas Management Plan.

I am a neighbor of the Interior Green Belt and Corona Heights Park. I volunteer with the SFSPCA to manage a Trap-Neuter-and Return feral cat colony in the area. I have spent four hours a week in the Interior Green Belt (IGB) for the past three years. During this nearly six hundred hours of being in and observing the forest there, I have learned a lot about the area and its fauna.

The initial study states that "...no important bird habitat has been designated." in the IGB. This is completely inaccurate. I have observed yellow warblers, Steller's Jays, bushtits, song sparrows, owls and Red-tailed Hawks. The yellow warbler is listed in the initial plan as a "species of concern" under CA state status. (Table 2, p.100.) Steller's

Jays and Red-tailed Hawks are listed as "species of local concern." (Table 3-5, p 3-34, p 3-33.)

I have also heard bird songs that I cannot identify, so there are potentially more sensitive bird species that live in or utilize the IGB. This is a biodiverse bird habitat that would be signifigantly negatively impacted by the removal of eucalyptus trees and brush.

The initial study also suggests removing fifteen Monterey Pines from the nearby Corona Heights Park. This park has a lot of Red-tailed Hawk activity. As previously mentioned, the Hawk is listed as a "species of local concern" in the initial study document. (Table 3-5, p 3-33.) Three Monterey Pines and a fourth large tree were recently removed near this area, two of the Pines because of disease. This loss of small bird habitat immediately led to a decrease in hawk activity. When their food source and perching

areas are removed, the hawks leave. Removing fifteen healthy trees in a known hawk area will significantly impact this species. These trees should not be removed.

The IGB has also been identified in the initial study as having "... no site specific wildlife related areas...." This area is home to skunks, raccoons, opossums and feral cats. The himalayan blackberry provides nesting area and protection for these local mammals. Where are they to go when their homes are destroyed?

The Natural Areas Resource group has singled out feral cats as a problem in local park areas. During my hours of observing, I have seen that the feral cats do not pose a threat to the local wildlife. The cats behave as part of the eco-system, not as top predators. The cats are cautious and on-guard in this environment, and their territory is small. The birds and mammals do not fear

them, and the cats do not exhibit hunting behaviors. Strange, but true.

I support habitat restoration and the protection of native species. But this forest is already home to many species that deserve the right to continue their existence.

In terms of Cumulative Impacts, UCSF is present applying for a FEMA grant to clear twenty three percent of the forest on Mt. Sutro and the IGB, and replant with natives. If the UCSF/FEMA plan and this Natural Areas plan both go forward, Mt. Sutro is slated to lose thirty percent of its present forest. This would be devastating in terms of lost bird and animal habitat. I strongly urge the EIR to take this other project into account when determining this plan's impact.

We are so lucky in San Francisco to have these open spaces in our midst. We need to manage them with care, taking into account all

the species that live in and depend on them. In our zeal to support and enhance some, it is important not to displace and discard others as if they are trash. All of our wildlife is valuable, and needs to be treated with respect.

May 26, 2009

Mr. Bill Wycko
San Francisco Planning Department
Natural Areas Management Plan
1650 Mission St., Suite 400
San Francisco, CA 94103

Re: Case No. 2005.1912E: Natural Areas Management Plan

Dear Mr Wycko:

The Golden Gate Audubon Society (GGAS) supports the Natural Areas Management Plan and we are pleased that an Environmental Impact Report (EIR) is being prepared for it. There are several matters of concern we wish to express, and we think that the scope of the EIR should be broadened to cover geology and soils.

Our greatest concern is not with the EIR, but with the plan itself. There is an error of fact, repeated several times, that the bird nesting season in San Francisco and Pacific begins on April 1. That is incorrect. The nesting season for most local bird species is from about February 15 through July 15. In fact Great Blue Herons, owls and hummingbirds may begin nesting in January. Most birds that nest in woodlands, scrub and marshes are on territory by early to mid March and have eggs by April 1. Should vegetation removal take place between mid February and the end of March there will be serious negative impacts to many nesting species. If the plan cannot be changed, this error must be addressed through the EIR process. A reasonable practice that would ensure the safety of almost all nesting birds would be to follow the practices outlined in the plan from February 15 to July 15. Areas that are scheduled for vegetation removal between January 1 and February 15, or July 15 and September 1, should be surveyed for bird nests and nesting activity. If nests are found the project should be modified to ensure that nesting birds are not disturbed.

A4.4 Best Management Practices, Erosion Control: Wood chips may be appropriate in some locations but the use of this erosion control method should be evaluated so that it does not negatively impact wildlife including birds and bees. This should include consideration of birds that require dirt areas for dust baths.

GR-6b and c: These sections suggest using nest boxes for cavity nesting birds and in particular Wood Ducks. This idea may be more appropriate in our "naturalistic parks". Cavity nesting birds were probably fewer prior to the introduction of large trees in San Francisco. Nest boxes may replace cavity nests in such woodlands, but they would be alien in other natural areas. The issue of introducing non-native species into the City is another matter. There are no historic nesting records for Wood Duck in San Francisco County except for one report from the San Francisco Zoo that may have involved a wild Wood Duck with one from the zoo collection. Use

GOLDEN GATE AUDUBON SOCIETY
2530 San Pablo Avenue, Suite G Berkeley, California 94702
phone 510.843.2222 *fax* 510.843.5351 *web* www.goldengateaudubon.org

of nest boxes to enhance nesting for non-native species is questionable and is not supported by GGAS. Use of nest boxes as part of the natural areas plan such as this should trigger consideration in an EIR.

GR-15c: This section suggests maintaining urban forest health by removing dead and dying trees that show signs of disease or insect infestation. This is inconsistent with GR-6a, which calls for leaving snags and dead branches on live trees unless they are hazardous. The EIR should address the issue of snags and standing dead trees and perhaps even suggest alternatives to guide this plan. GGAS has long advocated for a snag policy in San Francisco and we would certainly support developing one through this EIR process.

A 5.15 India Basin Shoreline Park: India Basin Shoreline also supports a huge number and variety of species of waterfowl from fall through spring.

A 5.18 Lake Merced: The project description mentions the Double-crested Cormorant colonies at Lake Merced, but fails to mention Great Blue Herons. Though not a listed species, the herons should be mentioned in this document. In the past Great Blue Herons have shared the three colony sites with cormorants. In 2009 herons nested only in the North Lake Colony and the Mesa Colony.

LM-6c: Permitting access to the shores of the East Lake during any time of year should trigger consideration in the EIR. Such access would increase erosion and if allowed in the time frame suggested of September 1 through March 31 would be likely to impact several nesting species, including the "San Francisco" Common Yellowthroat. This certainly requires consideration in the EIR.

PL-2: This section should be applicable to all Natural Area sites and include Great Horned Owl, Western Screech Owl and Barn Owl nests.

Table 2: Special Status Species…: This should not be limited to breeding birds but should include other species that depend on natural areas during some part of the year. Tri-colored Blackbird utilize Lake Merced during the fall and winter. Brown Pelicans and Peregrine Falcons utilize both Lake Merced and India Basin on an occasional basis. A thorough search of bird records for San Francisco County would identify other species of concern that use natural areas.

E.13 Geology and Soils

We are deeply troubled that impacts on geology and soils are not considered potentially significant. In and of themselves, we see little impact from the projects. It is impacts that result after the projects are in place that should trigger consideration in the EIR. A5.22 Pine Lake is a case in point. Erosion due particularly to off leash dogs and their owners is a significant impact that is resulting in destruction of restoration sites. An associated problem is soil and water contamination resulting from dog and feral cat waste. These are impacts that are likely at other restoration sites like Buena Vista Park, Lake Merced, McLaren Park, and other parks with sandy soils and steep terrain. These impacts need to be treated in the EIR and solutions should be considered. We urge that the EIR process be applied to Geology and Soils.

In the discussion of Lake Merced under Geology and Soils removal of trees on the lake's banks is cited as a potential cause of erosion. The EIR should also consider the impact of not removing single cypress and pines along steep banks that cannot sustain them. Trees such as these have historically fallen and have taken significant amounts of soil with them. There are no cases of trees that were removed causing erosion. This matter in itself should trigger inclusion in the EIR.

Finally, we suggest the EIR should include an updated, comprehensive biological inventory that identifies and describes all species of concern within San Francisco County, their distributions, and their population conditions. If this exceeds the scope of this plan, then a comprehensive biological inventory should be developed specifically for the Natural Areas covered by this EIR.

Thank you for the opportunity to comment on this matter. If you would like to discuss these matters please feel free to contact me at <murphsf@yahoo.com>.

Very truly yours,
Dan Murphy

Golden Gate Audubon Society
Conservation Committee
2945 Ulloa St.
San Francisco, CA 94116
(415) 564-0074

May 26, 2009

Martha Hoffman
1750 Waller Street
San Francisco Ca 94117

Bill Wycko
Environmental Review Officer
San Francisco Planning Department
1650 Mission Street
San Francisco, California 94103

RE: Significant Natural Resource Area Management Plan (SNRAMP), Environmental Impact Report, Case No. 2005.0912E

Dear Mr. Wycko:

I attended the May l2, 2009 public scoping meeting, and I want to make a brief written comment reflecting the spoken comment that I made at the meeting.

In asking you to look at issues in the Natural Areas Management Plan (NAP), I am particularly concerned with animal welfare issues.

I live next to Golden Gate Park and near the Stanyan and Belgrave Streets entrance to the Interior Green Belt. I have worked on San Francisco SPCA (SF/SPCA) projects in those areas over the years and am very familiar with the areas.

First, while I support restoration efforts, I do not want to lose our forests and I am especially concerned about losing protective habitat for wildlife such as raccoons, skunks, possums, etc. For example, Himalayan blackberry offers protective animal habitat. Extensive clearing of underbrush and blackberry removal must be studied in terms of potential negative impacts. Areas of its protection must be maintained (with regards to the CEQA requirement, E.12 Biological Resources, Topic d: no project shall "interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sights"). In this regard Jamie Ray, Director of the San Francisco Wildlife Rehabilitation Program, must be consulted. Ms. Ray is licensed by the California Department of Fish & Game (sfromp.org).

The initial study contains tables listing sensitive species, special status species and an appendix listing bird species found within the Natural Areas. A listing of all animals found within the Natural Areas must be added to these lists.

Second, In regard to feral cats, G.R.7 continues to be very flawed. It must either be removed or completely revised in cooperation with San Francisco Animal Care and Control and San Francisco SPCA.

As a longtime volunteer in the SF/SPCA Feral Cat Program, I have extensive knowledge and experience in observing and working with feral cats in San Francisco. There are very few cats in San Francisco's designated Natural Areas. This is because of the SF/SPCA's Feral Cat TNR (trap, neuter, return) Program. Feral cats should not be singled out as the primary predator or some kind of urgent threat. That is very misguided. From my experience in the field, I would say that they have little impact.

In NAP's discussion of feral cats, rather than focus on the reality in San Francisco, NAP has chosen to dwell on anti-cat and out of state studies. These studies tell us nothing about the feral cats in San Francisco. Alley Cat Allies (alleycat.org) should be consulted as a resource regarding feral cats.

All matters of policy concerning animals in San Francisco need to involve communication and working together with San Francisco Animal Care and Control and the SF/SPCA. NAP has given lip service to these agencies, but has really not shown good faith in working with them. This is not acceptable.

Third, Educational materials must not be about good and bad plants and animals. Respect for all plants and animals must be nourished and developed. Under G.R14, educational materials must have input from all stakeholders including San Francisco Animal Care & Control, the San Francisco SPCA, Recreation and Parks Department and local wildlife expert Ms. Jamie Ray, through the San Francisco public process. Educational materials must not be developed solely by the Recreation and Parks Department.

G.R.7b lists the Cats Indoors program from the American Bird Conservancy as a source of educational information about feral cats and states that the Cats Indoors program is approved by the San Francisco SPCA. *In fact it is NOT approved by the San Francisco SPCA* and is seen as extremely anti-cat and misinformed in its bias. That claim of approval must be removed.

Sincerely,

Martha Hoffman

Martha Hoffman
M.S.W. University of California at Berkeley
Landscape Gardener
San Francisco Feral Cat Program

National Park Service
U.S. Department of the Interior

Golden Gate National
Recreation Area

Fort Mason
Building 201
San Francisco, CA 94123

415-561-4930 phone
415-561-4939 fax

Golden Gate National Recreation Area Fax

To: Jessica Range

Fax number: 415·558-6409

From: Steve Ortega

Date: 5/26/09

Pages to follow: 2

Comments:

If there is a problem, please call: LeeAnn Ciancetti

Telephone: 415·561·4930

United States Department of the Interior

NATIONAL PARK SERVICE
Golden Gate National Recreation Area
Fort Mason, San Francisco, California 94123

IN REPLY REFER TO:

L76 (GOGA-PLAN)

May 26, 2009

Bill Wycko
San Francisco Planning Department
Natural Areas Management Plan
1650 Mission Street, Suite 400
San Francisco, CA 94103

Subject: Comment Extension Request – Natural Areas Management Plan Initial Study

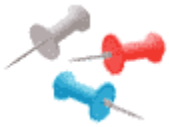
Dear Mr. Wycko:

This letter is in response to the Notice of Preparation of the Initial Study for the Natural Areas Management Plan. Due to staff shortage and vacations we were unable to gather comments regarding this plan by today's due date, May 26, 2009. We would like to request an extension of this due date to Friday, June 5, 2009 so that we may have more time to gather comments.

If you have questions or require additional information, please contact Steve Ortega, Environmental Protection Specialist, at (415) 561-2841.

Sincerely,

Nancy Hornor
Planning Division Chief



Bill Wycko/CTYPLN/SFGOV
05/26/2009 09:16 AM

To Jessica Range/CTYPLN/SFGOV@SFGOV
cc
bcc
Subject Fw: Natural Areas Management Plan scoping comments

----- Forwarded by Bill Wycko/CTYPLN/SFGOV on 05/26/2009 09:18 AM -----

Celeste Langille <cclangille@earthlink.net>
05/25/2009 11:30 PM
Please respond to Celeste Langille <cclangille@earthlink.net>

To bill.wycko@sfgov.org
cc
Subject Natural Areas Management Plan scoping comments

May 25, 2009

Bill Wycko
San Francisco Planning Department
Natural Areas Management Plan

Below are my scoping comments on the the City of San Francisco Planning Department's Natural Area Management Plan project EIR. I am a resident of Pacifica, a current City of Pacifica Planning Commissioner, and a former member of Pacifica's Open Space Committee and also a former member of the City of Pacifica's GGNRA Liaison Committee. I am submitting these comments solely on my personal behalf and my comments are focused on the Natural Area Management Plan involving Sharp Park.

I applaud the goals set forth in the Initial Study and the Natural Areas Program environmental review process.
I would like the City to review and select a full restoration alternative for Sharp Park. Also, the EIR must consider current information regarding sea-level rises and the impact on the western portion of Sharp Park.

The eastern canyon areas (east of Highway One)of Sharp Park contain especially well-preserved native habitat, important populations of special-status species, and other natural areas values. The eastern canyon areas of Sharp Park are susceptible to human impacts and should be off-limits to dogs. The EIR should not select any alternatives involving activities in Sharp Park that would increase recreation demands, including those involving increased vehicle traffic.

I fully support the Recommended Management Actions set forth in the Initial Study and would add restoration of all of Sanchez Creek as a goal. The Conservation and Restoration goals for all areas of Sharp Park in Pacifica should continue to be to maintain all viable populations of special-status species, improve habitat and natural areas connectivity, and prevent introduction of and decrease the amount of non-native invasive species.

Thank You,
Celeste Langille

Mitch Monroe
<mitch@sfdirtlab.com>
05/26/2009 03:23 PM

To jessica.range@sfgov.org
cc
bcc
Subject NAP EIR Scoping Comments

Jessica and others,

Thank you for involving the community of Pacifica to a be a part of the scoping process for teh upcoming DRAFT EIRs for San Francisco's Natural Areas.

Please pass this along to you contemporaries at SFRPD, NAP, SF Planning Dept., and any other interested parties involved in the Recreational Trails process.

SF Urban Riders is a Non-Profit 501c3 whose goal is to create healthy off road cycling recreation for all users, and encourage youth opportunities. We represent a growing number of recreational cyclists who are asking in unison to Please ADD multi use trails, off road bicycle trails, single track trails, and bike skills areas to the EIR scope of any projects in our larger parks and open spaces.

Off Road cycling is a growing contemporary activity that provides healthy recreation accessible at any level of entry, and appeals to a wide demographic. Trails are also the cheapest form of recreational improvement that can be made because they are sustainably designed, then constructed of natural materials by a large volunteer effort. There are many available federal funding sources that favor the inclusion of bicycle trails. SF Urban Riders would make a good partner with SFRPD on many levels and improve the overall quality of our parks.

Please refer to our Bicycle Trail Master Plan which was submitted to SFRPD in mid-April.

In closing, please add bike trails, single track trails and bike skills areas to the NAP EIR Scope.

Best regards,
--
Mitch Monroe
SF DIRTLAB
mitch@sfdirtlab.com
650-255-4323

Nature in the City

PO Box 170088
San Francisco CA 94117
www.natureinthecity.org
415.564.4107

Tuesday, May 26, 2009

To: Bill Wycko
San Francisco Planning Department
Natural Areas Management Plan
1650 Mission Street
Suite 400
San Francisco Ca 94103

From: **Nature in the City**
Peter Brastow, Founding Director
Re: *Initial Study, Significant Natural Resource Areas Management Plan*

1. The SNRAMP EIR must include a **maximum possible ecological restoration** alternative for Recreation and Park's 31 Natural Areas, so that the public has the opportunity to understand the potential for a biodiverse urban ecological future, and how that future would affect people and our environment.

The maximum possible ecological restoration alternative would include the following, for example:

a. Eradication or thorough control of all invasive plants on the San Francisco Weed Management Area (SFMWA) priority weed list.
b. Removal of all isolated invasive tree and shrub stands (not including ones that are serving a specific wildlife habitat function from year to year) from within natural areas to optimize continuity of native wildlife and rare plant habitat.
c. Total enforcement of leash laws in our parks and natural areas, so that, in effect, dogs are ONLY off-leash in DPAs, many of which should be moved away from natural areas for this alternative.
d. Total integration of the Cats Indoors Program (http://www.goldengateaudubon.org/html/catsindoors/catsindoors_page_2.htm#Resources), so that feral cats are not allowed to harm birds and other wildlife and themselves.
e. No designation for MA1s, MA2s, MA3s. The natural landscape must be examined, planned, evaluated and managed as a whole for the benefit of San Francisco's natural heritage and biodiversity.

2. The management framework of MA1s, MA2s and MA3s presents some real problems; instead of explicitly addressing the ecological fragmentation of our natural heritage, this arrangement perpetuates it with a fragmented management approach for the natural areas. Regardless of the relative value of different pieces of our natural areas, they should be managed with coherence, continuity and consistency for wildlife, rare plants, and ecosystem processes. MA-3s should not be subject to "few restrictions on recreational use" nor the "prohibition on (re)introduction of sensitive species." The lines between the areas are fuzzy, and so they should be managed as a whole with the highest degree of conservation protection. Discard the MA1s, MA2s, MA3s approach. If this approach is ultimately applied to Tank Hill, for example, then the unique south-facing cliff habitat will always be considered an "MA3" with no opportunity for restoration of native plant and wildlife habitat.

3. The EIR should thoroughly evaluate the environmental impacts of leaving so many – 95% - of the invasive trees in the natural areas, according to the current plan.

4. The EIR should comprehensively evaluate the impacts of off-leash dog use on San Francisco Natural Areas and the fact that 90% of Dog Play Areas are in the natural areas, according to the current plan.

5. On Page 8 of the NOP, it states, "Trails would be created in previously inaccessible areas, as opposed to improving social trails."
In general, new areas should not be opened up for trail use. Hundreds of miles of social trails criss-cross the natural areas. These should be either improved, if appropriate or closed if appropriate, and the decisions should be based on a comprehensive approach to trail planning. Environmental impacts from trail building, restoration, and closure should be comprehensively evaluated.

6. The impact of the golf course on the natural areas and natural resources at Sharp Park should be thoroughly evaluated, particularly for the impact to the federally-listed endangered San Francisco garter snake and the federally-listed threatened Calfornia red legged frog. The preferred alternative should be the one that recovers the San Francisco garter snake to self-sustainability.

7. Geology and Soils should not be eliminated from the effects discussion in the EIR. We need to know the impact to our native geology and soils from:

a. Rampant commercial off leash dog walking.
b. Leaving eucalyptus and other tree species growing on steep cliffs, where they can contribute to severe bedrock erosion events.
c. Continued deposition of cypress and eucalyptus duff into the natural chert and other Franciscan soils.

Sincerely,

Peter Brastow, Founding Director

INTEROFFICE MEMORANDUM

TO: SAN FRANCISCO PLANNING DEPARTMENT

FROM: BRENT PLATER, GOLF COURSE TASK FORCE MEMBER

SUBJECT: COMMENTS ON SCOPING FOR THE NATURAL AREAS MANAGEMENT PLAN AND THE FINAL PROS CONSULTING REPORT ENTITLED SAN FRANCISCO RECREATIONAL OPPORTUNITIES SUMMARY REPORT

DATE: 5/26/09

CC: SAN FRANCISCO RECREATION AND PARKS DEPARTMENT, SAN FRANCISCO RECREATION AND PARKS COMMISSION, SAN FRANCISCO BOARD OF SUPERVISORS, NANCY PELOSI, JACKIE SPIER, LEELAND YEE, MARK LENO, TOM AMMIANO

INTRODUCTION

This memo provides scoping comments on the Significant Natural Resource Areas Management Plan, and the Laguna Salada Wetlands Enhancement Project at Sharp Park. It also provides comments on Pros Consulting, Inc.'s August 2008 report entitled San Francisco Recreational Opportunities Study Summary Report.

Sharp Park, located in Pacifica but owned and operated by the City and County of San Francisco, is arguably the most important natural area within the Recreation and Parks Department's jurisdiction. The status quo at Sharp Park is unsustainable: the golf course that occupies much of the property is losing money, killing two endangered species, and threatens the surrounding community every year when the golf course floods. These problems are only going to get worse as our climate warms and sea levels rise. Much of the comments I provide will address how to ensure that Sharp Park becomes a community-centered model for outdoor recreation, endangered species recovery, and natural flood control.

As a member of San Francisco's Golf Course Task Force, I was asked to provide comments on the Summary Report, and in particular, to comment on the assumptions made and analysis provided by the Summary Report. Moreover, because I was appointed to the Golf Course Task Force to represent San Francisco's environmental community, I have provided comments that address the environmental consequences of San Francisco's existing golf programs and services, as well as the likely consequences that would occur if any of the Summary Report's recommendations were implemented by San Francisco. See Exhibits AA, KK.

COMMENTS ON THE LAGUNA SALADA WETLANDS ENHANCEMENT PROJECT, THE SIGNIFICANT NATURAL RESOURCE AREA MANAGEMENT PLAN, AND THE FINAL YOUNGER REPORT.

The environmental review for the Significant Natural Resource Areas Management Plan includes an enormous amount of funding and work to implement site-specific measures at Sharp Park. These measures are designed to reduce the take and encourage the recovery of two protected species: the California red-legged frog and the San Francisco garter snake. To ensure that the San Francisco garter snake recovers, the City must analyze and select full restoration alternatives that redesign or eliminate the golf course at Sharp Park.

A. SHARP PARK GOLF COURSE IS LOSING MONEY.

Sharp Park Golf Course costs the City and County of San Francisco hundreds of thousands of dollars a year in net losses to operate, losses that are not and cannot be recovered by the revenue generated by the golf course. The drain Sharp Park places on San Francisco resources robs our other municipal golf courses of needed maintenance; delays the golf fund's repayment of monies borrowed from the open space fund; and puts San Francisco's neighborhood parks and community centers at risk of closure.

These losses have been largely hidden to the public because of an incomplete accounting system: many of the expenses that the City spends to maintain Sharp Park Golf Course are not sourced from the Golf Fund, and therefore are not directly counted against the golf operations. For example, this Fiscal Year San Francisco spent approximately $240,000 from the Capital Fund to fix Sharp Park Golf Course's endangered species-killing pump house. See Exhibit C. San Francisco also spent $24,000 to hire monitors from the Natural Areas Program to reduce the number of endangered species killed by the golf course's operations this fiscal year, see Exhibit D, and even the environmental review process for the Laguna Salada Wetlands Enhancement Project—which is a prerequisite for the golf course to obtain permits to kill the endangered species found at Sharp Park—costs San Francisco taxpayers over $412,000. See Exhibit E.

But even within the Golf Fund, Sharp Park loses a staggering amount of money each year, money that could be used to provide recreational services where San Franciscan's actually live. For example, between Fiscal Year 04-05 and Fiscal Year 07-08, Sharp Park Golf Course drained between $30,000 and $300,000 each year from the golf fund alone. See Exhibit A. The variation in year-to-year losses is related to the number of rounds sold at Sharp Park, which in turn is driven by the wet conditions at Sharp Park that often leave the course unplayable.

Even these losses were hidden by official reports provided by the Recreation and Parks Department. See Exhibit B. The losses to the Golf Fund were hidden for three reasons. First, Exhibit B lists as revenue a subsidy to the Golf Fund from the General Fund. But the General Fund is simply a separate account that holds taxpayer monies: to a San Francisco taxpayer, this is simply another expense, not revenue generated by golf course operations. Second, Exhibit B lists as an expense funds repaid by Harding Golf Course to the Open Space Fund. But like the General Fund "revenues," this is not a true expense to San Francisco taxpayers, but just a transfer of taxpayer funds from one account to another.[1] Third, Exhibit B shows that a large sum of money is placed every year in a "golf unallocated" column. These are revenues and expenses that are drawn from or paid into the upkeep and management of each golf course, and to understand how each course is doing a methodology must be used that allocates these revenues and expenses to each course. Each of these three limitations in the RPD data are corrected in Exhibit A: the general fund and open space transfers are removed from the balance sheet, and the unallocated expenses and revenues are allocated to each course using two different methodologies, for comparison. Thus, Exhibit A is the most accurate reflection available of the day-to-day course operation and maintenance costs for Sharp Park and the City's other municipal golf courses. Combined with the subsidies provided to Sharp Park from the City's other sources of revenue, the golf course's drain on fiscal resources amounts to hundreds of thousands of dollars each year.

Future costs of Sharp Park Golf Course operations are predicted to be even more dire. In 2007, the Recreation and Parks Department concluded that unless changes are made at Sharp Park Golf Course, operating losses at Sharp Park Golf Course will total in the millions of dollars. See Exhibit F. Moreover, Sharp Park's illicitly built sea wall is likely to erode away due to anticipated changes to our ocean and coast wrought by climate change. See Exhibit G. Armoring the sea wall, which will be necessary only if Sharp Park Golf Course remains, will cost upwards of $32,000,000. See Exhibit H. Even the golf course's water supply is likely to become more expensive: the 400,000 gallons of water needed for peak demand must be provided by recycled water if we are to address ongoing droughts, and a recycled water project for Sharp Park is expected to cost $8,000,000. See Exhibit I.

The status quo at Sharp Park Golf Course is infeasible and simply cannot hold. The golf course operations lose too much money, money that could be spent to improve San Francisco's other

[1] It is of course a justified transfer, as Harding Park was given a large loan from the Open Space fund in order to upgrade the golf course several years ago, but to date has been unable to completely repay the funds it borrowed.

municipal golf courses, or keep our community centers open for more hours each day, or fund other essential city services.

B. SHARP PARK PROVIDES A POOR GOLF EXPERIENCE, AND REFURBISHING THE GOLF COURSE IS NOT FEASIBLE.

Sharp Park Golf Course provides a poor golfing experience, and improving this experience will require tens-of-millions of dollars in permitting fees and capital improvements that the City and County of San Francisco simply doesn't have, making any proposed improvements infeasible.

Sharp Park Golf Course is considered substandard by nearly any golf measure. See Exhibit M. The National Golf Foundation found that Sharp Park Golf Course has poor turf conditions, an outdated and ineffective irrigation system, inadequate drainage, flooding problems, and dangerous cart paths. See Exhibit L. Moreover, a survey of golfers indicated that Sharp Park received "F" grades for friendliness of staff, conditions of golf carts, the availability of golf amenities, on-course services, the conditions of the golf greens, and overall course conditions. Id.

Because of the substandard conditions, golfers exhibit "very little loyalty" to the course: they play there primarily because it is cheap, rather than because of the quality or history of the course. See Exhibit L. Indeed, the existing prices—which are some of the lowest in the Bay Area golf market—are believed to be all the market will bear by golf industry experts given the poor conditions at the course. See Exhibit L. Yet even at the existing price points, rounds played at Sharp Park have declined precipitously. Between 2000 and 2006, rounds played at Sharp Park declined by 38%. See Exhibit L. Because of this, Sharp Park currently operates at 45% of its overall capacity, about 15% below industry standards. See Exhibit M. Thus, Sharp Park cannot increase its contribution to the golf fund simply by increasing prices: if prices are raised without concomitant improvements to the golf experience golfers would choose to play elsewhere, reducing overall revenues received from the golf course.

PROs Consulting has argued that Sharp Park should nonetheless be restored to the original Alister MacKenzie design and marketed as an elite, historic golf course. See Exhibit M. Capital improvements alone for this alternative are expected to run as high as 14 million dollars. Id. Additional costs for permitting from the U.S. Fish and Wildlife Service, the Department of Fish and Game, and the Coastal Commission are likely to cost an additional 5-10 million dollars. PROSs Consulting, the National Golf Foundation, and the Recreation and Parks Department all agree that this level of capital investment is not possible from the City and County of San Francisco. See

Exhibits L, M, F. Instead, the proposals suggest privatizing Sharp Park Golf Course operations by executing a long-term lease with a golf developer, allow the developer to raise prices to $120 per round and up, busting the labor union that works at the course, and using these incentives to convince the golf developer to invest the capital necessary to refurbish Sharp Park Golf Course. Id.

None of these requirements—privatization, union busing, and raising golf prices by an order of magnitude—are likely to be palatable in San Francisco. But even if these requirements could be met by San Francisco, it is unlikely the market could support such a golf course at this time or in the future. First, the collapse of the capital market in the past year makes it highly unlikely that the type of capital necessary to refurbish Sharp Park could be obtained: particularly when it is unlikely that permitting agencies such as the U.S. Fish and Wildlife Service and the Coastal Commission would ultimately permit such an intensive use of Sharp Park. More importantly, the Bay Area golf market is already oversupplied causing courses to close and driving prices downward precisely when Sharp Park would have to raise them. Golf demand is declining nationwide, see Exhibit J, and in the Bay Area the decline is particularly acute: the Bay Area currently supplies 6,000,000 more rounds of golf each year then Bay Area golfers demand.[2] See Exhibit K.

Under these market conditions, golf courses will close, and increasingly golf courses that do close are not used for open space, but for urban infill and other developments. See Exhibit O. For example, a municipal golf course in Livermore has been proposed to be partially sold to developers. See exhibit N. Because Sharp Park contains a deed restriction requiring the land to be used as a "public park, or public playground,"[3] it cannot be developed. Because of this, if Sharp Park remains open through ongoing government subsidy, it is likely that some other, better golf course will fail, the land will be sold, and the land will be converted to a more intensive development use. Conversely, if Sharp Park were to close, this would help sustain the market for other, better golf courses and because of Sharp Park's deed restriction we would not face concerns about development pressures impacting the existing open space landscape at Sharp Park.

[2] This data, from PROs Consulting, is likely an underestimate of the excess golf capacity in the Bay Area. PROs did a regional assessment of golf supply, but based Bay Area demand for golf on national averages, rather than conducting local assessments for golf demand. This is likely to overestimate golf demand in the Bay Area: the Bay Area is blessed with a multitude of recreational opportunities that compete with golf for our recreational time and dollars, and existing data indicates that regional golf courses continue to operate below capacity because of it.

[3] Thee deed restriction does not state that the land must be used for "recreational purposes," as is often reported. The existing golf course, which precludes entry to Sharp Park to anyone that is not golfing or obtains prior permission from the private golf concession arguably violates the deed restriction.

C. SHARP PARK GOLF COURSE DESTROYED HISTORIC HABITAT FOR ENDANGERED SPECIES AND CONTINUES TO TAKE SPECIES WITHOUT A PERMIT.

Sharp Park has always provided suitable habitat for the San Francisco garter snake and the California red-legged frog, but the construction of Sharp Park Golf Course and the building of Sharp Park's sea wall has destroyed the vast majority of habitat present at the site. However, the Laguna Salada enhancement plan seems to presume that Laguna Salada was a salt-water lagoon that was inhospitable to the snake and the frog. It therefore seems to presume that the golf course and sea wall somehow prevent Laguna Salada from becoming too saline for these animals to survive. This erroneous assumption hinders the ability of the Recreation and Parks Department to consider feasible restoration alternatives at Sharp Park.

As a preliminary matter, the California red-legged frog is relatively tolerant to salinity for an amphibian, which is why we have exemplary coastal populations at places like Rodeo Lagoon at Fort Cronkhite and Abbotts Lagoon in Point Reyes. See Exhibit P. Indeed, a little bit of salinity is good for the frog, because the non-native, invasive, and predatory bullfrog is less tolerant of salt, and so a little salinity actually ensures that the California red-legged frog population remains robust while the bullfrog population is constrained.

Historically, both the California red-legged frog and the San Francisco garter snake thrived at Sharp Park: until the golf course and sea wall destroyed the functioning ecosystem there. See Exhibit Q. Sharp Park once contained a backbarrier lagoon system that protected the lagoon from coastal intrusion except in the most extreme storm events. During these events, salt water intrusion would be balanced against freshwater rainfall and freshwater drainage that funneled from the large watershed into Laguna Salada, keeping salinity levels balanced and low enough for the frog to survive. This would occur until the backbarrier lagoon would "heal" itself through natural sand movement that would rebuild the barrier system. Moreover, because the golf course did not exist, there was a gradient of wetlands upland of Laguna Salada, each with higher freshwater content, that the frog and snake could use through small-scale migrations until optimum conditions returned to the lagoon. See Exhibit R.

However, when the golf course was built, these upland wetland habitats were completely destroyed. Moreover, in a great act of hubris, Alister MacKenzie destroyed the natural barrier along the ocean in order to place 7 links of golf on the beach. When MacKenzie did this, massive coastal

floods were unleashed on Sharp Park and destroyed all seven of these holes, and in one instance ocean sea waters crept inland as far as the Sharp Park golf course clubhouse. See Exhibit S.

The frog and snake populations survived this inundation. The earliest surveys for the San Francisco garter snake at Sharp Park date back to the 1940s, after the course was designed but before the illicitly-built sea wall was constructed to protect Sharp Park from further coastal storms. At that time, the snake was considered "abundant" at Sharp Park. But follow-up surveys in the 1970s found a population in decline, and then, subsequent to the construction of the sea wall, surveys indicated that the snake was near extinction. In 2006, the US Fish and Wildlife Service concluded that a lawn mower killed a San Francisco garter snake at Sharp Park. See Exhibit T. Examination of the dead San Francisco garter snake indicated lacerations consistent with lawn mower blades and grass clippings in the wounds. See Exhibit U. In 2008, one to two San Francisco garter snakes were observed all year. See Exhibit V.

Today, the frog and the snake are literally squeezed between a fairway and a hard place. The golf course has destroyed all suitable upland habitats. If the sea wall were to the fail—and it will unless we invest millions of dollars to armor the sea wall or replace it with the natural barrier protections that were once there—the frog and the snake would not have any upland wetland areas to move into. Moreover, even if the sea wall does not fail, there is currently not enough habitat at the lagoon to ensure that the snake can recover: the population would remain at such a low level that a random event such as a disease or pollution spill or poaching would result in the extirpation of the population.

Moreover, the golf course's ongoing maintenance and operations take both species. Yet the City does not have a permit to take either species; it has implemented no mitigation measures to reduce take of the snake to date; and the mitigation measures that have been implemented to reduce take of the frog are not effective in reducing take of frog egg masses and tadpoles to zero. See Exhibit V. In addition, most of the California red-legged frog egg masses are laid at Horse stable Pond, where Sharp Park Golf Course's pump house is found. After the recent $240,000 construction project to fix a broken pipe from the pump house through the sea wall to the ocean, biologists concluded that entrainment of frog egg masses, tadpoles, and perhaps adults could occur, pumping individuals from Laguna Salada out to sea. See Exhibit W.

Because the San Francisco garter snake is a fully protected species under California law, the golf course's operations and maintenance can never be incorporated into a take permit for the species.

Therefore, as long as the golf course is in operation, it will be at risk for substantial civil and criminal penalties for taking the species. Take may occur directly, such as killing snakes with lawn mowers, or it may occur indirectly, through habitat modification that leads to the death or injury to individual animals, especially through the modification of habitat in ways that significantly impacts essential behavior patterns such as breeding, foraging, estivating, and other activities.

If the City were to attempt to obtain a permit for the Laguna Salada Wetlands Enhancement Project or the Natural Areas Program Management Plan that incorporates the threat to the species—the golf course ongoing maintenance and operations—into the permit, or the Department of Fish and Game were to issue such a permit, the permit would be unlawful, as only bona fide restoration and recovery efforts are eligible for fully protected species take permits under California law.

In the absence of any legal authority to continue golf course operations without violating California and federal environmental laws, alternatives that retain the golf course in its existing configuration and cause take are simply not feasible, and cannot be assessed under CEQA. Only alternatives that reduce take to zero with a reasonable certainty may be assessed as feasible alternatives under CEQA. Only alternatives that eliminate or redesign the golf course can meet this standard, and therefore these are the only alternatives that can be assessed as feasible.

The importance of Sharp Park for the long term survival and recovery of the San Francisco garter snake cannot be overstated. It is the northernmost population within the species range, and as climate change shifts the species habitats northward, this population is therefore the most likely to successfully adapt to changing conditions. See Exhibit LL. It is also the most genetically in tact of any population, which means it is the population that could best serve as a source population for the reintroduction of the species into historic habitats. Id. And reintroduction is needed: existing recovery goals require 10 viable populations be present in the wild before the species can be considered recovered, and at present there may only be six populations, none of which are known to be viable in the long run under existing conditions. Id.

If San Francisco only eliminates active take of the snake at Sharp Park, but does not provide adequate new habitat for the species to recover, in the 50-year time horizon the species will be lost from Sharp Park, and probably the entire world.

D. THE LAGUNA SALADA WETLANDS RESTORATION PROJECT MUST CONSIDER THE IMPACTS OF CLIMATE CHANGE AND THE LONG-TERM SUSTAINABILITY OF THE SITE.

Our best predications about how global warming will impact Sharp Park indicate that existing problems with flooding, drainage, endangered species take, and the construction of the sea wall will only get worse. The City must consider alternatives that plan for the long-term adaptability of Sharp Park to these changes so that the recovery of the San Francisco garter snake can be assured at the site. See Exhibit Y.

Historically Sharp Park included a backbarrier lagoon system. This system contained a barrier sand system that separated Laguna Salada from the Pacific Ocean and protected the lagoon from massive coastal intrusions. However, Alister McKenzie's original golf course design destroyed this protection by laying seven links of golf on the beach. By destroying this protective system, the design unleashed two massive coastal storms that inundated much of Sharp Park with sea water, and destroyed much of the golf course, including the seven beach-side links.

To prevent the ocean tides from inundating Sharp Park, the City built, over time, an illicitly and poorly constructed sea wall at Sharp Park. However, in so doing the City plugged the natural freshwater outflow—Sanchez Creek—and prevented the freshwater that accumulated in the large water shed of which Sharp Park is a part from reaching the ocean. Thus, Sharp Park now annually floods with freshwater.

Sharp Park's sea wall is likely to erode away unless something is done to prepare the area for the impacts of global warming. See Exhibit G. There are essentially two alternatives: armor the sea wall at a cost of $32 million, or attempt to recreate an adaptive barrier that will be more resilient to the changes that will occur due to climate change and that will help protect the coast from global warming.

Armoring the sea wall could affect the entire beach at Sharp Park, as it may affect beach dynamics and sand movement. An alternative is to try and recreate, after snake and frog recovery efforts have succeeded and the population is secure, the more dynamic barrier lagoon system that likely existed at Sharp Park historically. This alternative is likely to be cheaper, more effective, and more sustainable than placing an unmovable barrier across the mouth of Sanchez Creek that will not be able to adapt to the changes wrought by global warming. See Exhibit X.

Therefore, it is essential that the City consider alternatives that will provide for the long-term sustainability and recovery of the Laguna Salada ecosystem and the San Francisco garter snake. Opportunities to learn more about this possibility will be discussed at a conference in Pacifica, CA at the end of June. See Exhibit Z.

E. FULL RESTORATION OF SHARP PARK WILL PROVIDE SAN FRANCISCANS WITH RECREATIONAL AMENITIES THAT THEY ACTUALLY DEMAND.

Full restoration alternative must be considered at Sharp Park for another reason: San Francisco's number one recreational demand is for more hiking and biking trails, while golf finishes 16th out of 19 recreational options in the same survey. See Exhibit BB. This is direct evidence that San Francisco is not providing what modern San Franciscan's demand from their recreational facilities. The primary reason this is the case is because hundreds of acres of City property are locked into exclusive golf uses created decades ago and have remained static, while San Francisco residents' recreational preferences have changed.

Moreover, the San Francisco Board of Supervisors unanimously passed a resolution ordering the Recreation and Parks Department to consider full restoration alternatives at Sharp Park. This is another indication of the overwhelming public support for San Francisco to reconsider what it supplies to its residents. Even Sharp Park's existing concessionaire has recognized that San Franciscans have little demand for the existing golf course, stating in a proposal to the City that the typical golfer at Sharp Park is a "local resident" of the course. See Exhibit FF.[4]

Under these circumstances, it is imperative for the City to consider and select alternatives at Sharp Park that restore the site and provide recreational opportunities that are compatible with that protection. For example, a full restoration alternative has been proposed at www.restoresharppark.org. See Exhibit CC. This restoration proposal would create a community centered model of natural flood control, outdoor recreation, environmental education, and

[4] The Current concessionaire is on a month to month lease, and this lease should be cancelled as soon as practicable and not renewed. The concessionaire has shown outright hostility to the minimum environmental protections imposed on the golf course to date, by orchestrating a public relations campaign against the environmental protections and also be redesigning the golf course logo and emblem with a biologically inaccurate depiction of a California red-legged frog preventing a golf ball from being in play. This emblem was labeled "Sharp Park Home of the Red Legged Frog," and sold on t-shirts and other memorabilia at the golf course club house. See Exhibit GG. The existing management simply does not have the temperament or character necessary to solve the environmental problems imposed by the golf course. Moreover, as early as 1993, San Francisco's Civil Grand Jury discovered that mandatory investments in the golf course were not being made by the concessionaire. See Exhibit MM. A new concessionaire is needed to investigate and remedy these allegations.

endangered species recovery. These alternatives are feasible and must be considered during the EIR process.

F. RPD MUST SELECT APPROPRIATE STAFF AND CONSULTANTS TO CONDUCT FULL RESTORATION ALTERNATIVES.

Currently RPD has an enormous contract with consulting giant TetraTech to perform the Laguna Salada enhancement restoration project. However, full restoration alternatives will require that existing subcontractors with relevant expertise become more involved in the restoration planning process. For example, subcontractor Greg Kamman is the only individual named in the Laguna Salada Wetlands Enhancement Project with enough expertise to prepare serious alternatives for Sharp Park that consider the long-term sustainability of the berm, the original historic conditions of the site, and the dynamic conditions that will be imposed by global warming on the site. Additional experts such as coastal ecologist Peter Baye, coastal engineer and Pacifica resident Bob Batallio of Philip Williams and Associates, Darren Fong of the National Park Service, Carlos Davidson of San Francisco State University, and many other local individuals with site-specific knowledge of Sharp Park and tidal conditions on amphibian and reptile habitats must be consulted, because no one on the team specified by TetraTech have expertise in these areas. Indeed, Karen Swaim, the consulting herpetologist, simply does not have the expertise and understanding of dynamic coastal systems to provide full support for a project of this magnitude.

More importantly, Dennis Murphy and his colleagues are inappropriate consultants for this project. See Exhibit HH. As a preliminary matter, Dr. Murphy is not qualified to consult on these projects, as he is a butterfly expert and not an expert in herpetology, coastal ecology, and climate change. Moreover, Dr. Murphy's objectivity and reputation have come into question because of his relationship with developers. See Exhibit DD. Mr. Murphy simply should not be permitted to consult on this project when local, objective experts with site-specific knowledge of Sharp Park and with relevant expertise are available for the Department.

G. FULL RESTORATION CAN BE FUNDED BY PRIVATE MITIGATION BANKS OR BY PUBLIC-PRIVATE PARTNERSHIPS.

Full restoration alternatives must be considered for another reason: both private and public models indicate restoration will provide the City and County of San Francisco with net profits that are greater than any golf amenity that could be create at Sharp Park.

RPD has already received a prospectus from a wetlands mitigation banking company that has proposed to do a fully public wetlands mitigation bank at the site. For the types of wetlands that could be restored at Sharp Park, CalTrans was paying up to $3.5 million dollars per acre as recently as last year. See Exhibit II. There are approximately 200 acres at Sharp Park that could be developed into wetlands under this model, bringing in a gross revenue of over $700 million dollars. A portion of these funds would be held in trust to pay for ongoing maintenance and upkeep, another portion would be used to conduct the restoration work. But the remaining funds would be profit to San Francisco: and more profit that Sharp Park Golf Course could provide to the City over the next 100 years. Although mitigation banks have been controversial in the environmental community, a fully public mitigation bank with reasonable constraints on access to the bank would be met with 100% support from the Bay Area's environmental community and would allow San Francisco to be a leader in environmentally sound restoration and financing projects.

Another model is also feasible. At Crissy Field restoration was funded by a collaboration of public grants and private philanthropic donations. This model could also succeed at Sharp Park, and must be explored by the City. These restoration alternatives would also provide revenue for Pacifica. Golf courses are no longer the amenity that developers are designing projects around. See Exhibit NN. Instead, developers are looking for natural resources to use as a center piece and an attraction to their developments. Pacifica already has plans to create a new urbanism city scape at Palmetto Avenue, which currently dead-ends into a chain-link fence on Sharp Park's north side. If Sharp Park were restored and a trail created to link Palmetto Avenue with a restored trail system at Sharp Park, Pacifica would have a recreational amenity unlike any other on the California Coast, one that integrates the best of new urban design with the natural resource amenities that modern communities and tourists are willing to pay a premium for.

H. RESTORING SHARP PARK TO A NATURALISTIC STATE WOULD BE GOOD FOR THE GAME OF GOLF.

Sharp Park Golf Course is losing money, killing two endangered species, and puts the surrounding community at risk every year when it floods. The status quo simply isn't sustainable at Sharp Park: something must change there. The question is what will Sharp Park become. For the good of the game, Sharp Park Golf Course must close.

Nationwide the game of golf is in decline. See Exhibit J. This decline is more acute in the Bay Area, where we have an unparalleled diversity of recreational opportunities competing with golf for our recreational dollars. See Exhibit K. Currently the Bay Area supplies 6 million more rounds of

golf than golfers demand each year, and this is causing golf courses to close in nearly every Bay Area county. Id. Golf courses in Livermore, Forest Knolls, San Francisco, and in Pacifica are already up for sale or are being proposed for conversion to some other use, and the best predictions indicate that more golf courses will suffer this fate before the golf market and our entire economy stabilize.

Sharp Park, by any measure, provides a marginal golf experience. In 2007 the National Golf Foundation gave Sharp Park an "F" grade in nearly every category it measured, including friendliness of staff, conditions of golf carts, the availability of golf amenities, on-course services, the conditions of the golf greens, and overall course conditions. If we continue to subsidize Sharp Park Golf Course to keep it open, under existing market conditions other, better golf courses will close, and the game of golf in the Bay Area will be worse because of it.

Even if we only concern ourselves with San Francisco's municipal golf courses, it would be best for the game if Sharp Park were to close. Sharp Park loses between $30,000 and $300,000 each year from San Francisco's golf fund alone, and it loses millions more from other taxpayer subsidies. These are loses, not just expenses: revenues from Sharp Park doesn't even cover the course's operating costs, let alone the capital and open space projects that are required to keep the golf course functioning. Every dollar that Sharp Park drains from our coffers is another dollar we cannot spend improving the City's other municipal courses. If we were to take a portion of the resources we spend at Sharp Park and instead spend those resources at Lincoln, Harding, Golden Gate, and our other courses that are in desperate need of attention, the playing conditions at these courses would improve greatly and San Francisco could truly bill itself as a premier golf destination.

There is no merit to the idea that Sharp Park Golf Course today contains some historic or architectural value that is worth preserving. The original McKenzie design was fundamentally flawed to begin with, and built in an inappropriate location to boot. The seven beach side holes were destroyed by two massive coastal storms which brought sea water to the clubhouse within a few years of opening day, and the subsequent construction of the sea wall, Highway 1, and years of deferred maintenance destroyed the rest of McKenzie's design. In 1972, the entire course was rebuilt by Robert Muir Graves, and golf historians such as Daniel Wexler have therefore concluded that "no appreciable trace of [McKenzie's] strategy remains in play" at Sharp Park today. See Exhibit JJ.

Some have argued that Sharp Park should be restored not to a naturalistic state, but to McKenzie's original design. But this is not feasible. To do so would cost between 14-20 million in capital, not to mention the several millions of dollars in permitting and mitigation fees for harming

endangered species. See Exhibit AA. In today's market and in Pacifica's relatively rural, low-density location, that level of capital investment simply cannot be found for such a risky investment. Moreover, regulatory agencies wouldn't permit such an intensive use on endangered species habitats, so any such proposal would eventually be denied. And other communities with publicly owned McKenzie courses have found that the design simply cannot generate revenue: McKenzie's designs too often fail to meet the demands of the modern golfer and new golf technology, and are being redesigned to modernize the course for today's game. Exhibit OO. But most importantly, if McKenzie's original design was recreated, it would suffer the same fate as the original: it would again wash away to sea, only this time more rapidly and violently as climate change causes sea levels to rise and storm intensity and frequency to increase along California's coast. See Exhibit G.

Some golfers will disagree with all of this. Those golfers, content with the status quo, will contest the financial data San Francisco has provided (without providing any alternative financial data); they will claim that McKenzie's design still exists at Sharp Park (without pointing to a single sand trap, let alone a link, that McKenzie would recognize as his handiwork today); they will argue that a private marketing company with a clever advertizing campaign is all that is necessary to reverse the decline in Bay Area golf (even though brining the PGA tour to San Francisco has been unable to do that).

If these golfers succeed keeping Sharp Park open at any price, the game will suffer. The demand simply isn't available to support all of the Bay Area's courses, and a great course will fail to keep Sharp Park alive. It could be Harding Park, or Crystal Springs, or Lake Chabot, or some other course: we currently do not have the data available to know which marginal enterprise will fail with any certainty. But we do know that courses on the margin of profitability simply can't compete in today's market with a golf course, even a terrible one, that is subsidized with hundreds of thousands of dollars in public capital every year.

And if our good courses close because we subsidize our poor ones, how can we expect the game to thrive in the future? The competition is stiff: we have the birthplace of mountain biking (Mt. Tam), the most famous big wave surf in the world (Mavericks), and perhaps most troubling to those who'd like to see more people golfing, we have the birthplace of the iPod and the internet search engine (Silicon Valley), which the data indicates are as responsible for this past decade's decline in outdoor recreation as anything else.

To have any hope for future growth, the game of golf must put its best foot forward against this competition. That means closing golf courses that provide a marginal experience, and reinvesting in our golf courses with more promise. That is why Sharp Park must close: for the good of the game.

Loam Gnome
<loamgnome@gmail.com>
05/26/2009 01:51 PM

To jessica.range@sfgov.org, bill.wycko@sfgov.org, Dawn Kamalanathan <dawn.kamalanathan@sfgov.org>, jared.blumenfeld@sfgov.org, dennis.kern@sfgov.org, Sean
cc
bcc
Subject Request for bike friendly TRAILS in the NAP Recreational Trail EIR.....from SF Urban Riders

Attention SFRPD, NAP, SF Planning Dept. and any other interested parties involved in the Recreational Trails process

SF Urban Riders is a Non-Profit 501c3 whose goal is to create healthy off road cycling recreation for all users, and encourage youth opportunities.

We represent a growing number of recreational cyclists who are asking in unison to Please ADD multi use trails, off road bicycle trails, single track trails, and bike skills areas to the EIR scope of any projects in our larger parks and open spaces.

Off Road cycling is a growing contemporary activity that provides healthy recreation accessible at any level of entry, and appeals to a wide demographic. Trails are also the cheapest form of recreational improvement that can be made because they are sustainably designed, then constructed of natural materials by a large volunteer effort. There is many available federal funding sources that favor the inclusion of bicycle trails. SF Urban Riders would make a good partner with SFRPD on many levels and improve the overall quality of our parks.

For More Information on why sustainable multi use access is necessary please feel free to review our Master Plan which is available online:
http://sfurbanriders.org/wordpress/lead-story/unlease-the-proposal/

ADD BIKE TRAILS, SINGLE TRACK TRAILS AND BIKE SKILLS AREAS TO THE NAP EIR.

Sincerely,

Dan Schneider
SF Urban Riders
415-298-2504
www.sfurbanriders.org

San Francisco Dog Owners Group

PUBLIC COMMENT ON INTIAL STUDY SIGNIFICANT NATURAL RESOURCE AREAS MANAGEMENT PLAN (SNRAMP)

May 26, 2009

Bill Wycko
San Francisco Planning Dept.
Natural Areas Management Plan
1650 Mission St, Suite 400
San Francisco, CA 94103

Dear Mr. Wycko,

The San Francisco Dog Owners Group (SFDOG) is a registered 501(c)(3) non-profit dedicated to responsible dog ownership and preserving off-leash access in our parks. We are active in our neighborhood parks, having organized park clean-ups and dog behavior/training workshops in the parks, and distributed flyers on "Park Petiquette", dog training, preventing poisoning, and emergency preparedness for pets. We have over 900 dues-paying members and our listserves and website routinely reach thousands more.

SFDOG has significant concerns with the Initial Study for the EIR for the Natural Areas Program as prepared by Tetra Tech. I have outlined our requests for improving the analysis to be undertaken for a quality EIR in the following pages. Briefly, our concerns include errors and omissions in information provided, obvious environmental impacts that are not addressed, biased descriptions of research, and policies based on anecdotes rather than rigorous scientific studies. Unfortunately, because of these errors and omissions, this document reflects poorly on the SF Planning Dept, as will any EIR based solely on the recommendations in this poorly crafted Initial Study.

The Natural Areas Program and its Management Plan have been one of the Recreation and Park Department's most controversial endeavors, and you can be sure that advocates on all sides will pore over the full EIR with an eye toward possible litigation. Please expand the scope of the EIR to include the suggestions described in this public comment. If you have any questions, I would be happy to discuss this comment with you in more detail. Thank you.

Sincerely,

Sally Stephens
Chair, SFDOG

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PUBLIC COMMENT ON INTIAL STUDY SIGNIFICANT NATURAL RESOURCE AREAS MANAGEMENT PLAN (SNRAMP)

San Francisco Dog Owners Group (SFDOG)
May 26, 2009

The Initial Study for the SNRAMP EIR has several glaring problems. These must be addressed if the full EIR is to have any validity.

SF Animal Care and Control estimates that 1/4 to 1/3 of the households in San Francisco are home to at least one dog (the national average is 1/4 of households). San Francisco consistently ranks as one of the most dog-friendly cities in the country and it is therefore likely that there are more households with dogs in San Francisco than the national average. There are therefore 130,000 to 150,000 dogs in San Francisco. People with dogs are the largest group of park users in the city; most visit parks with their dogs several times every day, rain or shine.

Dogs do not go to the parks by themselves; people bring them to parks. Attempts to restrict access by dogs to areas within or adjacent to natural areas are essentially attempts to keep a large group of people from enjoying those areas. The net effect of the Management Plan will be to deny access by a small group of people to a large group of people who simply want to visit their neighborhood parks.

Note that, of the 31 city parks with natural areas mentioned in the 2006 Management Plan, NAP claims the entire park (100%) in 17 of them. In an additional 10 parks, NAP claims over 50% of the park acreage. The four with fewer than 50% of their land claimed by NAP are: Golden Gate Park (3% of land is claimed by NAP), Pine Lake (28%), Buena Vista Park (17%), and Golden Gate Heights Park (13%). To be fair, not all NAP-claimed land will have significant restrictions on access. But a majority of NAP land (57%) will have significant restrictions (MA-1 and MA-2), with people restricted to paths only and dogs restricted to on-leash only, if allowed at all. In 8 parks, all land in the natural area will have significant restrictions on access (all the natural area is classified as MA-1 or MA-2). The NAP Management Plan keeps people out of 1/3 of the city's parkland. In some cases, this denial of access will be to the only park within easy walking distance in the neighborhood.

SFDOG has the following specific concerns about the Initial Study and the full EIR for the NAP:

THERE IS NO SCIENTIFIC CONSENSUS TO SUPPORT THE BASIC PREMISE BEHIND GR-8 – THAT DOGS ARE HARMFUL TO PLANTS AND WILDLIFE. THERE IS THEREFORE NO REASON TO RESTRICT DOGS IN NATURAL AREAS, NO REASON FOR GR-8.

It is a basic gospel of the Natural Areas Program and its supporters, and therefore embedded in the management plan that is the subject of this EIR, that dogs, and in particular off-leash dogs, are harmful to plants, birds, and other wildlife. These claims are often stated as fact. However, the reality is that there is **no scientific consensus that off-leash dogs have a significant impact on bird and wildlife populations.** Some studies have shown an impact. But others have found no significant effect on bird and wildlife diversity and populations.

A recent study by Forrest and Cassady St. Clair (2006) studied the effects of dogs on diversity and abundance of birds and small mammals at 56 sites in urban parks in Edmonton, Alberta. Half of the sites were visited by off-leash dogs, half were on-leash or no dogs. City officials reported the on-leash sites had high public compliance with leash laws. Before beginning the study, the researchers fully expected "that designated off-leash

areas would represent comparatively poor habitat and would negatively influence diversity and/or abundance of birds and small mammals relative to nearby habitat where dogs were required to be leashed within the same urban park system."

To their surprise, they discovered that **whether a site was on- or off-leash had "no measurable effect on the diversity or abundance of birds and small mammals."** This lack of difference between on- and off-leash sites was seen even when they considered only those species that appeared to be breeding, or only those species that nested on the ground or in low shrubs.

This study may be more relevant to the NAP than other studies of dog impacts on diversity because both the NAP and the parks studied in Edmonton are urban parks. Indeed, one possible explanation the researchers give for why there was no observed difference is that "**wildlife, particularly birds, in suburban and urban areas exist there because they are fairly tolerant of moderate levels of human activity**."

Compare this to studies cited in a report, commissioned by the NAP to comment on the management plan, by Huntsinger and Bartolome (2005; available online at:
http://www.parks.sfgov.org/wcm_recpark/NAP/scientificreview_huntsinger.pdf)
that purports to prove negative impacts from dogs. They cite a report on dogs' impacts on Rocky Mountain wildlife (not urban) and on gazelles (definitely not urban). It is not clear whether other studies cited refer to birds and other wildlife in urban parks or not. The city of San Francisco is the second most densely populated city in the US (only Manhattan is denser). Our parks are not remote, pristine wildernesses. **When deciding the relevance of any study of the impacts of dogs on plants and wildlife to the NAP, the full EIR must consider whether the study took place in an urban park where wildlife is likely to be more tolerant of dogs and people. If not, the study's relevance to the NAP must be discounted.** The Huntsinger and Bartoleme review makes no attempt to sort out studies done under conditions like those in NAP areas (urban parks) from those done in remote wilderness areas. Therefore, its conclusions cannot be used as a basis for the restrictions proposed in GR-8.

In addition, the sections of the Huntsinger and Bartoleme review that deal with dogs are full of "anecdotal accounts" of negative impacts. The problem is that **anecdotal accounts are not reliable and cannot be used as the basis for public policy**. For example, an underlying assumption in the NAP Management Plan used to justify on-leash restrictions on trails is that off-leash dogs on trails roam widely and frequently disturb plants, wildlife, and other park visitors. However, a study by Beckoff and Meaney (1997), published in a peer-reviewed journal, tested this assumption and found that it is not true. Beckoff and Meaney observed the behavior of dogs in six parks in and around Boulder, Colorado. They positioned themselves at various vantage points along trails and recorded everything they saw. They also followed individual dogs during the entire time they were in the park, recording everything the dogs did. Finally, they gave a questionnaire to all park visitors, obtaining more responses from non-dog owners than dog owners.

Their data showed that off-leash dogs generally did not travel far off trail, and when they did, it was for short periods of time. "There is no doubt that *some* dogs go off trail for various amounts of time and that *some* dogs do occasionally disturb people, wildlife, and habitat. However, compared to people, dogs did not seem to do much damage to vegetation or bodies of water, and they only rarely chased wildlife... **People disrupt wildlife more frequently than dogs, and people cause more damage to vegetation and to bodies of water**."

Beckoff and Meaney note that: "In Boulder and perhaps in other areas, **reports of unruly dogs seem to attract a lot of attention, but of course, people do not report when dogs are well-behaved**." It is human nature to remember when something bad happens, but not to notice all the times nothing bad occurred. That's not a problem unless you take a remembered bad incident and assume it is "typical." That is the basic flaw in anecdotal accounts, which really say more about the biases of those making the reports than they say about what is really happening.

In a recent study that tested another common assumption, Warren (2007) tested whether recreational disturbances changed the feeding behavior of the Western Snowy Plover at Crissy Field and at two sites at Point Reyes. Warren admits in the study that she fully expected the data to show that as the frequency of disturbance increased, the birds would spend less time actively foraging for food and more time alert. Instead, she found no significant relationship between feeding behavior and direct disturbance by people recreating on the beach. What other assumptions about effects of disturbances by dogs and people will be similarly disproved when studies are done that put them to the test? How much bad public policy will have been set based on these erroneous assumptions?

THE FULL EIR MUST INCLUDE A COMPLETE, UNBIASED ANALYSIS OF ANY SCIENTIFIC LITERATURE WITH REGARD TO DOGS IN PARKS. SPECIAL ATTENTION MUST BE PAID TO STUDIES OF THE IMPACTS OF DOGS CONDUCTED IN URBAN PARKS (COMPARABLE TO NAP), AS OPPOSED TO STUDIES MADE IN WILDERNESS AREAS WHERE WILDLIFE IS NOT ACCUSTOMED TO PEOPLE AND DOGS (NOT COMPARABLE TO NAP).

THE FULL EIR MUST CAREFULLY LOOK FOR AND CONSIDER BIAS IN DATA USED BY THE NAP TO JUSTIFY THE RESTRICTIONS IN GR-8.

In May 2006, the Point Reyes National Seashore (PRNS) management claimed that an oyster farm in Drakes Bay was harming marine wildlife and causing significant negative impacts on the environment and, therefore, should be closed. A PRNS report stated that the oyster farm workers disturbed seals, causing a huge decline in seal population, and that sediment from oyster feces was harming eelgrass beds. Therefore, the oyster farm did not belong in a national seashore. Corey Goodman, a microbiologist at UC Berkeley, member of the National Academy of Sciences, and a former Chair of the National Research Council's Board of Life Sciences, analyzed the raw data used in the studies cited by PRNS staff and found that the data did not support nearly every negative impact claimed.

On the September 27, 2007 episode of the KQED-FM program "Quest", Goodman said, about the published claims by PRNS staff: "Essentially every one of the scientific claims that they made are refuted by their own scientific data.... They have made intentionally misleading claims, statements about data that are untrue, claims of cause and effect that are untrue. I think this is serious because they have misused science to mislead the public."

An Interior Dept's Inspector General report and a second report by the National Academy of Sciences agreed with Goodman's analysis. Yet, convinced that the oyster farm did not belong there, PRNS staff misrepresented their data to support that conclusion.

Similar concerns have been raised about government claims of impacts of dogs on wildlife in the context of native plant restoration. For example, two reports (in 1996 and 2006) by Daphne Hatch, an employee of the Golden Gate National Recreation Area, argued that off-leash dogs should be restricted to protect Western Snowy Plovers at Ocean Beach (in the context of restoration of Ocean Beach). The 1996 Report states that on 15 occasions, at least 100 plovers were "inadvertently disturbed" by dogs running on the beach, and compared that to the 48 plovers inadvertently disturbed by people on the beach. However, if you look at the data, you see that the surveys that showed disturbances by people were a subset in time of those involving dogs. Indeed, the disturbances from people were noted in about half the recording time (24 hours of observations) as that devoted to studying dogs (40 hours). Had the people been observed for an equally long period of time, the numbers of disturbances caused by dogs and people would have been nearly the same. Other data presented in both studies

show no impact of off-leash dogs on the numbers of plovers. Yet the conclusion drawn in the report is that off-leash dogs have to be restricted to "protect" the plovers.

THE FULL EIR MUST RE-ANALYZE ANY DATA PROVIDED BY NAP (ESPECIALLY DATA NOT PUBLISHED IN A PEER-REVIEWED JOURNAL) TO ENSURE THAT CONCLUSIONS AGAINST DOGS ARE ACTUALLY SUPPORTED BY THE DATA. THE FULL EIR MUST AVOID A SITUATION SIMILAR TO THE ONE IN POINT REYES, IN WHICH GOVERNMENT RESEARCHERS MISREPRESENTED SCIENTIFIC RESULTS TO BOLSTER A CASE AGAINST AN OYSTER FARM.

THE FULL EIR CANNOT CONSIDER CLOSING THE LAKE MERCED DOG PLAY AREA AS CALLED FOR IN THE INITIAL STUDY (LM-7a) B ECAUSE RPD MADE THIS AN OFFICIAL OFF-LEASH AREA YEARS AGO AND PROMISED IT TO THE DOG-OWNING COMMUNITY. EVEN NAP HAS ACKNOWLEDGED THIS STATUS PUBLICLY. THE FULL EIR MUST CORRECT INCORRECT STATEMENTS ABOUT THE RPD DOG POLICY MADE IN GR-8b.

The Initial Study says (page 36): "Due to the CCSF moratorium on new DPAs, the Lake Merced DPA couldn't be relocated to a new location, so it would only be removed. Restoration of the site would continue, following the removal of the DPA." The Notice of Preparation of an EIR for the Natural Areas Management Plan states that the final draft plan was published in February 2006. That is the plan that will be studied in the full EIR. However, the 2006 Management Plan says about the Lake Merced DPA in Recommendation LM-7a (page 6.1-18): "The SFRPD and the Dog Advisory Committee should consider relocating the DPA to a different location. In the meantime, this DPA can remain open, but impacts should be monitored. If use levels increase during this time such that impacts to breeding bird habitat are detected, signs and other mitigations should be implemented." There is NO mention of closing the DPA. Monitoring and mitigation can be considered in the full EIR because they are mentioned in the 2006 Management Plan. Closing the DPA is NOT an option that can be considered in the full EIR for the Management Plan because it is not mentioned in the Management Plan. This must be corrected in the full EIR.

In addition, the 2002 RPD Dog Policy sets forth a public process to create or to close a DPA, which includes evaluation by the Dog Advisory Committee (DAC). DPAs cannot be closed without that public process. It is especially true that a DPA cannot be closed because a consultant doing an Initial Study or an EIR decides it should be. The DAC was "sunset"-ed in February 2007 and no public process to replace it has been announced by RPD. Until a replacement public process to close DPAs that does not include the DAC is devised by RPD, there is no legal way to close a DPA. While there is a moratorium on creating new DPAs as RPD conducts system-wide DPA planning, there is also a moratorium on closing existing DPAs until the system-wide planning is completed. Therefore, **closing the Lake Merced DPA cannot be considered as part of the Management Plan nor as part of the full EIR.**

It is not the role of the Initial Study to CHANGE what is in the draft 2006 Management Plan as described above. Nor is it their role to add a NEW natural area, # 32 the Everson/Digby lots (page 46 of the Initial Study) that is not in the 2006 Management Plan. The public has not been informed that the area currently used as neighborhood open space is now a "natural area" with who knows what restrictions attached to its use.

WHEN CONSIDERING ANY IMPACTS OF DOGS IN PARKS, THE FULL EIR MUST TAKE INTO ACCOUNT THE DIFFERENCE BETWEEN "FREE-ROAMING" AND "OFF-LEASH" DOGS.

"Free-roaming" dogs are dogs that are running WITHOUT any human oversight. Examples of free-roaming dogs would be a dog whose owners did not know that it had escaped from a backyard, or a feral dog that lives without any human control. "Off-leash" dogs are dogs that are running WITH human oversight. Their guardian is nearby and controls them with voice commands. Studies that discuss impacts of free-roaming dogs CANNOT be used to indicate similar impacts from off-leash dogs. This distinction must be considered by the full EIR when considering any reported impacts of dogs in parks.

THE EIR MUST ADDRESS THE NEGATIVE ENVIRONMENTAL IMPACT ON TRAFFIC (E-5a), AIR POLLUTION (E-7b), AND GLOBAL WARMING (E-7f) IF AREAS THAT ARE CURRENTLY OFF-LEASH ARE CLOSED TO PEOPLE WITH DOGS.

According to the Draft Management Plan for the Natural Areas Program (NAP), approximately 80% of the currently legal off-leash areas in San Francisco city parks are located either within or adjacent to areas subsequently claimed by the NAP (note that the off-leash areas were there first). The Plan calls for the immediate closure of parts of the currently off-leash areas in two parks (a reduction of 29% in Bernal Hill and of 14% in McLaren Park; note that the plan states that some of the area in Bernal Hill to be closed is steep and inaccessible and therefore is excluded from their claimed reduction of 17%). These two closures will reduce the total acreage in city parks available for off-leash recreation by approximately 15%. In addition, the Plan calls for monitoring of off-leash areas in Buena Vista Park, Golden Gate Park, Lake Merced, and McLaren Park. Should NAP claim that dogs are causing any problems, NAP will call for the closure of all or parts of those areas. Finally, the Plan calls for expanding the most-sensitive MA-1 areas into less-sensitive MA-2 and even MA-3 areas when funding becomes available. Thus, an off-leash area that is currently adjacent to an MA-3 area, and therefore, not under any restrictions, could find itself, in the future, adjacent to an MA-2 or even an MA-1 area. Should NAP determine that dogs in the off-leash area have a negative impact on newly adjoining MA-1 and MA-2 areas (or even on an MA-3), they can call for closure of the off-leash area.

Clearly, 80% of the currently legal off-leash areas in San Francisco's city parks are at risk of closure because of the potential activities of the NAP as outlined in the NAP Management Plan. What will happen to the hundreds of thousands of people with dogs who are shut out of their neighborhood park if any or all of the 80% of off-leash areas are closed? They will be forced to drive across town to the remaining legal off-leash areas. Public transit is not an option for people with dogs. MUNI buses and trains forbid dogs during rush hours before and after work, the primary times that people are walking and playing with their dogs in parks. Forcing large numbers of people to drive across town to use the remaining legal off-leash areas will increase traffic and air pollution, and will contribute to global warming. The negative impact on the environment of this driving must be acknowledged and addressed in the full EIR.

The full EIR must consider not only the impacts on traffic, air pollution, and global warming of the proposed closure of off-leash areas in McLaren Park and Bernal Hill, but also the impacts of closing the off-leash areas in the parks specifically slated for monitoring, as well as the impacts of closing all 80% of the legal off-leash areas within or adjacent to areas claimed by the NAP.

THE ENVIRONMENTAL IMPACT ON THE REMAINING OFF-LEASH AREAS IF PEOPLE WITH DOGS ARE FORCED OUT OF LEGAL OFF-LEASH AREAS WITHIN OR ADJACENT TO NATURAL AREAS MUST BE CONSIDERED IN THE FULL EIR.

Any large group of park users that is concentrated into a small area – whether it be soccer players, kids with Frisbees, or people with dogs – can cause some damage to those areas. The full EIR must look at the impact on the remaining legal off-leash areas of serious overuse if closures of current off-leash areas are demanded by NAP because of the Management Plan.

In addition, tens of thousands of people with dogs walk off-leash in the Golden Gate National Recreation Area (GGNRA) every day, including Fort Funston, Ocean Beach, and Crissy Field. Many of these people live adjacent to these areas; indeed, proximity and ease of access for dog walking is one reason people buy homes in neighborhoods adjacent to the GGNRA. However, the GGNRA is considering severely restricting off-leash access to the lands under its control. Should the GGNRA's restrictions occur, thousands more people with dogs could be forced to use the legal off-leash areas in San Francisco city parks. The cumulative impact of closing off-leash areas because of the NAP and the GGNRA must be included in the full EIR.

THERE ARE ALSO SEVERAL NON-DOG-RELATED ISSUES THAT SHOULD BE INCLUDED IN THE FULL EIR.

THE FULL EIR MUST CONSIDER THE NEGATIVE IMPACTS ON WIND (E-8) AND EROSION (E-13) OF REMOVAL OF TREES AND NON-NATIVE PLANTS FROM NATURAL AREAS.

The Management Plan calls for replacing trees removed from natural areas with other trees, but says the replacement trees may not be planted at the same site. Also, new trees will not be the same size as the ones removed, for many years, if ever. Many trees were planted in parks to provide windbreaks not only for the parks, but also for the homes immediately adjacent to the parks. Removing these trees will remove the windbreaks, with potential property damage to the homes.

Over the years, homeowners and park officials planted many non-native plants, especially ice plant, because they were the only plants that would stabilize San Francisco's sandy hills. Native plants frequently require drifting sand to thrive, and they, therefore, were not effective at stabilizing the hills. Land within many natural areas is fairly steep. Removing the ice plant and other non-native plants that have stabilized the hills for decades will result in increased erosion in city parks.

For example, NAP plans for all four parks in the Golden Gate Heights neighborhood (Grandview, Rock Outcrop, Golden Gate Heights Park, and Hawk Hill) call for "scattered, open sand". These parks are located near the top of several hills, on steep, west-facing slopes with nothing to block strong ocean winds. Even with the ice plant that has covered the areas for decades, drifting sand still blocks streets, clogs sewers, and damages nearby homeowners' property. Clearly, removing the stabilizing plants and creating areas of "scattered, open sand" will cause significantly more erosion and damage.

NAP staff have stated in public meetings that the program has no "legal" responsibility for damage to homeowners' property that result from their actions (e.g., removing ice plant that stabilized sand resulting in drifting sand damaging a park neighbor's backyard, as has happened around Grandview Park). In a scientific review of the NAP Management Plan, reviewer Peggy Fielder, one of the paid authors of the original management plan, was asked: "Have the secondary consequences of management activities been adequately identified and

addressed (e.g., effects on healthy trees, forests, plants, animals, birds, wind patterns, erosion, restrictions, use of herbicides, and the necessity of removing invasive animals)?" Fielding replied: "Probably not, but this is not a function of the plan." These secondary consequences MUST be considered during the full EIR, especially the effects on windbreaks and erosion, and on the PEOPLE who live in homes next door to a city park!

Natural areas do not occur in a vacuum. Because our city parks are located within a densely populated urban city, the effects of NAP management decisions, such as removing non-native trees or plants that stabilize hillsides, extend beyond the public areas of the park itself. It is not sufficient to only consider wind and erosion within the park. The full EIR MUST evaluate the physical effects (not the just legal) that include erosion, sand and wind effects on homeowners and property adjacent to the parks that contain natural areas.

THE FULL EIR MUST CONSIDER THE NEGATIVE IMPACT OF CREATING HABITAT IN NATURAL AREAS THAT ENCOURAGES MOSQUITO BREEDING, INCREASING THE PUBLIC HEALTH RISK OF WEST NILE VIRUS.

Many of the plans for individual natural areas call for creating ponds and standing water sources. These habitats are prime mosquito breeding areas. The Initial Study only mentions "small water features" as being potential mosquito breeding sites. However, larger ponds are also important breeding sites. The impact on public health of mosquito breeding at ALL ponds in ALL natural areas MUST be addressed in the full EIR. The impact of increasing the size and number of ponds at each site MUST be considered. This is an especially important issue at Sharp Park, one of only four places in San Mateo County where the threat of mosquito breeding is high enough to warrant helicopter spraying of larvicide in addition to ground applications. Increasing the size and number of ponds for frog habitat at Sharp Park will significantly increase the threat of mosquito breeding there. The impact of an increased use of BT, a biological control agent, to control mosquito breeding in larger or more ponds must be considered in the full EIR.

THE NEGATIVE IMPACT ON HOMES ADJACENT TO NATURAL AREAS FROM PRESCRIBED BURNING SHOULD THOSE BURNS GET OUT OF HAND MUST BE CONSIDERED IN THE FULL EIR (E-15h).

The Initial Study states (page 11) that NAP "no longer is proposing prescribed burning would not occur. The SNRAMP will be updated to reflect this change." The full EIR is authorized to study the 2006 Management Plan. Significant changes to the 2006 Management Plan cannot be made before the EIR is done. Therefore, the change referred to in the Initial Study cannot be made. In any event, the full EIR MUST consider the potentially catastrophic impact of prescribed burns on adjacent homes, as well as parkland, should a burn get out of hand.

THE FULL EIR MUST INCLUDE THE IMPACTS ON AESTHETICS OF POOR MAINTENANCE BY NAP STAFF AND THEIR VOLUNTEERS. THE FULL EIR MUST ALSO INCLUDE THE EFFECTS OF POOR MAINTENANCE ON THE NEED FOR MORE HERBICIDES IN NATURAL AREAS.

Any full EIR must consider whether or not the natural areas can be maintained as described in the management plan. In most parks, the 2006 Management Plan allocates fewer than 20 days/year for

planting/maintenance of the natural areas. In 16 of the 31 natural areas in the 2006 Management Plan, the total maintenance planned is 10 or fewer days each year. There are countless stories of volunteers who have spent long hours planting native plants in NAP areas, only to see absolutely no maintenance performed once the plants are there. Without maintenance, the plants die, creating unsightly vistas of dead and dying plants.

In addition, poor maintenance allows non-native vegetation to grow back, requiring repeated applications of herbicides to get rid of the unwanted non-natives.

The full EIR MUST consider the benefits of scaling back the program to a few areas that can be well maintained, as opposed to the current plans to take over one-third of San Francisco's city parkland for the program, too much area to be adequately maintained by NAP staff. The Management Plan is much more ambitious in the amount of work to be done annually, than NAP has demonstrated it has the capacity to actually DO on a consistent basis. It would be preferable to have a workable management plan that is achievable within the resources of the city and the volunteer commitment made to NAP, than to have a utopian plan including monitoring and research goals that are not attainable.

Finally, with regard to aesthetics... Who decides what is aesthetically pleasing? For many people, brush piles used in natural areas look like accumulations of trash and are aesthetically unpleasing. For many people, shaded areas with tall, non-native trees are aesthetically pleasing, while areas without tall trees are less so. People like to see their parks green, not brown half the year. How will the different aesthetics of what a park should look like be included in the full EIR? Will the full EIR include a study of what San Francisco residents want/like to see in their parks? How will people, who are part of the environment, be part of the EIR evaluation?

--end--

THE STUDIES REFERENCED IN THIS PUBLIC COMMENT ARE:

1) **"Effects of dog leash laws and habitat type on avian and small mammal communities in urban parks", Andrew Forrest, Colleen Cassady St. Clair, *Urban Ecosyst* (2006) 9, p. 51-66**

Abstract: "Remnant natural areas within urban settings can act as important refuges for wildlife, substantially increasing local biodiversity. However, habitat suitability for these species is potentially affected by human recreational activities including the presence of free-running dogs. To compare the diversity and abundance of songbird and small mammal communities between areas with bylaws that require, or do not require, dogs to be leashed, point counts and live-trapping surveys were conducted in three habitat types (deciduous, coniferous, and meadow) in the river valley parks of Edmonton, Alberta. Among birds, there was no difference between areas with different leashing bylaws in species diversity for any of the three habitat types. Similarly, there was no difference in bird diversity for a subset of species that were plausibly breeding at these sites. However, higher bird diversity was recorded in deciduous and coniferous sites than in meadow sites, regardless of leash designation, probably as a function of the horticultural practice of mowing meadows. Among both birds and small mammals, there was no difference in the abundance of individuals as a function of leashing bylaws. Our results suggest that off-leash dogs have no effect on the diversity or abundance of birds and small mammals in urban parks, but it is also possible that other factors, such as leash law compliance, reduced or obscured the effects of off-leash dogs in this study."

Before beginning the study, the researchers "hypothesized that designated off-leash areas would represent comparatively poor habitat and would negatively influence diversity and/or abundance of birds and small mammals relative to nearby habitat where dogs were required to be leashed within the same urban park system... [On-leash sites] were believed by city officials to have high public compliance with leash laws. Off-leash sites were either in officially designated off-leash areas or, in two cases, in areas that were designated as on-leash but were known to experience frequent use by off-leash dogs and their owners." (p. 53)

Researchers conducted bird surveys in all 56 sites (half off-leash, half on-leash) a total of three times between May and July 2002. Each survey involved a 5-minute, 100 m, fixed radius point count, followed by a 5-minute playback of a black-capped chickadee mobbing call (known to attract several bird species and used to increase detection of less vocal species). A 5-mintue post-playback point count concluded the survey. Researchers recorded all birds that were seen or heard during the 15-minute period. They only counted birds if they interacted with the environment (that is, they did not count birds flying over the survey site). Small mammals were live-trapped at a randomly selected subset of 32 of the original 56 sites.

They found that "Designation of sites for dogs to be on- or off-leash had no measurable effect on the diversity or abundance of birds and small mammals within the sites that we surveyed in the Edmonton River valley. There was a similar lack of difference in bird abundance when we restricted analyses to only those species that appeared to be breeding, only those species that nest on the ground or in low shrubs, and only the most abundant species." (p.61)

2) **"Interactions Among Dogs, People, and the Environment in Boulder, Colorado: A Case Study", Marc Bekoff and Carron A. Meaney, *Anthrozoos*, (1997), 10(1), p. 12-31.**

Abstract: "From September 1995 to April 1996 we studied interactions among dogs, people, and the environment in Boulder, Colorado, Data on behavioral disturbances by off-leash dogs who were accompanied by a person were collected with respect to dog-dog and dog-human interactions, dog-wildlife encounters, dogs trampling vegetation, and dogs entering and disturbing bodies of water. A questionnaire also was administered. Behavioral data showed that off-leash dogs generally did not travel far off trail, that when they did it was for short periods of time, and that they rarely were observed to chase other dogs, disturb people, chase wildlife, destroy vegetation, or enter bodies of water. Results from analyses of the questionnaire (skewed toward non-dog owners) showed that dog owners and non-dog owners agreed that people were more disruptive to the environment than dogs and that unruly people were more problematic than unruly dogs. We conclude that the well-being and interests of dogs should not summarily and dismissively be compromised when dogs and people attempt to share limited space that can be used by all parties for recreational purposes. Indeed, a higher percentage of people reported that the quality of dogs' experience of the outdoors would be compromised more than their own enjoyment if dogs could not walk off-leash in areas where this is currently permitted. The methods used and the results from this case study can serve as a model for other locations in which dogs and people compete for limited spatial resources."

In this study, the researchers observed the behaviors of dogs in six parks in and around Boulder. They positioned themselves at various vantage points along trails and recorded what they saw. They also followed individual dogs during the entire time they were in the park, recording everything they saw the dogs do. They administered a questionnaire they designed, with the help of professional pollsters, to all visitors entering the parks being studied. More non-dog owners (53.2%) responded to the questionnaire than did dog owners (46.8%).

"There is no doubt that *some* dogs go off trail for various amounts of time and that *some* dogs do occasionally disturb people, wildlife, and habitat. However, compared to people, dogs did not seem to do much damage to vegetation or bodies of water, and they only rarely chased wildlife... People were more disruptive than were dogs, and when dogs did go far off trails they often were lured off by people [e.g., by chasing a thrown stick]..." (p.26) "People also reported (and direct observations confirmed the fact) that people disrupt wildlife more frequently than dogs, and people cause more damage to vegetation and to bodies of water." (p. 27)

3) **"Recreation Disturbance Does Not Change Feeding Behavior of the Western Snowy Plover", Megan Warren, UC Berkeley Environmental Sciences 196, Senior Research Seminar, May 7, 2007**

Abstract: "The Western Snowy Plover (*Charadrius alexandrinus nivosus*) is a small shorebird that has many scattered wintering populations along the Pacific Coast of the United State, including several in the Bay Area. This species has been listed as threatened since 1993 under the federal Endangered Species Act of 1973. For this study I measured disturbance rates, types, plover responses and feeding time in three different sites in the San Francisco Bay Area to explore the link between recreation disturbance and feeding behavior. I predicted that as frequency of disturbance

increased, the birds would spend less time actively foraging and more time alert. However, data showed no significant relationship between feeding behavior and direct disturbance by human recreators. Instead, I now predict that recreation has a more indirect effect on the western snowy plover feeding behavior. Future research should focus on indirect effects of recreation, such as habitat disturbance and food source quality."

Warren observed plover behavior at Crissy Field (high-use recreational site), Limantour Beach (medium-use recreational site), and Abbott's Lagoon (low-use recreational site). Surveys were made of birds' responses to recreational activity in four categories – no response, mild response (causing a resting plover to stand), moderate response (causing a plover to stand up and/or walk away), and major response (causing the plover to flush). Feeding behavior surveys quantified how the plovers budgeted their time during the dusk feeding period. Plovers were observed: 1) searching for food, defined as movement along the shoreline with its head down visually scanning for prey; 2) actively foraging, defined as head down with its beak in the sand eating the prey; and 3) time spent alert, defined as a bird standing still with its head up visually scanning the beach. A linear regression was used to test the relationship between frequency of disturbance and foraging, alert and searching time.

"The Crissy Field study did not provide any relevant results, however, the data from the two Point Reyes study sites do not support the hypothesis that western snowy plovers in more heavily disturbed areas devote less time to actively foraging and more time to being alert... These results suggest that direct recreation disturbance is not as significant as earlier thought, and that links between recreation and western snowy plover feeding behavior are more subtle." (p. 9)

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Effects of dog leash laws and habitat type on avian and small mammal communities in urban parks

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Abstract Remnant natural areas within urban settings can act as important refuges for wildlife, substantially increasing local biodiversity. However, habitat suitability for these species is potentially affected by human recreational activities including the presence of free-running dogs. To compare the diversity and abundance of songbird and small mammal communities between areas with bylaws that require, or do not require, dogs to be leashed, point counts and live-trapping surveys were conducted in three habitat types (deciduous, coniferous, and meadow) in the river valley parks of Edmonton, Alberta. Among birds, there was no difference between areas with different leashing bylaws in species diversity for any of the three habitat types. Similarly, there was no difference in bird diversity for a subset of species that were plausibly breeding at these sites. However, higher bird diversity was recorded in deciduous and coniferous sites than in meadow sites, regardless of leash designation, probably as a function of the horticultural practice of mowing meadows. Among both birds and small mammals, there was no difference in the abundance of individuals as a function of leashing bylaws. Our results suggest that off-leash dogs have no effect on the diversity or abundance of birds and small mammals in urban parks, but it is also possible that other factors, such as leash law compliance, reduced or obscured the effects of off-leash dogs in this study.

Keywords Urban parks · Dogs · Birds · Small mammals · Wildlife · Diversity · Leashing by-laws

Introduction

In developed countries of the world, 75% of humans already live in urban areas and the worldwide urban population is estimated to be increasing by 175 000 people each day (UN,

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2003). As urban areas expand to accommodate increases in both the human population and urbanization, remaining natural areas are giving way to further anthropogenic development (Searns, 1995). Increasing development in and surrounding cities heightens the value of remaining natural areas, which frequently occur in river valleys and ravines, and large areas of this sort may be capable of supporting several native wildlife species. In the city of Edmonton, Alberta, the North Saskatchewan River valley and several adjacent ravines comprise an enormous urban park system of 7400 ha, renowned as being the largest contiguous area of urban parkland in North America. Much of this area remains in a relatively natural state and appears to sustain a high diversity of wildlife (Mowat, 1993). In the past, city planners have developed park and trail systems within the river valley for a variety of human recreational uses. However, more recently and more generally, urban natural areas are recognised by both city planners and ecologists for their value in the conservation of biodiversity (Clergeau et al., 1998; Fernandez-Juricic and Jokimaki, 2001).

Protecting the biodiversity within urban parks requires that city planners carefully manage the variety of competing pressures on these areas. These pressures arise from high levels of human visitation associated with a number of recreational uses, the presence of both official and unofficial trail systems, and even such things as illegal garbage disposal (Tilghman, 1987). Dog-walking is one of the most common recreational activities in the Edmonton river valley and is conducted by about a quarter of park users (Edmonton Community Services, 2001). To accommodate dog-walkers, the City of Edmonton has designated certain parks and trails as 'off-leash' areas where dog owners are permitted to walk their dogs without a restraining leash. In total, there are 40 such areas in Edmonton, and 14 of these are within the North Saskatchewan River valley. Because the activity of domestic dogs may affect wildlife in urban areas, civic employees were interested in estimating diversity and abundance of small animals that might be most susceptible to dog disturbance in areas with and without leash laws.

A variety of negative effects on wildlife have been documented for domestic dogs elsewhere and these may plausibly apply to the Edmonton area. Most generally, wildlife may be chased or disturbed by dogs as a vestige of their natural hunting instincts (Sime, 1999). Flushing in response to the presence of dogs is a documented and conspicuous response shown by some city-dwelling passerines (e.g., Fernandez-Juricic and Telleria, 2000) and colonial shorebirds (e.g., Mitchell et al., 1988; Lafferty, 2001). Dogs can also cause physical injury (Doncaster, 1994; Shine and Koenig, 2001), nest disturbance (Govan, 1998), and even death (Fuller, 1990). Other effects may be more subtle and less easily observed. As examples, disturbance by dogs can cause energetic loss when it results in an evasive response, increased vigilance, or lost foraging opportunities (Burger, 1986; Fernandez-Juricic and Telleria, 2000). Domestic dogs also have the potential to introduce disease or parasites into urban wildlife populations (Sime, 1999). Finally, the presence of dogs may exert a cumulative effect with other disturbances to reduce habitat suitability (Fernandez-Juricic, 2002).

Because leashing of dogs may reduce some forms of disturbance (e.g., chasing) (Lafferty, 2001), we investigated the effect that dog leash laws have on the diversity and abundance of songbirds and small mammals. These groups are relatively unstudied in this context, yet appear to be both abundant and diverse (in the case of birds) in the Edmonton River Valley (Mowat, 1993). In general, urban bird communities appear to be more influenced by habitat features that occur at a local level than they are by large-scale landscape characteristics (Cleargeau et al., 1998, 2001) and this may be true of fragmented populations more generally (Mazerolle and Villard, 1999). Therefore, off-leash dogs in the Edmonton River Valley, which are officially restricted to designated sites, may affect wildlife on a very small spatial scale. Accordingly, we hypothesized that designated off-leash areas would represent comparatively

poor habitat and would negatively influence diversity and/or abundance of birds and small mammals relative to nearby similar habitat where dogs were required to be leashed within the same urban park system.

Methods

Study area

All census sites were located in the North Saskatchewan River valley and adjoining ravines within the city of Edmonton, Alberta (53° 33′ 00″ N–113° 28′ 00″ W). Within the 7400 hectares of parkland are 190 kilometers of multi-use trails and 22 different park areas. The presence of these amenities attracts an estimated 2 million users annually (Anonymous, 2002).

A total of 56 separate sites were selected within the river valley with an equal number of sites located in areas designated as requiring dogs to be on-leash and off-leash. On-leash sites were defined as sites which either disallowed dogs or required that they be leashed. These areas were also believed by City officials to have high public compliance with leash laws (K. Moore, personal communication). Off-leash sites were in officially designated off-leash areas or, in two cases, were in areas that were designated as on-leash, but were known to experience frequent use by off-leash dogs and their owners (K. Moore, personal communication). Sites were further categorized into three habitat classifications according to the dominant vegetation type: deciduous-dominated, coniferous-dominated, and meadow. Aspen (*Populus tremuloides*), the dominant tree species in the North Saskatchewan River valley, was qualitatively the most common tree species in deciduous-dominated sites (Mowat, 1993) which also contained balsam poplar (*Populus balsamifera*). Coniferous sites were generally located on north-facing slopes or in steep-sided ravines, and were dominated by white spruce (*Picea glauca*). Within meadow sites, we used two habitat sub-types; those that consisted of natural unmowed vegetation (i.e. semi-natural sites) and grassy areas comprised partly or mainly by introduced grass species that are routinely mowed by the City (i.e. manicured sites). We anticipated that manicured sites may have different communities than natural ones, but too few natural sites of sufficient size were available to obtain similar numbers of sites within that habitat alone. The few natural sites that we did find were located in small patches of grassland on south-facing slopes and along the bottom of the river valley. Vegetation cover in the natural sites was comprised of several species of grass (e.g. *Bromus inermis*, *Agropyron* spp., *Festuca* spp.), thistle, and leguminous species (e.g. *Melalotus* spp.) (Mowat, 1993). The distribution of on-leash sites among habitat types was 11 deciduous, 10 coniferous, and seven meadow sites. Within off-leash areas, sampling occurred at 10 deciduous, 10 coniferous, and eight meadow sites. We used 1:10 000 locally-produced orienteering maps to place our sampling sites at the center of target habitat patches and then navigated to them using known reference points. The location of trails was not considered during site selection. The centers of the sites were placed at least 250 meters apart to minimize the possibility of double-counting individuals.

Bird surveys

We conducted bird surveys in all 56 sites a total of three times each between May and July 2002. Surveys were conducted between sunrise and 10 AM and only under calm weather

conditions (wind less than 5 on the Beaufort scale) without significant precipitation. Each site was sampled at a different time on each visit to control for temporal variation.

Each survey involved a 5-minute, 100 m, fixed-radius point count (Bibby et al., 1992) followed by a 5-minute playback (*sensu* Gunn et al. 2000 after Desrochers and Hannon, 1997) of a black-capped chickadee (*Poecile atricapillus*) mobbing call. The chickadee mobbing call is known to attract several bird species that occur within the study area (Hurd, 1996; Gunn et al., 2000) and we used it to increase detection of less vocal species (e.g., woodpeckers) and to provide opportunities for behavioural observations (below). A 5-minute post-playback point count concluded each survey. We recorded all birds that were seen or heard during the 15 min. Birds were only counted if they interacted with the habitat, meaning that birds observed flying over the study site were not recorded. Caution was taken to minimize the chance of double counting individual birds by carefully noting their direction and apparent movement during the census. When possible, we observed individual birds carefully to collect evidence of breeding activity (after Vickery et al., 1992) by taking advantage of the close approaches that typically followed use of the mobbing call (Gunn et al., 2000). Individual bird species were considered to be breeding at a site if we recorded one of the following criteria: (a) a male was singing on at least two of the three visits, or (b) an individual of either sex was seen exhibiting breeding behavior (i.e., traveling in a pair, carrying nesting material, food, or fecal sacs) on any visit (after Gunn et al., 2000).

Small mammal surveys

To accommodate the greater effort that it required, small mammals were live-trapped at a randomly selected subset of 32 of the original 56 sites between mid-July and mid-August, 2002. The distribution among habitat types of the 32 sites was 10 deciduous, 10 coniferous and 12 meadow sites. Twelve meadow sites were selected to allow for equal sampling effort among meadow sub-types (n = 6 of each) and among dog treatments (n = 3 within each meadow sub-type).

Each site was sampled using an array of 10 Victor Tin-Cat® live-, multiple-capture traps placed approximately 20 m apart. The arrangement of traps varied between sites to accommodate local physical features, but was generally comprised by two parallel lines of traps placed greater than 3 m away from either side of a trail. When possible, all traps were placed within the site's point count radius. When this was not possible, traps were placed as close as possible to the point count center and within the same habitat type.

Each site was pre-baited for five nights then trapped for two consecutive nights to permit mark-recapture population estimation (Sutherland, 1996). Three or four sites were trapped per night and these were spread among two or more of the treatment and habitat types to control for seasonal variation in small mammal numbers. Pre-baiting was conducted using pop cans with enlarged openings that were nailed in place and baited with sunflower seeds. To maximize trapping success, traps were placed along woody debris and in other areas likely to be used by small mammals. Traps were covered with plant material to conceal their presence from the public and to provide insulation from both heat and cold. Traps were set in the evenings, baited with a handful of sunflower seeds and dry cat food, and checked the following mornings. During the day between the first and second night of trapping, each trap was locked open and left in place. Traps that were placed in manicured meadow sites were covered with wooden boards for additional protection from the elements.

Following the first night of trapping, each trapped individual was identified to species, sexed, weighed, and marked with a permanent marker at the base of its tail and then released.

The average time it took to process each animal was approximately 1 min. After the second night of trapping the same procedure was followed but no animals were marked.

Statistical analysis

We calculated species diversity using the Shannon-Wiener diversity index (following Krebs, 1994). To examine differences in diversity and abundance among treatments and habitat types, we used parametric tests (ANOVA and *t*-tests) when the data satisfied the assumptions of normality and homogeneity of variance (Sokal and Rohlf, 1981). In some cases the data needed to be transformed to meet these assumptions so the square-root transformation ($\sqrt{Y} + \frac{1}{2}$) was applied (Sokal and Rohlf, 1981). We used Tukey's honestly-significant difference (HSD) statistic to conduct post-hoc, pair-wise tests among ANOVA means (Sokal and Rohlf, 1981). When the assumptions were not met and the data could not be transformed to meet them, we used the non-parametric analogue to a *t*-test, the Mann-Whitney U test.

Results

Birds

In total, 2 203 birds representing 61 species (including two unidentified *picidae* and *interidae* spp.) were counted during the bird censuses. The black-capped chickadee (see Table 1 for scientific names) was the most abundant species, accounting for 30% of all observations. Other common species, each accounting for at least 5% of all observations, were the least flycatcher, red-eyed vireo, red-breasted nuthatch, and yellow warbler.

We examined bird diversity as a function of habitat type and leashing bylaw designation in two ways; by including all birds that were detected and with only those birds that exhibited evidence of breeding. Across all species, bird community diversity differed as a function of habitat (Fig. 1(A); $F = 100.0, df = 2,50, P \leq 0.001$), but not as a function of dog leashing bylaws ($F = 1.5$, $df = 1,50$, $P = 0.23$) or the interaction between leashing bylaws and habitat ($F = 0.6$, $df = 2,50$, $P = 0.53$). Posthoc tests revealed that bird diversity did not differ between the deciduous-dominated and coniferous habitats (Tukey's HSD $P = 0.85$), but both of these were significantly more diverse than the meadow areas (Fig. 1(A); Tukey's HSD $P \leq 0.001$ for each). These results were qualitatively identical for birds that exhibited evidence of breeding (Fig 1(B)). Again, diversity differed as a function of habitat (Fig. 1(B); $F = 78.9, df = 2,50, P \leq 0.001$), but not bylaw designation (Fig. 1(B).; $F = 0.003$, $df = 1,50$, $P = 0.87$) or the interaction between bylaw designation and habitat ($F = 0.06$, $df = 2,50$, $P = (0.60)$. Pair-wise differences between habitats were also similar; breeding bird diversity did not differ between deciduous-dominated and coniferous habitats (Fig. 1(B). Tukey's HSD $P = 0.21$), but both of these habitat types had significantly greater diversity than meadow areas (Fig. 1(B); Tukey's HSD $P \leq 0.001$ for each).

To assess differences in the abundance of birds as a function of leash designation, we compared the maximum number of individuals of all species detected at each site. The average of these abundances differed between habitat types (Fig. 2; $F = 106.2, df = 2,50$, $P \leq 0.001$), but not between on-leash and off-leash sites (Fig. 2; $F = 0.004$, $df = 1,50$, $P = 0.95$) or as a function of the interaction between leashing bylaw designation and habitat type ($F = 1.1, df = 2,50, P = 0.34$). The effect of habitat resulted in similar differences as before, and meadow sites had approximately 80% fewer birds than deciduous and coniferous-dominated sites.

Table 1 Summary of the number and species of birds detected during censusues

Common name	Latin name	Number of detections during surveys (% of these detections made in OFF leash sites)	
ring-billed gull	*Larus delawarensis*	8 (63)	
ring-necked pheasant	*Phasianus colchicus*	2 (100)	
sharp-shinned hawk	*Accipiter striatus*	3 (33)	
Cooper's hawk	*Accipiter cooperii*	4 (50)	
pileated woodpecker	*Dryocopus pileatus*	8 (50)	
downy woodpecker	*Picoides pubescens*	44 (50)	a
hairy woodpecker	*Picoides villosus*	3 (33)	
unidentified woodpecker	*Picidea*	6 (33)	a
northern flicker	*Colaptes auratus*	1 (0)	
yellow-bellied sapsucker	*Sphyrapicus varius*	2 (50)	
western wood-pewee	*Contopus sordidulus*	2 (50)	
eastern phoebe	*Sayornis phoebe*	5 (40)	
alder flycatcher	*Empidonax alnorum*	3 (33)	
least flycatcher	*Empidonax minimus*	114 (56)	a
American crow	*Corvus brachyrhynchos*	53 (66)	
common raven	*Corvus corax*	2 (0)	
blue jay	*Cyanocitta cristata*	14 (50)	
black-billed magpie	*Pica pica*	56 (43)	
black-capped chickadee	*Poecile atricapillus*	670 (51)	a
boreal chickadee	*Poecile hudsonicus*	2 (0)	
white-breasted nuthatch	*Sitta carolinensis*	47 (45)	a
red-breasted nuthatch	*Sitta canadensis*	148 (45)	a
house wren	*Troglodytes aedon*	12 (33)	a
ruby-crowned kinglet	*Regulus calendula*	13 (46)	a
golden-crowned kinglet	*Regulus satrapa*	8 (38)	a
American robin	*Turdus migratorius*	68 (53)	a
Swainson's thrush	*Catharus ustulatus*	7 (57)	b
hermit thrush	*Catharus guttatus*	1 (0)	b
cedar waxwing	*Bombycilla cedrorum*	10 (70)	a
blue-headed vireo	*Vireo solitarius*	27 (30)	a
red-eyed vireo	*Vireo olivaceus*	141 (57)	a
warbling vireo	*Vireo gilvus*	4 (50)	
black-and-white warbler	*Mniotilta varia*	1 (100)	
Tennessee warbler	*Vermivora peregrina*	11 (36)	b
orange-crowned warbler	*Vermivora celata*	3 (33)	
yellow warbler	*Dendroica petechia*	194 (51)	a
Magnolia warbler	*Dendroica magnolia*	1 (0)	
yellow-rumped warbler	*Dendroica coronata*	31 (19)	a
blackpoll warbler	*Dendroica striata*	7 (71)	
ovenbird	*Seiurus aurocapillus*	13 (38)	a,b
Canada warbler	*Wilsonia canadensis*	2 (100)	
American redstart	*Setophaga ruticilla*	3 (0)	
red-winged blackbird	*Agelaius phoeniceus*	1 (0)	
unidentified blackbird	*Icteridae*	9 (11)	a
northern oriole	*Icterus galbula*	7 (57)	a
western tanager	*Piranga ludoviciana*	31 (48)	a
rose-breasted grosbeak	*Pheuticus ludovicianus*	6 (50)	
purple finch	*Carpodacus purpureus*	5 (40)	a

(*Continued on Next Page*)

Table 1 (*Continued*)

Common Name	Latin Name	Number of detections during surveys (% of these detections made in OFF leash sites)	
pine siskin	*Carduelis pinus*	56 (34)	
red crossbill	*Loxia curvirostra*	6 (100)	
white-winged crossbill	*Loxia leucoptera*	7 (100)	
savannah sparrow	*Passerculus sandwichensis*	54 (52)	a,b
le Conte's sparrow	*Ammodramus leconteii*	8 (63)	a,b
vesper sparrow	*Pooecetes gramineus*	2 (100)	a,b
dark-eyed junco	*Junco hyemalis*	39 (54)	a,b
chipping sparrow	*Spizella passerina*	69 (42)	a
clay-colored sparrow	*Spizella pallida*	63 (43)	a,b
white-throated sparrow	*Zonotrichia albicollis*	60 (55)	a,b
Lincoln's sparrow	*Melospiza lincolnii*	1 (0)	
song sparrow	*Melospiza melodia*	21 (62)	a,b
house sparrow	*Passer domesticus*	4 (50)	
Total detections		2203 (49)	

[a]Species considered to be breeding, within at least one study site (see methods for definition)
[b]Species that nest on the ground or in low shrubs which were thus considered to have potentially greater vulnerability to the effects of urban dogs

We considered the 11 species that nest on the ground or in low shrubs to have potentially greater vulnerability to the effects of urban dogs. Thus, we compared the abundance of these species individually as a function of dog designation and grouped birds by habitat to increase the power of the test (*sensu* Cohen, 1988). Eight species displayed clearly non-significant differences in abundance between on-leash and off-leash sites (Mann-Whitney $U \leq 92.0$, $df = 1$ to 29, $P \geq 0.16$ for each species). The ninth species, the song sparrow, was only marginally non-significant ($U = 9.0$, $df = 7$, $P = 0.08$), but in the unpredicted direction; almost twice as many sparrows were counted in off-leash sites as were in on-leash areas. When subjected to a Bonferroni adjustment to account for the multiple comparisons, all species-specific differences were highly non-significant (adjusted P required for significance (0.0056). There were insufficient data to analyze the two other ground-nesting species (vesper sparrow and hermit thrush) that were counted during the surveys.

In addition to these ground-nesting birds, we also examined differences in the abundance of the five most common forest species encountered during the survey period for which differences may have been more apparent owing to larger values and lower variance (again, *sensu* Cohen, 1988); black-capped chickadee, least flycatcher, red-breasted nuthatch, red-eyed vireo, and yellow warbler). Four species showed non-significant differences in abundance between on-leash and off-leash sites (Mann-Whitney $U \leq 237.5$, $df = 26$ to 42, $P \geq 0.33$). Comparable to song sparrows, red-eyed vireos were 33% more abundant in the off-leash sites than they were in on-leash sites (Mann-Whitney $U = 116.0$, $df = 38$, $P = 0.03$). However, after subjecting the data to a Bonferroni adjustment to account for the multiple comparisons made between species this difference was not significant (adjusted P required for significance (0.01).

Small mammals

Three species were detected in the small mammal census. In order of decreasing abundance these species were the deer mouse (*Peromyscus maniculatus*), red-backed vole (*Clethri-*

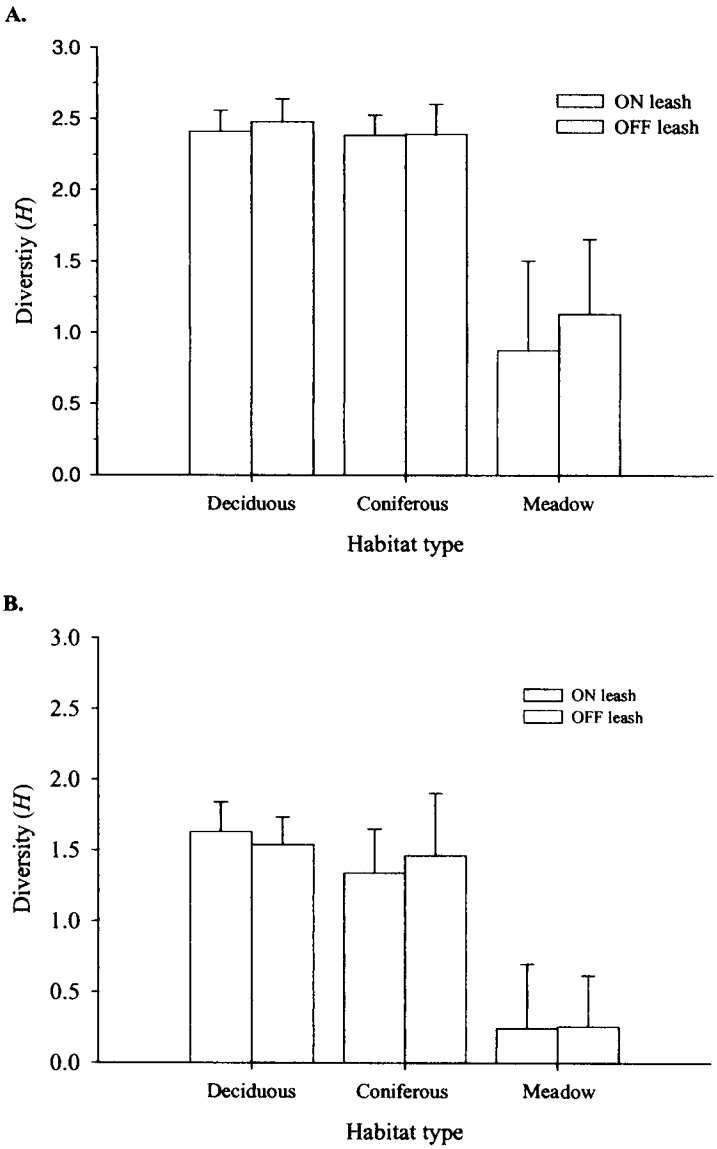

Fig. 1 Shannon-Wiener indices of bird diversity (mean ± SD) across dog treatment and habitat types observed in the Edmonton river valley parks for (A) all bird species recorded during survey period and (B) only those bird species considered to be breeding at a site

onomys gapperi), and meadow vole (*Microtus pennsylvanicus*), comprising a total of 287 individuals. Sixty-one individuals were recaptured on the second night of trapping, bringing the total number of captures to 348.

Abundance was compared using two sources of data; the highest counts per site based on the greatest number of individuals trapped in one night and population estimates derived for each site using the Petersen mark-recapture technique (as described by Sutherland, 1996).

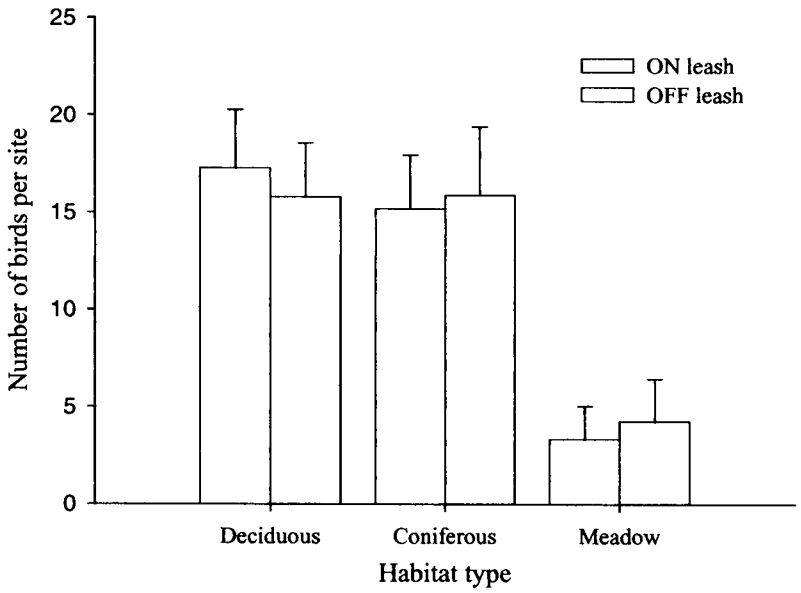

Fig. 2 Average number of birds detected per site (mean ± SD) across all species, treatment, and habitat types in the Edmonton River valley parks

Square-root transformation population estimates of each species were analyzed separately via two-way ANOVA (for deer mice and red-backed voles which occurred in both forested habitat types) and t-test (for meadow voles which occurred only in meadow habitat). For deer mice and red-backed voles, population estimates did not differ as a function of habitat (Figs. 3(A) and (B), $F = 0.003$ and 1.02 respectively, $df = 2,9$ and 2,7, $P = 0.96$ and 0.33), leash designation ($F = 0.04$ and 0.64, $df = 1,9$ and 1,7, $P = 0.85$ and 0.43) or the interaction between dog treatment and habitat type ($F = 0.63$ and 2.23, $df = 2,9$ and 2,7, $P = 0.44$ and 0.16). Meadow voles also displayed a clearly non-significant difference between on-leash and off-leash sites (Fig. 3(C), $t = -0.12$, $df = 2,3$, $P = 0.92$). Across all three species, these results were qualitatively unchanged when we made similar comparisons using the maximum one-night capture rate for each site as a measure of abundance.

Manicured vs. semi-natural comparisons

Because the apparent bird and small mammal diversity of meadow habitat differed so strikingly in the field as a function of horticultural practice, we examined these differences with an *a posteriori* analysis. Bird diversity was significantly greater in semi-natural sites than it was in manicured sites ($t = 2.42$, $df = 8,4$, $P = 0.04$). However, overall, bird abundance did not differ as a function of horticultural practice ($t = 1.20$, $df = 10,9$, $P = 0.26$), presumably because of changes in the composition of the bird community. Predictably, more typically-urban species (i.e. black-billed magpie, American crow, ring-billed gull, American robin, and house sparrow) were found in manicured sites compared to a more native composition of the bird community within semi-natural sites (i.e. savannah sparrow, Le Contes sparrow, vesper sparrow and clay-colored sparrow).

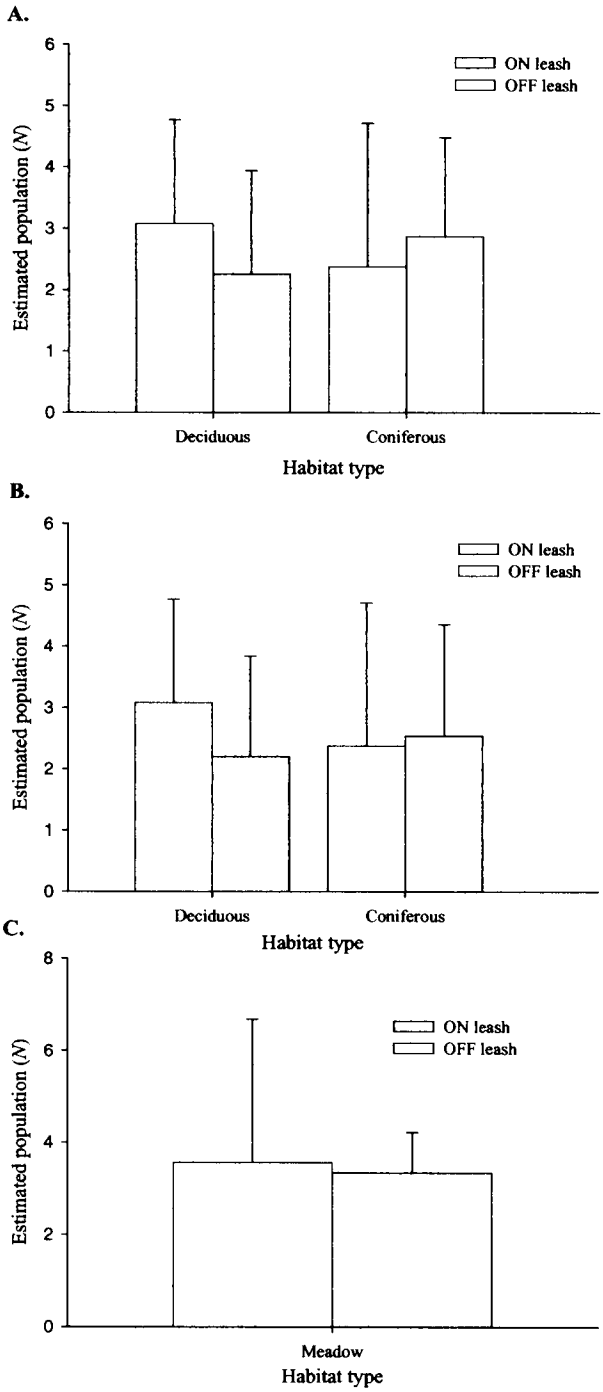

Fig. 3 Estimates of small mammal population sizes (mean ± SD) across treatment and habitat types observed in the Edmonton river valley parks for (A) deer mice and (B) red-backed voles and (C) meadow voles. Estimates were calculated with square root transformed data using the Petersen method of mark-recapture

Small mammal abundance was also higher in semi-natural sites. As many as 11 meadow voles were caught during one night in a single semi-natural meadow site, and the average one-night maximum capture rate was six (only meadow voles were trapped in meadow sites). This average value corresponds to an approximate and average population estimate of 11 individuals per semi-natural meadow site. In contrast, not one individual of any species was caught among all manicured sites during the entire survey period. The lack of variance in this category precludes statistical analysis.

Discussion

Designation of sites for dogs to be on- or off-leash had no measurable effect on the diversity or abundance of birds and small mammals within the sites that we surveyed in the Edmonton River valley. There was a similar lack of difference in bird abundance when we restricted analyses to only those species that appeared to be breeding, only those species that nest on the ground or in low shrubs, and only the most abundant species. These results contrast with some other studies, which reported that many species of wildlife are affected by free-running dogs (Sime, 1999; Lafferty, 2001). We expected that an effect on diversity of leash designation would be apparent at the scale of our censuses because comparable local scales appear more generally to influence the composition of urban bird communities (Clergeau et al., 1998, 2001; Melles et al., 2003). Given that our results did not support our hypothesis that leashing bylaws affect the diversity or abundance of birds and small mammals, there are two types of interpretations for them. In the first category, several factors make it is plausible that free-running dogs do not affect urban birds or wildlife, or not by the measures we employed (diversity and abundance). In a second category, our design may have precluded identifying effects of dogs that really exist.

Consistent with the first interpretation, free-running dogs may not affect birds and small mammals in the vicinity of human use trails because dog activity is restricted to such small temporal and spatial scales that its effects are negligible. Behavioral data suggests that off-leash dogs generally do not travel far off trail, and that when they do it is only for brief periods (Bekoff and Meaney, 1997). By our subjective and anecdotal assessment, dogs in our study area travelled off trail very little, especially in wooded sites, and only slightly more in semi-natural meadow sites. However, dogs did typically stray widely within the manicured meadow sites (AF, personal observation), but in those areas low habitat quality likely overwhelmed our ability to detect differences in diversity or abundance owing to dog activity.

A second biological reason that there was no apparent effect of leashing bylaws is that wildlife, particularly birds, in suburban and urban areas exist there because they are fairly tolerant of moderate levels of human activity (Cooke, 1980), including accompanying dogs. Fernandez-Juricic et al. (2001) have shown that birds can even become habituated to dogs in highly used urban parks. Bird tolerance appears to be highest once territories are established and nesting has begun (Tilghman, 1987) and this corresponds with the timing of our censuses. In fact, moderately perturbed habitats often have greater species richness than do the most natural habitats (Blair, 1996; Tilghman, 1987), perhaps as a function of greater habitat diversity. Thus, the tendency for song sparrows and red-eyed vireos to be more abundant in areas with off-leash dogs may mean that this disturbance somehow improves habitat quality for these species. This supports Mortberg's (2001) assertion that the effect of disturbance from recreation on densities of breeding birds is species-specific.

A third reason that leash designation may not affect birds and small mammals in Edmonton is because these communities may already have responded to the presence of wild coyotes (*Canis latrans*), which are abundant in Edmonton's North Saskatchewan River Valley (Mowat, 1993; Patriquin, 1992). Coyotes are a natural predator of both birds and small mammals (Pattie and Fisher, 1999) and historically occurred in the aspen parkland ecoregion that surrounds Edmonton. The presence of coyotes may reduce the novelty, and hence reaction to, free-running dogs and they may also enhance bird and small mammal communities by reducing the occurrence in ravine parks of domestic cats (Crooks and Soule, 1999).

A second category of explanation for our results is that free-running dogs had negative biological effects on wildlife in our study area, but we were not able to detect them. There are three main ways that this may have come about. The first is that the effect of leash laws was swamped by variation in one or more habitat or site characteristics that exerted greater influences on wildlife diversity or abundance. Among these potential characteristics are landscape structure adjacent to woodlands (Jokimaki, 1999; Melles et al., 2003), habitat structural complexity (e.g., Scott et al., 2003), distance to the nearest trail (Tilghman, 1987; Miller et al., 1998), distance to water (e.g., Tilghman, 1987), level of human activity (Fernandez-Juricic and Jokimaki, 2001), average canopy height (Tilghman, 1987), and the size of censused patches (Crooks et al., 2004). Trail proximity may have particular importance because trails can alter species composition in forest ecosystems (Miller et al., 1998) and both official and unofficial trails are ubiquitous in the Edmonton River Valley. Other studies have shown that bird diversity decreases along a gradient of increasing urbanization (Blair, 1996; Clergeau et al., 1998; Reynaud and Thioulouse, 2000), and such effects could obscure or contradict the potential negative effect of off-leash dogs. During site selection, we did not attempt to measure trail density, proximity to city center, patch size or any of the other habitat characteristics named above, and these may also be profitable subjects of further investigation.

A second reason that we may not have detected existing differences in the diversity or abundance of birds and small mammals is that this effect was confounded by variation in habitat quality between the two leashing designations. In contrast to the majority of the urban parks, it was our subjective impression that the designated off-leash areas within Edmonton were less developed. Parks personnel confirmed that off-leash areas are generally designated in areas where conflicts with a majority of other user types can be avoided (K. Moore and D. Frost, personal communications). Development levels may have an influence on wildlife because of its implications in both biotic and abiotic components of habitat quality. Biologically, less developed parks have increased amounts of vegetative cover (Jokimaki, 1999), and decreased occurrences of exotic species (Blair, 1996). Greater vegetation cover in particular is known to affect both birds (Jokimaki, 1999) and small mammals (Dickman, 1986). More specifically, increased cover can cause birds to show more tolerance towards human-related disturbances (Knight and Temple, 1995). Off-leash areas may also have occurred in areas with greater food availability, particularly for insectivorous species, which may generally be more sensitive to the effects of urbanization (Parsons et al., 2003; Lim and Sodhi, 2004). It would be worthwhile to subject this hypothesis, that off-leash areas occur in areas of higher habitat quality, to further investigation.

A final reason why we failed to detect an impact of leash designation within the urban parks of Edmonton may be that no difference existed in dog behaviour as a function of leashing bylaws. Via personal observation throughout the summer, and through personal communication with City of Edmonton Park Rangers, there is evidence that some people do not comply with leashing bylaws in city parks. Non-compliance may be a widespread problem as Lafferty (2001) also noted low levels of compliance with leash laws by dog

owners on a southern California beach. It is possible that the rate of non-compliance was high enough to nullify functional differences in our leash designation treatments and, consequently, differences in our response variables.

Whether or not there exist effects of off leash dogs on the diversity and abundance of birds and small mammals, dog activity may disrupt several more subtle aspects of wildlife communities that we did not measure. Most importantly, dogs may reduce nesting success (e.g., Gutzwiller et al., 1998), but not species abundance or the frequency of nesting attempts in habitats that ultimately function as sinks for regional populations (*sensu* Pulliam, 1988). For this reason, animal density and abundance may not be reliable indicators of habitat quality as we have implicitly assumed (Van Horne, 1983). In addition, domestic dogs have the potential to impose stress-related physiological effects on wildlife and may introduce diseases and parasites into populations of urban wildlife (Simes, 1999). Finally, dogs may exert greater effects on larger mammals that provide more visible targets for chase (e.g., white-tailed deer [Fuller, 1990; Ballard , 1999], red squirrel, snowshoe hare) that we did not census.

Manicured versus semi-natural meadow sites

Because our sample of meadow habitat included both manicured and semi-natural sites, we were able to show that meadow sites with manicured grass had significantly lower levels of avian diversity and small mammal abundance than did semi-natural sites with non-manicured grass. The abundance of birds at manicured sites also tended to be lower than it was at semi-natural sites, but not significantly so with our conservative multiple-comparison procedure. The lower diversity of birds in manicured sites is probably a function of their decreased habitat suitability as nesting or foraging sites. Because most birds do not forage far from vegetative cover, which they perceive as protection from predators (Giesbrecht and Ankney, 1998; Rodriguez et al., 2001), the lack of vegetative cover in these areas probably compromised both habitat quality and resource availability (Scheiman et al., 2003). Similar limitations of short grass would have afflicted the small mammal community (Jensen and Honess, 1995), explaining the complete lack of mammal detections in this area. Most of the native songbirds in the study area, which are insectivorous, granivorous, or fruitivorous, probably also lacked appropriate forage in the manicured sites. Instead, these sites would have contained the kind of human refuse (i.e. because they are the site of picnics, festivals, and organized sport) that is favoured by the scavenging and urbanized species we found there (e.g., ring-billed gulls, black-billed magpies, American crows, house sparrows and American robins; see also Fernandez-Juricic et al., 2002; Parsons et al., 2003). Our findings support a general expectation that more heavily modified areas are typically dominated by a few species that occur at high densities (Tilghman, 1987; Edgar and Kershaw, 1994; Melles *et al.*, 2003; Fraterrigo and Wiens, 2005), and also suggest that these practices exert far greater effects than the presence of off-leash dogs.

Conclusions

Although this study found no impact of dog leashing by-laws on the diversity and abundance of both birds and small mammals, it would be imprudent to conclude that dogs have no effect on wildlife for the several reasons described above. Among the results of this study, perhaps the most pertinent finding that relates directly to the management of urban parks that are assumed to have much value to resident wildlife (Fernandez-Juricic and Jokimaki, 2001) is

the issue of leash law compliance. The suspected lack of compliance indicates the need for investigation into the reasons why people ignore leashing bylaws so that steps can be taken to improve the situation. The striking effect of horticultural practices on the diversity (birds) and abundance (mammals) suggests an inexpensive solution for increasing biodiversity in urban areas. It is likely that cities could substantially increase biodiversity simply by letting existing green spaces revert to a more natural state (Crooks et al., 2004).

If future research finds that dogs do adversely affect wildlife, there are several measures that might reduce this impact. Increased enforcement and higher fines may increase the effect of leashing laws. Better visual delineation of sensitive areas might be effective to further restrict the spatial impact of dog activity. Finally, city planners might try to identify key habitat features that are elsewhere correlated with wildlife diversity (e.g., structural diversity: Linehan et al., 1967; Tilghman, 1987) and then assess and limit the impact of dogs and other recreational activity on these attributes.

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INTERACTIONS AMONG DOGS, PEOPLE, AND THE ENVIRONMENT IN BOULDER, COLORADO: A CASE STUDY

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> ***"The environment is not a luxury. When political movements have faded, when economic systems have changed, when ideologies have been superseded and forgotten, the environment will still be important." (Sylvan and Bennett 1994, p. 6)***
>
> ***"That recreational activities disturb wildlife is well appreciated but poorly understood. Most popular forms of recreation in wildlands have yet to receive detailed study." (Knight and Cole 1995, p. 61)***

ABSTRACT

From September 1995 to April 1996 we studied interactions among dogs, people, and the environment in Boulder, Colorado. Data on behavioral disturbances by off-leash dogs who were accompanied by a person were collected with respect to dog-dog and dog-human interactions, dog-wildlife encounters, dogs trampling vegetation, and dogs entering and disturbing bodies of water. A questionnaire also was administered. Behavioral data showed that off-leash dogs generally did not travel far off trail, that when they did it was for short periods of time, and that they rarely were observed to chase other dogs, disturb people, chase wildlife, destroy vegetation, or enter bodies of water. Results from analyses of the questionnaire (skewed toward non-dog owners) showed that dog owners and non-dog owners agreed that people were more disruptive to the environment than dogs and that unruly people were more problematic than unruly dogs. We conclude that the well-being and interests of dogs should not summarily and dismissively be compromised when dogs and people attempt to share limited space that can be used by all parties for recreational purposes. Indeed, a higher percentage of people reported that the quality of dogs' experience of the outdoors would be compromised more than their own enjoyment if dogs could not walk off-leash in areas where this is currently permitted. The methods used and the results from this case study can serve as a model for other locations in which dogs and people compete for limited spatial resources.

INTRODUCTION

Across the United States and in many other countries there is growing interest in how human and nonhuman animals (hereafter animals) can best share space that can be used by all parties for recreational purposes (see Knight and Gutzwiller 1995 for review). Although concern often focuses on the mutual well-being of humans and animals, when priorities have to be established, humans generally receive favorable treatment. Furthermore, when there are competing interests among humans, domestic dogs (*Canis familiaris*), wild animals, and "nature" in general, dogs' well-being and interests are often overridden (because they are "merely dogs" or "simply domesticated animals;" see Bekoff 1995, 1996a and Bekoff and Jamieson 1996 for discussion).

In the late 1800s, the people of Boulder, Colorado, had the foresight to set aside a large parcel of land backing into the foothills. Since then, additional land has been purchased under an Open Space program to create a greenbelt around the city, and to provide wildlife habitat and recreational opportunities. This program has been very successful and popular with the public.

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In recent years, there has been a large increase in the use of Open Space trails in Boulder. As emphasized by Roberts (1995), Boulderites who enjoy the outdoors "love their parks to death" as they pursue recreational activities. This community resource, which is shared by humans and animals, consists of about 25,000 acres and approximately 150 miles of trails. In 1993 there were about 1.3 million visits, an increase of 13% compared to previous years (Miller 1994). In one study, it was reported that 21.3% of groups visiting Boulder City Open Space participated in exercising their companion dogs (Zeller et al. 1994). In Boulder, as in other communities, companion animals such as dogs are very important to some people and problematic to others. The resulting conflicts between different groups (pro- and anti-dog factions) of people have placed the Boulder City Council in the position of having to consider various management decisions. Empirical data are necessary and can help to deal with controversial issues such as these in a more objective and straightforward manner. The development of sound management policies that attempt to maximize the well-being of all parties in recreational areas, including the possibility of placing restrictions on dogs, require detailed consideration of perceived and actual problems. Whereas there is a significant literature on human attitudes towards domestic and wild animals (e.g. Kellert 1994; Serpell 1995a,b, and references therein), there are very few data that can inform management decisions at the local level. As the number of humans and companion animals increases, existing land use problems continue to grow in Boulder (Roberts 1995; Zaslowsky 1995) and in other communities.

Among the major issues regarding land use in Boulder and other locales is the concern that off-leash dogs disturb other dogs, people, wildlife, and the environment. Some data support this claim (see Lowry and McArthur 1978, Gentry 1983, Mainini et al. 1993, Miller 1994, Knight & Gutzwiller 1995, and references therein), whereas other data suggest either that dogs have a minimal demonstrable effect on animals such as deer (e.g. Progulske and Baskett 1958; Sweeney et al. 1971; Scott and Causey 1973) or that human impacts are equally or more invasive (e.g. Yalden and Yalden 1990). Clearly, the issues concerning the impact of dogs on wildlife and habitat require further and more detailed attention.

METHODS

Data were collected from September 1995 through April 1996 at six different locations in and around Boulder (four Open Space locations and on the University of Colorado, Boulder, campus and on the Pearl Street Mall). To achieve our goals of learning more about the behavior of off-leash dogs and about people's attitudes and perceptions towards dogs, we devised an original questionnaire and also collected detailed information on behavior. We felt that a combination of these two approaches should help to clarify distinctions between perceived problems and actual areas of conflict among dogs, people, and the environment.

Questionnaires

Our questionnaire (Appendix A) characterized the respondents by place of residence, patterns of use of Open Space, whether or not they owned and had a dog with them, their attitudes toward dogs and people, their experiences with dogs and people on Open Space, their views of the impact of dogs and people on habitat and wildlife, and their concerns about Open Space in the future. The questionnaire was developed and implemented with the input of professional pollsters and administered at the same four locations on Open Space at which data were collected on behavioral disturbances (Mt. Sanitas, Bobolink Trail, Chautauqua, Doudy Draw) where dogs are allowed to be off-leash, and also at two other locations (University of Colorado, Boulder Campus and Pearl Street Mall) where dogs are required to be on a leash. (Two other areas [Sawhill and Walden Ponds] received too little use to be included in the present data set.) All visitors with and without dogs were asked to fill out the questionnaire while the researcher waited for its completion. The questionnaires were analyzed by Market Research Services, Longmont, Colorado and cross-tabulations were run so that responses to each question could be correlated with one another.

Behavioral Disturbances

In this part of our study we were concerned with the following short-term and direct behavioral disturbances (for discussion, see Knight and Cole 1995, p. 61) by off-leash, companion dogs who were accompanied by a person. Data consisted of (i) characterization of the patterns of space use by individually observed dogs; (ii) characterization of patterns of chasing and flushing wildlife and disturbing vegetation and bodies of water; (iii) the nature of dog-dog encounters, and (iv) the nature of dog-people encounters.

Behavioral data were collected at six locations (see above). Observations were made "on trail" or from a stable vantage point, and efforts were made to minimize the effects of

researchers' presence. For example, observers sat in the same place quietly and dogs generally paid little overt attention to them. At each location, beginning at the trailhead and extending for 500 meters (m), the trail was partitioned with flagging into five linear 100m sections. Other 100m sections further along a trail were randomly sampled to see if there was any "trailhead effect."

Seven different people collected field data and administered the questionnaires. Regular meetings were held to make sure that there was consistency among the different researchers. Focal animal sampling (Altmann 1974), in which individual dogs were followed during their travels within each of the 100-meter sections, was used. All of the dog's activities and its location were recorded on prepared score sheets or read into a voice-activated tape recorder. A continuous time-base was maintained using stop watches. For each 100-meter section, we recorded the frequencies and rates with which dogs were "off trail" and "on trail," the distances from the trail that dogs travelled, and whether or not leaving the trail was owner-induced (e.g. by throwing a Frisbee or a stick). We recorded all events of flushing and chasing, including and independent of the focal animal. We recorded observed instances when a dog did not appear to flush or to chase wildlife (recognizing that unobservable physiological changes can be caused by the presence of dogs; for discussion, see Gabrielson and Smith 1995). The mammalian species with which we were concerned included mule deer (*Odocoileus hemionus*), yellow-bellied marmots (*Marmota flaviventris*), black-tailed prairie dogs (*Cynomys ludovicianus*), rock squirrels (*Spermophilus variegatus*), jackrabbits (*Lepus* spp.), cottontails (*Sylvilagus* spp.), coyotes (*Canis latrans*), and red foxes (*Vulpes vulpes*). Avian species included black-billed magpies (*Pica pica*), robins (*Turdus migratorius*), dark-eyed juncos (*Junco hyemalis*), mallard ducks (*Anas platyrhynchos*), steller's jays (*Cyanocitta stelleri*), and mountain (*Parus gambeli*) and black-capped chickadees (*Parus atricapillus*).

Data were analyzed using proportions tests (Bruning and Kintz 1977, p. 222ff) which generate the z statistic. We used $p<0.05$ (two-tailed test; $z_{crit}>1.96$) to indicate significant differences between two percentages. The phrase "no significant difference" or similar terms mean that $z\leq1.96$ and $p>0.05$. Critical values of z for other levels of statistical significance are 2.58 ($p<0.010$) and 3.30 ($p<0.001$).

RESULTS

Behavioral Disturbances

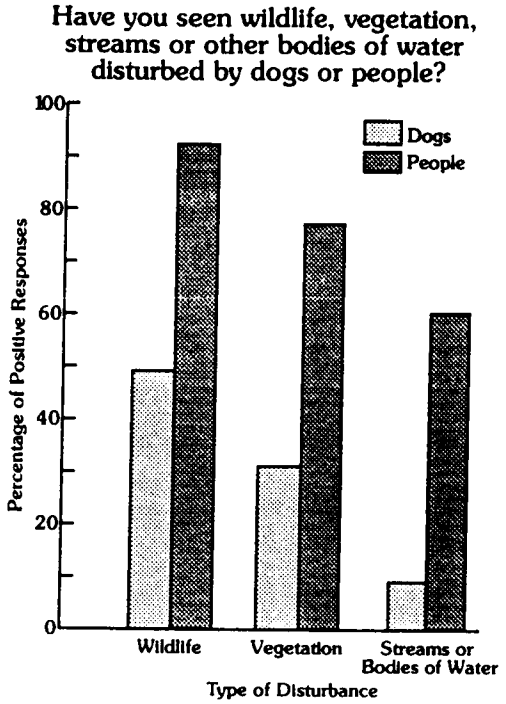
Approximately 800 different dogs were observed for about a total of 150 hours. The behavior of dogs at different locations and at the same locale did not vary significantly (detailed analyses for the different locations are presented in Bekoff 1996b). Off-leash dogs generally travelled less than 2-5 m off trail for fewer than 1-2 minutes (min). For example, in one study (n=100 dogs) at Mt. Sanitas, 30 (=30%) dogs remained on the trail and 45 (=45%) dogs went off trail between 1-5m for less than 1 min. In a second study at Mt. Sanitas (n=80 dogs), 80% of dogs remained within 1-3m of the trail (15% remained on trail and 40% went less than 1m off trail) and in a third study at Mt. Sanitas (n=100 dogs), 93 (=93%) of dogs remained within 5m of the trail. The general impression of observers was that when dogs went far off trail, they were lured off by the people who were responsible for them (e.g. people threw sticks, Frisbees, or went off trail and then called their dogs). It is also notable that only 2 "earnest chases" of wildlife (1 deer and 1 unidentified squirrel) were observed in which it was unambiguously concluded that it was the dog who initiated and maintained the chase. Dogs also only rarely entered bodies of water. Similar behavioral data were collected at Chautauqua (n=272 dogs). In addition, information on dog-dog interactions showed that 20/26 (81%) were friendly (dogs greeted, sniffed, or played with one another) or neutral (dogs passed one another with no physical contact) and 6 (19%; $p<0.001$) had aggressive (threat) components. All observers noted that dogs off leash were friendlier than dogs on leash, although no detailed data were collected on this aspect of behavior. We also observed 172 dog-people interactions of which 146 (85%) were neutral and the rest (n=26, 15%; $p<0.001$) were friendly. When sufficient data could be collected, they indicated that there were no differences in the behavior of dogs in different segments of the trail (1st 100m, 2nd 100m, 3rd 100m).

Questionnaires

Four hundred and fifty (n=450) questionnaires were completed. More non-dog owners (53.2%) than dog owners (46.8%) were polled. Of all respondents, 96.4% were comfortable with dogs, and there were no significant differences ($p>0.05$) among different locations or between dog owners and non-dog owners. Most people ($p<0.01$) thought it would lessen the quality of their own (68.3%) and their dog's (82.2%) out-

door experience if dogs had to be leashed. In general, people were more disturbed by large dogs; breeds singled out as threatening (n=35 respondents) included: Rottweilers (35.3%), Doberman Pinschers (20%), Pit Bull Terriers (17.1%), and Chows (14.3%). Many more people reported seeing other people disturb wildlife (92.2%), vegetation (78.0%), and bodies of water (60.5%) significantly more often ($p<0.001$ for all comparisons) than dogs (49.7%, 31.4%, and 9.0%, respectively; Figure 1).

Figure 1.



The percentage of positive ("yes") responses to the question "Have you seen wildlife, vegetation, streams, or other bodies of water disturbed by dogs or people?" (Questions 18-23, see Appendix A)

While we did not detect any seasonal differences in water use by dogs, it is possible that in the hottest months of the year (when we were not in the field; June-August) they would disturb water more than at other times of the year.

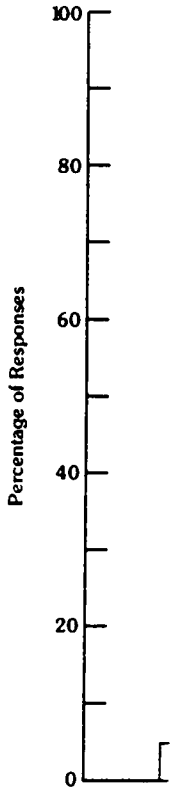
Overall responses to the question "What do you think is the biggest problem facing those who use parks and open space?" are presented in Figure 2. This question was also analyzed separately for dog owners and non-dog owners. A small, but significantly higher percentage of non-dog owners thought that there were too many dogs (10.6%) when compared to dog owners (2.9%; $p<0.01$), and a significantly higher proportion of non-dog owners (28.5%) thought that there were too many piles of dog feces left on or near trails when compared to dog-owners (19.5; $p<0.05$). Similar percentages ($p>0.05$) of non-dog owners and dog owners reported that there were too many people (non-dog owners: 47.3%; dog owners: 53.4%), too many unruly dogs (15.5%; 8.0%), and too many unruly people (32.4%; 28.2%). Both groups agreed that people, and not dogs, were the major problem. Regardless of location, respondents indicated that there were far too many people when compared to the number of dogs ($p<0.001$) and too many unruly people when compared to the number of unruly dogs ($p<0.001$). Disturbance by people included talking loudly, trampling vegetation, and littering.

Non-dog owners and dog owners were also asked what they thought about a number of different issues centering on purported problems with off-leash dogs. Similar proportions ($p>0.05$) indicated that there should be standardized obedience tests for dogs (non-dog owners: 48.2%; dog owners: 42.7%), that dogs should not be banned from Open Space (93.3; 98.2%), and that additional areas where dogs could run free should be established (72.3%; 64.3%). A significantly higher percentage of non-dog owners (55.0%) when compared to dog owners (37.3%) believed that there should be an annual fee for dogs using Open Space, that dogs should be on leashes at all times (30.5%; 19.0%), and that there should be stricter enforcement of voice and sight control (76.6%; 66.0%).

DISCUSSION

The present study was concerned with interactions among domestic dogs, people, and the environment in Boulder, Colorado. There were few noteworthy differences when data were analyzed by location. While some of the results may be specific to this area, there seems to be a more general message that deserves serious attention from those who live in other environs. There is no doubt that *some* dogs go off trail for various amounts of time and that *some* dogs do occasionally disturb people, wildlife, and habitat. However, compared to people, dogs did not seem to do much damage to vegetation or bodies of water, and they only rarely chased wildlife. Dog-wildlife encounters are very important to study; however, it is often very difficult to identify precisely what factors directly cause wildlife disturbances (Gentry 1983). People were more disruptive than were dogs, and when dogs did go far off trails they often were lured off by people. There was no trailhead effect and dogs' behavior

Figure 2.

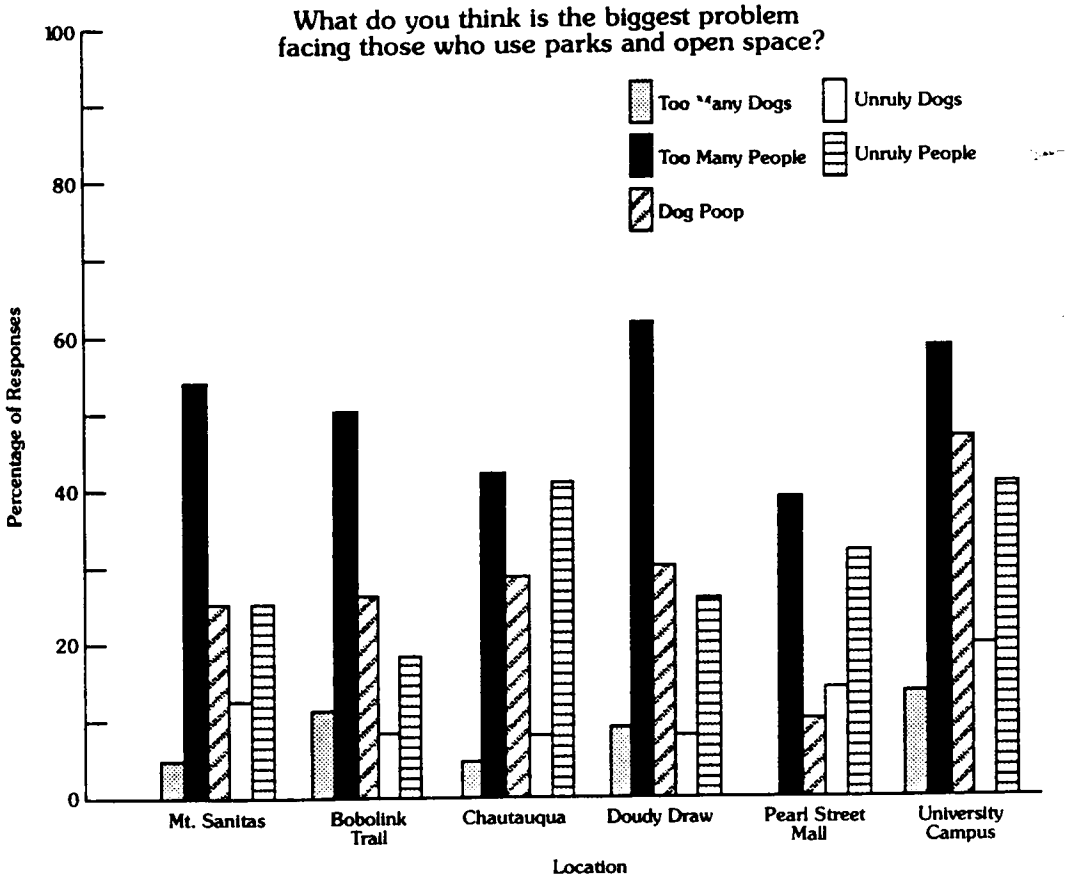


Responses to the qu (Question 24, see A

differed little whe their travels in ir and when they c

The resul the behavioral c questionnaire sh non-dog owners tions of major p people and too r Space in Boulde felt comfortable reported (and di fact) that people than dogs, and vegetation and tc third of the respc a problem. Ther can cause proble tal, aesthetic; Be more of a prob 1996) than in op dealing with this

Figure 2.



Responses to the question "What do you think is the biggest problem facing those who use parks and open space?" (Question 24, see Appendix A) Numbers total more than 100 because of some multiple responses.

differed little when they first were let free, during their travels in intermediate segments of a trail, and when they completed their walks.

The results of the questionnaire support the behavioral data. In fact, the results of the questionnaire show clearly that dog owners and non-dog owners do not differ in their perceptions of major problems—essentially, too many people and too many unruly people using Open Space in Boulder. Almost 97% of people polled felt comfortable with dogs off-leash. People also reported (and direct observations confirmed the fact) that people disrupt wildlife more frequently than dogs, and people cause more damage to vegetation and to bodies of water. Less than one-third of the respondents reported that feces were a problem. There are many reasons why feces can cause problems (e.g. hygienic, environmental, aesthetic; Beck 1979) and perhaps they are more of a problem in urban areas (Dumont 1996) than in open recreational areas. Boulder is dealing with this problem by placing plastic bags and trash cans near trailheads and along trails. Interestingly, non-threatening barking by dogs was not an issue for either group. Also, all observers noted that dogs off leash were friendlier than dogs on leash, although no detailed data were collected on this aspect of behavior (see also Thomas 1996).

The relationship between people and dogs has changed greatly in Boulder over the past 25 years. In the early 1970s many uncastrated dogs ran free without their owners. Dogs occasionally formed packs, chased deer and, on at least one occasion, attacked a child. Since then, there appears to have been an increased interest in having well-behaved dogs. In 1980, the Boulder Humane Society regularly offered one obedience class, and in 1996 there are 20 concurrent classes (Nana Wills, personal communication). Dog owners have become more responsible (having their dogs castrated and watching over them more conscientiously), and rarely is a dog seen without their owner or another person in attendance.

We conclude that little needs to be done to manage dogs directly in the areas where we conducted our studies. There are always going to be "problem" dogs and "problem" people. In Boulder and perhaps in other areas, reports of unruly dogs seem to attract a lot of attention, but of course, people do not report when dogs are well-behaved. Additional enforcement may solve some problems but there really are few problems that could not largely be solved by continuing serious efforts to educate people about dog behavior and matters of etiquette and responsibility (see also Beck 1996 and Dumont 1996), and by requiring people to learn more about dog behavior and control of their companions, for people and their companions essentially are a cooperative social unit (Sanders 1990).

The fact that dog owners and non-dog owners did not disagree on important issues (that standardized obedience tests should be required and that banning dogs is not a viable option) also needs to be addressed. Although standardized obedience testing is possible and equally attractive to non-dog owners and dog-owners alike, the implementation of such a practice has not been given serious attention. While the details still need to be worked out for different locations, some possibilities would entail having people attend classes, hire a professional trainer, or train their dogs themselves and then go to their local humane society for testing. A set fee would be established to cover the cost of testing and licensing; the fee might also include a donation to the society.

Further concerns could be addressed by having various stipulations that could cover different sorts of violations. The following suggestions might be helpful for implementing obedience certification. People who were first-time offenders who did not have a license would be given a certain amount of time to complete the standardized test and pay a small fine. First-time offenders who had already received their licenses would have to pay for, and repeat, the standardized test within a certain period of time, but there would be no fine. However the obedience certification process is implemented, there seems to be little doubt that dogs and people would benefit.

It seems clear to us that the well-being and interests of dogs should not summarily be compromised when dogs and people attempt to share limited space that can be used by all parties for recreational purposes. The methods used and the results from this case study can serve as a model for other locations in which dogs and people compete for limited spatial resources.

POSTSCRIPT

A recent study of dogs on the University of Colorado (Boulder) campus (Dwyer and Bekoff, unpublished data) showed that leashed dogs initiated contact with humans 5.5 times more than did unleashed dogs, and that people initiated contact with leashed dogs 3.8 times more than with unleashed dogs. Generally, unleashed dogs ignored humans and choose other unleashed dogs with whom to interact when they were not exploring their surroundings.

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APPENDIX A: QUESTIONNAIRE

Perceptions of the Impact of Dogs on Open Space

We are interested in learning more about how dogs and people use open space so that dogs and people can maximize the pleasure that can be had by being outdoors in the limited available space. We hope that you will take the time to answer these questions.

Date: Location: Time: Sex: Age: Children?

(1) Do you live in Boulder? City____ County_____ For how long?____ No_____

(2) How often do you use open space? (a) daily, (b) 5 times per week, (c) 2-4 times per week, (d) 2-4 times per month, (e) less than 1 time per month, (f) 2-4 times per year or less, (g) never

(3) How long have you used this portion of open space?_____

(4) Why do you come to open space? (a) to exercise myself, (b) to exercise my dog, (c) to see wildlife, (d) to be alone, (e) to enjoy nature, (f) other
Please rank your top three (3) choices by writing down the appropriate letter:

_____ _____ _____

(5) In what type of activity do you usually engage? (you can choose more than 1) (a) walk/hike, (b) jog/run, (c) bicycle, (d) equestrian, (e) exercise dog)

(6) Are you a dog owner? Yes:_____ No:_____

(7) Are you comfortable with dogs? Yes:_____ No:_____

(8) Do you have a dog with you now? Yes:_____ No:_____
On leash:_____ Off Leash:_____
Under excellent voice control:_____
Under control most of the time:_____
Not well-controlled:_____

(9) Do you think dogs should be (a) on leash always, (b) off leash always if dog not a threat to people, (c) off leash in certain areas and at certain times, (d) other?

(10) Would it lessen the quality of your open space experience if your dog had to be on a leash? Yes:_____ No:_____
How: _____
_____

(11) Would it lessen the quality of your dog's experience if your dog had to be on a leash? leash? Yes:_____ No:_____
How: _____
_____

(12) Have you ever been attacked by a dog on open space? (a) two or more times, (b) once, (c) never. What were extent of injuries?

_____

(13) Have you ever felt uneasy when passing someone else's dog? (a) two or more times, (b) once, (c) never.

(14) In what ways did you feel uneasy? (a) disturbs me, (b) disturbs children,(c) disturbs my dog, (d) disturbs wildlife, (e) too many dogs, (f) dog out of control

(15) Do certain types of dogs bother you more than others? Yes:_____ No:_____
If YES, why: Please provide more details next to your choices

(a) breed _____

(b) size _____

(c) color _____

(d) behavior _____

(e) sex _____

(f) the behavior of the person with the dog?

_____

(16) Have you ever felt uneasy in the presence of other people on open space? (a) two or more times, (b) once, (c) never.

(17) Have you seen other people bothered by dogs? (a) two or more times, (b) once, (c) never.

(18) Have you seen wildlife disturbed by dogs? Yes:_____ No:_____
If YES, (a) often, (b) occasionally, (c) never

(19) Have you seen wildlife disturbed by people? Yes:_____ No:_____
If YES, (a) often, (b) occasionally, (c) never

(20) Have you seen vegetation disturbed by dogs in a harmful way? Yes:_____ No:_____
If YES, (a) often, (b) occasionally, (c) never

(21) Have you seen vegetation disturbed by people in a harmful way?

Yes:_____
If YES, (a)

(22) Have you
water distu
Yes:_____
If YES, (a)

(23) Have you
water distu
way?
Yes:_____
If YES, (a)

(24) What do
facing the

Too many
Too many
Too many
Too many
Too much
Other: _

Commer

_____

_____

_____

Yes:_____ No:_____
If YES, (a) often, (b) occasionally, (c) never

(22) Have you seen streams or other bodies of water disturbed by dogs in a harmful way?
Yes:_____ No:_____
If YES, (a) often, (b) occasionally, (c) never

(23) Have you seen streams or other bodies of water disturbed by humans in a harmful way?
Yes:_____ No:_____
If YES, (a) often, (b) occasionally, (c) never

(24) What do you think is the biggest problem facing those who use open space?

Too many dogs: _____
Too many unruly dogs: _____
Too many people :_____
Too many unruly people: _____
Too much dog poop: _____
Other: _____

Comments:_____

_____

_____

_____

(25) If findings suggest that dogs are problematic, do you agree with:

(a) requiring standardized obedience testing for dogs off leash: Yes:_____ No:_____

(b) requiring annual fee and tags for dogs using open space: Yes:_____ No:_____

(c) requiring all dogs to be on a leash at all times: Yes:_____ No:_____

(d) requiring stricter enforcement for voice and sight control: Yes:_____ No:_____

(e) banning all dogs: Yes:_____ No:_____

(f) providing areas for dogs on leash and other areas for dogs off leash?
Yes:_____ No:_____

(g) other _____

General Comments

_____

_____

_____

_____

_____

_____

Recreation Disturbance Does Not Change Feeding Behavior of the Western Snowy Plover

Megan Warren

Abstract The Western Snowy Plover (*Charadrius alexandrinus nivosus*) is a small shorebird that has many scattered wintering populations along the Pacific Coast of the United States, including several in the Bay Area. This species has been listed as threatened since 1993 under the federal Endangered Species Act of 1973. For this study I measured disturbance rates, types, plover responses and feeding time in three different sites in the San Francisco Bay Area to explore the link between recreation disturbance and feeding behavior. I predicted that as frequency of disturbance increased, the birds would spend less time actively foraging and more time alert. However, data showed no significant relationship between feeding behavior and direct disturbance by human recreators. Instead, I now predict that recreation has a more indirect effect on the western snowy plover feeding behavior. Future research should focus on indirect effects of recreation, such as habitat disturbance and food source quality.

Introduction

Outdoor recreation has increased in popularity over the years, resulting in expansion and development of designated outdoor recreation areas (Flather and Cordell 1995). Non-motorized recreation, such as hiking, nature viewing, horseback riding, beach bathing and dog-walking have increased the most in popularity (Flather and Cordell 1995). As these activities become more popular, they often disturb and displace wildlife populations, causing them to change specific behaviors and habits. Once-popular breeding sites located in popular recreation areas may be abandoned for less hospitable sites simply due to the amount of disturbance (Knight and Cole 1995).

Shorebirds are especially vulnerable to recreation, which can disrupt available habitat for nesting and foraging (Burger 1995). Recreation can be especially harmful for species already struggling to make a living in a specific area. One such species is the western snowy plover, a small shorebird found along the Pacific Coast. This species has been listed as threatened since 1993 under the Endangered Species Act of 1973 (Smith 1993). Ruhlen et al. (2003) found that on average, more snowy plover (*Charadrius alexandrinus*) chicks died or wandered away on weekends at two beaches in the Point Reyes National Seashore, possibly due to increased recreation on those days. Many other studies on plover species (*C. alexandrinus, C. melodus*) have shown that human disturbance leads to changes in habitat use and foraging—both when and how long birds forage, as well as decreased nest success (Lafferty 2001b, Burger 1991, Burger 1994, Lafferty et al. 2006).

Foraging success is a good indicator of nesting success. Shorebirds with habitats more prone to high levels of disturbance spend more time fleeing from and watching for potential predators, depleting fat reserves and time spent caring for their broods (Burger 1991). The western snowy plover forages for both marine and terrestrial invertebrates by visually scanning then probing with its beak in the sand, washed-up seaweed, and low vegetation. Western snowy plover are often found foraging together in small groups (Page et al. 1995). Newly-hatched chicks are precocial, and can walk around and forage for themselves shortly after hatching (Tucker and Powell 1999). Recreational use of plover foraging areas is especially harmful to these newly-hatched chicks (Ruhlen et al. 2003). This study addresses how recreation affects wintering populations of the western snowy plover by examining its feeding behavior at several more

heavily used sites in the San Francisco Bay Area, where the relationship between shorebird feeding behavior and recreation has yet to be fully explored.

Since its inception in 1972, the Golden Gate National Recreation Area (GGNRA) has become one of the most popular and heavily used urban national parks, with more than 10 million visitors per year (NPS 2006). Even before the formation of the park the area was heavily used by recreationists. Many locations within the park are prime breeding habitat for the threatened sub-species western snowy plover (*Charadrius alexandrinus nivosus*), but within the park only wintering populations can be found (Merkle 2006, pers. comm.). Western snowy plover stopped breeding on the beaches in the GGNRA, most likely due to an increase in disturbances from recreation. One of the largest disturbances to western snowy plover, as well as other shorebirds, is dog-walking, especially those off-leash (Lafferty 2001a). In 2002 GGNRA began considering changes to its dog policy. Currently, off-leash pets are allowed in many areas of the park including those important to the western snowy plover—Crissy Field and Ocean Beach (US Department of the Interior 1979). An advisory committee was formed to take place in the negotiated rulemaking, which encompasses the many interest groups with stakes in the rule changes (NPS 2006). Changes in these policies could positively impact populations of the western snowy plover currently wintering in GGNRA, and is important to understand how recreation affects all matters of their biology before making any permanent changes.

It is also important to understand what kinds of disturbances adversely affect foraging behavior. Determining these and other answers are important when deciding how western snowy plover habitat, such as that in GGNRA, should be managed in the future. The main objective of this study is to see how recreation and direct disturbance impacts western snowy plover feeding behavior, which can then be used to create appropriate wildlife management plans. I predict that western snowy plover populations in more heavily-disturbed areas will devote more of their feeding time towards avoiding disturbances than to actively searching for and eating their food.

Methods

For this study, two different kinds of direct observational surveys were developed and carried out weekly for five weeks at three different study sites during February and March 2007.

Study Sites Three study sites were used in this research. The first study site was at Crissy Field in San Francisco, California, which is part of the Golden Gate National Recreation Area

(Fig. 1). The stretch of beach where the western snowy plover is found is 100 meters east of the Gulf of the Farallones Visitors' Center (Fig. 2). The beach is 80 meters long and its habitat is characterized by sand dunes with low vegetation. This site supports a population of four to six birds. Crissy Field is readily accessible by car, foot, bike and public transit. This site has also recently (October 2006) changed from an off-leash to on-leash dog area. For this study, Crissy Field was classified as a high-use recreational site. The second study site was the spit at Limantour Beach in the Point Reyes National Seashore (PRNS), located about 56 kilometers north of San Francisco in Marin County, California (Fig. 3).

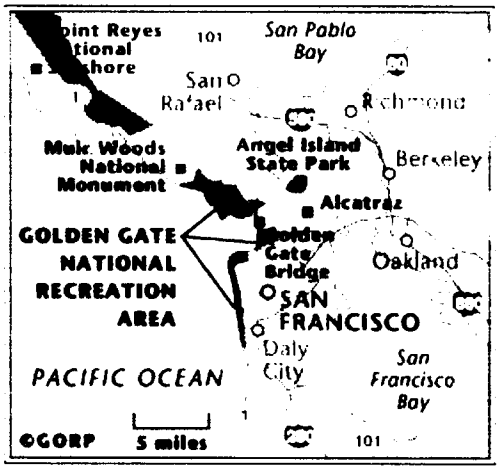

Figure 1: Golden Gate National Recreation Area, California

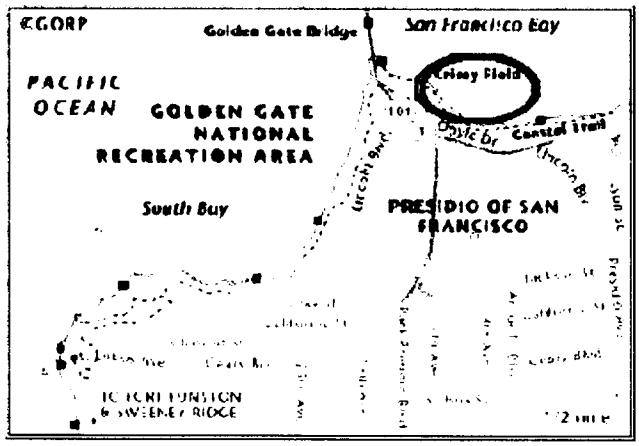

Figure 2: Crissy Field Study Site, in Golden Gate National Recreation Area, CA

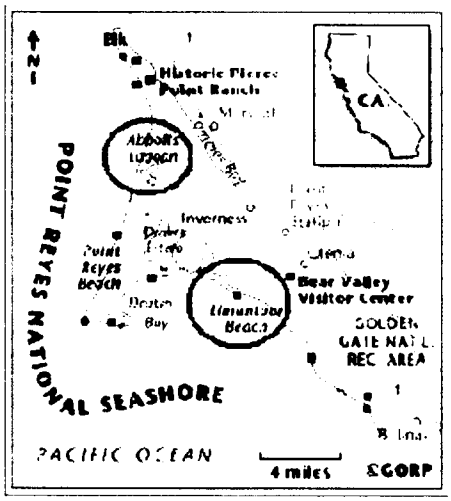

Figure 3: Limantour Beach and Abbott's Lagoon Study Sites, Point Reyes National Seashore, CA

Limantour Spit juts into Drake's Bay and is about four kilometers long, and is characterized by long stretches of beach with little vegetative cover. This site supports a population of 80-100 birds. Limantour Beach is relatively busy, as it is accessible just off a main road near the entrance of PRNS. Any type of recreation is permitted; however, dogs are restricted to the area of the beach away from the plovers. Limantour Beach was classified as a medium-use recreational site. The third study site was also located in the Point Reyes National Seashore at Abbott's Lagoon, which is 16 kilometers

northwest of Limantour Spit on the Pacific Ocean (Fig. 3). Abbott's Lagoon is characterized by low sand dunes with little vegetation, and supports a population of 45-50 birds on a two kilometer stretch of beach at the foot of the lagoon. This site is the most isolated and least accessible of the three sites, and was classified as a low-use recreational site.

Disturbance Surveys Disturbance surveys were conducted over a one-hour period just before dusk at each study site. The minimum population size for each survey sample period was four birds. Upon locating the population, date, time of day, general weather patterns and study site were noted at the top of the data sheet. For each instance of disturbance (defined as a recreational activity that could change behavior of the western snowy plover), time, type (individual or group), activity, distance from birds, number of birds disturbed and their response was recorded. The birds' responses were divided into four categories: no response, mild response (causing a resting plover to stand), moderate response (causing a plover to stand up and/or walk away), and major response (causing the plover to flush). The data gathered from these studies were used to create graphs showing frequency of certain types of recreation at each site.

Feeding Behavior Surveys Feeding behavior surveys quantified how the plovers budgeted their time during the dusk feeding period. The purpose of these surveys was to observe the percent breakdown of the plover behavior (based on time) and link behavioral changes to nearby recreational disturbances. Over the 30 minutes following the recreation disturbance surveys four different focus-animal surveys were carried out, each time on a different bird. Focus animal surveys were two minutes long. An Olympus digital voice recorder, model VN-3100, was used to measure the total amount of time the bird spent in each of three feeding behaviors. These behaviors were observed and defined during preliminary observation periods. The western snowy plover was seen (1) searching for food, defined as movement along the shoreline with its head down visually scanning for prey; (2) actively foraging, defined as head down with its beak in the sand eating the prey; and (3) time spent alert, defined as a bird standing still with its head up visually scanning the beach. Once transferred to the computer, the recorder shows exactly how many seconds were spent on each activity. A linear regression was used to test the relationship between frequency of disturbance and foraging, alert and searching time.

Results

Recreation and foraging data were collected at the Abbott's Lagoon, Limantour Beach and Crissy Field study sites over four observation days on a Thursday, Friday or Saturday between February 1, 2007 and March 8, 2007. Western snowy plover do not feed at Crissy Field, so data on recreation disturbance and feeding behavior comes from the two Point Reyes National Seashore sites.

Recreational Use Accessibility is the main factor distinguishing recreational use among the three beaches. Not surprisingly, the urban study site, Crissy Field, showed the highest and most varied recreational use of all the sites (Fig. 4). Limantour Beach, the next most accessible site had the second highest recreational use, though only walkers used the site. Finally, Abbott's Lagoon, the most isolated of the three sites, had the lowest recreational use. Again, this site was only frequented by walkers. Both PRNS sites were comparable in terms of type of recreation and foraging data.

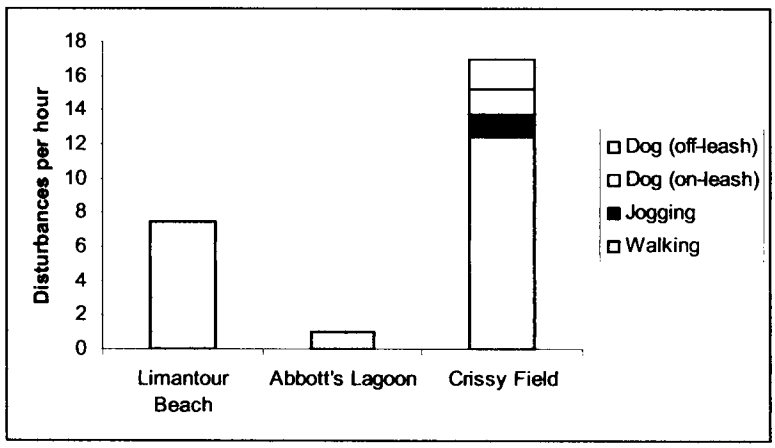

Figure 4: Recreation level and type per hour at each study site

Disturbance Data The disturbance surveys were used to determine two things. First, they were used to see how strongly resting birds responded in the presence of human recreators. Secondly, they were used in conjunction with feeding behavior surveys to infer changes in foraging, searching and alert time based on how heavily the site was used. Protocol dictated that western snowy plover response to recreators be classified as mild, causing a resting bird to stand; moderate, causing a resting bird to stand and walk away; or major, causing a resting bird to flush. The first part of the disturbance surveys showed by and large that resting plovers do not react strongly to the presence of recreators (Table 1). Since feeding behavior was not observed during any of the observation periods at Crissy Field, useful data came only from Limantour Beach and Abbott's Lagoon. A linear regression with these data shows no relationship between disturbance level and foraging time (Fig 5) (R^2=0.0011, p=0.86). Similarly, no relationship exists between

disturbance level and alert time (Fig 6) (R^2=0.0039, p=0.73). A slightly stronger positive linear relationship is found between disturbance level and searching time (Fig 7) (R^2=0.046, p=0.24); however, this is still an incredibly weak relationship, and cannot be considered significant.

Table 1: Proportion of plover mild, moderate or major response to recreation, by site

		% Plover Response to Recreation				
		None	Mild	Moderate	Major	Sample Size
Crissy Field						190
	Walking	45	9	7	0	
	Jogging	10	2	0	0	
	Dog (off-leash)	7	3	6	0	
	Dog (on-leash)	6	3	2	0	
Limantour Beach						81
	Walking	59	11	15	15	
Abbott's Lagoon						8
	Walking	25	37.5	37.5	0	

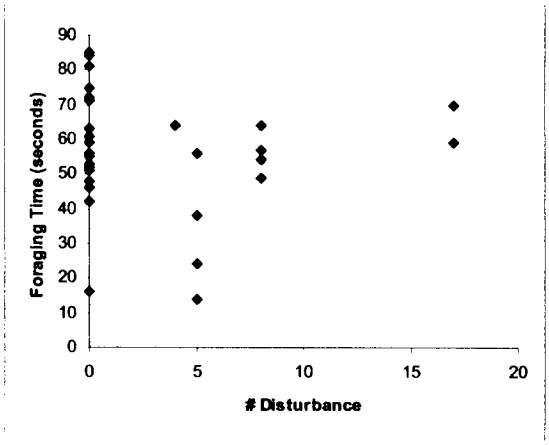

Figure 6: Disturbance level vs. alert time

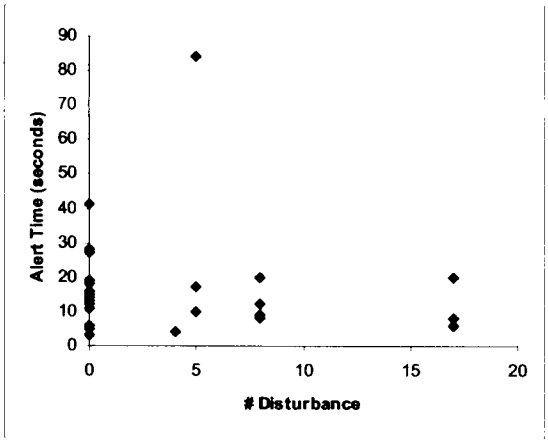

Figure 5: Disturbance level vs. foraging time

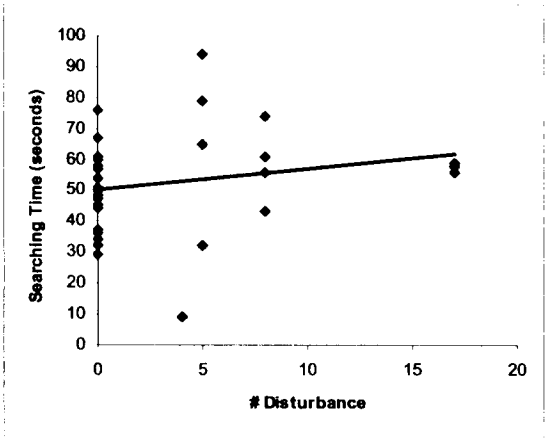

Figure 7: Disturbance level vs. searching time

Feeding Behavior Data Crissy Field is the only site at which the birds were not found foraging in the evening, and they are not always at the site. Of six survey dates, they were only on the beach for four of them, and not once were they foraging. When the birds are at this site, they begin to get restless around 5:45 p.m. and soon fly away, presumably to go forage in a different area. Data from Limantour Beach and Abbott's Lagoon suggest that no significant relationship exists between disturbance level and foraging behavior. Therefore, it can be assumed that the absence of foraging western snowy plover at Crissy Field is due to other factors, such as quality of the food source available at the site.

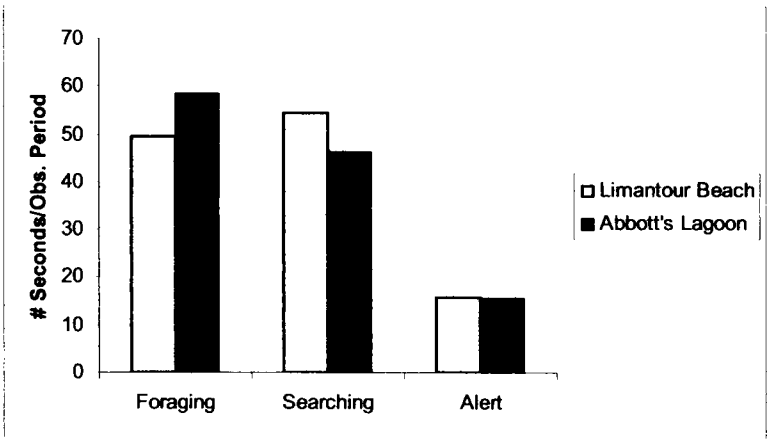

Figure 8: Average distribution of three feeding behaviors by over 2-minute focus-animal surveys

Average times for the three observed feeding behaviors are consistent between the Abbott's Lagoon and Limantour Beach data (Fig. 8), which also suggests no relationship between disturbance level and feeding behavior. Limantour Beach was a site with medium disturbance levels, and Abbott's Lagoon

was a site with low disturbance levels. Both sites had between 10 and 20 birds on each observation day.

Discussion

This study looked at links between disturbance level and foraging behavior of the western snowy plover at three different beaches in the San Francisco Bay Area. The Crissy Field study site did not provide any relevant results, however, the data from the two Point Reyes study sites do not support the hypothesis that western snowy plovers in more heavily disturbed areas devote less time to actively foraging and more time to being alert.

Data show no significant correlation between number of disturbances and time spent actively searching or foraging, or being alert while feeding at dusk. These results suggest that direct recreation disturbance is not as significant as earlier thought, and that links between recreation and western snowy plover feeding behavior are more subtle. Several possible explanations exist for explaining these relationships. The data suggest that as more disturbances occur, more time is spent on searching than on being alert or foraging. Though not significant, this relationship does bring to mind other possible explanations of the trend indirectly related to recreational use at certain sites.

Accessibility and disturbance are two possible explanations for increased searching time at more heavily used sites. At Limantour Beach, recreational use tends to be right at the shoreline, which is also where the western snowy plover forage. With an overall higher recreation use than Abbott's Lagoon, Limantour Beach may have a more disturbed habitat at the shoreline, which could make less overall food available, or just make it harder to find. Another explanation could be absence of biological debris, such as seaweed, kelp, and dead or decaying sea birds and mammals. Since Limantour Beach is used by more people, biological debris is either displaced or removed. This debris has been proven to be an important food source for shorebird communities in southern California (Dugan et al. 2003), and its removal could force the western snowy plover to spend more time searching for food along the disturbed shoreline. Finally, poor food source quality has been linked with failed hatching of western snowy plover eggs due to high mercury levels at Point Reyes Beach (Schwarzbach et al. 2005). Pollution may be an indirect result of recreation that may cause western snowy plover to spend more time seeking out

suitable food. Quality of the food source itself is very important for the continued success of this species.

The western snowy plover is affected by recreation, albeit indirectly (such as with shoreline disturbance). Future studies should focus on both the quality of the food source and the habitat disturbance at important breeding and wintering sites for the western snowy plover. More vigorous methods should also be developed for monitoring feeding behavior in order to take into account not only the time spent doing each activity, but also where the western snowy plover choose to forage, and what they choose to eat. Studies should also focus on the relative disturbance of foraging habitats. A more careful selection of study sites must take place. It is important to find habitats with varying levels of recreation and habitat disturbance where the birds are known to spend time feeding. Though this study had a range of disturbance levels at each site, feeding habitat was not suitable at Crissy Field and therefore not observed. Furthermore, the data from Limantour Beach and Abbott's Lagoon showed extremely weak to non-existent correlations that cannot be extended to Crissy Field. It is important to keep monitoring western snowy plover populations to detect any changes in their behavior (foraging or otherwise).

This research project is perhaps more useful as an education tool. If anything, increased monitoring of bird populations will make people more aware of their presence. The snowy plovers can be difficult to see, but are really interesting to watch. If recreationists are aware of their presence, they can conduct their activities in a way that still allows them to have fun, but to decrease their affect on wintering populations of the western snowy plover.

Acknowledgements

I would like to thank John Latto and the entire ES 196 crew for their support and input throughout the entire length of the project. I would also like to thank Sarah Reed, Bill Merkle from the National Park Service and Samantha Murray and Matthew Zlatunich from the Golden Gate Audubon Society for their help in putting the project together.

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San Francisco Group 85 Second Street San Francisco, CA 94105
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May 26, 2009

Bill Wycko
Planning Dept.
1650 Mission St., suite #400
San Francisco, CA 94117
Fax: 558-6409
RE: Case Number 1912E Natural Areas Management Plan

Dear Mr. Wycko.

The Sierra Club is in general very supportive of the current iteration of the Significant Natural Areas Management Plan, and we are pleased that the process of environmental review is finally underway. The following are some technical comments regarding the scope of the review work which we feel should be addressed.

With regard to the significant natural areas located in San Francisco, we note that the plan itself adopts a hierarchical approach by dividing the natural areas into three separate categories (MA1's, MA2's and MA3's). While such an approach is useful for establishing priorities, it creates a patchwork situation which is less than ideal for planning purposes. In general, we would like to see a maximum restoration alternative studied for each of the city's natural areas. Of special concern are those areas, generally designated as MA3's, which contain stands of non-native trees. The study should address the effects of allowing unchecked growth of these non-native forests on the significant natural resources, as well as alternative scenarios for management of these sections, for instance by managing the understory for biodiversity, thinning, and allowing for a natural succession with the goal of eventual re-establishment of native plant communities.

For the treatment of Sharp Park and the Laguna Salada Enhancement plan, our understanding is that the DEIR will include the three alternatives (no-golf, 18-hole and 9-hole) approved by the city's Board of Supervisors. We believe that in each of these alternatives, the lead criterion should be the protection of habitat for the listed species. It is especially important that elaboration of these scenarios proceed according to the best available science, with the end of maximizing critical habitat for these species.

We look forward to the release of the DEIR, which we hope happens in a timely manner.

Yours truly,

Steven Chapman (for the San Francisco Group)

RECEIVED

MAY 2 6 2009

CITY & COUNTY OF S.F.
PLANNING DEPARTMENT
M E A

TO: Bill Wycko, SF Planning Dept, Natural Areas Management Plan,
1650 Mission St., Suite 400, San Francisco, CA 94103

May 22, 2009

RE: Neighborhood comments and Criticism and Protest of Environmental review of Project title: Natural Areas Management Plan
Case No. 2005.1912E

Project size: 1, 105 acres.

Attached is a General comment on the general flaws and misconceptions of the plan.

In this section we will comment on Specific Details of the plan which are false, misleading, have no scientific merit, and have potential for great harm to our City.

The Natural Areas Program , instigated by zealots who regard native plants as 'good' and non-native as 'bad', has no scientific basis. For some reason they refer to eucalyptus trees as 'weeds' and the underlying motive of this project is to kill and destroy these beautiful trees.

FIRE: The threat of fire is a transparent ruse, used to generate fear in attempt to justify killing of healthy trees.
There has not been a serious fire in Sutro forest for over a hundred years.
The commonly repeated myth that eucalyptus is prone to fire and 'native trees are fire resistant is just that, a myth. All wood is flammable. There is NO evidence of significant advantage benefit of native trees, in fact there is no good definition of which trees are native. Try to burn a dry eucalyptus log in your fireplace and you will find it very difficult .

The forest is damp to wet most of the time and the winds predominantly from the West. The forest pulls moisture from the fog in vast amounts. Tree removal has potential to dry out the area. If dry native grasses replace trees, the threat of fire may Increase.

WIND PATTERNS:

Cutting down trees must alter the wind patterns. Most of the homes close to the forest are protected from winds by the forest, Tree removal has potential to INCREASE fire hazard by removing this protection.

Micro climates: Belgrave Ave is a good example. The street is generally calm with mild breezes. On Tank Hill at the East end, farther from the forest and at higher altitude, the winds are often 40 knots and more as there is no wind

protection. The same situation applies up to the top of Twin Peaks and to all the neighborhoods in the lee of the forest. These strong winds would only INCREASE the risk of fire.

Effects on WATER COLLECTION, DRAINAGE:

The forest pulls down thousands of gallons of water from the fog bank. Without tree roots to hold the ground what might happen to run off?

Without tree roots what is the potential for landslides and earth movement ? (let us not forget earthquakes). Earth movement has potential for people and property damage.

CARBON DIOXIDE EFFECT:
The program dismisses the beneficial effect of the forest in carbon dioxide removal and suggests that the small native plants will do as well.
This is preposterous pseudo science at its worst. Environmentalists bristle at the destruction of the Brazilian rain forest, and here there is intent to destroy an exquiste forest in the centre of our City! To suggest that native plants would be more effective than the forest is absolute nonsense.

AN IMMEDIATELY ADJACENT PROJECT currently intends to remove trees on 14 of 61 acres, about 25% of the forest owned by UC. The natural Areas program also wants to remove trees on the portion owned by the city, so that 1/3 of the forest would be stripped. The forest does not recognize a UCSF/city boundary line. Each affects the other and is not addressed in the plan.

HERBICIDES:
They indicate all the cut trees and brush will be 'painted' with herbicides. This would be thousands of gallons of herbicide, which will eventually wash away and contaminate. Numerous underground springs underly these areas.

WATER USE: Any native plantings require extensive irrigation systems, costly, and consuming water which may be in limited suppy. The previously planted areas with native plants required installation of expensive irrigation systems and increases water consumption.

MOST IMPORTANT:

The law requires a full Environmental Impact Report before huge projects like this be undertaken. The EIR requires response to 18 (eighteen) items of concern.

This project as outlined at the public meeting, chooses to arbitrarily ignore many of the 18 items. It does not require 'experts' to see the potential harm and unforseeable risks here. It just takes residents of the neighborhood who walk the

areas daily. This leads one to question the qualifications and the motives of the "consultants' . I am told they do not have a certified arborist on their staff.
I believe that no consultant has actually walked though Sutro forest or the neighborhood!
Many in the neighborhood have a profound distrust of those involved in this project. There are of course well meaning people who have been misled by the propaganda of the native plant zealots and accomplished bureaucrats.

The native plant advocates are intent on destroying eucalyptus trees, and experimenting with plants that may not survive in a modern setting.

In their zealousness they are promoting misinformation and attempting to circumvent the intent of the law, ie EIR reporting of 18 issues.

The neighborhood will be watching very closely to see the Intent of EIR laws is met.
What is proposed here is an experiment, with unpredictable results and little or nothing to be gained.

ECONOMICS:

Our Country, our City and our State are in the midst of unprecendented severe economic crisis. Our National leaders have asked us to help and take some personal responsibility.

When the Mayor indicates we may fire 1000 employees, cut back on essential services, when the State has billions of deficit, when people are still homeless in New Orleans, when the University announces need to increase student fees, does it seem 'right' to spend vast amounts on a purely elective project, that is ill conceived at the start? I repeat, Purely Elective and potentially disastrous.

Addendum:

We, the neighborhhod support the more detailed objections and criticisms submitted by Nancy Weurful and Mary McAllister
. We are in the process of consolidating lists of neighbors but submit this now because of time constraints imposed with short notice.

Morley Singer M.D.
177 Belgrave Ave.
San Francisco, CA 94117

Morley M. Singer

SAN FRANCISCO
SPCA

May 26, 2009

Mr. Bill Wycko
Environmental Review Officer
San Francisco Planning Department
1650 Mission Street
San Francisco, CA 94103
RE: Significant Natural Resource Area Management Plan (SNRAMP), Environmental Impact Report, Case No. 2005.0912E

Dear Mr. Wycko:

As the largest animal protection organization in San Francisco, The San Francisco SPCA (SF/SPCA) has a vested interest in the Significant Natural Resource Area Management Plan and we appreciate the opportunity to offer our recommendations regarding the scoping for the Environmental Impact Report.

Our Concerns:

GR-7: Predators: In section 5 "GENERAL RECOMMENDATIONS" of the 2006 SNRAMP the need for feral cat control is described as 'urgent'. However, there have been no scientific studies to determine the impact of feral cats or any other predator in San Francisco's Natural Areas. We do know that the Natural Areas Program website tells us that "Pollution, habitat loss and fragmentation, and invasive species all make it difficult for native plants and animals to survive in the city." Therefore, we do not accept that predators including feral cats play a major, much less an "urgent," role impacting wildlife in our parks and open spaces.

GR-7a: Refers to the Quail Recovery Plan: While this organization is in agreement with the general premise of the Quail Recovery Plan, the Plan does not define the circumstances that would require removal of a predator, how those circumstances would be proved, and what impact removal of a predator from the location would have on the rest of the environment , prior to ordering its removal.

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SAN FRANCISCO
SPCA

GR-7b: While The SF/SPCA agrees that feral cat populations are initially generated by irresponsible breeding, the proposal to eliminate the release of cats into the wild is unrealistic and ineffective. On the contrary, Trap-Neuter- Return programs (TNR), when coupled with the adoption of tame cats and kittens, can maintain and will eventually decrease the population of feral cats (*Journal of the American Veterinary Medical Association. 01/02/200302/2003;222(1):42-6. ISSN: 0003-1488).*

GR-7c: "To the extent possible, all predator control shall be performed in a humane manner, such that harm and suffering to the animals is minimal."
The SF/SPCA continues to oppose the premise that "minimal suffering and harm" to animals is acceptable. There is no way to determine what this phrase means, what is minimal and what is not, and who is evaluating the level of suffering. Unfortunately, this language is too subjective to be protective of animals.

Our Recommendations:

1. GR-7a: Feral cats should not be assumed to be the predator in question without clear evidence.

2. GR-7a: The SF/SPCA deeply appreciates the Recreation and Park Commission's amendment to the Management Plan that elevates the recommendation of feral cat relocation to require their review and approval. For the record, this amendment was made on August 21, 2006 to Resolution Number 0608-012 which states; *"That where appropriate in the plan that feral cat relocation shall be implemented only upon a determination by the Commission that other methods of population reduction failed to adequately reduce cat populations in natural areas."*
We request that the SNRAMP reflect this additional language in GR-7a.

3. GR-7a: Clarify what scientific measures will be used to determine if a predator is negatively impacting a Natural Area and require those measures to be proven prior to considering a removal plan.

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SAN FRANCISCO
SPCA

4. Please remove GR-7b. Acknowledge that eliminating the release of cats in San Francisco is an impractical objective and instead support the positive impact the SF/SPCA Feral Fix Program has had on Natural Areas and all parks and open spaces since 1993. During this time, the SF/SPCA has subsidized the sterilization, adoption, release of thousands of felines and has seen a reduction in feral cat populations throughout this community.

5. GR- 7c: This must be rewritten to remove the subjective language that allows suffering. Humane measures exercised under the control of San Francisco Animal Care and Control should be stressed.

The SF/SPCA would like to see in the future a well designed, long term, scientific, and objective study to evaluate both the positive and negative impacts of feral cats in the urban environment of San Francisco. Only then will we have a basis for a dialogue about feral cats based on facts. We recognize that the EIR process is not in a position to provide the resources and time for this study, but we do acknowledge the need for this information. The SF/SPCA continues to pledge itself to providing support for the TNR program that has contributed so greatly to the control of feral cats in San Francisco.

Sincerely,

Jan McHugh-Smith
President

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To:

Mr. Bill Wycko
San Francisco Planning Dept
Natural Areas Management PLan
1650 Mission St, Suite 400
San Francisco, CA 94103

From:

Lisa Vittori
P.O. Box 31897
San Francisco, Ca. 94131
(415) 931-3075
lisavittori@yahoo.com

RE:

Natural Areas Management Plan

Dear Mr. Wycko--

I am writing to express concern about the Natural Areas Management Plan as now written. Although I could discuss each site in as much detail as the plan itself, I will spare you. In short, the plan severely limits access to, and recreation in, areas now commonly used by a wide variety of citizens. It makes inaccurate and misleading assumptions about the level of present and future use, and the impact of those uses upon natural systems. It uses the excuse of "endangered" species to restrict access to many areas in which those species either do not exist or in which they are currently co-existing peacefully with other uses.

As background, I have worked professionally as a naturalist and restorationist for the last 35+ years. I worked with the National Park Service on their restoration programs as both a crew supervisor (with the California Conservation Corps) and a field biologist. I began my career as a planner and permit appeals analyst with the California Coastal Commission, specializing in access and wildlands issues . Over the years I've volunteered on many restoration projects, usually with my dog(s) and various children in tow. I've supported both restoration and public access over my career, and am dismayed to now see restoration used as a weapon to keep people out of public lands.

Over the last 10-15 years, I've watched as one site after another was either closed to public use or severely restricted. I've also seen agreements made and broken, most notably with the dog-walking community, but with others (horse-riders, cyclists, bird-watchers, golfers, day-camps) as well. Even if access was supposed to be restricted temporarily, the restrictions almost always became permanent. In turn, recreational pressure increased in other areas, producing more calls for restrictions.

A good example is the closure of many areas for dog-walking (assume this means walking with one's well-behaved off-leash canine companion). In the early to mid 1990's many popular dog-walking places on the Penninsula were abruptly closed, obstensibly for "environmental reasons". More people started coming to Fort Funston, some from as far away as Palo Alto. At the same time the GGNRA wanted to "restore" Fort Funston, and fenced many acres off for what was supposed to be a five year period (that was 15 years ago!). Similarly, battles in many local parks led to restrictions on neighborhood dog-walking. Suddenly Bernal Heights, Glen Park, and McLaren Park became more heavily used by citizens who needed to **walk** (not just stand) daily with their dogs.

Rec and Park's solution has been to build what they call DPA's. Some are walkable; most are not. Now the Natural Areas Program wants to restrict or eliminate these, too. There are many

problems with this; I will name just five: 1) This is not in the Natural Areas Program's jurisdiction, in part because (2) there have been agreements made over time through the Dog Advisory Committee and the Dog Policy to add more DPAs. 3) The Natural Areas Program ***assured*** us when a management plan first came out that they would work with the dog community and ensure that we could continue to utilize these areas for dog-walking. 4) The management plan also stipulates that before new "DPA"s are added extensive environmental studies would have to be performed. Historically, this means that they will ignore the existing heavy use of an area for dog-walking and pretend that they are starting with a pristine area that would be impacted by a new use. 5) Instead of finding ways to integrate native species into public areas, they plan to instead introduce threatened species and deny access.

Thank you for your time and attention. Lisa Vittori

Mr. Bill Wycko
Environmental Review Officer
San Francisco Planning Department
1650 Mission
San Francisco, CA 94103

May 25, 2009

RE: Significant Natural Resource Area Management Plan (SRAMP), Environmental Impact Report # 2005,0912E

Dear Mr. Wycko:

I have been involved with working to humanely reduce feral cat populations since the late 1990s both in San Francisco and in Italy. I have participated in trapping and sterilizing feral or community cats in San Francisco for the last 9 years and during that time have witnessed a marked reduction in the number of cats in the colonies with which I have been involved. When adult cats are spayed and neutered and kittens taken for adoption a group of feral cats can be immediately reduced by 50%.

There are fewer and fewer feral cats in the areas of the city that come under the jurisdiction of the Natural Resource Area Plan. The cats that there are sterilized, fed and monitored. Any new cat that shows up is taken to be spayed/neutered. Often these are recently abandoned cats that have not yet become wary of people and they find new homes.

In San Francisco the need to remove feral cats becomes less pressing every year, yet there are numbers of people who think cats are increasing in population rather than dramatically decreasing. The SF/SPCA has been offering free feral fix since the early 1990s. As a result of this program, thousands of cats have been spayed/neutered and hundreds of thousands of cats have never been born.

I believe that because of the cat's relationship to people as a companion animal, a relationship not shared with other wild animals such as crows, skunks, possums, foxes and raccoons, feral cats have become a stand-in for humans and the problems we have caused to the environment. Feral cats are not a significant problem and should not be singled out. There is no 'urgent' need to remove them as is stated in G.R. 7a, G.R 7b and G.R. 7c.

The G.R. section in the Environmental Impact Report needs to be removed. It is made up of unproven suppositions not based on what has been happening in San Francisco over the last 15 years.

Thank you.

Susan Wheeler
President, Friends of Roman Cats
Member of CAT that deals with feral cats issues in conjunction with the SF/SPCA

May 26, 2009

L-Danyielle Yacobucci
845 McAllister Street, #C
San Francisco CA 94102

Bill Wycko
Environmental Review Officer
San Francisco Planning Department
1650 Mission Street
San Francisco Ca 94103

Dear Mr. Wycko:

RE: RE: Significant Natural Resource Area Management Plan (SNRAMP), Environmental Impact Report, Case# 2005.0912E

The Initial Study states, "Topics are included in the EIR if there is not sufficient information available at this time on the potentially affected resources or site conditions."

I have considerable expertise on issues regarding feral cats. Presently no one knows what their impact is on San Francisco's environment and are only using speculation based on a lack of knowledge and expertise.

I believe that the General Recommendations for Predators G.R.7a, G.R.7b and G.R.7c as they stand are extremely flawed. The Natural Areas Program states under G.R.7 that feral cats are an urgent matter. This statement is from Ms. Huntsinger and Mr. Bartolome's review and their scientific expertise does not include feral cats.

The facts are that there are only a few feral cats in the Natural Areas in San Francisco. These feral cats are all fixed, fed, monitored and not hungry. Since 2006 because of San Francisco SPCA's Feral Cat Program there are fewer feral cats in the Natural Areas and in all of San Francisco.

What is the justification for feral cats to be described as an "urgent" matter? What exactly does this mean? What studies have been done *in San Francisco* that show and prove this? Studies that are done in other areas of the United States do not prove that feral cats are an "urgent" matter in San Francisco.

Why is the feral cat the only predator that is called an urgent matter? There is no evidence, observational material or scientific studies done in San Francisco proving that. Other predators greatly outnumber feral cats in San Francisco. Feral cats are not the primary reason for losses due to preying. Feral Cats are being singled out for no legitimate reason and possibly just for ideological bias.

Here is a list of other predators in these same natural areas as listed in The Presidio Implementation Plan, Golden Gate Audubon Society; and Save The Quail Campaign, Setting and Site Assessment, LSA Associates, Inc.:
Western Scrub-Jay, Common Raven, American Crow, Cooper, Sharp Shinned Red-Tailed Hawk, owl, gray fox, striped skunk, northern raccoon, domestic cat, California ground squirrel, and red fox.

Then there are other predators in the NAP areas such as coyotes, feral pigs, frogs, snakes, cormorants, herons, turtles, badger (potential), mice, rats, bats, bobcats and of course Humans.

To give you a few specific examples--Raccoons eat bird eggs and young and adult animals. . .Skunks will eat bird eggs and young animals. . . Possums will eat bird eggs and young animals. . .Ground squirrels will eat bird eggs and young. . .Jays, ravens and crows will kill and eat anything, including bird eggs. . . Herons will eat anything that fits in their mouth. . .Raptors and owls will kill and eat anything they can catch. . .Coyotes and fox will kill and eat anything they can catch. . . Mice and rats will eat anything, etc, etc., etc....

My point is that there are many more predators than feral cats in the natural areas of San Francisco. Feral cats are being inappropriately singled out as the most dangerous predator, the one that does the most harm and kills more than any other predator. There is no scientific basis for this conclusion and the impact of feral cats is not accurately understood. Their predation could even be quite limited. Keep in mind that predators also have positive impacts such as rodent control and maintaining balance in the environment. *A clear definition of what a predator is must be put in the Glossary.*

In the Initial Study under G.R.7a, it states "implement the feral cat control policy from the Quail Recovery Plan" (QRP) passed in 2004 by the Board of Supervisors. There is no feral cat control policy mentioned in the QRP. The QRP only uses the word "predator" and states that quail recovery must be done *without killing other animals.*

The control of any predator should be undertaken only in situations where it is clearly demonstrated with hard proof that they are having a negative effect on an area. Any control program must be developed with the expertise and humane practices of San Francisco Animal Care and Control and the San Francisco SPCA.

All of G.R.7 as it stands is unacceptable. It must either be removed or completely revised in cooperation with San Francisco Animal Care & Control and the San Francisco SPCA.

Thank you and sincerely,
L-Danyielle Yacobucci

L-Danyielle Yacobucci
Feral Cat Expert
Bachelor of Arts Degree, Psychology,
San Francisco Resident

Comments Re Initial Study for the SNRAMP - May 18, 2009

My comments are in reference to my experience in the Oak Woodlands - GG Park Natural Area.
I suggest that the EIR of NAP Management Plan take seriously the boots on the ground experience of local habitat restoration volunteers.
My view is that Oak Woodlands are about 3 % of GG P and represent a fraction of what remains of original Coast Scrub and Oak Woodland habitat that predates the Park.
Our experience with very large introduced tree canopy (blue gum eucalyptus and monterey pine/cypress) and varieties of smaller but pervasive and invasive tree species indicates that the Natural Areas mandate to protect these remnant habitats must trump the often misguided attempts to " protect " trees.
In the Oak Woodlands, very few, if any of the large canopy trees have been cut but they are very problematic and in some places should be removed.
A lot of the invasive ' monocultural ' shrubs and trees have been cut to enable healthy growth of original natural habitat and in fact we replant more than an equivalent amount of native forbs, shrubs and trees to restore aesthetic and habitat balance.
We also have cut invasive monocultures to reduce the danger of fire (the Oak Woodland has suffered fires caused by vagrant campers) and also to clear overgrown areas that provide cover for illegal camping and trash accumulation.
For this reason, among others, I strongly urge extra penalties (at least a misdemeanor arrest) for those who camp in Natural Areas.
The overlapping GG P jurisdiction (RPD - GG P management is not always on board with Natural Areas staff due to turf and bureaucratic squabbling) produces a less than satisfactory record in coping with these issues .
This indicates to me that Natural Areas must have the clear mandate to completely regulate the core of the natural area, MA-1 , AND adjacent zones, MA-2 , MA-3.
I think that these current ' tri - level ' natural area designations are a recipe for fragmented management and undermines the mandate of Natural Areas to regulate, restore and steward these places based on science, factual evidence and common sense.
In regard to dogs - as of now everyone is free to use such restored places as Oak Woodlands' Coon Hollow - but if it becomes obvious that dogs digging, pooping and peeing in this place produce significant impact then Natural Areas must have the absolute right to require limits to dog use.
Overall, the Natural Areas mandate to restore and steward the tiny remnants of our ' original' natural habitats in this regional urban environment require some sacrifice on the part of narrow interests that don't put sustainable natural habitat front and center.
I think it is quite obvious that we continue to lose planetary biodiversity - we must do better.

ROBERT BAKEWELL <rcbakewell@yahoo.com>
Volunteer Steward for SFRPD Natural Areas Program
Oak Woodlands Restoration - GG Park
863 Arguello Blvd. # 5 , SF CA 94118
SF CA 94118
415-710-9617

May 25, 2009

To: Mr. Bill Wycko
Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

From: Denise Lapins
15 Belgrave Avenue
San Francisco, CA 94117

Re: Project title: Natural Areas Management Plan
Case No. 2005.1912E

Dear Mr. Wycko:

I and my family have lived immediately adjacent to Tank Hill, a so-called 'natural area', for nearly twenty years. At the opposite end of our small street lies another so-designated site, the interior greenbelt of Sutro forest, managed under the auspices of the RPD Natural Areas Program (NAP), and the subject of comments herein because of the proposed Management Plan involving clear cutting of 140 or more mature trees in that specific area. This decision to convert existing forest adjacent to neighboring homes to a sensitive plant museum has been made without proper scientific study or input from residents.

I am writing to request that the Planning Department demand more studies – assessments with forest-specific expertise on the part of the consultants, unlike the Initial Study provided by Tetra Tech. Such studies are needed in order to fully evaluate the substantial impacts that would result from the loss of the trees noted in the NAP Management Plan.

The history of this neighborhood and the NAP is rich with conflict, stemming primarily from documented clandestine clear-cutting of trees atop Tank Hill. One only need regard this site to witness an unfortunate example of the effects of wholesale tree removal. Winds blow with extreme force without the buffer of mature trees and of the native flora planted there (with the help of neighbors, I among them) few plants survive today. The total area of the site is far smaller than the interior greenbelt just 2/10s of a mile away, and the evidence from the Tank Hill experience bodes poorly for the greenbelt proposal.

While the reasons to require more studies are legion, I will focus my remarks and questions on a few key points:

Geology: How do we know that erosion problems resulting from the loss of trees will not be incurred upon the neighboring homes? What will be the effects of herbicides to immediate neighbors, animal and insect denizens of the forest, and others?

While the forest is managed under two jurisdictions it nonetheless exists as a single entity, with the university and the NAP overseeing a combined total of 61 acres of Sutro forest. The university currently proposes clear-cutting a total of 14 +/- acres of trees, which is more than 20% of total forest acreage. How have the combined effects of such significant deforestation been evaluated? How have the risks to both people and property been evaluated in light of the fact that deforestation will be upslope from residential areas adjacent to the greenbelt? How has the City evaluated the cumulative effects of the UC/FEMA grant proposal along with the NAP Management Plan?

This EIR must evaluate this cumulative effect on the entire Sutro forest of both management proposals.

Biology: What is known of the effects of removing established trees as proposed? What will be the effects of the health of the forest in its entirety with this type of periodic and spotty tree removal?

Recreation/Land Use: One of the reasons this management plan is so controversial is because of the restriction of access to the public of their own public land. The interior greenbelt contains the Belgrave trailhead into the forest from the east. Neighbors and visitors use this greenbelt area on a year-round basis. Sensitive habitat plantings will restrict use to a degree unknown. The impact of these plantings on our use has not been quantified.

As your charge to implement CEQA, which defines *'environment'* as the *'existing setting'*, I respectfully request that the Planning Department provide for a comprehensive scientific Environmental Review to evaluate the above-stated concerns on our current environment. Such a report will address the deficiencies in the Initial Study and allow the effects of the scope of the Management Plan to be fully and scientifically evaluated.

Thank you for your attention to these important concerns. I appreciate the opportunity to contribute to this important Management Plan.

Sincerely,

Denise Lapins

cc: SF Recreation & Park Commission
Supervisor Ross Mirkarimi, Dist. 5
Belgrave Neighbors
Twin Peaks Improvement Association

San Mateo County
Mosquito and Vector Control District
1351 Rollins Rd
Burlingame CA 94010
(650) 344-8592 Fax (650) 344-3843
www.smcmad.org

Date: 5/26/09 Time: _____

Deliver to: Bill Wycko

Fax Number: (415) 558-6409

From: Chindi Peavey

Number of pages including coversheet: 3

Subject or Message: Natural Areas Management Plan EIR

If this transmission is incomplete or you have any questions,
Please contact sender at (650) 344-8592

San Mateo County
Mosquito and Vector Control District

1351 Rollins Rd
Burlingame CA 94010
(650) 344-8592 Fax (650) 344-3843
www.smcmad.org

To: Bill Wycko
San Francisco Planning Department
Natural Areas Management Plan
1650 Mission St, Suite 400
San Francisco, CA 94103

RE: Scope and Content of Environmental Impact Report and Environmental Review of the San Francisco Natural Areas Management Plan.

The San Mateo County Mosquito and Vector Control District would like to ensure that two things are considered in any future environmental documents for the Natural Areas Management Plan

1) The impact of changes at Sharp Park on mosquito development there.

The San Mateo County Mosquito and Vector Control District has been conducting mosquito control at Laguna Salada in the Sharp Park Golf course in Pacifica for several years. Substantial populations of vector mosquitoes develop on this property. Over the past several years, sediment has accumulated in the Laguna and encouraged the growth of cattails. The cattail stands provide ideal habitat for tule mosquitoes. Because of the broad extent of these stands, they must be treated by helicopter, a very expensive operation. If left uncontrolled, mosquitoes from this site present a significant threat to the health and safety of the residents in surrounding neighborhoods and visitors to the golf course and surrounding area. Therefore, the impact of changes to the site on mosquito development there should be one of the issues addressed in environmental documents prepared for the property. Changes to the shape, depth, and vegetation will have immediate and long term consequences on the necessity for pesticide applications, the method by which they are applied, and even the types of materials that must be used at this site. There are ways in which physical changes to the site could greatly alleviate mosquito production and reduce the need for pesticide applications. Conversely, the extent of mosquito development could be increased, if larger areas of marsh become populated with thick vegetation. District staff can offer expertise on the impact of proposed changes on mosquito production at the site. Our staff would like to work with the Planning Department during the design phase to ensure that changes at the Laguna minimize the potential for mosquito development rather than exacerbating the problem.

2) Continued access for inspection and treatment activities.

The SMCMVCD is responsible to the citizens and taxpayers of San Mateo County to provide vector control services. Because mosquito development is currently occurring at this site and may continue, the environmental review should clearly state the need for access to all mosquito development areas for inspection and control operations.

The District would like to work closely with the Planning Department in the future and can provide information on the current state of mosquito development in Sharp Park and the potential impact of any changes to the landscape there.

Thank you,

Chindi Peavey, PhD
Vector Ecologist
San Mateo County Mosquito and Vector Control
(650) 344-8592
(650) 642-4845

JOB STATUS REPORT

TIME : 05/26/2009 16:06
NAME : SAN MATEO CO. MVCD
FAX# : 650-344-3843
TEL# :
SER.# : 008100930

DATE,TIME	05/26 16:06
FAX NO./NAME	14155586378
DURATION	00:00:00
PAGE(S)	00
RESULT	BUSY
MODE	STANDARD

BUSY: BUSY/NO RESPONSE

San Mateo County
Mosquito and Vector Control District
1351 Rollins Rd
Burlingame CA 94010
(650) 344-8592 Fax (650) 344-3843
www.smcmad.org

Date: 5/26/09 Time: _____

Deliver to: Bill Wycko

Fax Number: (415) ~~558-6378~~ 558-6409

From: Chindi Peavey

Number of pages including coversheet: 3

Subject or Message: Natural Areas Management Plan EIR

05/26/2009 18:17 650-344-3843 SAN MATEO CO. MVCD PAGE 01/03

San Mateo County
Mosquito and Vector Control District

1351 Rollins Rd
Burlingame CA 94010
(650) 344-8592 Fax (650) 344-3843
www.smcmad.org

To: Bill Wycko
San Francisco Planning Department
Natural Areas Management Plan
1650 Mission St, Suite 400
San Francisco, CA 94103

RE: Scope and Content of Environmental Impact Report and Environmental Review of the San Francisco Natural Areas Management Plan.

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2) Continued access for inspection and treatment activities.

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The District would like to work closely with the Planning Department in the future and can provide information on the current state of mosquito development in Sharp Park and the potential impact of any changes to the landscape there.

Thank you,

Chindi Peavey, PhD
Vector Ecologist
San Mateo County Mosquito and Vector Control
(650) 344-8592
(650) 642-4845

The San Francisco Tree Council

May 23, 2009

Bill Wycko, Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103-2479

Re: Initial Study of the Natural Areas Management Plan

Dear Mr. Wycko,

Please require a **full Environmental Impact Report of the Natural Areas Management Plan**. As director and founder of the SF Tree Council and an appointed founding member of the city's Urban Forest Council, and after attending 5 years of Natural Areas meetings -- I am greatly concerned about the past 10 years of the Natural Areas Program destroying healthy mature trees, and ignoring the tremendous loss and outrage of the majority of San Franciscans.

San Francisco's large, mature trees are truly an endangered species and need to be preserved. Only 5% of trees of the total 669,000 trees in San Francisco have diameters greater than 30 inches, according USDA 2007 report (UFORE) on the state of the urban forest in San Francisco.

I concur with Mary McAllister, Karin Hu, and Nancy Wuerfel's assessment of The Initial Study of the SNRAMP. It is flawed, incomplete, and does not provide the much needed proof that SNRAMP is sustainable, cost effective or will benefit the greater good of our citizens. The scientific communities in the United State question the value of native plants and its citizens have rejected it when requiring the removal of healthy trees.

The Initial Study of the environmental impacts of SNRAMP is inadequate in many respects:

- It dismisses as "insignificant" environmental impacts that have been experienced in the past and that caused considerable damage as well as public concern.
- It makes sweeping statements, dismissing environmental and safety issues without providing any basis for these dismissals
- It demonstrates that the author has either not read SNRAMP or has not understood important portions of it
- It demonstrates that the author has ignored basic scientific principles needed to analyze potential impacts, such as carbon sequestration and release
- It demonstrates that the author has not visited the natural areas and is unaware of the 10-year history of environmental and safety problems and public concern since the Natural Areas Program began

For the long-term health of our environment and that of the citizens of San Francisco, please require a full EIR of SNRAMP.

Sincerely yours,

Carolyn Blair, Executive Director
San Francisco Tree Council
Member SF Urban Forest Council
2310 Powell Street, Suite 305
San Francisco, CA 94133
sftreecouncil@dslextreme.com
415-982-8793

Working Together To Preserve & Protect Our Community Urban Forest,
For Nourishment for the Soul, Consolation for the Heart
And Inspiration for the Mind

Brent Plater
<bplater@ggnrabig
year.org>

To
<jessica.range@sfgov.org>,
<bill.wycko@sfgov.org>

06/16/2009 01:38 PM

cc

Subject
Re: Scoping Comments on NAP EIR

Hi Jessica,

Thanks for talking to me about the Natural Areas Program/Laguna Salada Enhancement CEQA process last month. As I mentioned to you on the phone, the main purpose of the Laguna Salada Enhancement Plan is to "restore the Laguna Salad wetlands to provide suitable habitat for the San Francisco garter snake and the California red-legged frog." p. 1-1. To do so, the purposes and objectives section expressly states that San Francisco and/or its consultants must consider restoring vegetative conditions, water quality, migration corridors, etc. in "the lagoon and the surrounding area." Id. Thus, it seems that RPD must consider full restoration of Sharp Park through the CEQA process, and that the City may not simply presume that the golf course will continue to exist indefinitely.

I also previously sent you a copy of my comments, along with a website where you could download the comments and all the exhibits. Please let me know if you have any trouble accessing the documents. The link is posted again below.

Thank you,

Brent Plater
415-572-6989

SAN FRANCISCO
PUBLIC GOLF ALLIANCE
FAR & SURE

220 MONTGOMERY ST., #303
SAN FRANCISCO, CA. 94104
(415) 392-5431, ext. 203
E-MAIL: RICHARD@ERSKINETULLEY.COM

June 22, 2009

By U.S. mail and e-mail

Mr. Phil Ginsburg, Director
Ms. Dawn Kamalanathan, Planning Director
Recreation & Parks Department
City of San Francisco
McLaren Lodge
501 Stanyan St.
San Francisco, CA. 94117

San Francisco Planning Department
Attn: Bill Wycko, Environmental Review Officer
1650 Mission St., #400
San Francisco, CA. 94103-2479

Re: Sharp Park Golf Course

Alternate Use Study
Park Code, Article 3, Section 320
File No. 090329

Sensitive Natural Resource Areas Management Plan EIR
Case No. 2005.1912E

Dear Mr. Ginsburg, Ms. Kamalanathan, and Mr. Wycko,

In connection with your respective planning processes with regard to the Sharp Park Golf Course, the San Francisco Public Golf Alliance submits the following comments and suggestions.

(1) Sharp Park Golf Course is an historic public landscape of local, national and international significance, one of the few public golf courses, and the only surviving seaside public links, designed by the historically preeminent golf architect Alister MacKenzie.

(2) The golf course is culturally significant as a popular recreational asset used and enjoyed by men, women, and children of all ages, backgrounds, races, and cultures.

(3) The golf course is also a work landscape architecture of the highest aesthetic value, by an internationally-renowned master, and is enjoyed not only by the golfers, but also by the thousands of strollers, hikers, and bikers who pass by on the seawall that overlooks the golf course.

(4) Practical, cost-effective measures are readily available to preserve the full 18-hole golf course, in its current configuration, retaining all of MacKenzie's remaining original golf holes, while simultaneously protecting and enhancing the habitat for the red-legged frog and San Francisco garter snake at the ponds and waterways on the golf course.

(5) Simultaneously preserving the golf course and protecting the frog and snake can be accomplished more quickly, and at lower cost to the city in both money and administrative time, than eliminating the golf course or reducing it to 9 holes.

(6) Because of the golf course's international status as a public seaside Alister MacKenzie course, preservation of the golf course offers the city the opportunity for significantly greater revenue, than destruction or diminution of the golf course.

I. HISTORICAL, AESTHETIC, AND CULTURAL SIGNIFICANCE OF SHARP PARK GOLF COURSE.

1. Sharp Park Golf Course, opened in 1932, is the work of the internationally preeminent golf architect, Dr. Alister MacKenzie, who was hired for the job by John McLaren, a kindred Scottish gardener and the father of Golden Gate Park. McLaren was head of the San Francisco Recreation and Park Department, and personally planted the trees on the golf course.

2. Sharp Park Golf Course is a nationally and internationally-significant cultural landscape, and has been formally recognized as worthy of preservation by public entities and non-governmental organizations, including the City of Pacifica, County of San Mateo, and the Cultural Landscape Foundation of Washington, D.C.

3. Golf architecture is a branch of landscape architecture, and MacKenzie was a naturalist, in the tradition of Capability Brown, the 18th Century father of the English school of landscape design, which turned away from the formal geometry of French and Italian gardens. "The chief object of every golf course architect worth his salt," MacKenzie famously said, "is to imitate the beauties of nature so closely as to make his work indistinguishable from nature itself."

4. The great aesthetic value of MacKenzie's landscape architecture is enjoyed not only by golfers, but by the thousands of walkers and hikers who pass by daily on the trail atop the seawall that adjoins the golf course to the west.

5. MacKenzie was a native Englishman and Bay Area resident, and the designer of several of the world's best-known and most beloved golf courses, including Cypress Point and Augusta National, the site of the annual Master's Tournament. Sharp Park is one of only a very few public courses designed by MacKenzie, and his only remaining public seaside links. As such, Sharp Park is a world cultural resource, the only place in the world where current and future generations of the general public can experience in person the seaside work of this master artist.

6. As Sharp Park's owner, San Francisco has an obligation of stewardship, which accompanies international masterworks.

7. In its current condition and configuration, the Sharp Park Golf Course has 12 of MacKenzie's original holes, complete with their greens complexes (numbers 1, 2, 3, 9, 10, 11, 13, 14, 15, 17, and 18), parts of two other holes (numbers 12 and 16), and another original green complex at the 8th hole. Although four ocean side holes were lost to the sea years ago, and other holes have lost original bunkers and consequently some of their original strategy (which could be restored), and

although the seawall now blocks ocean views, the course retains its seaside links character and the air, wind, sounds, and smells of the sea.

8. Sharp Park Golf Course also retains the artistry and ingenuity of Dr. MacKenzie's original design. Sharp Park's picturesque routing, the architect's trademark optical illusions, and his false-fronted, heaving and tumbling greens simultaneously entertain and challenge golfers as they walk the linksland. For example, MacKenzie's famous use of camouflage is displayed at the current 14th hole, where a large mound 30 yards in front of the right side of green creates an optical illusion that the green is closer to the player standing in the fairway than it is in fact.

9. "A golf course should be made interesting and a good test of golf," MacKenzie said, "by the tilt of the greens and the character of the undulations." (*The Spirit of St. Andrews,* 1934, at p. 75.) MacKenzie designed dramatic mounds in Sharp Park's greens and surrounds to deflect all but the very best shots away from the holes. He built "false fronts" at the greens on holes 2, 9, 13, 14, 17, and 18, to reject shots that land on the front of the greens. Likewise, MacKenzie used steep slopes off the sides of greens (for example, at the 17th green), to deflect the inexpertly-struck approach shot down an embankment to a very difficult short-side pitch.

10. Because the master's artistry can be seen and directly experienced by the public, Sharp Park has great value to the local, regional, national, and international golf communities, all of which look to San Francisco to act as a responsible caretaker of this internationally-known and beloved asset.

11. This unpretentious, old-fashioned, golf course provides golf at modest cost to the general public, and as a result the course closely resembles in spirit the seaside links of the sport's homeland, Scotland. In 2006-2007 and 2007-2008, the most recent years for which official figures are available, 56,000 and 51,000 annual rounds of golf were played at Sharp Park, according to the December 17, 2008 Report of Controller Ben Rosenfield to the San Francisco Board of Supervisors.

12. The City of San Francisco's recreational consultant Leon Younger and PROS Consulting, in its August, 2008

Recreational Opportunities Study Summary Report, urged the city to preserve the golf course: "A historic golf course designed by the most celebrated golf architect.... It is much like having a park designed by Olmstead or a Frank Lloyd Wright building.... The golf community around the world is aware of this golf course, its past and future potential... to be one of the best public golf courses in the United States.... Because of its heritage it has the potential for private fund raising or an endowment for restoration and remodel. Probably one of the few in America.... It provides the average golfer access to design greatness.... It should be a crown jewel of the Recreation and Park Department and the city of San Francisco, a prominent fixture extolling the quality of life in this area. A proud heritage of some of the best golf in the world and its relationship to the sea.... It would also become a great revenue source (especially with private funds for restoration/remodel) for the Recreation and Park Department, as it would be a great local golf course but also a destination golf course for golfers all over America." (PROS Report, August, 2008, at p. 44.)

13. Destruction of the Sharp Park Golf Course, or its disfigurement or diminution to 9 holes, as some have suggested, would be a great loss to San Francisco, and would be fatal to the international significance and appeal of the course. The world golf and landscape architectural communities would mourn and recriminate, and would regard the city as irresponsible and folly.

14. For these reasons, San Francisco should make every effort to maintain all of the remaining MacKenzie golf holes at Sharp Park.

II. THE GOLF COURSE CAN BE RETAINED AND PRESERVED, WHILE SIMULTANEOUSLY ENHANCING THE ENVIRONMENT.

1. We recognize that the Sharp Park Golf Course has over the years--and precisely because the golf course has fostered a freshwater pond ecology in place of the brackish water ecology that preexisted the golf course and the seawall--become home to the federally-protected red-legged frog and the endangered San Francisco garter snake, and that the city is under state and federal mandate to protect these species.

2. Golf courses can be, and commonly are, operated in a manner that protects and enhances habitat for threatened and endangered species. In fact, this is done right now at the San Francisco Public Utilities Commission-owned Crystal Springs Golf Course, located on public watershed lands in Hillsborough. The golf course is leased by the city long-term to an environmental award-winning golf management company that specializes in operating municipally-owned courses. Since the lease began about 15 years ago, Crystal Springs has simultaneously provided public golf, enhanced habitat for native species including the red-legged frog and San Francisco garter snake, annually returned over $1 Million in net lease payments to the city, while also making nearly $5 Million in capital improvements to the property.

3. We understand from the description of the "Recommended Management Actions" at pages 43-44 of the Tetra-Tech Natural Areas Management Plan Initial Study, that the city intends to dredge Laguna Salada, and to remove some amount of the bulrushes that now fill that marsh, to create ponds of open water together with upland habitat islands. However, we have not seen any details of this dredging and tule-removal plan. How deep will the ponds be after dredging, and what will be their new dimensions and water-holding capacities? Will permits be required for such dredging and/or tule-removal operations? As between the City and County of San Francisco, the City of Pacifica, County of San Mateo, the Coastal Zone Commission, and the Corps of Engineers, where does the permitting authority for this work lie?

4. We also understand that the city's "Recommended Management Actions" include the creation of "a buffer zone between the Laguna Salada wetlands and the golf course fairways." We are unaware of any description of this buffer zone, or its dimensions or mechanics. And we have the same questions as to permit requirements and permitting authority, as described above at the end of paragraph II.3.

5. We have several questions about the drainage from Horse Stable Pond to the beach: (1) what is the water level of the outflow pipe(s); (2) what is the capacity of the pump(s); (3) what is the working condition of the pump(s); (4) what is the water level and the capacity of the gravity outflow line; and (5) what is the operational status of the gravity outflow line? We need a better understanding of how the gravity and the pump-

assisted outflows work together, and the reasons why there have in the past been problems. We understand that the gravity outflow pipe had been clogged for many years, but that it has recently been unclogged. When was that accomplished, and who was the project officer, and what is the contact information for that project officer? Who has the best understanding of these pond hydrology issues, and has there been a comprehensive written report on these issues? Can we get a copy of such a report? We need full understanding of these issues to address the fairway drainage issues discussed below in paragraph II.7(8).

6. We also understand the Golden Gate National Recreation Area's Mori Point property, immediately to the south of Horse Stable Pond, to be upland habitat for the San Francisco Garter Snake and the red-legged frog, and that the GGNRA has encouraged the city to manage Sharp Park compatibly with the species' migration between Mori Point Mori Point, Horse Stable Pond, and Laguna Salada.

7. Subject to our need for additional site information, we suggest a combination of measures, including but not limited to the following, at what appear to be the most environmentally-sensitive areas on the course--holes Nos. 12, 13, 14, and 15.

(1) create a native plant/no-golf area surrounding an "island" green complex in the vicinity of the current 12th green;

(2) alternately, relocate the 12th green complex (which is not a MacKenzie original) to the west, closer to the seawall;

(3) alternately relocate both the tee and green complex for the 12th hole to west and north of 12th green and 13th tee, which appears to be the site of an abandoned golf hole, currently overgrown with iceplant;

(4) create an "island tee" complex at the 13th tee, also surrounded by a native plant/no-golf area;

(5) connect the 12th tee and green, the 12th green and 13th tee, and the 13th tee and 13th fairway by raised boardwalk causeways, which would be the only access to these playing areas, and reduce golf maintenance at the 12th green and 13th tee complexes to hand-mowing;

(6) make these raised causeways at the 12th and 13th holes walking-only for both golfers and maintenance workers, and require golfers to park golf carts behind the 11th green, and retrieve them only after returning to the 13th fairway;

(7) restrict golf cart usage on the 13th, 14th, 15th, and 17th fairways to cart paths only, and move the cart paths away from Laguna Salada;

(8) raise the 14th fairway at its lowest points, and separate the fairway from the wetland area by some combination of mounds and/or low railroad-tie walls, and then follow the drainage overflow around the Laguna Salada, and contain the overflow with similar mounds and/or low walls;

(9) alternately, at times of high water at the 14th fairway, temporarily close that fairway to play, and utilize instead a new short 4-par hole that might be located running south to north alongside the seawall, behind the current 12th green and 13th tee; and

(10) connect the 15th tee and green complex with another causeway.

Similar measures to the foregoing have been taken at other courses with sensitive amphibian species, in the Bay Area and elsewhere, including at Bodega Bay and Crystal Springs.

8. The foregoing and similar measures could be accomplished consistent with and as part of the currently-ongoing Sensitive Natural Resource Areas Environmental Impact Report process. By comparison, we believe that destruction of the golf course, or significant reconfiguration with new holes in virgin areas, or reduction of the golf course from 18 to 9 holes, would require a separate, lengthy and expensive environmental review process, that would raise many complex and controversial environmental and social issues outside the scope of the current EIR process.

9. We have reviewed the Recreation and Park Department's recently-adopted Environmental Species Compliance Plan for Sharp Park. Employed in conjunction with the Recommended Management Actions listed for the Laguna Salada and Horse Stable Pond area in the Tetra Tech Initial Study, the

measures outlined in the Compliance Plan provide for continuation of the MacKenzie golf course, in harmony with protection of the frog and snake and enhancement of their habitat.

10. We understand that the city's contract for the Harding Park project requires the Professional Golfers Association ("PGA") to provide golf design at Sharp Park and/or Lincoln Park up to $1 Million. (See Management Audit of Recreation and Park Department, by San Francisco Budget Analyst's Office, January 12, 2006, at Section 6.) The sensitive ecology and hydrology issues at Sharp Park necessarily imply environmental and engineering study as part of golf course design, so that now would be a good time for the city to invoke the PGA's obligation to provide design at Sharp Park.

We anticipate consulting with a team including a species biologist, hydrologist, and golf architect, and we further anticipate that we may have additional or alternative suggestions aimed at finding creative, minimalist, nature-friendly solutions that will simultaneously preserve and enhance the habitats for the listed species, and preserve the legacy MacKenzie golf course at Sharp Park. And we look forward to working cooperatively with the Recreation and Park Department, Fish and Game, the Fish and Wildlife Service, and the relevant political entities and administrative agencies to this end.

We ask you to advise us as soon as possible of the details of the city's dredging plans at Laguna Salada, Horse Stable Pond, and the connecting waterway and Sanchez Creek. These plans will affect the hydrological issues of the above-discussed drainage measures. We also ask that, as soon as possible, we be allowed to meet with the city's biologist and golf architect so that we can fully understand their scientific and topographic concerns at the site.

If working cooperatively we can simultaneously save the golf course and protect the frog and snake and enhance their habitat--and we are confident this can be done--then San Francisco will have an asset that will be valuable to the environment, to the citizens of San Francisco and its neighboring communities, to the local and international golf and cultural landscape communities, and to the treasury of the Recreation and Park Department. Such an environmentally-friendly golf course

will be a revenue-generator for the city, and an example to other communities with sensitive species issues in their parklands.

Because we would be preserving an asset of the broader golf community, we are endeavoring to obtain the support, financial and otherwise, of that community to make this possible. Initial responses to our inquiries in this regard have been very positive, on the assumption that the interrelated environmental and golf restorations, and golf at Sharp Park going forward, will require the very highest levels of biological science, engineering, stewardship, and golf operations.

We look forward to working closely with you and all of the interested political bodies and administrative agencies, and all persons of good will, on this important project.

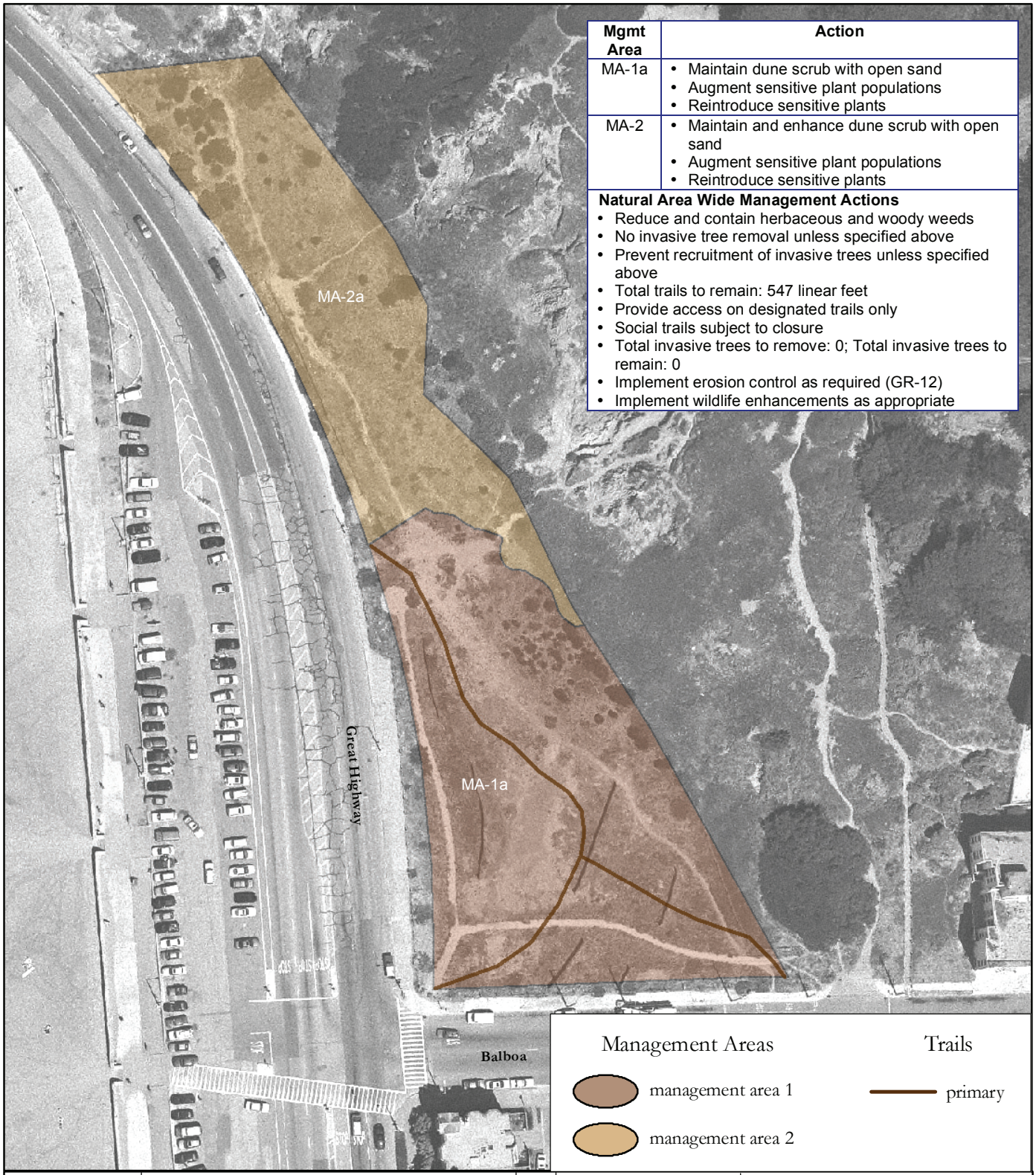
Very truly yours,

Richard Harris
San Francisco Public Golf Alliance

cc: Mayor Gavin Newsom
Mayor Julie Lancelle
Supervisor Sean Elsbernd
Supervisor Ross Mirkarimi
Golden Gate National Recreation Area
George Mozingo
Ken King
Lennie Roberts
Cultural Landscape Foundation
Tim Finchem, Commissioner, PGA of America
David Diller, President, Sharp Park Golf Club
Lyn Nelson, CEO, Northern California Golf Association
San Francisco Parks Trust
Alister MacKenzie Society
American Society of Golf Course Architects
Sean Sweeney
John Bock, Tetra-Tech, Inc.
Laborers Union Local 261
San Francisco Golf Task Force Members
Directors, San Francisco Public Golf Alliance

APPENDIX B

Maps of the Natural Areas



Mgmt Area	Action
MA-1a	• Maintain dune scrub with open sand • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2	• Maintain and enhance dune scrub with open sand • Augment sensitive plant populations • Reintroduce sensitive plants

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 547 linear feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 0
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSUGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1 Foot Resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

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Feet

FIGURE 6.22 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Balboa Natural Area

Significant Natural Resource Areas Management Plan

San Francisco, California

Mgmt Area	Action
MA-1a	• Maintain diverse native grassland
MA-1b	• Remove approximately 5 invasive trees • Maintain diverse native grassland • Augment sensitive plant populations
MA-1c	• Remove approximately 30 invasive trees • Maintain diverse native grassland • Augment sensitive plant populations • Reintroduce sensitive plants • Discourage motorcycle use. Install fences if necessary
MA-1d	• Remove approximately 140 invasive trees • Maintain diverse native grassland • Augment sensitive plant populations • Reintroduce sensitive plants • Discourage motorcycle use. Install fences if necessary • Consider development of a new trail
MA-1e	• Maintain diverse native grassland • Augment Mission blue butterfly habitat • Augment sensitive plant populations
MA-1f	• Remove approximately 10 invasive trees • Maintain diverse native grassland • Augment sensitive plant populations • Reintroduce sensitive plants
MA-1g	• Maintain diverse native grassland • Augment sensitive plant populations • Reintroduce sensitive plants • Discourage motorcycle use. Install fences if necessary • Limit dog use to on-leash only • Monitor potential impacts to endangered Mission blue butterfly habitat and install trailside fencing if required (south of radio tower only)
MA-1h	• Maintain diverse native grassland • Augment sensitive plant populations
MA-2a	• Remove approximately 70 invasive trees • Maintain and enhance a mixed native oak-grassland mosaic • Augment sensitive plant populations
MA-2b	• Remove approximately 100 invasive trees • Maintain and enhance oak woodland • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2c	• Maintain and enhance willow riparian, scrub and grassland mosaic • Augment sensitive plant populations

Mgmt Area	Action
MA-2d	• Remove 1 invasive tree • Maintain and enhance scrub-grassland mosaic • Augment sensitive plant populations • Augment Mission blue butterfly habitat
MA-2e	• Remove approximately 150 invasive trees • Maintain and enhance cherry tree woodland, scrub, and grassland • Augment sensitive plant populations • Augment Mission blue butterfly habitat
MA-2f	• Maintain and enhance grassland • Augment sensitive plant populations • Augment Mission blue butterfly habitat
MA-2g	• Remove approximately 5 invasive trees • Maintain and enhance scrub-grassland mosaic • Augment sensitive plant populations • Augment Mission blue butterfly habitat • Augment wrentit habitat • Reintroduce sensitive plants • Limit dog use to on-leash only
MA-3a	• Maintain and enhance urban forest
MA-3b	• Maintain and enhance existing forest-grassland-scrub mosaic • Maintain showy native landscaped park entrance • Allow important nectar/larval/seed invasive plants to persist for wildlife • Stabilize eroding slope

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 8,077 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 511; Total invasive trees to remain: 5,489
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

- management area 1
- management area 2
- management area 3

Trails

- primary
- secondary
- proposed

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised December 11, 2005.

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Feet

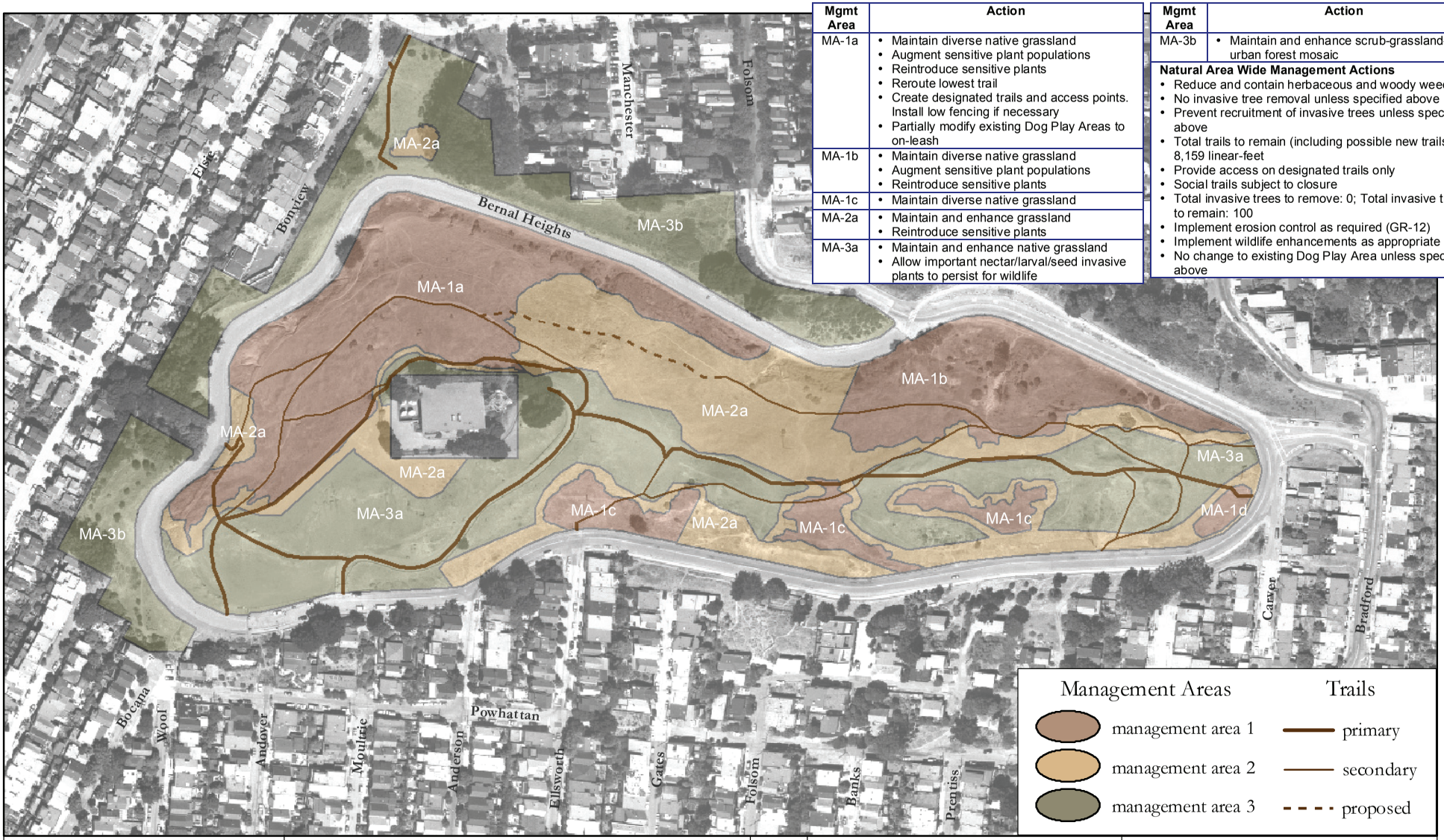
FIGURE 6.17 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Bayview Park

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain diverse native grassland • Augment sensitive plant populations • Reintroduce sensitive plants • Reroute lowest trail • Create designated trails and access points. Install low fencing if necessary • Partially modify existing Dog Play Areas to on-leash
MA-1b	• Maintain diverse native grassland • Augment sensitive plant populations • Reintroduce sensitive plants
MA-1c	• Maintain diverse native grassland
MA-2a	• Maintain and enhance grassland • Reintroduce sensitive plants
MA-3a	• Maintain and enhance native grassland • Allow important nectar/larval/seed invasive plants to persist for wildlife

Mgmt Area	Action
MA-3b	• Maintain and enhance scrub-grassland-urban forest mosaic

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 8,159 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 100
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate
- No change to existing Dog Play Area unless specified above

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University, Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1 Foot Resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science. Revised August 23, 2005.

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Feet

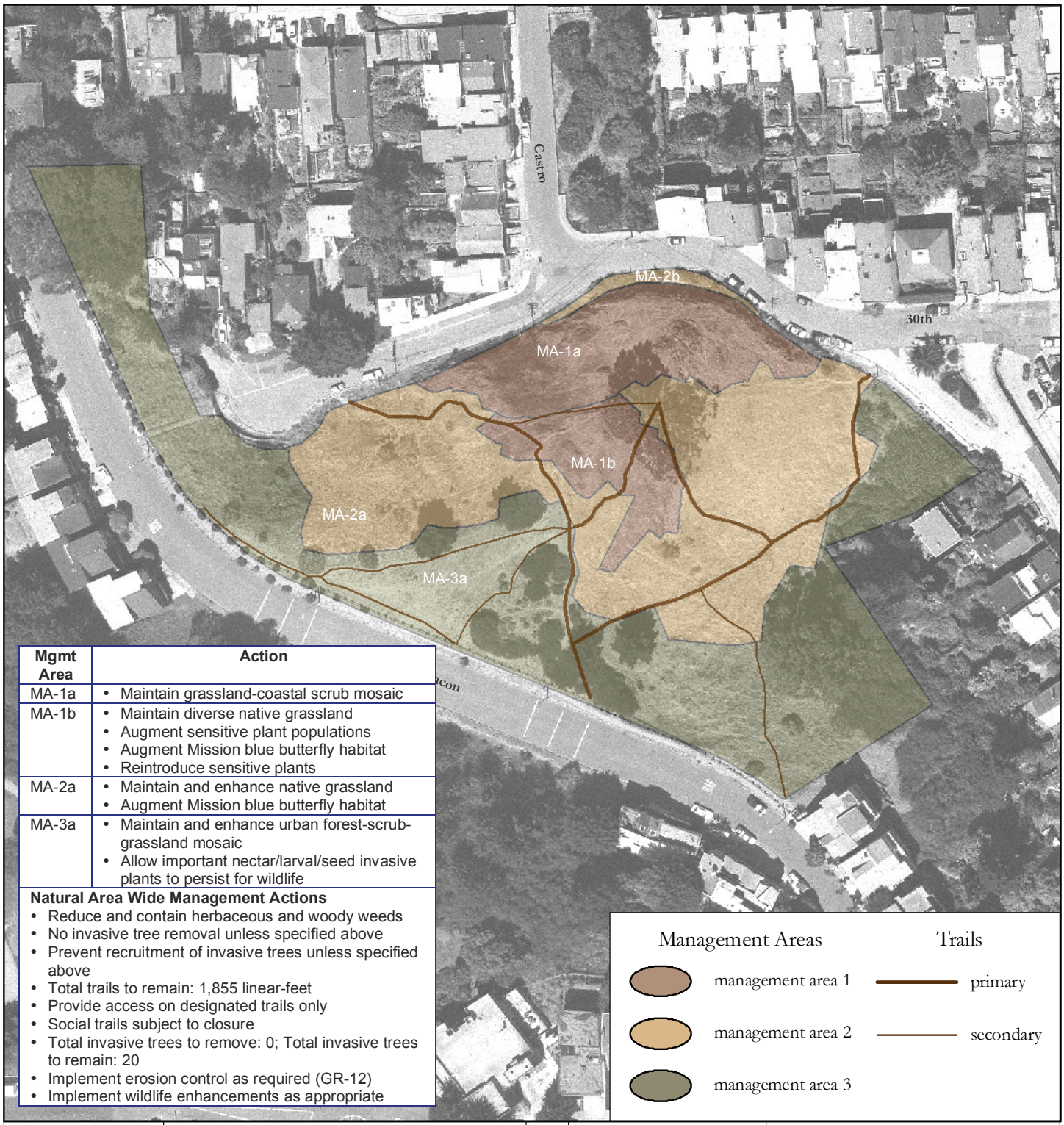
FIGURE 6.21 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Bernal Hill

Significant Natural Resource Areas Management Plan

San Francisco



Mgmt Area	Action
MA-1a	• Maintain grassland-coastal scrub mosaic
MA-1b	• Maintain diverse native grassland • Augment sensitive plant populations • Augment Mission blue butterfly habitat • Reintroduce sensitive plants
MA-2a	• Maintain and enhance native grassland • Augment Mission blue butterfly habitat
MA-3a	• Maintain and enhance urban forest-scrub-grassland mosaic • Allow important nectar/larval/seed invasive plants to persist for wildlife

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 1,855 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 20
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSUGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1 Foot Resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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0 25 50 100
Feet

FIGURE 6.9 - 4

MANAGEMENT AREAS AND TRAIL PLAN

Billy Goat

Significant Natural Resource Areas Management Plan

San Francisco, California

Mgmt Area	Action
MA-1a	• Remove 3 invasive trees • Maintain diverse native grassland
MA-2a	• Maintain and enhance oak-scrub mosaic
MA-2b	• Maintain and enhance dune scrub • Reintroduce sensitive plants
MA-2c	• Maintain and enhance grassland
MA-3a	• Maintain cypress-grassland mosaic with scattered oaks • Allow important nectar/larval/seed invasive plants to persist for wildlife
MA-3b	• Maintain and enhance grassland • Allow important nectar/larval/seed invasive plants to persist for wildlife

Natural Area Wide Management Actions
- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 884 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 3; Total invasive trees to remain: 17
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Mgmt Area	Action
LV MA-1a	• Maintain grassland • Augment sensitive plant populations
LV MA-2a	• Maintain and enhance diverse native grassland
LV MA-2b	• Maintain and enhance coastal scrub
LV MA-2c	• Maintain and enhance a landscaped native scrub
LV MA-3a	• Maintain and enhance grassland-coastal scrub mosaic • Allow important nectar/larval/seed invasive plants to persist for wildlife

Natural Area Wide Management Actions
- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 651 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to re move: 0; Total invasive trees to remain: 0
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University, Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1 Foot Resolution - 2001: City of San Francisco Department of Public Works, San Francisco; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 30, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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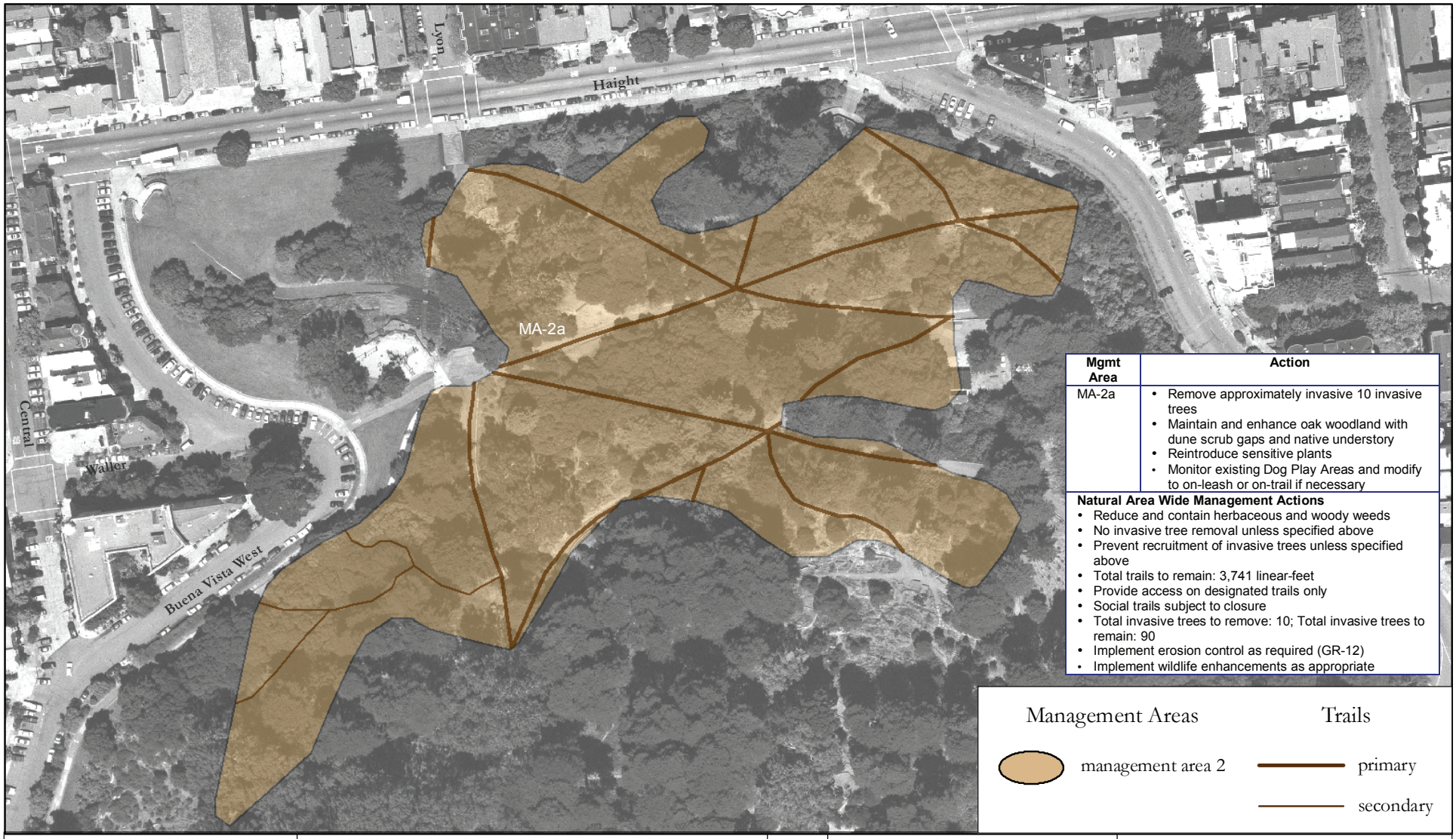
FIGURE 6.6 - 5
MANAGEMENT AREAS AND TRAIL PLAN
Brooks Park and Lakeview/Ashton Mini Park
Significant Natural Resource Areas Management Plan
San Francisco, California



Mgmt Area	Action
MA-2a	• Remove approximately invasive 10 invasive trees • Maintain and enhance oak woodland with dune scrub gaps and native understory • Reintroduce sensitive plants • Monitor existing Dog Play Areas and modify to on-leash or on-trail if necessary

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 3,741 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 10; Total invasive trees to remain: 90
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSUGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1 Foot Resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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Feet

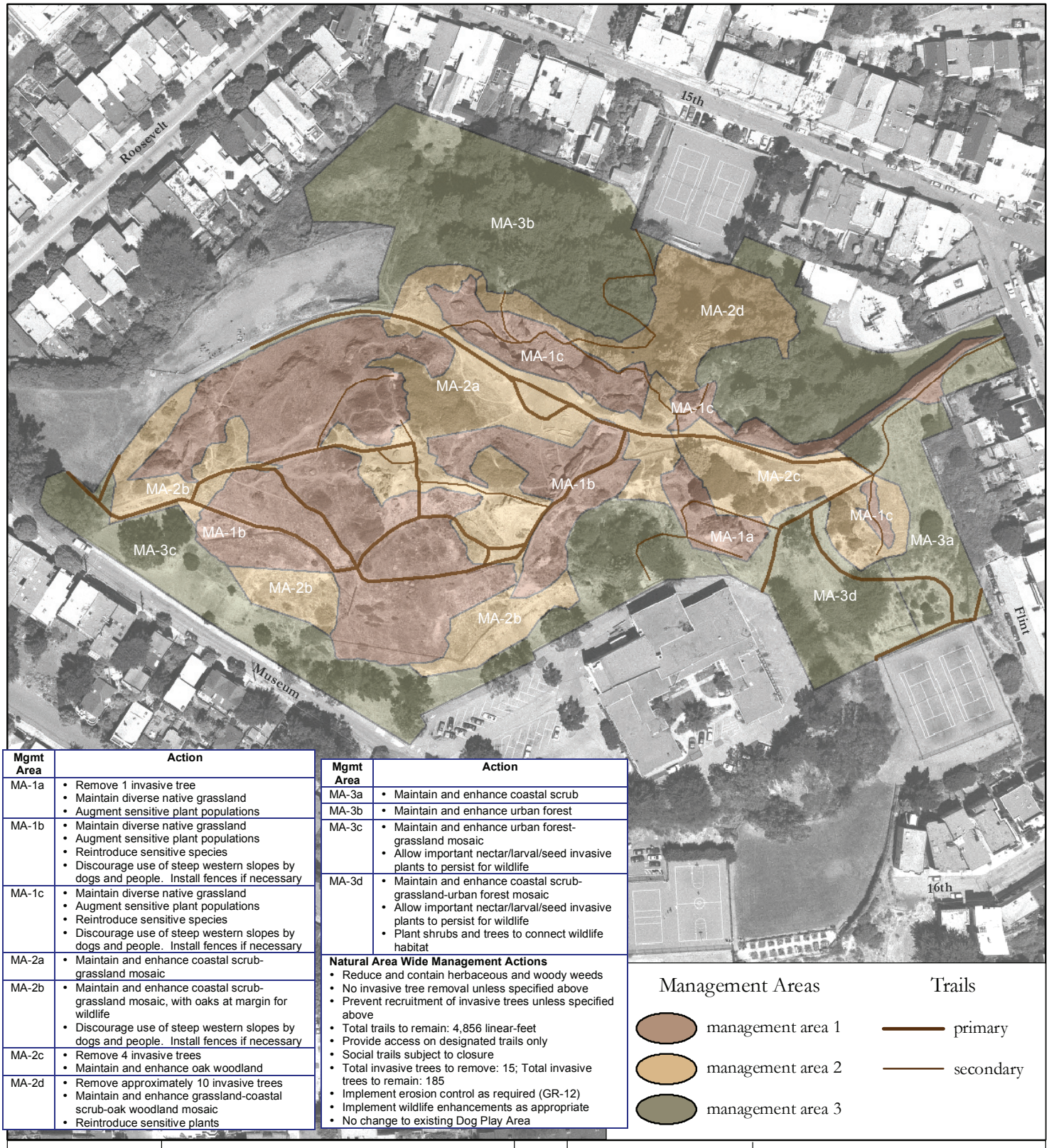
FIGURE 6.10 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Buena Vista Park

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Remove 1 invasive tree • Maintain diverse native grassland • Augment sensitive plant populations
MA-1b	• Maintain diverse native grassland • Augment sensitive plant populations • Reintroduce sensitive species • Discourage use of steep western slopes by dogs and people. Install fences if necessary
MA-1c	• Maintain diverse native grassland • Augment sensitive plant populations • Reintroduce sensitive species • Discourage use of steep western slopes by dogs and people. Install fences if necessary
MA-2a	• Maintain and enhance coastal scrub-grassland mosaic
MA-2b	• Maintain and enhance coastal scrub-grassland mosaic, with oaks at margin for wildlife • Discourage use of steep western slopes by dogs and people. Install fences if necessary
MA-2c	• Remove 4 invasive trees • Maintain and enhance oak woodland
MA-2d	• Remove approximately 10 invasive trees • Maintain and enhance grassland-coastal scrub-oak woodland mosaic • Reintroduce sensitive plants

Mgmt Area	Action
MA-3a	• Maintain and enhance coastal scrub
MA-3b	• Maintain and enhance urban forest
MA-3c	• Maintain and enhance urban forest-grassland mosaic • Allow important nectar/larval/seed invasive plants to persist for wildlife
MA-3d	• Maintain and enhance coastal scrub-grassland-urban forest mosaic • Allow important nectar/larval/seed invasive plants to persist for wildlife • Plant shrubs and trees to connect wildlife habitat

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 4,856 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 15; Total invasive trees to remain: 185
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate
- No change to existing Dog Play Area

Management Areas

- management area 1
- management area 2
- management area 3

Trails

- primary
- secondary

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

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Feet

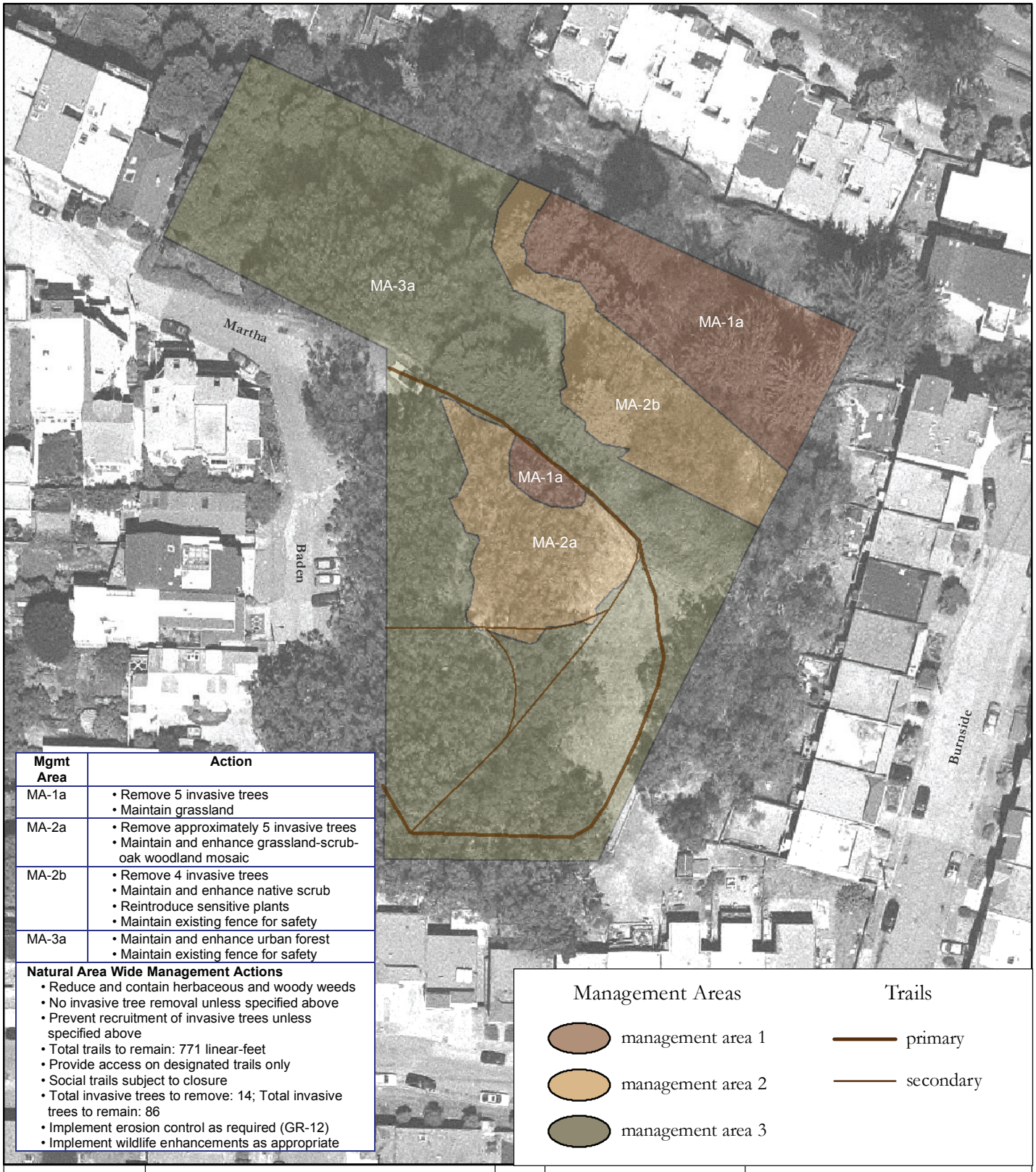
FIGURE 6.11 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Corona Heights

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Remove 5 invasive trees • Maintain grassland
MA-2a	• Remove approximately 5 invasive trees • Maintain and enhance grassland-scrub-oak woodland mosaic
MA-2b	• Remove 4 invasive trees • Maintain and enhance native scrub • Reintroduce sensitive plants • Maintain existing fence for safety
MA-3a	• Maintain and enhance urban forest • Maintain existing fence for safety

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 771 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 14; Total invasive trees to remain: 86
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

- management area 1
- management area 2
- management area 3

Trails

- primary
- secondary

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s Street-Map 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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Feet

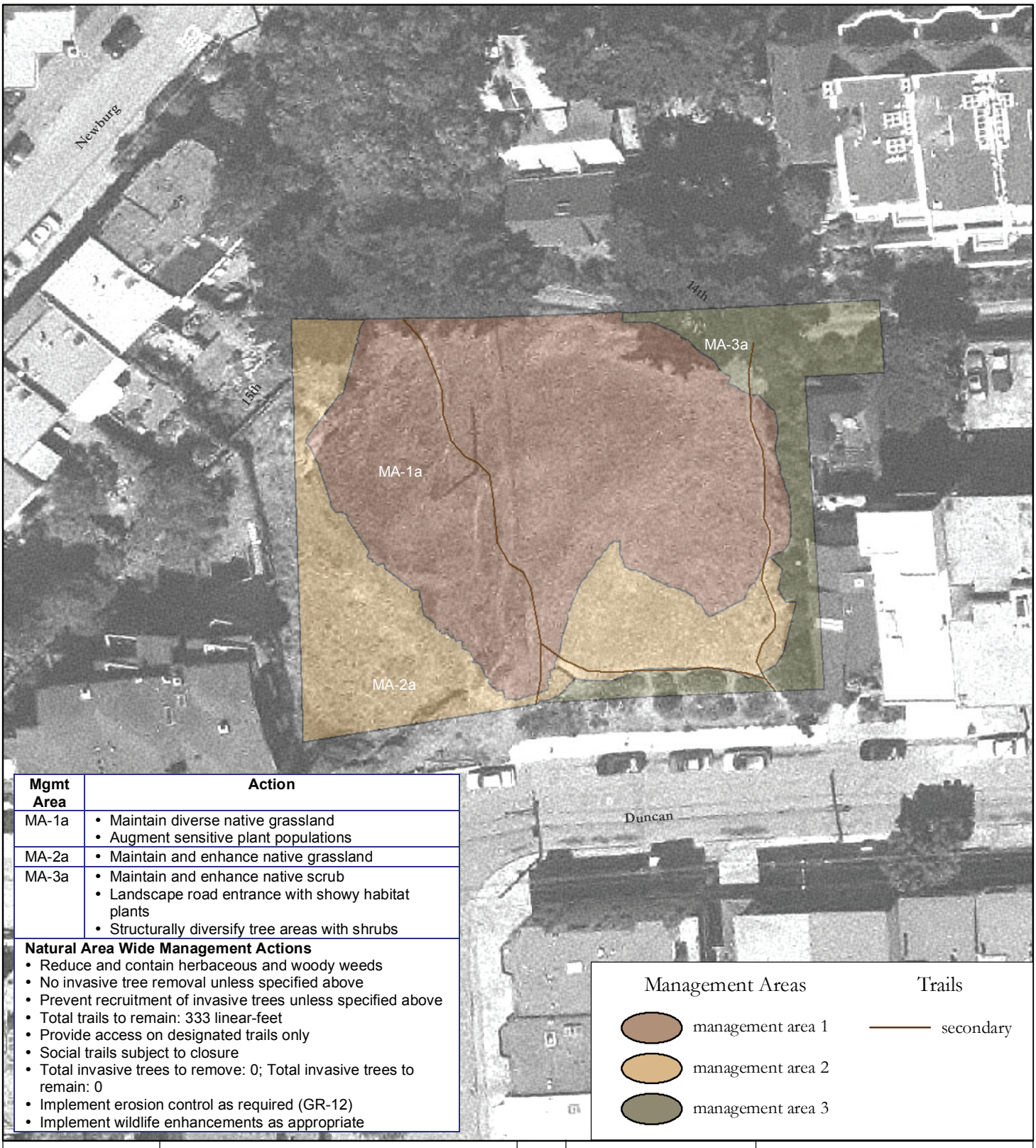
FIGURE 6.24 - 4

MANAGEMENT AREAS AND TRAIL PLAN

Dorothy Erskine

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain diverse native grassland • Augment sensitive plant populations
MA-2a	• Maintain and enhance native grassland
MA-3a	• Maintain and enhance native scrub • Landscape road entrance with showy habitat plants • Structurally diversify tree areas with shrubs

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 333 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 0
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; August 23, 2005.

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Feet

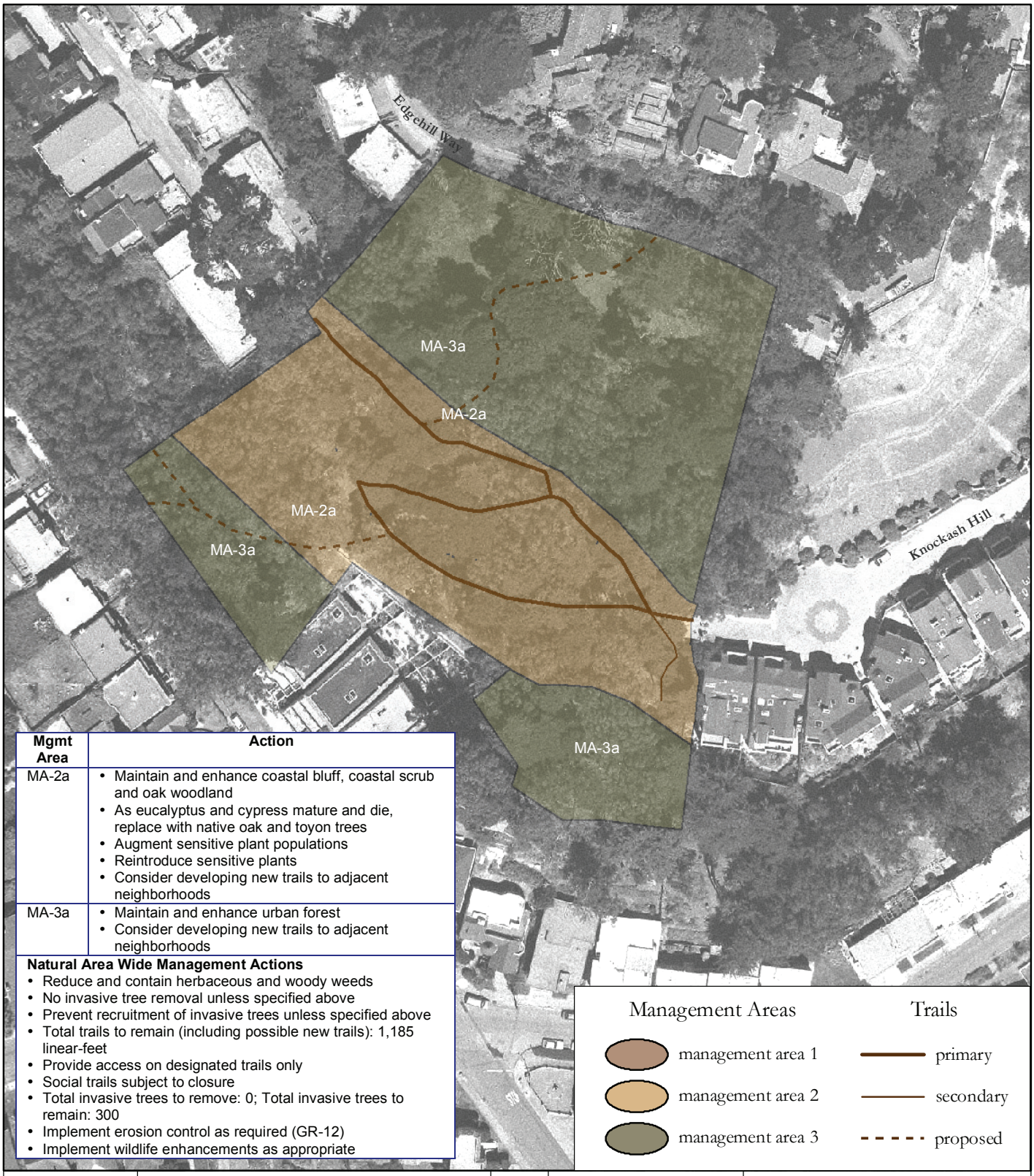
FIGURE 6.12 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Duncan-Castro

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-2a	• Maintain and enhance coastal bluff, coastal scrub and oak woodland • As eucalyptus and cypress mature and die, replace with native oak and toyon trees • Augment sensitive plant populations • Reintroduce sensitive plants • Consider developing new trails to adjacent neighborhoods
MA-3a	• Maintain and enhance urban forest • Consider developing new trails to adjacent neighborhoods

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 1,185 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 300
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

management area 1

management area 2

management area 3

Trails

primary

secondary

proposed

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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Feet

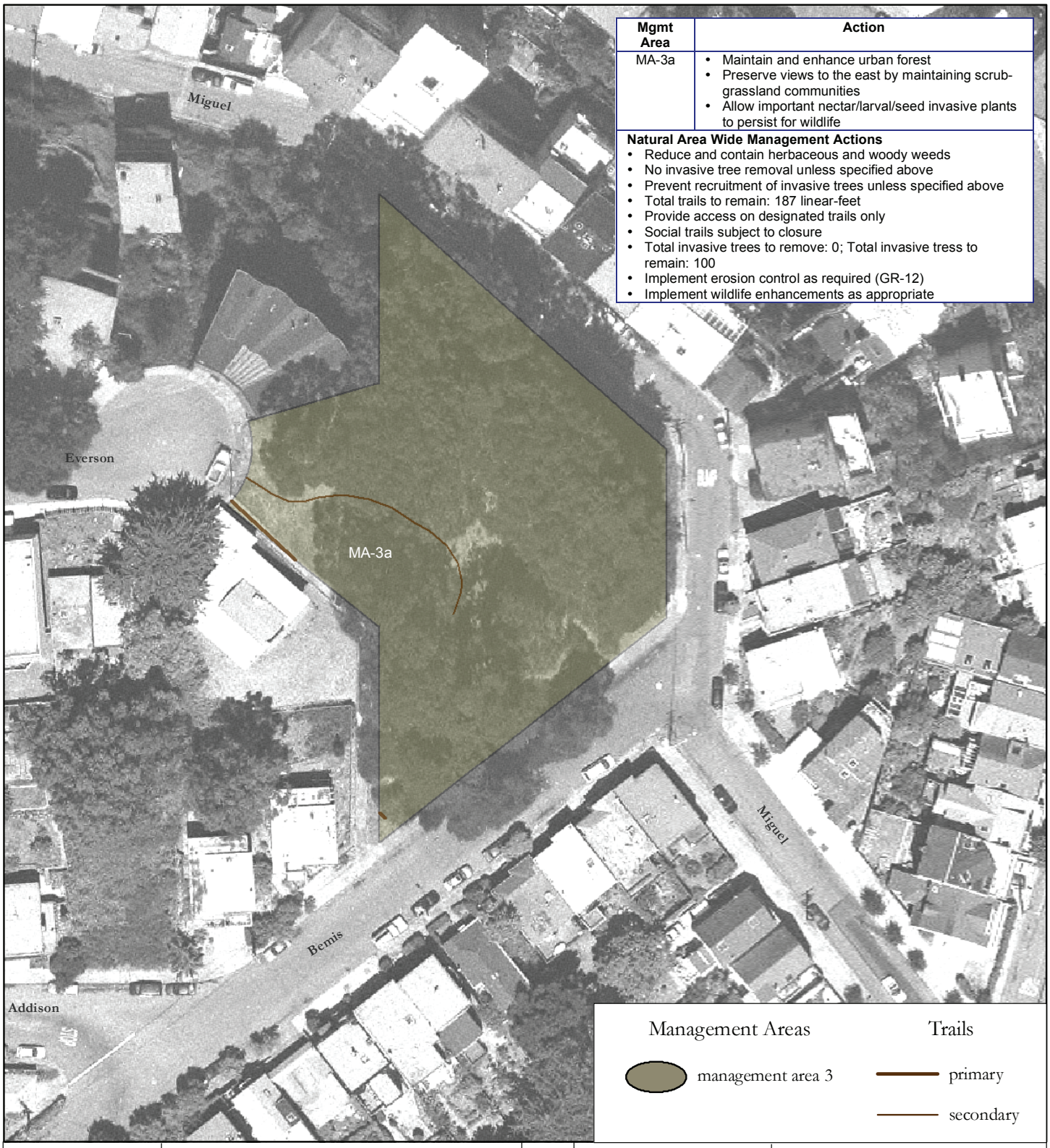
FIGURE 6.25 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Edgehill Mountain

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-3a	• Maintain and enhance urban forest • Preserve views to the east by maintaining scrub-grassland communities • Allow important nectar/larval/seed invasive plants to persist for wildlife

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 187 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive tress to remain: 100
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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0 20 40 80
Feet

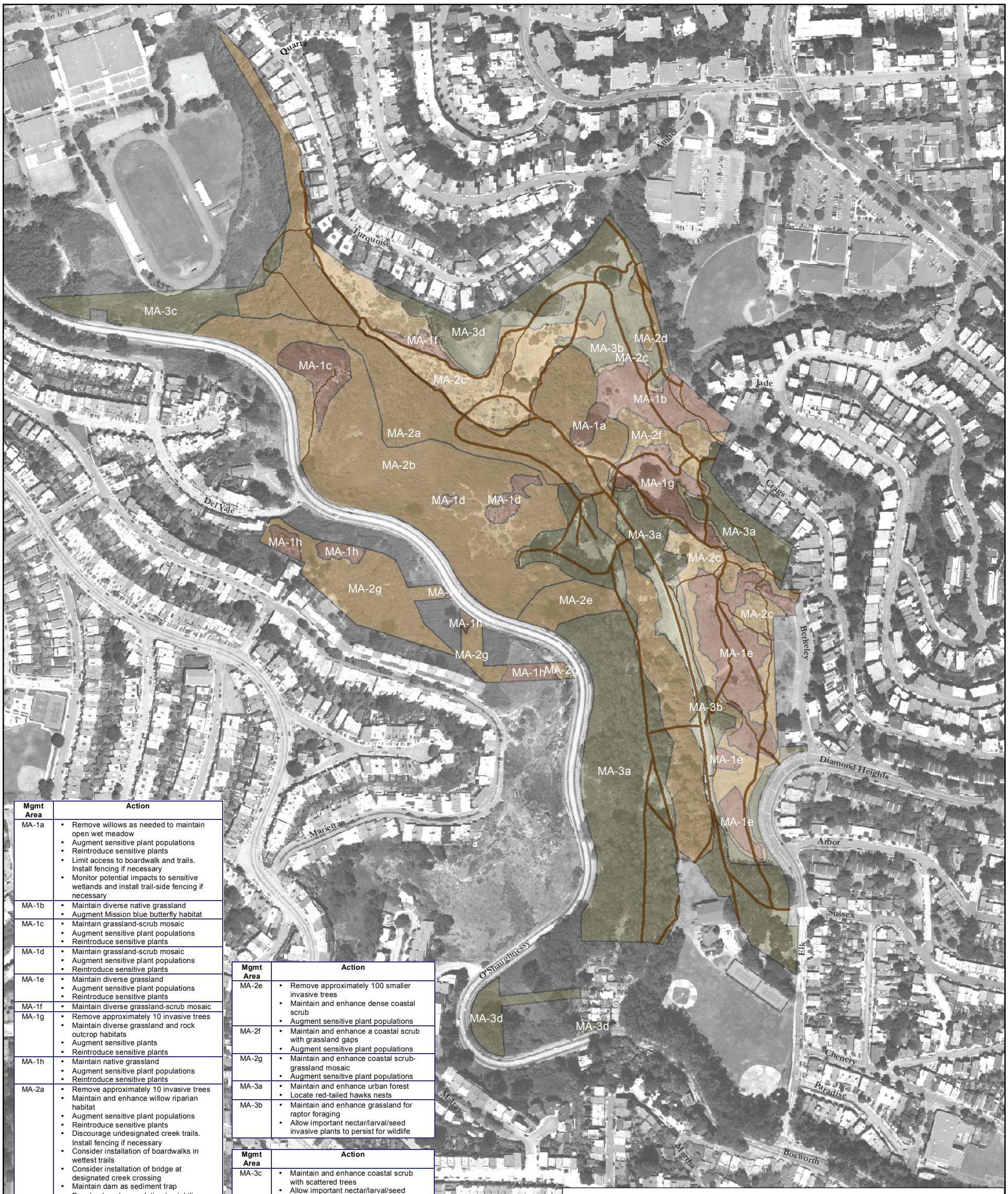
FIGURE 6.26 - 4

MANAGEMENT AREAS AND TRAIL PLAN

Fairmount Park

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Remove willows as needed to maintain open wet meadow • Augment sensitive plant populations • Reintroduce sensitive plants • Limit access to boardwalk and trails. Install fencing if necessary • Monitor potential impacts to sensitive wetlands and install trail-side fencing if necessary
MA-1b	• Maintain diverse native grassland • Augment Mission blue butterfly habitat
MA-1c	• Maintain grassland-scrub mosaic • Augment sensitive plant populations • Reintroduce sensitive plants
MA-1d	• Maintain grassland-scrub mosaic • Augment sensitive plant populations • Reintroduce sensitive plants
MA-1e	• Maintain diverse grassland • Augment sensitive plant populations • Reintroduce sensitive plants
MA-1f	• Maintain diverse grassland-scrub mosaic
MA-1g	• Remove approximately 10 invasive trees • Maintain diverse grassland and rock outcrop habitats • Augment sensitive plants • Reintroduce sensitive plants
MA-1h	• Maintain native grassland • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2a	• Remove approximately 10 invasive trees • Maintain and enhance willow riparian habitat • Augment sensitive plant populations • Reintroduce sensitive plants • Discourage undesignated creek trails. Install fencing if necessary • Consider installation of boardwalks in wettest trails • Consider installation of bridge at designated creek crossing • Maintain dam as sediment trap • Develop long term solution to stabilize slope • Monitor potential impacts to sensitive creek channel and install trailside fencing if necessary
MA-2b	• Maintain and enhance coastal scrub • Augment sensitive plant populations
MA-2c	• Maintain and enhance a diverse grassland habitat with scattered shrubs • Augment sensitive plant populations
MA-2d	• Remove willows as needed to improve drainage • Maintain and enhance willow scrub with open water for wildlife • Monitor potential impacts to sensitive wetlands and install trailside fencing if necessary

Mgmt Area	Action
MA-2e	• Remove approximately 100 smaller invasive trees • Maintain and enhance dense coastal scrub • Augment sensitive plant populations
MA-2f	• Maintain and enhance a coastal scrub with grassland gaps • Augment sensitive plant populations
MA-2g	• Maintain and enhance coastal scrub-grassland mosaic • Augment sensitive plant populations
MA-3a	• Maintain and enhance urban forest • Locate red-tailed hawks nests
MA-3b	• Maintain and enhance grassland for raptor foraging • Allow important nectar/larval/seed invasive plants to persist for wildlife

Mgmt Area	Action
MA-3c	• Maintain and enhance coastal scrub with scattered trees • Allow important nectar/larval/seed invasive plants to persist for wildlife
MA-3d	• Maintain and enhance urban forest • Allow important nectar/larval/seed invasive plants to persist for wildlife
Natural Area Wide Management Actions	• Reduce and contain herbaceous and woody weeds • No invasive tree removal unless specified above • Prevent recruitment of invasive trees unless specified above • Total trails to remain: 19,589 linear-feet • Provide access on designated trails only • Social trails subject to closure • Total invasive trees to remove: 120; Total invasive trees to remain: 5,880 • Implement erosion control as required (GR-12) • Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s Street-Map 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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0 125 250 500
Feet

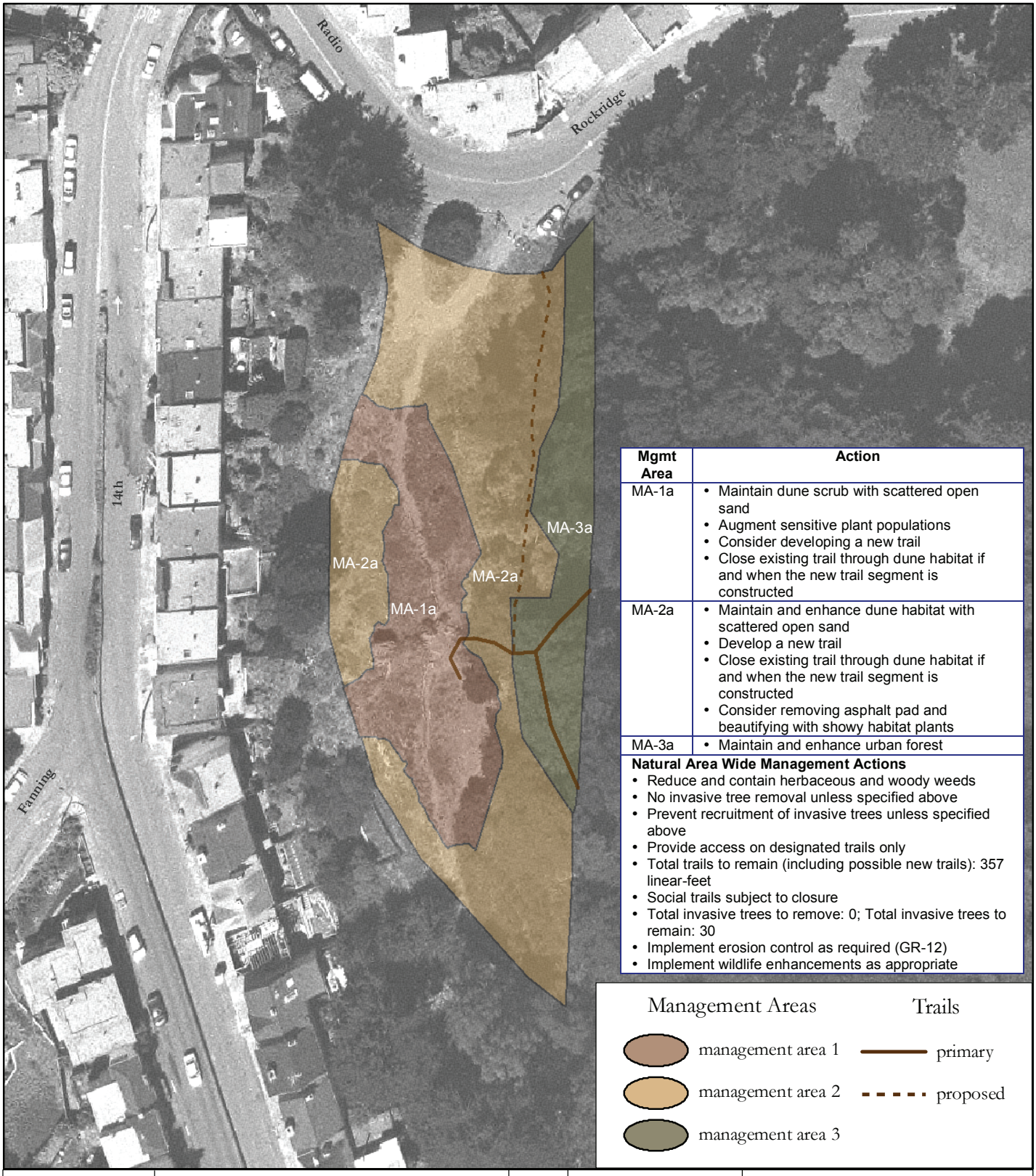
FIGURE 6.3 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Glen Canyon and O'Shaughnessy Hollow

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain dune scrub with scattered open sand • Augment sensitive plant populations • Consider developing a new trail • Close existing trail through dune habitat if and when the new trail segment is constructed
MA-2a	• Maintain and enhance dune habitat with scattered open sand • Develop a new trail • Close existing trail through dune habitat if and when the new trail segment is constructed • Consider removing asphalt pad and beautifying with showy habitat plants
MA-3a	• Maintain and enhance urban forest

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Provide access on designated trails only
- Total trails to remain (including possible new trails): 357 linear-feet
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 30
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

management area 1

management area 2

management area 3

Trails

primary

proposed

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSUGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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0 15 30 60

Feet

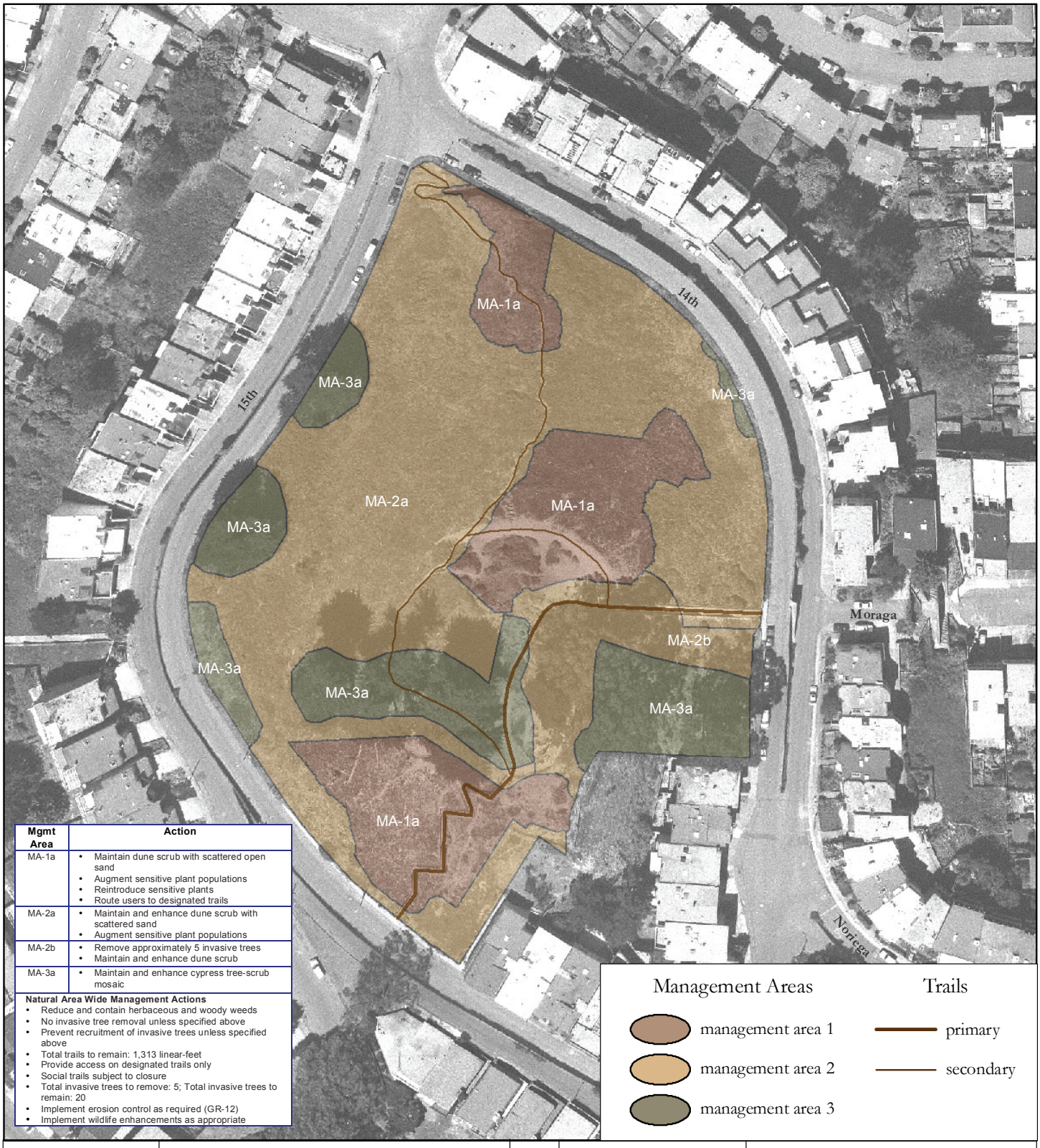
FIGURE 6.5 - 19

MANAGEMENT AREAS AND TRAIL PLAN

Golden Gate Heights

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain dune scrub with scattered open sand • Augment sensitive plant populations • Reintroduce sensitive plants • Route users to designated trails
MA-2a	• Maintain and enhance dune scrub with scattered sand • Augment sensitive plant populations
MA-2b	• Remove approximately 5 invasive trees • Maintain and enhance dune scrub
MA-3a	• Maintain and enhance cypress tree-scrub mosaic

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 1,313 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 5; Total invasive trees to remain: 20
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

management area 1

management area 2

management area 3

Trails

primary

secondary

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

0 25 50 100

Feet

FIGURE 6.5 - 17

MANAGEMENT AREAS AND TRAIL PLAN

Grandview

Significant Natural Resource Areas Management Plan

San Francisco, California

Mgmt Area	Action
MA-1a	• Maintain dune scrub with scattered open sand • Augment sensitive plant populations • Reintroduce sensitive plants • Consider installing a sand ladder on secondary trails • Limit access to designated trails, fence if necessary
MA-2a	• Maintain and enhance dune scrub with scattered open sand • Augment sensitive plant populations • Limit access to designated trails, fence if necessary

Natural Area Wide Management Actions
- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Provide access on designated trails
- Total trails to remain: 917 linear-feet
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 10
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1 Foot Resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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Feet

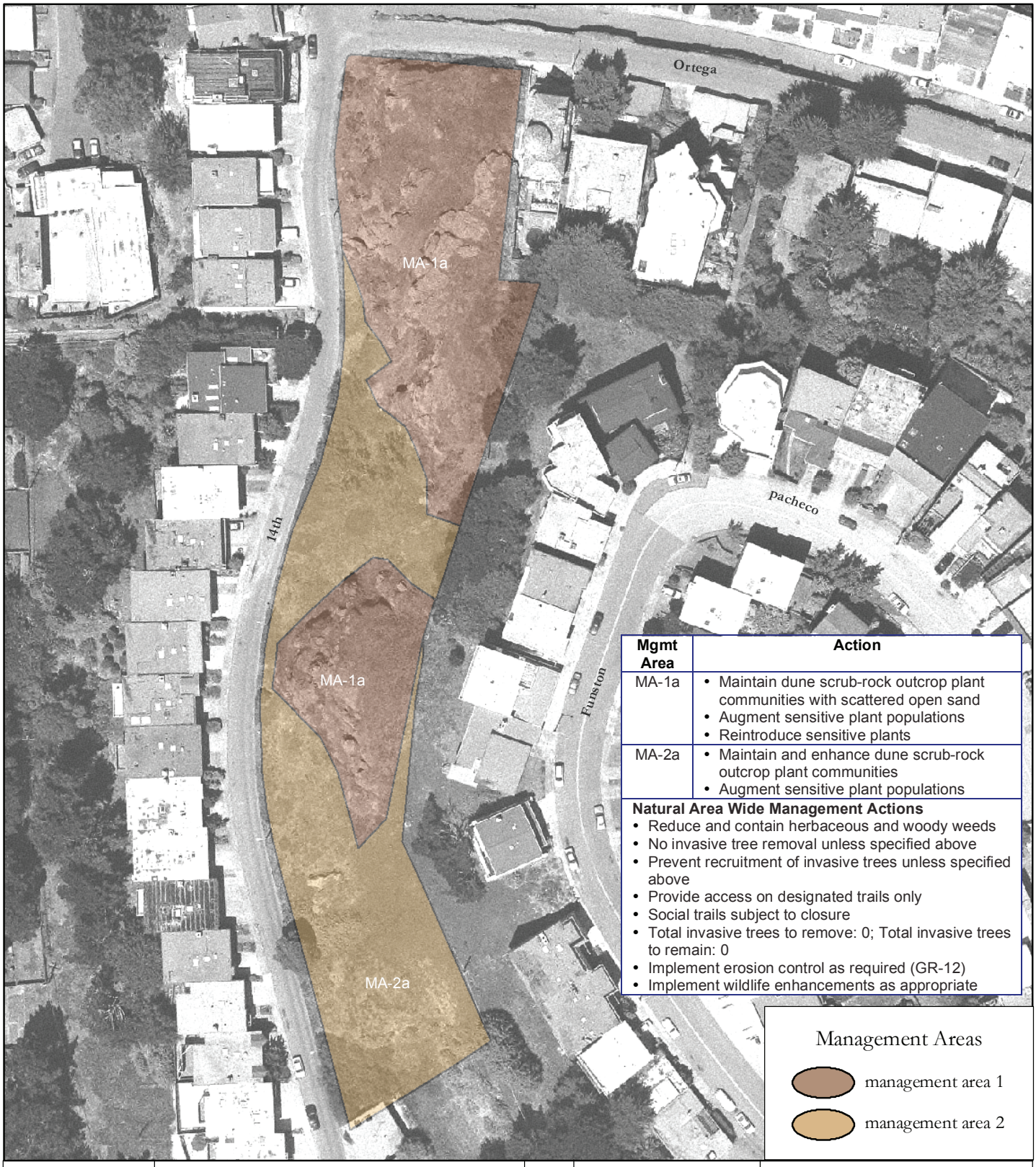
FIGURE 6.5 - 20

MANAGEMENT AREAS AND TRAIL PLAN

Hawk Hill

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain dune scrub-rock outcrop plant communities with scattered open sand • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2a	• Maintain and enhance dune scrub-rock outcrop plant communities • Augment sensitive plant populations

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remove: 0
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

management area 1

management area 2

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc's StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

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N

0 25 50 100

Feet

FINAL DRAFT

FIGURE 6.5 - 18

MANAGEMENT AREAS AND TRAIL PLAN

Rock Outcrop

Significant Natural Resource Areas Management Plan

San Francisco, California

Mgmt Area	Action
MA-1a	• Maintain coastal scrub with open sand gaps • Augment sensitive plant populations
MA-1b	• Maintain oak woodland with dune scrub gaps • Augment sensitive plant populations
MA-2a	• Maintain and enhance oak woodland with diverse native understory • No change to existing DPA
MA-2b	• Remove 12 medium sized invasive trees • Maintain and enhance oak woodland with diverse native understory and dune scrub gaps
MA-2c	• Maintain and enhance oak woodland with diverse native understory and dune scrub gaps
MA-2d	• Maintain and enhance oak woodland with dune scrub gaps • Augment sensitive plant populations • Reintroduce sensitive plants • Maintain visual screen to traffic along Fulton
MA-2e	• Maintain and enhance native oak woodland with diverse native understory
MA-2f	• Remove approximately 10 invasive trees • Maintain and enhance oak woodland with diverse native understory and dune scrub gaps • Install barricades at organic dump to protect oak trees
MA-2g	• Remove 4 leptospermum trees • Maintain and enhance oak woodland with diverse native understory and dune scrub in gaps • Monitor existing Dog Play Areas and modify to on-leash or on-trail if necessary
MA-2h	• Remove 6 invasive trees • Maintain and enhance oak woodland with diverse native understory and dune scrub gaps

Mgmt Area	Action
MA-2i	• Maintain and enhance oak woodland with dune scrub gaps
MA-2j	• Remove approximately 50 invasive trees • Maintain and enhance oak woodland with diverse native understory and dune scrub gaps • Augment sensitive plant populations • Limit mountain bike use with signs and, if necessary, temporary barrier fences
MA-2k	• Maintain and enhance a native oak-toyon woodland with dune scrub gaps • Augment sensitive plant populations

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 12,463 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 82; Total invasive trees to remain: 818
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1 Foot Resolution - 2001: City of San Francisco Department of Public Works, San Francisco; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

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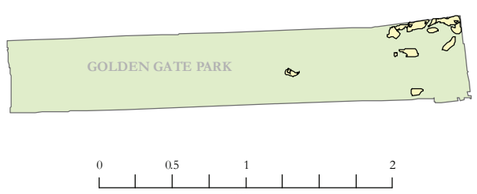

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Feet

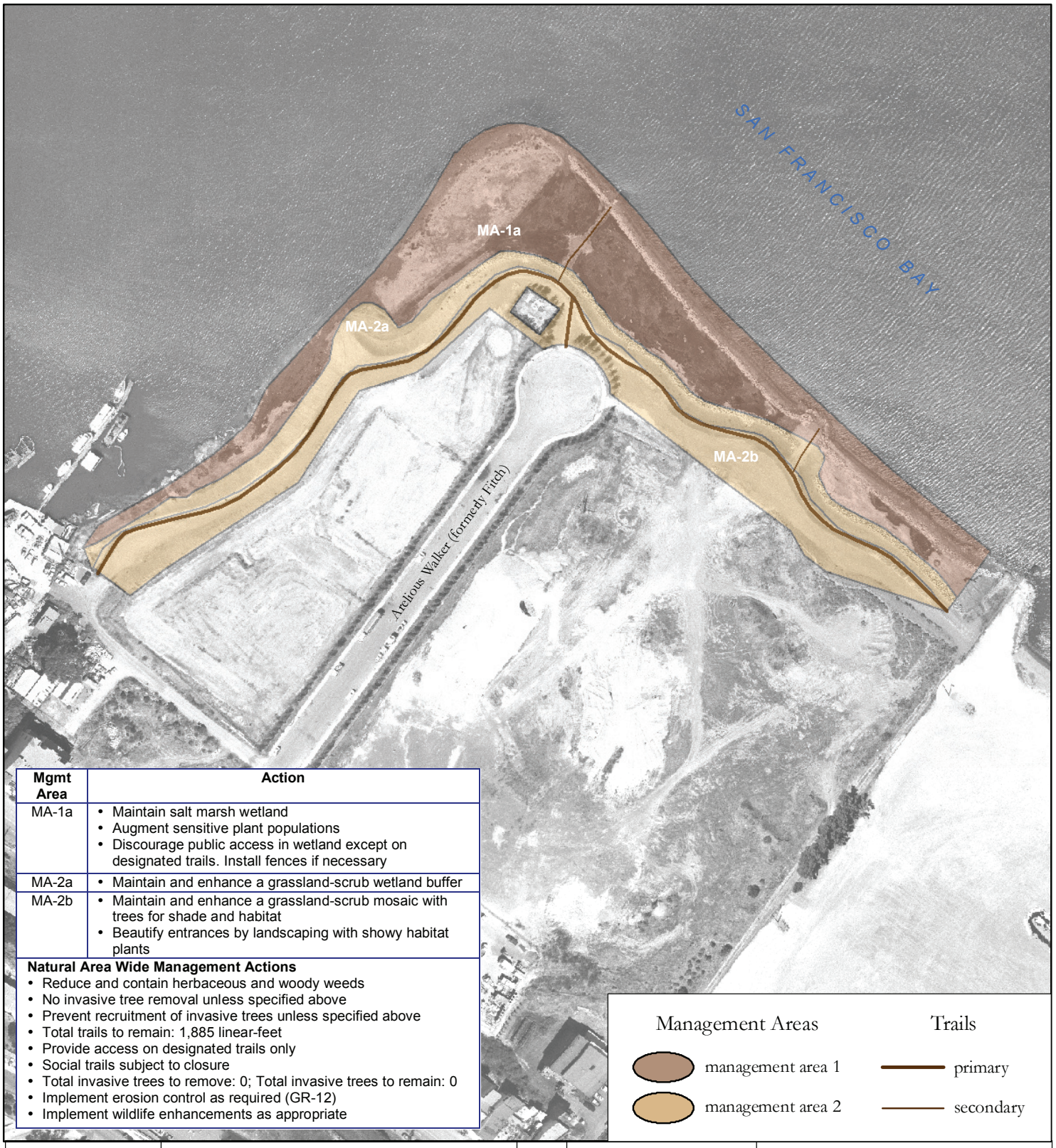
FIGURE 6.15 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Oak Woodlands, Whiskey Hill, Lily Pond, and Strawberry Hill in Golden Gate Park

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain salt marsh wetland • Augment sensitive plant populations • Discourage public access in wetland except on designated trails. Install fences if necessary
MA-2a	• Maintain and enhance a grassland-scrub wetland buffer
MA-2b	• Maintain and enhance a grassland-scrub mosaic with trees for shade and habitat • Beautify entrances by landscaping with showy habitat plants

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 1,885 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 0
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSUGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc's StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science, revised August 21, 2005.

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0 50 100 200
Feet

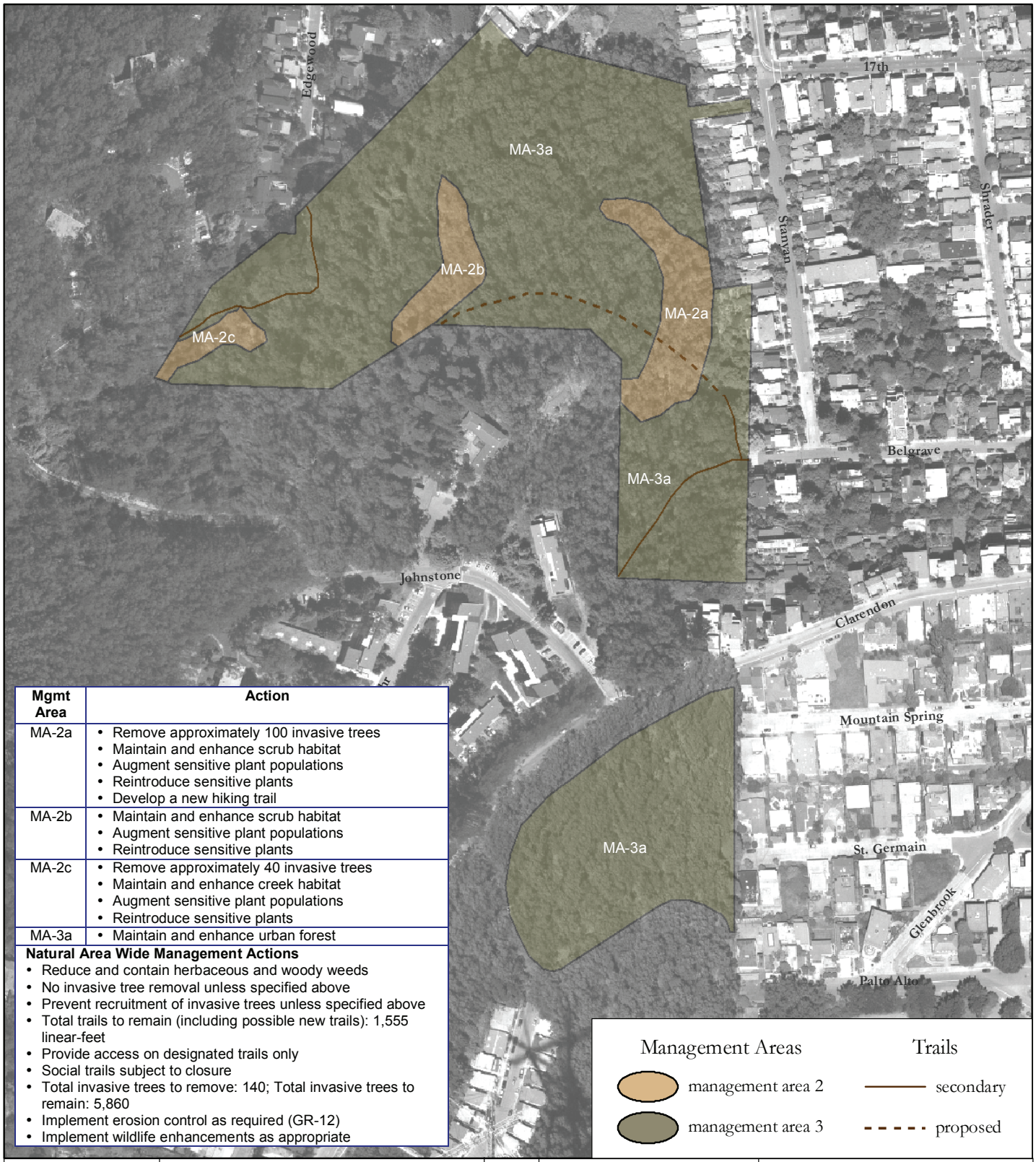
FIGURE 6.18 - 5

MANAGEMENT AREAS AND TRAIL PLAN

India Basin Shoreline Park

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-2a	• Remove approximately 100 invasive trees • Maintain and enhance scrub habitat • Augment sensitive plant populations • Reintroduce sensitive plants • Develop a new hiking trail
MA-2b	• Maintain and enhance scrub habitat • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2c	• Remove approximately 40 invasive trees • Maintain and enhance creek habitat • Augment sensitive plant populations • Reintroduce sensitive plants
MA-3a	• Maintain and enhance urban forest

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 1,555 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 140; Total invasive trees to remain: 5,860
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc's StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised November 15, 2005.

N

0 87.5 175 350
Feet

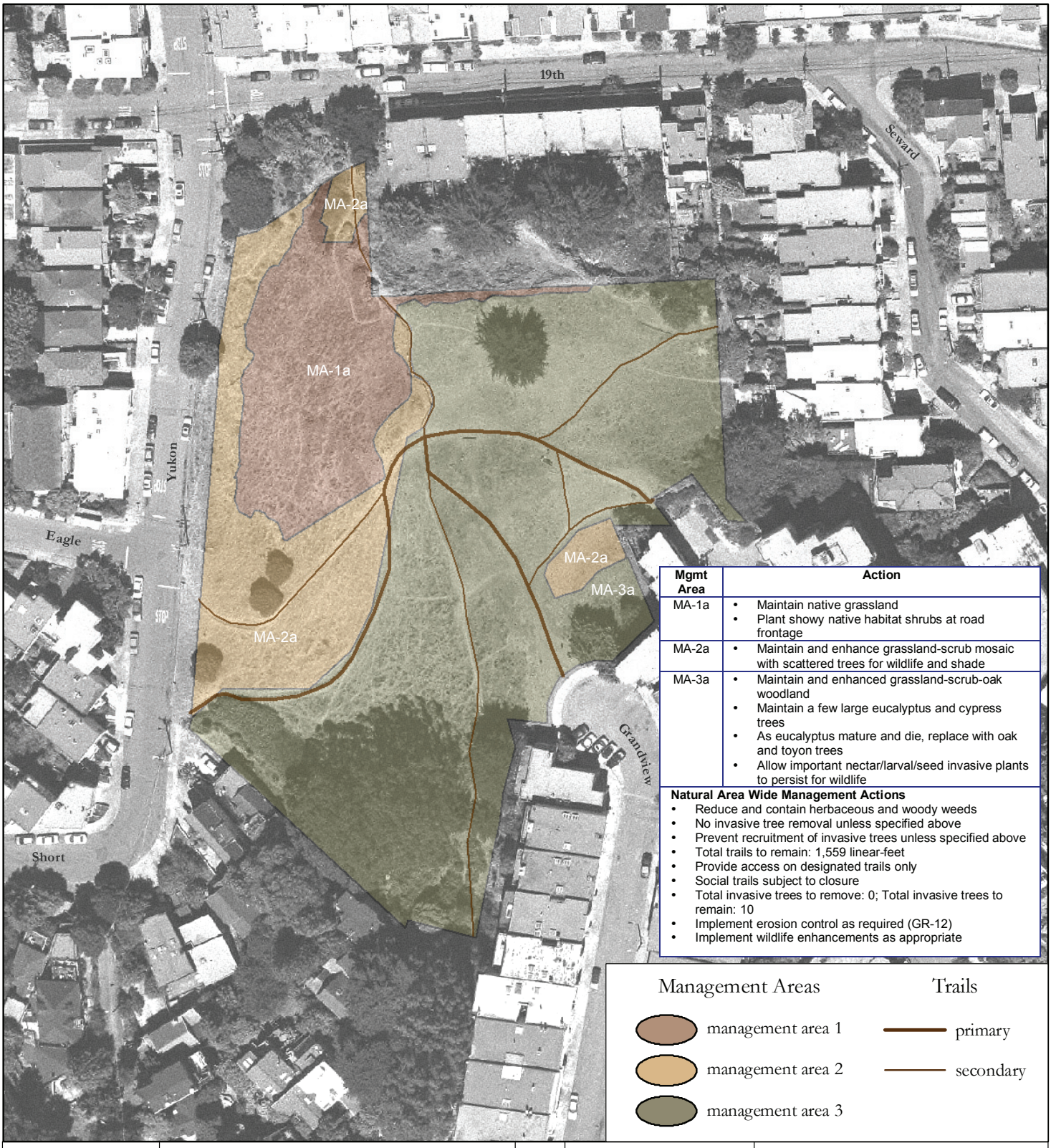
FIGURE 6.23 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Interior Greenbelt

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain native grassland • Plant showy native habitat shrubs at road frontage
MA-2a	• Maintain and enhance grassland-scrub mosaic with scattered trees for wildlife and shade
MA-3a	• Maintain and enhanced grassland-scrub-oak woodland • Maintain a few large eucalyptus and cypress trees • As eucalyptus mature and die, replace with oak and toyon trees • Allow important nectar/larval/seed invasive plants to persist for wildlife

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 1,559 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 10
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

management area 1

management area 2

management area 3

Trails

primary

secondary

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

0 25 50 100

Feet

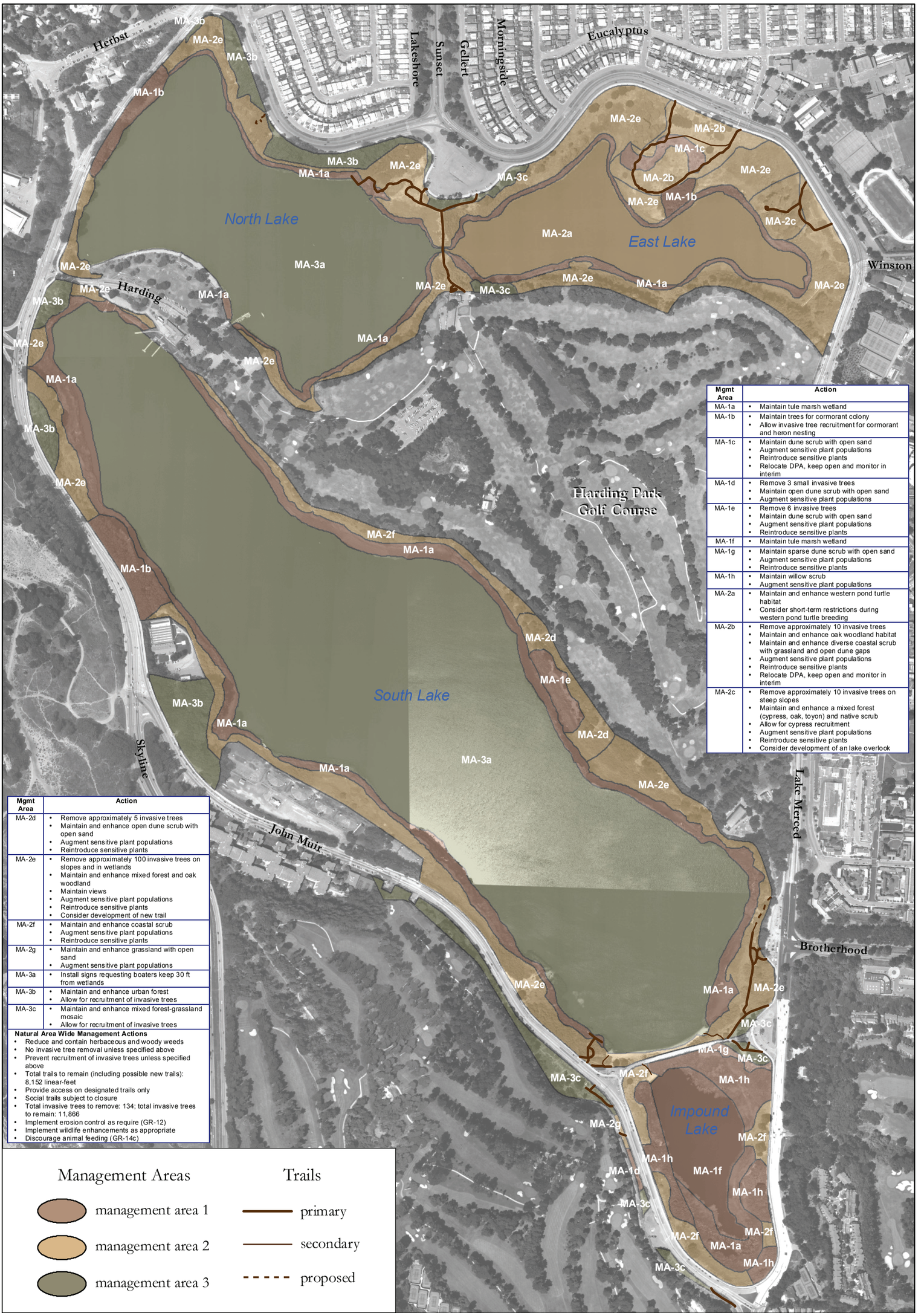
FIGURE 6.13 - 4

MANAGEMENT AREAS AND TRAIL PLAN

Kite Hill

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain tule marsh wetland
MA-1b	• Maintain trees for cormorant colony • Allow invasive tree recruitment for cormorant and heron nesting
MA-1c	• Maintain dune scrub with open sand • Augment sensitive plant populations • Reintroduce sensitive plants • Relocate DPA, keep open and monitor in interim
MA-1d	• Remove 3 small invasive trees • Maintain open dune scrub with open sand • Augment sensitive plant populations
MA-1e	• Remove 6 invasive trees • Maintain dune scrub with open sand • Augment sensitive plant populations • Reintroduce sensitive plants
MA-1f	• Maintain tule marsh wetland
MA-1g	• Maintain sparse dune scrub with open sand • Augment sensitive plant populations • Reintroduce sensitive plants
MA-1h	• Maintain willow scrub • Augment sensitive plant populations
MA-2a	• Maintain and enhance western pond turtle habitat • Consider short-term restrictions during western pond turtle breeding
MA-2b	• Remove approximately 10 invasive trees • Maintain and enhance oak woodland habitat • Maintain and enhance diverse coastal scrub with grassland and open dune gaps • Augment sensitive plant populations • Reintroduce sensitive plants • Relocate DPA, keep open and monitor in interim
MA-2c	• Remove approximately 10 invasive trees on steep slopes • Maintain and enhance a mixed forest (cypress, oak, toyon) and native scrub • Allow for cypress recruitment • Augment sensitive plant populations • Reintroduce sensitive plants • Consider development of an lake overlook

Mgmt Area	Action
MA-2d	• Remove approximately 5 invasive trees • Maintain and enhance open dune scrub with open sand • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2e	• Remove approximately 100 invasive trees on slopes and in wetlands • Maintain and enhance mixed forest and oak woodland • Maintain views • Augment sensitive plant populations • Reintroduce sensitive plants • Consider development of new trail
MA-2f	• Maintain and enhance coastal scrub • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2g	• Maintain and enhance grassland with open sand • Augment sensitive plant populations
MA-3a	• Install signs requesting boaters keep 30 ft from wetlands
MA-3b	• Maintain and enhance urban forest • Allow for recruitment of invasive trees
MA-3c	• Maintain and enhance mixed forest-grassland mosaic • Allow for recruitment of invasive trees

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 8,152 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 134; total invasive trees to remain: 11,866
- Implement erosion control as require (GR-12)
- Implement wildlife enhancements as appropriate
- Discourage animal feeding (GR-14c)

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 30, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised October 13, 2005.

N

0 250 500 1,000
Feet

FIGURE 6.1 - 9
MANAGEMENT AREAS AND TRAIL PLAN
Lake Merced
Significant Natural Resource Areas Management Plan
San Francisco, California

Mgmt Area	Action
MA-1a	• Remove approximately 50 invasive trees • Develop and maintain mixed scrub-forest riparian habitat for quail • Reintroduce sensitive plants • Augment food plants for quail • Limit foot traffic in the creek • Modify existing Dog Play Area to restrict access to 0.6 acres of creek; convert 7.7 acres of the 60 acre area to on-leash
MA-1b	• Maintain wet meadow • Reintroduce sensitive plants
MA-1c	• Remove approximately 5 invasive trees • Maintain riparian wetland • Augment sensitive plant populations • Reintroduce sensitive plants
MA-1d	• Remove approximately 20 invasive trees • Maintain rich native grassland • Reintroduce sensitive plants
MA-1e	• Remove approximately 60 invasive trees • Maintain rich native grassland • Augment sensitive plant populations • Augment Mission blue butterfly habitat • Reintroduce sensitive plants • Monitor potential impacts to endangered Mission blue butterfly habitat and install trailside fencing if necessary
MA-2a	• Remove approximately 40 invasive trees • Maintain and enhance rich grassland-scrub mosaic • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2b	• Remove approximately 600 invasive trees • Maintain and enhance a diverse grassland scrub mixed forest ecotone, with scattered oaks • Augment sensitive plant populations • Augment wrentit habitat • Reintroduce sensitive plants

Mgmt Area	Action
MA-2c	• Maintain and enhance riparian-wet meadow-scrub mosaic • Reintroduce sensitive plants
MA-2d	• Maintain and enhance wrentit habitat
MA-2e	• Remove approximately 30 invasive trees • Maintain and enhance diverse scrub-grassland-rock outcrop mosaic • Reintroduce sensitive plants
MA-3a	• Maintain and enhance urban forest • Augment wrentit habitat
MA-3b	• Maintain and enhance grassland for raptor foraging • Allow important nectar/larval/seed invasive plants to persist for wildlife • No change to existing DPAs
MA-3c	• Maintain and enhance urban forest with a native tree and scrub ecotone • Augment wrentit habitat

Management Areas
- management area 1
- management area 2
- management area 3

Trails
- primary
- secondary

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1 Foot Resolution - 2001: City of San Francisco Department of Public Works, San Francisco; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

0 0.25 0.5 1
Miles

0 125 250 500
Feet

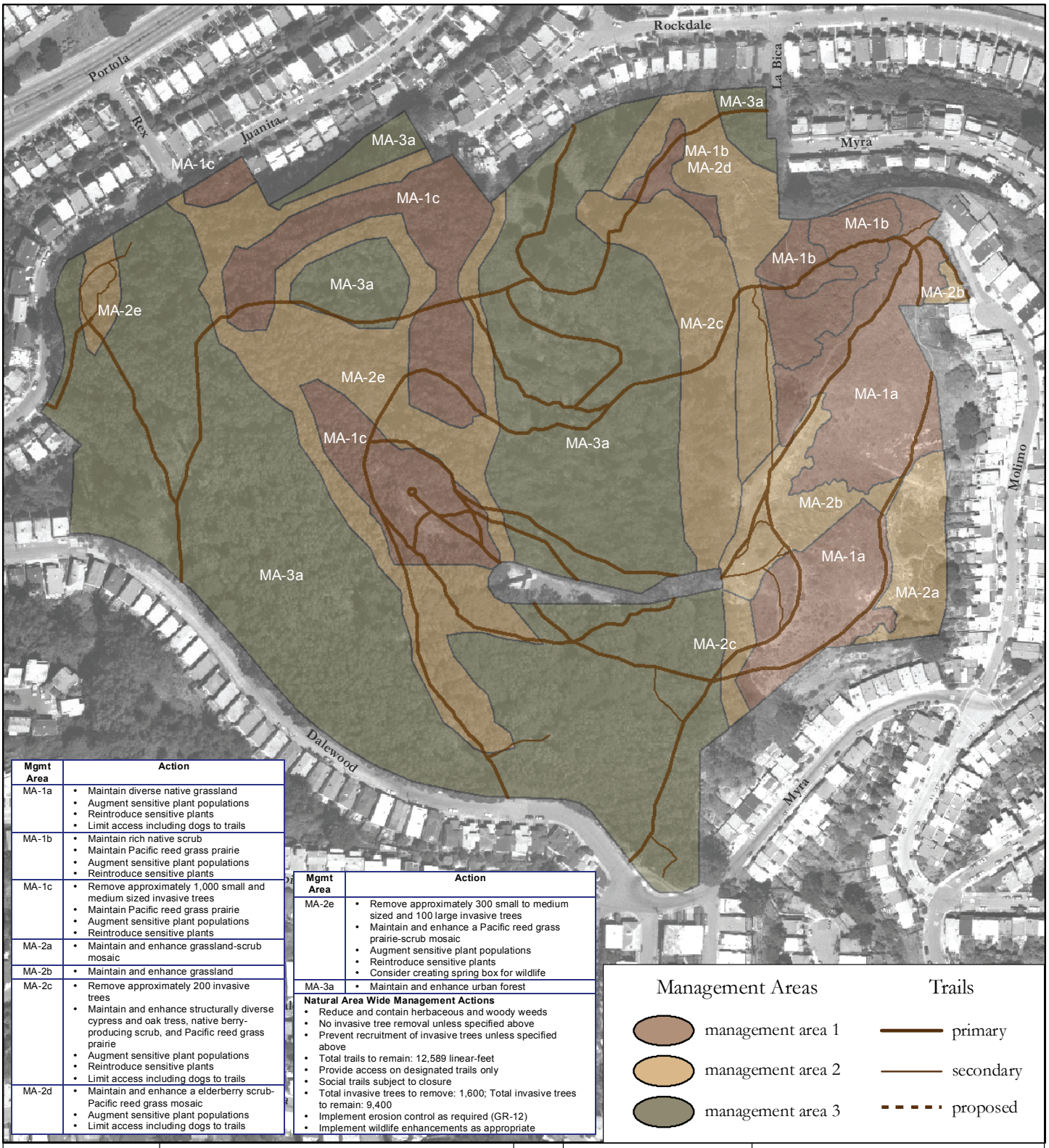
FIGURE 6.19 - 13

MANAGEMENT AREAS AND TRAIL PLAN

McLaren Park

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain diverse native grassland • Augment sensitive plant populations • Reintroduce sensitive plants • Limit access including dogs to trails
MA-1b	• Maintain rich native scrub • Maintain Pacific reed grass prairie • Augment sensitive plant populations • Reintroduce sensitive plants
MA-1c	• Remove approximately 1,000 small and medium sized invasive trees • Maintain Pacific reed grass prairie • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2a	• Maintain and enhance grassland-scrub mosaic
MA-2b	• Maintain and enhance grassland
MA-2c	• Remove approximately 200 invasive trees • Maintain and enhance structurally diverse cypress and oak tress, native berry-producing scrub, and Pacific reed grass prairie • Augment sensitive plant populations • Reintroduce sensitive plants • Limit access including dogs to trails
MA-2d	• Maintain and enhance a elderberry scrub-Pacific reed grass mosaic • Augment sensitive plant populations • Limit access including dogs to trails

Mgmt Area	Action
MA-2e	• Remove approximately 300 small to medium sized and 100 large invasive trees • Maintain and enhance a Pacific reed grass prairie-scrub mosaic • Augment sensitive plant populations • Reintroduce sensitive plants • Consider creating spring box for wildlife
MA-3a	• Maintain and enhance urban forest

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 12,589 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 1,600; Total invasive trees to remain: 9,400
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSUGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science (SFSU IGIS); revised August 22, 2005.

N

0 75 150 300

Feet

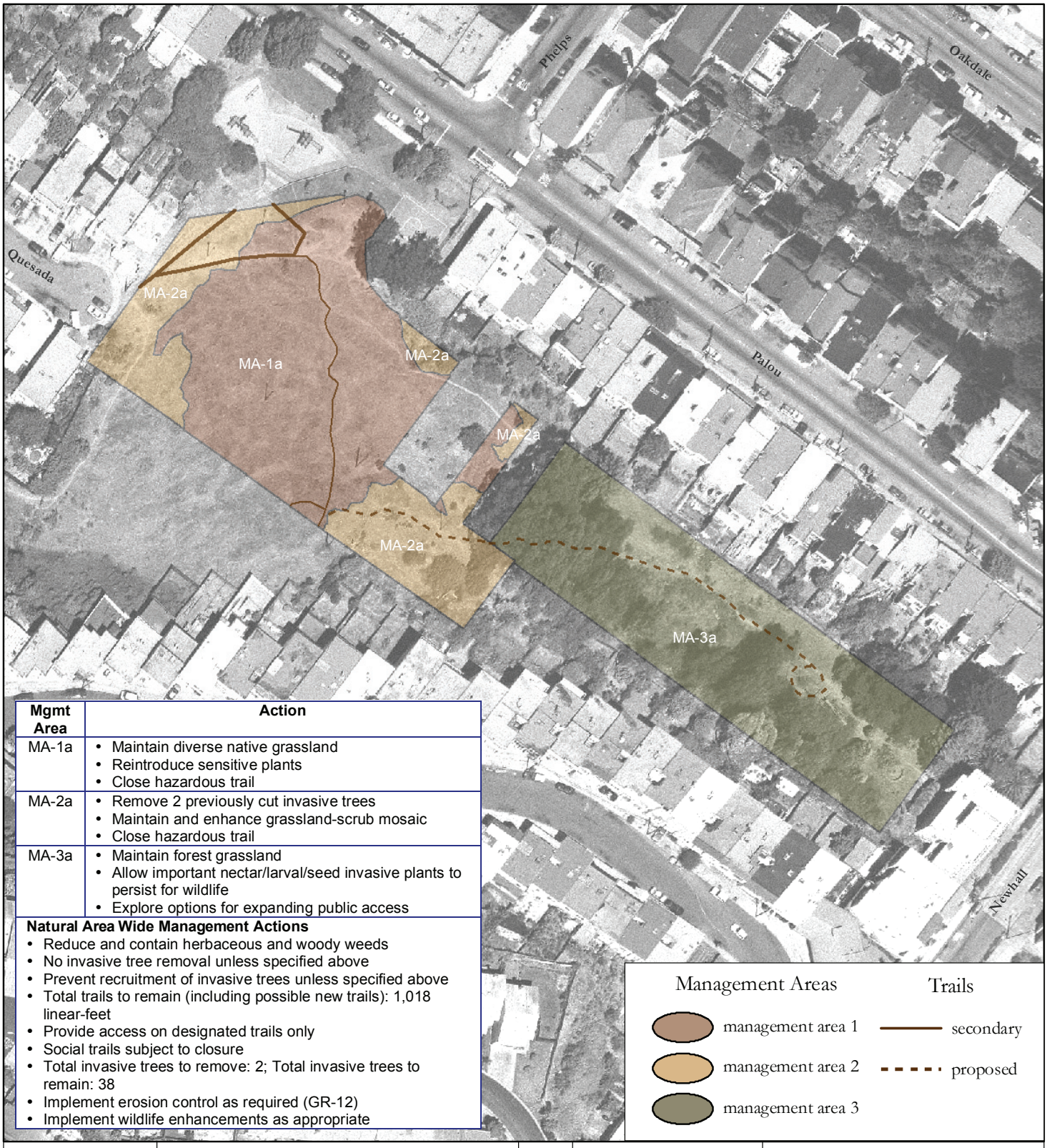
FIGURE 6.2 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Mt. Davidson

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain diverse native grassland • Reintroduce sensitive plants • Close hazardous trail
MA-2a	• Remove 2 previously cut invasive trees • Maintain and enhance grassland-scrub mosaic • Close hazardous trail
MA-3a	• Maintain forest grassland • Allow important nectar/larval/seed invasive plants to persist for wildlife • Explore options for expanding public access

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 1,018 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 2; Total invasive trees to remain: 38
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

0 25 50 100
Feet

FIGURE 6.20 - 4

MANAGEMENT AREAS AND TRAIL PLAN

Palou Phelps

Significant Natural Resource Areas Management Plan

San Francisco, California

Mgmt Area	Action
MA-1a	• Maintain tule marsh • If found, relocate western pond turtle to Lake Merced • Consider reintroducing Pacific chorus frog • Reduce and contain invasive aquatic plant species, such as *Ludwigia* • Restrict dog access to tule marsh and water's edge
MA-2a	• Maintain and enhance riparian and coastal scrub • Maintain and enhance oak woodland-coastal scrub mosaic • Maintain views • If found, relocate western pond turtle to Lake Merced • Reintroduce sensitive plants • Limit access including dogs to designated trails, platforms and overlooks, install temporary fencing, if necessary
MA-2b	• Maintain and enhance riparian habitat
MA-2c	• Protect red-tailed hawk nest
MA-3a	• Maintain and enhance urban forest • Improve or re-route concrete trail at west end
MA-3b	• Maintain and enhance a riparian corridor

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 2,562 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 1,000
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate
- No change to existing Dog Play Area

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s Street-Map 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

0 50 100 200
Feet

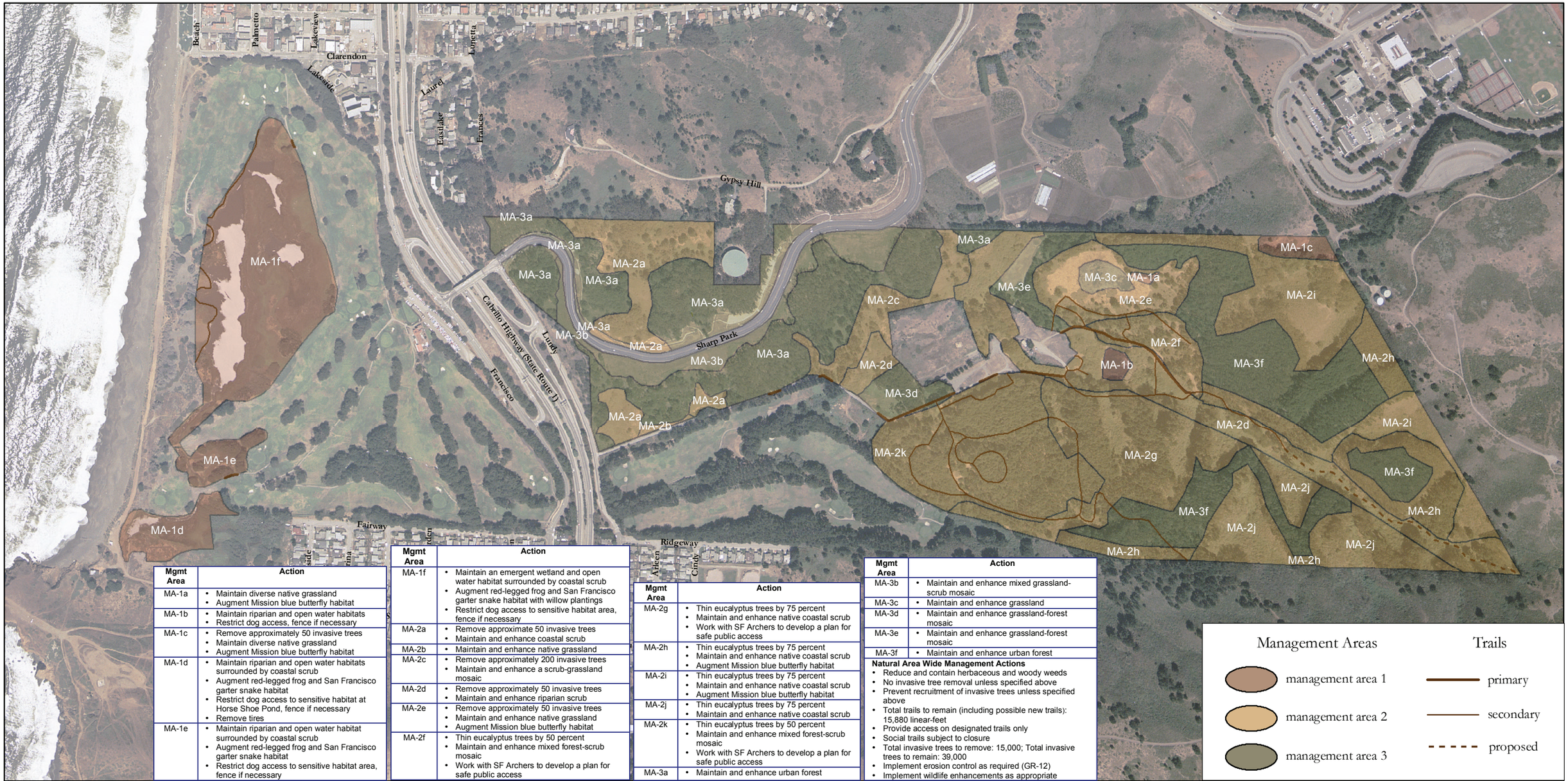
FIGURE 6.7 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Pine Lake

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain diverse native grassland • Augment Mission blue butterfly habitat
MA-1b	• Maintain riparian and open water habitats • Restrict dog access, fence if necessary
MA-1c	• Remove approximately 50 invasive trees • Maintain diverse native grassland • Augment Mission blue butterfly habitat
MA-1d	• Maintain riparian and open water habitats surrounded by coastal scrub • Augment red-legged frog and San Francisco garter snake habitat • Restrict dog access to sensitive habitat at Horse Shoe Pond, fence if necessary • Remove tires
MA-1e	• Maintain riparian and open water habitat surrounded by coastal scrub • Augment red-legged frog and San Francisco garter snake habitat • Restrict dog access to sensitive habitat area, fence if necessary

Mgmt Area	Action
MA-1f	• Maintain an emergent wetland and open water habitat surrounded by coastal scrub • Augment red-legged frog and San Francisco garter snake habitat with willow plantings • Restrict dog access to sensitive habitat area, fence if necessary
MA-2a	• Remove approximate 50 invasive trees • Maintain and enhance coastal scrub
MA-2b	• Maintain and enhance native grassland
MA-2c	• Remove approximately 200 invasive trees • Maintain and enhance a scrub-grassland mosaic
MA-2d	• Remove approximately 50 invasive trees • Maintain and enhance riparian scrub
MA-2e	• Remove approximately 50 invasive trees • Maintain and enhance native grassland • Augment Mission blue butterfly habitat
MA-2f	• Thin eucalyptus trees by 50 percent • Maintain and enhance mixed forest-scrub mosaic • Work with SF Archers to develop a plan for safe public access

Mgmt Area	Action
MA-2g	• Thin eucalyptus trees by 75 percent • Maintain and enhance native coastal scrub • Work with SF Archers to develop a plan for safe public access
MA-2h	• Thin eucalyptus trees by 75 percent • Maintain and enhance native coastal scrub • Augment Mission blue butterfly habitat
MA-2i	• Thin eucalyptus trees by 75 percent • Maintain and enhance native coastal scrub • Augment Mission blue butterfly habitat
MA-2j	• Thin eucalyptus trees by 75 percent • Maintain and enhance native coastal scrub
MA-2k	• Thin eucalyptus trees by 50 percent • Maintain and enhance mixed forest-scrub mosaic • Work with SF Archers to develop a plan for safe public access
MA-3a	• Maintain and enhance urban forest

Mgmt Area	Action
MA-3b	• Maintain and enhance mixed grassland-scrub mosaic
MA-3c	• Maintain and enhance grassland
MA-3d	• Maintain and enhance grassland-forest mosaic
MA-3e	• Maintain and enhance grassland-forest mosaic
MA-3f	• Maintain and enhance urban forest

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 15,880 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 15,000; Total invasive trees to remain: 39,000
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography from HJW for NAP, 1995, 2-foot pixels; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 24, 2005.

N

0 500 1,000 2,000
Feet

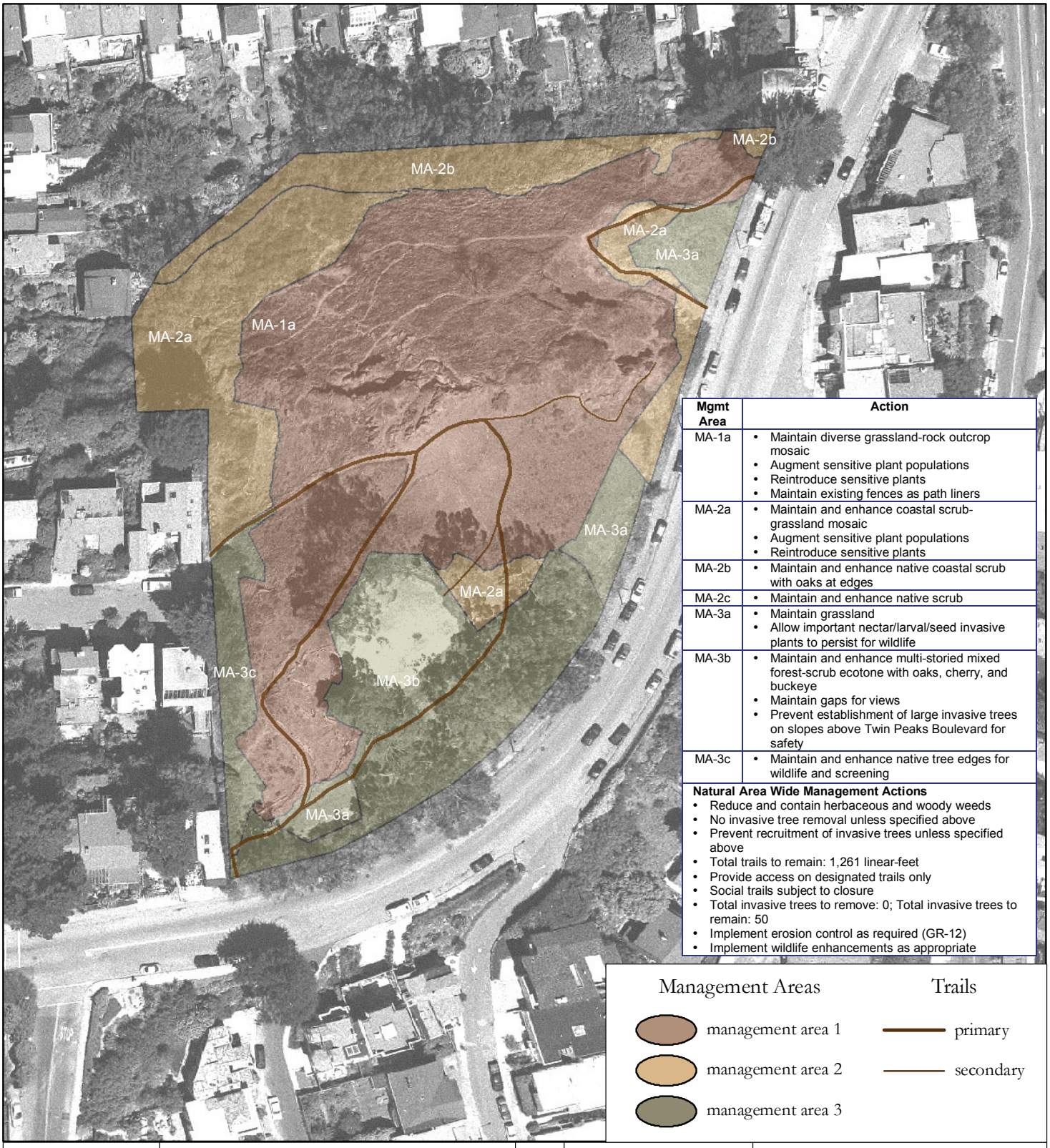
FIGURE 6.4-5

MANAGEMENT AREAS AND TRAIL PLAN

Sharp Park

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain diverse grassland-rock outcrop mosaic • Augment sensitive plant populations • Reintroduce sensitive plants • Maintain existing fences as path liners
MA-2a	• Maintain and enhance coastal scrub-grassland mosaic • Augment sensitive plant populations • Reintroduce sensitive plants
MA-2b	• Maintain and enhance native coastal scrub with oaks at edges
MA-2c	• Maintain and enhance native scrub
MA-3a	• Maintain grassland • Allow important nectar/larval/seed invasive plants to persist for wildlife
MA-3b	• Maintain and enhance multi-storied mixed forest-scrub ecotone with oaks, cherry, and buckeye • Maintain gaps for views • Prevent establishment of large invasive trees on slopes above Twin Peaks Boulevard for safety
MA-3c	• Maintain and enhance native tree edges for wildlife and screening

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain: 1,261 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 50
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

management area 1

management area 2

management area 3

Trails

primary

secondary

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc's StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

0 25 50 100

Feet

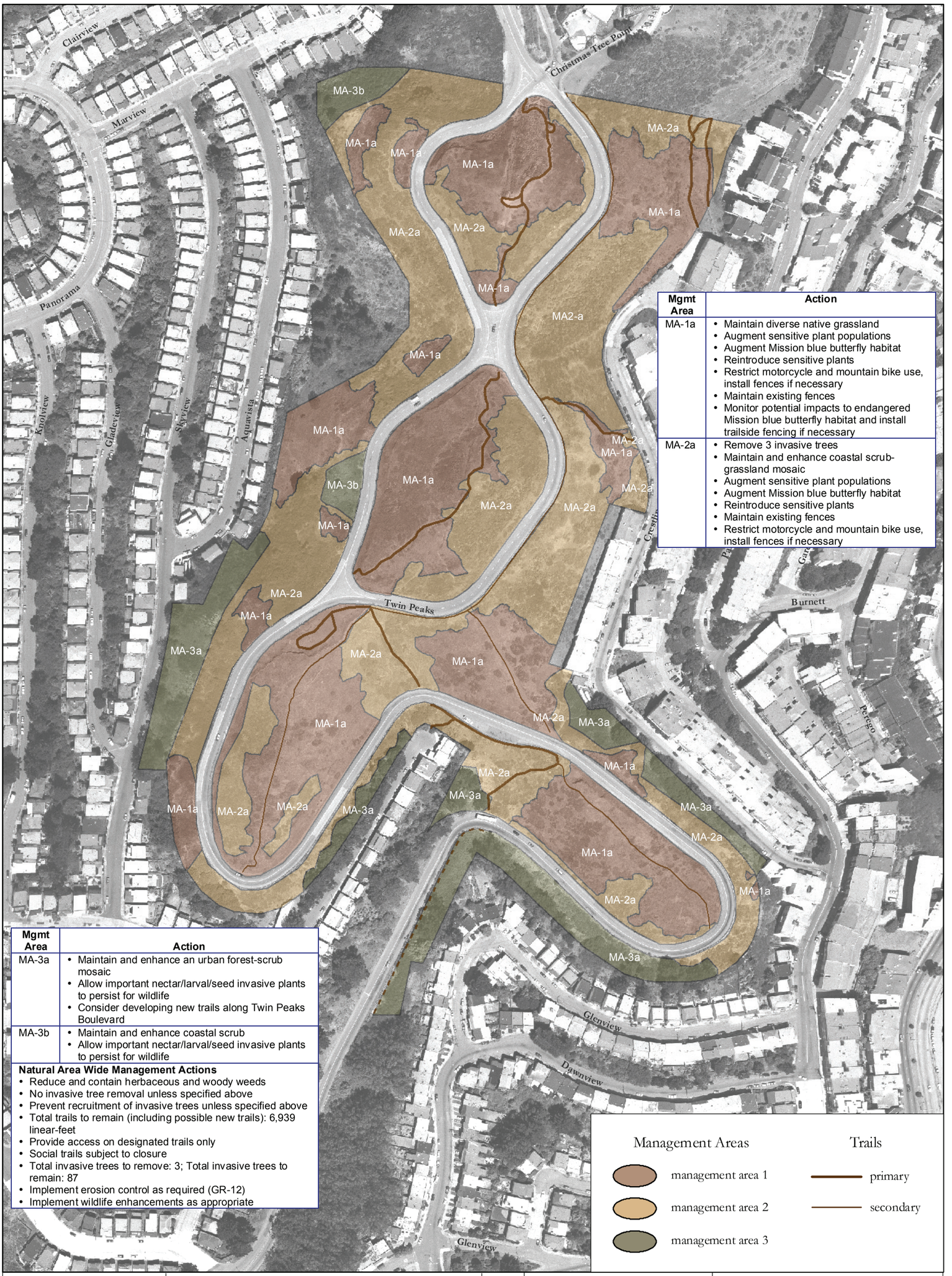
FIGURE 6.14 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Tank Hill

Significant Natural Resource Areas Management Plan

San Francisco, California



Mgmt Area	Action
MA-1a	• Maintain diverse native grassland • Augment sensitive plant populations • Augment Mission blue butterfly habitat • Reintroduce sensitive plants • Restrict motorcycle and mountain bike use, install fences if necessary • Maintain existing fences • Monitor potential impacts to endangered Mission blue butterfly habitat and install trailside fencing if necessary
MA-2a	• Remove 3 invasive trees • Maintain and enhance coastal scrub-grassland mosaic • Augment sensitive plant populations • Augment Mission blue butterfly habitat • Reintroduce sensitive plants • Maintain existing fences • Restrict motorcycle and mountain bike use, install fences if necessary

Mgmt Area	Action
MA-3a	• Maintain and enhance an urban forest-scrub mosaic • Allow important nectar/larval/seed invasive plants to persist for wildlife • Consider developing new trails along Twin Peaks Boulevard
MA-3b	• Maintain and enhance coastal scrub • Allow important nectar/larval/seed invasive plants to persist for wildlife

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Total trails to remain (including possible new trails): 6,939 linear-feet
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 3; Total invasive trees to remain: 87
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

- management area 1
- management area 2
- management area 3

Trails

- primary
- secondary

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc.'s StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 29, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised October 11, 2005.

N

0 75 150 300

Feet

FIGURE 6.8 - 5

MANAGEMENT AREAS AND TRAIL PLAN

Twin Peaks

Significant Natural Resource Areas Management Plan

San Francisco, California

Mgmt Area	Action
MA-2a	• Maintain and enhance oak woodland and coastal scrub

Natural Area Wide Management Actions

- Reduce and contain herbaceous and woody weeds
- No invasive tree removal unless specified above
- Prevent recruitment of invasive trees unless specified above
- Provide access on designated trails only
- Social trails subject to closure
- Total invasive trees to remove: 0; Total invasive trees to remain: 0
- Implement erosion control as required (GR-12)
- Implement wildlife enhancements as appropriate

Management Areas

management area 2

EIP ASSOCIATES

Source: Management areas and trails data collected by San Francisco Department of Recreation and Park Natural Areas Program (NAP), 2005; trails data digitized by San Francisco State University Institute for GISc (SFSU IGIS), 2005; streets data excerpted from Environmental Systems Research Institute (ESRI), Inc's StreetMap 2000 data copyright ESRI 1998-2001; aerial photography San Francisco Department of Public Works, 2002, Orthophoto - San Francisco - 1-foot resolution - 2001; all data are in California State Plane Zone III projection, NAD 1983; map produced using ArcGIS 9.0 software by ESRI.

Map created May 28, 2005 by Debra Dwyer, San Francisco State University, Institute for Geographic Information Science; revised August 23, 2005.

N

0 15 30 60

Feet

FIGURE 6.16 - 4

MANAGEMENT AREAS AND TRAIL PLAN

15th Avenue Steps

Significant Natural Resource Areas Management Plan

San Francisco, California

Mgmt Area	Action
MA-1a	Maintain diverse native grassland
	Reintroduce sensitive plants
MA-2a	Maintain and enhance grassland
MA-3a	Maintain and enhance multi-storied forest-scrub ecotone with oaks, and buckeye
Natural Area Wide Management Actions	
	Reduce and contain herbaceous and woody weeds No invasive tree removal unless specified above Prevent recruitment of invasive trees unless specified above Provide access on designated trails only Social trails subject to closure Total invasive tree removal: 0; Total invasive trees to remain: 0. Implement erosion control as required (GR-12) Implement wildlife enhancements as appropriate

SAN FRANCISCO RECREATION & PARKS

Source: Orthophoto - SFDT, 2007; Street Data - SFDPW, 2009;
Significant Natural Area Data created by RPD Planning from information provided by RPD Natural Area Program, 2010;
All Data are NAD 1983 StatePlane California III FIPS 0403 Feet

Created by Sean Stasio, SFRPD Planning Division
for SFRPD Significant Natural Areas Program, NOvember 2010

N

0 25 50 75 100
Feet

FIGURE 6.27-4

MANAGEMENT AREAS

Everson/Digby

Significant Natural Resource Areas
Management Plan

San Francisco, California

APPENDIX C

Cultural Resources

SAN FRANCISCO
PLANNING DEPARTMENT

MEMO

Historic Resource Evaluation Response

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MEA Planner:	Jessica Range
Project Address:	**Significant Natural Resource Areas Management Plan: Sharp Park Golf Course, Pacifica**
Block/Lot:	N/A
Case No.:	2005.1912E
Date of Review:	February 8, 2011
Planning Dept. Reviewer:	Shelley Caltagirone (415) 558-6625 | shelley.caltagirone@sfgov.org

PROPOSED PROJECT ☐ Demolition ☒ Alteration

PROJECT DESCRIPTION

The project is the implementation of the San Francisco Recreation and Parks Department's Significant Natural Resource Areas Management Plan. The plan establishes goals and objectives for 32 Natural Areas, including Sharp Park Golf Course located in Pacifica. The specific goals and objectives are listed fully in Chapters 2 and 3 of the Sharp Park Golf Course Historical Resources Evaluation (HRE) report. In summary, the proposed project would convert about 19 acres of the golf course to Natural Area to facilitate restoration of the Laguna Salada and wildlife habitats associated with the property. Both the lagoon and pond would be excavated extensively and the dredge spoils would be used to raise Holes 10, 14, 15, and 18, creating upland habitat on the east edge of Laguna Salada. Thirteen acres of the golf course would be converted to upland habitat along the east side of the lagoon and would require that Holes 10 and 13 are slightly shortened or narrowed. A dispersal corridor between the lagoon and the pond would be constructed with upland features and would necessitate closing Hole 12 of the golf course. A post and rail fence would also be installed along the seawall to the west of the lagoon, with additional fencing around the wetland complex to discourage human and pet intrusion.

PRE-EXISTING HISTORIC RATING / SURVEY

The golf course and the clubhouse were separately designated as historic landmarks for the City of Pacifica in 2009. The property is not listed on the state or national registries. The property is considered a "Category A" (Known Historic Resource) property for the purposes of the Planning Department's California Environmental Quality Act (CEQA) review procedures.

HISTORIC DISTRICT / NEIGHBORHOOD CONTEXT

The 411-acre golf course is located in the town of Pacifica in San Mateo County. It borders the Pacific Ocean and is bisected by Highway 1. Thirteen fairways, the clubhouse, and Laguna Salada are located to the west of the highway, and the four remaining fairways are located to the east of the highway.

1. **California Register Criteria of Significance:** A building may be an historical resource if it meets any of the California Register criteria listed below. If more information is needed to make such a determination please specify what information is needed. *(This determination for California Register Eligibility is made based on existing data and research provided to the Planning Department by the above named preparer / consultant and other parties. Key pages of report and a photograph of the subject building are attached.)*

Event: or	☒ Yes	☐ No	☐ Unable to determine
Persons: or	☐ Yes	☒ No	☐ Unable to determine
Architecture: or	☒ Yes	☐ No	☐ Unable to determine
Information Potential:	☐ Further investigation recommended.		
District or Context:	☒ Yes, may contribute to a potential district or significant context.		
	If yes, period of significance: 1929-1932		

The Planning Department concurs with Tetra Tech's determination that the subject property appears to be eligible for listing on the California Register for its significance under Criteria 1 (Events) and 3 (Architecture). The golf course's development is associated with the broader event of the golden age of golf in the US and in California. The course is also an important example of a seaside golf course designed by a master landscape architect, Alister Mackenzie. Please refer to Section 5.2 of the HRE report for a full analysis of the resource's historical significance.

---

2. **Integrity** is the ability of a property to convey its significance. To be a resource for the purposes of CEQA, a property must not only be shown to be significant under the California Register criteria, but it also must have integrity. To retain historic integrity a property will always possess several, and usually most, of the aspects. The subject property has retained or lacks integrity from the period of significance noted above:

Location:	☒ Retains	☐ Lacks	**Setting:**	☒ Retains	☐ Lacks
Association:	☒ Retains	☐ Lacks	**Feeling:**	☒ Retains	☐ Lacks
Design:	☒ Retains	☐ Lacks	**Materials:**	☒ Retains	☐ Lacks
Workmanship:	☒ Retains	☐ Lacks			

The resource retains sufficient integrity in all aspects of its character to convey its historical significance. Please refer to Section 5.3 of the HRE report for a full analysis of property's integrity.

---

3. **Determination** of whether the property is an "historical resource" for purposes of CEQA.

☐ No Resource Present *(Go to 6 below.)* ☒ Historical Resource Present *(Continue to 4.)*

---

4. **If the property appears to be an historical resource,** would the proposed project materially impair the resource (i.e. alter in an adverse manner those physical characteristics which justify the property's inclusion in any registry to which it belongs)?

☐ The project would not cause a substantial adverse change in the significance of the resource such that the significance of the resource would be materially impaired. *(Continue to 5 if the project is an alteration.)*

☒ The project is a significant impact as proposed. *(Continue to 5 if the project is an alteration.)*

The Planning Department fully concurs with the impacts analysis provided by Tetra Tech in Section 5.4 of the HRE report. In summary:

Project Impacts:

- Raising Holes 10, 14, 15, and 18 *would not cause a significant impact* on the character-defining features of the golf course and the holes would remain in their original locations and the visual character of their fairways would only be minimally affected.

- The closure of Hole 12 *would cause a significant impact* to the historic resource as the work would eliminate an original hole and fairway on the west side of the course. Its removal would significantly alter the original golf course design and boundaries.

- The proposed fencing would add a modern element to the golf course but would not harm the character or setting of the resource. This addition to the landscape *would not cause a significant impact* to the historic resource.

- Modifying approximately 13 acres of the golf course to create upland habitat along the east side of the lagoon would require slightly shortening or narrowing Holes 10 and 13. This alteration would significantly alter the character of these original fairways. Therefore, the work *would cause a significant impact* to the historic resource.

Alternative Project Impacts:

- The recreation analysis of the SNRAMP EIR proposes a mitigation measure (Option 1) that would create a new hole on the east side of Highway 1 as a replacement for Hole 12. This would result in a total of 13 holes on the west side of the highway and five holes on the east side. This arrangement would not maintain the historic balance of holes on either side of the highway and would change the historic boundaries of the course. This *would cause a significant impact* to the original design of the historic resource.

- The recreation analysis of the SNRAMP EIR proposes a mitigation measure (Option 2) that would create a new hole on the west side of Highway 1 as a replacement for Hole 12. While the mitigation measure would change the layout of the holes, this alternative mitigation measure would restore some of the elements that Mackenzie had implemented in his original design by placing the new holes in areas of the course where holes were historically placed. The proposed holes would also be in keeping with the historic boundaries of the golf course. Because of the restorative aspect of the work, this mitigation *would cause a less than significant impact* to the resource.

The project would result in significant impacts to several character-defining features of the golf course, including Holes 10, 12, and 13.

5. **Character-defining features** of the building to be retained or respected in order to avoid a significant adverse effect by the project, presently or cumulatively, as modifications to the project to reduce or avoid impacts. Please recommend conditions of approval that may be desirable to mitigate the project's adverse effects.

   The character-defining features of the property are:

   - The original features and design of the clubhouse;
   - The original features and design of the permanent maintenance building; and,
   - The original features and design of the golf course, including the 12 original holes (current holes 1, 2, 3, 8, 9, 10, 11, 13, 14, 15, 17, and 18), the original landscape features, and the cypress tree plantings that line the fairways.

   Documentation of the historic cultural landscape by a qualified architectural historian should be completed before the commencement of any landscape alterations, as described in Chapter 6 of the HRE report. However, documentation of the resource will not mitigate the impacts of the project to Holes 10, 12, and 13 to a less than significant level.

---

6. **Would the proposed project have an adverse effect on off-site historical resources, such as adjacent historic properties?**

   ☐ Yes ☒ No ☐ Unable to determine

   There are no identified off-site historical resources that would be affected by the project.

SENIOR PRESERVATION PLANNER REVIEW

Signature: Tina Tam Date: 2/15/2011

Tina Tam, *Senior Preservation Planner*

cc: Linda Avery, *Recording Secretary*, Historic Preservation Commission
Virnaliza Byrd / Historic Resource Impact Review File

SC: G:\DOCUMENTS\Cases\CEQA\EIR\Significant Natural Resource Areas Management Plan\Sharp Park Golf Course_HRER.doc

SAN FRANCISCO
PLANNING DEPARTMENT

MEMO

Historic Resource Evaluation Response

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Planning
Information:
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MEA Planner:	Jessica Range
Project:	**Significant Natural Resource Areas Management Plan: Mount Davidson**
Block/Lot:	N/A
Case No.:	2005.1912E
Date of Review:	January 12, 2011
Planning Dept. Reviewer:	Shelley Caltagirone (415) 558-6625 | shelley.caltagirone@sfgov.org

PROPOSED PROJECT ☐ Demolition ☒ Alteration

PROJECT DESCRIPTION

The project is the implementation of the San Francisco Recreation and Parks Department's Significant Natural Resource Areas Management Plan. The plan establishes goals and objectives for 32 Natural Areas, including Mount Davidson. The specific plan actions for this site are primarily vegetation changes to maintain the health of the existing forest. The work would include the removal of a portion of the existing invasive tree species, including approximately 1,600 of the estimated 11,000 blue gum eucalyptus trees, and the introduction of native plant species. There are no proposed changes to the hardscape features of the natural area (i.e. retaining walls and steps).

PRE-EXISTING HISTORIC RATING / SURVEY

The property is not currently listed on any local, state, or national registries. The property is considered a "Category B" (Properties Requiring Further Consultation and Review) property for the purposes of the Planning Department's California Environmental Quality Act (CEQA) review procedures due to the age of the park and structures.

HISTORIC DISTRICT / NEIGHBORHOOD CONTEXT

Mount Davidson Natural Area is in south-central San Francisco south of Portola Drive in the Miraloma neighborhood. Forests cover approximately 30 acres of the 40-acre Natural Area and the area contains WPA-era retaining walls and staircases. It is also the location of the Mount Davidson cross erected in 1929 (the cross has been privately owned since 1997 and is not considered part of the Mount Davidson Natural Area). Please refer to the attached "Mount Davidson WPA-Era Retaining Walls & Stairs" DPR form, Sections P3a and B10, for a full description of the site and associated structures and their historic context.

---

1. **California Register Criteria of Significance:** A building may be an historical resource if it meets any of the California Register criteria listed below. If more information is needed to make such a determination please specify what information is needed. *(This determination for California Register*

Eligibility is made based on existing data and research provided to the Planning Department by the above named preparer / consultant and other parties. Key pages of report and a photograph of the subject building are attached.)

Event: or	☒ Yes	☐ No	☐ Unable to determine
Persons: or	☒ Yes	☐ No	☐ Unable to determine
Architecture: or	☒ Yes	☐ No	☐ Unable to determine
Information Potential:	☐ Further investigation recommended.		
District or Context:	☒ Yes, may contribute to a potential district or significant context. If yes, period of significance: 1885-1943		

The WPA-era staircases and retaining walls located at Mount Davidson were evaluated by Tetra Tech for eligibility for listing on the California Register. These hardscape features were found to be eligible for listing on the California Register under Criterion 1 (Event) and 3 (Architecture) for their association with WPA/New Deal Construction. The Planning Department concurs with the findings presented in the attached DPR form, Section B10. (See form for full evaluation of these features.)

Tetra Tech also prepared a memorandum[1] describing the history of the urban forest located at Mount Davidson and the establishment of the city park in this location. Based upon this information the Planning Department finds that the Mount Davidson natural area is potentially eligible for listing on the California Register under Criteria 1 (Event) and 2 (Persons) as an ethnographic landscape. Although further research is required to establish a full historic context for the site, Mount Davidson is a prominent topographical feature in San Francisco that has historically held special natural and cultural significance for the city. The site is associated with local philanthropist Adolph Sutro, with an annual Easter ceremony established in 1923, and with the early development of natural areas dedicated to recreational use within San Francisco. For these reasons, the natural area will be considered a historic resource for the purposes of this review.

Sutro, known for his Comstock Lode engineering and as a philanthropist, and specifically his conservationist activities, purchased the Mount Davidson (then known as Blue Mountain) property in 1881 and began planting the forest circa 1885. This activity occurred around the same time that Sutro was helping to organize the first California Arbor Day held in 1886. The original forest was planted with pine, cypress, and eucalyptus trees; however, over time the eucalyptus have begun to dominate and have occasionally been thinned to retain the diversity of the forest. The property was transferred to A.S. Baldwin in 1909. During this time the mountain was given the name 'Mount Davidson', and the first public trails were established on the property. In 1923 the first Easter ceremony was held at the top of the mountain, beginning the tradition which continues through today. The property was finally purchased by the City in 1927 and the land was dedicated as a city park in 1929. In the same year as the park dedication, a permanent cross was constructed at the mountaintop for the yearly Easter services. As noted above the park became the site of a WPA-era work project between 1936-1943. Based upon these facts, the period of significance for the potential historic landscape would

[1] Memorandum regarding "Summary of History of Trees on Mount Davidson Taken from Research Conducted for DPR 523 Forms for Mount Davidson WPA-era Walls and Stairs" to Sophie Hayward, Planning Department, from Julia Mates, Historian, Tetra Tech, Inc. dated August 10, 2010.

appear to be 1885-1943, beginning with the forest planting and extending through to what appears to be the last major improvement project for the park.

---

2. **Integrity** is the ability of a property to convey its significance. To be a resource for the purposes of CEQA, a property must not only be shown to be significant under the California Register criteria, but it also must have integrity. To retain historic integrity a property will always possess several, and usually most, of the aspects. The subject property has retained or lacks integrity from the period of significance noted above:

Location:	☒ Retains	☐ Lacks	**Setting:**	☒ Retains	☐ Lacks
Association:	☒ Retains	☐ Lacks	**Feeling:**	☒ Retains	☐ Lacks
Design:	☒ Retains	☐ Lacks	**Materials:**	☒ Retains	☐ Lacks
Workmanship:	☒ Retains	☐ Lacks			

Other than the expected weathering of outdoor landscape features, the retaining wall and staircases have retained a high level of integrity in all aspects of their significance. Although a full survey of the site has not been conducted, the historic landscape also appears to be intact and to display the same range of vegetation first established in Sutro Forest in 1885. As is expected in a living landscape, the forest has grown over time; however this change does not diminish the integrity of the site.

---

3. **Determination** of whether the property is an "historical resource" for purposes of CEQA.

☐ No Resource Present *(Go to 6 below.)* ☒ Historical Resource Present *(Continue to 4.)*

---

4. **If the property appears to be an historical resource,** would the proposed project materially impair the resource (i.e. alter in an adverse manner those physical characteristics which justify the property's inclusion in any registry to which it belongs)?

☒ The project would not cause a substantial adverse change in the significance of the resource such that the significance of the resource would be materially impaired. *(Continue to 5 if the project is an alteration.)*

☐ The project is a significant impact as proposed. *(Continue to 5 if the project is an alteration.)*

Staff has reviewed the proposed project and found that the work will not result in any significant changes to the historic landscape or its hardscape features. The selective tree removal will help to restore the historic balance of tree species within the forest and will preserve its historic character. Moreover, the historic landscape's use as a public park will be preserved. Therefore, the project will not cause a substantial adverse change in the significance of the resource.

5. **Character-defining features** of the building to be retained or respected in order to avoid a significant adverse effect by the project, presently or cumulatively, as modifications to the project to reduce or avoid impacts. Please recommend conditions of approval that may be desirable to mitigate the project's adverse effects.

   The character-defining features of the Mount Davidson historic landscape appear to be the WPA-era hardscape retaining walls and stairs; the Sutro forest, composed of pine, cypress, and eucalyptus trees; and, the Mount Davidson cross.

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6. **Would the proposed project have an adverse effect on off-site historical resources, such as adjacent historic properties?**

   ☐ Yes ☒ No ☐ Unable to determine

   There are no indentified historic resources at the perimeter of the Mount Davidson natural area. The project would not directly or indirectly affect any off-site historic resources.

SENIOR PRESERVATION PLANNER REVIEW

Signature: _____ Date: 2-10-2011

Tina Tam, *Senior Preservation Planner*

cc: Linda Avery, *Recording Secretary*, Historic Preservation Commission
Virnaliza Byrd / Historic Resource Impact Review File

SC: G:\DOCUMENTS\Cases\CEQA\EIR\Significant Natural Resource Areas Management Plan\Mt. Davidson_HRER.doc

Historical Resources Evaluation Report

For the

Sharp Park Golf Course
Part of the Natural Areas
City and County of San Francisco

Pacifica, San Mateo County

January 2011

Prepared for:

City and County of San Francisco Planning Department
Major Environmental Analysis
1650 Mission Street, Suite 400
San Francisco, California 94103

Prepared by:

Tetra Tech, Inc.
555 Market Street, 15th Floor
San Francisco, California 94105

TABLE OF CONTENTS

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FIGURES, ILLUSTRATIONS, AND PHOTOGRAPHS

(All photographs are by Tetra Tech, Inc., unless otherwise noted.)

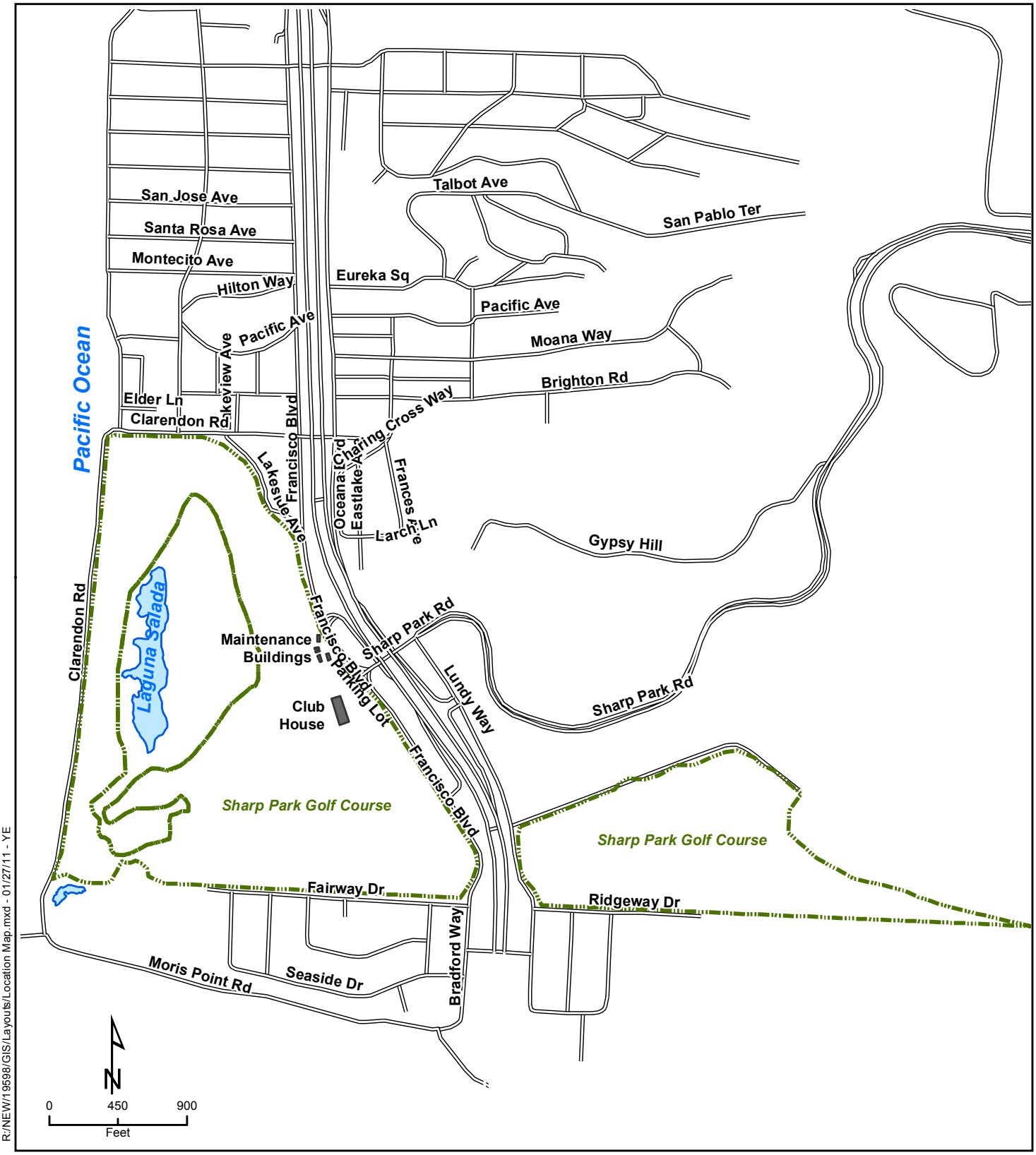
APPENDIX

CHAPTER 1
SUMMARY OF FINDINGS

In response to public concerns raised during the California Environmental Quality Act (CEQA) scoping process for the Significant Natural Resource Area Management Plan (SNRAMP) Environmental Impact Report (EIR), this Historical Resources Evaluation (HRE) addresses Sharp Park Golf Course as a designed historic landscape. CEQA requires that the lead agency for the project, the City and County of San Francisco Planning Department Major Environmental Analysis (MEA), determine the impact that implementing the SNRAMP may have on historical resources at Sharp Park Golf Course. MEA and the San Francisco Recreation and Park Department (SFRPD) are preparing an EIR for this project, for which this HRE will be a technical background report. Tetra Tech prepared this HRE, in accordance with Section 15064.5(a)-(b) of the CEQA guidelines and using the criteria outlined in Section 5924.1 of the California Public Resources Code and Section 15126.4 of the CEQA guidelines. The report identifies known or potential historical resources at Sharp Park Golf Course that could be impacted by the project and assesses potential impacts on those resources. The report also proposes measures to mitigate any substantial adverse changes to historical resources. The location of the Golf Course is shown in Figure 1.

Based on the scoping comments from the Initial Study, Tetra Tech and MEA established the project's area of potential effects (APE) as the footprint of the Sharp Park Golf Course[1] (Figure 2). Tetra Tech's historian identified the built environment resources within the APE that could be potentially impacted by this project. These resources constitute the survey population properties for this study, which are Sharp Park Golf Course, including the course itself, maintenance buildings, and clubhouse.

[1]The term "area of potential effect" is associated with historic resources studied in compliance with the National Historic Preservation Act, Section 106 and its regulation in Title 36, Code of Federal Regulations, Section 800. APE is used in this document to define the geographical area that the SNRAMP EIR project may directly or indirectly impact. This report is prepared for the project's compliance under CEQA and use of APE should not be taken to imply that the SNRAMP EIR project is a federal undertaking that must comply with Section 106.



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Location Map

Legend

Sharp Park Golf Course Boundary

Pacifica, California

TETRA TECH

Figure 1

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Legend

- Original holes
- Modified original holes
- Built after 1941

TETRA TECH

Existing Golf Course

Pacifica, California

Figure 2

Tetra Tech inventoried and evaluated the golf course to assess whether it should be considered a historical resource for the purposes of CEQA, that is, whether it is listed on, determined eligible for listing on, or appears to meet the criteria for listing on the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP).

Tetra Tech concludes that Sharp Park Golf Course appears to meet the criteria for listing on the CRHR and NRHP and should be considered a historical resource for the purposes of CEQA. Furthermore, the project would cause a substantial adverse change to the Sharp Park Golf Course because some of the project activities would diminish the historic integrity of the property. Therefore, mitigation measures are proposed in this document.

CHAPTER 2
PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

While San Francisco is by and large a densely developed urban area, fragments of unique plant and animal habitats, known as Natural Areas, have been preserved in San Francisco and Pacifica, in the parks that are managed by the SFRPD. In the late 1990s, the SFRPD developed a Natural Areas Program to protect and manage these Natural Areas for the natural and human values they provide. The Natural Areas Program mission is to preserve, restore, and enhance the remnant Natural Areas and to promote environmental stewardship of these areas. On January 19, 1995, the San Francisco Recreation and Park Commission approved the first SNRAMP.

Over the course of several years, the SFRPD developed a new SNRAMP (SFRPD 2006), with a final draft plan based on the 1995 plan and published in February 2006. This SNRAMP contains detailed information on the biology, geology, and trails within 32 Natural Areas, all of which are in San Francisco except Sharp Park, which is in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years. The proposed project is the SFRPD's implementation of the SNRAMP.

2.2 PROJECT OBJECTIVES

Summarized below are the goals and objectives of the SNRAMP.

Conservation and Restoration Goals

- To identify existing natural resources;
- To maintain viable populations of all special status species;
- To maintain and enhance native plant and animal communities;
- To maintain and enhance local biodiversity;

- To reestablish native community diversity, structure, and ecosystem function where degraded;
- To improve Natural Area connectivity; and
- To decrease the extent of invasive exotic species cover.

Education Goals

- To provide services that will enable all age groups to better understand the values of the Natural Areas, including ecosystem functions and socioeconomic values;
- To provide opportunities for service learning to students in the San Francisco Unified School District; and
- To provide diverse outdoor classroom opportunities.

Research Goals

- To provide a research framework and research opportunities to schools and universities that will lead to an enhanced understanding of the natural systems and an informed adaptive management approach;
- To contribute to the scientific understanding of local natural systems; and
- To contribute to the field of restoration ecology and other applied sciences.

Stewardship Goals

- To develop and support opportunities for public stewardship of Natural Areas;
- To foster neighborhood stewardship and volunteer groups; and
- To provide diverse opportunities for participation by stewardship groups.

Recreation Goals

- To provide opportunities for passive recreational uses (e.g., hiking and nature observation) that are compatible with conservation and restoration goals and
- To improve and develop a recreational trail system that provides the greatest amount of accessibility while protecting natural resources.

Monitoring Goals

To establish a long-term monitoring program to:

- Identify the species on which monitoring should focus;
- Detect increases and declines in abundance, distribution, or health of special status species;
- Detect significant changes in acreage of native communities, wildlife habitats, and invasive species;
- Detect significant increases and declines in native species richness;

- Assess success of restoration in achieving conservation and restoration goals; and
- Provide an adaptive management framework for evaluating changes (e.g., conceptual model).

Design and Aesthetic Goals

- Where possible, to develop aesthetically pleasing landscapes that are consistent with surrounding landscapes and that create natural transitions, especially where adjacent parklands and traditionally landscaped areas abut Natural Areas;
- To maintain and develop viewpoints and viewsheds to enhance park experiences; and
- Where possible, to design and maintain landscapes to discourage the accumulation of trash and illegal encampments.

Safety Goal

- To design and maintain landscapes that promotes public safety.

2.3 PROJECT LOCATION

The 411-acre Sharp Park is in the town of Pacifica in San Mateo County. The park borders the Pacific Ocean and is bisected by Highway 1. Thirteen fairways, the Sharp Park Golf Course clubhouse, and Laguna Salada are on the western side of Highway 1; the four remaining fairways are on the eastern side of Highway 1. Figure 1 is a map of Sharp Park Golf Course.

CHAPTER 3
PROPOSED PROJECT

Recommended Sharp Park Management Actions that include Sharp Park Golf Course in general are as follows:

- Implement improvements to protect and enhance the California red-legged frog and San Francisco garter snake at Laguna Salada, including the following:
  - Create shallow pools within existing wetlands,
  - Continue monitoring red-legged frogs and San Francisco garter snakes,
  - Remove tires from Horse Stable Pond,
  - Install signs and barriers to keep dogs out of Horse Stable Pond
- Separate the small peninsulas within Laguna Salada from the mainland by small canals,
  - Restore Sanchez Creek by deepening the channel, expanding the creek corridor upstream, and installing buffer zones to limit human disturbance;
- Raise the area directly east of Laguna Salada to prevent flooding and plant with willows and other native vegetation to provide snake and frog basking sites, and to provide nesting habitat for riparian birds;
- Work with golf course staff to minimize use of chemicals;
- Educate golf course staff about the importance of identifying California red-legged frogs, San Francisco garter snakes, and forktail damselflies and their habitats;
- Work with golf course maintenance staff to incorporate native plants within bank stabilization efforts along Sanchez Creek where it flows through the golf course.

The following specific project activities would impact Sharp Park Golf Course:

- The areas that are currently open water within the lagoon and Horse Stable Pond would be deepened by two to three feet, and parts of the eastern portions of the lagoon and pond would be excavated extensively to restore open water habitat and to ensure that ample edge habitat consisting of open water/emergent vegetation interface would persist for the foreseeable future. Excavated dredge spoils appropriate for use as golf course substrate materials would be used on-site to raise Holes 10, 14, 15, and 18 and to create the upland habitat on the east edge of Laguna Salada. A dispersal corridor between the lagoon and the pond would be constructed with upland features designed to support the San Francisco garter snake; this action would necessitate closing Hole 12 of the Sharp Park Golf Course.
- A post and rail fence would also be installed along the seawall to the west of the lagoon, with additional fencing around the wetland complex to discourage human and pet intrusion into the restored habitat area.

The proposed project would convert about 19 acres of the Sharp Park Golf Course to Natural Area to facilitate Laguna Salada restoration. To restore California red-legged frog and San Francisco garter snake habitat at Laguna Salada, approximately 13 acres of the golf course would be modified to create upland habitat along the east side of the lagoon to provide critically important San Francisco garter snake upland habitat, to discourage frogs from depositing egg masses in locations where the resulting tadpoles may end up being stranded and to allow for the creation of new wetlands to compensate for those filled during the restoration process. This would primarily affect the layout of the golf course Holes 13 and 14, directly east of Laguna Salada. Holes 10 and 13 would be slightly shortened or narrowed, and Hole 12 would be removed. This habitat corridor would be approximately six acres, bringing the total of modified area at the golf course to about 19 acres. This change would affect the playability of the course.

The EIR for the project identifies mitigation to reduce this recreation impact on Sharp Park Golf Course. In order to create a habitat corridor between Horse Stable Pond and Laguna Salada, one of two potential mitigation measures would be implemented. These measures are detailed below.

Recreation Mitigation Measure, Option 1. The SFRPD would coordinate with a golf course consultant and would restore the playability of the Sharp Park Golf Course. One possible approach is the creation of a new Hole 7 east of Highway 1. Under this option, there would be a total of 13 holes on the west side of the Highway 1 and five holes on the east side. The bunkering and sculptured contouring would be characteristic of the design and strategy aesthetics of Alister Mackenzie, the famous golf-architect who had designed several courses in the US and abroad. The SFRPD would use a professional golf course architect to design the new and reconfigured holes and fairways, while distinguishing the new holes from the original historic holes.

Recreation Mitigation Measure, Option 2. The SFRPD would coordinate with a golf course consultant and would restore the playability of the Sharp Park Golf Course. Under this option, the golf course would be reconfigured to include 15 holes on the west side of Highway 1 and three holes on the east side. Two new holes and fairways would be created on the coast side of the course, to the west of Laguna Salada. The bunkering and sculptured contouring would be characteristic of the design and strategy aesthetics of Alister Mackenzie, the famous golf-architect who had designed several courses in the US and abroad. The SFRPD would use a professional golf course architect to design the new and reconfigured holes and fairways, while distinguishing the new holes from the original historic holes.

CHAPTER 4
RESEARCH AND FIELD METHODOLOGY

Tetra Tech conducted preliminary research at the City and County of San Francisco Planning Department and the City of Pacifica Planning Department to determine whether any previous studies or evaluations had been conducted for Sharp Park Golf Course. We also reviewed the NRHP and California Inventory of Historic Resources, as the golf course would automatically be eligible for listing on the CRHR and would be considered a historical resource for the purposes of CEQA if it was listed in the NRHP. None of the state or national registers identified Sharp Park Golf Course as a historical resource.[2] The golf course and the clubhouse were separately designated as historic landmarks for the City of Pacifica in 2009.[3]

Tetra Tech inventoried the golf course for recordation on DPR 523 forms and conducted research for this HRE in March and April 2010. We prepared a historic context to address the themes and background for the property, which we evaluated under the CRHR and NRHP criteria on the DPR 523 forms; the latter criteria applied because properties that are listed on or eligible for listing on the NRHP are automatically eligible for listing on the CRHR. Historical research was conducted at the San Francisco Public Library History Center and its general collections, California Historical Society, San Mateo County Public Library (various branches), and the City of Pacifica Planning and Economics Department. Research revealed that the relevant themes and context for discussing the significance of the golf course as a designed historic landscape include the growth and development of golf in San Francisco. The relevant period for the themes and context, as they relate to the survey population, is the early to mid-twentieth century.

[2]National Park Service, National Register Information System, online database http://www.nr.nps.gov/ and http://www.nationalregisterofhistoricplaces.com.
[3]Elizabeth Claycomb, City of Pacifica Planning and Economic Development Department, personal communication with Julia Mates, Tetra Tech March 8, 2010.

4.1 AREA OF POTENTIAL EFFECT

Tetra Tech and MEA established as the APE for this project the footprint of Sharp Park Golf Course, which has boundaries on both the east and west sides of the Highway 1. This APE includes all of the buildings and structures within the golf course boundaries.

4.2 HISTORICAL OVERVIEW

The following overview provides historic background to the project area and historic context for the golf course and includes a discussion of the development of golf in San Francisco. This historic context summarizes the context provided in the inventory and evaluation form in the appendix.

4.3 HISTORY OF SHARP PARK GOLF COURSE

Sharp Park Golf Course is on the former Mexican Rancho land of San Pedro. A portion of this land, 410 acres, was eventually owned by George Sharp, a prominent San Francisco attorney and corporate counsel for the Ocean Shore Railroad in the late 1880s.[4] When Sharp died in early 1882, the land was left to his wife, Honora. She died in 1905, and the land was left to her trustees, Ruben Lloyd and Adolph Spreckles, both members of the San Francisco Parks Commission. Spreckles sold his share of the property to the City and County of San Francisco in 1916 for 10 dollars in gold, and, after Lloyd passed away in 1917, the remaining shares of the land were bequeathed by the estate to the City of San Francisco.[5] The property was stipulated to be used for a park and recreation only.

The City and County of San Francisco commissioned Alister Mackenzie to design the course. Having worked on other seaside golf courses in Great Britain, Mackenzie believed that "golf in its early days was always played on commons or links land which bordered the sea. The natural characteristics of this type of land made it easily the most suitable for the game."[6] Mackenzie stated that Sharp Park, being constructed on land reclaimed from the sea "now has a great resemblance to real links land."[7] Jack Fleming, the City's golf course overseer appointed by the Parks Commission, was Mackenzie's assistant during the project. In the mid-1930s, Robert Hunter was appointed to supervise construction of the course.[8]

The location of Sharp Park Golf Course posed a challenge. The parcels of land designated for the course were next to the Pacific Ocean, and the land was composed of barren sand dunes and a lagoon. In order to construct the golf course and build up fairway grades, the Sharp Park site was dredged. The natural lagoon, Laguna Salada, remained within the golf course, and the design incorporated it by surrounding it with

[4]Sharp Park Golf Course occupies only 120 acres of this land.
[5]Sharp Park Golf Course Web site: http://www.sharpparkgc.com/.
[6]Alister Mackenzie, *The Spirit of St. Andrews* (1995 Published Posthumously Sleeping Bear Press, Chelsea, Michigan, p. 246).
[7]Mackenzie, *The Spirit of Saint Andrews*, pp. 171-172.
[8]National Golf Foundation Consulting, Inc., *Sharp Park Golf Course* (City of San Francisco, California, no date), p. 84. On file at City and County of San Francisco Park and Recreation Department vertical files, labeled "Miscellaneous Documents, Golf Course History."

fairways. Construction began on the course in 1929, and it took fourteen months to dredge the area around Laguna Salada marsh. Sharp Park Golf Club opened in 1932, after two delays due to drainage problems on the course from winter rains.[9]

The original layout of the golf course included Holes featuring multiple tees (Holes 2, 5, and 14), double fairways (Holes 5 and 10), cross bunkering (Hole 16), fairways in sand dunes (Holes 3 and 7), and several holes bordering Laguna Salada (Holes 4, 5, 8, 9, 10, and 11). Cypress trees dotted the setting.[10]

When constructed, the course used well water for irrigation. In the 1930s, the Works Progress Administration (WPA) installed a water pipeline for the course that extended from the San Bruno County Jail reservoir to a concrete pressure-reducing tank, 20 feet wide by 150 feet long. This pipeline provided water to the course for irrigation and for drinking until it was abandoned in place in 2008. The line extended through the canyon to the east of the course through the Hole 7 fairway.[11]

Golf courses have been called living things in the sense that they are mostly constructed of living elements, such as grass and trees, which grow and change over time. Soil erodes, changing the pitch of slopes; trees grow or are replanted, and the holes cannot be played as they were originally. Advancements in playing equipment also change the game.[12]

Courses are redesigned, replaced, or remodeled for two reasons; the first is to improve the layout of the course, the second is to adjust the course for advances in golf technology. Redesigning golf courses involves rerouting and adjusting holes. In golf course architecture, restoring courses is considered to be the act of bringing a course back to, or closer to, its original state.[13] At the same time, there are technological advances in the game of golf (balls, clubs, and mowing techniques) that advance and therefore result in alteration of the course to maintain playability. By the late 1920s, golf course designers accepted the idea that both natural and technological advances are factors, among others, that make it necessary to continuously improve golf courses, in order to maintain the strategy of the game.

4.3.1 Changes to the Course

The layout of Sharp Park Golf Course has undergone several alterations to accommodate natural changes in the landscape because of the course's location along the Pacific Ocean shoreline. The course was also modified to accommodate the anticipated realignment of Highway 1.

[9]Joe Faulkner, *Sharp Park*, 1970, www.sfpublic.golf.com.
[10]Daniel Wexler, *The Missing Links: America's Greatest Lost Golf Course & Holes* (Sleeping Bear Press, Chelsea, Michigan, 2000), pp. 114-115.
[11]Clyde Healy, Assistant City Engineer, *Report of Clyde E. Healy, Assistant City Engineer, City of San Francisco and Coordinator of WPA Projects*, (San Francisco, October 1935-1939), p. 53.
[12]Graves and Cornish, *Golf Course Design* (John Wiley & Sons, Inc, New York, 1998), pp. 127, 131-132.
[13]Graves and Cornish, *Golf Course Design*, pp. 131-132.

The first major alteration was in 1941, when a seawall or berm was constructed to keep the ocean from reaching and flooding the course. To make room for the berm, the two original oceanside Holes 3 and 7 were moved inland. Another alteration was removing the lagoon and the second fairway at original Hole 10 (current Hole 14). Course modifications also included the installation of a 4,000-gallon pump to help with annual flooding of Laguna Salada, rerouting fairways for holes on the east side of Highway 1, and modest alterations, such as renumbering and shortening some of the original fairways. More recent changes involved lengthening fairways and adding and rebuilding tee boxes from 1985 until 1994.

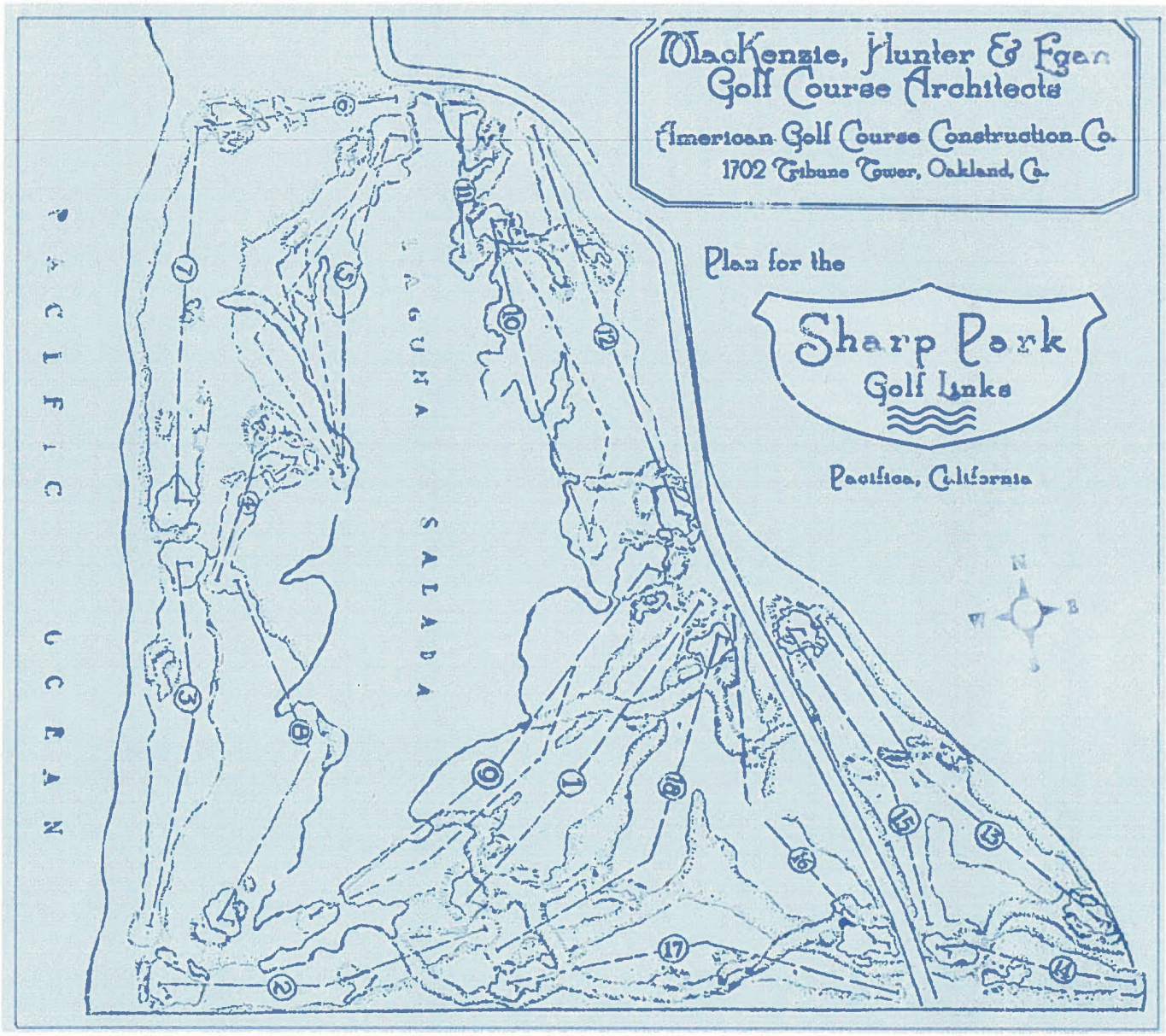
The original design of the course had three holes on the east side of what was a county road, in front (on the west side) of the clubhouse, as shown in Figure 3. Around 1943, the county road was improved and rerouted to become Highway 1, which no longer passed the west side of the club house but was now on the east side. Although Highway 1 was not realigned until sometime after 1940, the designers of the course knew the course would have to be modified to accommodate the road (Figure 3). In 1932, Jack Fleming, in writing about the course in the *San Francisco Call-Bulletin*, described it as being "at present along the edge of the county road which is planned to re-locate." Other, more minor alterations included changing sand trap shapes, filling in sand traps with grass, and rerouting fairways in 1962 and 1963. Between 1985 and 1994, several tees were lengthened and tee boxes were added or enlarged in order to accommodate female players and to accommodate larger numbers of golfers. Concrete cart paths were constructed along the back nine holes by 1996.

There has been a strong desire to maintain the original design layout of the course to the greatest extent. Many of the alterations have been forced by the natural changes in the landscape, with only a few changes made to accommodate advanced technology in golf clubs and ball construction. The goal has been to make the necessary modifications while preserving Sharp Park's function as a golf course, laden with elements of challenge and surprise, and to maintain playability.

4.3.2 History of Public Golf in San Francisco

The game of golf came to California in the late 1800s, and the first course was constructed in southern California at the Riverside Country Club in 1891. The first northern California golf course, a three-hole course built in 1893, was at the Burlingame Country Club. The first course to be constructed in San Francisco was the private San Francisco Golf Club in 1895.[14]

[14]Neal Hotelling, *Pebble Beach Golf Links: The Official History* (Sleeping Bear Press, Chelsea, Michigan, 1999), p. 20.



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Original Plan for Sharp Park Golf Course

Pacifica, California

TETRA TECH

Figure 3

While golf courses at private country clubs were gaining in popularity, golfers unable to afford the high prices of country clubs had very few places to play. In the early 1900s, avid golfers and wealthy members of private clubs, Jack Neville and Vincent Whitney, approached John McLaren, Supervisor of Golden Gate Park, about constructing a municipal golf course. Neville and Whitney then began designing San Francisco's first municipal golf course, Lincoln Park.[15] Lincoln Park remained the only San Francisco municipal golf course for 23 years, until the construction in 1925 of Harding Park, designed by Sam Whiting and Willie Watson.

The popularity of golf in San Francisco reflected the popularity of the sport within the entire country, and peaked during the 1920s. Often called "the golden age of golf," the sport grew in popularity during the late 1910s through the early 1930s, with many well-designed courses constructed during this period. Within the City of San Francisco, Lincoln Park and Harding Park were the only two public golf courses in San Francisco and, on weekends, they were overrun with golfers. The City decided to use the land in San Mateo County, formerly owned by George Sharp, for a third public golf course, named for the former landowner. Alister Mackenzie was commissioned to design the course, assisted by Jack Fleming, Superintendent of Maintenance for Golf Courses and Bowling Greens in San Francisco. Supervision of construction was given to Chandler Eagan, with whom Mackenzie had worked on Pebble Beach Golf Links in 1929.[16] In 1930, Robert Hunter, Jr., was appointed the superintendent for the remaining ten months of the course's construction. Willis Polk and Company architect Angus McSweeney prepared plans for the golf clubhouse.

Alister Mackenzie

Alister Mackenzie was born in Scotland in 1870. He served as the Alwoodley Golf Club Green Chairman in the early 1900s, assisting golf architect H. S. Colt with the design of the golf course in Leeds.[17] Mackenzie continued to work with Colt on other courses, and, in 1925, he established his own golf architecture firm and designed golf courses in Great Britain, Uruguay, Australia, Argentina, Canada, and the US.[18] Mackenzie's best work in America was done between 1928 and 1933. By the time Mackenzie was commissioned to work on Sharp Park, he was living in the Bay Area. He died in 1934.[19]

Mackenzie's concept of an ideal hole in perfect surroundings was one surrounded by sand dunes next to the seashore.[20] Mackenzie felt that the success of golf course construction depended entirely on making the best use of natural features and devising

[15]Joe Faulkner, 1970, p. 5; although the course was constructed in the early 1900s, it was not expanded to a full 18-hole course until 1917.
[16]Bo Links and Richard Harris. *Mackenzie's Sharp Park Under Siege*. Golf Club Atlas Web site: http://golfclubatlas.com/in-my-opinion/sharp-park
[17]Geoff Shackelford, *Grounds for Golf: the History and Fundamentals of Golf Course Design* (St. Martin's Press, New York, 2003), p. 154.
[18]Cornish and Whitten, *The Architects of Golf*, p. 81.
[19]Honorable Julie Lancelle, Bo Links, and Jeffrey Phillips, *Sharp Park Golf Course*, The Cultural Landscape Foundation, July 2009.
[20]Mackenzie, *Golf Architecture*, p, 28.

artificial ones indistinguishable from nature.[21] He also contended that a golf course must offer adventure in order to hold interest for continuous play. His courses provided interesting challenges for golfers, regardless of their skill level. Mackenzie's firm was also known for its original and distinctive bunkers, with irregular shapes and each with its own design.[22] He often had the overall vision for design of his courses and left the details to those who worked with him, such as Eagan. George Shackelford, in his book *Grounds for Golf*, describes Mackenzie as a master designer and offers that Mackenzie's secret to creating unique courses was his talent for routing.[23] Mackenzie designed his hole layout and sequencing on natural ground contours, not on any prescribed sequencing. Distinctive bunkering, the use of small hillocks around greens, and exciting hole locations were Mackenzie's trademark. As Shackelford describes, while many architects try to create a special course, Mackenzie "could figure out how best to fit holes onto a property and situate a golf course to evoke a comfortable, settled, connection to the ground. His course routings are always functional and original but rarely do they fight the contours of the property."

Mackenzie's notable US golf course designs were Cypress Point Golf Club, California (1928), Augusta National Golf Club, Georgia (1932), and Pasatiempo Golf Club, California (1929). Mackenzie was commissioned by the City and County of San Francisco to design Sharp Park Golf Course in 1929.

According to Geoffrey Cornish and Ron Whitten, golf architects and authors of the book, *The Architects of Golf*, post-World War II golf course designers were influenced most by Mackenzie's philosophies.[24]

Sharp Park Golf Course Clubhouse

The two-story clubhouse was designed the prestigious design firm of Willis Polk and Company, a highly respected architectural firm, responsible for many architectural masterpieces throughout northern California. Examples are the Palace of Fine Arts and the Hobart Building in San Francisco and the Water Temple in Sunol. The firm was also instrumental in rebuilding San Francisco after the 1906 earthquake. After Polk died in 1924, his firm developed the plans for the Sharp Park Golf Course Clubhouse, the chief architect of which was Angus McSweeney. The building was constructed by the Works Progress Administration, and a plaque on the clubhouse states, "Improved by Works Progress Administration 1935-1936." The clubhouse, designed in the Mission style of architecture, has undergone a few alterations over time.

[21]Mackenzie, *Golf Architecture*, p. 29.
[22]Shackelford, *Grounds for Golf*, p. 155.
[23]"Routing" is a golf term used to describe the path the course follows from the first tee to the 18th hole; Shackelford, *Grounds for Golf*, p. 156.
[24]Geoffrey S. Cornish and Ronald E Whitten, *The Golf Course* (New York: The Rutledge Press 1981), p. 8.

CHAPTER 5
FINDINGS AND CONCLUSIONS

Tetra Tech prepared this HRE using the criteria outlined in Section 5924.1 of the California Public Resources Code, as well as Section 15126.4 of the CEQA guidelines. The report identifies historical resources that could be impacted by the SNRAMP project and assesses potential impacts on the Sharp Park Golf Course.

5.1 EVALUATION CRITERIA

The criteria for identifying historical resources under CEQA are in Section 15064.5(a)(2)-(3) of the CEQA guidelines, which provide the criteria from Section 20524.1 of the California Public Resources Code. According to the CRHR (California Code of Regulations Title 14, Chapter 11.5), properties listed on or formally determined to be eligible for listing on the NRHP are automatically eligible for listing on the CRHR. The CRHR criteria are largely based on the NRHP criteria, which are codified in 36 CFR, Part 60, and are explained in guidelines published by the Keeper of the National Register.[25] Resources must be at least 50 years old in order to be eligible for listing on the NRHP or the CRHR.

National Parks Service Preservation Brief 36 defines a cultural landscape as "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other values." There are four general types of cultural landscape, one of which is the historic designed landscape. National Parks Service *National Register Bulletin 18*, "How to Evaluate and Nominate Designed Historic Landscapes," defines a historic designed landscape as one that "has significance as a design or work of art; was consciously designed and laid out by a master gardener, landscape architect, architect, or horticulturalist to a design principle, or an owner or other amateur using a recognized style or tradition in response or reaction to a recognized style or tradition; has a historical association with a significant person, trend, or event, etc. in landscape

[25]The most widely accepted guidelines are contained in the US Department of Interior, National Park Service, "Guidelines for Applying the National Register Criteria for Evaluation," *National Register Bulletin 15* (US Government Printing, Washington, DC, 1991, revised 1995 through 2002).

gardening or landscape architecture; or a significant relationship to the theory or practice of landscape architecture." *Bulletin 18* goes on to list golf courses as an example of grounds designed or developed for outdoor recreation or sports that fall under the category of a designed historic landscape. Therefore, Sharp Park Golf Course is being evaluated for its historic significance as a designed historic landscape.

Historic significance is judged by applying NRHP Criteria A through D and CRHR Criteria 1 through 4. The NRHP guidelines state that a historic resource's "quality of significance in American history, architecture, archeology, engineering and culture" is determined by meeting at least one of the following, (properties may be significant at the local, state, or national level):

Criterion A: Association with events or trends significant in the broad patterns of our history;

Criterion B: Association with the lives of significant individuals;

Criterion C: A property that embodies the distinctive characteristics of a type, period, or method of construction that represents the work of a master, or that possesses high artistic values;

Criterion D: Has yielded, or is likely to yield, information important to history or prehistory.

In general, Criterion D is used to evaluate historic sites and archaeological resources.

"Integrity" is determined through applying seven factors to the historical resource: location, design, setting, workmanship, materials, feeling, and association. All of these aspects must be considered in order to determine whether a landscape retains enough of its important historic characteristics and features to convey its historically significant appearance or associations. Because landscape features change over time, a landscape need not retain all of the original features it had during its period of significance, but it must retain the essential features and characteristics that make its historic character clearly recognizable.[26]

The CRHR criteria closely parallel those of the NRHP. Each resource must be determined to be significant at the local, state, or national level under one of four criteria (paraphrased below) in order to be determined eligible:

Criterion 1: Resources associated with important events that have made a significant contribution to the broad patterns of our history.

Criterion 2: Resources associated with the lives of persons important to our past.

[26]National Park Service, "How to Evaluate and Nominate Designed Historic Landscapes," *National Register Bulletin No. 18*, p. 6, Web site: www. http://www.nps.gov/history/nr/publications/bulletins/pdfs/nrb18.pdf.

Criterion 3: Resources that embody the distinctive characteristics of a type, period, or method of construction, or represents the work of a master.

Criterion 4: Resources that have yielded, or may be likely to yield, information important in prehistory or history.[27]

As with NRHP Criterion D, Criterion 4 is generally used to evaluate historic sites and archaeological resources.

The CRHR definition of integrity and its special considerations for certain properties are slightly different from those for the NRHP. Integrity is defined as "the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance." The CRHR further states that eligible resources must "retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance," and the CRHR lists the same seven aspects of integrity used for evaluating properties under the NRHP criteria.

5.2 EVALUATION

Tetra Tech concludes that Sharp Park Golf Course appears to meet the criteria for listing on the CRHR and NRHP and should be considered a historical resource for the purposes of CEQA.

The following provides a summary of Sharp Park Golf Course's historic significance. It is evaluated on the DPR 523 forms in the appendix.

Sharp Park Golf Course appears to meet the criteria for listing on the NRHP for its significance under Criteria A and C and for listing on the CRHR under Criteria 1 and 3. (See the DPR 523 form for the evaluation of this property under NRHP Criteria B and D, along with the evaluation of the property under CRHR Criteria 2 and 4.)

The property's period of significance is from 1929 to 1932, which represent the construction dates for the course's original design.

Sharp Park Golf Course is significant under Criterion A/1 because its construction is associated with the need within San Francisco for a third municipal golf course. The construction and development of Sharp Park Golf Course was a direct result of the overcrowding at Harding and Lincoln Park municipal courses and the City's desire to build a third course to accommodate San Francisco golfers. The construction of Sharp Park Golf Course represents a development pattern within the City of San Francisco and within the US in general, in which golf was an increasingly popular sport. The years between 1910 and the late 1930s have been called the "golden age of golf" in the US due to the fact that many of the great golf course architects designed courses during

[27]California Public Resources Code, Sections 4850 through 4858; California Office of Historic Preservation, "Instructions for Nominating Historical Resources to the California Register of Historical Resources," August 1997.

this period. Many of the courses, like Sharp Park Golf Course, are still in use today. The construction of Sharp Park Golf Course is directly associated with the growing popularity of recreational golf within the US during the early twentieth century.

Sharp Park Golf Course is significant under Criterion C/3 for its architecture and landscape architecture—a public golf course constructed between 1929 and 1932, embodying distinctive characteristics of a seaside golf course. This period is often called "the golden age of golf" because of the popularity of the game and the increase in golf courses constructed in the US. Sharp Park Golf Course contains many distinctive elements of its type, a golf course constructed on the oceanside, on sandy dunes, with original seaside holes that provide water hazards as part of the game. The course was designed by a well-known architect, with nuances, style, and innovation that enhanced golf courses constructed during this period in the US, many of which were private. The original layout of the golf course included holes featuring multiple tees, double fairways, cross bunkering, fairways in sand dunes, and several holes bordering Laguna Salada. Cypress trees dotted the setting. Although the course has been modified, it is common to modify a living landscape, although efforts to keep the fairways' general original course design were always in effect. Twelve of the original 18 holes are part of the current design, and two fairways are original but without original greens.

The golf course is also the work of a master. While there are other examples of Mackenzie's work that are more well known, Sharp Park Golf Course is an example of his idea of the perfect surroundings for a golf course—holes surrounded by sand dunes next to the seashore. Although alterations have been made to the course, during the period of significance the course retained Mackenzie's routing, surprise elements, and hole and fairway locations.

The clubhouse is a good example of an Eclectic architectural style, with Mission and Spanish elements, improved by the Works Progress Administration during the Great Depression. The clubhouse was built to serve the golfers of Sharp Park Golf Course, is directly associated with the golf course, and is considered a historical character-defining feature of the golf course. It is a good representation of its architectural type and period, and its alterations have not diminished its historic integrity, as discussed below. The golf course clubhouse has consistently been used as a clubhouse for Sharp Park golfers, as was its original purpose. The presence of the golf course clubhouse helps to convey the historic character of the entire golf course.

In rare instances, buildings and landscape features themselves can serve as sources of important information about historic construction materials or technologies (Criterion D/4); however, the Sharp Park Golf Course does not appear to be a principal source of information in this regard.

5.3 INTEGRITY

Integrity of a historic resource is measured by applying seven factors: location, design, setting, workmanship, materials, feeling, and association. Sharp Park Golf Course, including the clubhouse and maintenance building, has retained a sufficient level of

integrity in all measures. Although the course has been modified over time, the golf course is in its historic location and retains much of its historic appearance, except that the ocean is no longer visible from the course. Still present are the lagoon, the east and west locations of the holes, and the fairway, which were all elements of the original design. Mackenzie designed the course with interesting challenges for golfers, regardless of their skill level, which is still true of the current course. Man-made features that have been added, such as the seawall, do not diminish the historic integrity of the course because the land and its location were important to Mackenzie's design; thus, the course is still authentic to Mackenzie's plan. The course retains its integrity of design, workmanship, and materials, which provide it with a similar sense of feeling and association to its period of significance.

The clubhouse retains most of its historic design features, and original or in-kind materials illustrate the workmanship that went into its design. Modifications, such as additions to the dining area and replaced windows, have not reduced the overall historic character of the building that give it the sense of feeling and association to its period of significance.

Sharp Park Golf Course's character-defining features are the original features and design of the clubhouse, the original permanent maintenance building, and the course's original layout, including the 12 remaining original holes (current holes 1, 2, 3, 8, 9, 10, 11, 13, 14, 15, 17 and 18) and original landscape features. The cypress trees that line the fairways also contribute to its significance, although none of the specific shrubs or trees on the property are considered contributors. The property's noncontributing features are the practice green, the maintenance trailers, the cart paths, the four holes that were moved to the east side of Highway 1, and other alterations that occurred after the period of significance.

The permanent maintenance building is part of the original construction of the golf course and retains its original integrity. The cypress trees that line the fairways also contribute to its significance, although none of the specific shrubs or trees on the property are considered contributors. Together, these features contribute to the golf course's historic significance and must be present to do so. The property's noncontributing features are the practice green, the maintenance trailers, the cart paths, and the four holes that were moved to the east side of Highway 1. These noncontributing features are those that were constructed or added after the period of significance, or, as in the case of the maintenance trailers, are temporary structures.

5.4 IMPACTS ANALYSIS AND MITIGATION MEASURES

CEQA guidelines Section 15064.5(b) states that "a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." The following provides reference to the project description in Section 2 as it relates to Sharp Park Golf Course and an impacts analysis for the golf course as a historic resource.

The SNRAMP project activities will be situated at and next to the eastern and western part of Sharp Park Golf Course and will not be near either the clubhouse or maintenance building. Therefore, none of the project components or construction will cause a substantial adverse change to these contributing buildings on this property such that they will be materially impaired or unable to continue to convey their significance. Potential impacts on this property would be on the designed historic landscape itself.

As part of the proposed project, some of the activities that will take place when implementing the SNRAMP will have the following direct potential impacts on Sharp Park Golf Course:

Impact HR-1. Excavated dredged spoils appropriate for use as golf course substrate materials would be used on-site to raise Holes 10, 14, 15, and 18 and to create the upland habitat on the east edge of Laguna Salada. Raising Holes 10, 14, and 15 would not have a significant impact on the historical character-defining features of the golf course because the holes would remain in place and alterations would be to elevate the holes, which would not impact the historic integrity of the fairways. There would be a less than significant impact on these holes from this proposed project activity.

Impact HR-2. The closure of Hole 12 (historic Hole 2) would have significant impacts on the historic character-defining features of the golf course because it would eliminate a hole and fairway on the west side of the course, along the ocean. Hole 2 was originally designed as a 262-yard fairway and a par 4. The hole was shortened in the early 1960s and was renumbered. Although Hole 12 has been altered from its original design, its closure and conversion to coastal/shrub habitat is a significant impact on the golf course because the Hole 12 area was included as part of the golf course design since the original construction of the course. The hole had always been at the edge of the lagoon or backed against the seawall. Using the area for habitat conservation and not as part of the golf course changes the boundaries of the golf course and its historic design. Closing Hole 12 would therefore be a significant impact. Implementing Mitigation Measure 1 (Document Historical Resources), as described in Section 5.0, would record the golf course following the Secretary of the Interior's *Standards for the Treatment of Historic Properties and Guidelines for the Treatment of Cultural Landscapes*. Because implementing Mitigation Measure 1 would not reduce this impact, there would still be a significant impact on the historic resource.

Impact HR-3. A post and rail fence would also be installed along the seawall, to the west of the lagoon, with additional fencing around the wetland complex to discourage human and pet intrusion into the restored habitat area. This fence would alter the visual appearance of the seawall and would add a modern element to the golf course. The seawall is not an original feature of the golf course but was constructed during the golf course's period of significance and would be a modern element within the historic setting of the course. The construction of a fence would add a modern element to the course but would not alter a historic character-defining feature. Therefore, constructing a fence would not have a significant impact on the golf course.

Impact HR-4. Modifying approximately 13 acres of the golf course to create upland habitat along the east side of the lagoon to provide critically important San Francisco garter snake upland habitat would require slightly shortening or narrowing Holes 10 and 13 (historic Holes 18 and 9). The habitat corridor would be approximately six acres, bringing the total of modified area at the golf course to about 19 acres. This would have a significant impact on the historic character-defining features, historic Holes 18 and 9, because these holes and fairways would be narrowed and shortened. Fairways have been altered in the past at Sharp Park Golf Course. Implementing Mitigation Measure 1 (Document Historical Resources) would record the golf course in its existing condition under the Secretary of the Interior's *Standards for the Treatment of Historic Properties and Guidelines for the Treatment of Cultural Landscapes*. It would serve as a record of the changes on the golf course through time, including the alterations on fairways and holes due to varying natural conditions. Implementing this mitigation measure would not reduce this impact to less than significant because modifying the historic character-defining features would still constitute a significant impact on the golf course, a historic resource.

Impact HR-5. The recreation analysis in the SNRAMP EIR proposes a mitigation measure (Recreation Mitigation Measure, Option 1) that would create a new hole on the east side of Highway 1, as a replacement for Hole 12. This reconfiguration would result in a total of 13 holes on the west side of Highway 1 and five holes on the east side. Adding another hole on the east side of the freeway diminishes the historic integrity of the landscape because it changes the balance of holes that were originally on the east and west side of Highway 1 and creates a hole in an area that was not originally planned and not originally part of the Mackenzie-designed course. Adding another hole on the east side of the course, in an area that would change the historic boundaries of the golf course design, would be a significant impact on Sharp Park Golf Course, a historic resource. Implementing Mitigation Measure 1 (Document Historical Resources), as described in Section 5.0, would record the golf course following the Secretary of the Interior's *Standards for the Treatment of Historic Properties and Guidelines for the Treatment of Cultural Landscapes*. Because implementing Mitigation Measure 1 would not reduce this impact, there would still be a significant impact on the historic resource.

Impact HR-6. The recreation analysis in the SNRAMP EIR proposes a mitigation measure (Recreation Mitigation Measure, Option 2) that would create a new hole on the west side of Highway 1, as a replacement for Hole 12. This reconfiguration would result in a total of 15 holes on the west side of Highway 1 and three holes on the east side. This alternative mitigation measure would be beneficial to the Sharp Park Golf Course because it would restore some of the elements that Mackenzie had implemented in his original design of this course, such as coast side holes. This mitigation measure would change the layout of the holes, but the new holes would be in areas of the course where Mackenzie situated holes in his original design, and would be in keeping with the historic boundaries of the golf course. Impacts on Sharp Park Golf Course, if this version of the mitigation measure were implemented, would be less than significant.

CHAPTER 6
MITIGATION

Mitigation Measure 1, Document Historical Resources—The SFRPD would document or retain a consultant to document Sharp Park Golf Course before any construction work or modifications to the course. The National Park Service has published some guidance for the preservation of cultural landscapes in *Preservation Brief 36: Protecting Cultural Landscapes, Planning, Treatment and Management of Historic Landscapes* and in the more complete Secretary of the Interior's *Standards for Treatment of Historic Properties Guidelines for the Treatment of Cultural Landscapes.* The appropriate level of documentation would be selected by a qualified professional who meets the standards for history, architectural history, or architecture (as appropriate) set forth by the Secretary of the Interior's Professional Qualification Standards, (36 CFR, Part 61). The documentation will consist of the following:

- Full sets of measured drawings depicting existing or historic conditions of the Sharp Park Golf Course;
- Digital photographs (does not have to be large-format negatives) of Sharp Park Golf Course;
- A written history and description of Sharp Park Golf Course and its alterations.

The professional historian will prepare the documentation and will submit it for review and approval by the San Francisco Planning Department's Preservation Specialist. The documentation will be disseminated to the San Francisco Library History Room and the SFRPD Headquarters.[28]

[28]Note that in most cases the use of drawings, photographs, and displays does not mitigate the physical impact caused by demolishing or destroying a historical resource (14 CCR, Section 15126.4[b]). However, CEQA requires that all feasible mitigation be undertaken even if it does not mitigate below a level of significance. Recordation serves a legitimate archival purpose; Office of Historic Preservation, *How Can Substantial Adverse Change be mitigated?* California State Parks Web site: www.ohp.parks.ca.gov.

CHAPTER 7
QUALIFICATIONS

Julia Mates Historian/Architectural meets the History and Architectural History professional qualifications as outlined by the federal government in Title 36, Code of Federal Regulations, Part 61. Ms. Mates prepared this HRE with assistance from Cultural Resource Specialists Erin King and Frank Stipe. Ms. Mates reviewed project information, assessed known and potential historical resources, and prepared the text for this report. Ms. Mates has a Masters Degree in History/Public History and ten years of experience conducting historic resource projects.

Ms. King assisted with field recordation of the Sharp Park Golf Course. She has an MA, RPA, and over nine years of experience.

Mr. Stipe assisted with peer review of the designed historic landscape report. Mr. Stipe has an MA, RPA, and over ten years of experience.

APPENDIX A

DPR 523 FORMS

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 3S
Other Listings _____
Review Code _____ Reviewer _____ Date _____

 ***Resource Name or #** (Assigned by recorder) Sharp Park Golf Course

P1. Other Identifier: Sharp Park Golf Course

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County** San Mateo
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5′ Quad** San Francisco South **Date** 1956 (photorevised 1999) **T**___; **R** ___; __ ¼ **of Sec** ___; _____ **B.M.**

c. Address Sharp Park Drive / Francisco Boulevard City Pacifica Zip 94404

d. UTM: (give more than one for large and/or linear resources) Zone _____; _____mE/ _____mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)
Intersection of Sharp Park Drive and Francisco Boulevard. Sharp Park Drive, heading west, dead ends at golf course.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The Sharp Park Golf Course (SPGC) is an 18-hole, 120-acre golf course in the town of Pacifica in San Mateo County. The golf course borders the Pacific Ocean, is bisected by Highway 1, and contains the natural Laguna Salada lagoon, wetlands, and associated vegetation. The course is owned and maintained by the City of San Francisco Recreation and Parks Department. The clubhouse is at the east side of the property, overlooking the course, as shown in Photograph 1, below. (See Continuation Sheet)

P3b. Resource Attributes:** (List attributes and codes) HP29: Landscape Architecture; HP13: Clubhouse; HP35: New Deal Public Works ProjectP4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1: Clubhouse, camera facing southeast, April 9, 2010.

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1931/ City of San Francisco Historic Records

***P7. Owner and Address:**
City and County of San Francisco

***P8. Recorded by:** (Name, affiliation, address)
Julia Mates/Erin King
Tetra Tech, Inc.
555 Market Street, 15th Floor
San Francisco, CA 94105

***P9. Date Recorded:** March 4, 2010
***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Tetra Tech, Inc., "Historical Resources Evaluation Report for Sharp Park Golf Course SFRPD Natural Resources Areas," 2011.

***Attachments:** NONE ☐ Location Map ☒ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (list) _____

***NRHP Status Code** 3S

***Resource Name or #** (Assigned by recorder) Sharp Park Golf Course

B1. Historic Name: Sharp Park Golf Course

B2. Common Name: Sharp Park Golf Course

B3. Original Use: Golf course and clubhouse and maintenance building B4. Present Use: Golf course and clubhouse and maintenance building

***B5. Architectural Style:** Eclectic with elements of Spanish and Mission Revival

***B6. Construction History:** (Construction date, alteration, and date of alterations) Course: built 1929-1932; alterations 1941, 1962; lengthening some tees 1985-1994 / Clubhouse: built 1932; early improvements 1935-1936; enclosed dining area and additional dining space 1994

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date:** _____ **Original Location:** _____

***B8. Related Features:** _____

B9. Architect: Course: Alister Mackenzie / Clubhouse: Agnus McSweeny b. Builder: Course: Unknown / Clubhouse: Unknown, improvements WPA

***B10. Significance: Theme** Golf **Area** San Francisco

Period of Significance 1929-1932 **Property Type** Golf Course and Clubhouse **Applicable Criteria** A / 1 & C / 3

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Sharp Park Golf Course, including the clubhouse, appears to meet the criteria for listing in the National Register of Historic Places (NRHP) for its significance under Criteria A and C. Furthermore, this property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act (CEQA) Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and the property appears to meet the significance criteria as outlined in these guidelines. Therefore, it is a historical resource for the purposes of CEQA. (See Continuation Sheet.)

(Sketch Map with north arrow required.)

See Continuation Sheet.

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** Neal Hotelling, *Pebble Beach Golf Links: The Official History*, (Chelsea, MI: Sleeping Bear Press, 1999); *Sharp Park & Pro Shop Plans*, (San Francisco Planning Department 1994); Sharp Park Golf Course Website: http://www.sharpparkgc.com; Alister Mackenzie, The Spirit of St. Andrews, (Chealsea, MI: Sleeping Bear Press, 1995); City and County of San Francisco, Board of Park Commissioners, Map. *Sharp Park Municipal Golf Course, Salada Beach, San Mateo County, California*, on file at City of Pacifica Planning Department; Harris, Richard. Pacifica Planning Commission Meeting correspondence 2009, on file at City of Pacifica Planning Department; San Francisco, California; National Golf Foundation Consulting, Inc. *Sharp Park Golf Course*, City of San Francisco, CA, no date on file at\ San Francisco Parks and Recreation Department files titled Miscellaneous Documents, Golf Course History; Dr. Michael J. Hurzdan, Golf Course Architecture: Evolutions in Design, Construction, and Restoration Technology, Second Edition, (Hoboken, NJ: and see footnotes.

B13. Remarks:

***B14. Evaluator:** Julia Mates

***Date of Evaluation:** March 2010

(This space reserved for official comments.)

P3a. Description (continued)

Along with the 18-hole course, the facility includes a large clubhouse, practice green, and maintenance area. The course and clubhouse were completed in April 1932. Access to the facility is from Sharp Park Road; a chain link fence, trees, and bushes establish the property's boundaries. A parking lot is adjacent to the east side of the clubhouse. The course's front nine holes are on the southern and eastern sides of the course. Some of the front nine holes (holes 4 through 7) are on the east side of Highway 1 and are accessed by a tunnel under the highway. The back nine holes are located on the western and southern sides of the property. Routing of the course is accomplished with fairways running parallel to each other and divided by mature cypress trees. The fairways are surrounded by concrete cart paths. A natural lagoon, Laguna Salada, is located at the western end of the course, and four holes (14 through 17) play around the lagoon. The southern end of the lagoon is traversed by a bridge. A seawall divides the course from the ocean on the west side of the course. **Photograph 2**, **3**, and **4** are representative photos of the golf course.

The golf course has undergone alterations since its construction, including lengthening, relocating and renumbering fairways, infilling some sand dunes with grass, construction of a seawall/berm dividing the ocean from the course, lengthening tees, adding tee boxes, and re-routing the course to accommodate the alignment changes in Highway 1.

The two-story clubhouse has an irregular footprint with multiple wings. The clubhouse is shown in **Photographs 5, 6, 7, 8, 9 and 10**. It sits on a concrete foundation and is clad in stucco. The building is topped with a cross gable roof with multiple-level, cross-gabled roof wings that run on a north-south axis. The roof is sheathed in red clay tiles and is moderately pitched with no eave overhang. There are two extended entrances on the north axis, one facing east and the other facing west. An extension off the south end of the building is a modest addition, constructed in 1994.[1] The clubhouse was constructed in the Eclectic architectural style with elements of Spanish Revival and Mission styles, popular in California during the 1920s. Architect Agnus McSweeny, an associate at the San Francisco architectural firm started by Willis Polk, designed the building that was constructed by the Works Progress Administration (WPA). A plaque on the clubhouse states, "Improved by Works Progress Administration 1935-1936." Exterior details include a variety of sizes of fixed and vertical hung sliding sashes. Many windows on the building appear to have been replaced with modern sashes, with the exception of the windows on the east façade which are original wood, vertical hung and casement sashes. There are circular vents, some covered with wrought iron bars and others in the form of Mission Style canals in some of the gables. There are four chimneys along the roof line that are sheathed in stucco. A driving range is north of the clubhouse, and maintenance buildings are on the northeast side of the course.

The north wing faces the practice green. There is secondary entrance at the first floor of this north side that contains a set of original double wood doors with fixed center sashes covered by metal security grilles. The windows on this side of the building are comprised of replacement metal sliding sashes and original one-over-one hung wood sashes. There is a small north facing patio at the second story that is accessed through a set of paired, glazed doors, with multiple panes of rectangular glass.

[1] *Sharp Park Restaurant & Pro Shop plans for proposed work*, dated October 1994, on file at City of Pacifica Planning Department, Permit No. 1327994.

The east side of the building faces the parking lot and contains the main entrance to the club from the lot. This side has a projecting first story with a recessed, round arched entrance with a decorative iron work and gates set into the arch. The front doors are a set of original, paired glazed doors with multiple panes of rectangular glass, flanked by sets of fixed, windows with multiple panes of rectangular glass.

The western side of the clubhouse faces the golf course, and serves as the main façade. The main entrance on this side is recessed with an extended arch. Flanking the arch are two piers, sided in smooth stucco. A pair of original, wood doors identical to those at the east side of the building serve as the front doors. Metal security grilles cover the windows of these doors. The remainder of this west side features a ribbon of six large, replacement floor-to-ceiling windows. Each set of three windows flanks a central, wood door with multiple glass panes.

The south side of the building is an extension, constructed in 1994, that faces the current Hole 2 fairway. It has large, modern, fixed windows, and little architectural relief.

A compound of temporary and one permanent building serves as the maintenance area for the golf course and is north of the clubhouse, on the east end of the property, atop a small hill. This maintenance area is surrounded by trees and metal fencing. Most of the structures within the maintenance area are temporary storage containers; the only permanent building is a large, one-story barn that rests on a concrete foundation, and is topped with a front gable roof with shallow eaves with exposed wood roof rafter tails. **(Photograph 11**). The walls of this building are clad in vertical shiplap redwood. At both the north and south sides of the building are two over-head mounted wood doors. Fenestration along the building consists of original awning sashes with wood muntins. This barn is currently used for storage and is original to the course.

B10. Significance (continued)

History of Sharp Park Golf Course

Sharp Park Golf Course is located on the former Mexican Rancho land of San Pedro. A portion of this land, 410-acres, was eventually owned by George Sharp, prominent San Francisco attorney and corporate counsel for the Ocean Shore Railroad in the late 1880s.[2] When Sharp passed away in early 1882, the land was left to his wife, Honora. She passed away in 1905 and the estate land was left to her trustees, Ruben Lloyd and Adolph Spreckles, both members of the San Francisco Parks Commission. Spreckles sold his share of the property to the City and County of San Francisco in 1916 for 10 dollars in gold, and, after Lloyd passed away in 1917, the remaining shares of the land were bequeathed by the estate to the San Francisco.[3] The property was stipulated to be used for park and recreational purposes only.

Alister Mackenzie was commissioned by the City and County of San Francisco to design the course. Having worked on other seaside golf courses in Great Britain, Mackenzie believed that "golf in its early days was always played on commons or links land which bordered the sea. …the natural characteristics of this type of land made it easily the most suitable for the game."[4] Mackenzie stated that Sharp Park, being constructed on land reclaimed

[2] Sharp Park Golf Course is located on only 120 acres of this land.

[3] Sharp Park Golf Course website: http://www.sharpparkgc.com/.

[4] Alister Mackenzie, *the Spirit of St. Andrews*, (Chelsea, MI: Sleeping Bear Press 1995), 246.

B10. Significance (continued)

from the sea "now has a great resemblance to real links land."[5] Jack Fleming, who was the Parks Commission-appointed City golf course overseer, served as Mackenzie's assistant during the project. In the mid-1930s, Robert Hunter was appointed to supervise construction of the course.[6]

The location of Sharp Park Golf Course posed a challenge. The parcels of land designated for the course were adjacent to the Pacific Ocean and the land was composed of barren sand dunes and a lagoon. In order to construct the golf course and build up fairway grades, the Sharp Park site was dredged. The natural lagoon, Laguna Salada, remained within the golf course, and the design incorporated it by surrounding it with fairways. Construction began on the course in 1929, and dredging the area around Laguna Salada marsh took 14 months. Sharp Park Golf Club opened in 1932, after two delays due to drainage problems on the course from winter rains.[7]

The original layout of the golf course included holes featuring multiple tees (holes 2, 5, and 14), double fairways (holes 5 and 10), cross bunkering (hole 16) fairways in sand dunes (holes 3 and 7) and several holes bordering the inland lake (hole 4, 5, 8, 9, 10, and 11). Cypress trees dotted the setting. [8]

When originally constructed, the course used well water for irrigation. In the 1930s, the WPA installed a water pipeline for the course that extended from the San Bruno county jail reservoir to a concrete pressure reducing tank, 20 feet wide by 150 feet long. This pipeline provided water to the course for irrigation and for drinking until it was abandoned in place in 2008. The line extended through the canyon to the east of the course through the current Hole 7 fairway.[9]

Golf courses have been called living things in the sense that they are mostly constructed of living elements, such as grass and trees, which grow and change over time. Soil erodes, changing the pitch of slopes; trees grow or are replanted, and the holes cannot be played as they were originally. Advancements in playing equipment also change the game.

Courses are redesigned, replaced, or remodeled for two reasons; the first is to improve the layout of the course, the second is to adjust the course for advances in golf technology. Redesigning golf courses involves rerouting and adjusting holes. In golf course architecture, restoring courses is considered to be the act of bringing a course back to, or closer to, its original state. At the same time, there are technological advances in the game of golf (balls, clubs, and mowing techniques) that advance and therefore result in alteration of the course to maintain playability. By the late 1920s, golf course designers accepted the idea that both natural and technological advances are factors, among others, that make it necessary to continuously improve golf courses, in order to maintain the strategy of the game.

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[5] Mackenzie, *the Spirit of Saint Andrews*, 171-172.

[6] National Golf Foundation Consulting, Inc., *Sharp Park Golf Course*, (City of San Francisco, CA, no date), 84, On file at City and County of San Francisco Park and Recreation Department vertical files *Miscellaneous Documents, Golf Course History*.

[7] Joe Faulkner, *Sharp Park*, 1970, www.sfpublic.golf.com.

[8] Daniel Wexler, *the Missing Links: America's Greatest Lost Golf Course & Holes*, (Chelsea, Michigan: Sleeping Bear Press 2000) 114-115.

[9] Clyde Healy, Assistant City Engineer, *Report of Clyde E. Healy, Assistant City Engineer, City of San Francisco and Coordinator of WPA Projects*, (San Francisco: October 1935-1939), 53.

B10. Significance (continued)

Changes to the Course

The layout of Sharp Park Golf Course has undergone several alterations to accommodate natural changes in the landscape because of the course's location along the Pacific Ocean shoreline. The course was also modified to accommodate the anticipated realignment of Highway 1.

The first major alteration was in 1941, when a seawall or berm was constructed to keep the ocean from reaching and flooding the course. To make room for the berm, the two original oceanside Holes 3 and 7 were moved inland. Another alteration was removing the lagoon and the second fairway at original Hole 10 (current Hole 14). Course modifications also included the installation of a 4,000-gallon pump to help with annual flooding of Laguna Salada, rerouting fairways for holes on the east side of Highway 1, and modest alterations, such as renumbering and shortening some of the original fairways. More recent changes involved lengthening fairways and adding and rebuilding tee boxes from 1985 until 1994.

The original design of the course had three holes on the east side of what was a county road, in front (on the west side) of the clubhouse, as shown in Figure 3. Around 1943, the county road was improved and rerouted to become Highway 1, which no longer passed the west side of the club house but was now on the east side. Although Highway 1 was not realigned until sometime after 1940, the designers of the course knew the course would have to be modified to accommodate the road (Figure 3). In 1932, Jack Fleming, in writing about the course in the San Francisco Call-Bulletin, described it as being "at present along the edge of the county road which is planned to re-locate." Other, more minor alterations included changing sand trap

Historic Contexts

Golf Course Design

Modern golf has its roots in Scotland beginning in the mid-fifteenth century on hilly grazing land along the coastline covered with fescues, broom, and other links plants. Early golf courses in the United States were referred to as "golf links" because they were designed in the tradition of Scottish links—the sandy seaside wasteland that links the ocean with the arable soil inland is the location where the Scottish used to construct golf grounds.[10] Holes were placed in an area that afforded interesting play, and aside from removing tall brush, little was done to modify the grounds. By the turn of the century, golf was becoming an important sport and golf course architecture was becoming a respected profession. Several early courses constructed in the United States during the mid to late nineteenth century were designed by professional golfers from Great Britain. Interest in golf evolved in the US during the late nineteenth and early twentieth centuries and increased in popularity during the post-World War II years.[11]

Prior to the 1920s, golf courses were designed by prominent players, not golf architects. Golf course architecture was a full time profession in the 1920s, and it was a period of growing prosperity for the US, a time when construction costs, real estate values, and interest rates were low. The 1920s have been called the Golden Age of

[10] Graves and Cornish, *Golf Course Design*, 3; Neal Hotelling, *Pebble Beach Golf Links: the Official History* (Michigan: Sleeping Bear Press, 1999), 13.
[11] Tom Fazio, *Golf Course Designs*, (New York: Harry N. Abrams, Inc. 2000), 98-100.

B10. Significance (continued)

golf course style in America and the 1920s saw the style of golf courses enhance immeasurably.[12] By the mid-1930s, golf construction regained popularity and many municipalities hired course architects to design golf courses. During the Great Depression era, the federal WPA program was used to provide workers to build these public courses.[13]

Because golf courses are both natural and manmade, it is common for golf courses to be redesigned over time. Courses are redesigned, replaced, or remodeled for two primary reasons to accommodate for advances in golf technology and to improve the layout of the course to accommodate the natural changes that occur within a natural landscape such as vegetation growth, soil erosion, and changes in slope pitch.

History of Public Golf in San Francisco

The game of golf came to California in the late 1800s and the first course was constructed in Southern California at the Riverside Country Club in 1891. The first Northern California golf course was at the Burlingame Country Club, a three hole golf course, built in 1893. The first golf course to be constructed in San Francisco was the San Francisco Golf Club in 1895. [14]

While golf courses at private country clubs were gaining in popularity, golf courses for golfers unable to afford the high prices of country clubs had very few places to play. In the early 1900s, avid golfers and wealthy members of private clubs, Jack Neville and Vincent Whitney, approached John McLaren, Supervisor of Golden Gate Park, about constructing a municipal golf course. Neville and Whitney then began designing San Francisco's first municipal golf course, Lincoln Park.[15] Lincoln Park remained the only San Francisco municipal golf course for 23 years until the construction of Harding Park. Harding Park, designed by Sam Whiting and Willie Watson, was constructed in 1925.

The popularity of golf in San Francisco peaked during the 1920s. Lincoln Park and Harding Park were the only two golf courses in San Francisco and, on weekends, they were overrun with golfers. The City decided to use the land in San Mateo County, formerly owned by George Sharp, for the location of a third public golf course, named for the former land owner. Alister Mackenzie, the famous golf architect who had designed several courses in the US and abroad, was commissioned to design the course. Mackenzie was assisted by Jack Fleming, Superintendent of Maintenance for Golf Courses and Bowling Greens in San Francisco. Supervision of construction was given to Chandler Eagan, with whom Mackenzie had worked on Pebble Beach Golf Links in 1929.[16] In 1930, Robert Hunter Jr. was appointed the superintendent of construction for the course for the remaining ten months of construction. Willis Polk and Company architect Agnus McSweeny was hired to prepare plans for the construction of the golf clubhouse.

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[12] Geoffrey S. Cornish and Ronald E. Whitten, *the Architects of Golf*, (Harper Collins Publishers: New York 1993.), 84.

[13] Cornish and Whitten, *the Architects of Golf*, 106.

[14] Neal Hotelling, *Pebble Beach Golf Links: The Official History*, (Chelsea, MI: Sleeping Bear Press, 1999), 20.

[15] Joe Faulkner, 1970 5; Although the course was constructed in the early 1900s, it did not consist of a full 18 holes until 1917 when the course expanded to a full 18 hole course.

[16] Bo Links and Richard Harris. *Mackenzie's Sharp Park Under Siege*.

B10. Significance (continued)

Alister Mackenzie

Alister Mackenzie was born in Scotland in 1870 and received a medical degree. He served as the Alwoodley Golf Club Green Chairman in the early 1900s, assisting golf architect H.S. Colt with the design of that golf course in Leeds.[17] Mackenzie continued to work with Colt on other courses, and, in 1925, he established his own golf architecture firm and designed golf courses in Great Brittan, Uruguay, Australia, Argentina, Canada, and the US.[18] Mackenzie's best work in America was done between 1928 and 1933 prior to his death in 1934.[19] By the time Mackenzie was commissioned to work on Sharp Park, he was living in the Bay Area.

Mackenzie's concept of an ideal hole in perfect surroundings was a hole surrounded by sand dunes next to the seashore.[20] Mackenzie felt that the success of golf course construction depended entirely on making the best use of natural features and the devising of artificial ones indistinguishable from nature.[21] He also contended that a golf course must offer adventure in order to hold interest for continuous play. His courses provided interesting challenges for golfers, regardless of their skill level. Mackenzie's firm was also known for its original and distinctive bunkers with irregular shapes, each with its own individual design.[22] Mackenzie often had the overall vision for design of his courses, and left the details to be created by those who worked with him, such as Eagan.

George Shackelford, in his book *Grounds for Golf*, describes Mackenzie as a master designer and offers that Mackenzie's secret to creating unique courses was his talent for routing.[23] Mackenzie designed his hole layout and sequencing on natural ground contours, not on any prescribed sequencing. Distinctive bunkering, the use of small hillocks around greens and exciting hole locations were Mackenzie's trademark. As Shackelford describes, while many architects try to create a special course, Mackenzie "could figure out how best to fit holes onto a property and situate a golf course to evoke a comfortable, settled, connection to the ground. His course routings are always functional and original but rarely do they fight the contours of the property."

Mackenzie's notable US golf course designs were Cypress Point Golf Club, California (1928), Augusta National Golf Club, Georgia (1932), and Pasatiempo Golf Club, California (1929). Mackenzie was commissioned by the City and County of San Francisco to design Sharp Park Golf Course in 1929. According to Geoffrey Cornish and Ron Whitten, golf architects and authors of the book, *The Architects of Golf*, it was Mackenzie's philosophies that most influenced post-World War II designers.[24]

[17] Geoff Shackelford, Grounds for Golf: the History and Fundamentals of Golf Course Design, (New York: St. Martin's Press, 2003), 154.
[18] Cornish and Whitten, *the Architects of Golf*, 81.
[19] Honorable Julie Lancelle, Bo Links, and Jeffrey Phillips, *Sharp Park Golf Course*, The Cultural Landscape Foundation, July 2009.
[20] Mackenzie, *Golf Architecture*, 28.
[21] Mackenzie, *Golf Architecture*, 29.
[22] Shackelford, *Grounds for Golf*, 155.
[23] Shackelford, Grounds for Golf, 156.
[24] Geoffrey S. Cornish and Ronald E Whitten, *The Golf Course*, (New York: The Rutledge Press 1981), 8.

B10. Significance (continued)

Agnus McSweeny

The prestigious design firm of Willis Polk and Company was chosen as the clubhouse architect at Sharp Park. Willis Polk and Company was a highly respected architectural firm, responsible for many architectural masterpieces throughout Northern California. Willis Polk, the architect credited for such masterpieces as the Palace of Fine Arts, the Hobart Building and the Sunol Water Temple as well as the rebuilding San Francisco after the 1906 earthquake, died in 1924. His architectural firm carried on in his tradition and developed the plans for the Sharp Park Golf Clubhouse. The chief architect in charge of the project was Angus McSweeney.

Evaluation

Significance

The following provides an evaluation of the Sharp Park Golf Course under each NRHP and California Register of Historical Resources (CRHR) criteria. The property's period of significance is from 1929 to 1932, and represents the period from start of the property's construction to its completion.

Sharp Park Golf Course appears to meet the criteria for listing on the NRHP for its significance under Criteria A and C and for listing on the CRHR under Criteria 1 and 3.

Sharp Park Golf Course is significant under Criterion A/1 because its construction is associated with the "golden age of golf" in the US, during the late 1910s through the 1930s, a time of great popularity for the sport and a period during which golf architects designed many courses throughout the US. The trend in popularity of golf during this period is also reflected in the history of the golf within San Francisco, because during the early 1920s, the City had the need for a third municipal golf course. The construction and development of Sharp Park Golf Course was a direct result of the overcrowding at Harding Park and Lincoln Park municipal courses and the City's desire to build a third course to accommodate San Francisco golfers.

Sharp Park Golf Course is significant under Criterion C/3 for its architecture and landscape architecture—a public golf course constructed between 1929 and 1932, embodying distinctive characteristics of a seaside golf course. This period is often called "the golden age of golf" because of the popularity of the game and the spike in golf courses constructed in the US. Sharp Park Golf Course contains many distinctive elements of its type, a golf course constructed on the oceanside, on sandy dunes, with original seaside holes that provide water hazards as part of the game. The course was designed by a well-known architect, with nuances, style, and innovation that enhanced golf courses constructed during this period in the US, many of which were private. The original layout of the golf course included holes featuring multiple tees, double fairways, cross bunkering, fairways in sand dunes, and several holes bordering Laguna Salada. Cypress trees dotted the setting. Although the course has been modified, it is common to modify a living landscape, although efforts to keep the fairways' general original course design were always in effect. Twelve of the original 18 holes are part of the current design, and two fairways are original but without original greens.

B10. Significance (continued)

The golf course is also the work of a master. While there are other examples of Mackenzie's work that are more well known, Sharp Park Golf Course is an example of his idea of the perfect surroundings for a golf course—holes surrounded by sand dunes next to the seashore. Although alterations have been made to the course, during the period of significance the course retained Mackenzie's routing, surprise elements, and hole and fairway locations.

The clubhouse is a good example of an Eclectic architectural style, with Mission and Spanish elements, improved by the WPA during the Great Depression. The clubhouse is associated with the golf course and is considered a historic character defining feature of the golf course.

Finally, in rare instances, buildings and landscape features themselves can serve as sources of important information about historic construction materials or technologies (Criterion D/4); however, the Sharp Park Golf Course does not appear to be a principal source of information in this regard.

Integrity

Integrity of a historic resource is measured by applying seven factors: location, design, setting, workmanship, materials, feeling, and association. Sharp Park Golf Course, including the club house and maintenance building has retained a sufficient level of integrity in all measures, with the exception of setting, because the seawall now obstructs the view of the ocean from the course. The CRHR definition of integrity is "the authenticity of a historical resource's physical identity as evidenced by the survival of characteristics or historic fabric that existed during the resource's period of significance."

The CRHR goes on to state that eligible resources "must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance," and then it lists the seven aspects of integrity. Although the course has been modified over time, the golf course is in its historic location and retains much of its historic appearance, with the exception of the fact that the ocean is no longer visible from the course. Still present are the lagoon, the east and west locations of the holes, and the freeway bisection, which were all elements of the original design. Mackenzie designed the course with interesting challenges for golfers, regardless of their skill level, which is still true of the current course. Man-made features that have been added, such as the seawall, do not diminish the historic integrity of the course because the land and its location was important to Mackenzie's design; thus, the course is still authentic to Mackenzie's plan. The course retains its integrity of design, workmanship, and materials that provide it with a similar sense of feeling and association to its forty-four years period of significance.

The clubhouse retains most of its historic design features; original or in-kind materials illustrate the workmanship that went into its design. Modifications, such as additions to the dining area and replaced windows, have not reduced the overall historic character of the building that give it the sense of feeling and association to its period of significance.

B10. Significance (continued)

Sharp Park Golf Course's character-defining features are the original features and design of the clubhouse, the original permanent maintenance building, and the course's original layout, including the 12 remaining original holes (current holes 1, 2, 3, 8, 9, 10, 11, 13, 14, 15, 17 and 18) and original landscape features. The cypress trees that line the fairways also contribute to its significance, although none of the specific shrubs or trees on the property are considered contributors. The property's noncontributing features are the practice green, the maintenance trailers, the cart paths, the four holes that were moved to the east side of Highway 1, and other alterations that occurred after the period of significance.

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Sean Sweeny, Sharp Park Golf Course, personal communication with Julia Mates, Tetra Tech, April 28, 2010.

Photographs (continued):

Photograph 2: Southern-most hole and fairway, camera facing north 3/4/2010

Photograph 3: Western portion of golf course, Fairway No. 12, camera facing east, 3/4/2010

Photograph 4: Fairway No. 3, camera facing south, 3/4/2010

Photograph 5: East side of clubhouse, camera facing northwest 3/4/2010

Photograph 6: Fairway No. 10, camera facing west, 3/4/2010

Photograph 7: East entrance to clubhouse, camera facing west, 3/4/2010

Photograph 8: South side of clubhouse, camera facing northeast 3/4/2010

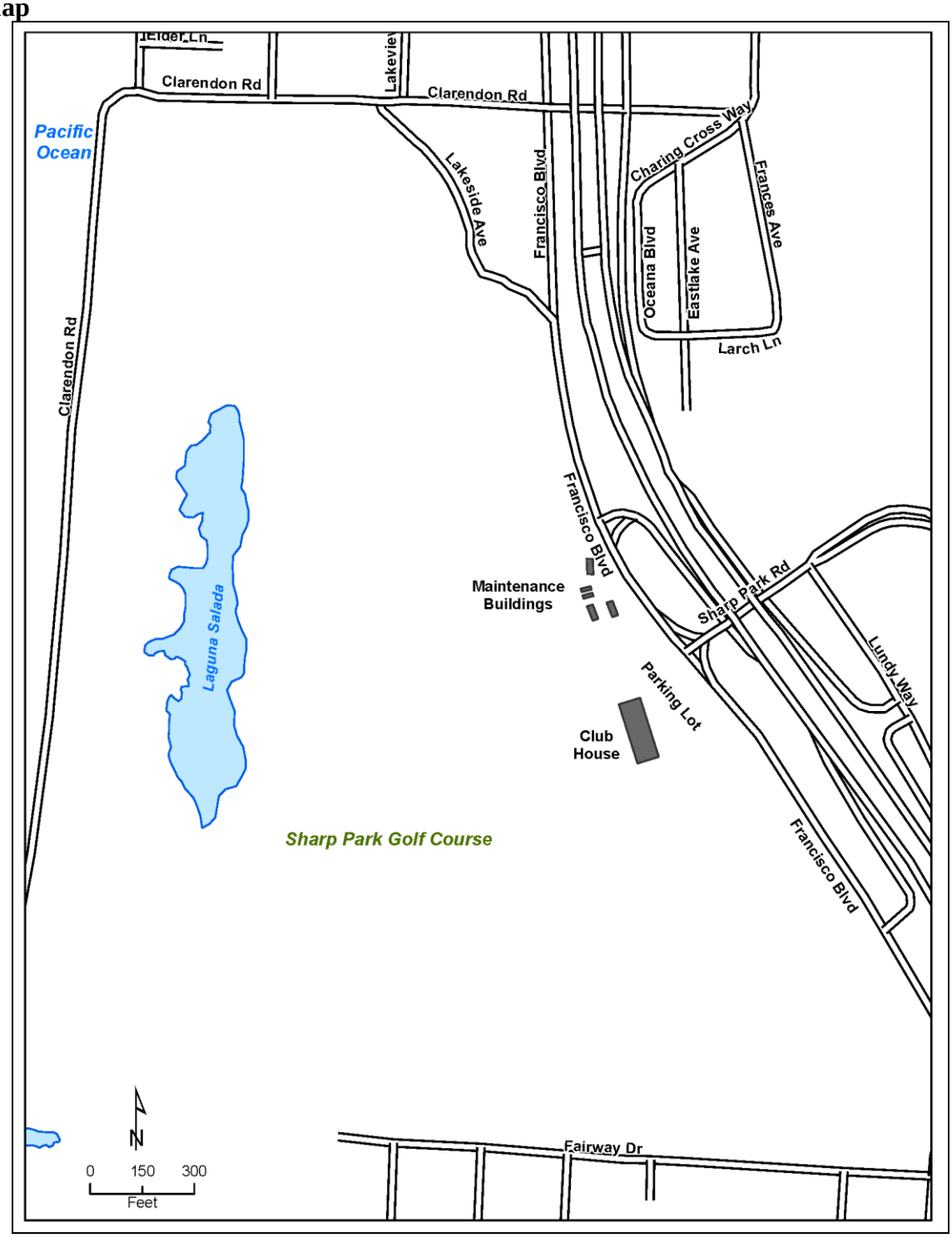
Photograph 9: North side of clubhouse, camera facing south, 3/4/2010

Photographs (continued):

Photograph 10: West side of clubhouse, camera facing southeast 3/4/2010

Photograph 11: Maintenance building, camera facing southeast, 3/4/2010

Location Map



APPENDIX D

Biological Resources

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

Species	Common Name	Status Federal, State, CNPS, Local	Local Significance
Birds			
Aechmophorus clarkii	Clark's Grebe	SLC	Few breeding records from Lake Merced. Also occurs at Sharp Park and India Basin on occasion.
Podilymbus podiceps	Pied-billed Grebe	SLC	Breeds at Lake Merced and Pine Lake. Also present at Sharp Park
Phalacrocorax auritus	Double-crested Cormorant	CSC (rookeries)	Presently nests at Lake Merced
Phalacrocorax penicillatus	Brandt's Cormorant	SLC	Found only at India Basin.
Phalacrocorax pelagicus	Pelagic Cormorant	SLC	Found only at India Basin.
Nycticorax nycticoraz	Black-crowned Night Heron	-	Locally uncommon, may breed at Lake Merced. Observed at Sharp Park, India Basin, and McLaren Park.
Butorides striatus	Green Heron	SLC	Presently occurs at Golden Gate Park and Pine Lake. Presently nests at Lake Merced.
Areda herodias	Great Blue Heron	Sens	Presently nests at Lake Merced
Anas strepera	Gadwall	SLC	Historically bred within San Francisco. Now a winter resident at Lake Merced, Pine Lake, Sharp Park, India Basin, and McLaren Park.
Rallus limicola	Virginia Rail	SLC	Presently occurs at Lake Merced
Porzana carolina	Sora	SLC	Presently occurs at Lake Merced
Laterallus jamaicensis coturniculus	Black Rail	SLC	Historically reported, not recently observed in the City
Haematopus bachmani	Black Oystercatcher	SLC	Occurs in India Basin only
Charadrius alexandrinus	Snowy Plover	FT, CSC	Presently occurs at Ocean Beach
Cepphus columba	Pigeon Guillemont	SLC	Occurs in India Basin only
Buteo lineatus	Red-shouldered Hawk	SLC	Lake Merced, Pine Lake, Palau Phelps, Golden Gate Heights, Billy Goat Hill, and Dorothy Erskine Park. Breeds at Sharp Park, Bayview Hill, McLaren Park, Buena Vista Park, and Glen Canyon.
Buteo jamaicensis	Red-tailed Hawk	SLC	Found in most Natural Areas. Breeds at Sharp Park, Bayview Hill, McLaren Park, Buena Vista Park, Dorothy Erskine Park, Glen Canyon Park, Mt. Davidson, Tank Hill, and Twin Peaks.
Pandion haliaetus	Osprey	SLC	Observed at Lake Merced, India Basin, and McLaren Park.
Falco sparverius	American Kestrel	SLC	Lake Merced, Sharp Park, Bayview Hill, India Basin, and Mt. Davidson. Breeds at McLaren Park.
Falco peregrinus	Peregrine Falcon	SLC	Likely forages in most Natural Areas. No breeding habitat in any of the Natural Areas.
Callipepla californica	California Quail	SLC	Presently occurs at the Presidio and the Arboretum in Golden Gate Park
Columba fasciata	Band-tailed Pigeon	SLC	Sharp Park, Buena Vista. Breeds in Glen Canyon, Mt. Davidson, and Twin Peaks
Bubo virginianus	Great Horned Owl	SLC	Found in Sharp Park. Breeds at Lake Merced, Pine Lake, McLaren Park, and Glen Canyon.
Tyto alba	Barn Owl	SLC	Presently occurs at Lake Merced. Historically reported from Golden Gate Park.
Otus kennicottii	Western Screech Owl	SLC	Presently occurs at Oak Woodlands (Golden Gate Park)

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

Species	Common Name	Status Federal, State, CNPS, Local	Local Significance
Aeronautes saxatalis	White-throated Swift	SLC	Found at Edgehill Mtn, Fairmount Park, Glen Canyon, Interior Greenbelt, Kite Hill, and Mt. Davidson.
Picoides villosus	Hairy Woodpecker	SLC	Found in Sharp Park.
Contopus borealis	Olive-sided Flycatcher	SLC	Currently nests at Lake Merced, Golden Gate Park, Buena Vista, and the Presidio
Sayornis saya	Say's Phoebe	SLC	Winter resident at Sharp Park, Bayview Hill, Bernal Heights, India Basin, McLaren Park, and Mt. Davidson.
Empidonax difficilis	Pacific-slope Flycatcher	SLC	Found in Sharp Park, Bayview Hill, McLaren Park, Billy Goat Hill, Corona Heights, Duncan-Castro, Glen Canyon Park, Mt. Davidson, Oak Woodlands, Tank Hill, and Twin Peaks.
Eremophila alpestris	Horned Lark	SLC	Occurs during migration only. Historic breeding records.
Tachycineta bicolor	Tree Swallow	SLC	Found in Sharp Park, Bayview Hill, and Golden Gate Heights. Breeds in Glen Canyon Park and McLaren Park.
Tachycineta thalassina	Violet-green Swallow	SLC	Found in Sharp Park, Bayview Hill, Golden Gate Heights, Glen Canyon Park, Kite Hill, Mt. Davidson, and Twin Peaks.
Riparia riparia	Bank Swallow	ST	Currently nest at Fort Funston and forage over Lake Merced
Hirundo pyrrhonota	Cliff Swallow	SLC	Currently nests at Lake Merced and Golden Gate Park
Hirundo rustica	Barn Swallow	SLC	Found in most Natural Areas. Breeds at Lake Merced, Pine Lake, McLaren Park, Buena Vista Park, Billy Goat Hill, Corona Heights, Glen Canyon Park, and Mt. Davidson.
Cyanocitta stelleri	Steller's Jay	SLC	Foung at Sharp Park, Buena Vista, Glen Canyon Park. Breeds at Mt. Davidson and Oak Woodlands.
Chamaea fasciata	Wrentit	SLC	Presently occurs at McLaren Park, and Bayview Hill.
Sitta canadensis	Red-breasted Nuthatch	SLC	Winter resident at Lake Merced, Pine Lake, Bayview Hill, McLaren Park, Golden Gate Heights, Corona Heights, Dorothy Erskine Park, Glen Canyon Park, Mt. Davidson, and Oak Woodlands.
Sitta pygmaea	Pygmy Nuthatch	SLC	Breeds at Brooks Park, Lake Merced, Pine Lake, Bayview Hill, McLaren Park, Buena Vista, Golden Gate Heights, Corona Heights, Dorothy Erskine Park, Edgehill Mtn, Fairmount Park, Glen Canyon, Interior Greenbelt, Mt. Davidson, Oak Woodland, Tank Hill, and Twin Peaks. Also found at Kite Hill.
Thryomanes bewickii	Bewick's Wren	SLC	Presently nests at Lake Merced and Fort Funston
Catharus ustulatus	Swainson's Thrush	SLC	Breeds at Sharp Park. Also found at Buena Vista, Golden Gate Heights, Glen Canyon, McLaren Park, Oak Woodlands, and Twin Peaks.
Lanius ludovicianus	Loggerhead Shrike	SLC	Occurs during migration only. Historic breeding records.
Vireo huttoni	Hutton's Vireo	SLC	Found at Sharp Park, Bayview Hill, McLaren Park, Pine Lake, and Buena Vista. Likely breeds in San Francisco.

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

Species	Common Name	Status Federal, State, CNPS, Local	Local Significance
Vermivora celata	Orange-crowned Warbler	SLC	Found at Lake Merced, Pine Lake, Bayview Hill, McLaren Park, Buena Vista, Billy Goat Hill, Edgehill Mt., Glen Canyon Park, Mt. Davidson, Oak Woodlands, and Twin Peaks. Likely breeds in San Francisco at Mt. Davidson.
Dendroica petechia	Yellow Warbler	CSC (nesting)	Observed at Lake Merced in spring 2000, breeding undocumented
Wilsonia pusilla	Wilson's Warbler	SLC	Found at Bernal Heights, Bayview Hill, McLaren Park, Buena Vista, Golden Gate Heights, Corona Heights, Dorothy Erskine, Glen Canyon Park, Oak Woodlands, and Twin Peaks. Breeds at lake Merced, Pine Lake, and Mt. Davidson.
Geothlypis trichas	Common Yellowthroat	CSC	Presently occurs at Lake Merced and Sharp Park
Pipilo maculatus	Spotted Towhee	SLC	Presently occurs at Mount Davidson, Presideo, Oak Woodlands (Golden Gate Park), McLaren Park, Glen Canyon Park, and Twin Peaks.
Junco hyemalis	Dark-eyed Junco	-	Breeding population limited, wintering birds widespread in parks and yards of San Francisco
Zonotrichia leucophrys	White-crowened Sparrow	-	Breeding population limited, wintering birds widespread in parks and yards of San Francisco
Icterus cucullatus	Hooded Oriole	SLC	Breeds at Lake Merced and Glen Canyon Park. Also found at McLaren Park, Buena Vista, and Mt. Davidson.
Carduelis tristis	American Goldfinch	SLC	Breeds at Lake Merced, Sharp Park, Bayview Hill, and McLaren Park. Also found at Glen Canyon, Mt. Davidson, and Twin Peaks.
Carduelis psaltria	Lesser Goldfinch	SLC	Breeds at Bayview Hill, McLaren Park, Gilly Goat Hill, Corona Heights, Glen Canyon Park, Mt. Davidson, and Twin Peaks. Also found at Brooks Park, Dorothy Erskine Park, and Farimount Park.
Loxia curvirostra	Red Crossbill	SLC	Winter resident found at Lake Merced, McLaren Park, Buena Vista, Golden Gate Heights, Oak Woodlands, and Twin Peaks.
Carpodacus purpureus	Purple Finch	SLC	Breeds at Lake Merced, Glen Canyon, Mt. Davidson, Oak Woodlads, and Twin Peaks. Also found at Pine Lake, Sharp Park, Bayview Hill, McLaren Park, Buena Vista, Golden Gate Heights, Corona Heights, and Dorothy Erskine Park.

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

Species	Common Name	Status Federal, State, CNPS, Local	Local Significance
Fish			
Eucyclogobius newberryi	Tidewater Goby	FPD (FE), CSC	Historically collected (1895), not recently observed in the City
Reptiles and Amphibians			
Clemmys marmorata	Western Pond Turtle	CSC	Presently occurs at Lake Merced. Presumed extant at Pine Lake but not recently observed.
Rana aurora draytonii	California Red-legged Frog	FT	Historically observed at Lake Merced. Recently observed at Sharp Park.
Thamnophis sirtalis elegans	San Francisco Garter Snake	FE, SE, SFP	Historically reported from Sharp Park
Invertebrates			
Caecuditea tomalensis	Tomales Isopod	FSC	Collected in 1984 from Lake Merced (CNDDB 2000)
Euphydryas editha bayensis	Bay Checkerspot Butterfly	FT	Reported from Mt. Davidson and Twin Peaks in 1980. Not currently present at either Natural Area.
Icaricia icarioides missionensis	Mission Blue Butterfly	FE	Reported at Sharp Park and McLaren Park in 1988 and from Bayview Park in 2001. Currently breeds on Twin Peaks
Incisalia mossii bayensis	San Bruno Elfin Butterfly	FE	
Ischnura gemina	San Francisco Forktail Damselfly	-	Not observed since 1989, presumed present in Glen Canyon. Presently occurs in McLaren Park.
Lichnanthe ursina	Bumblebee Scarab Beetle	FSC	1980 report from dunes near Laguna Salada, presumed present
Speyeria callippe callippe	San Francisco Silverspot Butterfly	FE	
Plants			
Amsinckia menziesii var. *intermedia*	Common Fiddleneck	LS	Presently occurs at Bayview Park, and Twin Peaks
Aquilegia formosa	Red Columbine	LS	Presently occurs at Glen Canyon, O'Shaughnessy Hollow, and Mount Davidson
Arabis blepharophylla	Coast Rock Cress	CNPS List 4	Presently occurs at Mt. Davidson, O'Shaughnessy Hollow, and Twin Peaks
Arctostaphylos hookeri ssp. *franciscana*	Franciscan manzanita	CNPS List 1A	Historically occurred at Mt. Davidson
Arctostaphylos hookeri ssp. *ravenii*	Raven's manzanita	FE, SE, CNPS List 1B	Historically occurred at Mt. Davidson
Aristolochia californica	California Pipevine	-	Presently occurs at occur at Lake Merced
Aster radulinus	Broadleaf Aster	LS	Presently occurs at Bayview Park
Astragalus nutalli var. *virgatus*	Nuttall's Milk Vetch	LS	Historically occurred at Lake Merced
Blennosperma nanum	Common Stickyseed	LS	Presently occurs at Bayview Park
Calamagrostis nutkaensis	Pacific Reed Grass	LS	Southern range limit, presently occurs at Mt. Davidson, Twin Peaks, and Edgehill Mtn.
Castilleja exserta	Purple Owl's Clover	LS	Presently occurs at Mount Davidson and Glen Canyon
Castilleja wightii	Paintbrush	LS	Presently occurs at Hawk Hill, Lake Merced, and Balboa Natural Area.

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

Species	Common Name	Status Federal, State, CNPS, Local	Local Significance
Cerastium arvense	Meadow White	LS	Presently occurs at Twin Peaks and Rock Outcrop
Chenopodium californicum	California Goosefoot	LS	Historically occurred at Lake Merced
Chorizanthe cuspidata var. *cuspidata*	San Francisco Spineflower	FSC, CNPS List 1B	Presently occurs at Ft. Funston, Golden Gate Heights, and Lake Merced
Clarkia rubicunda	Farewell-to-Spring	-	Presently occurs at Tank Hill, Bayview Hill, and Lakeview/Ashton Mini Park
Collinsia multicolor	San Francisco Collinsia	CNPS List 1B	Presently occurs at Bayview Hill
Croton californica	California Croton	LS	Northern distributional limit, presently occurs at Hawk Hill
Delphinium californicum	Larkspur	LS	Presently occurst at Bayview Park
Delphinium decorum	Coast Larkspur	LS	Presently occurs at Bayview Park
Deschampsia danthonioides	Annual Hairgrass	LS	Presently occurs at Corona and Rock Outcrop
Disporum hookeri	Fairy Bells	LS	Presently occurs at Interior Green Belt
Dodecatheon clevelandii	Shooting Star	LS	Presently occurs at Bernal Hill.
Elymus multisetus	Big Squirrel Tail	LS	Presently occurs at Bayview Park, Bernal Hill and McLaren Park
Erigeron foliosus	Leafy Daisy	LS	Presently occurs in O'Shaughnessey Hollow
Erysimum franciscanum	San Francisco Wallflower	FSC, CNPS List 4	Presently occurs at Grandview Park, Golden Gate Heights, Hawk Hill, and Rock Outcrop
Euthamia occidentalis	Western Goldenrod	LS	Historically reported not recently observed in the City.
Festuca californica	California Fescue	LS	Presently occurs at Bayview Park, Edgehill Mtn. and Mt. Davidson
Frankenia salina	Alkali-Heath	LS	Presently occurs at India Basin Shoreline Park.
Fritillaria liliacea	Fragrant Fritillary	CNPS 1B	Presently occurs at Bernal Heights
Gallium porrigens	Climbing Bedstraw	LS	Presently occurs in Bayview Park , O'Shaughnessy Hollow, and Twin Peaks
Garrya elliptica	Silk Tassel Bush	LS	Presently found in Glen Canyon Park
Gilia capitata ssp. *chamissonis*	Dune Gilia	CNPS List 1B	Presently occurs at Hawk Hill and Lake Merced
Gilia clivorum	Grassland Gilia	LS	Historically reported not recently observed in the City.
Grindelia hirsutula var. *maritima*	San Francisco Gumplant	FSC, CNPS List 1B	Presently occurs at Mount Davidson, Twin Peaks, Corona Heights, and Balboa Natural Area.
Grindelia stricta var. *augustifolia*	Marsh Gumplant	-	Presently occurs at India Basin Shoreline Park.
Heuchera micrantha	Alumroot	LS	Presently occurs at O'Shaughnessy,and Glen Canyon
Juncus xiphiodes	Iris Leaf Rush	LS	Historically reported not recently observed in the City.
Layia carnosa	Beach Layia	FE, SE, CNPS List 1B	Historically reported from San Francisco, location not well mapped, presumed extirpated
Lessingia germanorum	San Francisco Lessingia	FE, SE, CNPS List 1B	Only current population found on the Presidio.
Leymus x vancouverensis	Vancouver's Ryegrass	LS	Presently occurs at Lake Merced
Lilaea scilloides	Flowering Quillwort	LS	Presently occurs at McLaren Park (is likely extripated)

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

Species	Common Name	Status Federal, State, CNPS, Local	Local Significance
Linaria canadensis	Canadian or Blue Toad-Flax	LS	Presently occurs at Hawk Hill
Lithophragma heterophylla	Prarie Star, Woodland Star	LS	Presently occurs in Bayview Park
Marah oreganus	Wild Cucumber, Man-root	LS	Presently occurs at McLaren Park and Lake Merced
Monardella undulata	Curly-leaved Monardella	CNPS List 4	Not known to occur in the City
Muilla maritima	Common Muilla	LS	Presently occurs at Corona Heights, Tank Hill, Bernal Hill and Mount Davidson
Navarretia squarrosa	Skunkweed	LS	Presently occurs at Hawk Hill and McLaren Park
Osmorhiza chilensis	Sweet Cicely	LS	Presently occurs at Interior Greenbelt.
Pellaea andromedifolia	Coffee Fern	LS	Historically reported not recently observed in the City.
Prunus emarginata	Bitter Cherry	LS	Presently occurs at Bayview and Glen Canyon
Prunus ilicifolia	Holly-leaved Cherry Islais Cherry	LS	Presently occurs at Bayview Park, Glen Canyon
Prunus virginiana var. demissa	Western Choke Cherry	LS	Presently occurs at Tank Hill and Bayview Park
Quercus chrysolepis	Canyon Live Oak	LS	Presently occurs at Lake Merced
Rhamnus crocea	Spiny Redberry	LS	Presently occurs at Glen Canyon
Ribes divaricatum	Coastal Black Gooseberry	LS	Presently occurs at Lake Merced
Ribes menziessi	Canyon Gooseberry	LS	Presently occurs at Bayview Park
Rosa gymnocarpa	Wood Rose	LS	Presently occurs at Bayview Park, O'Shaughnessy and Mount Davidson
Rubus parviflorus	Thimbleberry	LS	Presently occurs at Lake Merced and Interior Green Belt
Salvia spathacea	Hummingbird Sage	LS	Presently occurs at Bernal Hill.
Saxifraga californica	California saxifrage	LS	Presently occurs at Billy Goat Hill
Sedum spathulifolium	Broadleaf Stonecrop	-	Larval food plant for San Bruno elfin butterfly, presently occurs at Glen Canyon, Mt. Davidson, O'Shaughnessy Hollow, Tank Hill, and Twin Peaks
Senecio aronicoides	Groundsel	LS	Presently occurs at Bayview Park and Mount Davidson
Silene scouleri ssp. *grandis*	Scouler's Large Campion	LS	Presently occurs at Bayview Hill
Silene verecunda ssp. *verecunda*	San Francisco Campion	FSC, CNPS List 1B	Presently occurs at Mt. Davidson and Rock Outcrop
Sisyrinchium californicum	Yellow-eyed Grass	LS	Only San Francisco population in Glen Canyon
Tanacetum camphoratum	Dune Tansy	-	Southern distributional limit. Presently occurs at Grandview Park, Golden Gate Heights, Hawk Hill, Rock Outcrop, Lake Merced, and Balboa Natural Area.
Triphysaria eriantha var. *rosea*	Johnny-tuck	LS	Presently occurs at McLaren Park

Table 3-5. Sensitive species presently and historically known to occur at Significant Natural Areas.

Species	Common Name	Status Federal, State, CNPS, Local	Local Significance
Vaccinium ovatum	California or Evergreen Huckleberry	LS	Presently occurs at Mount Davidson
Viola adunca	Blue Violet	LS	Presently occurs at Glen Canyon, Twin Peaks and O'Shaugnessy
Viola pedunculata	Johnny-Jump-Up	-	Larval food plant for San Francisco silverspot butterfly, presently occurs at Bayview Hill, McLaren Park, Tank Hill, Duncan-Castro, and Corona Heights
Woodwardia fimbriata	Giant Chain Fern	LS	Presently occurs at Glen Canyon
Zigadenus fremontii	Star Lily	LS	Presently occurs at Bernal Hill

Status Key:

Federal Status

FE Endangered. Species in danger of extinction throughout all or significant portion of its range.

FT Threatened. Species likely to become endangered within foreseeable future throughout all or a significant portion of its range.

FPE Proposed for listing as endangered.

FC Candidate for listing as endangered. Candidate information now available indicates that listing may be appropriate with supporting data currently on file.

FSC Species of Concern. Former Category 2 Candidate for listing as endangered.

FPD Proposed de-listing.

California State Status

SE Endangered. Species whose continued existence in California is jeopardized.

ST Threatened. Species, although not presently threatened with extinction, that is likely to become endangered in the foreseeable future.

SSC Species of Concern.

SFP State Fully Protected under Sections 3511 and 4700 of the Fish and Game Code.

Sens Considered a sensitive species by the California Department of Forestry.

California Native Plant Society

1A Plants presumed extinct in California

1B Plants that are rare or endangered in California and elsewhere.

2 Plants that are endangered in California, but more common elsewhere.

3 Plants about which more information is needed.

4 Plants of limited distribution (a watch list).

LS Locally Significant.

Golden Gate Audubon Society

SLC Species of Local Concern

Appendix Table C-1. Bird species found within the San Francisco Significant Natural Areas (Based on Cotter [1998] as annotated by Josiah Clark, 2002).

						Natural Area																												
						Southwest				Southeast					Central West						Central														North
	Common Name	*Species Name*	N/I	Sensitive	Resident/ Migrant	BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BN
1	Red-throated Loon	*Gavia stellata*			w							X																						
2	Pacific Loon	*Gavia pacifica*			w							X																						
3	Common Loon	*Gavia immer*			w		x					X																		x				
4	Yellow-billed Loon	*Gavia adamsii*			v																													
5	Pied-billed Grebe	*Podilymbus podiceps*			r/m		*X	X*	X			x																						
6	Horned Grebe	*Podiceps auritus*			w		X					x																						
7	Red-necked Grebe	*Podiceps grisegena*			w							x																						
8	Eared Grebe	*Podiceps nigricollis*			w		X					X	x																					
9	Western Grebe	*Aechmophorus occidentalis*			w		X(*)		X			X																						
10	Clark's Grebe	*Aechmophorus clarkii*			w		X(*)		X			X																						
11	American White Pelican	*Pelecanus erythrorhynchos*			m																													
12	Brown Pelican	*Pelecanus occidentalis*			pb		x					X																		x				
13	Double-crested Cormorant	*Phalacrocorax auritus*			r/m		X	x	X			X	x																	x				
14	Brandt's Cormorant	*Phalacrocorax penicillatus*			r/m							X																						
15	Pelagic Cormorant	*Phalacrocorax pelagicus*			r/m							X																						
16	American Bittern	*Botaurus lentiginosus*		1	m		x		x																									
17	Least Bittern	*Ixobrychus exilis*			v																													
18	Great Blue Heron	*Ardea herodias*		3+	r/m		X*	X	X			X	X																	x				
19	Great Egret	*Ardea alba*		3+	r/m		X*	X	X			X	X																	x				
20	Snowy Egret	*Egretta thula*			r/m		X	x	X			X																						
21	Cattle Egret	*Bubulcus ibis*			v																													
22	Green Heron	*Butorides virescens*		2+	s		X	x*	x				x																					
23	Black-crowned Night-Heron	*Nycticorax nycticorax*		3+	r/m		X	x	x			X	X																	x				
24	White-faced Ibis	*Pegadis chihi*			v																													
25	Turkey Vulture	*Cathartes aura*			m/w		x	x	X	x	x	x	x		x	x	x	x	x				x				x	x			x		x	x	x	x
26	Tundra Swan	*Cygnus columbianus*			w		?																											
27	Greater White-fronted Goose	*Anser albifrons*			w		x																								x				
28	Snow Goose	*Chen caerulescens*			w		x																								x				
29	Ross's Goose	*Chen rossii*			w		x																											
30	Brant	*Branta bernicla*			w																													
31	Canada Goose	*Branta canadensis*			w		x					X																		x				
32	Wood Duck	*Aix sponsa*		3	w		x																											
33	Green-winged Teal	*Anas crecca*		4	w		x					x																						
34	Mallard	*Anas platyrhynchos*			r/m		X	X	X			X	X		x															x				x	
35	Northern Pintail	*Anas acuta*		4	w		x					x	x																					
36	Blue-winged Teal	*Anas discors*			w		x																											
37	Cinnamon Teal	*Anas cyanoptera*		4	w		x																											
38	Northern Shoveler	*Anas clypeata*		4	w		x	x	X			x																						
39	Gadwall	*Anas strepera*		2+	w(*)		X	x	X			x	x																						
40	Eurasian Wigeon	*Anas penelope*			w							x																						
41	American Wigeon	*Anas americana*			w		X	x	X			X																						
42	Canvasback	*Aythya valisineria*		4	w		x	x				x	x																					
43	Redhead	*Aythya americana*			w																													
44	Ring-necked Duck	*Aythya collaris*		4	w		X																											
45	Tufted Duck	*Aythya fuligula*			v		x																											
46	Greater Scaup	*Aythya marila*			w		X					X																						
47	Lesser Scaup	*Aythya affinis*			w		X					X																						
48	Harlequin Duck	*Histrionicus histrionicus*			w																													
49	Oldsquaw	*Clangula hyemalis*			w							x																						
50	Black Scoter	*Melanitta nigra*			w							x																						
51	Surf Scoter	*Melanitta perspicillata*			w		x					X																						
52	White-winged Scoter	*Melanitta fusca*		4	w							x																						
53	Common Goldeneye	*Bucephala clangula*			w		x					X																						
54	Barrow's Goldeneye	*Bucephala islandica*			w							x																						
55	Bufflehead	*Bucephala albeola*			w		X					X	x																					
56	Hooded Merganser	*Lophodytes cucullatus*			w		x																											
57	Common Merganser	*Mergus merganser*			w		x																											
58	Red-breasted Merganser	*Mergus serrator*			w		x					X																						
59	Ruddy Duck	*Oxyura jamaicensis*			w(*)		X*	x	X			X	X															x			x				
60	Osprey	*Pandion haliaetus*			r/m		x					x	x																		x				
61	White-tailed Kite	*Elanus leucurus*			r/m		x					x																			x				
62	Bald Eagle	*Haliaeetus leucocephalus*			m		x			x																									
63	Northern Harrier	*Circus cyaneus*			m		x					x			x	x		x									x			x				x	
64	Sharp-shinned Hawk	*Accipiter striatus*		4	w	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x	x	x	

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						Natural Area																												
						Southwest				Southeast					Central West						Central														North
	Common Name	*Species Name*	N/I	Sensitive	Resident/ Migrant	BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BN
65	Cooper's Hawk	*Accipiter cooperii*		4	w(*)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x		x	x	x	x	x	
66	Northern Goshawk	*Accipiter gentilis*			v																									x				
67	Red-shouldered Hawk	*Buteo lineatus*			r/m	x	X	X	X*	X*		x	X*	X	X*	x	X	x	x	x	X	x	X		x		X*			X				
68	Broad-winged Hawk	*Buteo platypterus*			v		x	x		x																				x				
69	Swainson's Hawk	*Buteo swainsoni*			v					x																								
70	Red-tailed Hawk	*Buteo jamaicensis*			r/m	X	X	X	X*	X*		X	X*	X	X*	X	X	X	X	X	X	X	X*	X	X	X	X*	X*	X	X*	X	X	X*	X*	X
71	Ferruginous Hawk	*Buteo regalis*			m																									x				
72	Rough-legged Hawk	*Buteo lagopus*			m																													
73	Golden Eagle	*Aquila chrysaetos*			m					x																				x				
74	American Kestrel	*Falco sparverius*		2+	r/m	x	X	x	X	X	x	X	X*	x	x	x	x	x	x	x		X								X				x
75	Merlin	*Falco columbarius*			w		x	x		x	x	x	x		x	x	x	x	x	x	x	X		x		x	x			x	x		x	x	
76	Peregrine Falcon	*Falco peregrinus*		3+	r/m		x		x	x	x	x	x		x												x			x			x	
77	Prairie Falcon	*Falco mexicanus*			m																													
78	California Quail	*Callipepla californica*		1	r		x			x			e		e							X*					x			x				
79	Black Rail	*Laterallus jamaicensis*			X		e																											
80	Clapper Rail	*Rallus longirostris*			r																													
81	Virginia Rail	*Rallus limicola*		3	w		X		x																									
82	Sora	*Porzana carolina*		3	w		X																											
83	Common Moorhen	*Gallinula chloropus*			w		x																											
84	American Coot	*Fulica americana*			r/m		X*	X	X*			X	X																					
85	Black-bellied Plover	*Pluvialis squatarola*			w		x					X																						X
86	American Golden-Plover	*Pluvialis dominica*			w																													
87	Pacific Golden-Plover	*Pluvialis fulva*			w		x					X																						
88	Snowy Plover	*Charadrius alexandrinus*		1	w(*)		x																											?
89	Semipalmated Plover	*Charadrius semipalmatus*			w		x					X																						x
90	Killdeer	*Charadrius vociferus*			r/m		X	x	X	x		X*	x		x	x				0		x			x				x		x				X
91	Black Oystercatcher	*Haematopus bachmani*			r							X																						
92	Black-necked Stilt	*Himantopus mexicanus*			r/m							x																						
93	American Avocet	*Recurvirostra americana*			r/m							X																						
94	Greater Yellowlegs	*Tringa melanoleuca*			w		x		x			X																						
95	Lesser Yellowlegs	*Tringa flavipes*			m							x																		x				
96	Solitary Sandpiper	*Tringa solitaria*			v																													
97	Willet	*Catoptrophorus semipalmatus*			w							X																						
98	Wandering Tattler	*Heteroscelus incanus*			w							x																						
99	Spotted Sandpiper	*Actitis macularia*		3	w		x					X																						
100	Whimbrel	*Numenius phaeopus*			w							X																						
101	Long-billed Curlew	*Numenius americanus*		4	w		x					X																						
102	Marbled Godwit	*Limosa fedoa*		4	w							X																						
103	Ruddy Turnstone	*Arenaria interpres*			w							x																						
104	Black Turnstone	*Arenaria melanocephala*			w							x																						
105	Surfbird	*Aphriza virgata*			w							x																						
106	Red Knot	*Calidris canutus*			w							x																						
107	Sanderling	*Calidris alba*			w							X																						
108	Semipalmated Sandpiper	*Calidris pusilla*			v																													
109	Western Sandpiper	*Calidris mauri*			w		x					X																						
110	Least Sandpiper	*Calidris minutilla*			w		x					X																						
111	Baird's Sandpiper	*Calidris bairdii*			m		x																											
112	Pectoral Sandpiper	*Calidris melanotos*			m		x																											
113	Dunlin	*Calidris alpina*			w		x					x																						
114	Curlew Sandpiper	*Calidris ferruginea**			v		x																											
115	Short-billed Dowitcher	*Limnodromus griseus*			w		x					X																						
116	Long-billed Dowitcher	*Limnodromus scolopaceus*			w		x					x																						
117	Common Snipe	*Gallinago gallinago*		3	w		x	x	x			x	x																						
118	Wilson's Phalarope	*Phalaropus tricolor*			m																													
119	Red-necked Phalarope	*Phalaropus lobatus*			m		x					x																						
120	Red Phalarope	*Phalaropus fulicaria*			m		x					x																						
121	Pomarine Jaeger	*Stercorarius pomarinus*			m																													
122	Parasitic Jaeger	*Stercorarius parasiticus*			m		x					x																						
123	Franklin's Gull	*Larus pipixcan*			v																													
124	Bonaparte's Gull	*Larus philadelphia*			w		x					x	x																					
125	Heermann's Gull	*Larus heermanni*			pb		X					X	x																					x
126	Mew Gull	*Larus canus*			w		X		X			X	X																	x				
127	Ring-billed Gull	*Larus delawarensis*			w		X		x			X	X		x																			
128	California Gull	*Larus californicus*			w(*)		X		X			X	X		x																		x	x

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	Common Name	*Species Name*	N/I	Sensitive	Resident/ Migrant	BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BN
129	Herring Gull	*Larus argentatus*			w		x					x	x																	x				
130	Thayer's Gull	*Larus thayeri*			w		x					X																		x				
131	Western Gull	*Larus occidentalis*			r/m		X		x			X	X		x															x			x	x
132	Glaucous-winged Gull	*Larus glaucescens*			w		X		x			X	X		x															x				
133	Glaucous Gull	*Larus hyperboreus*			v		x																							x				
134	Black-legged Kittiwake	*Rissa tridactyla*			w																													
135	Sabine's Gull	*Xema sabini*			m																													
136	Caspian Tern	*Sterna caspia*			s		X					X																		x				
137	Elegant Tern	*Sterna elegans*			pb							X																						
138	Common Tern	*Sterna hirundo*			m		x					x																						
139	Arctic Tern	*Sterna paradisaea*			m																													
140	Forster's Tern	*Sterna forsteri*			m		x																											
141	Least Tern	*Sterna antillarum*			v																													
142	Black Tern	*Chlidonias niger*			v																													
143	Common Murre	*Uria aalge*			r/m																													
144	Pigeon Guillemot	*Cepphus columba*			s																													
145	Marbled Murrelet	*Brachyramphus marmoratus*			w																													
146	Ancient Murrelet	*Synthliboramphus antiquus*			w																													
147	Cassin's Auklet	*Ptychoramphus aleuticus*			w																													
148	Rhinoceros Auklet	*Cerorhinca monocerata*			w																													
149	Tufted Puffin	*Fratercula cirrhata*			w																													
150	Horned Puffin	*Fratercula corniculata*			v																													
151	Rock Dove	*Columba livia*			r	X	X	X		x	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	x	X	X	X	X	X	X	X	X	X
152	Band-tailed Pigeon	*Columba fasciata*		3	r/m	x	x	x	X	x		x	x		X	x		x		x	x		x		x	x	X*	x	x	X*	X	x	x	X*	
153	White-winged Dove	*Zenaida asiatica*			v																													
154	Mourning Dove	*Zenaida macroura*			r/m	X*	X*	X*	X*	X*	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X
155	Greater Roadrunner	*Geococcyx californianus*			X																													
156	Barn Owl	*Tyto alba*		3+	r/m		x		x	x		x	x		x				x		x	x		x			x			x		x		
157	Western Screech-Owl	*Otus kennicottii*		1	r																						X*	X*				e		
158	Great Horned Owl	*Bubo virginianus*			r	X	X*	X*	X	X			X		x		x				x	X*	x				X*			X*		X	X		
159	Snowy Owl	*Nyctea scandiaca**			v																													
160	Burrowing Owl	*Athene cunicularia*		1	m/w																	x												
161	Long-eared Owl	*Asio otus*			m																													
162	Short-eared Owl	*Asio flammeus*			m							x																						
163	Northern Saw-whet Owl	*Aegolius funereus*			m/w					x																								
164	Lesser Nighthawk	*Chordeiles acutipennis*			v																													
165	Common Poorwill	*Phalaenoptilus nuttallii*			m																													
166	Black Swift	*Cypseloides niger*			m								x																	X				
167	Chimney Swift	*Chaetura pelagica*			v																													
168	Vaux's Swift	*Chaetura vauxi*			m		x	x	x	x		x	x									x					x			x				
169	White-throated Swift	*Aeronautes saxatalis*			r/m	x	x		x	x		x	x	x	x		x	x	x		x	x	x	x	X	X	X	X	X	x			x	
170	Black-chinned Hummingbird	*Archilochus alexandri*			v																													
171	Anna's Hummingbird	*Calypte anna*			r/m	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X
172	Rufous Hummingbird	*Selasphorus rufus*			m		x			x			x		x		x	x			x	x					x	x		x			x	x	
173	Allen's Hummingbird	*Selasphorus sasin*			s	X*	X*	X*	X*	X*		X	X*	X	X*	X	X*	X*	x	x	X*	X*	X*	X	X*	X*	X*	X*	X	X	X*	X*	X	X*	X*	X
174	Belted Kingfisher	*Ceryle alcyon*		3	w		X	x				X	x																	x				
175	Lewis's Woodpecker	*Melanerpes lewis*			v																													
176	Acorn Woodpecker	*Melanerpes formicivorus*			m		x			x					x															x				
177	Gila Woodpecker	*Melanerpes uropygialis*			v																													
178	Yellow-bellied Sapsucker	*Sphyrapicus varius*			v																									x				
179	Red-naped Sapsucker	*Sphyrapicus nuchalis*			v																													
180	Red-breasted Sapsucker	*Sphyrapicus ruber*			w		x	x	X	x			x		x		x								x		x			x		x		
181	Williamson's Sapsucker	*Sphyrapicus thyroideus*			v																													
182	Nuttall's Woodpecker	*Picoides nuttallii*			m		x			x			x		x												x			x		x		
183	Downy Woodpecker	*Picoides pubescens*			r	X	X*	X*	X*	X*		x	X*	X	X*		X*				X	X*	X*	x	X*	X*	X*	X*	X	X*	X*	x	x	x	
184	Hairy Woodpecker	*Picoides villosus*			r		x	x	X	x			x		x															x	x*			x	
185	Northern Flicker	*Colaptes auratus*			w	X	X	X	X?	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
186	Olive-sided Flycatcher	*Contopus cooperi*			m/s		x*	x	x	x*	x		x*		x		x						X			x	x	X*	x		x*	x		x	x*
187	Western Wood-Pewee	*Contopus sordidulus*			m	x	x	x	x	x	x		x		x		x						x			x		x	x		x	x		x	x
188	Willow Flycatcher	*Empidonax traillii*			m		x			x			x		x													x			x	x			x
189	Least Flycatcher	*Empidonax minimus*			v		x	x		x			x																	x				
190	Hammond's Flycatcher	*Empidonax hammondii*			m		x			x			x															X			x				
191	Dusky Flycatcher	*Empidonax oberholseri*			m		x			x			x															X			x				
192	Gray Flycatcher	*Empidonax wrightii*			v																													

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193	Pacific-slope Flycatcher	*Empidonax difficilis*			m(*)	x	x	x	X?	X	x	x	X	x	x		x			x	X	X	X	x	x	x	X	x		X	X	x	X	X	
194	Black Phoebe	*Sayornis nigricans*			r/m	X	X*	X*	X*	X	X	X*	X*	X	X*	X	X	X	X		X*	X*	X*	X	X	X	X*	X		X*	X	X	X	X	X
195	Say's Phoebe	*Sayornis saya*			w	x	x		X	X	X	X	X	x	x	x	x	x			x	x		x	x	x	x	x		X		x	x		
196	Dusky-capped Flycatcher	*Myiarchus tuberculifer*			v			x							x		x																	
197	Ash-throated Flycatcher	*Myiarchus cinerascens*			m		x	x		x			x									X	x							X	x		x	x	
198	Tropical Kingbird	*Tyrannus melancholicus*			v		x						x																	x					
199	Cassin's Kingbird	*Tyrannus vociferans*			v																														
200	Thick-billed Kingbird	*Tyrannus crassirostris*			v								x																						
201	Western Kingbird	*Tyrannus verticalis*			m		x	x		x	x	x	x		x	x			x			X		x			x			x				x	
202	Eastern Kingbird	*Tyrannus tyrannus*			v																														
203	Loggerhead Shrike	*Lanius ludovicianus*		1	m					x			x																	x					
204	Northern Shrike	*Lanius excubitor*			v																														
205	Blue-headed Vireo	*Vireo solitarius*			v					x																				x					
206	Cassin's Vireo	*Vireo cassinii*			m		x	x		x			x		x		x						x				x			x					
207	Plumbeous Vireo	*Vireo plumbeus*			v					X			X												x		X*	x			x					
208	Hutton's Vireo	*Vireo huttoni*		2+	r		x	x	X	X			X		X								x	x						x*	x*		x	x	
209	Warbling Vireo	*Vireo gilvus*			m	x	x	x	X?	X			X		X		X				x	x	x	x	x	x	X	x		X	X		x	x	
210	Philadelphia Vireo	*Vireo philadelphicus*			v																														
211	Red-eyed Vireo	*Vireo olivaceus*			v		x			x			x																						
212	Yellow-green Vireo	*Vireo flavoviridis*			v																														
213	Steller's Jay	*Cyanocitta stelleri*			r		x	x	X	x			x		X							X					X			X*	X*			x	
214	Western Scrub-Jay	*Aphelocoma californica*			r	X*	X*	X*	X	X*	x		X*	X	X*	X*	X*	X*	X	X*	X*	X*	X*	X	x	X	X*	X*	X	X*	X*	X*	X*	X*	X	X
215	Clark's Nutcracker	*Nucifraga columbiana*			v																														
216	Yellow-billed Magpie	*Pica nuttalli*			v																														
217	American Crow	*Corvus brachyrhynchos*			r	X	X*	X*	X	X*	X	X	X*	X	X*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X*	X	X	X*	X*	X
218	Common Raven	*Corvus corax*			r/m	X	X*	X*	X?	X*	X	X	X*	X	X*	X	X*	X	X	X	X	X	X*	X	X*	X*	X*	X*	X	X	X*	X*	X	X	X	X
219	Horned Lark	*Eremophila alpestris*			m																														
220	Purple Martin	*Progne subis*			m																														
221	Tree Swallow	*Tachycineta bicolor*		2+	s	x	x*	x	X?	x	x	x	x*		X	x	X	x	x	x	x	x	x	x	x	x	X*		x	X*	x*		x	x	x
222	Violet-green Swallow	*Tachycineta thalassina*		2+	s	x	x	x	X?	x	x	x	x		X	x	X	x	x	x	x	x	x	x	x	x	X		X	X	x	x	x	X	x
223	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*			m		x	x	x	x	x	x	x		x		x				x		x	x			x			x				x	x
224	Bank Swallow	*Riparia riparia*		2	s		x																												
225	Barn Swallow	*Hirundo rustica*			s		X*	X*	X	X	X	X	X*	X	X*	X	X	X	X	X	X	X*	X*	X	X	X	X	X*	X	X	X*	X	X	X	X	x
226	Cliff Swallow	*Petrochelidon pyrrhonota*			s	X	x*	x	X?	X	X	X	X*		X	x	x	x	X	x	x	X	x	x	X	X	X	x	x	X*	x		x	x	x
227	Chestnut-backed Chickadee	*Poecile rufescens*		4	r	X*	X*	X*	X*	X*	X*	x	X*	X	X*	x	X*	x	x	x	X*	X*	X*	x	X*	X*	X*	X*	X	X*	X*	X	X*	X*	
228	Oak Titmouse	*Baeolophus inornatus*			X																														
229	Bushtit	*Psaltriparus minimus*		4	r	X*	X*	X*	X*	X*	X	X	X*	x	X*	x*	X*	X*	x	X	x*	x*	x*	X	X*	X*	X*	x*	x*	X*	X*	x	x	x		
230	Red-breasted Nuthatch	*Sitta canadensis*			w		x	x		x			x		x		x					x	x				x			x	x				
231	White-breasted Nuthatch	*Sitta carolinensis*			v																														
232	Pygmy Nuthatch	*Sitta pygmaea*			r	X*	X*	X*		X*			X*	x	X*	x	X*	x	x	x	x	X*	X*		X*	X*	X*	X*	X	X*	X*	x	X*	X*		
233	Brown Creeper	*Certhia americana*			r	x	X*	X*	X*	X*			X*		X*	x	X*			x		X*	X*		X	x	X*	X	x	X*	X*	x	x	X*		
234	Rock Wren	*Salpinctes obsoletus*			m																														
235	Bewick's Wren	*Thryomanes bewickii*		1+	r		x		X*	x*			x		x	x		x				x					x			x	X?			x	
236	House Wren	*Troglodytes aedon*			m		x	x		x			x		x		x				x	x			x		x			x	x	x		x	
237	Winter Wren	*Troglodytes troglodytes*			r/m	x	X*	X*	X*	X			X*	x	X*	x	X			x	x	X	x		X	X	X*	X	x	x	X*	X	x	X*	x	
238	Sedge Wren	*Cistothorus platensis*			v																														
239	Marsh Wren	*Cistothorus palustris*		3	r/m		X*	x	X*			x	x																						
240	Blue-gray Gnatcatcher	*Polioptila caerulea*			m		x						x		x												x			x					
241	Golden-crowned Kinglet	*Regulus satrapa*			w	x	X	X	x	x			X		X	x	X			x	x	X	X			x	X	x		X	X		x	X	
242	Ruby-crowned Kinglet	*Regulus calendula*			w	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
243	Western Bluebird	*Sialia mexicana*			X																									x					
244	Townsend's Solitaire	*Myadestes townsendi*			v																									x					
245	Swainson's Thrush	*Catharus ustulatus*		3	s	x	x*	x	X*	x			x		X	x	X	x		x			x		x	x	X?	x		X?	X		x	X?	
246	Hermit Thrush	*Catharus guttatus*			w	X	X	X	X	X	X	X	X	X	X	x	X	x		X	X	X	X	x	X	X	X	X	x	X	X	X	X	X	
247	Wood Thrush	*Hylocichla mustelina*			v																														
248	American Robin	*Turdus migratorius*			r/m	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X	X*	X*	X*	X*	X	X	X	X	X*	X*	X*	X*	X*	X*	X*	X*	X
249	Varied Thrush	*Ixoreus naevius*			w		x	x	X						X		X													X	X		x	X	
250	Wrentit	*Chamaea fasciata*		1	X		x		X*	e			e																						
251	Northern Mockingbird	*Mimus polyglottos*			r/m	X	x	x		x*	x	X*	x*	X	X	x	x	x	X	X*	X*	X*	X*	X	X	X	X*	X	X	X	x	X	X	X*	X
252	Sage Thrasher	*Oreoscoptes montanus*			v																									x					
253	Brown Thrasher	*Toxostoma rufum*			v																														
254	European Starling	*Sturnus vulgaris*			r/m	X*	X*	X*	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X
255	American Pipit	*Anthus rubescens*			m/w		x					x																		x					
256	Cedar Waxwing	*Bombycilla cedrorum*			w	X	X	X	X	X	X	X	X	X	X	x	X	x	x	x	X	X	X	x	X	X	X	X	x	X	x	x	X	X	

Appendix Table C-1. Bird species found within the San Francisco Significant Natural Areas (Based on Cotter [1998] as annotated by Josiah Clark, 2002).

						Natural Area																												
						Southwest				Southeast					Central West						Central													North
						BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BN
	Common Name	*Species Name*	N/I	Sensitive	Resident/ Migrant																													
257	Golden-winged Warbler	*Vermivora chrysoptera*			v												x																	
258	Tennessee Warbler	*Vermivora peregrina*			v		x	x					x																	x				
259	Orange-crowned Warbler	*Vermivora celata*		2+	m/w(*)	x	X	X	X*	X	x	x	X?		X	x	x	x		x	X	x	x		X	x	X?	x		X	X	x	x	X	
260	Nashville Warbler	*Vermivora ruficapilla*			m		x	x		x			x		x							x				x	x	x		X					
261	Virginia's Warbler	*Vermivora virginiae*			v																									x					
262	Lucy's Warbler	*Vermivora luciae*			v		x																												
263	Northern Parula	*Parula americana*			v		x						x								X	X	X							x					
264	Yellow Warbler	*Dendroica petechia*		1+	m	x	X	X	X	X	X	X	X	x	X	x	X	x	x	x	X	x	x		X	X	X	X	x	X	X	x	X	X	
265	Chestnut-sided Warbler	*Dendroica pensylvanica*			v		x																				x			x					
266	Magnolia Warbler	*Dendroica magnolia*			v		x																							x					
267	Black-throated Blue Warbler	*Dendroica caerulescens*			v																									x					
268	Yellow-rumped Warbler	*Dendroica coronata*			w	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
269	Black-throated Gray Warbler	*Dendroica nigrescens*			m	x	X	X	x						x		x			x		x						x		x	x			x	
270	Townsend's Warbler	*Dendroica townsendi*			w	X	X	X	X	X	x	x	X	X	X	X	X	x	x	x	X	X	X	x	X	X	X	X	x	X	X	X	x	X	
271	Hermit Warbler	*Dendroica occidentalis*			m/w		X	X		x			x		x		x										x			x	x			x	
272	Black-throated Green Warbler	*Dendroica virens*			v		x						x																						
273	Blackburnian Warbler	*Dendroica fusca*			v		x															x													
274	Yellow-throated Warbler	*Dendroica dominica*			v																														
275	Prairie Warbler	*Dendroica discolor*			v		x															x													
276	Palm Warbler	*Dendroica palmarum*			v		x	x							x												x			x					
277	Blackpoll Warbler	*Dendroica striata*			v		x	x		x					x												x			x					
278	Black-and-white Warbler	*Mniotilta varia*			v		x						x																	x					
279	American Redstart	*Setophaga ruticilla*			v		x						x														x			x					
280	Prothonotary Warbler	*Protonotaria citrea*			v		x																												
281	Ovenbird	*Seiurus aurocapillus*			v																														
282	Northern Waterthrush	*Seiurus noveboracensis*			v		x																							x					
283	Kentucky Warbler	*Oporornis formosus*			v																														
284	MacGillivray's Warbler	*Oporornis tolmiei*			m		x	x					x		x												x			x					
285	Common Yellowthroat	*Geothlypis trichas*		3+	r/m		X*	x	X*	x		x	x														x			x					
286	Hooded Warbler	*Wilsonia citrina*			v																									x					
287	Wilson's Warbler	*Wilsonia pusilla*		2+	m/s	x	X*	X*	X*	X	X		X?		X	x	X	x		x	x	X	X		x	x	X?	x	x	X*	X		x	X	
288	Canada Warbler	*Wilsonia canadensis*			v																														
289	Yellow-breasted Chat	*Icteria virens*			v		x																												
290	Summer Tanager	*Piranga rubra*			v		x	x					x																						
291	Western Tanager	*Piranga ludoviciana*			m		X	X		X	x		x		X	x	X	x		x	X	X	X		x	x	X	x		X	X	x	x	X	
292	Green-tailed Towhee	*Pipilo chlorurus*			v																														
293	Spotted Towhee	*Pipilo maculatus*		1+	r/m		x*			x			x		x	x		x				x					x			x	x*			x	x
294	California Towhee	*Pipilo crissalis*			r	X	X*	X*	X*	X	x	x	X	X	X*	X*	X*	X*	x	X*	X*	X*	X*	X	X	X*	X*	X	X	X*	X	X*		X*	X*	X	
295	American Tree Sparrow	*Spizella arborea*			v																														
296	Chipping Sparrow	*Spizella passerina*			m		x			x			x		x							x					x			x	x		x	x	
297	Clay-colored Sparrow	*Spizella pallida*			v		x						x		x															x					
298	Brewer's Sparrow	*Spizella breweri*			v																									x					
299	Vesper Sparrow	*Pooecetes gramineus*			v																														
300	Lark Sparrow	*Chondestes grammacus*			m		x			x			x														x			x	x			x	
301	Lark Bunting	*Calamospiza melanocorys*			v																														
302	Savannah Sparrow	*Passerculus sandwichensis*		2+	r/m		X		x	x	x	x	x					x		x		X	x				x			x			x	X
303	Grasshopper Sparrow	*Ammodramus savannarum*			v		x																												
304	Fox Sparrow	*Passerella iliaca*			w	x	X	X	X	X	x		X	x	X	X	X	x		x	x	X	X		X	X	X	X		X	X	x	X	X	x
305	Song Sparrow	*Melospiza melodia*		2+	r		X*	X*	X*	x		x	X*									x					X*			X*	x*			X*	x
306	Lincoln's Sparrow	*Melospiza lincolnii*			w		X	X	X	X	x	X	X		X	x	X	x		x	x	x	x			x	X	x		X	x		x	x	
307	Swamp Sparrow	*Melospiza georgiana*			v		x						x																	x					
308	White-throated Sparrow	*Zonotrichia albicollis*			w		x	x		x			x		x		x					X					x			x	x				
309	Harris's Sparrow	*Zonotrichia querula*			v																														
310	White-crowned Sparrow	*Zonotrichia leucophrys*		2+	r/w	X	X*	X	X*	X	X	X	X*	X	X	X*	X	X*	X	X	X	X*	X*	X	X	X	X	X*	X	X*	X*	X	X	X	X	X
311	Golden-crowned Sparrow	*Zonotrichia atricapilla*			w	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
312	Dark-eyed Junco	*Junco hyemalis*			r/m	X	X*	X*	X*	X*	x	x	X*	x	X*	X	X*	X	X	X*	X	X*	X*	x		x	X	X*	X	X*	X*	x	X*	X*	X	X
313	Chestnut-collared Longspur	*Calcarius ornatus*			v																									x					
314	Snow Bunting	*Plectrophenax nivalis*			v																														
315	Rose-breasted Grosbeak	*Pheucticus ludovicianus*			v		x			x			x									x					x			x					
316	Black-headed Grosbeak	*Pheucticus melanocephalus*		3+	m(*)		x	x	X?	X			X		x	x	x			x	x	x					x			X*	X		x	X	
317	Blue Grosbeak	*Guiraca caerulea*			v																														
318	Lazuli Bunting	*Passerina amoena*			m(*)		x	x		x	x		x		x												x*			x				x	
319	Indigo Bunting	*Passerina cyanea*			v		x			x			x																	x					
320	Bobolink	*Dolichonyx oryzivorus*			v																														

Appendix Table C-1. Bird species found within the San Francisco Significant Natural Areas (Based on Cotter [1998] as annotated by Josiah Clark, 2002).

						Natural Area																												
						Southwest				Southeast					Central West						Central													North
	Common Name	*Species Name*	N/I	Sensitive	Resident/ Migrant	BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BN
321	Red-winged Blackbird	*Agelaius phoeniceus*			r/m	x	X*	X*	X*	x	x	X	x		X					x	x	x	x	x		x	X	X	X	X	x	x	x	X	
322	Tricolored Blackbird	*Agelaius tricolor*			m		x																											
323	Western Meadowlark	*Sturnella neglecta*			w	x	x	x	X	X	X	X	X	x	x	X	x	X	x	x	X	X				x	X		x	X	x		x	x	
324	Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*			v		x																											
325	Brewer's Blackbird	*Euphagus cyanocephalus*			r/m	X*	X*	X*	X	X*	X*	X*	X*	X*	X*	X	X*	X	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X
326	Great-tailed Grackle	*Quiscalus mexicanus*			v																													
327	Brown-headed Cowbird	*Molothrus ater*			r/m	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X
328	Orchard Oriole	*Icterus spurius*			v		x																							x				
329	Hooded Oriole	*Icterus cucullatus*			s		X*	x		x			X		X	x	x			x		x	x				X*			X	x			x	
330	Baltimore Oriole	*Icterus galbula*			v		x																											
331	Bullock's Oriole	*Icterus bullockii*			m(*)		x	x		X			X		x	x	x					x	x				X			X	x		x	x	
332	Scott's Oriole	*Icterus parisorum*			v																										x			
333	Purple Finch	*Carpodacus purpureus*			r/m	x	X*	X	X	X	x		X		X	x	X	x		x		X	X		x	x	X*	x		X*	X*		x	X*	
334	Cassin's Finch	*Carpodacus cassinii*			v																										x			
335	House Finch	*Carpodacus mexicanus*			r/m	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X
336	Red Crossbill	*Loxia curvirostra*		4	w/m(*)		x						x		x		x					X								x	x			x	
337	Pine Siskin	*Carduelis pinus*			r/m	x	x*	x*	X	X			X*		X	X	X	x	x	X	x	X	X*	x							X*	X*			X*	X
338	Lesser Goldfinch	*Carduelis psaltria*			r/m	X	x*	x*	X	X*	x	x	X*	x	x*	x*	x	x	x	x	X*	X*	X	x	x	X	X*	x	x	X*	x			X*	X
339	Lawrence's Goldfinch	*Carduelis lawrencei*			v																									x				
340	American Goldfinch	*Carduelis tristis*			r/m	x	X*	x	X*	X*	x	x	X*		x	x	x	x		x	x	x	x	x		x	X	x	x	X	x			X	X
341	Evening Grosbeak	*Coccothraustes vespertinus*			v																													
342	House Sparrow	*Passer domesticus*			r/m	X*	X*	X*	X	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X*	X

Notes

1	Once common, now very rare
2	Recently common but notably declining
3	Appears to be declining in recent years
4	Potentially at risk or declining
+	Rare breeder in San Francisco
X	Means expected at appropriate time of year and in appropriate habitat. This includes migrants.
x	Means recorded but not to be expected every visit or very rare- like recorded just once.
*	Indicates that the species breeds in the area.
r	Species that is resident with at least part of the population non-migratory and breeding in area
w	Species that regularly spends the winter in the area but migrates elsewhere to breed
m	Species seen during migration but neither breeds nor spends the winter
s	Species that migrate to the area to breed in the spring and summer months
v	Species that is very rare or a vagrant in the area and is far out of range or expected habitat
pb	Species regularly present post breeding as individuals disperse north to avoid competition for food around breeding colonies
(*)	Indicates that a few breeding records exist for this species in the area
r/m	Species that is primarily a resident but migrants of the species regularly pass through
m/w	Species that is primarily a migrant but winters with some regularity
m/s	Species that is primarily a migrant but some individuals do attempt to breed in the area

Note that birds that are indicated as W or S are also migrants during spring and fall.
Migrants, vagrants and spring breeding birds may occasionally overwinter.

This list was created using the official bird list for the City of San Francisco (Cotter, 1998) as annotated by Josiah Clark, SFRPD 2002.

Southwest
BP = Brooks Park, Lakeview/Ashton Mini Park
LM = Lake Merced
PL = Pine Lake
SP = Sharp Park

Southeast
VP = Bayview Park
BH = Bernal Hill
IB = India Basin Shoreline Park
MP = McLaren Park
PP = Palou/Phelps

Central West
BV = Buena Vista
GV = Grandview Park
GH = Golden Gate Heights
HH = Hawk Hill
RO = Rock Outcrop

Central
FI = 15th Avenue Steps
BG = Billy Goat Hill
CH = Corona Heights
DP = Dorothy Erskine Park
DC = Duncan-Castro
EM = Edgehill Mountain
FP = Fairmount Park
GC = Glen Canyon Park
IG = Interion Green Belt
KH = Kite Hill
MD = Mount Davidson
OW = Golden Gate Park (Oak Woodland and Strawberry Hill)
OH = O'Shaughnessy Hollow
TK = Tank Hill
TP = Twin Peaks

North
BA = Balboa Natural Area

Appendix Table C-2. Animal species found within the San Francisco Significant Natural Areas.

					Natural Area																														
					Southwest				Southeast					Central West						Central															North
	Common Name	*Species Name*	N/I	Sensitive	BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BN
Frogs																																			
1	California red-legged frog	*Rana auroroa draytonii*	N	Yes		X		X				X																							
2	Bullfrog	*Rana catesbeiana*	I			X						X																							
3	Pacific chorus frog	*Pseudacris (Hylla) regilla*	N			X						X																							
4	Western toad	*Bufo boreas*	N									X														X									
Turtles																																			
1	Western pond turtle	*Clemmys marmorata*	N	Yes		X	X																												
2	Spiny soft-shell turtle	*Apalone spinifera*	I			X	X																												
3	Red-ear slider	*Trachemys scripta*	I			X	X					X																							
Salamanders																																			
1	Arboreal salamander	*Aneides lugubris*	N		X				X			X														X									
2	California slender salamander	*Batrachoseps attenuatus*	N			X	X	X	X			X						X								X			X	X					
3	Yellow-eyed salamander	*Ensatina eschscholtzii*	N						X			X																							
4	Coast range newt	*Taricha torosa*	N									X															X								
Snakes																																			
1	Pacific ring-neck snake	*Diadophis punctatus*	N						X			X																							
2	Pacific gopher snake	*Pituophis melanoleucus*	N			X			X			X														X									
3	Pacific rubber boa	*Charina bottae bottae*	N									X														X									
4	Western yellow-bellied racer	*Coluber constrictor mormon*	N									X														X									
5	Western terrestrial garter snake	*Thamnophis elegans*	N																							X						X			
6	Coast gartner snake	*Thamnophis elegans terrestris*	N									X																							
7	San Francisco gartner snake	*Thamnophis sirtalis tetrataenia*	N	Yes				?																											
8	Gartner snake	*Thamnophis spp.*	N			X																													
9	California king snake	*Lampropeltis getulus californae*	N									X																							
Lizards																																			
1	San Francisco alligator lizard	*Elgaria coerulea coerulea*	N			X	X					X					X									X									
2	California alligator lizard	*Elgaria multicarinata multicarinata*	N						X									X											X						
3	Skilton skink	*Eumeces skiltonianus*	N			X						X																							
4	Western fence lizard	*Sceloporus occidentalis*	N			X			X			X																	X						
5	Northern alligator lizard	*Gerrhonotus multicarniatus*	N									X																							
6	Unknown lizard species																																	X	
Mammals																																			
1	Broad-footed mole	*Scapanus latimanus*	N									X														X	X								
2	California meadow vole	*Microtus californicus*	N			X		X				X														X	X							X	
3	House mouse	*Mus musculus*	I			X						?														X								X	
4	Harvest mouse	*Reithrondontomys megalotis*	N			X			X			?																							
5	Pinion mouse	*Peromyscus truei*	N						X																										
6	Muskrat	*Ondatra zibethic*	I			X																													
7	Shrew	*Sorex spp*	N			X																													
8	Ornate shrew	*Sorex ornatus*	N																							X									
9	Trowbridge shrew	*Sorex trowbridgii*	N									?																							
10	Bat		N			X																				X									
11	Long-tailed weasel	*Mustela frenata*	N			X						?																							
12	Gray fox	*Urocyon cinereoargenteus*	N			X																													
13	Virginia oppossum	*Didelphis virginiana*	N									?														X									
14	Brush rabbit	*Sylvilagus bachmani*	N																							X									
15	California ground squirrel	*Spermophilus beecheyi*	N			X						X														X									
16	Eastern grey squirrel	*Sciurus carolinensis*	I									?															X								
17	Pocket gopher	*Thomomys bottae*	N				X		X	X		X									X					X		X				X			
18	Deer mouse	*Peromyscus maniculatus*	N									?														X									
19	Norway rat	*Rattus norvegicus*	I									?														X									
20	Black rat	*Rattus rattus*	I									?																							
21	Raccoon	*Procyon lotor*	N									X														X									
22	Striped skunk	*Mephitis mephitis*	N																							X									
23	Domestic cat	*Felis cattus*	N																							X									
24	Beechy ground squirrel	*Sparmophilus beecheyi*	N									X														X									
25	Palid bat	*Antrozous pallidus*	N																							?									
26	Townsend's big-eared bat	*Plecotus townsendii townsendii*	N																							?									
27	California mastif bat	*Eumops perotis californicus*	N																							?									
28	Red bat	*Lasiurus borealis*	N									?																							
29	Hoary bat	*Lasiurus cinereus*	N									?																							
30	Big brown bat	*Eptesicus fuscus*	N									?																							

Appendix Table C-2. Animal species found within the San Francisco Significant Natural Areas.

					Natural Area																														
					Southwest				Southeast					Central West						Central															North
	Common Name	*Species Name*	N/I	Sensitive	BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BN
Fish																																			
1	Goldfish	*Carassius auratus*	I			X	X																												
2	Common Carp	*Cyprinus carpio*	I			X	X																												
3	Hitch	*Lavinia exilicauda*	N			X																													
4	Hardhead	*Mylopharadon conocephalus*	N			X																													
5	Sacramento Blackfish	*Orthodon microlepidotus*	N			X																													
6	Sacramento Sucker	*Catostomus occidentalis*	N			X																													
7	White Catfish	*Ameiurus catus*	I			X																													
8	Brown Bullhead	*Ameiurus nebulosus*	N			X																													
9	Channel Catfish	*Ictalurus punctatus*	I			X																													
10	Muskellunge	*Esox masquinongy*	I			X																													
11	Coho Salmon	*Oncorhynchus kisutch*	N			X																													
12	Rainbow Trout	*Onchorynchus mykiss*	N/I			X																													
13	Sockeye Salmon (Kokanee)	*Oncorhynchus nerka*	I			X																													
14	Brook Trout	*Salvelinus fontinalis*	I			X																													
15	western mosquitofish	*Gambusia affinis*	I				X																												
16	Threespine Stickleback	*Gasterosteus aculeatus*	N			X	X																												
17	Prickly Sculpin	*Cottus asper*	N			X																													
18	Sacramento Perch	*Archoplites interruptus*	N			X																													
19	Green Sunfish	*Lepomis cyanellus*	I			X																													
20	Bluegill	*Lepomis macrochirus*	I			X																													
21	Largemouth Bass	*Micropterus salmoides*	I			X																													
22	Black Crappie	*Pomoxis nigromaculatus*	I			X																													
23	Tule Perch	*Hyserocarpus traski*	I			X																													
Crusteceans																																			
1	Crayfish		N				X																												
Insects																																			
1	Cabbage butterfly	*Pieris rapae*										X															X								
2	West Coast lady	*Vanessa annabella*										X															X								
3	Mission blue butterfly	*Icaricia icarioides missionensis*										X																							
4	California ringlet	*Coenonympha tullia californica*																									X								
5	Monarch butterfly	*Danaus plexippus*																									X			X					
6	Mourning cloak	*Nymphalis antiopa*																									X								
7	Satyr anglewing	*Polygonia satyrus*																									X								
8	Red admiral	*Vanessa atalanta*																									X								
9	Painted lady	*Vanessa cardui*																									X								
10	American painted lady	*Vanessa virginiensis*																									X								
11	Buckeye	*Junonia coenia*																									X								
12	Field crescent	*Phyciodes pratensis*																									X								
13	Chalcedon checkerspot	*Euphydryes chalcedon*																									X								
14	Anise swallowtail	*Papilio zlicaon*																									X								
15	Western tiger swallowtail	*Papilio rutulus*																									X								
16	Swallowtail spp.																															X			
17	Large marble	*Euchloe ausonides*																									X								
18	Orange sulfur	*Colias eurytheme*																									X								
19	Common hairstreak	*Colias philodice*																									X								
20	Acmon blue	*Plebeius acmon*																									X								
21	Echo blue	*Celastrina argiolus echo*																									X								
22	Umber skipper	*Poanes melane*																									X								
23	Woodland skipper	*Ochlodes sylvanoides*																									X								
24	Fiery skipper	*Hylephila phyleus*																									X								
25	Sandhill skipper	*Polites sabuleti*																									X								
26	Common checkered skipper	*Pyrgus communis*																									X								
27	Yellowtail	*Chaetodon xanthurus*																												X					
28	San Francisco Forktail damselfly	*Ischnura gemina*		Yes								X															X								
29	Western forktail	*Ischnura perparva*										X																							
30	Pacific forktail	*Ischnura cervula*										X																							
31	Swift forktail	*Ischnura erratic*										X																							
32	Vivid dancer	*Argia vivida*										X															X								
33	Cardinal meadowhawk	*Sympetrum illiotum*										X																							
34	Wingless cranefly	*Tipula vestigipennis*																									X								
35	Camel cricket	*Pristoceuthophilus sp.*																									X								
36	Hoverfly	*Volucella bombylans*																									X								
37	Robberfly	*Laphria sp.*																									X								
38	Pyralid moth	*Uresiphita reversalis*																									X								

Appendix Table C-2. Animal species found within the San Francisco Significant Natural Areas.

					Natural Area																										
					Southwest				Southeast					Central West						Central												North
					BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BN
	Common Name	*Species Name*	N/I	Sensitive																													
39	Banana slug	*Ariolimax columbianus*					X																							X			
40	Nymph	*Malenka sp.*																							X								
41	Stonefly	*Amphinemura sp.*																							X								
42	Waterbug	*Microvelia sp.*																							X								
43	Water strider	*Gerris sp.*																							X								
44	Cranefly	*Holorusia sp.*																							X								
45	Meniscus midges	*Dixella sp.*																							X								
46	Mosquito	*Culiseta sp.*																							X								
47	Mosquito	*Culex sp.*																							X								
48	Caddisfly	*Parapsyche sp.*																							X								
49	Caddisfly	*Lepidostoma sp.*																							X								
50	Bumblebee	*Bombus californicus*			X				X	X	X											X					X				X		
51	Bumblebee	*Bombus caligrnosus*																															
52	Bumblebee	*Bombus melanopygus*			X		X		X	X	X	X		X		X	X	X				X		X	X		X			X			
53	Bumblebee	*Bombus sitkensis*					X							X		X	X							X		X			X				
54	Bumblebee	*Bombus vosnesenskii*			X		X		X	X	X	X		X		X	X	X			X		X	X		X			X			X	X	

Notes

1 An "X" indicates presence and a "?" was used where it was uncertain if a species actually occurred within one of the Natural Areas.
2 "N/I" indicates if a species is native to San Francisco or if it has been introduced.
3 Information collected from the following sources: DPW 2001; Singer 2000, Paquin and Reading 2000, M. Vasey, SFSU, 1999, Personal Communication, EIP 2000, McFrederick 2004, and communications with SFRPD Staff.

Southwest
BP = Brooks Park, Lakeview/Ashton Mini Park
LM = Lake Merced
PL = Pine Lake
SP = Sharp Park

Southeast
VP = Bayview Park
BH = Bernal Hill
IB = India Basin Shoreline Park
MP = McLaren Park
PP = Palou/Phelps

Central West
BV = Buena Vista
GV = Grandview Park
GH = Golden Gate Heights
HH = Hawk Hill
RO = Rock Outcrop

Central
FI = 15th Avenue Steps
BG = Billy Goat Hill
CH = Corona Heights
DP = Dorothy Erskine Park
DC = Duncan-Castro
EM = Edgehill Mountain
FP = Fairmount Park
GC = Glen Canyon Park
IG = Interion Green Belt
KH = Kite Hill
MD = Mount Davidson
OW = Golden Gate Park (Oak Woodland, Strawberry Hill, and Whiskey Hill)
OH = O'Shaughnessy Hollow
TK = Tank Hill
TP = Twin Peaks

North
BA = Balboa Natural Area

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

				Natural Area																												
				Southwest				Southeast					Central West						Central														North
				BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BA
			Number of Species	60	106	74	209	226	167	10	221	76	50	77	51	67	77	31	59	132	53	31	28	11	334	28	59	161	64	160	75	191	
	Species Name	Common Name	SF Native																													
1	*Abronia latifolia*	Yellow Sand Verbena	Yes				X																									
2	*Acacia longifolia*	Golden Wattle, Sydney Golden	No				X				X		X		X									X	X	X			X		X	
3	*Acacia mearnsii*	Black Wattle	No								X																					
4	*Acacia melanoxylon*	Blackwood Acacia	No		X								X		X													X				
5	*Acacia verticillata*	Star Acacia, Prickly Moses	No		X								X																			
6	*Acaena pinnatifida var. californica*	Acaena	Yes	X			X	X	X		X	X		X	X					X		X			X			X		X		X	
7	*Acanthomintha lanceolata*	Santa Clara Thornmint	No				X																									
8	*Acer macrophyllum*	Big-leaf Maple	Yes										X																			
9	*Acer negundo var. californica*	California Box Elder	Yes			X											X															
10	*Acer sp.*		No										X																			
11	*Achillea millefolium*	Yarrow	Yes		X		X	X	X		X	X		X	X	X	X	X	X	X	X	X			X		X	X		X	X	X	
12	*Achyrachaena mollis*	Blow-wives	Yes												X																	
13	*Actaea rubra*	Baneberry	Yes	X																												
14	*Adiantum jordanii*	California Maiden-hair Fern	Yes				X																									
15	*Aesculus califonica*	California Buckeye	Yes			X	X		X		X	X							X	X					X				X		X	
16	*Agapanthes africannus*	Agapanthes	No																										X			
17	*Agapanthes orientalis*	Agapanthes	No																X													
18	*Agapanthes sp.*	Agapanthes	No																						X							
19	*Agoseris apargioides var. apargioides*	Coast Dandelion	Yes	X				X	X		X					X									X			X				
20	*Agoseris grandiflora*	California Dandelion	Yes					X								X				X					X							
21	*Agoseris sp.*		No												X													X		X		
22	*Agrostis exarata*	Bent Grass	Yes				X	X																								
23	*Agrostis hallii*	Hall's Bent Grass	Yes						X																							X
24	*Agrostis pallens*	Leafy bent Grass	Yes					X																								
25	*Agrostis sp.*		No				X	X			X									X					X					X		X	
26	*Aira caryophyllea*	European hairgrass, Shiver Grass	No	X	X			X	X		X	X					X			X					X		X			X	X		
27	*Albizia lophantha*	Plume Acacia, Stink Bean	No		X				X																							
28	*Alchemilla occidentalis*	Alchelmilla	No									X													X							
29	*Allium dichlamydeum*	Coast Red Onion	Yes	X			X	X	X		X								X	X	X	X			X			X		X	X	X	
30	*Allium triquetrum*	Wild onion, White-flowered Onion	No					X			X														X				X		X	X	
31	*Alnus rhombifolia*	White Alder	No		X																				X							
32	*Alnus rubra*	Red Alder	Yes			X																										
33	*Alopecurus geniculatus*	Water Foxtail	No								X																					
34	*Alopecurus saccatus*		No																						X							
35	*Amaryllis belladonna*	Naked Lady	No						X																X							
36	*Ambrosia chamissonis*	Beach Bur, Silver Beachweed	Yes				X																									
37	*Amelanchier pallida*	Sevice Berry	Yes																									X		X		
38	*Amelanchier utahensis*	Utah Service Berry	No																						X							X
39	*Amsinckia intermedia*	Fiddleneck, Rancher's Fireweed	Yes					X			X																					
40	*Anagallis arvensis*	Scarlet Pimpernel	No				X	X	X		X	X								X					X					X		
41	*Anaphalis margaritacea*	Pearly Everlasting	Yes	X			X	X	X											X					X		X	X		X		X	
42	*Angelica hendersonii*	Coast Angelica	Yes	X			X	X						X		X	X								X			X		X		X	
43	*Anthriscus caucalis*	Bur-Chervil	No					X			X							X							X				X			X	
44	*Aphanes mollis*		No								X																					
45	*Aphanes occidentalis*	Western Lady's Mantle	Yes					X	X		X			X																	X	X	
46	*Aptenia cordifolia*	Baby Sun Rose, Dew Plant	No								X																					
47	*Aquilegia formosa*	Columbine	Yes																						X							
48	*Arabis blepharophylla*	Coast Rock Cress	Yes						X													X			X			X		X		X	
49	*Arabis glabra*	Tower mustard	Yes		X			X																								
50	*Arbutus menziesii*	Pacific Madrone	Yes		X	X	X		X				X																			X	
51	*Arctotheca calendula*	Capeweed	No								X																					X	
52	*Aristolochia californica*	Calif. Pipe Vine, Dutchman's Pipe	Yes		X																								X			
53	*Armeria maritima ssp. californica*	Thrift, Sea-pink	Yes	X										X	X	X	X											X				
54	*Artemisia californica*	California Sagebrush	Yes		X		X	X			X			X						X			X		X			X	X	X	X	X	
55	*Artemisia douglasiana*	Mugwort, California Mugwort	Yes				X	X			X									X					X		X	X		X		X	
56	*Artemisia pycnocephala*	Beach or coastal Sagewort	Yes											X	X	X	X															
57	*Artemisia sp.*		No										X																			
58	*Aster chilensis*	California Aster	Yes	X		X	X	X	X		X									X					X		X	X		X		X	
59	*Aster radulinus*	Aster, Rough-leaved Aster	Yes					X																								
60	*Athyrium filix-femina var. cyclosorum*	Lady Fern	Yes			X	X																		X				X			
61	*Atriplex triangularis*	Spearscale	Yes				X																									
62	*Avena barbata*	Slender Wild Oat	No	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X			X	X		X	X			X	X	
63	*Avena fatua*	Wild Oat	No				X	X	X		X			X		X	X		X	X					X		X					X	
64	*Avena sp.*	Wild Oat	No																											X			
65	*Azolla filiculoides*	American Water Fern	Yes				X																									

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

				Natural Area																													
				Southwest				Southeast					Central West						Central														North
				BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BA
			Number of Species	60	106	74	209	226	167	10	221	76	50	77	51	67	77	31	59	132	53	31	28	11	334	28	59	161	64	160	75	191	
	Species Name	Common Name	SF Native																														
66	*Baccharis douglasii*	Marsh Baccharis	Yes					X																									
67	*Baccharis pilularis*	Coyote Brush	Yes	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X		X		X	X	X	X	X	X	
68	*Baccharis pilularis ssp. consanguinea*	Coyote Brush	Yes		X																												
69	*Barbarea orthoceras*	American Winter Cress	Yes					X																	X								
70	*Bellis perennis*	English Daisy	No								X														X							X	
71	*Berberis pinnata*	Coast barberry, Shiny-leaf Mahonia	Yes				X	X																	X			X		X	X	X	
72	*Brachypodium distachyon*	Purple False Brome	No				X																										
73	*Brassica nigra*	Black Mustard	No					X	X		X																						
74	*Brassica rapa*	Field Mustard, Turnip	No					X	X		X														X							X	
75	*Briza maxima*	Rattlesnake Grass, Big Quaking Grass	No		X			X	X		X					X	X			X					X		X	X		X	X	X	
76	*Briza minor*	Little Rattlesnake (Quaking) Grass	No		X		X	X			X														X					X			
77	*Brodiaea elegans*	Harvest Brodiaea	Yes									X													X								
78	*Brodiaea sp.*	Brodiaea sp.	No	X							X	X																					
79	*Brodiaea terrestris*	Dwarf Brodiaea, Earth Brodiaea	Yes					X	X		X														X			X		X	X	X	
80	*Bromus carinatus ssp. carinatus*	California Brome, Mountain Brome	Yes		X	X		X	X		X	X			X		X		X	X	X		X		X	X	X	X	X	X	X	
81	*Bromus carinatus ssp. maritimus*	California Brome, Seaside Brome	Yes	X										X	X	X	X	X															
82	*Bromus catharticus*	Rescue Grass	No																													X	
83	*Bromus diandrus*	Ripgut Brome	No	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X					X		X	X	X	X	X	
84	*Bromus hordeaceus*	Soft Chess	No		X			X	X		X	X								X	X					X		X	X		X	X	
85	*Bromus madritensis ssp. rubens*	Foxtail Chess	No		X			X																								X	
86	*Buddeja davidii*		No																						X								
87	*Cakile maritima*	Sea Rocket	No				X																										
88	*Calamagrostis nutkaensis*	Pacific Reed Grass	Yes				X				X																	X		X		X	
89	*Calandrinia ciliata*	Red Maids	Yes												X																	X	
90	*Calocedrus decurrens*	Incense Cedar	No																	X													
91	*Calochortus albus*	White Globe Lily, Fairy Lantern	Yes				X																										
92	*Calycanthus occidentalis*	Spice Bush	No																						X								
93	*Calystegia occidentalis*	Western or Bush Morning-glory	Yes					X	X		X														X							X	
94	*Calystegia purpurata ssp. purpurata*	Morning-glory	Yes				X	X	X											X	X		X		X		X	X		X		X	
95	*Calystegia subacaulis*	Hill Morning-glory	Yes					X	X		X									X					X		X			X		X	
96	*Camissonia cheiranthifolia*	Beach Evening Primrose	Yes		X		X							X		X																	
97	*Camissonia ovata*	Sun Cup	Yes					X	X		X									X					X			X		X			
98	*Capsella bursa-pastoris*	Shepherd's Purse	No						X																X							X	
99	*Cardamine californica var. integrifolia*	Milk maids, California Toothwort	Yes					X												X	X				X			X		X			
100	*Cardamine oligosperma*	Bitter-cress	Yes					X	X																X					X		X	
101	*Cardamine sp.*		No		X																												
102	*Cardionema ramosissimum*	Sandmat	Yes		X			X			X				X	X				X					X			X		X		X	
103	*Carduus pycnocephalus*	Italian Thistle	No				X	X	X		X								X						X					X	X	X	
104	*Carex barbarae*	Santa Barbara Sedge	Yes																						X								
105	*Carex brevicaulis*	Short-stemmed Sedge	Yes					X	X					X	X					X													
106	*Carex sp.*	Sedge	No				X				X																						
107	*Carpobrotus edulis*	Iceplant, Hottentot Fig	No		X	X	X	X	X					X	X	X	X								X							X	
108	*Castilleja densiflora*	Owl's Clover	Yes																	X													
109	*Castilleja exserta ssp. exserta*	Purple Owl's Clover	Yes																						X			X		X			
110	*Castilleja latifolia*	Seaside Paintbrush	Yes													X									X					X			
111	*Castilleja sp.*	Indian Paintbrush	No																													X	
112	*Castilleja wightii*	Beach Paintbrush	Yes				X									X																	
113	*Ceanothus "species nova"*		No										X																				
114	*Ceanothus thyrsiflorus*	Coast Blue Blossom, California Lilac	Yes								X								X	X									X			X	
115	*Centaurea solstitialis*	Yellow Star-thistle, Barnaby's Thistle	No				X		X																								
116	*Centaurium muehlenbergii*	Monterey Centaury	Yes																						X								
117	*Centranthus ruber*	Red Valerian	No					X	X		X	X							X	X					X					X		X	
118	*Cerastium arvense*	Field or Meadow Chickweed	Yes								X			X			X										X	X				X	
119	*Cerastium glomeratum*	Mouse-Ear Chickweed	No		X			X	X			X					X								X						X	X	
120	*Chamaesyce maculata*	spotted Spurge	No																						X								
121	*Chamomilla suaveolens*	Pineapple Weed	No					X	X																X								
122	*Chasmanthe floribunda*	Chasmanthe	No						X																								
123	*Chenopodium album*	Pigweed, Lamb's Quarters	No				X																		X								
124	*Chenopodium berlanderi*	Berlandier's or Pitseed Goosefoot	Yes						X																								
125	*Chenopodium multifidum*	Cutleaf Goosefoot	No				X																										
126	*Chenopodium murale*	Nettle-leaf Goosefoot	No																						X								
127	*Chenopodium sp.*		No							X																							
128	*Chlorogalum pomeridianum*	Soap Plant, Amole	Yes	X	X	X	X		X					X					X	X		X	X				X	X		X	X	X	
129	*Chlorogalum pomeridianum var. divaricatum*	Soap Plant	Yes					X			X	X									X				X							X	
130	*Chorizanthe cuspidata ssp. cuspidata*	San Francisco Spineflower	Yes		X																												
131	*Chrysanthemum leucanthemum*	Ox-Eye Daisy, Common Daisy	No				X																										

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

				Natural Area																												
				Southwest				Southeast					Central West						Central														North
				BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BA
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	Species Name	Common Name	SF Native																													
132	*Chrysanthemum segetum*		No				X																									
133	*Cirsium arvense*	Canada Thistle	No								X																					
134	*Cirsium brevistylum*	Indian Thistle	Yes				X																		X							
135	*Cirsium occidentale var. californicum*	California Thistle	Yes		X																				X					X		
136	*Cirsium quercetorum*	Brownie Thistle	Yes					X	X		X									X					X					X		X	
137	*Cirsium vulgare*	Bull thistle	No				X	X			X														X					X		X	
138	*Clarkia rubicunda*	Farewell-to-Spring	Yes				X	X	X											X					X						X	X	
139	*Claytonia perfoliata*	Miner's Lettuce	Yes	X	X	X	X	X	X		X	X		X	X	X	X	X		X	X		X		X		X	X	X	X	X	X	
140	*Clematis sp.*		No																							X							
141	*Collinsia multicolor*	Chinese Houses	Yes					X																									
142	*Conicosia pugioniformis*	Narrow-Leaf Ice Plant	No											X		X																	
143	*Conioselinum chinense*		Yes																													X	
144	*Conium maculatum*	Poison Hemlock	No		X	X	X											X							X				X	X		X	
145	*Convolvulus arvensis*	Morning-Glory, Field Bindweed	No						X		X														X								
146	*Conyza bilboana*		No																						X							
147	*Conyza bonariensis*	Horseweed	No								X														X							X	
148	*Conyza canadensis*	Horseweed	Yes			X	X				X																						
149	*Conyza sp.*	Horseweed	No				X																										
150	*Coprosma repens*	Mirror Plant	No			X	X				X		X		X		X											X					
151	*Cornus sericea ssp. sericea*	Creek or American Dogwood	Yes				X																										
152	*Coronopus didymus*	Wart, Swine Cress	No																						X								
153	*Cortaderia jubata*	Andean Pampas Grass	No	X		X	X	X	X		X					X	X		X	X						X				X		X	
154	*Cortaderia selloana*	Pampas Grass	No		X		X				X																						
155	*Corylus cornuta var. californica*	California Hazelnut	Yes				X																										
156	*Cotoneaster pannosa*	Cotoneaster	No						X		X	X			X										X								
157	*Cotoneaster sp.*	Cotoneaster	No					X					X	X					X									X	X	X		X	
158	*Cotula australis*	New Zealand Brass Buttons	No																						X								
159	*Cotula coronopifolia*	Brass Buttons	No				X																										
160	*Crassula argentea*	Jade Plant	No																									X					
161	*Crassula connata*	Sand Pygmy-weed	Yes					X	X							X	X								X							X	
162	*Crassula sp.*	(succulents)	No													X																	
163	*Crocosmia masoniorum*	Crocosmia	No			X	X											X										X				X	
164	*Croton californicus*	California Croton	Yes													X																	
165	*Cupressus macrocarpa*	Monterey Cypress	No	X	X	X	X	X	X		X		X	X	X					X	X			X	X	X		X				X	
166	*Cuscuta salina var. major*	Salt marsh Dodder	Yes							X																							
167	*Cymbalaria muralis*	Kenilworth Ivy	No																												X		
168	*Cynodon dactylon*	Bermuda Grass	No																						X								
169	*Cynosurus echinatus*	Hedgehog Dogtail, Dogtail Grass	No								X																						
170	*Cyperus eragrostis*	Tall Cyperus	Yes				X		X		X														X				X				
171	*Cyperus esculentus*	Nutsedge, Galingale	Yes				X																										
172	*Cytisus scoparius*	Scotch Broom	No				X																		X								
173	*Dactylis glomerata*	Orchard Grass	No				X																		X								
174	*Danthonia californica var. americana*	California Oatgrass	Yes	X			X	X	X		X	X									X		X			X			X		X		
175	*Daucus carota*	Carrot	No				X																										
176	*Daucus pusillus*	Rattlesnake Weed	Yes																						X					X			
177	*Delairea odorata*	Cape-ivy, German-ivy	No	X		X	X	X			X		X					X			X				X	X		X	X			X	
178	*Delphinium californicum*	California Larkspur	Yes				X	X																									
179	*Delphinium decorum*	Coast Larkspur	Yes					X																									
180	*Deschampia cespitosa*	Tufted Hairgrass	Yes																						X							X	
181	*Deschampsia cespitosa ssp. holciformis*	Tufted Hairgrass	Yes					X																									
182	*Deschampsia danthonioides*	annual Hairgrass	Yes														X			X													
183	*Dichelostemma capitatum*	Blue Dicks, Wild Hyacinth	Yes	X				X	X		X	X							X	X	X	X	X		X		X	X		X	X	X	
184	*Dichondra donelliana*	Dichondra	Yes					X	X		X										X				X		X	X		X		X	
185	*Disporum hookeri*	Fairy Bells	Yes																									X					
186	*Distichlis spicata*	Saltgrass	Yes				X			X																							
187	*Dodecatheon clevelandii ssp. patulum*	Shooting Star	Yes					X	X																								
188	*Dodecatheon hendersonii*	Mosquito Bills, Sailor Caps	Yes					X	X		X																	X				X	
189	*Dryopteris arguta*	Spreading Coastal Wood Fern	Yes		X		X	X												X	X		X		X	X		X	X	X		X	
190	*Duchesnea indica*	Mock-strawberry	No																						X				X				
191	*Dudleya farinosa*	Live-forever	Yes		X		X	X			X			X	X	X	X			X			X		X			X		X	X	X	
192	*Echinocloa crus-galli*		No								X																						
193	*Echium candicans*	Echium	No																													X	
194	*Echium sp.*	Echium	No																													X	
195	*Ehrharta erecta*	Ehrharta Grass	No		X	X	X				X		X	X	X		X	X				X				X	X		X	X			
196	*Elymus californicus*	California Bottle-brush Grass	Yes																													X	
197	*Elymus glaucus ssp. glaucus*	Blue Wild Rye, Western Wild Rye	Yes	X			X	X	X		X	X		X					X	X	X					X		X	X		X		X	

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198	*Elymus multisetus*	Big Squirrel Tail	Yes					X	X																								
199	*Epilobium brachycarpum*	Willow-herb	Yes					X		X	X									X					X			X		X		X	
200	*Epilobium ciliatum*	Willow-herb	Yes								X																						
201	*Epilobium ciliatum ssp. ciliatum*	Northern Willow-herb	Yes					X	X																				X				
202	*Epilobium ciliatum ssp. watsonii*	Willow-herb	Yes				X																		X			X		X		X	
203	*Epipactis helleborine*		No																						X								
204	*Equisetum arvense*	Common Horsetail, Field Horsetail	Yes																						X								
205	*Equisetum sp.*	Horsetail	No				X																										
206	*Equisetum telmateia*	Giant Horsetail	Yes				X				X														X								
207	*Equisetum telmateia ssp. Braunii*	Giant horsetail, Horsetail fern	Yes								X																						
208	*Erechtites arguta*		No																						X								
209	*Erechtites glomerata*	New Zealand Fireweed	No					X																									
210	*Erechtites minima*	Australian Fireweed	No				X																		X			X					
211	*Erechtites prenanthoides*		No																						X								
212	*Erechtites sp.*		No																											X			
213	*Ericameria ericoides*	Mock Heather, Goldenbush	Yes		X									X	X	X	X	X															
214	*Erigeron blochmaniae*	Blochmans Leafy Daisy	No						X																								
215	*Erigeron foliosus*	Leafy Daisy	Yes					X												X					X					X			
216	*Erigeron glaucus*	SeasideDaisy	Yes	X			X							X			X								X			X		X	X	X	
217	*Erigeron sp.*	Fleebane Daisy	No								X														X								
218	*Eriogonum latifolium*	Coast Buckwheat	Yes	X	X		X	X	X		X	X		X	X	X	X		X	X	X	X		X	X	X		X		X	X	X	
219	*Eriogonum nudum*	Nude Buckwheat	Yes																						X								
220	*Eriophyllum confertiflorum*	Golden or Yellow Yarrow	Yes					X			X		X							X								X				X	
221	*Eriophyllum confertiflorum var. confertiflorum*	Lizardtail	Yes																						X					X		X	
222	*Eriophyllum staechadifolium*	Lizard-tail, Seaside Wooly Sunflower	Yes	X	X		X				X														X			X	X	X		X	
223	*Erodium botrys*	Broad-leaf Filaree, Long-beaked Filaree	No		X			X	X		X	X													X		X	X				X	
224	*Erodium cicutarium*	Red-stemmed Filaree, Storksbill	No					X	X		X	X					X			X					X		X					X	
225	*Erodium moschatum*	White-stemmed Filaree	No					X	X		X														X							X	
226	*Erodium sp.*	Filaree	No								X																						
227	*Erysimum franciscanum*	San Francisco Wallflower	Yes		X									X	X	X	X	X															
228	*Escallonia sp.*	Escallonia	No										X																				
229	*Eschscholzia californica*	California Poppy	Yes	X	X		X	X	X		X	X		X	X	X	X	X	X	X		X			X		X	X	X	X	X	X	
230	*Eucalyptus globulus*	Blue Gum Eucalyptus	No		X	X	X	X	X		X	X									X			X	X	X		X	X		X		
231	*Eucalyptus nicholii*	Eucalyptus	No					X																									
232	*Eucalyptus sp.*	Blue Gum	No				X				X		X															X					
233	*Eucalyptus viminalis*	manna Gum	No					X			X		X																				
234	*Euphorbia peplus*	Petty Spurge	No				X	X			X														X								
235	*Euphorbia spathulata*	Spurge	Yes																	X													
236	*Festuca arundinacea*	Tall Fescue, Alta Fescue, Reed Fescue	No								X														X								
237	*Festuca californica*	California Fescue	Yes				X	X			X														X			X					
238	*Festuca idahoensis*	Idaho Fescue	Yes					X						X		X						X			X			X		X		X	
239	*Festuca rubra*	Red Fescue	Yes	X			X	X	X		X	X		X	X	X	X	X	X	X		X					X	X			X	X	
240	*Festuca sp.*		No																													X	
241	*Filago gallica*	Herba Impia	No		X			X	X			X									X				X								
242	*Filago sp.*		No																											X			
243	*Foeniculum vulgare*	Sweet Fennel	No		X		X	X	X		X	X	X							X	X	X				X		X			X		X	
244	*Fragaria chiloensis*	Beach or Dune Strawberry	Yes	X			X							X	X	X	X			X	X					X			X				X	
245	*Fragaria sp.*	Strawberry	No																										X				
246	*Fragaria vesca*	Wild or Woodland Strawberry	Yes				X	X															X		X			X		X		X	
247	*Frankenia salina*	Alkali heath, Yerba Reuma	Yes				X																										
248	*Fritillaria affinis*	Checker lily, Mission Bells	Yes					X	X												X	X			X			X		X		X	
249	*Fumaria officinalis*	Fumitory	No								X														X				X				
250	*Fumaria parviflora*	Fumitory	No		X		X				X																						
251	*Fumaria sp.*		No																						X								
252	*Fushia sp.*	Fushia	No																							X		X					
253	*Galium aparine*	Bedstraw, Cleavers, Goosegrass	Yes			X	X	X			X					X				X		X		X	X		X	X	X		X	
254	*Galium nuttallii*	Nuttall's Bedstraw, Climbing Bedstraw	No																									X					
255	*Galium porrigens var. porrigens*	Climbing Bedstraw	Yes				X	X																	X					X		X	
256	*Galium sp.*	Bedstraw	No		X																												
257	*Garrya elliptica*	Silk tassel Bush	Yes		X																				X								
258	*Gaultheria shallon*	Gaultheria	Yes																						X			X		X			
259	*Gazania sp.*	Gazania	No								X																						
260	*Genista monspessulana*	French Broom	No		X		X	X	X		X	X	X				X		X	X					X			X		X	X	X	
261	*Geranium dissectum*	Cut-Leaf Geranium	No					X	X		X	X		X				X							X			X	X	X		X	
262	*Geranium molle*	Crane's Bill Geranium	No					X	X		X														X								
263	*Geranium sp.*	Geranium	No		X				X																								

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	Species Name	Common Name	SF Native																													
264	*Gilia capitata ssp. chamissonis*	Dune Gilia	Yes													X																
265	*Gilia clivorum*	Gilia	Yes					X																								
266	*Glyceria leptostachya*	Manna Grass	Yes																					X								
267	*Glyceria occidentalis*	Manna Grass	Yes								X																					
268	*Gnaphalium californicum*	Cudweed, Green everlasting	Yes				X	X																X					X		X	
269	*Gnaphalium canescens ssp. beneolens*	Everlasting Cudweed	Yes					X																							X	
270	*Gnaphalium luteo-album*	Everlasting Cudweed	No					X																X								
271	*Gnaphalium purpureum*	Purple Cudweed	Yes					X									X															
272	*Gnaphalium ramosissimum*	Pink Everlasting, Cudweed	Yes				X	X																								
273	*Gnaphalium sp.*		No		X		X		X		X																	X		X		X	
274	*Gnaphalium stramineum*	Cudweed	Yes					X																								
275	*Grindelia camporum*	Gumplant	Yes																					X								
276	*Grindelia hirsutula*	Hairy Gumplant	Yes																	X											X	
277	*Grindelia hirsutula var. maritima*	San Francisco Gumplant	Yes																												X	
278	*Grindelia maritima*	San Francisco Gumplant	Yes						X																						X	
279	*Grindelia stricta*	Gumplant	Yes				X																									
280	*Grindelia stricta var. angustifolia*		Yes							X																						
281	*Griselinia sp.*	Griselinia	No																													
282	*Hedera helix*	English Ivy	No		X	X			X		X	X	X		X				X						X	X		X	X		X	
283	*Hedypnois cretica*	Hedypnois	No														X								X							
284	*Helenium puberulum*	Sneezeweed	Yes																						X							
285	*Heliotropium curvassavicum*	Heliotrope	Yes				X																									
286	*Heracleum lanatum*	Cow Parsnip	Yes				X																		X			X		X		X	
287	*Heteromeles arbutifolia*	Toyon, Christmas Berry	Yes		X	X	X	X	X		X	X	X					X		X	X	X	X	X	X			X	X	X		X	
288	*Heterotheca sessiliflora ssp. bolanderi*	Goldenaster	Yes					X														X						X				
289	*Heuchera micrantha*	Alumroot	Yes																					X				X				
290	*Hirschfeldia incana*	Summer Mustard	No				X	X	X		X	X							X		X				X			X		X		X	
291	*Holcus lanatus*	Purple Velvet Grass	No			X	X	X			X														X					X			
292	*Holodiscus discolor*	Oceanspray, Creambush	Yes		X		X	X			X									X					X			X		X		X	
293	*Hordeum brachyantherum*	Meadow Barley	Yes				X	X	X		X														X								
294	*Hordeum marinum ssp. gussoneanum*	Mediterranean Barley	No								X																						
295	*Hordeum murinum ssp. Leporinum*	Farmer's Foxtail	No			X		X	X		X	X		X	X	X	X		X	X				X	X		X	X	X		X	X	
296	*Hordeum sp.*		No																											X			
297	*Horkelia californica*	California Horkelia	Yes	X			X	X	X										X	X	X				X			X		X		X	
298	*Hypochaeris glabra*	Smooth Cat's-Ear	No					X	X		X	X		X	X	X	X			X					X			X		X		X	
299	*Hypochaeris radicata*	Hairy or Rough Cat's-Ear	No	X				X	X		X	X		X			X		X	X					X			X		X	X	X	
300	*Ilex aquifolium*	English Holly	No								X														X								
301	*Ilex sp.*	Holly	No																									X					
302	*Iris douglasiana*	Douglas Iris	Yes			X	X	X						X	X					X	X				X			X		X		X	
303	*Iris longipetala*	Coast Iris	Yes					X	X		X								X	X	X				X		X	X		X		X	
304	*Iris pseudacorus*	Yellow Flag	No			X																											
305	*Jaumea carnosa*	Jaumea	Yes				X																										
306	*Juncus balticus*	Rush	Yes			X	X				X			X											X								
307	*Juncus bufonius*	Toad Rush	Yes					X	X		X					X									X				X	X			
308	*Juncus effusus var. brunneus*	Bog Rush	Yes			X	X				X														X			X	X	X			
309	*Juncus lesueurii*	Rush	Yes			X	X				X			X											X								
310	*Juncus occidentalis*	Rush	Yes				X				X									X													
311	*Juncus patens*	Spreading Rush, Common Rush	Yes				X	X																	X			X		X		X	
312	*Juncus phaeocephalus*	Rush	Yes								X			X											X								
313	*Juncus sp.*	Rush	No		X						X																						
314	*Juncus xiphioides*	Iris Leaf Rush	No											X																			
315	*Kniphofia uvaria*	Red-Hot Poker, Poker Plant	No																						X			X					
316	*Koeleria macrantha*	June Grass	Yes				X	X	X		X	X						X		X					X			X		X	X	X	
317	*lactuca serriola*	prickly Lettuce	No					X				X																				X	
318	*Lactuca sp.*	Prickly Lettuce	No																													X	
319	*Lasthenia californica*	Goldfields	Yes					X	X			X								X								X			X	X	
320	*Lasthenia chrysostoma*		No																	X													
321	*lathyrus latifolius*	Giant Pea, Everlasting Pea	No						X										X	X													
322	*Lathyrus sp.*		No						X																								
323	*Lathyrus vestitus var. vestitus*	Pacific, Bolander's, or Hillside Pea	Yes	X			X	X	X		X			X					X	X	X	X	X		X	X	X	X		X	X	X	
324	*Lavatera arborea*	Tree-mallow	No			X	X				X																						
325	*Lavatera cretica*	Tree-mallow	No																						X								
326	*Lavatera sp.*	Tree mallow	No								X																						
327	*Lemna sp.*		No								X																						
328	*Lepidium nitidum*	Peppergrass	Yes						X																X								
329	*Lepidium sp.*	Peppergrass	No		X																												

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330	*Leptospermum laevigatum*	Tea Tree	No										X																X			
331	*Leptospermum sp.*	New Zealand Tea tree	No										X																			
332	*Leymus mollis ssp. mollis*	American Dune-Grass	Yes				X																									
333	*Leymus triticoides*	Valley Wild-rye	Yes					X								X																
334	*Ligusticum apiifolium*	Pacific Lovage	Yes					X													X				X			X		X		X
335	*Lilaea scilloides*	Flowering Quillwort	Yes								X																					
336	*Lilium sp.*	Lily	No								X																					
337	*Limonium californicum*	Sea Lavendar, Marsh Rosemary	Yes							X																						
338	*Limonium sp.*	Sea Lavendar	No		X																											
339	*Linaria bipartita*	Toadflax	No																						X							
340	*Linaria canadensis*	Canadian or Blue Toad-Flax	Yes											X																		
341	*Linum bienne*	Flax	No					X																								
342	*Lithophragma affine*	Woodland Star	Yes					X																	X							
343	*Lobularia maritima*	Sweet Alyssum	No		X		X				X			X	X	X									X							X
344	*Lolium multiflorum*	Italian Ryegrass	No	X			X	X	X		X	X						X	X	X	X			X	X		X	X		X	X	X
345	*Lolium perenne*	Perrenial Ryegrass	No				X	X			X																						
346	*Lomatium caruifolium*	biscuit root	Yes					X	X		X	X							X			X			X		X				X	X
347	*Lomatium dasycarpum*	Wooly Parsnip	Yes					X	X			X									X				X			X		X		
348	*Lomatium sp.*		No																						X							
349	*Lomatium utriculatum*	Bladder Parsnip	Yes					X	X		X	X								X	X	X			X		X	X		X	X	X
350	*Lonicera hispidula var. vacillans*	California Honeysuckle	Yes				X				X														X					X		X
351	*Lonicera involucrata*	Coast Twinberry	Yes				X																									
352	*Lonicera japonica*	Japanese Honeysuckle	No						X																X							
353	*Lotus corniculatus*	Birdfoot Trefoil	No				X	X			X														X							
354	*Lotus purshianus var. purshianus*	Spanish Clover	Yes					X																								
355	*Lotus scoparius*	Deer Weed, California Broom	Yes		X			X	X		X			X	X	X				X					X			X		X		X
356	*Lotus sp.*	Lotus	No								X						X															X
357	*Lotus wrangelianus*	Calif. Lotus, Chilean Trefoil	Yes																	X					X							
358	*Ludwigia peploides*	Marsh Purslane	Yes			X																										
359	*Lupinus albifrons var. collinus*	Silver Bush Lupine	Yes				X	X	X		X														X					X		X
360	*Lupinus arboreus*	Yellow Bush Lupine, Tree Lupine	Yes	X	X	X	X	X	X		X		X	X		X	X	X	X						X				X		X	X
361	*Lupinus bicolor*	Miniature Lupine, Annual Lupine	Yes					X	X	X	X			X		X	X			X		X			X			X		X	X	X
362	*Lupinus chamissonis*	Chamisso's Lupine, Beach Blue Lupine	Yes											X		X																
363	*Lupinus formosus var. formosus*	Summer Lupine	Yes					X	X																							
364	*Lupinus nanus*	Sky Lupine	Yes	X				X		X	X	X								X					X		X					X
365	*Lupinus sp.*		No																								X					
366	*Lupinus sparsiflorus*	Loosely-flowered Annual Lupine	No																						X							
367	*Lupinus succulentus*	Arroyo Lupine	No																						X							
368	*Lupinus variicolor*	Varicolored Lupine, Varied Lupine	Yes					X	X		X					X				X					X		X	X		X	X	X
369	*Luzula comosa*	Wood Rush	Yes	X			X	X	X		X	X					X			X		X			X		X	X		X	X	X
370	*Luzula multiflora*	Hairy Wood Rush	No																	X												
371	*Lyonothamnus floribundus*	Catalina Ironwood	No										X																			
372	*Lythrum hyssopifolium*	Loosestrife	No								X														X					X		
373	*Madia minima*	Tarweed	Yes								X																					
374	*Madia sativa*	Coast Tarweed, Headland Tarweed	Yes					X												X					X					X		
375	*Madia sp.*	Tarweed	No				X																									
376	*Malva nicaeensis*	Bull Mallow	No																						X				X			
377	*Malva parviflora*	Cheeseweed, Little Mallow	No					X			X														X					X		
378	*Malva sp.*	Mallow	No		X				X				X																			
379	*Malva sylvestris*	high Mallow	No			X							X				X		X													
380	*Marah fabaceus*	Man-root, Wild Cucumber	Yes			X	X	X			X		X	X	X	X	X	X	X	X			X		X	X		X	X	X	X	X
381	*Marah oreganus*	Wild Cucumber, Man-root	Yes								X																					
382	*Matthiola incana*	Stock	No				X																									
383	*Maytenus boaria*	Mayten Tree	No										X																X			
384	*Medicago polymorpha*	California Bur-Clover	No		X	X	X	X	X		X	X					X			X					X		X					
385	*Medicago sp.*	Burclover	No								X																					
386	*Melica californica*	California Melica	Yes					X	X		X	X								X					X		X	X		X		X
387	*Melica imperfecta*	Small-Flowered Melica	Yes	X			X	X								X																
388	*Melica sp.*	Oniongrass	No				X																		X							
389	*Melica torreyana*	Torrey's Melica	Yes																	X					X							
390	*Melilotus alba*	White Sweetclover, Melilot	No																						X							
391	*Melilotus indica*	Sourclover	No					X	X																X							
392	*Mentha spicata var. spicata*	Spearmint	No																										X			
393	*Microseris bigelovii*	Coast Dandelion, Coast Microseris	Yes					X	X							X				X												
394	*Microseris lindleyi*		No																	X												
395	*Microseris sp.*		No																	X		X										

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				Natural Area																												
				Southwest				Southeast					Central West						Central														North
				BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BA
	Number of Species			60	106	74	209	226	167	10	221	76	50	77	51	67	77	31	59	132	53	31	28	11	334	28	59	161	64	160	75	191	
	Species Name	Common Name	SF Native																													
396	*Mimulus aurantiacus*	Sticky or Bush Monkey Flower	Yes	X	X		X	X						X		X				X			X		X			X	X	X	X	X	
397	*Mimulus guttatus*	Common Monkey Flower	Yes				X				X														X								
398	*Minuartia douglasii*	Sandwort	No																	X													
399	*Monardella villosa*	Coyote-Mint	Yes				X	X	X											X					X			X				X	
400	*Monardella villosa var. franciscana*	Western Pennyroyal	Yes																						X					X			
401	*Muilla maritima*	Muilla	No																	X							X	X			X	X	
402	*Myoporum laetum*	Lollypop Tree	No		X		X																						X				
403	*Myoporum sp.*		No																									X					
404	*Myosotis latifolia*	Forget-me-not	No																						X								
405	*Myosotis sp.*	Forget-me-not	No																									X					
406	*Myrica californica*	California Wax Myrtle	Yes		X	X	X																		X				X				
407	*Narcissus sp.*	Daffodil	No																						X								
408	*Nassella lepida*	Foothill Needlegrass	Yes				X	X	X		X																						
409	*Nassella pulchra*	Purple Needlegrass	Yes	X			X	X	X		X	X								X	X	X		X	X	X		X	X		X	X	X	
410	*Navarretia squarrosa*	Skunkweed	Yes					X																									
411	*Nemophila maculata*		No						X																								
412	*Nemophila menziesii*	Baby Blue-eyes	Yes						X																X						X		
413	*Nymphaea odorata*	White Water Lily, Water Nymph	No				X																										
414	*Oemleria cerasiformis*	Oso Berry	Yes				X	X			X										X	X			X	X		X		X	X	X	
415	*Oenanthe sarmentosa*	Water Parsley	Yes		X	X	X				X														X				X				
416	*Oenothera elata ssp. hookeri*	Beach Evening Primrose	Yes		X		X																										
417	*Olea sp.*	Olive	No										X																				
418	*Osmorhiza chilensis*	Sweet Cicely	Yes																							X							
419	*Oxalis albicans ssp. pilosa*	Wood-sorrel	Yes	X							X																						
420	*Oxalis incarnata*		No																						X					X			
421	*Oxalis latifolia*		No																X														
422	*Oxalis pes-caprae*	Bermuda Buttercup	No		X			X	X		X			X	X	X	X	X	X	X					X		X	X	X	X	X	X	
423	*Oxalis rubra*		No					X	X																								
424	*Oxalis sp.*		No																									X					
425	*parietaria judaica*		No					X			X																						
426	*Paronychia franciscana*	Nailwort	No	X					X		X						X		X	X	X				X			X		X	X	X	
427	*Pellaea andromedifolia*	Coffee Fern	Yes				X																										
428	*Pellaea sp.*		No																									X					
429	*Pennisetum clandestinum*	Kikuyu Grass	No	X																													
430	*Pentagramma triangularis*	Goldback Fern	Yes				X	X	X			X									X				X					X		X	
431	*Perideridia kelloggii*	Yampah	Yes					X	X																								
432	*Phacelia californica*	California Coast Phacelia	Yes		X		X	X						X	X	X	X			X			X		X							X	
433	*Phacelia distans*	Wild-Heliotrope	Yes				X							X	X	X	X															X	
434	*Phacelia malvifolia*	Stinging Phacelia	Yes				X							X											X				X	X			
435	*Phalaris aquatica*	Harding Grass	No						X																								
436	*Phalaris sp.*		No				X																										
437	*Picris echioides*	Bristly Ox-tongue	No				X	X	X		X									X					X								
438	*Pinus pinea*	Italian Stone Pine	No																								X						
439	*Pinus radiata*	Monterey Pine	No	X	X		X		X		X		X		X	X	X			X					X			X	X			X	
440	*Pinus sp.*	Pine	No								X									X													
441	*Piperia elegans*	Green Rein-orchid, Coast Piperia	Yes					X	X																X			X		X		X	
442	*Piptochaetium setosum*	Ricegrass	No																						X								
443	*Pittosporum crassifolium*	Thick-leaved Pittosporum	No										X																				
444	*Pittosporum sp.*		No			X	X		X																								
445	*Pittosporum undulatum*	Victorian Box, Mock Orange	No										X																				
446	*Plantago coronopus*	Split-Leaf Plantain	No				X	X																									
447	*Plantago erecta*	Dwarf Plantain	Yes	X				X	X		X						X			X		X			X			X		X	X	X	
448	*Plantago lanceolata*	English Plantain	No	X	X		X	X	X		X	X		X		X	X		X	X	X			X	X	X		X	X		X	X	X	
449	*Plantago major*	Common Plantain	No		X																				X								
450	*Plantago sp.*	Plantain	No				X																										
451	*Plantago subnuda*	Mexican Plantain	Yes			X	X																		X								
452	*Platanus racemosa*	Western Sycamore	Yes																						X								
453	*Poa annua*	Annual Bluegrass	No		X	X		X	X					X											X		X	X				X	
454	*Poa douglasii*	Douglas or Sand-dune Bluegrass	Yes		X									X		X	X																
455	*Poa secunda ssp. secunda*	One-sided Bluegrass, Pine Bluegrass	Yes																	X		X											
456	*Poa sp.*		No																													X	
457	*Poa unilateralis*	Ocean-bluff bluegrass	Yes	X				X	X			X		X			X		X	X		X			X			X		X	X	X	
458	*Polycarpon tetraphyllum*	Four-leaved allseed	No																						X								
459	*Polygala californica*	Milkwort	Yes														X		X														
460	*Polygonum amphibium var. emersum*	Swamp Knotweed, Kelp	Yes		X	X																											
461	*Polygonum arenastrum*	Common or Dooryard Knotweed	No						X																X		X						

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				Natural Area																											
				Southwest				Southeast					Central West						Central													North
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			Number of Species	60	106	74	209	226	167	10	221	76	50	77	51	67	77	31	59	132	53	31	28	11	334	28	59	161	64	160	75	191	
	Species Name	Common Name	SF Native																												
462	*Polygonum capitatum*	Ornmental Knotweed	No																						X							
463	*Polygonum paronychia*	Dune Knotweed	Yes	X										X	X	X	X															
464	*Polygonum persicaria*	Lady's Thumb	No								X																					
465	*Polygonum punctatum*	Water Smartweed	Yes				X																		X				X			
466	*Polygonum sp.*	Knotweed	No		X		X				X																				X	
467	*Polypodium californicum*	California Polypody	Yes	X		X		X	X		X	X		X	X					X	X		X		X		X	X	X	X	X	
468	*Polypodium scouleri*	Leather-leaf Fern	Yes				X							X	X		X						X		X	X		X		X			
469	*Polypogon interruptus*	Ditch beard Grass	No						X																							
470	*Polypogon monspeliensis*	Anual beard Grass	No				X	X			X																					
471	*Polystichum dudleyi*	Sword Fern	Yes																	X												
472	*Polystichum munitum*	Western Sword Fern	Yes			X	X	X	X			X					X	X		X			X		X	X		X	X	X		X	
473	*Populus fremontii ssp. fremontii*	Fremont's Cottonwood	Yes										X																			
474	*Populus nigra*	Italian Poplar, Lombardi Poplar	No		X																											
475	*Populus sp.*	Poplar	No						X				X																			
476	*Potentilla anserina ssp. pacifica*	Silverfern	Yes				X																		X							
477	*Potentilla glandulosa*	Cinquefoil	Yes				X	X	X												X		X		X			X		X		X	
478	*Potentilla pectinisecta*		No				X																									
479	*Prunella vulgaris*	Self-heal	Yes				X																									
480	*Prunus cerasifera*	Wild Plum, Cherry Plum	No										X												X							
481	*Prunus emarginata*	Bitter Cherry	No					X																	X							
482	*Prunus ilicifolia*	Holly-leaved Cherry, Islais creek cherry	Yes	X			X	X																	X							
483	*Prunus sp.*		No					X			X																					
484	*Prunus virginiana*	Western Choke Cherry	No		X			X																							X	X	
485	*Psilocarphus tenellus*	Woolly Marbles	Yes																						X							
486	*Pteridium aquilinum var. pubescens*	Western Bracken, Bracken Fern	Yes	X	X	X	X	X						X		X	X								X	X		X	X	X	X	
487	*Pyracantha angustifolia*	Firethorn	No					X																	X					X		
488	*Pyracantha sp.*	Firethorn	No									X																				
489	*Quercus agrifolia*	Coast Live Oak, California Live Oak	Yes		X	X		X	X		X		X					X		X					X				X	X		
490	*Quercus lobata*		No																	X												
491	*Quercus suber*	cork oak	No																												X	
492	*Quercus wislizenii var. frutescens*	Interior Live Oak	Yes																						X					X		
493	*Ranunculus californicus*	California Buttercup	Yes	X				X	X		X	X		X			X		X	X	X	X			X		X	X		X	X	X	
494	*Ranunculus muricatus*	Buttercup	No								X														X							
495	*Raphanus sativus*	Wild Radish, Radish	No		X	X	X	X	X		X	X	X			X	X	X	X	X					X		X	X		X	X	X	
496	*Rhamnus californica*	California Coffeeberry	Yes	X			X	X			X				X	X				X					X			X		X		X	
497	*Rhamnus crocea*	Spiny Redberry	Yes				X																		X					X		
498	*Ribes menziesii*	Canyon Gooseberry	Yes				X	X																		X						X	
499	*Ribes sanguineum var. glutinosum*	Coast Red Flowering Currant	Yes			X							X								X		X		X			X	X				
500	*Rorippa nasturtium-aquaticum*	Water-cress	Yes		X		X				X														X								
501	*Rosa californica*	California Wild Rose	Yes		X			X																									
502	*Rosa gymnocarpa*	Wood Rose	Yes					X																	X			X		X			
503	*Rosa sp.*	garden Rose	No									X																					
504	*Rubus discolor*	Himalayan Blackberry, Himalayaberry	No			X			X		X	X	X		X		X		X		X				X	X		X	X		X		
505	*Rubus parviflorus*	Thimbleberry	Yes		X		X																			X							
506	*Rubus ursinus*	California Blackberry	Yes	X	X	X	X	X			X			X	X	X	X	X	X	X	X			X		X	X		X	X	X	X	X	
507	*Rumex acetosella*	Sheep Sorrel	No		X		X	X	X		X	X		X	X	X	X		X	X					X		X	X		X	X	X	
508	*Rumex crispus*	Curly-leaved Dock	No			X	X	X	X		X								X						X					X		X	
509	*Rumex maritimus*	Golden Dock	Yes																										X				
510	*Rumex pulcher*	Fiddle Dock	No			X					X														X								
511	*Rumex salicifolius var. crassus*	Willow Dock	Yes																						X					X			
512	*Rumex sp.*	Dock	No								X																						
513	*Sagina procumbens*	Procumbent pearlwort	Yes																						X								
514	*Salicornia virginica*	Pickleweed	Yes				X			X																							
515	*Salix babylonica*	Weeping Willow	No			X																											
516	*Salix laevigata*	Red Willow	Yes		X																				X								
517	*Salix lasiolepis*	Arroyo Willow	Yes	X	X	X	X	X	X		X					X	X	X		X					X				X			X	
518	*Salix scouleriana*	Scouler's Willow	Yes								X																						
519	*Salix sitchensis*	Sitka Willow	No				X																										
520	*Salix sp.*	Willow	No		X		X																										
521	*Sambucus mexicana*	Blue Elderberry	Yes			X		X	X				X										X		X								
522	*Sambucus racemosa var. racemosa*	Red Elderberry	Yes		X	X	X																		X	X		X	X	X			
523	*Sanicula arctopoides*	Footsteps-of-spring	Yes	X				X	X		X	X		X			X			X	X		X		X		X	X		X	X	X	
524	*Sanicula bipinnatifida*	Purple Sanicle	Yes					X			X									X	X				X					X			
525	*Sanicula crassicaulis*	Pacific Snakeroot	Yes			X	X	X			X										X		X		X			X		X	X	X	
526	*Satureja douglasii*	Yerba Buena	Yes				X																									X	
527	*Scabiosa atropurpurea*	Pincushion Flower	No						X			X																					

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	Species Name	Common Name	SF Native																													
528	*Scandix pecten-veneris*	Venus' Needle	No								X														X							
529	*Scirpus acutus*		Yes				X																									
530	*Scirpus americanus*	Three-square	Yes				X																									
531	*Scirpus californicus*	California Bulrush	Yes		X	X	X																									
532	*Scirpus cernuus*	Bulrush	Yes								X																					
533	*Scirpus microcarpus*	Bulrush	Yes				X																		X							
534	*Scirpus pungens*	Common Threesquare	Yes				X				X																					
535	*Scirpus robustus*		Yes				X																									
536	*Scrophularia californica*	California Figwort, Bee Plant	Yes	X	X	X	X	X	X		X	X	X	X		X		X		X			X		X			X	X	X	X	X	
537	*Sedum spathulifolium*	Stone-crop	Yes																						X			X		X	X	X	
538	*Senecio aronicoides*	Groundsel	Yes					X																				X					
539	*Senecio elegans*	Purple Ragwort	No		X																											
540	*Senecio hybridus*	Garden or Florist's Cineraria	No					X			X																					
541	*Senecio mikanioides*	Cape-vine/ivy, German-ivy	No		X																				X							
542	*Senecio vulgaris*	Common Groundsel	No					X						X											X					X		
543	*Sequoia sempervirens*	Coast Redwood	Yes										X												X							
544	*Sequoiadendron giganteum*	Giant Sequoia	No										X																			
545	*Setaria gracilis*		No				X																									
546	*Sherardia arvensis*	Field Madder	No					X																	X							
547	*Sidalcea malvaeflora*	Checkerbloom, Wild Hollyhock	Yes	X				X	X		X	X							X	X	X	X			X		X	X		X	X	X	
548	*Silene gallica*	Windmill Pink	No					X	X		X	X		X		X	X			X					X					X		X	
549	*Silene scouleri ssp. grandis*	Scouler's Large Campion	Yes					X																									
550	*Silene verecunda ssp. verecunda*	Dolores or San Francisco Campion	Yes					X									X											X					
551	*Silybum marianum*	Milk Thistle	No						X		X														X							
552	*Sisymbrium irio*	London Rocket	No		X																											
553	*Sisyrinchium bellum*	Blue-Eyed Grass	Yes				X	X	X		X	X							X	X	X	X			X			X		X		X	
554	*Sisyrinchium californicum*	Golden-eyed Grass	Yes																						X							
555	*Smilacina racemosa*	Fat Solomon's Seal	Yes				X																					X		X		
556	*Smilacina stellata*	False Solomon's Seal	Yes		X																				X				X			
557	*Solanum americanum*	Nightshade	Yes																						X				X			
558	*Solanum aviculare*	Nightshade	No			X																										
559	*Solanum douglasii*	Nightshade	Yes		X	X					X														X					X		
560	*solanum furcatum*		No																						X							
561	*Solanum sp.*	Nightshade	No		X								X															X				X	
562	*Solanum umbelliferum*	Blue Witch	Yes				X																									
563	*Solidago californica*	California Goldenrod	Yes					X																	X							
564	*Solidago canadensis var. elongata*	Meadow Goldenrod	Yes					X													X	X			X			X		X		X	
565	*Solidago sp.*		No		X																											
566	*Solidago spathulata ssp. spathulata*	Dune or Coast Goldenrod	Yes											X	X	X	X								X			X		X		X	
567	*Soliva sessilis*	Common Solvia	No								X									X					X							
568	*Sonchus asper ssp. asper*	Prickly Sow Thistle	No					X			X	X		X					X	X					X		X	X		X		X	
569	*Sonchus oleraceus*	Common Sow Thistle	No			X	X	X	X		X	X		X		X	X		X						X					X	X	X	
570	*Spartina foliosa*		Yes							X																							
571	*Spergula arvensis ssp. arvensis*	Stickwort, Starwort, Spurrey	No						X								X								X			X				X	
572	*Spergula sp.*	Spurry	No																									X					
573	*Spergularia bocconii*	Sand-spurrey	No					X																									
574	*Spergularia marina*	Sand-spurrey	Yes				X										X															
575	*Spergularia rubra*	Sand-spurrey	No																						X							
576	*Spiranthes romanzoffiana*	Ladies tresses	Yes																									X					
577	*Stachys ajugoides var. ajugoides*	Hedge Nettle	Yes			X	X	X	X										X	X		X	X	X	X	X	X	X	X	X			
578	*Stachys ajugoides var. rigida*	Hedge Nettle, Rigid Hedge Nettle	Yes	X							X	X								X	X										X	X	
579	*Stachys bullata*	Hedge Nettle, Wood Mint	Yes			X	X																										
580	*Stachys rigida*	Rigid Hedge Nettle	Yes																						X							
581	*Stellaria media*	Common Chickweed	No				X	X	X		X	X		X				X		X					X		X		X	X			
582	*Symphoricarpos albus var. laevigatus*	Snowberry	Yes			X		X																	X			X	X	X			
583	*Symphoricarpos mollis*	Creeping Snowberry, Trailing Snowberry	Yes				X	X																	X	X				X			
584	*Tamarix sp.*	Tamarisk	No		X																											
585	*Tanacetum camphoratum*	Dune tansy	Yes											X	X	X	X															
586	*Taraxacum officinale*	Dandelion	No								X														X							X	
587	*Taxus brevifolia*	Yew Tree	No										X																			
588	*Tellima grandiflora*	Fringe Cups	Yes			X																			X							
589	*Tetragonia tetragonioides*	New Zealand Spinach	No		X		X																									
590	*Thalictrum fendleri var. fendleri*	Meadow Rue	Yes				X																									
591	*Torilis arvensis*		No								X																					
592	*Torilis nodosa*	Hedge Parsley	No																						X							
593	*Toxicodendron diversilobum*	Poison Oak	Yes	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	

Appendix Table C-3. Plant species found within the San Francisco Significant Natural Areas.

				Natural Area																												
				Southwest				Southeast					Central West						Central														North
				BP	LM	PL	SP	VP	BH	IB	MP	PP	BV	GV	GH	HH	RO	FI	BG	CH	DP	DC	EM	FP	GC	IG	KH	MD	OW	OH	TK	TP	BA
			Number of Species	60	106	74	209	226	167	10	221	76	50	77	51	67	77	31	59	132	53	31	28	11	334	28	59	161	64	160	75	191	
	Species Name	Common Name	SF Native																													
594	*Tragopogan porrifolius*	Salsify, Oyster Plant	No					X			X														X								
595	*Trifolium depauperatum var. amplectans*	Sack Clover, Pale Sack Clover	Yes					X	X			X								X													
596	*Trifolium depauperatum var. truncatum*	Sack Clover	Yes						X																								
597	*Trifolium dubium*	Shamrock, Little Hop Clover	No								X														X							X	
598	*Trifolium gracilentum*	Clover	Yes																						X								
599	*Trifolium hirtum*	Rose Clover	No						X																X								
600	*Trifolium incarnatum*	Crimson Clover	No						X																								
601	*Trifolium microcephalum*	Clover	No																						X								
602	*Trifolium microdon*	Clover	Yes									X																					
603	*Trifolium repens*	White Clover	No			X	X				X														X								
604	*Trifolium sp.*	Clover	No								X																X						
605	*Trifolium subterraneum*	Subterranean Clover	No																						X								
606	*Trifolium tridentatum*	Tomcat Clover	Yes																						X			X					
607	*Trifolium willdenovii*	Tomcat Clover	Yes					X	X		X	X					X			X					X						X	X	
608	*Trifolium wormskioldii*	Cow Clover, Coast Clover	Yes				X																										
609	*Triphysaria eriantha*	Butter-and-eggs, Johnny-tuck	Yes					X			X														X								
610	*Triphysaria pusilla*	Owl's Clover, Dwarf Owl's Clover	Yes					X	X		X														X			X			X	X	
611	*Triteleia laxa*	Ithuriel's Spear, Long-rayed Brodiaea	Yes	X				X	X		X	X								X	X	X			X			X		X	X	X	
612	*Triticum aestivum*	Wheat	No																						X								
613	*Tropaeolum majus*	Garden Nasturtium	No		X	X							X					X			X				X	X		X		X			
614	*Typha angustifolia*	Nail Rod, Narrow-leaved Cattail	Yes				X																										
615	*typha latifolia*	Cat-tail	Yes		X		X				X														X								
616	*Typha sp.*		No																						X								
617	*Umbellularia californica*	California Bay, California Laurel	Yes																						X								
618	*Urtica dioica ssp. gracilis*	California Nettle	Yes			X	X																										
619	*Urtica dioica ssp. holosericea*	Coast Nettle	Yes		X																				X								
620	*Urtica sp.*		No		X																												
621	*Urtica urens*	Dwarf Nettle	No																						X								
622	*Vaccinium ovatum*	California or Evergreen Huckleberry	Yes														X											X		X			
623	*Valeriana sp.*	Valerian, Garden Heliotrope	No						X																								
624	*Veronica americana*	American Brooklime	Yes								X														X								
625	*Veronica persica*	Persian Speedwell	No																						X								
626	*Vicia americana var. americana*	American Vetch	Yes					X			X										X				X							X	
627	*Vicia benghalensis*	Purple Vetch	No								X														X								
628	*Vicia gigantea*	Giant Vetch	Yes			X	X																		X			X					
629	*Vicia hirsuta*		No																						X								
630	*Vicia sativa ssp. nigra*	Narrow-leaved Vetch, Common Vetch	No						X		X	X							X	X					X		X	X		X		X	
631	*Vicia sativa ssp. sativa*	Common Vetch, Spring Vetch	No					X																									
632	*Vicia sp.*	Vetch	No		X				X		X			X								X											
633	*Vicia villosa*	Wooly Vetch	No																						X								
634	*Vinca major*	Greater Periwinkle	No		X	X							X												X				X				
635	*Viola adunca*	Blue or Western Dog Violet	Yes																						X					X			
636	*Viola pedunculata*	Johnny-jump-up, Cal. Golden Violet	Yes					X	X		X										X		X		X			X			X	X	
637	*Vulpia bromoides*	Six-weeks Fescue	No	X			X	X	X			X		X	X	X	X		X	X					X		X	X			X	X	
638	*Vulpia microstachys var. pauciflora*		Yes								X																						
639	*Vulpia myuros var. hirsuta*	Rat-tail Fescue	No					X			X																					X	X	
640	*Vulpia octoflora*	Slender Fescue	Yes								X																						
641	*Vulpia sp.*		No																						X			X		X		X	
642	*Woodwardia fimbriata*	Giant chain Fern	Yes																	X					X								
643	*Wyethia angustifolia*	Narrow-leaf Mule's Ears	Yes				X	X	X		X									X	X				X		X	X		X		X	
644	*Zantedeschia aethiopica*	Calla Lily, Common Calla	No															X							X								
645	*Zigadenus fremontii*	Star Lily	Yes						X		X														X								

Southwest
BP = Brooks Park, LakeView/Ashton Mini Park
LM = Lake Merced
PL = Pine Lake
RN = Rolph Nicol
SP = Sharp Park

Southeast
VP = Bayview Park
BH = Bernal Hill
IB = India Basin Shoreline Park
MP = McLaren Park
PP = Palou/Phelps

Central West
BV = Buena Vista
GV = Grandview Park
GH = Golden Gate Heights
HH = Hawk Hill
RO = Rock Outcrop

Central
FI = 15th Avenue Steps
BG = Billy Goat Hill
CH = Corona Heights
DP = Dorothy Erskine Park
DC = Duncan-Castro
EM = Edgehill Mountain
FP = Fairmount Park
GC = Glen Canyon Park
IG = Interion Green Belt
KH = Kite Hill
MD = Mount Davidson
OW = Golden Gate Park (Oak Woodland and Strawberry Hill)
OH = O'Shaughnessy Hollow
TK = Tank Hill
TP = Twin Peaks

North
ML = Mountain Lake

APPENDIX E

1995 Significant Natural Resource Areas Management Plan

RECREATION AND PARK DEPARTMENT

STAFF REPORT ON THE

SIGNIFICANT NATURAL RESOURCE AREAS MANAGEMENT PLAN

Adopted by the San Francisco
Recreation and Park Commission

January 19, 1995

Resolution No. 9501-008

Introduction

Significant natural areas in San Francisco are generally remnants of an original landscape region that stretched from San Bruno Mountain to the Golden Gate Headlands. This original landscape, sometimes known as the Franciscan biological region, was marked by the greatest inland penetration of ocean sand anywhere on the Pacific Coast and supported a rich sand dune ecosystem.

Rising above this belt of wind-blown sand, a ridge of Franciscan radiolarian chert extended in a southeast-northwest direction. Predominantly treeless except for small groves of coast live oak and toyon in more sheltered areas with sufficient soil, these grassy hilltops flourished with wildflowers in the spring.

Freshwater and saltwater wetlands teeming with wildlife lined the shoreline of the Bay. Small seasonal pools dotted the shifting sand dunes near the ocean and extensive stream systems fed vast marshes. A rising ocean deposited sand that effectively blocked the free-flow of a creek system resulting in the creation of Lake Merced.

The unique characteristics of this biological region made it different from any other ecosystem. Today, only very small examples of this rare environment remain as footnotes to the ecological history of San Francisco.

Many of these natural vestiges face degradation and destabilization from increasing urbanization. In order to effectively preserve and protect these valuable natural resources, the Recreation and Park Department proposes to develop a Significant Natural Resource Areas Management Plan.

Program Background

As public awareness of the value of San Francisco's biological diversity has grown, so has the appreciation of notable natural resources within the City's park system.

To further the protection and enhancement of significant natural resources on property under the jurisdiction of the Recreation and Park Department, a total of $400,000 has been earmarked to fund a Significant Natural Resource Areas Management Plan (SNRAMP) through the San Francisco Park and Open Space Program. The purpose of this management plan is to establish a maintenance and preservation program related to the protection and enhancement of natural resource values.

It is envisioned that a significant portion of the funds would be used to address immediate threats to natural resources on park property, such as invasive weeds and erosion (see Attachment D). The remainder of the funds would be reserved for the development of the specific management programs of the natural resources management plan.

The Recreation and Park Department staff has drafted plan objectives, policies and guidelines for identifying significant natural areas and developing a standardized procedure for inventorying these areas and establishing management programs for their protection. The attached report provides the background and initial process contemplated by staff for the Significant Natural Resource Areas Management Plan.

An environmental consultant would be selected in the second part of the plan's development to further refine the plan, inventory natural resources within selected park properties, and make the site specific management program recommendations.

A stated objective of the proposed program is to "[i]ncrease City-wide level of awareness of the location and value of significant natural resource areas...." and to "[e]ncourage local participation in the protection or improvement of natural resources." Therefore, interested members of the public have been invited to participate in a series of community workshops to review and comment on the draft SNRAMP. Members of the public, community organizations, and agencies with natural resources expertise will be invited to participate with Recreation and Park Department staff on a task force to implement SNRAMP. The task force would also monitor the progress of the consultant and review and comment on further refinements of the plan by the consultant.

Following this process, the general public will be invited to attend a workshop to review and comment on the consultant-prepared plan. Upon completion of the environmental review for compliance with the California Environmental Quality Act (CEQA), the consultant-prepared SNRAMP would be reviewed and considered for approval by the Recreation and Park Commission at a public hearing.

Program Overview

The protection and enhancement of natural areas has become a priority goal for public agencies at both the state and federal levels. The Environmental Protection Agency, and Department of the Interior in particular, have initiated numerous programs to inventory natural resources on public lands, and have developed guidelines and standards for the preservation and enhancement of

resources such as threatened and endangered plants and animals, and habitat areas such as wetlands, vernal pools, desert communities and coastal zones.

Similarly, the State of California has a long history of priority policies and actions directed to the protection of statewide natural resources. In particular, the California Department of Fish and Game, Lands and Natural Areas Project has initiated a computerized inventory of natural areas, and a program designed to raise the awareness among developers, planners, conservationists and the general public about the presence of natural areas in local communities.

Many environmental organizations, such as The Nature Conservancy, also provide assistance in the preservation of unique natural resources. Groups with special expertise, such as the California Native Plant Society, the Sierra Club, the Audubon Society and others have played an active role in forwarding these programs.

Locally, there are a number of individual efforts under the auspices of the Golden Gate National Recreation Area and within the Recreation and Park Department (particularly through the Park and Open Space Program) that focus on the preservation and enhancement of natural areas and resources within the City and County of San Francisco.

The Recreation and Park Department would like to further these efforts by: 1) Developing guidelines and policies to protect or enhance valuable natural resources; 2) Setting standards for identifying these resources on property under the jurisdiction of the Recreation and Park Department; and 3) Following an approach and site-specific methodology for managing these areas. The result will be a Significant Natural Resource Areas Management Plan.

The following report produced by the staff of the Recreation and Park Department provides the background and initial process envisioned by staff for the Significant Natural Resource Areas Management Plan. This report is a summary of a program to identify significant natural resource areas, develop a standardized procedure for inventorying these areas, and establish management policies and actions for their protection.

Relationship to Other Plans

Other City departments and governmental agencies would comment on the consultant-prepared SNRAMP for consistency with other applicable plans and policies, including the following:

- *City Master Plan: Recreation and Open Space Element - Policy 13*: "Natural area management plans should be developed for publicly owned land throughout the City which would identify potentially significant natural areas,

inventory them, and identify the presence of natural resources. The plan should establish a consistent set of management policies and practices to protect and enhance the resources."

- Adopted master plans for individual parks
- Adopted forestry management plans for individual parks
- GGNRA: *General Management Plan* and *Resources Management Plan*
- Local Coastal Plan.

Action Items for Adoption by the Recreation and Park Commission

I. PROGRAM OBJECTIVES

- Increase City-wide level of awareness of the location and value of significant natural resource areas under the jurisdiction of the Recreation and Park Department.
- Encourage community participation in the protection or improvement of natural resources.
- Provide educational and recreational opportunities related to natural resources where appropriate; where feasible, restrict recreational uses and activity in sensitive habitat areas.
- Determine management needs and priorities for natural resources, particularly those identified by other agencies as rare, threatened or endangered species or habitat, or a species or habitat of special concern.
- Consult and coordinate with other city departments, agencies and groups with special expertise for inventory information and implementation.
- Implement measures designed to address immediate problems, such as invasive weed control.

II. IDENTIFICATION OF SIGNIFICANT NATURAL RESOURCE AREAS

In order to identify the significant natural resource areas under the jurisdiction of the Recreation and Park Department, staff established a general set of criteria. These criteria are:

A. Park property contains naturally occurring biotic and/or geomorphic remnants of the indigenous landscape.

B. Conforms to State of California, Department of Fish and Game criteria:

1. Presence of rare type of species or habitat;
2. Presence of ensemble type of species or habitat (3 or more elements occurring together);
3. Presence of the best example of a type of species or habitat; and
4. Presence of high diversity type of species or habitat.

C. Special values: geology, riparian zones, wildlife habitat.

D. Corridor or connector between natural areas.

E. Natural resource area is vulnerable to degradation from an imminent ecological crisis, such as inundation by exotic plant species.

Many properties under the jurisdiction of the Recreation and Park Department are remnants (or include remnants) of the original natural landscape found in San Francisco prior to urbanization and therefore have significant natural values or features. Some examples of significant natural resource areas include:

- Native grasslands that thrive on the shallow soils of the windswept, foggy western slopes of San Francisco hilltops such as Bernal Hill, Twin Peaks, Bayview Park and the eastern side of Mt. Davidson. These grasslands are noteworthy for their ability to provide conditions of shade and water retention between bunches of grass that are ideal for native wildflowers. Many of these native wildflowers support a biologically diverse insect community, including rare species of butterflies.

- The most important avian habitat in San Francisco at Lake Merced. The Lake's proximity to the ocean, coastal cliffs and remnant dunes make it critical to the breeding ecology of as many as 50 bird species. It is a valuable habitat for thousands of migrating birds during spring and fall. Winter birds range from 60 to 100 species and number in the thousands of

individual birds. Lake Merced also provides habitat for remnant mammal, reptile and insect populations.

- Rare and diverse habitat areas in Glen Canyon Park, including a riparian habitat and a hillside native plant community.

- Rare and unusual geological formations found at Twin Peaks, the Rock Outcrop and Corona Heights.

- Important connectors between natural areas such as the many hilltop parks in San Francisco that serve as important links for certain species of birds and butterflies that require a range of suitable habitat.

- Rare, threatened or endangered species of animals and plants, such as the Mission Blue Butterfly found on Twin Peaks.

It is not the function of the SNRAMP to identify, inventory and maintain elements of park property which are not remnants of the original natural landscape, such as playgrounds, golf courses and ballfields. It is recognized, however, that certain parks that are characterized by a nonindigenous landscape are naturalistic, and as such, contribute to the biodiversity of the region by providing wildlife habitat. An example of such a park includes the vegetation of Stern Grove which supports many species of birds. These "naturalistic" parks are generally prioritized in Rank C in recognition of the fact that the park does not meet all of the criteria listed above (particularly criterion A).

Staff developed an evaluation matrix using the above criteria and suggested the following initial priority ranking of properties for "significant natural resource area" designation.

Following supplemental field inventories, this ranking may be revised based on site specific programs. Field work may also show that a particular park should be a higher priority because it is threatened by an immediate ecological crisis, pursuant to criterion E.

All or PART of the following parks would be considered candidates for significant natural areas.

Rank A	Rank B	Rank C
Bayview Park Glen Canyon Park Lake Merced Mt. Davidson Twin Peaks	Bernal Hill Billy Goat Hill Buena Vista Park Corona Heights Golden Gate Heights -- (western edge) Golden Gate Park— Oak Woodland Strawberry Hill Grandview Park Kite Hill McLaren Park— southern grasslands McNab Lake/Marsh Rock Outcrop Sharp Park Tank Hill	Brooks Property Dorothy Erskine Park Edgehill Mtn. Open Space Fairmont Park Golden Gate Park— Selected Lakes Park Presidio Interior Greenbelt Lincoln Park Mountain Lake Park Rolph Nicol (southern edge) Stern Grove/Pine Lake Zoo

COMMENTS:

The program would focus on San Francisco park property and Sharp Park, however, Camp Mather may receive some review. Although the Zoo and Palace of Fine Arts (Lagoon) are included (Rank C), these sites may be questionable as natural areas.

III. GENERAL POLICIES AND MANAGEMENT ACTIONS

A. Vegetation

- Maintain/promote indigenous plant species; propagate native plants using seed collected from the specific site to avoid alteration of unique genetic strains of native plant species. This propagation policy should apply to the policies and management actions listed below to the extent possible.

- Control/remove invasive species.

- Provide fire breaks where appropriate and maximize indigenous vegetation with low flammability or low fuel volume in areas of high fire hazard.

- Utilize indigenous vegetation as ground cover to control erosion on steep slopes.

- Protect species listed as rare, threatened, endangered or of special concern.

- Remove exotic plants which adversely affect indigenous plant growth.

- Enhance riparian areas.

- Reforest and/or replant areas where appropriate to maintain diversity of indigenous plant communities.

- Preserve habitat which supports wildlife.

B. Wildlife

- Monitor wildlife population which is an indicator of a diverse ecosystem.

- Consult with agencies such as the State of California, Department of Fish and Game and The Nature Conservancy on habitat enhancement.

- Cooperate with other agencies (SPCA, Mayor's Office of Animal Care and Control) using established and humane procedures to remove or control free-roaming domestic dogs, feral cats and feral ducks or geese when their presence conflicts with natural wildlife.

- Develop educational programs with other agencies for wildlife protection.

C. Water Resources

- Maintain/improve water quality of streams and ponds.

- Protect riparian zones from erosion and sedimentation.

- Maintain drainage and erosion prevention devices along roads and service trails.

- Control drainage/runoff from roads.
- Establish and maintain tule encroachment zone around lakes.
- Use proper controls when applying aquatic herbicide.

D. Geotechnical/Soils

- Minimize erosion along roads and trails.
- Seed/plant bare soils with indigenous vegetation.
- Stabilize embankments when not in conflict with habitat.
- Minimize public access to and use of landslide areas and unstable slopes.
- Seek agreements with adjacent property owners to avoid development which contributes to erosion/runoff, or is subject to landslides.
- Clear landslide debris on park property.
- Install retaining devices where necessary to stabilize slopes.

E. Education

- Promote professional development of Recreation and Park Department staff in natural resources management.
- Develop nature programs to promote educational and recreational value of resources (for example, through the Randall Museum).
- Develop education programs aimed at private property owners adjacent to significant natural resource areas regarding the degradation of the resource resulting from such practices as dumping garden clippings or planting exotic species on park property.
- Develop education programs through the San Francisco Unified School District regarding significant natural resource areas. For example, work with staff at McAteer High School to develop an ecology program using Glen Canyon Park as an outdoor

classroom. Various aspects of the canyon ecology and history could be incorporated into the school curriculum in the form of class projects.

F. Public Use

- Develop guidelines for pathways and interpretative trails/signs.
- Control dirt bikes and off-road vehicle use.
- Encourage community participation in a public stewardship program.

SIGNIFICANT NATURAL RESOURCES AREA MANAGEMENT PLAN

ATTACHMENT A
SIGNIFICANT NATURAL AREA INVENTORY

(Name of Park) _____

(Area Surveyed) _____

(Date of Survey) _____

Natural Resources	Applicable? Yes	No	Notes
A. VEGETATION Ground cover Shrubs/vines Perennials Annuals Grasses Trees			Describe proportion of natural, exotics; any species on threatened or endangered plant list; sensitive plant endangered list; balance of flowering vs. non-flowering; habitat for animals; proportion of evergreen vs. deciduous self-seeding characteristics; pest and disease resistance; drought tolerant; irrigation; potential fire hazard.[1]
B. WILDLIFE			Describe all types; any species on T & E list; diversity; need for protection/enhancement.[1]
C. WATER			Natural water (ponds, creeks, streams, lakes); drainages; water quality; encroachment (tules, sedimentation).[1]
D. GEOLOGY/SOILS			Any rock outcropping; exposed soils/erosion; landslide areas; wetlands.[1]
E. PUBLIC USE			Active play area; viewing area; developed pathways; seating area; handicapped access; signage; lighting.[1]

[1] Show on map.

SIGNIFICANT NATURAL RESOURCES AREA MANAGEMENT PLAN

ATTACHMENT B
MOBILE CREW WORK PLAN

A component of the proposed Significant Natural Resource Areas Management Plan is to address immediate problems in selected parks that contain significant natural resources. An initial program to hire 3 to 4 gardeners from a temporary Civil Service list and/or retain the services of the San Francisco Conservation Corps on an as-needed basis is being considered.

The types of projects that would be assigned to the mobile crew would include:

- Invasive Weed Control
- Erosion Control/Shoreline Restoration (small scale)
- Ivy Removal/Control
- Revegetation Projects related to Invasive Weed and Erosion Control
- Fire Hazard Control
- Weedy Tree Control

RANK A PARKS	DURATION[1]
Bayview Park	1 month
Glen Canyon Park	2 months
Mt. Davidson (west side)	1 month
Twin Peaks	2 months
Lake Merced	1 month

RANK B PARKS	DURATION[1]
Bernal Hill	2 weeks
Corona Heights	1 month
Golden Gate Park: Oak Woodland	2 weeks
Golden Gate Park: Strawberry Hill	1 week
McLaren Park (South)	2 weeks
Billy Goat Hill	2 weeks
Grandview Park	1 month
Tank Hill	2 weeks
Golden Gate Heights (west side)	1 week
Rock Outcrop	1 week
Buena Vista Park	2 weeks
Sharp Park (Selected Natural Areas)	1 month
Kite Hill	2 weeks

RANK C PARKS	DURATION[1]
Stern Grove/Pine Lake	1 month
Brooks Property	1 week
Golden Gate Park (Selected Lakes)	2 weeks
Mountain Lake Park	2 weeks
Interior Greenbelt	2 weeks

[1]Weed Control: Duration noted is for first pass only. Repeated weed control will be needed.

APPENDIX F

Everson/Digby Natural Area Description

6.27 EVERSON/DIGBY

GENERAL DESCRIPTION AND LOCATION

Everson/Digby (E/D) is a 1.2-acre Natural Area located between Everson Street and Digby Street in the Diamond Heights area of San Francisco, east of Glen Canyon Park. Elevations range from 415 to 515 feet above sea level (Figure 6.27-1). The vegetation of E/D is composed primarily of grasslands with shrubs and trees along its lower boundary (Figure 6.27-1). E/D provides important habitat for native plants; grassland habitat; regionally significant City views; and suitable habitat for a variety of bird species.

GEOLOGY, HYDROLOGY, AND TRAILS

This Natural Area is an undeveloped open space comprised mostly of a steep hill rising up from Everson Street to Digby Street. Soil in this Natural Area is relatively shallow, typically less than one foot deep, and is underlain by Franciscan bedrock. The bedrock outcrops in the middle of the site, in a steep slope area (Figure 6.27-2).

There is no surface water at the site. Drainage of the area is by overland flow. Some rainfall percolates into fissures in the rock, but runoff generally is rapid.

No primary or secondary trials were observed in the E/D Natural Area. A paved sidewalk runs along Digby Street at the upper boundary of the natural area.

VEGETATION

The vegetation of E/D is classified into five series (Table 6.27-1; Figure 6.27-3). These series are within four sub-formations: approximately 79 percent of the area is grassland; 9 percent is forest; 7 percent is scrub; and 4 percent is classified as “other herb” (fennel). None of these series are dominated by native species.

Forest

One forest series was mapped at E/D: acacia forest. Within the Natural Area, only a small amount of land is covered by this species (0.11 acres).

Grassland

Two herbaceous series were mapped at E/D: wild oat grassland (0.95 acres) and fennel (0.05 acres). Wild oat grassland dominates the Natural Area.

Scrub

Two non-native scrub series were mapped at E/D: cottoneaster scrub (0.04 acres) and mixed exotic scrub which contains Scotch broom (*Cytisus scoparius*) (0.05 acres).

Sensitive Plant Species

No sensitive plant species have been observed at E/D. The California Natural Diversity Data Base (CNDDB) does not report the occurrence of any sensitive plant species at E/D (CNDDB 2009). It also does not provide potential habitat for sensitive plant species. Several native species were identified at E/D, including sky lupine (*Lupinus nanus*), yarrow (*Achillea millefolium*), and California melica (Melica californica).

Invasive Plant Species

All of the vegetation series at E/D are dominated by invasive species. As previously mentioned, wild oat grassland dominates the site. Acacia trees are encroaching into the Natural Area from the residential development that abuts E/D on the southern edge. Cotoneaster scrub, mixed exotic scrub and fennel occur in the eastern portion of E/D. Additional invasive species within the grassland include Bermuda buttercup (*Oxalis pes-caprae*), English plantain (*Plantago lanceolata*), and wild radish (*Raphanus sativus*).

WILDLIFE

Birds

The multi-storied complex habitat found within E/D and below the Natural Area may provide some nesting and roosting habitat for a wide variety of species. The grassland habitats of E/D provide foraging habitat for raptors such as red-tailed (*Buteo jamaicensis*) and red-shouldered (*Buteo lineatus*) hawks, while the Acacia forest edge provides potential nesting habitat for these species. Habitat for smaller birds (songbirds) is available in the scrub and forest habitats in and below the Natural Area. No areas of important bird habitat were delineated for this Natural Area.

Mammals, Reptiles, and Amphibians

No animal surveys were conducted at E/D; however, common animals are likely to occur here. Small mammals such as the California meadow vole (*Microtus californicus*), house mouse (*Mus musculus*), and pocket gopher (*Thomomys bottae*) are likely to be found in this habitat. Large mammals such as raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*) and Virginia opossum (*Didelphis virginiana*) are typical of urbanized parks in general and are expected to occur within E/D. Reptiles typical of grassland habitats, such as garter snakes, are suspected to occur here, but have not been reported. The CNDDB does not report any sensitive species as

occurring within the area (CNDDB 2009), and the area does not provide potential suitable habitat for sensitive species.

Invertebrates

Sensitive Invertebrate Species

At least three special-status species of butterflies potentially occur within the City of San Francisco: mission blue butterfly (*Icaricia icarioides missionensis*), San Bruno elfin butterfly (*Incisalia mossii bayensis*), and bay checkerspot butterfly (*Euphydryas editha bayensis*). The CNDDB does not report the occurrence of any special-status species of invertebrates at E/D (CNDDB 2009), and the site does not provide potential habitat for these species.

MANAGEMENT AREAS

The Management Areas (MAs) at E/D have been delineated based on the presence of diverse native grasslands. The MA-1a area supports a rich array of species including California poppy (*Eschscholzia californica*), purple needle grass (*Nassella pulchra*), and California melica (*Melica californica*), and is more intact habitat than the MA-2a area which borders Digby Street. The MA-3a areas include tree and shrub communities (Figure 6.27-4).

ISSUES AND RECOMMENDATIONS

Several conservation and recreation-related issues have been identified for E/D. Recommendations developed for each of these issues will guide restoration, enhancement, and maintenance work. In the following discussion, system-wide issues and recommendations (GR-1 for example; see Chapter 5) that apply to the entire Natural Area at E/D are presented first within each topical area, followed by site-specific issues and recommendations. Site-specific recommendations are keyed to the Management Area in which they should occur.

Site Improvements – Implementation of management recommendations at E/D would not change significantly the overall look of the park and would result in:

- improved wildlife habitat;
- enhancement of native grasslands.

Careful management and restoration of the grasslands at E/D will create a native grassland that is rich in plant species and offers habitat for sensitive species of butterflies. This grassland may be comparable to that found on the northern slope of Bayview Park (Section 6.17) or on San Bruno Mountain.

Vegetation

Issues relating to vegetation management at E/D involve the protection of habitats, typically though the control of invasive plants (GR-1). Specific actions to take in managing grasslands such as those present at E/D should be implemented (GR-3). No trees will be removed at E/D. Issues relating to the general safety of visitors and surrounding homes, fire hazards posed by vegetation and trees, and illicit activities must be considered during management of the Natural Areas (GR-13). In addition to these general recommendations, the following site-specific issues should be addressed.

Issue ED-1: Invasive species occur throughout E/D and pose a threat to the grasslands

> ***Recommendation ED-1a:*** Reduce and contain herbaceous and woody invasive species, including radish, fennel, and annual grasses in all Management Areas. Prevent the establishment of invasive trees in grasslands.
>
> ***Recommendation ED-1b:*** Areas where invasive species have been removed shall be revegetated using appropriate native plants. Existing grasslands will be enhanced and diversified as appropriate (MA-1a and MA-2a). Specifically, within MA-1a, efforts shall be taken to augment the existing uncommon grassland plant species such as silver lupine (*Lupinus albifrons* var. *collinus*). Within MA-2a, the existing non-native grassland should be slowly replaced with a native grassland including California poppy (*Eschscholzia californica*), purple needle grass (*Nassella pulchra*), and California melica (*Melica californica*). Using diversity, cover, and density targets generated from reference sites within and around San Francisco, plant native grassland species in the appropriate areas (see Appendix B).
>
> ***Recommendation ED-1c:*** Contain and/or reduce acacia, broom, cotoneaster, and fennel in MA-3a and diversify the grassland interface with wildlife-enhancing species and design.

Wildlife

Implementation of system-wide recommendations that relate to vegetation management and nesting birds (GR-4), predation (GR-7), increasing cover for small mammals and birds (GR-9) and installation of host plants for native insects (GR-10) would all serve to enhance the wildlife habitat at E/D.

Soils, Erosion, and Public Use

No primary or secondary trials were observed in the E/D Natural Area. The issue of erosion and habitat impacts related to social trails that may develop is addressed through implementation of GR-11 and GR-12.

Table xx. Vegetation series mapped at Everson/Digby.

	Vegetation Series	Total Acreage
Forest	acacia forest	0.11
	Subtotal	**0.11**
Scrub	cottoneaster scrub	0.04
	Scotch broom	0.05
	Subtotal	**0.09**
Grassland	wild oat grassland	0.95
	fennel	0.05
	Subtotal	**1.00**
Grand Total		**1.20**

SAN FRANCISCO RECREATION & PARKS

Source: Orthophoto - SFDT, 2007; Street Data - SFDPW, 2009; Contour Data - HJW, 2001; Property Data REIS, 2005; Significant Natural Area Data created by RPD Planning from information provided by RPD Natural Area Program, 2010; All Data are NAD 1983 StatePlane California III FIPS 0403 Feet

Created by Sean Stasio, SFRPD Planning Division for SFRPD Significant Natural Areas Program, November 2010

N

0 25 50 75 100
Feet

FIGURE 6.27-1

AERIAL PHOTOGRAPH, PROPERTY BOUNDARIES, AND NATURAL AREAS

Everson/Digby

Significant Natural Resource Areas Management Plan

San Francisco, California

Source: Orthophoto - SFDT, 2007; Street Data - SFDPW, 2009; All Data are NAD 1983 StatePlane California III FIPS 0403 Feet

Created by Yashekia Evans, Tetra Tech, for SFRPD Significant Natural Areas Program, April 2011.

N

0 50 100
Feet

FIGURE 6.27-2

SOILS AND LAND FEATURES

Everson/Digby

Significant Natural Resource Areas Management Plan

San Francisco, California

SAN FRANCISCO RECREATION & PARKS

Source: Orthophoto - SFDT, 2007; Street Data - SFDPW, 2009;
Significant Natural Area Data created by RPD Planning from information provided by RPD Natural Area Program, 2010;
All Data are NAD 1983 StatePlane California III FIPS 0403 Feet

Created by Sean Stasio, SFRPD Planning Division
for SFRPD Significant Natural Areas Program, November 2010

N

0 25 50 75 100
Feet

FIGURE 6.27-3

VEGETATION

Everson/Digby

Significant Natural Resource Areas Management Plan

San Francisco, California

Mgmt Area	Action
MA-1a	Maintain diverse native grassland
	Reintroduce sensitive plants
MA-2a	Maintain and enhance grassland
MA-3a	Maintain and enhance multi-storied forest-scrub ecotone with oaks, and buckeye
Natural Area Wide Management Actions	
	Reduce and contain herbaceous and woody weeds No invasive tree removal unless specified above Prevent recruitment of invasive trees unless specified above Provide access on designated trails only Social trails subject to closure Total invasive tree removal: 0; Total invasive trees to remain: 0. Implement erosion control as required (GR-12) Implement wildlife enhancements as appropriate

SAN FRANCISCO RECREATION & PARKS

Source: Orthophoto - SFDT, 2007; Street Data - SFDPW, 2009;
Significant Natural Area Data created by RPD Planning from information provided by RPD Natural Area Program, 2010;
All Data are NAD 1983 StatePlane California III FIPS 0403 Feet

Created by Sean Stasio, SFRPD Planning Division
for SFRPD Significant Natural Areas Program, NOvember 2010

N

0 25 50 75 100
Feet

FIGURE 6.27-4

MANAGEMENT AREAS

Everson/Digby

Significant Natural Resource Areas
Management Plan

San Francisco, California

APPENDIX G

Cumulative Projects

San Francisco Related Cumulative Projects List

Area Plans

PLAN AREA	NATURAL AREAS
Bayview Hunters Point	Bayview Park, Bernal Hill, India Basin Shoreline Park, Palou/Phelps
Hunters Point Shipyard	India Basin Shoreline Park
Market and Octavia	Buena Vista Park, Corona Heights
Mission	Bernal Hill

Planning Cases

NATURAL AREAS	CASE NO	PROJECT NAME	NOTICE
15th Avenue Steps	2008.0612	1427 11TH AV	Two-story vertical addition to the existing one-story, 1,368 sqft single-family dwelling, and a three-story horizontal side addition to the south side of existing dwelling. The resulting structure will be three stories in height and 2-dwelling units.
15th Avenue Steps	2010.0264	RPD-Grandview Park Restoration Work	Repair existing retaining walls, restore trail, provide new protective fencing, provide soil erosion control measures, and native plant restoration.
Balboa Natural Area	2010.0350	640 46TH AV	3rd-story vertical addition and remodel at 2nd-story of a single-family residence.
Bayview Park	2006.0422	Executive Park	General Plan Amendment and Zoning Map change to amend the Executive Park Subarea Plan of the South Bayshore Area Plan.
Bayview Park	2009.0311	SUNNYDALE SEWER IMPROVEMENT	SFPUC auxiliary sewer project to alleviate flooding in the Visitation Valley/Sunnydale neighborhood, with new main alignment N along county line to SF Bay; previous main tunnel alignment (1998.123E) Negative Declaration.
Bayview Park	2008.1110	6600 Third Street	100% Affordable DUs (42,238 square feet) and 21 off-street parking spaces. New building would be 40 feet tall. Demolition of 43 residential hotel rooms and construction of 25 new dwelling units and 55 group housing units.
Bayview Park	2009.0815	RPD-Candelstick Park	Add temporary pedestrain bridge over Hunters Point Expressway.
Bayview Park	2009.0839	BOS 091036-Third St/LeConte Affordable Housing SUD	Planning Code amendment establishing the Third Street and Le COnte Ave Affordable Housing Special Use District.
Bayview Park	2010.0863	Visitacion Valley Impact Fee	Amendments to the Planning Code Section 420.1-420.5: The Visitacion Valley Community Facilities and Infrastructure Fee and Fund [Board File No. 10-----]. Ordinance introduced by Supervisor Maxwell amending Planning Code Sections 420.1 (Findings), 420.2
Bayview Park	2010.0708	RPD- Candlestick Park 2010	Add temporary pedestrain bridge over Hunters Point Expressway.
Bernal Hill	2008.0283	41 MIRABEL AV	Existing 2-unit, 3-story, 3298 sqft residential building. Proposed unit merge of the top two floors, remodel garage into a unit, and addition of a 1-car garage.
Bernal Hill	2008.0409	384 HOLLADAY AV	Develop single-family dwellings on each lot with two off-street parking spaces each. Downslope Lots.
Bernal Hill	2009.0195	280 BAYSHORE BL	Micro Bio Diesel Refinery; blending, fueling hybrid
Bernal Hill	2009.0338	97 ANDOVER ST	Parking variance. Addition/Alteration of single-family residence.
Bernal Hill	2009.0725	128 ELSIE ST	New single-family residence on a vacant downsloping lot.
Bernal Hill	2009.1018	183 BREWSTER ST	New 2,811 sqft single-family residence on vacant lot.
Bernal Hill	2009.0276	CESAR CHAVEZ AUXILIARY SEWER	New 1.2mi auxiliary sewer to address localized flooding, Cesar Chavez Street Area. Alignment from east: off Napoleon, Jerrold, Precita, Cesar Chavez west to Valencia, Duncan, Guerrero, Fair, Coleridge, Coso. Replaces existing brick sewer in Cesar Chavez
Bernal Hill	2009.0753	3155 Cesar Chavez Street	Vertical and horizontal addition of a church in an R-district. Requires CU per 209.3(j)
Bernal Hill	2009.1173	1467 SHOTWELL ST	2-story side addition and alterations to the existing entry way of a single-family residenence.
Bernal Hill	2010.0306	10 Bernal Heights	Modify CU to install 5 dish antennas.
Billy Goat Hill	2006.0974	1700 DIAMOND ST	Demolish existing single-family home, subdivide existing parcel resulting in four new lots, and construct four new single-family homes.
Billy Goat Hill	2007.0679	290 BEACON ST	Renovation of front facade, construction of horizontal addition to either side of the existing second and third floors, construction of horizontal addition to the rear of the existing basement, second, and third floors, and construction of a new basement
Billy Goat Hill	2008.0041	527 29TH ST	Raise existing single-family residence from 24'-7" to 34'-4" in height. Create new 2-car tandem garage at lower level. Proposed addition of 1,422 sqft for a totla of 3,811 sqft.
Billy Goat Hill	2008.1218	70 GOLD MINE DR	Demolition of existing single-family residnece and detached garage. Proposed subdivision and construction of 4 residnetial units.
Billy Goat Hill	2009.1025	140 - 142 Laidley Street	Dwelling unit merger from 3 dwellings to 2 dwellings. Project inlcudes adding a garage and constructing additions to the cottage portion of the building.
Billy Goat Hill	2010.0876	631 29TH ST	Alteration of the roofline to crate more habitable space at the 2nd floor of the existing single-family building.
Billy Goat Hill	2010.1032	2329 CASTRO ST	Raise subject building by approx. 5ft to create gound level living space and storage space.
Billy Goat Hill	2010.0446	RPD-Billy Goat Hill	repair and replace landscaping at park.
Brooks Park	2008.0580	439 VERNON ST	Demo existing dwelling and construct a 2-story single-family dwelling with one off-street parking space.
Brooks Park	2008.0212	1101 JUNIPERO SERRA BL	Demolish existing gas station and construct 3 story mixed use project with 8 dwelling units.
Brooks Park	2009.0240	BOS 090319	Amend Planning Code Section 263.20 to allow special height exception for ground floor uses.
Brooks Park	2010.0621	314 RANDOLPH ST	New construction on vacant lot for new 8-unit residential building with a health center on the ground and first floors.
Buena Vista Park	2001.1056	280 DIVISADERO ST	3/20/04 - Determination that project may have significant effect on environment 6/26/03 - Environmental Evaluation filed Request for a Certificate of Appropriateness for effective demolition replacement carriage house, converted to residential unit.
Buena Vista Park	2005.0927	755 ASHBURY ST	Amend existing PUD; move house. Previous CATEX. AKA 36-38 DOWNEY
Buena Vista Park	2005.0555	CA Pacific Medical Center (CPMC)	California Pacific Medical Center - Four Campus Master Plan - (1) Cathedral Hill, (2) Pacific, (3) California, and (4) Davies Campuses. Revised Application (2/22/2008): CPMC Long Range Development Plan: (1) Cathedral Hill (reduced), (2) Pacific, (3)

Buena Vista Park	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Buena Vista Park	2008.1232	Int Moratorium Haight Paraphernalia	BOS 081380: Urgency Ordinance impsoing interim zoning moratorium prohibiting new tobacco paraphernalia shops in the Haight NCD, or Haight Street NC-1 or NC-2 for period of 45 days.
Buena Vista Park	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Buena Vista Park	2009.0811	1580 MASONIC AV	4th floor addition. 1st, 2nd, 3rd floor horizontal addition. Interior changes.
Buena Vista Park	2009.1003	1138 PAGE ST	Addition and alteration of existing 2-unit residence to proposed 4 unit, 4parking space residential building.
Buena Vista Park	2009.0269	RPD-Buena Vista Park Improvement	Trail extension, clearing and grubing, erosion control measures, small retaining walls and native plantings.
Buena Vista Park	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Buena Vista Park	2009.1170	37 - 39 LLOYD STREET (aka 35 LLOYD STREET)	Vacant lot and new construction of a 4- story, 2-unit residential building with 2 parking spaces.
Buena Vista Park	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.
Buena Vista Park	2010.0445	RPD-Corona Heights	Repair and replace existing landscaping.
Corona Heights	2005.0555	CA Pacific Medical Center (CPMC)	California Pacific Medical Center - Four Campus Master Plan - (1) Cathedral Hill, (2) Pacific, (3) California, and (4) Davies Campuses. Revised Application (2/22/2008): CPMC Long Range Development Plan: (1) Cathedral Hill (reduced), (2) Pacific, (3)
Corona Heights	2008.0430	2299 MARKET ST	Develop vacant lot with 34,477 sqft, 5-story, 50-foot high mixed-use building with ground floor retail, 18 residential units and a basement garage. Project includes a rear yard modification request.
Corona Heights	2008.1188	136 ORD ST	Historic resource determination
Corona Heights	2009.0269	RPD-Buena Vista Park Improvement	Trail extension, clearing and grubing, erosion control measures, small retaining walls and native plantings.
Corona Heights	2009.0811	1580 MASONIC AV	4th floor addition. 1st, 2nd, 3rd floor horizontal addition. Interior changes.
Corona Heights	2009.1097	2362 15TH ST	Addition/alteration to existing 4-unit building.
Corona Heights	2010.0445	RPD-Corona Heights	Repair and replace existing landscaping.
Corona Heights	2010.0634	75 CLIFFORD TR	Addition/alteration at front of single-family dwelling to add a new garage and reconfigure the existing bay window.
Dorothy Erskine Park	2008.0374	279 MONTEREY BL	Demoiltion of existing single-family residence.
Dorothy Erskine Park	2009.0652	125 CHILTON AV	Addition alteration to single-family dwelling.
Dorothy Erskine Park	2009.1098	75 VAN BUREN ST	863 sqft addition that includes a new bedroom, bathroom and a living room. Will remain a single-family dwelling.
Dorothy Erskine Park	2010.0391	1259 BOSWORTH ST(aka 701 CONGO ST)	Two-lot subdivision
Dorothy Erskine Park	2010.0587	185 CHILTON AV	Rear Yard and Exposure Variances to construct new one-story extension connecting front garage structure to rear dwelling unit.
Duncan-Castro	2006.0974	1700 DIAMOND ST	Demolish existing single-family home, subdivide existing parcel resulting in four new lots, and construct four new single-family homes.
Duncan-Castro	2006.1102	1409 SANCHEZ ST	Demolish existing single-family building and replace it with a new two units residential building. DR pursuant to Section 317 of the Code.
Duncan-Castro	2008.0041	527 29TH ST	Raise existing single-family residence from 24'-7" to 34'-4" in height. Create new 2-car tandem garage at lower level. Proposed addition of 1,422 sqft for a totla of 3,811 sqft.
Duncan-Castro	2008.1218	70 GOLD MINE DR	Demolition of existing single-family resident and detached garage. Proposed subdivision and construction of 4 residnetial units.
Duncan-Castro	2009.1019	1412 DIAMOND ST	1,131 sqft 3rd floor and rear addition to existing single-family residence.
Duncan-Castro	2010.0876	631 29TH ST	Alteration of the roofline to crate more habitable space at the 2nd floor of the existing single-family building.
Duncan-Castro	2010.1032	2329 CASTRO ST	Raise subject building by approx. 5ft to create gound level living space and storage space.
Edgehill Mountain	2009.0411	40 EDGEHILL WY	Demolition and construction of a new single-family residence.
Edgehill Mountain	2010.0156	1043 PORTOLA DRIVE	Vertical addition to existing 2-story building that includes strucutral upgrade and replacement and repair of existing windows and doors.
Everson Digby	2006.0076	538 LAIDLEY ST	To construct a two-story over garage single-family dwelling on a vacant lot. The previous dwelling on the lot was destroyed by fire, as a result, an emergency demolition was issued by the DBI, to demolish the bldg. in an RH-1 district.
Everson Digby	2006.0974	1700 DIAMOND ST	Demolish existing single-family home, subdivide existing parcel resulting in four new lots, and construct four new single-family homes.
Everson Digby	2006.0076	538 LAIDLEY ST	To construct a two-story over garage single-family dwelling on a vacant lot. The previous dwelling on the lot was destroyed by fire, as a result, an emergency demolition was issued by the DBI, to demolish the bldg. in an RH-1 district.
Everson Digby	2007.0679	290 BEACON ST	Renovation of front facade, construction of horizontal addition to either side of the existing second and third floors, construction of horizontal addition to the rear of the existing basement, second, and third floors, and construction of a new basement
Everson Digby	2008.0041	527 29TH ST	Raise existing single-family residence from 24'-7" to 34'-4" in height. Create new 2-car tandem garage at lower level. Proposed addition of 1,422 sqft for a totla of 3,811 sqft.
Everson Digby	2008.1218	70 GOLD MINE DR	Demolition of existing single-family resident and detached garage. Proposed subdivision and construction of 4 residnetial units.
Everson Digby	2009.0069	564 CHENERY ST	3-story fron addition to existing 2-story residnetial house.
Everson Digby	2009.1019	1412 DIAMOND ST	1,131 sqft 3rd floor and rear addition to existing single-family residence.
Everson Digby	2009.1098	75 VAN BUREN ST	863 sqft addition that includes a new bedroom, bathroom and a living room. Will remain a single-family dwelling.
Everson Digby	2009.1025	140 - 142 Laidley Street	Dwelling unit merger from 3 dwellings to 2 dwellings. Project inlcudes adding a garage and constructing additions to the cottage portion of the building.
Everson Digby	2010.0876	631 29TH ST	Alteration of the roofline to crate more habitable space at the 2nd floor of the existing single-family building.
Everson Digby	2010.1032	2329 CASTRO ST	Raise subject building by approx. 5ft to create gound level living space and storage space.
Everson Digby	2010.0446	RPD-Billy Goat Hill	repair and replace landscaping at park.
Fairmount Park	2006.0076	538 LAIDLEY ST	To construct a two-story over garage single-family dwelling on a vacant lot. The previous dwelling on the lot was destroyed by fire, as a result, an emergency demolition was issued by the DBI, to demolish the bldg. in an RH-1 district.

Fairmount Park	2007.0679	290 BEACON ST	Renovation of front facade, construction of horizontal addition to either side of the existing second and third floors, construction of horizontal addition to the rear of the existing basement, second, and third floors, and construction of a new basement
Fairmount Park	2009.0069	564 CHENERY ST	3-story fron addition to existing 2-story residnetial house.
Fairmount Park	2009.1025	140 - 142 Laidley Street	Dwelling unit merger from 3 dwellings to 2 dwellings. Project inlcudes adding a garage and constructing additions to the cottage portion of the building.
Fairmount Park	2010.0446	RPD-Billy Goat Hill	repair and replace landscaping at park.
Glen Canyon Park	2008.1218	70 GOLD MINE DR	Demolition of existing single-family residnece and detached garage. Proposed subdivision and construction of 4 residnetial units.
Glen Canyon Park	2009.1098	75 VAN BUREN ST	863 sqft addition that includes a new bedroom, bathroom and a living room. Will remain a single-family dwelling.
Glen Canyon Park	2010.0391	1259 BOSWORTH ST(aka 701 CONGO ST)	Two-lot subdivision
Glen Canyon Park	2010.0167	201 TERESITA BL	Vertical addition to existing single-family residence.
Golden Gate Heights	2009.0521	916 ORTEGA ST	2-story rear addition and a new 3rd floor. Remove non-confomring rear addition.
Golden Gate Heights	2009.0755	2021 16TH AV	Interior remodel, re-roof (flat to pitch), and change in entrance elevation.
Golden Gate Heights	2010.0930	PUC-Forest Hill Pump Station Upgrades Project	Demolition of the existing pump station and replacement with a new potable water pump station to meet current Building Code standards as an essential utility facility.
Golden Gate Heights	2010.0396	645 QUINTARA ST	Vertical addition to single-family residence to provide an additional two bedrooms. Would remain a single-faily residence.
Golden Gate Heights	2010.0384	2192 FUNSTON AVENUE	Vacant lot. New construction of a single-family 3,401 sqft, 40-foot high residential building.
Golden Gate Heights	2010.0181	2 QUINTARA ST	Lot Line Adjustment
Grandview Park	2009.0521	916 ORTEGA ST	2-story rear addition and a new 3rd floor. Remove non-confomring rear addition.
Grandview Park	2010.0264	RPD-Grandview Park Restoration Work	Repair existing retaining walls, restore trail, provide new protective fencing, provide soil erosion control measures, and native plant restoration.
Grandview Park	2010.0297	1770 16TH AV	3rd floor vertical addition to existing SFD setback 15-feet from front facade.
Hawk Hill	2009.0085	202 SAN MARCOS AV	To construct a three-story over garage single-family dwelling on a vacant lot.
Hawk Hill	2009.0085	160 SAN MARCOS AVENUE	To construct a three-story over garage single-family dwelling on a vacant lot.
Hawk Hill	2010.0930	PUC-Forest Hill Pump Station Upgrades Project	Demolition of the existing pump station and replacement with a new potable water pump station to meet current Building Code standards as an essential utility facility.
Hawk Hill	2010.0396	645 QUINTARA ST	Vertical addition to single-family residence to provide an additional two bedrooms. Would remain a single-faily residence.
Hawk Hill	2010.0384	2192 FUNSTON AVENUE	Vacant lot. New construction of a single-family 3,401 sqft, 40-foot high residential building.
Hawk Hill	2010.0181	2 QUINTARA ST	Lot Line Adjustment
India Basin Shoreline Park	2009.0919	1000 EVANS AV	Remediation work involving digging of three recovery trenches with lengths varying from 120 ft to 175 ft.
Interior Green Belt	2008.1087	1427 SHRADER ST	Horizontal and vertical addition; modification to the facade. Addiing one more unit.
Interior Green Belt	2009.0299	4963 17TH ST	Horizontal and vertical addition to existing 2-story single-family residence.
Interior Green Belt	2009.0487	200 BELGRAVE AV	Addition/Alteration to single-family residence.
Interior Green Belt	2009.0156	89 BELGRAVE AV	Lot line adjustment to divide one 7,500 sq.ft. lot into a 4,000 sq.ft. and 3,000 sq.ft. lot. Vertical and Horizontal Addition to existing single family residence of 1,300sf, resulting in a 4,200 sf single-family residence. New construction of a 4,000 sf
Interior Green Belt	2009.0568	AWSS SEISMIC & SYSTEM UPGRADES	Five pump station and tank retrofit/rebuild projects, part of AWSS program improvements.
Interior Green Belt	2009.0814	36 WOODLAND AV	Expand roof to livable space by adding 900 sf to an existing 2,800 sf single family home.
Interior Green Belt	2009.1152	Earthquake Safety & Emergency Response Bond	-Auxilliary Water Supply System -Critical Facilities and Infrastructure -Public Safety Building -Forensic Science Center Project Preliminary work for this DPW bond measure. Earthquake Safety and Emergency Response Bond. The Earthquake Safety and
Interior Green Belt	2009.0980	1560 SHRADER ST	Additon/alteration to single-family residence.
Interior Green Belt	2010.0351	5370 BELVEDERE ST	Rear addition and new doormers, raise the building 12", add new garage and driveway, and renovate kitchen, family room, master bedroom, bathrooms, and stairs.
Interior Green Belt	2010.0001	45 GRATTAN ST	NEW CONSTRUCTION. FRONT SETBACK VARIANCE
Kite Hill	2008.1178	1344 CLAYTON ST	Rear yard variance
Kite Hill	2008.1188	136 ORD ST	Historic resource determination
Kite Hill	2008.1191	358 DIAMOND ST	Raise existing 2,285 sqft 2-story house 5-feet in order to add 3-car garage at ground level. Add new driveway and curb cut, which will require removal of one street tree. Replace existing front stairs to accomdate increased height. Add 26 sqft addition a
Kite Hill	2008.0040	86 STANTON ST	Construction of 3,081 sqft, 25'-11" in height single-family residence with existing secondary structure. Parking provided on adjacent lot per ZA's letter of determination.
Kite Hill	2009.0196	117 DIAMOND ST	Adding expanded child care to existing school use for 13+ children
Kite Hill	2009.0568	AWSS SEISMIC & SYSTEM UPGRADES	Five pump station and tank retrofit/rebuild projects, part of AWSS program improvements.
Kite Hill	2009.0788	324 CASELLI AV	Interior improvements and vertical 3rd story addition.
Kite Hill	2009.0826	225 DOUGLASS ST	Interior renovations, front facade renovation, vertical 3rd story addition, horizontal rear addition and seismic upgrade.
Kite Hill	2009.1152	Earthquake Safety & Emergency Response Bond	-Auxilliary Water Supply System -Critical Facilities and Infrastructure -Public Safety Building -Forensic Science Center Project Preliminary work for this DPW bond measure. Earthquake Safety and Emergency Response Bond. The Earthquake Safety and
Kite Hill	2010.0005	4260 22ND ST	Remove asbestos shingles and replace with stucco and replace existing aluminum windows and front door.
Kite Hill	2010.0354	267 EUREKA ST	Enclose a protion of the front porch of an existing single-family residence.
Kite Hill	2010.1033	4226 22ND ST	Proposed addition to 2-unit dwelling.
Kite Hill	2010.0208	445 DOUGLASS ST	Addition/alteration to front primary facade of single-family residence. Would remain a single-family residence.
Kite Hill	2010.0372	479 DOUGLASS ST	Horizontal 3-story addition behind existing 3-story residence.

Kite Hill	2010.0598	75 MARS STREET	Addition/alteration to existing single-family dwelling to add a new residential unit, a new garage and exapnd all levels of existing building and a new vertical floor addition, rear yard variance required for rear addition that would extend to the rear p
Lake Merced	2008.0021	3711 19th Avenue (Parkmerced)	Master redevelopment program for 116-ac Parkmerced site, proposed to retain existing midrise bldgs and demo/replace all others w/ 4-14-story residential bldgs, on-site relocation of existing residents @ current rent-controlled rates, concurrent infrastru
Lake Merced	2008.1122	WSIP Groundwater Project B	SFPUC WSIP Groundwater Project B-- North Westside Basin local supply project. Would provide additional potable water supply using locally developed groundwater; construct six well stations, including three in GGP, and five miles of new distribution pipel
Lake Merced	2010.0099	PUC-Sunset Supply Pipeline Vegetation Clearing	Remove trees and vegetation around the Sunset Supply Pipeline.
Lakeview/Ashton	2009.0240	BOS 090319	Amend Planning Code Section 263.20 to allow special height exception for ground floor uses.
Lakeview/Ashton	2009.0297	239 MINERVA ST	Demolish existing 1-story substandard, non-comforming single-family resindece at rear of lot, lot line adjustment with lot 069, divide into 2 parcels and construct a single-family home on each site.
Lily Pond	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Lily Pond	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Lily Pond	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Lily Pond	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.
McLaren Park	2007.0389	228 RAYMOND AV	Two story horizontal addition in front requiring a front yard setback variance.
McLaren Park	2008.1050	191 TIOGA AV	Demolition of single family house (located on two lots) and garage (on a third lot). Construction of 3 single family homes on the three lots.
McLaren Park	2009.0307	555 MOSCOW ST	Horizontal addition for addtional guest room and study.
McLaren Park	2009.0756	469 RAYMOND AV	Demolish 1-story single-family residential building straddled in the middle of two lots and construct two single-family residential buildings on each lot.
McLaren Park	2009.1073	1200 BOWDOIN ST	Retaining wall between 1200 and 1208 Boudin Street.
McLaren Park	2010.0305	Sunnydale HOPE SF Master Plan	The project project is the Sunnydale HOPE SF Master Plan. The proposed project would demolish the existing Sunnydale public housing complexes and construct replacement housing, new market rate housing, infrastructure, open space, and community ammentitie
McLaren Park	2010.0863	Visitacion Valley Impact Fee	Amendments to the Planning Code Section 420.1-420.5: The Visitacion Valley Community Facilities and Infrastructure Fee and Fund [Board File No. 10-----]. Ordinance introduced by Supervisor Maxwell amending Planning Code Sections 420.1 (Findings), 420.2
McLaren Park	2010.0616	137 ARLETA AV	Horizontal/vertical addition to existing single-family residence to add a new garage. Would remain a single-family residence.
Mt. Davidson	2008.0558	795 FOERSTER ST	2 lot merger and 4 Lot subdivision, construction of 3 SFDs on three new lots
Mt. Davidson	2010.0167	201 TERESITA BL	Vertical addition to existing single-family residence.
Mt. Davidson	2010.0156	1043 PORTOLA DRIVE	Vertical addition to existing 2-story building that includes strucutral upgrade and replacement and repair of existing windows and doors.
Oak Woodlands	2006.0460	690 STANYAN ST	Demolish existing one-story retail and mezzanine containing approximately 23,600 sq. ft. and construct a new 62 unit residential structure with 34,400 sq. ft. of groundfloor retail. Two stories of underground parking would also be proposed for 176 total
Oak Woodlands	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Oak Woodlands	2008.1273	25 BALBOA ST	One story vertical addition over the existing two-story over garage and convert existing single-family dwelling to two family dwellings.
Oak Woodlands	2008.0395	2130 FULTON ST	Construction of a 4 story 59,900-sf University of San Francisco Teaching Building and Demolition of 17,000-sf of a Concrete Plaza,
Oak Woodlands	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Oak Woodlands	2009.1072	32 COLE ST	Remove and reaplce existing failing concrete retaining wall.
Oak Woodlands	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Oak Woodlands	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.
Oak Woodlands	2010.0014	226 CABRILLO ST	Demo existing single-family dwelling
Palou/Phelps	2003.1048	4800 Third St.	Proposal to build a mixed use project with 15 BMR DUs over commercial. Zoning Map changes for height and SUD for affordable housing. Requires PUD for exceptions to parking variance and rezoning.
Palou/Phelps	2007.1141	4701 03RD ST	Seismic retrofit and ADA access upgrades, balcony rehabilitiation, interior and exterior prep and paint, prescenium evaluation.
Palou/Phelps	2009.0304	SFPL-Bayview Branch Library	Demo and construction of a new Bayview Branch Library, R-Case: The project proposes to remove existing Bayview Anna E Waden Branch Library and the neighborhing storefront. The new library will be an approximately 9,000 square feet one-story building wit
Palou/Phelps	2009.0313	1911-1915 Quesada	Construction of two new single-family residences on two vacant lots.
Palou/Phelps	2010.1020	PUC-City Distribution Division Corp. Yard Fueling	PUC-City Distribution Division Corp. Yard Fueling Station.
Palou/Phelps	2010.0489	MTA-4701 03RD ST (Bayview Opera House Plaza)	Street and plaza improvements around the Bayview Opera House. No changes to the Opera building.
Palou/Phelps	2010.0199	PUC Southeast Water Pollution Control Plant	Proposed SEWPCP Medium Voltage Reliabilitity System Upgrad Project would remove and replace the existing 15kV electrical cables and would install new equipment.

Rock Outcrop	2009.0521	916 ORTEGA ST	2-story rear addition and a new 3rd floor. Remove non-confomring rear addition.
Rock Outcrop	2009.0755	2021 16TH AV	Interior remodel, re-roof (flat to pitch), and change in entrance elevation.
Rock Outcrop	2010.0264	RPD-Grandview Park Restoration Work	Repair existing retaining walls, restore trail, provide new protective fencing, provide soil erosion control measures, and native plant restoration.
Rock Outcrop	2010.0297	1770 16TH AV	3rd floor vertical addition to existing SFD setback 15-feet from front facade.
Strawberry Hill	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Strawberry Hill	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Strawberry Hill	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Strawberry Hill	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.
Tank Hill	2008.1087	1427 SHRADER ST	Horizontal and vertical addition; modification to the facade. Addiing one more unit.
Tank Hill	2008.1178	1344 CLAYTON ST	Rear yard variance
Tank Hill	2009.0299	4963 17TH ST	Horizontal and vertical addition to existing 2-story single-family residence.
Tank Hill	2009.0487	200 BELGRAVE AV	Addition/Alteration to single-family residence.
Tank Hill	2009.0156	89 BELGRAVE AV	Lot line adjustment to divide one 7,500 sq.ft. lot into a 4,000 sq.ft. and 3,000 sq.ft. lot. Vertical and Horizontal Addition to existing single family residence of 1,300sf, resulting in a 4,200 sf single-family residence. New construction of a 4,000 sf
Tank Hill	2009.0568	AWSS SEISMIC & SYSTEM UPGRADES	Five pump station and tank retrofit/rebuild projects, part of AWSS program improvements.
Tank Hill	2009.0788	324 CASELLI AV	Interior improvements and vertical 3rd story addition.
Tank Hill	2009.1152	Earthquake Safety & Emergency Response Bond	-Auxilliary Water Supply System -Critical Facilities and Infrastructure -Public Safety Building -Forensic Science Center Project Preliminary work for this DPW bond measure. Earthquake Safety and Emergency Response Bond. The Earthquake Safety and
Tank Hill	2009.0980	1560 SHRADER ST	Additon/alteration to single-family residence.
Tank Hill	2009.0870	125 CROWN TR	NEW CONSTRUCTION OF SINGLE-FAMILY DWELLNG. SEE 2008.1160D FOR DEMO.
Tank Hill	2010.0598	75 MARS STREET	Addition/alteration to existing single-family dwelling to add a new residential unit, a new garage and exapnd all levels of existing building and a new vertical floor addition, rear yard variance required for rear addition that would extend to the rear p
Tank Hill	2010.0351	5370 BELVEDERE ST	Rear addition and new doormers, raise the building 12", add new garage and driveway, and renovate kitchen, family room, master bedroom, bathrooms, and stairs.
Tank Hill	2010.0001	45 GRATTAN ST	NEW CONSTRUCTION. FRONT SETBACK VARIANCE
Twin Peaks	2008.0315	829 CORBETT AVENUE	Demolish existing single-family dwelling unit. No proposd plans.
Twin Peaks	2009.0324	21 FOUNTAIN ST	Addition/Alteration of existing single-family.
Twin Peaks	2009.0446	60 FOUNTAIN ST	Rear yard variance for the construction of a new single-family building at rear of site.
Twin Peaks	2009.0568	AWSS SEISMIC & SYSTEM UPGRADES	Five pump station and tank retrofit/rebuild projects, part of AWSS program improvements.
Twin Peaks	2009.0870	125 CROWN TR	NEW CONSTRUCTION OF SINGLE-FAMILY DWELLNG. SEE 2008.1160D FOR DEMO.
Twin Peaks	2009.1152	Earthquake Safety & Emergency Response Bond	-Auxilliary Water Supply System -Critical Facilities and Infrastructure -Public Safety Building -Forensic Science Center Project Preliminary work for this DPW bond measure. Earthquake Safety and Emergency Response Bond. The Earthquake Safety and
Twin Peaks	2010.0375	20 HOFFMAN AV	The proposed project is a vertical addition to alter the existing pitched roof.
Twin Peaks	2010.0725	70 CRESTLINE DR	Vacant lot/Split lot from larger lot and construct 4-unit residential building.
Whiskey Hill	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Whiskey Hill	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Whiskey Hill	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Whiskey Hill	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.

Other SF Projects

Name	Description
Sharp Park Recycled Water Project	Construction and operation of recycled water pump station, storage tanks, and pipelines near Sharp Park; pipelines would be installed through Sharp Park; construction scheduled for 2009 (project on hold)
Westside Recycled Water Project	Construction and operation of recycled water facility and pipelines; construction scheduled for 2011-2014
Harding Park Recycled Water Project	Construction and operation of a recycled water storage tank and distribution pipeline near Lake Merced; construction scheduled for 2009-2010
San Andreas Pipeline No. 3	Installation and operation of approximately 23,400 feet (4.4 miles) of new pipeline to extend the existing pipeline from the San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco; installation scheduled for 2009-2011

UC San Francisco Mount Sutro Open Space Reserve	UCSF would conduct fire mitigation (forest thinning) projects on two parcels of 6 and 8 acres within the 61-acre reserve
San Francisco State University Master Plan	Development of the campus from 2009 through 2020 to accommodate an increased enrollment ceiling of 25,000 full-time students. Current full time student enrollment is 20,000. The campus master plan would result in a net increase in academic and academic support building space of 900,000 gross square feet.
SFRPD Trails Program	Trail improvements under the Clean and Safe Neighborhood Parks Bond
SFRPD Forestry Program	Tree planting and restoration under the Clean and Safe Neighborhood Parks Bond
SFRPD Horseshoe Courts	Create horseshoe courts at Oak Woodlands
SFRPD Bike Skills Area	Create bike skills area at McLaren Park
SFRPD disc golf course	Create disc golf course at McLaren Park
GGNRA Dog Management Plan	Changes in dog management measures at 21 properties within the Golden Gate National Recreation Area (including Fort Mason, Crissy Field, Fort Point, Baker Beach, Fort Miley, Lands End, Sutro Heights Park, Ocean Beach, and Fort Funston in San Francisco) (including Mori Point, Milagra Ridge, Sweeney Ridge, and Pedro Point Headlands in San Mateo County)
Candlestick Point-Hunters Point Shipyard Phase II Development	Development of 10,500 residential for 24,465 residents; 885,000 gross square feet (gsf) of retail; 150,000 gsf of office; 2.5 million gsf of Research & Development (R&D) uses; a 220-room, 150,000 gsf hotel; 255,000 gsf of artist live/work space; 100,000 gsf of community services; 300-slip maringa; 251.3 acres of new parks, sports fields, and waterfront recreation areas, as well as 84 acres of new and improved State parkland; a 69,000-seat 49ers stadium; and a 75,000 gsf performance arena. The permanent employee population associated with the project would be 10,730. Project area extends from India Basin to Candlestick Cove.

Pacifica Related Cumulative Projects List

Residential Development	Projects totaling 261 units on an estimated 150 acres
Commercial Development	Projects totaling about 85,000 square feet of building space

APPENDIX H

Air Quality

TETRA TECH

CEQA AIR QUALITY TECHNICAL REPORT

FOR THE

SAN FRANCISCO NATURAL AREAS MANAGEMENT PLAN

Prepared by

Tetra Tech, Inc.

August 2011

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ACRONYMS AND ABBREVIATIONS

ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards (CAAQS)
CO	Carbon monoxide
CO_2	Carbon dioxide
EPA	Environmental Protection Agency
GHG	Greenhouse gas
HARP	Hot Spots Analysis Reporting Program
HI	Hazardous Index
H_2S	Hydrogen sulfide
HRA	Health Risk Assessment
ISCST	Industrial Source Code Short Term
Lbs	Pounds
Mph	miles per hour
MT	Metric tons
NAAQS	National Ambient Air Quality Standards
NO	Nitric oxide
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides
OEHHA	Office of Environmental Health and Hazard Assessment
O&M	Operating and maintenance
O_3	Ozone
Pb	Lead
PM_{10}	fine particulate matter equal to or less than 10 microns
$PM_{2.5}$	fine particulate matter equal to or less than 2.5 microns
ROG	Reactive organic gas
SFRPD	San Francisco Recreation and Park Department
SCAQMD	South Coast Air Quality Management District
SO_2	Sulfur dioxide
TACs	Toxic air contaminants
TSP	Total suspended particulate
URBEMIS	Urban Emissions Program

SECTION 1

PROJECT DESCRIPTION

The San Francisco Recreation and Park Department (SFRPD) proposes to implement the Significant Natural Resource Areas Management Plan at 32 Natural Areas in San Francisco and Pacifica. The largest individual project proposed under that plan is restoration of the wetland at Sharp Park located in Pacifica. The air quality analysis presented in this report analyzes the potential air quality impacts associated with the proposed restoration project. The estimated emissions from that project represent the highest level of emissions anticipated under the plan; this analysis serves as a guide for the anticipated emissions associated with other plan activities.

1.1 Project Location

The proposed project is to restore the wetland at Sharp Park located in the city of Pacifica, County of San Mateo, California. Sharp Park is one of the largest SFRPD parks and is surrounded by significant open spaces. The park borders the Pacific Ocean and is bisected by Highway 1. The Sharp Park Golf Course and Laguna Salada are on the western side of Highway 1. Mori Point borders the southwestern edge, and Sweeney Ridge borders the park on the southeastern and eastern edges. The northern side of Sharp Park is bordered by undeveloped areas within the cities of Pacifica and San Bruno. The Natural Area accounts for 237.2 acres within Sharp Park and encompasses the upper canyon areas, portions of Sanchez Creek, and the Laguna Salada wetlands and associated vegetation.

The proposed project is in the area under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD is the public agency entrusted with regulating stationary sources of air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties.

1.2 Proposed Project Description

Following are the proposed main activities to restore the wetland at Sharp Park:

- Dredging to remove sediment and decaying vegetation in Laguna Salada, Horse Stable Pond, and the channel that connects the two water bodies;
- Re-contouring the shoreline to create shallow water habitat;
- Creating a habitat corridor between Horse Stable Pond and Laguna Salada;

- Creating an upland peninsula in the middle of the lagoon to provide snakes and frogs with refugia from feral cats and other predators; and

- Constructing upland mounds on the east side of the lagoon and between Laguna Salada and Horse Stable Pond.

1.3 Types and Sources of Air Pollutants

There are three major sources of emissions for this project:

- Fugitive dust emissions – Dust is generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions;

- Construction Equipment – Construction requires use of heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and

- Vehicles – Transport vehicles travelling to and from the site, including delivery trucks hauling materials and automobiles carrying workers, generate exhaust emission.

SECTION 2

PROJECT SETTING

2.1 Sources and Receptors

The emission sources for this project include: fugitive dust from site excavation, exhaust form construction equipment and exhaust from vehicles. The BAAQMD California Environmental Quality Act (CEQA) Air Quality guidelines require that air quality impact shall be assessed for receptors located within 1,000 feet of a project. These nearby receptors include residents, businesses, schools, churches, and hospitals. Figure 1 shows the emissions sources and the receptors within 1,000 feet of the proposed project. The area within 1,000 feet of the emissions source is often referred to as the zone of impact. The zone of impact is depicted as a circle on Figure 1. The nearest receptor is the golf course located east of the site where major construction activities will occur.

2.2 Existing Air Quality Standards

In California, local responsibility for air quality is assigned to air quality management districts and air pollution control districts. The project site is located in San Mateo County, which is under the jurisdiction of the BAAQMD. The impact analysis contained in this section was prepared according to the methodologies provided by the BAAQMD [Ref. 1].

The Federal Clean Air Act (42 USC Section 7401-7671q; CAA) requires the adoption of the National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare from the effects of air pollution. Current standards are set for sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), fine particulate matter equal to or less than 10 microns (PM_{10}), fine particulate matter equal to or less than 2.5 microns ($PM_{2.5}$), and lead (Pb). These pollutants are called criteria air pollutants. The State of California Air Resources Board (ARB) has established additional standards for criteria air pollutants that are generally more restrictive than the NAAQS. National and state standards are shown in Table 1 [Ref. 2].

The project site is located within the jurisdiction of the BAAQMD. The mission of the BAAQMD is to attain and maintain NAAQS and California Ambient Air Quality Standards (CAAQS) and to ensure air pollutants do not pose a nuisance or significant public health threat.

2.3 Climate

Air quality in the project area is not only affected by various emission sources (mobile, industry, etc.) but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc.

The climate near the proposed project features mild and wet winters and cool summers with frequent fog or wind. The lowest winter temperatures ranged from 36°F to 23°F (2°C to –5°C). The lowest temperature on record ranges from 30°F to 20°F (–1°C to –7°C). The average highest temperature ranges from 104°F to 116°F (40°C to 47°C).

The BAAQMD maintains a meteorological station near the proposed project (Fort Funston Meteorological Station). The station is located approximately 10 miles north of Sharp Park. Review of the wind data collected at this station shows that the prevailing wind is from the southwest with an average wind speed of 8 knots. Figure 2 shows the windrose plot.

2.4 Air Pollutant Constituents and Attainment Status

The following describes the criteria air pollutants and their attainment status in the Bay Area Air Basin. A state or region is given the status of "attainment" or "unclassified" if ambient air quality standards have not been exceeded. A status of "nonattainment" for particular criteria air pollutants is assigned if the ambient air quality standard for that pollutant has been exceeded. Once designated as nonattainment, attainment status may be achieved after three years of data showing non-exceedance of the standard. When an area is reclassified from nonattainment to attainment, it is designated as a maintenance area, indicating the requirement to establish and enforce a plan to maintain attainment with the standard.

Table 2 presents the air quality attainment status of the Bay Area Air Basin. The Bay Area is classified "attainment" for all of the national standards with the exception of ozone. It is classified "non-attainment" for state standards for ozone and particulate matters (PM_{10} and $PM_{2.5}$). Following is a brief description of the criteria air pollutants.

Ozone

Ozone results from chemical reaction of nitrogen oxides and reactive organic gases under sunlight influence. Ozone is a problematic air contaminant in the Bay Area Air Basin. Maximum ozone concentrations usually are recorded during summer months. The BAAQMD measured ambient air data show that state and national ozone air quality standards were exceeded approximately 32 days in 2009 [Ref. 3]. Under both national and state standards, the area is classified as nonattainment area for ozone.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a product of fuel combustion, during which the nitrogen in the air is converted to nitrogen dioxide (NO_2) and nitric oxide (NO). The combination of NO_2 and NO is collectively known as nitrogen oxides (NOx). The BAAQMD measured ambient air data show that state and national NO_2 air quality standards were not exceeded in 2009 [Ref. 3]. Under both national and state standards, the area is classified as attainment area for NO_2.

Carbon Monoxide

Carbon monoxide (CO) is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. CO reduces the oxygen-carrying capacity of the blood and in high concentrations can cause death. At lower concentrations, people exposed experience dizziness and headaches. The BAAQMD measured ambient air data show that state and national CO air quality standards were not exceeded in 2009 [Ref. 3]. Under both national and state standards, the area is classified as attainment area for CO.

Sulfur Dioxide

Sulfur dioxide (SO_2) is produced when any sulfur-containing fuel is burned. Chemical plants that treat or refine sulfur or sulfur-containing chemicals also emit SO_2. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of the state, depending on local fuel characteristics, weather, and topography. SO_2 can cause bronchia constriction and may aggravate respiratory diseases. In moist environments, SO_2 may combine with water to form sulfuric acid, a component of acid deposition. The BAAQMD measured ambient air data show that state and national SO_2 air quality standards were not exceeded in 2009 [Ref. 3]. Under both national and state standards, the area is classified as attainment area for SO_2.

Fine Particulates (PM_{10}, $PM_{2.5}$)

Particulate matter in the air is composed of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and oxides of nitrogen. In 1984, the ARB adopted standards for fine particulate (PM_{10} - particulate matter of less than 10 microns), and phased out the total suspended particulate (TSP) standards used up to that time. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulate related to human health. In 1987, Environmental Protection Agency (EPA) also replaced national TSP standards with PM_{10} standards. In July 1997, the EPA adopted new standards for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

Particulates are a public health and welfare concern for several reasons. Particulates may be intrinsically toxic because of their inherent chemical and/or physical characteristics. Particulate matter may interfere with one or more of the mechanisms that normally clear the respiratory tract. Finally, fine particulates, which are easily carried deep into the lungs, may act as carriers of absorbed toxic substances. Thus elevated particulate concentrations may exacerbate pre-existing respiratory diseases such as bronchitis. Particulate matter, especially fine particulates, also interferes with visibility. The BAAQMD measured ambient air data show that state PM_{10} air quality standards were exceeded on 1 day in 2009 [Ref. 3]. The national $PM_{2.5}$ air quality standards were exceeded on 11 days in 2009 [Ref. 3].

Lead

Lead is found in old paints and coatings, plumbing, and various other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead.

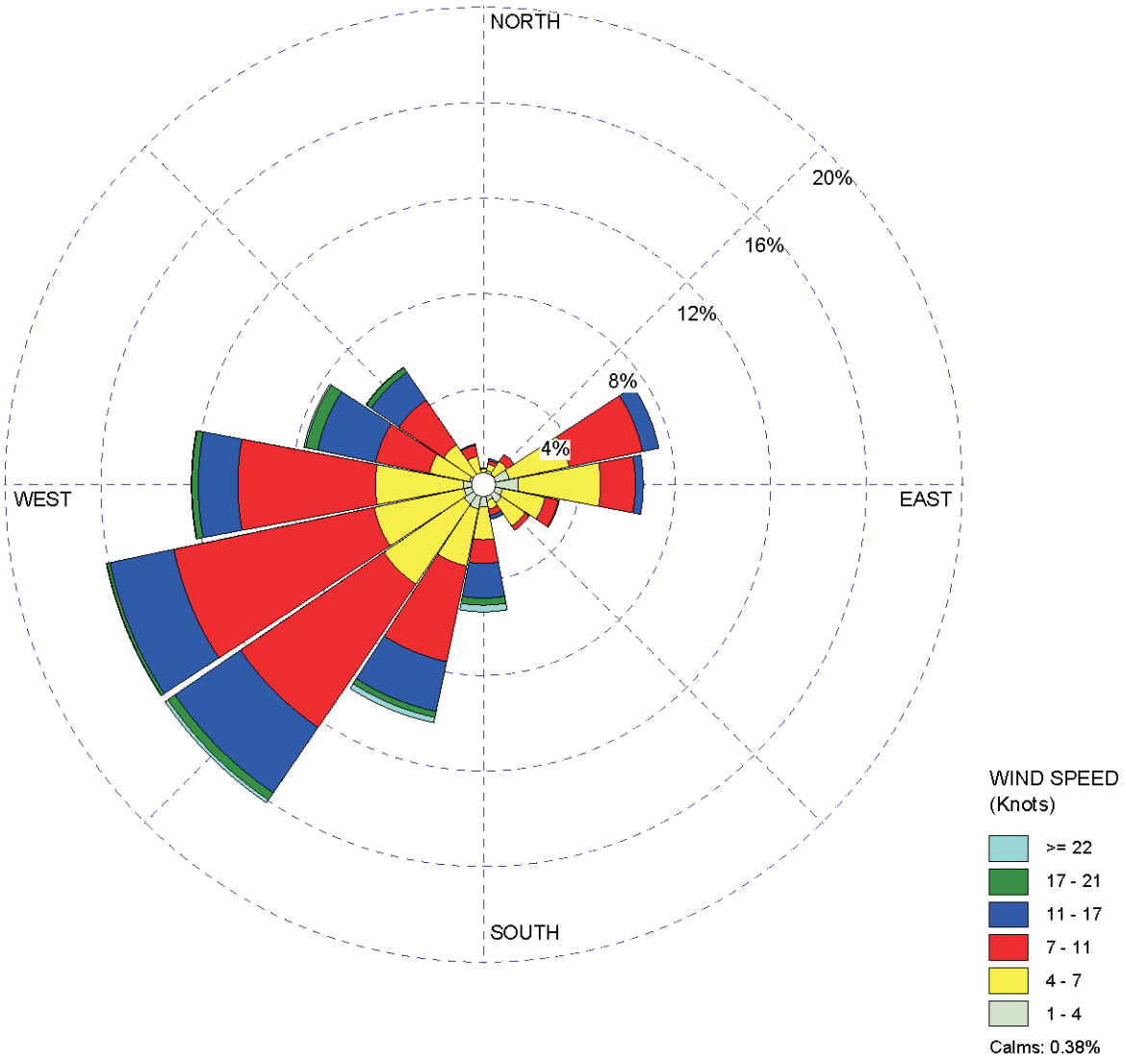
Figure 1. Emissions Sources and Receptors Within 1,000 Feet

WIND ROSE PLOT:

Figure 2. Windrose Plot

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: **2005** **Jan 1 - Dec 31** **00:00 - 23:00**	COMPANY NAME: **Tetra Tech, Inc.**	
	CALM WINDS: **0.38%**	TOTAL COUNT: **8760 hrs.**	
	AVG. WIND SPEED: **8.16 Knots**		PROJECT NO.:

Table 1. State and National Air Quality Standards

Pollutant	Averaging Time	California Standards [1] (Concentration) [3]	National Standards [2]	
			Primary [3,4]	Secondary [3,5]
Ozone (O_3)	1 Hour	0.09 ppm	-	
	8 Hour	0.07 ppm	0.08 ppm [6]	0.08 ppm
Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3		50 µg/m^3
Particulate Matter ($PM_{2.5}$)	24 Hour		35 µg/m^3	
	Annual Arithmetic Mean	12 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	8 Hour	9 ppm	9 ppm	
	1 Hour	20 ppm	35 ppm	
	8 Hour (Lake Tahoe)	6 ppm		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.03 ppm	0.053 ppm	
	1 Hour	0.18 ppm	0.1 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean		0.03 ppm	
	24 Hour	0.04 ppm	0.14 ppm	
	3 Hour			
	1 Hour	0.25 ppm		
Lead [7]	30 Day Average	1.5 µg/m^3		
	Calendar Quarter		1.5 µg/m^3	1.5 µg/m^3
Visibility Reducing Particles [8]	8 Hour	See footnote 8		
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm		
Vinyl Chloride [7]	24 Hour	0.01 ppm		

µg/m^3 – micrograms per cubic meter
ppm – parts per million

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter (PM_{10}, $PM_{2.5}$) and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

3. Concentration expressed first in units in which it was promulgated; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect public health.

5. National Secondary Standards: The levels of air quality necessary to protect public welfare from any known or anticipated adverse effects of a pollutant.

6. New National 8-hour ozone and fine particulate matter standards were promulgated by EPA on July 18, 1997.

7. The ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for implementing control measures at levels below the ambient concentrations specified for these pollutants.

8. Extinction coefficient of 0.23 per kilometer, visibility of ten miles or more (0.07 – 30 miles or more for Lake Tahoe) due to particulates when relative humidity is less than 70 percent.

Table 2. Criteria Air Pollutant Attainment Status in the Bay Area

Air Pollutants	State	National
Ozone (1-Hour)	Non-attainment	N/A
Ozone (8-Hour)	Non-attainment	Non-attainment
$PM_{2.5}$	Non-attainment	Non-attainment
PM_{10}	Non-attainment	Unclassified
NO_2	Attainment	Unclassified/Attainment
CO	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	N/A
Hydrogen Sulfide	Unclassified	N/A
Visibility Reducing Particles	Unclassified	N/A

Source: BAAQMD 2010 [Ref. 2].

N/A – not applicable

SECTION 3

THRESHOLDS OF SIGNIFICANCE

This section describes the air quality significant thresholds established by the BAAQMD. Section 4 presents the methodologies used to determine the air quality impacts associated with the proposed project and the actual air quality impacts using these methods.

For purposes of meeting national requirements, impact significance is related to conformance with the EPA-approved State Implementation Plan (SIP) and with the NAAQS. Air quality impacts would be significant if they exceed these standards or contribute to non-conformance. BAAQMD has published thresholds of significance for air quality, as shown in Table 3.

A project has a significant air quality impact if it does one of the following:

1. Generates total emissions that exceed the thresholds shown in Table 3; and/or

2. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1, or annual average $PM_{2.5}$ emissions above 0.3 $\mu g/m^3$.

A project with significant impacts must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation.

Table 3. Thresholds of Significance

Criteria Air Pollutants	Construction-Related	Operational-Related	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tons/yr)
ROG	54	54	10
NOx	54	54	10
PM_{10}	82 (exhaust only)	82	15
$PM_{2.5}$	54 (exhaust only)	54	10
CO	None	9 ppm (8-hr average), 20 ppm (1-hr average)	
SOx	None	None	None
GHGs (stationary sources)	None	10,000 MT/yr	
GHGs (non-stationary sources)	None	Compliance with Qualified GHG Reduction Strategy Or 1,100 MT of CO_2e/yr Or 4.6 MT CO_2e /yr (residents and employees)	
Health Risk (Individual Project)	Same as Operational-related Thresholds	Cancer Risk < 10 in a million, Chronic Index <1, Acute Index <1, Ambient $PM_{2.5}$ < 0.3 ug/m^3 annual average, Zone of Impact = 1,000 feet from fence line	
Health Risk (cumulative)	Same as Operational-related Thresholds	Cancer Risk < 100 in a million, Chronic Index <10, Acute Index <10, Ambient $PM_{2.5}$ < 0.8 ug/ m^3 annual average (from all local sources), Zone of Impact = 1,000 feet from fence line	

CO_2e – carbon dioxide equivalent
GHG – greenhouse gas
lbs – pounds
MT – metric ton
ROG – reactive organic gas
yr – year

SECTION 4

CRITERIA AIR POLLUTANT EMISSIONS

This section presents the methodologies used to determine the types and quantities of the criteria air pollutant emissions and their impacts associated with the proposed Sharp Park restoration project.

4.1 Methodology

4.1.1 Construction Emissions

Air quality impacts associated with the proposed project are related to emissions that would occur during construction and subsequent operation of the proposed project. The principal sources of pollutants during construction would be the earth-moving activities, construction equipment, trucks bringing materials to site, and construction crew commuting vehicles. The sources of pollutants during project operations would be limited to the vehicles and equipment used by the operations and maintenance staff.

There are many air quality modeling tools available to assess air quality impacts of the project. Construction emissions were estimated based on the air emission modeling software package, ARB's URBEMIS 2007 [Ref. 4]. The model selection is consistent with the BAAQMD CEQA guidelines. The model contains data specific for each California air basin.

Construction is typically conducted in phases. The URBEMIS 2007 model divides construction into demolition, mass site grading, fine site grading, trenching, building construction, architectural coating, and paving phases. These model settings can be modified to fit applicable features of a specific project. For this project, the following construction phases are assumed:

- Barrier Installation and Ponds Dewatering
- Excavation and Grading
- Culvert Placement and Excavation
- Revegetation
- Rifle Range Excavation

Each construction phase can generate the following: (1) fugitive dust emissions resulting from soil disturbance activity; (2) emissions of air pollutants from fuel combustion in construction equipment; and (3) emissions of air pollutants from fuel combustion in vehicles used for worker commuting and material hauling and construction debris disposal.

Construction activities consist of wetland restoration activities in the Sharp Park area, west of Highway 1. The project is located in a coastal wetland which is currently home to several endangered species. The endangered species located on-site are migratory in nature and generally not present at Sharp Park from September to October each year..

The air quality impact analyses are conducted based on the assumption that construction activities would be conducted in a single year between May 1 and October 15. A summary of the quantitative construction activity information and assumptions used for the modeling analysis is provided in Appendix A

4.1.2 Operational-Related Emissions

Planned maintenance activities during the operation phase could result in emissions. However, because proposed operations are expected to be substantially similar to current operations, negligible changes are anticipated in the operation emissions. As a result, these operation emissions are not expected to exceed the BAAQMD significance thresholds and are not quantified.

4.2 Results of Analysis

4.2.1 Project Level

Table 4 shows the URBEMIS model output summary. Criteria air pollutant emissions from construction activities were compared to the June 2010 BAAQMD CEQA significance thresholds. As shown in Table 4, construction criteria air pollutant emissions would exceed the BAAQMD threshold for NOx, and mitigation measures would be required. Appendix A provides the complete URBEMIS files, including construction assumptions, schedules, types and quantities of equipment, model input and output files.

4.2.2 Cumulative

The BAAQMD considers projects that result in a significant criteria air pollutant or ozone precursor impact to also result in a cumulatively considerable contribution to criteria air pollutants or ozone precursors.

4.3 Mitigation Measures

The project will be required to implement all feasible mitigation measures to reduce NOx emissions.

Following are the mitigation measures considered for NOx emissions reduction:

1. For any Sharp Park restoration activities between 2011 and 2015, use Tier 3 equipment with best available control technology where feasible. For programmatic projects conducted after 2015, use Tier 4 equipment or interim Tier 4 equipment equipped with best available control technology where such equipment exists.

2. Use temporary power provided by the Pacific Gas & Electric Company instead of diesel generators; where it is not possible to plug into the electric grid, use Tier 3 diesel generators and air compressors.

3. Use concrete batched from local plants to limit concrete trucks' travel time and the amount of diesel exhaust emitted.

4. Minimize idling times by either shutting equipment and vehicles off when not in use or limiting the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Provide clear signage for construction workers regarding idling rules at all access points.

5. Use on-road haul trucks model year 2007 or later.

6. Maintain and properly tune construction equipment in accordance with manufacturer's specifications. Have all equipment checked by a certified mechanic to determine that equipment is running in proper condition prior to operation.

There are commercially available post-combustion NOx emission control technologies, including selective catalytic reduction (SCR) system, selective non-catalytic reduction (SNCR) system, and NOxTECH. These technologies can reduce NOx emissions by up to 90 percent. However, they are more suitable for stationary equipment and have not been demonstrated and proven to operate effectively in mobile construction equipment. In summary, the proposed mitigation measures would reduce NOx emissions but not substantially. Using Tier 3 or similar engines would be the most effective way to reduce NOx emissions; however, it is not likely to reduce emissions below the significance threshold.

For dust control mitigation, the San Francisco Construction Dust Ordinance requires that all site preparation work, demolition, or other construction activities that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil must comply with specified dust control measures. For project sites greater than half an acre in size, the Ordinance requires that a Dust Control Plan be prepared and approved by the San Francisco Health Department. The SFRPD would be required to comply with the Ordinance and submit a Dust Control Plan for the Sharp Park restoration project and many of the programmatic projects.

In addition, BAAQMD fugitive emissions rule requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. The BAAQMD fugitive emissions rule requires implementing dust suppression techniques to prevent fugitive dust from creating an off-site nuisance. Implementing these dust suppression techniques will reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors. Applicable dust suppression techniques include the following:

1. Water active sites. Locations where grading is to occur will be watered before earth moving activities;

2. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114 (freeboard means vertical space between the top of the load and top of the trailer);

3. Traffic speeds on all unpaved roads shall be reduced to 15 miles per hour or less.

The San Francisco Dust Control Ordinance includes these dust suppression requirements.

4.4 Summary of Project's Criteria Air Pollutant Impacts

In summary, the air quality analysis concludes that the project would result in NOx emissions that exceed the significant thresholds established by the BAAQMD. During the long-term operation of the project, all criteria air pollutant emissions are expected to be similar to current emissions levels.

Because construction-related NOx emissions exceed the BAAQMD significance threshold, the project would also be considered to result in a considerable contribution to cumulative ozone precursor emissions.

Table 4. CEQA Thresholds of Significance for Construction Emissions Versus Estimated Sharp Park Construction Emissions

	Average Daily ROG, lbs/day	**Average Daily NOx, lbs/day**	**Average Daily PM_{10}, lbs/day**	**Average Daily $PM_{2.5}$, lbs/day**	**GHGs, CO_2e (MT/year)**
BAAQMD Threshold for Construction Emissions	54	54	82 (exhaust only)	54 (exhaust only)	None for construction
Sharp Park Construction Emissions	13	153	3.4 (exhaust only)	3.1(exhaust only)	1,630
Exceed Threshold?	No	YES	No	No	NA

NA = Not Applicable

SECTION 5

GREENHOUSE GAS EMISSIONS

This section presents the methodologies used to determine the types and quantities of the greenhouse gas (GHG) emissions and their impacts associated with the proposed Sharp Park restoration project.

5.1 Methodology

5.1.1 Construction Emissions

The BAAQMD does not have an adopted quantitative threshold of significance for construction-related GHG emissions. However, BAAQMD recommends that construction-related GHG emissions be quantified and that the project opponent make a determination on the significance of these construction-generated GHG emission impacts.

For this project, the sources of GHG are the fuel combustion in construction equipment, in vehicles used to haul materials and vehicles used by worker commuting to/from the site.

There are three types of GHG from fuel combustion, including carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). GHG emissions are presented as carbon dioxide equivalents (CO_2e). CO_2e is computed based on global warming equivalence. The CH_4 global warming equivalence is 21 times that of CO_2, and the N_2O global warming equivalence is 310 times that of CO_2.

Mathematically, the CO_{2e} can be represented by the following equation:

CO_{2e} Emissions = CO_2 Emissions + 21 x CH_4 Emissions + 310 x N_2O Emissions

The BAAQMD has developed a GHG emission calculation tool (BGM Model). However, this model can only be used to estimate operation-related GHG emissions. Therefore, the URBEMIS model was used to estimate the GHG emissions during the construction phase of the proposed project.

5.1.2 Operation Emissions

Planned maintenance activities during the operation phase could result in GHG emissions. However, because proposed operations are expected to be substantially similar to current operations, negligible changes are anticipated in the operation emissions. As a result, these operation GHG emissions are not expected to exceed the BAAQMD significance thresholds and are not quantified.

5.2 Results of Analysis

5.2.1 Project Level

Tetra Tech used the URBEMIS model to estimate the GHG emissions during the construction phase of the project. Based on the construction schedule, types and quantities of construction equipment, and numbers of haul trucks, etc., Tetra Tech estimated that the maximum CO_2 emissions would be 21,777 pounds per day. Table 4 shows the calculation result.

The URBEMIS model provides a CO_2 profile only and does not quantify CO_2e, CH_4 and N_2O emissions. Tetra Tech assumes that the CO_2 emissions of 21,777 pounds per day are CO_2e. Justification of the assumption is as follows: For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are:

(1) CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed,
(2) CH_4 emission factors are 0.065 pounds of CO_2e per gallon consumed, and
(3) N_2O emission factors are 0.068 pounds of CO_2e per gallon consumed.

As shown in these emission factors, the CO_2 profile is 99 percent of the total GHG generated in combustion equipment. Therefore, Tetra Tech assumes that the CO_2 emissions of 21,777 lbs per day represent the CO_2e levels.

The current BAAQMD CEQA guidelines have no quantitative GHG emissions significance threshold for construction. This GHG quantification is presented for information purpose only. The Sharp Park wetland restoration project has average CO_2e emissions of 21,777 lbs per day, which are converted to 3,593,205 pounds based on 5.5 months per one year of construction activities. This annual emission profile converts to 1,630 MT.

5.2.2 Cumulative

The impacts of climate change are the cumulative result of GHG emissions and therefore a project-level analysis of GHG emissions is also considered an analysis of a project's contribution to cumulative effects of GHGs.

BAAQMD's approach is to identify the GHG emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions. If a project would generate GHG emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact. Based on this approach, the GHG emissions of the proposed project during the operation phase would not make a considerable contribution to cumulative GHG impacts.

5.3 Mitigation Measures

The estimated project-level GHG emissions from operation would not have a significant impact; as result, no mitigation is required.

5.4 Summary of Project's GHG Impacts

In summary, the air quality analysis concludes that during the long-term operation of the project, all GHG emissions are expected to be similar to current emissions levels. There are no GHG emissions thresholds established by the BAAQMD for construction activities.

SECTION 6

HEALTH RISK ANALYSIS

This section presents the methodologies used to determine the health risks and the impacts associated with the proposed project.

6.1 Methodology

6.1.1 Construction

6.1.1.1 Project-Level

During construction, toxic emissions are generated mainly from fuel combustion in the construction equipment. In order to determine the health impacts of these toxic emissions, a health risk assessment (HRA) was performed.

A HRA is an estimate of the probability that adverse health effects could occur due to exposure to toxic pollutants. A facility's air emissions, stack information, operation schedule, local weather conditions, chemical dose-response data, etc. are fed into a computer model to produce an estimate of the health risks to nearby people (receptors). HRA is performed in 3 steps: hazard identification, exposure assessment, and risk characterization.

Hazard Identification

Hazard identification refers to the identification of substances as carcinogens, reproductive toxins, chronic toxins, or acute toxins, or to the identification of a type of exposure as hazardous. Regulated hazardous substances are listed in BAAQMD's toxic rule and ARB's regulated toxic lists. The toxic air contaminants (TACs) used in the HRA include $PM_{2.5}$, diesel particulate matter (DPM) and acrolein. DPM and acrolein are byproducts of diesel fuel combustion. Sources of $PM_{2.5}$ include activities such as earthmoving. There are other TACs from diesel combustion besides DPM and acrolein, but they are less potent and thus are not included in the HRA.

Exposure Assessment

Exposure assessment is the identification and quantification of all routes of human exposure to substances of concern. The Industrial Source Code Short Term Version 3 (ISCST3) model issued by EPA was used for estimation of offsite concentrations of TACs. Based on land use surrounding the proposed project and EPA guidelines, an urban profile was assumed. Meteorology data from the BAAQMD's Fort Funston Station were used. The model selection is consistent with the BAAQMD CEQA guidelines. The following inputs were used for the ISCST3 model.

1. Emission Source Models

Construction activities were modeled as area sources placed over the area of wetland restoration activities. The project is expected to require soil export activities using haul trucks which have the potential to emit toxic air contaminants (TACs). Haul trucks travelling to and from the site were modeled as an area source extending ¼ mile from the project site. Pollutants modeled include $PM_{2.5}$, DPM, and acrolein which are emitted from heavy construction equipment and haul trucks.

2. Site Elevation

Elevation data and aerial photography was obtained from the United States Geological Survey (USGS) Seamless Data Warehouse [Ref. 5].

3. Receptor Models

Modeled sensitive receptor locations included residents located to the north and south of the project site. The project site is currently surrounded by a golf course which is expected to be operational during construction activities. Therefore, sensitive receptor locations were placed in the golf course to account for people who may be present during construction activities. Receptor locations were placed at 50-meter intervals. Construction emission sources and receptors included in the model are presented in Figure 3. To estimate a worst-case health impact, the nearest sensitive receptor was assumed to be a residential child at the project fence line.

Risk Characterization

Risk characterization is the final step of the HRA. It quantifies the human health risk based on the exposure assessment and dose-response relationships (cancer potency factors and reference exposure levels). In this assessment, three types of human health effects were considered: 1) cancer, 2) chronic effects, and 3) acute effects. Health risks including cancer, chronic, and acute risks are calculated based on the Office of Environmental Health and Hazard Assessment (OEHHA) guidelines. In order to present the worst-case scenario, the BAAQMD recommends that cancer risk be weighted by a factor of 10 for exposure that occurs to an individual from the third trimester of pregnancy to two years of age. Health risk (cancer, chronic, and acute) was calculated using the ARB Hot Spots Analysis Reporting Program (HARP) which is based on OEHHA risk factors [Ref. 6]. Annual $PM_{2.5}$ emissions from construction activities were also modeled to determine impacts on sensitive receptors.

Following is a summary of the OEHHA method to determine the cancer, chronic and acute health risk:

Cancer Risk

The cancer risks were calculated as the individual excess lifetime cancer risk (i.e., the probability that an individual may develop cancer from a lifetime exposure to the chemicals of concern).

There are different pathways that a toxicant can enter a human body. Gaseous toxicants can enter a human body through the inhalation pathway. Gaseous toxicants can also be deposited on soil, surface water, or plants, which can then enter a human body through ingestion and dermal pathways. Semi-volatile and metal toxicants can enter the body through inhalation, ingestion and dermal pathways.

For inhalation pathway, the cancer risk is computed using the following equation:

$$CRinh = (GLC \times CP \times CRAF \times BR \times EF \times ED \times 10^{-6}) / AT \quad \text{Eq. 1}$$

Where:

CRinh = Cancer Risk through inhalation
GLC = Annual Average Ground-level concentration (from air dispersion model)
CP = Cancer Potency factor
BR = Daily Breathing Rate
EF = Exposure frequency
ED = Exposure Duration
AT = Average Time Period
CRAF = Cancer risk adjustment factors:
1.7 for resident receptors exposure
1.0 for offsite worker exposure

OEHHA revised the HRA guideline in May 2009, which included procedures to consider the increased susceptibility of infants and children to carcinogens compared to adults. The revised procedures require incorporation of age sensitivity factors (ASFs) in the calculation of cancer risk for infants, children and adolescents. The ASFs results in weighting cancer risk by a factor of 10 for exposure that occurs from the third trimester of pregnancy to 2 years of age and a factor of 3 for exposure that occurs from 2 years through 15 years of age.

For the proposed project, the risks due to exposure of DPM thru the non-inhalation pathways are not considered. This is consisted with the BAAQMD guidelines [Ref. 7].

Chronic Risk

The potential for long-term chronic health effects is quantified by comparing the predicted level of exposure to a reference exposure level (REL). This ratio of predicted exposure to reference exposure is referred to as a chronic hazard index (HIc). HIc is calculated by summing the ratios of each toxic substance over its REL. The equation for estimating HIc is as follows:

$$HIc = \sum Ci / \text{chronic RELi}$$

Where:

Ci = Ground-level concentration of substance i (annual average concentration)
RELi = Chronic Reference Exposure Level for substance i.

Acute Risk

In the same manner as the quantification of chronic health effects, the potential for short-term acute health effects was quantified using a hazard index. The acute hazard index (HIa) is calculated by dividing the maximum estimated hourly concentration of each toxic air pollutant by its reference short-term exposure levels. The equation for estimating HIa is as follows:

$$HIa = \sum Ci / \text{Acute RELi}$$

Where:

Ci = Maximum hourly ground-level concentration of substance i
RELi = Acute Reference Exposure Level for substance i.

Table 5 provides the HRA input parameters.

6.1.1.2 Cumulative

Cumulative health risk was determined by obtaining risk values from nearby sources of toxics from the BAAQMD website. Within 1,000 feet of the project area, there is only one source, which is a gas station owned and operated by the SFRPD for refueling of golf carts. Tetra Tech contacted the BAAQMD for the health risks from this facility. The BAAQMD determined that the risk from the SFRPD gas station is insignificant.

The project is located within 1,000 feet of a Highway 1, which is a major roadway. Vehicles on Highway 1 emit TACs and $PM_{2.5}$. Health risk impacts from these nearby traffic flows on Highway 1 were determined using BAAQMD roadway screening models.

Relative to the project site at Sharp Park in San Mateo County, Highway 1 runs north and south and is approximately 400 feet from the project site. Based on this location, the BAAQMD screening model was used to determine risks and $PM_{2.5}$ emissions from Highway 1 [Ref. 8, 9]. The risk values and $PM_{2.5}$ emissions profiles were added to project-level risks to determine the cumulative risks for the project.

6.1.2 Operational

6.1.2.1 Project-Level

During operation, planned activities would result in operational emissions. However, because proposed operations are expected to be substantially similar to current operations, negligible changes are anticipated in the operation emissions. As a result, health risks from these operation emissions are not quantified.

6.1.2.2 Cumulative

Planned activities would result in operational emissions. However, because proposed operations are expected to be substantially similar to current operations, negligible changes are anticipated in the operation emissions. As a result, health risks from these operation emissions are not quantified.

6.2 Results of Analysis

6.2.1 Project Level

Table 6 summarizes the HRA results. The construction emissions would result in a less than significant impact with regard to TACs and health risk. Cancer risk and $PM_{2.5}$ concentrations are presented in Figures 4 and 5 respectively. Figure 4 identifies the locations of the highest cancer risk, chronic risk and acute risk. Figure 5 shows the location of the highest $PM_{2.5}$ concentrations. Appendix B provides the dispersion and risk model files. The output file data is provided electronically on CD.

6.2.2. Cumulative

As shown in Table 6, the cumulative emissions would result in a less than significant impact related to TACs and health risk.

6.3 Mitigation Measures

The estimated health risk is below the BAAQMD thresholds; therefore, no mitigation is required.

6.4 Summary of Project's Health Risk Impacts

In summary, the HRA concludes that toxic emissions during short-term construction do not exceed the significance thresholds established by the BAAQMD. During the long-term operation of the project, all emissions and health risks are expected to be remained at current levels.

Table 5. HRA Model Input Parameters

Input Parameters – ISCST3 MODEL		
Diesel Particulate Matter Run (Cancer and Chronic Risk)	**On-site Construction**	**Haul Route**
DPM Emission Sources Modeled as Area Source, m^2	153,994	22,052
Hours of Emissions, hrs/day	8	8
Emission Rate, g/s	3	3
Emission Rate, g/s-m^2	1.95E-05	1.36E-04
Diesel Particulate Matter Run (Acute Risk)		
Emission Sources Modeled as Area Source, m^2	153,994	22,052
Hours of Emissions, hrs/day	8	8
Emission Rate, g/s	1	1
Emission Rate, g/s-m^2	6.49E-06	4.53E-05
$PM_{2.5}$ Run		
Emission Sources Modeled as Area Source, m^2	153,994	22,052
Hours of Emissions, hrs/day	8	8
Seconds per day	28800	28800
Emission Rate, lbs/day	0.5	
Emission Rate, g/s	0.00845	8.41E-05
Emission Rage, g/s-m^2	5.49E-08	3.82E-09

Input Parameters - HARP MODEL		
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	1.10E+00	
Breathing Rate, (L/kg-day)	302	
Exposure Frequency (day/years)	365	
Exposure Duration (years)	1	
Average Time Period (days)	25,550	
Cancer Risk Adjustment Factor Resident	1.7	
Cancer Risk Adjustment Factor worker	1	
Age Sensitive Factors		
Third Trimester of pregnancy to 2 years of age	10	
2 years through 15 years of age	3	
Acrolein Acute Inhalation REL, $\mu g/m^3$	2.5	Eyes; Respiratory System
Acrolein Chronic Inhalation REL, $\mu g/m^3$	0.35	Eyes; Respiratory System

DPM Acute Inhalation REL, $\mu g/m^3$	0	N/A
DPM Chronic Inhalation REL, $\mu g/m^3$	5.0	Respiratory System

Annual Emissions (lbs/year)

	On-site Construction	**Haul Truck**
PM_{10} (DPM)	51.59	2.044
$PM_{2.5}$	47.46	1.881
Acrolein	0.67	0.027

Hourly Emissions (lbs/hr)

	On-site Construction	**Haul Truck**
PM_{10} (DPM)	0.07	5.81E-03
$PM_{2.5}$	0.07	5.34E-03
Acrolein	9.5E-04	7.56E-05

g/s – grams per second
g/s-m^2 – grams per second per square meters
hrs/day – hours per day
L/kg-day – liters per kilograms per day
m^2 – square meters
mg/kg-day – milligrams per kilograms per day
$\mu g/m^3$ – micrograms per cubic meters
N/A – not applicable

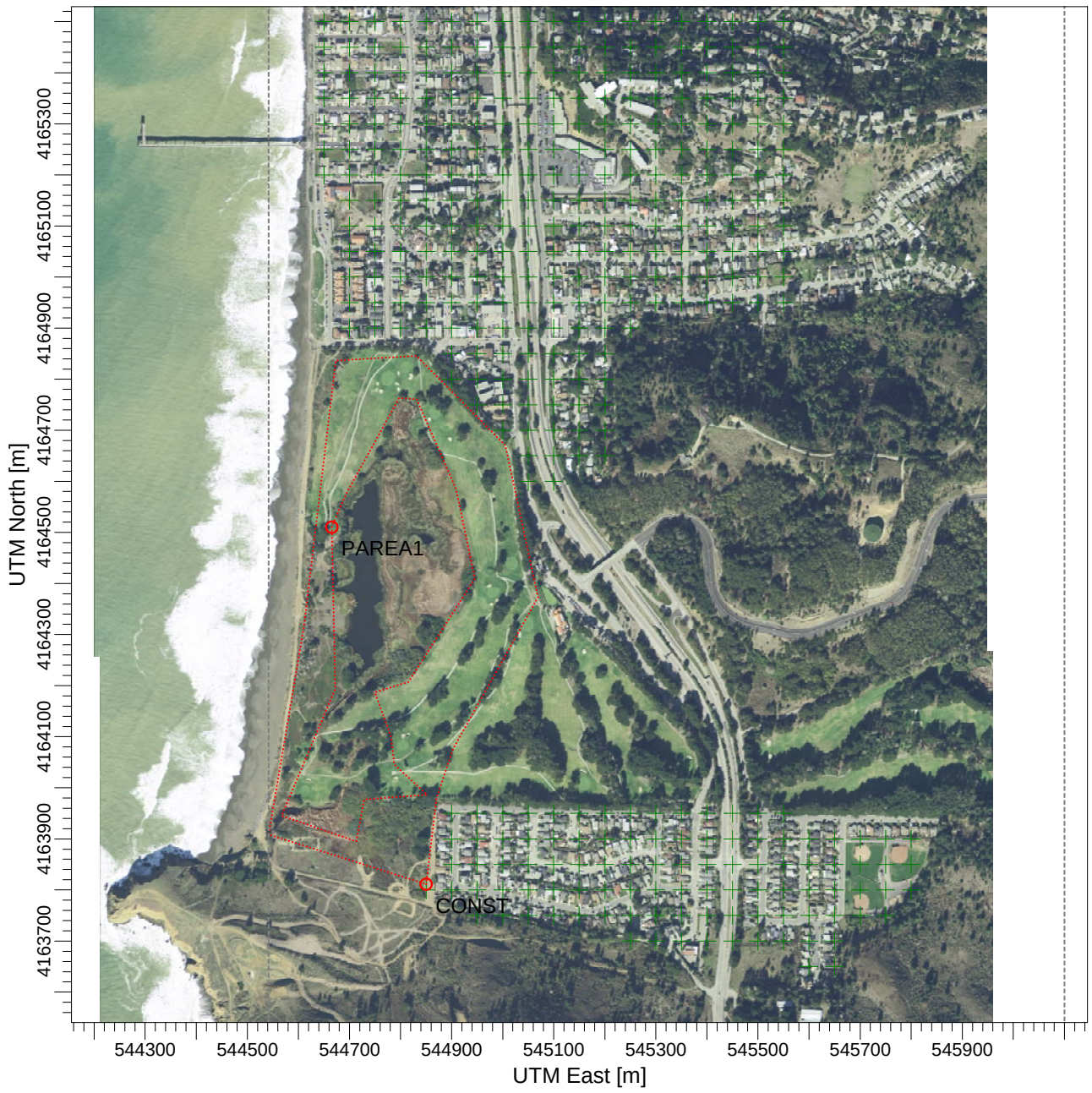
Table 6. CEQA Thresholds of Significance for Construction Emissions and Health Risks

	Health Risk (Individual Project)	**Health Risk (Cumulative)**
BAAQMD Threshold for Construction Emissions	Cancer Risk < 10 in a million, Chronic Index <1, Acute Index <1, Ambient $PM_{2.5}$ < 0.3 ug/m^3 annual average, Zone of Impact = 1,000 feet from fence line	Cancer Risk < 100 in a million, Chronic Index <10, Acute Index (no threshold)Ambient $PM_{2.5}$ < 0.8 ug/m^3 annual average (from all local sources), Zone of Impact = 1,000 feet from fence line
Sharp Park Construction Emissions	Cancer Risk = 0.62 in a million, Chronic Risk = 0.00248, Acute Risk = 0.0088 $PM_{2.5}$ = 0.04 ug/m^3	Cancer Risk = 2.22 in a million, Chronic Risk = 0.0045, $PM_{2.5}$ = 0.061 ug/m^3 (Note 1)
Exceed Thresholds?	**No**	**No**

Note 1:

- Cumulative risks and $PM_{2.5}$ emission include contributions from Highway 1:
  Cancer risk = 1.6 in a million
  Chronic risk = 0.002
  $PM_{2.5}$ = 0.021 µg/m^3
- Risks and $PM_{2.5}$ emissions for the SFRPD's gas station are insignificant based on information provided by BAAQMD (Ref. 10)

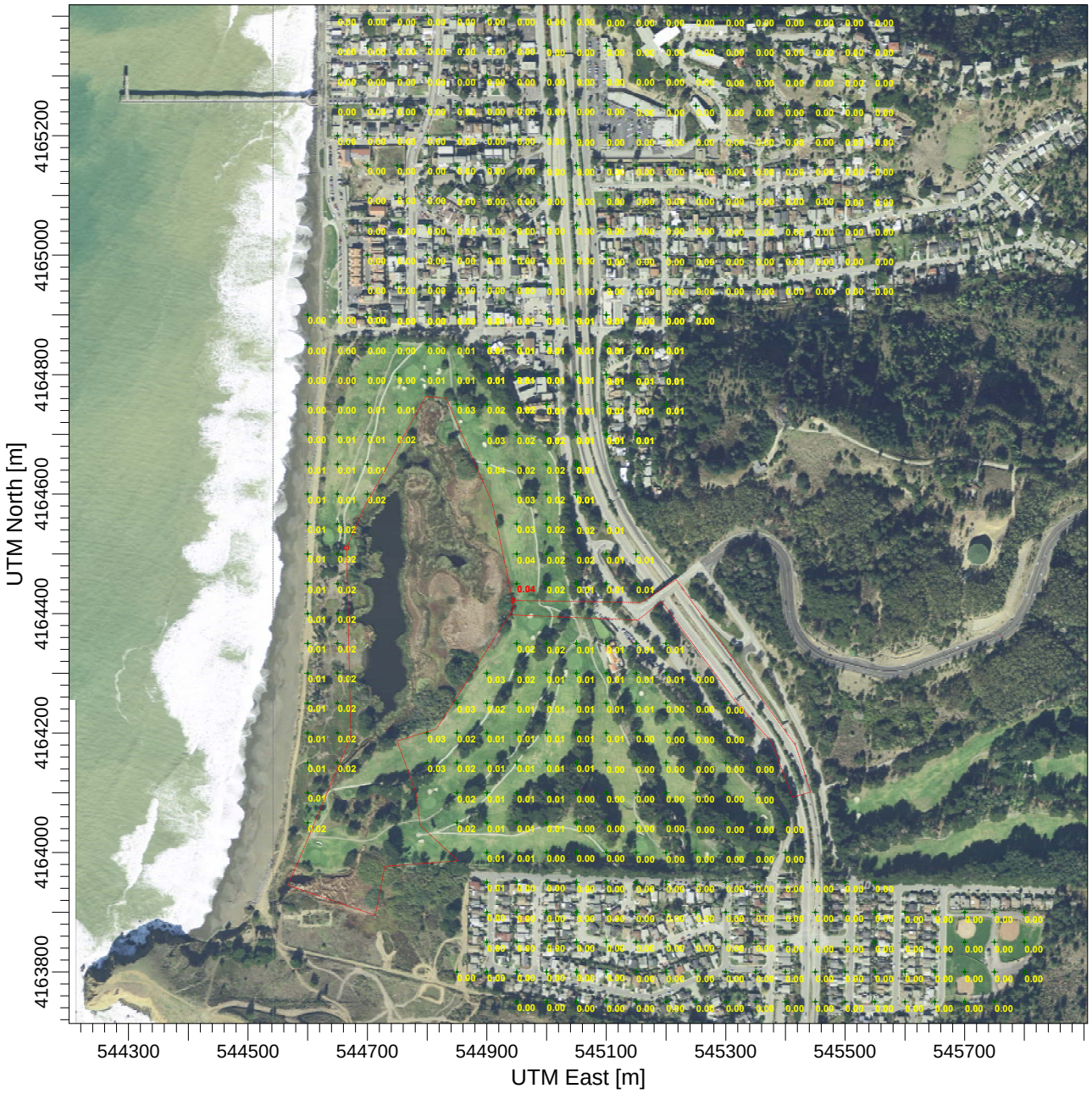
Figure 3. Modeled Emissions Sources and Receptors



COMMENTS:	SOURCES: **2**	COMPANY NAME:	
	RECEPTORS: **483**	MODELER:	
		SCALE: 1:12,506 0 0.4 km	
		DATE: **1/20/2011**	PROJECT NO.:

Figure 4. Health Risk Summary

Figure 5. PM2.5 Emission Profile



COMMENTS: Construction PM2.5 Annual	SOURCES: **2**	COMPANY NAME:	
	RECEPTORS: **668**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,720 0 0.4 km	
	MAX: **0.03922 ug/m^3**	DATE: **8/28/2011**	PROJECT NO.:

SECTION 7

CONCLUSIONS

This air quality analysis for the proposed Sharp Park wetland restoration project has the following conclusions.

7.1 Construction - Short-Term Impacts

During the construction phase, the short-term NOx emissions would exceed BAAQMD significant thresholds. Mitigation measures are proposed that can reduce such impacts.

All other short-term criteria air pollutant emissions would not exceed BAAQMD significant threshold.

The HRA concluded that toxic emissions during short-term construction do not exceed the significant health risk thresholds established by the BAAQMD.

7.2 Operation - Long-Term Impacts

During operation, planned maintenance activities would remain similar to current levels at the Park.

SECTION 8

REFERENCES

1. BAAQMD CEQA Guidelines, June 2010, http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx

2. Federal and State Air Quality Standards, http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm

3. Bay Area Air Pollution Summary, 2009, http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx

4. ARB's Urban Emission Model, 2007, http://www.urbemis.com

5. Elevation Data, http://seamless.usgs.gov/ (Accessed January 2011)

6. California Air Resources Board - HotSpots Analysis and Reporting Program http://www.arb.ca.gov/toxics/harp/harp.htm

7. BAAQMD Air Toxic Analysis Guideline, "Recommended Methods for Screening and Modeling Local Risks and Hazards", May 2010, Page 79.

8. BAAQMD Air Toxic Analysis Guideline, "Recommended Methods for Screening and Modeling Local Risks and Hazards", May 2010, Section 3.1.2, Page 18.

9. BAAQMD Highway Screening Analysis Tool, "San Mateo County – 6ft Elevation"

10. Email from Ms. Andrea Gordon of BAAQMD on June 16,2011

APPENDIX A

URBEMIS MODEL RUNS

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
400	GRID	545550	4162650	6.74E-05	1.46E-06	9.80916E-09	1.40131E-10	1.40131E-09
402	GRID	545450	4162750	6.97E-05	1.62E-06	1.01499E-08	1.44999E-10	1.44999E-09
406	GRID	545400	4162800	7.12E-05	1.88E-06	1.04081E-08	1.48688E-10	1.48688E-09
401	GRID	545550	4162700	7.23E-05	1.53E-06	1.05164E-08	1.50234E-10	1.50234E-09
403	GRID	545500	4162750	7.37E-05	1.58E-06	1.0714E-08	1.53058E-10	1.53058E-09
407	GRID	545450	4162800	7.55E-05	1.70E-06	1.09851E-08	1.56931E-10	1.56931E-09
412	GRID	545400	4162850	7.72E-05	1.98E-06	1.12776E-08	1.61108E-10	1.61108E-09
404	GRID	545550	4162750	7.75E-05	1.61E-06	1.12578E-08	1.60826E-10	1.60826E-09
408	GRID	545500	4162800	7.95E-05	1.66E-06	1.15493E-08	1.6499E-10	1.6499E-09
405	GRID	545600	4162750	8.10E-05	1.69E-06	1.17761E-08	1.6823E-10	1.6823E-09
413	GRID	545450	4162850	8.15E-05	1.80E-06	1.18546E-08	1.69351E-10	1.69351E-09
409	GRID	545550	4162800	8.32E-05	1.70E-06	1.20943E-08	1.72775E-10	1.72775E-09
418	GRID	545400	4162900	8.39E-05	2.09E-06	1.22446E-08	1.74923E-10	1.74923E-09
414	GRID	545500	4162850	8.57E-05	1.75E-06	1.24504E-08	1.77863E-10	1.77863E-09
410	GRID	545600	4162800	8.66E-05	1.80E-06	1.25834E-08	1.79763E-10	1.79763E-09
424	GRID	545350	4162950	8.66E-05	2.59E-06	1.26964E-08	1.81378E-10	1.81378E-09
419	GRID	545450	4162900	8.84E-05	1.90E-06	1.28508E-08	1.83582E-10	1.83582E-09
411	GRID	545650	4162800	8.93E-05	1.90E-06	1.29788E-08	1.85411E-10	1.85411E-09
415	GRID	545550	4162850	8.93E-05	1.81E-06	1.2965E-08	1.85214E-10	1.85214E-09
431	GRID	545300	4163000	8.95E-05	3.29E-06	1.32076E-08	1.8868E-10	1.8868E-09
425	GRID	545400	4162950	9.13E-05	2.21E-06	1.33079E-08	1.90113E-10	1.90113E-09
420	GRID	545500	4162900	9.24E-05	1.86E-06	1.34162E-08	1.91659E-10	1.91659E-09
416	GRID	545600	4162850	9.24E-05	1.91E-06	1.34237E-08	1.91767E-10	1.91767E-09
432	GRID	545350	4163000	9.46E-05	2.77E-06	1.38624E-08	1.98034E-10	1.98034E-09
417	GRID	545650	4162850	9.50E-05	2.03E-06	1.38203E-08	1.97433E-10	1.97433E-09
426	GRID	545450	4162950	9.57E-05	2.01E-06	1.39129E-08	1.98755E-10	1.98755E-09
421	GRID	545550	4162900	9.59E-05	1.93E-06	1.39332E-08	1.99046E-10	1.99046E-09
422	GRID	545600	4162900	9.88E-05	2.05E-06	1.43615E-08	2.05165E-10	2.05165E-09
427	GRID	545500	4162950	9.95E-05	1.98E-06	1.44466E-08	2.06379E-10	2.06379E-09
433	GRID	545400	4163000	9.93E-05	2.35E-06	1.44689E-08	2.06698E-10	2.06698E-09
423	GRID	545650	4162900	1.01E-04	2.18E-06	1.4729E-08	2.10414E-10	2.10414E-09
428	GRID	545550	4162950	1.03E-04	2.06E-06	1.49661E-08	2.13802E-10	2.13802E-09
434	GRID	545450	4163000	1.04E-04	2.13E-06	1.50713E-08	2.15304E-10	2.15304E-09
445	GRID	545350	4163050	1.04E-04	2.96E-06	1.51576E-08	2.16537E-10	2.16537E-09
429	GRID	545600	4162950	1.06E-04	2.20E-06	1.53969E-08	2.19956E-10	2.19956E-09
435	GRID	545500	4163000	1.08E-04	2.11E-06	1.56062E-08	2.22946E-10	2.22946E-09
430	GRID	545650	4162950	1.08E-04	2.34E-06	1.57022E-08	2.24318E-10	2.24318E-09
446	GRID	545400	4163050	1.08E-04	2.51E-06	1.57907E-08	2.25582E-10	2.25582E-09
436	GRID	545550	4163000	1.11E-04	2.21E-06	1.60966E-08	2.29952E-10	2.29952E-09
447	GRID	545450	4163050	1.13E-04	2.28E-06	1.63602E-08	2.33717E-10	2.33717E-09
437	GRID	545600	4163000	1.14E-04	2.37E-06	1.64995E-08	2.35707E-10	2.35707E-09
458	GRID	545350	4163100	1.14E-04	3.19E-06	1.66163E-08	2.37375E-10	2.37375E-09
438	GRID	545650	4163000	1.15E-04	2.52E-06	1.67744E-08	2.39634E-10	2.39634E-09
448	GRID	545500	4163050	1.16E-04	2.27E-06	1.68964E-08	2.41377E-10	2.41377E-09
439	GRID	545700	4163000	1.17E-04	2.68E-06	1.69871E-08	2.42673E-10	2.42673E-09
444	GRID	545950	4163000	1.16E-04	4.14E-06	1.71005E-08	2.44292E-10	2.44292E-09
443	GRID	545900	4163000	1.16E-04	3.79E-06	1.71136E-08	2.4448E-10	2.4448E-09
440	GRID	545750	4163000	1.17E-04	2.86E-06	1.70756E-08	2.43937E-10	2.43937E-09
442	GRID	545850	4163000	1.17E-04	3.43E-06	1.71255E-08	2.4465E-10	2.4465E-09
441	GRID	545800	4163000	1.17E-04	3.11E-06	1.7112E-08	2.44457E-10	2.44457E-09
459	GRID	545400	4163100	1.18E-04	2.70E-06	1.72114E-08	2.45878E-10	2.45878E-09
449	GRID	545550	4163050	1.20E-04	2.39E-06	1.73576E-08	2.47966E-10	2.47966E-09
450	GRID	545600	4163050	1.22E-04	2.57E-06	1.77313E-08	2.53305E-10	2.53305E-09
460	GRID	545450	4163100	1.23E-04	2.45E-06	1.78101E-08	2.5443E-10	2.5443E-09
451	GRID	545650	4163050	1.24E-04	2.74E-06	1.79783E-08	2.56833E-10	2.56833E-09
457	GRID	545950	4163050	1.23E-04	4.56E-06	1.81419E-08	2.59169E-10	2.59169E-09
456	GRID	545900	4163050	1.23E-04	4.22E-06	1.81563E-08	2.59375E-10	2.59375E-09
455	GRID	545850	4163050	1.24E-04	3.82E-06	1.81631E-08	2.59474E-10	2.59474E-09
452	GRID	545700	4163050	1.24E-04	2.92E-06	1.80985E-08	2.58549E-10	2.58549E-09
453	GRID	545750	4163050	1.24E-04	3.14E-06	1.81615E-08	2.59451E-10	2.59451E-09
454	GRID	545800	4163050	1.24E-04	3.45E-06	1.81738E-08	2.59626E-10	2.59626E-09
470	GRID	545350	4163150	1.25E-04	3.44E-06	1.82676E-08	2.60966E-10	2.60966E-09
461	GRID	545500	4163100	1.26E-04	2.44E-06	1.83159E-08	2.61655E-10	2.61655E-09
462	GRID	545550	4163100	1.29E-04	2.60E-06	1.87821E-08	2.68316E-10	2.68316E-09
471	GRID	545400	4163150	1.30E-04	2.90E-06	1.88565E-08	2.69379E-10	2.69379E-09
463	GRID	545600	4163100	1.31E-04	2.80E-06	1.9095E-08	2.72785E-10	2.72785E-09
469	GRID	545900	4163100	1.31E-04	4.68E-06	1.9332E-08	2.76171E-10	2.76171E-09
468	GRID	545850	4163100	1.32E-04	4.26E-06	1.93668E-08	2.76668E-10	2.76668E-09
464	GRID	545650	4163100	1.32E-04	2.99E-06	1.9281E-08	2.75443E-10	2.75443E-09
467	GRID	545800	4163100	1.32E-04	3.84E-06	1.94016E-08	2.77165E-10	2.77165E-09
465	GRID	545700	4163100	1.33E-04	3.20E-06	1.93745E-08	2.76779E-10	2.76779E-09
466	GRID	545750	4163100	1.33E-04	3.47E-06	1.94135E-08	2.77335E-10	2.77335E-09
472	GRID	545450	4163150	1.34E-04	2.64E-06	1.94209E-08	2.77442E-10	2.77442E-09
473	GRID	545500	4163150	1.37E-04	2.65E-06	1.99305E-08	2.84721E-10	2.84721E-09

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
474	GRID	545550	4163150	1.40E-04	2.84E-06	2.03371E-08	2.9053E-10	2.9053E-09
475	GRID	545600	4163150	1.42E-04	3.06E-06	2.0622E-08	2.94601E-10	2.94601E-09
478	GRID	545750	4163150	1.42E-04	3.87E-06	2.07692E-08	2.96703E-10	2.96703E-09
476	GRID	545650	4163150	1.42E-04	3.29E-06	2.07498E-08	2.96425E-10	2.96425E-09
477	GRID	545700	4163150	1.42E-04	3.54E-06	2.07849E-08	2.96927E-10	2.96927E-09
381	GRID	544650	4165600	2.85E-04	4.46E-06	4.11982E-08	5.88545E-10	5.88545E-09
362	GRID	544650	4165550	3.03E-04	4.53E-06	4.37434E-08	6.24906E-10	6.24906E-09
382	GRID	544700	4165600	3.18E-04	5.04E-06	4.60345E-08	6.57636E-10	6.57636E-09
343	GRID	544650	4165500	3.23E-04	4.63E-06	4.66093E-08	6.65847E-10	6.65847E-09
363	GRID	544700	4165550	3.41E-04	5.11E-06	4.92123E-08	7.03032E-10	7.03032E-09
324	GRID	544650	4165450	3.45E-04	4.78E-06	4.97996E-08	7.11423E-10	7.11423E-09
383	GRID	544750	4165600	3.56E-04	5.70E-06	5.15147E-08	7.35924E-10	7.35924E-09
344	GRID	544700	4165500	3.65E-04	5.19E-06	5.27094E-08	7.52992E-10	7.52992E-09
305	GRID	544650	4165400	3.72E-04	4.97E-06	5.363E-08	7.66143E-10	7.66143E-09
2	GRID	545650	4163650	3.69E-04	1.42E-05	5.46264E-08	7.80377E-10	7.80377E-09
364	GRID	544750	4165550	3.81E-04	5.81E-06	5.50169E-08	7.85955E-10	7.85955E-09
1	GRID	545600	4163650	3.81E-04	1.23E-05	5.59472E-08	7.99246E-10	7.99246E-09
384	GRID	544800	4165600	3.92E-04	6.38E-06	5.66817E-08	8.09739E-10	8.09739E-09
325	GRID	544700	4165450	3.94E-04	5.29E-06	5.68442E-08	8.12059E-10	8.12059E-09
286	GRID	544650	4165350	4.01E-04	5.24E-06	5.77873E-08	8.25533E-10	8.25533E-09
345	GRID	544750	4165500	4.12E-04	5.92E-06	5.94685E-08	8.4955E-10	8.4955E-09
11	GRID	545650	4163700	4.12E-04	1.75E-05	6.1112E-08	8.73029E-10	8.73029E-09
365	GRID	544800	4165550	4.23E-04	6.57E-06	6.11459E-08	8.73513E-10	8.73513E-09
306	GRID	544700	4165400	4.25E-04	5.45E-06	6.13033E-08	8.75762E-10	8.75762E-09
385	GRID	544850	4165600	4.27E-04	6.99E-06	6.18399E-08	8.83428E-10	8.83428E-09
10	GRID	545600	4163700	4.25E-04	1.54E-05	6.27246E-08	8.96066E-10	8.96066E-09
28	GRID	545750	4163750	4.25E-04	2.03E-05	6.34152E-08	9.05931E-10	9.05931E-09
267	GRID	544650	4165300	4.34E-04	5.58E-06	6.25897E-08	8.94139E-10	8.94139E-09
9	GRID	545550	4163700	4.43E-04	1.31E-05	6.49208E-08	9.2744E-10	9.2744E-09
27	GRID	545700	4163750	4.41E-04	2.11E-05	6.57464E-08	9.39235E-10	9.39235E-09
326	GRID	544750	4165450	4.45E-04	6.02E-06	6.4237E-08	9.17672E-10	9.17672E-09
48	GRID	545800	4163800	4.52E-04	2.39E-05	6.77327E-08	9.6761E-10	9.6761E-09
346	GRID	544800	4165500	4.59E-04	6.76E-06	6.62426E-08	9.46323E-10	9.46323E-09
386	GRID	544900	4165600	4.59E-04	7.58E-06	6.63606E-08	9.48009E-10	9.48009E-09
8	GRID	545500	4163700	4.59E-04	1.14E-05	6.69005E-08	9.55722E-10	9.55722E-09
287	GRID	544700	4165350	4.61E-04	5.66E-06	6.64038E-08	9.48626E-10	9.48626E-09
26	GRID	545650	4163750	4.59E-04	2.13E-05	6.83193E-08	9.7599E-10	9.7599E-09
366	GRID	544850	4165550	4.63E-04	7.30E-06	6.69542E-08	9.56489E-10	9.56489E-09
248	GRID	544650	4165250	4.72E-04	6.03E-06	6.8041E-08	9.72015E-10	9.72015E-09
47	GRID	545750	4163800	4.70E-04	2.43E-05	7.03181E-08	1.00454E-09	1.00454E-08
7	GRID	545450	4163700	4.76E-04	1.04E-05	6.92976E-08	9.89965E-10	9.89965E-09
25	GRID	545600	4163750	4.76E-04	1.98E-05	7.06285E-08	1.00898E-09	1.00898E-08
307	GRID	544750	4165400	4.85E-04	6.16E-06	6.996E-08	9.99429E-10	9.99429E-09
387	GRID	544950	4165600	4.87E-04	8.22E-06	7.05707E-08	1.00815E-09	1.00815E-08
46	GRID	545700	4163800	4.90E-04	2.50E-05	7.32832E-08	1.0469E-09	1.0469E-08
6	GRID	545400	4163700	4.94E-04	1.15E-05	7.19834E-08	1.02833E-09	1.02833E-08
327	GRID	544800	4165450	4.99E-04	6.93E-06	7.19719E-08	1.02817E-09	1.02817E-08
367	GRID	544900	4165550	4.99E-04	7.98E-06	7.21213E-08	1.0303E-09	1.0303E-08
24	GRID	545550	4163750	4.96E-04	1.66E-05	7.30285E-08	1.04326E-09	1.04326E-08
268	GRID	544700	4165300	5.03E-04	5.95E-06	7.24663E-08	1.03523E-09	1.03523E-08
67	GRID	545800	4163850	4.96E-04	2.97E-05	7.48993E-08	1.06999E-09	1.06999E-08
347	GRID	544850	4165500	5.03E-04	7.60E-06	7.27011E-08	1.03859E-09	1.03859E-08
5	GRID	545350	4163700	5.12E-04	1.35E-05	7.48074E-08	1.06868E-09	1.06868E-08
45	GRID	545650	4163800	5.10E-04	2.60E-05	7.62734E-08	1.08962E-09	1.08962E-08
229	GRID	544650	4165200	5.16E-04	6.60E-06	7.44593E-08	1.0637E-09	1.0637E-08
388	GRID	545000	4165600	5.19E-04	9.00E-06	7.51177E-08	1.07311E-09	1.07311E-08
23	GRID	545500	4163750	5.19E-04	1.41E-05	7.5846E-08	1.08351E-09	1.08351E-08
66	GRID	545750	4163850	5.19E-04	3.02E-05	7.81311E-08	1.11616E-09	1.11616E-08
4	GRID	545300	4163700	5.28E-04	1.42E-05	7.71261E-08	1.1018E-09	1.1018E-08
288	GRID	544750	4165350	5.32E-04	6.32E-06	7.66387E-08	1.09484E-09	1.09484E-08
368	GRID	544950	4165550	5.32E-04	8.69E-06	7.69752E-08	1.09965E-09	1.09965E-08
44	GRID	545600	4163800	5.32E-04	2.55E-05	7.9367E-08	1.13381E-09	1.13381E-08
3	GRID	545250	4163700	5.39E-04	1.46E-05	7.87608E-08	1.12515E-09	1.12515E-08
22	GRID	545450	4163750	5.43E-04	1.27E-05	7.91309E-08	1.13044E-09	1.13044E-08
348	GRID	544900	4165500	5.45E-04	8.40E-06	7.88351E-08	1.12622E-09	1.12622E-08
308	GRID	544800	4165400	5.48E-04	7.10E-06	7.89675E-08	1.12811E-09	1.12811E-08
65	GRID	545700	4163850	5.43E-04	3.07E-05	8.16923E-08	1.16703E-09	1.16703E-08
389	GRID	545050	4165600	5.50E-04	9.88E-06	7.96799E-08	1.13828E-09	1.13828E-08
328	GRID	544850	4165450	5.52E-04	7.90E-06	7.97155E-08	1.13879E-09	1.13879E-08
86	GRID	545800	4163900	5.43E-04	3.80E-05	8.27344E-08	1.18192E-09	1.18192E-08
249	GRID	544700	4165250	5.54E-04	6.35E-06	7.98114E-08	1.14016E-09	1.14016E-08
43	GRID	545550	4163800	5.59E-04	2.19E-05	8.2655E-08	1.18079E-09	1.18079E-08
369	GRID	545000	4165550	5.68E-04	9.52E-06	8.21648E-08	1.17378E-09	1.17378E-08
21	GRID	545400	4163750	5.70E-04	1.41E-05	8.31346E-08	1.18764E-09	1.18764E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
64	GRID	545650	4163850	5.68E-04	3.18E-05	8.53414E-08	1.21916E-09	1.21916E-08
85	GRID	545750	4163900	5.70E-04	3.89E-05	8.66627E-08	1.23804E-09	1.23804E-08
390	GRID	545100	4165600	5.81E-04	1.09E-05	8.42671E-08	1.20382E-09	1.20382E-08
269	GRID	544750	4165300	5.85E-04	6.56E-06	8.42781E-08	1.20397E-09	1.20397E-08
349	GRID	544950	4165500	5.85E-04	9.17E-06	8.46498E-08	1.20928E-09	1.20928E-08
42	GRID	545500	4163800	5.88E-04	1.81E-05	8.62348E-08	1.23193E-09	1.23193E-08
20	GRID	545350	4163750	5.99E-04	1.64E-05	8.75807E-08	1.25115E-09	1.25115E-08
329	GRID	544900	4165450	5.99E-04	8.82E-06	8.65009E-08	1.23573E-09	1.23573E-08
63	GRID	545600	4163850	5.97E-04	3.28E-05	8.95991E-08	1.27999E-09	1.27999E-08
289	GRID	544800	4165350	6.03E-04	7.28E-06	8.69163E-08	1.24166E-09	1.24166E-08
370	GRID	545050	4165550	6.03E-04	1.05E-05	8.73733E-08	1.24819E-09	1.24819E-08
309	GRID	544850	4165400	6.08E-04	8.20E-06	8.76806E-08	1.25258E-09	1.25258E-08
84	GRID	545700	4163900	5.99E-04	3.96E-05	9.08828E-08	1.29833E-09	1.29833E-08
230	GRID	544700	4165200	6.12E-04	6.87E-06	8.81248E-08	1.25893E-09	1.25893E-08
391	GRID	545150	4165600	6.14E-04	1.21E-05	8.91838E-08	1.27405E-09	1.27405E-08
41	GRID	545450	4163800	6.19E-04	1.58E-05	9.03449E-08	1.29064E-09	1.29064E-08
350	GRID	545000	4165500	6.25E-04	1.01E-05	9.04795E-08	1.29256E-09	1.29256E-08
19	GRID	545300	4163750	6.25E-04	1.69E-05	9.14588E-08	1.30655E-09	1.30655E-08
62	GRID	545550	4163850	6.28E-04	3.00E-05	9.36339E-08	1.33763E-09	1.33763E-08
83	GRID	545650	4163900	6.32E-04	4.06E-05	9.57744E-08	1.36821E-09	1.36821E-08
371	GRID	545100	4165550	6.39E-04	1.16E-05	9.26069E-08	1.32296E-09	1.32296E-08
250	GRID	544750	4165250	6.48E-04	6.89E-06	9.31977E-08	1.3314E-09	1.3314E-08
330	GRID	544950	4165450	6.45E-04	9.79E-06	9.32939E-08	1.33277E-09	1.33277E-08
392	GRID	545200	4165600	6.45E-04	1.32E-05	9.37836E-08	1.33977E-09	1.33977E-08
18	GRID	545250	4163750	6.50E-04	1.72E-05	9.49823E-08	1.35689E-09	1.35689E-08
40	GRID	545400	4163800	6.54E-04	1.76E-05	9.56789E-08	1.36684E-09	1.36684E-08
310	GRID	544900	4165400	6.63E-04	9.35E-06	9.57663E-08	1.36809E-09	1.36809E-08
351	GRID	545050	4165500	6.66E-04	1.12E-05	9.63469E-08	1.37638E-09	1.37638E-08
61	GRID	545500	4163850	6.63E-04	2.41E-05	9.78631E-08	1.39804E-09	1.39804E-08
270	GRID	544800	4165300	6.70E-04	7.50E-06	9.64533E-08	1.3779E-09	1.3779E-08
17	GRID	545200	4163750	6.70E-04	1.74E-05	9.78595E-08	1.39799E-09	1.39799E-08
290	GRID	544850	4165350	6.74E-04	8.49E-06	9.7229E-08	1.38899E-09	1.38899E-08
82	GRID	545600	4163900	6.68E-04	4.22E-05	1.01083E-07	1.44405E-09	1.44405E-08
372	GRID	545150	4165550	6.77E-04	1.29E-05	9.81699E-08	1.40243E-09	1.40243E-08
211	GRID	544700	4165150	6.81E-04	7.54E-06	9.80441E-08	1.40063E-09	1.40063E-08
393	GRID	545250	4165600	6.79E-04	1.44E-05	9.87002E-08	1.41E-09	1.41E-08
16	GRID	545150	4163750	6.86E-04	1.69E-05	1.00015E-07	1.42879E-09	1.42879E-08
331	GRID	545000	4165450	6.92E-04	1.08E-05	1.00087E-07	1.42981E-09	1.42981E-08
39	GRID	545350	4163800	6.94E-04	2.04E-05	1.01772E-07	1.45389E-09	1.45389E-08
15	GRID	545100	4163750	6.97E-04	1.65E-05	1.01537E-07	1.45053E-09	1.45053E-08
12	GRID	544950	4163750	7.01E-04	1.77E-05	1.02346E-07	1.46209E-09	1.46209E-08
14	GRID	545050	4163750	7.03E-04	1.66E-05	1.025E-07	1.46429E-09	1.46429E-08
60	GRID	545450	4163850	7.03E-04	2.02E-05	1.03015E-07	1.47164E-09	1.47164E-08
13	GRID	545000	4163750	7.08E-04	1.71E-05	1.03209E-07	1.47442E-09	1.47442E-08
352	GRID	545100	4165500	7.08E-04	1.24E-05	1.02544E-07	1.46491E-09	1.46491E-08
394	GRID	545300	4165600	7.08E-04	1.55E-05	1.02983E-07	1.47119E-09	1.47119E-08
373	GRID	545200	4165550	7.14E-04	1.41E-05	1.03733E-07	1.4819E-09	1.4819E-08
81	GRID	545550	4163900	7.06E-04	4.22E-05	1.06471E-07	1.52101E-09	1.52101E-08
311	GRID	544950	4165400	7.19E-04	1.04E-05	1.03839E-07	1.48342E-09	1.48342E-08
231	GRID	544750	4165200	7.23E-04	7.34E-06	1.04036E-07	1.48623E-09	1.48623E-08
395	GRID	545350	4165600	7.32E-04	1.67E-05	1.06632E-07	1.52332E-09	1.52332E-08
38	GRID	545300	4163800	7.37E-04	2.05E-05	1.07818E-07	1.54026E-09	1.54026E-08
291	GRID	544900	4165350	7.41E-04	9.79E-06	1.0692E-07	1.52744E-09	1.52744E-08
332	GRID	545050	4165450	7.41E-04	1.19E-05	1.07222E-07	1.53174E-09	1.53174E-08
251	GRID	544800	4165250	7.50E-04	7.77E-06	1.07901E-07	1.54144E-09	1.54144E-08
374	GRID	545250	4165550	7.48E-04	1.54E-05	1.08675E-07	1.5525E-09	1.5525E-08
353	GRID	545150	4165500	7.50E-04	1.38E-05	1.08753E-07	1.55362E-09	1.55362E-08
59	GRID	545400	4163850	7.50E-04	2.28E-05	1.10046E-07	1.57209E-09	1.57209E-08
271	GRID	544850	4165300	7.55E-04	8.78E-06	1.08679E-07	1.55255E-09	1.55255E-08
396	GRID	545400	4165600	7.52E-04	1.77E-05	1.09635E-07	1.56621E-09	1.56621E-08
80	GRID	545500	4163900	7.50E-04	3.43E-05	1.11678E-07	1.59541E-09	1.59541E-08
193	GRID	544700	4165100	7.66E-04	8.39E-06	1.10207E-07	1.57438E-09	1.57438E-08
397	GRID	545450	4165600	7.66E-04	1.88E-05	1.11687E-07	1.59553E-09	1.59553E-08
312	GRID	545000	4165400	7.75E-04	1.15E-05	1.11912E-07	1.59875E-09	1.59875E-08
398	GRID	545500	4165600	7.70E-04	1.98E-05	1.12471E-07	1.60674E-09	1.60674E-08
399	GRID	545550	4165600	7.70E-04	2.08E-05	1.1261E-07	1.60871E-09	1.60871E-08
375	GRID	545300	4165550	7.79E-04	1.68E-05	1.133E-07	1.61857E-09	1.61857E-08
37	GRID	545250	4163800	7.79E-04	2.09E-05	1.1389E-07	1.627E-09	1.627E-08
333	GRID	545100	4165450	7.90E-04	1.33E-05	1.14394E-07	1.63421E-09	1.63421E-08
354	GRID	545200	4165500	7.92E-04	1.52E-05	1.14975E-07	1.6425E-09	1.6425E-08
79	GRID	545450	4163900	8.01E-04	2.73E-05	1.17963E-07	1.68518E-09	1.68518E-08
100	GRID	545550	4163950	7.90E-04	5.96E-05	1.20986E-07	1.72837E-09	1.72837E-08
292	GRID	544950	4165350	8.06E-04	1.10E-05	1.16286E-07	1.66123E-09	1.66123E-08
376	GRID	545350	4165550	8.04E-04	1.80E-05	1.16961E-07	1.67088E-09	1.67088E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
58	GRID	545350	4163850	8.04E-04	2.58E-05	1.18066E-07	1.68666E-09	1.68666E-08
212	GRID	544750	4165150	8.17E-04	7.95E-06	1.17433E-07	1.67761E-09	1.67761E-08
36	GRID	545200	4163800	8.21E-04	2.07E-05	1.19886E-07	1.71265E-09	1.71265E-08
377	GRID	545400	4165550	8.21E-04	1.92E-05	1.19672E-07	1.7096E-09	1.7096E-08
380	GRID	545550	4165550	8.24E-04	2.28E-05	1.20491E-07	1.7213E-09	1.7213E-08
313	GRID	545050	4165400	8.30E-04	1.28E-05	1.20023E-07	1.71462E-09	1.71462E-08
355	GRID	545250	4165500	8.28E-04	1.67E-05	1.20259E-07	1.71798E-09	1.71798E-08
378	GRID	545450	4165550	8.30E-04	2.04E-05	1.21103E-07	1.73004E-09	1.73004E-08
379	GRID	545500	4165550	8.30E-04	2.16E-05	1.21279E-07	1.73255E-09	1.73255E-08
272	GRID	544900	4165300	8.35E-04	1.02E-05	1.20293E-07	1.71847E-09	1.71847E-08
334	GRID	545150	4165450	8.39E-04	1.48E-05	1.2158E-07	1.73685E-09	1.73685E-08
232	GRID	544800	4165200	8.48E-04	8.14E-06	1.21897E-07	1.74138E-09	1.74138E-08
252	GRID	544850	4165250	8.53E-04	9.08E-06	1.22665E-07	1.75236E-09	1.75236E-08
99	GRID	545500	4163950	8.46E-04	5.37E-05	1.28067E-07	1.82953E-09	1.82953E-08
356	GRID	545300	4165500	8.59E-04	1.82E-05	1.24909E-07	1.78441E-09	1.78441E-08
35	GRID	545150	4163800	8.59E-04	2.02E-05	1.25198E-07	1.78854E-09	1.78854E-08
78	GRID	545400	4163900	8.59E-04	3.08E-05	1.26704E-07	1.81006E-09	1.81006E-08
175	GRID	544700	4165050	8.66E-04	9.44E-06	1.24617E-07	1.78024E-09	1.78024E-08
57	GRID	545300	4163850	8.64E-04	2.57E-05	1.2661E-07	1.80871E-09	1.80871E-08
293	GRID	545000	4165350	8.73E-04	1.23E-05	1.25982E-07	1.79974E-09	1.79974E-08
361	GRID	545550	4165500	8.79E-04	2.49E-05	1.28715E-07	1.83879E-09	1.83879E-08
335	GRID	545200	4165450	8.84E-04	1.64E-05	1.28144E-07	1.83062E-09	1.83062E-08
357	GRID	545350	4165500	8.81E-04	1.96E-05	1.28279E-07	1.83255E-09	1.83255E-08
314	GRID	545100	4165400	8.88E-04	1.43E-05	1.28476E-07	1.83537E-09	1.83537E-08
360	GRID	545500	4165500	8.93E-04	2.35E-05	1.30428E-07	1.86326E-09	1.86326E-08
358	GRID	545400	4165500	8.95E-04	2.09E-05	1.30368E-07	1.86241E-09	1.86241E-08
34	GRID	545100	4163800	8.97E-04	2.01E-05	1.30572E-07	1.86532E-09	1.86532E-08
655	GRID	544600	4164900	8.99E-04	1.62E-05	1.30337E-07	1.86195E-09	1.86195E-08
359	GRID	545450	4165500	8.99E-04	2.23E-05	1.31203E-07	1.87433E-09	1.87433E-08
273	GRID	544950	4165300	9.13E-04	1.18E-05	1.3161E-07	1.88015E-09	1.88015E-08
98	GRID	545450	4163950	9.08E-04	3.93E-05	1.34894E-07	1.92706E-09	1.92706E-08
336	GRID	545250	4165450	9.22E-04	1.81E-05	1.33769E-07	1.91099E-09	1.91099E-08
194	GRID	544750	4165100	9.30E-04	8.75E-06	1.33709E-07	1.91012E-09	1.91012E-08
56	GRID	545250	4163850	9.28E-04	2.59E-05	1.35838E-07	1.94054E-09	1.94054E-08
77	GRID	545350	4163900	9.26E-04	3.35E-05	1.366E-07	1.95143E-09	1.95143E-08
33	GRID	545050	4163800	9.33E-04	2.06E-05	1.35718E-07	1.93883E-09	1.93883E-08
294	GRID	545050	4165350	9.39E-04	1.38E-05	1.35689E-07	1.93842E-09	1.93842E-08
342	GRID	545550	4165450	9.37E-04	2.73E-05	1.37306E-07	1.96151E-09	1.96151E-08
315	GRID	545150	4165400	9.42E-04	1.61E-05	1.36333E-07	1.94761E-09	1.94761E-08
253	GRID	544900	4165250	9.50E-04	1.08E-05	1.36847E-07	1.95496E-09	1.95496E-08
337	GRID	545300	4165450	9.50E-04	1.98E-05	1.38128E-07	1.97325E-09	1.97325E-08
341	GRID	545500	4165450	9.59E-04	2.59E-05	1.40274E-07	2.00392E-09	2.00392E-08
213	GRID	544800	4165150	9.68E-04	8.67E-06	1.39085E-07	1.98692E-09	1.98692E-08
32	GRID	545000	4163800	9.66E-04	2.16E-05	1.4061E-07	2.00871E-09	2.00871E-08
233	GRID	544850	4165200	9.73E-04	9.44E-06	1.39828E-07	1.99754E-09	1.99754E-08
338	GRID	545350	4165450	9.70E-04	2.13E-05	1.41206E-07	2.01722E-09	2.01722E-08
340	GRID	545450	4165450	9.73E-04	2.44E-05	1.41962E-07	2.02803E-09	2.02803E-08
339	GRID	545400	4165450	9.77E-04	2.29E-05	1.42382E-07	2.03403E-09	2.03403E-08
157	GRID	544700	4165000	9.88E-04	1.09E-05	1.42259E-07	2.03228E-09	2.03228E-08
97	GRID	545400	4163950	9.79E-04	4.41E-05	1.45713E-07	2.08161E-09	2.08161E-08
274	GRID	545000	4165300	9.93E-04	1.32E-05	1.4322E-07	2.04599E-09	2.04599E-08
316	GRID	545200	4165400	9.91E-04	1.78E-05	1.43556E-07	2.05079E-09	2.05079E-08
31	GRID	544950	4163800	9.97E-04	2.27E-05	1.45197E-07	2.07424E-09	2.07424E-08
29	GRID	544850	4163800	9.99E-04	2.35E-05	1.45639E-07	2.08056E-09	2.08056E-08
55	GRID	545200	4163850	9.99E-04	2.56E-05	1.45928E-07	2.08469E-09	2.08469E-08
323	GRID	545550	4165400	9.97E-04	3.02E-05	1.46277E-07	2.08967E-09	2.08967E-08
295	GRID	545100	4165350	1.01E-03	1.54E-05	1.45435E-07	2.07764E-09	2.07764E-08
76	GRID	545300	4163900	1.01E-03	3.33E-05	1.47984E-07	2.11405E-09	2.11405E-08
30	GRID	544900	4163800	1.01E-03	2.34E-05	1.47516E-07	2.10736E-09	2.10736E-08
317	GRID	545250	4165400	1.03E-03	1.97E-05	1.49206E-07	2.13152E-09	2.13152E-08
322	GRID	545500	4165400	1.03E-03	2.87E-05	1.50487E-07	2.14982E-09	2.14982E-08
254	GRID	544950	4165250	1.05E-03	1.25E-05	1.50725E-07	2.15321E-09	2.15321E-08
321	GRID	545450	4165400	1.05E-03	2.70E-05	1.53418E-07	2.19168E-09	2.19168E-08
318	GRID	545300	4165400	1.06E-03	2.16E-05	1.53285E-07	2.18979E-09	2.18979E-08
296	GRID	545150	4165350	1.07E-03	1.74E-05	1.54267E-07	2.20382E-09	2.20382E-08
304	GRID	545550	4165350	1.06E-03	3.36E-05	1.55944E-07	2.22777E-09	2.22777E-08
319	GRID	545350	4165400	1.07E-03	2.35E-05	1.55134E-07	2.21619E-09	2.21619E-08
320	GRID	545400	4165400	1.07E-03	2.52E-05	1.55385E-07	2.21978E-09	2.21978E-08
656	GRID	544650	4164900	1.07E-03	1.59E-05	1.54371E-07	2.2053E-09	2.2053E-08
275	GRID	545050	4165300	1.07E-03	1.49E-05	1.54866E-07	2.21238E-09	2.21238E-08
176	GRID	544750	4165050	1.08E-03	9.79E-06	1.54455E-07	2.2065E-09	2.2065E-08
96	GRID	545350	4163950	1.07E-03	4.59E-05	1.58323E-07	2.26175E-09	2.26175E-08
54	GRID	545150	4163850	1.08E-03	2.54E-05	1.56677E-07	2.23825E-09	2.23825E-08
234	GRID	544900	4165200	1.09E-03	1.13E-05	1.57204E-07	2.24577E-09	2.24577E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
75	GRID	545250	4163900	1.10E-03	3.34E-05	1.60989E-07	2.29984E-09	2.29984E-08
303	GRID	545500	4165350	1.10E-03	3.18E-05	1.61397E-07	2.30567E-09	2.30567E-08
297	GRID	545200	4165350	1.12E-03	1.94E-05	1.61845E-07	2.31207E-09	2.31207E-08
195	GRID	544800	4165100	1.12E-03	9.35E-06	1.61364E-07	2.3052E-09	2.3052E-08
214	GRID	544850	4165150	1.13E-03	9.97E-06	1.61769E-07	2.31098E-09	2.31098E-08
489	GRID	545400	4164000	1.11E-03	6.95E-05	1.68342E-07	2.40489E-09	2.40489E-08
285	GRID	545550	4165300	1.13E-03	3.75E-05	1.65686E-07	2.36694E-09	2.36694E-08
139	GRID	544700	4164950	1.14E-03	1.29E-05	1.64401E-07	2.34859E-09	2.34859E-08
302	GRID	545450	4165350	1.14E-03	2.99E-05	1.65874E-07	2.36963E-09	2.36963E-08
255	GRID	545000	4165250	1.14E-03	1.44E-05	1.64615E-07	2.35164E-09	2.35164E-08
276	GRID	545100	4165300	1.15E-03	1.68E-05	1.65905E-07	2.37007E-09	2.37007E-08
298	GRID	545250	4165350	1.15E-03	2.16E-05	1.67229E-07	2.38898E-09	2.38898E-08
642	GRID	544600	4164850	1.16E-03	1.92E-05	1.67207E-07	2.38867E-09	2.38867E-08
53	GRID	545100	4163850	1.16E-03	2.60E-05	1.6849E-07	2.40701E-09	2.40701E-08
301	GRID	545400	4165350	1.16E-03	2.80E-05	1.69084E-07	2.41548E-09	2.41548E-08
299	GRID	545300	4165350	1.17E-03	2.37E-05	1.70065E-07	2.42951E-09	2.42951E-08
95	GRID	545300	4163950	1.17E-03	4.56E-05	1.72545E-07	2.46493E-09	2.46493E-08
300	GRID	545350	4165350	1.17E-03	2.58E-05	1.70684E-07	2.43834E-09	2.43834E-08
284	GRID	545500	4165300	1.18E-03	3.55E-05	1.72699E-07	2.46712E-09	2.46712E-08
266	GRID	545550	4165250	1.20E-03	4.21E-05	1.7648E-07	2.52114E-09	2.52114E-08
74	GRID	545200	4163900	1.20E-03	3.37E-05	1.76238E-07	2.51768E-09	2.51768E-08
235	GRID	544950	4165200	1.21E-03	1.34E-05	1.74617E-07	2.49454E-09	2.49454E-08
277	GRID	545150	4165300	1.22E-03	1.90E-05	1.75725E-07	2.51036E-09	2.51036E-08
283	GRID	545450	4165300	1.22E-03	3.34E-05	1.79052E-07	2.55789E-09	2.55789E-08
488	GRID	545350	4164000	1.22E-03	6.90E-05	1.83161E-07	2.61659E-09	2.61659E-08
256	GRID	545050	4165250	1.24E-03	1.62E-05	1.78505E-07	2.55007E-09	2.55007E-08
52	GRID	545050	4163850	1.24E-03	2.73E-05	1.81025E-07	2.58608E-09	2.58608E-08
158	GRID	544750	4165000	1.26E-03	1.11E-05	1.81263E-07	2.58947E-09	2.58947E-08
265	GRID	545500	4165250	1.26E-03	3.99E-05	1.84735E-07	2.63907E-09	2.63907E-08
278	GRID	545200	4165300	1.26E-03	2.13E-05	1.83036E-07	2.6148E-09	2.6148E-08
282	GRID	545400	4165300	1.26E-03	3.11E-05	1.84113E-07	2.63018E-09	2.63018E-08
215	GRID	544900	4165150	1.28E-03	1.18E-05	1.83898E-07	2.62712E-09	2.62712E-08
247	GRID	545550	4165200	1.27E-03	4.74E-05	1.88008E-07	2.68582E-09	2.68582E-08
279	GRID	545250	4165300	1.29E-03	2.38E-05	1.87507E-07	2.67868E-09	2.67868E-08
281	GRID	545350	4165300	1.29E-03	2.87E-05	1.87577E-07	2.67967E-09	2.67967E-08
502	GRID	545400	4164050	1.26E-03	1.33E-04	1.98006E-07	2.82865E-09	2.82865E-08
94	GRID	545250	4163950	1.29E-03	4.71E-05	1.90188E-07	2.71697E-09	2.71697E-08
280	GRID	545300	4165300	1.30E-03	2.63E-05	1.8881E-07	2.69728E-09	2.69728E-08
177	GRID	544800	4165050	1.32E-03	1.04E-05	1.90035E-07	2.71479E-09	2.71479E-08
196	GRID	544850	4165100	1.32E-03	1.06E-05	1.90061E-07	2.71515E-09	2.71515E-08
257	GRID	545100	4165250	1.32E-03	1.83E-05	1.91165E-07	2.73094E-09	2.73094E-08
264	GRID	545450	4165250	1.32E-03	3.76E-05	1.92952E-07	2.75646E-09	2.75646E-08
73	GRID	545150	4163900	1.33E-03	3.47E-05	1.93805E-07	2.76864E-09	2.76864E-08
236	GRID	545000	4165200	1.33E-03	1.55E-05	1.92031E-07	2.7433E-09	2.7433E-08
51	GRID	545000	4163850	1.34E-03	2.87E-05	1.94219E-07	2.77456E-09	2.77456E-08
246	GRID	545500	4165200	1.34E-03	4.52E-05	1.97834E-07	2.82621E-09	2.82621E-08
127	GRID	544700	4164900	1.36E-03	1.55E-05	1.95517E-07	2.7931E-09	2.7931E-08
657	GRID	544700	4164900	1.36E-03	1.55E-05	1.95517E-07	2.7931E-09	2.7931E-08
487	GRID	545300	4164000	1.34E-03	7.23E-05	2.01702E-07	2.88145E-09	2.88145E-08
228	GRID	545550	4165150	1.35E-03	5.37E-05	2.00003E-07	2.85719E-09	2.85719E-08
643	GRID	544650	4164850	1.37E-03	1.93E-05	1.97958E-07	2.82798E-09	2.82798E-08
263	GRID	545400	4165250	1.37E-03	3.49E-05	2.00181E-07	2.85972E-09	2.85972E-08
258	GRID	545150	4165250	1.39E-03	2.08E-05	2.01024E-07	2.87177E-09	2.87177E-08
262	GRID	545350	4165250	1.42E-03	3.22E-05	2.06129E-07	2.94471E-09	2.94471E-08
245	GRID	545450	4165200	1.42E-03	4.25E-05	2.07915E-07	2.97022E-09	2.97022E-08
501	GRID	545350	4164050	1.38E-03	1.44E-04	2.17576E-07	3.10822E-09	3.10822E-08
216	GRID	544950	4165150	1.43E-03	1.43E-05	2.05799E-07	2.93999E-09	2.93999E-08
259	GRID	545200	4165250	1.44E-03	2.35E-05	2.07751E-07	2.96787E-09	2.96787E-08
93	GRID	545200	4163950	1.43E-03	5.01E-05	2.11213E-07	3.01733E-09	3.01733E-08
50	GRID	544950	4163850	1.44E-03	2.97E-05	2.09581E-07	2.99401E-09	2.99401E-08
237	GRID	545050	4165200	1.45E-03	1.77E-05	2.08507E-07	2.97867E-09	2.97867E-08
261	GRID	545300	4165250	1.44E-03	2.94E-05	2.0953E-07	2.99329E-09	2.99329E-08
210	GRID	545550	4165100	1.43E-03	6.12E-05	2.12795E-07	3.03993E-09	3.03993E-08
227	GRID	545500	4165150	1.44E-03	5.13E-05	2.12023E-07	3.0289E-09	3.0289E-08
260	GRID	545250	4165250	1.45E-03	2.65E-05	2.10384E-07	3.00548E-09	3.00548E-08
72	GRID	545100	4163900	1.47E-03	3.62E-05	2.14617E-07	3.06596E-09	3.06596E-08
244	GRID	545400	4165200	1.49E-03	3.95E-05	2.17629E-07	3.10899E-09	3.10899E-08
140	GRID	544750	4164950	1.51E-03	1.30E-05	2.16702E-07	3.09574E-09	3.09574E-08
486	GRID	545250	4164000	1.50E-03	8.03E-05	2.2471E-07	3.21014E-09	3.21014E-08
197	GRID	544900	4165100	1.52E-03	1.25E-05	2.18858E-07	3.12654E-09	3.12654E-08
192	GRID	545550	4165050	1.52E-03	7.00E-05	2.25776E-07	3.22537E-09	3.22537E-08
226	GRID	545450	4165150	1.52E-03	4.84E-05	2.23968E-07	3.19954E-09	3.19954E-08
238	GRID	545100	4165200	1.54E-03	2.01E-05	2.22156E-07	3.17365E-09	3.17365E-08
209	GRID	545500	4165100	1.53E-03	5.87E-05	2.26704E-07	3.23863E-09	3.23863E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
243	GRID	545350	4165200	1.55E-03	3.63E-05	2.2605E-07	3.22929E-09	3.22929E-08
49	GRID	544900	4163850	1.57E-03	3.02E-05	2.28024E-07	3.25748E-09	3.25748E-08
217	GRID	545000	4165150	1.58E-03	1.69E-05	2.27091E-07	3.24416E-09	3.24416E-08
500	GRID	545300	4164050	1.54E-03	1.62E-04	2.42078E-07	3.45826E-09	3.45826E-08
178	GRID	544850	4165050	1.59E-03	1.15E-05	2.28214E-07	3.2602E-09	3.2602E-08
159	GRID	544800	4165000	1.60E-03	1.17E-05	2.28885E-07	3.26979E-09	3.26979E-08
629	GRID	544600	4164800	1.59E-03	2.27E-05	2.30125E-07	3.2875E-09	3.2875E-08
239	GRID	545150	4165200	1.60E-03	2.30E-05	2.31443E-07	3.30633E-09	3.30633E-08
242	GRID	545300	4165200	1.60E-03	3.30E-05	2.32545E-07	3.32207E-09	3.32207E-08
174	GRID	545550	4165000	1.60E-03	8.06E-05	2.38691E-07	3.40987E-09	3.40987E-08
92	GRID	545150	4163950	1.61E-03	5.20E-05	2.36525E-07	3.37892E-09	3.37892E-08
225	GRID	545400	4165150	1.61E-03	4.51E-05	2.36166E-07	3.37381E-09	3.37381E-08
240	GRID	545200	4165200	1.63E-03	2.62E-05	2.36015E-07	3.37164E-09	3.37164E-08
241	GRID	545250	4165200	1.63E-03	2.95E-05	2.36175E-07	3.37393E-09	3.37393E-08
191	GRID	545500	4165050	1.63E-03	6.77E-05	2.42245E-07	3.46065E-09	3.46065E-08
208	GRID	545450	4165100	1.64E-03	5.56E-05	2.41476E-07	3.44966E-09	3.44966E-08
71	GRID	545050	4163900	1.65E-03	3.77E-05	2.40182E-07	3.43117E-09	3.43117E-08
156	GRID	545550	4164950	1.67E-03	9.35E-05	2.50665E-07	3.58093E-09	3.58093E-08
224	GRID	545350	4165150	1.70E-03	4.14E-05	2.47681E-07	3.5383E-09	3.5383E-08
485	GRID	545200	4164000	1.68E-03	8.35E-05	2.51781E-07	3.59688E-09	3.59688E-08
218	GRID	545050	4165150	1.71E-03	1.95E-05	2.46152E-07	3.51646E-09	3.51646E-08
198	GRID	544950	4165100	1.72E-03	1.53E-05	2.47134E-07	3.53048E-09	3.53048E-08
644	GRID	544700	4164850	1.72E-03	1.90E-05	2.47991E-07	3.54272E-09	3.54272E-08
514	GRID	545350	4164100	1.56E-03	5.32E-04	2.98488E-07	4.26412E-09	4.26412E-08
173	GRID	545500	4165000	1.73E-03	7.86E-05	2.57416E-07	3.67737E-09	3.67737E-08
207	GRID	545400	4165100	1.75E-03	5.19E-05	2.56464E-07	3.66377E-09	3.66377E-08
499	GRID	545250	4164050	1.73E-03	1.57E-04	2.67944E-07	3.82777E-09	3.82777E-08
190	GRID	545450	4165050	1.76E-03	6.44E-05	2.59831E-07	3.71188E-09	3.71188E-08
223	GRID	545300	4165150	1.77E-03	3.74E-05	2.57891E-07	3.68415E-09	3.68415E-08
219	GRID	545100	4165150	1.80E-03	2.23E-05	2.59863E-07	3.71233E-09	3.71233E-08
222	GRID	545250	4165150	1.83E-03	3.33E-05	2.65236E-07	3.78908E-09	3.78908E-08
91	GRID	545100	4163950	1.83E-03	5.29E-05	2.6834E-07	3.83343E-09	3.83343E-08
155	GRID	545500	4164950	1.82E-03	9.17E-05	2.72597E-07	3.89424E-09	3.89424E-08
128	GRID	544750	4164900	1.85E-03	1.54E-05	2.65222E-07	3.78889E-09	3.78889E-08
658	GRID	544750	4164900	1.85E-03	1.54E-05	2.65222E-07	3.78889E-09	3.78889E-08
220	GRID	545150	4165150	1.85E-03	2.56E-05	2.673E-07	3.81857E-09	3.81857E-08
179	GRID	544900	4165050	1.86E-03	1.33E-05	2.66822E-07	3.81174E-09	3.81174E-08
221	GRID	545200	4165150	1.86E-03	2.94E-05	2.6879E-07	3.83986E-09	3.83986E-08
513	GRID	545300	4164100	1.75E-03	3.66E-04	3.01187E-07	4.30267E-09	4.30267E-08
206	GRID	545350	4165100	1.86E-03	4.75E-05	2.71694E-07	3.88134E-09	3.88134E-08
70	GRID	545000	4163900	1.87E-03	3.89E-05	2.71097E-07	3.87281E-09	3.87281E-08
172	GRID	545450	4165000	1.88E-03	7.51E-05	2.78476E-07	3.97822E-09	3.97822E-08
199	GRID	545000	4165100	1.90E-03	1.84E-05	2.73571E-07	3.90816E-09	3.90816E-08
189	GRID	545400	4165050	1.89E-03	6.01E-05	2.78242E-07	3.97489E-09	3.97489E-08
484	GRID	545150	4164000	1.92E-03	8.18E-05	2.84804E-07	4.06864E-09	4.06864E-08
630	GRID	544650	4164800	1.92E-03	2.32E-05	2.77101E-07	3.95859E-09	3.95859E-08
141	GRID	544800	4164950	1.98E-03	1.34E-05	2.83947E-07	4.05639E-09	4.05639E-08
160	GRID	544850	4165000	1.97E-03	1.27E-05	2.81945E-07	4.02779E-09	4.02779E-08
205	GRID	545300	4165100	1.96E-03	4.29E-05	2.85605E-07	4.08008E-09	4.08008E-08
498	GRID	545200	4164050	1.96E-03	1.43E-04	2.9921E-07	4.27442E-09	4.27442E-08
154	GRID	545450	4164950	1.99E-03	8.82E-05	2.96496E-07	4.23565E-09	4.23565E-08
188	GRID	545350	4165050	2.03E-03	5.52E-05	2.97504E-07	4.25006E-09	4.25006E-08
200	GRID	545050	4165100	2.04E-03	2.15E-05	2.93975E-07	4.19965E-09	4.19965E-08
171	GRID	545400	4165000	2.04E-03	7.06E-05	3.00956E-07	4.29937E-09	4.29937E-08
204	GRID	545250	4165100	2.05E-03	3.80E-05	2.97591E-07	4.2513E-09	4.2513E-08
512	GRID	545250	4164100	1.97E-03	2.78E-04	3.20638E-07	4.58054E-09	4.58054E-08
528	GRID	545350	4164150	1.76E-03	9.26E-04	3.82499E-07	5.46426E-09	5.46426E-08
180	GRID	544950	4165050	2.12E-03	1.63E-05	3.04009E-07	4.34299E-09	4.34299E-08
201	GRID	545100	4165100	2.13E-03	2.49E-05	3.06178E-07	4.37397E-09	4.37397E-08
203	GRID	545200	4165100	2.12E-03	3.32E-05	3.06103E-07	4.3729E-09	4.3729E-08
69	GRID	544950	4163900	2.13E-03	3.95E-05	3.08579E-07	4.40827E-09	4.40827E-08
90	GRID	545050	4163950	2.13E-03	5.34E-05	3.10233E-07	4.4319E-09	4.4319E-08
202	GRID	545150	4165100	2.15E-03	2.87E-05	3.09582E-07	4.4226E-09	4.4226E-08
527	GRID	545300	4164150	1.99E-03	5.65E-04	3.63153E-07	5.1879E-09	5.1879E-08
187	GRID	545300	4165050	2.17E-03	4.97E-05	3.16361E-07	4.51944E-09	4.51944E-08
153	GRID	545400	4164950	2.19E-03	8.35E-05	3.23717E-07	4.62453E-09	4.62453E-08
170	GRID	545350	4165000	2.22E-03	6.48E-05	3.25175E-07	4.64536E-09	4.64536E-08
483	GRID	545100	4164000	2.22E-03	7.88E-05	3.27805E-07	4.68293E-09	4.68293E-08
497	GRID	545150	4164050	2.25E-03	1.28E-04	3.38272E-07	4.83245E-09	4.83245E-08
186	GRID	545250	4165050	2.29E-03	4.38E-05	3.32644E-07	4.75206E-09	4.75206E-08
181	GRID	545000	4165050	2.34E-03	2.01E-05	3.35605E-07	4.79436E-09	4.79436E-08
511	GRID	545200	4164100	2.27E-03	2.24E-04	3.55126E-07	5.07323E-09	5.07323E-08
617	GRID	544600	4164750	2.31E-03	2.67E-05	3.33378E-07	4.76254E-09	4.76254E-08
161	GRID	544900	4165000	2.34E-03	1.45E-05	3.34801E-07	4.78288E-09	4.78288E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
645	GRID	544750	4164850	2.36E-03	1.88E-05	3.38586E-07	4.83694E-09	4.83694E-08
526	GRID	545250	4164150	2.27E-03	4.03E-04	3.80614E-07	5.43734E-09	5.43734E-08
169	GRID	545300	4165000	2.40E-03	5.83E-05	3.50548E-07	5.00783E-09	5.00783E-08
152	GRID	545350	4164950	2.40E-03	7.71E-05	3.53223E-07	5.04604E-09	5.04604E-08
185	GRID	545200	4165050	2.40E-03	3.80E-05	3.47661E-07	4.96658E-09	4.96658E-08
182	GRID	545050	4165050	2.47E-03	2.40E-05	3.55171E-07	5.07387E-09	5.07387E-08
631	GRID	544700	4164800	2.45E-03	2.35E-05	3.51927E-07	5.02753E-09	5.02753E-08
68	GRID	544900	4163900	2.47E-03	3.94E-05	3.57368E-07	5.10526E-09	5.10526E-08
184	GRID	545150	4165050	2.49E-03	3.26E-05	3.59571E-07	5.13672E-09	5.13672E-08
183	GRID	545100	4165050	2.52E-03	2.80E-05	3.62087E-07	5.17267E-09	5.17267E-08
541	GRID	545300	4164200	2.25E-03	8.38E-04	4.39344E-07	6.27634E-09	6.27634E-08
142	GRID	544850	4164950	2.54E-03	1.44E-05	3.6331E-07	5.19014E-09	5.19014E-08
89	GRID	545000	4163950	2.54E-03	5.34E-05	3.68859E-07	5.26942E-09	5.26942E-08
129	GRID	544800	4164900	2.56E-03	1.58E-05	3.66679E-07	5.23828E-09	5.23828E-08
659	GRID	544800	4164900	2.56E-03	1.58E-05	3.66679E-07	5.23828E-09	5.23828E-08
168	GRID	545250	4165000	2.58E-03	5.12E-05	3.74896E-07	5.35565E-09	5.35565E-08
151	GRID	545300	4164950	2.65E-03	6.93E-05	3.86976E-07	5.52824E-09	5.52824E-08
482	GRID	545050	4164000	2.65E-03	7.61E-05	3.87943E-07	5.54205E-09	5.54205E-08
496	GRID	545100	4164050	2.65E-03	1.16E-04	3.93556E-07	5.62222E-09	5.62222E-08
162	GRID	544950	4165000	2.67E-03	1.76E-05	3.82788E-07	5.4684E-09	5.4684E-08
510	GRID	545150	4164100	2.63E-03	1.87E-04	4.00557E-07	5.72224E-09	5.72224E-08
525	GRID	545200	4164150	2.60E-03	3.14E-04	4.15467E-07	5.93525E-09	5.93525E-08
167	GRID	545200	4165000	2.76E-03	4.41E-05	3.9923E-07	5.70329E-09	5.70329E-08
540	GRID	545250	4164200	2.58E-03	5.82E-04	4.50467E-07	6.43525E-09	6.43525E-08
150	GRID	545250	4164950	2.89E-03	6.08E-05	4.20617E-07	6.00882E-09	6.00882E-08
166	GRID	545150	4165000	2.89E-03	3.76E-05	4.17315E-07	5.96165E-09	5.96165E-08
163	GRID	545000	4165000	2.92E-03	2.20E-05	4.18274E-07	5.97535E-09	5.97535E-08
618	GRID	544650	4164750	2.98E-03	2.79E-05	4.2861E-07	6.123E-09	6.123E-08
165	GRID	545100	4165000	2.98E-03	3.19E-05	4.29188E-07	6.13125E-09	6.13125E-08
164	GRID	545050	4165000	3.00E-03	2.69E-05	4.31641E-07	6.1663E-09	6.1663E-08
553	GRID	545300	4164250	2.54E-03	1.47E-03	5.7094E-07	8.15628E-09	8.15628E-08
143	GRID	544900	4164950	3.07E-03	1.61E-05	4.39616E-07	6.28023E-09	6.28023E-08
149	GRID	545200	4164950	3.14E-03	5.19E-05	4.5422E-07	6.48886E-09	6.48886E-08
524	GRID	545150	4164150	3.05E-03	2.55E-04	4.70435E-07	6.7205E-09	6.7205E-08
539	GRID	545200	4164200	3.00E-03	4.39E-04	4.90338E-07	7.00483E-09	7.00483E-08
88	GRID	544950	4163950	3.14E-03	5.30E-05	4.54371E-07	6.49102E-09	6.49102E-08
509	GRID	545100	4164100	3.12E-03	1.61E-04	4.66633E-07	6.66618E-09	6.66618E-08
138	GRID	545250	4164900	3.21E-03	7.33E-05	4.66766E-07	6.66808E-09	6.66808E-08
495	GRID	545050	4164050	3.18E-03	1.07E-04	4.68355E-07	6.69079E-09	6.69079E-08
552	GRID	545250	4164250	2.94E-03	8.91E-04	5.45115E-07	7.78736E-09	7.78736E-08
668	GRID	545250	4164900	3.21E-03	7.33E-05	4.66766E-07	6.66808E-09	6.66808E-08
481	GRID	545000	4164000	3.27E-03	7.35E-05	4.7631E-07	6.80443E-09	6.80443E-08
148	GRID	545150	4164950	3.36E-03	4.38E-05	4.84755E-07	6.92507E-09	6.92507E-08
632	GRID	544750	4164800	3.38E-03	2.34E-05	4.85011E-07	6.92873E-09	6.92873E-08
130	GRID	544850	4164900	3.47E-03	1.67E-05	4.96733E-07	7.09618E-09	7.09618E-08
607	GRID	544600	4164700	3.45E-03	3.20E-05	4.95749E-07	7.08212E-09	7.08212E-08
660	GRID	544850	4164900	3.47E-03	1.67E-05	4.96733E-07	7.09618E-09	7.09618E-08
144	GRID	544950	4164950	3.49E-03	1.93E-05	5.00279E-07	7.14684E-09	7.14684E-08
137	GRID	545200	4164900	3.54E-03	6.23E-05	5.12731E-07	7.32473E-09	7.32473E-08
147	GRID	545100	4164950	3.54E-03	3.68E-05	5.09102E-07	7.27289E-09	7.27289E-08
667	GRID	545200	4164900	3.54E-03	6.23E-05	5.12731E-07	7.32473E-09	7.32473E-08
646	GRID	544800	4164850	3.56E-03	1.90E-05	5.09735E-07	7.28193E-09	7.28193E-08
551	GRID	545200	4164250	3.43E-03	6.20E-04	5.76287E-07	8.23267E-09	8.23267E-08
538	GRID	545150	4164200	3.54E-03	3.44E-04	5.52833E-07	7.89762E-09	7.89762E-08
146	GRID	545050	4164950	3.67E-03	3.04E-05	5.27212E-07	7.5316E-09	7.5316E-08
145	GRID	545000	4164950	3.67E-03	2.43E-05	5.26346E-07	7.51923E-09	7.51923E-08
523	GRID	545100	4164150	3.65E-03	2.14E-04	5.50222E-07	7.86031E-09	7.86031E-08
563	GRID	545250	4164300	3.29E-03	1.38E-03	6.64874E-07	9.4982E-09	9.4982E-08
508	GRID	545050	4164100	3.76E-03	1.43E-04	5.55896E-07	7.94138E-09	7.94138E-08
136	GRID	545150	4164900	3.90E-03	5.19E-05	5.61966E-07	8.02808E-09	8.02808E-08
666	GRID	545150	4164900	3.90E-03	5.19E-05	5.61966E-07	8.02808E-09	8.02808E-08
126	GRID	545200	4164850	3.96E-03	7.62E-05	5.74925E-07	8.21322E-09	8.21322E-08
654	GRID	545200	4164850	3.96E-03	7.62E-05	5.74925E-07	8.21322E-09	8.21322E-08
494	GRID	545000	4164050	4.01E-03	9.97E-05	5.84603E-07	8.35147E-09	8.35147E-08
87	GRID	544900	4163950	4.07E-03	5.18E-05	5.87292E-07	8.38989E-09	8.38989E-08
562	GRID	545200	4164300	3.90E-03	8.91E-04	6.81381E-07	9.73401E-09	9.73401E-08
619	GRID	544700	4164750	4.16E-03	2.87E-05	5.96691E-07	8.52416E-09	8.52416E-08
135	GRID	545100	4164900	4.23E-03	4.29E-05	6.0822E-07	8.68885E-09	8.68885E-08
550	GRID	545150	4164250	4.07E-03	4.63E-04	6.45839E-07	9.22626E-09	9.22626E-08
665	GRID	545100	4164900	4.23E-03	4.29E-05	6.0822E-07	8.68885E-09	8.68885E-08
131	GRID	544900	4164900	4.30E-03	1.84E-05	6.14236E-07	8.7748E-09	8.7748E-08
661	GRID	544900	4164900	4.30E-03	1.84E-05	6.14236E-07	8.7748E-09	8.7748E-08
537	GRID	545100	4164200	4.25E-03	2.81E-04	6.45326E-07	9.21894E-09	9.21894E-08
480	GRID	544950	4164000	4.34E-03	7.09E-05	6.28044E-07	8.97206E-09	8.97206E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
119	GRID	545200	4164800	4.38E-03	9.52E-05	6.37848E-07	9.11211E-09	9.11211E-08
641	GRID	545200	4164800	4.38E-03	9.52E-05	6.37848E-07	9.11211E-09	9.11211E-08
125	GRID	545150	4164850	4.47E-03	6.29E-05	6.45916E-07	9.22737E-09	9.22737E-08
522	GRID	545050	4164150	4.43E-03	1.84E-04	6.56867E-07	9.38381E-09	9.38381E-08
653	GRID	545150	4164850	4.47E-03	6.29E-05	6.45916E-07	9.22737E-09	9.22737E-08
134	GRID	545050	4164900	4.52E-03	3.47E-05	6.48248E-07	9.26069E-09	9.26069E-08
664	GRID	545050	4164900	4.52E-03	3.47E-05	6.48248E-07	9.26069E-09	9.26069E-08
132	GRID	544950	4164900	4.67E-03	2.17E-05	6.68573E-07	9.55104E-09	9.55104E-08
662	GRID	544950	4164900	4.67E-03	2.17E-05	6.68573E-07	9.55104E-09	9.55104E-08
133	GRID	545000	4164900	4.70E-03	2.72E-05	6.72521E-07	9.60744E-09	9.60744E-08
663	GRID	545000	4164900	4.70E-03	2.72E-05	6.72521E-07	9.60744E-09	9.60744E-08
608	GRID	544650	4164700	4.72E-03	3.38E-05	6.76631E-07	9.66616E-09	9.66616E-08
571	GRID	545200	4164350	4.32E-03	1.40E-03	8.14413E-07	1.16345E-08	1.16345E-07
112	GRID	545200	4164750	4.76E-03	1.23E-04	6.95612E-07	9.93732E-09	9.93732E-08
507	GRID	545000	4164100	4.76E-03	1.29E-04	6.96491E-07	9.94988E-09	9.94988E-08
628	GRID	545200	4164750	4.76E-03	1.23E-04	6.95612E-07	9.93732E-09	9.93732E-08
561	GRID	545150	4164300	4.67E-03	6.42E-04	7.56888E-07	1.08127E-08	1.08127E-07
600	GRID	544600	4164650	4.90E-03	3.92E-05	7.02761E-07	1.00394E-08	1.00394E-07
124	GRID	545100	4164850	5.01E-03	5.11E-05	7.20289E-07	1.02898E-08	1.02898E-07
652	GRID	545100	4164850	5.01E-03	5.11E-05	7.20289E-07	1.02898E-08	1.02898E-07
549	GRID	545100	4164250	4.92E-03	3.69E-04	7.52825E-07	1.07546E-08	1.07546E-07
118	GRID	545150	4164800	5.05E-03	7.80E-05	7.30469E-07	1.04353E-08	1.04353E-07
640	GRID	545150	4164800	5.05E-03	7.80E-05	7.30469E-07	1.04353E-08	1.04353E-07
536	GRID	545050	4164200	5.16E-03	2.36E-04	7.68851E-07	1.09836E-08	1.09836E-07
647	GRID	544850	4164850	5.28E-03	1.98E-05	7.53872E-07	1.07696E-08	1.07696E-07
493	GRID	544950	4164050	5.43E-03	9.26E-05	7.86413E-07	1.12345E-08	1.12345E-07
123	GRID	545050	4164850	5.54E-03	4.01E-05	7.94787E-07	1.13541E-08	1.13541E-07
521	GRID	545000	4164150	5.50E-03	1.63E-04	8.05964E-07	1.15138E-08	1.15138E-07
651	GRID	545050	4164850	5.54E-03	4.01E-05	7.94787E-07	1.13541E-08	1.13541E-07
570	GRID	545150	4164350	5.28E-03	1.01E-03	8.95435E-07	1.27919E-08	1.27919E-07
633	GRID	544800	4164800	5.63E-03	2.35E-05	8.0509E-07	1.15013E-08	1.15013E-07
111	GRID	545150	4164750	5.63E-03	9.97E-05	8.15938E-07	1.16563E-08	1.16563E-07
627	GRID	545150	4164750	5.63E-03	9.97E-05	8.15938E-07	1.16563E-08	1.16563E-07
117	GRID	545100	4164800	5.85E-03	6.20E-05	8.42267E-07	1.20324E-08	1.20324E-07
560	GRID	545100	4164300	5.70E-03	4.99E-04	8.82321E-07	1.26046E-08	1.26046E-07
639	GRID	545100	4164800	5.85E-03	6.20E-05	8.42267E-07	1.20324E-08	1.20324E-07
122	GRID	545000	4164850	6.05E-03	3.10E-05	8.6638E-07	1.23769E-08	1.23769E-07
650	GRID	545000	4164850	6.05E-03	3.10E-05	8.6638E-07	1.23769E-08	1.23769E-07
548	GRID	545050	4164250	6.05E-03	3.02E-04	9.05026E-07	1.29289E-08	1.29289E-07
106	GRID	545150	4164700	6.14E-03	1.32E-04	8.9347E-07	1.27639E-08	1.27639E-07
616	GRID	545150	4164700	6.14E-03	1.32E-04	8.9347E-07	1.27639E-08	1.27639E-07
506	GRID	544950	4164100	6.32E-03	1.18E-04	9.16813E-07	1.30973E-08	1.30973E-07
120	GRID	544900	4164850	6.37E-03	2.17E-05	9.09415E-07	1.29916E-08	1.29916E-07
648	GRID	544900	4164850	6.37E-03	2.17E-05	9.09415E-07	1.29916E-08	1.29916E-07
121	GRID	544950	4164850	6.41E-03	2.51E-05	9.16243E-07	1.30892E-08	1.30892E-07
649	GRID	544950	4164850	6.41E-03	2.51E-05	9.16243E-07	1.30892E-08	1.30892E-07
535	GRID	545000	4164200	6.41E-03	2.04E-04	9.41668E-07	1.34524E-08	1.34524E-07
479	GRID	544900	4164000	6.52E-03	6.76E-05	9.38127E-07	1.34018E-08	1.34018E-07
594	GRID	544600	4164600	6.57E-03	4.95E-05	9.41891E-07	1.34556E-08	1.34556E-07
110	GRID	545100	4164750	6.72E-03	7.77E-05	9.68091E-07	1.38299E-08	1.38299E-07
626	GRID	545100	4164750	6.72E-03	7.77E-05	9.68091E-07	1.38299E-08	1.38299E-07
116	GRID	545050	4164800	6.74E-03	4.74E-05	9.66954E-07	1.38136E-08	1.38136E-07
620	GRID	544750	4164750	6.77E-03	2.92E-05	9.67524E-07	1.38218E-08	1.38218E-07
638	GRID	545050	4164800	6.74E-03	4.74E-05	9.66954E-07	1.38136E-08	1.38136E-07
569	GRID	545100	4164350	6.61E-03	8.19E-04	1.05783E-06	1.51118E-08	1.51118E-07
601	GRID	544650	4164650	6.94E-03	4.19E-05	9.94684E-07	1.42098E-08	1.42098E-07
580	GRID	545150	4164450	6.41E-03	1.95E-03	1.19014E-06	1.7002E-08	1.7002E-07
587	GRID	545150	4164500	6.77E-03	7.88E-04	1.07549E-06	1.53641E-08	1.53641E-07
520	GRID	544950	4164150	7.10E-03	1.47E-04	1.03187E-06	1.4741E-08	1.4741E-07
559	GRID	545050	4164300	7.17E-03	4.07E-04	1.07829E-06	1.54041E-08	1.54041E-07
609	GRID	544700	4164700	7.30E-03	3.55E-05	1.04447E-06	1.4921E-08	1.4921E-07
105	GRID	545100	4164700	7.55E-03	1.01E-04	1.08872E-06	1.55532E-08	1.55532E-07
615	GRID	545100	4164700	7.55E-03	1.01E-04	1.08872E-06	1.55532E-08	1.55532E-07
547	GRID	545000	4164250	7.61E-03	2.57E-04	1.12033E-06	1.60046E-08	1.60046E-07
115	GRID	545000	4164800	7.75E-03	3.68E-05	1.10804E-06	1.58291E-08	1.58291E-07
637	GRID	545000	4164800	7.75E-03	3.68E-05	1.10804E-06	1.58291E-08	1.58291E-07
109	GRID	545050	4164750	8.04E-03	5.83E-05	1.1523E-06	1.64614E-08	1.64614E-07
625	GRID	545050	4164750	8.04E-03	5.83E-05	1.1523E-06	1.64614E-08	1.64614E-07
534	GRID	544950	4164200	8.19E-03	1.82E-04	1.19205E-06	1.70292E-08	1.70292E-07
492	GRID	544900	4164050	8.28E-03	8.63E-05	1.19115E-06	1.70164E-08	1.70164E-07
588	GRID	544600	4164550	8.32E-03	6.21E-05	1.19404E-06	1.70576E-08	1.70576E-07
529	GRID	544600	4164200	8.61E-03	9.70E-05	1.2402E-06	1.77172E-08	1.77172E-07
568	GRID	545050	4164350	8.57E-03	7.27E-04	1.32351E-06	1.89073E-08	1.89073E-07
114	GRID	544950	4164800	8.86E-03	3.02E-05	1.26555E-06	1.80792E-08	1.80792E-07

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
636	GRID	544950	4164800	8.86E-03	3.02E-05	1.26555E-06	1.80792E-08	1.80792E-07
579	GRID	545100	4164450	8.32E-03	1.76E-03	1.43631E-06	2.05187E-08	2.05187E-07
505	GRID	544900	4164100	8.99E-03	1.08E-04	1.29558E-06	1.85083E-08	1.85083E-07
515	GRID	544600	4164150	9.06E-03	8.50E-05	1.30188E-06	1.85982E-08	1.85982E-07
586	GRID	545100	4164500	8.84E-03	7.35E-04	1.3628E-06	1.94685E-08	1.94685E-07
593	GRID	545100	4164550	8.95E-03	3.73E-04	1.32704E-06	1.89577E-08	1.89577E-07
542	GRID	544600	4164250	9.08E-03	1.09E-04	1.30851E-06	1.8693E-08	1.8693E-07
104	GRID	545050	4164700	9.35E-03	7.61E-05	1.3418E-06	1.91686E-08	1.91686E-07
614	GRID	545050	4164700	9.35E-03	7.61E-05	1.3418E-06	1.91686E-08	1.91686E-07
558	GRID	545000	4164300	9.33E-03	3.48E-04	1.37739E-06	1.96771E-08	1.96771E-07
519	GRID	544900	4164150	9.57E-03	1.32E-04	1.38149E-06	1.97356E-08	1.97356E-07
554	GRID	544600	4164300	9.62E-03	1.18E-04	1.38582E-06	1.97974E-08	1.97974E-07
595	GRID	544650	4164600	9.62E-03	5.33E-05	1.37658E-06	1.96654E-08	1.96654E-07
108	GRID	545000	4164750	9.70E-03	4.56E-05	1.38816E-06	1.98309E-08	1.98309E-07
624	GRID	545000	4164750	9.70E-03	4.56E-05	1.38816E-06	1.98309E-08	1.98309E-07
581	GRID	544600	4164500	9.77E-03	7.50E-05	1.40186E-06	2.00266E-08	2.00266E-07
634	GRID	544850	4164800	9.84E-03	2.43E-05	1.40414E-06	2.00591E-08	2.00591E-07
113	GRID	544900	4164800	9.97E-03	2.62E-05	1.42343E-06	2.03347E-08	2.03347E-07
635	GRID	544900	4164800	9.97E-03	2.62E-05	1.42343E-06	2.03347E-08	2.03347E-07
546	GRID	544950	4164250	9.95E-03	2.29E-04	1.44918E-06	2.07025E-08	2.07025E-07
564	GRID	544600	4164350	9.99E-03	1.17E-04	1.43957E-06	2.05653E-08	2.05653E-07
572	GRID	544600	4164400	1.02E-02	1.05E-04	1.4695E-06	2.09929E-08	2.09929E-07
574	GRID	544600	4164450	1.02E-02	8.82E-05	1.46711E-06	2.09588E-08	2.09588E-07
102	GRID	545050	4164650	1.06E-02	1.08E-04	1.52058E-06	2.17226E-08	2.17226E-07
606	GRID	545050	4164650	1.06E-02	1.08E-04	1.52058E-06	2.17226E-08	2.17226E-07
503	GRID	544600	4164100	1.09E-02	7.31E-05	1.56637E-06	2.23768E-08	2.23768E-07
533	GRID	544900	4164200	1.09E-02	1.62E-04	1.5759E-06	2.25128E-08	2.25128E-07
602	GRID	544700	4164650	1.14E-02	4.46E-05	1.62887E-06	2.32695E-08	2.32695E-07
101	GRID	545050	4164600	1.15E-02	1.70E-04	1.66576E-06	2.37966E-08	2.37966E-07
599	GRID	545050	4164600	1.15E-02	1.70E-04	1.66576E-06	2.37966E-08	2.37966E-07
103	GRID	545000	4164700	1.18E-02	5.98E-05	1.69441E-06	2.42058E-08	2.42058E-07
613	GRID	545000	4164700	1.18E-02	5.98E-05	1.69441E-06	2.42058E-08	2.42058E-07
567	GRID	545000	4164350	1.18E-02	6.27E-04	1.76249E-06	2.51784E-08	2.51784E-07
578	GRID	545050	4164450	1.14E-02	1.58E-03	1.8536E-06	2.64799E-08	2.64799E-07
107	GRID	544950	4164750	1.20E-02	3.76E-05	1.70709E-06	2.4387E-08	2.4387E-07
623	GRID	544950	4164750	1.20E-02	3.76E-05	1.70709E-06	2.4387E-08	2.4387E-07
592	GRID	545050	4164550	1.21E-02	3.02E-04	1.76369E-06	2.51956E-08	2.51956E-07
585	GRID	545050	4164500	1.21E-02	6.15E-04	1.81143E-06	2.58776E-08	2.58776E-07
589	GRID	544650	4164550	1.26E-02	6.90E-05	1.8098E-06	2.58542E-08	2.58542E-07
557	GRID	544950	4164300	1.29E-02	3.14E-04	1.87636E-06	2.68052E-08	2.68052E-07
530	GRID	544650	4164200	1.34E-02	1.07E-04	1.92608E-06	2.75155E-08	2.75155E-07
518	GRID	544850	4164150	1.36E-02	1.20E-04	1.95332E-06	2.79045E-08	2.79045E-07
610	GRID	544750	4164700	1.38E-02	3.67E-05	1.96682E-06	2.80974E-08	2.80974E-07
504	GRID	544850	4164100	1.38E-02	9.88E-05	1.98516E-06	2.83595E-08	2.83595E-07
543	GRID	544650	4164250	1.40E-02	1.23E-04	2.00452E-06	2.86361E-08	2.86361E-07
605	GRID	545000	4164650	1.40E-02	8.35E-05	1.99884E-06	2.85548E-08	2.85548E-07
490	GRID	544600	4164050	1.40E-02	6.22E-05	2.00847E-06	2.86925E-08	2.86925E-07
545	GRID	544900	4164250	1.41E-02	2.05E-04	2.03509E-06	2.90727E-08	2.90727E-07
491	GRID	544850	4164050	1.43E-02	8.02E-05	2.04906E-06	2.92723E-08	2.92723E-07
555	GRID	544650	4164300	1.46E-02	1.38E-04	2.10173E-06	3.00247E-08	3.00247E-07
565	GRID	544650	4164350	1.52E-02	1.42E-04	2.17829E-06	3.11184E-08	3.11184E-07
582	GRID	544650	4164500	1.52E-02	8.66E-05	2.18308E-06	3.11868E-08	3.11868E-07
622	GRID	544900	4164750	1.54E-02	3.28E-05	2.19126E-06	3.13037E-08	3.13037E-07
532	GRID	544850	4164200	1.54E-02	1.47E-04	2.20756E-06	3.15366E-08	3.15366E-07
573	GRID	544650	4164400	1.55E-02	1.27E-04	2.22052E-06	3.17217E-08	3.17217E-07
612	GRID	544950	4164700	1.55E-02	4.89E-05	2.21574E-06	3.16535E-08	3.16535E-07
575	GRID	544650	4164450	1.55E-02	1.05E-04	2.22688E-06	3.18126E-08	3.18126E-07
598	GRID	545000	4164600	1.58E-02	1.26E-04	2.27426E-06	3.24895E-08	3.24895E-07
516	GRID	544650	4164150	1.63E-02	9.08E-05	2.33262E-06	3.33232E-08	3.33232E-07
591	GRID	545000	4164550	1.72E-02	2.09E-04	2.48254E-06	3.54649E-08	3.54649E-07
596	GRID	544700	4164600	1.74E-02	5.78E-05	2.48636E-06	3.55194E-08	3.55194E-07
566	GRID	544950	4164350	1.76E-02	5.39E-04	2.5802E-06	3.686E-08	3.686E-07
577	GRID	545000	4164450	1.73E-02	1.25E-03	2.64692E-06	3.78131E-08	3.78131E-07
584	GRID	545000	4164500	1.79E-02	4.27E-04	2.61179E-06	3.73113E-08	3.73113E-07
604	GRID	544950	4164650	1.94E-02	6.68E-05	2.76652E-06	3.95218E-08	3.95218E-07
556	GRID	544900	4164300	2.04E-02	2.81E-04	2.94917E-06	4.2131E-08	4.2131E-07
517	GRID	544800	4164150	2.09E-02	1.11E-04	2.99782E-06	4.28261E-08	4.28261E-07
621	GRID	544850	4164750	2.12E-02	3.07E-05	3.02757E-06	4.3251E-08	4.3251E-07
611	GRID	544900	4164700	2.17E-02	4.28E-05	3.09901E-06	4.42715E-08	4.42715E-07
531	GRID	544800	4164200	2.29E-02	1.36E-04	3.28338E-06	4.69054E-08	4.69054E-07
597	GRID	544950	4164600	2.31E-02	9.52E-05	3.30929E-06	4.72756E-08	4.72756E-07
544	GRID	544850	4164250	2.45E-02	1.86E-04	3.51236E-06	5.01766E-08	5.01766E-07
590	GRID	544950	4164550	2.65E-02	1.43E-04	3.79142E-06	5.41631E-08	5.41631E-07
603	GRID	544900	4164650	2.89E-02	5.70E-05	4.12778E-06	5.89682E-08	5.89682E-07

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
583	GRID	544950	4164500	2.89E-02	2.47E-04	4.15482E-06	5.93546E-08	5.93546E-07
576	GRID	544950	4164450	3.09E-02	5.59E-04	4.48448E-06	6.40639E-08	6.40639E-07
								6.40639E-07

Sample Calculation:

At the receptor (#576), which has the highest cancer risk:

Cancer = [(3.09E-2 + 5.59E-4)) x 1.1 x 302 x 365 x 3 x 0.00001] / 25550 [70 years exposure] =

Cancer ={ [(3.09E-02 + 5.59E-4) x 1.1 x 302 x 365 x 3 x 0.00001] / 25550} x (1/70) [1 years exposure] =

Cancer ={ [(3.09E-2 + 5.59E-4) x 1.1 x 302 x 365 x 3 x 0.00001] / 25550} x (1/70) x 10 [1 Year exposure for infants] =

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	1-hr (ug/m3) Acrolein GLC from construction	1-hr (ug/m3) Acrolein GLC from Haul truck	Chronic Index Hic	Acute Index Hia	Annual (ug/m3) PM2.5 GLC from construction	Annual (ug/m3) PM2.5 GLC from Haul truck
400	GRID	545550	4162650	6.74E-05	1.46E-06	2.82E-06	3.78E-07	5.44E-06	4.67E-04	8.00E-05	0.00E+00
402	GRID	545450	4162750	6.97E-05	1.62E-06	2.85E-06	2.95E-07	5.64E-06	4.59E-04	8.00E-05	0.00E+00
406	GRID	545400	4162800	7.12E-05	1.88E-06	2.84E-06	2.48E-07	5.77E-06	4.51E-04	8.00E-05	0.00E+00
401	GRID	545550	4162700	7.23E-05	1.53E-06	2.94E-06	3.99E-07	5.83E-06	4.88E-04	9.00E-05	0.00E+00
403	GRID	545500	4162750	7.37E-05	1.58E-06	2.99E-06	3.60E-07	5.95E-06	4.90E-04	9.00E-05	0.00E+00
407	GRID	545450	4162800	7.55E-05	1.70E-06	3.02E-06	3.13E-07	6.09E-06	4.87E-04	9.00E-05	0.00E+00
412	GRID	545400	4162850	7.72E-05	1.98E-06	3.04E-06	2.66E-07	6.26E-06	4.83E-04	9.00E-05	0.00E+00
404	GRID	545550	4162750	7.75E-05	1.61E-06	3.05E-06	4.23E-07	6.26E-06	5.07E-04	9.00E-05	0.00E+00
408	GRID	545500	4162800	7.95E-05	1.66E-06	3.12E-06	3.86E-07	6.41E-06	5.12E-04	9.00E-05	0.00E+00
405	GRID	545600	4162750	8.10E-05	1.69E-06	3.02E-06	4.67E-07	6.53E-06	5.09E-04	1.00E-04	0.00E+00
413	GRID	545450	4162850	8.15E-05	1.80E-06	3.18E-06	3.37E-07	6.59E-06	5.13E-04	1.00E-04	0.00E+00
409	GRID	545550	4162800	8.32E-05	1.70E-06	3.13E-06	4.49E-07	6.71E-06	5.23E-04	1.00E-04	0.00E+00
418	GRID	545400	4162900	8.39E-05	2.09E-06	3.22E-06	2.84E-07	6.80E-06	5.12E-04	1.00E-04	0.00E+00
414	GRID	545500	4162850	8.57E-05	1.75E-06	3.23E-06	4.10E-07	6.91E-06	5.31E-04	1.00E-04	0.00E+00
410	GRID	545600	4162800	8.66E-05	1.80E-06	3.06E-06	4.91E-07	6.98E-06	5.19E-04	1.00E-04	0.00E+00
424	GRID	545350	4162950	8.66E-05	2.59E-06	3.25E-06	3.13E-07	7.05E-06	5.21E-04	1.00E-04	0.00E+00
419	GRID	545450	4162900	8.84E-05	1.90E-06	3.31E-06	3.60E-07	7.13E-06	5.36E-04	1.00E-04	0.00E+00
411	GRID	545650	4162800	8.93E-05	1.90E-06	2.90E-06	4.93E-07	7.21E-06	4.96E-04	1.10E-04	0.00E+00
415	GRID	545550	4162850	8.93E-05	1.81E-06	3.20E-06	4.78E-07	7.20E-06	5.37E-04	1.10E-04	0.00E+00
431	GRID	545300	4163000	8.95E-05	3.29E-06	3.27E-06	4.96E-07	7.34E-06	5.50E-04	1.10E-04	0.00E+00
425	GRID	545400	4162950	9.13E-05	2.21E-06	3.38E-06	3.05E-07	7.39E-06	5.38E-04	1.10E-04	0.00E+00
420	GRID	545500	4162900	9.24E-05	1.86E-06	3.31E-06	4.38E-07	7.44E-06	5.49E-04	1.10E-04	0.00E+00
416	GRID	545600	4162850	9.24E-05	1.91E-06	3.08E-06	5.14E-07	7.46E-06	5.25E-04	1.10E-04	0.00E+00
432	GRID	545350	4163000	9.46E-05	2.77E-06	3.44E-06	3.37E-07	7.70E-06	5.52E-04	1.10E-04	0.00E+00
417	GRID	545650	4162850	9.50E-05	2.03E-06	2.87E-06	5.06E-07	7.67E-06	4.93E-04	1.10E-04	0.00E+00
426	GRID	545450	4162950	9.57E-05	2.01E-06	3.44E-06	3.86E-07	7.72E-06	5.57E-04	1.10E-04	0.00E+00
421	GRID	545550	4162900	9.59E-05	1.93E-06	3.24E-06	5.06E-07	7.73E-06	5.47E-04	1.10E-04	0.00E+00
422	GRID	545600	4162900	9.88E-05	2.05E-06	3.07E-06	5.40E-07	7.98E-06	5.27E-04	1.20E-04	0.00E+00
427	GRID	545500	4162950	9.95E-05	1.98E-06	3.38E-06	4.70E-07	8.03E-06	5.64E-04	1.20E-04	0.00E+00
433	GRID	545400	4163000	9.93E-05	2.35E-06	3.51E-06	3.29E-07	8.04E-06	5.62E-04	1.20E-04	0.00E+00
423	GRID	545650	4162900	1.01E-04	2.18E-06	2.81E-06	5.19E-07	8.18E-06	4.86E-04	1.20E-04	0.00E+00
428	GRID	545550	4162950	1.03E-04	2.06E-06	3.27E-06	5.38E-07	8.31E-06	5.55E-04	1.20E-04	0.00E+00
434	GRID	545450	4163000	1.04E-04	2.13E-06	3.54E-06	4.12E-07	8.36E-06	5.75E-04	1.20E-04	0.00E+00
445	GRID	545350	4163050	1.04E-04	2.96E-06	3.61E-06	3.63E-07	8.42E-06	5.80E-04	1.20E-04	0.00E+00
429	GRID	545600	4162950	1.06E-04	2.20E-06	3.04E-06	5.64E-07	8.54E-06	5.26E-04	1.20E-04	0.00E+00
435	GRID	545500	4163000	1.08E-04	2.11E-06	3.44E-06	5.01E-07	8.67E-06	5.76E-04	1.30E-04	0.00E+00
430	GRID	545650	4162950	1.08E-04	2.34E-06	2.72E-06	5.32E-07	8.72E-06	4.74E-04	1.30E-04	0.00E+00
446	GRID	545400	4163050	1.08E-04	2.51E-06	3.64E-06	3.52E-07	8.76E-06	5.84E-04	1.30E-04	0.00E+00
436	GRID	545550	4163000	1.11E-04	2.21E-06	3.26E-06	5.71E-07	8.94E-06	5.60E-04	1.30E-04	0.00E+00
447	GRID	545450	4163050	1.13E-04	2.28E-06	3.61E-06	4.44E-07	9.08E-06	5.92E-04	1.30E-04	0.00E+00
437	GRID	545600	4163000	1.14E-04	2.37E-06	2.97E-06	5.90E-07	9.16E-06	5.20E-04	1.30E-04	0.00E+00
458	GRID	545350	4163100	1.14E-04	3.19E-06	3.77E-06	3.91E-07	9.23E-06	6.06E-04	1.30E-04	0.00E+00
438	GRID	545650	4163000	1.15E-04	2.52E-06	2.59E-06	5.40E-07	9.32E-06	4.57E-04	1.40E-04	0.00E+00
448	GRID	545500	4163050	1.16E-04	2.27E-06	3.48E-06	5.38E-07	9.38E-06	5.86E-04	1.40E-04	0.00E+00
439	GRID	545700	4163000	1.17E-04	2.68E-06	2.40E-06	4.31E-07	9.42E-06	4.13E-04	1.40E-04	0.00E+00
444	GRID	545950	4163000	1.16E-04	4.14E-06	1.41E-06	4.20E-07	9.49E-06	2.68E-04	1.40E-04	0.00E+00
443	GRID	545900	4163000	1.16E-04	3.79E-06	1.62E-06	3.94E-07	9.50E-06	2.95E-04	1.40E-04	0.00E+00
440	GRID	545750	4163000	1.17E-04	2.86E-06	2.16E-06	2.95E-07	9.48E-06	3.59E-04	1.40E-04	0.00E+00
442	GRID	545850	4163000	1.17E-04	3.43E-06	1.80E-06	3.37E-07	9.50E-06	3.12E-04	1.40E-04	0.00E+00
441	GRID	545800	4163000	1.17E-04	3.11E-06	1.92E-06	2.66E-07	9.50E-06	3.20E-04	1.40E-04	0.00E+00
459	GRID	545400	4163100	1.18E-04	2.70E-06	3.77E-06	3.78E-07	9.56E-06	6.04E-04	1.40E-04	0.00E+00
449	GRID	545550	4163050	1.20E-04	2.39E-06	3.23E-06	6.05E-07	9.64E-06	5.60E-04	1.40E-04	0.00E+00
450	GRID	545600	4163050	1.22E-04	2.57E-06	2.88E-06	6.13E-07	9.84E-06	5.10E-04	1.40E-04	0.00E+00
460	GRID	545450	4163100	1.23E-04	2.45E-06	3.67E-06	4.78E-07	9.88E-06	6.06E-04	1.40E-04	0.00E+00
451	GRID	545650	4163050	1.24E-04	2.74E-06	2.56E-06	5.45E-07	9.98E-06	4.53E-04	1.50E-04	0.00E+00
457	GRID	545950	4163050	1.23E-04	4.56E-06	1.29E-06	4.41E-07	1.01E-05	2.52E-04	1.50E-04	0.00E+00
456	GRID	545900	4163050	1.23E-04	4.22E-06	1.52E-06	4.33E-07	1.01E-05	2.86E-04	1.50E-04	0.00E+00
455	GRID	545850	4163050	1.24E-04	3.82E-06	1.73E-06	3.84E-07	1.01E-05	3.10E-04	1.50E-04	0.00E+00
452	GRID	545700	4163050	1.24E-04	2.92E-06	2.34E-06	4.15E-07	1.01E-05	4.03E-04	1.50E-04	0.00E+00
453	GRID	545750	4163050	1.24E-04	3.14E-06	2.06E-06	2.69E-07	1.01E-05	3.40E-04	1.50E-04	0.00E+00
454	GRID	545800	4163050	1.24E-04	3.45E-06	1.91E-06	3.11E-07	1.01E-05	3.24E-04	1.50E-04	0.00E+00
470	GRID	545350	4163150	1.25E-04	3.44E-06	3.90E-06	4.25E-07	1.01E-05	6.31E-04	1.50E-04	0.00E+00
461	GRID	545500	4163100	1.26E-04	2.44E-06	3.48E-06	5.77E-07	1.02E-05	5.93E-04	1.50E-04	0.00E+00
462	GRID	545550	4163100	1.29E-04	2.60E-06	3.16E-06	6.45E-07	1.04E-05	5.56E-04	1.50E-04	0.00E+00
471	GRID	545400	4163150	1.30E-04	2.90E-06	3.87E-06	4.07E-07	1.05E-05	6.22E-04	1.50E-04	0.00E+00
463	GRID	545600	4163100	1.31E-04	2.80E-06	2.74E-06	6.39E-07	1.06E-05	4.93E-04	1.50E-04	0.00E+00
469	GRID	545900	4163100	1.31E-04	4.68E-06	1.40E-06	4.67E-07	1.07E-05	2.72E-04	1.50E-04	0.00E+00
468	GRID	545850	4163100	1.32E-04	4.26E-06	1.64E-06	4.33E-07	1.08E-05	3.03E-04	1.60E-04	0.00E+00
464	GRID	545650	4163100	1.32E-04	2.99E-06	2.52E-06	5.45E-07	1.07E-05	4.48E-04	1.60E-04	0.00E+00
467	GRID	545800	4163100	1.32E-04	3.84E-06	1.86E-06	3.63E-07	1.08E-05	3.24E-04	1.60E-04	0.00E+00
465	GRID	545700	4163100	1.33E-04	3.20E-06	2.25E-06	3.94E-07	1.08E-05	3.86E-04	1.60E-04	0.00E+00
466	GRID	545750	4163100	1.33E-04	3.47E-06	2.01E-06	2.79E-07	1.08E-05	3.35E-04	1.60E-04	0.00E+00
472	GRID	545450	4163150	1.34E-04	2.64E-06	3.71E-06	5.14E-07	1.08E-05	6.18E-04	1.60E-04	0.00E+00
473	GRID	545500	4163150	1.37E-04	2.65E-06	3.44E-06	6.18E-07	1.11E-05	5.95E-04	1.60E-04	0.00E+00
474	GRID	545550	4163150	1.40E-04	2.84E-06	3.06E-06	6.84E-07	1.13E-05	5.47E-04	1.70E-04	0.00E+00
475	GRID	545600	4163150	1.42E-04	3.06E-06	2.70E-06	6.60E-07	1.14E-05	4.91E-04	1.70E-04	0.00E+00
478	GRID	545750	4163150	1.42E-04	3.87E-06	1.98E-06	3.31E-07	1.15E-05	3.37E-04	1.70E-04	0.00E+00
476	GRID	545650	4163150	1.42E-04	3.29E-06	2.45E-06	5.40E-07	1.15E-05	4.37E-04	1.70E-04	0.00E+00
477	GRID	545700	4163150	1.42E-04	3.54E-06	2.13E-06	3.68E-07	1.15E-05	3.64E-04	1.70E-04	0.00E+00
381	GRID	544650	4165600	2.85E-04	4.46E-06	1.15E-05	4.38E-07	2.29E-05	1.74E-03	3.40E-04	0.00E+00
362	GRID	544650	4165550	3.03E-04	4.53E-06	1.22E-05	4.54E-07	2.43E-05	1.85E-03	3.60E-04	0.00E+00
382	GRID	544700	4165600	3.18E-04	5.04E-06	9.90E-06	5.11E-07	2.56E-05	1.52E-03	3.80E-04	0.00E+00
343	GRID	544650	4165500	3.23E-04	4.63E-06	1.30E-05	5.27E-07	2.59E-05	1.97E-03	3.80E-04	0.00E+00
363	GRID	544700	4165550	3.41E-04	5.11E-06	1.07E-05	5.04E-07	2.73E-05	1.64E-03	4.00E-04	0.00E+00
324	GRID	544650	4165450	3.45E-04	4.78E-06	1.37E-05	5.95E-07	2.77E-05	2.09E-03	4.10E-04	0.00E+00
383	GRID	544750	4165600	3.56E-04	5.70E-06	1.08E-05	5.56E-07	2.85E-05	1.66E-03	4.20E-04	0.00E+00
344	GRID	544700	4165500	3.65E-04	5.19E-06	1.16E-05	4.91E-07	2.93E-05	1.77E-03	4.30E-04	0.00E+00
305	GRID	544650	4165400	3.72E-04	4.97E-06	1.45E-05	6.50E-07	2.97E-05	2.22E-03	4.40E-04	0.00E+00
2	GRID	545650	4163650	3.69E-04	1.42E-05	3.84E-06	1.13E-06	3.04E-05	7.28E-04	4.40E-04	0.00E+00
364	GRID	544750	4165550	3.81E-04	5.81E-06	1.14E-05	5.66E-07	3.06E-05	1.75E-03	4.50E-04	0.00E+00

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	1-hr (ug/m3) Acrolein GLC from construction	1-hr (ug/m3) Acrolein GLC from Haul truck	Chronic Index Hic	Acute Index Hia	Annual (ug/m3) PM2.5 GLC from construction	Annual (ug/m3) PM2.5 GLC from Haul truck
1	GRID	545600	4163650	3.81E-04	1.23E-05	3.97E-06	9.79E-07	3.11E-05	7.21E-04	4.50E-04	0.00E+00
384	GRID	544800	4165600	3.92E-04	6.38E-06	1.31E-05	5.92E-07	3.15E-05	1.99E-03	4.60E-04	0.00E+00
325	GRID	544700	4165450	3.94E-04	5.29E-06	1.26E-05	5.14E-07	3.15E-05	1.92E-03	4.60E-04	0.00E+00
286	GRID	544650	4165350	4.01E-04	5.24E-06	1.53E-05	6.86E-07	3.21E-05	2.34E-03	4.70E-04	0.00E+00
345	GRID	544750	4165500	4.12E-04	5.92E-06	1.21E-05	5.71E-07	3.30E-05	1.84E-03	4.90E-04	0.00E+00
11	GRID	545650	4163700	4.12E-04	1.75E-05	3.87E-06	1.19E-06	3.39E-05	7.40E-04	4.90E-04	0.00E+00
365	GRID	544800	4165550	4.23E-04	6.57E-06	1.38E-05	6.11E-07	3.39E-05	2.11E-03	5.00E-04	0.00E+00
306	GRID	544700	4165400	4.25E-04	5.45E-06	1.37E-05	6.00E-07	3.40E-05	2.09E-03	5.00E-04	0.00E+00
385	GRID	544850	4165600	4.27E-04	6.99E-06	1.36E-05	5.82E-07	3.43E-05	2.07E-03	5.00E-04	0.00E+00
10	GRID	545600	4163700	4.25E-04	1.54E-05	4.07E-06	1.24E-06	3.49E-05	7.77E-04	5.00E-04	0.00E+00
28	GRID	545750	4163750	4.25E-04	2.03E-05	3.71E-06	6.03E-07	3.53E-05	6.29E-04	5.00E-04	0.00E+00
267	GRID	544650	4165300	4.34E-04	5.58E-06	1.61E-05	6.99E-07	3.48E-05	2.45E-03	5.10E-04	0.00E+00
9	GRID	545550	4163700	4.43E-04	1.31E-05	4.30E-06	8.51E-07	3.60E-05	7.51E-04	5.20E-04	0.00E+00
27	GRID	545700	4163750	4.41E-04	2.11E-05	3.74E-06	9.03E-07	3.66E-05	6.76E-04	5.20E-04	0.00E+00
326	GRID	544750	4165450	4.45E-04	6.02E-06	1.28E-05	5.66E-07	3.57E-05	1.95E-03	5.30E-04	0.00E+00
48	GRID	545800	4163800	4.52E-04	2.39E-05	4.10E-06	3.65E-07	3.77E-05	6.50E-04	5.30E-04	0.00E+00
346	GRID	544800	4165500	4.59E-04	6.76E-06	1.47E-05	6.18E-07	3.68E-05	2.23E-03	5.40E-04	0.00E+00
386	GRID	544900	4165600	4.59E-04	7.58E-06	1.23E-05	5.11E-07	3.68E-05	1.87E-03	5.40E-04	0.00E+00
8	GRID	545500	4163700	4.59E-04	1.14E-05	4.49E-06	1.51E-06	3.72E-05	8.77E-04	5.40E-04	0.00E+00
287	GRID	544700	4165350	4.61E-04	5.66E-06	1.49E-05	6.78E-07	3.69E-05	2.27E-03	5.40E-04	0.00E+00
26	GRID	545650	4163750	4.59E-04	2.13E-05	3.80E-06	1.17E-06	3.79E-05	7.28E-04	5.40E-04	0.00E+00
366	GRID	544850	4165550	4.63E-04	7.30E-06	1.44E-05	6.21E-07	3.71E-05	2.19E-03	5.50E-04	0.00E+00
248	GRID	544650	4165250	4.72E-04	6.03E-06	1.69E-05	7.25E-07	3.79E-05	2.57E-03	5.60E-04	0.00E+00
47	GRID	545750	4163800	4.70E-04	2.43E-05	4.00E-06	3.86E-07	3.91E-05	6.40E-04	5.60E-04	0.00E+00
7	GRID	545450	4163700	4.76E-04	1.04E-05	4.66E-06	1.52E-06	3.85E-05	9.01E-04	5.60E-04	0.00E+00
25	GRID	545600	4163750	4.76E-04	1.98E-05	3.97E-06	1.49E-06	3.92E-05	7.97E-04	5.60E-04	0.00E+00
307	GRID	544750	4165400	4.85E-04	6.16E-06	1.35E-05	5.51E-07	3.88E-05	2.06E-03	5.70E-04	0.00E+00
387	GRID	544950	4165600	4.87E-04	8.22E-06	1.10E-05	6.08E-07	3.92E-05	1.69E-03	5.80E-04	0.00E+00
46	GRID	545700	4163800	4.90E-04	2.50E-05	3.93E-06	7.91E-07	4.07E-05	6.89E-04	5.80E-04	0.00E+00
6	GRID	545400	4163700	4.94E-04	1.15E-05	4.69E-06	1.17E-06	4.00E-05	8.57E-04	5.80E-04	0.00E+00
327	GRID	544800	4165450	4.99E-04	6.93E-06	1.56E-05	6.37E-07	4.00E-05	2.37E-03	5.90E-04	0.00E+00
367	GRID	544900	4165550	4.99E-04	7.98E-06	1.29E-05	5.69E-07	4.00E-05	1.97E-03	5.90E-04	0.00E+00
24	GRID	545550	4163750	4.96E-04	1.66E-05	4.20E-06	1.17E-06	4.06E-05	7.84E-04	5.90E-04	0.00E+00
268	GRID	544700	4165300	5.03E-04	5.95E-06	1.61E-05	7.38E-07	4.03E-05	2.46E-03	5.90E-04	0.00E+00
67	GRID	545800	4163850	4.96E-04	2.97E-05	4.59E-06	3.84E-07	4.16E-05	7.28E-04	5.90E-04	0.00E+00
347	GRID	544850	4165500	5.03E-04	7.60E-06	1.51E-05	6.58E-07	4.04E-05	2.31E-03	5.90E-04	0.00E+00
5	GRID	545350	4163700	5.12E-04	1.35E-05	4.62E-06	1.49E-06	4.16E-05	8.90E-04	6.00E-04	0.00E+00
45	GRID	545650	4163800	5.10E-04	2.60E-05	3.90E-06	1.11E-06	4.24E-05	7.32E-04	6.00E-04	0.00E+00
229	GRID	544650	4165200	5.16E-04	6.60E-06	1.76E-05	8.43E-07	4.14E-05	2.70E-03	6.10E-04	0.00E+00
388	GRID	545000	4165600	5.19E-04	9.00E-06	8.36E-06	7.18E-07	4.17E-05	1.33E-03	6.10E-04	0.00E+00
23	GRID	545500	4163750	5.19E-04	1.41E-05	4.49E-06	1.59E-06	4.21E-05	8.88E-04	6.10E-04	0.00E+00
66	GRID	545750	4163850	5.19E-04	3.02E-05	4.49E-06	4.44E-07	4.34E-05	7.21E-04	6.10E-04	0.00E+00
4	GRID	545300	4163700	5.28E-04	1.42E-05	4.36E-06	1.54E-06	4.28E-05	8.65E-04	6.20E-04	0.00E+00
288	GRID	544750	4165350	5.32E-04	6.32E-06	1.44E-05	5.90E-07	4.25E-05	2.19E-03	6.30E-04	0.00E+00
368	GRID	544950	4165550	5.32E-04	8.69E-06	1.13E-05	6.08E-07	4.28E-05	1.74E-03	6.30E-04	0.00E+00
44	GRID	545600	4163800	5.32E-04	2.55E-05	3.93E-06	1.58E-06	4.41E-05	8.03E-04	6.30E-04	0.00E+00
3	GRID	545250	4163700	5.39E-04	1.46E-05	5.31E-06	1.46E-06	4.37E-05	9.89E-04	6.40E-04	0.00E+00
22	GRID	545450	4163750	5.43E-04	1.27E-05	4.85E-06	1.75E-06	4.40E-05	9.61E-04	6.40E-04	0.00E+00
348	GRID	544900	4165500	5.45E-04	8.40E-06	1.36E-05	6.24E-07	4.37E-05	2.08E-03	6.40E-04	0.00E+00
308	GRID	544800	4165400	5.48E-04	7.10E-06	1.67E-05	6.45E-07	4.38E-05	2.53E-03	6.50E-04	0.00E+00
65	GRID	545700	4163850	5.43E-04	3.07E-05	4.39E-06	5.11E-07	4.53E-05	7.14E-04	6.40E-04	0.00E+00
389	GRID	545050	4165600	5.50E-04	9.88E-06	9.21E-06	7.91E-07	4.42E-05	1.46E-03	6.50E-04	0.00E+00
328	GRID	544850	4165450	5.52E-04	7.90E-06	1.60E-05	6.84E-07	4.42E-05	2.44E-03	6.50E-04	0.00E+00
86	GRID	545800	4163900	5.43E-04	3.80E-05	5.18E-06	4.38E-07	4.60E-05	8.19E-04	6.40E-04	0.00E+00
249	GRID	544700	4165250	5.54E-04	6.35E-06	1.74E-05	7.72E-07	4.42E-05	2.65E-03	6.50E-04	0.00E+00
43	GRID	545550	4163800	5.59E-04	2.19E-05	4.03E-06	1.62E-06	4.59E-05	8.24E-04	6.60E-04	0.00E+00
369	GRID	545000	4165550	5.68E-04	9.52E-06	8.82E-06	7.25E-07	4.56E-05	1.39E-03	6.70E-04	0.00E+00
21	GRID	545400	4163750	5.70E-04	1.41E-05	5.18E-06	1.34E-06	4.62E-05	9.52E-04	6.70E-04	0.00E+00
64	GRID	545650	4163850	5.68E-04	3.18E-05	4.26E-06	1.07E-06	4.74E-05	7.80E-04	6.70E-04	0.00E+00
85	GRID	545750	4163900	5.70E-04	3.89E-05	5.12E-06	4.57E-07	4.82E-05	8.13E-04	6.70E-04	0.00E+00
390	GRID	545100	4165600	5.81E-04	1.09E-05	9.18E-06	7.96E-07	4.68E-05	1.46E-03	6.90E-04	0.00E+00
269	GRID	544750	4165300	5.85E-04	6.56E-06	1.54E-05	6.91E-07	4.67E-05	2.35E-03	6.90E-04	0.00E+00
349	GRID	544950	4165500	5.85E-04	9.17E-06	1.16E-05	6.05E-07	4.69E-05	1.78E-03	6.90E-04	0.00E+00
42	GRID	545500	4163800	5.88E-04	1.81E-05	4.23E-06	1.61E-06	4.78E-05	8.53E-04	6.90E-04	0.00E+00
20	GRID	545350	4163750	5.99E-04	1.64E-05	5.44E-06	1.72E-06	4.86E-05	1.05E-03	7.10E-04	0.00E+00
329	GRID	544900	4165450	5.99E-04	8.82E-06	1.43E-05	6.78E-07	4.81E-05	2.19E-03	7.10E-04	0.00E+00
63	GRID	545600	4163850	5.97E-04	3.28E-05	4.16E-06	1.57E-06	4.97E-05	8.39E-04	7.00E-04	0.00E+00
289	GRID	544800	4165350	6.03E-04	7.28E-06	1.78E-05	6.39E-07	4.83E-05	2.70E-03	7.10E-04	0.00E+00
370	GRID	545050	4165550	6.03E-04	1.05E-05	9.84E-06	8.17E-07	4.85E-05	1.56E-03	7.10E-04	0.00E+00
309	GRID	544850	4165400	6.08E-04	8.20E-06	1.70E-05	7.02E-07	4.87E-05	2.59E-03	7.20E-04	0.00E+00
84	GRID	545700	4163900	5.99E-04	3.96E-05	5.02E-06	5.56E-07	5.05E-05	8.14E-04	7.10E-04	0.00E+00
230	GRID	544700	4165200	6.12E-04	6.87E-06	1.88E-05	7.72E-07	4.89E-05	2.85E-03	7.20E-04	0.00E+00
391	GRID	545150	4165600	6.14E-04	1.21E-05	1.13E-05	7.20E-07	4.95E-05	1.76E-03	7.20E-04	0.00E+00
41	GRID	545450	4163800	6.19E-04	1.58E-05	4.56E-06	2.03E-06	5.01E-05	9.60E-04	7.30E-04	0.00E+00
350	GRID	545000	4165500	6.25E-04	1.01E-05	9.74E-06	7.36E-07	5.02E-05	1.53E-03	7.40E-04	0.00E+00
19	GRID	545300	4163750	6.25E-04	1.69E-05	5.61E-06	1.65E-06	5.07E-05	1.06E-03	7.40E-04	0.00E+00
62	GRID	545550	4163850	6.28E-04	3.00E-05	4.13E-06	2.12E-06	5.20E-05	9.11E-04	7.40E-04	0.00E+00
83	GRID	545650	4163900	6.32E-04	4.06E-05	4.89E-06	7.02E-07	5.31E-05	8.17E-04	7.50E-04	0.00E+00
371	GRID	545100	4165550	6.39E-04	1.16E-05	1.05E-05	8.38E-07	5.15E-05	1.65E-03	7.50E-04	0.00E+00
250	GRID	544750	4165250	6.48E-04	6.89E-06	1.65E-05	7.80E-07	5.18E-05	2.53E-03	7.60E-04	0.00E+00
330	GRID	544950	4165450	6.45E-04	9.79E-06	1.19E-05	6.03E-07	5.18E-05	1.82E-03	7.60E-04	0.00E+00
392	GRID	545200	4165600	6.45E-04	1.32E-05	1.24E-05	6.03E-07	5.21E-05	1.90E-03	7.60E-04	0.00E+00
18	GRID	545250	4163750	6.50E-04	1.72E-05	5.54E-06	1.55E-06	5.27E-05	1.04E-03	7.70E-04	0.00E+00
40	GRID	545400	4163800	6.54E-04	1.76E-05	4.98E-06	1.56E-06	5.32E-05	9.54E-04	7.70E-04	0.00E+00
310	GRID	544900	4165400	6.63E-04	9.35E-06	1.51E-05	7.31E-07	5.32E-05	2.31E-03	7.80E-04	0.00E+00
351	GRID	545050	4165500	6.66E-04	1.12E-05	1.05E-05	8.40E-07	5.35E-05	1.65E-03	7.90E-04	0.00E+00
61	GRID	545500	4163850	6.63E-04	2.41E-05	4.13E-06	1.49E-06	5.43E-05	8.22E-04	7.80E-04	0.00E+00
270	GRID	544800	4165300	6.70E-04	7.50E-06	1.91E-05	6.21E-07	5.36E-05	2.89E-03	7.90E-04	0.00E+00
17	GRID	545200	4163750	6.70E-04	1.74E-05	6.07E-06	1.40E-06	5.43E-05	1.09E-03	7.90E-04	0.00E+00
290	GRID	544850	4165350	6.74E-04	8.49E-06	1.81E-05	7.18E-07	5.39E-05	2.75E-03	8.00E-04	0.00E+00

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3)		1-hr (ug/m3)		Chronic	Acute	Annual (ug/m3)	
				DPM GLC	DPM GLC	Acrolein GLC	Acrolein GLC	Index	Index	PM2.5 GLC	PM2.5 GLC
				from construction	from Haul truck	from construction	from Haul truck	Hic	Hia	from construction	from Haul truck
82	GRID	545600	4163900	6.68E-04	4.22E-05	4.95E-06	1.50E-06	5.60E-05	9.41E-04	7.90E-04	0.00E+00
372	GRID	545150	4165550	6.77E-04	1.29E-05	1.25E-05	7.70E-07	5.45E-05	1.94E-03	8.00E-04	0.00E+00
211	GRID	544700	4165150	6.81E-04	7.54E-06	2.01E-05	8.90E-07	5.45E-05	3.07E-03	8.00E-04	0.00E+00
393	GRID	545250	4165600	6.79E-04	1.44E-05	1.20E-05	6.94E-07	5.47E-05	1.85E-03	8.00E-04	0.00E+00
16	GRID	545150	4163750	6.86E-04	1.69E-05	6.56E-06	1.15E-06	5.55E-05	1.13E-03	8.10E-04	0.00E+00
331	GRID	545000	4165450	6.92E-04	1.08E-05	1.07E-05	7.41E-07	5.56E-05	1.67E-03	8.20E-04	0.00E+00
39	GRID	545350	4163800	6.94E-04	2.04E-05	5.51E-06	1.98E-06	5.65E-05	1.09E-03	8.20E-04	0.00E+00
15	GRID	545100	4163750	6.97E-04	1.65E-05	6.62E-06	1.06E-06	5.64E-05	1.12E-03	8.20E-04	0.00E+00
12	GRID	544950	4163750	7.01E-04	1.77E-05	1.18E-05	1.01E-06	5.69E-05	1.87E-03	8.30E-04	0.00E+00
14	GRID	545050	4163750	7.03E-04	1.66E-05	7.48E-06	1.05E-06	5.70E-05	1.24E-03	8.30E-04	0.00E+00
60	GRID	545450	4163850	7.03E-04	2.02E-05	4.26E-06	2.40E-06	5.72E-05	9.72E-04	8.30E-04	0.00E+00
13	GRID	545000	4163750	7.08E-04	1.71E-05	1.01E-05	1.04E-06	5.72E-05	1.62E-03	8.30E-04	0.00E+00
352	GRID	545100	4165500	7.08E-04	1.24E-05	1.20E-05	8.79E-07	5.70E-05	1.88E-03	8.40E-04	0.00E+00
394	GRID	545300	4165600	7.08E-04	1.55E-05	1.05E-05	7.54E-07	5.71E-05	1.64E-03	8.40E-04	0.00E+00
373	GRID	545200	4165550	7.14E-04	1.41E-05	1.31E-05	6.29E-07	5.75E-05	2.00E-03	8.40E-04	0.00E+00
81	GRID	545550	4163900	7.06E-04	4.22E-05	5.15E-06	2.26E-06	5.91E-05	1.08E-03	8.30E-04	0.00E+00
311	GRID	544950	4165400	7.19E-04	1.04E-05	1.22E-05	6.65E-07	5.76E-05	1.87E-03	8.50E-04	0.00E+00
231	GRID	544750	4165200	7.23E-04	7.34E-06	1.78E-05	8.43E-07	5.78E-05	2.72E-03	8.50E-04	0.00E+00
395	GRID	545350	4165600	7.32E-04	1.67E-05	8.30E-06	7.54E-07	5.92E-05	1.32E-03	8.60E-04	0.00E+00
38	GRID	545300	4163800	7.37E-04	2.05E-05	6.07E-06	1.76E-06	5.98E-05	1.14E-03	8.70E-04	0.00E+00
291	GRID	544900	4165350	7.41E-04	9.79E-06	1.59E-05	7.72E-07	5.93E-05	2.43E-03	8.70E-04	0.00E+00
332	GRID	545050	4165450	7.41E-04	1.19E-05	1.10E-05	8.64E-07	5.95E-05	1.74E-03	8.70E-04	0.00E+00
251	GRID	544800	4165250	7.50E-04	7.77E-06	2.06E-05	6.86E-07	5.99E-05	3.11E-03	8.90E-04	0.00E+00
374	GRID	545250	4165550	7.48E-04	1.54E-05	1.21E-05	7.23E-07	6.04E-05	1.87E-03	8.80E-04	0.00E+00
353	GRID	545150	4165500	7.50E-04	1.38E-05	1.37E-05	8.22E-07	6.04E-05	2.11E-03	8.90E-04	0.00E+00
59	GRID	545400	4163850	7.50E-04	2.28E-05	4.49E-06	1.82E-06	6.11E-05	9.23E-04	8.90E-04	0.00E+00
271	GRID	544850	4165300	7.55E-04	8.78E-06	1.93E-05	7.33E-07	6.03E-05	2.92E-03	8.90E-04	0.00E+00
396	GRID	545400	4165600	7.52E-04	1.77E-05	6.00E-06	6.94E-07	6.09E-05	9.79E-04	8.90E-04	0.00E+00
80	GRID	545500	4163900	7.50E-04	3.43E-05	5.38E-06	2.21E-06	6.20E-05	1.11E-03	8.90E-04	0.00E+00
193	GRID	544700	4165100	7.66E-04	8.39E-06	2.15E-05	1.00E-06	6.11E-05	3.29E-03	9.00E-04	0.00E+00
397	GRID	545450	4165600	7.66E-04	1.88E-05	5.90E-06	6.16E-07	6.20E-05	9.54E-04	9.00E-04	0.00E+00
312	GRID	545000	4165400	7.75E-04	1.15E-05	1.16E-05	7.44E-07	6.21E-05	1.81E-03	9.10E-04	0.00E+00
398	GRID	545500	4165600	7.70E-04	1.98E-05	6.66E-06	5.27E-07	6.25E-05	1.05E-03	9.10E-04	0.00E+00
399	GRID	545550	4165600	7.70E-04	2.08E-05	7.02E-06	4.96E-07	6.25E-05	1.10E-03	9.10E-04	0.00E+00
375	GRID	545300	4165550	7.79E-04	1.68E-05	1.01E-05	7.85E-07	6.29E-05	1.59E-03	9.20E-04	0.00E+00
37	GRID	545250	4163800	7.79E-04	2.09E-05	6.56E-06	1.67E-06	6.33E-05	1.20E-03	9.20E-04	0.00E+00
333	GRID	545100	4165450	7.90E-04	1.33E-05	1.35E-05	9.24E-07	6.35E-05	2.11E-03	9.30E-04	0.00E+00
354	GRID	545200	4165500	7.92E-04	1.52E-05	1.36E-05	6.76E-07	6.38E-05	2.08E-03	9.30E-04	0.00E+00
79	GRID	545450	4163900	8.01E-04	2.73E-05	5.57E-06	2.95E-06	6.54E-05	1.24E-03	9.40E-04	0.00E+00
100	GRID	545550	4163950	7.90E-04	5.96E-05	5.87E-06	2.15E-06	6.72E-05	1.17E-03	9.30E-04	1.00E-05
292	GRID	544950	4165350	8.06E-04	1.10E-05	1.24E-05	7.41E-07	6.46E-05	1.92E-03	9.50E-04	0.00E+00
376	GRID	545350	4165550	8.04E-04	1.80E-05	7.64E-06	7.85E-07	6.49E-05	1.23E-03	9.50E-04	0.00E+00
58	GRID	545350	4163850	8.04E-04	2.58E-05	4.92E-06	2.23E-06	6.55E-05	1.05E-03	9.50E-04	0.00E+00
212	GRID	544750	4165150	8.17E-04	7.95E-06	1.92E-05	8.69E-07	6.52E-05	2.93E-03	9.60E-04	0.00E+00
36	GRID	545200	4163800	8.21E-04	2.07E-05	6.85E-06	1.49E-06	6.65E-05	1.22E-03	9.70E-04	0.00E+00
377	GRID	545400	4165550	8.21E-04	1.92E-05	5.84E-06	7.15E-07	6.64E-05	9.57E-04	9.70E-04	0.00E+00
380	GRID	545550	4165550	8.24E-04	2.28E-05	7.35E-06	5.40E-07	6.69E-05	1.15E-03	9.70E-04	0.00E+00
313	GRID	545050	4165400	8.30E-04	1.28E-05	1.26E-05	8.85E-07	6.66E-05	1.96E-03	9.80E-04	0.00E+00
355	GRID	545250	4165500	8.28E-04	1.67E-05	1.20E-05	7.54E-07	6.68E-05	1.86E-03	9.80E-04	0.00E+00
378	GRID	545450	4165550	8.30E-04	2.04E-05	6.79E-06	6.34E-07	6.72E-05	1.08E-03	9.80E-04	0.00E+00
379	GRID	545500	4165550	8.30E-04	2.16E-05	7.28E-06	5.35E-07	6.73E-05	1.14E-03	9.80E-04	0.00E+00
272	GRID	544900	4165300	8.35E-04	1.02E-05	1.67E-05	8.04E-07	6.68E-05	2.56E-03	9.80E-04	0.00E+00
334	GRID	545150	4165450	8.39E-04	1.48E-05	1.46E-05	8.77E-07	6.74E-05	2.27E-03	9.90E-04	0.00E+00
232	GRID	544800	4165200	8.48E-04	8.14E-06	2.23E-05	8.09E-07	6.77E-05	3.38E-03	1.00E-03	0.00E+00
252	GRID	544850	4165250	8.53E-04	9.08E-06	2.06E-05	7.31E-07	6.80E-05	3.11E-03	1.01E-03	0.00E+00
99	GRID	545500	4163950	8.46E-04	5.37E-05	6.23E-06	3.44E-06	7.11E-05	1.41E-03	1.00E-03	1.00E-05
356	GRID	545300	4165500	8.59E-04	1.82E-05	9.54E-06	8.19E-07	6.94E-05	1.51E-03	1.01E-03	0.00E+00
35	GRID	545150	4163800	8.59E-04	2.02E-05	6.82E-06	1.20E-06	6.96E-05	1.17E-03	1.02E-03	0.00E+00
78	GRID	545400	4163900	8.59E-04	3.08E-05	5.80E-06	2.30E-06	7.03E-05	1.18E-03	1.01E-03	0.00E+00
175	GRID	544700	4165050	8.66E-04	9.44E-06	2.29E-05	1.05E-06	6.92E-05	3.49E-03	1.02E-03	0.00E+00
57	GRID	545300	4163850	8.64E-04	2.57E-05	5.54E-06	1.89E-06	7.02E-05	1.09E-03	1.02E-03	0.00E+00
293	GRID	545000	4165350	8.73E-04	1.23E-05	1.26E-05	7.44E-07	6.99E-05	1.95E-03	1.03E-03	0.00E+00
361	GRID	545550	4165500	8.79E-04	2.49E-05	7.80E-06	5.87E-07	7.15E-05	1.23E-03	1.04E-03	0.00E+00
335	GRID	545200	4165450	8.84E-04	1.64E-05	1.38E-05	7.31E-07	7.11E-05	2.13E-03	1.04E-03	0.00E+00
357	GRID	545350	4165500	8.81E-04	1.96E-05	6.89E-06	8.17E-07	7.13E-05	1.12E-03	1.04E-03	0.00E+00
314	GRID	545100	4165400	8.88E-04	1.43E-05	1.51E-05	9.68E-07	7.13E-05	2.34E-03	1.05E-03	0.00E+00
360	GRID	545500	4165500	8.93E-04	2.35E-05	7.74E-06	5.43E-07	7.24E-05	1.21E-03	1.05E-03	0.00E+00
358	GRID	545400	4165500	8.95E-04	2.09E-05	6.82E-06	7.41E-07	7.24E-05	1.11E-03	1.06E-03	0.00E+00
34	GRID	545100	4163800	8.97E-04	2.01E-05	7.12E-06	1.13E-06	7.26E-05	1.20E-03	1.06E-03	0.00E+00
655	GRID	544600	4164900	8.99E-04	1.62E-05	1.63E-05	1.00E-06	7.24E-05	2.53E-03	1.06E-03	0.00E+00
359	GRID	545450	4165500	8.99E-04	2.23E-05	7.54E-06	6.52E-07	7.28E-05	1.19E-03	1.06E-03	0.00E+00
273	GRID	544950	4165300	9.13E-04	1.18E-05	1.26E-05	8.14E-07	7.31E-05	1.96E-03	1.08E-03	0.00E+00
98	GRID	545450	4163950	9.08E-04	3.93E-05	6.62E-06	3.71E-06	7.49E-05	1.51E-03	1.07E-03	0.00E+00
336	GRID	545250	4165450	9.22E-04	1.81E-05	1.16E-05	7.88E-07	7.43E-05	1.82E-03	1.09E-03	0.00E+00
194	GRID	544750	4165100	9.30E-04	8.75E-06	2.10E-05	9.32E-07	7.43E-05	3.21E-03	1.10E-03	0.00E+00
56	GRID	545250	4163850	9.28E-04	2.59E-05	6.36E-06	1.81E-06	7.55E-05	1.19E-03	1.10E-03	0.00E+00
77	GRID	545350	4163900	9.26E-04	3.35E-05	6.00E-06	2.46E-06	7.59E-05	1.24E-03	1.09E-03	0.00E+00
33	GRID	545050	4163800	9.33E-04	2.06E-05	7.21E-06	1.12E-06	7.54E-05	1.22E-03	1.10E-03	0.00E+00
294	GRID	545050	4165350	9.39E-04	1.38E-05	1.46E-05	9.05E-07	7.53E-05	2.26E-03	1.11E-03	0.00E+00
342	GRID	545550	4165450	9.37E-04	2.73E-05	8.33E-06	6.37E-07	7.62E-05	1.31E-03	1.11E-03	0.00E+00
315	GRID	545150	4165400	9.42E-04	1.61E-05	1.54E-05	9.39E-07	7.57E-05	2.39E-03	1.11E-03	0.00E+00
253	GRID	544900	4165250	9.50E-04	1.08E-05	1.76E-05	8.22E-07	7.59E-05	2.69E-03	1.12E-03	0.00E+00
337	GRID	545300	4165450	9.50E-04	1.98E-05	8.82E-06	8.58E-07	7.67E-05	1.41E-03	1.12E-03	0.00E+00
341	GRID	545500	4165450	9.59E-04	2.59E-05	8.13E-06	5.58E-07	7.78E-05	1.27E-03	1.13E-03	0.00E+00
213	GRID	544800	4165150	9.68E-04	8.67E-06	2.43E-05	9.13E-07	7.73E-05	3.68E-03	1.14E-03	0.00E+00
32	GRID	545000	4163800	9.66E-04	2.16E-05	1.03E-05	1.10E-06	7.80E-05	1.66E-03	1.14E-03	0.00E+00
233	GRID	544850	4165200	9.73E-04	9.44E-06	2.21E-05	7.10E-07	7.76E-05	3.33E-03	1.15E-03	0.00E+00
338	GRID	545350	4165450	9.70E-04	2.13E-05	6.82E-06	8.53E-07	7.83E-05	1.12E-03	1.14E-03	0.00E+00
340	GRID	545450	4165450	9.73E-04	2.44E-05	8.13E-06	6.71E-07	7.88E-05	1.28E-03	1.15E-03	0.00E+00
339	GRID	545400	4165450	9.77E-04	2.29E-05	7.74E-06	7.67E-07	7.90E-05	1.24E-03	1.15E-03	0.00E+00

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	1-hr (ug/m3) Acrolein GLC from construction	1-hr (ug/m3) Acrolein GLC from Haul truck	Chronic Index Hic	Acute Index Hia	Annual (ug/m3) PM2.5 GLC from construction	Annual (ug/m3) PM2.5 GLC from Haul truck
157	GRID	544700	4165000	9.88E-04	1.09E-05	2.43E-05	1.02E-06	7.90E-05	3.70E-03	1.17E-03	0.00E+00
97	GRID	545400	4163950	9.79E-04	4.41E-05	7.12E-06	3.31E-06	8.10E-05	1.52E-03	1.16E-03	0.00E+00
274	GRID	545000	4165300	9.93E-04	1.32E-05	1.35E-05	7.41E-07	7.95E-05	2.08E-03	1.17E-03	0.00E+00
316	GRID	545200	4165400	9.91E-04	1.78E-05	1.38E-05	7.91E-07	7.97E-05	2.14E-03	1.17E-03	0.00E+00
31	GRID	544950	4163800	9.97E-04	2.27E-05	1.23E-05	1.06E-06	8.07E-05	1.95E-03	1.18E-03	0.00E+00
29	GRID	544850	4163800	9.99E-04	2.35E-05	1.83E-05	9.19E-07	8.08E-05	2.80E-03	1.18E-03	0.00E+00
55	GRID	545200	4163850	9.99E-04	2.56E-05	7.31E-06	1.58E-06	8.11E-05	1.30E-03	1.18E-03	0.00E+00
323	GRID	545550	4165400	9.97E-04	3.02E-05	8.59E-06	6.86E-07	8.12E-05	1.35E-03	1.18E-03	0.00E+00
295	GRID	545100	4165350	1.01E-03	1.54E-05	1.65E-05	1.02E-06	8.07E-05	2.55E-03	1.19E-03	0.00E+00
76	GRID	545300	4163900	1.01E-03	3.33E-05	6.20E-06	2.07E-06	8.21E-05	1.21E-03	1.19E-03	0.00E+00
30	GRID	544900	4163800	1.01E-03	2.34E-05	1.39E-05	9.89E-07	8.19E-05	2.18E-03	1.19E-03	0.00E+00
317	GRID	545250	4165400	1.03E-03	1.97E-05	1.11E-05	8.25E-07	8.29E-05	1.74E-03	1.21E-03	0.00E+00
322	GRID	545500	4165400	1.03E-03	2.87E-05	8.75E-06	6.11E-07	8.35E-05	1.37E-03	1.21E-03	0.00E+00
254	GRID	544950	4165250	1.05E-03	1.25E-05	1.40E-05	8.79E-07	8.37E-05	2.18E-03	1.23E-03	0.00E+00
321	GRID	545450	4165400	1.05E-03	2.70E-05	8.49E-06	6.89E-07	8.53E-05	1.34E-03	1.24E-03	0.00E+00
318	GRID	545300	4165400	1.06E-03	2.16E-05	7.97E-06	9.00E-07	8.51E-05	1.30E-03	1.24E-03	0.00E+00
296	GRID	545150	4165350	1.07E-03	1.74E-05	1.59E-05	1.00E-06	8.56E-05	2.47E-03	1.26E-03	0.00E+00
304	GRID	545550	4165350	1.06E-03	3.36E-05	8.62E-06	7.38E-07	8.65E-05	1.37E-03	1.25E-03	0.00E+00
319	GRID	545350	4165400	1.07E-03	2.35E-05	7.90E-06	8.90E-07	8.62E-05	1.28E-03	1.26E-03	0.00E+00
320	GRID	545400	4165400	1.07E-03	2.52E-05	8.49E-06	7.93E-07	8.62E-05	1.35E-03	1.26E-03	0.00E+00
656	GRID	544650	4164900	1.07E-03	1.59E-05	2.31E-05	9.86E-07	8.58E-05	3.52E-03	1.26E-03	0.00E+00
275	GRID	545050	4165300	1.07E-03	1.49E-05	1.67E-05	9.19E-07	8.59E-05	2.57E-03	1.27E-03	0.00E+00
176	GRID	544750	4165050	1.08E-03	9.79E-06	2.36E-05	1.09E-06	8.58E-05	3.60E-03	1.27E-03	0.00E+00
96	GRID	545350	4163950	1.07E-03	4.59E-05	7.64E-06	2.64E-06	8.78E-05	1.50E-03	1.26E-03	0.00E+00
54	GRID	545150	4163850	1.08E-03	2.54E-05	8.20E-06	1.25E-06	8.70E-05	1.38E-03	1.27E-03	0.00E+00
234	GRID	544900	4165200	1.09E-03	1.13E-05	1.85E-05	8.51E-07	8.73E-05	2.82E-03	1.29E-03	0.00E+00
75	GRID	545250	4163900	1.10E-03	3.34E-05	6.39E-06	1.98E-06	8.94E-05	1.22E-03	1.30E-03	0.00E+00
303	GRID	545500	4165350	1.10E-03	3.18E-05	9.12E-06	6.65E-07	8.95E-05	1.43E-03	1.30E-03	0.00E+00
297	GRID	545200	4165350	1.12E-03	1.94E-05	1.36E-05	8.58E-07	8.98E-05	2.11E-03	1.32E-03	0.00E+00
195	GRID	544800	4165100	1.12E-03	9.35E-06	2.66E-05	9.73E-07	8.95E-05	4.02E-03	1.33E-03	0.00E+00
214	GRID	544850	4165150	1.13E-03	9.97E-06	2.37E-05	8.14E-07	8.98E-05	3.59E-03	1.33E-03	0.00E+00
489	GRID	545400	4164000	1.11E-03	6.95E-06	6.95E-06	4.83E-06	9.35E-05	1.72E-03	1.31E-03	1.00E-05
285	GRID	545550	4165300	1.13E-03	3.75E-05	9.08E-06	7.91E-07	9.20E-05	1.44E-03	1.33E-03	0.00E+00
139	GRID	544700	4164950	1.14E-03	1.29E-05	2.59E-05	9.76E-07	9.13E-05	3.93E-03	1.35E-03	0.00E+00
302	GRID	545450	4165350	1.14E-03	2.99E-05	9.18E-06	7.07E-07	9.21E-05	1.44E-03	1.34E-03	0.00E+00
255	GRID	545000	4165250	1.14E-03	1.44E-05	1.56E-05	8.01E-07	9.14E-05	2.40E-03	1.35E-03	0.00E+00
276	GRID	545100	4165300	1.15E-03	1.68E-05	1.76E-05	1.06E-06	9.21E-05	2.73E-03	1.36E-03	0.00E+00
298	GRID	545250	4165350	1.15E-03	2.16E-05	1.03E-05	8.66E-07	9.28E-05	1.63E-03	1.36E-03	0.00E+00
642	GRID	544600	4164850	1.16E-03	1.92E-05	1.63E-05	1.26E-06	9.29E-05	2.57E-03	1.36E-03	0.00E+00
53	GRID	545100	4163850	1.16E-03	2.60E-05	8.69E-06	1.23E-06	9.35E-05	1.45E-03	1.37E-03	0.00E+00
301	GRID	545400	4165350	1.16E-03	2.80E-05	9.02E-06	8.22E-07	9.39E-05	1.44E-03	1.37E-03	0.00E+00
299	GRID	545300	4165350	1.17E-03	2.37E-05	8.03E-06	9.45E-07	9.44E-05	1.31E-03	1.38E-03	0.00E+00
95	GRID	545300	4163950	1.17E-03	4.56E-05	8.26E-06	2.31E-06	9.58E-05	1.54E-03	1.38E-03	0.00E+00
300	GRID	545350	4165350	1.17E-03	2.58E-05	8.82E-06	9.32E-07	9.48E-05	1.43E-03	1.38E-03	0.00E+00
284	GRID	545500	4165300	1.18E-03	3.55E-05	9.25E-06	7.25E-07	9.59E-05	1.46E-03	1.39E-03	0.00E+00
266	GRID	545550	4165250	1.20E-03	4.21E-05	9.97E-06	8.45E-07	9.80E-05	1.58E-03	1.41E-03	0.00E+00
74	GRID	545200	4163900	1.20E-03	3.37E-05	6.53E-06	1.69E-06	9.78E-05	1.20E-03	1.42E-03	0.00E+00
235	GRID	544950	4165200	1.21E-03	1.34E-05	1.56E-05	9.34E-07	9.70E-05	2.41E-03	1.43E-03	0.00E+00
277	GRID	545150	4165300	1.22E-03	1.90E-05	1.61E-05	1.07E-06	9.75E-05	2.51E-03	1.43E-03	0.00E+00
283	GRID	545450	4165300	1.22E-03	3.34E-05	9.71E-06	7.28E-07	9.94E-05	1.52E-03	1.44E-03	0.00E+00
488	GRID	545350	4164000	1.22E-03	6.90E-05	7.51E-06	2.87E-06	1.02E-04	1.52E-03	1.44E-03	1.00E-05
256	GRID	545050	4165250	1.24E-03	1.62E-05	1.86E-05	9.29E-07	9.91E-05	2.85E-03	1.46E-03	0.00E+00
52	GRID	545050	4163850	1.24E-03	2.73E-05	8.59E-06	1.21E-06	1.00E-04	1.43E-03	1.47E-03	0.00E+00
158	GRID	544750	4165000	1.26E-03	1.11E-05	2.63E-05	1.17E-06	1.01E-04	4.01E-03	1.49E-03	0.00E+00
265	GRID	545500	4165250	1.26E-03	3.99E-05	9.64E-06	7.88E-07	1.03E-04	1.52E-03	1.49E-03	0.00E+00
278	GRID	545200	4165300	1.26E-03	2.13E-05	1.30E-05	9.32E-07	1.02E-04	2.04E-03	1.49E-03	0.00E+00
282	GRID	545400	4165300	1.26E-03	3.11E-05	9.64E-06	8.53E-07	1.02E-04	1.53E-03	1.49E-03	0.00E+00
215	GRID	544900	4165150	1.28E-03	1.18E-05	1.94E-05	8.51E-07	1.02E-04	2.95E-03	1.51E-03	0.00E+00
247	GRID	545550	4165200	1.27E-03	4.74E-05	1.06E-05	8.98E-07	1.04E-04	1.67E-03	1.50E-03	1.00E-05
279	GRID	545250	4165300	1.29E-03	2.38E-05	9.35E-06	9.11E-07	1.04E-04	1.50E-03	1.53E-03	0.00E+00
281	GRID	545350	4165300	1.29E-03	2.87E-05	9.54E-06	9.76E-07	1.04E-04	1.54E-03	1.52E-03	0.00E+00
502	GRID	545400	4164050	1.26E-03	1.33E-04	7.08E-06	6.55E-06	1.10E-04	1.99E-03	1.48E-03	1.00E-05
94	GRID	545250	4163950	1.29E-03	4.71E-05	8.95E-06	2.18E-06	1.06E-04	1.62E-03	1.52E-03	0.00E+00
280	GRID	545300	4165300	1.30E-03	2.63E-05	9.15E-06	9.97E-07	1.05E-04	1.48E-03	1.53E-03	0.00E+00
177	GRID	544800	4165050	1.32E-03	1.04E-05	2.92E-05	9.79E-07	1.05E-04	4.41E-03	1.56E-03	0.00E+00
196	GRID	544850	4165100	1.32E-03	1.06E-05	2.56E-05	9.65E-07	1.06E-04	3.89E-03	1.56E-03	0.00E+00
257	GRID	545100	4165250	1.32E-03	1.83E-05	1.84E-05	1.10E-06	1.06E-04	2.85E-03	1.56E-03	0.00E+00
264	GRID	545450	4165250	1.32E-03	3.76E-05	9.94E-06	7.49E-07	1.07E-04	1.56E-03	1.56E-03	0.00E+00
73	GRID	545150	4163900	1.33E-03	3.47E-05	7.44E-06	1.35E-06	1.08E-04	1.29E-03	1.57E-03	0.00E+00
236	GRID	545000	4165200	1.33E-03	1.55E-05	1.84E-05	9.05E-07	1.07E-04	2.82E-03	1.57E-03	0.00E+00
51	GRID	545000	4163850	1.34E-03	2.87E-05	1.04E-05	1.17E-06	1.08E-04	1.68E-03	1.58E-03	0.00E+00
246	GRID	545500	4165200	1.34E-03	4.52E-05	1.06E-05	8.56E-07	1.10E-04	1.67E-03	1.59E-03	0.00E+00
127	GRID	544700	4164900	1.36E-03	1.55E-05	2.78E-05	1.10E-06	1.08E-04	4.22E-03	1.60E-03	0.00E+00
657	GRID	544700	4164900	1.36E-03	1.55E-05	2.78E-05	1.10E-06	1.08E-04	4.22E-03	1.60E-03	0.00E+00
487	GRID	545300	4164000	1.34E-03	7.23E-05	8.20E-06	2.64E-06	1.12E-04	1.58E-03	1.59E-03	1.00E-05
228	GRID	545550	4165150	1.35E-03	5.37E-05	1.09E-05	9.45E-07	1.11E-04	1.72E-03	1.60E-03	1.00E-05
643	GRID	544650	4164850	1.37E-03	1.93E-05	2.44E-05	1.13E-06	1.10E-04	3.73E-03	1.62E-03	0.00E+00
263	GRID	545400	4165250	1.37E-03	3.49E-05	1.03E-05	8.87E-07	1.11E-04	1.63E-03	1.62E-03	0.00E+00
258	GRID	545150	4165250	1.39E-03	2.08E-05	1.60E-05	1.15E-06	1.12E-04	2.50E-03	1.64E-03	0.00E+00
262	GRID	545350	4165250	1.42E-03	3.22E-05	1.01E-05	1.02E-06	1.14E-04	1.63E-03	1.67E-03	0.00E+00
245	GRID	545450	4165200	1.42E-03	4.25E-05	1.02E-05	7.70E-07	1.15E-04	1.61E-03	1.67E-03	0.00E+00
501	GRID	545350	4164050	1.38E-03	1.44E-04	7.02E-06	3.60E-06	1.21E-04	1.55E-03	1.63E-03	2.00E-05
216	GRID	544950	4165150	1.43E-03	1.43E-05	1.71E-05	9.68E-07	1.14E-04	2.63E-03	1.69E-03	0.00E+00
259	GRID	545200	4165250	1.44E-03	2.35E-05	1.22E-05	1.02E-06	1.15E-04	1.93E-03	1.69E-03	0.00E+00
93	GRID	545200	4163950	1.43E-03	5.01E-05	9.74E-06	1.82E-06	1.17E-04	1.69E-03	1.69E-03	1.00E-05
50	GRID	544950	4163850	1.44E-03	2.97E-05	1.29E-05	1.09E-06	1.16E-04	2.04E-03	1.70E-03	0.00E+00
237	GRID	545050	4165200	1.45E-03	1.77E-05	2.03E-05	9.37E-07	1.16E-04	3.10E-03	1.71E-03	0.00E+00
261	GRID	545300	4165250	1.44E-03	2.94E-05	1.01E-05	1.05E-06	1.16E-04	1.62E-03	1.70E-03	0.00E+00
210	GRID	545550	4165100	1.43E-03	6.12E-05	1.08E-05	9.89E-07	1.18E-04	1.72E-03	1.69E-03	1.00E-05
227	GRID	545500	4165150	1.44E-03	5.13E-05	1.12E-05	9.26E-07	1.18E-04	1.77E-03	1.70E-03	1.00E-05

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3)		1-hr (ug/m3)		Chronic	Acute	Annual (ug/m3)	
				DPM GLC	DPM GLC	Acrolein GLC	Acrolein GLC	Index	Index	PM2.5 GLC	PM2.5 GLC
				from construction	from Haul truck	from construction	from Haul truck	Hic	Hia	from construction	from Haul truck
260	GRID	545250	4165250	1.45E-03	2.65E-05	9.44E-06	9.63E-07	1.17E-04	1.52E-03	1.71E-03	0.00E+00
72	GRID	545100	4163900	1.47E-03	3.62E-05	9.08E-06	1.35E-06	1.19E-04	1.52E-03	1.74E-03	0.00E+00
244	GRID	545400	4165200	1.49E-03	3.95E-05	1.07E-05	9.21E-07	1.21E-04	1.69E-03	1.76E-03	0.00E+00
140	GRID	544750	4164950	1.51E-03	1.30E-05	2.91E-05	1.15E-06	1.20E-04	4.42E-03	1.78E-03	0.00E+00
486	GRID	545250	4164000	1.50E-03	8.03E-05	8.98E-06	2.41E-06	1.25E-04	1.67E-03	1.77E-03	1.00E-05
197	GRID	544900	4165100	1.52E-03	1.25E-05	2.03E-05	8.27E-07	1.21E-04	3.08E-03	1.80E-03	0.00E+00
192	GRID	545550	4165050	1.52E-03	7.00E-05	1.03E-05	1.03E-06	1.25E-04	1.66E-03	1.79E-03	1.00E-05
226	GRID	545450	4165150	1.52E-03	4.84E-05	1.12E-05	8.43E-07	1.24E-04	1.76E-03	1.80E-03	1.00E-05
238	GRID	545100	4165200	1.54E-03	2.01E-05	1.89E-05	1.15E-06	1.23E-04	2.93E-03	1.82E-03	0.00E+00
209	GRID	545500	4165100	1.53E-03	5.87E-05	1.15E-05	9.97E-07	1.26E-04	1.83E-03	1.81E-03	1.00E-05
243	GRID	545350	4165200	1.55E-03	3.63E-05	1.09E-05	1.08E-06	1.25E-04	1.75E-03	1.83E-03	0.00E+00
49	GRID	544900	4163850	1.57E-03	3.02E-05	1.43E-05	1.01E-06	1.27E-04	2.24E-03	1.86E-03	0.00E+00
217	GRID	545000	4165150	1.58E-03	1.69E-05	2.12E-05	1.01E-06	1.26E-04	3.24E-03	1.86E-03	0.00E+00
500	GRID	545300	4164050	1.54E-03	1.62E-04	6.92E-06	3.08E-06	1.34E-04	1.46E-03	1.81E-03	2.00E-05
178	GRID	544850	4165050	1.59E-03	1.15E-05	2.78E-05	1.09E-06	1.27E-04	4.22E-03	1.88E-03	0.00E+00
159	GRID	544800	4165000	1.60E-03	1.17E-05	3.25E-05	1.18E-06	1.27E-04	4.91E-03	1.88E-03	0.00E+00
629	GRID	544600	4164800	1.59E-03	2.27E-05	1.63E-05	1.58E-06	1.28E-04	2.61E-03	1.88E-03	0.00E+00
239	GRID	545150	4165200	1.60E-03	2.30E-05	1.55E-05	1.23E-06	1.29E-04	2.45E-03	1.89E-03	0.00E+00
242	GRID	545300	4165200	1.60E-03	3.30E-05	1.07E-05	1.11E-06	1.29E-04	1.73E-03	1.89E-03	0.00E+00
174	GRID	545550	4165000	1.60E-03	8.06E-05	9.48E-06	1.06E-06	1.32E-04	1.54E-03	1.88E-03	1.00E-05
92	GRID	545150	4163950	1.61E-03	5.20E-05	1.06E-05	1.52E-06	1.31E-04	1.78E-03	1.90E-03	1.00E-05
225	GRID	545400	4165150	1.61E-03	4.51E-05	1.09E-05	9.58E-07	1.31E-04	1.74E-03	1.91E-03	0.00E+00
240	GRID	545200	4165200	1.63E-03	2.62E-05	1.12E-05	1.11E-06	1.31E-04	1.79E-03	1.93E-03	0.00E+00
241	GRID	545250	4165200	1.63E-03	2.95E-05	1.06E-05	1.02E-06	1.31E-04	1.69E-03	1.92E-03	0.00E+00
191	GRID	545500	4165050	1.63E-03	6.77E-05	1.15E-05	1.06E-06	1.34E-04	1.83E-03	1.93E-03	1.00E-05
208	GRID	545450	4165100	1.64E-03	5.56E-05	1.19E-05	9.29E-07	1.34E-04	1.88E-03	1.94E-03	1.00E-05
71	GRID	545050	4163900	1.65E-03	3.77E-05	1.09E-05	1.30E-06	1.33E-04	1.78E-03	1.95E-03	0.00E+00
156	GRID	545550	4164950	1.67E-03	9.35E-05	8.30E-06	1.09E-06	1.39E-04	1.37E-03	1.97E-03	1.00E-05
224	GRID	545350	4165150	1.70E-03	4.14E-05	1.14E-05	1.13E-06	1.38E-04	1.84E-03	2.01E-03	0.00E+00
485	GRID	545200	4164000	1.68E-03	8.35E-05	9.97E-06	1.96E-06	1.40E-04	1.74E-03	1.99E-03	1.00E-05
218	GRID	545050	4165150	1.71E-03	1.95E-05	2.16E-05	9.37E-07	1.37E-04	3.29E-03	2.02E-03	0.00E+00
198	GRID	544950	4165100	1.72E-03	1.53E-05	2.06E-05	1.00E-06	1.37E-04	3.15E-03	2.03E-03	0.00E+00
644	GRID	544700	4164850	1.72E-03	1.90E-05	3.00E-05	1.09E-06	1.38E-04	4.54E-03	2.03E-03	0.00E+00
514	GRID	545350	4164100	1.56E-03	5.32E-04	8.20E-06	3.84E-06	1.66E-04	1.75E-03	1.85E-03	6.00E-05
173	GRID	545500	4165000	1.73E-03	7.86E-05	1.10E-05	1.12E-06	1.43E-04	1.77E-03	2.04E-03	1.00E-05
207	GRID	545400	4165100	1.75E-03	5.19E-05	1.20E-05	9.99E-07	1.42E-04	1.90E-03	2.07E-03	1.00E-05
499	GRID	545250	4164050	1.73E-03	1.57E-04	7.48E-06	2.71E-06	1.49E-04	1.49E-03	2.04E-03	2.00E-05
190	GRID	545450	4165050	1.76E-03	6.44E-05	1.23E-05	1.02E-06	1.44E-04	1.94E-03	2.08E-03	1.00E-05
223	GRID	545300	4165150	1.77E-03	3.74E-05	1.16E-05	1.18E-06	1.43E-04	1.87E-03	2.09E-03	0.00E+00
219	GRID	545100	4165150	1.80E-03	2.23E-05	1.90E-05	1.19E-06	1.44E-04	2.95E-03	2.13E-03	0.00E+00
222	GRID	545250	4165150	1.83E-03	3.33E-05	1.14E-05	1.08E-06	1.47E-04	1.83E-03	2.16E-03	0.00E+00
91	GRID	545100	4163950	1.83E-03	5.29E-05	1.16E-05	1.47E-06	1.49E-04	1.91E-03	2.16E-03	1.00E-05
155	GRID	545500	4164950	1.82E-03	9.17E-05	1.01E-05	1.18E-06	1.51E-04	1.64E-03	2.15E-03	1.00E-05
128	GRID	544750	4164900	1.85E-03	1.54E-05	3.20E-05	1.09E-06	1.47E-04	4.83E-03	2.18E-03	0.00E+00
658	GRID	544750	4164900	1.85E-03	1.54E-05	3.20E-05	1.09E-06	1.47E-04	4.83E-03	2.18E-03	0.00E+00
220	GRID	545150	4165150	1.85E-03	2.56E-05	1.47E-05	1.32E-06	1.48E-04	2.34E-03	2.19E-03	0.00E+00
179	GRID	544900	4165050	1.86E-03	1.33E-05	2.11E-05	9.89E-07	1.48E-04	3.23E-03	2.20E-03	0.00E+00
221	GRID	545200	4165150	1.86E-03	2.94E-05	1.11E-05	1.21E-06	1.49E-04	1.80E-03	2.19E-03	0.00E+00
513	GRID	545300	4164100	1.75E-03	3.66E-04	8.23E-06	3.65E-06	1.67E-04	1.73E-03	2.06E-03	4.00E-05
206	GRID	545350	4165100	1.86E-03	4.75E-05	1.17E-05	1.19E-06	1.51E-04	1.89E-03	2.20E-03	1.00E-05
70	GRID	545000	4163900	1.87E-03	3.89E-05	1.20E-05	1.22E-06	1.51E-04	1.93E-03	2.20E-03	0.00E+00
172	GRID	545450	4165000	1.88E-03	7.51E-05	1.23E-05	1.12E-06	1.55E-04	1.96E-03	2.22E-03	1.00E-05
199	GRID	545000	4165100	1.90E-03	1.84E-05	2.36E-05	1.10E-06	1.52E-04	3.61E-03	2.25E-03	0.00E+00
189	GRID	545400	4165050	1.89E-03	6.01E-05	1.28E-05	1.04E-06	1.55E-04	2.01E-03	2.24E-03	1.00E-05
484	GRID	545150	4164000	1.92E-03	8.18E-05	1.12E-05	1.70E-06	1.58E-04	1.88E-03	2.27E-03	1.00E-05
630	GRID	544650	4164800	1.92E-03	2.32E-05	2.59E-05	1.50E-06	1.54E-04	4.00E-03	2.27E-03	0.00E+00
141	GRID	544800	4164950	1.98E-03	1.34E-05	3.64E-05	1.32E-06	1.58E-04	5.51E-03	2.34E-03	0.00E+00
160	GRID	544850	4165000	1.97E-03	1.27E-05	3.03E-05	1.13E-06	1.57E-04	4.59E-03	2.32E-03	0.00E+00
205	GRID	545300	4165100	1.96E-03	4.29E-05	1.23E-05	1.26E-06	1.59E-04	1.98E-03	2.32E-03	0.00E+00
498	GRID	545200	4164050	1.96E-03	1.43E-04	8.20E-06	2.14E-06	1.66E-04	1.51E-03	2.31E-03	2.00E-05
154	GRID	545450	4164950	1.99E-03	8.82E-05	1.18E-05	1.22E-06	1.65E-04	1.90E-03	2.36E-03	1.00E-05
188	GRID	545350	4165050	2.03E-03	5.52E-05	1.29E-05	1.26E-06	1.65E-04	2.06E-03	2.40E-03	1.00E-05
200	GRID	545050	4165100	2.04E-03	2.15E-05	2.25E-05	9.97E-07	1.63E-04	3.42E-03	2.41E-03	0.00E+00
171	GRID	545400	4165000	2.04E-03	7.06E-05	1.32E-05	1.09E-06	1.67E-04	2.08E-03	2.41E-03	1.00E-05
204	GRID	545250	4165100	2.05E-03	3.80E-05	1.24E-05	1.16E-06	1.65E-04	1.97E-03	2.42E-03	0.00E+00
512	GRID	545250	4164100	1.97E-03	2.78E-04	8.30E-06	3.08E-06	1.78E-04	1.66E-03	2.33E-03	3.00E-05
528	GRID	545350	4164150	1.76E-03	9.26E-04	9.25E-06	5.06E-06	2.12E-04	2.09E-03	2.08E-03	1.00E-04
180	GRID	544950	4165050	2.12E-03	1.63E-05	2.46E-05	1.02E-06	1.69E-04	3.74E-03	2.50E-03	0.00E+00
201	GRID	545100	4165100	2.13E-03	2.49E-05	1.88E-05	1.22E-06	1.70E-04	2.92E-03	2.51E-03	0.00E+00
203	GRID	545200	4165100	2.12E-03	3.32E-05	1.22E-05	1.32E-06	1.70E-04	1.97E-03	2.50E-03	0.00E+00
69	GRID	544950	4163900	2.13E-03	3.95E-05	1.35E-05	1.13E-06	1.71E-04	2.13E-03	2.51E-03	0.00E+00
90	GRID	545050	4163950	2.13E-03	5.34E-05	1.26E-05	1.38E-06	1.72E-04	2.05E-03	2.51E-03	1.00E-05
202	GRID	545150	4165100	2.15E-03	2.87E-05	1.36E-05	1.41E-06	1.72E-04	2.19E-03	2.53E-03	0.00E+00
527	GRID	545300	4164150	1.99E-03	5.65E-04	9.48E-06	4.41E-06	2.02E-04	2.03E-03	2.34E-03	6.00E-05
187	GRID	545300	4165050	2.17E-03	4.97E-05	1.27E-05	1.35E-06	1.76E-04	2.05E-03	2.56E-03	1.00E-05
153	GRID	545400	4164950	2.19E-03	8.35E-05	1.32E-05	1.15E-06	1.80E-04	2.09E-03	2.58E-03	1.00E-05
170	GRID	545350	4165000	2.22E-03	6.48E-05	1.37E-05	1.33E-06	1.80E-04	2.19E-03	2.62E-03	1.00E-05
483	GRID	545100	4164000	2.22E-03	7.88E-05	1.27E-05	1.59E-06	1.82E-04	2.09E-03	2.62E-03	1.00E-05
497	GRID	545150	4164050	2.25E-03	1.28E-04	9.05E-06	1.88E-06	1.88E-04	1.59E-03	2.66E-03	1.00E-05
186	GRID	545250	4165050	2.29E-03	4.38E-05	1.32E-05	1.24E-06	1.85E-04	2.11E-03	2.72E-03	0.00E+00
181	GRID	545000	4165050	2.34E-03	2.01E-05	2.55E-05	1.17E-06	1.86E-04	3.90E-03	2.75E-03	0.00E+00
511	GRID	545200	4164100	2.27E-03	2.24E-04	8.33E-06	2.36E-06	1.96E-04	1.56E-03	2.67E-03	2.00E-05
617	GRID	544600	4164750	2.31E-03	2.67E-05	1.69E-05	1.69E-06	1.86E-04	2.71E-03	2.74E-03	0.00E+00
161	GRID	544900	4165000	2.34E-03	1.45E-05	2.31E-05	1.18E-06	1.86E-04	3.55E-03	2.76E-03	0.00E+00
645	GRID	544750	4164850	2.36E-03	1.88E-05	3.54E-05	1.23E-06	1.87E-04	5.36E-03	2.77E-03	0.00E+00
526	GRID	545250	4164150	2.27E-03	4.03E-04	9.67E-06	3.57E-06	2.11E-04	1.93E-03	2.67E-03	4.00E-05
169	GRID	545300	4165000	2.40E-03	5.83E-05	1.38E-05	1.45E-06	1.94E-04	2.23E-03	2.83E-03	1.00E-05
152	GRID	545350	4164950	2.40E-03	7.71E-05	1.42E-05	1.41E-06	1.96E-04	2.28E-03	2.84E-03	1.00E-05
185	GRID	545200	4165050	2.40E-03	3.80E-05	1.32E-05	1.45E-06	1.94E-04	2.14E-03	2.85E-03	0.00E+00
182	GRID	545050	4165050	2.47E-03	2.40E-05	2.30E-05	1.15E-06	1.97E-04	3.52E-03	2.91E-03	0.00E+00

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3)		1-hr (ug/m3)		Chronic	Acute	Annual (ug/m3)	
				DPM GLC	DPM GLC	Acrolein GLC	Acrolein GLC	Index	Index	PM2.5 GLC	PM2.5 GLC
				from construction	from Haul truck	from construction	from Haul truck	Hic	Hia	from construction	from Haul truck
631	GRID	544700	4164800	2.45E-03	2.35E-05	3.28E-05	1.28E-06	1.96E-04	4.97E-03	2.90E-03	0.00E+00
68	GRID	544900	4163900	2.47E-03	3.94E-05	1.52E-05	1.04E-06	1.99E-04	2.37E-03	2.92E-03	0.00E+00
184	GRID	545150	4165050	2.49E-03	3.26E-05	1.30E-05	1.50E-06	1.99E-04	2.12E-03	2.94E-03	0.00E+00
183	GRID	545100	4165050	2.52E-03	2.80E-05	1.81E-05	1.25E-06	2.01E-04	2.82E-03	2.97E-03	0.00E+00
541	GRID	545300	4164200	2.25E-03	8.38E-04	1.06E-05	5.40E-06	2.44E-04	2.33E-03	2.65E-03	9.00E-05
142	GRID	544850	4164950	2.54E-03	1.44E-05	3.31E-05	1.28E-06	2.01E-04	5.04E-03	2.99E-03	0.00E+00
89	GRID	545000	4163950	2.54E-03	5.34E-05	1.35E-05	1.27E-06	2.05E-04	2.15E-03	2.99E-03	1.00E-05
129	GRID	544800	4164900	2.56E-03	1.58E-05	4.13E-05	1.32E-06	2.04E-04	6.24E-03	3.03E-03	0.00E+00
659	GRID	544800	4164900	2.56E-03	1.58E-05	4.13E-05	1.32E-06	2.04E-04	6.24E-03	3.03E-03	0.00E+00
168	GRID	545250	4165000	2.58E-03	5.12E-05	1.38E-05	1.34E-06	2.08E-04	2.22E-03	3.05E-03	1.00E-05
151	GRID	545300	4164950	2.65E-03	6.93E-05	1.48E-05	1.56E-06	2.14E-04	2.38E-03	3.11E-03	1.00E-05
482	GRID	545050	4164000	2.65E-03	7.61E-05	1.47E-05	1.46E-06	2.15E-04	2.36E-03	3.12E-03	1.00E-05
496	GRID	545100	4164050	2.65E-03	1.16E-04	1.01E-05	1.71E-06	2.18E-04	1.73E-03	3.12E-03	1.00E-05
162	GRID	544950	4165000	2.67E-03	1.76E-05	2.81E-05	9.86E-07	2.13E-04	4.25E-03	3.17E-03	0.00E+00
510	GRID	545150	4164100	2.63E-03	1.87E-04	8.36E-06	2.06E-06	2.22E-04	1.52E-03	3.10E-03	2.00E-05
525	GRID	545200	4164150	2.60E-03	3.14E-04	9.87E-06	2.64E-06	2.31E-04	1.83E-03	3.08E-03	3.00E-05
167	GRID	545200	4165000	2.76E-03	4.41E-05	1.43E-05	1.60E-06	2.21E-04	2.32E-03	3.24E-03	0.00E+00
540	GRID	545250	4164200	2.58E-03	5.82E-04	1.10E-05	4.23E-06	2.50E-04	2.22E-03	3.05E-03	6.00E-05
150	GRID	545250	4164950	2.89E-03	6.08E-05	1.50E-05	1.46E-06	2.33E-04	2.40E-03	3.40E-03	1.00E-05
166	GRID	545150	4165000	2.89E-03	3.76E-05	1.42E-05	1.61E-06	2.31E-04	2.30E-03	3.41E-03	0.00E+00
163	GRID	545000	4165000	2.92E-03	2.20E-05	2.70E-05	1.22E-06	2.32E-04	4.12E-03	3.43E-03	0.00E+00
618	GRID	544650	4164750	2.98E-03	2.79E-05	2.75E-05	1.81E-06	2.37E-04	4.29E-03	3.51E-03	0.00E+00
165	GRID	545100	4165000	2.98E-03	3.19E-05	1.70E-05	1.27E-06	2.38E-04	2.66E-03	3.52E-03	0.00E+00
164	GRID	545050	4165000	3.00E-03	2.69E-05	2.31E-05	1.31E-06	2.39E-04	3.56E-03	3.54E-03	0.00E+00
553	GRID	545300	4164250	2.54E-03	1.47E-03	1.11E-05	6.84E-06	3.17E-04	2.62E-03	2.99E-03	1.60E-04
143	GRID	544900	4164950	3.07E-03	1.61E-05	2.97E-05	1.31E-06	2.45E-04	4.52E-03	3.64E-03	0.00E+00
149	GRID	545200	4164950	3.14E-03	5.19E-05	1.51E-05	1.77E-06	2.52E-04	2.46E-03	3.69E-03	1.00E-05
524	GRID	545150	4164150	3.05E-03	2.55E-04	1.02E-05	2.28E-06	2.62E-04	1.81E-03	3.61E-03	3.00E-05
539	GRID	545200	4164200	3.00E-03	4.39E-04	1.14E-05	3.00E-06	2.72E-04	2.10E-03	3.55E-03	5.00E-05
88	GRID	544950	4163950	3.14E-03	5.30E-05	1.61E-05	1.16E-06	2.53E-04	2.51E-03	3.71E-03	1.00E-05
509	GRID	545100	4164100	3.12E-03	1.61E-04	8.33E-06	1.84E-06	2.58E-04	1.49E-03	3.67E-03	2.00E-05
138	GRID	545250	4164900	3.21E-03	7.33E-05	1.60E-05	1.60E-06	2.59E-04	2.58E-03	3.77E-03	1.00E-05
495	GRID	545050	4164050	3.18E-03	1.07E-04	1.14E-05	1.54E-06	2.60E-04	1.90E-03	3.75E-03	1.00E-05
552	GRID	545250	4164250	2.94E-03	8.91E-04	1.20E-05	5.11E-06	3.02E-04	2.50E-03	3.46E-03	9.00E-05
668	GRID	545250	4164900	3.21E-03	7.33E-05	1.60E-05	1.60E-06	2.59E-04	2.58E-03	3.77E-03	1.00E-05
481	GRID	545000	4164000	3.27E-03	7.35E-05	1.74E-05	1.32E-06	2.65E-04	2.74E-03	3.87E-03	1.00E-05
148	GRID	545150	4164950	3.36E-03	4.38E-05	1.54E-05	1.71E-06	2.69E-04	2.51E-03	3.96E-03	0.00E+00
632	GRID	544750	4164800	3.38E-03	2.34E-05	4.10E-05	1.25E-06	2.69E-04	6.16E-03	3.99E-03	0.00E+00
130	GRID	544850	4164900	3.47E-03	1.67E-05	3.67E-05	1.50E-06	2.75E-04	5.58E-03	4.09E-03	0.00E+00
607	GRID	544600	4164700	3.45E-03	3.20E-05	1.83E-05	1.51E-06	2.75E-04	2.89E-03	4.07E-03	0.00E+00
660	GRID	544850	4164900	3.47E-03	1.67E-05	3.67E-05	1.50E-06	2.75E-04	5.58E-03	4.09E-03	0.00E+00
144	GRID	544950	4164950	3.49E-03	1.93E-05	3.09E-05	1.24E-06	2.78E-04	4.70E-03	4.13E-03	0.00E+00
137	GRID	545200	4164900	3.54E-03	6.23E-05	1.64E-05	1.96E-06	2.85E-04	2.68E-03	4.18E-03	1.00E-05
147	GRID	545100	4164950	3.54E-03	3.68E-05	1.54E-05	1.29E-06	2.83E-04	2.44E-03	4.19E-03	0.00E+00
667	GRID	545200	4164900	3.54E-03	6.23E-05	1.64E-05	1.96E-06	2.85E-04	2.68E-03	4.18E-03	1.00E-05
646	GRID	544800	4164850	3.56E-03	1.90E-05	4.79E-05	1.23E-06	2.83E-04	7.19E-03	4.21E-03	0.00E+00
551	GRID	545200	4164250	3.43E-03	6.20E-04	1.29E-05	3.50E-06	3.21E-04	2.39E-03	4.06E-03	7.00E-05
538	GRID	545150	4164200	3.54E-03	3.44E-04	1.19E-05	2.54E-06	3.08E-04	2.10E-03	4.19E-03	4.00E-05
146	GRID	545050	4164950	3.67E-03	3.04E-05	2.28E-05	1.45E-06	2.92E-04	3.53E-03	4.33E-03	0.00E+00
145	GRID	545000	4164950	3.67E-03	2.43E-05	2.82E-05	1.26E-06	2.93E-04	4.30E-03	4.34E-03	0.00E+00
523	GRID	545100	4164150	3.65E-03	2.14E-04	1.05E-05	1.99E-06	3.05E-04	1.82E-03	4.30E-03	2.00E-05
563	GRID	545250	4164300	3.29E-03	1.38E-03	1.33E-05	6.13E-06	3.69E-04	2.85E-03	3.88E-03	1.50E-04
508	GRID	545050	4164100	3.76E-03	1.43E-04	1.00E-05	1.63E-06	3.09E-04	1.70E-03	4.45E-03	2.00E-05
136	GRID	545150	4164900	3.90E-03	5.19E-05	1.66E-05	1.82E-06	3.12E-04	2.69E-03	4.60E-03	1.00E-05
666	GRID	545150	4164900	3.90E-03	5.19E-05	1.66E-05	1.82E-06	3.12E-04	2.69E-03	4.60E-03	1.00E-05
126	GRID	545200	4164850	3.96E-03	7.62E-05	1.76E-05	2.19E-06	3.19E-04	2.88E-03	4.68E-03	1.00E-05
654	GRID	545200	4164850	3.96E-03	7.62E-05	1.76E-05	2.19E-06	3.19E-04	2.88E-03	4.68E-03	1.00E-05
494	GRID	545000	4164050	4.01E-03	9.97E-05	1.31E-05	1.38E-06	3.24E-04	2.12E-03	4.73E-03	1.00E-05
87	GRID	544900	4163950	4.07E-03	5.18E-05	1.91E-05	1.07E-06	3.25E-04	2.94E-03	4.80E-03	1.00E-05
562	GRID	545200	4164300	3.90E-03	8.91E-04	1.44E-05	4.41E-06	3.78E-04	2.74E-03	4.59E-03	9.00E-05
619	GRID	544700	4164750	4.16E-03	2.87E-05	3.61E-05	1.78E-06	3.31E-04	5.55E-03	4.92E-03	0.00E+00
135	GRID	545100	4164900	4.23E-03	4.29E-05	1.69E-05	1.55E-06	3.38E-04	2.70E-03	4.99E-03	0.00E+00
550	GRID	545150	4164250	4.07E-03	4.63E-04	1.36E-05	2.87E-06	3.59E-04	2.41E-03	4.82E-03	5.00E-05
665	GRID	545100	4164900	4.23E-03	4.29E-05	1.69E-05	1.55E-06	3.38E-04	2.70E-03	4.99E-03	0.00E+00
131	GRID	544900	4164900	4.30E-03	1.84E-05	3.51E-05	1.36E-06	3.41E-04	5.34E-03	5.06E-03	0.00E+00
661	GRID	544900	4164900	4.30E-03	1.84E-05	3.51E-05	1.36E-06	3.41E-04	5.34E-03	5.06E-03	0.00E+00
537	GRID	545100	4164200	4.25E-03	2.81E-04	1.24E-05	2.18E-06	3.58E-04	2.13E-03	5.01E-03	3.00E-05
480	GRID	544950	4164000	4.34E-03	7.09E-05	2.13E-05	1.21E-06	3.49E-04	3.29E-03	5.12E-03	1.00E-05
119	GRID	545200	4164800	4.38E-03	9.52E-05	1.85E-05	2.46E-06	3.54E-04	3.06E-03	5.17E-03	1.00E-05
641	GRID	545200	4164800	4.38E-03	9.52E-05	1.85E-05	2.46E-06	3.54E-04	3.06E-03	5.17E-03	1.00E-05
125	GRID	545150	4164850	4.47E-03	6.29E-05	1.82E-05	1.92E-06	3.58E-04	2.93E-03	5.28E-03	1.00E-05
522	GRID	545050	4164150	4.43E-03	1.84E-04	1.09E-05	1.77E-06	3.65E-04	1.85E-03	5.23E-03	2.00E-05
653	GRID	545150	4164850	4.47E-03	6.29E-05	1.82E-05	1.92E-06	3.58E-04	2.93E-03	5.28E-03	1.00E-05
134	GRID	545050	4164900	4.52E-03	3.47E-05	2.18E-05	1.54E-06	3.59E-04	3.41E-03	5.33E-03	0.00E+00
664	GRID	545050	4164900	4.52E-03	3.47E-05	2.18E-05	1.54E-06	3.59E-04	3.41E-03	5.33E-03	0.00E+00
132	GRID	544950	4164900	4.67E-03	2.17E-05	3.34E-05	1.49E-06	3.72E-04	5.09E-03	5.53E-03	0.00E+00
662	GRID	544950	4164900	4.67E-03	2.17E-05	3.34E-05	1.49E-06	3.72E-04	5.09E-03	5.53E-03	0.00E+00
133	GRID	545000	4164900	4.70E-03	2.72E-05	2.91E-05	1.22E-06	3.73E-04	4.42E-03	5.54E-03	0.00E+00
663	GRID	545000	4164900	4.70E-03	2.72E-05	2.91E-05	1.22E-06	3.73E-04	4.42E-03	5.54E-03	0.00E+00
608	GRID	544650	4164700	4.72E-03	3.38E-05	2.93E-05	1.86E-06	3.75E-04	4.55E-03	5.57E-03	0.00E+00
571	GRID	545200	4164350	4.32E-03	1.40E-03	1.68E-05	5.45E-06	4.53E-04	3.25E-03	5.11E-03	1.50E-04
112	GRID	545200	4164750	4.76E-03	1.23E-04	1.90E-05	2.79E-06	3.86E-04	3.19E-03	5.62E-03	1.00E-05
507	GRID	545000	4164100	4.76E-03	1.29E-04	1.13E-05	1.48E-06	3.86E-04	1.86E-03	5.61E-03	1.00E-05
628	GRID	545200	4164750	4.76E-03	1.23E-04	1.90E-05	2.79E-06	3.86E-04	3.19E-03	5.62E-03	1.00E-05
561	GRID	545150	4164300	4.67E-03	6.42E-04	1.56E-05	3.47E-06	4.19E-04	2.78E-03	5.50E-03	7.00E-05
600	GRID	544600	4164650	4.90E-03	3.92E-05	2.09E-05	1.05E-06	3.90E-04	3.21E-03	5.78E-03	0.00E+00
124	GRID	545100	4164850	5.01E-03	5.11E-05	1.87E-05	1.82E-06	4.00E-04	3.00E-03	5.91E-03	1.00E-05
652	GRID	545100	4164850	5.01E-03	5.11E-05	1.87E-05	1.82E-06	4.00E-04	3.00E-03	5.91E-03	1.00E-05
549	GRID	545100	4164250	4.92E-03	3.69E-04	1.45E-05	2.44E-06	4.19E-04	2.47E-03	5.81E-03	4.00E-05
118	GRID	545150	4164800	5.05E-03	7.80E-05	1.95E-05	2.00E-06	4.06E-04	3.14E-03	5.97E-03	1.00E-05

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	1-hr (ug/m3) Acrolein GLC from construction	1-hr (ug/m3) Acrolein GLC from Haul truck	Chronic Index Hic	Acute Index Hia	Annual (ug/m3) PM2.5 GLC from construction	Annual (ug/m3) PM2.5 GLC from Haul truck
640	GRID	545150	4164800	5.05E-03	7.80E-05	1.95E-05	2.00E-06	4.06E-04	3.14E-03	5.97E-03	1.00E-05
536	GRID	545050	4164200	5.16E-03	2.36E-04	1.32E-05	1.96E-06	4.27E-04	2.21E-03	6.10E-03	3.00E-05
647	GRID	544850	4164850	5.28E-03	1.98E-05	4.10E-05	1.54E-06	4.19E-04	6.20E-03	6.24E-03	0.00E+00
493	GRID	544950	4164050	5.43E-03	9.26E-05	1.54E-05	1.28E-06	4.37E-04	2.44E-03	6.41E-03	1.00E-05
123	GRID	545050	4164850	5.54E-03	4.01E-05	2.02E-05	1.64E-06	4.42E-04	3.19E-03	6.55E-03	0.00E+00
521	GRID	545000	4164150	5.50E-03	1.63E-04	1.21E-05	1.63E-06	4.48E-04	2.00E-03	6.50E-03	2.00E-05
651	GRID	545050	4164850	5.54E-03	4.01E-05	2.02E-05	1.64E-06	4.42E-04	3.19E-03	6.55E-03	0.00E+00
570	GRID	545150	4164350	5.28E-03	1.01E-03	1.85E-05	4.18E-06	4.97E-04	3.30E-03	6.23E-03	1.10E-04
633	GRID	544800	4164800	5.63E-03	2.35E-05	5.67E-05	1.40E-06	4.47E-04	8.50E-03	6.65E-03	0.00E+00
111	GRID	545150	4164750	5.63E-03	9.97E-05	2.06E-05	2.25E-06	4.53E-04	3.34E-03	6.65E-03	1.00E-05
627	GRID	545150	4164750	5.63E-03	9.97E-05	2.06E-05	2.25E-06	4.53E-04	3.34E-03	6.65E-03	1.00E-05
117	GRID	545100	4164800	5.85E-03	6.20E-05	2.05E-05	2.07E-06	4.67E-04	3.29E-03	6.90E-03	1.00E-05
560	GRID	545100	4164300	5.70E-03	4.99E-04	1.72E-05	3.16E-06	4.91E-04	2.97E-03	6.74E-03	5.00E-05
639	GRID	545100	4164800	5.85E-03	6.20E-05	2.05E-05	2.07E-06	4.67E-04	3.29E-03	6.90E-03	1.00E-05
122	GRID	545000	4164850	6.05E-03	3.10E-05	2.95E-05	1.63E-06	4.81E-04	4.54E-03	7.14E-03	0.00E+00
650	GRID	545000	4164850	6.05E-03	3.10E-05	2.95E-05	1.63E-06	4.81E-04	4.54E-03	7.14E-03	0.00E+00
548	GRID	545050	4164250	6.05E-03	3.02E-04	1.57E-05	2.32E-06	5.03E-04	2.63E-03	7.15E-03	3.00E-05
106	GRID	545150	4164700	6.14E-03	1.32E-04	2.14E-05	2.84E-06	4.97E-04	3.55E-03	7.26E-03	1.00E-05
616	GRID	545150	4164700	6.14E-03	1.32E-04	2.14E-05	2.84E-06	4.97E-04	3.55E-03	7.26E-03	1.00E-05
506	GRID	544950	4164100	6.32E-03	1.18E-04	1.61E-05	1.39E-06	5.08E-04	2.56E-03	7.45E-03	1.00E-05
120	GRID	544900	4164850	6.37E-03	2.17E-05	3.93E-05	1.71E-06	5.05E-04	6.00E-03	7.51E-03	0.00E+00
648	GRID	544900	4164850	6.37E-03	2.17E-05	3.93E-05	1.71E-06	5.05E-04	6.00E-03	7.51E-03	0.00E+00
121	GRID	544950	4164850	6.41E-03	2.51E-05	3.57E-05	1.62E-06	5.09E-04	5.44E-03	7.57E-03	0.00E+00
649	GRID	544950	4164850	6.41E-03	2.51E-05	3.57E-05	1.62E-06	5.09E-04	5.44E-03	7.57E-03	0.00E+00
535	GRID	545000	4164200	6.41E-03	2.04E-04	1.41E-05	1.79E-06	5.23E-04	2.33E-03	7.56E-03	2.00E-05
479	GRID	544900	4164000	6.52E-03	6.76E-05	2.70E-05	1.12E-06	5.20E-04	4.11E-03	7.69E-03	1.00E-05
594	GRID	544600	4164600	6.57E-03	4.95E-05	2.31E-05	1.23E-06	5.22E-04	3.56E-03	7.74E-03	1.00E-05
110	GRID	545100	4164750	6.72E-03	7.77E-05	2.20E-05	2.28E-06	5.37E-04	3.55E-03	7.92E-03	1.00E-05
626	GRID	545100	4164750	6.72E-03	7.77E-05	2.20E-05	2.28E-06	5.37E-04	3.55E-03	7.92E-03	1.00E-05
116	GRID	545050	4164800	6.74E-03	4.74E-05	2.15E-05	1.61E-06	5.37E-04	3.37E-03	7.96E-03	1.00E-05
620	GRID	544750	4164750	6.77E-03	2.92E-05	4.82E-05	1.58E-06	5.36E-04	7.28E-03	7.97E-03	0.00E+00
638	GRID	545050	4164800	6.74E-03	4.74E-05	2.15E-05	1.61E-06	5.37E-04	3.37E-03	7.96E-03	1.00E-05
569	GRID	545100	4164350	6.61E-03	8.19E-04	2.06E-05	5.35E-06	5.87E-04	3.78E-03	7.79E-03	9.00E-05
601	GRID	544650	4164650	6.94E-03	4.19E-05	3.11E-05	1.56E-06	5.53E-04	4.77E-03	8.21E-03	0.00E+00
580	GRID	545150	4164450	6.41E-03	1.95E-03	1.93E-05	9.37E-06	6.61E-04	4.20E-03	7.56E-03	2.10E-04
587	GRID	545150	4164500	6.77E-03	7.88E-04	1.76E-05	8.87E-06	5.98E-04	3.86E-03	8.00E-03	8.00E-05
520	GRID	544950	4164150	7.10E-03	1.47E-04	1.69E-05	1.50E-06	5.72E-04	2.69E-03	8.37E-03	2.00E-05
559	GRID	545050	4164300	7.17E-03	4.07E-04	1.93E-05	3.34E-06	5.99E-04	3.30E-03	8.46E-03	4.00E-05
609	GRID	544700	4164700	7.30E-03	3.55E-05	4.07E-05	2.07E-06	5.79E-04	6.23E-03	8.61E-03	0.00E+00
105	GRID	545100	4164700	7.55E-03	1.01E-04	2.33E-05	2.33E-06	6.04E-04	3.75E-03	8.89E-03	1.00E-05
615	GRID	545100	4164700	7.55E-03	1.01E-04	2.33E-05	2.33E-06	6.04E-04	3.75E-03	8.89E-03	1.00E-05
547	GRID	545000	4164250	7.61E-03	2.57E-04	1.78E-05	2.39E-06	6.23E-04	2.95E-03	8.99E-03	3.00E-05
115	GRID	545000	4164800	7.75E-03	3.68E-05	2.92E-05	1.96E-06	6.15E-04	4.55E-03	9.14E-03	0.00E+00
637	GRID	545000	4164800	7.75E-03	3.68E-05	2.92E-05	1.96E-06	6.15E-04	4.55E-03	9.14E-03	0.00E+00
109	GRID	545050	4164750	8.04E-03	5.83E-05	2.36E-05	2.27E-06	6.40E-04	3.78E-03	9.49E-03	1.00E-05
625	GRID	545050	4164750	8.04E-03	5.83E-05	2.36E-05	2.27E-06	6.40E-04	3.78E-03	9.49E-03	1.00E-05
534	GRID	544950	4164200	8.19E-03	1.82E-04	1.77E-05	1.88E-06	6.61E-04	2.86E-03	9.66E-03	2.00E-05
492	GRID	544900	4164050	8.28E-03	8.63E-05	1.90E-05	1.21E-06	6.61E-04	2.94E-03	9.77E-03	1.00E-05
588	GRID	544600	4164550	8.32E-03	6.21E-05	2.76E-05	1.88E-06	6.62E-04	4.30E-03	9.82E-03	1.00E-05
529	GRID	544600	4164200	8.61E-03	9.70E-05	3.07E-05	1.76E-06	6.88E-04	4.73E-03	1.02E-02	1.00E-05
568	GRID	545050	4164350	8.57E-03	7.27E-04	2.33E-05	6.29E-06	7.35E-04	4.32E-03	1.01E-02	8.00E-05
114	GRID	544950	4164800	8.86E-03	3.02E-05	3.80E-05	1.94E-06	7.03E-04	5.82E-03	1.05E-02	0.00E+00
636	GRID	544950	4164800	8.86E-03	3.02E-05	3.80E-05	1.94E-06	7.03E-04	5.82E-03	1.05E-02	0.00E+00
579	GRID	545100	4164450	8.32E-03	1.76E-03	2.22E-05	6.86E-06	7.97E-04	4.24E-03	9.82E-03	1.90E-04
505	GRID	544900	4164100	8.99E-03	1.08E-04	2.05E-05	1.31E-06	7.20E-04	3.19E-03	1.06E-02	1.00E-05
515	GRID	544600	4164150	9.06E-03	8.50E-05	3.17E-05	1.50E-06	7.22E-04	4.85E-03	1.07E-02	1.00E-05
586	GRID	545100	4164500	8.84E-03	7.35E-04	2.02E-05	5.77E-06	7.56E-04	3.79E-03	1.04E-02	8.00E-05
593	GRID	545100	4164550	8.95E-03	3.73E-04	2.14E-05	5.24E-06	7.37E-04	3.89E-03	1.06E-02	4.00E-05
542	GRID	544600	4164250	9.08E-03	1.09E-04	3.17E-05	1.73E-06	7.26E-04	4.88E-03	1.07E-02	1.00E-05
104	GRID	545050	4164700	9.35E-03	7.61E-05	2.55E-05	2.71E-06	7.45E-04	4.12E-03	1.10E-02	1.00E-05
614	GRID	545050	4164700	9.35E-03	7.61E-05	2.55E-05	2.71E-06	7.45E-04	4.12E-03	1.10E-02	1.00E-05
558	GRID	545000	4164300	9.33E-03	3.48E-04	2.21E-05	3.44E-06	7.65E-04	3.74E-03	1.10E-02	4.00E-05
519	GRID	544900	4164150	9.57E-03	1.32E-04	2.25E-05	1.56E-06	7.66E-04	3.51E-03	1.13E-02	1.00E-05
554	GRID	544600	4164300	9.62E-03	1.18E-04	3.17E-05	1.82E-06	7.69E-04	4.89E-03	1.13E-02	1.00E-05
595	GRID	544650	4164600	9.62E-03	5.33E-05	3.24E-05	1.24E-06	7.64E-04	4.91E-03	1.14E-02	1.00E-05
108	GRID	545000	4164750	9.70E-03	4.56E-05	2.80E-05	2.17E-06	7.71E-04	4.40E-03	1.15E-02	0.00E+00
624	GRID	545000	4164750	9.70E-03	4.56E-05	2.80E-05	2.17E-06	7.71E-04	4.40E-03	1.15E-02	0.00E+00
581	GRID	544600	4164500	9.77E-03	7.50E-05	3.04E-05	2.32E-06	7.78E-04	4.78E-03	1.15E-02	1.00E-05
634	GRID	544850	4164800	9.84E-03	2.43E-05	4.85E-05	1.41E-06	7.79E-04	7.28E-03	1.16E-02	0.00E+00
113	GRID	544900	4164800	9.97E-03	2.62E-05	4.36E-05	1.82E-06	7.90E-04	6.63E-03	1.18E-02	0.00E+00
635	GRID	544900	4164800	9.97E-03	2.62E-05	4.36E-05	1.82E-06	7.90E-04	6.63E-03	1.18E-02	0.00E+00
546	GRID	544950	4164250	9.95E-03	2.29E-04	2.07E-05	2.31E-06	8.04E-04	3.36E-03	1.17E-02	2.00E-05
564	GRID	544600	4164350	9.99E-03	1.17E-04	3.12E-05	2.30E-06	8.00E-04	4.89E-03	1.18E-02	1.00E-05
572	GRID	544600	4164400	1.02E-02	1.05E-04	3.08E-05	2.59E-06	8.15E-04	4.87E-03	1.21E-02	1.00E-05
574	GRID	544600	4164450	1.02E-02	8.82E-05	3.09E-05	2.79E-06	8.15E-04	4.92E-03	1.21E-02	1.00E-05
102	GRID	545050	4164650	1.06E-02	1.08E-04	2.71E-05	3.55E-06	8.44E-04	4.48E-03	1.25E-02	1.00E-05
606	GRID	545050	4164650	1.06E-02	1.08E-04	2.71E-05	3.55E-06	8.44E-04	4.48E-03	1.25E-02	1.00E-05
503	GRID	544600	4164100	1.09E-02	7.31E-05	3.28E-05	1.37E-06	8.69E-04	4.99E-03	1.29E-02	1.00E-05
533	GRID	544900	4164200	1.09E-02	1.62E-04	2.48E-05	1.81E-06	8.75E-04	3.89E-03	1.29E-02	2.00E-05
602	GRID	544700	4164650	1.14E-02	4.46E-05	4.59E-05	2.03E-06	9.04E-04	7.02E-03	1.35E-02	0.00E+00
101	GRID	545050	4164600	1.15E-02	1.70E-04	2.89E-05	3.47E-06	9.25E-04	4.73E-03	1.36E-02	2.00E-05
599	GRID	545050	4164600	1.15E-02	1.70E-04	2.89E-05	3.47E-06	9.25E-04	4.73E-03	1.36E-02	2.00E-05
103	GRID	545000	4164700	1.18E-02	5.98E-05	2.82E-05	2.77E-06	9.41E-04	4.53E-03	1.40E-02	1.00E-05
613	GRID	545000	4164700	1.18E-02	5.98E-05	2.82E-05	2.77E-06	9.41E-04	4.53E-03	1.40E-02	1.00E-05
567	GRID	545000	4164350	1.18E-02	6.27E-04	2.71E-05	6.03E-06	9.78E-04	4.83E-03	1.39E-02	7.00E-05
578	GRID	545050	4164450	1.14E-02	1.58E-03	2.60E-05	6.55E-06	1.03E-03	4.76E-03	1.35E-02	1.70E-04
107	GRID	544950	4164750	1.20E-02	3.76E-05	4.00E-05	2.22E-06	9.48E-04	6.15E-03	1.41E-02	0.00E+00
623	GRID	544950	4164750	1.20E-02	3.76E-05	4.00E-05	2.22E-06	9.48E-04	6.15E-03	1.41E-02	0.00E+00
592	GRID	545050	4164550	1.21E-02	3.02E-04	3.00E-05	3.63E-06	9.79E-04	4.91E-03	1.43E-02	3.00E-05
585	GRID	545050	4164500	1.21E-02	6.15E-04	2.54E-05	5.40E-06	1.01E-03	4.49E-03	1.43E-02	7.00E-05

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3)		1-hr (ug/m3)		Chronic	Acute	Annual (ug/m3)	
				DPM GLC	DPM GLC	Acrolein GLC	Acrolein GLC	Index	Index	PM2.5 GLC	PM2.5 GLC
				from construction	from Haul truck	from construction	from Haul truck	Hic	Hia	from construction	from Haul truck
589	GRID	544650	4164550	1.26E-02	6.90E-05	3.25E-05	1.86E-06	1.00E-03	5.02E-03	1.49E-02	1.00E-05
557	GRID	544950	4164300	1.29E-02	3.14E-04	2.60E-05	3.65E-06	1.04E-03	4.33E-03	1.52E-02	3.00E-05
530	GRID	544650	4164200	1.34E-02	1.07E-04	4.36E-05	1.77E-06	1.07E-03	6.64E-03	1.59E-02	1.00E-05
518	GRID	544850	4164150	1.36E-02	1.20E-04	2.72E-05	1.52E-06	1.08E-03	4.20E-03	1.60E-02	1.00E-05
610	GRID	544750	4164700	1.38E-02	3.67E-05	5.77E-05	2.13E-06	1.09E-03	8.75E-03	1.63E-02	0.00E+00
504	GRID	544850	4164100	1.38E-02	9.88E-05	2.42E-05	1.34E-06	1.10E-03	3.73E-03	1.63E-02	1.00E-05
543	GRID	544650	4164250	1.40E-02	1.23E-04	4.30E-05	2.10E-06	1.11E-03	6.56E-03	1.65E-02	1.00E-05
605	GRID	545000	4164650	1.40E-02	8.35E-05	3.06E-05	2.55E-06	1.11E-03	4.84E-03	1.65E-02	1.00E-05
490	GRID	544600	4164050	1.40E-02	6.22E-05	4.03E-05	1.16E-06	1.11E-03	6.08E-03	1.66E-02	1.00E-05
545	GRID	544900	4164250	1.41E-02	2.05E-04	2.78E-05	2.45E-06	1.13E-03	4.41E-03	1.66E-02	2.00E-05
491	GRID	544850	4164050	1.43E-02	8.02E-05	2.27E-05	1.16E-06	1.14E-03	3.49E-03	1.69E-02	1.00E-05
555	GRID	544650	4164300	1.46E-02	1.38E-04	4.16E-05	1.95E-06	1.17E-03	6.38E-03	1.73E-02	1.00E-05
565	GRID	544650	4164350	1.52E-02	1.42E-04	4.03E-05	2.46E-06	1.21E-03	6.26E-03	1.79E-02	2.00E-05
582	GRID	544650	4164500	1.52E-02	8.66E-05	3.64E-05	2.44E-06	1.21E-03	5.67E-03	1.80E-02	1.00E-05
622	GRID	544900	4164750	1.54E-02	3.28E-05	4.82E-05	1.65E-06	1.22E-03	7.27E-03	1.81E-02	0.00E+00
532	GRID	544850	4164200	1.54E-02	1.47E-04	3.38E-05	1.89E-06	1.23E-03	5.23E-03	1.81E-02	2.00E-05
573	GRID	544650	4164400	1.55E-02	1.27E-04	3.87E-05	3.08E-06	1.23E-03	6.08E-03	1.83E-02	1.00E-05
612	GRID	544950	4164700	1.55E-02	4.89E-05	4.13E-05	2.01E-06	1.23E-03	6.34E-03	1.83E-02	1.00E-05
575	GRID	544650	4164450	1.55E-02	1.05E-04	3.71E-05	3.31E-06	1.24E-03	5.89E-03	1.83E-02	1.00E-05
598	GRID	545000	4164600	1.58E-02	1.26E-04	3.27E-05	2.82E-06	1.26E-03	5.18E-03	1.87E-02	1.00E-05
516	GRID	544650	4164150	1.63E-02	9.08E-05	4.69E-05	1.60E-06	1.30E-03	7.10E-03	1.92E-02	1.00E-05
591	GRID	545000	4164550	1.72E-02	2.09E-04	3.51E-05	4.07E-06	1.38E-03	5.72E-03	2.03E-02	2.00E-05
596	GRID	544700	4164600	1.74E-02	5.78E-05	5.25E-05	1.57E-06	1.38E-03	7.87E-03	2.05E-02	1.00E-05
566	GRID	544950	4164350	1.76E-02	5.39E-04	3.20E-05	5.77E-06	1.43E-03	5.51E-03	2.08E-02	6.00E-05
577	GRID	545000	4164450	1.73E-02	1.25E-03	3.12E-05	5.45E-06	1.47E-03	5.36E-03	2.05E-02	1.30E-04
584	GRID	545000	4164500	1.79E-02	4.27E-04	3.77E-05	4.91E-06	1.45E-03	6.21E-03	2.11E-02	5.00E-05
604	GRID	544950	4164650	1.94E-02	6.68E-05	4.16E-05	2.28E-06	1.54E-03	6.42E-03	2.29E-02	1.00E-05
556	GRID	544900	4164300	2.04E-02	2.81E-04	3.12E-05	3.47E-06	1.64E-03	5.06E-03	2.41E-02	3.00E-05
517	GRID	544800	4164150	2.09E-02	1.11E-04	4.49E-05	1.53E-06	1.66E-03	6.79E-03	2.47E-02	1.00E-05
621	GRID	544850	4164750	2.12E-02	3.07E-05	5.51E-05	1.62E-06	1.68E-03	8.26E-03	2.51E-02	0.00E+00
611	GRID	544900	4164700	2.17E-02	4.28E-05	5.31E-05	1.90E-06	1.72E-03	8.01E-03	2.57E-02	0.00E+00
531	GRID	544800	4164200	2.29E-02	1.36E-04	5.38E-05	1.93E-06	1.83E-03	8.12E-03	2.71E-02	1.00E-05
597	GRID	544950	4164600	2.31E-02	9.52E-05	4.03E-05	2.95E-06	1.84E-03	6.34E-03	2.74E-02	1.00E-05
544	GRID	544850	4164250	2.45E-02	1.86E-04	4.43E-05	2.56E-06	1.94E-03	6.82E-03	2.88E-02	2.00E-05
590	GRID	544950	4164550	2.65E-02	1.43E-04	4.10E-05	3.91E-06	2.10E-03	6.56E-03	3.12E-02	2.00E-05
603	GRID	544900	4164650	2.89E-02	5.70E-05	5.77E-05	2.12E-06	2.29E-03	8.75E-03	3.41E-02	1.00E-05
583	GRID	544950	4164500	2.89E-02	2.47E-04	4.39E-05	4.31E-06	2.31E-03	7.07E-03	3.43E-02	3.00E-05
576	GRID	544950	4164450	3.09E-02	5.59E-04	4.79E-05	5.77E-06	2.48E-03	7.81E-03	3.64E-02	6.00E-05

APPENDIX B

DISPERSION MODELING AND HEALTH RISK ASSESSMENT RUNS INPUT FILES

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: G:\Sharp Park\New\URBEMIS\Construction4.urb924

Project Name: Sharp Park - Construction - 6-month Duration

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/1/2012-5/14/2012 Active	5.21	18.32	**123.65**	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building 05/01/2012-05/14/2012	5.21	18.32	123.65	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building Off Road Diesel	1.42	11.80	4.44	0.00	0.00	0.08	0.08	0.00	0.08	0.08	1,370.68
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	3.79	6.52	119.21	0.12	0.60	0.31	0.91	0.22	0.25	0.47	12,320.61
Time Slice 5/15/2012-8/31/2012 Active	**14.53**	**153.21**	72.54	**0.13**	0.50	3.37	3.87	0.16	3.10	3.27	**21,777.38**
Mass Grading 05/15/2012-	14.53	153.21	72.54	0.13	0.50	3.37	3.87	0.16	3.10	3.27	21,777.38
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	9.34	75.64	44.36	0.00	0.00	0.58	0.58	0.00	0.54	0.54	7,635.08
Mass Grading On Road Diesel	5.10	77.42	25.47	0.13	0.49	2.78	3.27	0.16	2.56	2.72	13,861.70
Mass Grading Worker Trips	0.09	0.15	2.72	0.00	0.01	0.01	0.02	0.00	0.01	0.01	280.60
Time Slice 9/3/2012-9/14/2012 Active	5.76	59.80	26.77	0.05	90.20	1.35	91.55	18.86	1.24	20.10	9,091.81
Mass Grading 09/01/2012-	1.65	16.47	8.36	0.02	45.07	0.45	45.52	9.42	0.41	9.83	2,535.94
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	0.96	6.22	4.50	0.00	0.00	0.08	0.08	0.00	0.08	0.08	654.92
Mass Grading On Road Diesel	0.67	10.22	3.36	0.02	0.06	0.37	0.43	0.02	0.34	0.36	1,830.00
Mass Grading Worker Trips	0.02	0.03	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.02
Mass Grading 09/01/2012-	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	2.70	22.52	10.36	0.00	0.00	0.15	0.15	0.00	0.14	0.14	2,713.85
Mass Grading On Road Diesel	1.37	20.75	6.82	0.03	0.13	0.75	0.88	0.04	0.69	0.73	3,714.47
Mass Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.54
Time Slice 9/17/2012-9/28/2012 Active	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading 09/01/2012-	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	2.70	22.52	10.36	0.00	0.00	0.15	0.15	0.00	0.14	0.14	2,713.85
Mass Grading On Road Diesel	1.37	20.75	6.82	0.03	0.13	0.75	0.88	0.04	0.69	0.73	3,714.47
Mass Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.54

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Time Slice 10/1/2012-10/15/2012	5.21	18.32	**123.65**	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building 10/01/2012-10/15/2012	5.21	18.32	123.65	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building Off Road Diesel	1.42	11.80	4.44	0.00	0.00	0.08	0.08	0.00	0.08	0.08	1,370.68
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	3.79	6.52	119.21	0.12	0.60	0.31	0.91	0.22	0.25	0.47	12,320.61

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Off Highway Tractors, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds

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For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%
For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%
The following mitigation measures apply to Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation
For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%
For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

Phase Assumptions

Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 3443.04
Off-Road Equipment:
3 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
3 Off Highway Tractors (267 hp) operating at a 0.65 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 922.62
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 5
Fugitive Dust Level of Detail: Default

20 lbs per acre-day
On Road Truck Travel (VMT): 454.55
Off-Road Equipment:
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds
Off-Road Equipment:
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation
Off-Road Equipment:
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Winter Construction Mitigated Emissions (Pounds/Day)

File Name: G:\Sharp Park\New\URBEMIS\Construction4.urb924

Project Name: Sharp Park - Construction - 6-month Duration

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Winter Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/1/2012-5/14/2012 Active	5.21	18.32	**123.65**	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building 05/01/2012-05/14/2012	5.21	18.32	123.65	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building Off Road Diesel	1.42	11.80	4.44	0.00	0.00	0.08	0.08	0.00	0.08	0.08	1,370.68
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	3.79	6.52	119.21	0.12	0.60	0.31	0.91	0.22	0.25	0.47	12,320.61
Time Slice 5/15/2012-8/31/2012 Active	**14.53**	**153.21**	72.54	**0.13**	0.50	3.37	3.87	0.16	3.10	3.27	**21,777.38**
Mass Grading 05/15/2012-	14.53	153.21	72.54	0.13	0.50	3.37	3.87	0.16	3.10	3.27	21,777.38
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	9.34	75.64	44.36	0.00	0.00	0.58	0.58	0.00	0.54	0.54	7,635.08
Mass Grading On Road Diesel	5.10	77.42	25.47	0.13	0.49	2.78	3.27	0.16	2.56	2.72	13,861.70
Mass Grading Worker Trips	0.09	0.15	2.72	0.00	0.01	0.01	0.02	0.00	0.01	0.01	280.60
Time Slice 9/3/2012-9/14/2012 Active	5.76	59.80	26.77	0.05	90.20	1.35	91.55	18.86	1.24	20.10	9,091.81
Mass Grading 09/01/2012-	1.65	16.47	8.36	0.02	45.07	0.45	45.52	9.42	0.41	9.83	2,535.94
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	0.96	6.22	4.50	0.00	0.00	0.08	0.08	0.00	0.08	0.08	654.92
Mass Grading On Road Diesel	0.67	10.22	3.36	0.02	0.06	0.37	0.43	0.02	0.34	0.36	1,830.00
Mass Grading Worker Trips	0.02	0.03	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.02
Mass Grading 09/01/2012-	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	2.70	22.52	10.36	0.00	0.00	0.15	0.15	0.00	0.14	0.14	2,713.85
Mass Grading On Road Diesel	1.37	20.75	6.82	0.03	0.13	0.75	0.88	0.04	0.69	0.73	3,714.47
Mass Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.54
Time Slice 9/17/2012-9/28/2012 Active	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading 09/01/2012-	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	2.70	22.52	10.36	0.00	0.00	0.15	0.15	0.00	0.14	0.14	2,713.85
Mass Grading On Road Diesel	1.37	20.75	6.82	0.03	0.13	0.75	0.88	0.04	0.69	0.73	3,714.47
Mass Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.54
Time Slice 10/1/2012-10/15/2012	5.21	18.32	**123.65**	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building 10/01/2012-10/15/2012	5.21	18.32	123.65	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29

Building Off Road Diesel	1.42	11.80	4.44	0.00	0.00	0.08	0.08	0.00	0.08	0.08	1,370.68
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	3.79	6.52	119.21	0.12	0.60	0.31	0.91	0.22	0.25	0.47	12,320.61

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Off Highway Tractors, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds

For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

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The following mitigation measures apply to Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation
For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%
For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

Phase Assumptions

Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 3443.04
Off-Road Equipment:
3 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
3 Off Highway Tractors (267 hp) operating at a 0.65 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 922.62
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 454.55
Off-Road Equipment:
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

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Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds
Off-Road Equipment:
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation
Off-Road Equipment:
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: G:\Sharp Park\New\URBEMIS\Construction4.urb924

Project Name: Sharp Park - Construction - 6-month Duration

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012 TOTALS (tons/year unmitigated)	0.68	6.76	4.39	0.01	1.53	0.29	1.82	0.32	0.27	0.59	1,082.20
2012 TOTALS (tons/year mitigated)	0.68	6.76	4.39	0.01	0.70	0.15	0.85	0.15	0.14	0.29	1,082.20
Percent Reduction	0.00	0.00	0.00	0.00	54.00	49.58	53.29	53.41	49.65	51.70	0.00

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012	0.68	6.76	4.39	0.01	0.70	0.15	0.85	0.15	0.14	0.29	1,082.20
Building 05/01/2012-05/14/2012	0.03	0.09	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.46
Building Off Road Diesel	0.01	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.85
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.02	0.03	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.60
Mass Grading 05/15/2012-08/31/2012	0.57	6.05	2.87	0.01	0.02	0.13	0.15	0.01	0.12	0.13	860.21
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.37	2.99	1.75	0.00	0.00	0.02	0.02	0.00	0.02	0.02	301.59

Mass Grading On Road Diesel	0.20	3.06	1.01	0.01	0.02	0.11	0.13	0.01	0.10	0.11	547.54
Mass Grading Worker Trips	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.08
Mass Grading 09/01/2012-09/15/2012	0.01	0.08	0.04	0.00	0.23	0.00	0.23	0.05	0.00	0.05	12.68
Mass Grading Dust	0.00	0.00	0.00	0.00	0.23	0.00	0.23	0.05	0.00	0.05	0.00
Mass Grading Off Road Diesel	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.27
Mass Grading On Road Diesel	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.15
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
Mass Grading 09/01/2012-09/30/2012	0.04	0.43	0.18	0.00	0.45	0.01	0.46	0.09	0.01	0.10	65.56
Mass Grading Dust	0.00	0.00	0.00	0.00	0.45	0.00	0.45	0.09	0.00	0.09	0.00
Mass Grading Off Road Diesel	0.03	0.23	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.14
Mass Grading On Road Diesel	0.01	0.21	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	37.14
Mass Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28
Building 10/01/2012-10/15/2012	0.03	0.10	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	75.30
Building Off Road Diesel	0.01	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.54
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.02	0.04	0.66	0.00	0.00	0.00	0.01	0.00	0.00	0.00	67.76

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

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For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Off Highway Tractors, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds

For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation

For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

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Compliance Checklist
Greenhouse Gas Analysis

A. GENERAL PROJECT INFORMATION:

Instructions: Complete Sections A and B, below. Generally, only projects within the City and County of San Francisco can apply for a determination of consistency with the GHG Reduction Strategy.

Date: August 17, 2011

Project name: Significant Natural Resource Areas Management Plan **Case No**: 2005.1912E

Project address and block and lot: Various locations within San Francisco

MEA planner: Jessica Range

Brief Project description:

The San Francisco Recreation and Park Department (SFRPD) developed a Significant Natural Resource Areas Management Plan (SNRAMP), with the final draft plan published in February 2006. This SNRAMP contains detailed information on the biology, geology, and trails within 32 Natural Areas, 31 of which are in San Francisco and one of which (Sharp Park) is in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years.

The proposed project, implementation of the SNRAMP, covers two categories of activity at Natural Areas in San Francisco: routine maintenance and programmatic projects, which are those projects that are not well defined at this time. The general actions under the SNRAMP that could affect emissions of greenhouse gases include operation of motorized equipment and the removal and replacement of invasive trees and other invasive vegetation with native trees and other native vegetation.

B. COMPLIANCE CHECKLIST TABLE

Complete and attach to this form the appropriate compliance table by determining project compliance with the identified regulations and providing project-level details in the discussion column. Please note that Table 1 applies to Private Development Projects, Table 2 applies to Municipal Projects, and Table 3 is for plan-level analysis. Projects that do not comply with an ordinance/regulation may be determined to be inconsistent with San Francisco's qualified GHG reduction strategy.

Compliance Checklist Table attached: ☐ Table 1. Private Development

☒ Table 2. Municipal Project

☐ Table 3. Area Plan for _____
(specify area)

C. DETERMINATION OF COMPLIANCE WITH CITY'S GHG REDUCTION STRATEGY

☒ Project Complies with San Francisco's *Strategies to Address Greenhouse Gas Emissions*

Project Notes:

The proposed project would emit GHGs primarily during construction of individual programmatic projects. Operational activities are not proposed to increase substantially and therefore any increase in GHGs from project operations (routine maintenance) would be minimal. Construction related GHG emissions would be short term and nominal given the anticipated level of construction activity required for programmatic projects. Although many of the GHG regulations are not applicable to the activities proposed by SFRPD because of the nature of the project (which includes primarily restoration, erosion control, trail development, and invasive vegetation removal), the SFRPD complies with existing regulations, such as the commuter benefit ordinance, emergency ride home program, and the mandatory recycling and composting ordinance. Further, the Natural Areas Management Plan would comply with all applicable City regulations identified as reducing greenhouse gas emissions, including the clean construction ordinance, which requires use of cleaner construction equipment and B20 biodiesel. Therefore, the proposed project would comply with San Francisco's GHG Reduction Strategy.

☐ Project Does Not Comply

If Project does not comply, provide discussion of non-compliant features:

_____

_____

_____

_____

_____

_____

Planner Name: Jessica Range **Date of Determination:** 8/24/11

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Compliance Checklist Table for Greenhouse Gas Analysis: Table 2. Municipal Projects

A. GENERAL PROJECT INFORMATION:

Date: August 17, 2011

Project name: Significant Natural Resource Areas Management Plan

Case No: 2005.1912E

Project address and block and lot: Various locations within San Francisco

Compliance Checklist Prepared By: John Bock, Tetra Tech

Date: August 17, 2011

B. COMPLIANCE CHECKLIST TABLE

Instructions: Complete the following table by determining project compliance with the identified regulations and providing project-level details in the discussion column. Projects that do not comply with an ordinance/regulation may be determined to be inconsistent with San Francisco's qualified GHG reduction strategy.

Table 2. Regulations Applicable to Municipal Projects

	Requirement	Project Compliance	Discussion
Transportation sector			
Commuter Benefits Ordinance (Environment Code, Section 421)	All City employees are offered commuter benefits for transit and vanpool expenses. The City Hall bike room provides secure bicycle parking, showers and lockers for bicycle commuters. City employees are also eligible for telecommuting and alternative work schedules.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City employees including San Francisco Recreation and Park Department (SFRPD) Natural Areas Program (NAP) staff are provided commuter benefits in accordance with Environment Code Section 421.
Emergency Ride Home Program	All City employees are automatically eligible for the emergency ride home program.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City employees, including NAP staff are automatically enrolled in the emergency ride home program.
Healthy Air and	Requires all new purchases or	☒ Project	The SFRPD follows the vehicle

	Requirement	Project Compliance	Discussion
Smog Ordinance (Environment Code, Chapter 4)	leases of passenger vehicles and light-duty trucks to be the cleanest and most efficient vehicles available on the market. There are also requirements for medium and heavy duty vehicles and for phasing out highly polluting vehicles (diesel MUNI buses).	Complies ☐ Not Applicable ☐ Project Does Not Comply	requirements of this ordinance. This is addressed in Section 3b, Fleet – Fuel Use and Reduction Measures, of the *San Francisco Recreation and Park Department Climate Action Plan Fiscal Year 2009-10.*
Biodiesel for Municipal Fleets (Executive Directive 06-02)	Requires all diesel using City Departments to begin using biodiesel (B20). Sets goals for all diesel equipment to be run on biodiesel by 2007 and goals for increasing biodiesel blends to B100.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	For the locations under the Significant Natural Resource Areas Management Plan, the SFRPD is implementing the biodiesel requirements of this ordinance, as documented in Section 3b, Fleet – Fuel Use and Reduction Measures, of the *San Francisco Recreation and Park Department Climate Action Plan Fiscal Year 2009-10.*
Clean Construction Ordinance (Administrative Code, Section 6.25)	Effective March 2009, all contracts for large (20+ day) City projects are required to: • Fuel diesel vehicles with B20 biodiesel, and • Use construction equipment that meet USEPA Tier 2 standards or best available control technologies for equipment over 25 hp.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	For all applicable contracts issued for work under the Significant Natural Resource Areas Management Plan, the NAP will include these requirements in its contract specifications, as required by the ordinance.
Bicycle Parking in City-Owned and Leased Buildings (Planning Code, Section 155.1)	Class 1 and 2 Bicycle Parking Spaces Class 1 Requirements: (A) Provide two spaces in buildings with 1-20 employees. (B) Provide four spaces in buildings with 21 to 50 employees. (C) In buildings with 51 to 300 employees, provide bicycle parking equal to at least five percent of the number of employees at that building, but no fewer than five bicycle spaces. (D) In buildings with more than 300 employees, provide bicycle parking equal to at least three percent of the number of employees at that building, but no fewer than 16 bicycle spaces. In addition to the Class 1 bicycle parking spaces provide Class 2	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project would not construct or renovate City-owned and leased buildings. Therefore, Planning Code Section 155.1 is not applicable to the proposed project.

	Requirement	Project Compliance	Discussion
	bicycle parking. Class 2 Requirements: (A) In buildings with one to 40 employees, at least two bicycle parking spaces shall be provided. (B) In buildings with 41 to 50 employees, at least four bicycle parking spaces shall be provided. (C) In buildings with 51 to 100 employees, at least six bicycle parking spaces shall be provided. (D) In buildings with more than 100 employees, at least eight bicycle parking spaces shall be provided. Wherever a responsible City official is required to provide eight or more Class 2 bicycle parking spaces, at least 50 percent of those parking spaces shall be covered.		
Bicycle parking in parking garages (Planning Code, Section 155.2)	(A) Every garage will supply a minimum of six bicycle parking spaces. (B) Garages with between 120 and 500 automobile spaces shall provide one bicycle space for every 20 automobile spaces. (C) Garages with more than 500 automobile spaces shall provide 25 spaces plus one additional space for every 40 automobile spaces over 500 spaces, up to a maximum of 50 bicycle parking spaces.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve parking garages. Therefore, Planning Code Section 155.2 is not applicable to the proposed project.
Transportation Management Programs (Planning Code, Section 163)	Requires new buildings or additions over a specified size (buildings >25,000 sf or 100,000 sf depending on the use and zoning district) within certain zoning districts (including downtown and mixed-use districts in the City's eastern neighborhoods and south of market) to implement a Transportation Management Program and provide on-site transportation management brokerage services for the life of the building.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project would not construct new buildings and would therefore not generate any greenhouse gas emissions as a result of vehicle trips generated by new buildings. Therefore, Planning Code Section 163 is not applicable to the proposed project.
Energy Efficiency Sector			
Resource Efficiency and	The ordinance specifies requirements for all city buildings	☐ Project	The proposed project would not construct or demolish buildings.

	Requirement	Project Compliance	Discussion
Green Building Ordinance (Environment Code, Chapter 7)	as well as requirements for construction and demolition debris recycling, and requirement for new construction. All new construction must comply achieve at a minimum the LEED® Silver standard. These buildings are required to perform commissions to ensure achievement of design standards. All other buildings are required to meet the following minimum specifications related to energy efficiency: 1. Toilets must use no more than 1.6 gal/flush 2. Showerheads must use no more than 1.5 gal/ min. 3. All lighting and electrical fixtures must meet specified requirements. 4. All fluorescent lamps must be replaced	Complies ☒ Not Applicable ☐ Project Does Not Comply	Therefore, this ordinance is not applicable to the proposed project.
Waste Reduction Sector			
Resource Efficiency and Green Building Ordinance (Environment Code, Chapter 7)	The ordinance requires all demolition (& new construction) projects to prepare a Construction and Demolition Debris Management Plan designed to recycle construction and demolition materials to the maximum extent feasible, with a goal of 75% diversion. The ordinance specifies requires for all city buildings to provide adequate recycling space	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project would not construct or demolish buildings. Therefore, this ordinance is not applicable to the proposed project.
Resource Conservation Ordinance (Environment Code, Chapter 5)	This ordinance establishes a goal for each City department to (i) maximize purchases of recycled products and (ii) divert from disposal as much solid waste as possible so that the City can meet the state-mandated 50% division requirement. Each City department shall prepare a Waste Assessment. The ordinance also requires the Department of the Environment to prepare a Resource Conservation Plan that facilitates waste reduction and recycling. The ordinance requires janitorial contracts to consolidate recyclable materials for	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City Departments, including the SFRPD, meet these resource conservation requirements.

	Requirement	Project Compliance	Discussion
	pick up. Lastly, the ordinance specifies purchasing requirements for paper products.		
Mandatory Recycling and Composting Ordinance (Environment Code, Chapter 19)	The mandatory recycling and composting ordinance requires all persons in San Francisco to separate their refuse into recyclables, compostables and trash, and place each type of refuse in a separate container designated for disposal of that type of refuse.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City Departments, including the SFRPD, meet these recycling and composting requirements. Minor quantities of solid waste and recyclable material would be generated during the management of the Natural Areas. Unless it can be used to create wildlife habitat, all large woody debris generated by the NAP would be composted in Golden Gate Park. The wood chips may be used to suppress understory invasive vegetation or could be used as beneficial mulch on other revegetation projects in the Natural Areas. The proposed project does not include a residential component.
Construction Recycled Content Ordinance (Administrative Code, Section 6.4)	Ordinance requires the use of recycled content material in public works projects to the maximum extent feasible and gives preference to local manufacturers and industry.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve public works projects that could incorporate recycled content materials. Therefore, this ordinance is not applicable to the proposed project.
Environment/Conservation Sector			
Street Tree Planting Requirements for New Construction (Planning Code Section 143)	Planning Code Section 143 requires new construction, significant alterations or relocation of buildings within many of San Francisco's zoning districts to plant on 24-inch box tree for every 20 feet along the property street frontage	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve constructing or altering buildings. Therefore, Planning Code Section 143 is not applicable to the proposed project. For management actions in San Francisco, the proposed project would remove invasive trees and replace them on a one-to-one basis with native trees.
Environmentally Preferable Purchasing Ordinance (Formerly Precautionary Purchasing Ordinance)	Requires City Departments to purchase products on the Approved Green Products List, maintained by the Department of the Environment. The items in the Approved Green Products List has been tested by San Francisco City Depts. and meet standards that are more rigorous than ecolabels in protecting our health and environment.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City Departments, including the SFRPD, meet these purchasing requirements. The proposed project does not involve purchase of product types included on the Green Products List.

	Requirement	Project Compliance	Discussion
Tropical Hardwood and Virgin Redwood Ban (Environment Code, Chapter 8)	The ordinance prohibits City departments from procuring, or engaging in contracts that would use the ordinance-listed tropical hardwoods and virgin redwood.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve constructing or renovating buildings. Therefore, this ban is not applicable to the proposed project.
Wood Burning Fireplace Ordinance (San Francisco Building Code, Chapter 31, Section 3102.8)	Bans the installation of wood burning fire places except for the following: • Pellet-fueled wood heater • EPA approved wood heater • Wood heater approved by the Northern Sonoma Air Pollution Control District	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve installation of fireplaces. Therefore, this ordinance is not applicable to the proposed project.
Regulation of Diesel Backup Generators (San Francisco Health Code, Article 30)	Requires: All diesel generators to be registered with the Department of Public Health All new diesel generators must be equipped with the best available air emissions control technology.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not include a diesel generator. Therefore, this regulation is not applicable to the proposed project.

Summary of Department Climate Action Plan: For municipal projects only, provide a summary for the respective Department's Climate Action Plan as a separate attachment.

Summary of Department Climate Action Plan: ☒ Included ☐ Not Included

In the San Francisco Recreation and Park Department's climate action plans, the SFRPD actions to reduce operational greenhouse gas emissions toward the City's goal of an 80 percent reduction by 2050 include the following:

- Energy Efficiency and Conservation: The SFRPD is working with the Energy Efficiency Services of the San Francisco Public Utilities Commission (SFPUC) to reduce energy use through the selection of operational equipment such as electrical fixtures and sprinkler heads, design standards enforcement, and use of the San Francisco Greening Checklist for exterior spaces.
- Renewable Energy Generation: The SFRPD is working with the SFPUC to assess its facilities' solar potential and identify potential co-generation sites.

- Information Technology (IT): IT energy conservation measures include power management tools for all personal computers and monitors. The SFRPD plan includes full compliance by the third quarter of fiscal year 2010 with the City's adopted policy of the Committee on Information Technology (COIT).
- Green Building: The SFRPD plan includes compliance with the City's Environmental Code to achieve Leadership in Energy and Environmental Design (LEED®) certification.
- Fleets and Fuel: The SFRPD has identified specific plans to retire older vehicles to achieve fuel savings, maintenance cost savings, and lower residual costs for older vehicles. Further, the SFRPD only purchases clean light-duty passenger cars and trucks.
- Employee Commute: The SFRPD plan includes measures to reduce vehicle trips traveled by promoting alternative transportation incentives to its employees.
- Zero Waste: The SFRPD is close to realizing its goal of 100 percent compliance with the City's recycling initiative.
- Green Product Purchasing: The SFRPD uses the City's Approved Catalog to purchase environmentally conscious products.
- Carbon Sequestration: The SFRPD promotes the City's urban forestry program through tree planting campaigns and supports other City departments in their participation in the urban forest program.
- Community Wide Emissions: The SFRPD actions include providing community support to reduce greenhouse gas emissions through programs related to recycling, biodiversity, bicycling, and community education. To encourage recycling, the SFRPD is currently posting signs at all facilities to educate users on the importance of recycling and directing them on where to place their recyclables. For biodiversity, the NAP and SFRPD volunteer programs maintain and enhance natural biodiversity at many of SFRPD's park sites. Related to bicycling, the SFRPD will promote bicycling to and within SFRPD facilities by installing bike parking racks and SF Bicycle Route maps at all facilities and by providing bicycle access and program information on the SFRPD website and other publications. The community education efforts include holding recycling education seminars at SFRPD recreation facilities.

APPENDIX

Laguna Salada Conceptual Restoration Plan

Sharp Park Conceptual Restoration Alternatives Report

November 2009

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Sharp Park Conceptual Restoration Plan
Executive Summary

BACKGROUND

Sharp Park is a 417-acre multiple use facility owned and maintained by the City of San Francisco, Recreation and Parks Department (SFRPD), and located in Pacifica, CA. One of the park's most prominent natural features is a wetland complex located at the west end of the park. The wetland complex consists of a lagoon (Laguna Salada), a pond (Horse Stable Pond), and a channel that connects the two bodies of water. The US Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) have identified the wetland complex at Sharp Park as important habitat for the endangered and fully protected San Francisco garter snake (SFGS) *(Thamnophis sirtalis tetrataenia)* and the California red-legged frog (CRLF) *(Rana draytonii)*. Habitat quality for the SFGS and CRLF in the wetland complex has been steadily diminishing for several reasons, including sedimentation, reduced open water habitat, overgrowth of emergent wetland plant communities, and lack of adjacent upland habitat.

PURPOSE

Both the USFWS and CDFG have recommended that SFRPD develop recovery actions to ensure the continued survival of populations of the SFGS and CRLF in Sharp Park. The purpose of preparing this conceptual plan is to develop and evaluate various alternatives for restoring SFGS and CRLF habitat within the wetland complex, the area surrounding the wetland complex, and the entire golf course area. The primary goal of each conceptual alternative was to propose an effective way of increasing upland habitat adjacent to existing or proposed wetland habitat, to restore the quality of existing wetland habitat, and to evaluate and respond to the changes such actions would require of the existing golf course design and operation.

METHODS

Studies were performed to assess the presence or absence of the SFGS and CRLF, and to evaluate the quality of their habitat within the wetland complex. These studies are reported in Appendix C of the conceptual planning report. Hydrologists prepared studies to assess the hydrological features of the wetland complex and to assist in making restoration recommendations (Appendix A). A golf course designer prepared various realignment options for the 18-hole and 9-hole alternatives and worked with the restoration planners to accommodate needed habitat expansion areas. A local engineering firm prepared topographic and bathymetric maps of the wetland complex and surrounding area.

The information in these studies was used to define the problem and develop measures to enhance the quality of habitat for the SFGS and CRLF, to reduce the potential that these species would be harmed by golf course practices or by other park users, and to assess the differences in habitat value between an 18-hole golf course, a 9-hole golf course, and golf course closure.

ALTERNATIVES

The common component of all alternatives is restoration of the wetland complex. Under all alternatives, similar features are proposed to restore wetland habitat and reduce the potential for recurrence of the problems that now occur, which include sedimentation, eutrophication due to dead and decaying vegetation, loss of open water habitat, and flooding of fairways. Implementing the restoration actions below would accomplish the main goal of the project, which is to enhance CRLF and SGFS habitat.

- **Dredging to remove sediment and decaying vegetation**. The areas that are currently open water within the lagoon would be deepened by up to 2 feet, and open water areas within the pond by up to 3 feet.
- **Recontouring the shoreline to create shallow water habitat**. The eastern edge of the lagoon, the edges of the connecting channel, and the north and south edges of the pond would be contoured to create shallow water habitat (1-3' deep) to allow for CRLF breeding habitat.
- **Creation of an upland peninsula.** A peninsula of approximately 2 acres will be created in the middle of the lagoon to create additional upland habitat for the SFGS and shallow water habitat for the CRLF.
- **Construction of upland mounds**. Upland mounds will be created on the east and south sides of the lagoon and in the dispersal corridor between the lagoon and the pond.
- **Pump Operations.** Altering the methods of operating pumps and other measures to control hydrological features is proposed under all alternatives.
- **Upland/Aquatic linkage and habitat segment.** A habitat linkage area between the lagoon and the pond would be constructed with native upland vegetation and mounds designed to allow SFGS movement and resting between the lagoon and the pond.
- **Completion of a Compliance Plan.** SFRPD has completed a compliance plan that is designed to avoid mortality and injury of SFGS and CRLFs resulting from maintenance and operations of the golf course (SFRPD 2009).
- **Closure of Hole 12.** Hole 12 would be closed under all alternatives to allow for creation of an upland habitat corridor between the lagoon and the pond/Mori Point area.
- **Catchment Basins**. To slow the rate of sedimentation from upstream sources, sediment catchment basins would be installed in two locations, one near the mouth of Sanchez Creek and the other on City of Pacifica property just outside the northern boundary of the Sharp Park.
- **Fencing**. All alternatives include installation of a post and rail fence along the seawall to the west of the lagoon, according to the Draft Compliance Plan. The wetland complex would also be fenced to discourage intrusion by humans or domestic animals, although the configuration of the fence may vary according to the alternative.
- **Revegetation**. Uplands, wetland, and shallow aquatic areas would be revegetated with an appropriate mix of native plant species.

DESCRIPTION OF ALTERNATIVES

Alternative A18

This alternative is intended to fulfill the recovery goals for the snake and frog while maintaining as much of the current golf course configuration as possible. In addition to the measures described above, Holes 10 and 13 would be slightly shortened and/or narrowed, and a new hole would be created near the rifle range/ archery course east of Highway 1. The area on the west side of the lagoon would be restored from its degraded condition to native upland habitat. Portions of the fairways in holes 10, 14 and 15 would be raised to 10.0' NAVD 88 from their current elevation of between 6.5' and 9.0', and hole 18 would be raised to allow a 2% slope relative to hole 14. In addition to the restoration of the entire wetland complex, this alternative would result in restoration or creation of 10.7 acres of California red-legged frog breeding / San Francisco garter snake primary foraging habitat and 23.4 acres of San Francisco garter snake upland basking / retreat habitat, all of which would be found either adjacent to the wetland complex or between the pond and the lagoon. Estimated construction costs for this alternative range from $5.9M (all excavated materials reused onsite) to $11.3M (all excavated materials hauled offsite).

Alternative A-9

This alternative is intended as a compromise between golf considerations and expanded upland areas east of the main body of the lagoon, and to increase opportunities for recreational pursuits other than golf. In addition to implementing the measures common to all alternatives, all holes bordering the wetland complex would be closed and restored to coastal scrub/shrub habitat. Three holes (1, 8, and 9) would remain west of Highway 1, along with a driving range and teaching area, and two new holes would be constructed at the rifle range. All existing holes east of Highway 1 would remain in their current location. In addition to the restoration of the entire wetland complex, this alternative would result in restoration or creation of 10.7 acres of California red-legged frog breeding / San Francisco garter snake primary foraging habitat and 44.3 acres of San Francisco garter snake upland basking / retreat habitat, much of which would be constructed at a greater distance from the wetland complex than the upland habitat restored under Alternative A18. Estimated costs for this alternative range from $7.8M (all excavated materials reused onsite) to $15.6M (all excavated materials hauled offsite).

No Golf Alternative (Alternative A-0)

This alternative was developed with the goal of maximizing the amount of available upland habitat for the snake and frog in the absence of golf operations. Because the lack of suitable upland habitat was identified as the limiting factor for the snake, the golf areas would be converted into uplands. Enhancements to wetland areas in lower Sanchez Creek and the wetland complex would be identical to those in Alternatives A18 and A9. Water from Sanchez Creek would be captured in two shallow ponds to provide additional breeding habitat for the CRLF. In addition to the restoration of the entire wetland complex, this alternative would result in restoration or creation of 11.3 acres of California red-legged frog breeding / San Francisco garter snake primary foraging habitat and 97.4 acres of San Francisco garter snake upland basking / retreat habitat, much of which would be constructed at a greater distance from the wetland complex than the upland habitat restored under Alternatives A18 or A9. Estimated costs for this alternative range from $9.0M (all excavated materials reused onsite) to $22.2M (all excavated materials hauled offsite).

FINDINGS AND CONCLUSIONS

Habitat requirements of the SFGS vary throughout the year, and include foraging habitat and nearby upland retreats located in underground burrows and soil crevices, typically located in a grassland-shrub community. Upland habitat for this species at Sharp Park is restricted to a small area south of Horse Stable Pond. The lack of suitable upland habitat is therefore a primary limiting factor in ensuring the persistence of the SFGS at Sharp Park. The SFGS population may have also been affected by wave overwash, collecting, predation, and golf course maintenance practices.

The CRLF usually occurs in or near quiet permanent water of streams, marshes, ponds, and lakes, in habitats characterized by dense, shrubby riparian vegetation. The primary limiting factor for the CRLF in the Sharp Park wetland complex is a vegetation structure that is not conducive to successful breeding and/or recruitment of larval stages into the adult population. The dense emergent vegetation found in the lagoon and pond combined with little remaining open water offers poor habitat for the survival of egg masses or tadpoles.

With no action, the future of SFGS at Sharp Park is, at best, uncertain. Although historically SFGS have existed at Sharp Park while it functioned as a golf course, conditions of the wetland and adjacent uplands are far less favorable than in the past. Though beneficial, increasing CRLF breeding habitat alone will not increase the distribution and carrying capacity of the SFGS, due to the limited availability of upland habitat in Sharp Park. Increasing SFGS use of the area north of Horse Stable Pond, the areas adjacent to Laguna Salada, and the connecting canal will require maintaining undisturbed upland habitat in and between these areas. These enhancements can be accomplished without significant changes to the golf course design or to the movement of golfers on the course.

All three alternatives will achieve the habitat goals. The main differences between the various alternatives are the degree of upland habitat that would be created east of the wetland complex, the costs to implement the respective alternatives, and the tradeoff between the amount of habitat and the degree to which golf opportunities are lost. Implementing Alternative A-18 would be the least costly alternative, would result in the least impact to golf, and would restore the least amount of upland habitat. Implementing Alternative A-9 would cost more and restore more upland habitat than Alternative A-18 but would cost less and restore less upland habitat than the No Golf Alternative. Implementing the No Golf Alternative would have the highest costs, would result in the greatest impact to golf, and would restore the greatest amount of upland habitat of the three alternatives. However, because the best upland habitat for the SFGS is that which is found near water bodies, much of the upland habitat located east of the wetland complex would be of lower value than that located immediately adjacent to the wetland complex. Therefore, from a habitat restoration standpoint, converting uplands immediately adjacent to the wetland areas would result in the greatest net benefit to the SFGS per acre of enhanced habitat. Focusing restoration efforts on these areas also would result in the least amount of lost golf opportunities since more distant habitat would remain available for golf.

Although the value of the habitat gained through the No Golf Alternative would diminish with increasing distance from the wetland complex, the cost of restoring this habitat would not. Considering that there are limited funds available for a myriad of restoration projects in the Bay Area, extra money that would be required to restore habitat further from the wetland complex may be better spent elsewhere. Furthermore, because of the close proximity of Sharp Park to urban features including housing, highways, major roads, and businesses and the intrinsic threats posed by them to the SFGS, more extensive upland restoration carries its own risks. Restoring uplands and locating

additional wetland further to the east of the wetland complex would potentially increase the chance of take of this species by drawing the SFGS away from the relatively protected existing wetland complex into areas that would likely be extensively used by hikers, mountain bikers, and dog walkers. Finally, in the event of a seawall breach or overtopping of the seawall by storm surge, it is the connection to upland habitat at Mori Point, rather than restored golf areas east of the lagoon, that will be of critical importance to the SFGS. This fundamental aspect is met by all alternatives.

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City of San Francisco, Recreation and Parks Department	(SFRPD)
Clean Water Act	(CWA)
Endangered Species Act	(ESA)
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Golden Gate National Recreation Area	(GGNRA)
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National Wetland Inventory	(NWI)
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US Fish and Wildlife Service	(USFWS)

1. INTRODUCTION

Sharp Park is a 417-acre multiple use facility owned and maintained by the City of San Francisco, Recreation and Parks Department (SFRPD). Its main use is as an 18-hole golf course, of which 14 holes are on the west side of Highway 1, and 4 holes are east of Highway 1. Sharp Park also offers an archery course, opportunities for bird watching, and walking and cycling on the seawall that is found on the west side of the park. Sharp Park is located in San Mateo County near the City of Pacifica, California (Figure 1).

One of the most significant features of Sharp Park is a wetland complex at the west end of the park. The wetland complex consists of Laguna Salada, Horse Stable Pond, and a channel about 1,000 feet long that connects the two water bodies (Figure 2). Laguna Salada (the lagoon) is a large freshwater lagoon of approximately 27 acres which offers open water and marsh habitat for numerous wildlife species. Horse Stable Pond (the pond) is smaller than the lagoon but still offers viable wildlife habitat. Although the connecting channel is shallower than the lagoon and the pond and is overgrown with emergent vegetation, it still offers a viable aquatic corridor between the pond and lagoon under most conditions.

The US Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) have identified the wetland complex at Sharp Park as important habitat for the endangered and fully protected San Francisco garter snake (SFGS) *(Thamnophis sirtalis tetrataenia)* and the California red-legged frog (CRLF) *(Rana draytonii)*. Although historically these species have existed at Sharp Park while it functioned as a golf course, conditions of the wetlands and adjacent uplands are far less favorable in than in the past. Both agencies have recommended that SFRPD enhance habitat conditions in and around the wetland to ensure the viability of the population of the populations of these species that are found there, and take measures to reduce the possibility of harm to these species (referred to as "take").

This conceptual plan was originally conceived to serve as a template to restore the wetland complex and immediate upland area as part of a recovery action recommended by CDFG and USFWS. In response to later events, the scope of this plan was increased to encompass restoration alternatives throughout the park, focusing mainly on the wetland complex and on those areas used for golf. Ultimately, 3 restoration alternatives were developed, including an 18-hole alternative, a 9-hole alternative, and a No Golf Alternative, under which the entire golf course would be closed and restored to native habitat.

The primary goal of each conceptual alternative was to propose an effective way of increasing upland habitat adjacent to existing or future aquatic habitat, to restore the quality of the wetlands, and to evaluate and respond to the consequences of such a change to the existing golf course design and operation. The objectives of this conceptual restoration plan are to describe the existing resources, develop possible restoration alternatives, assess the extent to which each alternative could increase the value and extent of habitat for the SFGS and CRLF, to give an estimate of construction costs for each alternative, and to describe the process that would need to occur to partially or completely restore the wetland complex and golf areas. Changes in mowing, golf operations, and maintenance practices that are intended to reduce the chance of take of listed species were addressed as part of a separate compliance plan completed by SFRPD in 2009.

The wetland restoration components are similar across all alternatives, but the degree of upland restoration varies considerably for each alternative. The primary components of the restoration plan are as follows:

> **Dredging.** Much of the wetland complex would be dredged to remove accumulated sediments and biomass. Dredging various parts of the wetland and open water areas will inhibit the growth of the type of emergent vegetation that now fills in the wetland complex. Dredging plans will be designed to maximize foraging and breeding habitat for the SFGS and CRLF, while minimizing future maintenance requirements, resulting in lower costs to the City as well as reduced habitat disturbance in the future. Dredge spoils will be reused onsite to the degree possible.

Project Location

Sharp Park Conceptual Restoration Plan

Pacifica, CA

Figure 1

TETRA TECH

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Sharp Park General Features

Sharp Park Conceptual Restoration Plan

Pacifica, CA

Figure 2

TETRA TECH

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Habitat Conversion The main limiting factor in terms of habitat for the SFGS is lack of suitable upland habitat immediately adjacent to the lagoon. The SFGS needs basking and resting habitat, with escape cover (vegetation) and burrows for retreat from daily thermal extremes, at or near its main foraging habitat, which is found where frogs congregate. All alternatives call for converting some areas of the golf course and the existing wetlands to upland habitat needed by the SFGS for basking and resting, and allowance for development of rodent burrow complexes in appropriate locations. The main objective would be to establish a habitat linkage for SFGS between the lagoon and the pond and adjacent upland areas at Mori Point, located south of the wetlands complex. Wetlands that are converted to uplands during this process would be replaced onsite.

Public access to sensitive wetland and upland areas would be controlled by installation of a post and rail fence, but would also be enhanced under some alternatives by creation of a walking trail around all or part of the lagoon, a boardwalk over wetlands and uplands between the lagoon and the pond, and interpretive signs or kiosks at various vantage points. Restoring an upland peninsula in the center of the lagoon will increase valuable edge and shallow water habitat over current conditions.

As the public agency charged with providing and maintaining recreational facilities for the City of San Francisco, SFRPD balances resource management with recreational concerns. To help meet this goal, SFRPD created the Significant Natural Resource Areas Program (SNRAP). The SNRAP manages 31 natural areas, 30 of which are within the City of San Francisco and one (the wetland complex at Sharp Park) in Pacifica. The mission of this program is to preserve, restore, and enhance the Natural Areas and promote environmental stewardship of these areas.

Under this program, the wetland complex is being and will be managed and protected for the natural and human values it provides. Therefore, every effort has been made to develop a conceptual plan that would maintain and restore viable, high-value habitat for the SFGS and CRLF while retaining as many recreational features as possible. Management planning for the wetland complex and all other Natural Areas managed under this program is detailed in the Significant Natural Resource Areas Management Plan (SNARMP, SFRPD 2006). The plan is intended to guide natural resource protection, habitat restoration, trail and access improvements, and maintenance activities over the next 20 years.

SFRPD is in the process of preparing an Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) to assess the potential effects of implementing the SNARMP. Assessing the environmental, cultural, recreational, and economic effects of implementing the recommended wetland restoration actions within the natural areas at Sharp Park will be an integral part of the EIR. Consideration of actions proposed outside of the natural areas would occur during separate CEQA documentation.

1.1 PREPARATION OF THE CONCEPTUAL PLAN

This conceptual plan was created as a collaborative effort between SFRPD, Swaim Biological, Nickels Golf, and Tetra Tech, Inc. Public agencies including California Department of Fish and Game and US Fish and Wildlife Service were involved from the earliest phases of the project, and assisted with setting the goals of the project. Staff from the Golden Gate National Recreation Area (GGNRA) and the City of Pacifica added local knowledge and planning assistance during the conceptual planning process.

Tetra Tech is an environmental consulting firm with staff that specialize in preparation of natural resource management plans and wetland restoration plans. For this project, Tetra Tech is assisting SFRPD with project management, restoration design, engineering and cost estimating, assessment of general biological resources, and regulatory compliance and permitting. Tetra Tech's team includes Swaim Biological, who surveyed the wetland complex area for the presence of SFGS and CRLF and their habitat, and assisted in

preparing recommendations for restoration of habitat; Kamman Hydrology, who assessed and reported the hydrological features of the park, and provided recommendations for various restoration alternatives; and Nickels Golf Group, who prepared the golf course realignment alternatives. A local engineering firm was hired to prepare a topographical map of the wetland complex.

As part of the preparation of this conceptual plan, studies were completed to document topographic and hydrologic conditions and to determine the extent to which the marsh complex and surrounding areas are used by the snake and the frog during their lifecycle. At the same time, a golf course designer prepared a number of alternative golf course alignments that could be implemented to adjust the amount of available habitat while maintaining an attractive and challenging golf environment. A wetland delineation was conducted to determine the extent to which wetlands or other waters of the US under the jurisdiction of the US Army Corps of Engineers are found in the project area.

The information in these studies was used to develop measures to increase or maintain the amount and quality of habitat for the SFGS and CRLF, to reduce the potential that these species would be harmed by golf course practices or by other park users, and to assess the differences in habitat value between an 18-hole golf course, a 9-hole golf course, and golf course closure. One 18-hole alternative (Alternative A18) and one 9-hole alternative (Alternative A9) were brought forward for assessment. A single alternative (the No Golf Alternative) was also developed to assess closing the golf course and converting the fairways to upland habitat. The alternatives are described in detail in Section 4.

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2. HISTORICAL CONDITIONS

Prior to the development of the Sharp Park Golf Course beginning in the 1920s, the Laguna Salada site was characterized by ranch lands, sand dunes, and a large lagoon (PWA 1992). Although it is likely that some freshwater wetlands existed behind the dunes, the common name of Laguna Salada (Salty Lagoon) suggests that the lagoon was formerly brackish to saline. In one of the early photographs of the region, a small channel that connected the lagoon with the Pacific Ocean can be seen, along with a shoreline of relatively low relief.

A direct hydrologic connection between the lagoon and the ocean was eliminated with the construction of the golf course and the seawall. To avoid flooding the golf course, tidal exchange was eliminated and runoff from the watershed has been pumped into the ocean from a location at the pond since 1941. The elimination of saline water allowed the establishment of saline-intolerant vegetation such as cypress, grasses, and shrubs for bank stabilization and landscaping purposes. However, salts in bottom sediments persist and make the lagoon and the pond slightly saline, a condition which increases as water levels decline throughout the drought period (Kamman 2009). An abandoned gravity flow outlet which was once used to convey overflow from the pond to the ocean is still in place, but the outboard end is covered by several feet of sand. It is possible that small amounts of seawater enter the pond through this pipe during very high tides.

Considerable shoreline erosion has occurred along the Laguna Salada shoreline since completion of the Sharp Park Golf Course in 1932. This unarmored earthen seawall was constructed between 1941 and 1952 to prevent waves from overtopping the shoreline and damaging the golf course (PWA 1992). This embankment was repeatedly breached by storm waves, allowing the former natural process of wave overwash to occur and damage fairway landscaping.

The most severe erosion occurred in 1983 when most of the embankment was eroded and wave overwash carried sand onto the golf course fairways and into the lagoon. It was estimated that nearly half of the 200-300 feet of shoreline lost between 1931 and 1984 occurred between 1978 and 1984, and largely due to the 1983 event (PWA 1992). The seawall was rebuilt after this event, and is being assessed by geotechnical experts under separate contract with SFRPD.

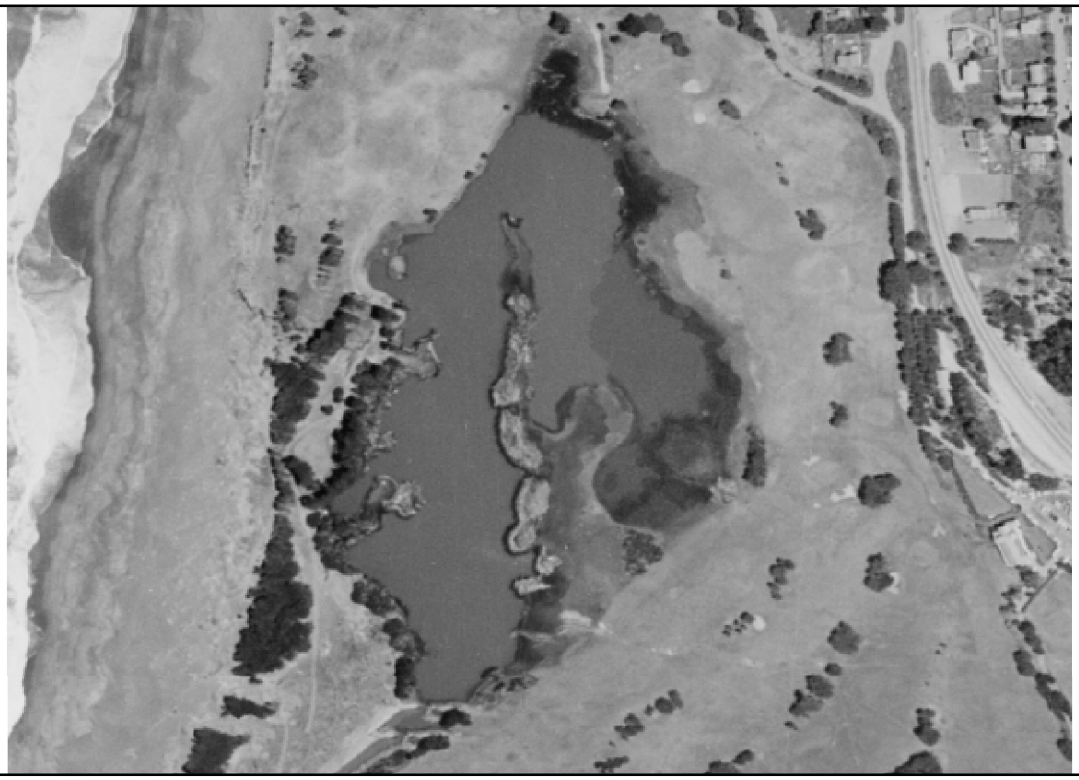
Flooding of the golf course has been a recurrent problem since the 1940s. In 1958, most of the golf course was submerged by a combination of wave overwash and storm inflows. In addition to damaging the golf course, increased salinity due to overwash may have been lethal to the CRLF and may have resulted in a near lack of SFGS prey during periods when the lagoon was too saline. A pump system was installed in 1941 to control the water level in the lagoon by pumping runoff to the ocean. Since the 1940s, the pump system has been augmented to pump up to 11,500 gallons per minute (GPM). Simulated storm models (Appendix A) show that this capacity is exceeded by rainfall events at or greater than 2-year recurrence intervals.

A defunct gravity flow drain is located at the pond, but currently does not function to remove stormwater. Reconstructing this drain would involve placing a new pipe through the seawall, over or through the beach on concrete footings placed on bedrock, and extending far enough into the surf to ensure that the outlet would not become buried in sand. Estimated costs for rebuilding this feature are between $400-800k. Rebuilding this structure would help to alleviate some of the flooding problems that are attributed to pump limitations.

The presence of the SFGS at Laguna Salada was documented as early as 1946 (Fox 1951). Although the CRLF was not considered rare at the time, their presence was also documented in 1946 as one was present in the stomach contents of an SFGS at the lagoon (Wade Fox, unpublished field notes). Comparing recent survey reports (Swaim, 2004 and 2008) to earlier reports (Fox 1951) indicates that the population of SFGS at Laguna Salada and likely at Horse Stable Pond has declined since early records of the presence and abundance of this species were recorded in 1946. This may be due to many factors including the sedimentation of the

lagoon, the conversion of upland habitat surrounding the exterior of the lagoon to golf fairways and greens, and illegal collecting of the species until listing in 1973. Barry (1978) suggested illegal collecting was one of the main factors in the decline of SFGS there, based on his interviews with reptile dealers. Field notes maintained by Wade Fox and obtained from the Museum of Vertebrate Zoology indicated that as early as 1946, the lack of upland habitat for SFGS was apparent. However, conditions were still such that Fox collected 44 specimens of SFGS at the lagoon over 1946 and 1947, over 15 years after the golf course was built and operating. In 1979, 37 SFGS were located in the wetland area adjacent to Horse Stable Pond and 46 in the Mori Point "bowl area" (Barry 1979). This indicates that at that time, the wetland complex, primarily Horse Stable Pond, was still supporting a relatively abundant population of SFGS. It was not until after the 1983 storms that a precipitous decline in SFGS in the Horse Stable Pond and Mori Point area was documented (McGinnis 1986; 1988, 1991, 1997).

Ongoing sedimentation of the lagoon has increased as sediment from the watershed is no longer flushed into the ocean during tidal surges or large storms. Sediment sources include erosion of dirt roads and parking areas, as well as natural input from erosion of Sanchez Creek and lightly vegetated hillsides. This has resulted in a higher bottom elevation of the wetland complex over time, allowing shallow emergent vegetation to spread at the expense of open water. Aerial photographs of the lagoon in 1956 and 2007 show the extent to which the open water part of the lagoon has converted to vegetated wetland (Figure 3).



1956

2005

Aerial Photos From 1956 And 2005

Sharp Park Conceptual Restoration Plan

Pacifica, CA

Figure 3

TETRA TECH

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3. EXISTING CONDITIONS

Assessment of historic aerial photographs of the Laguna Salada area indicates that prior to development of the Sharp Park Golf Course and the seawall located west of the wetland complex, environmental conditions at the project site were representative of a coastal lagoon system. Environmental changes during subsequent decades have modified the hydrologic characteristics of the system by isolating the lagoon and adjacent wetlands from the ocean.

The wetland complex at Sharp Park provides extensive habitat for the SFGS and the CRLF. SFGS habitat quality in the marsh complex is enhanced by its proximity to upland areas at Mori Point, located to the south of the lagoon and pond (Figure 2). The SFGS has been identified at Laguna Salada since at least 1940 (Fox 1951), but the importance of the population that occupies the area has gained more attention in recent years since the successful restoration of SFGS habitat at Mori Point and as other important habitat areas have been reduced in size or value.

Sharp Park's location near several open space areas makes it an important part of the overall distribution of SFGS and CRLF on the San Francisco Peninsula. The Golden Gate National Recreation Area (GGNRA) borders Sharp Park on the southwest and supports SFGS and CRLF. Habitat enhancement projects in 2004, 2005, and 2007 increased the amount of breeding habitat for CRLF and foraging habitat for SFGS at Mori Point. Trapping studies conducted in 2004, 2006, and 2008 have shown that the new ponds are being used by resident SFGS populations (Swaim Biological, Inc. 2008). Additional CRLF habitat is found at Sweeney Ridge, which lies to the east and southeast and provides habitat for the CRLF. SFGS were recently reconfirmed at the north end of San Andreas Reservoir, just east of Sweeney Ridge (SBI 2008 [unpublished]). To the north of Sharp Park, Milagra Ridge in the GGNRA supports CRLF and contains habitat suitable to support SFGS. To the south, beyond Mori Point, the Calera Creek watershed supports a large population of CRLF and also includes potential habitat for the SFGS. Individual SFGS and CRLFs probably move between some or all of these sites, and Sharp Park provides suitable habitat for dispersal and foraging for both species, as well as being a source population for CRLF.

3.1 WATERSHED CHARACTERISTICS

The natural watershed of Sanchez Creek includes 844 acres (1.3 square miles) (PWA 1992). The watershed consists of moderate to steep slopes in the upper watershed (Sweeney-Minchizo soil series) and flatter floodplain terraces (Tunites or Lockwood soil series) near the coast (PWA 1992). Most of the flatter terraces have been developed for residential, road, or golf course use, while most of the upper watershed remains undeveloped. The watershed is drained by Sanchez Creek, which extends approximately 1.7 miles between Horse Stable Pond and the watershed divide. Annual precipitation in the area ranges from about 29.5 inches annually at the coast to 30.5 inches annually at the watershed divide.

3.2 TOPOGRAPHY

Topographic information was reproduced on AutoCAD drawings that reflect the locations of thousands of vertical points taken by a roving, survey-grade GPS. Points were tied to five control points which were checked with a Total Station unit. Points in aquatic areas were taken by surveyors in a boat using a rod and level. In aquatic areas, bathymetry lines were produced at 0.5 foot contour intervals, and topographic lines outside of aquatic areas were produced at 1.0 foot contour intervals (Figure 4). Because the project originally only included the marsh complex and its immediate surroundings, topographic and bathymetric information at these contour intervals is not available beyond these areas. USGS topographic contour maps at 5 foot

contours have been used for other aspects of the conceptual plan, including development of alternative fairway alignments east of Highway 1.

The bathymetric survey determined the range of depths for all the aquatic features at the project site. The aquatic features including Laguna Salada and surrounding wetlands range from 0 to 7.5 feet (NAVD 88). The aquatic features including Horse Stable Pond and surrounding wetlands range from 3 to 9.5 feet (NAVD 88). The open water portion of the connecting channel ranges from 3 to 7 feet (NAVD 88). Cross sections and profile locations are shown in Figure 5, and topography/bathymetry at each cross section and along the profile is depicted in Figures 6-11.

3.3 HYDROLOGY

In combination with topography, the hydrology of the wetland complex creates the physical habitat which supports the vegetation and wildlife resources in this area. Water levels in the wetland complex, which is found in the lowest part of the park, are maintained primarily by groundwater, but are augmented in the rainy season by storm flows. The main components of the hydrologic system are described below.

Laguna Salada

Laguna Salada, the main component of the wetland complex, consists of an open water pond and adjacent emergent wetland occupying about 27 acres. The lagoon has a bottom elevation of between 0 and 2.5 feet, and is up to 7.5 feet deep under normal circumstances.

Horse Stable Pond

Horse Stable Pond, located at the south end of the wetland complex, consists of an open water pond and a freshwater wetland, which extends between the shoreline levee on the west and about 500 feet east to the housing subdivision. The pond is considerably smaller and shallower than the lagoon, with bottom elevations between 3 and 5 feet and typical water depths ranging from 1 to 3 ft.

Horse Stable Pond is fed by Sanchez Creek, which enters from the east, and Laguna Salada, which enters from the north via a connecting channel. Some surface water likely also enters from Mori Point, located to the south.

Connecting Channel

A meandering channel approximately 1,000 ft. long connects the lagoon with the pond and allows for bidirectional flow under all but the lowest water levels. Although the true bottom of this channel is at approximately 3' (NAVD 88), dead and decaying vegetation has raised the functional floor and provides a platform from which rooted emergent grows across most of the channel.

Sanchez Creek

Sanchez Creek is about 1.5 miles long and drains the 844 acre (1.3 sq. mile) watershed. The creek flows under Highway 1 just south of the Fairway Drive exit and is alternately culverted and daylighted across the golf course. Under original conditions, Sanchez Creek was approximately 5-7 feet wide and had a narrow riparian zone on either side.

Topography And Bathymetry

Topography displayed at 1.0' intervals
Bathymetry displayed at 0.5' intervals

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Figure 4

Legend

Contours

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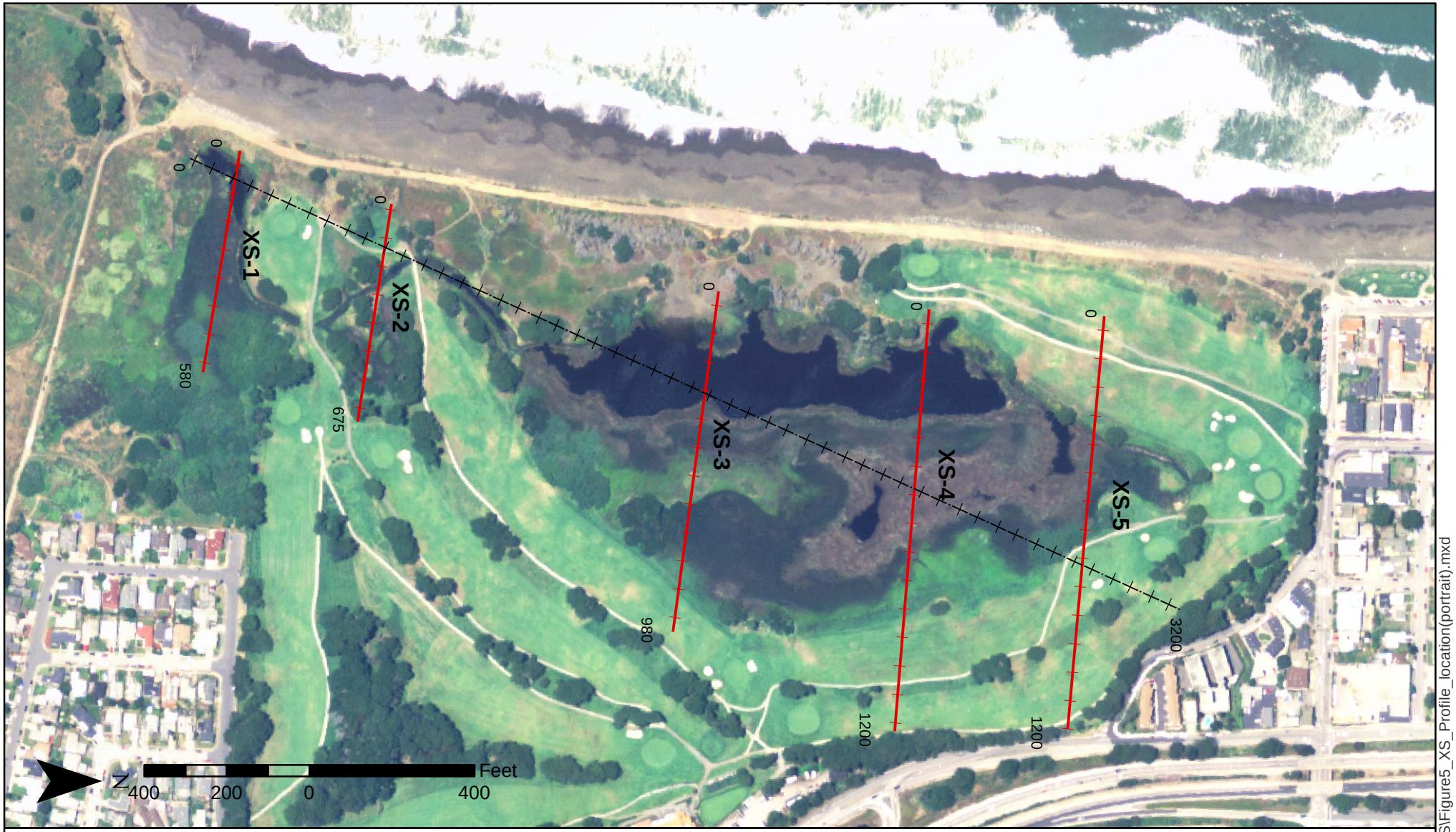

Cross Section And Profile Locations

Figure 5

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Profile
Cross Section

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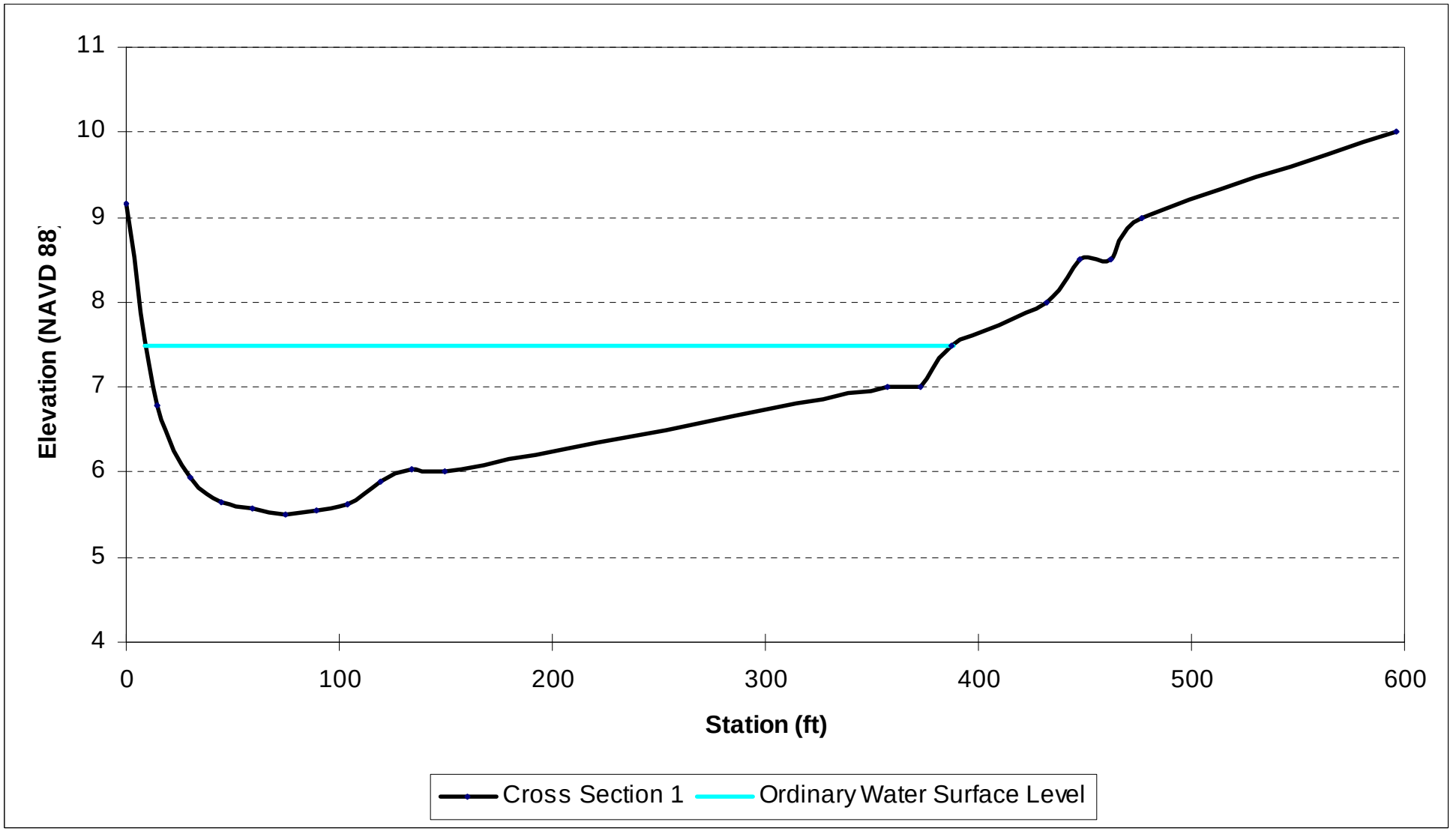

Cross Section 1
(Refer to Figure 5 for cross section locations)

Figure 6

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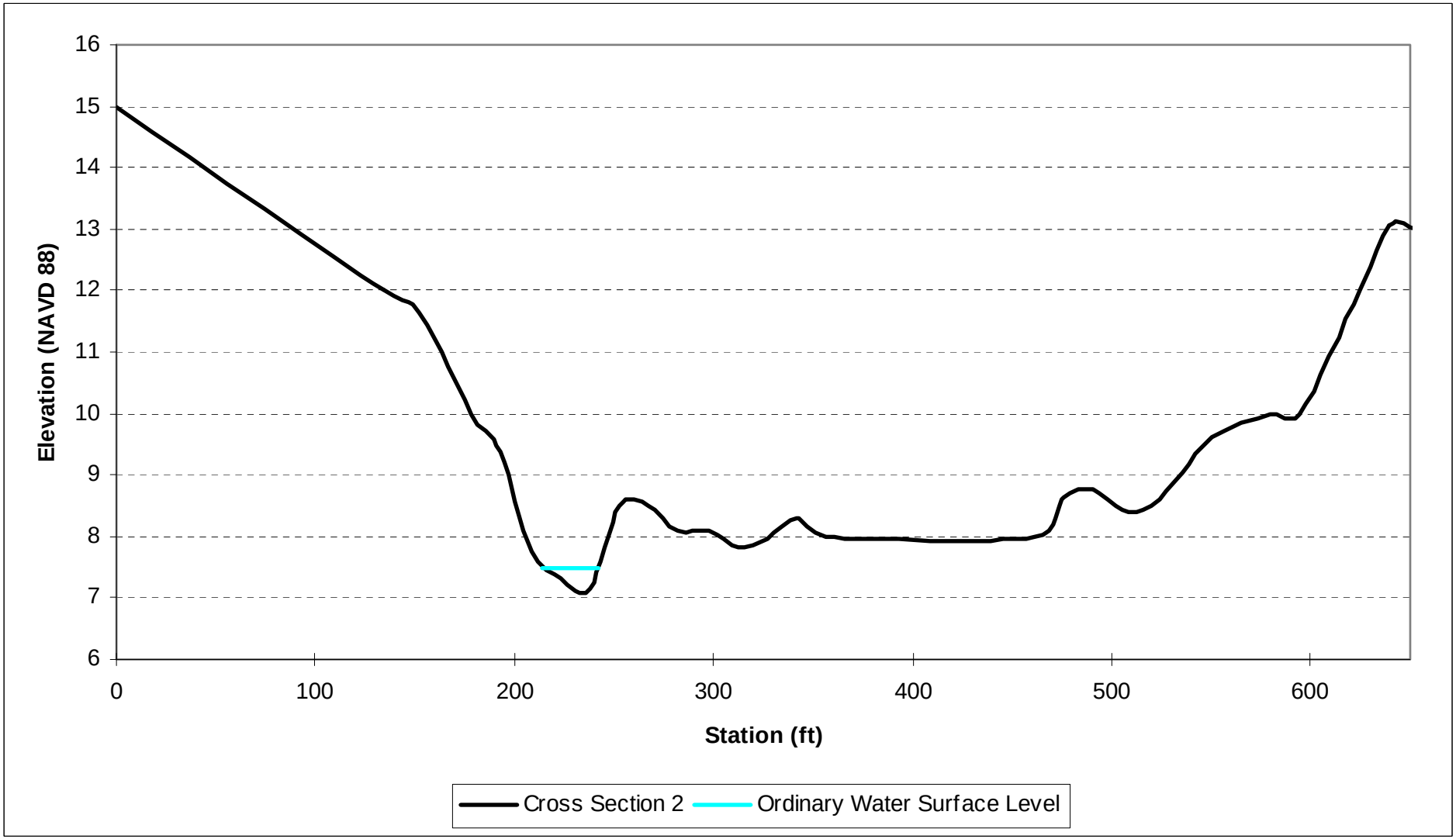

Cross Section 2
(Refer to Figure 5 for cross section locations)

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Figure 7

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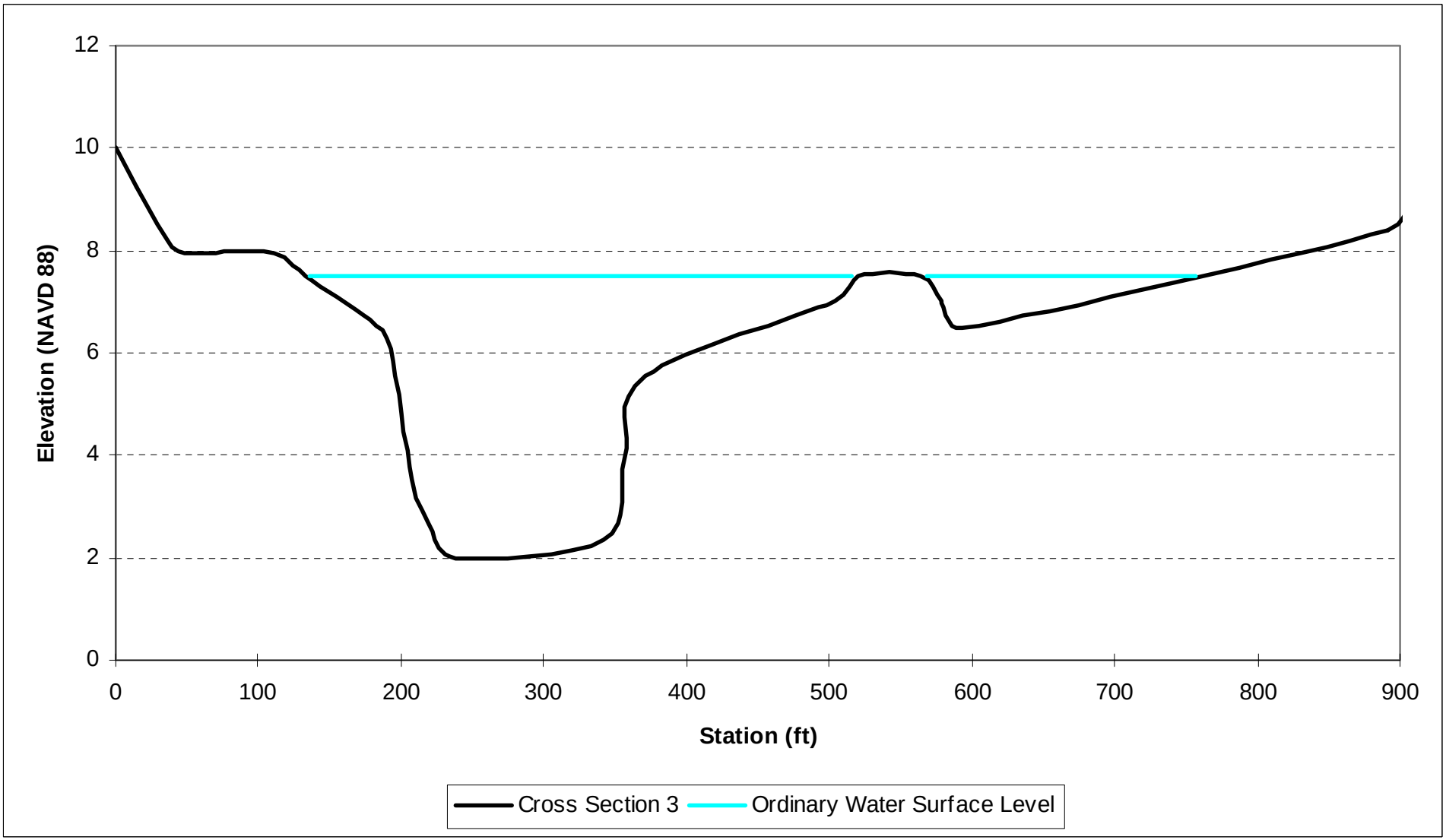

Cross Section 3
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Figure 8

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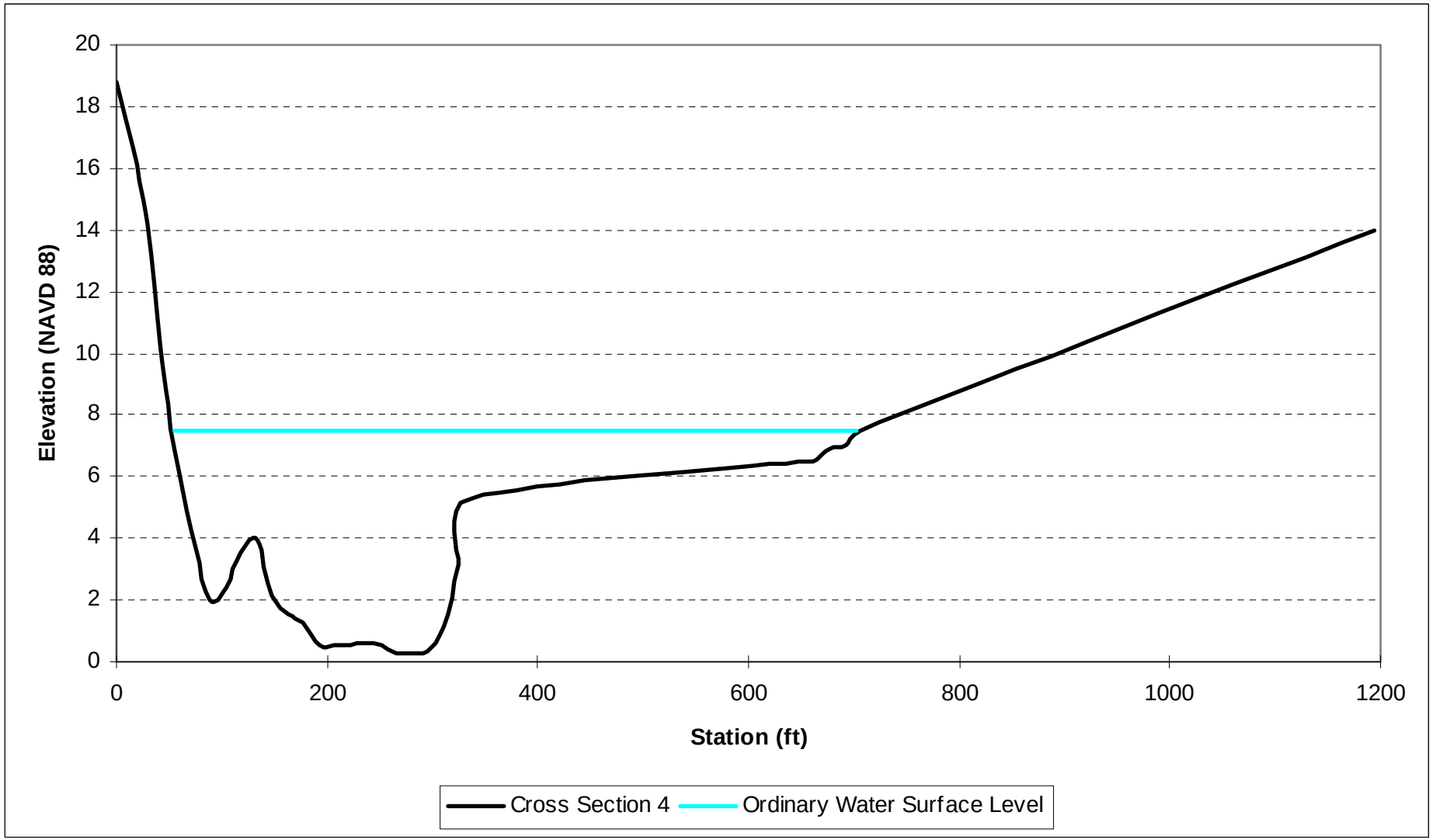

Cross Section 4
(Refer to Figure 5 for cross section locations)

Figure 9

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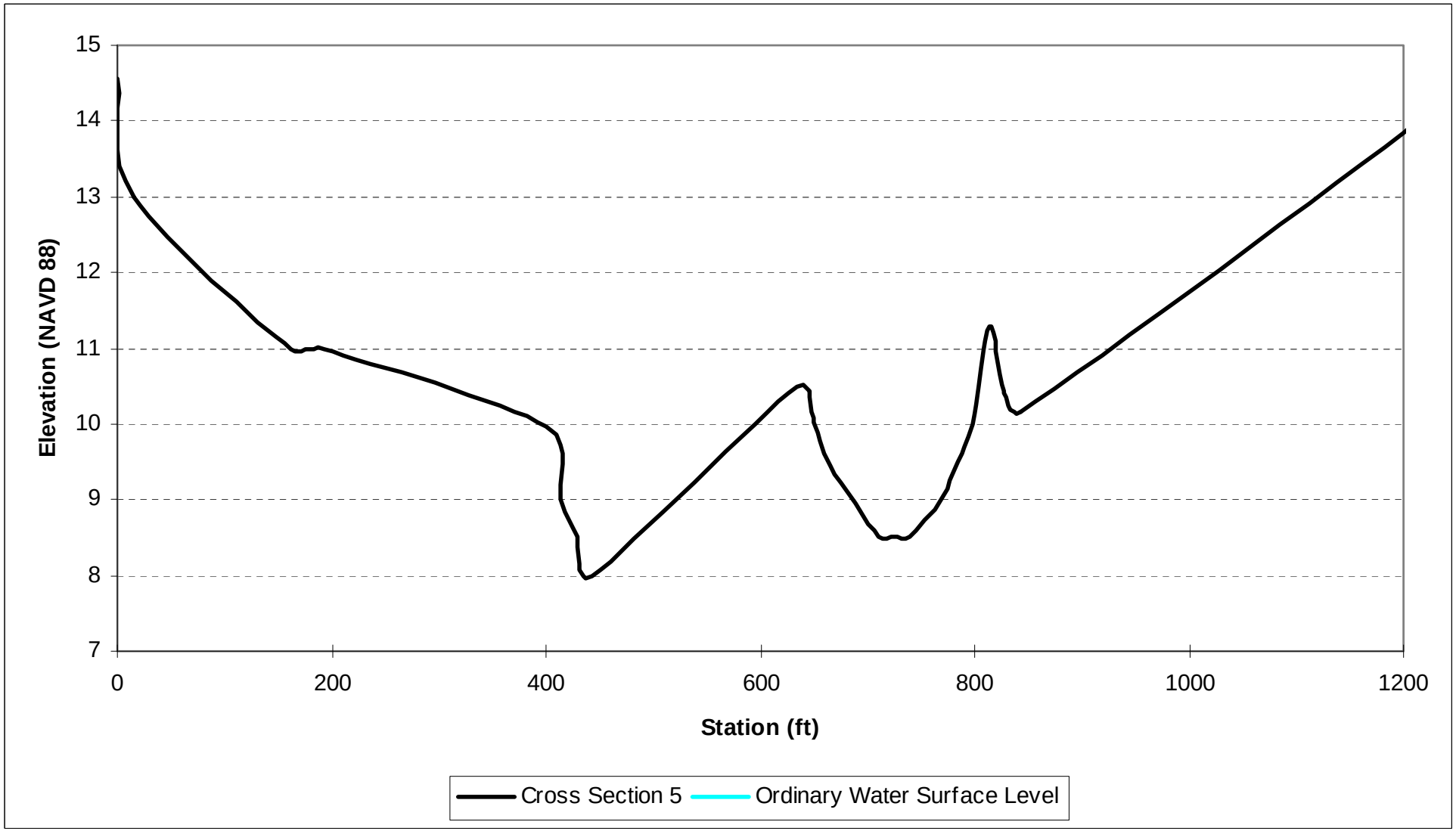

Cross Section 5
(Refer to Figure 5 for cross section locations)

Figure 10

Sharp Park Conceptual Restoration Plan

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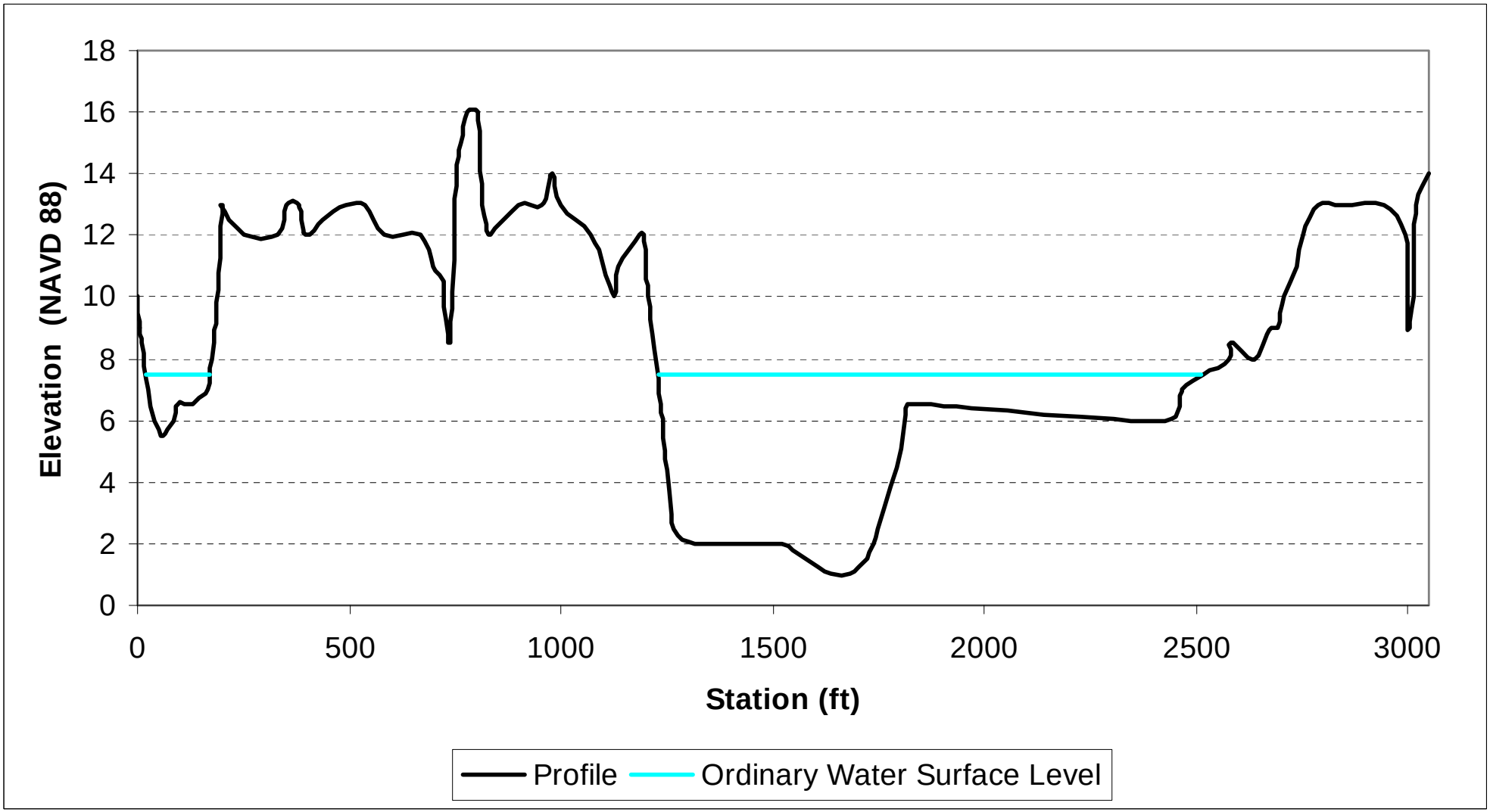

Profile of Wetlands Complex
(Refer to Figure 5 for cross section locations)

Figure 11

Sharp Park Conceptual Restoration Plan

Pacifica, CA

TETRA TECH

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Pacific Ocean/Seawall

Coastal sediment processes, including littoral sand transport, ocean wave transport (on- and off-shore), and wind blown sand create the beach and dunes along the west side of Laguna Salada (PWA 1992). A compacted earthen seawall was significantly reconstructed by the City of San Francisco in 1989 to reduce the damage from wave overtopping. The seawall performs its role of preventing tidal inundation and flooding of the study area under most conditions, but has been overtopped during very high storm surges, including events in 1956 and 1983.

For the purposes of this restoration plan, it is assumed that the seawall is stable and will continue to provide the wetland complex with a high level of protection from tidal inundation. The integrity of the seawall is being assessed by a geotechnical team under separate contract with SFRPD.

Water Quality

With the exception of salinity concentrations, water quality has not been identified as a limiting factor in the habitat value of the wetlands complex. Salinity concentrations were modeled under a variety of conditions, and were found to be below the threshold at which they would harm amphibians or other wildlife (Kamman 2009). Although water quality may be affected by nutrients carried by runoff from the golf course or by petroleum-based pollutants and heavy metals carried by runoff from Highway 1, water quality is being assessed under a separate contract and complete information is not yet available.

Sea Level Rise

Sea levels are projected to rise by up to 1.4 meters by 2100 (CA Natural Resources Agency 2009). Mean Higher High Water (MHHW) elevations under current conditions as well as those projected for the years 2030, 2040, and 2100 are illustrated in Figure 12. Although floods occurring under predicted sea levels at 2100 would not cover a significantly larger area of Sharp Park than would a flood occurring under current conditions, the seawall would be put under more stress and would likely be overtopped more frequently, placing wildlife in the wetlands complex at greater risk of harm due to greatly increased salinity levels.

Hydrologic Evaluation

Kamman Hydrology and Engineering, Inc. (KHE) performed a hydrological evaluation of the marsh complex and watershed during an entire hydrological cycle in 2008 and 2009. The purpose of the hydrological assessment was to improve understanding of the hydrologic processes which affect the distribution of ecological habitats in the wetland system and flooding of the adjacent golf course. Two of the main objectives behind the formulation of the hydrological study were to determine how to regulate water levels to avoid flooding parts of Holes 10, 12, 14, and 15 and to avoid stranding CRLF egg masses.

Much of what is currently known about the hydrology of the wetland complex was presented by Phil Williams and Associates et al. (PWA) in an earlier resource enhancement plan (PWA 1992). The PWA report includes a description of historical conditions at the site as well as results from a hydrologic monitoring study during the period 1990-1991. The KHE study aimed to expand on the findings of the earlier research to reflect current conditions at the site and to extend those findings into a suite of analytical models to be used in the planning and design for restoration alternatives.

Sea Level Rise Projections Over 100 Years

This figure shows the portions of Sharp Park that would be inundated if the seawall were breached or were not present. Inundated areas are estimated based on projected sea level rise scenarios.

TETRA TECH

Sharp Park Conceptual Restoration Plan

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Figure 12

MHHW_2000
MHHW_2040
MHHW_2030
MHHW_2100

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KHE maintained a hydrologic monitoring network at the site during the period April 2008 to April 2009. Field data collection focused on understanding the variability of water level and salinity in the wetland complex. Monitoring data were utilized to characterize current site conditions and to calibrate analytical models for additional investigation. Three specific analytical modeling tools were developed:

- A water budget model to investigate the seasonal variations of water supply and demand at the site.
- A salinity mass balance model to investigate the sources and relative impact on water quality.
- A hydraulic model to simulate the water level response in the wetland system to winter storm runoff.

Key findings of the report, in terms of relevance to SFGS and CRLF habitat and restoration design are as follows:

- The marsh system is not water limited, and water surface levels are maintained by groundwater even in very dry years. Increases in precipitation and runoff to the system only increase the amount of water that must be pumped out of the system. This is important in that it indicates that increasing the system's storage capacity through extensive dredging will not result in diminished water levels or compromised water quality.
- Although dense vegetation in the eastern part of the lagoon may slightly reduce the rate of drainage to the greater lagoon area and thus to the pumps in Horse Stable Pond, dense vegetation does not significantly contribute to water levels that encroach onto the golf fairways. Water surface elevations that result in standing water on the fairways result from inadequate pumping rates during periods of storm flows. Flooded fairways occur during dry months as well, possibly from poor drainage of golf course irrigation runoff or from input of runoff from the adjacent community, which would enter through a culvert at the north end of the lagoon. Poor drainage may be resulting from buildup of sediment in the main channel that separates the eastern half of the lagoon from the open water portion (west side) of the lagoon.
- Salinity varies according to the volume of water in the marsh complex at any given time. Salinity results from salts in the soils and water of the lagoon that are residual from the time that the lagoon was tidally inundated, and from salts deposited during subsequent overtopping of the seawall.
- Elevated salinity was found at a seep at the base of the seawall on the western edge of the pond (Wayne 2008). This saline water may have seeped through the seawall during sustained high tides, or may enter the pond through an abandoned culvert that once conveyed overflow from the pond to the ocean. Salinity from this seep is localized and is not of sufficient quantity to increase salinity levels in the rest of the pond (Kamman 2009). No other evidence of salt water intrusion through the seawall was found.

The complete hydrological report is found in Appendix A.

3.4 SEDIMENT

The wetland complex is at the hydrologic terminus of an 844-acre coastal watershed. The watershed includes one primary drainage, Sanchez Creek, and a smaller subbasin to the north that enters the main lagoon via a small, roadside swale and culvert. Neither of these waterways are gauged. Sanchez Creek drains to the pond, and the small swale drains to the main lagoon. Construction of the seawall has prevented sediment loads from exiting the watershed as they normally might have during storm events (high flows, tidal flushing, etc.).

As part of the engineering design for this project, a sediment yield analysis is being prepared. The primary objective of the sediment yield analysis is to better understand the rate at which sediment is transported to the wetland complex from the watershed. Annual sediment delivery rates, i.e., sediment yields, are estimated in

order to support design of sediment detention and removal facilities. The location and capacity of sedimentation basins will be designed to consider removal effectiveness and facility maintenance.

The approach to the sediment yield analysis includes a first-cut level of analysis based on the Revised Universal Soil Loss (RUSLE) methodology to estimate the long-term average annual soil loss from the tributary area. To the extent possible, existing information and studies and knowledge of the site will be used to guide estimation of parameters. Additionally, the Modified Universal Soil Loss Equation (MUSLE) is being used to predict soil erosion from the 2-, 5-, 10-, 25-, 50-, and 100-year storm events. Results from RUSLE and MUSLE will be compared to local or regional sediment yield data to evaluate the level of certainty in the yield estimates for the wetland complex. Uncertainties in sediment yield estimates will be taken into consideration during design through factors of safety and use of other conservative design parameters.

Data sources include existing reports, hydrologic analysis of the watershed, field reconnaissance, vegetation maps, land use maps, soil maps, and precipitation records. Total suspended sediment estimates will use, in part, the results of water samples pulled at Sanchez Creek and the sub-basin channel during a storm in winter of 2008.

3.5 VEGETATION

The majority of the Sharp Park study area is planted with golf course grasses including Kentucky bluegrass *(Poa pratensis)*, ryegrass *(Lolium* sp.), and kikuyu *(Pennisetum clandestinum)*, separated by occasional stands of Monterey cypress *(Cupressus macrocarpa)*. Although none of these grasses are native to the study areas, kikuyu in particular is considered a highly invasive weed and is very difficult to manage (Randall 2002). Areas used for golf are constantly disturbed by visitors and maintenance staff, and also have very minimal vegetative diversity. Therefore, they generally provide low value habitat and are only used by generalist species such as robins and starlings, which are adapted to these conditions. Primary habitat areas are found at the lagoon, the pond, the connecting canal, Sanchez Creek, and the uplands on GGNRA property found south of the pond. These areas provide habitat for six special status species as recognized by the State of California and US Fish and Wildlife Service: San Francisco forktail damselfly *(Ischnura gemina)*, California red-legged frog, western pond turtle *(Clemmys marmorata)*, San Francisco garter snake, salt marsh common yellowthroat *(Geothlypus tricha)s* and dusky-footed woodrat *(Neotoma fuscipes)*.

The construction of the Sharp Park Golf Course replaced native coastal scrub and grasslands, as well as artichoke farms (Sweeney 2008). Sanchez Creek, which runs through the golf course, has been culverted west of Highway 1. The stream remains daylighted east of Highway 1 except in the rifle range area, where it is also culverted. Some riparian scrub vegetation is found along the edges of Sanchez Creek east of the highway, and the stream is largely shaded in this area by large Monterey cypress trees. Freshwater marsh is found at the edges of the pond, the lagoon, and in the canal. Coastal scrub, dead Monterey cypress, and weedy, non-native plant species including iceplant are found to the west of the lagoon and wet meadow to the south and east. Most of the golf course is east of the lagoon; however, two holes are present in the area located northwest of the lagoon.

South of the pond are formerly grazed uplands which now consist of ruderal vegetation such as invasive weeds. To the west of the lagoon is a sparsely vegetated ~8 meter (~25 foot) high levee. Sand dunes interspersed with sections of golf course and marsh plants lie along the base of the levee on the landward side (PWA 1992).

In September 2008, a wetland delineation was performed to identify the wetland resources and other "Waters of the United States" that would fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE) at the wetland complex. Wetlands in the study area were identified using NWI maps, soil survey information, and site observations. Potential wetlands were delineated in the field using the Interim Regional Supplement

to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Environmental Laboratory 2008). Tetra Tech staff also prepared informal field maps of vegetation community types during several reconnaissance level field surveys.

Plant Community Descriptions

Several types of wetland plant communities were identified in the marsh complex, and upland and ruderal communities were identified around the marsh complex. Wetland habitat types include freshwater marsh, willow scrub, and wet meadow. Other habitat types include foredune, ruderal, and riparian. These habitat types are described below. Other plant communities including mixed conifer forest, Monterey cypress forest, eucalyptus forest, and coastal scrub/grassland were identified at the far eastern part of the project area and at nearby Mori Point. All habitat types are displayed at the community level in Figure 13.

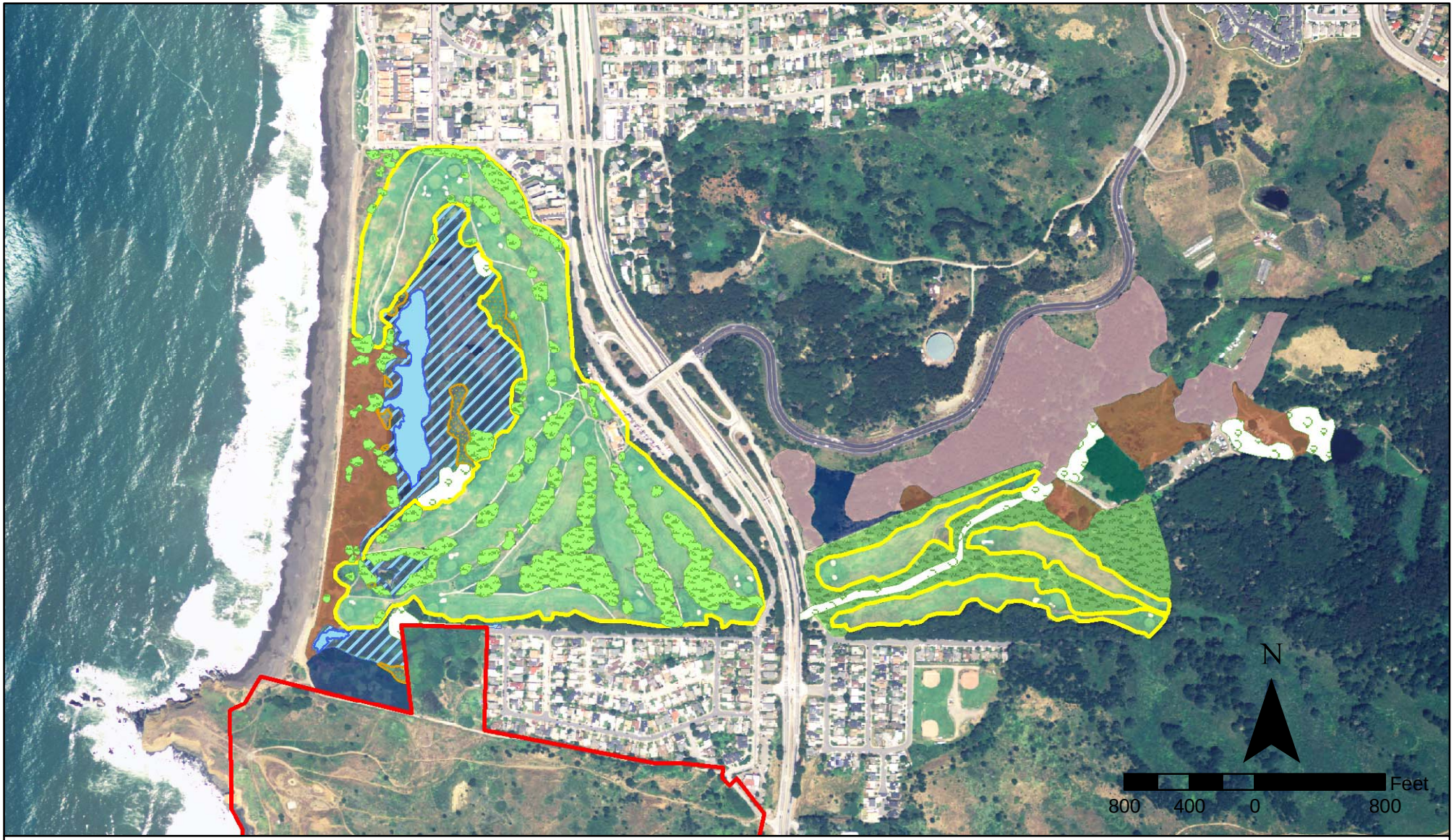
Freshwater Marsh

Freshwater marsh within the study area includes vegetated areas within and adjacent to Laguna Salada and Horse Stable Pond and the connecting channel (Tetra Tech 2008). Dominant vegetation within the freshwater marsh areas include bulrush *(Scirpus s*p.), cattail *(Typha angustifolia),* and coastal cinquefoil *(Potentilla anserina),* all of which are obligate wetland species. Cattails and bulrush have steadily encroached on much of what was formerly open water habitat in the eastern portion of Laguna Salada and in the connecting channel between the lagoon and the pond (Tetra Tech 2008). A small pond containing emergent vegetation was observed within the willow scrub area south of the golf course on GGNRA lands. GGNRA staff enhanced this pond by deepening an existing wetland to provide suitable breeding habitat for California red-legged frogs (Tetra Tech 2008).

Regular golf course maintenance appears to be controlling the growth of wetland habitat in some areas adjacent to the lagoon, as remnants of some hydrophytic plant communities were observed in lower elevation mowed areas (Tetra Tech 2008). Wetland vegetation has been encroaching onto the golf areas as poor drainage on the north and northwest parts of the lagoon has allowed for a larger flooded area.

Willow Scrub

Willow scrub within the study area was located south of the Sharp Park golf course, to the east of Horse Stable Pond, and near the archery range (Tetra Tech 2008). Small areas of this habitat type are also found on the northeast and southeast sides of Laguna Salada and along Sanchez Creek, east of Highway 1. The willow scrub communities are characterized by a dense overstory of arroyo willow *(Salix lasiolepis)* and sitka willow *(S. sitchensis),* which are both facultative wetland species, with an understory composed of obligate hydrophytes, such as panicled bulrush *(Scirpus microcarpus)* and coastal cinquefoil *(Potentilla anserina)* (Tetra Tech 2008).



General Habitat Types

Sharp Park Conceptual Restoration Plan
Pacifica, CA

Figure 13

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- Willow Scrub
- Wet Meadow
- Freshwater Marsh
- Unvegetated Pond/Open Water
- Coastal Scrub/Grassland
- Eucalyptus Forest
- Mixed Conifer/Laurel
- Monterey Cypress
- Ruderal
- GGNRA
- Golf Area

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Wet Meadow

Wet meadow occurs on the east side of Laguna Salada where the fairways flatten out at the edges of Holes 14 and 15, and also where a swale forms a meadow directly east of and adjacent to Horse Stable Pond. Dominant plants in this area include Baltic rush *(Juncus balticus)*, spreading rush *(J. patens),* bulrush *(Scirpus americanus)*, curly dock *(Rumex crispus)*, and coastal cinquefoil. Coyote bush *(Baccharis pilularis)* occurs on the hummocks amid the wetlands, which may be evidence that uplands were once present near the lagoon. Wet meadow vegetation grades to riparian willows (*Salix* spp.) and cattails (*Typha* spp.) near Sanchez Creek.

Wet meadow also occurs along the east side of the lagoon as well as on a peninsula of higher ground in the middle of the lagoon. Salt concentrations in the soils in these areas, residual to the time when the lagoon was open to tidal action, are probably responsible for the occurrence of some salt marsh plants including saltgrass *(Distichlis spicata)*, fleshy jaumea *(Jaumea carnosa)*, and Virginia pickleweed *(Salicornia virginica)*. Salt tolerant plant species are also found at the edge of the pond.

Ruderal Vegetation

Ruderal vegetation is found in the areas around the parking lot, in the upland habitat south of the pond and west of the lagoon, at the site of the closed rifle range, and at the archery range (Tetra Tech 2008). The vegetation in these areas includes primarily invasive forbs such as wild radish *(Raphanus sativus),* curly dock *(Rumex crispus),* and wild oats *(Avena barbosa)* (Tetra Tech 2008).

The hills on Mori Point are covered with non-native annual grasses mixed with invasive forbs including wild radish, bristly ox tongue *(Picris echioides)*, and sweet fennel *(Foeniculum vulgare)* with a few Monterey cypress (PWA 1992, Tetra Tech 2008).

In addition to maintained tees, greens, fairways, and sand traps, the golf course roughs include many non-native plants. Where the fairways border the lagoon, wet meadow and marsh plants function as hazards for the golf course. Between the holes (in the rough) are various non-native grasses.

Foredune

The western portion of the lagoon has undergone considerable disturbance, both from periodic high tides and storms and from development of the golf holes that were once there. The 25-foot high seawall supports only sparse ruderal vegetation. At its base, sands support foredune species and, closer to the lagoon, salt marsh species. Areas of bare sand are interspersed with patches of foredune plants. Residual soil salts are probably responsible for the occurrence of these species, since the lagoon itself supports freshwater marsh species. Species observed include coastal sand verbena *(Abronia latifolia)*, silver bur ragweed *(Ambrosia chamissonis),* ice plant (*Mesembryanthemum* sp.), and New Zealand spinach *(Tetragonia expansa)*.

Riparian

West of Highway 1, Sanchez Creek has been channelized and runs through a corridor southeast of the lagoon, parallel to Fairway Drive. In open areas the banks are partially vegetated with plantain (*Plantago* sp.), panicled bulrush *(Scirpus microcarpus)*, knotweed *(Polygonum* sp.), and broom (*Cytisus* sp.) (PWA 1992). A dense overstory of Monterey pine *(Pinus radiata)* and Monterey cypress cover much of its course in this area and as a result, there is little riparian vegetation. Near the end of Fairway Drive, the creek is culverted under the golf course. When it emerges from the culvert it flows under a thicket of willows. The stream then flows west through a dense stand of cattails and enters the pond (PWA 1992).

Wetlands

Wetlands in the study area were identified using National Wetland Inventory (NWI) maps, soil survey information, and site observations. Potential wetlands were delineated in the field using the routine on-site method (level 2), as outlined in Section D of the Wetlands Delineation Manual (Environmental Laboratory 1987). This method is referred to as the three-parameter approach because it uses three criteria—presence of hydrophytic (water adapted) vegetation, hydric soils, and wetland hydrology. The three-parameter approach determines whether an area is a jurisdictional wetland under normal conditions. Jurisdictional wetlands are regulated by the USACE under Section 404 of the Clean Water Act (CWA) and by the Regional Water Quality Control Board under Section 401 of the CWA.

A total of 27.42 of acres of Waters of the US were delineated within the study area (Appendix B, Figure 3). Jurisdictional areas were classified into four habitat types: freshwater marsh, willow scrub, wet meadow, and unvegetated pond (open water). The amount of each jurisdictional habitat type within the study area is shown in Table 1, below.

Table 1. Wetlands and Other Waters in the Wetlands Complex

Habitat Type	Jurisdictional Determination	Area (Acres)
Freshwater marsh	Wetlands	19.56
Willow scrub	Wetlands	0.93
Wet meadow	Wetlands	2.44
Unvegetated pond	Other Waters of the US	4.49
Total wetlands/waters		27.42

3.6 SENSITIVE WILDLIFE RESOURCES

Swaim Biological conducted surveys for the SFGS and CRLF at or near the wetland complex as part of this project in 2008, and in 2004, 2006, and 2008 as part of another project. Visual survey locations included the following aquatic habitats and associated uplands: Horse Stable Pond, Laguna Salada, the canal connecting Horse Stable Pond and Laguna Salada, Sanchez Creek west of Highway 1, and Arrowhead Lake east of Highway 1 and the archery range. Aside from determining the presence or absence of these species, one of the main objectives of the surveys was to identify limiting factors for the SFGS and CRLF and their prey species. The complete survey report is found in Appendix C.

California Red-legged Frog

Habitat Requirements

This species usually occurs in or near quiet permanent water of streams, marshes, ponds, and lakes (Stebbins 2003, NatureServe 2009) typically ~0.7 meter (2.3 foot) deep, in habitats characterized by dense, shrubby riparian vegetation (Hayes and Jennings 1988). During the dry summer months, California red-legged frogs estivate in small mammal burrows, leaf litter, or in other moist sites in or near riparian areas (~30 meters; 100 feet) (USFWS 1996). Individuals may range far from water along riparian corridors and in damp thickets and forests. The California red-legged frog is generally found near water but often disperses to upland habitat after rains (Stebbins 2003). Although frogs at most locations remain at the breeding site year-round, long-

distance movements of up to 2.2 miles to and from non-breeding sites have been observed (Bulger et al. 2003). Lack of a dispersal corridor leading to other viable habitat means that frogs found in the wetland complex at Sharp Park are unlikely to migrate.

Breeding occurs in permanent or seasonal water of ponds, marshes, or quiet stream pools, and sometimes in lakes (Fellers, in Jones et al. 2005). Eggs are often attached to emergent vegetation where they float at the surface (Hayes and Miyamoto 1984). CRLF typically breeds during or shortly after large rainfall events in late winter or early spring (Hayes and Miyamoto 1984, USFWS 1996). The breeding period lasts about 1 to 2 weeks and eggs hatch in 6 to 14 days. Larvae metamorphose in 3.5 to 7 months after hatching but occasionally overwinter (Fellers et al. 2001). Larval mortality tends to be very high within this species. Sexual maturity is reached in 3 to 4 years and individuals may live 8 to 10 years.

Diet for the California red-legged frog includes various terrestrial and aquatic invertebrates, mainly invertebrates of shoreline or water surface. Diet of large adults also includes small vertebrates. Larvae eat algae, organic debris, plant tissue, and other minute organisms (NatureServe 2009).

Local Occurrence

A total of 85 CRLF egg masses were located in or near the study area (SBI 2008). The highest concentration was in Horse Stable Pond, with 57 masses being located. Twenty egg masses were found in portions of Laguna Salada and four were found in the canal. East of Highway 1, four egg masses were found in Arrowhead Lake (SBI 2008). No egg masses were found in Sanchez Creek or in areas of extremely dense emergent vegetation that lacked open water (SBI 2008).

Areas that are suitable for foraging and basking but where no sign of breeding was observed include Sanchez Creek and portions of Laguna Salada, notably the north end. Juvenile and adult CRLFs were concentrated in and around the pond, the canal, and lower Sanchez Creek (SBI 2008). In these areas, CRLFs have been observed basking or sitting under vegetation next to the water. However, they were not observed in extremely dense cattails or bulrushes (SBI 2008).

The primary limiting factor for the CRLF in the wetlands complex is a vegetation structure that is inappropriate and not optimal for successful breeding and/or recruitment of larval stages into the adult population. The dense emergent vegetation combined with little remaining open water offers poor habitat for the survival of egg masses or tadpoles. Tadpoles hatched from eggs deposited on flooded areas of the golf course have been stranded in these areas due to their inability to penetrate the dense vegetation at the edge of the lagoon (Wayne 2008).

Locally, high salinity in the study area would lead to severely compromised habitat. One-hundred percent of CRLF egg masses die at salinity levels of 4.5 parts per thousand (ppt) (Jennings and Hayes 1990), and larvae cannot survive in concentrations higher than 7.0 ppt (USFWS 2002). The presence of egg masses in Laguna Salada, the canal, and Horse Stable Pond suggest salinity levels of less than 4.5 ppt are present during the breeding season. Although loss of CRLFs or their eggs due to salinity increases has not been documented at Laguna Salada in the past, the potential for this occurrence has led to the recommendation that any frog ponds created at Sharp Park be situated above the 100-year storm surge elevation that is predicted under current conditions and under projected conditions 30, 40, and 100 years in the future.

San Francisco Garter Snake

Habitat Requirements

The habitat requirements of the SFGS vary throughout the year, and multiple habitat types are used on a seasonal and often daily basis. From spring through early fall SFGS are found in wetland areas where they forage for frogs, tadpoles, and small fish. During these months they makes daily movements between foraging habitat and nearby upland retreats located in underground burrows and soil crevices, typically located in a grassland-shrub community. Grassy hillsides, floating algae, and rush mats also are used at this time for basking and mating. Beginning in mid- to late fall they may move to more distant uplands and winter underground retreats. Here they remain relatively inactive during the winter months versus the rest of the year. SFGS have been seen in all months of the year during warm weather, including individuals foraging in ponds during February. In some populations where uplands immediately adjacent to the aquatic habitat are suitable for winter retreats, SFGS will take advantage of these closer burrows (Larsen 1994).

Local Occurrence

Under current conditions, high quality upland habitat for the SFGS at Sharp Park is restricted to a small area south of Horse Stable Pond. Laguna Salada and the connecting channel contain functionally little or no adjacent SFGS upland habitat that is secure from daily human disturbance and exposure to predators (SBI 2009). This lack of suitable upland habitat with disturbance by golf activity during the day minimizes the connectivity between the aquatic habitats in Horse Stable Pond and Laguna Salada and deters occupancy by the snake in all but the southernmost portion of the park. The edges of Laguna Salada currently are the most likely routes for SFGS to follow, and movement through these areas could expose snakes to mortality from predation, mowing, and being crushed by golf carts and people. The lack of suitable upland habitat that would be used on a regular basis is therefore a limiting factor in ensuring the persistence of the SFGS at Sharp Park. Upland habitat that would be suitable for winter retreats is also limited as any that exists immediately adjacent to the lagoon would be subject to the flooding that occurs each winter.

For SFGS that travel to the lagoon from uplands near the pond or Mori Point, the extremely dense structure of the aquatic vegetation combined with little open water/emergent vegetation edge habitat at the lagoon provides extremely poor foraging habitat (SBI 2009). The deterioration of breeding habitat due to inappropriately dense vegetation also limits CRLF productivity at Laguna Salada.

Arrowhead Lake supports a breeding population of California red-legged frogs and Pacific chorus frogs, and is bounded by dense riparian vegetation, providing suitable foraging habitat for the San Francisco garter snake. Although no San Francisco garter snakes were observed there during these surveys, Arrowhead Lake and the surrounding uplands may be used as habitat. There is a historical record of SFGS on the parcel north of and adjacent to Sharp Park with no barriers between. San Francisco garter snakes are also known to occupy the SFPUC watershed land to the east around San Andreas Reservoir below Sweeney Ridge.

Survey Results

SBI conducted visual surveys in 2008 specifically for SFGS in March, April, and May of 2008. No SFGS were observed during visual surveys, which included the areas around lower Sanchez Creek, the lagoon, the canal, and the pond. However, the abundance of prey items in these areas, their proximity to recent observations of the snake at Mori Point and the pond (SBI 2006), and historical occurrence suggest that they are likely to be used by SFGS for foraging and movement. Five SFGS were trapped at a nearby wetlands at Mori Point in 2008 (SBI unpubl. data) and in wetland habitats south of the golf course and east of Horse Stable Pond. On July 9th, 2008, Golden Gate National Recreation Area biologists reported seeing a SFGS in the 'north pond', a few hundred feet east of Horse Stable Pond (S. Bennett in litt 2008).

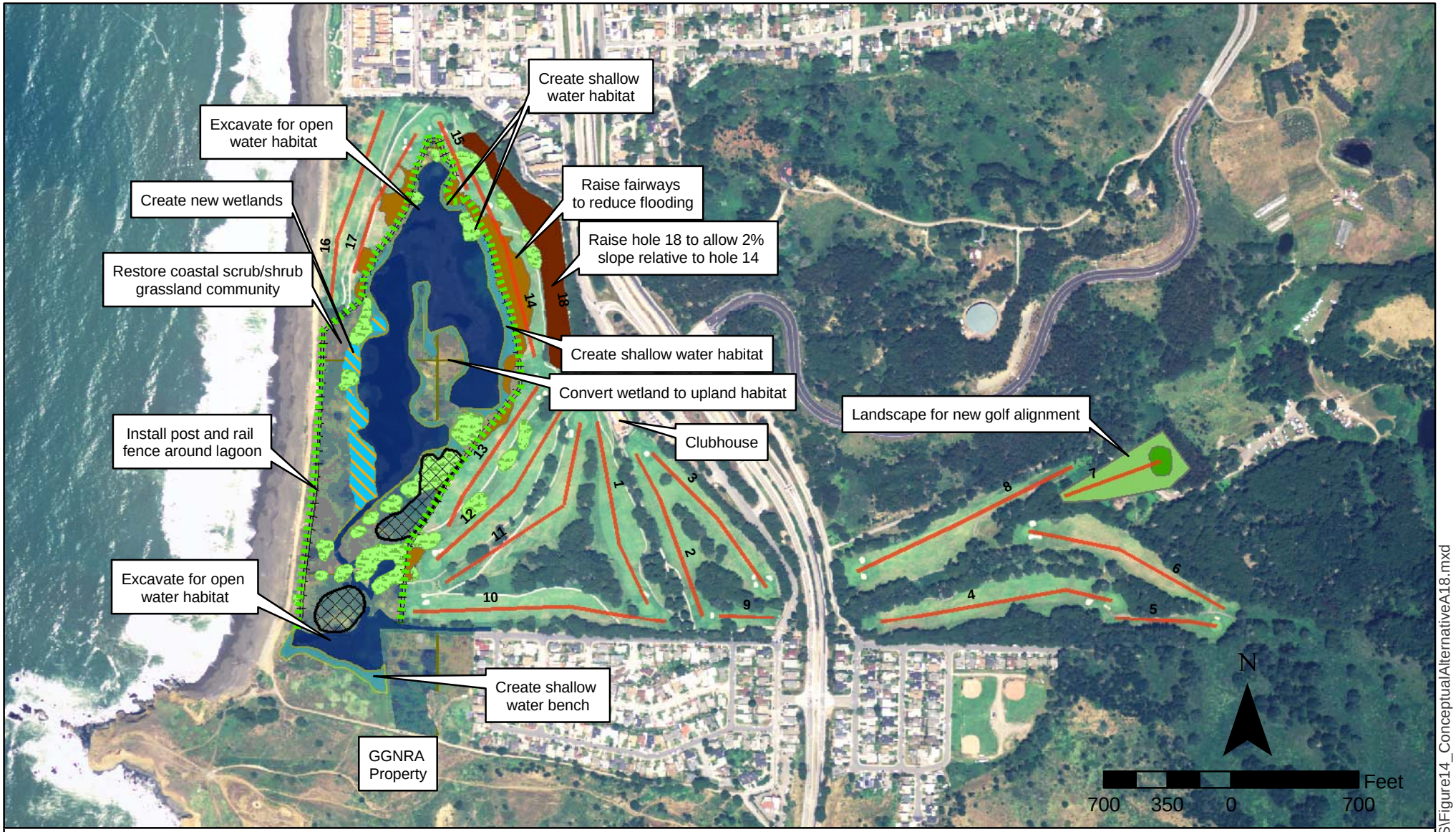
4. CONCEPTUAL PLANNING

During planning for the recovery effort, several broad goals were identified by SFRPD and through agency input. Those are as follows:

- Maintain and restore habitat for listed species, particularly the SFGS and CRLF;
- Meet the recommendations of the SFGS Recovery Plan (USFWS 1985);
- Restore functional wetland and upland habitat that is high-value and low maintenance;
- Comply with the requirements of state and federal regulations, including ESAs and the Clean Water Act; and,
- Preserve and enhance recreational opportunities that correspond to the listed species goals.

A series of conceptual alternatives have been created to detail proposed conditions that are predicted to occur under various alternatives and to assess whether each alternative would meet the recovery goals (Figures 14-16). A habitat assessment model was completed for existing conditions and for conditions that are projected to develop under each conceptual plan. Figure 17 shows habitat quality under existing conditions, and Figures 18-20 show projected habitat quality for the SFGS and CRLF under Alternatives A18, A9, and No Golf, respectively. Table 3 compares the amount of habitat for each species under the various alternatives compared to the projected costs. A detailed cost estimate is provided in Appendix D, and the process of determining costs is explained in Section 4.9.

Each alternative differs in the extent of upland habitat that would be restored as well as the alignment and location of golf holes. A gradient of measures is proposed under various alternatives, ranging from an alternative that would restore the wetlands and minimal surrounding upland habitat to a more comprehensive alternative that would also restore the wetlands but would also include a much greater amount of upland restoration as well as excavation of frog ponds and daylighting of Sanchez Creek. Alternatives include maintaining an 18-hole golf course, closing 9 holes and creating a 9-hole course with a driving range, and closing the park to golf while still allowing other recreational opportunities on the site. All alternatives share the same goal, which is to enhance habitat for the SFGS and CRLF, and share the same restoration features in and around the wetlands complex: creation of upland basking and retreat habitat adjacent to the wetlands, excavation of excess sediment and decaying vegetation from the wetlands complex, creation of an upland corridor between the pond and the lagoon, and recontouring the shoreline to create shallow water habitat.



Conceptual Alternative A18

Figure 14

Sharp Park Conceptual Restoration Plan
Pacifica, CA

TETRA TECH

- Fairways
- Fence
- Habitat Boundary
- Raise to 10' Contour
- Upland Mounds for SFGS Habitat
- Remove Non-Native Trees
- Coastal Shrub/Grassland
- New Wetlands
- Shallow Water Habitat
- Open Water
- Convert to Golf Holes

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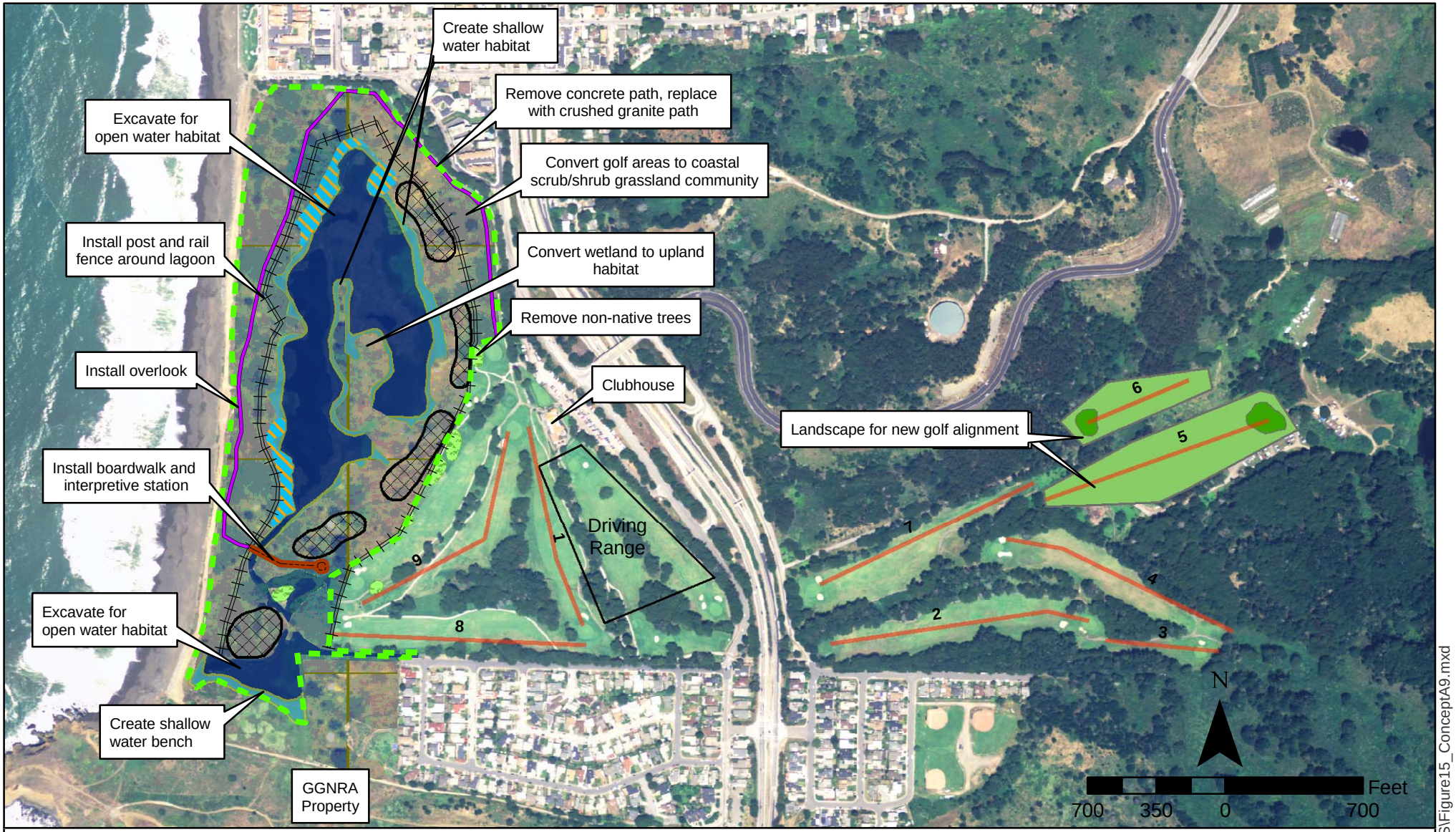

Conceptual Alternative A9

Sharp Park Conceptual Restoration Plan
Pacifica, CA

Figure 15

TETRA TECH

- Boardwalk
- Fence
- Fairways
- Habitat Boundary
- New Wetlands
- Upland Mounds for SFGS Habitat
- Coastal Shrub/Grassland
- Shallow Water Habitat
- Open Water
- Remove Non-Native Trees
- Convert to Golf Holes

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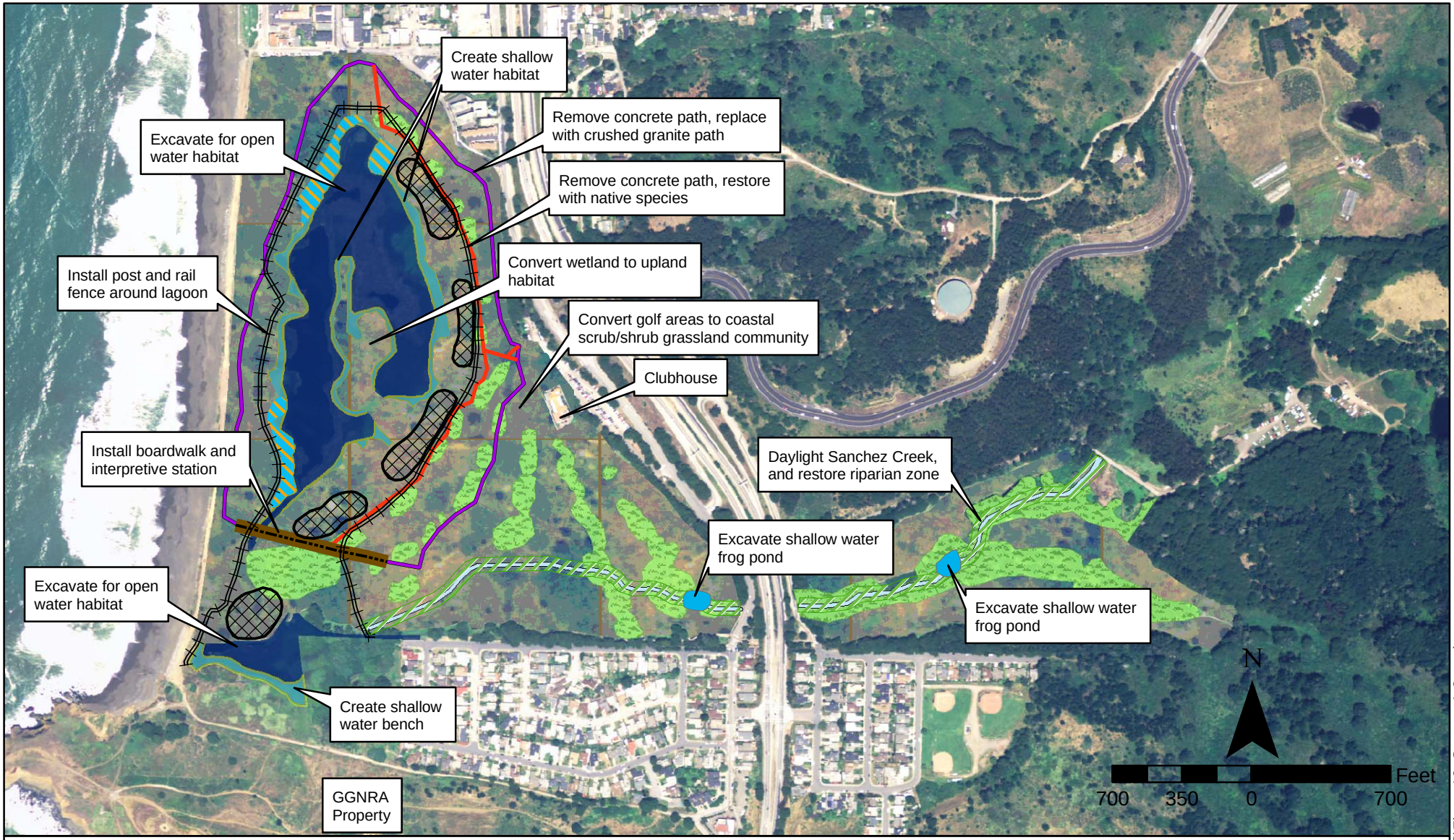

No Golf Alternative

Figure 16

Sharp Park Conceptual Restoration Plan

Pacifica, CA

TETRA TECH

Boardwalk
Daylight Sanchez Creek
Fence
Frog pond
Riparian Habitat
Upland Mounds for SFGS Habitat
New Wetlands
Remove Non-Native Trees
Coastal Shrub/Grassland
Shallow Water Habitat
Open water

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Habitat Quality Under Existing Conditions

Sharp Park Conceptual Restoration Plan

Pacifica, CA

Habitat Quality for the California Red-legged Frog and the San Francisco Garter Snake at Sharp Park

Figure 17

CRLF breeding / SFGS primary foraging habitat
- Highly Suitable
- Moderately Suitable

CRLF non-breeding / SFGS movement and secondary foraging habitat
- Highly Suitable
- Moderately Suitable

SFGS upland (retreat and basking) habitat
- Highly Suitable
- Moderately Suitable

TETRA TECH

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Habitat Quality Projection, Alternative A18

Sharp Park Conceptual Restoration Plan
Pacifica, CA

Habitat Quality Projection for the California Red-legged Frog and the San Francisco Garter Snake at Sharp Park

Figure 18

CRLF breeding / SFGS primary foraging habitat
- Highly Suitable
- Moderately Suitable

SFGS upland (retreat and basking) habitat
- Highly Suitable
- Moderately Suitable

CRLF non-breeding / SFGS movement and secondary foraging habitat
- Highly Suitable
- Moderately Suitable

TETRA TECH

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Habitat Quality Projection, Alternative A9

Sharp Park Conceptual Restoration Plan
Pacifica, CA

Habitat Quality Projection for the California Red-legged Frog and the San Francisco Garter Snake at Sharp Park

Figure 19

CRLF breeding / SFGS primary foraging habitat
- Highly Suitable
- Moderately Suitable

SFGS upland (basking and retreat) habitat
- Highly Suitable
- Moderately Suitable

CRLF non-breeding / SFGS secondary foraging habitat
- Highly Suitable
- Moderately Suitable

TETRA TECH

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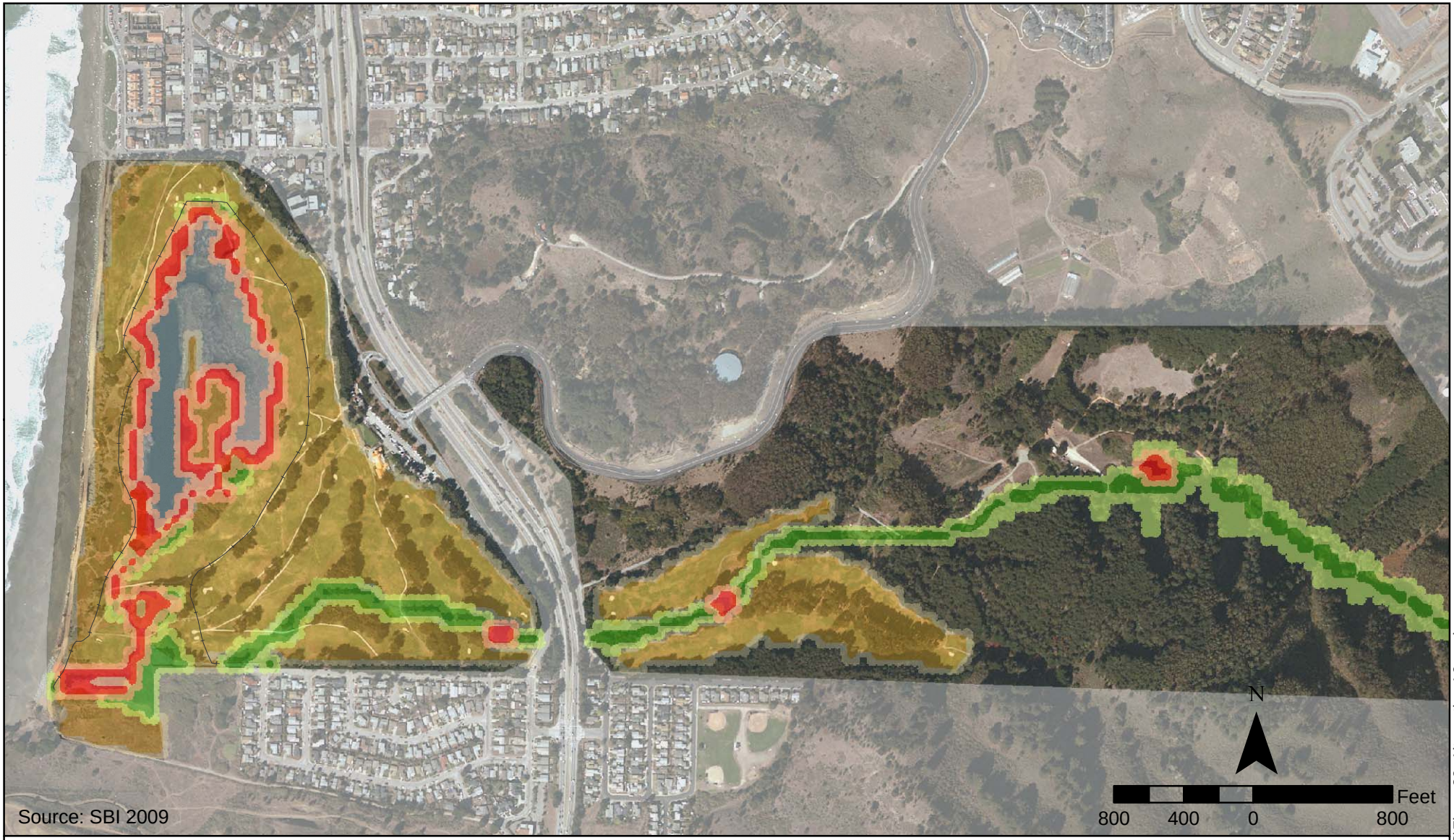

Habitat Quality Projection, No Golf Alternative

Sharp Park Conceptual Restoration Plan

Pacifica, CA

Habitat Quality Projection for the California Red-legged Frog and the San Francisco Garter Snake at Sharp Park

Figure 20

CRLF breeding / SFGS primary foraging habitat
- Highly Suitable
- Moderately Suitable

CRLF non-breeding / SFGS secondary foraging habitat
- Highly Suitable
- Moderately Suitable

SFGS upland (basking and retreat) habitat
- Highly Suitable
- Moderately Suitable

TETRA TECH

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4.1 Project Constraints

A number of physical, recreational, and biological factors influenced the design of this conceptual plan and in some cases limited or defined the extent of the proposed restoration. These included, but were not limited to, the following:

- *CRLF breeding habitat requirements* SFRPD closely monitors and regulates pumping from Horse Stable Pond into the ocean to avoid stranding CRLF egg masses at that breeding site. This occurs during the entire breeding period for the CRLF (generally December through March). This practice, in part, has resulted in water backing up onto the course flooding large portions of Holes 10, 14, and 15, and cutting off Hole 12 with a large pool of water around the culverted section of the connecting channel. The results of this are three-fold: 1) It eliminates all or portions of these holes from play, sometimes for extended periods 2) CRLFs sometimes lay their eggs during wet periods in the shallow pools that form in the flooded fairways. When the water levels drop, these egg masses can be stranded on dry ground and desiccate. Even if water persists long enough for eggs to hatch in these areas, most tadpoles would have limited mobility in the dense vegetation in the marsh area and may be stranded well before metamorphosis, and 3) Any potential SFGS upland available in areas not in play on the course is also flooded.

- *Presence of the seawall* A seawall separates the western edge of Sharp Park from the ocean and beach. Although members of the public suggested that a restoration option may include breaching the seawall to allow Sanchez Creek to run freely into the ocean, this option was considered infeasible for several reasons. The seawall plays a significant role in maintaining public safety by alleviating flooding during storm surges, and also keeps seawater out of the marsh complex, where saline water could harm resident reptiles and amphibians.

- *Sharp Park Clubhouse* The clubhouse is a historic feature, and its removal as a restoration feature was not considered as an option. Therefore, restoration plans were created assuming that the clubhouse and associated parking area would remain in place.

- *Archery Range* An archery range is located east of Highway 1 near the defunct rifle range. All plans were created to limit effects to the archery range or its access points.

- *Re-use of dredge spoils* It is assumed that some of the spoils removed during dredging of parts of the marsh complex would be used to restore fairways to upland habitat or to serve as the substrate for creation of new golf holes under some of the alternatives. However, spoils with greater than 50% organic material are deemed unsuitable for golf course substrate due to the potential for uneven settling, therefore organic sediments would only be spread where upland habitat is proposed.

- *Highway 1* Highway 1 provides a barrier to migration of the SFGS from the upper part of the park to the marsh complex and vice versa. Although a tunnel under the highway allows travel between the eastern and western parts of the park, the tunnel is not considered to be a viable corridor for migration of the snake. CRLF may have a low but significant flow of genetic exchange through culverts under Highway 1 and potentially overland.

- *Golf course history and alignment requirements* The golf course is a well known example of the design of Alistair McKenzie, a well known golf course architect who designed courses in the 1920s and 1930s. Although the prevailing goal in creating these conceptual plans was to enhance habitat value and diminish potential for harm to snakes and CRLF s, every effort was made to preserve the vision of Dr. MacKenzie and to minimize the need to substantially reconfigure the golf alignment. Furthermore, golf courses are generally constructed to follow a standard sequence of difficulty (par) from hole to hole, a factor that was considered in the various designs.

- *Mitigation for impacts to wetlands* Under all alternatives, an upland pensinsula will be created in the middle of the lagoon. Because this will result in fill of up to 2 acres of wetlands, 2 acres of wetlands must be created from the upland edges of the lagoon, which in some cases may encroach on existing fairways. By mitigating for impacts to wetlands and complying with other permit conditions required by the US Army Corps of Engineers (USACE) and the Regional Water Quality Control Board (RWQCB), SFRPD maintains compliance with Sections 404 and 401 of the Clean Water Act.

4.2 HABITAT CONSIDERATIONS

Historically, SFGS habitat at Sharp Park was concentrated in and around Laguna Salada and Horse Stable Pond. Habitat in these areas has become degraded over time as a result of sedimentation and excessive plant growth, flooding by seawater, and a variety of human impacts.

Both the SFGS and CRLF would benefit from the restoration of productive breeding and foraging habitat in each of these aquatic features. This could be accomplished by creating open water habitats adjacent to emergent vegetation in Laguna Salada, the canal, lower Sanchez Creek, and Horse Stable Pond. Because of their historic occupancy and the presence of features that currently support the SFGS, the conceptual plans were developed with the primary goal of restoring and enhancing habitat in these areas. Although CRLF are known to breed in Arrowhead Lake east of Highway 1, enhancements to the eastern portion of the park were not prioritized because there is no current evidence of occupation by the SFGS at Arrowhead Lake, nor is there a connection to the SFGS population at Mori Point. Each conceptual plan includes enhancements to wetland areas of the pond, the canal, and the lagoon in order to increase CRLF breeding and SFGS foraging habitat.

In order to address the shortage of suitable upland habitat for the SFGS, however, changes to the use of land adjacent to the wetland complex are required. The primary goal of each conceptual alternative was to propose an effective way of increasing upland habitat adjacent to existing or future aquatic habitat, and to evaluate the consequences of such a change to the existing golf course design and operation.

Restoration Options

Under all alternatives, creating new uplands west of Highway 1 would require the conversion of Hole 12 to wildlife habitat that includes both enhanced wetland and upland features. The two former golf holes west of Laguna Salada taken out of play after saltwater flooding in the 1980s currently contain non-native plants and bare, sandy ground that provide little habitat value for the snake and frog. These areas could be converted into upland habitat for the SFGS if CRLF breeding habitat that is free from predatory fish and which contains shallow water and emergent vegetation is also created in adjacent parts of Laguna Salada. Upland habitat created in these areas however would be susceptible to pedestrian trespassing, off-leash dog activity, potential saltwater spray, and may be prone to future flooding. Locating newly-created upland habitat on Laguna Salada's southeast and northeast sides instead would reduce some of the risks of impact by pedestrians, pets and ocean water, but would require one or more golf holes to be modified or relocated, and could increase impacts by golf course maintenance activities such as mowing. Creating SFGS upland habitat on the east side of the lagoon rather than the west side would allow for creation of new wetlands on the west side of the lagoon to mitigate for wetlands that are filled during planned restoration activities.

Creating upland habitat on the east side of Highway 1 would not benefit snakes and frogs in the areas where they primarily occur. Success criteria would be expected to require that SFGS either colonize the area by crossing the highway, an event that probably occurs rarely and presents substantial hazards to snakes that attempt it or by moving into the area from the Crystal Springs watershed. Connectivity to the Crystal Springs watershed to the east is limited by the unsuitable nature of the dense stands of eucalyptus and mixed evergreen forest and lack of distinct hydrologic connection with optimal foraging opportunities for promoting longer movements of SFGS. The exception to this could benefit CRLF and would occur under

the No Golf Alternative, in which frog ponds would be created along Sanchez Creek, one of which would be constructed east of Highway 1. Sufficient CRLF populations in the immediate area are present and would be very likely to colonize new ponds on Sanchez Creek.

4.3 GOLF COURSE PLANNING CONSIDERATIONS

Developing viable design solutions for a reconfigured Sharp Park Golf Course involves tying together golf course playability, endangered species habitat requirements, the original vision of Dr. Alister MacKenzie, and the unique physical and natural components of site.

Redesigning the layout and design of the golf course included understanding the evolution of the original layout dating back to 1931. Since the course was constructed it has changed due to storms off the Pacific Ocean and construction of roads. The result is that four of the oceanfront holes were relocated to the east side of the park and a sea wall protects the golf course from the ocean.

Presently there are 11 holes that are in the original location plus a shortened par three with an original green complex. Over most of the past 80 years the typical MacKenzie characteristics have almost disappeared but can still be seen.

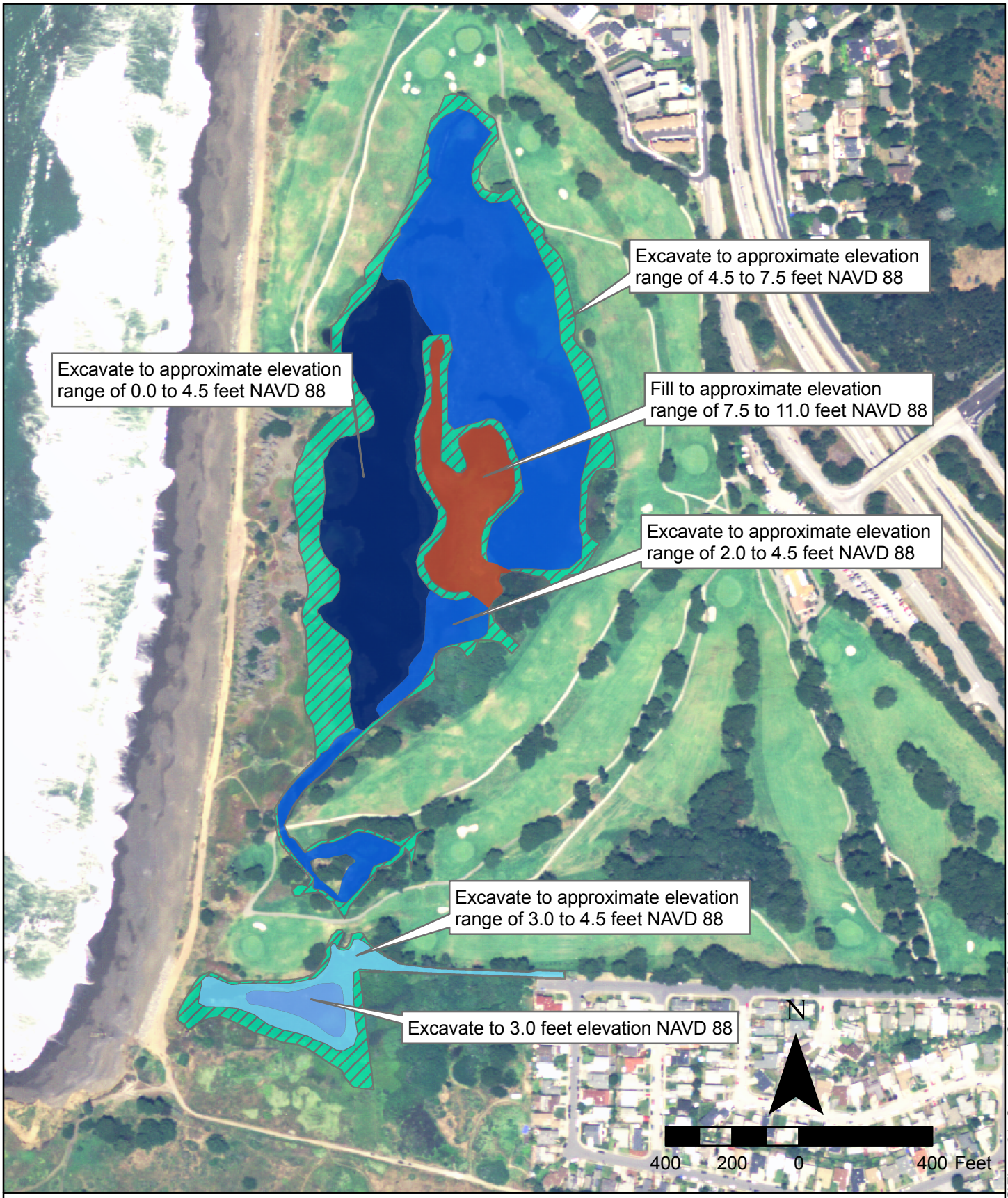
Alternative A18 keeps almost all of the original holes and would accomplish the goal of creating viable upland SFGS adjacent to the wetlands. To maintain an 18-hole regulation course on this property, it is important to keep the existing 18th hole in place because the course needs to return to the clubhouse. A scorecard showing the final lengths and pars of each hole under Alternative A18 is shown as Appendix E.

The proposed 9-hole alternative would eliminate golf around the lagoon by eliminating two golf holes and replacing the two holes at the rifle range. The 9-hole alternative would also add a driving range and practice hole.

4.4 FEATURES COMMON TO ALL ALTERNATIVES

The common component of all alternatives is restoration of the wetlands complex. Under all alternatives, the same features are proposed to restore wetland habitat and reduce the potential for recurrence of the problems that now occur, which include sedimentation, eutrophication due to dead and decaying vegetation, loss of open water habitat, and flooding of fairways. Implementing the restoration actions below would accomplish the main goal of the project, which is to enhance CRLF and SGFS habitat. The main components of the wetland restoration are as follows:

- **Dredging to remove sediment and decaying vegetation**. The areas that are currently open water within the lagoon would be deepened by up to 2 feet, and open water areas within the pond by up to 3 feet (Figure 21). Dredging to this extent would bring bottom elevations in the lagoon to 0' NAVD 88 at the deepest part of the lagoon, and down to +2' NAVD 88 in the pond. The eastern portions of the lagoon and pond as well as the connecting channel would be excavated up to 6 feet in the centers to restore open water habitat and to ensure that ample edge habitat consisting of open water/emergent vegetation interface and wetland/upland interface would persist for the foreseeable future. Deepening these areas will ensure persistence of open water habitat by discouraging the growth of dense stands of bulrush and cattails that are overgrowing the wetlands and diminishing habitat quality for the SFGS and CRLF.
- **Recontouring the shoreline to create shallow water habitat**. The eastern edge of the lagoon, the edges of the connecting channel, and the north and south edges of the pond would be contoured to create shallow water habitat (1-3' deep) to allow for CRLF breeding habitat. Shallower water (<1') will allow for growth of vegetation upon which frogs can attach egg masses, while deeper water (1-3') will allow for areas of open water or areas floating emergent vegetation.



Wetland Grading Plan

Sharp Park Conceptual Restoration Plan

Pacifica, CA

Figure 21

TETRA TECH

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- **Creation of an upland peninsula.** A peninsula of approximately 2 acres will be created in the middle of the lagoon and shallow water habitat for the CRLF. The peninsula is intended to address the shortage of upland SFGS habitat, and offer additional shallow water habitat at its edges for CRLF breeding. The peninsula will be constructed to be high enough above ordinary high water and the water table that it will develop an upland plant community and allow squirrels and other rodents to establish burrows which would later be used by the SFGS.

- **Construction of upland mounds**. Upland mounds will be created on the east and south sides of the lagoon and in the dispersal corridor between the lagoon and the pond.

- **Pump Operations.** Altering the methods of operating pumps and other measures to control hydrological features is proposed under all alternatives. The main purpose of altering pump operations is to be able to better control water levels without stranding CRLF egg masses, and thereby reduce the extent of golf course flooding. The main feature of this action is to cycle the pumps more frequently so that they turn on when the water is at a lower level than they currently do. The main disadvantage of cycling the pumps more frequently is that they will likely wear out more quickly than they would under current conditions. The need to operate the pumps more frequently could be reduced by raising the level of fairways that flood, as proposed under Alternative A18.

- **Upland/Aquatic linkage and habitat segment.** A habitat linkage area between the lagoon and the pond would be constructed with native upland vegetation and mounds designed to attract the SFGS. Construction of this corridor will require closing Hole 12 and revegetating the area with native upland species. The corridor would be bisected by the connecting channel, which will provide CRLF breeding habitat and SFGS foraging habitat. The habitat linkage will allow the SFGS population to inhabit a contiguous habitat segment area with features that will provide suitable habitat for SFSG on a year round basis between the lagoon and Mori Point without disturbance from humans or mowing equipment.

- **Completion of a Compliance Plan.** SFRPD has completed a compliance plan that is designed to avoid mortality and injury of SFGS and CRLFs resulting from maintenance and operations of the golf course (SFRPD 2009). Features of the compliance plan include increase monitoring to determine the earliest incidence of CRLF egg deposition, restrictions on mowing, gopher trapping, or repairs in sensitive areas, restrictions on use of particular types of herbicides, and increased stewardship training. Compliance planning is occurring under a separate process than the restoration planning described in this report.

- **Closure of Hole 12.** Due to its position directly between the lagoon and the pond, Hole 12 would be closed under all alternatives. Closing this hole would allow for creation of an uninterrupted habitat corridor between the lagoon and the pond and would also reduce the amount of human intrusion into areas that might be transited by SFGS. Hole 12 would be replaced under each alternative, although the exact alignments vary.

- **Catchment Basins**. To slow the rate of sedimentation from upstream sources, sediment catchment basins would be installed in two locations, one near the mouth of Sanchez Creek and the other on City of Pacifica property just outside the northern boundary of the Sharp Park.

- **Fencing**. A post and rail fence would also be installed to discourage human and pet intrusion into the restored habitat area, although the alignment of the fence in areas away from the seawall may vary according to the different alternatives. All alternatives include fencing along the seawall to the west of the lagoon, according to the Draft Compliance Plan.

- **Revegetation**. Uplands, wetlands, and shallow aquatic areas would be revegetated. The proposed plant palette includes aquatic, wetland, transitional and upland plant species known to occur in areas adjacent to Laguna Salada or similar habitat types. These plants occupy different strata to maximize habitat for a variety of species, particularly the SFGS and the CRLF, for cover, basking, and foraging. More specifically, emergent and floating-leaved species were selected to minimize the growth of non-native *Typha angustifolia* that currently provides poor CRLF habitat. Increased emergent and floating-leaved vegetation should also provide increased habitat for the San Francisco forktail damselfly. Sources of information include the recovery plans for the SFGS (USFWS 1985) and the CRLF (USFWS 2002). Table 2 lists plant species that are recommended for revegetation of all areas.

Table 2. Native Plant Species Recommended for Revegetation

Type	Scientific Name	Common Name
Transitional	*Juncus patens*	Spreading Rush
Transitional	*Rubus ursinus*	CA Blackberry
Transitional	*Scrophularia californica*	Beeplant
Transitional/Wetland	*Rumex salicifolius*	Willow Dock
Transitional/Wetland	*Salix lasiolepis*	Arroyo Willow
Transitional/Wetland	*S. sitchensis*	Sitka willow
Upland	*Achillea millefolium*	Yarrow
Upland	*Anaphalis margaritacea*	Pearly everlasting
Upland	*Argentina anserina*	Silverweed cinquefoil
Upland	*Artemisia californica*	CA Sagebrush
Upland	*Baccharis pilularis*	Coyote Bush
Upland	*Bromus carinatus var. maritimus*	CA Brome
Upland	*Castilleja wightii*	Indian Paintbrush
Upland	*Clarkia rubicunda*	Farewell to Spring
Upland	*Danthonia californica*	Oatgrass
Upland	*Diplacus aurantiacus*	Orange Bush Monkeyflower
Upland	*Dudleya farinosa*	Liveforever
Upland	*Festuca rubra*	Red Fescue
Upland	*Leymus triticoides*	Creeping Rye/Beardless Rye
Upland	*Mimulus aurantiacus*	Sticky Monkey Flower
Upland	*Nassella pulchra*	Purple Needle Grass
Upland	*Rhamnus californica*	Coffeeberry
Upland	*Sidalcea malviflora*	Checkerbloom
Wetland	*Eleocharis macrostachya*	Common Spikerush
Wetland	*J. effusus*	Rush
Wetland	*Sagittaria latifolia*	Broad-leaved Arrowhead
Wetland	*Scirpus microcarpus*	Small-fruited Bullrush
Wetland/Aquatic	*Potamogeton diversifolius*	Waterthread Pondweed
Wetland/Aquatic	*Potamogeton nodosus*	Long-leaved Pondweed
Wetland/Aquatic	*Sparganium angustifolium*	Narrowleaf Burreed
Wetland/Aquatic	*S. eurycarpum*	Broad-fruit Burreed
Wetland/Aquatic	*Typha latifolia*	Cattail
Wetland/Aquatic	*Zizania palustris*	Wildrice

Habitat features in restored upland areas would be the same under all alternatives, with the main difference being the extent of restored area. Ruderal areas and areas currently used for golf would all be restored as native coastal scrub/grasslands, although some of the uplands would be restored specifically for SFGS basking habitat.

- **Maintenance and Monitoring**. Assuming that the alternatives are designed and implemented correctly, success of any of the restoration alternatives will depend on the degree of maintenance and monitoring that occurs. Monitoring is recommended on a yearly basis, and maintenance needs will be determined by the results of the monitoring efforts. Monitoring for the following should occur on a yearly basis:

    - **Use by Listed Species** Since this is a recovery action for the SFGS, monitoring for use of restored areas by SFGS and the CRLF should be the major monitoring priority. As wetland and upland communities develop after restoration, habitats for SFGS and CRLF are anticipated to gradually develop as well. Surveys should begin prior to construction, and should continue after construction to document the extent of viable habitat and the population health of these species. Surveys should be coordinated with USFWS and CDFG to ensure compliance with endangered species laws and regulations.

    - **Invasive Plant Species** Since most of the habitat surrounding Sharp Park has been altered by the presence of non-native species, some of which are noxious invasive species, it is likely that restored areas will also be colonized by these species. Due to the relatively large area of restoration and the high labor needs associated with controlling invasive species, it is recommended that resources be applied to controlling the most noxious invasive species, including perennial pepperweed *(Lepidium latifolium),* gorse *(Ulex europaeus)*, reed canary grass *(Phalaris arundinaceae)*, and various types of thistle.

    - **Vegetation Cover** Percent vegetation cover in restored upland areas should be monitored at 6 month intervals for the first three years, and on a yearly basis thereafter. Wetland areas should be monitored to ensure that the target plant communities are developing and to ensure that areas do not become overgrown. Native species should be replanted yearly or as needed to provide a competitive edge over non-native species.

    - **Non-native Wildlife and Feral Species** Habitat restoration can be successful only if predation from non-native or feral species such as cats, bullfrogs, red foxes, and predatory fish can be minimized. Although predatory fish will be eliminated when the wetland complex is drained for construction, it is possible that new specimens will be deposited there later. Red foxes and feral cats have been seen at the site, and should be trapped and removed if they are identified as being threats to the SFGS or CRLF. Bullfrogs, which prey on CRLFs and juvenile SFGS in other areas, have not been identified in significant numbers at Sharp Park, but should be monitored for.

    - **Impacts from Human Use** Changing the use of lands immediately adjacent to the wetlands complex from primarily golf to other forms of recreation will affect the patterns of human use. Human incursion into restored uplands may affect SFGS in these areas, particularly by people on mountain bikes or those who allow dogs into the area, and should be monitored closely.

    - **Sediment** Although some sediment input into the wetlands system is desirable, controlling excessive sedimentation is one of the keys to ensuring that the current problem of overgrowth of emergent species in wetland areas does not occur in the foreseeable future. Sediment basins proposed for the north end of the park and on Sanchez Creek should be monitored for effectiveness on a yearly basis, and will likely need to be cleaned out at least

once every five years. Cross sections of the aquatic areas should be taken at established locations every five years to measure sediment accretion.

- **Water Quality** Water quality parameters to be monitored should include salinity, presence of heavy metals, dissolved oxygen, and input of fertilizers or herbicides from runoff or use of recycled water. Measurements should be taken at primary input locations and in the connecting channel. If water quality deficiencies are persistent and affect habitat quality for the SFGS and CRLF, remedial actions will be implemented as needed.
- **Construction Monitoring** A qualified biologist would be onsite during construction to monitor for sensitive species that may enter the construction area. The construction area should be surveyed for listed species prior to construction, and any specimens found in the construction footprint should be trapped and relocated. The biological monitor must be given authority to shut down construction in the event that listed species are found in the construction area.

4.5 ALTERNATIVES

The following alternatives have been considered in this report:

18-Hole Alternative (Alternative A18)

Alternative A18 is the conceptual plan that was under design for recovery of the SFGS and the CRLF prior to consideration of restoring greater Sharp Park (Figure 14). This alternative is intended to fulfill the recovery goals for the snake and frog while maintaining as much of the current golf course configuration as possible.

Under this alternative, Hole 12 would be closed and restored as coastal scrub/grassland habitat. Holes 10 and 13 would be shortened, and a new hole would be created near the rifle range/ archery course east of Highway 1. No new holes would be restored on the west side of the lagoon; instead, this area would be restored from its degraded condition to native upland habitat. Portions of the fairways in holes 10, 14, and 15 would be raised to 10.0' NAVD 88 from their current elevation of between 6.5' and 9.0' to prevent flooding on the fairways and also to discourage frogs from depositing egg masses in locations where the resulting tadpoles may end up being stranded. The fairway, green and tee areas of hole 18 would be raised to allow a consistent 2% slope from the east side of hole 18 to the west side of hole 14. No boardwalk would be created under this alternative, as there would be no need to cross the restored habitat area between the lagoon and pond. Several Monterey cypress trees would be removed from fairways east and north of the lagoon, as well as from the ruderal habitat west of the lagoon.

SFRPD would develop a new 165 yard, par three hole (Hole 7) after the existing 6th hole and in the location of the current organic waste site and rifle range. This hole would replace the existing 12th hole which would be removed to allow habitat creation between the lagoon and the pond. The new hole will be 165 yards from the back tee and play slightly uphill. The bunkering and sculptured contouring would be characteristic of design strategy and aesthesis of Dr. Alister MacKenzie.

The length of the hole is approximate and would become the second longest par three on the course. This length helps provide a variety of distances of par threes which is desirable for a regulation golf course.

9-Hole Alternative (Alternative A9)

This alternative is intended as a compromise between golf considerations and expanded upland areas east of the main body of the lagoon, and to increase opportunities for recreational pursuits other than golf. Under this alternative, all holes bordering the wetland complex would be closed and restored to coastal scrub/shrub habitat (Figure 15). Three holes (1, 8, and 9) would remain west of Highway 1, along with a driving range and

teaching area, and two new holes would be constructed at the rifle range. All existing holes east of Highway 1 would remain in their current location. Excess spoils from excavation of the lagoon would be deposited on the rifle range after remediation. Numerous Monterey cypress trees would be removed under this alternative. A concrete golf cart path would be removed and replaced with a crushed granite path that would start near the clubhouse, proceed around the north end of the lagoon, and end at an observation point and interpretive center located on a boardwalk that would extend into the marsh.

This alternative creates a driving range where existing holes #2 and #3 are located. To accommodate this range, and remove all golf around the lagoon, two new holes would be built at the east end of the golf course. The new holes would start after the existing 6th hole and be built on the site of the organic waste dump and the defunct rifle range.

> Hole 4 – Par 4, 400 yards. This would be an uphill hole playing longer than the 400 yards and has the potential to be a challenging par 4.
>
> Hole 5 – Par 3, 175 yards. This mid to long length par three would play slightly downhill. The setting would be very appealing with a natural area on the left and hills on the right.

No Golf Alternative

A single no golf alternative was developed (Figure 16). This alternative was developed with the goal of maximizing the amount of available upland habitat for the snake and frog in the absence of golf operations. Because the lack of suitable upland habitat was identified as the limiting factor for the snake, the golf areas would be converted into uplands. Enhancements to wetland areas in lower Sanchez Creek, Horse Stable Pond, and Laguna Salada would be identical to those outlined in the other concept plans. Water from Sanchez Creek would be captured in two shallow ponds to provide additional breeding habitat for the CRLF.

Under this alternative, all golf holes would be closed and the fairways would be restored to native coastal scrub/shrub habitat. Sanchez Creek would be daylighted as far east as the defunct rifle range and riparian habitat would be restored along the stream. Two shallow ponds would be constructed on Sanchez Creek to enhance CRLF habitat away from the marsh complex. These ponds would be constructed above the 100-year flood elevation that would occur under projected sea-level rise scenarios. A crushed granite walking path would replace concrete golf cart paths and would be extended to encompass the entire lagoon. No bicycles would be allowed on these paths. Visitors would cross the marsh and upland dispersal zone on a boardwalk that would span the entire habitat zone between the lagoon and the pond.

Maintenance of the restored area would still need to occur, and the pumps would need to be operated in the same manner that they currently operate during the winter.

4.6 POTENTIAL IMPACTS OF RESTORATION

If implemented, these plans could cause a number of temporary and permanent effects to natural resources and recreational opportunities at the park. The full range of potential effects will be assessed during preparation of CEQA documentation and will be addressed directly during the permitting phase of the project. The following have been identified as potentially occurring:

- *Take of listed species*. Although this project is considered a recovery action for listed species, accomplishing this goal will require a great deal of earthmoving and alteration of existing resources. Extensive human presence during construction, use of heavy excavating and earth-moving equipment, and noise can all harm wildlife species by interrupting their foraging or breeding habits or by resulting in direct harm to individuals.

- One of the first tasks that would occur during construction would be to drain the lagoon and the pond, which would discourage SFGS and CRLFs from remaining in the project area, reducing the potential for harmful effects to these species. However, although every effort would be made to capture and relocate sensitive wildlife resources prior to construction, the possibility of harm to listed species remains. Impacts to listed species would be addressed extensively during the Section 7 consultation process with USFWS and during similar consultation with CDFG, and standard and specific practices to minimize the potential for take will be developed at that time. Furthermore, impacts to listed species during construction will be offset in the long term by increasing the quantity and quality of their habitat in the marsh complex area.

- Under the 9-hole alternative, a walking path would encircle most of the lagoon area, enhancing opportunities for exercise and wildlife viewing. Under the No Golf alternative, the walking path would encircle the entire lagoon. The absence of golf operations would remove potential threats to wildlife posed by mowing and potential harm and harassment by players, but management for other threats would be required. Under both alternatives, the walking path would be located in the restored upland area, giving humans and dogs relatively unrestricted access to the area that is being restored for SFGS upland habitat. Although signs would be installed asking visitors to remain on the path, incursions into habitat areas would likely occur. Increased casual use of this area could increase disturbance of the SFGS, particularly by dogs and feral cats, which would be unlikely to use this area if it remained a golf course. Mountain biking would pose a threat to snakes basking on or attempting to cross trails.

- *Impacts on Recreation*. Although some recreational pursuits, such as bird watching, would likely be enhanced by the proposed restoration, other recreational aspects of the marsh area could be temporarily or permanently diminished. Dog walking would continue to be an unauthorized activity, and due to the greater presence of sensitive resources and higher potential for damage to egg masses after restoration, enforcement of this restriction, including issuance of tickets, will be increased.

- The most extensive impacts upon recreational resources would occur as a result of converting the golf course to a 9-hole course or by closing the golf course completely. A 9-hole course would be much less attractive to golfers than an 18-hole course, and a No Golf alternative would force golfers to find another course altogether.

- *Impacts to Visual Resources*. Extensive excavation and regrading of the marsh complex would occur and may have short term negative effects on local scenery. However, the marsh complex would be allowed to fill with water immediately upon completion of construction, and the visual impacts would subside at that time. Long-term effects from restoration of the wetlands complex would likely be positive as there would be a larger expanse of visually appealing open water. Some impacts to the viewshed would likely occur with the installation of a driving range, which would require construction of a chain link fence barrier at the south end of the course to keep golf balls from entering the residential area located south of the park.

- *Impacts to Wetlands*. Impacts to wetlands would occur during construction and as a result of creating an upland island in the middle of the lagoon. It is estimated that up to 1.5 acres will be filled during construction, an amount that would subsequently be recreated on the west and south sides of the marsh complex. Ultimately, there would be no net loss in amount or function of wetlands, and the end result would be restored wetland that provides better functions in terms of water quality benefits and wildlife habitat. Impacts to wetlands will be addressed during the Section 404 and 401 permitting processes and during preparation of a Lake and Streambed Alteration Agreement.

4.7 RESTORATION BENEFIT ASSESSMENT

To aid in evaluating the relative benefits of each alternative, SBI developed a habitat scoring system combined with a GIS model to determine the extent and quality of habitat that would be available to the SFGS and CRLF under each alternative. The scoring system was developed to characterize optimal habitat based on habitat correlates of the CRLF and SFGS from published literature, recorded observations of the species at the site during past surveys, and experience with these species at other sites in the region.

An aerial photograph of the site was divided into equal-sized cells, each 15 X 15 meters or about 1/20th acre, and a standardized scoring system was applied to each cell. Each cell was ranked least suitable (0), moderately suitable (1), or highly suitable (2) based on the presence of the 11 habitat characteristics included in the scoring system. Next, a raster surface consisting of cells, each with a habitat type and score associated with it was created over the photograph. Cells that were scored as containing high-quality habitat were summed in order to calculate the number of total acres of each habitat type in the photograph, and accuracy was verified with field visits to the site. This process was repeated using a concept drawing for each alternative to estimate the amount of habitat that would be created or lost under each alternative. Habitat quality under existing conditions is shown in Figure 17. Habitat quality projections for proposed alternatives are shown in Figures 18 through 20. Table 3 summarizes the results of the habitat quality assessment.

The following categories of habitat types were used in the analysis:

CRLF breeding and SFGS primary foraging habitat. Optimal habitat of this type contains water that persists long enough to facilitate CRLF tadpole development. It also would contain a mix of open water and emergent plant growth, as well as areas of shallow water extending at least one meter from shore. Wetlands in Horse Stable Pond and the connecting channel are examples of this habitat type.

SFGS upland retreat and basking habitat. Optimal upland habitat would consist of grassland or similar vegetation contacting CRLF breeding / SFGS foraging habitat with bushes providing some cover. Rodent burrows or large soil crevices would be present in soil that remains unsaturated throughout winter to provide upland retreats. Under existing conditions, this type of habitat is limited to an area south of Horse Stable Pond.

CRLF non-breeding and SFGS movement and secondary foraging habitat. Habitat containing year-round water or moisture but that is unsuitable for CRLF breeding was considered optimal non-breeding habitat so long as it also contained sufficient cover from predators, and was not separated from breeding habitat by a significant barrier or distance. Examples of this habitat type include dense shrubs located a short distance from water and riparian corridors. SFGS use this habitat type for movement and may forage here, though less frequently than in wetlands where CRLF breeding takes place.

Table 3. Habitat Quality Assessment and Projection Summary

Alternative	Available High-Quality Habitat (Acres) /(Increase over existing conditions)			Advantages for Habitat Quality	Disadvantages for Habitat Quality
	B/F	Up	N/F		
Existing conditions	3.9 (*)	3.8 (*)	13.9 (*)		Virtually no suitable SFGS upland habitat Little upland connectivity between HSP and LS
All Restoration Alternatives				Significant increase in uplands over existing conditions within LS and adjacent areas Increased CRLF breeding / SFGS foraging habitat in LS Adequate connectivity between HSP and LS Elimination of predatory fish Reduction of impacts of park visitors through fencing, signs	Golf operations would pose an ongoing potential threat to individual snakes, except under the No Golf Alternative
A18	10.7 (+6.8)	23.4 (+19.6)	10.0 (-3.9)	See above	SFGS foraging habitat on west and north sides of LS are adjacent to golf course
A9	10.7 (+6.8)	44.3 (+40.5)	10.1 (-3.8)	See above	Footpath through upland areas could result in pedestrian / pet impacts in habitat areas
No Golf	11.3 (+7.4)	97.4 (+93.6)	12.9 (-1.0)	See above, and Increased CRLF breeding / SFGS foraging habitat in LS, additional breeding ponds to mitigate potential future sea level rise Increased SFGS habitat east of Highway 1 Increased habitat by daylighting portions of Sanchez Creek	Footpath through upland areas could result in pedestrian / pet impacts in habitat areas

B/F = California red-legged frog breeding / San Francisco garter snake primary foraging habitat

Up = San Francisco garter snake upland basking / retreat habitat

N/F = California red-legged frog non-breeding / San Francisco garter snake secondary foraging habitat

Of the three habitat types mentioned above, CRLF non-breeding and SFGS movement and secondary foraging habitat is considered the least valuable in this location. This is because the moisture and cover that characterize high quality non-breeding habitat also would be available year-round at Laguna Salada, Horse Stable Pond, and the canal. For this and many other frog populations the shallow water and emergent vegetation which characterize high quality breeding habitat effectively function as non-breeding habitat outside of the breeding season. Furthermore, while some frogs at the site are likely to move relatively long distances from their breeding habitat, most probably stay or make only short movements from the water bodies. At one breeding site in Santa Cruz County as many as 80-90% of CRLF were found to remain there year-round (Bulger et al. 2003) although this number is probably very site-specific. While maintaining non-breeding and movement habitat also is important to ensure the survival of local CRLF populations by protecting individuals prone to long distance dispersal (Fellers and Kleeman 2007) addressing the lack of core breeding habitat should be the first priority for CRLF habitat enhancement at Sharp Park. Therefore habitat creation at this site emphasizes providing breeding habitat where moisture and cover persist year-round, and replacing non-breeding habitat with habitat of this type is considered to be a positive tradeoff.

Likewise, while the SFGS may occasionally use typical CRLF non-breeding habitats including riparian forest (SBI 2008), its primary upland habitat consists of grassland or similar areas with some shrubs and underground retreats. Therefore, replacement of CRLF non-breeding and SFGS movement and secondary foraging habitat with upland basking and retreat habitat is considered to be a positive tradeoff for the SFGS as well.

It is also important to note that while the No Golf Alternative offers by far the greatest amount of SFGS upland basking and retreat habitat, much of the newly created upland habitat is located relatively far from the marsh complex. These areas are unlikely to be used as frequently as similar upland areas closer to water, and evidence from another site suggests that extensive upland areas would not be required to maintain a stable population of SFGS. As an example of this, the West-of-Bayshore parcel located in Millbrae, California supports a large population of SFGS despite upland habitat at that site being limited to a relatively narrow area directly adjacent to the canals and marshes. The average total width of the 180-acre parcel is only about 750 feet, and a significant proportion of the area (more than 44%) is covered by wetlands. Consequently, few upland areas at the site extend farther than 350 feet from the wetlands, and most upland areas are considerably closer. Despite the relatively small amount of available upland habitat at that site (about 100 acres of upland vs. 80 acres of wetlands), the SFGS population was estimated to consist of several hundred individuals, and appears to be similar to when it was first estimated in 1994 (SBI 2009).

Under the No-Golf Alternative upland habitats would be created up to 800 feet from the main wetland complex. Upland habitat restored under the No-Golf Alternative east of Highway 1 would be located even farther from the existing wetlands in an area where there have been several studies with a negative finding for SFGS, and barriers to dispersal mean that colonization by SFGS is not guaranteed. While SFGS may eventually use these areas, distant uplands are less likely to be used extensively by the SFGS when suitable habitat exists nearby highly productive wetlands. Therefore, alternatives that concentrate upland basking and retreat habitat near the marsh complex may offer a comparable amount of highly utilized upland habitat in critical areas as does the No Golf Alternative.

Each alternative, including those that retain golf at the park, would provide a several-fold increase in high quality upland habitat over the 3.8 acres currently available, and each would be sufficient to allow the SFGS to persist at the site (Table 3). Alternative A18 would result in 23.4-acres of upland habitat located mainly south and west of the lagoon. Under Alternative A9, 44.3 acres of upland habitat would be distributed mainly around the perimeter of the lagoon. Each of these also would provide uninterrupted areas for SFGS to make seasonal movements to and from high quality winter uplands that will be created between Horse Stable Pond and the lagoon and to the slopes at Mori Point to the south.

4.8 Construction Sequence and Timeline for Implementation

A phased approach to construction was assessed. Under a phased approach, the most pressing tasks would be completed first, with other tasks to follow as funding allowed. The most pressing tasks in this plan are to dredge or excavate to improve water flow and to complete the restoration of the wetland complex and uplands on the east side of the lagoon and between the lagoon and the pond. Restoration of upland areas beyond the areas immediately adjacent to the lagoon or in the dispersal corridor south of the lagoon are considered to be of less importance, and could be constructed at a later time.

A phased approach would likely present a significant increase in the overall budget for the project. There are at least three reasons for this. The first is that the cost of mobilizing and demobilizing equipment, construction crews, traffic control staff, and other staff and equipment is a significant part of the estimated project cost. This cost would only be incurred a single time if the entire project were constructed at once, whereas it would be incurred multiple times under a phased approach. Furthermore, the least cost construction scenario would include re-use of much of the excavated material, which would be of such quantity that it would be impossible to stockpile it for later use. Therefore, it would need to be reused at the same time that it was excavated. A phased approach would make this impossible, necessitating offsite disposal of all excavated materials. Finally, the estimated construction costs for the various alternatives are based on 2009 prices and prevailing wages, which will increase each year after 2009. Therefore, the estimated cost for the same project will be higher in 2010 than the price estimated for 2009.

Under a single phase approach, the wetland complex would be restored first. Numerous steps need to occur before this can happen. Once a preferred alternative has been selected from the conceptual plan, the alternative will go through 30%, 60%, 90% and final design. Each of these levels of design can take several months. Permit applications will likely be prepared at the 30% design level and submitted shortly thereafter. The process of acquiring Section 7, Section 404, and Section 401 permits can take up to a year. Once designs are completed and permits have been secured, a bid package will be sent to prospective contractors, who will submit bids, and the winning contractor will contract with SFRPD and any other project sponsors to construct the project. It is recommended that the project be constructed during the dry period and after the CRLF and SFGS breeding seasons are over. Assuming that the project is designed during the winter and spring of 2010 and permit applications are being reviewed during the spring and summer of 2010, it is likely that the earliest possible opportunity to construct the project would be in summer of 2011.

4.9 Cost Considerations and Estimated Project Budget

Restoration Cost Considerations

Preliminary cost estimates were developed for each Sharp Park restoration alternative using a unit cost-based approach. The unit cost values were based on recent cost quotations, standards for restoration projects, and recent, and/or location-specific bid sheets or unit cost analysis information. Unit cost values represent equipment, labor, materials, and contractor overhead and profit. These cost estimates are at a preliminary level (approximately a 10 percent design) and are intended to allow comparisons between alternatives. The costs do not account for phased construction (multiple mobilizations), and costs are in 2009 dollars. Summary cost estimates for each alternative appear in Tables 4 and 5.

Quantities were estimated from areas shown on the GIS figures, topographic/bathymetric data generated in and around the wetlands complex, and assumed averaged dimensions (e.g., depths of excavation or fill). Site preparation is represented as a percentage of direct constructions costs. It includes mobilization and demobilization, dewatering and/or diversion, erosion control and BMPs, traffic control, utilities, and general demolition of minor obstructions not accounted for in the major cost item costs. The total site preparation percentage was 17%, as shown on the unit cost breakdown table.

General markups are estimated as a percentage of direct construction cost plus site preparation costs. General markups include a contingency to account for uncertainties in design, topography and other site conditions. Markups also include costs of the design phase of the project and construction management. These markups total 50% as shown in the unit cost table. Real estate acquisition costs are assumed to be zero since all restoration activities occur on existing golf course property.

Operation and maintenance costs are represented as a net present value (NPV) over a 50-year assumed project life. These costs include maintenance of vegetation during the first five years, invasive species maintenance every year for the first five years and as needed after five years, pump maintenance at the Horse Stable Pond pumphouse every other year, wetlands maintenance at years 25 and 50, sedimentation basin maintenance every five years, and culvert maintenance at years 25 and 50. These costs are detailed in the operations and maintenance summary table.

An important cost component of each alternative is the cost to dispose of excess excavation or fill that cannot be reused onsite. For this estimate it was assumed that excavation for haul-away would be disposed in Half Moon Bay, California, at the Ox Mountain Landfill Facility. There is a transfer station located in Pacifica; however, the unit cost to dispose at this location is much higher because it requires rehandling before final disposal at a landfill. The total unit cost of $35 per cubic yard for this line item assumes the following:

- nominal cost of $4 per cubic yard for excavation and loading into 26 cubic yard semi end-dumps,
- semi end-dump haul rate of $130 per hour,
- total one-way distance of 20 miles (combined highway and surface street) between Sharp Park Golf Course and Ox Mountain Landfill,
- disposal fee of $23 per cubic yard including escalation and contractor mark-up per July 2009 quotation from Ox Mountain (operated by Republic Services, Inc.).

In general, alternative project costs are driven by earthwork line items such as excavation and grading. Removing, on average, the top 1.5 feet of sod and topsoil off the fairways to ensure that kikuyu is eradicated is one of the most expensive features of this plan, and dredging/placing organic and mineral sediments from the wetland complex is the other most expensive feature. With variations depending on the type and location of excavation, generally the costs are based on the amount of surface area moved. Because the No Golf Alternative proposes to have the greatest area of fairway excavated, it would have the greatest volume excavated (approximately 303,000 cy) whereas Alternative A18 has the least amount of fairway excavated and therefore the least volume of excavated materials (approximately 126,000 cy).

Materials deemed suitable for reuse as golf course substrate are those with low organic content and high sand/silt content. It was assumed that approximately 50% of excavated material was suitable for reuse as golf course substrate onsite. Under the off-site disposal scenario, the remaining fill requires haul-away and landfill disposal. Under this assumption the cost of hauling and disposing off-site of unsuitable fill is ~$10.0M for the No Golf Alternative and between ~$3.8M and $5.5M for Alternatives A18 and A9. If all excavated fill is reused onsite the cost of this task is reduced for each alternative by up to 56%. Further design stages should

verify assumptions made in estimating cut and fill quantities and lagoon water surface elevations, as well as the estimated excavation and grading unit costs.

Another element that differentiates the alternatives is the amount of planned riparian and coastal scrub/shrub restoration. The No Golf Alternative requires the greatest amount of riparian and coastal scrub/shrub restoration due to the removal of the golf greens, totaling 94 acres, which is over double the amount of the other three alternatives. Additionally, the No Golf Alternative requires importing nearly three times as much topsoil fill than the other alternatives.

Revegetation costs include mulch/topsoil as needed. Earthwork costs assume no contaminated material. If contaminated materials are encountered, additional costs will be incurred for treatment and/or transport to an appropriate disposal facility.

A final element that differs among alternative designs is the demolition and reconstruction of the golf cart path. Under the No Golf Alternative the entire cart path would be demolished and reconstructed for recreational use. Under Alternative A9, only 20% of the cart path would be demolished and reconstructed. Alternative A18 does not require any work on the cart path and therefore does not incur a cost for this action.

Under all action alternatives, some of the construction, revegetation, monitoring, and maintenance tasks could be performed by SFRPD staff, volunteers, interns, and students. SFRPD staff operate medium-duty equipment such as backhoes and dump trucks, and could perform tasks such as daylighting Sanchez Creek, excavating and maintaining sediment basins, and maintaining the connecting channel. SFRPD also has biological and natural resources management staff that can prepare and implement revegetation and invasive species control plans, monitor egg masses, CRLF populations, and vegetative conditions, and organize interns or volunteers to control invasive species or perform revegetation or other maintenance tasks. The Natural Areas Program also maintains close ties with area colleges, and can likely enlist the assistance of graduate students who could perform thesis work by monitoring vegetative succession, wildlife populations, sedimentation, or other aspects of the post-restoration process that need to be observed, recorded, and assessed in order to determine the success of the project and apply adaptive management as needed.

GOLF COURSE REALIGNMENT COST CONSIDERATIONS

Preliminary cost estimates were developed for each of the Sharp Park Golf Course Alternatives. For a majority of the estimates a unit cost-based approach was used. The unit cost values were based on recent cost quotations, and recent local actual costs analysis information. Unit cost values represent equipment, labor, materials, and contractor overhead and profit. The costs assume all work for each phase will occur at the same time and not result in multiple mobilizations.

These estimates include work that is necessary for the proposed conceptual changes addressed in each alternative. Other course improvements such as bunkers, irrigation, drainage etc. that may need to be implemented are not included in the concepts or cost estimate.

The work addressed and quantities were estimated based on the layout of each alternative. The size of greens, tees, bunkers, irrigation, grading, drainage, grassing, cart path and landscaping are based on the conceptual layout and accepted parameters for golf holes. The work includes greens constructed to USGA recommendations, sand based tees and bunkers built to minimize maintenance. Soil amendment and additional drainage is proposed in newly constructed areas to assist in turf quality and playability.

The alternative project costs were driven by the size of the area being newly constructed or reconstructed and the size and number of golf course features. The construction areas would utilize suitable fill material generated by the habitat restoration process. The cost of moving the material is included in the restoration estimates. The cost to grade the soil into golf course features is included in the golf course estimate.

Both alternatives suggest creating new golf on the east side of the existing golf course and include removal of existing mature vegetation, mostly eucalyptus trees. The costs include hauling away the trees. One alternative provides for the realignment of the archery club access road to allow the construction of a new green.

The inclusion of netting for a driving range is a major component of the nine hole project cost. The costs were based on a generalized netting layout to protect the parking lot and the adjacent golf hole.

ESTIMATED COSTS

Estimated costs reported here include site preparation, construction, and general markups but do not include long-term operations and maintenance. An estimated cost schedule, including maintenance costs, is given in Appendix D.

Table 4. Construction Costs – Offsite Disposal

	NO GOLF	A18	A9
Site Preparation	$2,789,875	$1,056,040	$1,549,454
Restoration Construction	$12,753,248	$4,872,183	$7,114,973
Golf Hole Construction	n/a	$1,612,755	$1,711,750
General Markups	$7,771,561	$3,770,489	$5,188,089
Total	**$ 23,314,684**	**$ 11,311,467**	**$15,564,266**

Table 5. Construction Costs – Excavated Materials Reused Onsite

	NO GOLF	A18	A9
Site Preparation	$858,361	$330,772	$498,867
Restoration Construction	$5,121,184	$2,017,719	$3,006,509
Golf Hole Construction	n/a	$1,612,755	$1,711,750
General Markups	$2,989,773	$1,980,623	$2,608,563
Total	**$ 8,969,318**	**$ 5,941,869**	**$ 7,825,689**

4.10 REGULATORY PROCESS

Many of the resources found in the wetlands complex and surrounding areas are protected under one or more state or federal regulations. These regulations are enforced by agencies including the USFWS, US Army Corps of Engineers (USACE), CDFG, and the Regional Water Quality Control Board (RWQCB). Table 6 describes the permits that may be needed for this project and the conditions under which they would be required. Permit applications are generally prepared after the 30% designs for the project have been completed.

This project will require significant consultation with the USACE and RWQCB. As the federal agency charged with enforcement of Section 404 of the Clean Water Act, USACE may permit this project under a Nationwide Permit (NWP) that allows fill of wetlands for restoration projects that result in greater amounts of restored wetlands, or under an Individual Permit. Under this or separate permit, USACE may also comment on the proposed reuse of dredged materials for restoration, as proposed under all alternatives. A Section 401 Water Quality Certification will be requested from RWQCB for impacts to wetlands, habitat, and water quality. Likely concerns during this process involve water quality effects that may arise during draining of the wetlands complex prior to construction, as well as the fate of decant water resulting from placement of dredge spoils in upland locations.

In addition to wetlands regulation, the main regulatory programs guiding this plan are the Federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA), as well as the California provisions for fully-protected species. Although the City of San Francisco is carrying out the restoration of the wetland complex on a voluntary basis, as the owner of Sharp Park, the City must still comply with these regulatory programs in carrying out the alternatives set forth in this plan. Under the ESA, implementation of the plan may require consultation or permitting from the USFWS. Under CESA, implementation of the plan may require consultation or permitting from the CDFG

Table 6. State and Federal Permits That May Be Required for Plan Implementation

Agency	Permit/Approval	Required for
Federal Agencies		
USFWS/NMFS	Incidental Take Permit, Biological Opinion	Federal projects that may affect species listed as endangered, threatened, or proposed under the federal Endangered Species Act (16 USC 1531-1544)
USACE/EPA	Individual /Nationwide Section 404 Permit	Discharge of Dredge/fill into Waters of the U.S., including wetlands
	Section 10 Permit	Construction in navigable waters (may not apply to this project)
State Agencies		
California Coastal Commission	Coastal Zone Consistency Determination	Land development within the coastal zone including grading, removing, placement, and extraction of any earth material; and harvesting of major vegetation
CDFG	Section 2080 Permit (Endangered Species Management)	Activity where a species listed as candidate, threatened, or endangered under the California Endangered Species Act may be present in the project area and state agency is acting as lead agency for CEQA compliance
	Section 2081 Incidental Take Permit	Needed if it is determined through the Section 2080 Permit process that the proposed project may result in take of a state-listed species
	Lake/Streambed Alteration Agreement (California Fish and Game Code 1602)	Change in natural state of a river, stream, lake (includes road or land construction across a natural streambed)
State Water Resources Control Board	Construction Activities Storm Water General Permit	Stormwater discharges associated with construction
Regional Water Quality Control Board	Waste Discharge Requirements (Water Code 13000 et seq.)	Discharge of waste that might affect groundwater or surface water (nonpoint source) quality
	401 Certification (Clean Water Act, 33 USC 1341; required if the project needs a USACE Section 404 Permit)	Discharge into Waters of the US, including wetlands
State Historic Preservation Office	Section 106 (National Historic Preservation Act, PL 89-665, 16 U.S.C. 470 et seq.)	Projects that may impact a historic property within the area of potential effect.

Specific measures to avoid potential adverse effects on the CRLF and the SFGS during enhancement activities would be developed in consultation with the USFWS and CDFG. The following general measures provide guidelines for implementation of the conceptual restoration enhancement plan:

- Prior to any ground-disturbing activity, a qualified biologist should provide environmental awareness training for all workers who will be on site. The training should include a brief overview of the ESA, a description of the CRLF and SFGS, what steps should be taken to avoid impacts to their habitats, and what to do if an individual frog or snake is found.

- A temporary exclusion fence should be installed to prevent listed species from entering the work area. The placement of the fence would be directed by a qualified biologist in consultation with the USFWS and CDFG.

- Following installation of the exclusion fence and at least 6 weeks prior to construction, a trapping program will be conducted to remove all listed species from the area to be impacted.

- A qualified biologist should monitor all work activities on site. The monitor would verify that exclusion fence, erosion control measures and any other environmental protection measures are properly installed.

- Work should be confined to the smallest area possible to safely complete the project. Workers should be instructed to stay within the work corridor and limits should be clearly marked.

- Vehicle refueling and maintenance should be conducted a minimum of 150 feet from aquatic habitats and other sensitive areas identified by a qualified biologist.

- Construction activities should be done during the dry season (June 1 through October 15).

- If a CRLF or SFGS is found inside a work area a USFWS and CDFG-authorized biologist should relocate it out of harms way.

5. CONCLUSIONS

With no action, the future of SFGS at Sharp Park is, at best, uncertain. Although historically SFGS have existed at Sharp Park while it functioned as a golf course, conditions of the wetlands and adjacent uplands are far less favorable than in the past. During the past several decades sedimentation of the lagoon and flooding of the surrounding uplands has reduced available habitat. Saline overwash from Pacific storms in the early 1980s probably caused a sharp reduction in both the SFGS population and its prey base. The current population is more a reflection of these historic events than of direct impacts from the golf course, although substantial conflicts do exist, particularly with regard to upland habitat. Mori Point provides nearly all suitable upland habitat used by snakes at Sharp Park, and snakes traveling from these areas to the relatively poor foraging habitat at Laguna Salada face significant hazards. Although these hazards are being addressed and reduced through measures described in the compliance plan, some potential for harm to SFGS from golf operations will always exist. At a minimum the SFGS requires more upland habitat between Horse Stable Pond and Laguna Salada, and would also benefit from having more high quality CRLF breeding habitat in the lagoon.

Though beneficial, due to the limited availability of upland habitat in Sharp Park, increasing the distribution and carrying capacity of the SFGS will not be accomplished by increasing CRLF breeding habitat alone. Increasing SFGS use of the area north of Horse Stable Pond, the areas adjacent to Laguna Salada, and the connecting channel will require maintaining undisturbed upland habitat in these areas. These enhancements can be accomplished without significant changes to the golf course design or to the movement of golfers on the course.

All four conceptual alternatives would accomplish the main goals of restoring, increasing, and diversifying SFGS and CRLF habitat, and meeting the recommendations of the SFGS recovery plan. Under all alternatives, this would be accomplished by:

- Dredging and recontouring the wetlands complex to remove overgrown wetland vegetation, create a mix of shallow water habitat and open water areas, and increase water flow through the wetlands;
- Closing Hole 12 and shortening or narrowing other holes to allow for an SFGS dispersal corridor and upland retreat/basking areas on the east edge of the lagoon, on a peninsula in the center of the lagoon, between the lagoon and the pond, and around the pond;
- Removing non-native Monterey cypress trees to reduce shading in SFGS and CRLF habitat and to reduce perching and spotting locations for predatory birds;
- Installing fencing to restrict intrusions into sensitive habitat and interpretive signs to educate visitors about sensitive wildlife; and
- Developing a water control plan that will alleviate the potential for egg mass and tadpole stranding.

The main differences between the various alternatives are the degree of upland habitat that would be created east of the wetlands complex, the costs to implement the respective alternatives, and the tradeoff between the amount of habitat and the degree to which golf opportunities are lost. Implementing Alternative A18 (with excavation re-use) would be the least costly alternative, would result in the least impact to golf, and would restore the least amount of restored upland habitat for the SFGS. Implementing the No Golf Alternative (with excavation re-use) would have higher costs, would result in the greatest impact to golf, and would restore the greatest amount of upland habitat. Alternative A9 would fall in the middle of the No Golf Alternative and Alternative A18 in terms of cost and amount of restored upland habitat. However, because the best upland habitat for the SFGS is that which is found near water bodies, much of the upland habitat restored east of the wetlands complex under the No Golf Alternative would be of lower value than that

located immediately adjacent to the wetlands complex. Therefore, from a habitat restoration standpoint, converting uplands immediately adjacent to the wetland areas would result in the greatest net benefit to the SFGS per acre of enhanced habitat. Focusing restoration efforts on these areas also would result in the least amount of lost golf opportunities since more distant habitat would remain available for golf. While the No Golf Alternative would result in a greater total amount of upland SFGS habitat, the value of the habitat gained through this alternative would diminish with increasing distance from the wetland complex. Furthermore, because of the close proximity of major urban centers including housing, freeways, major roads, and businesses and the intrinsic threats posed by them to the snake, restoring uplands and locating additional wetlands further to the east would potentially increase the chance of take of this species by drawing the SFGS away from the relatively protected existing wetlands complex into areas that would likely be extensively used by hikers, mountain bikers, and dog walkers.

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APPENDIX J

Summary of Changes to the SNRAMP

Edwin M. Lee, Mayor
Philip A. Ginsburg, General Manager

August 24, 2011

Bill Wycko, Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Re: Clarification of Changes to the SNRAMP Project Description

Dear Mr. Wycko,

The San Francisco Recreation and Parks Department (SFRPD) published the Draft Significant Natural Resource Area Management Plan (SNRAMP) for environmental review and the following describes the modifications made to the Plan for one or more of the following reasons:

- The activity was determined to be infeasible
- The activity has been completed under separate environmental review
- The activity was incorrectly described
- The activity has been reassessed as contrary to policy
- Additional details and specificity have been developed for the activity

1. Prescribed Burning. While General Recommendation GR-3b of the February 2006 Final Draft San Francisco Natural Areas Management Plan (SNRAMP) mentions prescribed burning, no burning is proposed as part of the project. The following text has been added to the project description (Section III.H of the EIR):

(Note: The SNRAMP no longer is proposing prescribed burning. The SNRAMP will be updated to reflect this change. Should the SFRPD determine prescribed burning to be a desirable, feasible method for managing native grasslands, a separate environmental review would be required to comply with CEQA, and applicable permits and other regulatory agency approvals would be obtained.)

2. Dog Play Areas. While General Recommendation GR-8b of the SNRAMP mentions consideration of new dog play areas, no new dog play areas are proposed as part of the project. The following text has been added to the project description (Section III.H of the EIR):

(Note: An underlying assumption of this EIR is that there would be no new DPAs because there is direction from the Recreation and Park Commission not to establish new DPAs until systemwide DPA planning is completed. For the purposes of this EIR, this is considered a moratorium in that no new DPAs are reasonably foreseeable. This direction was announced at the October 10, 2006, meeting of the San Francisco Dog Advisory Committee. Should new DPAs be proposed at some point, the appropriate level of CEQA analysis would be undertaken, and applicable permits and other regulatory agency approvals would be obtained.)

3. Bayview Park Key Avenue Modifications. While Recommendation VP-8a of the SNRAMP mentions modifying the Key Avenue roadway, some of those modifications have been completed and are not proposed as part of the project. The following text has been added to the project description (Section III.F.2 of the EIR):

(note that portions of this management action have been completed)

4. Lake Merced Dog Play Area. While Recommendation LM-7a of the SNRAMP mentions relocating a dog play area, no relocation of dog play areas is proposed as part of the project, in compliance with the current moratorium on dog play areas. The following text has been added to the project description (Section III.I.18 of the EIR):

(Note: The SFRPD determined following completion of the final draft SNRAMP that, due to ongoing disturbance of breeding birds, this DPA should be closed, rather than monitored. This DPA would be closed in accordance with the SFRPD Final Dog Policy (SFRPD 2002) and SFPUC's Lake Merced Watershed Report (SFPUC 2011).Due to the San Francisco moratorium on new DPAs, the Lake Merced DPA couldn't be relocated to a new location, so it would only be removed. Restoration of the site would continue, following removal of the DPA.)

5. Lake Merced Environmental Education Center. While Recommendation LM-8b of the SNRAMP mentions development of an environmental education center, no such center is proposed as part of the project. The following text has been added to the project description (Section III.I.18 of the EIR):

(Note: Constructing and operating an environmental education center is no longer proposed as part of the SNRAMP. The SNRAMP will be updated to reflect this change. Should those activities be proposed at some point, the appropriate level of CEQA analysis would be undertaken, and applicable permits and other regulatory agency approvals would be obtained.)

6. Former Sharp Park Rifle Range. While Recommendation SP-12a of the SNRAMP mentions cleanup and remediation of the former rifle range, those activities are not proposed as part of the project. Remediation of the rifle range is complete, and the CEQA lead agency for this project is the California Department of Toxic Substances Control. The following text has been added to the project description (Section III.I.23 of the EIR):

(Note: Because these cleanup and remediation activities are part of a separate process led by the SFRPD Capital Division, are complete, and have been evaluated under a separate CEQA review, they are not addressed as part of the SNRAMP in this EIR.)

7. Additional Management Details. To provide additional details for analysis of the potential environmental effects, the following text has been added to the project description regarding best management practices, program-level activities, and routine maintenance activities:

(Section III.E.5 of the EIR)
Depending on site conditions, trails may or may not be created in previously inaccessible areas, as opposed to improving existing social trails. Trail placement would be designed to avoid sensitive vegetation and habitat to the extent possible. Trail alignments in the SNRAMP are conceptual and require further refinement and site-by-site evaluation to confirm the best alignment to provide access and minimize effects on surrounding natural resources.

The Natural Areas Program gardeners would continue to carry fire extinguishers in their trucks and would use appropriate fire prevention and suppression measures for more extensive tree and shrub removal. The SFRPD would continue to hold regular meetings with the San Francisco Fire Department and would coordinate management activities, such as tree removal, with that department.

Tree Removal and Replacement. *Invasive trees removed in San Francisco would be replaced with native tree species at a ratio of roughly one-to-one, although not necessarily at the same location or within the same Natural Area. The SFRPD would take into consideration the views from Natural Areas when locations are being selected for new trees; locations of replacement trees in San Francisco Natural Areas would be selected to preserve views from important points. Tree removal and other activities conducted at the edges of Natural Areas may require temporary closure of sidewalks and roads. For Sharp Park in Pacifica, many of the trees would be replaced not with trees but with more appropriate native vegetation, specifically coastal scrub. Tree removal is discussed in detail in Appendix F of the SNRAMP. For accounting purposes, the SNRAMP defines a tree as any plant having a dominant vertical trunk that is over 15 feet tall; tree species less than 15 feet tall are considered seedlings or saplings in the SNRAMP. Natural Areas Program staff could remove trees that have a diameter at breast height (dbh) of six inches or less; Natural Areas Program staff would coordinate with the SFRPD arborist, who would evaluate the removal of larger trees. Tree work would generally be limited to the nonbreeding season for bird species. Where tree work is required during the breeding season, surveys would be conducted before tree removal to determine the presence or absence of breeding birds, in accordance with GR-4b. Typically, trees would be removed limb-by-limb, rather than felling an entire tree; limb-by-limb removal techniques would always be applied in areas adjacent to other trees or sensitive habitat unless this technique is not feasible or practical from a safety perspective. Minimally impacting tree removal techniques would be employed and would involve removing the individual limbs of a tree, then cutting the trunk into individual sections. Tree removal would be conducted manually by someone climbing the tree or someone on a mechanical cherry picker next to the tree. If tree removal occurs in an area that is roadway-accessible, the limbs and trunk sections typically would be transported from the area by a flatbed truck; in other areas, the limbs and trunk sections would be left in place on the ground. Tree removal would leave the tree stump and root ball intact to hold the soil and minimize subsurface disturbance; stumps may be ground to below grade where necessary to avoid tripping hazards. The SFRPD would spread tree removal across targeted portions of Natural Areas and would not concentrate it in a particular location. Larger-scale tree removal (that exceeds half an acre or on average more than 20 trees), identified and analyzed as long-term programmatic projects in this EIR, would remove trees within urban forests (MA-2 and MA-3) over time and not simultaneously in one portion of a Natural Area. The SFRPD's Tree Removal Procedures require that all trees designated for removal be posted at least 30 days before removal. The public is invited to comment about the proposed removal, and the SFRPD may or may not modify its plans based on public input.*

Implementing the SNRAMP would involve thinning both individual trees and small clusters of trees. In most cases, some trees within the area would be left, and the surrounding forest would remain intact. Removal of other vegetation in MA-1 areas would primarily affect individual plants within roughly half-acre plots.

(Section III.F.1 of the EIR)
Programmatic projects would include the following:

- *Rerouting or constructing trails, using heavy equipment (such as bobcats, backhoes, and excavators) at an average or maximum grading depth of two feet. This activity is typically conducted by contractors.*

- *Stabilizing hillsides, using erosion control measures that require heavy equipment and grading and possible installation of structures, such as gabions. This activity is typically conducted by contractors.*

- *Undertaking initial invasive weed or tree removal projects that typically exceed half an acre (or on average 20 trees) at any one time. Trees will be removed manually and limb-by-limb, as described previously. This activity can be conducted by contractors or SFRPD staff.*

While the SNRAMP may identify additional types of programmatic projects, the environmental effects of those projects are anticipated to be similar to or less than the above categories of program-level projects.

(Section III.F.2 of the EIR)
Routine Maintenance
Routine maintenance would include the following:

- *Removing invasive weeds by hand, either as follow-up on a previously treated site or as initial treatment in small areas (less than half an acre). This activity mostly involves the use of hand tools and volunteers, with some use of power equipment by SFRPD staff, such as brush blades or chainsaws. Ground disturbance from this activity is typically within the top inch or so of ground around the root zone.*

- *Installing plants using hand tools and plants in one-gallon containers or smaller. In addition to planting, volunteers also may assist Natural Areas Program staff with installation of erosion control materials, including coir rolls, straw bales, wattles, jute netting, and straw matting. These materials are installed with pins or two- to three-foot-long wooden stakes. This activity typically disturbs up to 12 inches of surface soil.*

- *Removing invasive trees (mostly eucalyptus), as well as overhanging tree limbs. This activity typically occurs in places where trees are expanding into or threatening a native habitat or presenting a safety concern. Following removal, stumps are left in place, resulting in little, if any, ground disturbance. Typically, no more than 20 trees (or half an acre) are treated at one time. This removal covers saplings and any tree over 15 feet high. Trees over six inches dbh are typically removed by tree crews at a rate of one to a few trees at a time. Trees will be removed manually and limb-by-limb, as described above.*

- *Maintaining trails, which includes clearing deposited soil from steps, replacing or installing steps or trail edging, and rerouting and benching trails. Ground disturbance for this activity is usually six inches or less.*

- *Maintaining catchment basins and sediment dams through hand removal of accumulated materials.*

(Section III.G of the EIR)
When the San Francisco Recreation and Park Commission approved the SNRAMP for environmental analysis under CEQA, it passed the following two amendments:

- *MA-3 areas would be maintained by the SFRPD Urban Forestry staff and may be reforested with native or nonnative species. Weed and brush removal and erosion control in MA-3 areas would be undertaken in accordance with the SNRAMP.*

- *Where appropriate in the SNRAMP, feral cat relocation would be implemented only on a determination by the San Francisco Recreation and Park Commission that other methods of population reduction failed to adequately reduce cat populations in the Natural Areas.*

8. General Recommendation GR-4b. The bird breeding season was changed from April to September 1 to February 1 to August 31. (Section III.H of the EIR)

9. General Recommendation GR-15c. The following language was added to the end of the description: "retain snags and dead branches on live trees, unless they are a hazard to public safety or contain significant harmful insect or disease infestations." (Section III.H of the EIR)

10. Recommended management action VP-7b. The following text was added: "(note that this new entryway may not be feasible given the steepness of the slopes)." (Section III.I.2 of the EIR)

11. Recommended management action CH-1e. The following text was added: "(note that a portion of these trees on the north side of Corona Heights were removed in August 2010 because they were determined to be hazardous)." (Section III.I.7 of the EIR)

12. Recommended management action DP-1b. The number of existing eucalyptus trees was changed from 120 to 100. (Section III.I.8 of the EIR)

13. Recommended management action DP-2a. The text was changed so that tree removal is prohibited within 150 feet of an occupied bird nest, rather than within 500 feet. (Section III.I.8 of the EIR)

14. Recommended management action GC/OH-4a. The text was changed so that tree removal is prohibited within 150 feet of an occupied bird nest, rather than within 500 feet. (Section III.I.12 of the EIR)

15. Recommended management action IG-2a. The following text was added: "(note that this work is underway and is expected to be completed in June 2011)." (Section III.F.16 of the EIR)

16. Recommended management action LM-3a. The text was changed so that tree removal is prohibited within 150 feet of an occupied bird nest, rather than within 500 feet. (Section III.I.18 of the EIR)

17. Recommended management action LM-3b. Heron nesting areas were added to the list of areas that could require closure of social trails to reduce disturbance of such areas. (Section III.I.18 of the EIR)

18. Sharp Park. The bulleted text under SP-4a was modified and deleted. The bulleted text under SP-4b was modified to match current restoration design. Under SP-4c, language was added indicating that the goal is to ensure that red-legged frog egg masses remain hydrated. Recommended actions SP-4e, SP-6a, SP-6b, and SP-9ca were deleted and the remaining measures were re-labeled. SP-10a was modified to specify that the subject trenches are located north of Sharp Park Road. The following detailed description of the Laguna Salada wetland complex restoration activities was added, as presented below (Section III.F.2 of the EIR):

Sharp Park Restoration

As part of the Sharp Park restoration activities, the following measures from the SNRAMP would be implemented. The full set of Sharp Park SNRAMP measures are presented in Section III.I.23 and include additional measures that may fall under either programmatic projects or routine maintenance.

- *SP-4a—Implement improvements to protect and enhance the habitat for the California red-legged frog and San Francisco garter snake at Laguna Salada, including the following:*
    - *Create upland mounds for foraging, resting, and escape cover for the California red-legged frog and the San Francisco garter snake;*
    - *Dredge excess sediments and accumulated organic matter, including stands of invasive tules, to maintain open water and fringe habitat in the wetlands complex and use appropriate dredged material on site to create or enhance upland habitat or to increase the elevation of certain golf course fairways;*
    - *Continue monitoring for California red-legged frogs and San Francisco garter snakes; and*
    - *Install and maintain signs and barriers to prevent disturbance of sensitive habitat in Horse Stable Pond and Laguna Salada by dogs or other possible nuisances.*

- *SP-4b—Construct upland mounds in the area directly south and southeast of Laguna Salada and plant with native grasses and herbs to provide snake and frog basking sites, and to provide nesting habitat for riparian birds; and*

- *SP-9b—Establish a vegetation management plan for the canal connecting Laguna Salada and Horse Stable Pond that would allow channel maintenance without affecting the forktail damselfly, California red-legged frog, or San Francisco garter snake.*

The improvements to protect and enhance the California red-legged frog and San Francisco garter snake at Laguna Salada under measure SP-4a are focused on restoring the marsh complex and associated uplands. These restoration activities are intended to establish conditions that more resemble previous conditions and allow for thriving populations of these listed species. Figure 2 shows the restoration project footprint and the current vegetation communities, and Figure 3 shows the conceptual plan for restoring these areas. The goals of the Sharp Park restoration are to restore or enhance the wetland and upland habitat for the benefit of the San

Francisco garter snake and California red-legged frog, which will contribute to the recovery of these species, and to reduce the potential recurrence of the conditions that negatively affect the wetland complex and habitat for these species, including sedimentation, eutrophication due to the accumulation of dead and decaying vegetation, and loss of open water habitat due to accumulation of sediment and the proliferation of invasive plant species. Although the primary restoration features discussed in this section are not likely to change, some modification may occur during consultation with the USFWS and/or CDFG pursuant to the state and federal Endangered Species Acts and during other regulatory approval processes. The main components of the restoration to achieve recovery of the California red-legged frog and San Francisco garter snake populations are as follows:

- *Dredging up to 60,000 cubic yards of material to remove sediment, encroaching plant species, and decaying vegetation in Laguna Salada, Horse Stable Pond, and the channel that connects the two water bodies, resulting in the conversion of freshwater marsh, willow scrub, and wet meadow wetland habitat to open water habitat;*

- *Recontouring freshwater marsh wetland and ruderal (disturbed) habitat along the Laguna Salada, Horse Stable Pond, and channel shorelines to create shallow water wetland habitat;*

- *Creating an upland and wetland habitat corridor between Horse Stable Pond and Laguna Salada;*

- *Converting about half an acre of wet meadow/freshwater marsh wetland to upland habitat, creating an upland refuge in the middle of Laguna Salada to provide snakes and frogs with refugia from feral cats and other terrestrial predators, and creating about an acre of replacement wetland along the northern and western edges of the lagoon in place of coastal scrub habitat; and*

- *Constructing up to four acres of upland mounds on landscaped grass on the east side of the lagoon and between Laguna Salada and Horse Stable Pond. These mounds would be placed in the area currently occupied by part of the Hole 13 fairway, which would be narrowed and reconfigured.*

Some areas that are currently open water within Laguna Salada and Horse Stable Pond would be deepened by one to three feet, and parts of the eastern portions of the lagoon and pond shorelines, as well as the connector channel, would be excavated to restore open water habitat and to ensure that ample edge habitat consisting of open water/emergent vegetation interface would persist for the foreseeable future. This deepening would be conducted using excavating equipment positioned along the shore of the two water bodies. Up to 60,000 cubic yards of material would be excavated; of this, approximately 40,000 cubic yards would be used on-site and approximately 20,000 cubic yards would be stockpiled or spread at the Sharp Park rifle range site or disposed of at the Sharp Park organic dump. Excavated dredge spoils appropriate for use as golf course substrate materials would be used on-site to raise the elevation of Holes 10, 14, 15, and 18 and to create the upland habitat on the east edge of Laguna Salada. Prior to on-site use of dredged material, the sediments to be removed as part of the wetland restoration

project would be tested for elevated concentrations of sulfides and other characteristics to determine whether the sediments would serve as soils suitable for supporting desired vegetation. If the sediment proves unsuitable, it would be placed in a nonsensitive location or treated to render it capable of supporting the desired vegetation. Treatment may include spreading and mixing the dredged material with native soil to avoid concentrating acidic soils or adding lime to neutralize acidic soils. Excavation of the eastern portions of the lagoon, pond and the connector shoreline would convert up to six acres of freshwater marsh, willow scrub, and wet meadow wetland habitat to open water habitat.

To facilitate deepening of Laguna Salada, Horse Stable Pond, and the channel that connects them, as well as removal of encoraching bulrushes and tules, the water levels would be lowered temporarily to allow equipment to access the shoreline for removal of accumulated vegetation and sediments. This would be accomplished by operating the pumps at Horse Stable Pond to draw water through the wetland complex and out to the Pacific Ocean. It is anticipated that the water level in the wetland complex would be lowered from an approximate elevation of 7.5 feet above mean sea level (msl) to an elevation of approximately 4.5 feet msl, a decrease of 3 feet. Following lowering of the water levels, a qualified USFWS-approved biologist would survey the entire project area for California red-legged frogs and San Francisco garter snakes. If individuals are found during the survey, the biologist would relocate them to appropriate aquatic habitat, such as that near Mori Point, located south of Horse Stable Pond (or other suitable location as agreed to as part of consultation with the USFWS and/or CDFG); these activities would be conducted in coordination with the USFWS and CDFG.

An upland and wetland habitat corridor between the lagoon and the pond would be constructed with upland features designed to support the San Francisco garter snake; this action would necessitate permanently closing Hole 12 of the Sharp Park Golf Course. Sediment basins would be installed in two locations, one where Sanchez Creek enters a culvert to pass under Highway 1 and the other at the northern boundary of Sharp Park; the former sediment basin would be developed on about half an acre of the golf course (primarily upland Monterey pine habitat), and the latter sediment basin would be expanded onto about half an acre of ruderal and upland Monterey pine habitat. A post and rail fence would also be installed along the seawall to the west of the lagoon, with additional fencing around the wetland complex, to discourage human and pet intrusion into the restored habitat area.

Creating an upland refuge in the middle of the lagoon would require filling approximately half an acre of wet meadow and freshwater marsh wetlands. To compensate for this and other incidental loss of vegetated wetlands during construction, in-kind creation of approximately one acre of wetlands would occur in several upland locations around the northern and western edges of the lagoon. The newly created wetlands would cover the same or a greater amount of area as the wetlands that would be converted to upland habitat.

During the restoration activities, temporary equipment staging and materials storage would occur at the northwest corner of Sharp Park, at or near Hole 17 of the golf course. Equipment access to the project area from the north would be from Clarendon Street, which runs along the north side of Sharp Park. Access to the southern part of the project area would be from the sea wall levee road and the dirt road near the Horse Stable Pond pump house. Following completion

of each season's restoration activities (anticipated between May 1 and October 15), those staging and storage areas that are not permanently modified would be scarified, recontoured, and hydroseeded with native vegetation to approximate their pre-disturbance condition.

Creating, restoring, and enhancing California red-legged frog and San Francisco garter snake habitat at Laguna Salada would also involve a reconfiguration of some holes of Sharp Park Golf Course and converting a portion of the area currently occupied by the course to Natural Area. Approximately 13 acres of the golf course would be modified to create important upland habitat adjacent to the wetlands for the endangered San Francisco garter snake, to discourage frogs from depositing egg masses in locations where the resulting tadpoles may end up being stranded, and to allow for creation of new wetlands to compensate for those filled during restoration. In order to create a habitat corridor between Horse Stable Pond and Laguna Salada, Holes 10 and 13 would be slightly shortened or narrowed, and the existing Hole 12 would be permanently closed and relocated to another area. The habitat corridor would cover approximately six acres, bringing the total of modified area at the golf course to about 19 acres.

To protect the frogs and snakes during restoration work, the SFRPD anticipates conducting the restoration activities between May 1 and October 15 and would continue to coordinate the planning and undertaking of those activities with the USFWS and CDFG; this activity period avoids the breeding season for California red-legged frog and the season when San Francisco garter snakes are inactive in their winter burrows. The SFRPD would coordinate with the San Mateo County Mosquito and Vector Control District on the proposed changes to Laguna Salada to minimize the potential for development of mosquito breeding habitat.

While management options for the Sharp Park sea wall, including a naturally managed sea wall and shoreline, have been considered by the SFRPD, those options are not proposed as part of the SNRAMP.

Following completion of the restoration activities, the SFRPD would conduct maintenance to ensure the success of those activities. The scope of the maintenance is subject to modification during consultation with the USFWS pursuant to the ESA and through other regulatory approval processes. Maintenance would include weeding and maintaining the restored areas. Maintenance of the wetland areas may include removal of invasive plant species and additional planting of wetland plant species. As needed, the SFRPD also would conduct small-scale dredging of accumulated sediments from the wetlands using a backhoe. Maintaining the sediment basins would involve the periodic removal of accumulated sediment. Needed surveys would be coordinated with the USFWS and CDFG to ensure compliance with endangered species laws and regulations (SFRPD 2009a). Wetland functionality would be assessed using ecologically based criteria to determine success of the project objectives.

The most recent restoration plan for which theLaguna Salada restoration plan is based upon are shown in figure 3 of the EIR.

Added a discussion of the ongoing management measures at Horse Stable Pond, as presented below (Section III.I.23 of the EIR):

SFRPD would continue to use pumps to manage water levels in Horse Stable Pond to conserve the California red-legged frog by conducting post-rainfall inspections of the pond for California red-legged frog egg masses and making any pumping changes necessary to prevent stranding and other impacts to egg masses, if found to be present.

19. Everson/Digby. The Everson/Digby Natural Area was added as the 32nd Natural Area in the Natural Areas Program, as detailed in Attachment 1. (Section III.I.27 of the EIR)

20. General Recommendation GR-8a. Lake Merced was removed from the list of Dog Play Areas whose boundaries and locations would be retained. (Section III.H of the EIR)

21. Recommended management action IB-1c. California seablite (Sueada californica) was added to the list of plants whose populations should be augmented. (Section III.I.15 of the EIR)

22. Recommended management action IG-2b. Language was added that only appropriate social trails would be formalized and inappropriate trails would be eliminated. (Section III.I.16 of the EIR)

23. Recommended management action MP-9b. Monitoring was expanded to include the Geneva Avenue dog play area. (Section III.I.19 of the EIR)

24. Recommended management action PL-1b. The phrase associated with the Pine Lake Park Improvement Project was removed, as that project has been completed. (Section III.I.22 of the EIR)

25. Recommended management action PL-7a. The number of dedicated access points to Pine Lake was changed from two to one. (Section III.I.22 of the EIR)

26. Recommended management action TK-2a. Language was added indicating that installed vegetation would include oaks. (Section III.I.24 of the EIR)

27. Recommended management action TP-3a. The following text was added: "Explore options with the San Francisco Municipal Transit Agency to convert a portion of Twin Peaks Boulevard to a multi-use trail." (Section III.I.25 of the EIR)

SFRPD intends to implement the recommended measures from the SNRAMP in our management of the Recreation and Park's Natural Areas, including the work practices related to integrated pest management and best management practices, as detailed in Section III.E.5 of the EIR, in a site appropriate manner.

Sincerely,

Dawn Kamalanathan
Director of Capital and Planning Division
San Francisco Recreation and Parks Department
30 Van Ness, 5th Floor
San Francisco, CA 94102

GENERAL RECOMMENDATIONS

GR-1a	Reduce invasive plant populations
GR-1b	Where native plant seed banks do not exist or have diminished, appropriate native species may be used for revegetation. Plant native species to appropriate the diversity, cover, and density of adjacent habitats or of reference sites in similar habitats.
GR-1c	Conduct restoration during the appropriate time of the year and at an appropriate scale to avoid impacts on wildlife and to minimize erosion
GR-1d	In areas where it may not be feasible to reduce large infestations of invasive vegetation immediately, conduct containment actions along the interface between native and nonnative habitats
GR-1e	Annually monitor MAs, restoration areas, and other sensitive habitats for undesired plant species
GR-2a	Prioritize invasive weed reduction and management in areas supporting sensitive species or other vegetation series
GR-2b	Give sensitive species priority in revegetation and reintroduction activities throughout Natural Areas
GR-2c	Protect areas of sensitive species and vegetation series of limited distribution from human disturbance
GR-2d	Closely monitor plant populations and vegetation series of limited distribution
GR-2e	Continue to work with the scientific community to better understand key biological factors affecting the survival and reproduction of sensitive species and to better inform adaptive management decision making
GR-3a	Monitor annually if feasible, native grasslands and control invasive species
GR-3b	Explore alternative methods of grassland management for large grassland expanses, such as prescribed burning, livestock grazing, and use of motorized equipment
GR-4a	Conduct annual breeding bird surveys, if resources are available, using the standard point count or transect method, to develop a list of species nesting in Natural Areas

GR-4b	Conduct vegetation management activities outside the breeding season (February 1 to August 31) if breeding birds could be affected, unless the following specific conditions are met: projects begun prior to the breeding season have already disturbed the area, or a breeding bird survey is conducted first. If active nests (or large abandoned stick nests) of a sensitive species are discovered, a 150-foot radius avoidance buffer would be centered on the nest site(s) to prevent the nesting birds from being disturbed by power tools. Weeds may be pulled by hand no closer than 50 feet from the nest.
GR-4c	If surveys indicate that parasitism by brown-headed cowbirds is a significant problem, consult with the CDFG and the USFWS determine proper protocols to minimize the negative effects of this species on breeding birds
GR-4d	Use material from brush and tree trimming to increase nesting or escape habitat for ground-dwelling birds and to mitigate any loss of habitat from other vegetation clearing
GR-4e	Create corridors of shrubs between landscaped areas and Natural Areas to provide cover and transitional habitat for birds and other wildlife
GR-5a	Prevent invasive shrubs and trees from colonizing grasslands
GR-6a	Leave snags and dead branches on live trees, unless they are a hazard to public safety or contain significant harmful insect or disease infestations
GR-6b	Provide nest boxes for native species where natural cavities are absent or in limited supply
GR-6c	Provide nest boxes for wood ducks at Impound Lake (a sub-lake of Lake Merced), Sharp Park, and Pine Lake
GR-7a	Implement the feral cat control policy from the Quail Recovery Plan approved by the San Francisco Commission on the Environment
GR-7b	Develop outreach materials to educate neighbors and users of Natural Areas about feral cats
GR-7c	Undertake control of non-cat predators only where they are concentrated in such a manner that they are having a substantial effect on native wildlife populations
GR-8a	Retain the boundaries and locations of seven DPAs in Natural Areas (Corona Heights, Pine Lake Park, Golden Gate Park Southeast, McLaren Park Crocker Amazon, McLaren Park Geneva, Golden Gate Park Northeast, and Buena Vista Park) and modify two DPAs (Shelley Drive Loop at McLaren Park and Bernal Hill) to protect sensitive habitat areas
GR-8b	Match on-leash and off-leash dog use with the sensitivity of the habitat when considering new DPAs within or next to Natural Areas

GR-8c	Restrict dogs from three sensitive habitat areas (a portion of Gray Fox Creek at McLaren Park, habitat used by the San Francisco garter snake or California red-legged frog at Sharp Park, and the water at Pine Lake)
GR-9a	Preserve during vegetation management activities any brush, logs, rocks, and other natural elements that function as habitat for small mammals and place them at appropriate locations within the Natural Areas
GR-10a	As invasive plants are removed, install native plants or seeds that are beneficial to local insects
GR-10b	In MA-3 grasslands, maintain some invasive plant species that are host plants for local butterflies and other native insects
GR-11a	Maintain and improve primary designated trails
GR-11b	Encourage users to stay on the trails in all Natural Areas
GR-11c	Routinely monitor Natural Areas for new social trails and close or re-route any trails that impact sensitive species or sensitive habitat or that contribute to erosion
GR-11d	Maintain viewsheds to maintain and enhance public recreation
GR-11e	Consider adding amenities, such as overlooks and seating areas, when evaluating overall trail use
GR-12a	Revegetate steep slopes that have very thin vegetation to promote general soil stability
GR-12b	Reduce erosion risk during the transition between removing invasive species and growth of native species that replace them, including gradual implementation of restoration efforts
GR-13a	Discourage establishment of vegetation with high fire hazard ratings, such as French broom and eucalyptus stands, next to homes and other structures
GR-13b	Maintain clear passageways by removing encroaching vegetation and maintaining sight lines to increase safety on trails
GR-14a	Continue to network with local schools and research institutions to provide environmental education resources and opportunities for school children in San Francisco and Pacifica
GR-14b	Develop appropriate signage that explains the importance of natural resources, ecosystem functions, management activities and goals, and public involvement contacts
GR-14c	Develop education materials that discuss the impacts of feeding wildlife and wild animals and the problems with releasing unwanted pets into Natural Areas

GR-14d	Conduct special outreach to adjacent property owners about the impacts mentioned in GR-14c
GR-15a	Maintain urban forests within the MA-3 areas with a basal area per acre of between 200 and 600 square feet (this would provide a shaded forest environment)
GR-15b	Maintain a stocking rate that will perpetuate the urban forest and promote forest health
GR-15c	To promote forest health, focus tree removal on dead or dying trees, trees with disease or insect infestations, storm-damaged or hazardous trees, and trees that are suppressed because of overcrowding; retain snags and dead branches on live trees, unless they are a hazard to public safety or contain significant harmful insect or disease infestations
GR-15d	Do not plant sensitive species in MA-3 urban forests
GR-15e	Remove invasive Cape *(Delairia odorata)*, English *(Hedera helix)* and Algerian ivy *(Hedera algeriensis)* and Himalayan blackberry *(Rubus discolor)* as required in MA-3 stands to promote and maintain urban forest health
GR-15f	Consult the SFRPD arborist when tree removals or planting are proposed in MA-3 urban forests
GR-15g	Plant trees and shrubs in the urban forests that promote species diversity and improve wildlife habitat
GR-15h	Use San Francisco-approved insecticides to treat cut stumps

PLACE

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