DRAFT FINAL

SAN DIEGO RIVER

NATURAL RESOURCE MANAGEMENT PLAN

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PREPARED BY
PARK AND RECREATION DEPARTMENT
CITY OF SAN DIEGO
AND
MERKEL & ASSOCIATES, INC.

Adopted by San Diego City Council
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SUMMARY

The San Diego River Natural Resource Management Plan (NRMP) recognizes the value of natural resources along the San Diego River and provides for protection, enhancement, and management of these resources. This Plan establishes guidelines for present and future use and maintenance of the plan area while protecting natural resources. Management of active recreation areas within the NRMP area will be addressed through implementation of the San Diego River Master Plan. Use of this NRMP can help bridge what can sometimes be a gap between human activities and natural resource protection and management. This NRMP helps to clarify expectations for natural resource protection in the NRMP area and to facilitate the granting of any federal, state, or local permits required for projects in the NRMP area.

The NRMP area includes the undeveloped area along both sides of the San Diego River, from I-5 (at Mission Valley Preserve) to Mission Trails Regional Park, excluding the area from State Route 163 to Qualcomm Way and the Riverwalk Golf Course property. The entire project area falls within the City of San Diego (City) and within the City's Multiple Species Conservation Program (MSCP) Subarea Plan boundary. The NRMP area currently comprises over 578 acres of public and private ownership; however, the total acreage is not absolute, as the boundary of the NRMP area may change during the development of the San Diego River Master Plan. The NRMP area contains 12 native and non-native vegetation communities, as well as small areas of developed land and unvegetated areas. Recreational use along the San Diego River is limited to passive activities such as bird watching, due to restricted access and the relatively large transient population occupying the area. The cultural history of the NRMP area may date back as far as 10,000 years ago. Management of the NRMP area must address problems of public use, misuse, and overuse; urban encroachment; presence of utility structures requiring maintenance and expansion; erosion from slopes, hillsides, and water courses resulting in sedimentation in riparian areas; and fire-fuel management.

The NRMP identifies proposed management actions and recommendations based on existing biological, cultural, geological, and hydrological conditions, current and planned land uses, and recreational uses within the project area. The NRMP management recommendations take into account the public and private ownerships involved. It provides area specific management directives for MSCP target species, as well as guidelines for reduction of impacts from public use and adjacency issues.

Guidelines provided in the NRMP for maintenance, usage, and development include the following practices: requiring prior natural resource awareness training of the maintenance crew; requiring all maintenance vehicles and personnel to stay within existing access roads, rights-of-way, and foot-paths; minimizing erosion by using appropriate measures and best management practices; providing cultural resource protection and awareness; scheduling maintenance and development activities to avoid nesting/breeding seasons; constraining domestic animals; inspecting foot-paths regularly to identify areas requiring erosion control, maintenance, closure, and/or revegetation; unless management and monitoring evidence recommend otherwise, maintaining all roads and foot-paths as unpaved; providing buffer zones around sensitive areas; and limiting water quality and erosion impacts from new development.

Enhancement and restoration guidelines provided in this NRMP include: the elimination of nonnative, exotic plants and their replacement with native vegetation; assessment of the presence of non-native fauna and cowbirds and control as necessary; the potential posting of “No Entry” signs for areas supporting sensitive plants and animals including sensitive bird species nesting sites and sensitive plant areas; specific management and enhancement options for MSCP covered species; and periodic monitoring of natural resources.

Suggested guidelines for interpretive and research opportunities include: use of educational signs and kiosks for information dissemination; periodic rotation of educational materials; establishment of an “ecowatch” program; and encouragement of research to gather information on natural and cultural resources.

The NRMP also identifies which agencies have jurisdiction over various projects and mitigation planning, implementation, and maintenance requirements. Responsibilities of various City departments and the local community groups associated with the NRMP area are also discussed in the chapter describing how this NRMP shall be implemented.

1.0 INTRODUCTION

1.1 SETTING

The San Diego River Natural Resource Management Plan (NRMP) area includes the native and semi-native habitats associated with the San Diego River from I-5 to Mission Trails Regional Park, excluding the area from State Route 163 (SR-163) to Qualcomm Way and the Riverwalk Golf Course property. The project site lies within unsectioned lands, Township 16 South, Ranges 3 and 4 West of the San Bernardino Base and Meridian; USGS 7.5' La Jolla and La Mesa, California Quadrangles (Figure 1). The entire project area falls within the City of San Diego (the City) and within the City's Multiple Species Conservation Program (MSCP) Subarea Plan boundary. The NRMP area is further comprised of public and private land ownership.

The City is also preparing a Master Plan of the San Diego River Park. Established in 2001 by the San Diego River Park Alliance, the San Diego River Park extends from the San Diego River's headwaters in the Cuyamaca Mountains to the River's mouth. The San Diego River Park Master Plan (which is still in draft form at the time of this NRMP finalization) will further articulate and expand on the San Diego River Park Conceptual Plan (2002) that was approved by the San Diego River Coalition and accepted by the San Diego River Park Alliance. The Conceptual Plan was written by the Cal Poly Pomona Graduate Landscape Architectural Program, with the assistance of the San Diego River Coalition. The San Diego River Park Master Plan will address historical recognition, water management, habitat enhancement, and recreation. The Master Plan will also allow adjacent communities to re-consider and set policy on the land uses within their areas of the park and insure that the park is planned in coordination with other proposed and future development along the River. The Master Plan will work in coordination with the NRMP by building on existing NRMP information and providing more specifics on recreational/educational amenity siting and habitat restoration in conformance with the NRMP guidelines.

A number of agencies have direct or indirect involvement with land planning, resource protection, and permit approvals for the NRMP area and adjacent properties, including the City, United States Army Corps of Engineers (ACOE), United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), California Coastal Commission (CCC), and Regional Water Quality Control Board (RWQCB).

1.2 PURPOSE

The purpose of the Natural Resource Management Plan is to assist the City in developing sound management practices for crucial open space areas along the San Diego River that will support the goals of the City's MSCP; protect natural resources; provide appropriate opportunities for public access, enjoyment, and education; and identify constraints, opportunities, and responsibilities. In addition, the NRMP should provide guidance for the development of the San Diego River Master Plan to protect natural and cultural resources while accommodating certain human activities in the River Park.

The overall aim of the NRMP is to provide the City staff with a document that helps to direct current and future management and acquisition activities to maximize benefits to the San Diego River as a natural and cultural resource within the framework of the existing, applicable land use plans.

The purpose, goals, and objectives of the NRMP are established as long-range goals with periodic reviews. The guidelines outlined in the NRMP will be updated at least every ten years, or as needed, with input from the City, private groups, San Diego Archaeological Society, and resource agencies.

1.3 OBJECTIVE

The objectives of the San Diego River Natural Resource Management Plan are:

1. Establish management practices, which will preserve and protect cultural and biological resources while providing for passive recreational use, maintenance, and land use in the NRMP area.

2. Enhance and restore native habitats, particularly where such habitats serve to buffer the River or are critical to the ecological integrity of the San Diego River;

3. Manage native habitats and wildlife to ensure their persistence within the project area and increase abundance and/or diversity if biologically appropriate;

4. Identify and maintain important wildlife corridors and the connectivity between open space areas;

5. Control erosion throughout the project area to protect the watershed;

6. Provide natural buffer to San Diego River to accommodate natural flooding and dynamic hydrology;

7. Protect and maintain paleontological, archaeological, and cultural resources;

8. Develop and implement measures that ensure compatibility of existing land uses within and/or adjacent to NRMP with natural resources;

9. Enhance and maintain water quality within the lower San Diego River and the NRMP;

10. Minimize illegal and unauthorized activities through an enforcement program;

11. Conduct education, outreach, and research programs which raise public awareness of the River's unique natural and cultural resources;

12. Develop procedures for facility and utility siting, maintenance, and repair which are sensitive to species, habitat, and aesthetics; and

13. Ensure that all improvements and maintenance activities consider and provide for public safety.

Figure 1. Project Vicinity Map

2.0 AGENCY JURISDICTION AND APPLICABLE PLANS

2.1 AGENCY JURISDICTION

A number of agencies have direct or indirect involvement with land planning, resource protection and permit approvals for the San Diego River Natural Resource Management Plan (NRMP) area and adjacent properties. Agencies with major land use and permit responsibilities in the NRMP area are described below.

City of San Diego: The entire NRMP area lies within the jurisdiction of the City. The day-to-day management of the Park is the responsibility of the Park and Recreation Department, operating under the authority of the City Manager. The Open Space Division of the Park and Recreation Department performs tasks such as trash removal, maintenance of all physical structures (such as fences, restrooms, signs, and trails), and brush management. Additionally, this Division provides park rangers whose primary responsibilities include enforcement of City and State regulations, overseeing small enhancement and restoration efforts, interpretive activities, and coordination of volunteers. The Park and Recreation Department also has a Natural Resource Management Section whose primary purpose is the protection and management of environmental resources within the City's natural parks and open space.

The Development Services Department's involvement is focused on the permitting and environmental review process. Any individual project proposed within or adjacent to the NRMP area is required to meet the regulations outlined in the following applicable plans, ordinances, and laws: Land Development Code, MSCP Subarea Plan; applicable community plans, City General Plan, and City environmental and construction standards and requirements. Agencies and the public become involved with individual project proposals during this process. For projects requiring permitting, the Development Services Department serves as a liaison between the City, City departments, public, and agencies. The MSCP Division of the Planning Department is also responsible for collecting and monitoring data on target species and coordinating with the Park and Recreation Department on activities related to those target species. Other City departments involved in the NRMP area include the Police, Fire, Engineering and Capital Projects (erosion control; urban runoff; streets), and Metropolitan Wastewater departments.

United States Army Corps of Engineers (ACOE)**:** The United States Army Corps of Engineers (ACOE) has permit authority for projects that require permits under Section 404 of the Clean Water Act (CWA). Activities that are subject to a Section 404 permit include projects that involve discharge of fill or dredge materials into the waters of the United States. Some activities resulting from implementation of the NRMP may require individual or nationwide permits. The ACOE would need to be consulted for a determination on an individual project's need for an ACOE permit.

United States Fish and Wildlife Service**:** The USFWS acts in an advisory role with projects requiring an ACOE and/or City of San Diego permit. The USFWS also serves other permitting agencies in an advisory capacity. Of particular importance to the USFWS is the status of plants and animals on the List of Endangered and Threatened Species, which are protected under the federal Endangered Species Act of 1973. The USFWS is also concerned with protecting bird species covered by the Federal Migratory Bird Treaty Act of 1916, as amended in 1994. The USFWS has

signed an Implementing Agreement with the City for the San Diego MSCP Subarea Plan. In effect, the USFWS has a participating role in the planning process for the NRMP area.

California Coastal Commission**:** The CCC is responsible for issuing and administrating permits in compliance with the Coastal Act. In addition to protection of natural resources and coastal resources, maintenance of public access to the Coastal Zone is a primary directive of the CCC. Within the NRMP area, the Coastal Zone boundary extends to the railroad tracks located east of Interstate 5 (I-5) (Figure 2).

California Department of Fish and Game**:** CDFG is involved in the planning process for the NRMP in two ways. First, it is a signatory of the MSCP Implementing Agreements for the MSCP Subarea Plans. Second, CDFG is responsible for the issuance of Section 1600 *et seq*. of the California Fish and Game Code. These permits may be required for activities included in the NRMP. CDFG advises the CCC and other permit authorities.

Regional Water Quality Control Board**:** The San Diego RWQCB, which is one of the nine RWQCB in the State, administers National Pollutant Discharge Elimination System (NPDES) permits in the San Diego Region. A NPDES permit would be required for any future activity disturbing one or more acres of ground within the NRMP area. In California, the RWQCB is also responsible for administering Section 401 of the Clean Water Act, which requires that an applicant for a federal license or permit provide a certification that any discharges from the facility will comply with the Clean Water Act, including water quality standard requirements.

Surface Mining and Reclamation Act of 1975**:** The Surface Mining Act and Reclamation Act (SMARA) would apply only to mining areas at the far east end of the NRMP area. SMARA, which was enacted in 1975 and amended in 1980, 1984, 1985, 1986, 1987, and 1990, is intended to provide protection and subsequent beneficial use of mined lands. SMARA allows for continued use of surface mining operation and aims to assure that mine lands are reclaimed to a usable condition that is readily adaptable for alternative land uses. Particular emphasis for re-use of mined lands is given to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment. In accordance with SMARA, a report including details of the mining operation and its reclamation plan must be filed with State Geologist and local lead agency each year. SMARA would apply to areas adjacent to and within the NRMP area where resource extraction activities are on going or planned in the future.

2.2 APPLICABLE CITY OF SAN DIEGO PLANS

City of San Diego Progress Guide and General Plan (Adopted 1979, Amended 1997) has jurisdiction over the NRMP area and the land use regulations set forth by the Progress Guide and General Plan apply to the NRMP area and adjacent properties. As established by the Progress Guide and General Plan, the NRMP area and adjacent properties are within various community plan areas. According to the Progress Guide and General Plan, the NRMP area and adjacent properties are within the Urban Tier, with the majority of the NRMP area identified as open space. The urbanized areas adjacent to the NRMP area are identified for mixed land use, residential, office and specialized commercial, commercial recreation, other institutional, and general industrial (Figure 3).

Figure 2. California Coastal Commission Coastal Zone and MSCP MHPA Boundary

Figure 3. Land Use Designations

The Progress Guide and General Plan's Open Space Element includes the following goal that is applicable to the NRMP:

- Establish an open space system which provides for the preservation of natural resources, the managed production of resources, the provision of outdoor recreation, the protection of public health and safety, and the utilization of the varied terrain and natural drainage systems of the San Diego community to guide the form of urban development.

The Recreation Element of the General Plan includes a discussion recognizing recreation as one of the major uses of open space lands and resource-based parks as a major part of the City's open space system. The following goals listed in the Recreation Element are applicable to the NRMP:

- Provide a range of opportunities for active and passive recreation, education activities, and neighborhood identification in all parts of the City, adapted to the needs and desires of each community; and
- Enhance the urban scene by development of an extensive and varied system of open space and recreation facilities.

City of San Diego MSCP Subarea Plan was adopted in March 1997 and is part of a larger MSCP which allows the participating jurisdictions to maintain development flexibility by proactively planning a regional preserve system. The MSCP meets the requirements of the California Natural Communities Conservation Planning (NCCP) Act of 1992. The City's Subarea Plan forms the basis for the Implementing Agreement that is the contract between the City and the wildlife agencies (*i.e.*, USFWS and CDFG). The City cooperated with the wildlife agencies, property owners, developers, and environmental groups in developing the City Multi-Habitat Planning Area (MHPA). The MHPA delineates core biological resource areas and corridors targeted for conservation. The Preserve Design Criteria contained in the MSCP Subarea Plan were used as guides in the development of the City's MHPA.

The City Subarea Plan includes approximately 206,124 acres of land within the MSCP study area. The City's MHPA is approximately 56,831 acres of land with approximately 47,010 acres of land located within the City's jurisdiction. Approximately 90 percent (52,012 acres) of the MHPA within the City's Subarea will be preserved for biological purposes. The City's Subarea is divided into five distinct areas, including the Southern, Eastern, Urban, Northern, and Cornerstone Lands/San Pasqual Valley.

The San Diego River is identified within the MSCP Subarea Plan as an urban habitat area and is located within the MHPA (refer back to Figure 2). Major issues facing urban habitat areas, such as the NRMP area, include intense land uses adjacent to sensitive habitat, litter and vandalism, itinerant living quarters, infrastructure maintenance activities, invasive plants and animals, and degraded water quality resulting from urban runoff. Portions of the NRMP area that support vegetation communities such as riparian/wetland habitat, grassland, and coastal sage scrub are located within the MHPA. Other portions of the NRMP area are located adjacent to the MHPA.

The Urban Area within the City's Subarea Plan consists of Point Loma and other urban habitats, such as Mission Bay, Tecolote Canyon, Marian Bear Memorial Park, Rose Canyon, the southern slopes along Mission Valley, Carroll and Rattlesnake Canyons, Florida Canyon, Chollas Creek, a variety of

smaller canyon systems dispersed throughout the more urban areas of the City, and the San Diego River. The lands are managed pursuant to other existing Natural Resource Management Plans, Landscape Maintenance Districts, as conditions of permit approval, or are currently unmanaged. These areas also contribute to the public's experience of nature and the local native environment.

The following MHPA Guideline is specifically applicable to the NRMP area:

- Native vegetation shall be restored as a condition of future development proposals along the portion of the San Diego River corridor that is currently developed with the Riverwalk Golf Course.

Additionally, the following general MHPA Guidelines apply to the NRMP area.

Road and Utility Construction and Maintenance Policies

- All proposed utility lines (*e.g.*, sewer, water, etc.) should be designed to avoid or minimize intrusion into the MHPA. These facilities should be routed through developed or developing areas rather than the MHPA, where possible. If no other routing is feasible, then the lines should follow previously existing roads, easements, rights-of-way, and disturbed areas, minimizing habitat fragmentation.
- All new development for utilities and facilities within or crossing the MHPA shall be planned, designed, located and constructed to minimize environmental impacts. All such activities must avoid disturbing the habitat of MSCP covered species, and wetlands. If avoidance is infeasible, mitigation will be required.
- Temporary construction areas and roads, staging areas, or permanent access roads must not disturb existing habitat unless determined to be unavoidable. All such activities must occur on existing agricultural lands or in other disturbed areas rather than in habitat. If temporary habitat disturbance is unavoidable, then restoration of, and/or mitigation for, the disturbed area after project completion will be required.
- Construction and maintenance activities in wildlife corridors must avoid significant disruption of corridor usage. Environmental documents and Mitigation Monitoring and Reporting Programs covering such development must clearly specify how this will be achieved, and construction plans must contain all the pertinent information and be readily available to crews in the field. Training of construction crews and field workers must be conducted to ensure that all conditions are met. A responsible party must be specified.
- Roads in the MHPA will be limited to those identified in Community Plan Circulation Elements, collector streets essential for area circulation, and necessary maintenance/emergency access roads. Local streets should not cross the MHPA except where needed to access isolated development areas.
- Development of roads in canyon bottoms should be avoided whenever feasible, If an alternative location outside the MHPA is not feasible, then the road must be designed to cross the shortest length possible of the MHPA in order to minimize impacts and fragmentation of sensitive species and habitat. If roads cross the MHPA, they should provide for fully functional wildlife movement capability. Bridges are the preferred method of providing for movement, although culverts in selected locations may be acceptable. Fencing, grading and plant cover should be provided where needed to protect and shield animals, and guide them away from roads to appropriate crossings.

- Where possible, roads within the MHPA should be narrowed from existing design standards to minimize habitat fragmentation and disruption of wildlife movement and breeding areas. Roads must be located in lower quality habitat or disturbed areas to the extent possible.
- For the most part, existing roads and utility lines are considered a compatible use within the MHPA and therefore will be maintained. Exceptions may occur where underutilized or duplicative road systems are determined not to be necessary as identified in the Framework Management Section 1.5 of the MSCP Subarea Plan.

Fencing, Lighting, and Signage

- Fencing or other barriers will be used where it is determined to be the best method to achieve conservation goals and adjacent to land uses incompatible with the MHPA. For example, use chain link or cattle wire to direct wildlife to appropriate corridor crossings, natural rocks/boulders or split rail fencing to direct public access to appropriate locations, and chain link to provide added protection of certain sensitive species or habitats (*e.g.*, vernal pools).
- Lighting shall be designed to avoid intrusion into the MHPA and effects on wildlife. Lighting in areas of wildlife crossings should be of low-sodium or similar lighting.
- Signage will be limited to access and litter control and for educational purposes.

Materials Storage

- Prohibit storage of materials (*e.g.*, hazardous or toxic, chemicals, equipment, etc.) within the MHPA and ensure appropriate storage per applicable regulations in any areas that may impact the MHPA, especially due to potential leakage.

Mining, Extraction, and Processing Facilities

- Mining operations include mineral extraction, processing, and other related mining activities (*e.g.*, asphaltic processing). Currently permitted mining operations that have approved restoration plans may continue operating in the MHPA. New or expanded mining operations on lands conserved as part of the MHPA are incompatible with MSCP preserve goals for covered species and their habitats unless otherwise agreed to by the wildlife agencies a the time the parcel is conserved. New operations are permitted in the MHPA if: 1) impacts have been assessed and conditions incorporated to mitigate biological impacts and restore mined areas: 2) adverse impacts to covered species in the MHPA have been mitigated consistent wit the Subarea Plan; and 3) requirements of other City land use policies and regulations (*e.g.*, Adjacency Guidelines, Conditional Use Permit) have been satisfied. Existing and any newly permitted operations adjacent to or within the MHPA shall meet noise, air quality and water quality regulation requirements, as identified in the conditions of any existing or new permit, in order to adequately protect adjacent preserved areas and covered species. Such facilities shall also be appropriately restored upon cessation of mining activities.
- All mining and other related activities must be consistent with the objectives, guidelines, and recommendations in the MSCP Plan, the City's Environmentally Sensitive Lands Ordinance, all relevant long-range plans, as well as with the SMARA of 1975.
- Any sand removal activities should be monitored for noise impacts to surrounding sensitive habitats, and all new sediment removal or mining operations proposed in proximity to the

MHPA, or changes in existing operations, must include noise reduction methods that take into consideration the breeding and nesting seasons of sensitive bird species.

- All existing and future mined lands adjacent to or within the MHPA shall be reclaimed pursuant to SMARA. Ponds are considered compatible uses where they provide native wildlife and wetland habitats and do not conflict with conservation goals of the MSCP and Subarea Plan.
- Any permitted mining activity including reclamation of sand must consider changes and impacts to water quality, water table level, fluvial hydrology, flooding, and wetlands and habitats upstream and downstream, and provide adequate mitigation.

Flood Control

- Flood control should generally be limited to existing agreements with Resource Agencies unless demonstrated to be needed based on a cost benefit analysis and pursuant to a restoration plan. Floodplains within the MHPA, and upstream from the MHPA if feasible, should remain in a natural condition and configuration in order to allow for the ecological, geological, hydrological, and other natural processes to remain or be restored.
- No berming, channelization, or man-made constraints or barriers to creek, tributary, or river flows should be allowed in any floodplain within the MHPA unless reviewed by all appropriate agencies, and adequately mitigated. Review must include impacts to upstream and downstream habitats, flood flow volumes, velocities and configurations, water availability, and changes to the water table level.
- No riprap, concrete, or other unnatural material shall be used to stabilize river, creek, tributary, and channel banks within the MHPA. River, stream, and channel banks shall be natural, and stabilized where necessary with willows and other appropriate native plantings. Rock gabions may be used where necessary to dissipate flows and should incorporate design features to ensure wildlife movement.

Land Use Adjacency Guidelines

The MSCP Subarea Plan dictates that land uses adjacent to the MHPA must be managed to ensure minimal impacts to the MHPA. Consideration will be given to good planning principles in relation to adjacent land uses as described below. The following are adjacency guidelines that will be addressed, on a project by project basis, during either the planning (new development) or management (new and existing development) stages to minimize impacts and maintain the function of the MHPA. Implementation of these guidelines is addressed further in the Framework Management Plan section of the MSCP Subarea Plan.

Drainage: All new and proposed parking lots and developed areas in and adjacent to the preserve must not drain directly into the MHPA. All developed and paved areas must prevent the release of toxins, chemicals, petroleum products, exotic plant materials, and other elements that might degrade or harm the natural environment or ecosystem processes within the MHPA. This can be accomplished using a variety of methods including natural detention basins, grass swales or mechanical trapping devices. These systems should be maintained approximately once a year, or as often as needed, to ensure proper functioning. Maintenance should include dredging out

sediments, if needed, removing exotic plant materials, and adding chemical-neutralizing compounds (*e.g.*, clay compounds) when necessary and appropriate.

Toxics: Land uses, such as recreation and agriculture, that use chemicals or generate byproducts such as manure, that are potentially toxic or impactive to wildlife, sensitive species, habitat, or water quality need to incorporate measures to reduce impacts caused by the application and/or drainage of such materials into the MHPA. Such measures should include drainage/detention basins, swales, or holding areas with non-invasive grasses or wetland-type native vegetation to filter out the toxic materials. Regular maintenance should be provided. Where applicable, this requirement should be incorporated into leases on publicly owned property as leases come up for renewal.

Lighting: Lighting of all developed areas adjacent to the MHPA should be directed away from the MHPA. Where necessary, development should provide adequate shielding with non-invasive plant materials (preferably native), berming, and/or other methods to protect the MHPA and sensitive species from night lighting.

Noise: Uses in or adjacent to the MHPA should be designed to minimize noise impacts. Berms or walls should be constructed adjacent to commercial areas, recreational areas, and any other use that may introduce noises that could impact or interfere with wildlife utilization of the MHPA. Excessively noisy uses or activities adjacent to breeding areas must incorporate noise reduction measures and be curtailed during the breeding season of sensitive species. Adequate noise reduction measures should also be incorporated for the remainder of the year.

Barriers: New development adjacent to the MHPA may be required to provide barriers (*e.g.*, non-invasive vegetation, rocks/boulders, fences, walls, and/or signage) along the MHPA boundaries to direct public access to appropriate locations and reduce domestic animal predation.

Invasives: No invasive non-native plant species shall be introduced into areas adjacent to the MHPA.

Brush Management: Brush management is required in all base zones on the following types of premises: (1) Publicly or privately owned premises that are within 100 feet of a structure and contain native or naturalized vegetation; (2) Except for wetlands, environmentally sensitive lands that are within 100 feet of a structure, unless the Fire Chief deems brush management necessary in wetlands in accordance with San Diego Municipal Code Section 142.0412(i). Brush Management Zones. Where brush management is required, a comprehensive program shall be implemented that reduces fire hazards around structures by providing an effective fire breaks between all structures and contiguous areas of native or naturalized vegetation. Fire breaks shall consist of two distinct brush management areas called “Zone One” and “Zone Two”.

Brush management Zone One, the area adjacent to the structure, shall be least flammable and shall consist of pavement and permanently irrigated ornamental planting. Brush management Zone Two, the area between Zone One and any area of native or naturalized vegetation, shall consist of thinned, native or non-irrigated vegetation. The width of Zone One and Zone Two shall not exceed 100 feet and shall meet the City’s minimal requirements as dictated in the Municipal Code. Per the Municipal Code, Modifications to the Land Development Code regulations may be applicable where Zone One width is required adjacent to the MHPA and/or within the Coastal Overlay Zone.

Specific Zone One Requirements:

(1) The required Zone One width shall be provided between native or naturalized vegetation and any structure and shall be measured from the exterior of the structure to the vegetation.

(2) Zone One shall contain no habitable structures, structures that are directly attached to habitable structures, or other combustible construction that provides a means for transmitting fire to the habitable structures. Structures such as fences, walls, palapas, play structures, and nonhabitable gazebos that are located within brush management Zone One shall be of noncombustible construction.

(3) Plants within Zone One shall be primarily low-growing and less than 4 feet in height with the exception of trees. Plants shall be low-fuel and fire-resistive.

(4) Trees within Zone One shall be located away from structures to a minimum distance of 10 feet as measured from the structures to the drip line of the tree at maturity in accordance with the Landscape Standards of the Land Development Manual.

(5) Permanent irrigation is required for all planting areas within Zone One except as follows: when planting areas contain only species that do not grow taller than 24 inches in height; or, when planting areas contain only native or naturalized species that are not summer-dormant and have a maximum height at plant maturity of less than 24 inches.

(6) Zone One irrigation overspray and runoff shall not be allowed into adjacent areas of native or naturalized vegetation.

(7) Zone One shall be maintained on a regular basis by pruning and thinning plants, controlling weeds, and maintaining irrigation systems.

Zone Two Requirements:

(1) The required Zone Two width shall be provided between Zone One and the undisturbed, native or naturalized vegetation, and shall be measured from the edge of Zone One that is farthest from the habitable structure, to the edge of undisturbed vegetation.

(2) No structures shall be constructed in Zone Two.

(3) Within Zone Two, 50 percent of the plants over 24 inches in height shall be cut and cleared to a height of 6 inches.

(4) Within Zone Two, all plants remaining after 50 percent are reduced in height, shall be pruned to reduce fuel loading in accordance with the Landscape Standards in the Land Development Manual. Non-native plants shall be pruned before native plants are pruned.

(5) The following standards shall be used where Zone Two is in an area previously graded as part of legal development activity and is proposed to be planted with new plant material instead of clearing existing native or naturalized vegetation: (A) All new plant material for Zone Two shall be native nonirrigated, low-fuel, and fire-resistive. No non-native plant material may be planted in Zone Two either inside the MHPA or in the Coastal Overlay Zone, adjacent to areas containing sensitive biological resources. (B) New plants shall be low-growing with a maximum height at maturity of 24 inches. Single specimens of native trees and tree form shrubs may exceed this limitation if they are located to reduce the chance of transmitting fire from native or naturalized vegetation to habitable structures and if the vertical distance between the lowest branches of the trees and the top of adjacent plants are three times the height of the adjacent plants to reduce the spread of fire through ladder fueling. (C) All new Zone Two plantings shall irrigated temporarily until established to the satisfaction of the

City Manager. Only lowflow, low-gallonage spray heads may be used in Zone Two. Overspray and runoff from the irrigation shall not drift or flow into adjacent areas of native or naturalized vegetation. Temporary irrigation systems shall be removed upon approved establishment of the plantings. Permanent irrigation is not allowed in Zone Two. (D) Where Zone Two is being revegetated as a requirement of Section 142.0411(a), revegetation shall comply with the spacing standards in the Land Development Manual. Fifty percent of the planting area shall be planted with material that does not grow taller than 24 inches. The remaining planting area may be planted with taller material, but this material shall be maintained in accordance with the requirements for existing plant material in Zone Two.

(6) Zone Two shall be maintained on a regular basis by pruning and thinning plants, controlling weeds.

(7) Except as provided in Section 142.0412(i), where the required Zone One width shown in Table 142-04H cannot be provided on premises with existing structures, the required Zone Two width shall be increased by one foot for each foot of required Zone One width that cannot be provided.

San Diego River Master Plan (draft) focuses on the section of the San Diego River within the boundaries of the City of San Diego extending from the Pacific Ocean at Mission Bay to the City of Santee. The project area is defined as a corridor extending one-half mile on each side of the river. The Master Plan planning area includes both public and private property.

The Plan constructs a framework that adjacent communities can use to set policy on riverfront land uses within their boundaries and encourages coordination between San Diego River Park planning and other future development along the length of the river corridor. The Master Plan is organized in three major sections: Principles, Recommendations, and Implementation. The Principles are the overarching goals against which all decisions should be tested. The seven San Diego River Master Plan principles include: Principle One: clean-up and restore hydrologic function to the river; Principle Two: reclaim the valley as a common; Principle Three: unify fragmented lands; Principle Four: emphasize a continuum of experience; Principle Five: reveal the valley history; Principle Six: reorient development toward the river; and Principle Seven: create a synergy of people, water, and wildlife. The Recommendations section identifies a series of recommended actions and projects that are necessary to move the Plan from concept to reality. The Implementation section of the document describes the potential phasing and prioritization of the recommended actions. This plan remains in the draft stage at the time of SDR NRMP finalization.

Mission Trails Regional Park Master Plan (1985) includes the Mission Trail Regional Park (MTRP) which is adjacent to the eastern end of the NRMP area. Figure 3 shows the Mission Trails Regional Park in relation to the NRMP area. MTRP is one of the largest urban regional parks in the western United States. It is located south of I-52 and north of I-8, eight miles northeast of downtown San Diego and midway between the Pacific Ocean and Cleveland National Forest. MTRP is used for recreation such as hiking, fishing, camping, picnicking, exploring, and photography.

Surface water within MTRP drains into the San Diego River, which flows southwest to northeast through the park, at the bottom of Mission Gorge. The south end of the gorge is the site of the Park headquarters, including a visitor center, ranger station, and maintenance complex. Potential trail

linkages listed in the MTRP Master Plan include the San Diego River Trail, which is identified in the Park Planning and Design Implementation Section of the Master Plan as a regional trail linkage.

Tierrasanta Community Plan (1982) covers the Tierrasanta community, approximately 6,700 acres of land, which is bounded by I-15 on the west, Friars Road and the San Diego River on the south, the City of Santee on the east and United States Marine Corps Air Station (MCAS) Miramar on the north. Figures 3 and 4 show the Tierrasanta Community land use designations within and adjacent to the NRMP area. Specific residential developments within Tierrasanta include Regency Hill, which is located northeast of I-15 and Friars Road, and El Dorado Hills, which is located northeast of Admiral Baker Field. The main goal of the Tierrasanta Community Plan is to provide a wide variety of environmentally sensitive housing types for people of all income levels, family sizes, and racial and ethnic compositions. Other goals include protecting the natural environment, fostering the development of MTRP, and to promoting a high level of community services and facilities to adequately meet the needs of the Tierrasanta Community. Objectives set forth by the Tierrasanta Community Plan concerning open space systems are listed below:

- Protect the natural environment;
- Preserve canyons and hillsides designated as open space;
- Preserve the San Diego River environs and protect surrounding uses from flooding; and
- Develop the open space system identified in the community plan.

Navajo Community Plan (1982) addresses the Navajo community, which is approximately 8,000 acres in size and located in the easterly portion of the City (see Figures 3 and 4). It includes the community areas of Allied Gardens, Del Cerro, Grantville and San Carlos. It is bounded to the north and west by the San Diego River; to the east by the cities of El Cajon and La Mesa; and to the south by Interstate 8 (I-8). Navajo Community Plan directives pertaining to open space, recreation, and the San Diego River are listed below:

- Prevent and/or limit of development in proposed open space areas which serve to enhance community identity, such as steep slopes and canyons, floodplains, and areas within unique views and vistas;
- Ensure that the appearance and effects of industrial uses are compatible with the character of the surrounding residential and commercial areas and the sensitive resource of the San Diego River;
- Ensure that industrial development along the San Diego River is designed to minimize impacts to this sensitive resource;
- Preserve, improve, and reconstruct the wetlands and riparian habitat areas in and along both sides of the San Diego River;
- Enhance and maintain the aesthetic and recreational qualities of the San Diego River corridor as part of the open space systems;
- Establish and preserve a total open space system in perpetuity and guard against its commercialization. Preserve the natural environment including wildlife, vegetation, and terrain;
- Permit only those uses within the system which are compatible with the open space concept;

- Insure that any public improvements such as roads, drainage channels, and utility services and any private lessee developments be compatible with the objectives of the open space system;
- Insure that development of properties adjoining the open space system is in a manner compatible with the natural environment and in conformance with the Mission Trails Design District and Manual, the San Diego River Wetlands Management Plan, and any subsequently adopted programs which address the San Diego River area;
- Develop sufficient and convenient parks and recreation facilities to serve the existing and future population of the community; and
- Develop pedestrian and bikeway linkages between open space, neighborhood and community parks and other recreation and activity centers.

Mission Valley Community Plan (1985) is currently in the process of being updated. The Mission Valley Community is located within the central portion of the City, west of I-5, east of Fairmont Avenue, and south of Phyllis Place. The Mission Valley Community Plan provides a comprehensive guide for the enhancement and development of the Mission Valley Community. Areas north of the River within the Mission Valley Community Plan are designated as residential, commercial-retail, multiple use, and commercial-office. Areas south of the River are designated for commercial-recreation, commercial-office, public facilities, multiple use, and industrial. The Mission Valley Community Plan area also includes the Levi-Cushman Specific Plan area, which consists of approximately 200 acres of land to the west. A more detailed discussion regarding this specific plan is to follow. Figures 3 and 5 show the Mission Valley Community land use designations within and adjacent to the NRMP area.

The Open Space Element of the community plan sets forth the following goals pertaining to open space, recreation, and the San Diego River:

- Protecting existing and future development from flood hazard;
- Preserve and maintain the wetlands and riparian habitat areas along both sides of the River; and
- Enhance and maintain the aesthetic and recreational qualities of the River corridor as part of an open space system.

Figure 4. Land Use within the Tierrasanta and Navajo Community Plan Areas

Figure 5. Land Use within the Mission Valley Community

The Urban Design Element of the Community Plan focuses on the River, hillsides, and transportation corridors of the planning area. The San Diego River is identified in the Urban Design Element as a designed protection area. Specific design guidelines are presented for the San Diego River corridor under the Design Protection Areas section of the Urban Design Element. The design guidelines include the following guidelines pertaining to open space, recreation, and the San Diego River:

- The 100-year floodway zone protection should be maintained within the valley. The existing floodway zone line should be updated to carry the 100-year 49,000 cubic feet per second flood projected by the ACOE based on the River basin's buildout.
- Opportunities for modifying and realigning the existing floodway zone through construction of a man-made channel may be considered, as long as the channel is designed to carry the projected 100-year 49,000 cfs flood in a natural appearing facility. Additionally, this new facility will be required to implement the policies of the Wetlands Management Plan and the urban design guidelines for riverfront development included in this section of the plan. The new facility will be required to maintain a constant water flow velocity and provide erosion protection throughout its length.
- If modifications to the existing floodway zone are proposed on a project by project basis, the new project will be required to maintain existing safe water velocities and property values for adjacent properties.
- The floodway should be designed as a natural appearing waterway with rehabilitation, revegetation and/or preservation of native wetland habitats. Open water, freshwater marsh areas, riparian woodlands, buffer areas and passive recreation areas should be designed in concert so as to form a complete open space system along the River.
- Natural environmental features should be preserved and recreated within the floodway proper and should be incorporated as much as possible in areas beyond the floodway boundary to maintain and enhance the habitat and aesthetic values of the River.
- When rehabilitation and re-creation of the floodway-wetlands habitat is considered, open waters may become more extensive because of groundwater sources, although the water level will fluctuate with the seasons. Freshwater marsh vegetation will occur adjacent to and within water areas. Riparian woodlands should generally be located on the floodway slopes and on islands that may be created within the floodway. Woodland canopies should extend beyond the floodway into the private development area. A continuous revegetation corridor should be developed along both sides of the River.
- Buffer areas are to be located along the entire length of both sides of the River. Private development shall not intrude into the floodway.
- The average width of the buffer for the entire length of the River areas shall not be less than 20 feet. Maximum buffer widths should be at least 50 feet. A minimum buffer of ten feet should be assured.
- Buffer areas should be widest adjacent to the most sensitive habitat areas.
- Buffer areas should be planted with a combination of native trees, primarily riparian woodlands species and native shrubs of the coastal sage scrub community.

- Land uses within the buffer areas should include only the LRT Corridor, bikeway and pedestrian lanes and other passive recreation uses. LRT encroachments into buffer areas should take place in the wider sections of the buffer.
- Passive recreation facilities should be provided along the floodway, including benches, viewing areas, pedestrian and bicycle lanes, and other recreational activities such as a par course (exercise stations). These activities may take place within the 100-year floodway only in those areas where they avoid contact with the more sensitive wildlife habitat areas.
- Active recreation areas that may be developed within a project should be located away from the River and buffer areas, but should be visually and/or physically linked to the River corridor's passive recreation facilities.
- The River corridor is the dominant open space feature of the Mission Valley Community, and is an important part of the San Diego River and the Citywide open space systems. As such, it should be accessible to the public.
- Areas outside the River channel and riparian corridor, should be landscaped and linked to the River corridor. The landscaping should be consistent with the native species in the River.
- Private project recreational and urban plazas should be linked visually and/or physically to the River corridor in order to integrate them into the area-wide open space system.
- Public roadways directly linking the River to other portions of the community should be landscaped with trees native to the River's and valley's ecosystem. Riparian woodland type of trees or drought-resistant and fast growing species should be used.
- View considerations in relation to the River corridor are of two types. First: ground level views from public areas such as roads. These views primarily affect the siting of buildings. Second: aerial views from the hillsides into the River area and from public areas such as parks and roads in surrounding communities. These view considerations primarily affect the desired height and bulk of buildings. The following guidelines are designed to address the view quality issues:
- Generally, ground level view corridors into the River corridor should be provided from public streets. This will require spacing between buildings and development of landscaped areas in relation to River view corridors.
- Curving streets provide special view qualities and are desirable when establishing view corridors. All development should be set back from these view corridors and landscaped see-through areas should be provided.
- To allow see-through at pedestrian levels, landscaping materials should include patterned paving and tall-canopied trees.
- In order to provide visual openings and pedestrian scale along the River, buildings or portions of the buildings nearest the River should be of lower profiles with building heights increasing as distances from the River increase. High-rise structures should be kept back from the River
- Because of the view impacts of large low rise buildings as seen from above, roof areas should be carefully designed to enclose mechanical equipment. Projects should also consider the development of roof forms and the use of roof materials that will have positive visual impacts by providing color and pattern. Strong consideration should be given to the use of roofs for recreations, such as terraces and landscaped park-like areas, in conjunction with project recreational activities or commercial activities such as restaurants.

- Private development should be designed with thought given to the creation of landmarks, which provide focal points and better visual orientation. Landmark qualities can be established through the development of vertical building elements, such as towers, and other special building forms, such as "campaniles," domes or other similar structural forms. These architectural forms are particularly applicable to urban centers in commercial developments, which are the focal points of activity in the community.
- Development should orient towards the River.
- Development should be designed with appropriate scale relationships between buildings and adjacent open space features.
- Buildings should terrace or step down to the River corridor area.
- Parking areas and automobile access into development should be located along non-river frontage access roads, with wide pedestrian areas and landscaping located along the River.
- Building setback requirements should be sufficient in depth to provide a gradual transition between open space and development. Tall buildings will require larger setbacks than shorter buildings.
- Buildings should be sited so as to provide and/or maintain views of the River from public roads, the freeways, and the mesas on both sides of the valley, while maintaining views across the River.
- Building materials and design should enhance the aesthetic and biological value of the River. Reflective materials should not be used in the areas immediately adjacent to the floodways.

The San Diego River Wetlands Management Plan (WMP), contained in Appendix G of the Mission Valley Community Plan, is an integral part of the implementation of the San Diego River Element of the Community Plan. The WMP provides a framework for integrating the protection of wetlands with land development, transportation facilities and flood control. The WMP allows a comprehensive approach to wetlands protection, clarification of development expectations, and facilitation of permits for projects, which are in conformance with the WMP.

Guidelines are listed for seven sections of this area in order to assist in achieving the goals and objectives of the WMP. These guidelines are primarily listed in a graphical format. The NRMP area is located within sections 1-3 and 5-7 of the WMP planning area. The following WMP policies are pertinent to the NRMP:

- Any channelization of the floodway shall plan for biological as well as hydraulic features. A continuous band of wetlands along both sides of the River shall be incorporated into channel design;
- Overall, there shall be no quantitative reduction in wetlands (as defined by vegetation) within the WMP area. Loss of wetlands can be permitted if it is mitigated in a manner which contributes to the overall qualitative improvement of the River corridor;
- Mitigation shall be appropriate for the quantity and type of vegetation lost and shall consist of habitat conservation or improvement of degraded wetlands. If the impact is to wetlands, there shall be in-kind replacement of total wetlands and individual habitat types (unless it is demonstrated that the habitat would be improved through alternative replacement). If the impact

is to non-wetlands in the Floodway zone, there shall be out-of-kind compensation through conversion to wetlands;

- Mitigation shall be accomplished concurrent with or in advance of floodway loss; and
- The first priority is for a wetlands mitigation to occur within the same segment of the River in which the impact has occurred. Where it can be demonstrated that mitigation is not possible within the same segment, mitigation shall be permitted elsewhere within the study area.

Levi-Cushman Specific Plan (1987) area encompasses approximately 200 acres of land in the western portion of the Mission Valley Community Plan area on a site that is currently developed with Riverwalk Golf Course. Figure 3 shows the Levi-Cushman Specific plan area in relation to the Mission Valley Community Plan area and the NRMP area. The land is owned by members of the Levi and Cushman families of San Diego and is currently leased to the Riverwalk Golf Course. To be phased over a 20-year period, development within the Levi-Cushman Specific Plan area focuses residential, retail, office, and hotel use along the San Diego River.

The First San Diego River Improvement Project Specific Plan (1982) includes approximately 261 (privately owned) acres within the Mission Valley Community Plan area. Figures 3 and 6 show the First San Diego River Improvement Project (FSDRIP) land use designations within and adjacent to the NRMP area. FSDRIP is a privately owned river improvement and mitigation project that was approved in 1982 and constructed in 1989. It is located along the River between SR-163 and Qualcomm Way.

Four major private developments located adjacent to the flood control channel are identified in the Specific Plan. These developments include residential, commercial-office, commercial-retail, and visitor-oriented commercial uses.

The Specific Plan contains a River Improvement Element, which lists improvements and benefits that will be provided within or immediately adjacent to the Floodway zone. Improvements include the realignment of the San Diego River to create a flood control channel between I-805 and SR-163, biological restoration of wetland habitat, and passive recreation.

Figure 6. Land Use within the FSDRIP Area

FSDRIP Natural Resources Management Plan was adopted by the City Council on February 4, 2004 by Resolution No. 298839. As it has its own NRMP, FSDRIP is not specifically addressed in the San Diego River NRMP. As an integral part of the River corridor, the goals, objectives, and guidelines as outlined in the FSDRIP NRMP are included in this NRMP by reference. Some of the development guidelines set forth by the FSDRIP Natural Resources Management Plan are as follows:

- Temporary fencing along FSDRIP's outer edge between the proposed construction and FSDRIP shall be installed before construction;
- Buffer areas should be located along the entire length of an adjacent project and/or development;
- To avoid impacts to breeding least Bell's vireo and other migrating birds, construction activities which will impact FSDRIP, directly or indirectly, shall include specific conditions given in the FSDRIP natural resources management plan;
- Dikes, embankments, etc. should be vegetated or otherwise protected against erosion. Riprap may be used in limited areas where scouring is likely to occur during high velocity water flow;
- All pedestrian walks within FSDRIP should be a minimum of 10 feet. In areas of high development intensity, widths of 15 to 20 feet or greater should be considered;
- Grading required to accommodate any new development should have a minimal disturbance to the natural terrain;
- Contours should maintain the overall landform;
- Plant and seed recontoured slopes with local native drought-resistant trees, shrubs, and grasses to restore a natural appearance and prevent erosion;
- Use specialized plantings to serve as natural barriers to inappropriate human access, or in areas with little or no buffer between the wetland and development;
- Do not plant invasive, exotic plant species, such as pampas grass, giant reed, tamarisk and Brazilian pepper in adjacent ornamental landscapes; and
- All development projects along FSDRIP edges will be required to inform residents and/or tenants within the development of the permitted and non-permitted uses within FSDRIP.

Atlas Specific Plan (1988) area is located within the Mission Valley Community Plan area between I-5 and SR-163 (see Figures 3 and 7). The northern border of the Specific Plan area is Friars Road and the southern border is Mission Hills. The Specific Plan provides land use planning for seven individual sites within the Specific Plan area.

Of the seven planning sites in the Atlas Specific Plan, three sites are adjacent to the River. These sites are planned for hotel use. Several features are incorporated into the design of these sites to encourage river orientation and definition of the river corridor as natural and useable open space.

The Atlas Specific Plan includes a River Improvement Element which outlines measures for flood control improvement associated with implementation of the Specific Plan. Additionally, the Plan includes revegetation for riparian habitats disturbed as a result of construction of the recommended flood control improvements. The Plan identifies the San Diego River floodway in the northern portion of the Specific Plan area. Specific measures in the Atlas Specific Plan that pertain to open space, recreation, and the San Diego River include the following.

- Developments along the River corridor have at least two orientations; one to the River, and the other to the freeway and hotel circle. Improvements within those parcels shall be site-planned to respect both these important orientations. Service access and utility areas are not appropriate uses for either frontage.
- In general, the area should be considered an urban area and not a suburban area. This creates, however, some difficulty in integrating a highly urban situation with a highly natural, the River. Improvements within those parcels adjacent to the River shall, at least symbolically, reflect as much of the River environment as possible within the interior of the site. In this way, a sensitive and subtle transition will occur between River, structure, and the freeway corridor. For example, utilizing riparian trees and water elements around a central courtyard or plaza could be one way to reflect a site's proximity to the River.
- The treatment of the River corridor shall comply with the San Diego River WMP Design Criteria, except as modified by the Atlas Specific Plan.
- Viewsheds into and across the River shall be maintained or enhanced by proper site planning and building design.
- A buffer area averaging 30 feet wide shall be provided along the south side of the River from SR-163 to Fashion Valley Road at the Town and Country site between the wetland habitat area and adjacent development.
- A buffer area from 30 feet to 50 feet shall be provided along the south side of the River at the Hanalei Hotel site between wetland habitat area and adjacent development.
- The regional east-west pedestrian/bicycle system within the River corridor shall be constructed along the south side of the River at the Town and Country site and the Hanalei Hotel site.
- The Light Rail Transit (LRT) should be located above the 100-year flood and, if feasible, should relate to adjacent structures rather than the River.
- Passive recreation facilities shall be located along the outer edges of the buffer area to the floodway. These include picnic areas, benches, viewing areas and pathways.
- Uses along the River will include landscaped areas, walks, gardens, and bike paths to complement the proposed vegetation along the River. Hotel facilities such as guest rooms and lobby areas will be located off the gardens and landscaped areas orients to the river. Action recreation facilities are proposed within the hotel complex areas; they include swimming pools, tennis courts, exercise rooms, pro shops, and snack bar.

Figure 7. Land Use within the Atlas Specific Plan Area

Mission Valley Planned District Ordinance (1990) was established to ensure that development and redevelopment in Mission Valley will be accomplished in a manner that enhances and preserves sensitive resource areas; improves the vehicular, bicycle, pedestrian and public transit circulation network; provides reasonable use of property; and contributes to the aesthetic and functional well-being of the community. The Ordinance area is generally bounded on the west by I-5, on the north by Friars Road west of SR-163 and by the northern slopes of the valley east of SR-163, on the east by the eastern bank of the San Diego River and on the south by approximately the 150-foot contour line.

The Mission Valley Planned District Ordinance includes a San Diego River Subdistrict, which was created to ensure that development along the River takes place in a manner that is complementary to flood control, wetland management, urban design and open space criteria contained in the Mission Valley Community Plan. The Subdistrict includes provisions for a 35-foot minimum average width buffer extending away from the San Diego River, measured from the 100-year floodway line on both sides of the River. The buffer accommodates both biological (open space) and transitional buffer (passive/active recreation area) zones. Additionally, commercial, residential, and specific planning zones are designated for the NRMP area within the Mission Valley Planned District Ordinance.

San Diego River Watershed Management Plan (2005), includes the NRMP area as part of a larger watershed planning area which stretches across portions of the cities of San Diego, El Cajon, La Mesa, Poway, and Santee and several unincorporated jurisdictions. The framework of the San Diego River Watershed Management Plan (SDRWMP) is comprised of a vision, supporting goals, and strategies to achieve these goals. The SDRWMP is intended to be a "living document" which was completed in 2005 through a stakeholder-driven process, including 34 public meetings and workshops from February 2002 to March 2005. The SDRWMP addresses natural resource issues that cross jurisdictions and political boundaries and balances concerns about water quality and quantity with local jurisdictions' planning and zoning ordinances. This balance is struck while coordinating insights gained from natural resource and social sciences related to wildlife and human inhabitation. The next (pending) phase of the project is to begin implementation of the recommended actions in the San Diego River Watershed Management Plan.

3.0 EXISTING CONDITIONS

3.1 GEOLOGY AND SOILS

The San Diego River is a perennial watercourse consisting of relatively flat central terrain flanked by relatively steep north-facing slopes and smaller, gentler south-facing slopes. The elevations within the NRMP area range from 10 to 100 feet at Mean Sea Level (MSL).

Underlying geology is mapped as Alluvium. Smaller areas within the San Diego River are mapped as Jura-Trias metavolcanic rocks and Quaternary nonmarine terrace deposits (Rogers 1965) (Figure 8).

Figure 9 depicts the soil series within the NRMP area. The soils within and directly along the San Diego River are mapped as Riverwash (Bowman *et. al.* 1973). This soil type is typically sandy, gravelly, or cobbly. It is excessively drained and rapidly permeable (Bowman *et. al.* 1973).

The majority of the outlying soils surrounding the River consist of Tujunga sand, 0 to 5 percent slopes (Bowman *et. al.* 1973). This soil series consists of very deep, excessively drained sands derived from granitic alluvium. Permeability of this soil is very rapid; however, runoff is very slow to slow, and the erosion hazard is slight (Bowman *et. al.* 1973).

The area near the Qualcomm Stadium consists of flat terrain, previously filled with excavated and transported soil, paving, and dredge material (Bowman *et. al.* 1973).

Other soils mapped in this general area are described as Salinas clay loam with 2 to 9 percent slopes with a slight to moderate erosion hazard (Bowman *et. al.* 1973).

3.2 HYDROLOGY AND WATER QUALITY

Information within this section is derived from a variety of resources, including United States Army Corps of Engineers (ACOE) reports and other studies performed for projects proposed along the San Diego River.

REGIONAL WATERSHED CONDITIONS

The San Diego River watershed basin drains a 433 square-mile area in the western part of San Diego County (United States 1975). It is a pear-shaped watershed that is elongated in a northeast to southwest orientation. From the Cuyamaca Mountains, it flows southwesterly through Mission Valley and into the Pacific Ocean. The width of the basin varies from about seven miles at the mouth to approximately 14 miles in the Cuyamaca Mountains (United States 1975). The Pacific Ocean is the western border of the San Diego River watershed. Elevations within the watershed vary from sea level along the coast to 1,200 feet above mean sea level (AMSL) in the upper valleys, and to 6,515 feet AMSL at the summit of Cuyamaca Peak, the highest point on the boundary of the watershed (United States 1964). Important hydrologic resources in the San Diego watershed include water storage reservoirs and a large groundwater aquifer. Figure 10 shows the NRMP area within the San Diego River watershed.

Figure 8. Geology within the NRMP Area

Figure 9. Soil Series within the NRMP Area

Figure 10. The San Diego River Watershed and NRMP Area

The watershed of the San Diego River is bounded on the north and northwest by the San Dieguito River basin and the basins of several small coastal streams. It is bounded to the east by basins of streams flowing into the Salton Sea, and to the south by the Sweetwater River and small coastal streams flowing into San Diego Bay (United States 1975).

The San Diego River watershed has a mild subtropical climate, with fairly mild differences between summer and winter. A short wet season occurs during the winter. The National Weather Service operates 32 precipitation gages within San Diego County, and the County of San Diego collects rainfall data from another 85 precipitation stations. Records from the San Diego station are available since 1850, and provide the longest records in the San Diego River area (United States 1975). More than 70 percent of the annual precipitation occurs in the period from December to March (United States 1975). The distribution of mean annual precipitation within the basin varies from about 10 inches per year at the River mouth to about 35 inches at the Cuyamaca Mountains (Metropolitan Transit Development Board 1995).

Groundwater Unit Subareas

Within the central part of the San Diego River watershed is the Santee hydrologic subarea (State hydrologic unit number Z-3.A1). It is approximately 77 square miles and contains a small alluvial groundwater aquifer with approximately 55,000 acre-feet of storage (United States 1985). San Diego River Valley groundwater basin, including the project area, is located within the Santee subarea.

Hydrologic Subareas

The San Diego River watershed is divided into four natural subareas: the steep mountainous section of upper San Diego River; the upper San Diego River Valley; Mission Gorge; and Mission Valley, which is located between Mission Gorge and Mission Bay (United States 1975).

The upper San Diego River consists of rugged mountainous areas upstream of El Capitan and San Vicente dams. The principal tributaries of the San Diego River and its upper reaches are Boulder Creek, Cedar Creek, and the South Fork, which cut deep narrow canyons with occasional highland valleys before feeding into the San Diego River upstream of El Capitan Reservoir (United States 1975).

Approximately two miles below El Capitan Dam, the San Diego River emerges from a canyon into the upper San Diego River Valley. The upper San Diego River Valley is approximately 12 miles in length. Within the Valley, San Vicente Creek and Sycamore Canyon Creek enter the River from the north, and Los Coches and Forester Creeks enter the River from the south. Forester Creek traverses El Cajon Valley – a highly urbanized area. The average gradient of the San Diego River through the upper San Diego River valley is 20 feet per mile. Local tributaries in this part of the basin have an average gradient of 120 feet per mile (United States 1975).

Below the upper San Diego River Valley, the San Diego River flows through the Mission Gorge reach for approximately five miles. Mission Gorge, a short, narrow, segment of the San Diego River, was cut by the River through metavolcanic and granitic bedrock (San Diego County Water Authority 1992). Numerous small tributaries enter the River from the north and south near the Mission Gorge reach (United States 1975).

Downstream of the Mission Gorge segment, the San Diego River traverses Mission Valley for approximately ten miles before the River's terminus at the Pacific Ocean. The San Diego River formed Mission Valley by eroding through a coastal mesa. Principle tributaries into Mission Valley

are Murphy and Murray canyons, which both originate in the Kearny Mesa community of the City. Murphy Canyon drains approximately 12 square miles of the southeastern perimeter of the former mesa, and Murray Canyon drains approximately three square miles of the southern perimeter (United States 1975). From the south, Alvarado Canyon drains into Mission Valley from 14 square miles in eastern San Diego and western La Mesa (United States 1975). Development within Mission Valley has confined the River channel along most of its length, and modified the mouth of the River (Kleinfelder 2001).

RIVER HYDRAULICS

River Gradient and Physical Characteristics

The overall gradient for the San Diego River channel is 0.015 ft/ft (San Diego County Water Authority 1992). River slopes range from 30 feet per mile, near the mouth of the River, to over 1,000 feet per mile at the upper portion of the basin (United States 1975). Tributaries and segments of the main channel that are located upstream of the major dams (El Capitan and San Vicente) have steep slopes of approximately 0.030 ft/ft. Below the major dams, the main channel has milder slopes, except for the reach though Mission Gorge, which has a gradient of 0.009 ft/ft (Chang 1994a and San Diego County Water Authority 1992). The gradient of the Mission Valley area portion of the San Diego River, which is flat and urbanized, is 0.0002 ft/ft. Surface water in the Mission Valley area is slow moving or ponded (San Diego County Water Authority 1992).

Numerous ponds created by sand mining are a dominant physical feature of the San Diego River alluvial bed. From El Capitan and San Vicente dams to Mission Valley, sand pits are scattered throughout the riverbed. The depth of mining excavation varies from 10 to 80 feet, with an average of approximately 25 feet. Such sand pits cover more than 50 percent of the channel length within the mined area along the River. Sand mining induced changes in the river channel, such as the establishment of a pitted, saw-blade profile. It would take many large flood events to remove and reestablish the River to a new smooth equilibrium bed profile. Dips in the physical profile of the lower San Diego River usually correspond to sand pits caused by mining (Chang 1994a).

Hydraulic Structures

Hydraulic structures have substantial effects on the characteristics of flow and sediment transport for the San Diego River. Sixty percent on the total drainage area of the San Diego River is controlled by El Capitan and San Vicente reservoirs (Metropolitan Transit Development Board 1995), both of which are operated by the City Water Department. Generally, water releases from the reservoirs go into the water supply system for the region and do not affect the River channel. Infrequent water releases, however, which are performed to assist flood control and prevent reservoir spillage caused by storm activity on the upper portion of the watershed can cause scour in the downstream portions of the River channel (Chang 1994a).

El Capitan Dam, completed in 1935, is a hydraulic fill rock dam with an impervious clay core. It controls 190 square miles of the upper San Diego River drainage area. The reservoir capacity at the spillway crest (elevation 750 feet AMSL) is 112,800 acre-feet, which is more than six times the mean annual runoff of the San Diego River (United States 1975, Metropolitan Transit Development Board 1995, and Chang 1994a). The maximum release rate from El Capitan Dam is 1,600 cubic feet per second (cfs) (Metropolitan Transit Development Board 1995). Since the dam's completion, uncontrolled spillage has taken place in 1938, 1939, 1941, and 1980 when the water level exceeds the spillway crest.

San Vicente Dam, completed in 1943, is located on San Vicente Creek approximately two and one-half miles upstream of San Vicente's confluence with the San Diego River. It is a concrete gravity dam that controls runoff from 90 square miles of the San Vicente Creek drainage area (United States 1975). The reservoir capacity at the spillway crest (elevation 650 feet AMSL) is 90,200 acre-feet (United States 1975). San Vicente and El Capitan reservoirs are connected by a pipeline that enables transfer of water between them. Uncontrolled spillage has occurred from the San Vicente Dam in 1978, 1980, and 1983, but runoff has otherwise been contained since construction of the dam.

The Cuyamaca Reservoir is located on the headwaters of Boulder Creek, a tributary of the San Diego River. The earthfill dam was constructed in 1887. The reservoir contains a maximum storage of 11,600 acre-feet and controls runoff from twelve square miles (United States 1975). Cuyamaca Reservoir controls a small basin upstream of the El Capitan Reservoir and is presumed to have a minimal influence on floods occurring on the San Diego River (Metropolitan Transit Development Board 1995).

FSDRIP, approved in 1982 and constructed in 1989, has affected sediment transport along the lower San Diego River. The project includes three San Diego River crossings, at Mission Center Road, Camino del Este, and Qualcomm Way. The culverts under the roads reduce the flow velocity of the River, inducing deposition of sediment load from upstream. FSDRIP's alterations to the natural pattern of sediment transport have resulted in changes to the River channel (Metropolitan Transit Development Board 1995).

In addition to the reservoirs discussed above, there are numerous highway embankments and bridge piers across Murphy, Murray, and Alvarado canyons that affect the flow of the San Diego River. These structures are considered in the ACOE hydraulic analysis.

Hydraulic Conditions

The United States Geological Survey (USGS) operates three stream gage stations along the San Diego River: at El Capitan Dam, Fashion Valley, and near Santee.

The gage at El Capitan Dam (No. 11020600) covers a basin area of 188 square miles and has records from September 1970. The maximum recorded flow occurred on February 21, 1980, at 1,080 cfs (San Diego County Water Authority 1992).

The gage near Santee was originally located at the Old Mission Dam (formerly No. 110022500), but was relocated to Mast Boulevard in 1982 (currently No. 11022480). Records from the Old Mission Dam location had been available since 1912. By combining data from the two locations, 90 years of data are available from the Santee gage station. The area of the drainage basin at the present location is 368 square miles, representing 85 percent of the total area of the drainage basin. The recorded average discharge is 25 cfs and the average annual runoff is 18,100 acre-feet (San Diego County Water Authority 1992). The maximum discharge occurring at this location since the dams were complete is 9,590 cfs (Pryde 2002).

The Fashion Valley gage (No. 11023000), which began recording flow data in 1982, is located near the remains of a wooden bridge over the San Diego River, approximately 550 feet upstream of Fashion Valley Road. A previous gage at the same location recorded data from 1912 to 1916 (San Diego County Water Authority 1992).

FLOOD HAZARD

As shown in Table A, eight of the largest ten floods occurred prior to 1945, reflecting the impact dam construction has had on reducing the size of flood events. Indeed, completion of the El Capitan and San Vicente dams has substantially altered flood flow in the San Diego River. For instance, the maximum discharge recorded at the USGS stream gage near Santee before construction of the El Capitan and San Vicente dams was 70,200 cfs (in January 1916), while the maximum discharge recorded at the Santee stream gage after construction of the dams was 9,590 cfs (in March 1983) (Pryde 2001 and Metropolitan Transit Development Board 1995).

TABLE A

TWENTY LARGEST FLOOD EVENTS ON THE SAN DIEGO RIVER SINCE 1914

Rank of Flood Events	Maximum Volume (in cfs) [c]	Rain Year [a],[b]	Month of Flood	Rain Year Precipitation	Rain Year Rank
1	70,200	1915-16	January	12.55	24
2	45,400	1926-27	February	14.74	15
3	16,700	1921-22	December	18.65	3
4	14,200	1936-37	February	15.93	9
5	12,000	1917-18	March	8.04	[d]
6	9,590	1982-83	March	18.26	5
7	9,250	1940-41	April	24.74	1
8	7,400	1931-32	February	13.18	20
9	7,350	1937-38	March	9.72	[d]
10	6,010	1994-95	March	17.12	8
11	5,450	1997-98	February	17.78	7
12	4,540	1925-26	April	15.66	11
13	4,390	1951-52	January	18.16	6
14	3,960	1914-15	February	14.41	17
15	3,640	1990-91	March	11.79	25
16	3,460	1992-93	January	18.31	4
17	3,420 [e]	1979-80	February	15.72	10
18	3,400	1966-67	December	10.63	ave.
19	3,010 [e]	1977-78	January	18.71	2
20	2,900	1981-82	March	11.5	27

[a] Actual years covered by available data are 1914 to 2001.

[b] In California annual rainfall is measured from July 1 to the following June 30.

[c] cfs = cubic feet per second (at maximum flood flow).

[d] Annual precipitation for this year was below the mean.

[e] The peak run-off figures for January 1978 and February 1980 may be understated. It seems questionable that the peak flow of 1983 was three times that of 1978 or 1980. There was recording gage in place in the latter two years.

Source: P.R. Pryde, San Diego State University Department of Geography 2002.

The impact of dams on flood flow in the San Diego River is further evidenced by the February 21, 1980, flood event when inflow to El Capitan Reservoir was estimated as 40,000 cfs, while the outflow was only 1,080 cfs (Metropolitan Transit Development Board 1995). El Capitan Reservoir absorbed the entire flood volume without spilling.

A 100-year flood is a statistical estimation of the maximum flood size that is expected to occur for a river ten times in one thousand years. It is frequently utilized for planning flood protection measures. As determined by the ACOE in 1975, the estimated size of a 100-year flood for the San Diego River is 49,000 cfs. The Federal Emergency Management Agency (FEMA), however, uses the 36,000 cfs estimate developed by the ACOE prior to 1975 as the hydrologic basis for Flood Insurance Studies in the City. Thus, current agency regulations require that 36,000 cfs be used for studies reviewed by FEMA, including floodway analysis, and 49,000 cfs be used for studies reviewed by the City (Metropolitan Transit Development Board 1995).

HYDRAULIC CONDITIONS FOR THE LOWER PORTION OF THE NRMP AREA

From I-5 to SR-163, the San Diego River has the capacity to carry two to five-year frequency flood events but greater flows flood adjacent developments, including portions of the Riverwalk Golf Course, Fashion Valley Mall, the Town and Country Hotel (Metropolitan Transit Development Board 1995).

Surface and Groundwater Hydrology

The average surface water flow of the San Diego River for the time period between 1991 and 2001 is shown in Table B.

TABLE B

AVERAGE SAN DIEGO RIVER SURFACE WATER FLOW FOR 1991-2001

Year	River Flow (in cfs)											
	Jan	*Feb*	*March*	*April*	*May*	*June*	*July*	*Aug*	*Sept*	*Oct*	*Nov*	*Dec*
1991	26.1	37.0	444	30.8	7.45	3.04	6.11	7.03	1.60	10.9	4.50	34.5
1992	70.4	164	140	32.5	7.73	2.68	0.92	0.97	0.52	1.94	1.67	48.2
1993	683	458	156	59.6	15.7	15.3	3.85	2.71	1.56	2.78	17.4	18.4
1994	19.2	76.2	89.2	34.0	12.1	4.28	2.36	0.85	.077	.098	4.76	20.3
1995	297	143	404	64.8	40.0	19.6	7.07	2.95	1.53	1.16	8.56	12.5
1996	21.8	55.5	61.0	15.5	2.45	1.51	0.86	0.55	0.73	14.7	48.5	29.6
1997	125	30.6	15.6	9.31	2.60	1.74	1.44	0.92	8.88	2.36	19.0	44.2
1998	66.0	668	131	141	44.7	16.1	8.74	5.72	5.58	5.02	21.2	29.1
1999	44.4	26.6	22.3	45.0	8.16	3.94	1.87	1.68	1.71	1.30	1.69	5.9
2000	6.51	100	33.9	17.6	5.01	1.89	1.22	1.11	1.09	9.70	8.06	5.06
2001	64.8	76.4	51.6	26.5	7.07	3.56	1.95	1.27	1.12	-	-	-
Source: USGS Monthly Streamflow Statistics from the Fashion Valley Gage 2003												

Sediment

Sediment supply and removal determine how scour will occur on a river, because the presence or absence of sediment will alter the direction and velocity of water flow, thereby, dictating scour. Sediment delivery in the San Diego River is primarily related to the flood hydrograph, channel geometry, and sediment characteristics. In-stream sand mining and hydraulic structures in the lower San Diego River affect sediment delivery and the erosion pattern of the River, altering the channel bed configuration. Due to their impact on channel geometry, sand and gravel mining have had a major effect on the channel bed scour of the San Diego River. Future mining in the lower San Diego River, however, is considered unlikely since aggregate materials have mostly been depleted (Chang 2000).

In terms of effect on scour, FSDRIP is the most important hydraulic structure on the San Diego River (Chang 2000). The project, which is located along the River between SR-163 and Qualcomm Way, has three road crossings (at Mission Center Road, Camino del Este, and Qualcomm Way) that are designed to withstand 100-year floods. To withstand 100-year floods, the road crossings reduce the flow velocity of the River. In reducing the flow velocity, the project induces upstream sediment deposition, changing the natural pattern of sediment transport to result in River channel changes.

Groundwater

Groundwater flow in Mission Valley is generally parallel to the San Diego River in the center of the valley. At the edges of Mission Valley, groundwater flows toward the San Diego River. Groundwater on the south side of Mission Valley drains toward the north or northwest from the southern slopes of the valley toward the San Diego River. Closer to the River, the groundwater shifts westerly until flow is parallel to the River (Kleinfelder 2001).

The Mission Valley alluvial aquifer extends from Mission Gorge to the mouth of the San Diego River. It is comprised of unconsolidated sediments, principally silt and sand. The aquifer has a groundwater storage capacity of approximately 42,000 acre-feet. Recharge of the aquifer occurs primarily through percolation of San Diego River surface water through the sandy alluvium sediment. Precipitation and applied water also provide groundwater recharge through percolation. The Mission Valley aquifer ranges in depth from 20 feet in Murphy Canyon to 100 feet in Mission Valley (San Diego County Water Authority 1992).

Before the San Diego River was mined for sand, the depth of the Mission Valley aquifer was greater. Although much of the alluvium has been removed by sand mining, a steady year-round groundwater flow percolates through the alluvium. The groundwater is recharged during the rainy season. During the dry months, the stored groundwater is released to maintain the low flow of the River. Along the River, water table depth is indicated by the pond level in the sand pits. The steady groundwater flow aids water circulation in the River (Metropolitan Transit Development Board 1995).

Alluvial deposits within the Santee subarea occupy a southwesterly trending valley about 13 miles long and 1,500 to 5,000 feet wide. The shallow, highly productive aquifer is comprised of alluvial sediments such as silts, sands, and gravels, which are typically 75 feet deep. However, the aquifer is known to be more than 200 feet deep in the Lakeside area. The aquifer contains about 426,000 acre-feet of fill. Total water storage of the aquifer is estimated at 55,000 acre-feet (United States 1985, and San Diego County Water Authority 1992).

Groundwater in the alluvium is unconfined. Unconfined acquifers occur beneath a layer of porous layers of the earth's surface. Rainwater can seep more easily into unconfined aquifers than it can into confined acquifers, since fewer impediments block drainage into them, thus they are more susceptible to pollutants. The direction of groundwater flow within the Santee aquifer is westward, paralleling the course of the San Diego River. At Mission Gorge, the alluvial aquifer sediments contact hard metavolcanic and granitic rock outcrops at the surface, forcing groundwater to the surface and contributing substantial groundwater discharge to the base flow of the San Diego River just east of Mission Gorge (United States 1985, and San Diego County Water Authority 1992).

Underlying the more shallow aquifers previously discussed, a deep aquifer, composed of marine and terrestrial derived sandstone underlain by conglomerate, sandstone, and mudstone, occurs with a maximum depth of 1,000 feet (San Diego County Water Authority 1992).

WATER QUALITY

Water pollution is generally categorized by source and type. Pollution sources are either discrete conveyances, known as point sources, or nonpoint sources. Nonpoint source pollution results when water moves across the ground surface and picks up pollutants from roads, parking lots, lawns, agricultural fields, mining areas, construction sites, and other areas. These pollutants are carried into streams, rivers, and ground water, where they affect water quality and the beneficial uses of the waters (University of California, Division of Agriculture and Natural Resources 2002).

The Clean Water Act (CWA) contains two strategies for managing water quality: a technology-based approach to maintains a minimum level of pollutants using the best available technology; and a water quality-based approach evaluates the condition of surface waters and sets limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. Section 303(d) of the CWA bridges these two strategies (State Water Resources Control Board 2000). Section 303(d) requires that states make a list of waters that are not attaining standards after the technology-based limits are in effect. For waters on this list (and where the United States Environmental Protection Agency administrator deems they are appropriate), states are to develop total maximum daily loads (TMDLs) (State Water Resources Control Board 2000). The TMDL must account for contributions from point sources (federal permits for discharges) and contributions from nonpoint sources.

In California, the SWRCB has interpreted state law (Porter-Cologne Water Quality Control Act, California Water Code Section 13000 *et. seq.)* to require that implementation measures be included when TMDLs are incorporated into Basin Plans (water quality control plans) (State Water Resources Control Board 2000). The Porter-Cologne Act requires each Regional Board to formulate and adopt water quality control plans for all areas within its region. It also requires that a program of implementation be developed that describes how water quality standards will be attained (State Water Resources Control Board 2000).

Water quality is strongly influenced by the region's topography and climate. San Diego experiences, on average, 18 storm events per year which yield an average of 0.38 inches of rain in a nine-hour period (Woodward-Clyde 1995-1996). Due to the lack of rainfall in the county, the geologic conditions, and the terrain, streams are ephemeral.

The lower San Diego River is on the State Water Resources Control Board List of Water Quality Limited Segments (State Water Resources Control Board 1998, State Water Resources Control Board 2003a). The "pollutants/stressors" listed include fecal coliform, low dissolved oxygen, phosphorus, and total dissolved solids (TDS) (State Water Resources Control Board 2003a). For each of these pollutants the lower River fails to meet the Water Quality Control for the San Diego Basin (9) Plan objectives. Additional information on these pollutants, the sources, affected areas, and TMDL priorities is provided in Table C, based on the Draft 2002 List of Water Quality Limited Segments (State Water Resources Control Board 2003a) and the Staff Report Vol. III, Revision of the Clean Water Act Section 303(d) List of Water Quality Limited Segments, Water Body Fact Sheets Supporting the Section 303(d) Recommendations (State Water Resources Control Board 2003b).

TABLE C

WATER QUALITY INFORMATION FOR THE LOWER SAN DIEGO RIVER

Pollutant	Potential Sources	Data Used to Assess Water Quality	TMDL Priority	Estimated Area Affected
Fecal Coliform	Urban Runoff/Storm Sewers, Wastewater, Nonpoint and Point Source, and Sewage.	Intermittent sampling from 1998 to 2000 shows that 11 of 18 samples (61%) in both wet and dry weather had levels of fecal coliform in excess of the objection [400 Most Probable Number (MPN)/100 ml].	Low	12 Miles
Low Dissolved Oxygen (DO)	Urban Runoff/Storm Sewers, Bacterial Loading, Subsequent Decomposition of Organic Matter, Unknown Nonpoint Source, Unknown Point Source	Sampling in 1997 and 2000 showed DO concentrations to be below the objective of 6.0 mg/L in 76 of 84 samples (90%). Concentrations below the objective were measured at all 5 sampling points along the River. The average measured concentration was 4.87 mg/L and the median concentration was 4.48 mg/L. In addition, during the year 2000, all 5 stations were below the objective of 7.0 mg/L for more than 10% of the time.	Low	12 Miles
Phosphorus	Urban Runoff/Storm Sewers, Unknown Nonpoint Source, Unknown Point Source	Sampling in 1997 and 2000 showed phosphorus concentrations to exceed the objective for more than 10% of the time during a one-year period. A total of 87 exceedences were recorded for 112 samples (78%).	Low	12 Miles
Total Dissolved Solids (TDS)	Urban Runoff/Storm Sewers, Agriculture Runoff, Flow Regulation/Modification, Natural Sources and Anthropogenic Sources, (Imported Water, Evaporation, and Natural Salt), Unknown Nonpoint Source, Unknown Point Source	Sampling between 1997 and 2000 showed three locations along the River that exceeded the objective for more than 10% during a one-year period. The total number of exceedences was 67 out of 153 samples (44%). All 3 locations show a seasonal and increasing trend over the 3 years reviewed.	Low	12 Miles

Other than the 303(d) list and associated documents (*e.g.*, water body fact sheets, basin plan) little information is readily available on the water quality within the NRMP area. In addition, there is a lack of data on the locations of storm drains and related water quality. According to Project Clean Water, "constituents of concern" within the San Diego River watershed include coliform bacteria, TDS, nutrients, petroleum chemicals, toxics, and trash (Project Clean Water undated). During field surveys, considerable amounts of trash within the lower River, particularly west of the Admiral Baker Golf Course were observed. In the upper NRMP area less overall trash was observed, but at the eastern NRMP area boundary (along the boundary with Mission Trails Regional Park) the remnants of a non-functioning irrigation system were found within the River corridor. A spill of

what appeared to be a petroleum based chemical in the upper portion of the NRMP area near the western boundary of Mission Trails Regional Park was also observed.

3.3 STORM DRAIN OUTLETS

Figures 13a through 13i illustrate the location of storm drains and associated features in, and adjacent to, the San Diego River Natural Resources Management Plan area. The location of storm drain facilities presented in the figures was obtained from the SanGIS storm drain layer. SanGIS is a joint powers authority of the City and County of San Diego. The data in the figures is approximately ten years old and is the most current data available concerning the location of storm drains in the project area. Storm drains installed by development projects during the past ten years have not been incorporated into the SanGIS layer and are not reasonably available. The figures have been annotated to show additional storm drain features observed during the 2003 biological field surveys.

The storm drains convey runoff to the River channel from the adjacent areas north and south of the River. As shown on the figures, the majority of the storm drain facilities are located at the edges of the NRMP area. These facilities include headwalls, cleanouts, TDGates, and other "unknown" features. The only location where a storm drain crosses the River is immediately west of the SR 163 bridge (see Figures 11a-11i).

Figure 11a. Known Storm Drains within the NRMP Area

Figure 11b. Known Storm Drains within the NRMP Area

Figure 11c. Known Storm Drains within the NRMP Area

Figure 11d. Known Storm Drains within the NRMP Area

Figure 11e. Known Storm Drains within the NRMP Area

Figure 11f. Known Storm Drains within the NRMP Area

Figure 11g. Known Storm Drains within the NRMP Area

Figure 11h. Known Storm Drains within the NRMP Area

Figure 11i. Known Storm Drains within the NRMP Area

3.4 BIOLOGICAL RESOURCES

The description of existing biological resources within the NRMP area was compiled through a review of existing literature, examination of the California Natural Diversity Database (CNDDB) database records, consultation with local researchers, and 2002 and early 2003 field investigations conducted by Merkel & Associates.

M&A biologists conducted field investigations to identify existing biological resources within the NRMP area. Vegetation communities and slope exposures were surveyed on foot or in some cases from the perimeter of the habitat or an advantageous viewpoint. Vegetation communities within the study area were mapped on an aerial photograph and the site was examined for sensitive resources. Plant identifications were either resolved in the field or later determined through verification of voucher specimens. Exotic floral species locations had been mapped under a previous effort, but were digitized during development of the NRMP. Wildlife species detections were determined through direct observation (aided by binoculars), identification of vocalizations, or through observation of sign. Specific survey methodologies employed for wildlife detection included turtle trapping, seining, and avian point counts. Turtle trapping was undertaken in the lower river, immediately upstream of the westernmost trolley crossing bridge. Seining was undertaken just east of the Fashion Valley Road bridge crossing and in the area of the Morena Bridge crossing. Avian point counts were conducted within the NRMP study area from Mission Trails Regional Park west to Interstate-5. Census/count stations were established "semi-systematically" with a random starting point along the study area. Stations are normally established between 250 and 500 meters apart in order to ensure independence of each station. Pre-survey investigations ("trial run") spaced at 250 meters indicated that greater spacing between stations was necessary to achieve independence. Stations (n=25) were therefore set up at 500-meter intervals beginning at the random starting point. Due to restriction of access, some stations (n=2) had to be eliminated. Restriction of access included exclusion from a property, the presence of substantial open water or areas where marsh existed with limited adjacent riparian scrub or forest habitats. Thus, the overall pattern of stations is not uniform throughout the entire study area and has been termed "semi-systematic" in approach. Ultimately, 23 point count stations were established and utilized between Interstate 5 and the westernmost access point Mission Trails Park.

Ralph *et al*. (1995) recommend spending 5 to 10 minutes at each sampling station. The lesser 5-minute period is recommended if travel between stations is less than 15 minutes. For our study, travel time between stations was highly variable, based on movement constraints and the presence or absence of homeless encampments. In an effort to increase the minutes of observation and because at times travel between count stations may exceed 15 minutes, we utilized 10-minute, unlimited radius point counts at each station.

One survey was conducted each month during the 2002 breeding season (May, June, and July). Counts were conducted in the morning between the hours of just after sunrise to 13:30, although the majority of counts were completed prior to 11:00. While observers were teamed (2 people) for safety, counts were conducted by a single observer. The river was divided into 3 sections so that the entire study area could be covered in a single day. Adverse weather conditions such as heavy rain, fog, and high winds were avoided due to the lowered delectability of most birds (Robbins 1981). Counts began immediately upon reaching the census station and no attracting devices were utilized. Standardized field forms were used for data collection during point counts. The form required the data collector to indicate the species, habitat (unless flying over), and any indications of breeding

status or age of the individual. Ambient noise level was assessed and recorded using a standardized scale (1-4), in which 1 equals "no ambient noise" and 4 equals "cannot conduct point count due to noise interference". Weather conditions such as cloud cover, wind, and temperature were recorded.

Between point count stations, observers mapped sensitive avian species or species of management concern (*e.g.*, Brown-headed Cowbirds). At and between point count stations, observers mapped or made note of mammal signs, and any faunal species of management concern. Notes were also made on the presence of significant habitat disturbance, burned areas, trash, and transient encampments. In some areas where stations were separated by greater than 500 meters, separate (non-point count) surveys were conducted from kayak and all species were recorded with species totals.

We used frequency of occurrence to assess species richness (number of species) and relative bird abundance along the study corridor. Descriptive analysis and chi-square analysis was used to compare the number of individuals and species at each station as well as between stations.

The scientific nomenclature used in this plan is from the following standard references: vegetation communities, Holland (1986) and Oberbauer (1996); flora, Hickman (1993); butterflies, Opler and Wright (1999); birds, American Ornithologists' Union (2002); reptiles, Crother (2000/2001); and mammals, Wilson and Reeder (1993).

VEGETATION COMMUNITIES

Eighteen vegetation categories and sub-categories were delineated based upon the Holland (1986) and/or Oberbauer (1996) classification system within the study area: Diegan Coastal Sage Scrub (including a sub-category of Baccharis Scrub); Southern Willow Scrub; Southern Cottonwood Willow Riparian Forest; Mule Fat Scrub; Freshwater Marsh; Alkali Marsh/Cismontane Alkali Marsh; Floating Aquatic Vegetation; Open Water; Non-native Grassland; Non-native Vegetation/Exotics (including the sub-categories of Giant Reed, Pampas Grass, and Tamarisk Scrub); Eucalyptus Woodland; Disturbed Lands; Non-vegetated Channel (mapped as "Rip-Rap"); and Urban/Developed. Vegetation communities and exotics are illustrated on Figures 12a through 12i.

Diegan Coastal Sage Scrub

Except for areas of steep slope in Mission Gorge, most of the sage scrub growing in the plan area on the flanks of the San Diego River is disturbed. The floodplain was regularly scoured by major storm flows in the past, and subsequent agricultural and grazing activities denuded most of Mission Valley during the Spanish period and post Civil War era. A number of pre-1900 photographs in the collection of the San Diego Historical Society clearly indicate that Mission Valley was severely degraded well before urban development arrived. Tens of thousands of cattle associated with the San Diego Mission were probably responsible for the initial clearing of most of the Diegan coastal sage scrub from the Mission Valley floodplain. As a result, the remaining sage scrub habitat usually has few native annuals, because the shrub canopy is disturbed and does not provide the protective cover present in more pristine habitat. Principal shrubs present usually include only the most common sage scrub elements, such as California sagebrush (*Artemisia californica*), interior flat-top buckwheat (*Eriogonum fasciculatum* var. *foliolosum*), black sage (*Salvia mellifera*), white sage (*Salvia apiana*), toyon (*Heteromeles arbutifolia*), laurel sumac (*Malosma laurina*), and occasionally California adolphia/spinebush (*Adolphia californica*). The understory may include ubiquitous native annuals such as California filago (*Filago californica*), eucrypta (*Eucrypta chrysanthemifolia* var.

chrysanthemifolia), Bishop's lotus (*Lotus strigosus*), dwarf stonecrop (*Crassula connata*), fiddleneck (*Amsinckia intermedia*), and mock celery/parsley (*Apiastrum angustifolium*).

The rugged terrain within Mission Gorge has allowed some native Diegan coastal sage scrub to remain relatively undisturbed. Moreover, the exposure of rock outcrops has allowed several rock-dwelling species to gain a vigorous foothold, such as coastal dudleya/lance-leaf dudleya (*Dudleya lanceolata*) and chalk-lettuce/chalk dudleya (*Dudleya pulverulenta*), a large, succulent-leaved perennial.

Baccharis Scrub
This sub-community was delineated where disturbed areas had recovered beyond the initial non-native grassland phase and a pre-dominance of either coyote bush (*Baccharis pilularis*) and/or broom baccharis (*Baccharis sarothroides*) currently exists.

Southern Willow Scrub

Southern willow scrub is typically dominated by arroyo willow (*Salix lasiolepis*). Other species that may occur in this habitat include red willow (*Salix laevigata*), lance-leaf willow (*Salix lucida* ssp. *lasiandra*), and Goodding's black willow (*Salix gooddingii*). The gradient of the River will, to some extent, dictate the types of trees present along its banks. A steeper gradient along a narrower floodplain (*e.g.*, in Mission Gorge), in concert with a perennial flow, can provide optimal conditions for southern willow scrub. Fast-growing willows (particularly arroyo willow) can eventually displace mule fat and other smaller shrubs growing beneath, either through microclimatic changes such as severe shading, or by direct displacement as the willows physically expand their dimensions. Monotypic stands of a specific willow species sometimes grow along linear reaches of the River where unique growing conditions for that species are optimized.

Willows also grow particularly well along sandbars amid braided channels where the shallow gradient of the River and a broader floodplain are present. Under these conditions, Goodding's black willow, a species capable of growing substantially taller than arroyo willow, may occur in substantial numbers. Since the sandbars can be physically altered by floodwaters, the long-term stability of these microhabitats may change substantially from decade to decade.

Figure 12a. Vegetation Communities/Types within the NRMP Area

Figure 12b. Vegetation Communities/Types within the NRMP Area

Figure 12c. Vegetation Communities/Types within the NRMP Area

Figure 12d. Vegetation Communities/Types within the NRMP Area

Figure 12e. Vegetation Communities/Types within the NRMP Area

Figure 12f. Vegetation Communities/Types within the NRMP Area

Figure 12g. Vegetation Communities/Types within the NRMP Area

Figure 12h. Vegetation Communities/Types within the NRMP Area

Figure 12i. Vegetation Communities/Types within the NRMP Area

Southern Cottonwood Willow Riparian Forest

Several centuries of cumulative impacts from historical land uses along the River, including cattle grazing, leather tanning, farming, dairy production, alterations to regulate flooding, infrastructure improvements for freeways and utility lines, displacement of habitat for commercial and office construction, and most recently residential apartment and town-home building, have severely altered the floodplain and changed the riparian character of the River within the NRMP area. Prior to these human-induced changes, the vegetation community along the River was largely dictated by the seasonal flow of the River and the catastrophic changes wrought by massive floods that would occasionally scour the floodplain. During major flood and prior to the installation of upstream reservoirs, many of the mature cottonwood, sycamore, and willows growing on the River fringe were uprooted and displaced by the high volumes of water that coursed ocean-ward. In their place, seral wetland habitats grew and gradually matured until a new series of floods re-set the entire process.

The San Diego River environment is still subject to occasional flooding, but the native riparian vegetation within the floodplain no longer functions in a typical sequential process of re-growth and maturation. As a result, there is a tendency for the tree cover to maintain a mature canopy height where repetitive human impacts are not recurring. Large Fremont cottonwood (*Populus fremontii fremontii*), western sycamore (*Platanus racemosa*), and Goodding's black willow are particularly well developed south and west of Qualcomm Stadium, as well as in Mission Gorge. The substantial width of the riparian habitat in these areas also allows for a diverse understory with variably tiered smaller trees, shrubs, and herbaceous vegetation.

Substantial amounts of herbaceous vegetation are found in more mesic areas beneath the southern cottonwood willow riparian forest habitat. Species present in some areas include several regionally uncommon (but not federally or state sensitive) plants such as whorled marsh pennywort (*Hydrocotyle verticillata*), as well as more abundant wetland species such as great marsh evening primrose (*Oenothera elata hirsutissima*), Dombey's spike-sedge (*Eleocharis montevidensis*), and pale spike-sedge (*Eleocharis macrostachya*). All of these grow vigorously in wet sand and semi-shaded conditions adjacent to relatively stable watercourses. Particularly abundant, growing in shallow water and on wet mud, is water cress (*Rorippa nasturtium-officinale*), a native of Europe that under pristine water conditions is edible.

Mule Fat Scrub

Mule fat (*Baccharis salicifolia*) is often an abundant shrub growing throughout riparian corridors. It is a bit hardier than willows and cottonwoods; insofar as, it can pioneer more easily in broad expanses of sandy alluvium deposited during major flood events. It sometimes forms monotypic stands in particularly arid (*i.e.*, seasonally limited) reaches of deep fluvial sands devoid of substantial nutrients, or backwater areas of the River that might only receive sizeable flows during peak periods of rainfall. Small tributaries of the River with limited watersheds often are restricted to mule fat and an occasional small willow shrub cover.

A second species often associated with Mule Fat Scrub is narrow-leaved willow (*Salix exigua*), a shrubby plant that shows a proclivity for growing in hot open areas of deep sand. Narrow-leaved willow can thrive in dense, almost impenetrable masses, as its main stems do not attain the girth of most trees, and its limited foliage allows many willows to grow in close proximity. Cuttings of this

small willow can often be easily established or jump-started with temporary irrigation in suitable habitat.

Coastal and Valley Freshwater Marsh

Many locations along the San Diego River have been historically mined for sand. Larger sand-mining operations have left well-established ponds along the riverbed, which are usually fringed with broad-leaved cattail (*Typha latifolia*) and California bulrush (*Scirpus californicus*). Freshwater marsh can form fairly quickly, and even relatively recent, deeply scoured locations along the River can in-fill with cattail over several years. Ponds are particularly well developed along the San Diego River in the vicinity of the Friars Road bridge.

Freshwater marsh also grows under more natural conditions in areas of almost level terrain where water tends to stand for substantial periods of time. As a result, numerous locations along the River include linear swaths of this vegetation, often so thoroughly intermixed with riparian forest or willow scrub, that smaller tracts of marsh may not be separately mapped. There is a tendency for freshwater marsh to gradually evolve into willow scrub, as sandy alluvium is cumulatively carried into the area from upstream, raising substrate elevations and creating a more stable habitat with willows as the dominant species evolves.

Alkali Marsh/Cismontane Alkali Marsh

Cismontane alkali marsh is not as prominent along this riparian corridor as it is along the Otay River and the Tijuana River to the south. In general, salt marsh is under the influence of ocean tides and the repetitive influx of seawater; whereas, alkali marsh has a steady input of freshwater laden with salts leached from riverine areas upstream. This habitat consists of southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*) and San Diego marsh elder (*Iva hayesiana*).

Open Water

Broad areas of open water are frequently the result of focused sand-mining operations or borrow pits. While freshwater marsh usually thrives on the embankments of these open water areas due to the permanence of the water source, open water habitat is generally sparsely occupied by flowering plants. Several species of pondweed (including *Potamogeton pectinatus*) may float on the water surface or in shallow waters near the surface.

Areas mapped as floating aquatic vegetation consist of willow water-weed (*Ludwigia hexapetala*), which occurs on the surface of open water. The San Diego River Invasive Exotic Weed Eradication Master Plan refers to this species as *Ludwigia peploides* and classifies it as an exotic species; however, based upon recent survey work and the fact that *Ludwigia peploides* is a native species and relatively uncommon, it is believed this species was misidentified. *Ludwigia hexapetala*, which is also a native species, is fairly common, and is found in relatively large areas along the River. Another plant that may occur in dense concentrations floating on the water surface is Pacific mosquitofern (*Azolla filiculoides*). While this species may resemble algae, it is a primitive flowering plant. Several mat forming algae, such as Chara (*Chara vulgaris*) may also be present. Native duckweeds (*Lemna* sp.) include a handful of microscopic free-floating plants that are favorite food items for several duck and grebe species.

Non-native Grasslands

The lower reaches of the San Diego River currently retain relatively few expanses of non-native grasslands. More grassland habitats occurred in the Mission Valley area during the late 1960s when Mission Valley still supported some dairies and contained little development within the floodplain due to occasional severe flooding. Open fields from that era have now largely been replaced by commercial development, freeway infrastructure, and more recently, townhouses and apartment complexes. A few sites still support flat or graded terrain (that may include substantial fill), where future development is usually anticipated. As these fields lie fallow, they slowly develop a cover of non-native grasses and herbaceous Eurasian weeds that are better adapted to these disturbed conditions than are most native species. These non-native grasses include red brome (*Bromus madritensis* ssp. *Rubens*), wild oat (*Avena barbata*), soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*), foxtail fescue (*Vulpia myuros* var. *hirsuta*), annual bluegrass (*Poa annua*), and hare barley (*Hordeum murinum* ssp. *leporinum*). Interspersed within these non-native grasses are invasive forbs, such as garland chrysanthemum (*Chrysanthemum coronarium*), horseweed (*Conyza canadensis*), tocalote (*Centaurea melitensis*), Crete hedypnois (*Hedypnois cretica*), and smooth cat's-ear (*Hypochoeris glabra*). A few weedy native species such as telegraph weed (*Heterotheca grandiflora*) can also be locally common. With time, several native shrubs may pioneer on these disturbed pads, including broom baccharis, coyote bush, and deerweed (*Lotus scoparius* ssp. *brevialatus*).

Non-native Vegetation/Exotics

Exotic vegetation was delineated within the NRMP area under a previous study by Burkhart Environmental Consulting and Kelly & Associates (2002). The San Diego River Invasive Exotic Weed Eradication Master Plan (Burkhart Environmental Consulting and Kelly & Associates 2002) specifically identifies local non-native infestations. The results contained in the San Diego River Invasive Exotic Weed Eradication Master Plan regarding the distribution of invasive exotics should be considered an essential supplement to the overview provided herein. Specific exotic species mapped by Burkhart Environmental Consulting and Kelly & Associates were transferred into a GIS database by KTU+A and are included on the NRMP area vegetation maps. Where an area was dominated by exotic vegetation, it was designated as "Exotics", which is comparable to Oberbauer's Non-native Vegetation category, but it is not intended to include any of the sub-categories under it. The exotic species mapping effort selected species for mapping based on their tendency to be successful invaders and to out-compete native riparian species (Burkhart Environmental Consulting and Kelly & Associates 2002). In addition, any significant infestation of other non-natives with potential to be invasive was mapped (Burkhart Environmental Consulting and Kelly & Associates 2002). These species include giant reed (*Arundo donax*), Brazilian pepper tree (*Schinus terebinthifolius*), castor-bean (*Ricinus communis*), English ivy (*Hedera helix*), evergreen ash (*Fraxinus udhei*), fennel (*Foeniculum vulgare*), Mexican fan palm (*Washingtonia robusta*), canary island date palm (*Phoenix canariensis*), and pampas grass (*Cortaderia jubata*).

Areas mapped as exotics on Figures 12a through 12i include horticultural plantings commonly associated with residential developments and office parks in Mission Valley. These aesthetically-inspired plantings have some limited wildlife value, particularly for migrating birds, but are not comparable to native vegetation. Among the more common tree/shrub species utilized in landscaping are various pines (*Pinus* sp.), palms, acacias (*Acacia* sp.), oleander (*Nerium oleander*), walnut (*Juglans* sp.), myoporum (*Myoporum* sp.), mission olive (*Olea europea*), ash (*Fraxinus* sp.),

and jacaranda (*Jacaranda* sp.). Ground covers may include many different species of iceplants (Aizoaceae Family) and turf grasses, ivy, broad-leafed daisies (Aster Family), cacti, succulents (Crassulaceae Family), iris, and lilies. Some of these plants, particularly palms and bulbs, are readily established in adjacent natural wetland habitats, either through direct plantings or via seed, and can become noxious pest species.

Among the most troublesome of the exotic species mapped are giant reed, pampas grass, and tamarisk. These species occur in relatively large stands along the San Diego River, and thus, were mapped separately from the rest of the non-native vegetation/exotic habitat. The stands of giant reed and pampas grass, as well as tamarisk scrub are described in more detail below.

Giant Reed

Giant reed resembles bamboo, and it can easily reach the heights of mature willow trees. Massive efforts have been undertaken within other regional watersheds to rid drainages of this species. Where infestations are dense, giant reed can displace most of the native riparian trees and shrubs, and substantially alter the microclimate within a drainage by capturing much of the groundwater near the soil surface. Dense growth of Giant Reed greatly increases the available fuel for wildfires near urban areas, which allows for successful post-fire regeneration of this species (Bossard *et. al* 2000).

Pampas Grass

Pampas grass is also a pernicious weed. Its tall, feathery plumes can be readily observed within numerous wetland drainages in the region, as well as on hillsides where natural seeps or irrigation provide sufficient water for its growth and expansion. This species produces millions of seeds that develop without pollination. It is an aggressive colonizer that competes with and displaces native vegetation.

Tamarisk Scrub

Tamarisk scrub is a sub-set of Non-native Vegetation/Exotics and describes areas dominated by one of several *Tamarix* species. Tamarisk, also known as saltcedar, is a native of the Mediterranean region of Europe and portions of Asia. Tamarisk is very successful in proliferating through seed production and distribution. Trees reach maturity within a single year and are generally capable of producing seed the year following establishment. Trees grow rapidly and can achieve robust shrub sizes and heights of 15 to 20 feet within as little as three to four years. In dense infestations, the growth of trees is slowed. While tamarisk is generally considered to be a relatively shrubby tree, some robust specimens may attain heights of as much as 40 feet. Tamarisk Scrub typically becomes established following disturbance, when this invasive shrub/tree can out-compete native species. Once established, tamarisk resists drought better than native cottonwoods. While efficient at tapping limited water supplies, tamarisks are not conservative when it comes to evapotranspiration and consume as much or more water than most native riparian species. A single tamarisk tree of average size may extract as much as 200 gallons of water in a single day. Tamarisk transpires the weight of its foliage every hour at 80^{o}F (Stevens 2000). As tamarisk stands mature, their extremely high water loss tends to lower water tables to levels that are below the rooting zone of obligate phreatophytes, such as native cottonwoods and willows, resulting in their demise (DeLoach *et al.* 2000). It is for these reasons that tamarisk is considered one of the more problematic exotic species found along the San Diego River, which is why it has been mapped separately.

Eucalyptus Woodland

Eucalyptus were imported into San Diego County in substantial numbers in the late 19th and early 20th century. Thereafter, a number of local nurseries sought to meet the commercial demand for these quick-growing, relatively drought-tolerant trees. A handful of species, of the several hundred Australian eucalyptus available for propagation, were found to grow extraordinarily well in San Diego Mediterranean climate. Species found along the San Diego River include red ironbark (*Eucalyptus sideroxylon*), silver dollar gum (*Eucalyptus polyanthemos*), Tasmanian blue gum (*Eucalyptus globulus*), sugar gum (*Eucalyptus cladocalyx*), red gum (*Eucalyptus camaldulensis*), and lemon-scented gum (*Eucalyptus citriodora*). Interest in planting these trees has waned somewhat in recent years due to their easily fractured limbs, the difficulty of growing ground cover beneath them (due to allelopathic toxins in the eucalyptus leaves that discourage competing plant species), their flammable nature, and their invasive tendency to spread downstream along riparian corridors. Nevertheless, stands of these trees have been planted at numerous locations along the periphery of the San Diego River, and in some cases, have displaced native riparian habitat. While some raptor nesting may occur in eucalyptus, these trees integrate poorly into native vegetation.

Disturbed

Disturbed habitats are neither dominated by exotic vegetation nor do they support substantial amounts of native vegetation. This category includes unvegetated areas under bridges, dirt roads, or areas cleared through mechanical means or disturbance from human foot traffic.

Non-vegetated Channel/Rip-Rap

Several major flooding episodes over the last three decades in Mission Valley have underscored the problems associated with concentrating urban lands in close proximity to a floodplain. As a result of flood control efforts, short concrete-lined channels occur within Mission Valley, typically in association with underpasses. Areas of the River have also been lined with rip-rap, to maintain the river banks and provide for stabilization and flood control. These areas typically remain unvegetated.

Urban/Developed

Urban lands are those where development has occurred and native vegetation has been replaced by hardscape and irrigated landscapes.

FLORAL RESOURCES

The floral resources of the NRMP area reflect the area's context within an urban landscape; thus, in many areas, native flora formerly present within the River Valley has been displaced by non-native species introduced through historic and current land uses within and adjacent to the NRMP area and from upstream. However, native flora characteristic of coastal riparian habitats and adjacent uplands persists within the less disturbed portions of the NRMP area. Floral species detected within the NRMP area are provided within Appendix A.

ZOOLOGICAL RESOURCES

A checklist of invertebrates, fish, amphibians, reptiles, birds, and mammals known from the NRMP area is provided in Appendix B. Additional details regarding sensitive species, including locations within the NRMP area are provided in the "Sensitive Species" section later in this chapter.

Invertebrates

Gray hairstreak (*Strymon melinus*), Behr's metalmark (*Apodemia virgulti*), Acmon blue (*Icaricia acmon*), western tailed blue (*Everes amyntula*), cabbage white (*Pieris rapae*), and common white (*Pontia protodice*) were observed in upland or urban habitats on-site. In addition, California sister (*Adelpha bredowii*), red admiral (*Vanessa atalanta*), Lorquin's admiral (*Basilarchia lorquini*), mourning cloak (*Nymphalis antiopa*), western tiger swallowtail (*Papilio rutulus*), and pale swallowtail (*Papilio eurymedon*) were observed within the riparian habitats on-site. Other generalist species, including west coast lady (*Vanessa anabella*), and monarch (*Danaus plexippus*) also occur in the area. Surveys were not completed for the quino checkerspot butterfly (*Euphydryas editha quino*) because the project site does not contain appropriate habitat and lies outside of the recommended survey areas described in the current survey protocol for the species (USFWS 2002 and USFWS 2003). Other invertebrate species were detected in open water and include swamp crayfish (*Procambarus clarki*) and glass shrimp (*Natantia* sp.).

Fish

Fish species observed in the San Diego River included mosquitofish (*Gambusia affinis*), largemouth bass (*Micropteris salmoides*), green sunfish (*Lepomis cyanellus*), and common carp (*Cyprinus carpio*). Other non-native species that were not detected during the surveys but may occur in the River include Redear sunfish (*Lepomis microlophus*), black crappie (*Pomoxis nigromaculatus*), White crappie (*Pomoxis annularis*); various catfish species, brown bullhead (*Ameiurus nebulosus*), black bullhead (*Ameiurus melas*), and yellow bullhead (*Ameiurus natalis*), and bluegill (*Lepomis macrochirus*). Although striped mullet (*Mugil cephalus*) was the only native species observed, other common native brackish fish species such as, California killifish (*Fundulus parvipinnis*), staghorn sculpin (*Leptocottus armatus*) and some flatfish are expected to occur in the most western portion of the River.

Amphibians

Pacific chorus frog (*Pseudacris regilla*) was the only native amphibian detected during the recent surveys; however, nocturnal investigations of riparian habitats were not conducted. Another native species expected to occur in the area is the western toad (*Bufo boreas*). Bullfrog (*Rana catesbeiana*), a problem exotic species, was detected in several locations throughout the River.

Although not detected on site, garden slender salamander (*Batrachoseps major major*) may occur in the riparian habitat. The presence of fallen logs, sporadically found in the woodland understory along the River, is an important microhabitat for these species.

Reptiles

Lizards observed within the NRMP area were limited to western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), and orange-throated whiptail (*Cnemidophorus hyperythrus*). Both Side-blotched Lizard (*Uta stansburiana*) and Coronado Skink (*Eumeces skiltonianus interparietalis*) are also expected within the area.

Additional reptiles recorded during the recent surveys include several turtle species. Of note was the observation of both adult and juvenile red-eared slider (*Trachemys scripta elegans*). A snapping turtle (*Chelydra serpentina*) was observed downstream from Mission Gorge Road. Although not detected, southern Pacific pond turtle (*Clemmys marmorata pallida*) may also occur.

Recorded snakes trapped or observed by Lawrence Klauber (unpublished notes) confirm the presence of the following reptile species within the San Diego River and Mission Valley region: coastal rosy boa (*Lichanura trivirgata roseofusca*), western threadsnake (*Leptotyphlops humilis*), southern Pacific rattlesnake (*Crotalus viridis helleri*), red diamond rattlesnake (*Crotalus exsul*), speckled rattlesnake (*Crotalus mitchelli*), western blackhead snake (*Tantilla planiceps*), nightsnake (*Hypsiglena torquata*), two-striped garter snake (*Thamnophis hammondii*), long-nosed snake (*Rhinocheilus lecontei*), common kingsnake (*Lampropeltis getula*), California kingsnake (*Lampropeltis getula californiae*), San Diego gophersnake (*Pituophis catenifer annectens*), glossy snake (*Arizona elegans*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), California striped racer (*Masticophis lateralis lateralis*), coachwhip (*Masticophis flagellum*), yellow-bellied racer (*Coluber constrictor mormon*), and San Diego ring-necked snake (*Diadophis punctatus similis*).

Birds

Seventy-five species of birds were observed within the San Diego River during the 2002 point count surveys. Additional species are known from or have been recorded within the study area. The majority of species observed are either specifically associated with riparian and marsh systems, or are generalist species found in numerous habitats throughout the San Diego region. One sensitive species detected was the federally endangered least Bell's vireo (*Vireo bellii pusillus*). Brown–headed cowbirds (*Molothrus ater*) were document in most locations where least Bell's vireos were documented. Other riparian species noted, were black-headed grosbeak (*Pheucticus melanocephalus),* common yellowthroat (*Geothlypis trichas*), yellow-breasted chat (*Icteria virens*), yellow warbler (*Dendroica petechia*), warbling vireo (*Vireo gilvus*), as well as five more species of warblers, five species of flycatchers, and two species of woodpeckers. Raptor species included Cooper's hawk (*Accipiter cooperii),* red-shouldered hawk (*Buteo lineatus),* red-tailed hawk (*Buteo jamaicensis*), and American kestrel (*Falco sparverius*). Several subspecies of willow flycatcher migrate through the San Diego River watershed and it is possible that federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*) occurs on-site as a short-term migrant, but no breeding individuals were detected.

Few upland bird species were detected, presumably due to the disjunct, disturbed nature of the upland habitat surrounding the River. The few upland species detected included California towhee (*Pipilo crissalis*), canyon wren (*Catherpes mexicanus*), and rock wren (*Salpinctes obsoletus*). It is worth noting that both wren species were observed in a relatively undisturbed area immediately west of Mission Trails Regional Park. Additionally, western bluebirds (*Sialia mexicana*) were observed

utilizing on-site areas around the Admiral Baker Golf Course. Turkey vultures (*Cathartes aura*) were consistently observed in the eastern portion of the site.

Species observed within the NRMP area but for which the NRMP area would not constitute primary habitat included double-crested cormorant (*Phalacrocorax auritus*), Caspian tern (*Sterna caspia*), and western gull (*Larus occidentalis*). These species were likely tied to the River due to its close proximity to the coastal waters and were often observed in flight. Double-crested cormorants utilized high wire telephone lines, which span portions of the River, for roosting. As opportunistic feeders, gull species scavenged for food in the business parking lots adjacent to the River.

Nests of the following species were identified on or adjacent to the site: red-winged blackbird (*Agelaius phoeniceus*), lesser goldfinch (*Carduelis psaltria*), Cooper's hawk, red-tailed hawk, and red-shouldered hawk. While a number of other observed species certainly breed within the NRMP area, their nest sites were not detected or recorded as the 2002 surveys did not include specific nest searching efforts.

Of particular note, was the detection of the Swainson's thrush (*Catharus ustulatus*) on June 18, 2002, in the stretch of the River that is east of the Interste-15 and west of Fairmont Avenue. This species is a common visitor in the spring and a fall migrant, but it is a rare summer resident (Unitt 1984). This species prefers coastal lowland areas with dense undergrowth and is confined to these areas in the summer. The riparian woodlands of the San Diego River serve as suitable habitat, and a small number of Swainson's thrushes have been previously documented in the River during the summer.

Avian species of management concern include both sensitive and/or MSCP covered species, raptors, and birds that may need to be managed due to their effects on the ecology of the NRMP area (*e.g.*, brown-headed cowbird). The locations where these species were detected during 2002 fieldwork are displayed on Figures 13a through 13i.

Species not observed during 2002 work, but previously recorded on-site, include osprey (*Pandion haliateus*), white-tailed kite (*Elanus leucurus*), Virginia rail (*Rallus limicola*), light-footed clapper rail (*Rallus longirostris levipes*), and tricolored blackbird (*Agelaius tricolor*).

Figure 13a. Avian Species of Management Concern

Figure 13b. Avian Species of Management Concern

Figure 13c. Avian Species of Management Concern

Figure 13d. Avian Species of Management Concern

Figure 13e. Avian Species of Management Concern

Figure 13f. Avian Species of Management Concern

Figure 13g. Avian Species of Management Concern

Figure 13h. Avian Species of Management Concern

Figure 13i. Avian Species of Management Concern

Mammals

Thirteen species of terrestrial mammals were either directly observed or indirectly detected by tracks, scat, nests, or other sign. In addition, a number of bat species have been detected within the NRMP area. A number of resident mammals, however, cannot be detected without trapping. California ground squirrel (*Spermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), brush rabbit (*Sylvilagus bachmani*), and desert cottontail (*Sylvilagus audubonii*) scat were observed throughout the site. The presence of woodrat (*Neotoma* sp.) was evident by the appearance of their very large stick nests, which were found high along the banks of the River. Southern mule deer (*Odocoileus hemionus*) scat and tracks were noted in the most easterly portion of the site and two does were observed during the 2002 surveys in this same area. Coyote (*Canis latrans*) and fox, presumably gray fox (*Urocyon cinereoargenteus*), were determined to use the site by the presence of scat, tracks, and/or by direct observation. Paw prints of raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis)* were recorded from the muddy trails paralleling the River.

Domestic cat (*Felis catus*) and domestic dog (*Canis familiaris*) were both documented along the River. Virginia opossum (*Didelphis virginiana*) are also expected to occur on-site. Both bobcat (*Lynx rufus*) and mountain lion (*Felis concolor*) have been observed upstream of the NRMP area, within or adjacent to Mission Trails Regional Park. No evidence of large cats was detected during 2002 biological surveys of the NRMP area, but either species could occasionally utilize the easternmost NRMP area during more wide-ranging movements. Neither species is expected in the western portion of the NRMP area.

Small mammals cannot be identified in a project area with complete certainty without extensive trapping efforts. However, based on detection of sign and the presence of suitable habitats the following species are known or expected to be present within the NRMP area California vole *(Microtus californicus*), house mouse (*Mus musculus*), western harvest mouse (*Reithrodontomys megalotis*), black rat (*Rattus rattus*), and deer mouse (*Peromyscus maniculatus*).

There are a number of bats species that forage within the NRMP area. Recent 2002 surveys conducted by Drew Stokes of the United States Geographical Survey (USGS) detected a total of nine bat species at two sites west of SR-163 along the San Diego River (D. Stokes pers. com.). Bat detections from this study include the following species: Yuma myotis (*Myotis yumanensis sociabilis*), which uses sycamores, cottonwoods, oaks and broken chaparral habitat; western pipistrelle (*Pipistrellus hesperus*); regionally common big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus blossevillii*), and hoary bat (*Lasiurus cinereus*) (D. Stokes pers. com.). Additionally, the Mexican free-tailed bat (*Tadarida brasiliensis*), which roost mainly in crevices and forages in multiple habitats, big free-tailed bat (*Nyctinomops macrotis*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), and western mastiff bat (*Eumops perotis*)/California mastiff bat (*Eumops perotis californicus*) were detected.

WILDLIFE CORRIDORS

A wildlife corridor is "a route used by one or more species to move between two areas of habitat" (MSCP 1995). Corridors are very important for large mammals, especially predators. There are two types of corridors: local and regional. Local routes allow individuals to hunt, forage, and find water and den sites. Regional corridors allow species to migrate seasonally and to disperse individuals to other areas and meet other sub-populations. Corridors are defined or constrained by various factors,

such as topographic features, habitat, availability of natural and passable open space, game trails, and/or urban pressures (*e.g.*, noise, lighting, lack of vegetative cover, and domestic animals). It is important to maintain the San Diego River valley as a regional corridor link for wildlife to move between habitats to the east and west.

The San Diego River and its associated habitats provide an east-west corridor from Mission Trails Regional Park to the mouth of the River in Mission Bay Park. There are no large tracks of open space adjacent to the River to the west of Mission Trails Regional Park; nevertheless, the River provides connectivity with smaller areas of biological open space. This connectivity is essential for the dispersal of individuals from smaller open space areas to more expansive upstream habitats and to permit access to resources up and down the River for those populations which occur within the NRMP area.

Some meso-predators (*e.g.*, Virginia opossum, raccoon, striped skunk) can meet all of their habitat needs within the River corridor (including riparian habitats and adjacent uplands where present). Their home range is confined to the corridor and thus it provides for daily or seasonal movements, as well as all other needs. For individuals of larger species (*e.g.*, mule deer, coyote) the corridor is expected to enable their daily and/or seasonal movements but not encompass their home range. A number of bird species use the corridor exclusively during the breeding season or migration, but not as year round habitat.

Although not limited by habitat constituents alone, some species may be less likely to use portions of the River corridor that are limited in width due to urban encroachment or heavily effected by noise, lighting, or other urban-associated factors. Meso-predators have been shown to more readily use fragmented or urbanized habitats, where mountain lions, bobcats, and coyotes are more apt to avoid these types of corridors and habitats (Riley 1999, Crooks and Soule 1999). Based on the work of Haas (2000), fragmentation was positively associated with the distribution (probability of occurrence at a track transect) and relative abundance (frequency of occurrence at a track transect) of mule deer, striped skunk, domestic dog, and domestic cat and negatively associated with the distribution and relative abundance of bobcat and long-tailed weasel.

SENSITIVE SPECIES

Several sensitive plants and animals occur within the NRMP area and in the immediate vicinity. Others have not been observed but are expected due to the presence of favorable conditions and habitat. Sensitive plants and animals have usually become so due to loss of suitable habitat for their specific needs. Protection of sensitive habitats, therefore, is important in the preservation of sensitive species. These include MSCP covered species and narrow endemic species of concern to USFWS, CDFG, and California Native Plant Society (CNPS).

Of all the sensitive species covered under the City MSCP subarea plan, 2 plants, 2 reptile, and 8 bird species are known or expected to occur within the NRMP area and require area specific management measures or other conditions for coverage that pertain to the management activities within the NRMP area. These species are discussed further in this section using the following key: CS = San Diego Covered Species and NWE = Narrow Endemic Species.

Sensitive and/or MSCP covered animal and plant species (including narrow endemic species) known or expected within the NRMP area, which do not have specific management directives, are addressed in Table D at the end of this section. Sensitive and/or MSCP covered animal and plant species

(including narrow endemic species) known or expected within the NRMP area that have specific management directives, are addressed below.

Plants

(Under Subarea Plan Status: CS = MSCP Covered; NC = Not MSCP Covered; NWE = Narrow Endemic; and NE = Not Evaluated.)

San Diego Ambrosia (*Ambrosia pumila*) (CS & NWE)

Presence/Absence Status – San Diego ambrosia was not found during the 2003 surveys; however, several locations of this species within the vicinity of the NRMP area have been previously documented. One population was documented one mile west of Mission San Diego de Alcala, but it is most likely extirpated (Reiser 2001). Other populations have been documented to occur within Mission Trails Regional Park (Reiser 2001). Although these populations are not within the NRMP area, it is possible that these upstream populations could propagate downstream and colonize locations within the NRMP area.

Habitat – Creek beds, seasonally dry drainages, and floodplains are the preferred habitats. Usually a protective tree canopy is absent and it is growing on the periphery of willow woodland. Riverwash and sandy alluvium may underlie these locales.

Flowering – Perennial herb (rhizomatous), blooms May-September.

Status – San Diego ambrosia is approaching extirpation in the United States. All existing sites should be fully protected. While many species of related "ragweeds" are quite invasive, the San Diego ambrosia has good site tenacity but apparently does not readily colonize seemingly appropriate habitat. At least several key factors are probably involved. This species may have very exacting microhabitat requirements, or may be remnant of an extinct flora and poorly adapted to the current climatic regime. Regardless, this species would benefit from studies to determine its optimal habitat requirements; as well as efforts to artificially expand its local presence, and stabilize the existing very limited meta-population (Reiser 2001).

MSCP Conditions – If more than 10 percent of the populations at the Mission Trails Regional Park are impacted, this species will no longer be a covered species. Area specific management directives must include monitoring of transplanted populations, and specific measures to protect against detrimental edge effects.

Orcutt's Brodiaea (*Brodiaea orcuttii*) (CS)

Presence/Absence Status – Orcutt's brodiaea was not found during the 2003 surveys; however, this species has been previously documented in the vicinity of the NRMP area. A population was found in Tierra Santa just north of Shepherd Canyon and west of Mission Trails Regional Park. Due to this sighting and the presence of suitable habitat for this species in the NRMP area, the potential presence of this species cannot be discounted.

Habitat – Vernally moist grasslands, mima mound topography, and the periphery of vernal pools are all preferred habitat for this corm sprouting species. Orcutt's brodiaea will also occasionally grow on streamside embankments.

Flowering – Perennial herb (bulbiferous), blooms May-July. Generally, only a spring census during its blooming period, or immediately following, can determine the presence of this species.

Status – Orcutt's brodiaea is substantially declining throughout its southern California range. Given its relatively wide range of potential sites in vernally moist montane and coastal locales, it is probable a number of sites are being developed without the realization that this

species was present. Substantial portions of all sizeable populations should be fully protected. The considerable cismontane County range of this species indicates its current rarity is probably correlated with human-induced habitat destruction (Reiser 2001).

MSCP Conditions – Area specific management directives must include specific measures to protect against detrimental edge effects.

Invertebrates

No sensitive invertebrates are expected in the study area.

Amphibians and Reptiles

No sensitive amphibians are expected in the study area. The MSCP covered reptiles that require area specific management measures and are known or expected to occur are described below.

Southwestern Pond Turtle (*Clemmys marmorata pallida*) (CS)

Presence/Absence Status - This species is known to occur in the upper portions of the watershed beyond the NRMP area. This species was not sighted in 2002; however, they are, at times, found in such small numbers that it is possible that this species inhabits areas within the study sections of the San Diego River undetected.

Preferred Habitat - Highly aquatic, prefers ponds, creek pools, and marshes with rocky or muddy bottoms. Basks on longs, rocks, or other platforms of debris.

Food - This turtle is a generalist. It eats fish, insects, aquatic plants, worms, and carrion. In coastal San Diego County turtles sometimes eat substantial numbers of introduced crayfish (*Pacifasticus* sp.). They also can practice a "gape and suck" feeding for tiny invertebrates such as Daphnia and Cerodaphnia. Postpartum females may eat plant material; filamentous green algae and pieces of bulrush and cattail are sometimes found in the stomachs of these turtles (Holland 1991).

Breeding/Relevant Life History - The female lays eggs typically at sites on dry, well-drained soils with significant clay-silt content and less than 15 degree slopes. The female lays a clutch of 3 to 11 smooth, white, oval hard-shelled eggs in a hole which is then back-filled. Mating occurs in April-May; most egg laying occurs from May-July. Hatchlings overwinter in nests and emerge in March or April (Holland 1991). Incubation in captivity takes 73-80 days (Feldman 1982).

Status/Threats/Predators - This species is declining. In southern California this turtle is becoming quite rare due to loss of lowland riparian areas to development and disturbance. The continued presence and expansion of non-native, predatory fish and Bullfrogs (*Rana catesbeiana*) are also a significant issue for young turtles.

MSCP Conditions - Maintain and manage a 1,500-foot area around known locations within preserve lands for the species. Within this impact avoidance area, human impacts will be minimized, non-native species detrimental to pond turtles controlled/removed and habitat restoration/enhancement measures implemented.

Orange-throated Whiptail (*Cnemidophorus hyperythrus beldingi*) (CS)

Presence/Absence Status - Presence confirmed within the NRMP area through California Natural Diversity Database (CNDDB) query and Lawrence/Klauber unpublished notes. This whiptail still occurs within the NRMP area at the edges and within the washes of the riparian habitat, in native upland vegetation and ecotonal situations between uplands and wetlands.

Preferred Habitat - Areas of sage scrub, open chaparral, and peripheral edges of riparian zones and washes are all habitats utilized by this lizard. Bare ground coverage may average from 10 to 40 percent, with soils generally well drained, and consisting of moderately deep to very deep, loose sandy loams (McGurty 1981). Topography, habitat is generally level to mildly sloping, and the typical range of this species is from the immediate coast up to elevations of approximately 3,400 feet. Flat-top buckwheat is consistently found in habitats favored by the Orange-throated Whiptail.

Food - One species of subterranean termite (*Reticulitermes hesperus*) comprised 85 percent of all prey items consumed by this whiptail species, during one study (Bostic 1966). Colonies of this termite are usually situated in close proximity to moist soil or in wood connected to it. Spiders are an important alternate food source (Bostic 1966).

Breeding/Relevant Life History - Hatchlings are usually observed during August and September; from October through December, only juvenile lizards are typically observed foraging on the surface, although unseasonally warm weather can bring adults out in the winter. Individuals generally emerge from a winter hibernation (reportedly from south-facing slopes) in late March through April; most young have reached adult size by mid June (Bostic 1966). In one extended series of studies, mean home ranges for both sexes were found to be approximately 0.11 acre, with average home ranges of 0.26 acre (Bostic 1966).

Status/Threats/Predators - This species is still relatively common in areas where good habitat occurs; however, vast areas of former habitat in the coastal lowlands have been converted to urban and agricultural development.

MSCP Conditions - Area-specific management directives must address edge effects.

Birds

White-faced Ibis (*Plegadis chihi*) (CS)

Presence/Absence Status - This ibis is an uncommon migrant and winter visitor associated with wetlands and shallow, open water. This species was not observed during the 2002 surveys, and if it were to be found, it is expected that it would be relatively rare in the NRMP area. It may be occasionally found in the lower sections of the San Diego River where brackish water and open, mudflat terrain occurs, which is suitable for the ibis as foraging and loafing habitat.

Preferred Habitat - Freshwater marshes and ponds are usually associated with ibis activities. Sometimes they may occupy flooded agricultural fields or water treatment areas/ponds.

Food - Aquatic invertebrates such as crayfish, earthworms, insect larvae, leeches, snails, small frogs, bivalves, fish, and other small invertebrates found with aquatic vegetation are regular prey items. Ibis forage in shallow, muddy marshes where they can probe for food with their long, curved bill.

Breeding - Formerly known to breed in portions of the County during late May and early June (Unitt 1984), but not expected within NRMP.

Nests/Incubation/Clutch Size - Incubation typically occurs for 20-26 days; with fledging taking approximately eight weeks. Two to seven eggs are laid (three to four are common). Eggs are greenish-blue to bluish-green. Nests typically consist of a deep cup-shaped platform of coarse emergent vegetation and sticks that is lined with finer material (Ehrlich *et al*.1988). Colonial nest observations for San Diego County are reported from June 5, 1979 (Unitt 1984) in dense freshwater marsh habitat at Buena Vista Lagoon.

Call - The call is a pig-like *ka-onkkk*.

Status/Threats/Predators - Ibis are much better represented in the Imperial County than locally, and they are relatively uncommon in central and southern coastal San Diego County as compared with northern coastal San Diego County. DDT and pesticides were formerly a major problem, with some inland populations rebounding. However, coastal populations have continued to decline and pesticides still utilized in rice farming may be a factor. Bulrush and pond habitat capable of supporting ibis nesting does occur at scattered locations throughout the NRMP area. Use of this habitat for breeding may eventually occur when/if coastal populations recover from severe historical declines.

MSCP Conditions - Area specific management directives must include specific measures to protect against detrimental edge effects.

Cooper's Hawk (*Accipiter cooperii*) (CS)

Presence/Absence Status - This raptor regularly forages along the San Diego River and nests in areas where taller riparian trees are clustered. In 2002, this hawk was observed in several sections of the River.

Preferred Habitat - Found among trees along rivers, mature forests, open woodlands, and wood edges. The Cooper's hawk is adapted to forage within areas of tree canopy.

Food - This hawk feeds on medium sized birds passerines. Its diet may include small mammals, including ground squirrels, mice, and bats. A small portion of this hawks' diet is made up of reptiles and inspects.

Breeding - The breeding season for this species is approximately March through June and it has been recorded throughout much of the County where appropriate habitat exists.

Nests/Incubation/Clutch Size -The Cooper's hawk typically nests high in the fork or near the main trunk of a tree. In San Diego County, Cooper's hawks nest in eucalyptus, oak, and Sycamore trees. The substantial stick nests may be lined with chips, outer bark strips; sometimes they utilize abandoned raven nests. Three to six eggs are generally laid, with four to five typical. Eggs are bluish-white to greenish-white and often nest stained and spotted with brown. Incubation is about 32-36 days; nestlings fledge approximately 27-34 days after hatching (Ehrlich *et al*. 1988). Egg dates for San Diego County are reported from March 31 to May 28 (Unitt 1984).

Call -The Cooper's hawk makes a loud *kek kek kek*.

Status/Threats/Predators - Range wide, habitat destruction in riparian areas is a major threat for this species; as well as direct human interference at its nest site. However, in San Diego County this species appears to be increasing (Unitt and Perretta 2001).

MSCP Conditions - Area-specific management directives must include 300-foot impact avoidance areas around active nests and minimization of disturbance in oak woodlands and oak riparian forests.

Light-footed Clapper Rail (*Rallus longirostris levipes*) (CS)

Presence/Absence Status - This rail is an uncommon and very localized resident in tidal salt marshes. Species presence downstream from the NRMP area was confirmed by CNDDB query results. This species is also found intermittently in the San Diego River Flood Control Channel (Unitt 1984). SANDAG data reports that a light-footed clapper rail was detected east of Interstate 805 (I-805) in 1992. Furthermore, it may occur in the far west portion within of the NRMP area due to its connection with salt marsh habitat. Useable habitat by this species is more abundant within the flood control channel downstream of the NRMP area.

Preferred Habitat: This species is dependent on a salt marsh habitat and the associated mud flats. In addition, this species may also utilize freshwater marsh habitat for nesting, foraging, and cover.
Food: Rails are opportunistic feeders, eating a variety of invertebrates and plant materials.
Breeding: This species is a monogamous species that is known to breed in San Diego County.
Nests/Incubation/Clutch Size: Nest structures for this species are built of aquatic vegetation and tide-deposited materials. The nest is built on a firm bank or under a bush (Sibley 2001). Five to twelve buff or olive buff eggs with brown markings are generally laid. Incubation lasts about 20-23 days, hatchlings are independent after 35-42 days, and first flight takes place at 63-70 days (Alsop 2001).
Call: The light-footed clapper rail calls at dusk and dawn using a distinct series of ten or more dry *kek kek kek* notes, accelerating and then slowing (National Geographic Society 1999).
Status/Threats/Predators: This species' numbers have been greatly reduced by destruction and degradation of salt marsh habitat (Unitt 1984).
MSCP Conditions: Area specific management directives must include active management of wetlands to maintain a healthy tidal salt marsh environment, and specific measures to protect against detrimental edge effects to this species.

California Least Tern (*Sterna antillarum browni*) (CS)

Presence/Absence Status - The tern's presence has been confirmed downstream of the NRMP area. Fairly common to common but very localized summer resident and migrant (Unitt 1984); post-breeding dispersal during July and August of the California least tern includes locations well inland at Mission Valley. This species is a consistent winter visitor at the San Diego River Channel and maintains a nest colony along South Shores downstream of the NRMP area. This species prefers coastal habitat, and if found within the NRMP area it would likely be found flying over the site. Although no known nesting locations occur within the NRMP area, there are nesting colonies in relatively close vicinity of the site; thus, area specific management measures should be implemented to prevent/minimize edge effects to this species.
Preferred Habitat - This species is found along coastal waters, shallow estuaries, and lagoons.
Food - Terns eat small fish such as smelt, grunion, and anchovies.
Breeding - This species is known to breed along beach dunes and saltpan habitat in San Diego County and does not breed within the NRMP area.
Nests/Incubation/Clutch Size - Least terns establish nest colonies in coastal sand dunes at river mouths, lagoon entrances, and sandy strips of beach. This species breeds from April to September. Two to three pale buff eggs dotted, spotted, and scrawled with black or gray are generally laid. Incubation is about 24-32 days, hatchlings are semiprecocial and leave the nest but are tended for 60-90 days after first flight (Alsop 2001).
Call - This species makes a sharp repeated *kit* and a harsh *zree eek*.
Status/Threats/Predators - With urbanization and human beach use, terns are forced into other habitats for nesting, such as dry mudflats (Unitt 1984). Additional threats to this species have included a decrease in suitable habitat and increased predation by feral cats and other small mammals such as raccoons, crows, and opossums. This species' population size has fluctuated in the last decade but habitat management has help to stabilize population numbers to approximately 4,000 pairs in California (Tijuana Estuary undated).
MSCP Conditions - Area specific management directives must include protection of nesting site from human disturbances during the reproductive season, predator control, and specific measures to protect against detrimental edge effects. Incidental take (during the breeding

season) associated with maintenance/removal of levees/dikes is not authorized except as specifically approved on a case-by-case basis by the wildlife agencies.

Southwestern Willow Flycatcher (*Empidonax extimus traillii*) (CS)

Presence/Absence Status - This species is a regular migrant along the River and has historically nested in riparian habitat. Although there has been no recent confirmation of breeding activities for this species in the NRMP area, it is possible that this species could nest in the area.

Preferred Habitat - In southern California, southern cottonwood-willow riparian woodland or southern willow scrub is utilized. The nest is usually placed inconspicuously within a mid-sized to adult, densely vegetated willow tree or Fremont cottonwood.

Food - This species is an insectivore, and appears to be a generalist. Little information is available on this subspecies' precise prey item preferences. It has also been reported to eat various berries or small fruits, but they do not appear to be a significant food source during the breeding season (Beal 1912, Roberts 1932, Imhof 1962, and McCabe 1991 in Finch and Stoleson 2000).

Breeding - Migrants arrive relatively late from early May to mid-June (a brief period from May 2-June 13 is recorded in Unitt, 1984). Fall migrants return as early as August 4 and usually leave by October 11. Summer observations between these migration periods may represent the breeding southwestern willow flycatcher. It should be noted that nesting does occur during May when other subspecies of willow flycatcher may be migrating through the County. Historically the southwestern subspecies nested in both the coastal lowland (*e.g.*, Jamul Creek near Otay Lake; Tijuana River Valley east of Dairy Mart Road) and the mountains (*e.g.*, Cuyamaca Lake), but during recent years only a handful of riparian locations in northern San Diego County have supported this breeding subspecies.

Nests/Incubation/Clutch Size - This flycatcher nests in thickets of trees and shrubs of varying height and nest placement is in the fork of a branch at varying heights. The nesting site's plant community is generally of a similar age of growth and structurally homogeneous. The compact nest is composed of leaves, grass, fibers, feathers, and animal hair; with coarser material used in the nest base and body and finer material in the cup (Finch and Stoleson 2000). Nests are approximately eight cm high and eight centimeters wide (Finch and Stoleson 2000). Eggs are buffy or light tan generally with brown markings in a wreath at the blunt end but occasionally unspotted (Bent 1942 in Finch and Stoleson 2000). Three to four eggs in a clutch are common. Incubation begins with the laying of the ultimate egg. Mean incubation is 14.84 days (McCabe 1991 in Finch and Stoleson 2000). Young remain on the nest for 12-15 days before fledging, but will fledge prematurely if disturbed. Fledglings may return to the nest for three to five days and remain in the natal area for up to 14 to 15 days (Finch and Stoleson 2000). Generally nest building and egg laying occurs in late May and June, but may continue into July, with fledging of young anywhere from late June to mid-August (Finch and Stoleson 2000). One egg set for San Diego County is reported from Bonita on June 5 (Unitt 1984). Second clutches are uncommon.

Song/Call - This is sometimes translated as *fitz-bew*. Another common vocalization is the *whitt* call, but this is not unique to this flycatcher. Birds may respond readily to a taped recording; however, such usage requires a permit from the USFWS.

Status/Threats/Predators - Southwestern willow flycatchers are currently found in six states, but the majority of the population is concentrated in a limited number of sites. The continued survival and recovery of this species is threatened by habitat loss and habitat modifications that result in alterations of ecosystems processes (*e.g.*, unnatural edge effects that result in increased parasitism and predation pressure). The willow flycatcher is particularly

susceptible to nest parasitism by the brown-headed cowbird. The cowbird is often associated with livestock and riparian habitats. Without focused trapping programs, it is well distributed throughout coastal San Diego County in the spring and summer. As a breeding migrant it generally arrives in mid-March and leaves by mid-October. The cowbird lays its eggs in the nests of other riparian bird species, and their young may ultimately be mistakenly incubated and then fed by the host parents. The young cowbird may hatch earlier and young cowbirds have been known to competitively push eggs from the nest, resulting in mortality. They voraciously compete for food with the young of its parasitized "sibling" species or even dislodge nestlings from the nest. As a result, it may seriously shift resources away from the young of sensitive species like the southwestern willow flycatcher. Predation during the nesting phase is also a significant in the population dynamics of this species. Snakes, weasels, raccoons, foxes, opossums, domestic or feral cats, coyotes, corvids, and accipiters are all found within the riparian habitat and will prey upon any of the song bird species nesting therein. Ants may also be a problem during the nestling phase.

MSCP Conditions - Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)(1) guidelines into the project. Participating jurisdiction's guidelines and ordinances, and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. For new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds, jurisdictions must require monitoring and control of cowbirds. Area specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 1 and May 1 (*i.e.*, outside of the nesting period).

Least Bell's Vireo (*Vireo bellii pusillus*) (CS)

Presence/Absence Status - The presence of this species was confirmed during the 2002 surveys and through a CNDDB query.

Preferred Habitat - This vireo is a riparian species and is typically characterized as preferring early successional habitat (Fish and Wildlife Service 1998). In southern California, southern cottonwood-willow riparian woodland, southern willow scrub, or even mule fat scrub is utilized. Two features that appear to be essential are the presence of cover within one to two meters of the ground and a dense stratified canopy for foraging (Fish and Wildlife Service 1998).

Food - This species is insectivorous, and appears to be a generalist. In one study 99.3 percent of food taken was of animal origin with bugs (Hemiptera 34.43 percent of total), grasshoppers (Orthoptera 18.52 percent), beetles, and caterpillars predominating (Bent 1950). They obtain their prey primarily by foliage gleaning and hover catching. Foraging occurs in all levels of the canopy, but appears to be concentrated in the lower to mid-strata (Grinnell and Miller 1944, Goldwasser 1981, Gray and Greaves 1981, Salata 1983, Miner 1989 in Fish and Wildlife Service 1998).

Breeding - Migrants arrive as early as March 14 and generally nesting birds leave by September (Unitt 1984).

Nests/Incubation/Clutch Size - Nests are cup-shaped and constructed of leaves, bark, willow catkins, spider webs, and other material (Bent 1950 in Fish and Wildlife Service 1998). It is typically constructed in the fork of a tree or shrub within one meter of the ground and may be within a variety of tree or shrub species, but is most frequently in willow or mule fat (Fish and Wildlife Service 1998). Eggs are a lusterless white color with a few fine dark brown or

black spots. Typically clutches consist of three to four eggs and incubation lasts 14 days. Egg dates for San Diego County are reported from May 7 to July 12 (Unitt 1984). Nestlings fledge in 10 to 12 days and adults continue to care for fledges for approximately two weeks after fledging (Fish and Wildlife Service 1998). Juveniles may remain in the territory or vicinity for the remainder of the season.

Song/Call - The call is distinctive and characterized as short intervals: *cheedle cheedle chee? – cheedle cheedle chew!* Its first sequence with a rising tone; while the second similar sequence ends with a descending tone. Birds may respond readily to a taped recording; however, such usage requires an individual permit with the USFWS.

Status/Threats/Predators - In the past 40 years, this species has declined leaving San Diego County with an estimated 300 pairs in 1986 (Kus 2003). The protection of the species within the last decade, has allowed this species to make a come back. As of 1998, approximately 2,000 males were found throughout San Diego County (Kus pers. com.). The least Bell's vireo population increase in the period from 1986-1998 is primarily due to the management of the brown-headed cowbird populations (Kus 2003). In the NRMP area, significant threats to the vireo include nest parasitism by cowbirds, destruction of habitat as a result of flood control activities, invasion of non-native plants in the riparian habitats, and degradation of habitat due to edge effects from human activities. The vireo is particularly susceptible to nest parasitism by the brown-headed cowbird. The cowbird is often associated with horse stables, golf courses, and riparian habitats. Without focused trapping programs, cowbirds are well distributed throughout coastal San Diego County in the spring and summer. As a breeding migrant it generally arrives in mid-March and leaves by mid-October. The cowbird surreptitiously lays its eggs in the nests of other riparian bird species, and their young may ultimately be mistakenly incubated and then fed by the host parents. The young cowbird may hatch earlier and has been known to push eggs from the nest; if eggs have hatched, the cowbird nestling can voraciously compete for food with the young of the parasitized species or dislodge them from the nest. Predation is also a major cause of nest failure. Most predation occurs during the egg stage and potential predators include corvids, accipiters, snakes, raccoons, weasels, opossums, mice, rats, domestic or feral cats, and coyotes. Ants have also been reported as a problem for vireo nestlings (J. Wells pers. com.). Urbanization has contributed to increased concentrations of meso-predators and increases in Argentine ant (*Linepithema hamile*), formerly (*Iridomyrmex humilis*), populations.

MSCP Conditions - Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted and incorporate mitigation measures consistent with the 404(b)(1) guidelines into the project. Participating jurisdiction guidelines and ordinances, and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Jurisdictions must require new developments adjacent to preserve areas that create conditions attractive to Brown-headed Cowbirds; jurisdictions must require monitoring and control of cowbirds. Area specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 1 and March 15 (*i.e.*, outside of the nesting period).

Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*) (CS)

Presence/Absence Status - This species has not been detected within the NRMP area, but is reported (CNDDB) downstream of the NRMP area (west of the I-5). This sparrow is a year round resident but is localized. Due to the known locations in the immediate vicinity, it is possible that this species may occasionally be found within the NRMP area.

Preferred Habitat - This species prefers the upper littoral zone of tidal marshes, which can flood only by high spring or storm tides (Unitt 1984). Belding's savannah sparrow is found in salt marshes and lagoons dominated by pickleweed.

Food - This sparrow forages on mudflats, sandflats, and rock jetties. Their diet is composed of seeds and insects. Belding's savannah sparrow also drinks salt water (Tijuana Estuary undated).

Breeding - This species is resident year-round and can exhibit considerable site fidelity. The breeding season is early March through June.

Nests/Incubation/Clutch Size - Nests are typically located in the upper portions of the marsh and made of pickleweed, twigs, and hair. Two to six eggs are laid (Alsop 2001). The eggs are incubated for two weeks and chicks fledge in 7 to 14 days (Tijuana Estuary undated).

Song/Call - The song of this sparrow is delicate *tsit tsit tsit tseeee-tsaay* and its call note a light *tsip*.

Status/Threats/Predators - The San Diego 1991 census identified 2000 breeding pairs in California (Tijuana Estuary undated). This species is vulnerable to local extirpation due to habitat destruction and/or degradation.

MSCP Conditions - Area-specific management directives must include specific measures to protect against detrimental edge effects to this species.

Tricolored Blackbird (*Agelaius tricolor*) (CS)

Presence/Absence Status – This species is very common to abundant, but localized, resident. Although not confirmed within the NRMP area during the 2002 surveys, this species was reported in SANDAG information as occurring in the San Diego River, east of I-5 in 1993.

Preferred Habitat - The tricolored blackbird typically is observed near broad-leafed cattail and/or California bulrush in southern coastal and valley freshwater marsh. This species can also be detected in willows, mule fat, and tamarisks.

Food - This blackbird feeds its young insects and snails, but as an adult may also eat grass and forb seeds.

Breeding - The breeding season for this species is approximately mid-March through June.

Nests/Incubation/Clutch Size - The tricolored blackbird often nests near or over water. The nest is woven from grasses, sedges, and forbs. Two to six eggs are generally laid, (three to four are typical). Eggs are pale greens marked with brown and/or black. Incubation lasts about 11-13 days with nestlings fledging approximately 11-14 days after hatching (Ehrlich *et al*.1988). Egg dates for San Diego County are reported from March 30 to May 26 (Unitt 1984).

Song/Call - The tricolored blackbird's call has been referred to as a discordant breying *on-ke-kaaangh*; it does not include the more melodious sounds of the common red-winged blackbird in its repertoire (National Geographic 1999).

Status/Threats/Predators - Habitat destruction of coastal freshwater marsh is the primary concern for this species. The tricolored blackbird, unlike most sensitive avian species, will sometimes forage near humans in urban locations such as parking lots, agricultural lands, lakeshores, and damp lawns.

MSCP Conditions - Project approvals must require avoidance of active nesting areas during the breeding season. Area specific management directives must include measures to avoid impacts to breeding colonies, and specific measures to protect against detrimental edge effects to this species.

Mammals

No MSCP covered sensitive mammals that require area specific management measures are known or expected to occur in the NRMP area.

Other Sensitive Species

MSCP covered species without specific management directives, narrow endemics, and other sensitive species known or expected within the NRMP area are addressed below, in Table D. Sensitive wildlife species include those listed by USFWS (1999, 2003), CDFG (2003), and those considered regionally or locally sensitive by local jurisdictions, and private groups. Sensitive species observed on-site were limited; however, it is difficult to detect all species that may utilize an area due to seasonal or time of day biases. Also, some groups of species (*e.g.*, small mammals) require focused or specialized surveys to ensure detection.

TABLE D

SENSITIVE PLANTS AND ANIMALS KNOWN OR EXPECTED TO OCCUR WITHIN SAN DIEGO RIVER NRMP AREA FOR WHICH NO SPECIFIC MSCP MANAGEMENT DIRECTIVES HAVE BEEN ADOPTED

SENSITIVE PLANTS

(Under Subarea Plan Status: CS = MSCP Covered; NC = Not MSCP Covered; NWE = Narrow Endemic; and NE = Not Evaluated. Plant sensitivity codes are defined at the end of the table.)

Scientific Name **Common Name**	**Subarea Plan Status**	**Fed/State Status**	**CNPS**		**NDDB Rank**		**On-site Status**	**Notes**
			List	**R-E-D Code**	**Global**	**CA**		
Artemisia palmeri San Diego sagewort	NE	None	4	1-2-1	G3	S3.2	Present	This species typically occurs along creeks and drainages near the coast; inland it may occur in mesic chaparral conditions. During the 2003 surveys, this species was found in riparian scrub and riparian woodlands. Moderate amounts of this species were found west of I-805 on the north side of the River. Larger populations were located behind Qualcomm Stadium, on the northern portion of the River, just west of SR-163.
Ericameria palmeri ssp. *palmeri* Palmer's goldenbush	CS	None/ SC	2	3-2-1	G4T2 T3	S1.1	Present	The habitat for this species consists of coastal drainages, mesic chaparral sites, or rarely in Diegan sage scrub. Seasonally wet/moist locations are strongly preferred by this species. During the 2003 surveys, Palmer's goldenbush was found in limited numbers in one location within the NRMP area. Two individual shrubs were identified adjacent to Qualcomm Stadium.
Iva hayesiana San Diego marsh elder	NE	None/ None	2	2-2-1	G3?	S2.2?	Present	Creeks or intermittent streambeds are the preferred habitat for this low-growing, conspicuous shrub. If found in the understory of riparian vegetation, the canopy is typically open, allowing substantial sunlight to reach this plant. Sandy alluvial embankments with cobbles are also frequently utilized. During the 2003 surveys, relatively dense populations of this species were found both west and east of SR-163. A smaller population was also found west of I-805.

Scientific Name **Common Name**	**Subarea Plan Status**	**Fed/State Status**	**CNPS**		**NDDB Rank**		**On-site Status**	**Notes**
			List	**R-E-D Code**	**Global**	**CA**		
Juncus acutus ssp. *leopoldii* southwestern spiny rush	NE	None/ None	4	1-2-1	G5T5	S3.2	Present	Southwestern spiny rush is typically found in marshes and brackish environments, as well as along drainages with riparian vegetation. A population was found at the westernmost boundary of the NRMP area during the 2003 surveys, in cismontane alkali marsh habitat. Other populations were found east of SR-163 and west of I-805.
Phacelia stellaris Brand's phacelia	NE	None/ None	1B	3-3-2	G1G2	S1.1	Potentially present	Habitat consists of coastal dunes and sandy openings in sage scrub near the coast. Although this species was not observed during the 2003 surveys, it has been historically collected from sites in the bed of the San Diego River, which are probably no longer extant. It also has been reported near Old Town.
Quercus dumosa Nuttall's scrub oak	NE	None/ None	1B	2-3-2	G2	S1.1	Potentially present	Habitat consists of coastal chaparral typically with a relatively open canopy cover. Although the NRMP area lacks suitable habitat for this species and it was not observed during the 2003 surveys, it has been historically collected from the Mission Valley area. This species is also frequently found in disturbed, urban canyons; thus, the potential presence of this species should not be discounted.
Suaeda esteroa estuary seablite	NE	None/ None	1B	2-2-2	G4	S3.2	Potentially present	Typically found along the periphery of coastal salt marsh habitat. Although the NRMP area lacks suitable habitat for this species and it was not observed during the 2003 surveys, it is known to occur in Mission Bay, and thus, could potentially be found in the westernmost section of the NRMP area.

PLANT SENSITIVITY CODES

California Native Plant Society (CNPS) List

1 = Plants of highest priority.
1A = Species presumed extinct in California.
1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.
2 = Species rare, threatened, or endangered in California but which are more common elsewhere. These species are eligible for state listing.
3 = Species for which more information is needed. Distribution, endangerment, and/or taxonomic information is needed.
4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their population.

California Native Plant Society (CNPS) R-E-D (Rarity-Endangerment-Distribution) Codes

R: 1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction in low at this time.
R: 2 = Occurrence confined to several populations or to one extended population.
R: 3 = Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.
E: 1 = Not endangered.
E: 2 = Endangered in a portion of its range.
E: 3 = Endangered throughout its range.
D: 1 = More or less widespread outside California.
D: 2 = Rare outside California.
D: 3 = Endemic to California.

Natural Diversity Database Global Rank

G1 = Less than 6 viable element occurrences (Eos) OR less than 1,000 individuals OR less than 2,000 acres.
G2 = 6-20 Eos OR 1,000-3,000 individuals OR 2,000-10,000 acres.
G3 = 21-100 Eos OR 3,000-10,000 individuals OR 10,000-50,000 acres.
G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
Subspecies receive a T-rank attached to the G-rank. With the subspecies the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety.

Natural Diversity Database State Rank

S1 = Less than 6 Eos OR less than 1,000 individuals OR less than 2,000 acres; S1.1 = very threatened; S1.2 = threatened; S1.3 = no current threats known.
S2 = 6-20 Eos OR 1,000-3,000 individuals OR 2,000-10,000 acres; S2.1 = very threatened; S2.2 = threatened; S2.3 = no current threats known.
S3 = 21-100 Eos OR 3,000-10,000 individuals OR 10,000-50,000 acres; S3.1 = very threatened; S3.2 = threatened; S3.3 = no current threats known.
S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat. NO THREAT RANK.
S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK.

SENSITIVE ANIMALS

(Under Subarea Plan Status: CS = MSCP Covered; NC = Not MSCP Covered; NEW = Narrow Endemic; and NE = Not Evaluated.)

Scientific Name **Common Name**	**Subarea Plan Status**	**Fed/State Status**	**On-site Status**	**Notes**
Lichanura trivirgata roseofusca coastal rosy boa	NE	FSC/None	Previously documented on-site	Typically occurs in rocky outcrops within chaparral and sage scrub. Habitat preferred by this species is poorly represented on-site. Although this species was not detected during the 2002 surveys, this species was documented on-site by previous studies (Klauber unpublished notes).
Thamnophis hammondii two-striped garter snake	NE	None/SC	Previously documented on-site	Associated with semi-permanent and permanent bodies of water in a variety of habitats; requires a relatively dense riparian border. Although this species was not detected during the 2002 surveys, it was documented on-site by previous studies (Klauber unpublished notes). Habitat degradation has severely reduced the potential for a sustained, significant population within the NRMP.
Crotalus exsul red diamond rattlesnake	NE	None/SC	Previously documented on-site	Inhabits rocky outcrops and areas of heavy brush or rugged terrain in chaparral, sage scrub, or desert scrub on both coastal and desert slopes, usually below 4,000 feet. Although not detected during the 2002 surveys, this species was documented on-site by previous studies (Klauber unpublished notes). Good quality habitat exists on upstream portion of study area.
Salvadora hexalepis virgultea coast patch-nosed snake	NE	None/SC	Potentially present	Associated with low shrubs such as those found sage scrub or chaparral. Take refuge in burrows or woodrat nests. Although not identified on site during the recent surveys, this species was recorded in the upper portion of the River within Mission Trails Park (Klauber unpublished notes).
Anniella pulchra pulchra silvery legless lizard	NE	FSC/SC	Previously documented on-site	Need areas of loose sandy soils. Banks of streams, sandy canyon bottoms, and river slopes. Prefers scattered vegetation. This legless lizard was documented on-site by previous studies (Klauber unpublished notes). This species is nocturnal and was not detected during current surveys, but good quality habitat exists on the eastern end of the NRMP area.
Eumeces skiltonianus interparietalis Coronado skink	NE	None/SC	Previously documented on-site	Occurs in a variety of habitats including grasslands, sage scrub, and various woodlands including oak, pine, juniper, and riparian. Although this species was not detected during the 2002 surveys, this species has been documented on-site by previous studies (Klauber unpublished notes).

Scientific Name **Common Name**	**Subarea Plan Status**	**Fed/State Status**	**On-site Status**	**Notes**
Branta canadensis Canada Goose	CS	None/None	Potentially present	Preferred habitat is lakes, ponds, marshes, and fields (including golf courses). This goose is an abundant but localized winter visitor. The Canada goose can be found on any body of water along the coast or inland. In the 1970's, 20 geese were documented along the San Diego River east of the Old Mission Dam and two at the mouth of the San Diego River. This species was not observed during the 2002 surveys but may utilize the River or golf courses along the River.
Pelecanus occidentalis californicus California brown pelican	CS	FE/SE, Protected	Potentially present	This species has been observed at the mouth of the San Diego River and roosting on mudflats a few kilometers from the River mouth. It is a common to very common non-breeding visitor associated with salt water. The California brown pelican rarely ventures inland and was not observed in the NRMP area during the 2002 surveys.
Phalacrocorax auritus double-crested cormorant	NE	None/SC	Present	Common in bays, estuaries and lagoons along the coast. Roost on power lines and sandflats. This species roosts on telephone wires in open water areas along the River. It was documented in flight and roosting in the NRMP area during the 2002 surveys.
Ixobrychus exilis hesperis western least bittern	NE	FSC/SC	Present	Occupies brackish to freshwater marshes with extensive emergent vegetation. This species was detected in areas of Freshwater Marsh and near open tracts of open water, during the 2002 surveys.
Egretta rufescens reddish egret	CS	None/None	Potentially present	Preferred habitat is in shallow lagoons, salt marshes, tidal mud flats, and tidal channels. Occasionally they can be found in flooded agricultural fields. This egret is a very rare visitor in the fall and winter, casual in the spring and summer, and is associated with shallow lagoons, salt marshes, and tidal mud flats. It ventures north from western Mexico into California. Historically, this species has been observed at the San Diego River mouth (Unitt 1984). Reddish egret is not expected inland, in the NRMP area, but has been identified occasionally downstream.
Pandion haliaetus osprey	NE	None/SC	Present	Forages over lagoons, bays, and lakes. Observed on-site during previous M&A studies (Merkel & Associates, Inc. 2000).
Elanus leucurus white-tailed kite	NE	FSC/SA, Protected	Present	Occupies grasslands, agricultural fields, and open habitats with areas of dense deciduous trees for nesting. Observed on-site during previous M&A studies (Merkel & Associates, Inc. 2000).

Scientific Name **Common Name**	**Subarea Plan Status**	**Fed/State Status**	**On-site Status**	**Notes**
Charadrius alexandrinus nivosus western snowy plover	CS	FT/SC	Potentially Present	This species is typically found on sandy ocean beaches, lagoons, and tidal mudflats. This listed species' presence was confirmed down stream of the NRMP area. This plover is a common migrant and winter visitor, and fairly common to common but localized breeding resident (Unitt 1984). This species is a consistent winter visitor at the San Diego River Channel and prefers sand beaches and tidal mudflats. It is not known to venture inland within the NRMP area.
Chaetura vauxi Vaux's swift	NE	FSC/SC	Present	Occurs over a variety of habitats and most frequently in coastal lowlands. Observed in the upper reaches of the NRMP area during the 2002 surveys. This species is a common spring migrant, but is not expected to nest within the NRMP area.
Sialia mexicana western bluebird	CS	None/None	Present	Western bluebird is a bird of edge habitats preferring oak woodlands with adjacent grasslands and meadows. This species was confirmed in the NRMP area via sightings within the Admiral Baker Golf Course during the 2002 surveys. This bluebird is a common to very common resident and winter visitor.
Dendroica petechia yellow warbler	NE	None/SC	Present	Occupies willow riparian in mid to later stages with well-developed upperstory. This species was detected throughout the NRMP area and nests on-site. It also forages along the River as migrant.
Icteria virens yellow-breasted chat	NE	None/SC	Present	Occupies willow riparian in mid to later stages but with well-developed understory. Willow riparian habitat within the NRMP area is adequate for nesting with younger, denser stands generally preferred. It also forages along the River as migrant.
Myotis yumanensis Yuma myotis	NE	FSC/None	Present	Utilizes multiple habitats (primarily woodlands and forests) but forages over water. Observed on-site during 2002 USGS studies (Drew Stokes pers. comm.).
Eumops perotis californicus California mastiff bat (also known as western mastiff bat)	NE	FSC/SC	Present	The California mastiff bat is found in chaparral and oak woodlands. This species is a cliff dweller, roosts under rock slabs, and crevices of large boulders and buildings (Texas Parks and Wildlife undated). It is a permanent resident in southern California. This species was detected during the USGS 2002 surveys in the upper portion of the NRMP area, near Mission Trails Park.
Lasiurus blossevillii western red bat	NE	None/SC	Present	Prefers riparian habitats and roost in foliage. Has been found in oak, sycamore, cottonwood, and walnut trees. Species proposed to become California Species of Special Concern (Betsy Bolster pers. comm./Drew Stokes pers. comm. 2003). Observed on-site during 2002 USGS studies.

Scientific Name **Common Name**	**Subarea Plan Status**	**Fed/State Status**	**On-site Status**	**Notes**
Nyctinomops femorosaccus pocketed free-tailed bat	NE	None/SC	Present	Cliff rooster, feeds in multiple habitats. May roost in buildings. Found in chaparral. Observed on-site during 2002 USGS studies (Drew Stokes pers. comm.).
Nyctinomops femorosaccus big free-tailed bat	NE	None/SC	Present	Cliff rooster, prefers rugged, rocky canyons, feeds in multiple habitats including over water. Observed on-site during 2002 USGS studies (Drew Stokes pers. comm.).
Lepus californicus bennettii San Diego black-tailed jackrabbit	NE	FSC/SC	Present	Occupies relatively open chaparral and sage scrub and grasslands. This species was observed during the 2002 surveys.
Neotoma lepida intermedia San Diego desert woodrat	NE	FSC/SC	Present (but not confirmed)	Occupies chaparral, particularly abundant in areas of rock outcrops. Nests of this species or closely related dusky-footed woodrat (*Neotoma fuscipes*) seen within the NRMP area during 2002 surveys.
Felis concolor mountain lion	CS	None/SC	Potentially present	This species is a widespread, uncommon permanent resident, ranging from sea level to alpine meadows. It is found in nearly all habitats, except xeric regions of the Mojave and Colorado deserts that do not support mule deer populations. Mountain lions are most abundant in riparian areas and brushy stages of most habitats. Mountain lions take cover in caves and other natural cavities, as well as in thickets of brush and timber. They require extensive areas of riparian vegetation and brushy stages of various habitats, with interspersions of irregular terrain, rocky outcrops, and tree/brush edges. This species was not detected within the NRMP, but has been previously reported to the east, near Mission Trails Regional Park.
Odocoileus hemionus mule deer	CS	None/None	Present	The mule deer is found in forests, brushfields, meadows. In San Diego County specifically, this species occurs in the remaining extensive sage scrub, chaparral, riparian, grassland, and woodland habitats. This species was detected during the 2002 surveys in the upper portion of the NRMP area near Mission Trails Regional Park. It is distributed throughout San Diego County and is the only large native herbivore in the NRMP area.

*The following abbreviations are used in the Fed/State Status Column: FE = Federally Endangered, FT = Federally Threatened, FSC = Federal Species of Special Concern (Sacramento Office List), SC = CDFG Species of Special Concern; SA = CDFG Special Animal, SE = State (California) Endangered, ST = State (California) Threatened.

3.5 CULTURAL RESOURCES

This cultural resource analysis included a literature review, record search, and a preliminary windshield survey of the study area. Literature information and site forms for recorded cultural resources within the NRMP area and a one-mile radius of the study area were obtained from the South Coastal Information Center at San Diego State University. In addition, early maps were checked for resources and historic research was conducted at the San Diego Public Library and the County of San Diego. Because of the proposed project, extensive development along much of the River, and steep topography in the eastern portion of the study area, the focus for the cultural resource study includes the NRMP area and significant resources located adjacent to it.

Two prehistoric village or habitation locales have been recorded within and adjacent to the study area. The village of Cosoy, is located in and adjacent to the Riverwalk Golf Course at the western end of the study area and the village of Nipaquay is located within the Mission San Diego de Alcala complex and may be located in areas adjacent to the Mission. The vertical and horizontal extent of these village sites is unknown although testing programs have identified significant subsurface deposits at both locations. Another potentially significant cultural resource that is located adjacent to the study area is a prehistoric village site that has been identified south of Qualcomm Stadium that is within the NRMP area. Significant historic resources include portions of the Mission Flume at the eastern end of the study area. The San Diego Mission de Alcala complex is located adjacent to the study area. The San Diego Mission de Alcala complex is composed of standing buildings with extensive historic and prehistoric subsurface deposits that include numerous human burials and features.

PREHISTORY

The following discussion outlines and briefly describes theories currently presented for Native American occupation of San Diego County.

The earliest prehistoric sites of San Diego County have been identified as belonging to the San Dieguito Complex or Tradition. These people were initially believed to be big game hunters, however, additional research has provided information that shows these people to have been a hunting and gathering society. These people may have migrated into San Diego County as early as 10,000 years ago. Diagnostic artifacts associated with San Dieguito sites (Harris Site, CA-SDI-149, Rancho Park North Site CA-SDI-4391/SDM-W-49, Agua Hedionda Site CA-SDI-210, and Windsong Shores CA-SDI-10695) include scraper planes, choppers, scraping tools, crescentics, elongated bifacial knives, and leaf-shaped points (Warren 1966, 1967; Moriarty 1967; Kaldenberg 1982; Gallegos and Carrico 1984). This tool assemblage has also been called the Western Pluvial Lakes Tradition (Bedwell 1970; Moratto 1984) and the Western Lithic Co-tradition (Davis *et al.* 1969). These early occupants used coastal and inland resources that included plants, animals, shellfish, and fish (Moriarty 1967; Kaldenberg 1982; Gallegos and Carrico 1984). Manos and metates found on San Dieguito sites suggest reliance on seed and vegetable foods. Debate continues as to whether these people, who occupied both inland and coastal areas, abandoned San Diego County circa 8,500 years ago (SDCAS 1987) or remained, adopting new tools and cultural activities.

Sites related to this period and located in transverse valleys and sheltered canyon have been identified by some researchers as the La Jolla Tradition (True 1959:225-263; Warren et al. 1961:1-108; Meighan 1954:215-227). True (1959), Warren (1961), and Meighan (1954) called these sites

the Pauma Complex. Pauma Complex sites, which may express a more sedentary occupation, have been defined as having a predominance of grinding implements (manos and metates), no shellfish remains, great tool variety, with an emphasis on both gathering and hunting (True 1959; Warren 1961; Meighan 1954).

The La Jolla Tradition and Pauma Complex sites have been identified by Gallegos (1985) as coastal and inland manifestation of the same culture group. This hypothesis views the period from 10,000 years ago through approximately 1,300 years ago as the Early Period representing settlement by one culture group (San Dieguito/La Jolla) that is characterized by discrete modification of the artifact assemblage to respond to environmental changes and subsistence demands. This period was not environmentally stable as illustrated by the siltation of coastal lagoons, depletion of lagoon resources (*i.e.*, shellfish and fish), and the formation of San Diego Bay (Warren and Pavesic 1963; Miller 1966; Gallegos 1985; Masters 1988). Radiocarbon dates from sites adjacent to San Diego's coastal lagoons indicate that large populations were supported by lagoon resources circa 6,000 years ago. These sites do not appear to have been occupied after 3,000 years ago to circa 1,300 years ago. This absence of prehistoric occupation coincides with siltation of coastal lagoons and depletion of resources (Warren and Pavesic 1963; Miller 1966; Gallegos 1985). Archaeological deposits dated to circa 2,000 years ago are located closer to San Diego Bay where shellfish were still abundant (Gallegos and Kyle 1988).

By 2,000 years ago, Yuman speaking people occupied the Gila/Colorado River drainage (Moriarty 1969). Moriarty (1965, 1966) suggested a preceramic Yuman phase after his work at the Spindrift site in La Jolla. Based on a limited number of radiocarbon samples, Moriarty concluded that the preceramic Yumans occupied the San Diego coast circa 2,000 years ago, with ceramics having been introduced into San Diego County from the eastern deserts by circa 1,200 years ago. Yuman cultural traits may have been present in San Diego County before 2,000 years ago, however, Yuman influence is well documented after 1,200 years ago when the presence of small projectile points, pottery, Obsidian Butte obsidian, and cremation of the dead. The interface between Early Period occupants and Yuman (Kumeyaay/Diegueño) is not well understood. These early occupants of San Diego County may have been assimilated by Yuman speakers or they may have been displaced.

REGIONAL HISTORY

The history of San Diego County is commonly presented in terms of Spanish, Mexican, and American political domination. A discussion of historic land use and occupation under periods of political rule is justified on the basis of characteristics associated with each period, when economic, political and social activities were influenced by the prevailing laws and customs. Certain themes are common to all periods, such as the development of transportation, settlement, and agriculture. A comprehensive account of public and privately owned land in California, that includes the discussion of laws, activities and events related to the development of the state, is provided by Robinson (1979).

The first European visit to San Diego was on September 28, 1542, when Juan Rodriguez Cabrillo sailed into San Diego Bay; on November 10, 1602, Sebastian Vizcaino named the bay and port San Diego de Alcalá (Engstrand 1976:1). Although historically notable, these early visits had a limited impact on the region except as a portent of changes to come.

The Spanish Period (1769-1821) is represented by exploration; establishment of the San Diego Presidio, and the San Diego and San Luis Rey missions; the introduction of horses, cattle, and agricultural goods; and a new method of building construction and architectural style. Spanish

influence actually went beyond the year 1821, when California became a part of Mexico, for the missions continued to operate as in the past and laws governing the distribution of land were also retained for a period of time.

The Mexican Period (1821-1848) relates to the initial retention of Spanish laws and practices until shortly before secularization of the San Diego Mission in 1834, over a decade after Spanish rule. Although several grants of land were made prior to 1834, after secularization, vast tracts of land were dispersed through land grants. Cattle ranching prevailed over agricultural activities and the development of the hide and tallow trade increased during the early part of this period. The Pueblo of San Diego was also established and transportation routes were expanded. The Mexican Period ended as a result of the Mexican-American War.

The American Period (1848-Present) began when Mexico ceded California to the United States under the Treaty of Guadalupe Hidalgo in 1848. Terms of the Treaty brought about creation of the Lands Commission, in response to the Act of 1851 which was adopted as a means of validating land ownership throughout the State through settlement of land claims. Few Mexican ranchos remained intact because of legal costs and lack of sufficient evidence to prove title claims. Much of the land that once constituted the rancho holdings became available for settlement by emigrants to California. The influx of people to California and the San Diego region was the result of various factors, including the discovery of gold in the State; conclusion of the Civil War; availability of free land through passage of the Homestead Act; and importance of the County as an agricultural area supported by the construction of connecting railways. The growth and decline of towns occurred in response to an increased population and the economic "boom and bust" in the late 1800s.

LOCAL HISTORY

Mission Valley is the heart of historic San Diego. It is where the native people had their homes, where the first Spanish settlement was made, where the first Mission in Alta California was founded, as well as the first Presidio, and where the first Mexican and American townsite was located.

Major prehistoric habitation sites located within and adjacent to the study area include the village of Cosoy located within and adjacent to the Riverwalk Golf Course, the village of Nipaguay located within and adjacent to the Mission San Diego de Alcala complex, a village site located south of Qualcomm Stadium. The village of Cosoy was the first Native American village encountered by Spanish explorers when they landed in San Diego on May 1, 1769. This village, reportedly occupied by approximately 25 families, was among the first Native American villages to feel the influence of the Spanish missions and the presidio that were located south of the River in what is now called Old Town.

The Kumeyaay village of Nipaguay is located at the site of the historic Spanish Mission San Diego de Alcala. The Spanish priest Father Junipero Serra originally established the first of 21 California missions on Presidio Hill on July 16, 1769. Serra moved the mission in 1774 six miles east to its present location on the village of Nipaquay, a location that provided more water for agricultural uses. The first church was a wooden building that was erected at the new site in 1774 and burned in 1775 during an uprising by the Native Americans. Although Native American habitation midden has been identified at this location (Kyle and Carrico 1985), the vertical and horizontal extend of this village is not known.

The historic era of San Diego began in 1769 with the founding of the San Diego Mission. Between April 11 and July 1, 1769, expeditions began to arrive in San Diego by land and sea in preparation for a program of colonization and conversion of the native people (Engstrand 1976: 1). One of the members of the colonizing party was a soldier named Pedro Fages. Fages accompanied Gaspar de Portola on the two expeditions from San Diego to Monterey in 1769 and 1770. He made further travels throughout California in the 1770s and 1780s, and his diaries and reports provide first hand descriptions of the region (Priestley 1972).

Fages wrote that the mission of San Diego de Alcalá was founded in June 1769, at the port of San Diego. On July 14, 1769, he set out on his expedition to Monterey, leaving behind a small force. He reported that soon after his departure, some Indians from a nearby village attacked the camp. The military force killed several of the Indians. On July 16, 1769, Presidio Hill was established as the site of the Mission, and construction was begun on a church (Engstrand 1976: 1). Over time, Fages reported that 80 Indians in twelve families, who lived in the nearby village of "huts of brush and reeds", were baptized (Priestley 1972: 9). Fages further stated that there were more than twenty villages within 10 leagues (approximately 25 miles), and that some of these Indians also visited the mission for services. It is likely that the nearby village referred to by Fages was Cosoy, which was described as being at the base of Presidio Hill (Carrico 1977:31; Ezell and Ezell 1987:119-134).

Fages describes Mission Valley in the following quote:

> "It should be understood that the mission of San Diego as founded on a hill commanding the port and the Punta de Guijarras. It was situated at the side of a stream which, flowing only during the rainy season, passes through a long, spacious canyon wooded with willows, alders, vines, and roses of Castile, trees of varieties other than the above-named also occurring. There are ponds, or pools, which contain a sufficient supply of water for the use of the camp and for the mission during the entire year; but as it is not practicable to obtain irrigating water for the fields and tillable lands, life there will always be attended by the necessity of obtaining supplies for the maintenance of the people" (Priestley 1972:10).

Fages went on to say that without a more reliable water source, the mission would have to be moved upstream, where it was said water was more reliable. He also noted that the first year the Spaniards planted seeds in Mission Valley, they were carried away in a flood; when they planted the following year, there was no rain and the seeds did not sprout.

Both the Presidio and the Mission depended on supply ships for food. Despite a strong beginning, soon soldiers and padres were requesting additional supplies to support the growing settlement. In 1772, Father Crespi noted that San Diego had very little food, and that there had been little for the past year (Pourade 1961:16). Sufficient water was also lacking.

In time, the military encampment at the Mission site on Presidio Hill grew. Friction between the religious and military elements increased, particularly regarding treatment of the native people (Pourade 1961:18). The matter of scarce water and food resources was also making the situation worse. The cultivated fields had been moved to an area in the valley approximately five miles east of the Mission, where there was less danger of floods and more water was available for irrigation (Pourade 1961: 20). Father Junipero Serra wrote, in his first report for the Mission in 1774, that the Mission would be moved up the canyon because that location was more suitable, having more water and tillable land (Papageorge 1971:15). In August, 1774, the Mission San Diego de Alcalá was moved to its present site near the Indian village of Nipaguay (Engstrand 1976:2; Papageorge

1971:15). A corral was built at Rancho de San Luis, a location approximately 3 miles east of the new Mission site (Pourade 1961: 24).

There were conflicts between the newly-relocated Mission and the natives of Nipaguay and neighboring villages. The Indians claimed that Father Fuster had threatened to burn their rancheria unless they moved their settlement away from the vicinity of the new mission (Pourade 1961: 24). There were other accusations of mistreatment. On November 5, 1775, some of the Indians from nearby rancherias attacked the Mission and burned it, Father Jayme and two other Spaniards were killed. The Mission was temporarily moved back to Presidio Hill, however, by 1776, the buildings had been reconstructed at Nipaguay (Pourade 1961:37).

Eight years after the founding of the Mission, the Presidio was established by decree (Ezell and Ezell 1986: 192). The Presidio took over most of the buildings that had been used to house the Mission's functions (Ezell 1982).

The Mexican period of San Diego history began in 1821, when California became part of Mexico. The missions continued to operate in the traditional manner until 1834, when all of them became secular, meaning that the control of the Mission was turned over the civil authorities rather than religious authorities. Although some land grants were made prior to secularization in 1834, it was after this time that huge areas were turned over to ranchers and developers. Cattle ranching reached its heyday during the Mexican period. The San Diego Mission was not returned to the church until 1862, by which time it was dilapidated and in poor condition. In 1891, Father Ubach began the efforts to restore it (Papageorge 1971:17).

The Mission Dam was started in 1807, using Indian labor. By 1813, the padres had started work on an aqueduct to bring the water from the dam, at the upper end of Mission Gorge, to the Mission and agricultural lands of Mission Valley. The engineering feat brought water nearly six miles from the dam pond to the Mission. At the Mission, the water was stored in a small basin (Pourade 1961:121). Construction of the flume involved creation of an earthworks system sufficient to support the mission tiles and bricks used to line the canal.

The San Diego River has changed course across the valley many times over the years, sometimes emptying into Mission Bay and sometimes into San Diego Bay. By 1821, there were several settlements and vineyards in Mission Valley, but the homes and crops were washed away by heavy flooding (Papageorge 1971:16). Numerous floods over the decades rendered permanent habitation of the valley problematical.

Overflowing from the Presidio above, a small settlement grew in the location of Old Town. The main road north crossed the San Diego River at Old Town (Papageorge 1971:18), and continued north and east to the Mission after the ford (Morgan and Blair 1976: 18). The earliest homes in Old Town date from the very beginnings of Spanish colonization: Casa de Carrillo (1810), Estudillo House (1827), and the Bandini House (1827) (Hoover, Rensch, and Rensch 1966: 335-337). San Diego was founded as an official Pueblo in 1834 (Papageorge 1971:16). Settlement in Mission Valley below the Presidio and near the Mission increased. In 1846, Don Santiago Arguello received a deed of sale for the remaining unsold ex-Mission lands in Mission Valley (Papageorge 1971:16).

The American period began in 1848 with the conclusion of the Mexican-American War. Mexico ceded Alta California to the United States under the Treaty of Guadelupe Hidalgo. The Act of 1851 created the Lands Commission, which dealt with the Spanish and Mexican land grants. The

Commission was charged with validating these grants by settling land claims. As a result, few of the old Mexican land grants remained intact, mostly because of insufficient evidence proving title. Most of the Mexican land grants were based on sketch maps that did not meet the standards of the Lands Commission. New surveys were made, and the lands were made available for settlement by Americans. The availability of land, the gold rush, and promotion of southern California as a land of farms and ranches brought an influx of American settlers into the area.

The San Diego River, however, constrained development of Mission Valley. Papageorge (1971), in an excellent summary of the influence of the River on the development of the area, described many occasions when the entire Valley was swept bare of houses and fields during floods. In contrast, there were also many drought years.

After California became a state, Old Town began to decline. The Americans saw that the constant, unpredictable movements of the San Diego River between Mission Bay and San Diego Bay would never permit full use of the port. A new city was planned on San Diego Bay. In 1867, Alonzo Horton promoted development of this area, known as New Town or Horton's Addition (Hoover, Rensch, and Rensch 1966:336; Morgan and Blair 1976:26-27). The resulting development in what is now downtown San Diego left Old Town as a deteriorating collection of buildings that had once been the social and economic hub of San Diego.

Mission Valley was a vast, level area used primarily for farming and ranching during the 1870s and 1880s. Severe flooding limited the roads and development in the valley, although many wells operated in the valley bottom (Papageorge 1971:18-19). The construction of a dike between Old Town and Ocean Beach in the 1870s helped stabilize the River's course (Pryde 1973). Extreme efforts were needed to build anything permanent; the California Southern railroad, built across the valley in 1881, was supported by deep pilings (Papageorge 1971:19).

At the turn of the 20th century, development in the Valley was limited to dairy farms and ranches. The great flood of 1916 washed out homes and gardens in Mission Valley, as well as bridges; the railroad was spared (Papageorge 1971:20). The 1916 flood sent 75,000 cubic feet per second of water through the Valley, washing away everything in its path (Pryde 1973). The construction of El Capitan Dam and Reservoir in 1936 and San Vicente Dam in 1943 was the start of controlling the ongoing problem of flooding in Mission Valley (Pryde 1973). However, flooding in the 1930s continued to wash away roads, delay trains, and limit development in the Valley to dairy and other types of farms.

Mission Valley was the home of several dairy farms, including Ferrari Dairy, Silver Seal Dairy, Ohre Family Dairy, Allen's Dairy, and Challenge Dairy (San Diego Union, August 21, 1988; San Diego Union, April 7, 1986; San Diego Union, November 11, 1987; San Diego Union, August 25, 1972). Retired Chinese railroad workers had farms in the Valley (San Diego Union, October 22, 1966). Japanese farmers owned truck farms (San Diego Union, April 30, 1972). The 1928-29 aerial photographs of San Diego east of SR-163 show scattered residences along the edges of Mission Valley; the entire center of the valley is a broad wash. The residences are all now in developed areas.

Another use of the river valley was for gravel extraction and construction material production. The Conrock Company has been removing gravel from the area between I-805 and SR-163 since 1937. Removal of material allowed the current configuration of Friars Road (San Diego Union, May 8, 1977). Hazard's brickyard was located east of SR-163, adjacent to Friars Road and the River; this is now Hazard Center (San Diego Union, September 2, 1990).

Mission Valley has always been a major transportation corridor. SR-163 was completed across Mission Valley and opened to the public in 1948, after having been in the planning and construction stages for many years (Lortie and Clement 1996:4, 9). The two 1947 two-lane bridges crossing the San Diego River were widened as part of a multi-phase construction program in the 1960s (Lortie and Clement 1996:12). The grading for Highway 80, running along the south side of Mission Valley as a two lane road, began in 1949, and was completed in early 1953 (San Diego Union March 23, 1975). Before Highway 80 was built, a dirt road ran from Mission Valley to El Cajon; this road was improved to a gravel road between 1909 and 1913, and in 1914 the State Division of Highways took it over as part of the effort to build a road from San Diego to El Centro (Lortie and Clement 1996:5). Highway 80 was expanded and upgraded to I-8 in 1974 (Pryde 1973). The I-805 bridge across Mission Valley was started in 1969 (San Diego Union June 4, 1969).

Mission Valley has been the home of two stadiums. Westgate Park, where Fashion Valley Shopping Center is now located (and shown on the 1973 edition of the La Jolla 7.5' USGS topographic quadrangle), was the home of the Padres baseball team (San Diego Union-Tribune, July 7, 2002). The land where Westgate Park was used for stables prior to the construction of the stadium (San Diego Union, August 21, 1988). Before they played at Westgate Park, the Padres played at Lane Field, located at Harbor Drive and Highway 101, at the foot of Broadway (San Diego Union, August 20, 1967; San Diego Union-Tribune August 16, 1979). Lane Field was the location of the Pacific Coast League debut of the San Diego Padres on March 31, 1936 (San Diego Union, February 23 1936; Morgan and Blair 1976:149). The Padres moved from Westgate Park to the new San Diego Stadium in 1968 (San Diego Union-Tribune, July 7, 2002).

Originally called the All-American Stadium, the San Diego Stadium opened on August 20, 1967. In 1981, the name was changed to San Diego Jack Murphy Stadium; it is now called Qualcomm Stadium. When the new stadium opened in 1967, it became the home of the Chargers football team. Before that, the Chargers used Balboa Stadium, located next to San Diego High School. Balboa Stadium was build in 1915 for the Panama California Exposition (San Diego Union, March 29, 1936), and demolished as unsafe in 1979 (Los Angeles Time, July 22, 1979).

Work on a flood control channel for the San Diego River began in the early 1950s. With the construction of the flood control channel, development of the Valley was not far behind. Despite some community efforts to keep the Valley open, land values began to climb and shopping centers were not far behind. Fred Simpson, City Council member, built a polo field where the Kings Inn is now located (San Diego Union, March 8, 1978). A race track was located in Mission Valley below Mission Hills, just west of the golf course (1953 La Jolla 7.5' USGS topographic quadrangle). The Mission Valley Golf Club, open to the public, was started in 1947 (Papageorge 1971:22).

Investors started to see the potential of Mission Valley for commercial development. The first hotel in Mission Valley was the Town and Country, built in 1953. Mission Valley Inn opened in 1956, and Mission Valley Country Club, a private club opened in 1954, became the Riverwalk in 1957. The Kings Inn opened in 1959. The Hanalei, which began as Rancho Presidio Hotel, dates to 1959 (San Diego Union, March 23, 1975). The May Company Mission Valley Center opened in February 1961 (Papageorge 1971:23). Pumps were needed to keep the parking areas clear of water. The Bowlero was remodeled into the Masonic Temple (Papageorge 1971: 23) in the early 1960s. Mission Valleys' first office building, Mission Square, was built in 1962 (San Diego Tribune, November 2, 1962).

RECORD SEARCH RESULTS

Flooding has been a part of life along the San Diego River for centuries. It is very likely that historic remains are buried below the sediments in the valley floor. Archival research was conducted to determine whether any historic structures or features could be present within the project area.

Historic USGS Topographic Quadrangles were examined for any plotted structures or features. The results of this research are presented in Figure 2-5. The following USGS Topographic Quadrangles were analyzed: 1930 La Jolla 15' USGS Topographic Quadrangle, surveyed in 1901-02; and 1942 La Jolla 7.5' USGS Topographic Quadrangle.

Studies completed within the study area include a survey of the San Diego River Valley from El Capitan and San Vicente dams west to I-5 that was completed by Cupples in 1975 for the Department of the Army Corps of Engineers. Cupples study was completed by the San Diego State University Foundation under the direction of Dr. Paul H. Ezell. The study area was 500 yards wide from the centerline of the San Diego River and its major tributaries although Cupples surveyed a number of areas outside the 500-yard width to assess indirect impacts. Twenty-six cultural resources were recorded during this study and 43 previously recorded sites were identified by the literature review and record search. Some of the sites include the Village of Cosoy, lithic scatters, bedrock milling locations, rock art sites, rock walls, and historic sites that include the Mission San Diego de Alcala, the San Diego Mission Dam, the Mission Flume, and the Clarence Foster house.

Fourteen additional studies have been completed within the San Diego River study area. A number of these studies have focused on the Village of Cosoy at the western end of the study area during work for redesign of the Riverwalk Golf Course, the Mission Valley Water Reclamation project, and the Morena Segment of the Mission Valley LRT project. These studies include testing programs by the City (1993), Pigniolo (1994), Cooley (1995), Kyle and Gallegos (1995a,b), construction monitoring by Gilmer and Cheever (1997), and data recovery programs completed by Cooley and Mitchell (1996) and Schafer (1996).

The San Diego River area that extends east from the Riverwalk Golf Course along the south side of Fashion Valley and Mission Valley malls and extending east to the eastern terminus of the NRMP area has not been surveyed since the 1975 Cupples study. A number of studies have been completed adjacent to the study area at the eastern end of the project area within the Naval Recreation Facility (Whitehouse and Wade 1989, Clevenger 1991, Kyle and Gallegos 1995a,b). A study of the gravel pit area is in progress (Cheever, personal communication with Carolyn Kyle, February 2003). A data recovery program was partially completed but is currently not reported on for a portion of the San Diego Mission de Alcala by Kyle and Carrico (1990) and a testing program was completed by Schaefer (1986) for another portion of the mission complex. The study by Kyle and Carrico (1985) identified numerous human burials and significant historic and prehistoric features and artifacts. The Schaefer (1990) study identified a historic trash dump that was identified as not significant.

Cultural resources that have been identified within the San Diego River NRMP area include 1 lithic scatter, 5 shell scatters, 3 prehistoric habitation sites (within and adjacent to), and several segments of the historic flume that extended from the San Diego Mission Dam to the Mission San Diego de Alcala. These resources are discussed below.

CA-SDI-41

The village of Cosoy, this location was recorded in the early 20th century by N.C. Nelson near the intersection of modern I-8 and the Morena Boulevard offramp. Nelson completed a site record form based on second-hand information, and noted that he did not see any archaeological remains when he visited the site. He attributed the absence of artifacts to frequent flooding and sedimentation. His mapped location is compatible with the supposition by Bancroft (1886:1:137) that Cosoy was in Old Town. Later, Ezell and Ezell (1987) identified an area on a low knoll in Mission Valley, east of the Presidio, as the village of Cosoy, also known at the time as the Brown Site. Mission-era artifacts were identified at the site by the Ezells. The two locations are provided on the figure in this report.

CA-SDI-11722H

This site was recorded as a historic trash scatter by Steven Briggs and Scott Campbell in 1990. They observed 1940s bottles and bottle fragments; blue, green, amber glass; whiteware ceramics; can fragments; wood; and metal fragments. The scatter was within the adjacent golf course.

Bridge 57-126

This is the SR-163 bridge over the San Diego River. The bridge was originally two bridges that were completed in 1946. It was determined by the California Department of Transportation that this bridge is not a contributing element to a potential historic district comprising State Route 162 because of a loss in its historic integrity (Lortie and Clement 1996:2). According to Lortie and Clement (1996:21), "All that remains of the old bridges are the parabolic arch box girders that can be seen underneath the present freeway."

Bridge 57-0239F

This historic bridge, originally built in 1947, is located at the separation of I-8 and SR-163. It is the north bridge. It was determined by the California Department of Transportation that this bridge is not a contributing element to a potential historic district comprising State Route 162 because of a loss in its historic integrity during the 1960s road widening and construction programs (Lortie and Clement 1996:2). The only original remaining 1947 element, the north separation, was demolished in 1990 (Lortie and Clement 1996:21).

CA-SDI-35

The site number CA-SDI-35 refers to the present San Diego Mission buildings and their surroundings, located on both sides of San Diego Mission Road within the bend of San Diego River. The site area includes the present Mission compound; ex-Mission San Diego lands, and contiguous parcels (Moriarty and Brandes 1976). The San Diego Mission is California Historical Landmark 0242, is a National Historic Landmark, and is City of San Diego Historical Site #113.

The site number is also used to refer to a trash dump from the Poor Sisters of Nazareth School, established in 1927 and enlarged in 1939. The dump lies under 2.8 meters of land fill deposited in 1967. A wide variety of domestic items and some construction refuse dating from approximately 1930 to 1960 is capped by asphalt fill and overburden from the grading of the adjacent hill and parking lot area. The upper fill and the historic dump also contain a mix of heavily disturbed prehistoric/ethnohistoric remains and broken Mission-era tiles. This component of the site was recorded by Jerry Schaefer in 1990 (Schaefer 1990). N.C. Nelson noted the site in his 1912 survey but did not give the site any designation (the site form was completed in 1949 by Arnold R. Pilling).

El Camino Real

The historic roadway, which connects the missions of California, is California Historical Landmark 0784-0002.

CA-SDI-202

This location was recorded by Treganza as the southern part of Mission San Diego. This is probably the location or village of Nipaguay. Father Serra referred to the new Mission at this location as "Mission San Diego en Nipaguay" (Merriam 1968: 169).

CA-SDI-239

This location may be a part of the native village of Nipaguay, and may have been occupied at the founding of the Mission. It was recorded in 1951 by Elizabeth Hall as covering an extensive area on the southern slope of the hills behind the Mission. She noted potsherds, obsidian and chert flakes, and shellfish.

CA-SDI-14017

This site was recorded as a historic trash scatter on sloping and terraced ground approximately 40 meters above the golf course road. A single piece of glazed, ceramic brownware; a small fragment of white porcelain; and a fragment of burned, saw-cut bone were noted. Recorded by Gallegos and Associates 1995. Also noted were household ceramics, milled wood, and bottle fragments. Historic maps (1903 15' USGS reprinted in 1920 and 1940; and 1942 7.5' USGS) showed a structure to the southeast of the site (Kyle and Gallegos 1995).

CA-SDI-11720H

Another historic artifact scatter was recorded by Joyce Clevenger and Steven Briggs in 1990. They observed over 200 bottle glass fragments, mostly purpled. They also noted some whiteware ceramics, crockery, metal fragments, and sawed bone. The area contained several concrete slabs with cobble stones within them. There may be buried historic deposits at this site, which was recorded during a survey for the Mission Valley Water Reclamation Project.

CA-SDI-6658 and CA-SDI-6660

Mission Dam (CA-SDI-6658) and Flume (CA-SDI-6660) were recorded by David Hanna in 1978. The dam was originally 224 feet long, 13 feet thick, and 13 feet high and constructed of cobbles, large stones, Spanish brick, and cement. The construction dates are 1807-1815/1816. Recent work has revealed that the flume is still intact along the north side of the San Diego River, with segments buried beneath rock and sand fill.

The Mission Dam and Flume are City of San Diego Historical Site #2, designated on February 1, 1968. At that time, little was known about how much of the flume system remained intact. Hanna (1978) reported on three remaining segments, but by 1992, When the site was dedicated by E. Clampus Vitus, no part of the flume was thought to remain. Because the level terraces created to carry the canal have been covered by rock and earth slides, the flume segments remained buried and unnoticed for many years.

The Dam is also California Historical Landmark 0052, it is a National Historic Landmark, and is also on the National Register of Historic Places.

A proposal to extend Jackson Drive over the San Diego River, through Mission Trails Regional Park, resulted in an intensive survey of the area for cultural resources (Smith 1989). Smith found several

previously unknown segments of the flume near Jackson Drive. The segments had been obscured by earth and rock. He conducted a test excavation in one of the lower segments, and found a well-made tile-lined canal, with sloping sides and a flat bottom, within earthen terraces built by hand along the north side of the River.

In 1994, Gallegos and Associates mapped five segments of the flume. This comprehensive study provided detailed mapping of the extant flume segments. An ongoing (2003) project undertaken by RECON within a sand and gravel operation adjacent to Mission Trails Regional Park provided the opportunity to search for and discover even more segments of the flume. The RECON report is in preparation. It is now clear that the flume exists in several intact segments along the north side of the River between Mission Dam and the San Diego Mission.

While portions of the flume lie north of the NRMP area, the flume is thought to extend within the eastern NRMP area.

3.6 LAND USE AND RECREATION

The existing land use designations within and adjacent to the NRMP area are shown in Figure 3 and identified in Table E. Ownership information for lands within and adjacent to the NRMP area is outlined in Appendix D. While the land use plans may include other areas, only the parcels located along the River and adjacent to the NRMP study area are discussed. Adjacent land uses were included for the purposes of analyzing the edge effects that could affect the natural and cultural resources identified in the NRMP area.

From the NRMP area's eastern boundary at Mission Trails Regional Park to its western boundary at I-5, land uses within and adjacent to the plan area are regulated by various land use policy documents. These land use policy documents, which are generally described earlier in the *Jurisdiction and Applicable Plans Chapter*, set forth land use designations allowing specific types of development. Existing land uses within and adjacent to the NRMP area are generally consistent with the designations identified by the policy documents.

Mission Trails Regional Park to I-15

Between the project's eastern boundary at Mission Trails Regional Park and I-15, land use designations within the NRMP area are set forth by the Navajo Community Plan (see Figure 4). At the easternmost end of the NRMP area (on both sides of the River), resource extraction and mining activities occur at a facility run by Superior Ready-Mix. West of the mining area, on the south side of the River, a variety of industrial uses exist. These include Hamman Construction facility, Heritage Truck Painting, University Towing and other industrial uses that involve heavy machinery. A large undeveloped, vegetated site adjoins the River at the southwest corner of Mission Gorge Road and Katelyn Court. This site is designated for Industrial use by the Navajo Community Plan. The United States Navy recreation area, which includes Admiral Baker Golf Course, a clubhouse, a pool, an RV parking area, picnicking facilities, and a military training facility, is located on the north side of the River between the mining facilities and the Friars Road river crossing.

On the south side of the River, next to the undeveloped land designated for Industrial use, more industrial uses are present. These include Cutting Edge Supply, SRM Contractor & Paving, and BRH-Garver, Inc. These industrial sites store heavy machinery and are used for activities associated with the contracting industry. The BRH-Garver site at Mission Gorge Road and Old Cliffs Road is

also being used to store new cars for Courtesy Mission Valley Chevrolet. West of these industrial areas, the second Admiral Baker Golf Course is located along both sides of the River. Residential areas called the Mission Valley Recreation Vehicle (RV) Park and River Greens Condominium Homes are located east of the golf course. A vacant lot with an empty one-room structure is located along Mission Gorge Road, adjacent to the south of the condominiums. This site is designated for Multiple Family Residential use. West of the vacant area and the eastern golf course, all of which are north of the Friars Road river crossing, three different retail strips are located along the River. Businesses leasing these commercial sites include the following: a preschool, florists, a hair salon, restaurants, an education center for behavior health, and a Long's pharmacy.

Areas in the NRMP immediately west of the golf course and adjacent to both sides of the River are designated Vacant and Open Space Areas. These site are currently undeveloped and covered with vegetation. A steep slope is located on the western side of the River, south of Friars Road (see Figure 5).

Regency Hill residential development is located at the crest of the slope within the NRMP area west of the River and south of Friars Road. Mission Basilica San Diego de Alcala and a private access road to the Mission are located on the slope to the south of the residential area.

Industrial uses are located on the east side of the River south of Friars Road. Between Friars Road and San Diego Mission Road, the following industrial uses are present: Maxim Crane Works facility, which stores and supplies heavy machinery such as flatbed trailers and cranes; Cosby Oil, which services semi-truck and collects used oil on site; two light industrial office buildings leased by various tenants such as Rhodiana Corporation; and two medical office buildings used by Kaiser Permanente.

South of the San Diego Mission Road river crossing, residential uses are located on the west side of the NRMP area, while industrial and commercial uses flank the east side of the River. Throughout this area, the NRMP area is undeveloped and vegetated.

The NRMP area between Mission Plaza Apartments and I-15 (north of the River) is undeveloped and vegetated.

I-15 to SR-163

West of I-15 and north of the River, the NRMP area is undeveloped and covered with vegetation. Between Fenton Marketplace and I-805, multiple-family residential developments (Archstone Mission Valley Apartments and Club River Run Apartments) are situated on the north side of the River. The LRT track is located between the River and these residential developments.

A portion of the NRMP area on the north side of the River between I-805 and Qualcomm Way is vacant. This area is designated for Commercial-Office use by the Mission Valley Community Plan. The rest of the land on the north side of the NRMP area between I-805 and Qualcomm Way is developed with two office buildings that face Rio San Diego Drive and the Marriott Hotel.

Qualcomm Way is the eastern boundary of FSDRIP, which is excluded from this NRMP as it has its own Natural Resource Management Plan. FSDRIP is a flood control and riparian mitigation area that is located between Qualcomm Way and SR-163, on both sides of the River. The area is used by local residents for walking, jogging, wildlife observation, and fishing. Figure 6 shows the FSDRIP land use designations within the NRMP area.

On the south side of the River, Commercial-Office use, Public Facilties and some undeveloped, vegetated lands flank the River west of I-15 and east of the Mission City Parkway "S" curve. From this area eastward to I-805, there is unvegetated land north of Mission City Parkway.

SR-163 to I-5

Figures 3 and 7 show the planned land uses in this portion of the NRMP area. Between SR-163 and Fashion Valley Road, the NRMP area includes undeveloped, vegetated areas; a river crossing at Avenida del Rio; picnic tables, a private pedestrian bridge crossing the River; and a United States Geologic Survey (USGS) Streamflow Gauge Station.

At the end of this stretch of the River, the NRMP area widens and extensive, undeveloped, vegetated areas are located on both sides of the River. Transient persons frequently use this portion of the NRMP area for short-term settlement.

West of Sefton Field and Mission Valley YMCA, existing land use within the NRMP area is predominantly undeveloped and vegetated. Within this portion of the NRMP area, Morena Boulevard crosses in a north-south direction. The Amtrak and Coaster railroad crosses the area in the same direction. All NRMP area west of Sefton Park and Mission Valley YMCA is designated by the Mission Valley Community Plan as Open Space. This area forms the Mission Valley Preserve (from the YMCA parking lot and Sefton Field on the east to I-5 on the west).

Road Crossings

I-15, I-805, SR-163, and I-5 are major regional transportation crossings of the San Diego River. Other crossings include Friars Road, Mission San Diego Road, Ward Road, Qualcomm Way, Mission Center Road, Avenida del Rio, Fashion Valley Road, and Morena Boulevard. These roadways, many of which are major arterials, connect the north and south sides of Mission Valley. Additionally, a number of private pedestrian and bicycle bridge cross the River within the NRMP area.

LAND USE AND RECREATION ADJACENT TO THE NRMP AREA

The area outside the eastern boundary of the NRMP area is Mission Trails Regional Park, whose land use is governed by the Mission Trails Regional Park Master Development Plan. This regional open space park is used for a variety of recreation activities, including walking, hiking, and wildlife observation.

Mission Trails Regional Park to I-15

Between the project's eastern boundary at Mission Trails Regional Park and I-15, land use designations adjacent to the NRMP area are set forth by the Navajo Community Plan (see Figure 3). Consistent with the land use designation set forth in the master plan (Natural Open Space), the existing land use of the property adjacent to the eastern end of the NRMP area (north of the Superior Ready-Mix facility and Admiral Baker Golf Course) is open space. Residential uses consisting of the Mission Playmore development and Mission Plaza Apartments are located north of the NRMP area near I-15.

Where the River turns southward, industrial uses on the east side include two light industrial office buildings and associated parking, a Home Depot facility and parking area, a Honda car dealership, and a commercial shopping center with restaurants, gas station, car wash, and retail stores. Camino

del Rio North abuts the south side of the NRMP area between this commercial shopping area and I-15.

The sites to the north of the NRMP, and north of the Mission Plaza Apartments and I-15, are developed with the Mission San Diego LRT Station, MTDB trolley storage area, a 24 Hour Fitness facility, and the Rancho Mission Hills Apartments. Ward Road crosses the River immediately east of the San Diego Mission LRT Station. At this same location, the LRT extension that is currently under construction crosses over to the south side of the River. Camino del Rio North and footings for the LRT extension abut the south side of the NRMP area.

I-15 to SR-163

Qualcomm Stadium and its parking facility are located north of the NRMP area. An irrigated grassy field is also located north of the NRMP area, west of the stadium and parking area. This field is a former Charger football team training facility, and is presently used for miscellaneous sports activities. The Fenton LRT Station, Mission Valley Library, and the Fenton Marketplace shopping center are located north of the training field.

Areas south of the NRMP area between I-15 and the Camino del Rio North "s-curve" (across from Qualcomm Stadium and parking area) are developed with commercial office uses, including a building leased by the Kahala Travel and Westland Insurance Brokers, the Cornerstone Mortgage building, the San Diego State Foundation building, several office buildings comprising the Fountain View Business Park, and two office buildings leased by Anteon Corporation. The parking areas for each of these uses abut the NRMP area. The land along the Camino del Rio North "s-curve," which is on the south side of the NRMP area between the existing commercial office spaces and Mission City Parkway, has been converted into a City Metropolitan Wastewater District (MWWD) Canyon Sewer Mitigation site. This mitigation site was created for the purposes of permitting/mitigating impacts to wetland/waters (anticipated and existing) associated with the MWWD Canyon Sewer Access projects located within the San Diego River Watershed. The mitigation site was created during the fall and winter months of 2005/2006 and includes approximately 3.43 acres of wetland habitat (mostly southern cottonwood willow riparian forest vegetation) and approximately 2.06 acres of coastal sage scrub buffer on the adjacent created slopes.

Between Mission City Parkway and Qualcomm Way, the land south the NRMP area is bordered by Camino del Rio North in some locations. Parcels between this roadway and the NRMP area are largely undeveloped and covered with vegetation, with the exception of an office building leased by Sprint and a United States Postal Service distribution center. Vacant parcels in this area between Camino del Rio South and the NRMP area are designated by the Mission Valley Community Plan for Commercial-Office use.

SR-163 to I-5

Fashion Valley Mall and its parking area are located to the north of the NRMP area. Elevated LRT tracks and a maintenance road are located between the NRMP area and Fashion Valley Mall, as is the Fashion Valley LRT Station and associated parking. The Town and Country Hotel and Convention Center is located to the south of the NRMP area. Parking areas associated with this facility are adjacent to the NRMP area.

West of Fashion Valley Road, Riverwalk Golf Course borders the north and south sides of the NRMP area for approximately 3,500 feet.

A Budget Truck and Car Rental retail facility and vehicle storage area exists on the south side of the NRMP area on the western end of the Riverwalk Golf Course. Portions of the Budget rental site are vacant, graded, or paved areas that contain sparse vegetation. The site is designated for Office or Commercial Recreation Use by the Mission Valley Community Plan, and for Commercial Recreation-Tourist Related and Office use by the Atlas Specific Plan, which overlays the Mission Valley Community Plan in this area.

The Red Lion Hanalei Hotel and Conference Center is located south of the NRMP area, immediately west of the Budget site. The Red Lion site is developed with a hotel, conference center, and parking area and is used for tourism. Similarly, Motel 6 and its parking area are located west of the Red Lion site and adjacent to the south side of the NRMP area. A vacant area designated for Commercial-Recreation Use by the Mission Valley Community Plan is located west of Motel 6. West of this vacant area, Hotel Circle North is adjacent to the south side of the NRMP area, which is labeled as a wildlife habitat area in this location. The Comfort Inn and Suites is located across Hotel Circle North from this portion of the NRMP area. Further west, the Premier Inns hotel is located between Hotel Circle North and the NRMP area. Sefton Field Baseball Park, which is operated and maintained by Presidio Little League, is located on the south side of the NRMP area at the end of Hotel Circle North.

Across the River from the Budget rental site, to the north of the enlarged NRMP area, additional Riverwalk Golf Course is located. At the western end of the golf course to the north side of the NRMP area, an undeveloped, vegetated area exists between the River and the LRT track. Courtyard Apartments, Presidio Place Condominiums, and Mission Valley YMCA are situated between the NRMP area and Friars Road west of the golf course. The LRT track is located between the NRMP area and these uses until it turns north to cross Friars Road near the Linda Vista Station at Napa Street.

A self-storage facility is located south of the NRMP area, in the vicinity of where the Amtrak and Coaster railroad crosses the NRMP. The facility is located between the railroad and I-5.

The Southern Wildlife Preserve, located in Mission Bay Park, is west of I-5, outside the boundaries of the NRMP. The wildlife preserve is used for passive recreation, such as bird watching.

TABLE E

EXISTING LAND USES

Location	Within NRMP Area	North[1] of NRMP Area	South[2] of NRMP Area
Between Mission Trails Regional Park and Katelyn Court/Mission Gorge Road intersection	River; undeveloped, vegetated area; Mining use (Superior Ready-Mix); industrial use	Mining use (Superior Ready-Mix)	Industrial uses
Between the Katelyn Court/Mission Gorge Road intersection and Friars Road	River; undeveloped, vegetated area; Golf course (Admiral Baker Golf Course); commercial shopping center	Golf courses (Admiral Baker Golf Course) and other recreational uses (RV park, picnic areas, basketball courts)	Vacant, vegetated area; industrial use; multiple-family housing; commercial shopping centers
Between Friars Road and Mission San Diego Road	River; undeveloped, vegetated area; undeveloped steep slope; industrial use; Portions of Mission Basilica San Diego de Alcala	Undeveloped steep slope; residential development; portions of Mission Basilica San Diego de Alcala	Industrial use
Between Mission San Diego Road to I-15	River; undeveloped, vegetated area; industrial use	Residential use; LRT Station; 24-Hour Fitness facility	Industrial use; commercial shopping center; LRT track
Between I-15 to Mission City Parkway/Fenton Parkway	River; undeveloped, vegetated area; office building; portions of Qualcomm Stadium and parking; athletic field; LRT	Portions of Qualcomm Stadium and parking; Fenton Marketplace; Mission Valley Library	Office buildings; undeveloped, vegetated area
Between Mission City Parkway/Fenton Parkway to Qualcomm Way	River; undeveloped, vegetated area; office building; USPS distribution center	Multi-family residential use; Office use; Marriott Hotel	Camino del Rio North; Undeveloped, vegetated area
Between Qualcomm Way and SR-163	FSDRIP – not included in NRMP	FSDRIP – not included in NRMP	FSDRIP – not included in NRMP
Between SR-163 and Fashion Valley Road	Vegetated area; picnic facilities; Avenida del Rio river crossing; maintenance road; pedestrian bridge; LRT parking area; portions of Fashion Valley Mall	Fashion Valley Mall; Fashion Valley LRT Station	Town and County Hotel and Convention Center

Location	Within NRMP Area	North[1] of NRMP Area	South[2] of NRMP Area
From Fashion Valley Road to 3,500 feet west of it	River; undeveloped, vegetated area; Golf course (Riverwalk Golf Course)	Golf course (Riverwalk Golf Course)	Golf course
From 3,500 foot west of Fashion Valley Road to the alignment of Sefton Park/Mission Valley YMCA	River; undeveloped, vegetated area; Golf course (Riverwalk Golf Course)	Golf course (Riverwalk Golf Course); multiple-family residential uses; LRT tracks; Mission Valley YMCA; undeveloped, vegetated areas	Commercial-recreational uses; vacant lots; vacant, undeveloped areas
From the alignment of Sefton Park/Mission Valley YMCA to I-5	River; Undeveloped, vegetated area crossed by Morena Boulevard and railroad tracks consisting of Mission Valley Preserve	Undeveloped, vegetated areas; Friars Road	Undeveloped, vegetated areas consisting of Mission Valley Preserve
Notes: [1] Or West, as the River meanders. [2] Or East, as the River meanders.			

4.0 MANAGEMENT ISSUES

Creating a management plan that covers both private and public lands provides a unique set of challenges. Similarly management of wildlife, natural, and cultural resources within a highly urbanized setting is difficult. However, with careful planning and attention to detail and the public's needs, a balance can be struck. Not all requests for recreational access can be accommodated; similarly, not all measures to benefit wildlife can be employed within the NRMP setting. Maintenance activities will need to be carefully planned to avoid impacts to resources and not disrupt public use to the extent feasible.

A primary biological concern to areas covered by the NRMP is increased edge effects. The NRMP area is a linear project area with a high percentage of edge. Management actions to counteract or minimize detrimental edge effects will need to be a priority. Management of natural resources in the NRMP area must consider, among other things, impacts from human use, erosion, and surrounding development.

4.1 PUBLIC USE

The constant pressure of human use, including both passive and active recreational use and transient encampment use, can damage the NRMP area's natural and cultural resources. Presently, the NRMP area is in almost constant use for traditional recreational activities such as fishing, hiking, biking, and nature appreciation. In addition, the NRMP is occupied by a large number of transients throughout the year.

Public use of the NRMP area is highly varied and dependent upon location. The eastern end of the NRMP area receives little to no recreational use, probably due to the availability of Mission Trails Regional Park to the immediate east and the presence of constraining land uses adjacent to the NRMP area, including the Superior Ready Mix operations within the Mission Gorge area. Further downstream, near the Friar's Road River crossing, recreational use of the NRMP area is dominated by fishing. Once the River enters Mission Valley, west of I-15, traditional recreational uses within the actual NRMP area diminish, likely due to the presence of numerous transient encampments. Recreational uses occur immediately adjacent to the NRMP area and would be expected to expand into the NRMP habitats, with the elimination of transient encampments and increased safe access.

Transient encampments are dynamic and can be highly impactive. In addition, the area's setting and context, within a densely populated urban area, bring attendant problems such as litter, graffiti, and illegal activities. Numerous trails, often in inappropriate, sensitive areas have been created by unregulated use of the area. Intentional cultural site vandalism is also a problem. This misuse and overuse results in damage to natural and historic resources.

The NRMP area is expected to receive increased pressure for recreational activities as the population within the area continues to grow unchecked. The effects of this pressure may take the form of direct loss of habitats to human intrusion or alterations in the management of the River to meet the competing needs of human-use and wildlife-use. Also, human aesthetic expectations do not always match the natural conditions of an area. For instance, recreational users may prefer to experience a mature riparian woodland with adjacent perennial river flows, but meeting such goals may come with a corresponding loss of native species which require successional habitats and/or are adapted to

intermittent flows. Pressure for socially-acceptable public uses, in concert with illegal encampments, has the potential to effectively eliminate the natural and cultural resources of the area, as well as creating unsafe human conditions, if appropriate management and monitoring are not employed.

4.2 URBAN ENCROACHMENT

The NRMP area's proximity to residential, industrial, and commercial areas results in refuse dumping and illegal pedestrian access. Non-native landscape plants also have invaded from adjacent residential and commercial land use sources. Increased runoff from surrounding urban development introduces sediments and pollutants, such as oil and heavy metals, which degrade the entire NRMP area. This run-off, combined with adjacent land uses and numerous River crossings have altered the natural hydrology and habitats in the area. The volume of contaminants is relatively high because the storm drains emptying into the area serve commercial and industrial in addition to large residential areas. Further pressure can be expected with the additional development projects currently proposed, approved, or under construction.

4.3 EASEMENTS

There are several easements, which allow utilities (electricity, water, and sewer) to traverse the NRMP area. Problems occur from the presence of construction and maintenance crews, especially when the large equipment used leaves the designated access roads. The siting of access roads can damage wetlands, impact aesthetic values, and increase erosion. Misuse of access roads by non-authorized users is also a problem.

4.4 EROSION/SEDIMENTATION

Erosion and sedimentation problems exist throughout the NRMP area. Bank erosion is a problem in several locations at either end of the NRMP area. Sand and gravel are carried from surrounding slopes into the River and tributary streams during rainstorms or periods of excessive irrigation. Prehistoric sites and riparian habitat are damaged by erosion. In addition, deposition of material within culverts and under bridges can increase the need for maintenance of these areas, which may have corresponding impacts on adjacent natural and cultural resources effected by maintenance crew access and activities.

Erosion and deposition are part of the natural process of succession; however, alterations in the hydrologic conditions of the river have largely eliminated the natural flooding events that would have counteracted some of the effects of sedimentation. Also, urban runoff, storm drains, and human disturbance are accelerating the natural process by effecting flow rate and volume, damaging slope vegetation, and creating conditions which do not foster development of functional ecosystem. The resultant erosion is causing safety hazards, extreme siltation deposition, and loss of valuable habitat.

4.5 BRUSH MANAGEMENT

Controlled burns are a tool to encourage new and robust growth where a natural fire regime no longer occurs. Additionally, controlled burns eliminate or reduce the level of accumulated vegetative fuel-loading which can be hazardous and make controlling a wildfire much more difficult, similar to the situation in San Diego in 2003. The NRMP area's urban setting makes controlled burns expensive in the short-term due to the need to insure the safety of the surrounding development but less expensive

in the long-term as the results last longer than other brush control measures and, therefore, do not need to be conducted as often. A brush thinning program and firebreaks in appropriate locations are less problematic fire control methods that are currently implemented regularly by the Park and Recreation Department throughout the City.

Brush management and controlled burns would only be appropriate/necessary within a limited portion of the NRMP area where upland vegetation or non-native riparian vegetation create a potential hazardous fuel load.

5.0 CONSTRAINTS AND OPPORTUNITIES

5.1 CONSTRAINTS

The NRMP recognizes the following constraints.

The primary purpose of this NRMP is to protect, preserve, and enhance natural resources along the lower San Diego River. Since, however, the NRMP area is in an urban setting, management of the area must consider the proximity of residential and recreational uses and cannot be managed solely as wildlife habitat.

Within the NRMP area, a variety of land uses exist. These activities, plus the extensive development in adjacent areas, preclude returning all of the NRMP area to undisturbed habitat.

The extent of adjacent development, historic resources disturbance, and current recreational pressures within the area surrounding the NRMP preclude returning all of the NRMP area to the undisturbed habitat it once was.

Protection of natural resources, as required by state and federal law, precludes certain human activities (*e.g*., construction, dredging, recreation) from certain areas and during certain seasons.

Whenever mitigation or specific preserve areas occur within the NRMP area, potential land uses may be restricted and additional mitigation penalties may be required for any impacts to those areas.

The majority of soils within the NRMP area have the highest run-off potential and severe erodability ratings, making siting of trails and other facilities difficult, as well as increasing future management problems, such as erosion control.

Private ownership of many parcels within the NRMP area presents potential obstacles in implementing guidelines provided in the NRMP.

5.2 OPPORTUNITIES

Opportunities for preserving wildlife habitat and maintaining a recreational resource include the following.

Opportunities exist at numerous locations within the riparian forest to remove introduced plants, shrubs, and trees such as palms.

Comprehensive planning and management can provide adequate protection measures for natural resources.
Areas of degraded habitat can be restored to improve the overall natural resource system in the NRMP area.

Habitat improvement or conversion can be used as mitigation for future losses with proper coordination with resource agencies.

The NRMP area of the San Diego River, including biological and historical resources, can be used for educational and research purposes.

Many recreational activities currently undertaken within or contemplated for the NRMP area are compatible with most resources.

Federal, state, and local regulations provide protection for major biological elements in the NRMP area.

Slopes over 25 percent within the City are protected from development by City ordinance.

Educational opportunities exist for visitors to learn about the natural, historical, and cultural resources present.

Private ownership within the NRMP area provides private sector developers with the opportunity to purchase and enhance/restore habitat. This habitat can be placed under the long-term protection and management of this NRMP to meet mitigation requirements, which cannot be met at their project site.

Natural resource management and habitat restoration opportunities are increased by floodway and floodplain designations, which limit construction in these areas.

The City will be restoring and enhancing natural, cultural, and historic resources within the NRMP area. The City will also be identifying, developing, and implementing maintenance and recreational projects within the NRMP area.

6.0 LAND USE PROPOSALS

Future land use projects in and adjacent to the San Diego River NRMP are categorized as follows: private development, park facility, restoration, and enhancement projects, and park maintenance projects. Private development within the NRMP area is permitted to the extent that it conforms to existing zoning regulations and the City MSCP Subarea Plan. Proposed projects adjacent to the NRMP area are included in this section as they could indirectly impact the San Diego River. All projects within the NRMP area shall comply with the NRMP guidelines and obtain permits, as needed, consistent with the CEQA, federal, state, and city requirements. Designs for un-permitted developments are not yet approved and will be subject to environmental review. The purpose and need for all projects impacting sensitive resources, in addition to a statement that there are no practicable alternatives that avoid and/or minimize impacts to sensitive resources, should be demonstrated during the environmental review of the project. Any mitigation programs required shall incorporate the guidelines set forth in the NRMP, as appropriate.

All future projects should be designed to avoid and/or minimize indirect and direct impacts to sensitive resources associated with the NRMP and should comply with the MSCP Subarea Plan, which "…requires that native vegetation is restored as a condition of future development proposals along this portion of the San Diego River corridor". Finally, all new river crossings should bridge the river and not block high-level flows (*e.g.*, 100-year flood) that could ultimately require additional clearing and maintenance of the river.

6.1 PRIVATE DEVELOPMENT

Known projects being developed or proposed for development within or adjacent to the NRMP area are included in the following list and area identified in Figure 14.

Club River Run Apartments – This is an expansion project along Rio San Diego Drive immediately east of the I-805 overcrossing. This project proposes adding 16 units to existing development and a pedestrian trail along north side of MTDB LRT.

Hazard Center Drive – A westward extension of Hazard Center Drive is proposed to connect Hazard Center Drive to Fashion Valley Mall via an underpass beneath SR-163.

Hanalei office Tower Site - An amendment to the Atlas Specific Plan has been proposed to change the land use at the Hanalei Office Tower Site from office and hotel to apartments and hotel. This project was initiated more than two years ago, and has been dormant since its initiation.

Automobile Club of America (AAA) – AAA has proposed the development of a two-story office/retail facility at 2440 Hotel Circle Place. The project was heard before the City Council on July 15, 2003, and at this meeting, the decision of the Planning Commission in adopting the Mitigated Negative Declaration and Mitigation, Monitoring and Reporting Program (No. 2379, LDR No. 42-0127) prepared in connection with the AAA project was appealed by members of the River Valley Preservation Project, Sierra Club, and Audubon Society. A motion to uphold the appeal failed.

Presidio View Apartments - The recently approved 350-unit Presidio View Apartments development is located at the Christian Fellowship Church on Hotel Circle North. Construction of this project is currently underway.

Mission Valley YMCA – The YMCA has proposed an expansion to its facility along Friars Road. The project would add a pool, offices, a community room, and parking to the existing Mission Valley YMCA facility on Friars Road. This project was approved by the Planning Commission on July 31, 2003. The project construction was underway at the time of this document's completion, with pool ground breaking scheduled for May 2006.

Rio Courtyard - The proposed Rio Courtyard project would develop a 8,300 square foot office building along the River immediately west of I-805. Parking for the project would be located underneath I-805. This project was previously approved and is presently under Substantial Conformance Review and subject to City staff approval.

A1 Self-Storage - A community plan amendment has been initiated for a self-storage facility proposed immediately east of the Veterinary Hospital near Taylor Street.

Ocean Beach Bike Path/Hotel Circle North Bikeway Design - A bicycle path has been proposed by the Mission Valley and Ocean Beach Community areas. The path would occur on the south side of the River between Hotel Circle North and the Ocean Beach community. As of 2006, the San Diego River Conservancy is helping to secure Proposition 40 funding for the Ocean Beach Bike Path/Hotel Circle North Bikeway Design, now known as the "San Diego River Bicycle Path" (extension of existing Ocean Beach Bike Path).

Qualcomm Stadium Redevelopment – The City is currently in private negotiations with the San Diego Chargers and the Chargers Task Force to determine the future use of the site currently occupied by Qualcomm Stadium. The site may be developed with a different stadium as well as commercial and residential uses.

Mission Valley Community Plan – The Community Plan is in the process of being updated. Portions of the NRMP area west of Fashion Valley Road are proposed for future uses that differ from the existing uses as dictated by the Levi Cushman Specific Plan. The Specific Plan identifies planned land uses for the area west of Fashion Valley Road, south of Friars Road, north of I-8 and east of the I-8 Hotel Circle/Taylor Street exit. The plan designates open space land use for the River. On the north side of the River, planned land uses consist of Open Space, Commercial Office, Mixed Use-Office/Retail, Commercial-Hotel, Residential, and To Be Determined. Areas south of the River are identified for Mixed-Use-Office/Residential/Retail, Mixed-Use Office/Retail, Mixed Use-Hotel/Retail, and Open Space land uses. The update is expected to be complete in late 2004 or early 2005.

Mid-Coast Corridor Project - The Federal Transit Administration (FTA) and Metropolitan Transit Development Board (MTDB) propose to extend the San Diego Light Rail Transit (LRT) system from the Old Town station on the existing light rail line north to Balboa Avenue. The LRT extension would need to cross the San Diego River to provide access to the growing Mid-Coast Corridor. The Mid-Coast Corridor Project's Balboa LRT Extension would begin south of the San Diego River, where it would diverge from the Mission Valley LRT line, and continue north on a new bridge over the San Diego River. Three bridges would be included in the Balboa Extension: over San Diego River/Friars Road, Tecolote Creek, and Balboa Avenue. The San Diego River/Friars Road bridge

would be a reinforced concrete box girder bridge, approximately 900 feet long and less than 30 feet wide, with all footings of its nine columns outside the River's low flow channel. There is no schedule available for this work at this time.

Levi-Cushman Specific Plan Area River Crossings

Unlike the project's listed above, the Levi-Cushman Specific Plan does not propose a pending physical project, but has planned for future development (including River crossings) within the NRMP area. It is addressed here as a plan that could guide future development, but not a proposed project.

There are three river-crossings planned within the Levi-Cushman Specific Plan area. First, is existing Fashion Valley Road, which runs from Friars Road on the north to connect with I-8 on the south. Other crossings have not been constructed and include streets designated as Street A and Street C in the Specific Plan. Street A is the second river-crossing designated in the Levi-Cushman Specific Plan. This roadway would consist of a southern extension of Via Las Cumbres, and would connect Friars Road to Hotel Circle North. Street A would be designed as a 100-year flood level river-crossing. The third river-crossing is designated as Street C in the Levi-Cushman Community Plan. This roadway begins at Friars Road on the north and terminates at Street B on the south side of the River. Street C is located between Fashion Valley Road and Street D (designated in the Community Plan) and would be constructed as a bridge for pedestrians although it would also allow access for public transit and emergency vehicles. This roadway would be designed as a 100-year flood level crossing.

For all current and future proposed projects, CEQA requires identification of significant biological impacts. The City requires avoidance, minimization, and mitigation of these impacts in compliance with the MSCP Subarea Plan and City's Land Development Code, Biology Guidelines standards.

Figure 14. Proposed Projects and Uses

7.0 MAINTENANCE, USAGE, AND DEVELOPMENT GUIDELINES

The NRMP area is owned by the City and various private entities. Some areas are open to the public and overall the NRMP area is heavily used for a variety of purposes. Utility and transportation easements, facilities, and park facilities need regular maintenance and improvement. The following guidelines are provided for public safety and for protection of native habitat and wildlife while preserving the San Diego River resources. If any maintenance activity adversely impacts natural and/or cultural resources, mitigation will be required as outlined in the Mitigation Options and Guidelines chapter of this NRMP.

7.1 UTILITY MAINTENANCE

1. Applicable City, state, and/or federal permits shall be required prior to conducting any maintenance activity. Additionally, all such activity shall comply with guidelines in this NRMP. Approval from private landowners, where applicable, and the City Park and Recreation Department is required for all maintenance activity design, implementation, and mitigation to ensure the guidelines adopted in this NRMP are incorporated.

2. A qualified biologist shall identify potential impacts to biological resources on-site prior to the initiation of the maintenance activity. The biologist will discuss these potential impacts with the appropriate maintenance staff and crew involved with the maintenance activity. In addition, the biologist will also be present during the maintenance activity to ensure the avoidance and/or minimization of impacts to identified sensitive biological resources.

3. Within the City (San Diego City Council Policy 700-17), necessary underground public facilities are permitted to cross City open space areas if no permanent damage is sustained. Revegetation would be required, as well as any other required mitigation outlined in appropriate permits.

4. A Memorandum of Understanding or Letter of Agreement with each utility which conducts maintenance activities within the NRMP area should be developed to outline specific conditions for maintenance of their facilities and easements and would serve in lieu of issuing right-of-entry permit for individual maintenance visits.

5. All San Diego Gas and Electric (SDG&E), City of San Diego Metropolitan Wastewater Department (MWWD), and San Diego Trolley Inc. (SDTI) work crews shall undergo training programs to make crews aware of the sensitivity of the habitats in which they are working. The City and SDG&E have training programs for crews working in environmentally sensitive areas, as well as a sensitive plant, animal, and habitat reference guide. Crews should be routinely trained and advised on how to minimize environmental impacts during maintenance activities. Any current or future easements (to entities in addition to SDG&E, MWWD, and SDTI) should be subject these requirements as well as those listed below in #5.

6. Maintenance activities and other uses of easements held by SDG&E, MWWD, and SDTI must be coordinated with the City Park and Recreation Department Natural Resource

Manager and/or appropriate landowner. Notification to City of San Diego personnel and/or landowners should also occur as soon as possible when emergency action is required.

7. If a maintenance activity could result in direct or indirect impacts to surrounding habitat or sensitive resources, the maintenance work area should be flagged by a Natural Resource Planner, or qualified biologist and/or archaeologist to aid the maintenance personnel in keeping the impact confined to the work area. Additionally, depending on the biological resources that may be affected by the maintenance activity, a qualified biologist should be on-site during the maintenance.

8. Prior to conducting any maintenance activity that disturbs substrate, a site check for archaeological resources shall be conducted by a qualified archaeologist. Results should be given to the City (Contact: Natural Resource Planner for review by Development Services archaeologist) for review and evaluation. If the potential for indirect impacts exist, the site shall be flagged to keep work crews away. If direct impacts are found to be likely, the project should: 1) try to avoid the area; 2) minimize the impact; and 3) develop and implement a plan for recovery of resources subject to approval by the City contacts provided earlier. Native American consultation should be made, when appropriate, during impact analysis and mitigation design and implementation.

   A stewardship program for prehistoric and historic resources should be instituted for the NRMP area in conjunction with a Cultural Resource Site Management Plan. A designated steward would then be involved in consultations about projects and possible impacts to cultural sites.

9. Regular maintenance activity and new construction should avoid nesting/breeding season of all avian species (approximately February - September). [Per Fish and Game Code sections 3503, 3503.5, and 3513, the seasonal restriction should apply to all avian species that have active nests with the area of potential effect of maintenance activities (*e.g.*, minimum of 500 feet for nesting raptors).]

10. If work crews find an unidentified, potentially sensitive plant, nest, or burrow in the maintenance area, the Project Biologist shall be contacted. The Project Biologist will determine appropriate action to avoid or minimize impacts prior to resuming work.

11. Utility or transportation easements and siting of access roads should be reviewed to identify changes that could be made to minimize erosion and the impact on sensitive areas and species, cultural sites, wetlands, and aesthetic values. No activity should increase the size of existing access roads. If re-routing of access roads occurs, the vacated area(s) should be made available for sensitive plant/habitat restoration.

12. Parking of maintenance and city vehicles under all large native trees, especially oak trees, shall not be permitted in order to protect the tree root system.

13. River/stream crossings by vehicles shall be limited to existing bridges in order to reduce water quality impacts.

14. All construction and maintenance materials shall be disposed of in an appropriate manner and not in or near wetlands.

15. All construction and maintenance activities should use best management practices for erosion control at construction/work site and should provide for park user safety, such as temporary signs and/or barricades.

16. Erosion on access roads shall be minimized using appropriate measures, such as water bars.

17. For all grading work, dust shall be controlled with regular watering.

18. Mowing, rather than grading, should be the method of vegetation removal if needed to eliminate/reduce fire hazard, to provide safe access, or to improve view of utility facility.

19. Additional guidelines for SDG&E and maintenance activities include:
- Maintenance activities shall avoid the rainy season when soils are wet;
- All vehicles, personnel, and equipment shall remain within the existing right-of-way;
- Any accidental damage to NRMP area habitat outside the right-of-way shall be mitigated per the "Subregional Natural Community Conservation Plan" (NCCP) (1995) as outlined in the SDG&E NCCP. The NCCP requires projects go through a mitigation process for direct and indirect impacts. Forms of acceptable mitigation, in order of preference, include: avoidance, on-site restoration, fee-owned easements dedicated to the MSCP, and credits from pre-approved mitigation banks; and
- SDG&E shall conduct all operations within the NRMP area according to "Operational Protocols" outlined in their NCCP. This NCCP serves as a 50-year permit with United States Fish and Wildlife Service (USFWS) and CDFG and meets the requirements for the federal and state Endangered Species acts for 25 years, with an option for renewal up to 50 years.

20. Additional Guidelines for MWWD maintenance/emergency activities include:
- Maintenance activities shall be avoided during the rainy season when soils are wet unless a significant rain event inspection identifies a need for immediate maintenance. Access should be delayed a minimum of 48 hours after a rain event or until soils are dry enough to drive upon.;
- All vehicles, personnel, and equipment shall remain within the approved easement and any accidental damage to NRMP area habitat outside the easement shall be mitigated per the Mitigation Options and Guidelines outlined in this NRMP; and
- Within Water Department easements, temporary impacts shall be mitigated through on-site restoration, where feasible. Mitigation for impacts within the NRMP area shall be located within the NRMP area, whenever possible. However, riparian trees should not be replaced on-site if their root systems could result in damage to pipelines. The loss of on-site trees should be mitigated off-site through habitat creation, restoration, or enhancement. Mitigation details should be outlined as part of the permit process with appropriate agencies.
- Notify Open Space Lands Coordinator two days prior to desired access or within two days after an emergency event for open space City land;
- Only "canyon proficient vehicles" that can stay within the 8-10-foot wide access way are permitted on unpaved trails. Turning around only allowed at officially designated turn-around areas; and
- Access after dark should be for emergencies only and only when adequate measures are taken to ensure vehicles stay on the access ways.

21. Additional guidelines for SDTI maintenance/emergency activities include:
    - Maintenance activities shall be avoided during the rainy season when soils are wet;
    - All vehicles, personnel, and equipment shall remain within the approved easement; Any accidental damage to NRMP area habitat outside the easement shall be mitigated per the Mitigation Options and Guidelines outlined in this NRMP; and
    - Within SDTI easements, temporary impacts shall be mitigated through on-site restoration, where feasible. Mitigation for impacts within the NRMP area shall be located within the NRMP area, whenever possible. However, riparian trees should not be replaced on-site if their root systems could result in damage to trolley abutments. The loss of on-site trees should be mitigated on-site through habitat creation, restoration, or enhancement. Mitigation details should be outlined as part of the permit process with appropriate agencies.

22. Field surveys will be necessary to provide information to determine the present condition of the cultural resources. Prior to any development within the San Diego River Valley, each cultural resource will need to be evaluated through testing programs to determine the significance/importance prior to determining mitigation of proposed impacts or providing recommendations for preservation. Trails and bike paths will need to either be located away from significant/important cultural resources or the sites will need to be capped with sterile soil and landscaping. Monitoring during construction is recommended because of the possibility of prehistoric sites having been buried during flooding episodes along the River. One example of a deeply buried Late Prehistoric shell midden was identified in the Riverwalk Golf Course during construction monitoring by Schaefer (1996).

23. Mission Valley has been flooded many times over the centuries, burying or washing away everything in the path of the San Diego River. Historical documents, archives, and maps show residences, roads, and structures in the valley. It is likely that many of these remain buried beneath sediments and alluvium. Any grading or excavation along the path of the River, whether for development or habitat restoration, should be monitored by an archaeologist. If historical materials are found, grading should stop until the material can be evaluated for significance, following City of San Diego guidelines. Significant historical sites and features should be avoided. If avoidance is not possible, data recovery will be necessary.

7.2 PUBLIC USE

1. All trail users should remain on designated trails for the protection of adjacent sensitive resources and for their personal safety. Signs and physical barriers (*e.g.,* fencing, shrubs, rocks, and boulders) should be used to direct public use to appropriate, designated trails.

2. A program to control the spread of poison oak and other human nuisance plants along trails and identified public use areas should be implemented to keep those areas open to visitor use.

3. If hiking and bicycling are allowed they should be restricted to designated trails only. Signs shall be installed to identify appropriate uses for designated NRMP trails. All undesignated trails should be posted as closed to recreational users and physical barriers installed to deter access (trail siting criteria is provided in the "New Development" section of this chapter). To the extent practicable, undesignated trails should be restored, and interpretive signage and

fencing added along the perimeter of the riparian buffer where there are no clear trails, to protect these areas from encroachment.

4. Domestic animals shall be on a leash at all times within the NRMP area and shall remain on trails and in public areas. Owners are responsible for cleaning up their pet's droppings.

5. All litter shall be placed in garbage cans placed at trailheads and other locations in the NRMP area. If practicable, signage, pet waste bags, and trash receptacles will be provided in key locations to encourage trail users to keep areas clean. Trash receptacles should be emptied on a regular basis and should be designed to prevent access by opportunistic avian and mammalian species. Park Ranger staff should determine the frequency based on park usage.

6. If designating fishing areas are allowed in the NRMP area, fish populations shall be monitored and results shall determine future fishing sites. Fishing sites should be restricted where sensitive species, such as the southwestern pond turtle, are present, and where encroachment into or damage to riparian habitat would occur.

7. The City shall enforce federal and state laws, City ordinances, and NRMP policies.

8. Regular patrols shall be conducted to identify and control vandalism, illegal encampments, dumping, encroachments, trail blazing, etc.

9. Subsequent to completion of a Notice to Vacate and in accordance with applicable codes, all encampments shall be removed as soon as possible after consideration of biological concerns.

10. To aid patrols and discourage illegal uses and encampments, brush and dense vegetation should be thinned or removed during non-breeding/nesting season. Removal should be done by selective pruning rather than mechanical removal and should target non-native species, leaving various amounts of native plant understory. Thinning and removal locations and specific methods should be determined on a case-by-case basis in consultation with the resources agencies (and may require permits). Any thinning or removal actions shall be restricted to outside the avian breeding season.

11. No motorized vehicles, except, authorized utility crews with facilities in the NRMP area, emergency vehicles, or maintenance personnel, shall be allowed in the NRMP area, except public or private rights-of-way.

12. Graffiti and other effects of vandalism shall be removed/repaired as soon as possible.

13. A reporting and enforcement procedure should be developed to prevent residential and/or landscape encroachment into the NRMP area. The policy should allow for reporting by the public and volunteer groups as well as rangers and should be coordinated through the City Park and Recreation Department.

14. Areas where dumping occurs should be checked regularly and barricaded, if deemed necessary, to discourage dumping.

15. The San Diego Fire Department shall be the first responder point of contact for any potential hazardous waste spills or discoveries. Any identified hazardous waste shall be removed as

soon as possible following appropriate hazardous waste material disposal guidelines as determined by either the Fire Department or the County of San Diego Hazardous Materials Division Hazardous Incident Response Team. Areas should be signed within 24 hours of identification of the problem to indicate the presence of hazardous materials and made off-limits to public use.

7.3 PARK MAINTENANCE

The only portion of the NRMP area currently managed by the City as an active preserve or park is the Mission Valley Preserve at the western end of the NRMP. However, designation of additional park lands within the NRMP area is anticipated. The City maintains their parks for safety, sanitation, and habitat management reasons. All maintenance or management activities within the NRMP shall avoid and/or minimize impacts to biological resources and guidelines under Park Maintenance are incorporated by reference herein. The following maintenance activities shall be conducted within NRMP park land by the City (Park and Recreation Department).

1. Restroom Cleaning - schedule should be determined by park staff.

2. Litter Control - twice a week in parking lots and picnic areas; annual cleanup in other areas; and special volunteer projects for litter and illegal encampment removal, as needed.

3. Removal of Illegally Dumped Material - as soon as possible, where needed.

4. Graffiti Removal - as soon as possible from Park facilities.

5. Maintenance and Installation of Gates, Chains, and Locks - as needed to prevent illegal entrance.

6. Signs - replacement, repair, and cleaning as needed.

7. Picnic Areas - flail mow and weed to prevent fire and safety hazards in the spring after native plants go to seed (April or June).

8. Removal of Safety Hazards - safety hazards, such as fallen trees or hanging limbs, along the trails are removed as needed.

9. Removal of Improper Public Activities - activities, such as transient encampments, private encroachments on public land, tree houses, swings, or ropes in trees, placed in the Preserve illegally by the public are removed, as needed.

10. Removal of Exotic, Nonnative Plants - as, and where needed, by City staff or volunteers trained and/or supervised by City staff. Coordination with other agencies conducting similar activities in the watershed is desirable for optimal effectiveness. Necessary permits would be obtained for this activity, and any timing restrictions would be incorporated.

11. Brush Management - brush removed or thinned within 100 feet of structures on adjacent property, per City of San Diego Municipal Code 142.0412, to address Category I fire hazards, as needed based on an annual evaluation. However, per the City's Brush

Management Revisions to the Land Development Code, no brush management is required within wetland areas.

12. Trail Maintenance - major repair of trails once a year after the end of the rainy season to repair damage; minor repairs done throughout the year as needed.

13. Hazardous Materials Removal - when hazardous materials are identified, the Fire Department should be contacted. Appropriate removal or containment will be determined on a case-by-case basis by the Fire Department or the San Diego County Hazardous Materials Division Hazardous Incident Response Team. If the waste qualifies as "Household Hazardous Waste" (*e.g.*, cleaners, motor oil, gasoline), it may be taken in sealed containers to Household Hazardous Waste Transfer Facility is located at the Miramar Landfill.

14. Parking Lot Repair - parking areas maintained once a year after rainy season to repair damage or as needed due to vandalism or other forms of damage.

15. Sewerline and Access Road Service (City of San Diego Metropolitan Wastewater Department) - service manholes, monitor and maintain sewerlines and access roads once a year; emergency repair, as soon as possible.

16. Powerline and Right-of-Way Maintenance (San Diego Gas & Electric, Otay Water District) - general maintenance once a year; emergency repair, as soon as possible. All San Diego Gas & Electric maintenance work shall comply with the San Diego Gas & Electric Company's Subregional Natural Community Conservation Plan Section 6 (SDG&E 1995).

7.4 NEW DEVELOPMENT

1. Applicable City, state, and/or federal permits and appropriate environmental review shall be required prior to beginning a development activity. Additionally, all such activity shall comply with guidelines in this NRMP and not be located on an existing mitigation site. Approval of project design, implementation, and mitigation by the City Park and Recreation Department (depending on location of activity) is needed to ensure the guidelines adopted in this NRMP are being incorporated. Furthermore, all new development should comply with the MSCP Subarea Plan, which requires that "native vegetation is restored as a condition of future development proposals along…the San Diego River corridor".

2. Land Use Adjacency Guidelines, outlined in the San Diego MSCP Subarea Plan, shall be followed for all habitats.

3. Any permitted mining activity, including reclamation of sand, shall document impacts to water quality, water table level, fluvial hydrology, flooding, and wetlands and habitats upstream and downstream, and provide adequate mitigation.

4. All new development projects within the San Diego River watershed affecting water quality or quantity downstream should be subject to the City's municipal storm water permit and shall follow RWQCB standards. Any project upstream of NRMP area resulting in future changes to stream flows should consider the natural resources management policies

contained in this NRMP. Any enforcement actions associated with municipal storm water permits is the responsibility of the City.

5. All developed areas adjacent to the NRMP shall be subject to and adhere with the MSCP Land Use Adjacency Guidelines (City of San Diego MSCP Subarea Plan, Section 1.4.3) as referenced herein under Section 2.2 Applicable City of San Diego Plans. Furthermore, all new parking lots and developed areas in and adjacent to the NRMP area shall not drain directly into the NRMP area. All developed and paved areas shall prevent the release of toxins, chemical, petroleum products, fertilizers, exotic plant material, and other elements that might degrade or harm the natural environment within the NRMP area. BMP's should be installed within parking lots built prior to the adoption of the current municipal stormwater permit, paying special attention to those lots where water quality monitoring has indicated contaminants are being directly discharged into and polluting the River. BMP's should specifically include methods for pollutant runoff control, such as natural retention basins, grass swales and/or mechanical trapping devices. BMP's should be maintained as needed to ensure proper function. Appropriate maintenance could include dredging of sediments, removing exotic plants, and/or adding chemical-neutralizing compounds. All Best Management Practices (BMP's) or methods to control pollution from entering the NRMP area should be incorporated into the project footprint of the new development and not be located within any sensitive area or buffer to a sensitive area.

6. Development, construction, or maintenance design or activities should avoid concentrating and directing runoff into the NRMP area.

7. Maintenance access-ways and trails design within the NRMP should consider constructing bridges above the 100-year flood elevation, rather than culverts. This should minimize impacts to the river and the potential need for future clearing and maintenance of the river for flood control.

8. All new development adjacent to the NRMP area and/or sensitive biological areas will be setback from those areas so that all brush management requirements for zone 1 will occur outside of the NRMP and/or biologically sensitive areas. The modifications to development regulations listed in Section 142.0412e (City Brush Management Code 11-2005) are permitted adjacent to the MHPA to accommodate the increase in width. Mitigation will be provided if necessary brush management impacts biologically sensitive resources.

9. Adjacent development should provide a vegetative barrier within their brush management zone to reduce edge effect.

10. Developers should consult with City of San Diego to identify the specific trailhead location(s) in order to insure the trailhead and connecting trail locations are sited away from sensitive plants, sensitive habitats, sensitive breeding areas, and cultural resources. The design of the trailhead and trail should also be subject to approval of City of San Diego.

11. Picnic areas should be sited away from NRMP or sensitive biological areas to minimize impacts (*e.g.*, littering, feeding of wildlife, and attraction of nuisance or opportunistic wildlife) to sensitive biological areas. If picnic areas are located on parcels within or adjacent to the NRMP, a minimum 100-foot buffer to sensitive habitats should be provided.

12. Development of new trails requires City of San Diego environmental review per state law (CEQA). In the case of a stream crossing, a CDFG Streambed Alteration Agreement, Army Corps of Engineers (ACOE) permit, and a RWQCB Certification may be required.

13. The trail system should be sited within or adjacent to existing and permitted access roads whenever possible to consolidate use and minimize habitat fragmentation.

14. Trail width should be minimized, wherever possible, consistent with the type of use on that trail and trail location. For the most part, do not locate trails wider than 4 feet in copre areas or wildlife corridors, unless it is necessary to safely accommodate multiple uses or disabled access.

15. Within the MHPA areas of the NRMP, locate new trails, view overlooks, and staging areas in the least sensitive areas. Locate trails along edges of urban land uses adjacent to the MHPA, or the seam between land uses (not habitats), and follow existing dirt roads as much as possible rather than entering wildlife habitat or movement areas. Avoid locating trails between two native habitat types due to the heightened resource sensitivity of those areas.

16. Numerous informal trails exist in NRMP area and should provide sufficient choice for designation as a formal trail system in the future master planning process. If, however, new trails become necessary, they should avoid and/or minimize impacts to river edges and sensitive habitats or plants and not fragment existing habitats. In addition, formalization of a designated trail system should receive an appropriate environmental review.

17. If required, construction, including trails, resulting in subsurface disturbance should be monitored by a Native American consultant and/or qualified archaeologist for impacts to prehistoric and historic resources and by a qualified biologist for impacts to biological resources.

18. The design of new or rehabilitation of existing trails should avoid or minimize potential impacts to the greatest extent possible. Impacts should be determined through biological and cultural resource assessment survey. For example: minimize the number of creek crossings and pass through the riparian vegetation corridor only intermittently to prevent continuous disruption of wildlife movement.

19. Trails from areas adjacent to NRMP area should be limited in number. Possible locations should be studied in advance to avoid sensitive habitats and archaeological sites and minimize erosion, while allowing for reasonable public use.

20. Trails should be located to avoid introducing adverse impacts, (*e.g.*, away from slopes below adjacent residential development and not within areas of highly erodible soils).

21. Siting of trails should not follow ecotones (edges between plant communities) but should be limited, if possible, to a single trail which crosses through plant communities and ecotone boundaries. This optimizes interpretive and recreational value while protecting the multiple species which often congregate in ecotonal areas.

22. Trails should be relocated to avoid/protect endangered or sensitive plant species (including all MSCP covered species), key wildlife breeding habitats, and archaeology sites with surface artifacts.

23. Alternative trail and access road surfaces may be considered for erosion control. Possible alternatives include: gravel, fiber matting, polymer-based compounds, and mulching with organic or non-organic materials.

24. Stream crossings by vehicles shall be limited to existing bridges in order to reduce water quality impacts.

25. Erosion from construction of trails should be controlled by use of methods discussed in the City of San Diego Trail Design Standards.

26. Buffer areas serve a biological function by providing a separation and screening of wildlife habitat from human activity associated with development. The standard buffer for sensitive habitats or species within the NRMP shall be a minimum of 100 feet, measured from the outside drip-line of the riparian vegetation. This buffer should be based on current local and state standards, except where modified, according to the following criteria:

- The size and width of the buffer shall be based on site-specific biological resource information of species or habitats present and the nature and intensity of the proposed/existing adjacent use. For example, some species are more sensitive to noise and would need a wider buffer zone if the adjacent use had a decibel hourly average over 60. All measures to minimize indirect impacts to sensitive habitats should occur within the proposed development's footprint and outside of sensitive habitats and biological buffers to sensitive habitats; and
- A buffer may be reduced in width/size if an adjacent use takes additional measures, such as sedimentation basins, noise attenuation wall, fencing, thick native vegetative barriers, muted lighting, etc., as outlined in the various guidelines sections of this document and in Section 1.4.3, Land Use Adjacency Guidelines of City of San Diego's MSCP Subarea Plan.
- Allowable uses within a buffer area include passive recreational use, erosion control devices (where erosion already exists or is not the result of adjacent development), fences or other barriers, exotic removal, signs and multi-use trails. In the case of erosion control devices and fences or other barriers, planned erosion control devices should be placed outside of the buffer areas, unless the erosion problem and source are within the buffer; fences and barriers should be placed at the perimeter of the buffer. Buffer areas should be planted with appropriate vegetation native to southern California and compatible with the adjacent habitat to conserve water, minimize pollutant discharge into wetlands, and minimize the use of fertilizers and pesticides. Measures should be taken to keep surface water run-off from entering the NRMP area. The only exceptions to buffer zone provisions are signs, trails, boundary fences, and educational or research-oriented structures with jurisdictional City approval on a project-by-project basis. City approval shall include environmental review.

27. If physical barriers are needed to define a trail or public use area or to discourage public access, preference should be given to using a rustic style, such as split rail or post and rail fencing, or natural barrier plantings. Final decision will be made by Park & Recreation Open Space staff.

28. Within NRMP boundaries, maintenance roads, footpaths, and other trails in the NRMP open space core area should be unpaved to maintain the natural character of the NRMP area.

29. Paved areas within the NRMP area should be kept to a minimum to avoid water quality, hydrology, and aesthetic impacts.

30. All facilities within and adjacent to the NRMP area that use chemicals or general by-products which would be potentially toxic to or would impact wildlife, sensitive species, habitat, and/or water quality shall incorporate methods on their site to reduce impacts caused by the application and/or drainage of such materials into the NRMP area.

31. Any lighting needed for public safety in or adjacent to the NRMP area should be hooded, directional, low sodium or similar lighting, especially near biological buffers. Placement of lighting should consider the sensitivity of adjacent biological resources. Any lighting adjacent to the MPHA must comply with the MSCP Land Use Adjacency Guidelines (as previously referenced).

32. Noisy activities should be concentrated away from habitats where sensitive animal species occur or are likely to occur. These areas are variable depending on seasonal requirements of biological resources in the area.

33. Where noise or other impacts associated with temporary construction, such as clearing, grading, mining, or grubbing, would negatively impact breeding birds protected by the Federal Migratory Bird Treaty Act and occupied nests for raptors (usually during February 1 to August 15) as determined by City's biologist, clearing, grading, mining, or grubbing activities should be modified, if necessary, to prevent impacts. If a bird nest is identified in a pre-construction survey, impact avoidance measures shall be incorporated into the construction plan.

    Where noise associated with clearing, grading, mining, or grubbing would negatively impact an occupied least Bell's vireo nest during the breeding season (March 15 to September 15), as determined by City's biologist, noise levels should not exceed 60 dBA at the edge of the habitat. If warranted, however, a more restrictive standard may be used as determined on a case-by-case basis. If an occupied least Bell's vireo nest is identified in a pre-construction survey, noise reduction techniques, such as temporary noise walls or berms, shall be incorporated into the construction plans to reduce noise levels below 60 dBA. Based on the MSCP implementing agreement, any work that may affect vireo during the breeding season would require both Federal and State take permits/authorization and thus would require Resource Agency consultation and approval.

    Outside the bird breeding season(s) no restriction shall be placed on temporary construction noise.

34. Berms or walls should be constructed adjacent to commercial areas, active or commercial recreational areas, and any other use that may introduce noises that could impact or interfere with wildlife utilization of the NRMP. Uses or activities that produce noise in excess of 60 dBA, as measured at the edge of habitat, adjacent to breeding areas should incorporate noise reduction measures and be curtailed during the breeding season of sensitive species. Adequate noise reduction measures should also be incorporated for the remainder of the year.

35. The landscape plant palette for any development within or adjacent to the NRMP area should not include invasive exotic species. This is also true for areas not immediately adjacent to the NRMP area because wind and runoff can result in exotic species invading natural areas downwind and/or downstream from the original source. Landscaping within and immediately adjacent to the NRMP and its buffers should include only native species appropriate to the habitat that occurs in the area.

36. The permanent storage of materials, hazardous material, and/or equipment shall be prohibited within the NRMP area. Any storage of similar materials and equipment adjacent to the NRMP area should follow all applicable regulations to ensure that toxic and/or polluting materials do not enter the NRMP area.

8.0 MITIGATION OPTIONS AND GUIDELINES

Although the focus of the San Diego River NRMP is on natural habitat, necessary structures and some maintenance activities may be required which could impact existing natural habitat and/or cultural resources. Biological and archaeological surveys are required prior to obtaining applicable city, state, and federal permits and any site disturbance. Additionally, all projects should comply with applicable guidelines outlined in this NRMP, adopted by San Diego City Council. Approval of project design, implementation, and mitigation by San Diego Park and Recreation Department will be required to ensure the guidelines adopted as part of this NRMP and the respective MSCP Subarea Plan are being incorporated.

Impacts should be avoided or minimized as much as possible during the design, planning, and permitting phases. Maintenance activities should be planned in advance using the least physically disturbing methods, avoiding avian breeding seasons, using existing access ways, and restricting disturbance to the project area. Prior to any trail addition or other development, the area to be affected should be surveyed for cultural resources, as well as sensitive habitat, plant, and animal species at the appropriate time of year. Only existing access ways are to be used for any maintenance activity in the NRMP area.

The following guidelines provide an appropriate framework for mitigation if unavoidable impacts, direct or indirect, occur. Mitigation options for impacts to or loss of Diegan coastal sage scrub (including a sub-category of baccharis scrub), southern willow scrub, southern cottonwood willow riparian forest, mule fat scrub, freshwater marsh, alkali marsh/cismontane alkali marsh, floating aquatic vegetation, open water, and non-native grassland are the creation of new habitat, restoration of degraded habitat, and/or enhancement of existing disturbed or degraded habitat for maximization of wildlife value. Mitigation for riparian habitat requires special treatment to ensure habitat value is offset. Additional requirements may be added should they be necessary for creation of viable riparian habitat.

8.1 HABITAT MITIGATION

1. Mitigation ratios for habitat impacts shall be decided on a case-by-case basis, using applicable MSCP Subarea Plan guidelines. Mitigation for unavoidable wetland impacts should prevent any net loss of wetland function and values of impacted wetlands.

2. Proposed development or maintenance projects resulting in impacts shall be required to re-evaluate their proposed design to avoid the impacts. Grading plans should provide adequate buffer areas to adjacent habitat and/or sensitive areas.

3. Mitigation should be done within the NRMP area,whenever feasible. Final location of mitigation must be approved by Natural Resources Management staff.

4. A qualified biologist should monitor sensitive areas impacted and/or potentially impacted during construction and oversee mitigation programs. A qualified biologist is defined as "experienced" in state-of-the-art revegetation techniques of wetland and upland habitat. The qualified biologist shall: 1) prepare and oversee a detailed revegetation plan, meeting City

landscape guidelines, project-specific mitigation requirements, and guidelines outlined in this NRMP, including species, soil preparation, and site plan; 2) assist a landscape architect, if needed, in preparation of landscape working drawings to assure habitat/species comparability, and in review of planting requirements and revegetation techniques; and 3) develop and oversee a Monitoring, Maintenance, and Reporting program.

5. A Mitigation, Monitoring, and Reporting Program (MMRP) shall be developed for all mitigation projects. The program should outline: what will be done; what criteria will be used to determine success; a schedule of work and monitoring; means of funding the program; penalties for nonperformance, and a plan for remedial measures should they be necessary. As appropriate, the MMRP should also include:
   - A variety of habitat types to encourage diversity of species;
   - Vertical and horizontal plant diversity, appropriate for the habitat;
   - Irregular, rather than straight, borders where vegetation is especially dense, extensive, and connected to other habitat areas;
   - Maintenance of wildlife areas of concentration where vegetation is especially dense, extensive, and connected to other habitat areas;
   - Use of only appropriate native plants in revegetation;
   - Protection from human impacts in design of revegetation projects, such as the use of thorny shrubs, etc. to limit access to sensitive areas;
   - Temporary irrigation, if necessary, to help establish new vegetation; and
   - Non-native, invasive species removal on a regular basis;
   - Detailed description of the methods used to quantitatively and qualitatively monitor the mitigation site;and
   - Minimum of 3-5 years of maintenance and monitoring.

6. Prior to implementation, all projects involving revegetation and/or mitigation within the NRMP area must be reviewed and approved by the City Park and Recreation Department (District Manager and Natural Resource Manager). In the case of an SDG&E project, compliance with their NCCP (1995) shall be the primary basis for approval.

7. Revegetation efforts are best scheduled between October and February after the first significant rainfall if no irrigation is to be used.

8. If installation of temporary irrigation is necessary to meet success criteria, it should be removed before the site is determined to have met Mitigation, Monitoring, and Reporting Plan and/or permit requirements.

9. To demonstrate that a mitigation site is meeting its success criteria and self sustaining, no major remedial actions (*e.g.,* supplemental planting, irrigation, large-scale weeding) should be required or conducted within a mitigation site two years or growing seasons prior to sign-off by appropriate agencies.

10. Field checks by a qualified biologist of sensitive areas near the work area shall be required prior to and during work to ensure they have been properly flagged and protected from intrusion.

11. Temporary fencing and/or barriers, if necessary, should be provided to protect revegetation areas from human intrusion until they become well established.

12. Revegetation sites should be monitored regularly by a qualified biologist. Appropriate recommendations should be made for enhancing revegetation efforts to ensure success criteria are met.

13. Streambed crossings or other work done within a streambed require CDFG Streambed Alteration Agreements. Other permits, such as an Army Corps of Engineers Section 404 Permit, may be required if crossing involves fill or dredge material. Any crossing should be done during seasons of low water flow (*e.g.*, summer) to minimize the impacts on the stream.

14. Any disturbance of River banks which would cause erosion and/or create a potential erosion risk should be mitigated by revegetating the disturbed area as soon after the disturbance as possible. Bank protection, such as mulch or jute netting, may be required in the interim period.

15. All Best Management Practices (BMPs), as outlined by RWQCB, should be implemented to eliminate or contain sediments and pollutants, which could degrade the San Diego River. Failure to comply with BMPs outlined in permits issued by the City should result in enforcement action by the City.

16. Completion of mitigation requirements to offset impacts to biological resources requires sign-off by the wildlife agencies.

17. If success criteria cannot be met at a particular mitigation site, a new mitigation site shall be identified and an appropriate mitigation program implemented.

8.2 CULTURAL RESOURCE MITIGATION

Development which could potentially impact archaeological sites within the NRMP area includes: active recreation areas, trails, and visitor/interpretive centers. Prior to development of plans for any of these or other development, record searches should be obtained to identify any potential impacts, which could occur to known archaeological resources. Testing to determine significance would be necessary for all archaeological sites. Historic resources would need to be assessed for significance by a qualified historian. The City requires that development not be permitted in significant prehistoric or historic sites or resources unless all feasible measures to protect and preserve the site or resource are required as condition of permit approval. Final mitigation conditions will be determined by DSD and could include items numbered 1-9:

1. Sites that would potentially be subject to impacts should be surveyed to assess the extent and nature of the cultural resource site in case the majority of the site's resources are underground.

2. A Research Design and Data Recovery Program addressing a specific site should be developed and implemented by a qualified archaeologist for any activity impacting cultural resources.

3. Impacts to significant archaeological/cultural resources should be avoided or mitigated in compliance with CEQA and agency guidelines, by capping or completion of data recovery for those areas that would be impacted by construction. Conservation easements should be required for sites retained in place within private ownership.

4. Site avoidance and preservation can include capping the site with gravel or construction fabric and 16 to 18 inches of sterile fill soil. Capped sites can be landscaped with native, shallow rooted plants that are compatible with the surrounding habitat. Passive park uses that are compatible with capped sites include trails, picnic and play areas, parking lots, and tennis or volleyball courts.

5. Significant sites that are too large and costly to preserve through capping or mitigated through a data recovery program, can be protected by redesign of trails away from the sites. Significant cultural resources that are not capped or mitigated through data recovery need to be monitored through field checks by a qualified archaeologist every four to six months to ensure that sites are not being disturbed or destroyed. Additional protective methods will need to be implemented if the sites are being impacted by river valley use.

6. Review by the City Historic Sites Board could be necessary for historic resources, depending on the development or maintenance activity proposed.

7. Native American consultation may be required prior to approval and during implementation of any project component.

8. A qualified archaeologist may need to be onsite during a development or maintenance project, depending upon the significance of the resource and nature of the project, to monitor activity. If an archaeological monitor is necessary, they should have the authority to halt, direct, or divert ground disturbance.

9. Flagging, fencing, or other temporary measures may be provided, as necessary, to prevent accidental damage.

9.0 ENHANCEMENT AND RESTORATION GUIDELINES

These guidelines are provided for the enhancement and restoration of natural and cultural resources in NRMP area. For purposes of this NRMP, enhancement is defined as those activities that reduce and/or eliminate negative impacts to natural habitat or cultural resources. Restoration is defined as activities that return a disturbed area to its original condition or appropriate native habitat. It should be noted that any work within wetland areas, including exotics removal, would require coordination with the appropriate resource agencies, and may require a Streambed Alteration Agreement and/or other permits.

9.1 NATURAL RESOURCE ENHANCEMENT

1. Areas where sensitive bird species are likely to nest (*i.e.*, southern willow scrub habitat) or where sensitive plants are found shall be closed to public access. These areas should be posted: "No entry during breeding/nesting season (provide appropriate dates)" or "No entry due to sensitive habitat/plants", as appropriate, with a brief explanation for such postings.

2. Known locations of the following MSCP covered sensitive plant species in the NRMP area should be monitored, consistent with the current biological monitoring plan for the MSCP, to determine if appropriate and necessary protective management and enhancement measures are needed. The species to be monitored per the current monitoring plan include populations of San Diego ambrosia (*Ambrosia pumila*) and Orcutt's brodiaea (*Brodiaea orcuttii*).

3. As funding allows, sensitive species, other than the ones mentioned in the previous guideline, shall undergo quantitative and qualitative monitoring for abundance, distribution, and identification of new populations by City staff, MSCP staff, and/or trained volunteers.

4. As funding allows, the NRMP data base, including plants, sensitive species, avifauna, and large mammals should be updated every five years.

5. All eroded areas and potential erosion areas should be vegetated with native vegetation or protected by other natural erosion prevention measures.

6. A program to control the spread of poison oak along trail and identified public use areas should be implemented to keep those areas open to public use.

7. A program to eradicate non-native vegetation and replace it with native vegetation shall be designed and implemented for any area currently dominated by exotics, such as giant reed, ludwegia, Brazilian pepper tree, castor-bean, English ivy, evergreen ash, fennel, Mexican fan palm, canary island date palm, and pampas grass. Aggressive non-native plant species, such as water hyacinth, ludwegia, giant reed, tamarisk, and pampas grass, when present, should be removed semi-annually from biological buffers and sensitive habitats. The program should target upstream removal first, then move to infested, downstream areas. Setting priorities for which species should be removed first should consider: 1) the biology of the invasive species, such as time of flowering and reproductive capacity; 2) the immediate need of a specific area; 3) where removal of invasives could increase available habitat for sensitive species and/or

habitat; and 4) the potential effectiveness of the eradication efforts considering the conditions of the entire watershed.

8. Research the latest, most effective eradication method(s) for a particular species should be the basis for development of an exotic species eradication program or initiation of any exotic removal. This information can be obtained through California Exotic Pest Plant Council. Methods of removal requiring heavy equipment or other methods potentially harmful to native species may require some level of environmental review to ensure against impacts to sensitive species. Any herbicide sprayed in open water will require a National Pollutant Discharge Elimination System (NPDES) permit from the RWQCB.

9. If an herbicide is needed to control invasive exotic species, (*e.g.*, Rodeo®), it must be on an approved list (*e.g.*, USFWS, CDFG, and/or jurisdictional cities approved), as safe for use in wetland habitat. All safety and environmental regulations shall be followed.

10. Exotic plant removal activities should be scheduled to avoid avian breeding and nesting season.

11. The City should coordinate with other jurisdictional agencies and land owners in the San Diego River watershed to control, tamarisk and giant reed which have heavily infested the NRMP area. In order to effectively control these, as well as other invasive exotic plants within the NRMP area, the jurisdictions and landowners upstream of the NRMP area also need to eradicate these species in order to stop re-infestation of downstream areas. Possible methods for establishing such a cooperative effort include a Memorandum of Agreement between involved parties or establishing a Weed Management Area through the County Agriculture Department. Any such effort should also include proactive measures such as public outreach to educate San Diego River neighbors and users about invasive exotic species.

12. Where exotics are removed from stream banks, temporary erosion control precautions may be required, especially if root systems are removed. Removal should occur only at times of low flow and no rainfall. Roots should only be removed if necessary to eradicate exotic species and the area should be revegetated as soon as possible. Sandbags, brow ditches, or similar erosion control methods should be used to keep sediment out of the River and drainage courses.

    Permanent bank stabilization should also occur where exotics are removed through the planting and maintenance of native species.

13. Regular monitoring for re-infestation should be done after initiation of a removal program and remedial treatment taken as necessary.

14. When enhancing or restoring native habitats, plants used for revegetation should be taken from donor sites in close proximity to the site, if possible. Other donor sites may be used if they are of similar ecotone and the site has been approved by City of San Park and Recreation Department, as appropriate.

15. Adequate buffers should be established around sensitive plant populations to avoid trampling. Wherever possible, the minimum buffer width should be 100 feet, especially in wetland habitats.

16. In locations where water pollution control is needed, detention basins, treatment wetlands, grass filter strips, filtration trenches, and/or similar water quality treatment methods should be used, depending on the location and level of pollution. Grass filter strips, placed in the runoff flow path, should be relatively flat in order to slow and distribute flow. The filter strips should be planted with erosion resistant plants, such as close-growing grasses [*e.g.*, beardless wild rye grass (*Leymus triticoides*)].

17. Surveys should be conducted to monitor the deer population within the upper portion of NRMP area, per appropriate biological monitoring plan protocol.

18. Any "new" wildlife corridors identified should be investigated to determine usage and degree of importance to wildlife.

19. Information on invasive plants and animals harmful to the San Diego River area should be provided to adjacent residents. Residents should be encouraged to voluntarily remove invasive exotics from their landscaping.

20. If non-native trees die or are removed, they shall be replaced with appropriate native trees and/or habitat with the eventual goal of replacing non-native trees with native ones.

21. In areas where brown-headed cowbirds have been recorded adjacent to sensitive nesting passerines, an assessment of the need of brown-headed cowbird trapping should be conducted.

22. If cowbirds and/or non-native predators, such as feral cats, are observed during monitoring or ranger patrols, or by preserve or park visitors or private landowners, MSCP staff and the City should be notified. Any observations by unqualified staff or the public should be verified by a qualified biologist. If predator control is determined by MSCP staff and the City to be necessary to protect sensitive species, funding should be sought to conduct a predator control program for these problem predators at the location in accordance with these specific guidelines.

- Trapping of cowbirds/non-native predators should be limited to strategic locations determined feasible to protect ground and shrub-nesting birds, lizards, and other sensitive species from excessive depredation.
- A cowbird/predator control program should only be implemented where a problem has been identified and efforts are needed to maintain a healthy ecosystem balance in the NRMP area.
- Cowbird/predator methods shall be humane. Adequate shade and water (when appropriate) should be provided and traps should be checked twice daily.
- Any domestic animal inadvertently trapped should be taken to the nearest animal shelter.
- If a cowbird/predator control program becomes necessary, signs at access points should be installed to notify adjacent residents and landowners that trapping shall occur and how to retrieve their pets.

9.2 CULTURAL RESOURCE ENHANCEMENT AND RESTORATION

A site-specific Cultural Resource Management Plan (CRMP) should be prepared by a qualified archaeologist for all prehistoric and historic resources in the SDR NRMP area. This site-specific CRMP should include testing to determine site-specific significance and preparation of a data recovery program for those sites identified as significant, individual site inventory, and recommendations for maintenance, management, and long-term protection of cultural resources. Development and implementation of the proposed CRMP may need to include Native American involvement and shall include a complete project-specific impact evaluation, including ground surveys, in all areas for which grading activities are proposed.

Enhancement of prehistoric and historic sites within the SDR NRMP area should be done in accordance with the CRMP.

9.3 HABITAT RESTORATION

1. Native vegetation should be restored in damaged or degraded areas. Areas suffering from public activity abuse should be closed and rehabilitated. The following are damaged areas which should be restored with native vegetation:
   - Historic sand-mining areas throughout the NRMP area;
   - The riparian area in the Mission Valley Preserve (near I-5);
   - Unauthorized trails scattered throughout the NRMP area; and
   - Any roads determined to be duplicates and/or unnecessary for utility maintenance

2. Disturbed and upland areas should be planted with native trees where they are known to have existed historically, given appropriate existing conditions.

3. Wherever appropriate, non-native and ruderal areas should be restored to appropriate native habitat.

4. Plans for habitat restoration should consider historic use and habitat types in each area to help guide restoration efforts.

5. When restoring a native habitat, plants used in the revegetation effort should be taken from donor sites in close proximity to the site, if possible. Seed from outside San Diego County should not be used.

6. Previous mining areas provide excellent opportunities for habitat restoration. All mined lands existing prior to 1975 and future mined lands adjacent to or within the NRMP area shall be reclaimed pursuant to the SMARA of 1975. Ponds are considered compatible uses where they provide native wildlife and wetland habitats and do not conflict with conservation goals of the San Diego MSCP Subarea plans.

7. Riparian and wetland habitats in the NRMP area should be allowed to regenerate naturally, especially after removal of invasive exotics, except where active restoration is specified as a result of monitoring that is dependent on available funding; mitigation requirement; or means of reclaiming large areas previously occupied by exotic species, if deemed advisable to reduce the threat of re-invasion by exotics.

9.4 SPECIFIC MANAGEMENT DIRECTIVES

Not all species occurring within the NRMP area are expected to require additional species-specific management. It is expected, rather, that the guidelines provided in the Maintenance, Usage, and Development Guidelines chapter and the guidelines listed earlier in this chapter will be sufficient in providing optimal habitat conditions for most, if not all, species to maintain and/or thrive within the NRMP. However, there are some MSCP covered species, which may require additional management measures, if monitoring indicates the general guidelines are not sufficient to maintain acceptable populations levels plan-wide.

Under the current MSCP Biological Monitoring Plan, quantitative monitoring is required for certain covered species, habitat quality, and wildlife corridors. However, the NRMP area is not listed as a "Monitoring Location" in the Biological Monitoring Plan for the MSCP (Ogden 1996). (The closest monitoring location is Mission Trails Regional Park.) Thus, any monitoring undertaken within the NRMP area would be specific to the NRMP and the goals of maintaining species diversity and abundance within the NRMP area. Such monitoring should be conducted in order to determine the status of the species within the NRMP area and to make management decisions. Known sensitive species location should be visited as needed during appropriate seasons to determine if the species remain present. Information given in the "Sensitive Species" in Existing Conditions chapter can be helpful in determining the appropriate season and characteristics for each species. If sensitive species cannot be relocated, or if new populations are identified, Park and Recreation staff should notify MSCP staff.

Before conducting any specific management directives, the action shall be evaluated to ensure that the proposed action would not result in adverse impact to any other population of a MSCP covered species. The appropriate buffer distance (for individual sensitive species) shall be determined in accordance with the buffer policy as stated in Item 26 in the "New Development" section of the Maintenance, Usage, and Development Guidelines chapter.

ORCUTT'S BRODIAEA (*Brodiaea orcuttii*)

Area Specific Management Plans from the MSCP
Directives must include specific measures to protect against detrimental edge effects.

MSCP Specific Management Efforts
Approved trails should keep an appropriate distance from known populations. Areas where dumping may occur should be appropriately blocked as indicated in this NRMP plan. Periodic qualitative monitoring should be done to verify protection of known populations.

SOUTHERN PACIFIC POND TURTLE (*Clemmys marmorata pallida*)

Area Specific Management Plans from the MSCP
Maintain and manage a 1,500-foot area around known locations within the preserve lands for the species. Within this area, human impacts shall be minimized; non-native species detrimental to pond turtles controlled or removed; and habitat restoration/enhancement measures implemented.

MSCP Specific Management Efforts

The pond turtle formerly (until the late 1980s) occupied lower sections of the San Diego River. It is unknown at what locations they still survive. A current survey of the perennial wetlands throughout the San Diego River is necessary to verify at which, if any, locations the pond turtle still occurs. Pet turtles belonging to several non-native species have been released into the River and their competitive presence may exclude the southern pacific pond turtle. Such a non-native presence likely stresses any southern pacific pond turtle populations that occur in the same area. Removal of any non-native turtles should occur in concert with the identification of the native species at specific locations. In addition, bullfrogs are numerous throughout the San Diego River and will eat young turtles. Bullfrogs should be removed from areas where southern pacific pond turtles are found. Eliminating bullfrogs from the river would require intensive effort and likely would have to be accomplished throughout the drainage system to avoid quick re-introduction.

Maintaining a 1,500-foot disturbance buffer for existing southern pacific pond turtle populations may not be possible in the NRMP area given the narrow confinement of the NRMP corridor between highly urbanized areas. If native turtle populations are found, further guidance from wildlife agencies shall be necessary and previously recommended management measures shall have to be re-evaluated to accommodate the present circumstances.

BELDING'S ORANGE-THROATED WHIPTAIL (*Cnemidophorus hyperythrus beldingii*)

Area Specific Management Plans from the MSCP

Area specific management directives must address edge effects.

MSCP Specific Management Efforts

The whiptail is still locally common in San Diego River Valley. Like other reptiles, however, it is particularly susceptible to urban edge effects. Curtailing edge effects is difficult within the NRMP area given the heavily urbanized development along both the northern and southern boundaries of the NRMP. Maintaining upland habitat quality within the NRMP area would be the best means of minimizing edge effects. This should include regular removal of introduced trash, limiting unapproved foot trails, and closure of access points that are particularly troublesome in terms of disturbance to native upland scrub.

WHITE-FACED IBIS (*Plegadis chihi*)

Area Specific Management Plans from the MSCP

Area specific management directives must include specific measures to protect against detrimental edge effects.

MSCP Specific Management Efforts

The ibis is an uncommon avian associated with substantial freshwater and brackish marsh habitat. It is relatively rare in the NRMP area but may occasionally be found in the lower sections of the San Diego River where brackish water and open, mudflat terrain suitable for the ibis as foraging and loafing habitat occurs. This species prefers areas devoid of substantial human activity. To reduce impacts to known ibis locations, measures should be taken to limit human access to portions of the marshes or exclude access entirely with a reasonable buffer and provide sheltered conditions for ibis. Viewing platforms of wetlands occur at a number of park locations in the southwestern United States (*e.g.*, Mission Bay and the southern Salton Sea) and allow for appreciation of this habitat without interfering substantially with wildlife activities.

COOPER'S HAWK (*Accipiter cooperii*)

Area Specific Management Plans from the MSCP
Area specific management directives must include 300-foot impact avoidance areas around active nests and minimization of disturbance in oak woodlands and oak riparian forests.

MSCP Specific Management Efforts
Coast live oak woodland is poorly developed in San Diego River Valley and is largely a peripheral sub-component of southern cottonwood-willow riparian forest. Nevertheless, opportunities for nesting Cooper's hawk occur locally in the riparian forest and this species is expected to still regularly nest in the area. Cooper's hawk will sometimes display aggressive behavior towards humans if they are too near a nest site (*e.g.*, swooping). If repeated perching of Cooper's hawk at one locale is observed, or if unusual aggressive behavior of Cooper's hawk is conveyed to City staff during the appropriate season (March-June), potential nesting should be investigated and an appropriate avoidance area should be instituted. Nests may be moderately conspicuous and are typically situated in the dense canopies of trees. Red-tailed hawk, red-shouldered hawk, white-tailed kite, and common raven may also be found on large stick nests in tree canopies.

LEAST BELL'S VIREO (*Vireo bellii pusillus*)

Area Specific Management Plans from the MSCP
Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted, and incorporate mitigation measures into the project consistent with the 404(b)(1) guidelines. Participating jurisdiction's guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Jurisdictions must require new developments adjacent to preserve areas that create conditions attractive to brown-headed cowbirds to monitor and control cowbirds. Area specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 15 and March 15 (*i.e.*, outside of the nesting period).

MSCP Specific Management Efforts
All approved trails and recreational areas should maintain an appropriate buffer (minimum 100 feet wide) from historical and currently, utilized nest sites of least Bell's vireo. Nests are generally inconspicuous and are typically found in mature willows or riparian shrubs in close proximity to larger willows. Vegetation buffers should be considered to exclude hikers from venturing along unapproved trails in the vicinity of vireo nest sites. Temporary seasonal trail closures may be appropriate to deter park users from involuntarily harassing birds at a nest site. Temporary trail detours may be appropriate.

Surveys in accordance with the current MSCP biological monitoring plans or qualitative monitoring by park staff or volunteers should be undertaken to determine presence/absence of this vireo during the spring breeding season (March 15-September 15), particularly if any wetland impacts are proposed for the area. Since these birds are migratory, they may utilize different locations each year. Some territories may not be occupied from one year to the next, while new territories may be established elsewhere. Nevertheless, historical use of specific territories and specific clusters of trees where prior nests were situated is a good indicator for potential future use. No net loss of wetlands

should occur near historic vireo territories. Wetland mitigation should be accomplished locally rather than off-site.

Brown-headed cowbird trapping should be instituted, as funding permits, each year during the breeding season in least Bell's vireo nesting areas identified by senior park staff, MSCP staff, or qualified biologist, as having a cowbird problem. Brown-headed cowbirds breed in the coastal lowlands after mid-March and generally leave the region by mid-October. Rarely do birds over-winter.

Detrimental edge effects, such as activities with sounds regularly exceeding 60dBA, should be avoided near vireo nesting locations during the breeding season.

SOUTHWESTERN WILLOW FLYCATCHER (*Empidonax traillii extimus*)

Area Specific Management Plans from the MSCP

Jurisdictions must require surveys (using appropriate protocols) during the CEQA review process in suitable habitat proposed to be impacted, and incorporate mitigation measures into the project consistent with the 404(b)(1) guidelines. Participating jurisdiction's guidelines and ordinances and state and federal wetland regulations will provide additional habitat protection resulting in no net loss of wetlands. Jurisdictions must require new developments adjacent to preserve areas to create conditions unattractive to brown-headed cowbirds. Area specific management directives must include measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 1 and May 1 (*i.e.*, outside of the nesting period).

MSCP Specific Management Efforts

All approved trails and recreational areas should be kept an appropriate distance from historic or current nest sites. Nests are generally inconspicuous and are typically found in close proximity to flowing water. Vegetation buffers should be considered to exclude hikers from venturing along unapproved trails in the vicinity of historic willow flycatcher nest sites. Temporary seasonal trail closures may be appropriate to deter park users from involuntarily harassing birds at a nest site; temporary trail detours may be appropriate. This flycatcher is extraordinarily reduced in breeding numbers in southern California, and, hopefully, will rebound in numbers and occupy riparian breeding sites where not recently observed.

Surveys in accordance with the current MSCP biological monitoring plan should be undertaken to determine presence/absence of this flycatcher during the spring breeding season (May 1-August 31) if any wetland impacts are proposed for the area. Since these birds are migratory, they may utilize different locations each year. Some territories may not be occupied from one year to the next, while new territories elsewhere may be established. Nevertheless, historical use of specific territories and specific clusters of trees where prior nests were situated is a good indicator for potential future use. No net loss of wetlands should occur near historic willow flycatcher breeding territories. Wetland mitigation should be accomplished locally rather than moved off-site.

Cowbird trapping should be instituted each year during the breeding season, as funding permits. Cowbirds breed in coastal lowlands after mid-March and generally leave the region by mid-October. Rarely do birds over-winter.

Permitting activities with sounds regularly exceeding 60 dBA should be avoided during the breeding season.

It should be recognized that southwestern willow flycatchers sometimes nest in introduced tamarisk, which is a focus for removal for wetland enhancement. Focused surveys should thoroughly survey not merely willow/mule fat scrub but tamarisk scrub for this species.

TRICOLORED BLACKBIRD (*Agelaius tricolor*)

Area Specific Management Plans from the MSCP

Project approvals must require avoidance of active nesting areas during the breeding season. Area specific management directives must include measures to avoid impacts to breeding colonies, and specific measures against detrimental edge effects.

MSCP Specific Management Efforts

Although not detected breeding within the River during baseline surveys. Breeding surveys should be conducted in the future as this species is known to shift breeding locations. This species forages at a number of locations including relatively urbanized settings such as parking lots; however, nesting areas may be a considerable distance away. Identification of breeding areas could require the closing of some parts of the River to human activities during the mid-March through June breeding season. Expected breeding areas include locations with substantial stands of cattail and/or bulrush. Such potential locations are well distributed throughout the San Diego River.

Detrimental edge effects at breeding locations would include any proposed impacts that would modify freshwater marsh habitat within the floodplain of the San Diego River. Changes to the hydrology of the River should take into account the subsequent potential modifications to tricolored blackbird marshland habitat. In general, maintaining the existing hydrological features of San Diego River Valley and protecting the existing freshwater marsh habitat from de-watering impacts should sustain most of the existing breeding habitat for this species. Status of this species should be monitored within the NRMP area.

10.0 INTERPRETIVE AND RESEARCH GUIDELINES

The natural and cultural resources in the San Diego River NRMP area provide significant interpretive and research opportunities. One opportunity for including Native American resources could include an interpretative center and signage along trails, in which the rich cultural heritage of local Native Americans could be displayed. The displays could include visual forms (*i.e.*, photographs, artifacts, and educational labels), as well as recordings of Native American songs, musical instruments, and stories. Local Native Americans would need to provide input regarding use and preservation of cultural resource sites and interpretive displays. The following measures are designed to utilize these opportunities in a wise, non-disruptive manner.

10.1 INTERPRETIVE DISPLAYS AND PROGRAMS

1. Signs within the NRMP area shall be limited to those necessary for protection and/or interpretation of natural and cultural resources and sited in locations which avoid negative impacts to resources.

2. Signs shall be strategically placed for maximum benefit, such as staging areas and trailheads, and designed or placed to avoid increasing the number of perches already available to foraging raptors in and around sensitive species nesting habitat.

3. Standard informational and educational signs/kiosks shall be developed for the NRMP and for its riparian, wetland, and upland habitats; sensitive species; and sites of historical/cultural significance.

4. Interpretive displays shall be changed periodically and focus on educating the public about natural resources and systems within the River NRMP area, such as historical resources, water quality, evapo-transpiration, habitat and plant identification, sensitive species, invasive exotic species, seasonal or migratory species, ecosystems, food chains, animal behaviors, and species adaptations.

5. Before sign placement, final approval from the City Park and Recreation Department is required. For signs in natural areas of the NRMP area, a biologist should be consulted for siting compatibility with surrounding resources.

6. Interpretive programs for historic resources should be developed and implemented including printed material (if desirable) and signs.

7. An "Ecowatch" program (similar to Neighborhood Watch) which encourages public participation in educating, maintaining, and protecting the River's resources, should be considered.

8. Only the official logo for Mission Valley Preserve and/or the San Diego River Park (once chosen) shall be used, as appropriate, on interpretive and informational materials.

10.2 NATURE TRAIL SIGNAGE

1. An overall nature trail system plan shall be developed, including locations and points of interpretive interest as part of the San Diego River Park Master Plan development process. Siting of trails in the NRMP area shall be consistent with guidelines established in this NRMP.

2. A series of nature trail loops should be developed for different habitats throughout the NRMP area and, wherever possible, utilize existing trails.

3. All nature trails should be self-guided.

4. Nature trail signage shall include numbered signposts with interpretive information corresponding to a description in a trail booklet or similar system. Siting for this type of facility should be limited to main trails, access points, and/or nature center.

5. Interpretive information shall include information such as:
   - International signs for trails (hiking and bikes);
   - Identification of key plant and tree species;
   - Physical description of species, growth habit, role in surrounding habitat, and uses by wildlife and man;
   - Description of common wildlife behavior, including foraging, sleeping, and mating behaviors;
   - Identification of animal tracks;
   - Overall discussion of how the habitats in the area function as an ecosystem, such as food webs;
   - Historical and cultural facts of interest;
   - Local Native American history and culture; and/or
   - Discussion of causes of resource degradation (public misuse, urban runoff, exotic plant invasion, overuse, trash, etc.).

6. As appropriate, casting of animals, animal tracks, or animal droppings shall be located with appropriate interpretive display along nature trails and/or nature center as an interpretive resource.

10.3 INTERPRETIVE FACILITIES

The San Diego River Park Master Plan effort should identify the location of interpretive facilities. Any facility in the NRMP should be sited per the guidelines provided in this NRMP area and be in close proximity to nature trails.

There are several possible configurations for an interpretive facility in the NRMP area. Depending on available space and funding, the facility could be a moderately-sized building or a large open covered structure. A building could house a park ranger office, a theater for slide and video shows, interpretive exhibits, classroom/lab/meeting room, interpretive material storage, and Park maintenance and management material storage. An open structure should be of adequate size to accommodate bench seating for a classroom presentation, interpretive displays, and Park bulletin board. The selected design should blend with the surrounding natural resources and use natural

building materials. The area around the chosen structure should be landscaped with native vegetation and incorporate interpretive opportunities. Interpretive facilities should compliment interpretive centers/facilities already built or planned County-wide in resource-based parks and preserves. Interpretive programs should interface with school curriculum and address community interest and involvement.

Interpretive structures of smaller scale, such as a kiosk-type shelter, could also be considered for interpretive displays and/or programs in areas of the NRMP area that would be some distance from, or would not have direct access to, one of the two main interpretive facilities.

10.4 RESEARCH OPPORTUNITIES

Scientific research within City of San Diego resource-based parks and open space is encouraged. Permission from the City is required to ensure resources will not be damaged and/or research projects will not conflict with each other. Research proposals for studies to gather unknown information or update existing information on natural and cultural resources will be reviewed by the City Natural Resources Planner. Archaeological research proposals must also include Native American consultation before research activities begin. Any data published should be shared with the City's Park and Recreation Department for inclusion in the Park's research library. Potential funding would come from outside resources, grants, or City funds.

11.0 IMPLEMENTATION

11.1 FEDERAL AND STATE AGENCY PERMITS AND AGREEMENTS

The City will be the lead environmental review agency for almost any project proposed on San Diego land within NRMP boundaries. Federal and state agencies will be notified during the public review process of all proposed projects affecting natural resources and which may require additional state or federal permits. These agencies could include CDFG, CCC, USFWS, RWQCB, and/or ACOE. Mitigation plans and mitigation monitoring reports for individual projects will also be submitted to these agencies for their review and comment.

In some instances, another agency may be the lead agency. This is the case when a specific permit must be obtained from CDFG for streambed alteration or erosion control. When pursuing a permit for any deposition of fill or other material into waters of the United States, the ACOE is required to be lead environmental agency. These lead agencies would then consult with other resource agencies for review and comment on the proposed project and mitigation plan, if required.

11.2 DEVELOPMENT RESPONSIBILITIES

This Natural Resource Management Plan covers four types of possible projects: 1) erosion and/or sedimentation control; 2) new Park or adjacent development activities; 3) Park and utility maintenance activities; and 4) habitat enhancement and restoration. It will be the responsibility of the City or project applicant to plan, obtain required permits, and develop and implement a Mitigation, Monitoring, and Reporting Plan (MMRP) (if required).

PROJECT PLANNING

For any erosion control, new structure, or maintenance activity involving impact to habitat, cultural resources, or streambed disturbance, pre-project, site-specific field surveys shall be conducted by a qualified biologist and archaeologist. This survey shall determine the type and extent of impact to natural and/or cultural resources and identify possible mitigation requirements.

If mitigation is required, a qualified biologist and/or archeologist, approved by the jurisdictional City, shall develop an MMRP for approval by lead environmental agency and acceptance by City of San Diego Park and Recreation Department. Revegetation plans shall include the following: a landscape plan which addresses, in detail, the mitigation requirements and design criteria; the types and extent of habitats to be developed; grading requirements (if any); plant materials to be used; method of planting; method of irrigation (if needed); success criteria and plans for maintenance and monitoring of the revegetation; a detailed description of the methods used to quantitatively and qualitatively monitor the mitigation site; a minimum of 3-5 years of maintenance and monitoring; and contingency measures to be implemented if success criteria are not met. If cultural resources are also impacted, a qualified archaeologist, approved by the jurisdictional City, shall outline a plan and method(s) for protection and/or salvage of resource to be included in the MMRP. The lead environmental review agency shall review and approve cultural resource mitigation plans and revegetation plans before project approval is granted.
A binding mechanism shall be instituted to ensure a project applicant will implement, maintain, and monitor the mitigation effort as planned and approved. This mechanism can be a bond or other

means of assuring funds will be available to complete the mitigation program. In cases where mitigation habitat area is to be purchased from an already existing, approved mitigation bank, the acceptability of the project as a participant in the bank will need to be approved by the appropriate City jurisdiction and resource agencies and the required mitigation area purchased prior to project development.

MITIGATION IMPLEMENTATION

Mitigation programs shall be implemented according to MMRPs preceding or coincident with project construction or maintenance activity. Wherever necessary, exotic or invasive vegetation shall be removed and an irrigation plan shall be implemented to water plants until they have become established.

MITIGATION MAINTENANCE

Mitigation and enhancement plans shall include a long-term monitoring program to determine the success of the plan and identify maintenance needs. In the first three to five years after plan implementation, monitoring shall be conducted and reports made to the City Park and Recreation Department, and any other agencies as outlined in applicable permits on a regular basis. The frequency of monitoring shall be determined during the MMRP approval process. During the first three to five years, mitigation sites shall be monitored to obtain information regarding species and quantity and quality of their growth. The reports shall address plant survival, control of non-native plants, vegetative cover, species diversity, the success of establishing designated habitats, and recommended actions necessary to accomplish full mitigation. Resource agencies and any other appropriate agencies shall receive copies of mitigation monitoring reports.

The project applicant shall be responsible for maintaining revegetated mitigation sites until mitigation success criteria have been met. Replacement of vegetation and elimination of undesirable species shall be undertaken as part of the mitigation maintenance program. Vegetation should be monitored on a regular basis and replaced as needed to fulfill mitigation plan conditions. In order for mitigation areas to be successfully established, non-native plants which compete with native plants for light and space must be controlled. Non-native species, such as iceplant, eucalyptus, giant reed, tree tobacco, fennel, artichoke thistle, pampas grass, acacia, castor bean, and tamarisk, must be removed from all mitigation sites. Once removed, the plants should be appropriately disposed of in a landfill. Completion of a mitigation program or sign off by the wildlife agencies can occur only two years or growing seasons after major management actions (*i.e.*, supplemental planting, irrigation, major weed removal) have occurred. The project applicant should ensure that long-term maintenance of the mitigation site and funding to conduct the maintenance is provided.

11.3 CITY RESPONSIBILITIES

The Development Services Department and the Park and Recreation Department Open Space Division are responsible for the administration of the NRMP. The Development Services Department will review all public, private and City development projects under City jurisdiction to determine conformity with the NRMP, City codes and CEQA. The CEQA process will be applied to determine the environmental impacts of proposed projects and identify mitigation measures and alternatives to reduce impacts to the Park's natural and cultural resources.

The Park and Recreation Department is responsible for conducting maintenance, resource management, enhancement and educational activities in the Park in compliance with the NRMP. The Park and Recreation Department will review public and private projects, including revegetation plans and MMRPs, to ensure that they meet the requirements and objectives of the NRMP. The Park and Recreation Department also is responsible for implementation of enhancement and improvement projects and educational programs and maintaining a current database of Park resources. The Open Space Section of the Park and Recreation Department oversees the implementation of the NRMP; reviews proposed projects and impacts to check for minimization of impacts and compliance with the NRMP; reviews MMRPs and is part of the compliance sign-off for meeting success criteria; issues research and data collection permits (in coordination with the Senior Park Ranger); manages sensitive species and their habitat; and oversees implementation of habitat enhancement and restoration projects.

Park Rangers issue site use permits; coordinate volunteer efforts; provide educational programs; monitor and work to solve erosion problems; oversee trail, sign and fence maintenance and development; provide enforcement of City ordinances; and regularly patrol the Park.

The General Services Department (Streets Division), Water Department and Metropolitan Wastewater Department conduct maintenance activities for their infrastructure within the Park. These maintenance activities will be in compliance with the NRMP, City regulations and CEQA. If emergency work is needed, Park and Recreation staff (e.g., Park Ranger and/or Natural Resource Manager) must be notified in advance of repair work, if possible, or within 24 hours of an emergency repair action of what, why, when and how these repair measures will be or were taken. MMRPs, if necessary, will require a minimum of Park and Recreation (Natural Resource Manager) and Development Services approval prior to implementation, as well as signoff to determine when mitigation criteria are met.

11.4 COMMUNITY GROUP RESPONSIBILITIES

Any local San Diego River community group, which is a non-profit public interest group, is part of the City-community interface. These groups make recommendations to the City on management needs, enhancement and development of City parks and open space. In addition, the following are specific ways the community groups could support the City management of the Park:

1. Conduct fundraising activities for (including grant applications) Park enhancement and education and/or interpretive efforts.

2. Provide volunteers needed for Park improvements, environmental education and some maintenance activities, primarily for seasonal native plant installation and small habitat restoration projects.

3. Advise and assist government agencies, as appropriate, in the preparation, adoption, implementation of or amendment to the planning of the Park.

4. Provide public comments on City or other proposed projects that may affect the Park.

5. Investigate and advise on specific goals, standards and recommendations for open space use in the Park.

6. Notify the Park Rangers of unauthorized activities so that they can provide follow-up enforcement, if necessary.

11.5 POTENTIAL FUNDING SOURCES

The City's General Fund and volunteer labor by a wide variety of individuals and organizations provide the resources necessary for day-to-day operations of the Park, including many relatively small-scale restoration, enhancement and environmental education efforts. Additional sources of funding may, however, be necessary to implement some of the larger-scale efforts recommended in this NRMP.

Numerous grants are available from federal agencies, state agencies and private foundations to provide assistance with habitat restoration/enhancement, environmental education, water quality improvement and trails construction/restoration. Many of the available grant opportunities can be identified at Cyber-Sierra's Conservation Grants Center (www.conservationgrants.com). A clearinghouse for federal government grants is available at www.grants.gov. A state grant clearinghouse is available at www.getgrants.ca.gov, with more specific information available at various individual agency websites, such as the Wildlife Conservation Board (www.wcb.ca.gov), Parks and Recreation Department (www.parks.ca.gov/default.asp?page_id=1008), Department of Fish and Game (www.dfg.ca.gov/nccp/grants/grants.html) and SWRCB (www.swrcb.ca.gov/funding/index.html). The National Fish and Wildlife Foundation (www.nfwf.org/programs/grant_apply.htm) teams with a variety of governmental agencies and private organizations to provide grants for habitat restoration projects (specifically including management of invasive weeds), native plant conservation efforts, and efforts to protect and enhance the biological resources found on golf courses.

Grants vary in whether they are available to government and/or non-profit organizations. It is, therefore, recommended that the Park and Recreation Department and the Friends of Tecolote Canyon work closely together to identify appropriate grant opportunities. Additionally, because the grants typically have matching requirements, it is recommended that grant opportunities be screened to ensure that adequate matching resources will be available to fulfill grant requirements in any given year.

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APPENDIX A

SPECIES OF FLORA OBSERVED ON-SITE.

Vegetation Communities/Categories:

* = Denotes non-native flora species.

D = Diegan Coastal Sage Scrub
E = Eucalyptus Woodland
F = Mule Fat Scrub
G = Non-native Grassland
L = Cismontane Alkali Marsh
M = Coastal and Valley Freshwater Marsh
N = Exotic
O = Open Water
U = Urban Lands
W = Southern Cottonwood Willow Riparian Forest
S = Southern Willow Scrub
T = Tamarisk Scrub
X = Disturbed Lands

CRYPTOGAMS

Azollaceae - Mosquitofern Family		
Azolla filiculoides Lam.	Pacific mosquitofern	O
Dryopteridaceae - Wood Fern Family		
Dryopteris arguta	coastal woodfern	D
Polypodiaceae - Polypody Family		
Polypodium californicum	California polypody	D
Pteridaceae - Brake Family		
Adiantum jordani	California maiden-hair	D
Cheilanthes newberryi	California cottonfern	D
Pellaea andromedifolia	coffee fern	D
Pellaea mucronata var. *mucronata*	bird's-foot fern	D
Pentagramma triangularis ssp. t*riangularis*	California goldenback fern	D
Pentagramma triangularis ssp. *viscosa*	Yats silverback fern	D
Selaginellaceae - Spike-Moss Family		
Selaginella bigelovii	Bigelow's mossfern	D
Selaginella cinerascens	ashy spike-moss	D

GYMNOSPERMS

Pinaceae - Pine Family		
Pinus sp.	pine	X,N

DICOTYLEDONS

Aizoaceae - Carpet-weed Family		
**Carpobrotus chilensis*	sea fig	X
**Carpobrotus edulis*	hottentot-fig	X
**Mesembryanthemum crystallinum*	crystalline iceplant	X
**Mesembryanthemum nodiflorum*	slender-leaved iceplant	X
**Mesembryanthemum* sp.	iceplant	X
Amaranthaceae - Amaranth Family		
**Amaranthus albus*	tumbleweed	X
**Amaranthus blitoides*	prostrate amaranth	X
Anacardiaceae - Sumac Family		
Malosma laurina	laurel sumac	D
Rhus integrifolia	lemonadeberry	D
**Schinus molle*	Peruvian pepper tree	X
**Schinus terebinthifolius*	Brazilian pepper tree	X,N
Toxicodendron diversilobum	western poison oak	W

Apiaceae - Carrot Family		
Apiastrum angustifolium	mock parsley	D
**Apium graveolens*	celery	W
**Conium maculatum*	common poison hemlock	S,M
Daucus pusillus	rattlesnake weed	D
**Foeniculum vulgare*	fennel	X,N
Hydrocotyle verticillata	hydrocotyle	X
Lomatium dasycarpum ssp. *dasycarpum*	woolly-fruit lomatium	D
Sanicula arguta	sharp-tooth sanicle	D
Sanicula bipinnatifida	purple sanicle	D
Sanicula crassicaulis	Pacific sanicle	D
Apocynaceae - Dogbane Family		
**Nerium oleander*	oleander	X
**Vinca major*	greater periwinkle	W
Araliaceae - Ginseng Family		
**Hedera helix*	English ivy	N
Asclepiadaceae - Milkweed Family		
Asclepias fascicularis	narrow-leaf milkweed	W
Sarcostemma cynanchoides ssp. *hartwegii*	climbing milkweed	D
Asteraceae - Sunflower Family		
Achillea millefolium	yarrow	D
Acourtia microcephala	sacapellote, purpleheads	D
**Ageratina adenophora*	ageratina	S
Ambrosia chenopodiifolia	San Diego bursage	D
Ambrosia psilostachya	western ragweed	W
**Anthemis cotula*	mayweed	X
**Arctotis* hybrids	African daisy	X
Artemisia californica	California sagebrush	D
Artemisia douglasiana	mugwort	W
Artemisia dracunculus	tarragon	W
Artemisia palmeri	San Diego sagewort	W
Baccharis emoryi	Emory's baccharis	D
Baccharis pilularis	coyote brush	D
Baccharis salicifolia	mule fat	F
Baccharis sarothroides	broom baccharis	D
Bebbia juncea var. *aspera*	sweetbush	D
Bidens pilosa var. *pilosa*	common beggar-ticks	X
Brickellia californica	California brickellbush	D
**Carduus pycnocephalus*	Italian thistle	X
**Centaurea melitensis*	tocalote	X
Chaenactis glabriuscula var. *glabriuscula*	yellow pincushion	D
**Chamomilla suaveolens*	pineapple weed	X
**Chrysanthemum coronarium*	garland	X,G
Cirsium occidentale var. *californicum*	California thistle	D
Cirsium occidentale var. *occidentale*	cobweb thistle	D

**Cirsium vulgare*	bull thistle	X
**Conyza bonariensis*	flax-leaf fleabane	X
**Conyza canadensis*	horseweed	X,G
Conyza coulteri	Coulter's fleabane	W
**Cotula australis*	Australian brass-buttons	X
**Cotula coronopifolia*	brass-buttons	W
**Cynara cardunculus*	cardoon	X
Deinandra conjugens	Otay tarplant	D
Deinandra fasciculata	fascicled tarplant	D
Encelia californica	California encelia	D
Encelia farinosa	brittlebush	X
Ericameria palmeri var. *palmeri*	Palmer's goldenbush	D
Erigeron foliosus var. *foliosus*	leafy daisy	D
Eriophyllum confertiflorum var. *confertiflorum*	golden-yarrow	D
Euthamia occidentalis	western goldenrod	W
Filago californica	California filago	D
**Filago gallica*	narrow-leaf filago	X
Gnaphalium bicolor	bicolor cudweed	D
Gnaphalium californicum	California everlasting	D
Gnaphalium canescens ssp. *beneolens*	fragrant everlasting	D
Gnaphalium canescens ssp. *microcephalum*	white everlasting	D
Gnaphalium luteo-album	cudweed	W
Gnaphalium palustre	lowland cudweed	W
Gnaphalium straminium	cotton-batting plant	D
Grindelia camporum var. *camporum*	big gumplant	D
Gutierrezia sarothrae	matchweed	D
Hazardia squarrosa ssp. *grindelioides*	saw-toothed goldenbush	D
**Hedypnois cretica*	Crete hedypnois	X,G
**Helianthus annuus*	western sunflower	X
Heterotheca grandiflora	telegraph weed	X,G
Holocarpha virgata ssp. *elongata*	graceful tarplant	D
**Hypochoeris glabra*	smooth cat's-ear	X,G
Isocoma menziesii var. *decumbens*	clay-field goldenbush	D
Isocoma menziesii var. *menziesii*	goldenbush	D
Iva hayesiana	San Diego marsh elder	L
**Lycopersicon esculentum*	tomato	W
Lasthenia californica	common goldfields	D
Layia glandulosa	white tidy-tips	D
Lessingia filaginifolia var. *filaginifolia*	cudweed aster	D
Microseris douglasii ssp. *platycarpha*	small flower microseris	D
Osmadenia tenella	osmadenia	D
**Picris echioides*	bristly ox-tongue	W
Pentachaeta aurea	golden-rayed pentachaeta	D
Pluchea odorata	salt marsh fleabane	M
Pluchea sericea	arrow weed	W
Porophyllum gracile	odora	D
Rafinesquia californica	California chicory	D
Senecio californicus	California butterweed	D
**Senecio vulgaris*	common groundsel	X

**Silybum marianum*	milk-thistle	G
**Sonchus asper*	prickly sow thistle	G
**Sonchus oleraceus*	common sow thistle	G
Stephanomeria diegensis	San Diego wreath-plant	D
Stylocline gnaphalioides	everlasting nest straw	D
Taraxacum officinale	common dandelion	X
**Tragopogon porrifolius*	purple salsify	X
Uropappus lindleyi	silver puffs	D
Viguiera laciniata	San Diego County viguiera	D
Xanthium strumarium	cocklebur	F

Betulaceae - Birch Family

Alnus rhombifolia	white alder	W

Bignoniaceae - Bignonia Family

**Jacaranda* sp.		U, N

Boraginaceae - Borage Family

Amsinckia intermedia	fiddleneck	G,D
Amsinckia menziesii var. *intermedia*	rancher's fireweed	D
Cryptantha intermedia	nievitas, cryptantha	D
Heliotropium curvassavicum	salt heliotrope	L
Pectocarya linearis ssp. *ferocula*	slender pectocarya	D
Plagiobothrys collinus var. *californicus*	California popcornflower	D
Plagiobothrys collinus var. *gracilis*	small California popcornflower	D

Brassicaceae - Mustard Family

**Brassica nigra*	black mustard	G
Guillenia lasiophylla (Hook. & Arn.)Greene	California mustard	D
**Hirschfeldia incana* (L.)Lagr.-Fossat	short-pod mustard	X
Lepidium lasiocarpum var. *lasiocarpum*	sand peppergrass	D
**Lepidium latifolium*	tall white top	X
Lepidium nitidum var. *nitidum*	shining peppergrass	D
**Lobularia maritima*	sweet alyssum	X
**Raphanus sativus*	radish	G
**Rorippa nasturtium-officinale*	water cress	W

Cactaceae - Cactus Family

Cylindropuntia prolifera	cholla	D
Ferocactus viridescens	San Diego barrel cactus	D
Mammillaria dioica	fish-hook cactus	D
**Opuntia ficus-indica*	Indian-fig	X
Opuntia littoralis	coast prickly-pear	D
Opuntia oricola	bush prickly-pear	D

Capparaceae - Caper Family

Isomeris arborea	bladderpod	D

Caprifoliaceae - Honeysuckle Family

Lonicera subspicata var. *denudata*	San Diego honeysuckle	D
Sambucus mexicana	blue elderberry	D
Caryophyllaceae - Pink Family		
Cardionema ramosissimum	tread lightly	D
**Cerastium glomeratum*	mouse-ear chickweed	X
Loeflingia squarrosa var. *squarrosa*	California loeflingia	D
**Silene gallica*	common catchfly	G
**Spergula arvensis*	stickwort starwort	X
**Spergularia bocconii*	Buccone's sand-spurry	X
**Stellaria media*	common chickweed	X
Chenopodiaceae - Goosefoot Family		
Atriplex canescens ssp. *canescens*	four-wing saltbush	D
Atriplex lentiformis ssp. *lentiformis*	quail saltbush	X
Atriplex patula ssp. *patula*	Halberd-leaf saltbush	M
**Atriplex rosea*	redscale, red saltbush	X
**Atriplex semibaccata*	Australian saltbush	X
**Chenopodium album*	lamb's quarters	X
Chenopodium ambrosioides	Mexican tea	W
Chenopodium berlandieri	pitseed goosefoot	X
**Chenopodium multifidum*	cut-leaf goosefoot	U
**Chenopodium murale*	nettle-leaf goosefoot	X
**Chenopodium pumilio*	Tasmania goosefoot	U
**Salsola tragus*	Russian thistle	X
Cistaceae - Rock-Rose Family		
Helianthemum scoparium	peak rush-rose	D
Convolvulaceae - Morning-Glory Family		
Calystegia macrostegia ssp. *tenuifolia*	narrow-leaf morning-glory	D
Dichondra occidentalis	Western dichondra	D
Crassulaceae - Stonecrop Family		
Crassula connata	dwarf stonecrop	D
Dudleya edulis	ladies-fingers	D
Dudleya lanceolata	coastal dudleya	D
Dudleya pulverulenta	chalk-lettuce	D
Dudleya variegata	variegated dudleya	D
Cucurbitaceae - Gourd Family		
Cucurbita foetidissima	calabazilla	X
Marah macrocarpus var. *macrocarpus*	wild-cucumber	D
Cuscutaceae - Dodder Family		
Cuscuta californica var. *californica*	witch's hair	D
Cuscuta subinclusa	canyon dodder	D
Ericaceae - Heath Family		

Xylococcus bicolor	mission manzanita	D
Euphorbiaceae - Spurge Family		
Chamaesyce albomarginata	rattlesnake spurge	D
**Chamaesyce maculata*	spotted spurge	X
Chamaesyce polycarpa	small-seed sandmat	D
Croton californicus	common croton	X
Eremocarpus setigerus	doveweed	X
Euphorbia misera	cliff spurge	D
**Euphorbia peplus*	Petty Spurge	D
**Ricinus communis*	castor-bean	N
Fabaceae - Pea Family		
**Acacia* sp.	acacia	N
**Acacia longifolia*	Sydney wattle	U
Astragalus gambelianus	Gambel's locoweed	D
Astragalus trichopodus ssp. *leucopsis*	locoweed	D
Lathyrus vestitus ssp. *alefeldii*	San Diego sweetpea	D
Lotus hamatus	grab lotus	D
Lotus heermannii var. *heermannii*	woolly lotus	X
Lotus purshianus	spanish-clover	D
Lotus salsuginosus ssp. *slsuginosus*	alkali lotus	D
Lotus scoparius ssp. *brevialatus*	deerweed	D,G
Lotus scoparius var. *scoparius*	coastal deerweed	D
Lotus strigosus	Bishop's lotus	D
Lupinus bicolor	miniature lupine	D
Lupinus hirsutissimus	stinging lupine	D
Lupinus succulentus	arroyo lupine	D
Lupinus truncatus	collar lupine	D
**Medicago polymorpha*	California burclover	
**Melilotus albus*	white sweetclover	F
**Melilotus indicus*	sourclover	X
Trifolium depauperatum var. *truncatum*	pale bladder clover	D
Vicia ludoviciana var. *ludoviciana*	deerpea vetch	D
Fagaceae - Oak Family		
Quercus agrifolia	coast live oak	W
Quercus berberidifolia	scrub oak	D
Quercus dumosa	Nuttall's scrub oak	D
Gentianaceae - Gentian Family		
Centaurium venustum	canchalagua	D
Geraniaceae - Geranium Family		
**Erodium brachycarpum*	short-beak filaree	X
**Erodium cicutarium*	red-stem filaree	X
**Erodium moschatum*	white-stem filaree	X
**Geranium* sp.	geranium	N

Grossulariaceae - Currant Family		
Ribes indecorum	white flowering currant	D
Ribes speciosum	fuchsia-flowered gooseberry	D
Hydrophyllaceae - Waterleaf Family		
Emmenanthe penduliflora	whispering bells	D
Eriodictyon crassifolium var. *crassifolium*	thick-leaved yerba santa	D
Eucrypta chrysanthemifolia var. *chrysanthemifolia*	eucrypta	D
Nemophila menziesii var. *integrifolia*	baby blue eyes	D
Phacelia cicutaria var. *hispida*	caterpillar phacelia	D
Phacelia parryi	Parry's phacelia	D
Phacelia ramosissima var. *latifolia*	caterpillar phacelia	D
Pholistoma auritum	fiesta flower	D
Pholistoma racemosum	Nuttall's fiesta flower	D
Juglandaceae - Walnut Family		
Juglans sp.	walnut	N
Lamiaceae - Mint Family		
Marrubium vulgare	horehound	X
Salvia apiana	white sage	D
Salvia columbariae	chia	D
Salvia mellifera	black sage	D
Stachys ajugoides var. *rigida*	nettle	W
Lythraceae - Loosestrife Family		
**Lythrum hyssopifolia*	grass poly	F
Malvaceae - Mallow Family		
Malacothamnus fasciculatus	mesa bush mallow	D
**Malva parviflora*	cheeseweed, little mallow	X
Malvella leprosa	alkali-mallow	L
Sidalcea malvaeflora ssp. *sparsifolia*	checker-bloom	D
Moraceae - Mulberry Family		
**Ficus carica*	edible fig	W
Myoporaceae - Myoporum Family		
**Myoporum laetum*	ngaio	X
Myrtaceae - Myrtle Family		
**Eucalyptus camaldulensis*	red gum, river red gum	E
**Eucalyptus citriodora*	lemon-scented gum	E
**Eucalyptus cladocalyx*	sugar gum	E
**Eucalyptus globulus*	Tasmanian blue gum	E
**Eucalyptus polyanthemos*	silver dollar gum	E
**Eucalyptus sideroxylon*	red ironbark	E
**Eucalyptus* sp.	eucalyptus	E
**Callistemon* sp.	bottlebrush	X

Nyctaginaceae - Four-O'Clock Family		
Mirabilis californica	California wishbone plant	D
Oleaceae - Olive Family		
Fraxinus sp.	ash	N
**Olea europea*	mission olive	U, N
Onagraceae - Evening-Primrose Family		
Camissonia bistorta	California sun cup	D
Camissonia intermedia	evening primrose	D
Epilobium brachycarpum	summer cotton-weed	X
Epilobium canum ssp. *canum*	California fuchsia	D
Epilobium ciliatum ssp. *ciliatum*	willow herb	W
Ludwigia hexapetala	willow water-weed	O
Oenothera elata ssp. *hirsutissima*	great marsh evening primrose	W
Oxalidaceae - Wood-Sorrel Family		
Oxalis albicans ssp. *californica*	California wood-sorrel	D
**Oxalis corniculata*	yellow wood-sorrel	U
**Oxalis pes-caprae*	bermuda-buttercup	X
Papaveraceae - Poppy Family		
Eschscholzia californica	California poppy	D
Platystemon californicus	cream cups	D
Plantaginaceae - Plantain Family		
Plantago erecta	dot-seed plantain	D
**Plantago lanceolata*	English plantain	W
**Plantago major*	common plantain	W
Plantago ovata	woolly plantain	D
Platanaceae - Sycamore Family		
Platanus racemosa	western sycamore	W
Plumbaginaceae – Leadwort Family		
**Limonium perezii*	sea-lavender	X
Polemoniaceae - Phlox Family		
Eriastrum eremicum ssp. *eremicum*	desert woolly-star	D
Gilia angelensis	grassland gilia	D
Linanthus dianthiflorus	ground pink	D
Navarretia atractyloides	holly-leaf skunkweed	D
Navarretia hamata ssp. *leptantha*	narrow-throated skunkweed	D
Polygonaceae - Buckwheat Family		
Chorizanthe fimbriata var. *fimbriata*	fringed spineflower	D
Eriogonum fasciculatum var. *foliolosum*	interior flat-top buckwheat	D
Eriogonum gracile var. *gracile*	slender buckwheat	D

**Polygonum arenastrum*	common knotweed	X
Polygonum lapathifolia	willow weed	W
Polygonum punctatum	perennial smartweed	W
Pterostegia drymarioides	granny's hairnet	D
**Rumex crispus*	curly dock	F
Rumex salicifolius var. *denticulatus*	California dock	F
Portulacaceae - Purslane Family		
Calandrinia ciliata	red maids	D
Calandrinia maritima	seaside calandrinia	D
Claytonia perfoliata ssp. *perfoliata*	common miner's-lettuce	D
Claytonia perfoliata ssp. *mexicana*	miner's-lettuce	D
**Portulaca oleracea*	common purslane	L
Primulaceae - Primrose Family		
**Anagallis arvensis*	scarlet pimpernel	X
Dodecatheon clevelandii ssp. *clevelandii*	padre's shooting star	D
Ranunculaceae - Crowfoot Family		
Clematis pauciflora	ropevine	D
Delphinium parryi ssp. *parryi*	parry's larkspur	D
Thalictrum fendleri var. *polycarpum*	fendler's meadow-rue	D
Resedaceae - Mignonette Family		
Oligomeris linifolia	narrowleaf oligomeris	D
Rhamnaceae - Buckthorn Family		
Adolphia californica	California adolphia	D
Ceanothus tomentosus	Ramona ceanothus	D
Rhamnus crocea	spiny redberry	D
Rosaceae - Rose Family		
Adenostoma fasciculatum	chamise	D
Aphanes occidentalis	western lady's-mantle	D
Cercocarpus minutiflorus	San Diego mountain-mahogany	D
Heteromeles arbutifolia	toyon	D
Prunus ilicifolia ssp. *ilicifolia*	holly-leafed cherry	D
Rosa californica	California rose	W
Rubus ursinus	California blackberry	W
Rubiaceae - Madder Family		
Galium angustifolium ssp. *angustifolium*	narrow-leaf bedstraw	D
Galium aparine	goose grass	X
Galium nuttallii ssp. *nuttallii*	Nuttall's bedstraw	D
Salicaceae - Willow Family		
Populus fremontii ssp. *fremontii*	Fremont cottonwood	W
Populus balsamifera ssp. *trichocarpa*		

Salix exigua	narrow-leaved willow	W
Salix gooddingii	Goodding's black willow	S
Salix laevigata	red willow	S
Salix lasiolepis	arroyo willow	S
Salix lucida ssp. *lasiandra*	lance-leaf willow	S
Saururaceae - Lizard-tail Family		
Anemopsis californica	yerba mansa	L
Saxifragaceae - Saxifrage Family		
Jepsonia parryi	coast jepsonia	D
Scrophulariaceae - Figwort Family		
Antirrhinum coulterianum	white snapdragon	D
Castilleja affinis ssp. *affinis*	coast paintbrush	D
Castilleja exserta ssp. *exserta*	purple owl's-clover	D
Castilleja foliolosa	woolly indian paintbrush	D
Collinsia heterophylla	purple chinese houses	D
Cordylanthus orcuttianus	Orcutt's bird's-beak	F
Cordylanthus rigidus ssp. *setigerus*	dark-tip bird's-beak	D
Linaria canadensis	blue toadflax	D
Mimulus aurantiacus	San Diego monkeyflower	D
Mimulus guttatus	common monkeyflower	W
Penstemon spectabilis	showy penstemon	D
Scrophularia californica ssp. *floribunda*	California figwort	W
**Veronica anagallis-aquatica*	water speedwell	W
Simmondsiaceae - Jojoba Family		
Simmondsia chinensis	jojoba	D
Solanaceae - Nightshade Family		
Datura wrightii	western jimsonweed	X
**Lycopersicon esculentum*	tomato	G
Lycium andersonii	waterjacket	D
**Nicotiana glauca*	tree tobacco	X,D
Physalis crassifolia	ground-cherry	D
Solanum douglasii	Douglas' nightshade	D
**Solanum nigrum*	black nightshade	D
Solanum tenuilobatum	narrow-leaved nightshade	D
Tamaricaceae - Tamarisk Family		
Tamarix sp.	tamarisk	T
Tamarix aphylla	African tamarisk	T
**Tamarix parviflora*	four-petal European tamarisk	T
**Tamarix ramosissima*	five-petal East Asian tamarisk	T
Tropaeolaceae - Tropaeolum Family		
**Tropaeolum majus*	garden nasturtium	G,W

Urticaceae - Nettle Family		
Urtica dioica ssp. *holosericea*	hoary nettle	W
**Urtica urens*	dwarf nettle	X
Verbenaceae - Verbena Family		
Verbena menthaefolia	mint-leaf vervain	F
**Lantana montevidensis*	lantana	N
Violaceae - Violet Family		
Viola pedunculata	johnny-jump-up	D
Viscaceae - Mistletoe Family		
Phoradendron macrophyllum	sycamore mistletoe	W
Vitaceae - Grape Family		
Parthenocissus quinquefolia	Virginia creeper	S
Vitis girdiana	desert wild grape	W
Zygophyllaceae – Caltrop Family		
**Tribulus terrestris*	puncture vine, caltrop	N
MONOCOTYLEDONS		
Alismataceae - Water-Plantain Family		
Alisma plantago-aquatica	American water-plantain	L
**Phoenix canariensis*	Canary Island date palm	U,N
Washingtonia filifera	California fan palm	
Araceae – Arum Family		
**Zantedeschia* sp.	calla lily	N
Cyperaceae - Sedge Family		
Cyperus eragrostis	tall flatsedge	F
Cyperus erythrorhizos	red-root flatsedge	F
**Cyperus esculentus*	yellow nutsedge	F
**Cyperus involucratus*	umbrella flatsedge	F
**Cyperus odoratus*	fragrant flatsedge	F
Eleocharis acicularis var. *acicularis*	needle spike-sedge	W
Eleocharis macrostachya	pale spike-sedge	M
Eleocharis montevidensis	Dombey's spike-sedge	W
Scirpus acutus var. *occidentalis*	viscid bulrush	M
Scirpus americanus	Olney's bulrush	W
Scirpus californicus	California bulrush	M
Scirpus microcarpus	small-fruit bulrush	L
Scirpus pungens	threesquare bulrush	W
Scirpus robustus	prairie bulrush	M

Iridaceae - Iris Family		
Sisyrinchium bellum	blue-eyed grass	D
Juncaceae - Rush Family		
Juncus acutus ssp. *leopoldii*	spiny rush	L
Juncus bufonius var. *bufonius*	toad rush	W
Juncus dubius	mariposa rush	F
Juncus mexicanus	Mexican rush	L
Juncus rugulosus	wrinkled rush	F
Lemnaceae - Duckweed Family		
Lemna sp.	duckweed	O
Lemna minor	lesser duckweed	O
Lemna minuscula Herter	least duckweed	O
Liliaceae - Lily Family		
**Agave americana*	American agave	U
Allium praecox	early onion	D
Bloomeria crocea	common goldenstar	D
Calochortus splendens	splendid mariposa	D
Calochortus weedii var.	Weed's mariposa	D
Chlorogalum parviflorum	small-flower soap-plant	D
Dichelostemma capitatum ssp. *capitatum*	wild hyacinth	D
Fritillaria biflora var. *biflora*	California chocolate lily	D
Muilla clevelandii	San Diego goldenstar	D
Yucca schidigera	Mojave yucca	D
Zigadenus fremontii	Fremont's camas	D
Poaceae - Grass Family		
Achnatherum coronatum	giant needlegrass	D
**Arundo donax*	giant reed	N
**Avena barbata*	slender wild oat	G
Bothriochloa barbinodis	cane bluestem	D
**Brachypodium distachyon*	brachypodium grass	G
**Bromus catharticus*	rescue grass	X
**Bromus diandrus*	ripgut grass	G
**Bromus hordeaceus*	soft chess	G
**Bromus madritensis* ssp. *rubens*	red brome	G
**Cortaderia jubata*	pampas grass	N
**Cynodon dactylon*	Bermuda grass	X
**Digitaria sanguinalis*	large crabgrass	X
Distichlis spicata	saltgrass	L
**Gastridium ventricosum*	nit grass	X
Hordeum intercedens	little barley	G
**Hordeum murinum* ssp. *leporinum*	hare barley	G
**Lamarckia aurea*	golden-top	X
Leptochloa uninervia	dense-flower sprangle-top	M
Leymus condensatus	giant wild rye	D
Leymus triticoides	beardless wild ryegrass	W

**Lolium perenne*	perennial ryegrass	G
Melica frutescens	tall melic	D
Muhlenbergia microsperma	littleseed muhly	D
Muhlenbergia rigens	deergrass	W
Nassella lepida	foothill needlegrass	D
Nassella pulchra	purple needlegrass	D
**Pennisetum setaceum*	fountain grass	X
**Phalaris minor*	littleseed canary grass	X
**Piptatherum miliaceum*	smilo grass	
**Poa annua*	annual bluegrass	X,G
**Poa pratensis* ssp. *pratensis*	Kentucky bluegrass	X
**Polypogon monspeliensis*	annual beard grass	W
**Rhynchelytrum repens*	natal grass	X
**Schismus barbatus*	Mediterranean schismus	D
**Sorghum halepense*	johnsongrass	X
**Vulpia myuros* var. *hirsuta*	foxtail fescue	X,G
Pontederiaceae - Pickerel-Weed Family		
**Eichhornia crassipes*	water hyacinth	O
Potamogetonaceae - Pondweed Family		
Potamogeton pectinatus	fennel-leaf pondweed	O
Ruppia maritima	beakfruit sea-tassle	O
Typhaceae - Cat-Tail Family		
Typha domingensis	southern cattail	M
Typha latifolia	broad-leaved cattail	M

APPENDIX B

SPECIES OF FAUNA OBSERVED ON-SITE

* = Denotes non-native faunal species.

Habitat Types:

D = Diegan Coastal Sage Scrub
E = Eucalyptus Woodland
F = Mule Fat Scrub
G = Non-native Grassland
L = Cismontane Alkali Marsh
M = Coastal and Valley Freshwater Marsh
N = Exotic
O = Open Water
U = Urban Lands
W = Southern Cottonwood Willow Riparian Forest
S = Southern Willow Scrub
T = Tamarisk Scrub
X = Disturbed Lands

BUTTERFLIES

Papilionidae (swallowtail butterflies)		
Papilio eurymedon	pale swallowtail	W
Papilio rutulus	western tiger swallowtail	W
Papilio zelicaon	anise swallowtail	W
Pieridae (white, orange-tip, and sulfur butterflies)		
Pontia protodice	checkered white	U
Pieris rapae	cabbage white	U
Anthocharis sara sara	Sara orangetip	D
Zerene eurydice	California dogface	W
Lycaenidae (hairstreak, copper, and blue butterflies)		
Strymon melinus	Gray hairstreak	G
Everes amyntula	western tailed-blue	D
Icaricia acmon	Acmon blue	G
Riodinidae (Metalmarks)		
Apodemia virgulti	Behr's metalmark	D
Nymphalidae (brush-footed butterflies)		
Nymphalis antiopa	mourning cloak	W
Vanessa atalanta	red admiral	W
Vanessa cardui	painted lady	U
Vanessa anabella	west coast lady	W
Basilarchia lorquini	Lorquin's admiral	W
Adelpha bredowii californica	California sister	W
Danaus plexippus	monarch	W
Decapoda (shrimp, lobster, crabs)		
**Procambarus clarki*	swamp crayfish	O
**Natantia* sp	glass shrimp	O

FISHES

Cyprinidae (carps and minnows)		
**Cyprinus carpio*	common carp	O
Ictaluridae (bullhead catfishes)		
**Ameiurus melas*	black catfish	O
**Ameiurus nebulosus*	brown bullhead	O
**Ameiurus natalis*	yellow bullhead	O
Poeciliidae (livebearers)		
**Gambusia affinis*	mosquitofish	O

Centrarchidae		
**Lepomis cyanellus*	green sunfish	O
**Lepomis macrochirus*	bluegill	O
**Lepomis microlophus*	redear sunfish	O
**Micropterus salmoides*	largemouth bass	O
**Pomoxis annularis*	white crappie	O
**Pomoxis nigromaculatus*	black crappie	O
Cyprinodontidae (needlefish, saury, killifish, and silversides)		
Fundulus parvipinnis	California killifish	O
Mugilidae (dameselfishes and mullet)		
Mugil cephalus	striped mullet	O
AMPHIBIANS		
Hylidae (treefrogs and relatives)		
Pseudacris regilla	Pacific treefrog	M
Ranidae (true frogs)		
**Rana catesbeiana*	bullfrog	M
REPTILES		
Emydidae (pond and marsh turtles)		
**Trachemys scripta elegans*	red-eared slider	O
Chelydridae (Snapping Turtles)		
**Chelydra serpentina*	snapping turtle	O
Phrynosomatidae		
Sceloporus occidentalis	western fence lizard	U
Uta stansburiana	side-blotched lizard	U
Scincidae (skinks)		
Eumeces skiltonianus interparietalis	Coronado skink	W
Teiidae (whiptails and relatives)		
Cnemidophorus hyperythrus	Belding's orangethroated whiptail	D,G
Anguidae (alligator lizards and relatives)		
Elgaria multicarinata	southern alligator lizard	W
Leptotyphlopidae (thread snakes, blind snakes)		
Leptotyphlops humilis	western threadsnake	W

Boidae (boas)		
Lichanura trivirgata roseofusca	coastal rosy boa	C
Colubridae (colubrids)		
Diadophis punctatus similis	San Diego ringneck snake	W
Coluber constrictor mormon	yellow-bellied racer	W
Masticophis flagellum	coachwhip	W
Masticophis lateralis lateralis	California striped racer	W
Salvadora hexalepis virgultea	coast patchnose snake	W
Arizona elegans	glossy snake	W
Pituophis catenifer annectens	San Diego gopher snake	D
Lampropeltis getula	common kingsnake	W
Lampropeltis getula californiae	California kingsnake	W
Rhinocheilus lecontei	long-nosed snake	D
Thamnophis hammondii	two-striped garter snake	W
Hypsiglena torquata	night snake	D
Viperidae (vipers)		
Crotalus exsul	red diamond rattlesnake	D
Crotalus mitchelli	speckled rattlesnake	D
Crotalus viridis helleri	southern pacific rattlesnake	D

BIRDS

Anatidae (swans, geese, and ducks)		
Branta canadensis	Canada goose	G
Anas platyrhynchos	mallard	O
Phasianidae (quails, pheasants, and relatives)		
Callipepla californica	California quail	D
Podicipedidae (grebes)		
Aechmophorus occidentalis	western grebe	M,L
Podilymbus podiceps	pied-billed grebe	M,O
Pelecanidae (pelicans)		
Pelecanus erythrorhynchos	american white pelican	O,L
Pelecanus occidentalis californicus	California brown pelican	O,L
Phalacrocoracidae (cormorants)		
Phalacrocorax auritus	double-crested cormorant	O
Ardeidae (herons and bitterns)		
Ixobrychus exilis hesperis	western least bittern	M
Ardea herodias	great blue heron	M
Ardea alba	great egret	M
Egretta thula	snowy egret	M
Butorides virescens	green heron	M

Nycticorax nycticorax	black-crowned night heron	M
Threskiornithidae (ibises and spoonbills)		
Plegadis chihi	white-faced ibis	M
Cathartidae (american vultures)		
Cathartes aura	turkey vulture	F,O
Accipitridae (hawks, old world vultures, and harriers)		
Pandion haliaetus	osprey	W
Elanus leucurus	white-tailed kite	W
Accipiter striatus	sharp-shinned hawk	E,W
Accipiter cooperii	Cooper's hawk	E,W
Buteo lineatus	red-shouldered hawk	E,W
Buteo jamaicensis	red-tailed hawk	E,W
Falconidae (caracaras and falcons)		
Falco sparverius	American kestrel	E,W
Rallidae (rails, gallinules, and coots)		
Porzana carolina	sora	M
Gallinula chloropus	common moorhen	M,O
Fulica americana	American coot	M,O
Charadriidae (plovers and relatives)		
Charadrius vociferous	killdeer	G,M
Laridae (jaegers, gulls, terns, and skimmers)		
Larus occidentalis	western gull	F,O
Sterna caspia	Caspian tern	F,O
Sterna elegans	elegant tern	F,O
Sterna forsteri	Forster's tern	F,O
Sterna antillarum browni	California least tern	F,O
Columbidae (pigeons and doves)		
**Columba livia*	rock pigeon	F,O
Zenaida macroura	mourning dove	D,E W
Cuculidae (typical cuckoos)		
Geococcyx californianus	greater roadrunner	D
Apodidae (swifts)		
Chaetura vauxi	Vaux's swift	F,O
Aeronautes saxatalis	white-throated swift	F,O
Trochilidae (hummingbirds)		
Calypte anna	anna's hummingbird	D,S,W

Picidae (woodpeckers and wrynecks)		
Picoides nuttallii	Nuttall's woodpecker	E,S,W
Picoides pubescens	downy woodpecker	S,W
Colaptes auratus	northern flicker	E,W
Tyrannidae (tyrant flycatchers)		
Contopus sordidulus	western wood-pewee	W
Empidonax difficilis	Pacific-slope flycatcher	E,W
Sayornis nigricans	black phoebe	G,E,W
Myiarchus cinerascens	ash-throated flycatcher	E,W
Tyrannus vociferans	Cassin's kingbird	G,E,W
Laniidae (shrikes)		
Lanius ludovicianus	loggerhead shrike	D,X
Vireonidae (typical vireos)		
Vireo bellii pusillus	least Bell's vireo	S
Vireo huttoni	Hutton's vireo	W
Vireo gilvus	warbling vireo	W
Corvidae (jays, magpies, and crows)		
Aphelocoma californica	western scrub-jay	D
Corvus brachyrhynchos	American crow	E,W
Corvus corax	common raven	F,O
Hirundinidae (swallows)		
Tachycineta bicolor	tree swallow	W
Tachycineta thalassina	violet-green swallow	F,O
Stelgidopteryx serripennis	northern rough-winged swallow	F,O
Petrochelidon pyrrhonota	cliff swallow	F,O
Aegithalidae (bushtit)		
Psaltriparus minimus	bushtit	D,S,W
Troglodytidae (wrens)		
Salpinctes obsoletus	rock wren	X
Catherpes mexicanus	canyon wren	X
Thryomanes bewickii	Bewick's wren	D,S
Troglodytes aedon	house wren	D,S,W
Cistothorus palustris	marsh wren	M
Regulidae (kinglets)		
Regulus calendula	ruby-crowned kinglet	D,S,W
Turdidae (bluebirds and thrushes)		
Sialia mexicana	western bluebird	W
Catharus ustulatus	Swainson's thrush	S

Timaliidae (wrentit)		
Chamaea fasciata	wrentit	D,S
Mimidae (mockingbirds and thrashers)		
Mimus polyglottos	northern mockingbird	U
Toxostoma redivivum	California thrasher	D
Sturnidae (starlings)		
**Sturnus vulgaris*	European starling	E,W
Bombycillidae (waxwings)		
Bombycilla cedrorum	cedar waxwing	E,W
Ptilogonatidae (silky flycatchers)		
Phainopepla nitens	phainopepla	E,W
Parulidae (warblers)		
Vermivora celata	orange-crowned warbler	S,W
Vermivora ruficapilla	Nashville warbler	W
Dendroica petechia	yellow warbler	S,W
Dendroica coronata	yellow-rumped warbler	E,W
Dendroica nigrescens	black-throated warbler	W,S
Dendroica townsendi	Townsend's warbler	E,W
Dendroica occidentalis	hermit warbler	S,W
Geothlypis trichas	common yellowthroat	M,S
Wilsonia pusilla	Wilson's warbler	S,W
Icteria virens	yellow-breasted chat	S,W
Thraupidae (tanagers)		
Piranga ludoviciana	western tanager	W
Emberizidae (sparrows, blackbirds and relatives)		
Pipilo maculates	spotted towhee	D,S
Pipilo crissalis	California towhee	D,S
Aimophila ruficeps canescens	So. Ca. rufous-crowned sparrow	D
Melospiza melodia	song sparrow	M,S
Zonotrichia leucophrys	white-crowned sparrow	D,X
Cardinalidae (grosbeaks, buntings, and relatives		
Pheucticus melanocephalus	black-headed grosbeak	S,W
Passerina caerulea	blue grosbeak	S,W
Passerina amoena	lazuli bunting	D
Icteridae (blackbirds, meadowlarks, orioles, and relatives)		
Agelaius phoeniceus	red-winged blackbird	M
Euphagus cyanocephalus	Brewer’s blackbird	E,G,W
Molothrus ater	brown-headed cowbird	W
Icterus cucullatus	hooded oriole	E,W
Icterus bullockii	Bullock’s oriole	E,W

Fringillidae (finches)

Carpodacus mexicanus	house finch	D,G,E,U,W
Carduelis psaltria	lesser goldfinch	D,G,E,W
Carduelis tristis	American goldfinch	S,W

Passeridae (weaver finches)

**Passer domesticus*	house sparrow	U

MAMMALS

Didelphidae (opossums)

Didelphis virginiana	Virginia opossum	U

Vespertilionidae (vespertilionid bats)

Myotis yumanensis	Yuma myotis	W
Myotis evotis	long-eared myotis	W
Myotis thysanodes	fringed myotis	W
Pipistrellus hesperus	western pipistrelle	W
Eptesicus fuscus	big brown bat	W
Lasiurus blossevillii	red bat	W
Lasiurus cinereus	hoary bat	W
Antrozous pallidus	pallid bat	W

Molossidae (free-tailed bats)

Nyctinomops femorosaccus	pocketed free-tailed bat	W
Nyctinomops macrotis	big free-tailed bat	W
Eumops perotis	western mastiff bat	W
Eumops perotis californicus	California mastiff bat	W

Leporidae (rabbits and hares)

Sylvilagus bachmani	brush rabbit	D
Sylvilagus audubonii	desert cottontail	D
Lepus californicus bennetii	San Diego black-tailed jackrabbit	D

Sciuridae (squirrels, chipmunks, and marmots)

Spermophilus beecheyi	California ground squirrel	U

Geomyidae (pocket gophers)

Thomomys bottae	Botta's pocket gopher	D

Canidae (foxes, wolves, and relatives)

Canis latrans	coyote	W
**Canis familiaris*	feral dog	U
Urocyon cinereoargenteus	gray fox	W,D

Procyonidae (raccoons and relatives)

Procyon lotor	raccoon	W,U

Mustelidae (weasels, badgers, and relatives)

Mephitis mephitis	striped skunk	U,W

Felidae (cats)

**Felis catus*	feral cat	U,W

Cervidae (deer, elk, and relatives)

Odocoileus hemionus	mule deer	D,W

APPENDIX C

SENSITIVE SPECIES AND MSCP COVERED SPECIES NOT KNOWN OR EXPECTED TO OCCUR WITHIN THE NRMP AREA

The following sensitive species are known from the vicinity of the subject area, but for various reasons (primarily lack of suitable habitat) are not expected.

PLANTS

DICOTYLEDONS

Apiaceae - Carrot Family

Eryngium aristulatum var. *parishii*	San Diego button celery

Asteraceae - Sunflower Family

Microseris douglasii ssp. *platycarpha*	small flower microseris

Cactaceae - Cactus Family

Cylindropuntia californica Knuth var. *parkeri*	snake cholla
Ferocactus viridescens	San Diego barrel cactus

Ericaceae - Heath Family

Comarostaphylis diversifolia ssp.*diversifolia*	summer holly

Fabaceae - Pea Family

Lotus nuttallianus	Nuttall's lotus

Lamiaceae - Mint Family

Acanthomintha ilicifolia	San Diego thorn mint
Pogogyne abramsii	San Diego mesa mint
Pogogyne nudiuscula	Otay mesa mint

MONOCOTYLEDONS

Liliaceae - Lily Family

Muilla clevelandii	San Diego goldenstar
Piperia cooperi	chaparral rein orchid formerly cooper piperia

BUTTERFLIES

Lycaenidae (hairstreak, copper, and blue butterflies)

Lycaena hermes	Hermes copper
Callophrys (Mitovra) thornei	Thorne's hairstreak

Nymphalidae (brush-footed butterflies)

Euphydryas editha quino	quino checkerspot

Hesperiidae (skipper butterflies)

Euphyes vestris harbisoni	Harbison's skipper
Panoquina errans	wandering skipper

Decapoda (shrimp,lobster, crabs)

Branchinecta sandiegoensis	San Diego fairy shrimp
Streptocephalus woottoni	Riverside fairy shrimp

AMPHIBIANS

Bufonidae (true toads)

Bufo californicus	arroyo toad

referred to under the MSCP as arroyo southwestern toad

Ranidae (true frogs)

Rana aurora	red-legged frog

Referred to under the MSCP as California red-legged frog

REPTILES

Phrynosomatidae

Phrynosoma coronatum	coast horned lizard

Referred to under MSCP as San Diego horned lizard

BIRDS

Accipitridae (hawks, old world vultures, and harriers)

Haliaeetus leucocephalus	bald eagle
Circus cyaneus	northern harrier
Buteo swainsoni	Swainson's hawk
Buteo regalis	ferruginous hawk
Aquila chrysaetos	golden eagle

Falconidae (caracaras and falcons)

Falco peregrinus anatum	American peregrine falcon

Charadriidae (plovers and relatives)

Charadrius montanus	mountain plover

Scolopacidae (sandpipers and relatives

Numenius americanus	long-billed curlew

Laridae (jaegers, gulls, terns, and skimmers)

Sterna elegans	elegant tern

Strigidae (typical owls)

Athene cunicularia	burrowing owl

Troglodytidae (wrens)

Campylorhynchus brunneicapillus	cactus wren

Sylviidae (old world warblers and gnatcatchers)

Polioptila californica californica	coastal California gnatcatcher

Emberizidae (sparrows, blackbirds and relatives)

Aimophila ruficeps	rufous-crowned sparrow
Passerculus sandwichensis rostratus	large-billed savannah sparrow

APPENDIX D

LAND OWNERSHIP WITHIN AND ADJACENT TO THE NRMP AREA

Ownership of land within and adjacent to the NRMP area consists of Federal, State of California, MTDB, City of San Diego, and private entities, as indicated in the table below.

Land Area	Owner
Mission Trails Regional Park	City of San Diego
Admiral Baker Golf Course and associated military recreation facilities	United States Navy
South of the River between Mission Trails Regional Park and Mission Gorge Road	Private, various
One parcel in the area south of the River between Mission Trails Regional Park and Mission Gorge Road	City of San Diego
Mission Gorge Road to I-15	Private, various
One parcel between Mission Gorge Road and I-15	State of California
Various locations in the area between Mission Gorge Road and I-15	Metropolitan Transit Development Board
Most parcels along the River between I-15 and I-805	City of San Diego
Parcels just east of I-805	Private, various
Qualcomm Stadium and adjacent athletic fields	City of San Diego
Various parcels on the south side of the River between I-15 and I-805	Private, various
On the south side of the River between I-15 and I-805, along the "s" curve of Camino del Rio North	City of San Diego
Various parcels on the south side of the River between I-15 and I-805	Private, various
Areas between I-805 and Qualcomm Way, including the River	Private, various
One parcel between I-805 and Qualcomm Way	United States Postal Service
A small parcel adjacent to the west side of SR-163	City of San Diego
Area between SR-163 and Fashion Valley Road, including Fashion Valley Mall, and Riverwalk Golf Course	Private, various
Multiple family residential developments located north of the River, consisting of Presidio Place Condominiums and Courtyard Apartments	Private, various
Mission Valley YMCA	YMCA
Areas adjacent to Riverwalk Golf Course	MTDB
Parcels adjacent to the south side of the River, except one	Private, various
One parcel adjacent to the south side of the River	City of San Diego
Various small parcels along the westernmost portion of the NRMP area, and the baseball fields at Sefton Park	City of San Diego