

# San Pasqual Valley Integrated Weed Management Plan



JANUARY 2013

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Integrated Weed Management Plan**

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## SUMMARY

This Integrated Weed Management Plan (WMP) was developed for the City of San Diego Public Utilities Department to devise an adaptive, comprehensive plan that locates, identifies, quantifies, prioritizes, and provides recommendations for invasive weed species management within the approximately 7,405-acre San Pasqual Valley Weed Management Area (WMA). It is the intent of this WMP to be adaptive, flexible, and responsive to changing site conditions on an annual basis, including discovery of new invasive species not yet present or known to be growing in the WMA. The landscape scale plan complements regional land management objectives and will utilize the management levels and strategies articulated in the *Management Priorities for Invasive Non-native Plants: A Strategy for Regional Implementation* (SANDAG 2012). Public Utilities can emulate the WMP at other sites.

The goal of this plan is to outline the most effective and cost-efficient weed control and management practices that can be implemented by the City and stakeholders. A responsible management plan achieves its goals while incurring the least number of negative effects on non-target organisms and the environment. This goal will be achieved by utilizing Integrated Pest Management (IPM) techniques, including cultural control, physical control, biological control, and chemical (herbicide) control. Because this plan is adaptive to dynamic conditions, a primary objective is to prioritize the control of any future invasive species that are not currently known to be growing in the WMA when they are discovered. Controlling new invasions early will prove more economical and less harmful to the natural environment because these species will not be allowed to grow unchecked and become established throughout widespread areas of the WMA.

This plan includes updated summer 2011 mapping of target weed species locations within the WMA using high-resolution aerial imagery, prioritization and strategies for invasive species control, a monitoring program, and target performance standards that can be used to measure success and help determine when adaptive measures may be needed. This plan is complemented by a geographic information system (GIS) database that spatially locates target invasive species populations within the WMA, identifies species present in a given area, and indicates the percentage cover and acreage. The GIS database uses the high-resolution, geo-referenced 2011 imagery and county topography as the underlying base. In addition to the invasive species data, the GIS database contains several thematic layers that can be toggled on or off, including treatment areas (e.g., previously treated areas), parcel boundaries, ownership information, lessee information, jurisdictions, sensitive habitat areas, schools, farms, nurseries, organic farming zones, soil types, monitoring photo-points, archaeological information, and more. The desired information can be toggled on or off and the resultant map printed out at the desired scale.

As implementation of the plan unfolds, it will enable work to be recorded and tracked in the GIS database by uploading treatment areas and indicating pertinent information, including treatment area boundaries, the date of treatment, specific control method(s) utilized, chemical

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solutions/strengths used, name of applicator(s), weather conditions, and grant or funding source, on a field form. Follow-up monitoring data, including treatment effectiveness, the need for follow-up treatment, post-application weather/precipitation, and the new estimated percentage weed cover, can be uploaded. Once the data is uploaded to the GIS database, it can be tracked and analyzed, and future management decisions can be made based on the results of the analysis.

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## 1.0 INTRODUCTION

### 1.1 Project Description

The San Pasqual Valley Weed Management Area (WMA) is located in the northeastern corner of the City of San Diego (Figures 1 and 2) and is owned and managed by the City of San Diego Public Utilities Department (City). The San Pasqual Valley Plan (2005a), the San Pasqual Vision Plan (2004), and Council Policy 600-45 (2005b) identify water resources, agriculture, sensitive habitats, and open space as key values to be protected. Portions of the San Pasqual Valley are part of the Cornerstone Land preserve areas for the City's Multiple Species Conservation Program (MSCP). The Valley is underlain by the San Pasqual Groundwater Basin and is immediately upstream of Hodges Reservoir. The primary and overarching objective for the City's management of land in San Pasqual Valley is the protection of water resources. Beyond this, and in cooperation with other entities and partners, the City strives to protect all of the valley's natural resource and community values.

The occurrence and expanding presence of invasive non-native plants across the valley threatens water resources and other natural resources. Invasive plants are weed species that rapidly and opportunistically expand their distribution. Invasive plants use excessive amounts of water, degrade water quality, displace valuable native habitats, and are considered unsightly.

Weed management is an important constituent of the overall stewardship of the San Pasqual River Valley for many reasons. The most obvious is to prevent invasive weeds from displacing the native plants and native vegetation communities and in essence taking over the natural areas and ecological systems within the San Pasqual River Valley. The native plants and vegetation communities provide habitat, foraging, and nesting opportunities for hundreds of native birds and animal species, including some that are listed as rare, threatened, or endangered under state and/or federal environmental law. Weed species generally do not provide the same habitat value as native habitat. Many weed species create dense, often monotypic stands that severely limit biodiversity and can make wildlife passage difficult or impossible. Weed species are also more prone to fire, and studies have demonstrated that many weed species, including giant reed (*Arundo donax*) results in increased fire frequencies (Zemba and Hoffman 2000).

Weed species, and particularly wetland and riparian weed species such as giant reed and tamarisk (*Tamarix ramosissima*), are known "water hogs" that once established within a creek or floodplain make substantially less water available to the remaining native vegetation. The more water that these species uptake and transpire results in less water for downstream habitats and groundwater recharge. Once situated along a stream bank, these highly invasive plants are poised to proliferate farther downstream using flowing water as a potent dispersal vehicle of viable root fragments. Tamarisk, which is also known as salt cedar, is ubiquitous within the WMA, and it is especially egregious in that it is adept at creating higher soil salinity levels that kill most other

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plants and prevent understory growth. Both tamarisk and giant reed grow so densely, both above and below the ground, that they out-compete existing native plants and prevent native seedling germination (Frandsen and Jackson 1994).

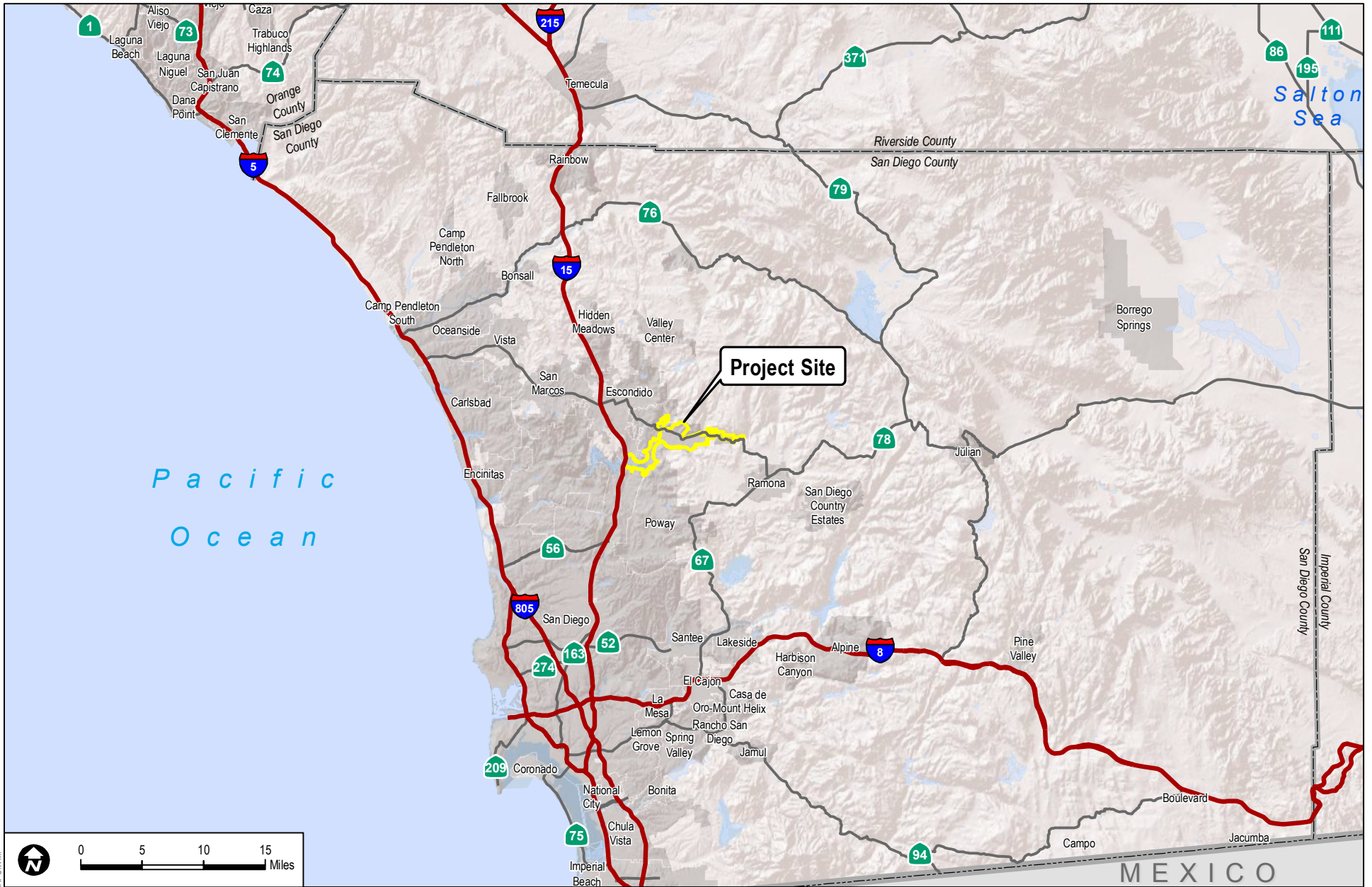
Studies have shown that most weeds are not as effective at bio-filtration as native plants. Native vegetation is generally more effective at nutrient uptake which serves to improve water quality. When invasive species such as giant reed take over a stream, the dense canopy of the native willow forest is lost, which results in higher water temperatures, increased algal growth, and lower available dissolved oxygen in the water. Arundo stands have been shown to adversely impact stream hydrology and sediment transport including increased flood elevations and accretion of streambed elevation (Leclerc and McArthur, 2011).

Many invasive species are also problematic to farmers, landscapers, and flood control districts, and they can be a costly maintenance item. Many invasive species that invade riparian areas break off at the base or trunk during high flow events, resulting in large piles of downstream debris. Giant reed is particularly problematic in this regard. Giant reed often results in large piles of biomass, which in turn traps other debris, forming large piles that can impede stream flow, clog culvert pipes, and can even bridge underpasses, all of which can result in flooding or erosion and the need for expensive removal efforts. Conversely native trees and vegetation have adapted to bend with stream flows and thus stay in place during high flow events.

## **1.2 Project Location**

The San Pasqual River Valley WMA is located in the City of San Diego and extends from Interstate 15/Lake Hodges at the western terminus approximately 10 miles to the east. The WMA is roughly bisected by Santa Ysabel Creek. The eastern terminus is approximately 2 miles west of Ramona (Figures 1 and 2). The site includes the Santa Ysabel creek riparian corridor and floodplain, tributary creeks including Guejito/Rockwood Canyon Creek and Santa Maria Creek, natural upland areas, and agricultural areas including farms, dairies, and plant nurseries. The WMA also includes the San Diego Safari Park (formerly Wild Animal Park) and several residences. The site is bordered by natural lands, open space, and agricultural, residential, and commercial land uses, as well as Interstate 15 along the western terminus (see Figure 3).

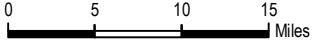
Because of its relatively large size, the San Pasqual River Valley WMA has been subdivided into seven smaller management units. The management units, referred to as reaches, are named East End Reach, Upper Preserve Reach, Santa Maria Reach, SANDAG Mitigation Bank Reach, Safari Park Reach, Cloverdale Reach, and Lake Hodges Inlet Reach. The reaches are discussed in more detail in Section 3.1.2.



**Project Site**

Pacific  
Ocean

MEXICO



**DUDEK**

SOURCE: City of San Diego 2011

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San Pasqual Valley Weed Management Plan

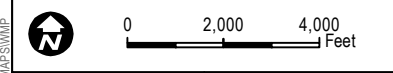
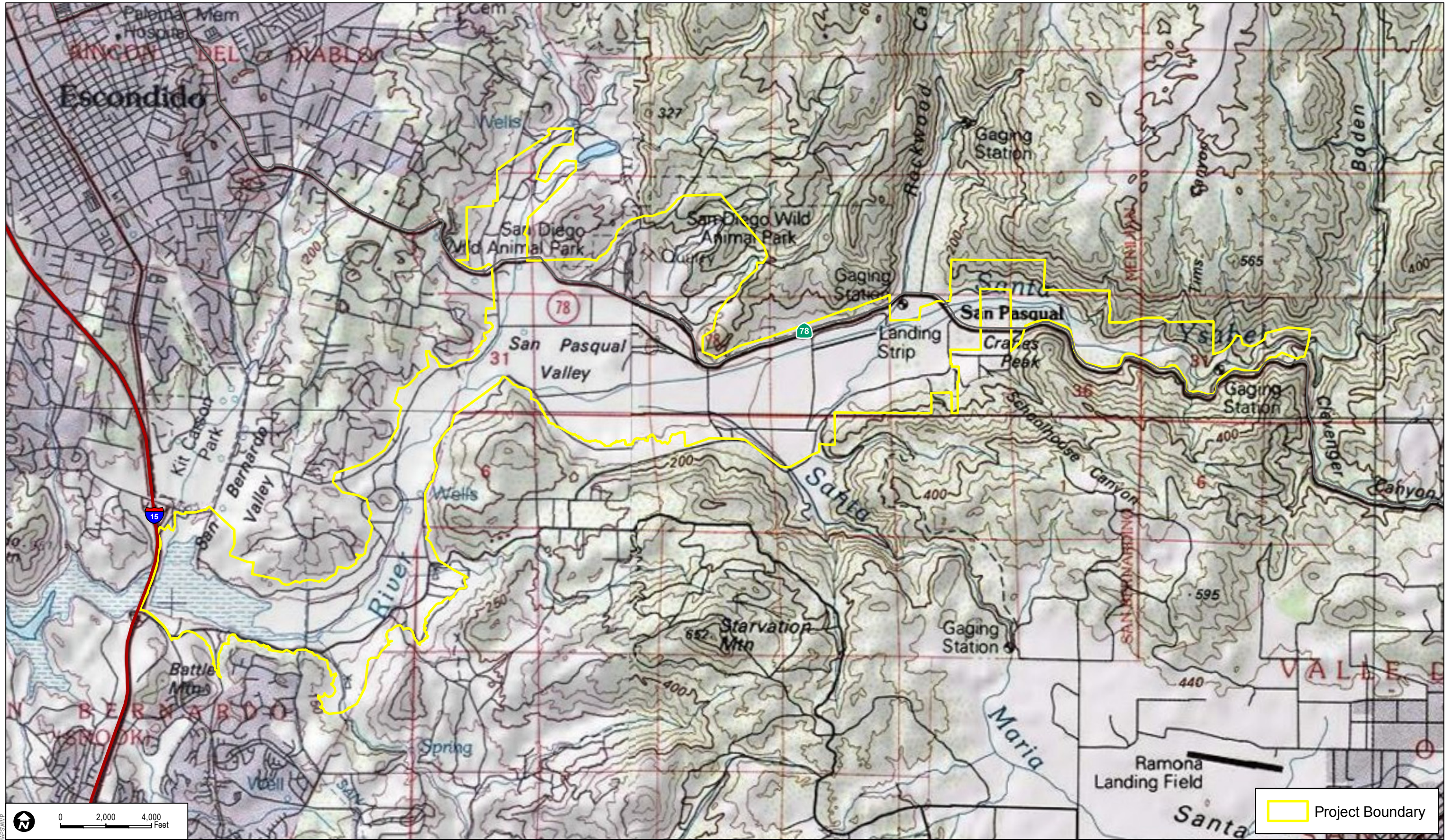
**FIGURE 1**  
**Regional Map**

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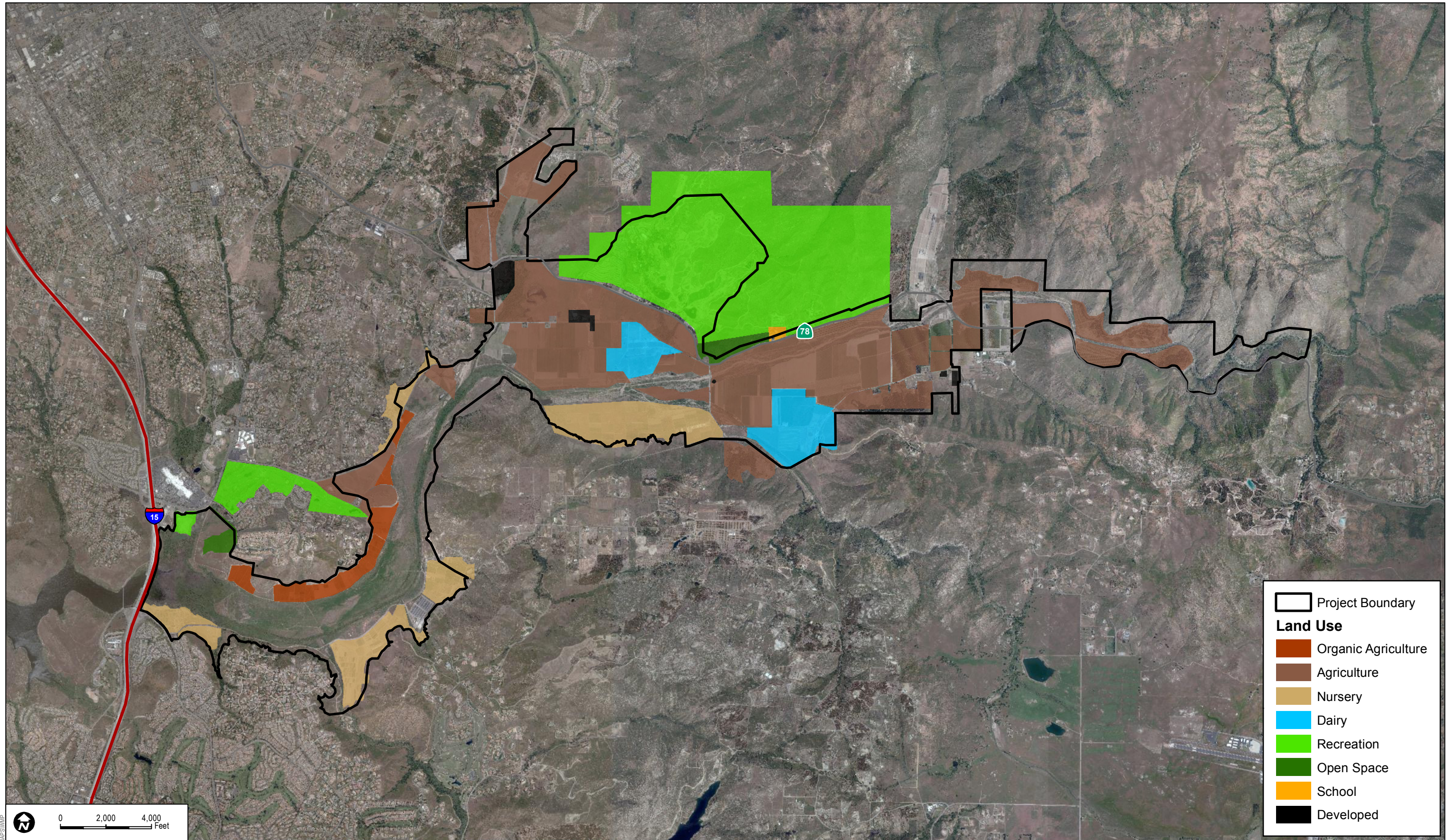
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SOURCE: USGS 7.5-Minute Series Quadrangle, City of San Diego 2011

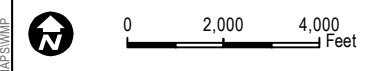
San Pasqual Valley Weed Management Plan

**FIGURE 2**  
**Vicinity Map**

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	Project Boundary
<b>Land Use</b>	
	Organic Agriculture
	Agriculture
	Nursery
	Dairy
	Recreation
	Open Space
	School
	Developed



**DUDEK**

SOURCE: CDFG NAIP 2010, City of San Diego 2011

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San Pasqual Valley Weed Management Plan

**FIGURE 3**  
**Land Use Map**

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## 1.3 Summary of Regulations and Resource Agencies

The WMA area includes wetland and upland vegetation communities and stream courses that are home to several different native plant and wildlife species, some of which are protected by local, state or federal law; it is important that the City consider potential impacts associated with weed management activities and exercise due-diligence prior to beginning weed control efforts. If due diligence indicates wetland or sensitive resources may be affected by the proposed weed management activities, resource agency coordination should be initiated. In general, any work that involves the removal or disturbance of potential bird nesting habitat should be performed outside of the migratory bird nesting season as outlined in the Migratory Bird Treaty Act.

For impacts associated with wildlife, it may be necessary to coordinate with the California Department of Fish and Game (CDFG) and/or the U.S. Fish and Wildlife Service (USFWS). If work could potentially affect wetlands and/or water quality including soil disturbance from equipment and vehicles entering jurisdictional areas, coordination and permits may need to be obtained from the CDFG, U.S. Army Corps of Engineers (ACOE), and/or Regional Water Quality Control Board (RWQCB). If weed control includes measures that could potentially disturb an acre or more of soil (i.e., grading, grubbing, or root removal associated with the work) a Stormwater Pollution Prevention Plan (SWPPP) may need to be prepared, in accordance with the State Water Resources Control Board's (SWRCB's) National Pollutant Discharge Elimination System (NPDES) Construction General Permit No. 2009-009-DWQ.

This plan includes methods for invasive species for control, which includes the killing and/or removal of invasive non-native vegetation (weeds). A variety of control methods are anticipated to be utilized during implementation of this plan. The control method(s) used will vary depending on several variables including, but not limited to, the particular species targeted for control, the overall acreage to be treated/removed, the crew skill level, the tools and machinery available for use, the time of year, the ease/difficulty of access, funding, and the proximity to sensitive resources.

CDFG has issued 1602 Streambed Alteration Agreement No. 1600-2008-0308-R5 to the San Dieguito River Park Joint Powers Authority (JPA), which is included in Appendix C. This permit is valid through March 15, 2019, and allows the JPA to enhance the San Dieguito River watershed by removing invasive plants. The 1602 agreement specifies seven “non-native invasive plants” that will be removed. They are giant reed, tamarisk, pampas grass (*Cortaderia* sp.), invasive palms (unspecified, but assumed to be Mexican fan palm (*Washingtonia robusta*) and Canary Island date palm (*Phoenix canariensis*), perennial pepperweed (*Lepidium latifolium*), castor bean (*Ricinus communis*), and eucalyptus (unspecified *Eucalyptus* species, but assumed to be red gum (*E. camaldulensis*)). The 1602 agreement specifies minutely detailed information about work to be performed in the WMA and the timing of that work that must be followed to comply with the agreement.

# San Pasqual Valley Integrated Weed Management Plan

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The 1602 agreement also states in the project description that after removing invasive plants the treated areas will be replanted with appropriate native vegetation. The permit includes restrictions/time frames for pesticide applications, biomass reduction (vegetation removal), revegetation and maintenance activities, and other items.

The U.S. Environmental Protection Agency (EPA) has developed bulletins with risk-based guidelines regarding the safe use of pesticides to protect endangered and threatened species. Interim bulletins have been developed for California on a countywide basis. The bulletin *Protecting Endangered Species, Interim Measures for Use of Herbicides in San Diego County* (EPA 1999) provides guidance for the San Pasqual Valley WMA (Appendix E). The guidelines take into account known locations of listed species on a regional basis, the pesticide mode of activity category, and hazard class to provide use limitations to protect the listed species. Use limitations include such things as establishing buffer zones, containing runoff water, establishing prohibitions in occupied habitat, except under certain specific conditions. Pesticides are listed by active ingredient rather than by trade name in the bulletins. Because these are interim measures, they provide guidelines and are not mandatory until they are finalized by EPA.

## 1.4 Legal Requirements of the Weed Control Program

In accordance with state law, this document discusses possible treatment options, but does not dictate the specific methods or materials that must be used to control invasive, exotic plant pest species at specific sites for this project. Actual methods and materials will depend on the specific environmental conditions present at the site at the time when control measures are undertaken. If needed at the time of treatment, the contractor or entity performing the control work will obtain a written recommendation from a licensed Pest Control Adviser (PCA). Depending on the circumstances and pesticide used, a written recommendation may not be required and a Qualified Applicator License (QAL) or Qualified Applicator Certificate (QAC) may make the decisions required for specific pesticide applications under the terms of their license or certificate.

In accordance with California Food and Agriculture Code, Section 12003, a written recommendation must contain current site-specific information for each treatment site, and include (a) the name and dosage of each pesticide to be used or description of the method recommended; (b) the identity of each pest to be controlled; (c) the owner or operator, location of and acreage to be treated; (d) the commodity, crop, or site to be treated; (e) suggested schedule, time, or conditions for the pesticide application or other control method; (f) a warning of the possibility of damages by the pesticide application that reasonably should have been known to exist by the pest control adviser; and (g) signature and address of the pest control adviser, along with an expiration date for the recommendation. A PCA recommendation is valid for a maximum of 1 year.

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Pesticide registrations, laws, regulations, and label directions change regularly, so this plan presents general information only. Refer to the specific herbicide label for information about approved methods, proper timing, and application rates. The contractor must follow all applicable label directions, laws, regulations, and safety precautions when performing pest control. It is up to the pesticide applicator to abide by the most current pesticide laws and regulations.

All applicable laws, regulations, safety precautions, and label directions must be followed when performing pest control, which includes the application of herbicides. State laws and regulations regarding pest control and pesticides are contained in the Food and Agriculture Code and the California Code of Regulations. Pest control and pesticide use are under the jurisdiction of the California Environmental Protection Agency (CalEPA), Pesticide Enforcement Branch. Local enforcement is provided by the County Agricultural Commissioner. CDFG signed a Memorandum of Understanding (MOU) in 1994 with the Department of Pesticide Regulation and the California Agricultural Commissioners and Sealers Association acknowledging that CDFG does not regulate pesticides. The MOU was followed by a Pesticide/Wildlife Incident Response Plan, dated April 2000, that outlined the scope and roles of each agency with regard to pesticides and wildlife issues.

To apply pesticides, state law requires that the contractor performing pest control have a valid Qualified Applicator Certificate (QAC) or Qualified Applicator License (QAL) from the State of California, as appropriate to the contractor's situation. If a contractor is performing the work, the contractor must also have a valid Pest Control Business License. If the contractor performing the pest control work needs specific pest control recommendations for any particular pest control effort, the contractor should consult a licensed PCA for a written recommendation.

Due to a 2001 decision by the U.S. Ninth Circuit Court of Appeals in the *Headwaters Inc. vs. Talent Irrigation District* case, an NPDES permit is required if any pesticides are applied to or come in contact with waters of the United States. If herbicides are applied to or come in contact with water, enrollment under Water Quality Order No. 2004-0009-DWQ Statewide General NPDES Permit for the Discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States No. CAG990005, or a subsequent permit, will be required prior to applying pesticides to the water. This permit is in a draft form for modification as this Plan was being prepared. This program is legally clouded due to court challenges and has not been resolved when this WMP was prepared.

The Healthy Schools Act of 2000 also imposes additional requirements for the use of pesticides on school property. Certain pesticides are prohibited from use on school property, and there are advance notification and posting requirements that need to be followed if any weed control work involving pesticide use is proposed on school property within the WMA.

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In addition, the Migratory Bird Treaty Act also could have an impact on the initial removal of invasive trees and shrubs in the WMA. Nesting bird surveys are required if vegetation removal is performed during the bird breeding season between February 15 and September 1 of any year. Because of this, the initial weed control and removal effort should take place outside the bird breeding season. Subsequent herbicide treatment of sprouting stumps should be done at the biologically appropriate time for that weed species, and it could be done during the bird breeding season, provided the exotics have not grown back to size and structure to support nesting birds. If the plants being treated do grow back and are able to support nesting birds before follow-up treatment, nesting bird surveys should be performed before additional control measures are employed. For follow-up herbicide treatment, it is important that the herbicide be applied at the biologically appropriate time when the plants are still weak, so that the plants do not have time to recover fully from the previous herbicide treatment.

### **1.5 Environmental Training and Education**

General Condition No. 3 of the CDFG 1602 agreement requires that all personnel conducting weed control activities within the WMA will be educated in regard to the requirements of the 1602 agreement. They will also be instructed on property boundaries, environmental conditions, restrictions, and requirements particular to the specific WMA they are working in prior to initiating weed control activities. All personnel should be informed of the presence or potential presence of sensitive wildlife, plants, or vegetation within or adjacent to treatment areas, and they should be informed about methods or techniques to avoid impacts to sensitive resources while working in and around them.

Personnel should be informed about any applicable resource agency permits and the requirements therein before beginning work. The field supervisor should have a copy of the resource agency permit(s) on site when performing work, in accordance with General Condition No. 4 of the CDFG 1602 Agreement. Training and supervision of weed control work should be conducted by a qualified individual with a biology, botany, ecology, or similar BS degree, who is intimately familiar with the plants and environmental resources present within the San Pasqual Valley WMA.

All weed control personnel/crews should be able to easily identify the target invasive species they are controlling and any species that look familiar, or that could be mistaken for the target species. Weed crews and personnel should perform work under the direct supervision of a person qualified to identify native and non-native species. All personnel working in or adjacent to environmentally sensitive areas are expected to undergo a brief environmental training session, including a plant-identification training session prior to starting work. If pesticides are to be used, personnel with a valid QAL or QAC should provide training and supervision, as required by the license or certificate, and as outlined in this section.

## 1.6 Mapping Methodology and Limitations

Dudek contracted with Digital Mapping Inc. (DMI) to fly the site in late spring 2011 to obtain current, high-resolution aerial imagery of the entire WMA. Following receipt of the high resolution geo-referenced imagery, Dudek GIS staff overlaid a rectangular grid system onto the imagery. The grid overlay resulted in a total of 71 grid “cells,” or maps, of the WMA. Each map was named/coded and printed at a 1 inch = 50 feet scale (Figure 4) for office and field mapping.

The original intent was to use the high-resolution imagery to perform a majority of the invasive species mapping in the office followed by field “spot checks” of approximately 10% of the WMA acreage to ground truth the data and for accuracy verification. However, it subsequently proved difficult to map a significant portion of the invasive species in the office for a variety of reasons including but not limited to 1) some of the invasive species had the same color/texture “markers” as native species; 2) some invasive species were obscured in the understory of tall willows and other trees; and 3) portions of the WMA had burned, and although trees appeared dead/skeletonized on the imagery, many had begun to stump sprout and regenerate at the base. In general, only relatively large monotypic stand of arundo and tamarisk trees were easily identified on the imagery.

In light of this limitation, the mapping protocol was revised and target invasive species were largely mapped in the field. The field mapping methodology involved accessing the site on existing dirt roads, hiking to an elevated vantage point, and mapping the field conditions directly onto each map grid cell. In instances where species identification was not clear from an elevated vantage point, the habitat area was entered for direct verification. Field mapping documented species the extent and percentage cover of identified target invasive species. Where the percentage cover changed, a new polygon was created to indicate the changed percentage cover. Field mapping of the WMA was completed between May 2011 and August 2011. Additional non-target weed species found within the WMA were mapped when observed.

Latin and common names of plants follow *The Jepson Manual* (Hickman 1993). Other published taxonomic treatments were used for exotic species not listed in Hickman, including *Weeds of California and other Western States, Volume 1, Aizoaceae – Fabaceae* (DiTomaso and Healy 2007a) and *Weeds of California and other Western States, Volume 2, Geraniaceae – Zygophyllaceae* (DiTomaso and Healy 2007b).

## 1.7 GIS Databases

Dudek was tasked with creation of a GIS database to track Weed Management Plan mapping related information for the region. This database template was designed to be uploaded to the SANDAG Data Warehouse for future submittal of data to the City of San Diego or other regional entity. Dudek created a database design to store geospatial information for inventory and mapping of Invasive Project Areas, Mapped Invasives, Photo Points of Mapped Invasives,

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Treatment Areas, Monitoring Areas and Photo Points for Monitoring. The database was created in ESRI's ArcGIS file geodatabase format with feature datasets (3), feature classes (6), subtypes(5), domains(13) and lookup tables (5). Metadata for each layer, subtypes, domains and lookup tables can be found in Appendix A.

Specifically for the San Pasqual Weed Management plan, the standard data layers mentioned above were collected. Upon completion of field mapping for the San Pasqual Valley WMP, the data on the field maps were input into the Mapped Invasives feature class (715 polygons). Dudek collected over 70 photo locations for the San Pasqual Valley WMP and were input to the Mapped Invasives Photo Points feature class. The Invasive Project Area boundary was also created and stored in the database.

In addition to these standard layers for Weed Management Plan regional data tracking, Dudek also created a feature class for the Organic Farms and a separate feature class to track Leased parcels. Metadata can be found in Appendix A.

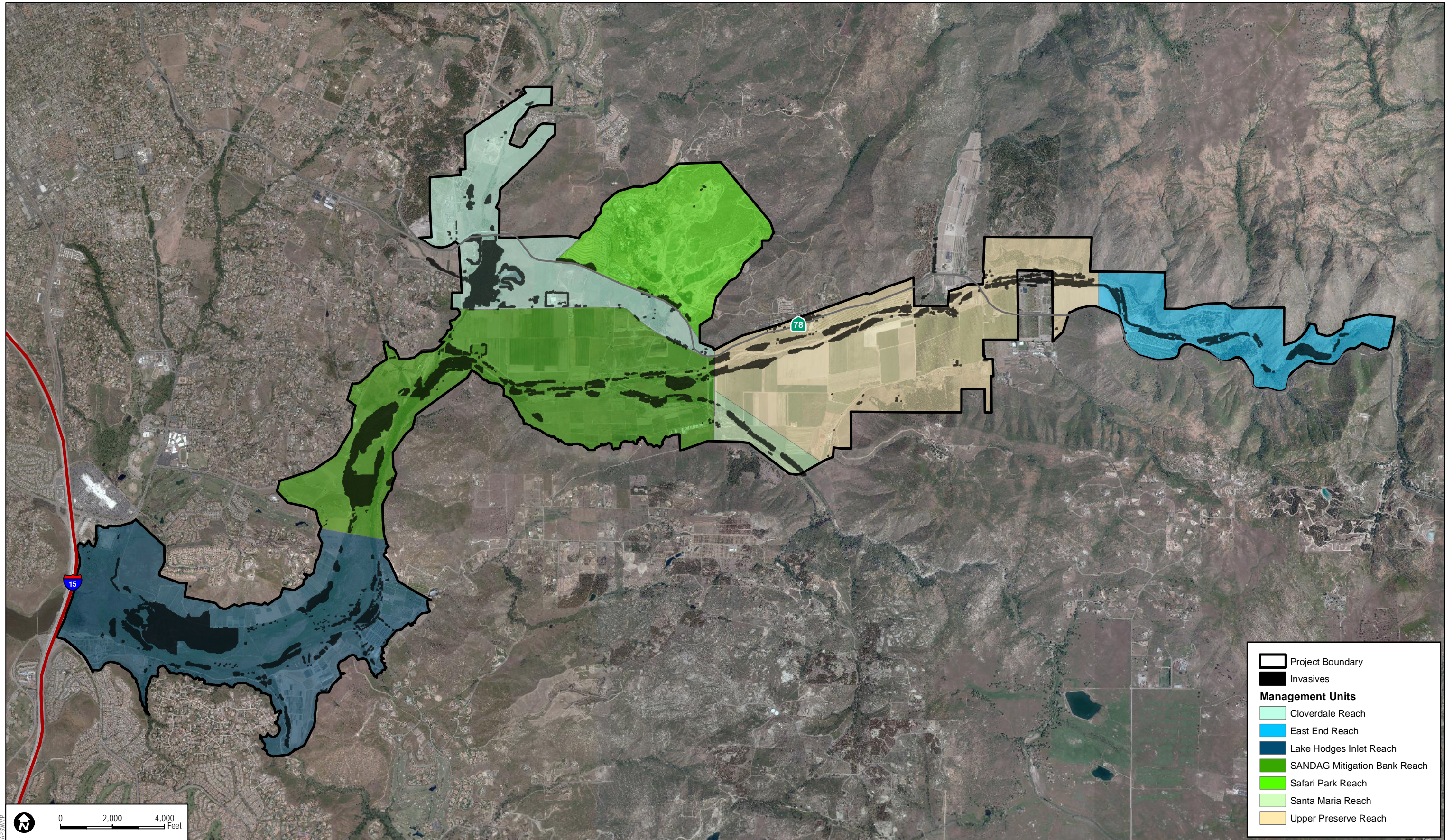
## **1.8 Stakeholders and Responsible Parties**

The City of San Diego Public Utilities Department is the responsible party for the design and implementation of this weed control program. There are a number of stakeholders that are partners in the WMA. The roles of the City and major stakeholders including the San Dieguito River Park JPA, the San Dieguito River Valley Conservancy, and the San Diego Safari Park are discussed below. Table 1 provides the contact telephone number and email for each stakeholder.

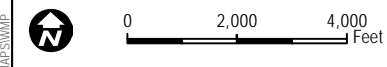
### **1.8.1 City of San Diego**

The City's Department of Public Utilities is the responsible party for the WMP preparation, overall coordination, and implementation. Nicole McGinnis and Kim Wehinger are the points of contact for the City of San Diego Public Utilities Department. See Table 1 for contact information.

The City contracted with Dudek to prepare the WMP and associated queryable, updatable, GIS mapping and database. The City owns the WMA land and has lessees within the project area. The largest lessee is the San Diego Safari Park. Other major stakeholders present within the WMA that are involved with the long-term management and implementation of this plan include the San Dieguito River Park JPA and the San Diego River Valley Conservancy. These stakeholders and their roles within the WMA are described in more detail as follows.



- Project Boundary
- Invasives
- Management Units**
- Cloverdale Reach
- East End Reach
- Lake Hodges Inlet Reach
- SANDAG Mitigation Bank Reach
- Safari Park Reach
- Santa Maria Reach
- Upper Preserve Reach



**DUDEK**

SOURCE: CDFG NAIP 2010, City of San Diego 2011

6476-05

San Pasqual Valley Weed Management Plan

**FIGURE 4**  
**Management Units Map**

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## **San Pasqual Valley Integrated Weed Management Plan**

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### **1.8.2 San Dieguito River Park JPA**

The San Dieguito River Valley Regional Open Space Park JPA, also known as the San Dieguito River Park, a project stakeholder, is the agency responsible for creating a natural open space park in the San Dieguito River Valley. Shawna Anderson is the contact person (Table 1). The park will someday extend from the ocean at Del Mar to Volcan Mountain, just north of Julian. The San Dieguito River Park JPA was formed as a separate agency on June 12, 1989, by the County of San Diego and the Cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach. It was empowered to acquire, plan, design, improve, operate, and maintain the San Dieguito River Park.

The Focused Planning Area (FPA) for the San Dieguito River Park extends along a 55-mile corridor that begins at the mouth of the San Dieguito River in Del Mar and ends at the desert just east of Volcan Mountain. The FPA encompasses the San Dieguito River Valley and its major tributary canyons, as well as Lake Hodges, San Pasqual Valley, Boden Canyon and Pamo Valley, Lake Sutherland, the Santa Ysabel Creek drainage, Volcan Mountain, and portions of the high desert in San Felipe Valley.

### **1.8.3 San Dieguito River Valley Conservancy**

The San Dieguito River Valley Conservancy is a stakeholder and nonprofit, citizen-based organization helping to implement the San Dieguito River Park and its Coast-to-Crest Trail stretching 55 miles from Volcan Mountain near Julian to the ocean, between the Cities of Del Mar and Solana Beach, California. David O'Connor is the contact person (Table 1).

The San Dieguito River Valley Conservancy preserves, protects, and shares the natural and cultural resources of the San Dieguito River Valley through collaborative efforts to acquire lands, complete trails, restore habitats, establish educational programs, create interpretive centers, encourage recreation, and mobilize public support.

### **1.8.4 San Diego Safari Park**

The San Diego Safari Park/Zoological Society is a stakeholder lessee. The leased area includes approximately 2,000 acres within the City-owned portion of San Pasqual Valley that is included within the WMA. The San Diego Safari Park contact person is Bryan Endress, Director of Applied Animal Ecology (Table 1). The Safari Park contains many ornamental and exotic plant species as well as native habitat areas, and as such, has been requested to prepare and submit a plant species inventory for the premises so it can be reviewed for any potentially invasive species that could escape and naturalize within the WMA. The City's consulting biologist did not attempt to map this area due to safety and access constraints.

# San Pasqual Valley Integrated Weed Management Plan

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## 1.8.5 SANDAG

The San Diego Association of Governments, known by the acronym SANDAG, is a regional planning agency that has contracted with the City to develop an approximately 300-acre mitigation bank in the central portion of the WMA (Figure 4). The SANDAG contact person is Keith Greer (Table 1). The SANDAG mitigation bank currently supports agricultural land and natural habitat areas along the river. Some or all of the agricultural lands may be converted to habitat for mitigation purposes at some time in the future.

## 1.8.6 County of San Diego Road Department

The County of San Diego maintains all road rights-of-way (ROW) along county roads in the San Pasqual Valley. The Valley Center Road Station performs weed abatement generally north of Ysabel Creek, on Old San Pasqual, Old Milky Way, Rockwood and Cloverdale roads. The Ramona Road Station is responsible for abatement on Highland Valley Road and Bandy Canyon Road. Scott Croft is the contact at the Valley Center Road Station and Larry Zickus is the contact at the Ramona Road Station (Table 1). Work to control invasive weeds within County road ROWs should be coordinated with County staff. In addition, requests for county assistance for weed control in the ROW may be requested.

## 1.8.7 Consultant

Dudek was retained by the City for the purposes of obtaining digital imagery, performing field mapping of target invasive species, and preparing the WMP and corresponding GIS maps and database. Mike Sweesy is the contact person (Table 1). Management staff at Dudek includes Michael Sweesy (Principal) and Lisa Lubeley (senior GIS project manager/group leader). WMP preparers included Douglas Gettinger (habitat restoration specialist/PCA), Paul Walsh (project/task manager), Kyle Mathews (biologist), and Tyler Friesen (GIS specialist).

**Table 1  
Stakeholder Contact List**

Organization	Contact Person	Contact Information
City of San Diego, Watershed and Resource Protection	Nicole McGinnis Kim Wehinger	619.533.4101 nmcginnis@sandiego.gov 619.533.5222 kwehinger@sandiego.gov
San Dieguito River Park JPA	Shawna Anderson	858.674.2275, ext. 13 shawna@sdrp.org
San Dieguito River Valley Conservancy	David O'Connor	858.674.2270, ext. 12 david@sdrvc.org
SD Safari Park/Institute for Conservation Research	Bryan Endress	760.291.5486 bendress@sandiegozoo.org
County Road Department	Valley Center Road Station Ramona Road Station	Scott Croft 760.749.0521 Larry Zickus 760.787.3312
SANDAG	Keith Greer	619.699.7390 Keith.Greer@sandag.org

# San Pasqual Valley Integrated Weed Management Plan

**Table 1**  
**Stakeholder Contact List**

Organization	Contact Person	Contact Information
San Pasqual Academy	Kati McHugh Health and Wellness Center Coordinator	760.741.4308 Kmchugh@spacademy.org
Dudek	Michael Sweesy Lisa Lubeley (GIS database)	760.942.5147 msweesy@dudek.com 760.479.4273 llubeley@dudek.com

## 1.9 Sensitive Resources Present within the Weed Management Area

Although sensitive resources surveys and mapping were not conducted as part of the invasive species mapping, Dudek made general notes during field visits and conducted a review of the California Natural Diversity Database (CNDDDB) (CDFG 2011) and SanGIS databases to indicate sensitive vegetation communities, plants, and wildlife species that occur, or are likely to occur, within the WMA. The sensitive species listed below should not be thought of as detailed or comprehensive. Other sensitive or protected species have the potential to occur within the WMA. It is up to the City and stakeholders to determine if and where sensitive species occur prior to performing work within the WMA. The CNDDDB, SanGIS and project GIS databases can be queried to help determine the historic locations of sensitive species and habitats.

### 1.9.1 Sensitive Species

Field surveys for sensitive plant species were not conducted as part of the invasive species mapping; however, a review of the CNDDDB (CDFG 2011b and 2011c) indicates the following plant species occur within or adjacent to the WMA: Palmer's goldenbush (*Ericameria palmeri*), San Diego milkvetch (*Astragalus oocarpus*), San Diego thornmint (*Acanthomintha ilicifolia*), smooth tarplant (*Centromadia pungens* ssp. *laevis*), and southern tarplant (*Centromadia parryi* ssp. *australis*). It should be noted that the frequency of occurrences for these species is very low; i.e., 1-2 individuals according to the CNDDDB. It is possible that there are other sensitive plants present within the WMA. Many sensitive plant species are ephemeral or annual in nature and often are only identifiable for a few weeks during the spring when the plants bloom. If weed management activities are slated to take place where sensitive plant species may occur or have historically occurred, the stakeholder must perform the necessary environmental due diligence and obtain resource agency permits, if necessary, before performing work.

CNDDDB (CDFG 2011, 2011a, and 2011c) and SanGIS databases indicate that the following sensitive wildlife species occur within the WMA: federally listed threatened California gnatcatcher (*Poliophtila californica californica*), federally and state-listed endangered least Bell's

# San Pasqual Valley Integrated Weed Management Plan

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vireo (*Vireo bellii pusillus*), southern willow flycatcher (*Empidonax traillii*), Bell's sage sparrow (*Amphispiza belli*), coastal cactus wren (*Campylorhynchus brunneicapillus*), Southern California rufous-crowned sparrow (*Aimophila ruficeps*), pallid bat (*Antrozous pallidus*), pocketed free-tailed bat (*Nyctinomops femorosacca*), western red bat (*Lasiurus blossevillii*), bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), San Diego black-tailed jackrabbit (*Lepus californicus*), San Diego desert woodrat (*Neotoma lepida*), coast horned lizard (*Phrynosoma coronatum*), orangethroat whiptail (*Cnemidophorus hyperythrus*), and arroyo toad (*Anaxyrus californicus*). Other sensitive or protected wildlife species have the potential to occur within the WMA. The applicable party is responsible to perform the necessary environmental due diligence and obtain resource agency permits, if necessary, before performing work.

## 1.9.2 Vegetation

### 1.9.2.1 Wetlands Vegetation

The following wetland vegetation communities were noted as present during invasive species mapping, or are included on the SanGIS database of the WMA: cismontane alkali marsh, herbaceous wetlands, freshwater marsh, giant reed, lakeshore fringe, mulefat scrub, open water, southern willow scrub, southern cottonwood-willow riparian forest, southern coast live oak riparian forest, and tamarisk scrub. The CDFG, ACOE, and RWQCB typically exercise jurisdiction over these vegetation communities because they are typically considered wetland waters of the United States.

Non-wetland waters of the United States observed or indicated on the SanGIS database include vegetated and unvegetated stream channels, open swales, ditches, and open water associated with Lake Hodges. These do not have a preponderance of hydrophytic vegetation or hydric soils, and hydrology or flow is most often ephemeral. Non-wetland waters of the United States typically have a defined stream or channel bed and banks, and flow for a brief period following a precipitation event. The CDFG, ACOE and RWQCB typically exercise jurisdiction over non-wetland waters of the United States/State.

### 1.9.2.2 Uplands Vegetation

Upland vegetation communities observed during invasive species mapping and/or included on the SanGIS database include the following: <sup>N</sup>Coast live oak woodland, <sup>N</sup>Diegan sage scrub, <sup>NN</sup>non-native grassland, <sup>NN</sup>eucalyptus woodland, <sup>N</sup>valley needlegrass grassland, ornamental/landscape, orchards, vineyards, row crops, ruderal/invasive, <sup>N</sup>southern mixed and chaparral. Vegetation communities denoted with an "N" indicate native vegetation communities typically protected by the MSCP, USFWS, and/or CDFG. Communities denoted with an "NN" indicate non-native vegetation communities protected by the MSCP. It should be noted that other vegetation communities may occur within the WMA.

# San Pasqual Valley Integrated Weed Management Plan

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## 1.9.3 Agriculture

The WMA contains traditional and organic farms, dairies, orchards, vineyards, and ornamental plant nurseries, hereafter collectively called “farms.” The locations of the farms currently active within the WMA are shown on Figure 3. The locations of ornamental plant nurseries within the WMA are also shown on Figure 3. Traditional and organic farm locations can also be queried in the GIS database. It is important to note, however, that lessees and farming practices can change, so the stakeholder may need to inquire with the lessee before initiating weed management activities, especially those that include the application of pesticides. It is important that the stakeholder performing weed management and weed control activities knows where these sensitive land uses are located prior to initiating work. As is always the case, it will be imperative that pesticide drift does not occur in these areas when performing weed management and control activities. Buffer widths should be established, as needed, to prevent potential collateral damage to adjacent farms.

When performing work adjacent to an organic farm, the stakeholder must abide by the “organic farming restrictions and requirements” of the particular farm. The National Organic Program (NOP) does not have any standard buffer distances required between organic production and non-organic areas. Numerous site specific factors can influence buffer widths, so they will vary. Each organic farm has to have an Organic System Plan (OSP) in place to have plans and procedures to produce organic products and prevent contamination. California Certified Organic Farmers (CCOF) generally uses a setback or buffer of 25 feet as a guideline between organic cropland and any non-organic use. Actual buffer widths will depend on the OSP of each farm and the management practices, procedures, barriers, etc. that they may have in place to prevent contamination of the cropland. When weed management activities occur within 250 feet of organic farms, the stakeholder should contact the farm owner or manager to obtain the specific requirements from their particular organic certification entity and abide by them to avoid any conflicts and potential liability.

## 1.9.4 Landscaping

The WMA contains ornamental landscaping improvements. The locations of landscaped areas are typically associated with improved areas such as roads, residences, and other structures. Because the location of landscaping is subject to change, the figures and database alone cannot be relied upon in all instances. As is always the case, it is imperative that pesticide drift does not occur in these areas when performing weed management and control activities. It is also important that plants in landscaped areas not be treated with herbicide or removed without authorization of the owner. The stakeholder in charge of weed management activities shall review the work areas and ensure that no collateral damage is incurred in these areas.

## **San Pasqual Valley Integrated Weed Management Plan**

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### **1.9.4.1 San Diego Safari Park/Zoo**

The WMA boundary includes a portion of the San Diego Safari Park (formerly Wild Animal Park), which contains numerous exotic and native plant species, a variety of wildlife, and high concentrations of human activities. The location of Safari Park is shown on Figure 3 and is also queryable on the GIS database. As is always the case, it is imperative that pesticide drift is not allowed to enter into these areas when performing weed management and control activities.

Whenever weed management activities are scheduled to take place within 250 feet of the Safari Park, the stakeholder shall ensure that work does not affect the Safari Park plants, animals, or people. Whenever weed management work is slated to occur within 250 feet of the Safari Park boundaries, the stakeholder initiating management activities shall notify Safari Park management and the City representative (Table 1) at least 7 days in advance to ensure that weed management activities do not negatively affect Safari Park business operations.

### **1.9.4.2 Schools**

The WMA boundary contains a portion of the San Pasqual Academy property (Figure 3). The contact person for the San Pasqual Academy is Kati McHugh, Health and Wellness Center Coordinator (Table 1). Pesticide use on school property has additional “right to know” notification requirements that must be met in accordance with the Healthy Schools Act of 2000 (AB 2260). For pesticides to be used at schools, the entity performing any weed control work is required to work with the school administration to provide the required advance parental notification of pesticide applications, post warning signs, and comply with the specific recordkeeping and other requirements of the Healthy Schools Act of 2000. In addition, a number of pesticides are prohibited on school sites. None of the pesticide materials that would likely be used to control invasive plant species for the WMA are currently prohibited by Education Code section 17610.1 at the time this plan was being prepared. However, significant lead time should be allowed check for the current status of regulations and fulfill these requirements if pesticide use is considered for any school sites in the WMA.

# San Pasqual Valley Integrated Weed Management Plan

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## 2.0 WEED MANAGEMENT PLAN

Invasive species targeted for control within the WMA are generally aggressive, rapidly colonizing non-native plant species that compromise the quality and functions of natural habitats within the WMA. In some instances, the invasive species also compromise safety by exacerbating flood and fire hazards.

### 2.1 Goals of the Weed Management Plan

The first goal of the WMA is to prevent the establishment of invasive plant species that are not currently growing, or known to be growing, within the WMA boundaries. By controlling new invasions when they are first discovered, they can quickly be controlled while they are relatively limited in scope and at lower cost than would be required once they become widespread. It is the intent of this WMP to be adaptive, flexible, and responsive to changing site conditions. Potential control measures will need to be determined if new invasive weed species are discovered. It should be noted that any new invasive species that might be discovered in jurisdictional areas are not included in the 1602 agreement that the JPA obtained from CDFG.

The second goal of the WMA is to control relatively small areas of invasive plant species before they can spread and become widespread. Invasive plant species that are rated with a higher score of invasiveness would be rated as a higher priority over species that have a lower rating (Section 2.5). Because of limited financial resources, non-native plant species that are not rated as invasive should not receive any resources for control unless they are growing in the immediate vicinity of invasive species that are being controlled and thus can be controlled with little additional effort or cost.

The third goal of the WMP is to reduce and/or eliminate the most widespread invasive non-native plant species from the JPA area to the greatest extent practical, in the most cost-effective and least environmentally damaging manner, and consistent with funds available. The most widespread species are giant reed, perennial pepperweed, and tamarisk. The intent of this plan is to prioritize control of invasive weed species within the WMA. Exotic control and removal will restore lost biological functions and values, alleviate flooding, reduce fire risk, improve groundwater recharge, and help prevent further downstream dispersal and colonization of invasive species. Specific objectives identified to obtain the project goal include 1) locating and mapping target invasive species; 2) determining their relative threat; 3) prioritizing species for control based on threat; 4) devising the most cost-effective, efficient, environmentally friendly control method(s); 5) identifying the funding source(s) for implementation; 6) implementing weed control ground work; and 7) performing follow-up monitoring and database updating to determine the effectiveness of the weed control work and schedule and prioritize future weed control efforts.

# San Pasqual Valley Integrated Weed Management Plan

## 2.2 Resources

There are numerous supplemental resources that are available for additional reference to assist in implementing this WMP. These resources should be checked periodically for any updates or new information that may have developed since this document was prepared.

**Table 2**  
**Resource Contacts**

Organization	Contact Person	Contact Information
County of San Diego Weed Management Area	Carl Bell	858.614.7633 cebell@ucdavis.edu
University of California Statewide IPM Program	Cheryl Wilen	858.694.2845 cesandiego@ucdavis.edu

Weed Management Specialist Carl Bell is the contact person for the San Diego County WMA. The JPA is a signatory to the San Diego WMA (Table 2). Information about the San Diego County WMA can be found at [http://sdcounty.ca.gov/awm/ipm\\_sdwma.html](http://sdcounty.ca.gov/awm/ipm_sdwma.html). The San Diego County WMA generally holds stakeholder meetings twice a year to share information about control efforts, new invasive species introductions, and funding resources and opportunities.

The California Invasive Plant Council (Cal-IPC) maintains invasive plant management information on its website at <http://www.cal-ipc.org/ip/management/index.php>. Information available includes invasive plant profiles, invasive plant alerts, and a list of current references. The 2006 Cal-IPC Invasive Species Inventory, as well as New Weeds Added to Cal-IPC Inventory, and any updates to it, can be found at <http://www.cal-ipc.org/ip/inventory/pdf/Inventory2006.pdf>. Cal-IPC holds an annual symposium in October to share information, and the proceedings are available on its website.

The University of California Statewide IPM Program maintains a website with extensive information about pest identification and management at <http://www.ipm.ucdavis.edu/default.html>. The local University of California Cooperative Extension (UCCE), San Diego Area IPM Advisor is Cheryl Wilen; she may be contacted for assistance with new or troublesome pest species.

Up-to-date specimen labels and material safety data sheets (MSDS) for most currently registered agro-chemicals can be found in a database maintained on the Crop Data Management Systems Inc. (CDMS) website at <http://www.cdms.net/LabelsMsds/LMDefault.aspx>. Pesticides can be searched for by either manufacturer or product name. Current pesticide labels and MSDS can also be obtained from the manufacturer and product suppliers.

# San Pasqual Valley Integrated Weed Management Plan

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Other useful published resources include Weeds of California and other Western States, Volume 1, *Aizoaceae–Fabaceae* (DiTomaso and Healy 2007a) and Weeds of California and other Western States, Volume 2, *Geraniaceae–Zygophyllaceae* (DiTomaso and Healy 2007b); Aquatic and Riparian Weeds of the West (DiTomaso and Healy 2003); Invasive Plants of California's Wildlands (Bossard et al. 2000); Pests of Landscape Trees and Shrubs, An Integrated Pest Management Guide (Dreistadt 1994); and Natural Enemies Handbook, The Illustrated Guide to Biological Pest Control (Flint and Dreistadt 1998).

## 2.3 Methods and Strategy

The most aggressive and widespread perennial invasive exotic plant species currently found in the WMA are giant reed, tamarisk, and perennial pepperweed. These species have also received the most attention, to date, within the WMA (Figure 5). Although these species receive the greatest resources and attention and will likely continue to do so under this WMP, invasions by new species or invasions of invasive species of more limited distribution within the WMA should receive the highest priority while they are most manageable and require the fewest resources.

There are seven species listed in the 1602 agreement that will be controlled. They are giant reed, tamarisk, pampas grass, “invasive palms,” perennial pepperweed, castor bean, and eucalyptus. The 1602 agreement contains 37 specific conditions that require compliance while controlling invasive plant species in the WMA. The 1602 agreement can be found in Appendix C of this WMP.

The invasive plant species that have been mapped within the WMA include tree of heaven (*Ailanthus altissima*), prostrate cape weed (*Arctotheca prostrata*), giant reed, black mustard (*Brassica nigra*), tocalote (*Centaurea melitensis*), poison hemlock (*Conium maculatum*), artichoke thistle or cardoon (*Cynara cardunculus*), red gum (*Eucalyptus camaldulensis*), fennel, perennial pepperweed, tree tobacco (*Nicotiana glauca*), Canary Island date palm (*Phoenix canariensis*), castor bean, California pepper (*Schinus molle*), tamarisk, and Mexican fan palm (*Washingtonia robusta*) (Appendix D). Each species is discussed and ranked in order of priority in Section 2.5.2, Target Weed Species.

Other invasive exotic plant species growing among or in close proximity to giant reed, tamarisk, and perennial pepperweed will be controlled at the same time.

## 2.4 Mapping Methods

Mapping methods during WMP implementation should utilize sub-meter Global Positioning System (GPS) equipment to accurately locate and record the extent of treated exotic species. The field collected data will be imported into the WMP database to track weed control efforts and will collectively form the basis for analysis of treatment efficacy and overall program success.

# **San Pasqual Valley Integrated Weed Management Plan**

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An assessment period (3–5 years) of WMP progress is desirable to determine progress toward meeting WMP goals.

High resolution, geo-referenced aerial photography was used to map vegetation within the WMA with only partial success. Issues such as recently burned and recovering vegetation made species identification unreliable. Future mapping efforts should research and evaluate the application of newly emerging remote sensing technologies such as Light Detection and Ranging (LiDAR). As a future WMA mapping methodology.

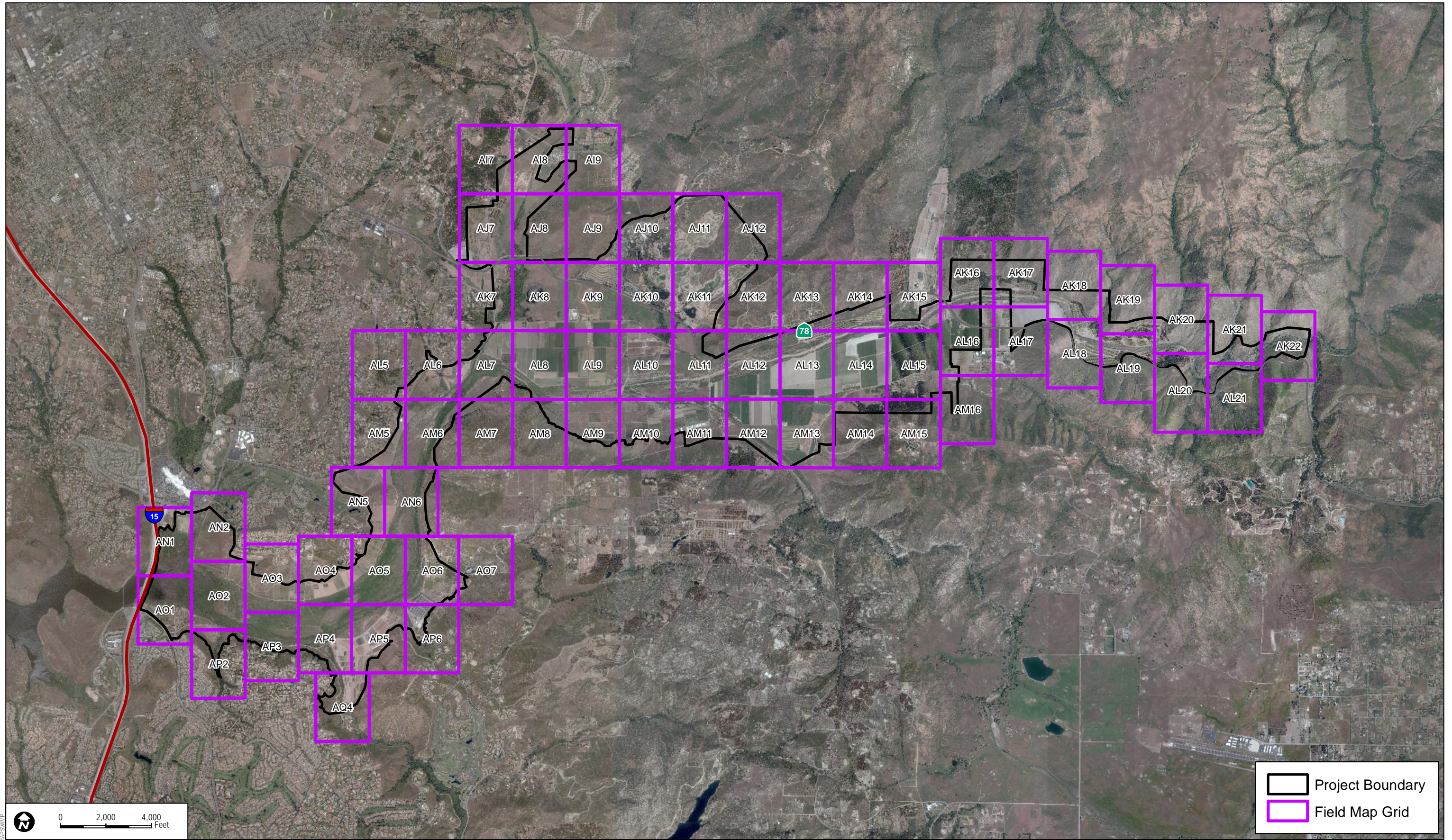
## **2.5 Target Species and Prioritization**

Because funds and available staff are limited, not all weed species can be fully controlled, and of those selected for control measures, not all may be treated in one season. For these reasons, management priorities need to be established. Generally, the most invasive species that are the most widespread in distribution and have the biggest impact on habitat quality have received the highest priority and the most attention. These species, giant reed, perennial pepperweed, and tamarisk, should continue to have the highest priority with one exception. New discoveries of invasive plant species that are not currently growing, or known to be growing, within the WMA boundaries should receive the highest priority to prevent their establishment while the infestations are relatively small, localized, and manageable. The management team will need to make a quick assessment of any newly discovered invasive plant species, determine the extent of establishment in the WMA, analyze the prospect for successful control, determine the best strategy to kill the invasive plants, and monitor the area for additional, previously undetected new and/or existing plant populations.

Once the primary weed species have been addressed, additional species should be targeted, based on their invasiveness, distribution within and outside of the WMA, impacts on habitat quality, likely ability to control the species, and financial resources and manpower available to control the species.

### **2.5.1 Weed Species within the Preserve**

Not all weed species growing within the WMA have been mapped, nor are they targeted for control measures. There are perhaps hundreds of non-native species, food crop, ornamental, and weed species, growing within the boundaries of the WMA, but only a handful have naturalized and invaded native habitat areas, especially wetlands. This WMP does not attempt to inventory all weed species growing within the WMA.



Project Boundary  
 Field Map Grid

0
2,000
4,000  
 Feet

SOURCE: CDFG NAIP 2010, City of San Diego 2011

**FIGURE 5**  
**Key Map**

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# San Pasqual Valley Integrated Weed Management Plan

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## 2.5.2 Target Weed Species

There are seven non-native plants specified in the 1602 agreement that are targeted; however, other species may be targeted as well. The target weed species mapped within the WMA are discussed below with potential control methods. These invasive weed species are listed in alphabetical order by Latin name, followed by common name(s). Each species is listed with its Cal-IPC rating (High, Moderate, Limited) and scores (A = Severe, B = Moderate, C = Limited, D = None, U = Unknown). Also listed is the California Department of Food and Agriculture (CDFA) noxious weed rating (A, B, C, Q, and D), where applicable.

CDFA ratings are defined as follows (CDFA 2010):

A – A pest of known economic or environmental detriment and is either not known to be established in California or it is present in a limited distribution that allows for the possibility of eradication or successful containment. A-rated pests are prohibited from entering the state because, by virtue of their rating, they have been placed on the of Plant Health and Pest Prevention Services Director’s list of organisms “detrimental to agriculture” in accordance with the FAC Sections 5261 and 6461. The only exception is for organisms accompanied by an approved CDFA or USDA live organism permit for contained exhibit or research purposes. If found entering or established in the state, A-rated pests are subject to state (or commissioner when acting as a state agent) enforced action involving eradication, quarantine regulation, containment, rejection, or other holding action.

B – A pest of known economic or environmental detriment and, if present in California, it is of limited distribution. B-rated pests are eligible to enter the state if the receiving county has agreed to accept them. If found in the state, they are subject to state endorsed holding action and eradication only to provide for containment, as when found in a nursery. At the discretion of the individual county agricultural commissioner they are subject to eradication, containment, suppression, control, or other holding action.

C – A pest of known economic or environmental detriment and, if present in California, it is usually widespread. C-rated organisms are eligible to enter the state as long as the commodities with which they are associated conform to pest cleanliness standards when found in nursery stock shipments. If found in the state, they are subject to regulations designed to retard spread or to suppress at the discretion of the individual county agricultural commissioner. There is no state enforced action other than providing for pest cleanliness.

Q – An organism or disorder suspected to be of economic or environmental detriment, but whose status is uncertain because of incomplete identification or inadequate information.

## San Pasqual Valley Integrated Weed Management Plan

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D – An organism known to be of little or no economic or environmental detriment, to have an extremely low likelihood of weediness, or is known to be a parasite or predator. There is no state enforced action.

Invasive exotic plant species growing in the WMA include:

### ***Ailanthus altissima* – tree-of-heaven**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**

**CDFR rating – C**

Tree-of-heaven is a deciduous tree from China that can grow to about 60 feet tall and produce dense thickets. It has naturalized and spread in riparian areas, typically forming dense patches and crowding out native vegetation. Tree-of-heaven reproduces by seed and spreads by prolific root sprouts, especially when the tree is cut down or girdled. Seed is wind-blown and may also spread by water flow, birds, and machinery (Bossard et al. 2000). It is a prolific seed producer, but the seed are only viable for about a year or so (DiTomaso and Healy 2003). Tree-of-heaven is limited in its distribution within the WMA.

### ***Arctotheca prostrata* – prostrate cape weed**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**

**CDFR rating – None**

Prostrate cape weed is an infertile form of *Arctotheca calendula*. Prostrate cape weed is limited in its distribution within the WMA and is frost sensitive. Prostrate cape weed is a low-growing, drought tolerant landscape plant native to South Africa that can escape cultivation in mesic areas. It spreads rapidly by vegetative means where there is sufficient moisture.

### ***Arundo donax* – giant reed, giant cane**

**Cal-IPC Rating – High; Impacts – A; Invasiveness – B; Distribution – A**

**CDFR rating – B**

Giant reed is a large-scale, spreading, aggressive grass weed of riparian areas that displaces native vegetation. It grows in dense clumps and can reach up to 30 feet tall. Giant reed was brought to California by the Spanish missionaries and is sometimes planted as a landscape plant. It resembles bamboo. Giant reed seldom produces viable seed in California and spreads by vegetative means (DiTomaso and Healy 2003). Stem or rhizome fragments that break off during rainstorms can root downstream if they settle in a location with sufficient moisture. The WMA has been controlling giant reed for several years, and it is the third most common invasive plant species in the WMA (Conservation Biology Institute, SanGIS 2009) (Figure 6). The WMA has been controlling giant reed for several years.

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### ***Brassica nigra* – black mustard**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – A**  
**CDFA rating – None**

Black mustard and similar mustard species such as field mustard (*Brassica rapa*), Saharan mustard (*Brassica tournefortii*), and shortpod mustard (*Hirschfeldia incana*) are annual species that are common throughout much of California in upland areas. Black mustard was brought to California by the Spanish missionaries and quickly became naturalized. It spreads by seed, germinates early in the fall, and grows quickly, out-competing many native species. Black mustard seed can persist in the soil for 50 years or more (DiTomaso and Healy 2003). Black mustard has been mapped as limited in its distribution within the WMA.

### ***Centaurea melitensis* – tocalote, Malta star thistle**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**  
**CDFA rating – C**

Tocalote is an annual upland weed from Europe that is common in Southern California. It was introduced to California by the Spanish missionaries in the 1700s (DiTomaso and Healy 2003). Tocalote spreads by seed, germinates, and grows quickly, out-competing many native species. Tocalote germinates early in the season, producing a tap-rooted prostrate rosette until it bolts and blooms from spring into summer. The seed generally fall close to the mother plant, but can be transported by wind, soil movement, animals, and water. Tocalote has been mapped as limited in its distribution within the WMA.

### ***Conium maculatum* – poison hemlock**

**Cal -IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**  
**CDFA rating – None**

Poison hemlock is a poisonous biannual weed of riparian and moist upland areas. It was introduced as an ornamental plant from Europe in the 1800s. Poison hemlock is more common in disturbed mesic areas and riparian areas, where it can form dense patches. It spreads by seed, germinates, and grows quickly, out-competing many native species, primarily in disturbed locations. The seed generally fall close to the mother plant, but can be transported by wind, soil movement, animals, and water. The seed is viable for about 3 years (DiTomaso and Healy 2003). Poison hemlock is mapped as limited in its distribution within the WMA.

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### *Cynara cardunculus* – artichoke thistle, cardoon

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**

**CDFA rating – B**

Artichoke thistle is a tap-rooted perennial upland weed. It prefers deep clay soils. It spreads by wind-blown seed in upland areas and can form dense stands and tends to go dormant during the dry summer months. The seed is viable for about 5 years (DiTomaso and Healy 2003). Artichoke thistle can also grow from small root fragments. Artichoke thistle is mapped as limited in its distribution within the WMA.

### *Eucalyptus camaldulensis* – red gum, river red gum

**Cal-IPC Rating – Limited; Impacts – C; Invasiveness – C; Distribution – C**

**CDFA rating – None**

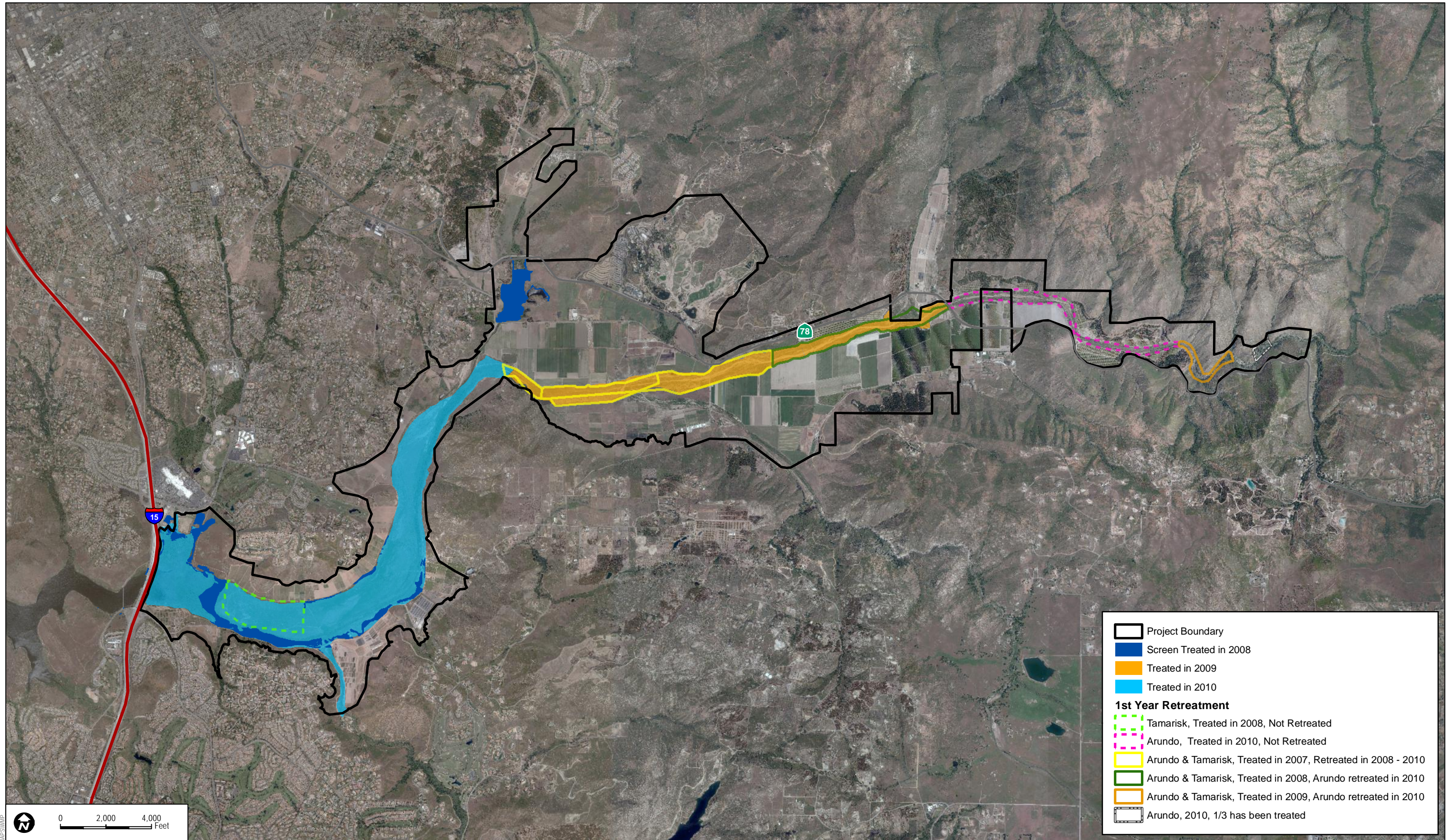
Red gum and other *Eucalyptus* species are common landscape trees in and around the WMA. Only 2 *Eucalyptus* species are listed as invasive by Cal-IPC, red gum and blue gum (*Eucalyptus globulus*), which is not commonly planted in San Diego County but is common farther north, especially along the coast. There are dozens of other *Eucalyptus* species that are planted in California that have not naturalized and are not invasive. *Eucalyptus* species reproduce by seed. Red gum has become naturalized along stream courses in the WMA, where conditions are favorable for seed germination and establishment. Red gum should be considered for control only after more significant invasive weed species have been controlled. *Eucalyptus* trees were not identified as to species when the WMA was mapped, so trees mapped as *Eucalyptus* may not necessarily be invasive, only invasive species such as red gum and blue gum should be controlled. Plants growing in the riparian corridor should be considered for control only after more significant invasive weed species have been controlled.

### *Foeniculum vulgare* – fennel

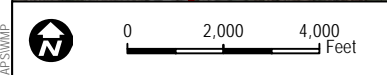
**Cal-IPC Rating – High; Impacts – A; Invasiveness – B; Distribution – A**

**CDFA rating – None**

Fennel is limited in its distribution within the WMA, but it is a highly invasive weed species. Fennel is a tough, aggressive, tap-rooted perennial weed that grows in mesic areas. Fennel is an aromatic herb that has escaped cultivation. It can form dense stands and tends to go dormant during the summer months. It spreads by seed, germinates, and grows quickly, out-competing many native species. The seed is viable for several years. The seed may be dispersed by bird and other animals, transported in water, and with soil movement (Bossard et al. 2000). Fennel can also reproduce from root fragments.



	Project Boundary
	Screen Treated in 2008
	Treated in 2009
	Treated in 2010
<b>1st Year Retreatment</b>	
	Tamarisk, Treated in 2008, Not Retreated
	Arundo, Treated in 2010, Not Retreated
	Arundo & Tamarisk, Treated in 2007, Retreated in 2008 - 2010
	Arundo & Tamarisk, Treated in 2008, Arundo retreated in 2010
	Arundo & Tamarisk, Treated in 2009, Arundo retreated in 2010
	Arundo, 2010, 1/3 has been treated



**FIGURE 6**  
**Previous Treatments**

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### ***Lepidium latifolium* – perennial pepperweed, tall whitetop**

**Cal-IPC Rating – High; Impacts – A; Invasiveness – A; Distribution – A**  
**CDFA rating – B**

The WMA has been controlling perennial pepperweed for several years, and it is the second most common invasive plant species in the WMA (Conservation Biology Institute, SANGIS 2009) (not shown in Figure 6). Perennial pepperweed spreads by seed and by vegetative means, the seed germinates, and grows quickly, out-competing many native species. Perennial pepperweed also spreads by vegetative means; root fragments that break off during rainstorms can root downstream if they settle in a location with sufficient moisture. It grows in mesic and riparian areas and tolerates saline and alkaline conditions. The plants produce white flowers during the late spring to summer months, which makes it easier to spot when it is growing among other vegetation.

### ***Nicotiana glauca* – tree tobacco**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**  
**CDFA rating – None**

Tree tobacco is a perennial woody species native to South America that typically invades disturbed areas. Tree Tobacco spreads by seed, germinates, and grows quickly, out-competing many native species. The seed is dispersed by water and soil movement. Plants growing in the riparian corridor should be considered for control only after more significant invasive weed species have been controlled. Tree tobacco is limited in its distribution within the WMA.

### ***Phoenix canariensis* – Canary Island date palm**

**Cal-IPC Rating – Limited; Impacts – C; Invasiveness – B; Distribution – D**  
**CDFA rating – None**

Canary Island date palm is a large ornamental palm tree and most specimens in the WMA are landscape plants. Seeds from Canary Island date palm can germinate and become established in riparian areas where there is sufficient moisture to support them. The seeds are transported to riparian areas by water or in bird droppings. Plants growing in the riparian corridor should be considered for control only after more significant invasive weed species have been controlled. Canary Island date palm is limited in its distribution within the WMA.

### ***Ricinus communis* – castor bean**

**Cal-IPC Rating – Limited; Impacts – C; Invasiveness – B; Distribution – B**  
**CDFA rating – None**

Castor bean can grow as a summer annual, perennial shrub or small tree that is frost sensitive (DiTomaso and Healy 2003). It escaped from cultivation, being grown originally as a crop and for ornament. Castor bean grows in riparian and mesic areas, typically becoming established in

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disturbed areas. Castor bean spreads by seed, germinates, and grows quickly, out-competing many native species. Castor bean seed disperses a short distance from the plant when the seed capsule opens, and can then be transported by water or soil movement. Castor bean is limited in its distribution within the WMA.

### ***Schinus molle* – Peruvian pepper, California pepper**

**Cal-IPC Rating – Limited; Impacts – C; Invasiveness – B; Distribution – B**

**CDFA rating – None**

While referred to as Peruvian pepper in *The Jepson Manual: Higher Plants of California* (Hickman 1993) and some other references, this species is more widely and commonly known as California pepper; another less planted species is known as Peruvian pepper (*Schinus polygamous*), which may create some confusion in common names. Peruvian pepper is a common landscape tree in and around the WMA. Peruvian pepper was introduced in California by Spanish missionaries. Peruvian pepper spreads by seed and can become established in mesic areas. The seed can be dispersed by wildlife, especially birds (DiTomaso and Healy 2003). Plants growing in the riparian corridor should be considered for control only after more significant invasive weed species have been controlled.

### ***Tamarix ramosissima* – tamarisk, salt cedar**

**Cal-IPC Rating – High; Impacts – A; Invasiveness – A; Distribution – A**

**CDFA rating – B**

Tamarisk is a bushy tree native to central Asia that is the most widespread invasive exotic species in the WMA (Conservation Biology Institute, SANGIS 2009). Tamarisk is native to Eurasia and has become naturalized along streams and rivers throughout much of the southwestern United States. It can grow to 30 feet tall and spreads by windblown or water-transported seeds that are produced in great quantities. The seed are only viable for about 5 weeks (DiTomaso and Healy 2003). It can also reproduce by root sprouts or stems, which can be transported downstream where they take root. Tamarisk tolerates saline conditions and creates localized saline conditions that inhibit growth by other plants by depositing salt from glands on the leaves (Bossard et al. 2000). The WMA has been controlling tamarisk for several years (Figure 6).

### ***Washingtonia robusta* – Mexican fan palm**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – C**

**CDFA rating – None**

Mexican fan palm is a commonly planted landscape tree in the WMA. It is probably the most widely planted palm tree used for landscaping in California. Seeds from Mexican fan palm can germinate and become established in riparian areas where there is sufficient moisture to support

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them. The seeds are transported to riparian areas by water or in bird droppings. Plants growing in the riparian corridor should be considered for control only after more significant invasive weed species have been controlled. Mexican fan palm is limited in its distribution in the riparian corridor within the WMA.

### **2.5.3 Prioritization**

Because staff availability and funding can be limited, priorities will need to be set to determine which invasive weeds will be given the highest priority, which species will have to be left for future attention, and which species may need to be left without control measures because there is not a realistic prospect for effective control. New discoveries or outbreaks of invasive weed species should receive the highest priority if they can be easily controlled while they are limited in distribution so that they do not become more widespread in the WMA. However, if the newly discovered invasive weed is widespread outside the JPA, it may not be feasible to control it within the WMA unless a more widespread control program is put in place to control the species, especially if the seeds are disseminated by wind. The availability of funding for control of specific species might also dictate how priorities are set. The need to address habitat degradation for specific listed wildlife or plant species could also be an important consideration in prioritization decision making.

Cal-IPC and CDFA noxious weed ratings should be considered for guidance in making these decisions, with A-rated weed species taking priority over lower rated species. Utilizing the 5 management levels developed in the *Management Priorities for Invasive Non-native Plants: A Strategy for Regional Implementation* (SANDAG 2012), staff can efficiently prioritize eradication efforts. The hierarchical management levels break down eradication feasibility with identified goals for each level. The primary eradication focus has been and will likely continue to be the control of giant reed, perennial pepperweed, and tamarisk. Because this program is meant to be adaptive, the program should be appraised annually to determine if the control programs for each species are effective, the goals are being achieved, and whether the importance of any one species is growing or declining in importance to habitat quality in the WMA.

## **2.6 Weed Control Methods**

Several methods of weed control can be utilized to control target invasive exotic plant species throughout the WMA. Weed control methods can include one or more of 4 basic methods separately or in combination: cultural, physical, biological, and/or chemical. The control method(s) employed should incorporate the most effective, cost-efficient, and least environmentally damaging available. Actual control measures employed will depend on the actual weed species present, its stage of biotic development, physical surroundings, time of year, and the actual environmental conditions present at the time control is undertaken.

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The need for follow-up weed control measures will depend on the species being controlled, how successful the initial efforts are, and whether new invasive exotic weed propagules are becoming established in the project area. Most of these invasive species require at least 2-3 years of properly timed, follow-up treatment to kill the plants (Bossard et al. 2000; DiTomaso and Healy 2003; and Tu et al. 2001). All applicable laws, regulations, safety precautions, and label directions must be followed when performing pest control.

Weed control methods are discussed below and shall include one or more of the following methods in combination to provide control.

### **2.6.1 Cultural Control**

Cultural control consists of practices that can help minimize the establishment and spread of invasive species. Cultural controls are of limited value in natural areas where nature is left to itself and maintenance is generally either not performed or very limited. Cultural controls in areas adjacent to natural areas can prove of value in limiting the spread of invasive species.

Landowners and lessees in the WMA can be encouraged to keep buffer areas and other land free of weeds, especially invasive species. Keeping Canary Island palm and Mexican fan palm trees in adjacent landscaped areas cleaned and trimmed regularly by removing flowers and seed heads before seeds mature can help prevent seed dispersal into riparian areas.

Limiting soil disturbance in project areas where weed control and restoration are taking place can help prevent the disturbed soil conditions that are favorable for the introduction and establishment of many weed species.

### **2.6.2 Physical and Mechanical Control**

Hand removal or physical extraction of plants using a weed wrench can sometimes be used around individual, desirable native species or clusters to be preserved, where other control methods are impractical or would cause damage to the native species. If physical removal is possible only after seed have set, but not yet dispersed, then the seed heads should be cut off, bagged, and removed from the site prior to the weed removal. Hand removal works best with small plants in moist soil that have not yet established extensive root systems. Special care should be taken not to trample adjacent native vegetation while removing target exotic species. Physical control by hand or physical extraction method is generally labor intensive, and therefore, generally the most expensive method of weed control.

Solarization may also be utilized in certain limited instances where there are relatively flat open areas that can be covered with plastic sheets for an extended period of time during the summer months to kill seeds in the soil seed bank by pasteurization (Elmore 1997). Aboveground plant

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growth needs to be removed prior to being covered with plastic, and the soil should be wet to saturation to allow for the solarization process to work. This method would work best where there have been dense stands of weeds such as mustard, poison hemlock, fennel, artichoke thistle, etc., have been long established and a significant seed bank is known to exist.

String trimmers and flail mowers may be used in certain instances where soils conditions are appropriate and topography allows for equipment access. This method is more cost-effective than hand work. This method is most applicable where a monotypic stand of weeds and/or exotics has developed, with minimal to no native species present. This technique can be used in conjunction with chemical control for species such as giant reed, where extensive biomass makes it physically difficult or impossible to move through the stand of weeds. Flail mowers can grind down the aboveground plant parts into mulch that can be left in place or hauled away, either before or after herbicide treatment. Herbicides are then used to treat foliage that grows back while the plants are still small.

### **2.6.3 Biological Control**

Biological control is ideal when there are effective control agents available. Ideally, the biological control agent, an insect or disease, keeps the plant pest species population low enough that no additional control measures are required. Some biological control agents attack and weaken the plant itself, while others eat the seeds and drastically reduce the number of viable seed for dispersal. Biological control agents will not completely kill and eliminate pest plants, however, so additional measures will be required to completely control pest species, or a tolerance of these species at certain levels will need to be accepted. Biological control agents for invasive plant species in the WMA are of limited availability and usefulness.

Several insect pests of tamarisk have been investigated, but their release and/or ultimate success remain in question. Grazing goats may be considered for use as a biological control agent to assist in the control of dense perennial pepperweed patches, followed by a properly timed chemical control program to treat regrowth.

### **2.6.4 Chemical Control**

Pesticides are any substance or mixture intended for preventing, destroying, repelling, killing, or mitigating problems caused by any insects, birds, rodents, weeds, nematodes, fungi, or other pests; and any other substance or mixture intended for use as a plant growth regulator, defoliant, or desiccant. Pesticides include avicides, herbicides, insecticides, insect repellents, disinfectants, antimicrobials, swimming pool chemicals, etc. Herbicides are a class of pesticide used to control weeds.

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Herbicides are generally the most effective and cost-efficient means available to control most weed species present in the WMA. Depending on the weed species and the herbicide used, a single herbicide application may or may not kill the plants. Follow-up applications may be necessary for the highly aggressive species that cannot be killed with one herbicide application and/or to kill plants that were missed or germinated after the initial herbicide application was made. Herbicide treatment may be used in combination with other methods.

Initial herbicide treatment should be done at the biologically appropriate time of year for each weed species. For example, fennel is most effectively treated during the spring months, while giant reed is best treated in the fall months, up until the first frost. Follow-up herbicide treatment should also be done at the biologically appropriate time when the recovering plants are still relatively small and before they have time to regain strength and vigor. This may require treatment during the bird breeding season. Legally registered herbicides may or may not pose a threat to avian species; refer to the herbicide label for information about proper timing and application rates. Appendix 1 of CDFG 1602 Streambed Alteration Agreement No. 1600-2008-0308-R5, found in Appendix C of this WMP, lists additional detailed requirements that CDFG has imposed on the WMA.

Pesticide label registrations and directions change with some frequency, and occasionally new products are introduced or old ones are withdrawn. Currently registered herbicides that may be utilized for weed control in the project area, as this WMP was being prepared, include but are not limited to aminopyralid (trade name Milestone), clopyralid (trade name Transline), diquat (trade name Reward), fluazifop-p (trade name Fusilade II), glyphosate (trade names Aquamaster, Roundup Pro, Roundup Pro Dry, Roundup Pro Concentrate, etc.), pelargonic acid (trade name Scythe), sethoxydim (trade name Poast), and triclopyr (trade names Garlon 3A, Garlon 4, Pathfinder II). All, some, or none of these materials may be used to control weeds in the project area, depending on circumstances at the time control is accomplished. Maximum annual use rate restrictions, as listed on the product label for some pesticides, will need to be taken into consideration when using herbicides to control invasive weed species in the WMA.

## 2.7 Species-Specific Control Methods and Strategies

*Ailanthus altissima* – tree-of-heaven

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**

**CDFA rating – C; Treatment Table 3**

Tree-of-heaven requires repeated herbicide applications to kill mature plants. The stump-cut, basal bark, cut or hack, frill, or injection treatment with herbicide method is effective. Springtime, right after leaf emergence and expansion is the most effective time to treat with herbicide (Bossard et al. 2000). Any regrowth can be treated with foliar spray or stump-cut

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treatment at any time during the growing season. If the trees are cut down and not treated with herbicide, there will be extensive root sprouting of adventitious shoots (Bossard et al. 2000). Herbicides that may be used on tree-of heaven include glyphosate, imazapyr, and triclopyr. The cut material can be hauled away, chipped and used as a mulch to be used on site or hauled off, or cut into smaller pieces and scattered on site, depending on the circumstances and budget constraints. If tree-of-heaven is controlled by cutting without herbicide treatment, the stump and root sprouts will need to be repeatedly cut several times a year until there is no regrowth. Seedlings may be pulled when the soil is moist or sprayed with a foliar application of herbicide. The biomass of seedlings or foliar sprayed growth can be left in place to decompose.

**Table 3**  
**Treatment Methods for *Ailanthus altissima* (tree-of-heaven)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Cut Stump Treatment	Glyphosate, Imazapyr, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Basal Bark, Hack, Frill, or Injection Treatment	Imazapyr, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down	Chain or hand saw, loppers, etc.	X	X	X	X	X	X	X	X	X	X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Glyphosate, Imazapyr, Triclopyr			X	X	X	X	X	X	X	X	X	
Cut Down Retreatment	Chain or hand saw, loppers, etc.	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Arctotheca prostrata* – prostrate cape weed**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**

**CDFA rating – None**

### **Treatment Table 4**

Prostrate cape weed can be controlled by a foliar herbicide spray at any time during the growing season following label rates (Bossard et al. 2000). Repeat treatment may be necessary. Herbicides that may be used on prostrate cape weed include diquat, glyphosate and pelargonic acid. Prostrate cape weed could also be controlled by solarization if it is growing in a relatively flat area in a monotypic stand that can be left covered with plastic for several months during the summer.

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Physical removal by digging it out with hand labor is also possible, but it is extremely labor intensive and expensive, as well as disruptive of the soil. Any root or stem fragments left in the soil can regrow. The biomass of this species is herbaceous and can be left in place to decompose.

**Table 4**  
**Treatment Methods for *Arctotheca prostrata* (prostrate cape weed)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Glyphosate, Diquat, Pelargonic Acid	X	X	X	X	X	X	X	X	X	X	X	X
Solarization	Plastic sheets							X	X	X			
Hand Pull or Dig	Gloves, shovels	X	X	X	X	X	X	X	X	X	X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Glyphosate, Diquat, Pelargonic Acid			X	X	X	X	X	X	X	X	X	
Solarization	Plastic sheets							X	X	X			
Hand Pull or Dig	Gloves, shovels	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Arundo donax* – giant reed, giant cane**

**Cal-IPC Rating – High; Impacts – A; Invasiveness – B; Distribution – A**

**CDFA rating – B**

### **Treatment Table 5**

Giant reed can be controlled by a variety of methods, but all require repeated herbicide treatment to kill the plants. The plants can be mechanically dug up and removed, but this method is difficult, requires heavy equipment, is highly disruptive of the soil, expensive, and any rhizome and root fragments missed will regrow. At least 3 years of treatment should be planned on to kill the giant reed plants completely. The WMA has been controlling giant reed for several years (Figure 6).

Giant reed plants can be sprayed from above with a dilute foliar solution of herbicide, either from ladders or power lifts, followed by removal of the biomass, with retreatment of the regrowth with a foliar spray when the plants are 2–3 feet tall. Alternatively, the cut stump treatment method can be used where the biomass is removed first by hand crews and immediately treated with a concentrated solution of herbicide, which eliminates the potential for

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spray drift. This method is time consuming and expensive for large patches, but is useful for small, isolated patches or where the giant cane is growing intertwined with willows or other native vegetation that are to be preserved. Late summer into fall up to the first frost is the most effective time to treat giant cane with herbicide (Bossard et al. 2000). Regrowth can be treated during the spring and summer months when they grow to 2-3 feet tall, but a contact killer would probably be a more effective treatment because glyphosate does not translocate into the root system well during the active growth phase.

Another alternative is to remove all the aboveground biomass first with a flail mower that mulches the biomass, and wait to treat with herbicide after the plants start growing again (Bossard et al. 2000). This method would be useful when early frost arrives before all the plants can be treated with herbicide in the fall prior to the onset of cold weather. Foliar treatment with a dilute solution of herbicide is then applied to the plants when they regrow to 2–3 feet tall. Herbicides that may be used on giant reed include diquat, glyphosate and pelargonic acid.

For all the above mentioned methods, the preferred method of biomass removal would be to chip the material and use it as a mulch on site, taking care to keep the mulch out of flow areas so that it is not carried downstream during rainstorms. Foliar sprayed regrowth may be left in place to decompose so long as it has not been allowed to grow more than 3 feet tall and become dense. In that instance it should be cut and either chipped for mulch or hauled away.

Prescribed burning followed by herbicide treatment of regrowth can also be highly effective if adequate fire buffers can be established. Obtaining burning permits and fire department cooperation can be difficult and time-consuming, however, and community outreach and notification will also be required. The WMA should be adaptive and be prepared to take advantage of any wildfires that burn giant reed and treat the regrowth early while the plants have been weakened, and before they can fully recover.

Refer to CDFG 1602 Streambed Alteration Agreement No. 1600-2008-0308-R5, found in Appendix C of this WMP, for detailed requirements that CDFG has imposed on the WMA to control giant reed.

**Table 5**  
**Treatment Methods for *Arundo donax* (giant reed, giant cane)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Glyphosate, Diquat, Pelargonic Acid					X	X	X	X	X	X	X	

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**Table 5**  
**Treatment Methods for *Arundo donax* (giant reed, giant cane)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Cut Stump Treatment	Glyphosate			X	X	X	X	X	X	X	X		
Hollow Stem Injection	Glyphosate			X	X	X	X	X	X	X	X		
Cut Down	Flail mower, lopers, etc.	X	X	X	X	X	X	X	X	X	X	X	X
Dig Out Rhizomes	Backhoe or excavator	X	X	X	X	X	X	X	X	X	X	X	X
Prescribed Burning	Fire	X	X	X	X								
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Glyphosate, Diquat, Pelargonic Acid			X	X	X	X	X	X	X			
Cut Down Retreatment	Flail mower, lopers, etc.	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Brassica nigra* – black mustard**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – A**  
**CDFA rating – None; Treatment Table 6**

Mustards can be controlled by herbicide treatment, hand-pulling, or properly timed mowing. Seedlings may be pulled when the soil is moist or sprayed with a foliar application of herbicide. Herbicides that may be used on mustards include diquat, glyphosate, imazapyr, pelargonic acid, and triclopyr. Mustard should be addressed early in the growth cycle before the plants flower and set seed. Mustards germinate early in the fall or early winter, often before significant rains, and should be controlled as soon as possible while the plants are still small. Because there is usually an extensive seed bank and the plants can germinate over an extended period of time, more than one treatment should be planned each year. If mowing is done it should occur before the plants start to bloom. More than one mowing or herbicide treatment might be required depending on rainfall in any given year. Because they are so common and the seed can persist in the soil for the long term, mustards should probably only be controlled as part of an active habitat restoration program. The aboveground biomass of mustard should be removed if the growth is dense or the area is going to be planted and/or seeded, otherwise the biomass can be left in place to decompose.

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**Table 6**  
**Treatment Methods for *Brassica nigra* (black mustard)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Glyphosate, Diquat, Imazapyr, Pelargonic Acid, Triclopyr	X	X	X							X	X	X
Mow	Mower, String Trimmer	X	X	X									
Hand Pull Seedlings	Gloves	X	X	X							X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Glyphosate, Diquat, Imazapyr, Pelargonic Acid, Triclopyr	X	X	X							X	X	X
Mow	Mower, String Trimmer	X	X	X									
Hand Pull Seedlings	Gloves	X	X	X							X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Centaurea melitensis* – tocalote, Malta star thistle**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**

**CDFA rating – C;**

### **Treatment Table 7**

Tocalote can be controlled by herbicide treatment or properly timed mowing. Herbicide treatment should occur from the rosette to bolting stage of growth. Mowing, or alternatively, intensive goat grazing, should occur when the plants bolt in late spring or early summer, but before the spines appear. The window of opportunity for this method only lasts a few weeks and the timing will vary each year depending on weather conditions. Regular active scouting will be required to determine the appropriate time for treatment. Hand-pulling is generally difficult and ineffective. Seedlings may be sprayed with a foliar application of herbicide. Herbicides that may be used on tocalote include clopyralid, diquat, glyphosate, imazapyr, pelargonic acid, and triclopyr. Because it is so common, tocalote should probably only be controlled as part of an active habitat restoration program. The biomass of this species is herbaceous, generally not dense, and can be left in place to decompose. The biomass should be removed if the area is going to be planted and/or seeded.

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**Table 7**  
**Treatment Methods for *Centaurea melitensis* (tocalote, Malta star thistle)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Clopyralid, Diquat, Glyphosate, Pelargonic Acid, Triclopyr	X	X	X	X	X	X					X	X
Mow or Graze	Mowers, string trimmers, goats				X	X	X						
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Clopyralid, Glyphosate, Triclopyr				X	X	X						

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

***Conium maculatum* – poison hemlock**

**Cal -IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**

**CDFA rating – None**

**Treatment Table 8**

Poison hemlock may be controlled by pulling, mowing, or by foliar spraying with a dilute solution of herbicide, generally in the winter or spring. When the plants are mowed, a second mowing may be required if the plants regrow. Seedlings may be sprayed with a foliar application of herbicide. Herbicides that may be used on poison hemlock include diquat, glyphosate and pelargonic acid. Seedlings can germinate on an almost year-round basis if environmental conditions are favorable (Bossard et al. 2000). Because it is so common, poison hemlock should probably only be controlled as part of an active habitat restoration program. The aboveground biomass of poison hemlock is herbaceous and should be removed if the growth is dense or the area is going to be planted and/or seeded, otherwise it can be left in place to decompose.

**Table 8**  
**Treatment Methods for *Conium maculatum* (poison hemlock)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Diquat, Glyphosate, Pelargonic Acid	X	X	X	X						X	X	X
Hollow Stem Injection	Glyphosate	X	X	X	X							X	X

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**Table 8**  
**Treatment Methods for *Conium maculatum* (poison hemlock)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Mow or Cut Down	Mower or string trimmer	X	X	X	X						X	X	X
Hand Pull Seedlings	Gloves	X	X	X							X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Diquat, Glyphosate, Pelargonic Acid	X	X	X	X						X	X	X
Hand Pull Seedlings	Gloves	X	X	X							X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Cynara cardunculus* – artichoke thistle, cardoon**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**

**CDFA rating – B; Treatment Table 9**

Artichoke thistle requires repeated herbicide treatment to kill the plants, as well as to kill newly germinated seedlings. Pulling or digging out artichoke thistle is ineffective because it will regrow from the taproot or even small root fragments left in the soil. Mature plants may be mowed and regrowth treated with herbicide, which could be a good option in dense patches of artichoke thistle, where the spiny foliage makes it difficult for workers to penetrate the patches to apply herbicide. Herbicide treatment for mature plants is most effective when the plants are bolting in spring, usually around April (Bossard et al. 2000). They may be treated with foliar spray or by the cut stump method, which is usually more labor intensive and expensive. If the mature plants are mowed first, they should be sprayed with herbicide when the emerging growth produces adequate leaf area to spray. Seedlings may be sprayed with a foliar application of herbicide. Herbicides that may be used on artichoke thistle include aminopyralid, clopyralid, diquat, glyphosate, and pelargonic acid. The aboveground biomass of artichoke thistle should be removed if the growth is dense or the area is going to be planted and/or seeded, otherwise it can be left in place to decompose. If plants are cut or mowed without herbicide treatment, repeated mowing or cutting at properly timed intervals will be required to kill the plants.

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**Table 9**  
**Treatment Methods for *Cynara cardunculus* (artichoke thistle, cardoon)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Aminopyralid, Diquat, Clopyralid, Glyphosate, Pelargonic Acid	X	X	X	X								X
Stump Cut	Glyphosate	X	X	X	X								X
Cut Down	Saw or loppers	X	X	X	X								
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Aminopyralid, Diquat, Clopyralid, Glyphosate, Pelargonic Acid	X	X	X	X								X
Cut Down	Saw or loppers	X	X	X	X								X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

***Eucalyptus camaldulensis* – red gum, river red gum**

**Cal-IPC Rating – Limited; Impacts – C; Invasiveness – C; Distribution – C**

**CDFR rating – None**

**Treatment Table 10**

Red gum can be controlled by the stump-cut herbicide treatment method. Red gum can also be controlled by frilling and injecting herbicide into the cambium layer of the trunk, or by foliar spray (which is generally not practical for large trees due to spray drift concerns). These methods should be used during periods of active growth. These method will leave the dead tree standing, which could provide roosting habitat if the dead trees are not located where they would be a safety hazard when they eventually fall over. If red gum is controlled by cutting without herbicide treatment, the stump and root sprouts will need to be repeatedly cut several times a year until there is no regrowth. The cut material can be hauled away, chipped and used as a mulch to be used on site or hauled off, or cut into smaller pieces and scattered on site, depending on the circumstances. Seedlings may be pulled when the soil is moist or sprayed with a foliar application of herbicide. Herbicides that may be used on red gum include diquat, glyphosate, imazapyr, pelargonic acid, and triclopyr. Refer to CDFG 1602 Streambed Alteration Agreement No. 1600-2008-0308-R5, found in Appendix C of this WMP, for detailed requirements that CDFG has imposed on the WMA to control red gum.

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**Table 10**  
**Treatment Methods for *Eucalyptus camaldulensis* (red gum, river red gum)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Diquat, Glyphosate, Imazapyr, Pelargonic Acid, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Cut Stump Treatment	Glyphosate, Imazapyr, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Basal Bark, Hack, Frill, or Injection Treatment	Imazapyr, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down	Chain or hand saw, lopers, etc.	X	X	X	X	X	X	X	X	X	X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Diquat, Glyphosate, Imazapyr, Pelargonic Acid, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down Retreatment	Chain or hand saw, lopers, etc.	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

***Foeniculum vulgare* - fennel**

**Cal-IPC Rating – High; Impacts – A; Invasiveness – B; Distribution – A**

**CDFR rating – None**

**Treatment Table 11**

Fennel requires repeated herbicide treatment to kill the plants, as well as to kill newly germinated seedlings. Pulling or digging out fennel is ineffective because it will regrow from the taproot or possibly even small root fragments left in the soil. Mature plants may be mowed and regrowth treated with herbicide, which could be a good option in dense patches of fennel. If fennel is controlled by cutting without herbicide treatment, new growth will need to be repeatedly cut several times a year until there is no regrowth. Seedlings may be sprayed with a foliar application of herbicide. Herbicide treatment is most effective in the spring during active growth (Bossard et al. 2000). Herbicides that may be used on fennel include diquat, glyphosate,

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pelargonic acid, and triclopyr. The aboveground biomass of fennel should be removed if the growth is dense or the area is going to be planted and/or seeded, otherwise it can be left in place to decompose.

**Table 11**  
**Treatment Methods for *Foeniculum vulgare* (fennel)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Diquat, Glyphosate, Pelargonic Acid, Triclopyr		X	X	X								
Cut Down	Saw or loppers	X	X	X	X	X	X	X	X	X	X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Glyphosate, Pelargonic Acid, Triclopyr		X	X	X								
Cut Down Retreatment	Saw or loppers	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Lepidium latifolium* – perennial pepperweed**

**Cal-IPC Rating – High; Impacts – A; Invasiveness – A; Distribution – A**

**CDFA rating – B**

#### **Treatment Table 12**

Perennial pepperweed requires repeated herbicide treatment over a period of several years to kill the plants, as well as to kill newly germinated seedlings. Pulling or digging out perennial pepperweed is ineffective because the plant has a massive, extensive root system that will regrow from small root fragments left in the soil. Mature plants may be mowed or intensively eaten down by goats and regrowth treated with a foliar application of herbicide, which could be a good option in dense patches of perennial pepperweed. Seedlings may also be sprayed with a foliar application of herbicide.

Chlorsulfuron, known by the trade name of Telar, is known to be the most effective herbicide to treat perennial pepperweed, but it may not be used in wet areas or near water. In addition, Telar cannot be used in locations where it could damage or kill adjacent desirable broadleaf vegetation because it is active on roots as well as foliage and has residual activity in the soil following application. These restrictions limit the potential use of Telar in the WMA. Refer to the Telar label for specific information. Other herbicides that can be used to treat perennial pepperweed include diquat, glyphosate, imazapyr, pelargonic acid, and triclopyr. All of these materials are applied as a foliar spray. Metsulfuron methyl, known by the trade name Escort, is

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effective on perennial pepperweed, but it is not registered for use in California at the time this WMP was prepared. The most effective time to treat perennial pepperweed is when the plant is in bud prior to bloom, usually occurring from spring into summer (Bossard et al. 2000). The aboveground biomass of perennial pepperweed should be removed if the growth is dense or the area is going to be planted and/or seeded, otherwise it can be left in place to decompose. Refer to CDFG 1602 Streambed Alteration Agreement No. 1600-2008-0308-R5, found in Appendix C of this WMP, for detailed requirements that CDFG has imposed on the WMA to control perennial pepperweed.

**Table 12**  
**Treatment Methods for *Lepidium latifolium* (perennial pepperweed)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Graze intensively	Goats					X	X	X	X				
Foliar Spray	Chlorsulfuron, Diquat, Glyphosate, Imazapyr, Pelargonic Acid, Triclopyr			X	X	X	X	X	X	X	X		
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Chlorsulfuron, Diquat, Glyphosate, Imazapyr, Pelargonic Acid, Triclopyr			X	X	X	X	X	X	X	X		

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Nicotiana glauca* - tree tobacco**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – B**

**CDFA rating – None**

### **Treatment Table 13**

Tree tobacco is best treated using the cut stump herbicide treatment method. Treatment is most effective during periods of active growth. Tree tobacco can be treated with a foliar spray, but the foliage has a waxy surface, and the herbicide solution often rolls off the leaves. A spreader sticker should be used if foliar sprays of herbicide are used to help with herbicide uptake. Seedlings may be pulled when the soil is moist or sprayed with a foliar application of herbicide. Herbicides that may be used on tree tobacco include diquat, glyphosate and pelargonic acid. The aboveground biomass of larger, woody tree tobacco plants should be removed from the site.

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Dead seedlings can be left in place to decompose. If plants are cut down without using herbicide treatment, regrowth will need to be repeatedly cut at regular intervals until the plants are dead.

**Table 13**  
**Treatment Methods for *Nicotiana glauca* (tree tobacco)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Diquat, Glyphosate, Pelargonic Acid	X	X	X	X	X	X	X	X	X	X	X	X
Cut Stump	Glyphosate	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down	Saw or lopers	X	X	X	X	X	X	X	X	X	X	X	X
Hand Pull Seedlings	Gloves	X	X	X	X	X	X	X	X	X	X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Glyphosate, Pelargonic Acid	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down	Saw or lopers	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Phoenix canariensis* – Canary Island date palm**

**Cal-IPC Rating – Limited; Impacts – C; Invasiveness – B; Distribution – D**

**CDFR rating – None**

#### **Treatment Table 14**

Palm trees may be controlled at any time of year, taking into account breeding bird seasonal requirements. Canary Island date palm can be killed by spraying the foliage with a systemic herbicide, or by drilling and injecting herbicide into the trunk. Herbicides that may be used on Canary Island date palm include diquat, glyphosate, and pelargonic acid. These method will leave the dead tree standing, which could provide roosting habitat if the dead trees are not located where they would be a safety hazard when they eventually fall over. Alternatively, they may be killed without use of herbicides by cutting off the terminal bud. Seedlings may be pulled when the soil is moist or sprayed with a foliar application of herbicide. Dead palm seedlings can be left in place to decompose provided they are not pulled and left laying on wet soil. Because they are large and heavy, the trunks will need to be either left in place to rot, removed as a unit by helicopter, or cut into small pieces and carried out.

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**Table 14**  
**Treatment Methods for *Phoenix canariensis* (Canary Island date palm)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Diquat, Glyphosate, Pelargonic Acid	X	X	X	X	X	X	X	X	X	X	X	X
Herbicide Injection	Glyphosate	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down	Saw or loppers	X	X	X	X	X	X	X	X	X	X	X	X
Hand Pull Seedlings	Gloves	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Ricinus communis* – castor bean**

**Cal-IPC Rating – Limited; Impacts – C; Invasiveness – B; Distribution – B**

**CDFA rating – None**

### **Treatment Table 15**

Castor bean can be pulled when the plants are small and the soil is moist. A weed wrench can also be used. When the soil is dry and hard, herbicide treatment will be required. Foliar spray, cut stump, or hollow stem injection methods all work. Seedlings may be pulled when the soil is moist or sprayed with a foliar application of herbicide. Seedlings and small plants under about 2 feet tall will likely be killed by one herbicide application, larger plants may require repeat herbicide treatments to kill the plants. Treatment is most effective during periods of active growth. Herbicides that may be used on castor bean include diquat, glyphosate, and pelargonic acid. The aboveground biomass of larger, woody castor bean plants should be removed from the site. Dead seedlings can be left in place to decompose provided they are not pulled and left laying on wet soil. If plants are cut down without using follow-up herbicide treatment, repeated cutting at regular intervals will be required to kill the plants.

**Table 15**  
**Treatment Methods for *Ricinus communis* (castor bean)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Diquat, Glyphosate, Pelargonic Acid	X	X	X	X	X	X	X	X	X	X	X	X
Hollow Stem Injection	Glyphosate	X	X	X	X	X	X	X	X	X	X	X	X

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**Table 15**  
**Treatment Methods for *Ricinus communis* (castor bean)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Cut Down	Saw or lopers	X	X	X	X	X	X	X	X	X	X	X	X
Hand Pull Seedlings	Gloves, Weed Wrench	X	X	X	X	X	X	X	X	X	X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Glyphosate, Pelargonic Acid	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down Retreatment	Saw or lopers	X	X	X	X	X	X	X	X	X	X	X	X
Hand Pull Seedlings	Gloves	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Schinus molle* – Peruvian pepper, California pepper**

**Cal-IPC Rating – Limited; Impacts – C; Invasiveness – B; Distribution – B**

**CDFR rating – None**

### **Treatment Table 16**

Peruvian pepper can be controlled by herbicides using foliar spray or the cut stump method. Treatment is most effective during periods of active growth. The cut material can either be hauled away, chipped and used as a mulch to be used on site or hauled off, or cut into smaller pieces and scattered on site, depending on quantity and the site specific circumstances. Peruvian pepper can also be controlled by frilling and injecting herbicide into the cambium layer of the trunk. The foliar spray and frilling and injecting methods will leave the dead tree standing, which could provide roosting habitat if the dead trees are not located where they would be a safety hazard when they eventually fall over. Seedlings may be pulled when the soil is moist or sprayed with a foliar application of herbicide. Herbicides that may be used on Peruvian pepper include diquat, glyphosate, imazapyr, pelargonic acid, and triclopyr. If plants are cut down without follow-up herbicide treatment, repeated cutting of new growth at regular intervals will be required until the plants are dead.

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**Table 16**  
**Treatment Methods for *Schinus molle* (Peruvian pepper, California pepper)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Diquat, Glyphosate, Imazapyr, Pelargonic Acid, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Cut Stump Treatment	Glyphosate, Imazapyr, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Basal Bark, Hack, Frill, or Injection Treatment	Imazapyr, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down	Chain or hand saw, lopers, etc.	X	X	X	X	X	X	X	X	X	X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Diquat, Glyphosate, Imazapyr, Pelargonic Acid, Triclopyr			X	X	X	X	X	X	X	X	X	X
Cut Down Retreatment	Chain or hand saw, lopers, etc.	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

### ***Tamarix ramosissima* – tamarisk, salt cedar**

**Cal-IPC Rating – High; Impacts – A; Invasiveness – A; Distribution – A**

**CDFA rating – B**

### **Treatment Table 17**

The U.S. Department of Agriculture (USDA) is working on biological control agents to control tamarisk, which may eventually provide adequate control over the long term. In the meantime, other methods will be required. Tamarisk can be controlled by herbicides, using foliar spray or the cut stump method. With dense thickets, the plants will need to be cut down or burned off first to gain access to the plants to treat with herbicide. Timing depends on the herbicide material used. Triclopyr with the trade names Garlon 4 and Pathfinder II can be used year-round, while Garlon 3A should only be used during the growing season. For glyphosate, various Roundup formulations and similar products, treatment should only be done during late spring to early fall during active growth (Bossard et al. 2000). For imazapyr, trade name Arsenal, treatment should be done during active growth while

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the plants are blooming. For plants treated with a foliar application of Arsenal, the treated plants should not be cut down or disturbed for 2 years following treatment. The cut material can be hauled away, chipped and used as a mulch to be used on site or hauled off, or cut into smaller pieces and scattered on site, depending on the circumstances. Tamarisk can also be controlled by frilling and injecting herbicide into the cambium layer of the trunk. Using the foliar spray or frilling and injecting will leave dead plants that will need to be removed if the plants are growing in dense thickets. Isolated plants could be left in place to decompose. Mechanical methods such as cutting the plants down without the use of herbicides are difficult because the plants have extensive root systems that will sprout new growth. If tamarisk is controlled by cutting without herbicide treatment, the stump and root sprouts will need to be repeatedly cut several times a year until there is no regrowth and the plants are dead. Seedlings may be pulled when the soil is moist or sprayed with a foliar application of herbicide. Diquat, trade name Reward, and pelargonic acid, trade name Scythe, are 2 contact killers that may be used in certain circumstances, but they provide no systemic control. Refer to CDFG 1602 Streambed Alteration Agreement No. 1600-2008-0308-R5, found in Appendix C of this WMP, for detailed requirements that CDFG has imposed on the WMA to control tamarisk.

**Table 17**  
**Treatment Methods for *Tamarix ramosissima* (tamarisk, salt cedar)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Aminopyralid, Diquat, Glyphosate, Imazapyr, Pelargonic Acid, Triclopyr			X	X	X	X	X	X	X	X	X	
Cut Stump Treatment	Glyphosate, Imazapyr, Triclopyr			X	X	X	X	X	X	X	X		
Basal Bark, Hack, Frill, or Injection Treatment	Imazapyr, Triclopyr	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down	Chain or hand saw, lopers, etc.	X	X	X	X	X	X	X	X	X	X	X	X
<i>Follow-up Treatment</i>													
Foliar Spray Retreatment	Diquat, Glyphosate, Imazapyr, Pelargonic Acid, Triclopyr			X	X	X	X	X	X	X	X	X	
Cut Down Retreatment	Chain or hand saw, lopers, etc.	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

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***Washingtonia robusta* – Mexican fan palm**

**Cal-IPC Rating – Moderate; Impacts – B; Invasiveness – B; Distribution – C**

**CDFA rating – None**

**Treatment Table 18**

Palm trees may be controlled at any time of year, taking into account breeding bird seasonal requirements. Mexican fan palm can be killed by spraying the foliage with a systemic herbicide or by drilling and injecting herbicide into the trunk. These method will leave the dead tree standing, which could provide roosting habitat if the dead trees are not located where they would be a safety hazard when they eventually fall over. Alternatively, they may be killed without use of herbicides by cutting off the terminal bud. Seedlings may be pulled when the soil is moist or sprayed with a foliar application of herbicide. Herbicides that may be used on Mexican fan palm include diquat, glyphosate, and pelargonic acid. Dead palm seedlings can be left in place to decompose provided they are not pulled and left laying on wet soil. The removal of large palms will depend on their location, site specific circumstances, and budget constraints. Because they are large and heavy, the trunks will need to be either left in place to rot, removed as a unit by helicopter, or cut into small pieces and carried out.

**Table 18**  
**Treatment Methods for *Washingtonia robusta* (Mexican fan palm)**

Method	Material	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
<i>Initial Treatment</i>													
Foliar Spray	Diquat, Glyphosate, Pelargonic Acid	X	X	X	X	X	X	X	X	X	X	X	X
Herbicide Injection	Glyphosate	X	X	X	X	X	X	X	X	X	X	X	X
Cut Down	Saw or loppers	X	X	X	X	X	X	X	X	X	X	X	X
Hand Pull Seedlings	Gloves	X	X	X	X	X	X	X	X	X	X	X	X

Note: Red Shading indicates potential bird breeding season restrictions, depending on location and species potentially present

## 2.8 Post-Weeding Erosion Control and Restoration

Weed removal in areas that include dense, or of large patches of monotypic stands of target exotic species may result in bare ground. These situations create an ecological vacuum that will be filled with the most opportunistic plant species in the vicinity or that resides in the soil, i.e., seed bank. Therefore, replacement native vegetation is recommended as a long term management strategy to exclude non-native vegetation recruitment. Native replacement vegetation can double as an erosion control strategy to prevent potential soil erosion, exotic recruitment, and adjacent habitat degradation. Additional erosion control measures in the form of best management

## San Pasqual Valley Integrated Weed Management Plan

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practices (BMPs) will be utilized during removal activities to minimize impacts to water quality as site conditions necessitate.

Deliberate action must be taken during removal activities to protect the integrity of adjacent native habitat within the control work area. BMPs should be implemented throughout work areas where substantial vegetation removal is required. The project biologist will monitor periodically during the project construction to help ensure BMP compliance. BMPs include:

- Installation of slope stabilization fabric, silt fencing, fiber rolls, and sandbags at key locations at the toe of slopes where large areas of exotic vegetation has been removed and downstream of any stream crossing areas.
- Installation (as necessary) of erosion control features (e.g., geotextile fabric) during and following vegetation removal.
- Seeding of significant areas cleared of exotic vegetation immediately following exotic vegetation removal.
- Leaving exotic tree roots in place and treating stumps where removal/grubbing would cause erosion or sedimentation.

If significant patches of target exotic species are removed, native seeding will be required to avoid establishment of weeds and for erosion control. Seeding of appropriate native species will help stabilize the surface soils and will help the natural succession process. Seed mix shall be selected based on the existing habitat of the weed removal location. Table 19 provides a seed mix to be applied at weed removal locations in upland habitats within the project area. Table 20 provides a seed mix to be applied to weed removal locations in wetland habitats within the project area.

**Table 19**  
**Seed List for Upland Areas**

Botanical Name	Common Name	PLS	Pounds Per Acre
<i>Artemisia californica</i>	California sagebrush	7.5	5
<i>Eriogonum fasciculatum</i>	California buckwheat	6.5	8
<i>Eschscholzia californica</i>	California poppy	73.5	3
<i>Plantago ovata</i>	woolly plantain	73.5	3
<i>Isocoma menziesii</i>	coast goldenbush	72	3
<i>Lotus scoparius</i>	deerweed	54	4
Total pounds per acre			26

PLS = Percentage Pure Live Seed

# San Pasqual Valley Integrated Weed Management Plan

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**Table 20**  
**Seed List for Wetland Areas**

Botanical Name	Common Name	PLS	Pounds Per Acre
<i>Artemisia douglasiana</i>	mugwort	5	3
<i>Artemisia palmeri</i>	San Diego sagewort	7.5	2
<i>Phacelia cicutaria</i>	caterpillar phacelia	80	0.5
<i>Pluchea odorata</i>	saltmarsh fleabane	21	1
Total pounds per acre			6.5

PLS = Percentage Pure Live Seed

Seed for inclusion in the upland and wetland mixtures may be obtained from native seed suppliers such as S&S Seeds in Carpinteria, California, or an alternative source approved by the project biologist.

## 2.9 Follow-up Management and Monitoring

A management plan for follow-up treatment and monitoring shall be implemented to control the reestablishment of removed or treated target invasive species. Reestablishment of target invasive species can occur through vegetative reproduction from fragmentation of remaining plant material, resprouting of root masses not removed or killed, or the germination of seed in the soil seed bank, along with newly introduced seed and/or vegetative propagules from other areas. Long-term maintenance must maintain an approximately 90% exotics/weed-free within the WMA for target exotic species to be considered successful.

Each of the target invasive species shall require a suppression regime specific to the reproductive and regenerative characteristics of the particular species (Section 2.6).

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## 3.0 MONITORING PLAN

Weed control is a particularly important management issue that requires ongoing attention from the City, stakeholders, and field personnel. Monitoring of the weed removal locations within the WMA shall be established to serve several functions: (1) To monitor the progress and success of exotic removal toward the stated exotic removal goals; (2) To establish annual priority areas and plan additional removal activities that are deemed necessary to control target exotic species; (3) To direct and monitor management activities in a manner to ensure that proper and appropriate treatment activities occur on a timely basis.

### 3.1 Monitoring Methods and Protocol

Monitoring shall be conducted by a qualified biologist with knowledge of weed and native species present in the WMA. Monitoring shall consist of regular field visits during targeted exotic removal efforts and quarterly field monitoring visits.

During removal/treatment activities, the project biologist activities may include:

- Flagging of identified exotic species
- Monitoring removal in sensitive habitat areas
- Monitoring for federally listed threatened and endangered species in appropriate areas
- Additional training of contractor personnel
- Reviewing removal efforts and access area impacts.

Qualitative monitoring (conducted on a quarterly basis) will include an assessment of target exotic plant removal success, resprout suppression, impacts to adjacent native habitats, and erosion control. In addition, spring monitoring visits shall include a general native plant establishment survey conducted to determine native plant recruitment within and adjacent to exotic removal locations.

#### 3.1.1 Monitoring of Overall WMA

The database coupled with site surveys should be utilized for monitoring the weed control efforts within the WMA. The status of treatment areas should be documented, and new or expanded infestations of invasive species should be mapped and entered into the database. The database should be updated on at least an annual basis.

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## 3.1.2 Monitoring of WMA Management Units

Management units, or reaches, have been established to track more manageable areas of land within the WMA. The WMA has been subdivided into seven reaches (Figure 6). Listed generally from upstream to downstream, they are East End Reach, Upper Preserve Reach, Santa Maria Reach, SANDAG Mitigation Bank Reach, Safari Park Reach, Cloverdale Reach, and Lake Hodges Inlet Reach. Management of these units may be assigned to different stakeholders such that the entire program does not fall to one stakeholder group. As part of annual, ongoing WMA management, the management units should receive annual priority ranking, unit objectives, and anticipated treatments. To the extent possible, treatments and funding will be done in a biologically appropriate manner within the WMA to provide the most effective long-term control. Collectively, the management unit plans become the overall annual WMA/WMP program to be implemented in a systematic manner. Each reach is discussed below.

### East End Reach

The East End Reach is at the upstream end of the WMA along Santa Ysabel Creek (Figure 4). The East End Reach is characterized by an incised channel with difficult, foot only access. Giant reed and tamarisk are the primary invasive weed species mapped in this reach. Most of the creek is bordered by citrus and avocado orchards.

Arroyo toad is known to be present in Santa Ysabel Creek in the East End Reach. Least Bell's vireo has also been documented in the creek. Least Bell's vireo is present during the spring and summer months. Since least Bell's vireo is a migratory species, it is not present in the WMA during the fall and winter months. With arroyo toad and least Bell's vireo potentially present in this reach, necessary precautions need to be taken when performing invasive exotics control.

### Upper Preserve Reach

The Upper Preserve Reach is located along Santa Ysabel Creek downstream of the East End Reach and upstream of the SANDAG Mitigation Bank and Santa Maria Reaches (Figure 4). Giant reed and tamarisk are the primary invasive weed species mapped in this reach. While not within the WMA, the lower end of Guejito Creek just upstream of Santa Ysabel Creek is also infested with giant reed. The creek is bordered by citrus orchards and agricultural fields in this reach. Least Bell's vireo has been documented in the creek. Least Bell's vireo is present during the spring and summer months. With least Bell's vireo potentially present in this reach, necessary precautions need to be taken when performing invasive exotics control. Since least Bell's vireo is a migratory species, it is not present in the WMA during the fall and winter months.

There is a school in the Upper Preserve Reach, so the additional requirements and coordination required by the Healthy Schools Act of 2000 will need to be followed for any invasive weed

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control work on school property. The Upper Preserve Reach also has a gap of approximately 1,300 lineal feet along Santa Ysabel Creek that is not included in the WMA. To the extent possible, the WMA should seek the cooperation/coordination of invasive exotics control with the landowner of the stretch of Santa Ysabel Creek that is not within the WMA, as well as the landowner for lower Guejito Creek. If not, these 2 locations will serve as source populations for continued dispersal of invasive species propagules into the WMA.

### **Santa Maria Reach**

The Santa Maria Reach is located along the lower end of Santa Maria Creek at the base of Bandy Canyon (Figure 4). Giant reed and tamarisk are the primary invasive weed species mapped in this reach. Santa Maria Creek is the main drainage from much of Ramona, so invasive species propagules can be expected to wash into the WMA on a continuing basis from upstream locations. The lower creek is bordered by agricultural fields and natural lands. The portion of Santa Maria Creek in Bandy Canyon between the WMA and Ramona is steep, rocky, and largely inaccessible, except maybe by foot.

### **SANDAG Mitigation Bank Reach**

The SANDAG Mitigation Bank Reach is in the central portion of the WMA along the San Dieguito River, Santa Ysabel Creek, Santa Maria Creek, and the unnamed tributary drainage below the Cloverdale Reach (Figure 4). Giant reed and tamarisk are the primary invasive weed species mapped in this reach. Agricultural lands border the creek in this reach. SANDAG may convert some agricultural lands and upland areas to habitat for mitigation purposes at some point in the future. The mitigation bank activities may involve removal of some tamarisk and arundo, but other areas of the San Dieguito River in this reach will not be affected by mitigation bank activities. Therefore, close coordination with SANDAG is necessary to identify invasive species locations that can be treated under this plan

Least Bell's vireo has been documented in the creek. Least Bell's vireo is present during the spring and summer months. With least Bell's vireo potentially present in this reach, necessary precautions need to be taken when performing invasive exotics control. Since least Bell's vireo is a migratory species, it is not present in the WMA during the fall and winter months.

### **Safari Park Reach**

The Safari Park Reach consists of the San Diego Zoo Safari Park, north of Highway 78 (Figure 4). The majority of this reach is developed and fenced off. Gum trees and palms, part of the landscaping for the Safari Park, are the primary "invasive weed" species mapped in this reach. The Safari Park Reach abuts the Cloverdale Reach to the south. The undeveloped portion of the Safari Park consists primarily of coastal sage scrub habitat on the upper slopes around the Safari

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Park. The majority of the mapped invasives are concentrated in the southern portion of this reach along Highway 78. Invasive weed species have not been mapped within the Safari Park itself, except by viewing the aerial maps. Any weed control work that needs to be done in this reach will require close coordination with the Safari Park.

## **Cloverdale Reach**

The Cloverdale Reach is located to the north of the SANDAG Mitigation Bank Reach along an unnamed tributary drainage that flows to the San Dieguito River from the north (Figure 4). The drainage flows into the WMA from the Eagle Crest Golf Course to the north. The southern boundary of this reach is at Old Milky Way. The majority of the mapped invasives are concentrated in the southern portion of this reach and consist of tamarisk. There is some giant reed in a side drainage that is both within and outside of the WMA. To the extent possible, the WMA should seek the cooperation/coordination of invasive exotics control with the landowner(s) of the invasive exotics not within the WMA. If not, this location will serve as source populations for continued dispersal of invasive species propagules into the WMA. This reach also abuts the Safari Park Reach on the southeast end along Highway 78. Agricultural lands and undeveloped land border the creek in this reach.

## **Lake Hodges Inlet Reach**

The Lake Hodges Inlet Reach is characterized by dense forested areas along the San Dieguito River upstream of I-15 (Figure 4). The lowest portion of this reach near I-15 is subject to inundation when Lake Hodges is filled to capacity. Perennial pepperweed and tamarisk are the primary invasive weed species mapped in this reach. The willow riparian forest in this area is occupied by least Bell's vireo during the spring and summer months. With least Bell's vireo present in this reach, necessary precautions need to be taken when performing invasive exotics control. Since least Bell's vireo is a migratory species, it is not present in the WMA during the fall and winter months. The northern portion of this reach contains organic agricultural land and agricultural land, nurseries, and undeveloped land borders the southern portion of the reach.

## **Roads and Highways**

State Highway 78 and other road right-of-ways in the WMA are maintained by Caltrans and the County of San Diego independent of the WMA. The road shoulders are periodically mowed and/or sprayed with herbicide.

### **3.1.3 Monitoring Following Weed Control Activities**

Each area where invasive plants have been controlled requires monitoring to determine the need for follow-up treatment. Treatment areas should be mapped at the time of treatment using GPS

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so that they can be accurately tracked. The timing of follow-up monitoring will depend on the species treated, time of year, and treatment method. Plants treated in the growth season should be checked 1-2 months after treatment to determine effectiveness and look for new growth. Plants treated in the fall months won't generally need to be checked until the following spring when growth begins. If plants are treated in late summer or early fall, however, they should be checked within a month or so to determine effectiveness and look for new growth that should be treated.

## **3.2 Adaptive Management Strategies**

Performance standards are viewed as interim project objectives, designed to achieve the annual WMP goals. Each reach within the WMA, as well as the WMA as a whole, will be reviewed annually to determine changes to the environment, management successes, deficiencies, and needs within the reaches, as well as for the WMA as a whole. This information will be used to reassess priorities and redirect resources, if necessary.

Each year, the WMA management units will be assessed to determine success of any control measures implemented in the prior year, changes in invasive species cover and density, need for follow-up treatment, and native species regrowth in control areas. The project database and maps will be updated to reflect current conditions and the effectiveness of previous treatment methodologies. Significant changes to native or non-native plant cover resulting from flooding or fire may dictate changes to management priorities or reallocation of funding to take advantage of opportunities that develop from unanticipated events, or constraints resulting from poor treatment results or funding limitations.

Based on the results of the annual assessments, management objectives, plans, and work schedules will be developed for the coming year, based on available/anticipated funding levels. This information may also be useful in applying for grant funding and any fund raising efforts undertaken.

## **3.3 Annual Reports**

Notification and Reporting, Condition No. 29 of the CDFG 1602 agreement, requires that an annual report be submitted by May 15 of each year. The report is required to provide GIS maps showing treated areas with the acreage of each listed by "acres removed, treated, and re-treated; disposal specifics; the effects of leaving mulched biomass in place; and a summary of the general successes and failures of the program." Photos from designated photo viewpoints will also be included in the annual reports. The reports should be prepared in a streamlined format to minimize report length and cost. Database records should be utilized to isolate the data and efficiently populate the annual report.

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Notification and Reporting, Condition No. 30 of the 1602 agreement, requires that the JPA prepare and submit a work plan to CDFG by July 15 of each year. The work plan will detail work for the coming fall so that CDFG can remain aware of the work program.

Notification and Reporting, Condition No. 31 of the 1602 agreement, requires that every 4 years a status report shall be submitted to CDFG “no later than ninety (90) days prior to the end of each 4-year period.” According to the 1602 agreement, the status reports shall include:

- a. A copy of Streambed Alteration Agreement No. 1600-2008-0308-R5 and any amendments that may have been made to it
- b. The status of each activity covered by the agreement
- c. An evaluation of the success or failure of the measures in the agreement to protect fish and wildlife resources that may be substantially adversely affected
- d. A discussion of any factors that could increase the predicted adverse impacts to fish and wildlife resources, and a description of the resources that may be adversely affected
- e. Photo documentation consisting of before and after photos of areas within the WMA adjacent to areas where heavy equipment was used to complete the weed control work.

The status reports should be prepared in a streamlined format to minimize report length and cost.

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### **4.0 FUNDING MECHANISMS**

The JPA may seek grant money from federal, state, and private sources to fund invasive exotic species control activities within the WMA. The San Diego JPA will function as the clearinghouse of information about available funding each year. Specific implementation projects can be created that are tailored for individual grant funding opportunities. Grant opportunities may be used as a strategic catalyst for implementing specific portions of the WMP, thereby helping to prioritize implementation within management zones.

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## 5.0 REFERENCES

- AB 2260. 2000. The Healthy Schools Act of 2000. California Assembly, 2000.
- Bossard, Carla C., John M. Randall, and Marc C. Hoshovsky, eds. 2000. *Invasive Plants of California's Wildlands*. Berkeley, California: University of California Press.
- Cal-IPC (California Invasive Plant Council). 2006. *California Invasive Plant Inventory*. Cal-IPC Publication 2006-02, California Invasive Plant Council: Berkeley, California. February. <http://www.cal-ipc.org/ip/inventory/pdf/Inventory2006.pdf>.
- Cal-IPC. 2007. *New Weeds Added to Cal-IPC Inventory*. California Invasive Plant Council: Berkeley, California. <http://www.cal-ipc.org/ip/inventory/pdf/WebUpdate2007.pdf>.
- CDFA (California Department of Food and Agriculture). 2010. "Encycloweed: Data Sheets." *California Department of Food and Agriculture*. [http://www.cdffa.ca.gov/plant/ipc/weedinfo/winfo\\_list-pestrating.htm](http://www.cdffa.ca.gov/plant/ipc/weedinfo/winfo_list-pestrating.htm).
- CDFG (California Department of Fish and Game). 2011. "Special Animals (898 taxa)." California Natural Diversity Database, Biogeographic Data Branch. January 2011. Accessed November 21, 2011. [http://www.dfg.ca.gov/biogeodata/cnddb/plants\\_and\\_animals.asp](http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp).
- CDFG. 2011a. "State and Federally Listed Endangered and Threatened Animals of California." California Natural Diversity Database, Biogeographic Data Branch. January 2011. Accessed November 21, 2011. [http://www.dfg.ca.gov/biogeodata/cnddb/plants\\_and\\_animals.asp](http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp).
- CDFG. 2011b. *Special Vascular Plants, Bryophytes, and Lichens List*. California Natural Diversity Database. October 2011. Accessed November 21, 2011. [http://www.dfg.ca.gov/biogeodata/cnddb/plants\\_and\\_animals.asp](http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp).
- CDFG. 2011c. California Natural Diversity Database (CNDDDB). RareFind 4: Commercial version. CDFG, Biogeographic Data Branch.
- City of San Diego. 2004. *The San Pasqual Vision Plan*. May 5, 2004. [http://docs.sandiego.gov/reportstocouncil\\_attach/2005/05-069%20Att%201.pdf](http://docs.sandiego.gov/reportstocouncil_attach/2005/05-069%20Att%201.pdf).
- City of San Diego. 2005a. *The San Pasqual Valley Plan*. Prepared by the City of San Diego Planning Department. Adopted June 27, 1995. Last amended July 19, 2005. <http://www.sandiego.gov/planning/community/profiles/pdf/sanpasqual/spvpfv.pdf>.

## San Pasqual Valley Integrated Weed Management Plan

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- City of San Diego. 2005b. "Protection of Water, Agricultural, Biological, and Cultural Resources within the San Pasqual Valley." *Council Policy 600-45*. June 27, 2005. [http://docs.sandiego.gov/councilpolicies/cpd\\_600-45.pdf](http://docs.sandiego.gov/councilpolicies/cpd_600-45.pdf).
- Conservation Biology Institute, SanGIS. 2009. *San Pasqual Valley Invasives Overview, Page 1 of 5 Map*.
- DiTomaso, Joseph M., and Evelyn A. Healy. 2003. *Aquatic and Riparian Weeds of the West*. University of California, Division of Agriculture and Natural Resources, Publication 3421 (Sponsored by the California Weed Science Society).
- DiTomaso, Joseph M., and Evelyn A. Healy. 2007a. *Weeds of California and other Western States, Volume 1, Aizoaceae– Fabaceae*. University of California, Division of Agriculture and Natural Resources.
- DiTomaso, Joseph M., and Evelyn A. Healy. 2007b. *Weeds of California and other Western States, Volume 2, Geraniaceae–Zygophyllaceae*. University of California, Division of Agriculture and Natural Resources.
- Dreistadt, Steven H. 1994. *Pests of Landscape Trees and Shrubs: An Integrated Pest Management Guide*. Oakland, California: University of California, Division of Agriculture and Natural Resources, Publication 3359.
- Elmore, Clyde L. 1997. *Soil Solarization: A Nonpesticidal Method for Controlling Diseases, Nematodes, and Weeds*. University of California, Division of Agriculture and Natural Resources, Publication 21377.
- EPA (U.S. Environmental Protection Agency). 1999. "Protecting Endangered Species: Interim Measures for Use of Herbicides in San Diego County." *Pesticides and Toxic Substances (H-7506C)*. December 1999. <http://www.cdpr.ca.gov/docs/endspec/espdfs/37he1299.pdf>.
- Flint, Mary Louise, and Steve H. Dreistadt. 1998. *Natural Enemies Handbook: The Illustrated Guide to Biological Pest Control*. University of California of California, Division of Agriculture and Natural Resources, Publication 3386-H.
- Frandsen, P. and N. Jackson. 1994. The impact of *Arundo donax* on flood control and endangered species. Pp. 13-16 in: Jackson, N. E., Frandsen, P., Douthit, S. eds. 1994. *Arundo donax workshop proceedings*.
- Hickman, J.C., ed. 1993. *The Jepson Manual: Higher Plants of California*. 3rd printing, with corrections, 1996. Berkeley, California: University of California Press.

## San Pasqual Valley Integrated Weed Management Plan

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- Leclerc, René, and Robert C. MacArthur. 2011. Effects of *Arundo donax* on River Hydraulics, Sediment Transport and Geomorphology, Santa Margarita River, California. Proceedings of the Headwaters to Ocean (H<sub>2</sub>O) Conference, San Diego, California, May 26, 2011. [http://www.coastalconference.org/h2o\\_2011/pdf/2011-05-26-Thursday/Session%2010C-Riparian%20Restoration/Leclerc\\_of\\_Arundo\\_Donax\\_on\\_River\\_Hydraulics.pdf](http://www.coastalconference.org/h2o_2011/pdf/2011-05-26-Thursday/Session%2010C-Riparian%20Restoration/Leclerc_of_Arundo_Donax_on_River_Hydraulics.pdf)
- SANDAG (San Diego Association of Governments). 2012. Management Priorities for Invasive Non-Native Plants: A Strategy for Regional Implementation, San Diego County, California. Prepared by Cal-IPC, Dendra Inc., and Conservation Biology Institute. September 2012.
- Tu, M., C. Hurd. and J.M. Randall. 2001. Weed Control Methods Handbook, The Nature Conservancy, <http://tncweeds.ucdavis.edu>, version: April 2001.
- USGS (U.S. Geological Survey). "San Diego County, California" [map]. 7.5-Minute Series, San Pasqual Quadrangle.
- Zemba, R., and S. Hoffman. 2000. Environmental Assessment of the Santa Ana Watershed. Program, Orange County Water District, Fountain Valley, CA.

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APPENDIX A  
*GIS Database Metadata*



## SDIMS Feature Classes Metadata

### Invasive\_Project\_Areas - Polygon

Field Name	Type	Length	Domain	Description	LUT (Primary Key)
PROJ_ID	Text	10		Unique project ID: IPA-"OBJECTID" (IPA = Invasive Project Area)	
PROJ_NAME	Text	100		Unique project name	
P_YEAR	Long Integer	–		Year project began	
MGT_DEPT	Text	10	MGT_DEPT	Managing City Department	MANAGING_CITY_DEPT_LUT (MD_CODE)
ENTITY	Text	100		Agency/Organization creating data	
Calc_Acres	Float	–		GIS calculated acreage or project area	

### Mapped\_Invasives - Polygon

Field Name	Type	Length	Domain	Description	LUT (Primary Key)
PROJ_ID	Text	10		Unique project ID: IPA-# (IPA = Invasive Project Area)	
MI_ID	Text	25		Unique mapped invasive ID: "PROJ_ID"-MI-"OBJECTID"	
IP_CODE1	Text	10	IP_CODE	Invasive plant code	Invasives_LUT (IP_CODE)
IP_CODE2	Text	10	IP_CODE	Invasive plant code	Invasives_LUT (IP_CODE)
IP_CODE3	Text	10	IP_CODE	Invasive plant code	Invasives_LUT (IP_CODE)
P_COV1	Short Integer	–		IP_CODE1 percent cover	
P_COV2	Short Integer	–		IP_CODE2 percent cover	
P_COV3	Short Integer	–		IP_CODE3 percent cover	
M_DATE	Date	–		Date invasive was mapped	
M_YEAR	Long Integer	–		Year invasive was mapped	
NOTES	Text	255		Notes	
ENTITY	Text	100		Agency/Organization creating data	
Calc_Acres	Float	–		GIS calculated acreage of mapped invasive	

### Mapped\_Invasives\_Photo\_Points - Point

Field Name	Type	Length	Domain	Description	LUT (Primary Key)
PROJ_ID	Text	10		Unique project ID: IPA-# (IPA = Invasive Project Area)	
PP_ID	Text	25		Unique photo point ID: "PROJ_ID"-P-"OBJECTID"	
P_DATE	Date	–		Date photo was taken	
P_YEAR	Long Integer	–		Year photo was taken	
P_TIME	Text	20		Time of day photo was taken	
P_DIR	Text	100		Direction of camera when photo was taken	
CAM_MAKE	Text	25		Make of camera	
CAM_MODEL	Text	25		Model of camera	

### SDIMS Feature Classes Metadata

P_FILE	Text	150		Name of photo - e.g 001.jpg
P_PATH	Text	255		Hyperlink to photo file location
NOTES	Text	255		Notes
ENTITY	Text	100		Agency/Organization creating data

#### Invasive\_Monitoring\_Areas - Polygon

Field Name	Type	Length	Domain	Description	LUT (Primary Key)
PROJ_ID	Text	10		Unique project ID: IPA-# (IPA = Invasive Project Area)	
MA_ID	Text	25		Unique monitoring area ID: "PROJ_ID"-MA-"OBJECTID"	
IP_CODE1	Text	10	IP_CODE	Invasive plant code	Invasives_LUT (IP_CODE)
IP_CODE2	Text	10	IP_CODE	Invasive plant code	Invasives_LUT (IP_CODE)
IP_CODE3	Text	10	IP_CODE	Invasive plant code	Invasives_LUT (IP_CODE)
P_COV1	Short Integer	-		IP_CODE1 percent cover	
P_COV2	Short Integer	-		IP_CODE2 percent cover	
P_COV3	Short Integer	-		IP_CODE3 percent cover	
IP_PHEN1	Text	25	PHENOLOGY	Phenology of invasive	
IP_PHEN2	Text	25	PHENOLOGY	Phenology of invasive	
IP_PHEN3	Text	25	PHENOLOGY	Phenology of invasive	
FUND_SRC	Text	100		Source of funding for treatment being monitored	
FUND_AMT	Text	10		Amount of funding for treatment being monitored	
M_DATE	Date	-		Date invasive treatment monitoring began	
M_YEAR	Long Integer	-		Year invasive treatment monitoring began	
FS_FILE	Text	150		Name of scanned field sheet file - e.g. FS_001.pdf	
FS_PATH	Text	255		Hyperlink to field sheet file location	
NOTES	Text	255		Notes	
ENTITY	Text	100		Agency/Organization creating data	
Calc_Acres	Float	-		GIS calculated acreage of invasives monitoring areas	

#### Invasive\_Monitoring\_Photo\_Points - Point

Field Name	Type	Length	Domain	Description	LUT (Primary Key)
PROJ_ID	Text	10		Unique project ID: IPA-# (IPA = Invasive Project Area)	
MA_ID	Text	25		Unique monitoring area ID from Invasive_Monitoring_Areas that photo is documenting	
PM_ID	Text	25		Unique photo point ID: "PROJ_ID"-PM-"OBJECTID"	
P_DATE	Date	-		Date photo was taken	
P_YEAR	Long Integer	-		Year photo was taken	
P_TIME	Text	20		Time of day photo was taken	
P_DIR	Text	100		Direction of camera when photo was taken	
CAM_MAKE	Text	25		Make of camera	
CAM_MODEL	Text	25		Model of camera	
P_FILE	Text	150		Name of photo - e.g 001.jpg	
P_PATH	Text	255		Hyperlink to photo file location	

**SDIMS Feature Classes Metadata**

NOTES	Text	255	Notes
ENTITY	Text	100	Agency/Organization creating data

**Invasive\_Treatment\_Areas - Polygon**

- Types**      T\_TYPE
- 1 Biological
  - 2 Chemical
  - 3 Cultural
  - 4 Physical
  - 5 Prescribed\_Burn

Field Name	Type	Length	Domain	Description	LUT (Primary Key)
PROJ_ID	Text	10		Unique project ID: IPA-# (IPA = Invasive Project Area)	
TA_ID	Text	25		Unique treatment area ID: "PROJ_ID"-TA-"OBJECTID"	
TA_DATE	Date	-		Date of treatment	
TA_YEAR	Long Integer	-		Year of treatment	
IP_CODE1	Text	10	IP_CODE	Invasive plant code	Invasives_LUT (IP_CODE)
IP_CODE2	Text	10	IP_CODE	Invasive plant code	Invasives_LUT (IP_CODE)
IP_CODE3	Text	10	IP_CODE	Invasive plant code	Invasives_LUT (IP_CODE)
IP_PHEN1	Text	25	PHENOLOGY	Phenology of invasive at time of treatment	
IP_PHEN2	Text	25	PHENOLOGY	Phenology of invasive at time of treatment	
IP_PHEN3	Text	25	PHENOLOGY	Phenology of invasive at time of treatment	
T_TYPE	Long Integer	-		General type of treatment	
			Domain dependent on T_TYPE (BIO_Type, CHEM_Type, CUL_Type, PHYS_Type, or PBURN_Type)		
T_METHOD	Text	50		Specific type of treatment methodology	
START_TIME	Text	20		Time treatment started	
END_TIME	Text	20		Time treatment was completed	
TOT_HOURS	Double	-		Total number of hours spent on treatment	
TOT_STAFF	Long Integer	-		Number of staff present for treatment	
TOT_VLNTR	Long Integer	-		Number of volunteers present for treatment	
TEMP	Text	25		Temperature reading at time of treatment	
TEMP_TIME	Text	20		Exact time teperature reading was taken	
PRECIP	Text	10	PRECIP	Precipitation at time of treatment	
NOTES	Text	255		Notes	
ENTITY	Text	100		Agency/Organization creating data	
Calc_Acres	Float	-		GIS calculated acreage of invasive treatment areas	

## SDIMS Lookup Tables Metadata

### CALIPC\_LUT

Field Name	Type	Length	Domain	Description
IPC_CODE	Text	10		CA Invasive Plant Council invasive code
IPC_Descr	Text	50		CallIPC classification

### CDFA\_LUT

Field Name	Type	Length	Domain	Description
CDFA_Code	Text	10		CA Department of Food and Agriculture invasive classification
CDFA_Descr	Text	250		Classification description

### MANAGING\_CITY\_DEPT\_LUT

Field Name	Type	Length	Domain	Description
MD_CODE	Text	10		Managing department code
MD_NAME	Text	100		Managing department complete name

### Invasives\_LUT

Field Name	Type	Length	Domain	Description
IP_CODE	Text	10		Invasive plant code
S_NAME	Text	50		Scientific name
C_NAME	Text	50		Common name
NOTES	Text	200		
CDFA	Text	10	CDFA_Codes	CDFA classification
IPC_RATING	Text	10	CALIPC_OVERALL	Overall CalIPC rating
IPC_IMPACTS	Text	10	CALIPC_Codes	CalIPC invasive impact rating
IPC_INVAS	Text	10	CALIPC_Codes	CalIPC invasiveness rating
IPC_DISTRIB	Text	10	CALIPC_Codes	CalIPC distribution rating

### CDFG\_Target\_Species\_LUT

Field Name	Type	Length	Domain	Description
PROJ_ID	Text	10		Unique project ID: IPA-# (IPA = Invasive Project Area)
IP_CODE	Text	10	IP_CODE	Invasive plant code
S_NAME	Text	50		Scientific name

### SDIMS Lookup Tables Metadata

C_NAME	Text	50	Common name
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## SDIMS Domains Metadata

<b>BIO_Type</b>	<b>Bio treatment type</b>
<b>Code</b>	<b>Description</b>
INSECT	INSECT
DISEASE	DISEASE
GOAT GRAZING	GOAT GRAZING
OTHER	OTHER

<b>CALIPC_Codes</b>	<b>CA Invasive Plants Council Score Codes</b>
<b>Code</b>	<b>Description</b>
A	A
B	B
C	C
D	D
U	U

<b>CALIPC_OVERALL</b>	<b>CA Invasive Plants Council Overall Rating Codes</b>
<b>Code</b>	<b>Description</b>
HIGH	HIGH
MODERATE	MODERATE
LIMITED	LIMITED
NOT RATED	NOT RATED
NATIVE	NATIVE

<b>CDFA_Codes</b>	<b>CA Dept of Food &amp; Ag Invasive Rating Codes</b>
<b>Code</b>	<b>Description</b>
A	A
B	B
C	C
D	D
Q	Q
NONE	NONE

<b>CHEM_TYPE</b>	<b>Chemical Treatment Type</b>
<b>Code</b>	<b>Description</b>
GLYPHOSATE	GLYPHOSATE
TRICLOPYR	TRICLOPYR
DIQUAT	DIQUAT
FLUAZIFOP-P	FLUAZIFOP-P
SETHOXYDIM	SETHOXYDIM
PELARGONIC ACID	PELARGONIC ACID
OTHER	OTHER

<b>CUL_TYPE</b>	<b>Cultural Treatment Type</b>
<b>Code</b>	<b>Description</b>
WEED FREE BUFFER	WEED FREE BUFFER

## SDIMS Domains Metadata

INVASIVE TREES FLOWER/SEED REMOVAL	INVASIVE TREES FLOWER/SEED REMOVAL
LIMITED SOIL DISTURBANCE	LIMITED SOIL DISTURBANCE
OTHER	OTHER

### IP\_CODE

### Invasive Plant Code

Code	Description
Code based on IP_CODE in Invasives _LUT	See Invasive _LUT for detailed list of codes

### MGT\_DEPT

### Managing City Department

Code	Description
DPU_WW	DPU_WW
DPU_W	DPU_W
READ	READ
GSD_T	GSD_T
GSD_SW	GSD_SW
PRD_DPR	PRD_DRP
PRD_OS	PRD_OS
PRD_CP1	PRD_CP1
PRD_CP2	PRD_CP2
ESD	ESD
FRD	FRD
HC	HC
PL	PL
PD	PD

### PBURN\_TYPE

### Prescribed Burn Treatment Type

Code	Description
Prescribed_Burn	Prescribed_Burn

### PHENOLOGY

### Invasive Phenology

Code	Description
BOLTING	BOLTING
BUD	BUD
DEAD/SKELETON	DEAD/SKELETON
FLOWERING	FLOWERING
MATURE	MATURE
ROSETTE	ROSETTE
SEED_SET	SEED_SET
SEEDLING	SEEDLING

### PHYS\_TYPE

### Physical Treatment Type

Code	Description
HAND REMOVAL	HAND REMOVAL
WEED WRENCH EXTRACTION	WEED WRENCH EXTRACTION
SOLARIZATION	SOLARIZATION
STRING TRIMMER	STRING TRIMMER
FLAIL MOWER	FLAIL MOWER

## SDIMS Domains Metadata

OTHER	OTHER
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<b>PRECIP</b>	<b>Precipitation at Treatment Time</b>
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<b>Code</b>	<b>Description</b>
YES	YES
NO	NO

<b>TREAT_TYPE</b>	<b>Treatment Type</b>
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<b>Code</b>	<b>Description</b>
Biological	Biological
Chemical	Chemical
Cultural	Cultural
Physical	Physical
Prescribed_Burn	Prescribed_Burn

SDIMS Livasives Lookup Table

IP_CODE	S_NAME	C_NAME	NOTES	CDFA	IPC_RATING	IPC_IMPACT	IPC_INVAS	IPC_DISTRI
Acacyc	Acacia cyclops	red-eyed wattle		NONE	NOT RATED	U	U	U
Acadea	Acacia dealbataá	silver wattle		NONE	MODERATE	B	B	B
Acrcrp	Acroptilon repens á	Russian knapweed		B	MODERATE	B	B	B
Aegtri	Aegilops triuncialis á	barb goatgrass		B	HIGH	A	A	B
Ageade	Ageratina adenophoraá	eupatorium		NONE	MODERATE	B	B	B
Agrsto	Agrostis stoloniferaá	creeping bentgrass		NONE	LIMITED	C	B	C
Ailalt	Ailanthus altissima á	tree-of-heaven		C	MODERATE	B	B	B
Ammare	Ammophila arenaria á	European beachgrass		NONE	HIGH	A	B	B
Antcot	Anthemis cotula	mayweed chamomile		NONE	NOT RATED	U	U	U
Arudon	Arundo donax á	giant reed		B	HIGH	A	B	A
Aspasp	Asparagus asparagoidesá	bridal creeper		NONE	MODERATE	B	B	D
Aspfis	Asphodelus fistulosusá	onionweed		Q	MODERATE	B	A	C
Atrsem	Atriplex semibaccata á	Australian saltbush		NONE	MODERATE	B	B	B
Avebar	Avena barbataá	slender wild oat		NONE	MODERATE	B	B	A
Avefat	Avena fatuaá	wild oat		NONE	MODERATE	B	B	A
Bashys	Bassia hyssopifolia á	fivehook bassia		NONE	LIMITED	C	C	B
Bradis	Brachypodium distachyoná	false brome		NONE	MODERATE	B	B	B
Branig	Brassica nigraá	black mustard		NONE	MODERATE	B	B	A
Brarap	Brassica rapa á	field mustard		NONE	LIMITED	C	B	B
Bratou	Brassica tournefortii á	Saharan mustard		NONE	HIGH	A	A	B
Brodia	Bromus diandrusá	ripgut brome		NONE	MODERATE	B	B	A
Brohor	Bromus hordeaceus á	soft brome		NONE	LIMITED	B	C	A
Brojap	Bromus japonicusá	Japanese brome		NONE	LIMITED	B	C	B
Brmaru	Bromus madritensis ssp. rubensá	red brome		NONE	HIGH	A	B	A
Brotec	Bromus tectorum á	downy brome		NONE	HIGH	A	B	A
Cakmar	Cakile maritimaá	European sea-rocket		NONE	LIMITED	C	B	B
Carcha	Cardaria chalepensisá	lens-podded white-top		B	MODERATE	B	B	C
Cardra	Cardaria drabaá	hoary cress		B	MODERATE	B	B	B
Carpub	Cardaria pubescensá	hairy whitetop		B	LIMITED	C	B	C
Carpyc	Carduus pycnocephalusá	Italian thistle		C	MODERATE	B	B	A
Carchi	Carpobrotus chilensisá	sea-fig, iceplant		NONE	MODERATE	B	B	A
Caredu	Carpobrotus edulisá	Hottentot-fig		NONE	HIGH	A	B	A
Cencal	Centaurea calcitrapaá	purple starthistle		B	MODERATE	A	B	B
Cenmel	Centaurea melitensis á	tochalote		C	MODERATE	B	B	B
Censol	Centaurea solstitialisá	yellow starthistle		C	HIGH	A	B	A
Chrcor	Chrysanthemum coronariumá	crown daisy		NONE	MODERATE	B	B	B
Cirarv	Cirsium arvenseá	Canada thistle		B	MODERATE	B	B	B
Cirvul	Cirsium vulgare á	bull thistle		C	MODERATE	B	B	B
Conmac	Conium maculatum á	poison-hemlock		NONE	MODERATE	B	B	B
Conarv	Convolvulus arvensis	field bindweed		NONE	NOT RATED	U	U	U
Corjub	Cortaderia jubata á	jubatagrass		B	HIGH	A	A	A
Corsel	Cortaderia selloana á	pampasgrass		NONE	HIGH	A	A	B
Cotfra	Cotoneaster franchetiiá	orange cotoneaster		NONE	MODERATE	B	A	B
Cotlac	Cotoneaster lacteusá	Parney's cotoneaster		NONE	MODERATE	B	B	B
Cotpan	Cotoneaster pannosusá	silverleaf cotoneaster		NONE	MODERATE	B	A	B

SDIMS Livasives Lookup Table

Cotcor	Cotula coronopifoliaá	brassbuttons	NONE	LIMITED	C	C	B
Cyncar	Cynara cardunculusá	artichoke thistle	B	MODERATE	B	B	B
Cyndac	Cynodon dactyloná	bermudagrass	NONE	MODERATE	B	B	B
Cytsco	Cytisus scopariusá	Scotch broom	C	HIGH	A	B	A
Delodo	Delairea odorataá	German-ivy	B	HIGH	A	A	B
Decsop	Descurainia sophiaá	tansy mustard	NONE	LIMITED	C	B	B
Dimsin	Dimorphotheca sinuata	African daisy	NONE	NOT RATED	U	U	U
Dipful	Dipsacus fullonumá	common teasel	NONE	MODERATE	B	B	B
Dipsat	Dipsacus sativusá	fuller's teasel	NONE	MODERATE	B	B	B
Ditgra	Dittrichia graveolensá	stinkwort	NONE	MODERATE	B	A	C
Echcan	Echium candicansá	pride-of-Madeira	NONE	LIMITED	C	B	B
Ehrcal	Ehrharta calycina á	purple veldtgrass	NONE	HIGH	A	A	B
Ehrere	Ehrharta erecta á	erect veldtgrass	NONE	MODERATE	B	B	B
Ehrlon	Ehrharta longifloraá	long-flowered veldtgrass	NONE	MODERATE	B	B	C
Elaang	Elaeagnus angustifoliaá	Russian-olive	NONE	MODERATE	B	A	B
Emespi	Emex spinosaá	spiny emex	NONE	MODERATE	B	B	D
Erobot	Erodium botrys	broadleaf filaree	NONE	NOT RATED	U	U	U
Erocic	Erodium cicutariumá	redstem filaree	NONE	LIMITED	C	C	A
Eromos	Erodium moschatum	whitestem filaree	NONE	NOT RATED	U	U	U
Euccam	Eucalyptus camaldulensisá	red gum	NONE	LIMITED	C	C	C
Eucglo	Eucalyptus globulus á	Tasmanian blue gum	NONE	MODERATE	B	B	B
Eupter	Euphorbia terracinaá	carnation spurge	B	MODERATE	B	B	C
Ficcar	Ficus caricaá	edible fig	NONE	MODERATE	B	A	B
Foevul	Foeniculum vulgare á	fennel	NONE	HIGH	A	B	A
Frauhd	Fraxinus uhdei	evergreen ash	NONE	LIMITED	U	U	U
Genmon	Genista monspessulanaá	French broom	C	HIGH	A	A	B
Gerdis	Geranium dissectum á	cutleaf geranium	NONE	MODERATE	C	B	A
Halglo	Halogeton glomeratusá	halogeton	A	MODERATE	B	A	B
Hedcan	Hedera canariensis	Algerian ivy	NONE	HIGH	A	A	A
Hedhel	Hedera helix	English ivy	NONE	HIGH	A	A	A
Hirinc	Hirschfeldia incanaá	shortpod mustard	NONE	MODERATE	B	B	A
Hollan	Holcus lanatus á	common velvet grass	NONE	MODERATE	B	B	A
Hormar	Hordeum marinum	Mediterranean barley	NONE	MODERATE	B	B	A
Hormur	Hordeum murinum	hare barley	NONE	MODERATE	B	B	A
Hypcan	Hypericum canarienseá	Canary Island hypericum	B	MODERATE	B	B	C
Hyper	Hypericum perforatumá	common St. John's wort	C	MODERATE	B	B	B
Hypgla	Hypochaeris glabra á	smooth catsear	NONE	LIMITED	C	B	B
Hyprad	Hypochaeris radicataá	rough catsear	NONE	MODERATE	C	B	A
Kocsco	Kochia scoparia á	kochia	NONE	MODERATE	B	C	B
Lacser	Lactuca serriola	prickly lettuce	NONE	NOT RATED	U	U	U
Leplat	Lepidium latifoliumá	perennial pepperweed	A	HIGH	A	A	A
Leplae	Leptospermum laevigatum	Australian tea tree	NONE	NOT RATED	U	U	U
Lobmar	Lobularia maritimaá	sweet alyssum	NONE	NOT RATED	C	B	B
Lolmul	Lolium multiflorumá	Italian ryegrass	NONE	MODERATE	A	B	A
Lotcor	Lotus corniculatus	birdsfoot trefoil	NONE	NOT RATED	U	U	U
Lupemo	Ludwigia peploides ssp. montevidensisá	creeping water-primrose	NONE	HIGH	A	B	B
Lythys	Lythrum hyssopifoliumá	hyssop loosestrife	NONE	LIMITED	C	B	B

SDIMS Livasives Lookup Table

Lytsal	Lythrum salicariaá	purple loosestrife	B	HIGH	A	A	B
Marvul	Marrubium vulgare á	white horehound	NONE	LIMITED	C	C	B
Medpol	Medicago polymorphaá	California burclover	NONE	LIMITED	C	C	A
Melind	Melilotus indica	sourclover	NONE	NOT RATED	U	U	U
Mescry	Mesembryanthemum crystallinumá	crystalline iceplant	NONE	MODERATE	B	B	C
Myolae	Myoporum laetumá	myoporum	NONE	MODERATE	B	B	B
Nerole	Nerium oleander	oleander	NONE	NOT RATED	U	U	U
Nicgla	Nicotiana glaucaá	tree tobacco	NONE	MODERATE	B	B	B
Oleeur	Olea europaeaá	olive	NONE	LIMITED	C	B	B
Oxacor	Oxalis corniculata	creeping woodsorrel	NONE	NOT RATED	U	U	U
Oxapes	Oxalis pes-capraeaá	Bermuda buttercup	NONE	MODERATE	B	B	B
Paracu	Parkinsonia aculeata	Mexican Palo Verde	NONE	NOT RATED	U	U	U
Pencla	Pennisetum clandestinumá	kikuyugrass	C	LIMITED	C	C	B
Penset	Pennisetum setaceum á	crimson fountaingrass	NONE	MODERATE	B	B	B
Penvil	Pennisetum villosum	feathertop	NONE	NOT RATED	U	U	U
Phaaqu	Phalaris aquatica á	hardinggrass	NONE	MODERATE	B	B	B
Phocan	Phoenix canariensisá	Canary Island date palm	NONE	LIMITED	C	B	D
Phraus	Phragmites australisá	common reed	NONE	NATIVE	B	B	B
Phyame	Phytolacca americanaá	common pokeweed	NONE	LIMITED	C	B	C
Picech	Picris echioidesaá	bristly oxtongue	NONE	LIMITED	C	B	B
Pinrad	Pinus radiata cultivarsá	Monterey pine	NONE	NATIVE	B	B	B
Pipmil	Piptatherum miliaceumá	smilograss	NONE	LIMITED	C	B	B
Pischi	Pistachia chinensis	Chinese pistache	NONE	NOT RATED	U	U	U
Plalan	Plantago lanceolataá	English plantain	NONE	LIMITED	C	C	B
Polmon	Polypogon monspeliensis and subspp.á	rabbit's-foot grass	NONE	LIMITED	C	C	B
Pyrang	Pyracantha angustifolia	pyracantha	NONE	LIMITED	C	B	B
Rapsat	Raphanus sativusaá	radish	NONE	LIMITED	C	C	B
Riccom	Ricinus communisá	castorbean	NONE	LIMITED	C	B	B
Robpse	Robinia pseudoacaciaá	black locust	NONE	LIMITED	C	B	B
Rumcri	Rumex crispus á	curly dock	NONE	LIMITED	C	C	A
Saltra	Salsola tragusá	Russian-thistle	C	LIMITED	C	C	B
Schmol	Schinus molle á	Peruvian peppertree	NONE	LIMITED	C	B	B
Schter	Schinus terebinthifolius á	Brazilian peppertree	NONE	LIMITED	C	B	C
Schara	Schismus arabicus	mediterraneangrass	NONE	LIMITED	B	C	A
Schbar	Schismus barbatus	Old Han schismus	NONE	LIMITED	B	C	A
Silmar	Silybum marianumá	blessed milkthistle	NONE	LIMITED	C	C	A
Sisiri	Sisymbrium irio á	London rocket	NONE	MODERATE	B	B	A
Solela	Solanum elaeagnifolium	silverleaf nightshade	B	NOT RATED	U	U	U
Sonasp	Sonchus asper	spiny sowthistle	NONE	NOT RATED	U	U	U
Spajun	Spartium junceum á	Spanish broom	C	HIGH	A	B	B
Tamaph	Tamarix aphyllaá	athel tamarisk	NONE	LIMITED	C	B	B
Tampar	Tamarix parvifloraá	smallflower tamarisk	B	HIGH	A	A	B
Tamram	Tamarix ramosissimaá	saltcedar, tamarisk	B	HIGH	A	A	A
Tromaj	Tropaeolum majus	garden nasturtium	NONE	NOT RATED	U	U	U

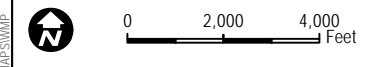
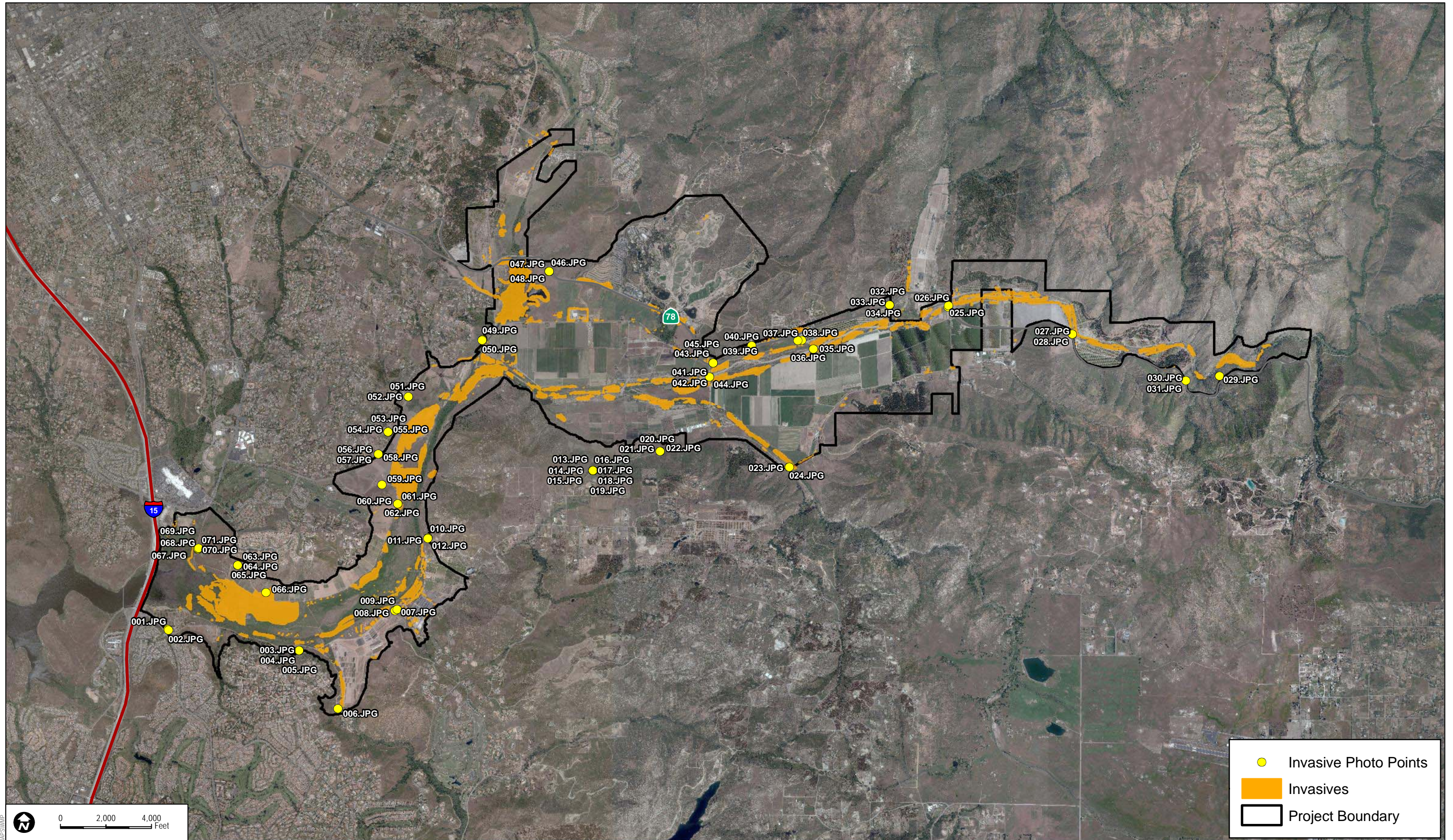
SDIMS Livasives Lookup Table

Uleeur	Ulex europaeusá	gorse	B	HIGH	A	B	B
Ulpum	Ulmus pumila	Siberian elm	NONE	NOT RATED	U	U	U
Vicvil	Vicia villosa	hairy vetch	NONE	NOT RATED	U	U	U
Vinmaj	Vinca majorá	big periwinkle	NONE	MODERATE	B	B	B
Vulmyu	Vulpia myuros á	rattail fescue	NONE	MODERATE	B	B	A
Wasrob	Washingtonia robustaá	Mexican fan palm	NONE	MODERATE	B	B	C
Eucsp	Eucalyptus sp.	Eucalyptus species					
Acasp	Acacia sp.	Acacia species					
Tamsp	Tamarisk sp.	Tamarisk species					
Pinsp	Pinus sp.	Pine species					
Arusp	Arundo sp.	Arundo species					

Arundo species

APPENDIX B  
*WMA Photo Points*





- Invasive Photo Points
- Invasives
- Project Boundary

**DUDEK**

SOURCE: CDFG NAIP 2010, City of San Diego 2011

6476-05

San Pasqual Valley Weed Management Plan

**FIGURE 1**  
**Photo Points Map**



001.JPG



002.JPG



003.JPG



004.JPG



005.JPG



006.JPG

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007.JPG



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013.JPG



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019.JPG



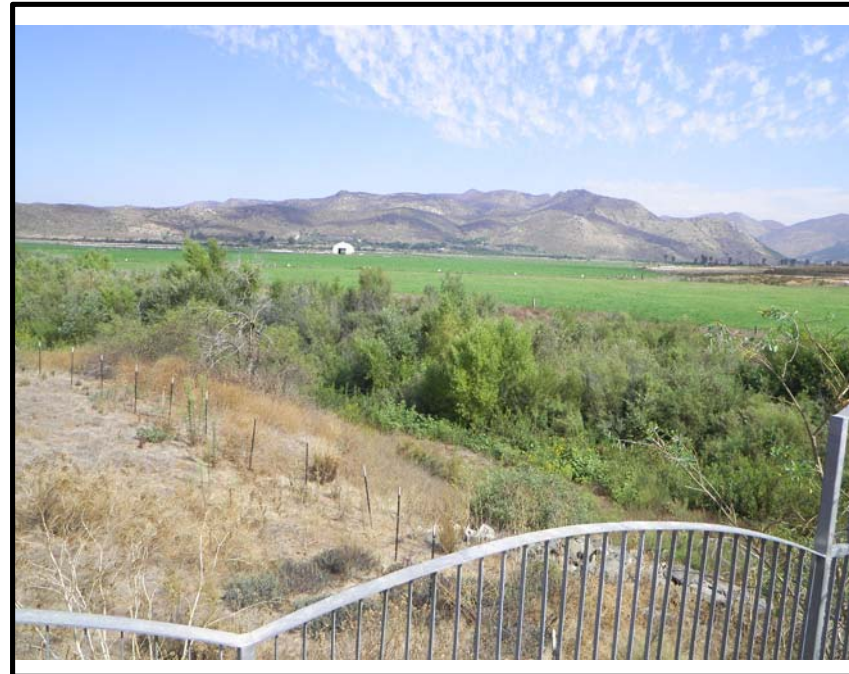
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022.JPG



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024.JPG

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025.JPG



026.JPG



027.JPG



028.JPG

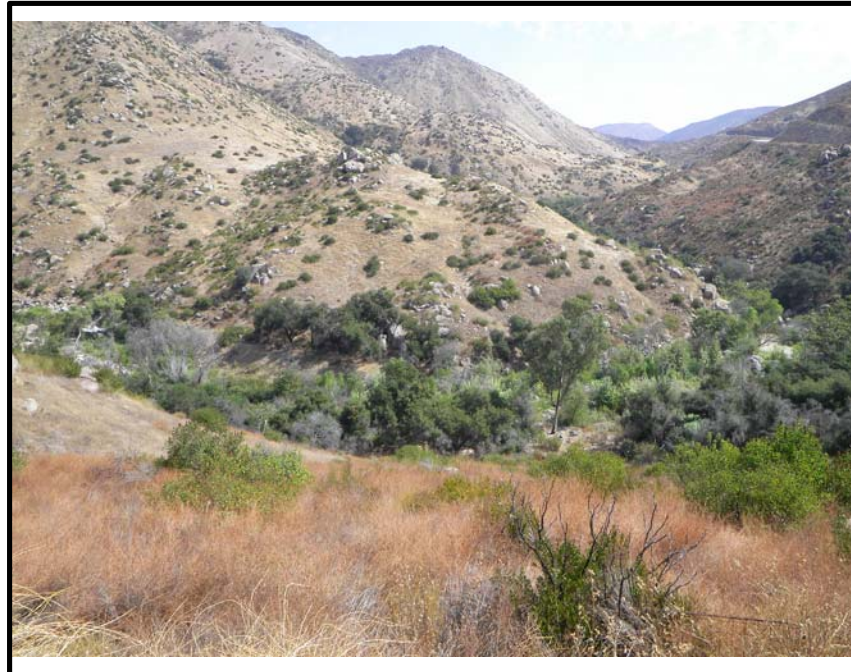


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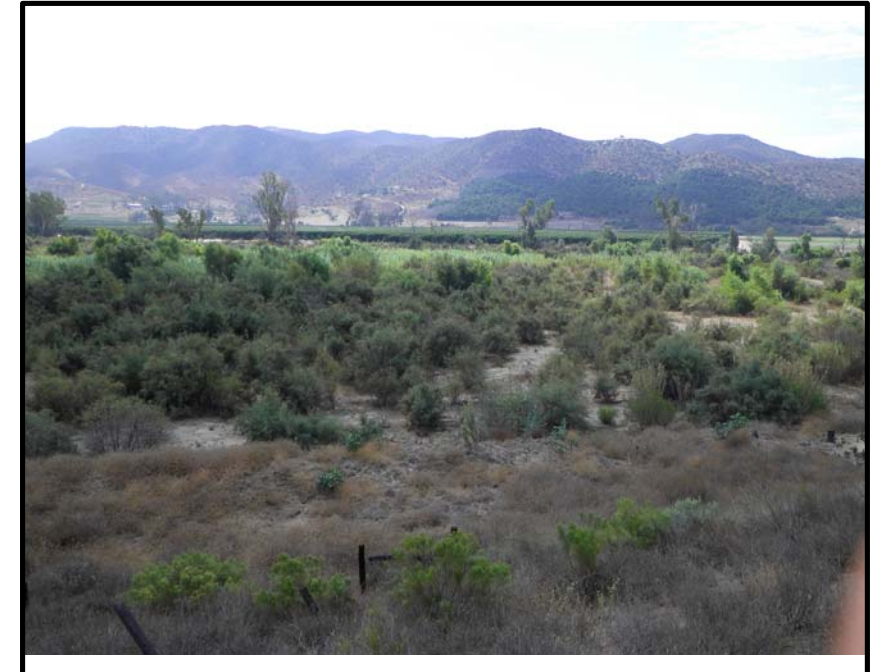
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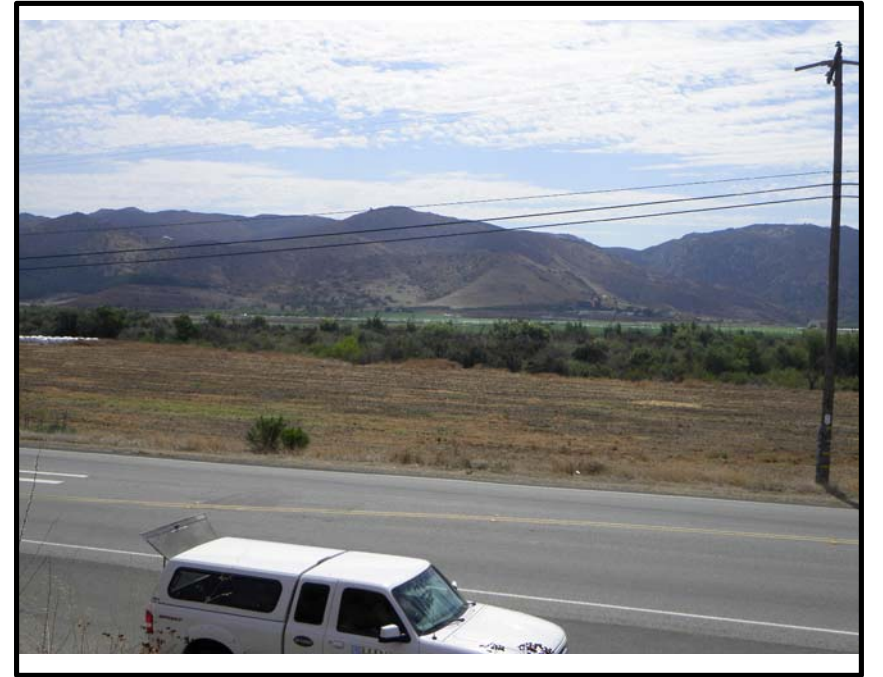
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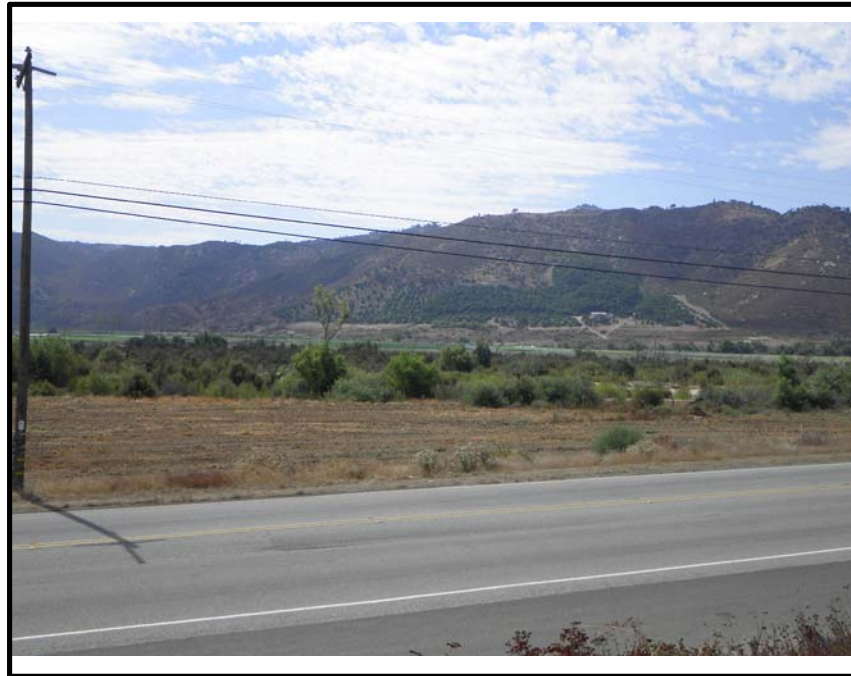
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040.JPG



041.JPG



042.JPG



043.JPG



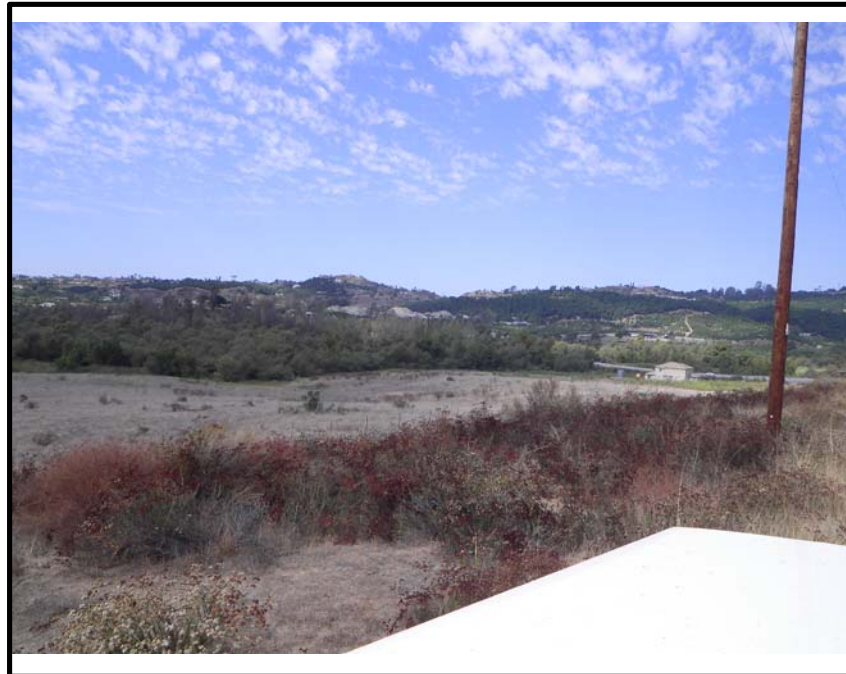
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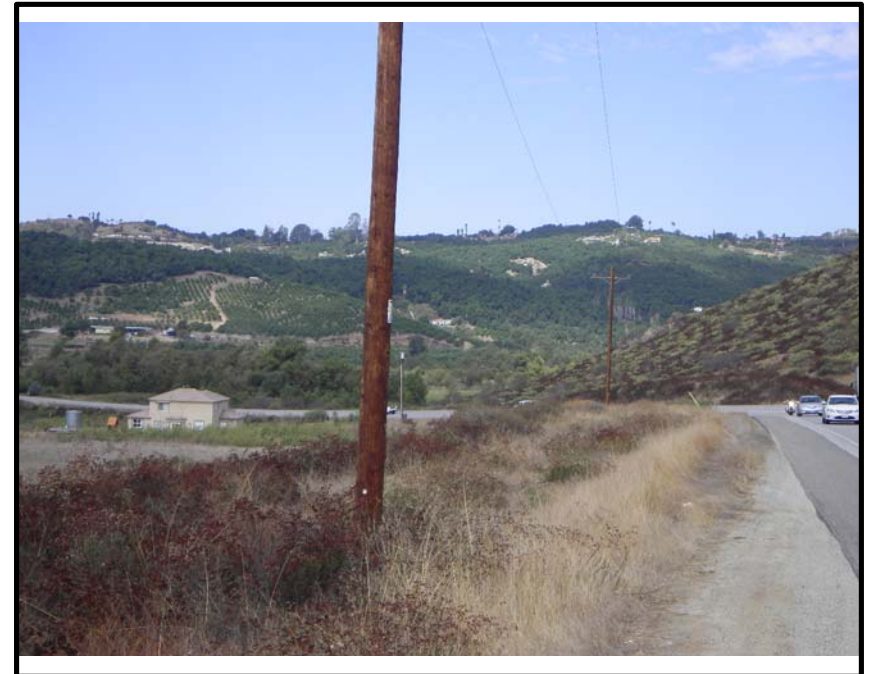
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046.JPG



047.JPG



048.JPG

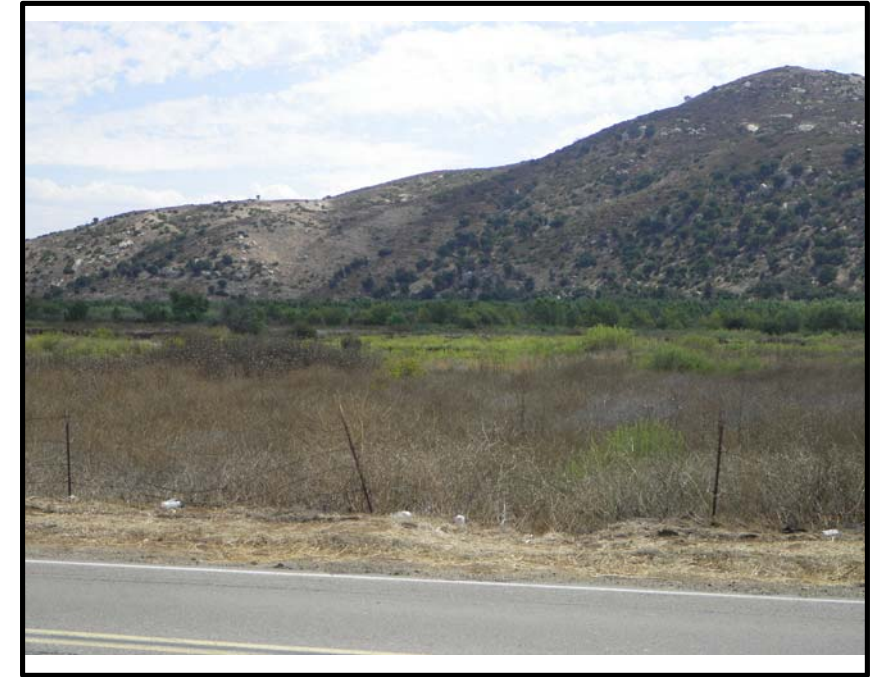
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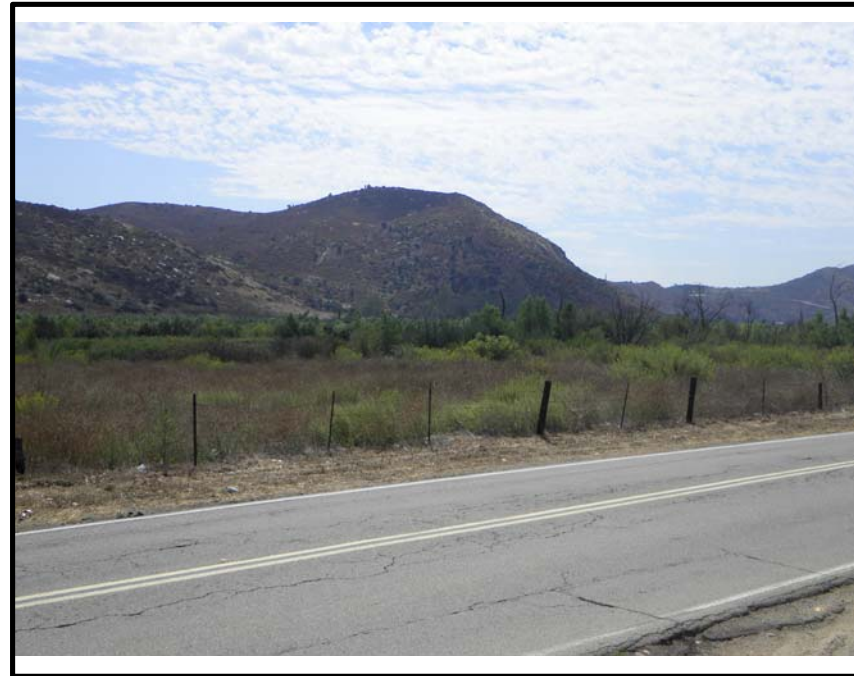
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052.JPG



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055.JPG



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057.JPG



058.JPG



059.JPG



060.JPG

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061.JPG



062.JPG



063.JPG



064.JPG



065.JPG



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APPENDIX C  
*CDFG 1602 Agreement*





**DEPARTMENT OF FISH AND GAME**

South Coast Region  
4949 Viewridge Avenue  
San Diego, CA 92123  
(858) 467-4201



August 17, 2009

Ms. Shawna Anderson  
San Dieguito River Park JPA  
14103 Highland Valley Road  
Escondido, CA 92025

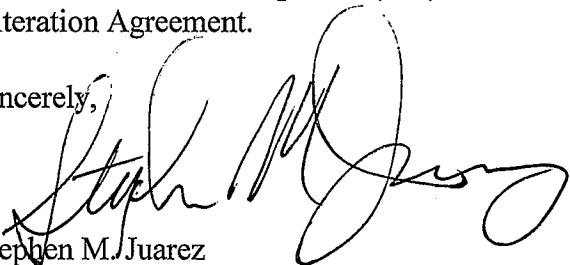
Dear Ms. Anderson:

Enclosed is Streambed Alteration Agreement #1600-2008-0308-R5 that authorizes work on the San Dieguito Lagoon JPA San Dieguito Watershed Invasive Non-native Plant Control Program in San Diego County. This action is authorized under Section 1602 of the Fish and Game Code and has been approved by the California Department of Fish and Game. Pursuant to the requirements of the California Environmental Quality Act (CEQA), the Department filed a Notice of Determination (NOD) on the project on August 17, 2009. Under CEQA regulations, the project has a 30-day statute of limitations on court challenges of the Department's approval.

The Department believes that the project fully meets the requirements of the Fish and Game Code and CEQA. However, if court challenges on the NOD are received during the 30-day period, then an additional review or even modification of the project may be required. If no comments are received during the 30-day period, then any subsequent comments need not be responded to. This information is provided to you so that if you choose to undertake the project prior to the close of the 30-day period, you do so with the knowledge that additional actions may be required based on the results of any court challenges that are filed during that period.

Please contact Tamara Spear at (858) 467-4223 if you have any questions regarding the Streambed Alteration Agreement.

Sincerely,



Stephen M. Juarez  
Environmental Program Manager

Enclosure

Revised 11/05

**CALIFORNIA DEPARTMENT OF FISH AND GAME**

South Coast Region  
4949 Viewridge Avenue  
San Diego, CA 92123

Notification No.1600-2008-0308-R5

**AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION**

THIS LONG-TERM AGREEMENT, entered into between the California Department of Fish and Game, hereinafter called the Department, and San Dieguito River Park Joint Power Authority (JPA), 14103 Highland Valley Road (858)674-2275 X 13, (Point of Contact: Shawna Anderson), hereinafter called the Applicant, is as follows.

WHEREAS, pursuant to Section 1602 of the California Fish and Game Code, the Applicant, on the 13<sup>th</sup> day of August, 2008, notified the Department that they intend to divert or obstruct the natural flow of, or change the bed, channel, or bank of, or use material from streambeds located within the San Dieguito River watershed, San Diego County.

WHEREAS, the Department has determined that such operations may substantially adversely affect existing fish and wildlife resources within the San Dieguito River watershed including the following: **Birds** - least Bell's vireo (*Vireo bellii bellii*), yellow-breasted chat (*Icteria virens*), Cooper's hawk (*Accipiter cooperii*), white-tailed kite (*Elanus leucurus*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow warbler (*Dendroica petechia*); **Amphibians** - arroyo southwestern toad (*Bufo microscaphus*); **Reptiles** - two-striped garter snake (*Thamnophis hammondi*); **Plants** - San Diego milk vetch (*Astragalus oocarpus*), smooth tarplant (*Centromadia pungens* ssp. *laevis*); and other aquatic and wildlife resources supported by the habitats within the Department's jurisdiction.

THEREFORE, the Department hereby proposes measures to protect fish and wildlife resources during the Applicant's work. The Applicant hereby agrees to accept and implement the following measures/conditions as part of the proposed work. The following provisions constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that the Applicant is precluded from doing other activities subject to Fish and Game Code Section 1600 *et seq.* at the site. However, activities not specifically agreed to and resolved by this Agreement shall be subject to separate notification pursuant to Fish and Game Code Section 1600 *et seq.*

If the Applicant's work changes from that stated in the notification specified above, this Agreement is no longer valid and a new notification shall be submitted to the Department. Failure to comply with the provisions of this Agreement and with other pertinent code sections, including but not limited to Fish and Game Code Sections 5650, 5652, 5901, 5931, 5937, and 5948, may result in prosecution.

Nothing in this Agreement authorizes the Applicant to trespass on any land or property, nor does it relieve the Applicant of responsibility for compliance with applicable federal, state, or local laws or ordinances. A consummated Agreement does not constitute the Department's endorsement of the proposed operation, or assure the Department's concurrence with permits required from other agencies.

### **Term and Effective Date**

This Agreement becomes effective the date of Department's signature and project activities will be terminated by March 15, 2019. Any amendment of the termination date shall be by written mutual consent of the Applicant and the Department, and shall be in compliance with the Department's regulations, policies, and procedures in effect as of the date of such amendment.

### **Extension**

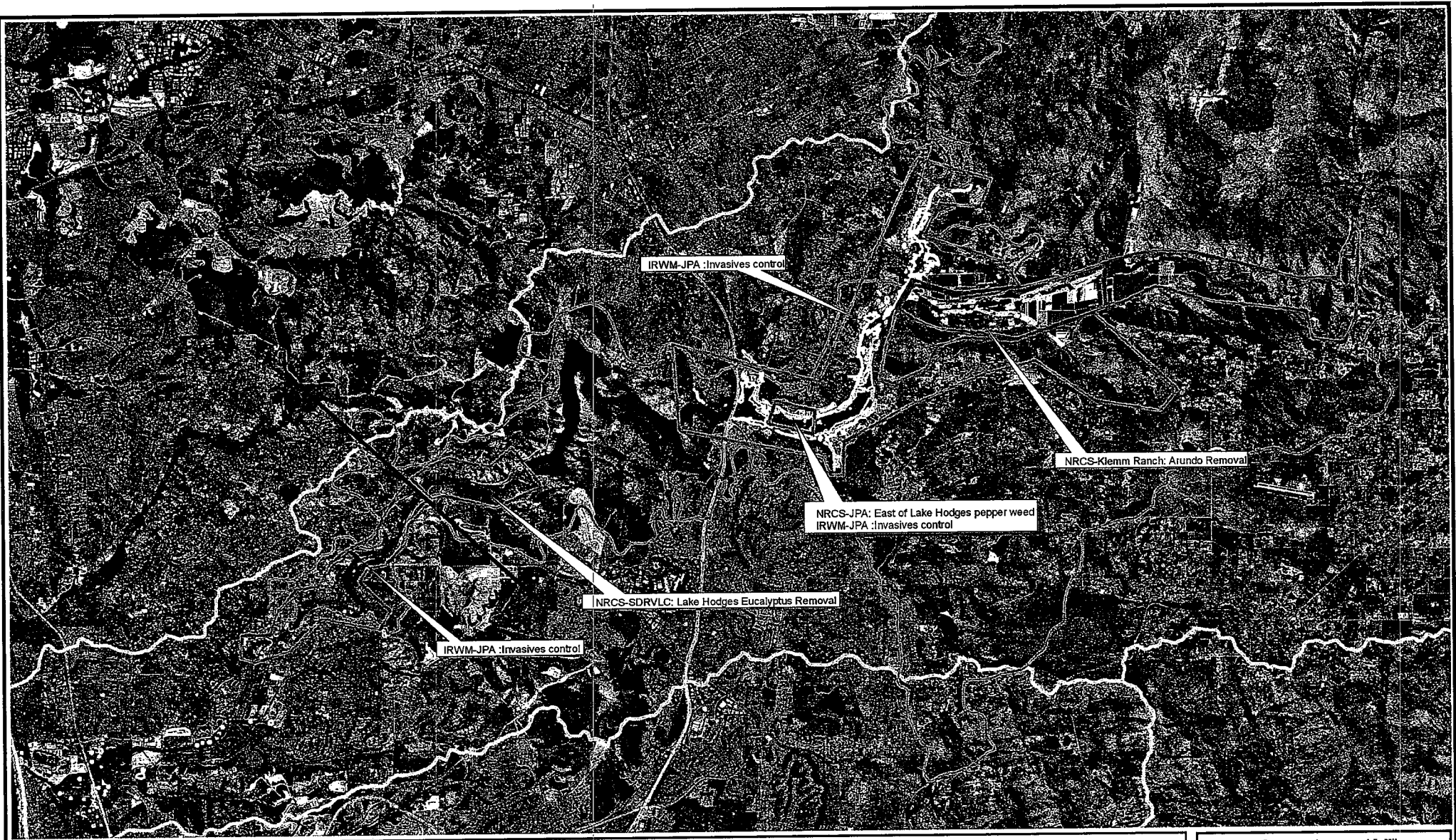
The Applicant may request one extension of the Agreement in accordance with Fish and Game Code Section 1605(g); the Applicant shall request the extension of this Agreement prior to its termination. The one extension may be granted for up to five years from the date of termination of the Agreement and is subject to Departmental approval. The extension request and fees shall be submitted to the Department's South Coast Region at the above address, Attn: Streambed Alteration Program – SAA#1600-2008-0308-R5. If the Applicant fails to request the extension prior to the Agreement's termination, then the Applicant shall submit a new notification with fees and required information to the Department. Any construction/impacts that occur under an expired Agreement are a violation of Fish and Game Code Section 1600 *et seq.*

### **Project Location**

The project is located within the San Dieguito River watershed in San Diego County, as depicted in Figure 1, "San Dieguito River Watershed Location and Acreage of Riparian Invasive Non-Native Plants".

### **Project Description**

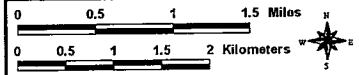
The Applicant proposes to alter streambeds within the San Dieguito River watershed to accommodate the San Dieguito River Park JPA Invasive Non-native Plant Removal and Habitat Restoration Project. The purpose of the project is to "enhance ecological function" of the San Dieguito River watershed by removing non-native invasive plants including giant reed (*Arundo donax*), tamarisk, (*Tamarisk* sp.), pampas grass (*Cortaderia* sp.), invasive palms, pepperweed (*Lepidium latifolium*), castor bean and eucalyptus. After removing invasive plants, the program also includes replanting the treated areas with appropriate native vegetation. Initial treatment and removal of invasive plants would occur over a period of 5-10 years depending on funding availability. Project activity and work time periods will consist of the following and are



**Figure 1. San Dieguito Invasive Plant Control Program: Distribution of Invasive non-native plants. San Dieguito JPA lead (covers multiple restoration projects: San Dieguito Conservancy, County, JPA).**

Mapped invasive non-native plants: data 2006

- |                                    |                                 |                        |
|------------------------------------|---------------------------------|------------------------|
| Arundo: 175 acres                  | Perennial pepperweed: 468 acres | Witch Creek Fire 11-07 |
| Eucalyptus, palms, misc.: 65 acres | Tamarisk: 379 acres             | Watershed unit         |
| Pampas grass: 8 acres              |                                 |                        |



Map 7-2008 : Image 1ft AExpress 6-06 : Dendra Inc.

further detailed in the attached Appendix 1:

- a) Initial foliar treatment of *Arundo*, tamarisk, pampas grass in the fall - between September 15 and mid-December
- b) Biomass reduction – between mid-January and March 15
- c) Re-vegetation activities - between December 15 and March 15
- d) Maintenance Activities, which includes watering and herbicide re-treatments - between March 15 and September 15
- e) Treatment of perennial pepperweed - between April 15 and July 30
- f) Eucalyptus Treatment and removal of biomass – between September 15 and January 15

### **Impacts**

Approximately 874 acres of non-native invasive plants will be impacted by the project. Impacts to native vegetation shall be limited to that necessary to gain access to stands invasive non-native plants identified for removal.

### **Compensatory Mitigation**

There is no compensatory mitigation required for this project, however the Applicant shall mitigate at a minimum 5:1 ratio for impacts that occur beyond those authorized by this Agreement. In the event that additional mitigation is required, the type of mitigation shall be determined by the Department and may include creation, restoration, enhancement, and/or preservation.

## CONDITIONS

### General

1. The agreed work includes activities associated with the Project Location and Project Description provided above. Specific work areas and mitigation measures are described on/in the plans and documents submitted by the Applicant including: "Notification of Lake or Streambed Alteration" dated August 13, 2008; "DFG 1600 Streambed Alteration Permit: Supporting Documents", dated August 4, 2008; a "Mitigated Negative Declaration", SCH #2009051065; and shall be implemented as proposed unless directed differently by this Agreement.
2. The purpose of this Streambed Alteration Agreement is for the Applicant to coordinate and/or oversee an Invasive Plant (predominantly *Arundo* and pepperweed) Removal and Habitat Restoration. The work shall be implemented through contracts with public and/or private licensed herbicide applicators. The Applicant shall be responsible for, and shall oversee the work done by these entities to ensure that the conditions in this Streambed Alteration Agreement are followed.
3. The Applicant shall develop and implement a training program for all project personnel prior to initiation of Project Activities to provide an overview and understanding of all the conditions in this Agreement. All project workers and persons associated with the Project Activities shall attend this training. Personnel that become involved in the Project Activities after the Project Activities have been initiated shall receive the same training before entering the Project site.
4. The Applicant shall provide a copy of the Agreement to all contractors, subcontractors, and the Applicant's project supervisors. Copies of the Agreement shall be readily available at work sites at all times during periods of active work and must be presented to any Department personnel, or personnel from another agency upon demand.
5. The Applicant shall notify the Department, in writing, at least five days prior to initiation of Project activities identifying current treatment areas on a map along with the names of property owners. Notification shall be sent to the South Coast Region office at the above address, Attn: Streambed, SAA#1600-2008-0308-R5.
6. In the event that the project scope, nature, or environmental impact is altered by the imposition of subsequent permit conditions by a local, state or federal regulatory authority, the Applicant shall notify the Department of any imposed project modification that interferes with compliance with Department conditions.
7. This Agreement does not authorize the take of any candidate species or species listed as threatened or endangered under the California Endangered Species Act (Fish

& G. Code, § 2050 *et seq.*). If the proposed work could affect any candidate, threatened, or endangered species, the Applicant shall contact the Department and shall not commence the work without the Department's prior approval.

### **Time Restrictions**

8. To avoid impacts to nesting birds, the Applicant shall conduct project activity within California Department of Fish and Game (CDFG) jurisdictional habitats as outlined in the Project Description of this Agreement, unless otherwise agreed to by the Department.

9. If work is performed within the stream channel during the winter storm period the Applicant shall continually monitor the five day weather forecast. If precipitation is forecasted (>40% chance), the Applicant shall completely secure the site, so no materials may enter or be washed into the stream one day prior to precipitation, unless the Department has provided prior written approval to the contrary. During periods of precipitation, no construction activities may occur; only activities involving the prevention of materials from entering the stream or being washed downstream may be conducted.

### **Habitat Protection**

10. The Applicant shall have a qualified biologist on site as needed during project activity to assure that impacts to native riparian habitats are minimized. When mechanized equipment is used, there shall also be an additional person present acting as a spotter for the equipment operator. The equipment operator, spotter and biologist will use two-way radios to communicate with one another. The biologist and the spotter shall have the authority to stop the equipment operator if necessary.

11. The perimeter of the work sites shall be adequately flagged by a qualified biologist to exclude activities from, and prevent damage to, adjacent CDFG jurisdictional habitat.

### **Exotic Vegetation Eradication Control**

12. As described in submitted documents, the reduced biomass from the treated *Arundo* will be mowed into mulch and left within the original footprint of the treated area. Although a certain amount of mulch may be desirable to reduce erosion, the Applicant shall monitor the treated areas to determine if excessive mulch adversely limits recovery of native vegetation, or is otherwise detrimental to fish and wildlife (biological resources). If it is determined that excessive mulch is detrimental to biological resources, the excessive mulch will be removed and disposed of in a legal manner. In all cases it shall be placed in a manner which prevents its reestablishment in CDFG jurisdictional habitat, and in such a manner so that it does not negatively effect other sensitive native habitat communities

13. The removal of soil, native vegetation, and vegetative debris from the CDFG jurisdictional habitat is prohibited, except as otherwise specified within this Agreement; however, the Applicant may remove all human generated debris, such as lawn and farm cuttings, garbage and trash.

14. All herbicide use conditions for mixing, application, and clean-up shall conform to all applicable federal, State, and local regulations and shall be done by a licensed applicator. Herbicide mixing sites shall be located only in areas devoid of vegetation, and where there is no potential of a spill reaching a vegetated area or a stream, for example, avoid mixing at a storm drain water inlet.

15. No vehicles shall be operated within the stream except as authorized in the Project Description of this Agreement or as follows: vehicles may be used to carry equipment and transport cut vegetation; all vehicles shall use existing roads for access to the sites; truck-based sprayers may be used only where existing roads are adjacent to exotic species and where exotic plants are growing in large clumps with no native vegetation adjacent; and, small soft rubber-tired ATV's may be used where existing road access is not available, provided that such ATV's can access the central channel without entering wetland areas.

16. Truck-based sprayers (herbicide) may be used only where existing roads are adjacent to exotic species and where exotic plants are growing in large clumps with no native vegetation adjacent. Backpack sprayers shall be used in all situations where the exotic plants are growing in small clumps interspersed with the native vegetation, and in those situations where truck or ATV access is limited or impossible.

17. The application of herbicides shall be conducted in such a manner to minimize overspray of herbicide on to adjacent native vegetation (e.g. willow, oak and sycamore) Herbicide shall be applied only on calm days to prevent airborne transfer (drift) of the herbicide. The Department recognizes small individuals of native woody species may inadvertently be damaged during the non-exotic plant removal activity. Should collateral damage occur, native woody vegetation shall be left to re-sprout

18. Any herbicide used where there is the possibility that the herbicide could come into contact with water shall be approved for use in an aquatic environment (e.g. Rodeo).

#### **Aquatic and Wildlife Migration Protection**

19. If any wildlife is encountered during the course of the project activities, said wildlife shall be allowed to leave the project area unharmed and shall be flushed, hazed, or herded in a safe direction away from the project sites.

## **Equipment and Access**

20. No equipment shall be operated in areas of ponded or flowing water, except as otherwise specified in this Agreement.
21. Staging/storage areas for equipment and materials shall be located outside of CDFG jurisdictional habitat except as described in the project description.
22. Access to the work sites shall be via existing roads and access ramps or as described in the project description.
23. Any equipment or vehicles driven and/or operated within or adjacent to the CDFG jurisdictional habitat shall be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.
24. No equipment maintenance shall be done within or near any stream channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.

## **Pollution, Litter and Cleanup**

25. The clean-up of all spills shall begin immediately upon observation of the spill. The Department shall be notified immediately by the Applicant of any spills and shall be consulted regarding clean-up procedures.
26. The Applicant shall comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the Applicant to ensure compliance.
27. Spoil sites shall not be located within a stream, where spoil could be washed back into a stream, or where it could cover aquatic or riparian vegetation.
28. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, construction waste, cement or concrete or washings thereof, asphalt, paint, oil or other petroleum products, or any other substances/materials associated with any project-related activity shall be allowed to contaminate the soil and/or enter into or be placed where they may be washed by rainfall or runoff into a stream or lake. Any of these substances/materials, placed within or where they may enter a stream or lake, by the Applicant or any party working under contract, or with the permission of the Applicant, shall be removed immediately upon observation of their presence. When operations are completed, any excess materials or debris shall be removed from the work area.

## Notification and Reporting

29. An annual report shall be submitted to the Department by May 15 of each year for the duration of the Project. The report shall include a map of the treated areas showing the number of acres removed, treated, and re-treated, disposal specifics, the effects of leaving mulched biomass in place and a summary of the general successes and failures of the program. Photos from designated photo stations shall be included as well as GIS maps.

30. Each summer (July 15<sup>th</sup>) a 'work plan' outlining expected non-native plant control and re-vegetation will be prepared and submitted to the Department. This will allow DFG to remain aware of the intended work program each fall.

31. Pursuant to Fish and Game Code section 1605(g), every four (4) years until this agreement expires the Applicant shall submit a Status Report to the Department no later than ninety (90) days prior to the end of each four-year period. Upon receipt of the Status Report, the Department will contact the applicant to schedule an on-site inspection and meet the requirements specified in Fish and Game Code section 1605(g)(3). Each Status Report shall include the following information:

- a) A copy of the original SAA and all amendments thereto;
- b) The status of each activity covered by the SAA;
- c) An evaluation of the success or failure of the measures in the SAA to protect the fish and wildlife resources that the activities (the SAA covers) may substantially adversely affect;
- d) A discussion of any factors that could increase the predicted adverse impacts on fish and wildlife resources, and a description of the resources that may be adversely affected; and
- e) Photo documentation consisting of "before and after" photos of areas within the project sites adjacent to habitats where heavy equipment was used to complete the Covered Activity.

32. Immediately notify the Department in writing if monitoring reveals that any of the protective measures were not implemented during the period indicated in this program, or if it anticipates that measures will not be implemented within the time period specified.

33. Immediately notify the Department if any of the protective measures not providing the level of protection that is appropriate for the impact that is occurring, and recommendations, if any, for alternative protective measures.

## **Administrative**

34. The Department reserves the right to suspend or cancel this Agreement under one or more of, but not limited to, the following circumstances:

- a. the Department determines that the information provided by the Applicant in support of the Notification/Agreement is incomplete or inaccurate;
- b. the Department obtains new information that was not known to it in preparing the terms and conditions of the Agreement;
- c. the project or project activities as described in the notification/Agreement change; and
- d. the conditions affecting fish and wildlife resources change or the Department determines that project activities will result in a substantial adverse effect on the environment.

Before any suspension or cancellation of the Agreement, the Department will notify the Applicant in writing of the circumstances which the Department believes warrant suspension or cancellation. The Applicant will have seven working days from the date of receipt of the Department's notification to respond in writing to the circumstances described in the notification. Upon receipt of the Department's notification, the Applicant shall cease all project activities specified in the notification and shall not reinstate them until the Department informs the Applicant in writing that methods and/or measures have been identified, agreed upon, and shall be implemented to adequately address the reasons for the Department's notification.

35. This Agreement may be amended at any time by mutual agreement of the parties. Any amendments to this Agreement shall be made in a separate writing, signed by the parties, and attached to this Agreement. Any approved amendments shall become part of this Agreement.

36. It is understood the Department has entered into this Agreement for purposes of establishing protective features for fish and wildlife. The decision to proceed with the project is the sole responsibility of the Applicant, and is not required by this Agreement. It is further agreed that all liability and/or incurred cost related to or arising from the Applicant's project and the implementation of the fish and wildlife protective conditions of this Agreement, remain the sole responsibility of the Applicant. The Applicant agrees to hold harmless the State of California and the Department against any related claim made by any party or parties for personal injury or any other damages.

37. The Department reserves the right to enter the project site at any time to ensure compliance with terms/conditions of this Agreement.

**CONCURRENCE**

San Dieguito River Park JPA

Susan A. Carter  
Signature

Date: 8/13/09

SUSAN A. CARTER  
Printed Name

DEPUTY DIRECTOR  
Title

CALIFORNIA DEPARTMENT OF FISH AND GAME

Stephen M. Juarez  
Stephen M. Juarez  
Environmental Program Manager  
South Coast Region

Date: 18 Aug 2009

Prepared by: Tamara A. Spear, Environmental Scientist

## Appendix 1

Various types of work and specific measures:

### **Initial Foliar Treatment of *Arundo*, tamarisk, pampas grass (excluding pepperweed): Herbicide Application**

- 1) No more than three crews will be active on the watershed at one time.
- 2) Only one crew will operate at a given site at a time (sites are separated by at least one mile- and are usually on entirely different reaches of the watershed).
- 3) Crew size will not exceed 16 individuals- and no more than five people will be working together at a given spot.
- 4) Herbicide application will occur with either backpack sprayers (3 gallon) or hand held power sprayers. Power sprayers are moved by ATV's and consist of a small gas powered engine (3 hp) on a trailer with a tank/reservoir (50gal useable volume).
- 5) To reduce the chance/impact of spillage, work crews can only mix herbicide, refill power sprayers (using concentrate and water: i.e. mixing), load mixed chemical into ATV's (for refilling backpack sprayers or power sprayers), and refuel (ATV's or power sprayer) in staging areas. Mixed chemical (application strength) may be added to sprayers in the field.
- 6) Staging areas are disturbed sites such as roads, shoulders, graded areas, or sites with compacted soil that support no vegetation or weedy vegetation.
- 7) Foliar spraying will not occur when ambient wind speeds exceed 5 miles per hour.
- 8) Crew members will avoid wading through streams whenever possible.
- 9) Each crew may use up to 2 ATV's (typically one is used- to move mixed herbicide to crews in the field).
- 10) ATV's will not drive in channel areas.
- 11) ATV's will operate only in open areas- woody vegetation (>1" DBH) will not be cleared or driven upon.
- 12) Site preparation is carried out prior to treatment of *Arundo*. Preparation entails separating, or creating a space, between stands of *Arundo* and native vegetation. This allows the *Arundo* to be treated without affecting the native woody vegetation. The space between *Arundo* and native vegetation is created by pushing, detangling and/or trimming the vegetation. Both *Arundo* and native woody vegetation may be trimmed. However, woody vegetation may not be trimmed that is in excess of four inches in diameter. Excessive trimming of *Arundo* is not usually carried out because this triggers re-sprouting which results in a much longer re-treatment cycle (before vegetation removal, see species conservation measures).
- 13) All regulations involving use of herbicides will be followed including BMP's. All applicators will be licensed and certified. Aquatic herbicide formulations will be used when near open water, including any additives (spreading agents and dye's).
- 14) A marking dye will be used to assure that drift or overspray onto non-target vegetation is not occurring.

- 15) All garbage and waste material generated by the work crew will be removed from the site.

### **Biomass reduction (lowering dead or live *Arundo* cane)**

This biomass reduction section pertains to areas below the dam (no arroyo toads). Two areas along creeks may also have reduction- but a site visit and specific authorization will be given when that area is treated.

Large *Arundo* stands (>1/8 acre or >75 feet across) are usually cut or mowed to allow for active native plant restoration and to speed up the decomposition of the dead *Arundo* cane. Scattered smaller stands are left to decompose naturally (they are left standing). Typically all biomass reduction methods are used on sites with large stands of *Arundo* due to factors including: amount and distribution of native woody vegetation, access to the site and site topography, visibility of the site, and input from the property owner.

The normal biomass reduction process is: 1) a large mower mows stands, 2) hand crews cut all *Arundo* that mowers could not reduce, 3) a smaller mower mows hand cut *Arundo*. Some sites that do not have mowing access may be cut by hand and chipped.

Biomass reduction occurs from mid-January up to March 15<sup>th</sup>, but most work is completed by late February to allow for replanting. As mentioned previously, some sites may be mowed first (anytime between Sep 15<sup>th</sup> and January 15<sup>th</sup>) and then the re-sprouting cane is treated. These sites typically are high fire risk sites- or are sites where immediate biomass reduction is needed.

#### Mowing:

Mowing is carried out using a fixed tooth or hammer flail mowing attachment mounted on a tractor. The mowing attachment mulches the dead (or live) *Arundo* cane into a layer about 4" thick (thickness varies at site from 1/2" to 10"). The mowing attachment and tractor do not dig into the soil surface or change topography of the site. All tractors are rubber tired. Several sizes of tractors are used: from a larger 45,000 lb tractor with four large tires (about 56" by 18") with a mowing implement 100" wide to a smaller size 8,000 lb tractor with two large (48" x 16") and two small tires (24" x 12") with a mowing implement 74" wide. Live or dead *Arundo* stands are mowed standing and piles of dead *Arundo* stacked by hand crews are mowed.

- 1) No native vegetation is mowed.
- 2) No mowing occurs in the stream channel.
- 3) No mulched/mowed biomass will be placed in the channel.
- 4) All mowed material is over previously existing stands of *Arundo*, no open habitat or native vegetation will be covered with *Arundo* mulch.

#### Cutting by hand crews:

Crews cut dead *Arundo* using chainsaws operated by hand. Hand tools (loppers and machetes)

may be used, but in limited situations.

- 1) Crews are of 16 or fewer individuals will work in teams of 5 or less. For each team one person cuts and the other team members pull, haul, and stack the cut dead *Arundo* cane.
- 2) No more than one crew may operate at a given site.
- 3) No more than three sites may be active on the watershed at once.
- 4) Crews typically do not use ATV's, but sites far from roads with previously used trails for ATV's (during the fall herbicide application) may re-use these same access routes in open areas. No ATV use can occur in channel areas or in areas with native woody vegetation.
- 5) Chippers may be used at sites where mowing is not possible due to site topography. Typically this is on tributaries where creeks have deep profiles. Chippers may be staged on roads and may chip material onto disturbed/maintained areas outside the creek profile, chip into areas where *Arundo* previously existed, or ship into containers for hauling off site.

**Re-vegetation (native planting) Activities: Between December 15<sup>th</sup> and March 15<sup>th</sup>**

- 1) No more than two crews will be active on the watershed at one time.
- 2) Only one crew will operate at a given site at a time (sites are separated by at least one mile- and are usually on entirely different reaches of the watershed).
- 3) Crew size will not exceed 12 individuals.
- 4) Each crew may use up to 2 ATV's to move plants from staging areas to planting locations. ATV's typically drive only in areas that have been mowed (on dead *Arundo* mulch) or along established compacted trails and roads. Some sites that are flat and connected to roads, may allow use of a 4 wheel drive truck to access mowed areas and deliver plants.
- 5) ATV's will not drive in channel areas.
- 6) ATV's will operate only in open areas, usually on mowed dead *Arundo* mulch- no woody vegetation (>1" DBH) will be cleared or driven upon.

**Maintenance Activities (watering and re-treatments): Between March 15<sup>th</sup> and Sep 15<sup>th</sup>**

- 1) No more than two crews will be active on the watershed at one time.
- 2) Only one crew will operate at a given site at a time (sites are separated by at least one mile- and are usually on entirely different reaches of the watershed).
- 3) Crew size will not exceed 6 individuals.
- 4) No areas may be worked in that have vegetation structure suitable for nesting (work only in mowed areas with new plantings).
- 5) No powered equipment may be used within the riparian vegetation zone. Watering and treatment with back packs or power sprayers may occur- but all trucks (which have a gas powered pump) will operate along access roads, road shoulders or in staging areas. Only foot crews will enter riparian habitat restoration areas.
- 6) Avian monitors may be used as requested.

### **Treatment of Perennial Pepperweed: Between April 15<sup>th</sup> and July 30<sup>th</sup>**

- 1) No more than two crews will be active on the watershed at one time.
- 2) Only one crew will operate at a given site at a time (sites are separated by at least one mile- and are usually on entirely different reaches of the watershed).
- 3) Crew size will not exceed 8 individuals- and no more than four people will be working together at a given spot.
- 4) Herbicide application will occur with either backpack sprayers (3 gallon) or hand held power sprayers. Power sprayers will be operated using long lines- with tanks and motors mounted on trucks, trailers (pulled by ATV's), or tractors. Aquatic formulations will be used if standing water is present. Upland formulations will be used in areas away from standing water. All label guidelines will be followed.
- 5) Trucks and tractors may only use roads and established trails (compacted areas). ATV's may be used in open areas with no woody structure (other than occasional large mature gallery trees that have no low branching structure). Spray rigs may be used on ATV's in some areas where cover is high. Old fields with no native cover may have treatments using tractors or truck mounted spray rigs- but only outside of arroyo toad areas.
- 6) To reduce the chance/impact of spillage, work crews can only mix herbicide, refill power sprayers (using concentrate and water: i.e. mixing), load mixed chemical into ATV's (for refilling backpack sprayers or power sprayers), and refuel (ATV's or power sprayer) in staging areas. Mixed chemical (application strength) may be added to sprayers in the field.
- 7) Staging areas are disturbed sites such as roads, shoulders, graded areas, or sites with compacted soil that support no vegetation or weedy vegetation.
- 8) Foliar spraying will not occur when ambient wind speeds exceed 5 miles per hour.
- 9) Crew members will avoid wading through streams whenever possible.
- 10) Each crew may use up to 2 ATV's (typically one is used- to move mixed herbicide to crews in the field).
- 11) ATV's will not drive in channel areas.
- 12) ATV's will operate only in open areas- woody vegetation (>1" DBH) will not be cleared or driven upon.
- 13) Avian monitors will pre-survey pepperweed sites one to three days prior to work. Sites with active vireo or willow flycatcher use will have a monitor on site during work activity and a minimum 100' buffer will be maintained. Any additional conditions requested under FWS Technical Assistance will be followed.

### **Eucalyptus: Treatment and biomass**

- 1) The eucalyptus control component will be conducted in phases to avoid denudation of 8trees within the stream channel.
- 2) No more than three crews will be active on the watershed at one time.
- 3) Only one crew will operate at a given site at a time (sites are separated by at least one mile- and are usually on entirely different reaches of the watershed).

- 4) Crew size will not exceed 20 individuals- and no more than five people will be working together at a given spot.
- 5) Herbicide application is typically cut stump, injection and or girdling. Some smaller class plants may have basal bark treatment.
- 6) To reduce the chance/impact of spillage, work crews can only mix herbicide, load mixed chemical into ATV's (for refilling backpack sprayers), and refuel (ATV's) in staging areas.
- 7) Staging areas are disturbed sites such as roads, permanent trails, shoulders, graded areas, or sites with compacted soil that support no vegetation or weedy vegetation.
- 8) Crew members will avoid wading through streams whenever possible.
- 9) Each crew may use up to 2 ATV's (typically one is used- to move mixed herbicide to crews in the field).
- 10) ATV's will not drive in channel areas.
- 11) ATV's will operate only in open areas- woody vegetation (>1" DBH) will not be cleared or driven upon.
- 12) A rubber tire skidder will be used to haul cut eucalyptus to the staging area for chipping/masticating.
- 13) The skidder may only operate in open areas- no removal of native vegetation is permitted. Some smaller class shrubs and sub shrubs may be crushed- these should re-sprout. Re-vegetation of areas used by skidder will restore or exceed density of woody vegetation that existed prior to work.
- 14) Many areas are not traversable by any rubber tired equipment. Biomass in these areas will be bundled and helicoptered out. Helicopters may not cross power lines. They will deposit cut material along roads, permanent trails, or degraded compacted areas with no native vegetation. Mastication (chipping) of material will then occur at deposition site. Material will be spread on roads, trails, of degraded areas having no native vegetation. This will only occur in areas outside of arroyo toad habitat (areas below dam). Mulched material may not exceed 4" depth.
- 15) If material is chipped at the Highland Valley Road site, it will be hauled off site or spread on compacted areas (old roads or road shoulders).
- 16) Larger trees may be girdled or treated by injection and left standing (to leave structure for wildlife). Typically trees over 16" DBH are left standing unless they occur near roads or trails (to leave high canopy and nest cavities for wildlife).

# NOTICE OF DETERMINATION

TO:  Office of Planning and Research

For U.S. Mail:  
P.O. Box 3044  
Sacramento, CA 95812-3044

Street Address:  
1400 Tenth Street  
Sacramento, CA 95814

FROM: Department of Fish and Game  
South Coast Region  
4949 Viewridge Avenue  
San Diego, Ca 92123  
Contact: Tamara Spear  
Phone: (858)467-4223

LEAD AGENCY:  
San Dieguito River Par JPA  
14103 Highland Valley Road  
Escondido, CA 92025

SUBJECT: Filing of Notice of Determination pursuant to § 21108 of the Public Resources Code

State Clearinghouse Number: 20090510

Project Title: San Dieguito Watershed Invasive Non-native Plant Control Program

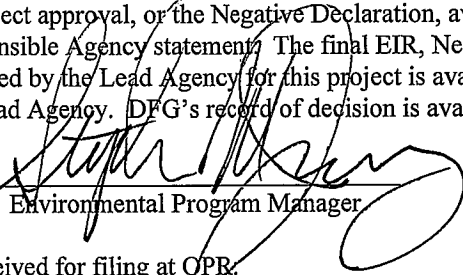
Project Location: San Dieguito Watershed in San Diego County.

Project Description: The Applicant proposes to alter streambeds within the San Dieguito River watershed to accommodate the San Dieguito River Park JPA Invasive Non-native Plant Removal and Habitat Restoration Project. The purpose of the project is to "enhance ecological function" of the San Dieguito River watershed by removing non-native invasive plants including giant reed (*Arundo donax*), tamarisk, (*Tamarisk* sp.), pampas grass (*Cortaderia* sp.), invasive palms, pepperweed (*Lepidium latifolium*), castor bean and eucalyptus. After removing invasive plants, the program also includes replanting the treated areas with appropriate native vegetation. Initial treatment and removal of invasive plants would occur over a period of 5-10 years depending on funding availability. (Streambed Alteration Agreement #1600-2008-0308-R5)

This is to advise that the Department of Fish and Game (DFG), acting as  the lead agency /  a responsible agency approved the above-described project on August 17, 2009 and has made the following determinations regarding the above described project:

1. The project will not have a significant effect on the environment. (This determination is limited to effects within DFG's jurisdiction when DFG acts as a responsible agency.)
2.  An environmental impact report /  A negative declaration /  A Mitigated Negative Declaration was prepared for this project pursuant to CEQA.
3. Mitigation measures  were /  were not made a condition of DFG's approval of the project.
4. A mitigation reporting or monitoring plan  was /  was not adopted by DFG for this project.
5. A Statement of Overriding Considerations  was /  was not adopted by DFG for this project.
6. Findings  were /  were not made by DFG pursuant to Public Resources Code § 21081(a). The Department did, however, adopt findings to document its compliance with CEQA.
7. Compliance with the environmental filing fee requirement at Fish and Game Code § 711.4 (check one):
  - Payment is submitted with this notice.
  - A copy of a receipt showing prior payment is on file with the Department.
  - A copy of the Lead Agency's Certificate of Fee Exemption and De Minimis Impact Finding is attached to this notice.

- Lead Agency certification: DFG, as Lead Agency, has made the final EIR with comments and responses and record of project approval, or the Negative Declaration, available to the General Public at the DFG office identified above.
- Responsible Agency statement: The final EIR, Negative Declaration or Mitigated Negative Declaration that was prepared by the Lead Agency for this project is available to the General Public at the office location listed above for the Lead Agency. DFG's record of decision is available at the DFG office identified above.

Signature:   
Environmental Program Manager

Date: 18 Aug 2009

Date Received for filing at OPR.

CALIFORNIA DEPARTMENT OF FISH AND GAME  
AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION  
No. 1600-2008-0308-R5

CEQA FINDINGS

*INTRODUCTION:*

The California Environmental Quality Act ("CEQA"; Public Resources Code §21000, *et seq.*), and the State CEQA Guidelines ("Guidelines"; 14 Cal.Code Regs. 15000, *et seq.*) require that prior to reaching a decision on a project, a Responsible Agency must consider the environmental effects of the project as shown in the Mitigated Negative Declaration ("MND") prepared by the Lead Agency.

As the Lead Agency for the San Dieguito Watershed Invasive Non-native Plant Control Program, the San Dieguito River Park JPA adopted the Mitigated Negative Declaration, SCH#20090510, filed June 24, 2009. The Lead Agencies findings are that the Mitigated Negative Declaration adequately addresses all environmental issues associated with the project.

The California Department of Fish and Game (CDFG) is issuing a Streambed Alteration Agreement to the project applicant, San Dieguito JPA. The Applicant proposes to alter streambeds within the San Dieguito River watershed in San Diego to accommodate the San Dieguito River Park JPA Invasive Non-native Plant Removal and Habitat Restoration Project. The purpose of the project is to "enhance ecological function" of the San Dieguito River watershed by removing non-native invasive plants including giant reed (*Arundo donax*), tamarisk, (*Tamarisk* sp.), pampas grass (*Cortaderia* sp.), invasive palms, pepperweed (*Lepidium latifolium*), castor bean and eucalyptus. After removing invasive plants, the program also includes replanting the treated areas with appropriate native vegetation. Initial treatment and removal of invasive plants would occur over a period of 5-10 years depending on funding availability.

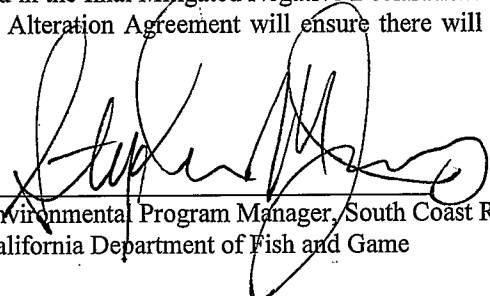
The CDFG is a Responsible Agency under CEQA for the purpose of approving the Streambed Alteration Agreement necessitated by the Lead Agency's project. As a CEQA Responsible Agency, CDFG is required by Guidelines §15096 to review the environment document certified by the Lead Agency approving the project and to make certain findings concerning the project's potential to cause significant, adverse environmental effects. However, when considering alternatives and mitigation measures approved by the Lead Agency, a Responsible Agency is more limited than the Lead Agency. CDFG has responsibility for mitigating or avoiding only the direct or indirect environmental effects of the streambed alteration agreement that it approves.

■ *FINDING:* CDFG has considered the Mitigated Negative Declaration adopted by the Lead Agency. CDFG has independently concluded that the Streambed Alteration Agreement should be issued under the terms and conditions specified therein. CDFG finds that with the mitigation measures incorporated into the Streambed Alteration Agreement, there will be no significant effects from the project.

□ *FINDING:* CDFG has considered the Mitigated Negative Declaration adopted by the Lead Agency. CDFG has independently concluded that the Streambed Alteration Agreement should be issued under the terms and conditions specified therein. CDFG finds that changes have been incorporated into the project that will avoid or substantially lessen the significant environmental effect as identified in the final Mitigated Negative Declaration. In particular, CDFG finds that the measures incorporated into the Streambed Alteration Agreement will ensure there will be no significant effects from project.

*The Project is Approved.*

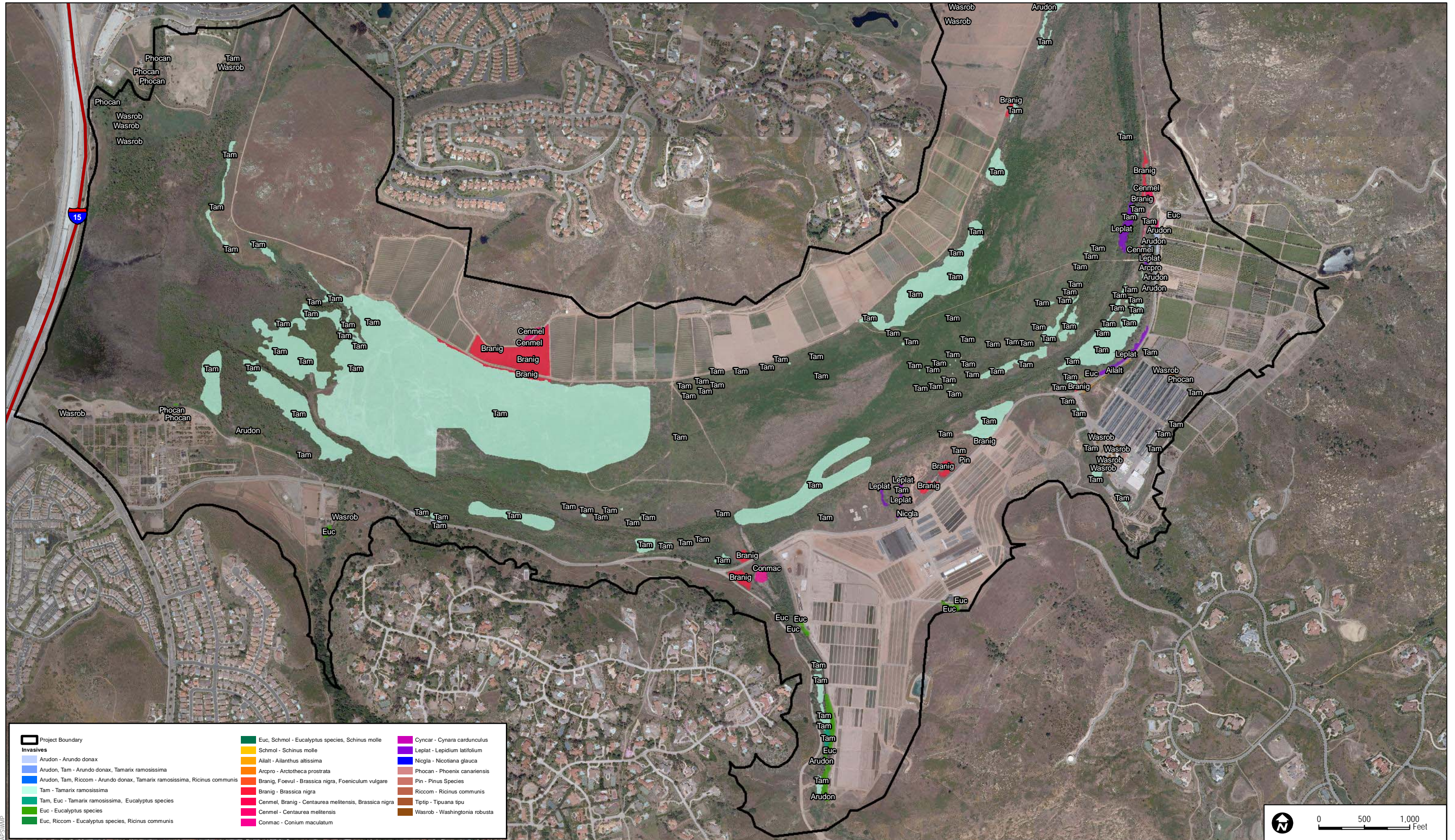
DATE: 18 June 2009

  
Environmental Program Manager, South Coast Region  
California Department of Fish and Game

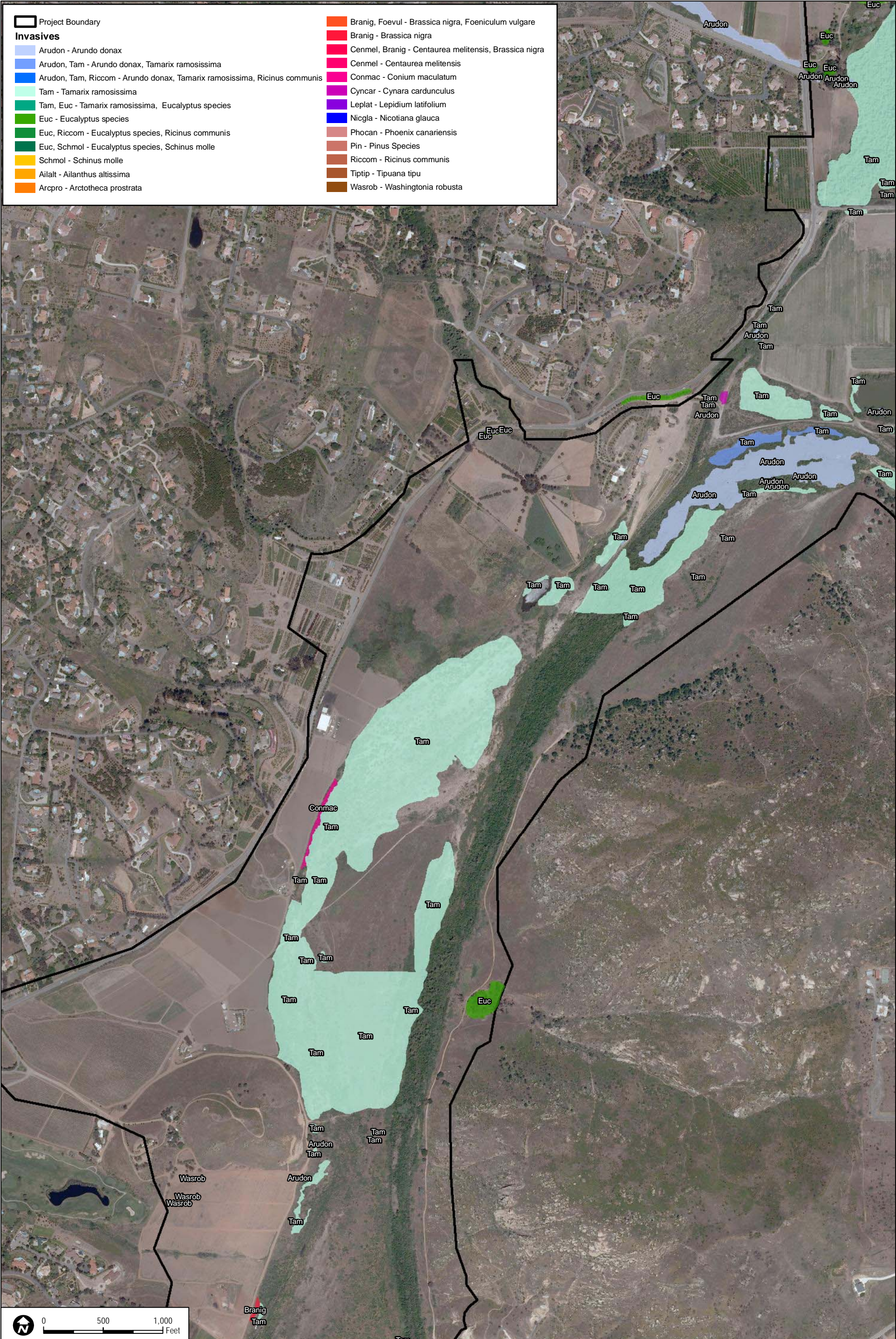


APPENDIX D  
*Map Book*





**FIGURE 1**  
**Invasive Map**



Project Boundary

**Invasives**

- Arudon - Arundo donax
- Arudon, Tam - Arundo donax, Tamarix ramosissima
- Arudon, Tam, Riccom - Arundo donax, Tamarix ramosissima, Ricinus communis
- Tam - Tamarix ramosissima
- Tam, Euc - Tamarix ramosissima, Eucalyptus species
- Euc - Eucalyptus species
- Euc, Riccom - Eucalyptus species, Ricinus communis
- Euc, Schmol - Eucalyptus species, Schinus molle
- Schmol - Schinus molle
- Ailalt - Ailanthus altissima
- Arcpro - Arctotheca prostrata

- Branig, Foevul - Brassica nigra, Foeniculum vulgare
- Branig - Brassica nigra
- Cenmel, Branig - Centaurea melitensis, Brassica nigra
- Cenmel - Centaurea melitensis
- Conmac - Conium maculatum
- Cyncar - Cynara cardunculus
- Leplat - Lepidium latifolium
- Nicgla - Nicotiana glauca
- Phocan - Phoenix canariensis
- Pin - Pinus Species
- Riccom - Ricinus communis
- Tiptip - Tipuana tipu
- Wasrob - Washingtonia robusta



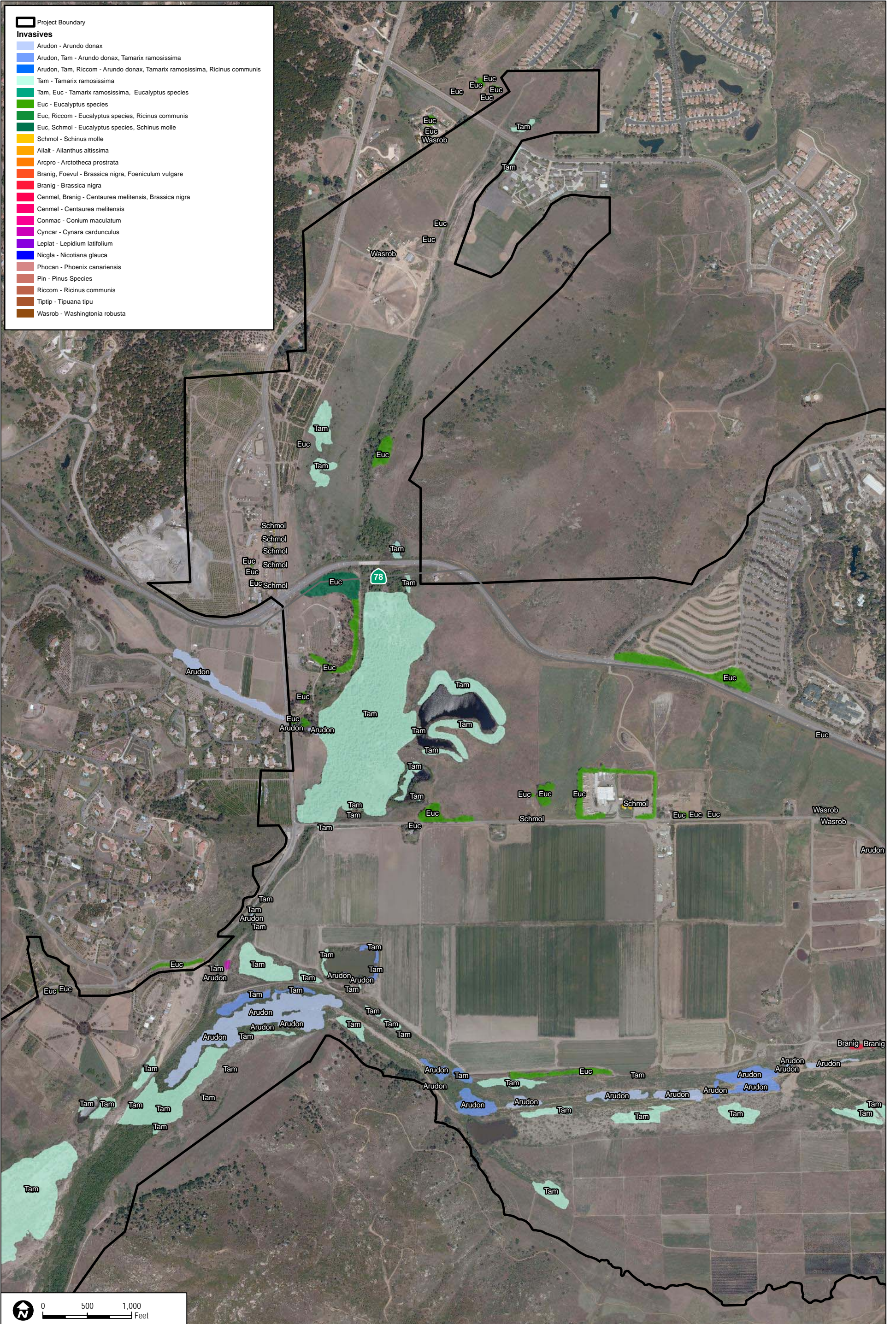
**DUDEK**

SOURCE: CDFG NAIP 2010, City of San Diego 2011

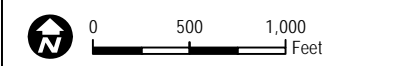
6476-05

San Pasqual Valley Weed Management Plan

**FIGURE 2**  
**Invasive Map**



- Project Boundary**
- Invasives**
- Arudon - Arundo donax
  - Arudon, Tam - Arundo donax, Tamarix ramosissima
  - Arudon, Tam, Riccom - Arundo donax, Tamarix ramosissima, Ricinus communis
  - Tam - Tamarix ramosissima
  - Tam, Euc - Tamarix ramosissima, Eucalyptus species
  - Euc - Eucalyptus species
  - Euc, Riccom - Eucalyptus species, Ricinus communis
  - Euc, Schmol - Eucalyptus species, Schinus molle
  - Schmol - Schinus molle
  - Alliat - Ailanthus altissima
  - Arupro - Arctotheca prostrata
  - Branig, Foevul - Brassica nigra, Foeniculum vulgare
  - Branig - Brassica nigra
  - Cenmel, Branig - Centaurea melitensis, Brassica nigra
  - Cenmel - Centaurea melitensis
  - Conmac - Conium maculatum
  - Cyncar - Cynara cardunculus
  - Leplat - Lepidium latifolium
  - Nicgla - Nicotiana glauca
  - Phocan - Phoenix canariensis
  - Pin - Pinus Species
  - Riccom - Ricinus communis
  - Tiptip - Tipuana tipu
  - Wasrob - Washingtonia robusta



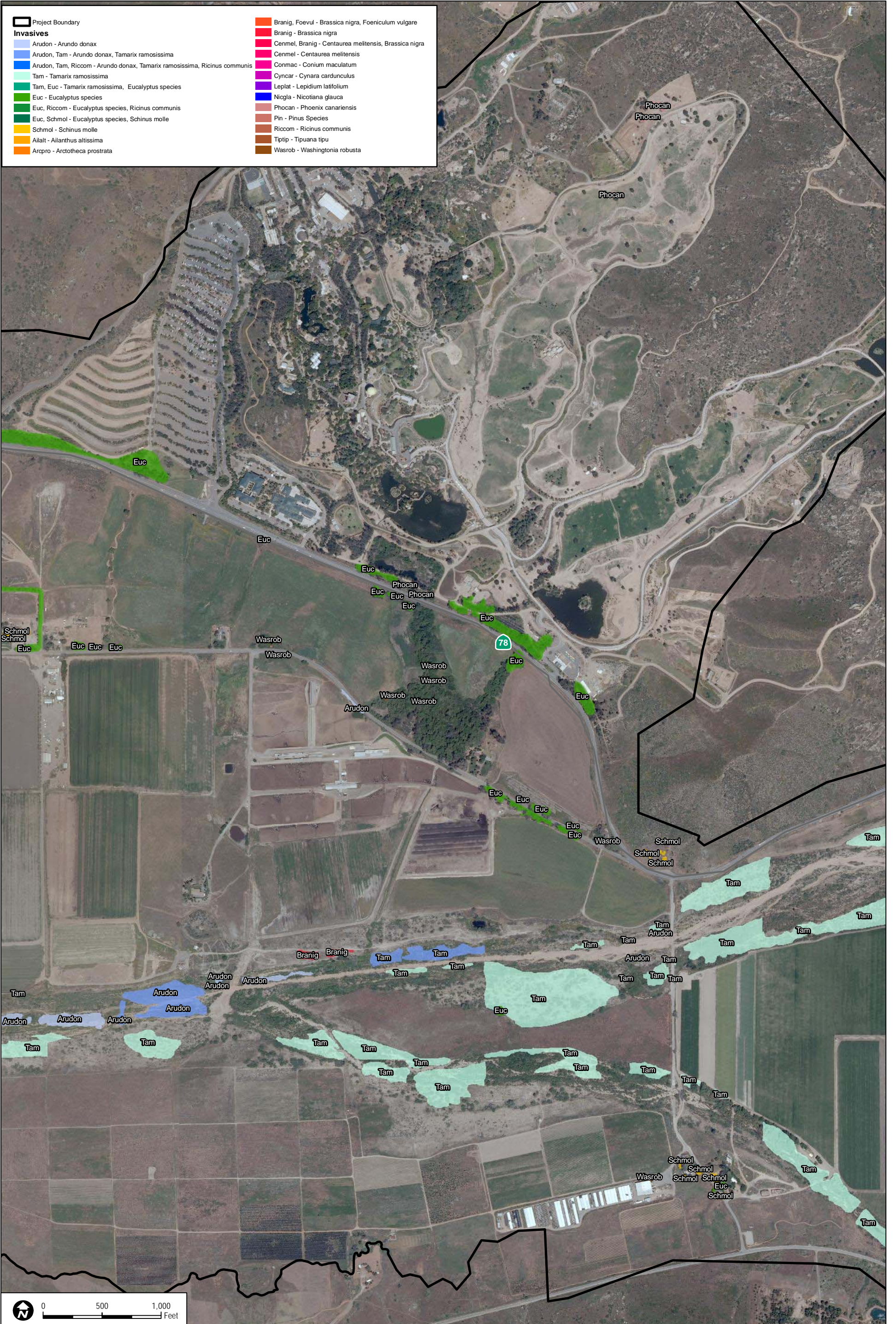
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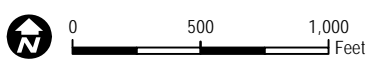
SOURCE: CDFG NAIP 2010, City of San Diego 2011

San Pasqual Valley Weed Management Plan

**FIGURE 3**  
**Invasive Map**



- |   |   |
|---|---|
| Project Boundary  | Branig, Foedul - Brassica nigra, Foeniculum vulgare   |
| <b>Invasives</b>  | Branig - Brassica nigra                               |
| Arudon - Arundo donax   | Cenmel, Branig - Centaurea melitensis, Brassica nigra |
| Arudon, Tam - Arundo donax, Tamarix ramosissima                           | Conmac - Conium maculatum                             |
| Arudon, Tam, Riccom - Arundo donax, Tamarix ramosissima, Ricinus communis | Cyncar - Cynara cardunculus                           |
| Tam - Tamarix ramosissima   | Leplat - Lepidium latifolium                          |
| Tam, Euc - Tamarix ramosissima, Eucalyptus species                        | Nicgla - Nicotiana glauca                             |
| Euc - Eucalyptus species  | Phocan - Phoenix canariensis                          |
| Euc, Riccom - Eucalyptus species, Ricinus communis                        | Pin - Pinus Species                                   |
| Euc, Schmol - Eucalyptus species, Schinus molle                           | Riccom - Ricinus communis                             |
| Schmol - Schinus molle  | Tiptip - Tipuana tipu                                 |
| Ailalt - Ailanthus altissima  | Wasrob - Washingtonia robusta                         |
| Arcpro - Arctotheca prostrata   |   |



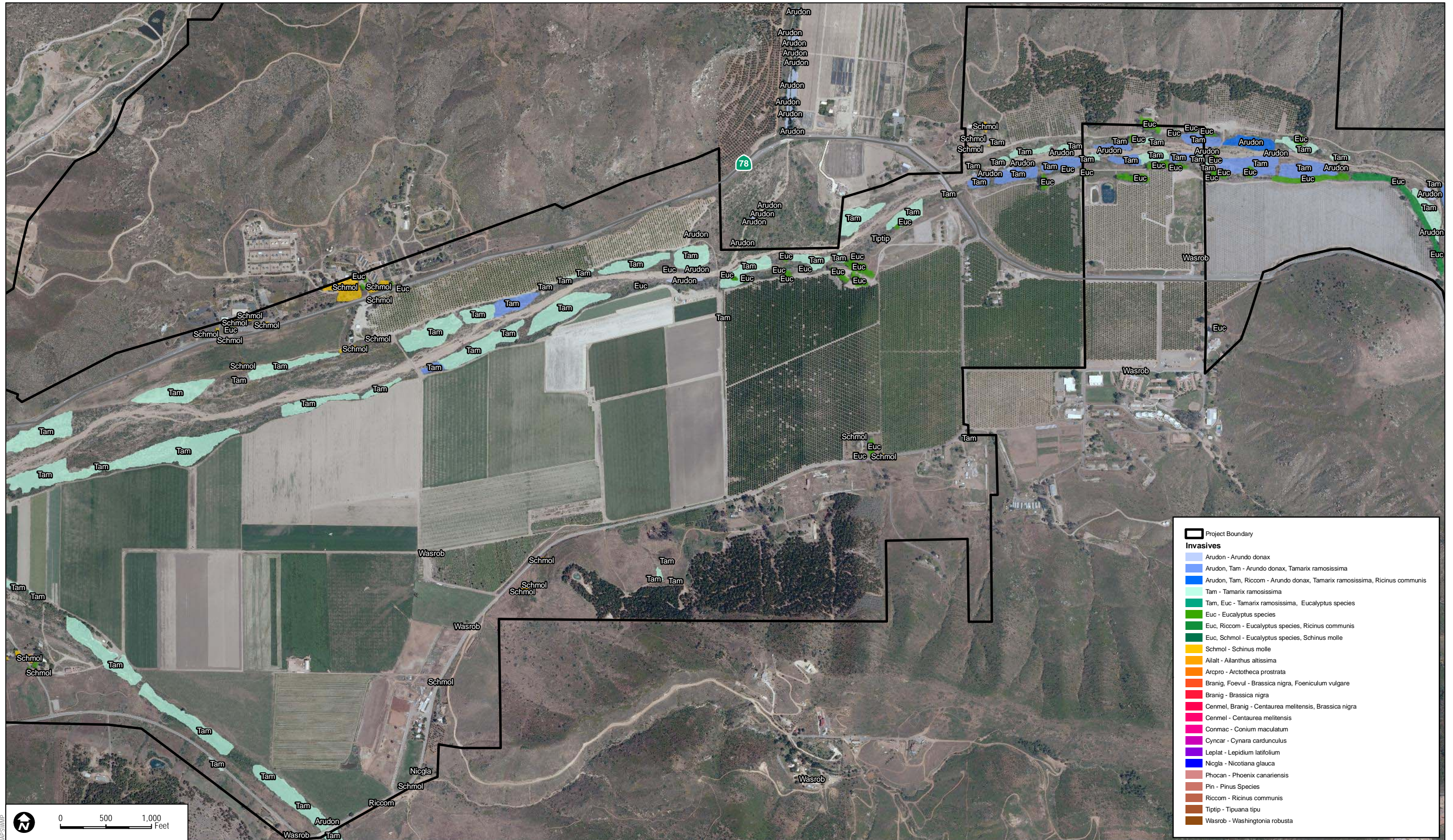
**DUDEK**

6476-05

SOURCE: CDFG NAIP 2010, City of San Diego 2011

San Pasqual Valley Weed Management Plan

**FIGURE 4**  
**Invasive Map**

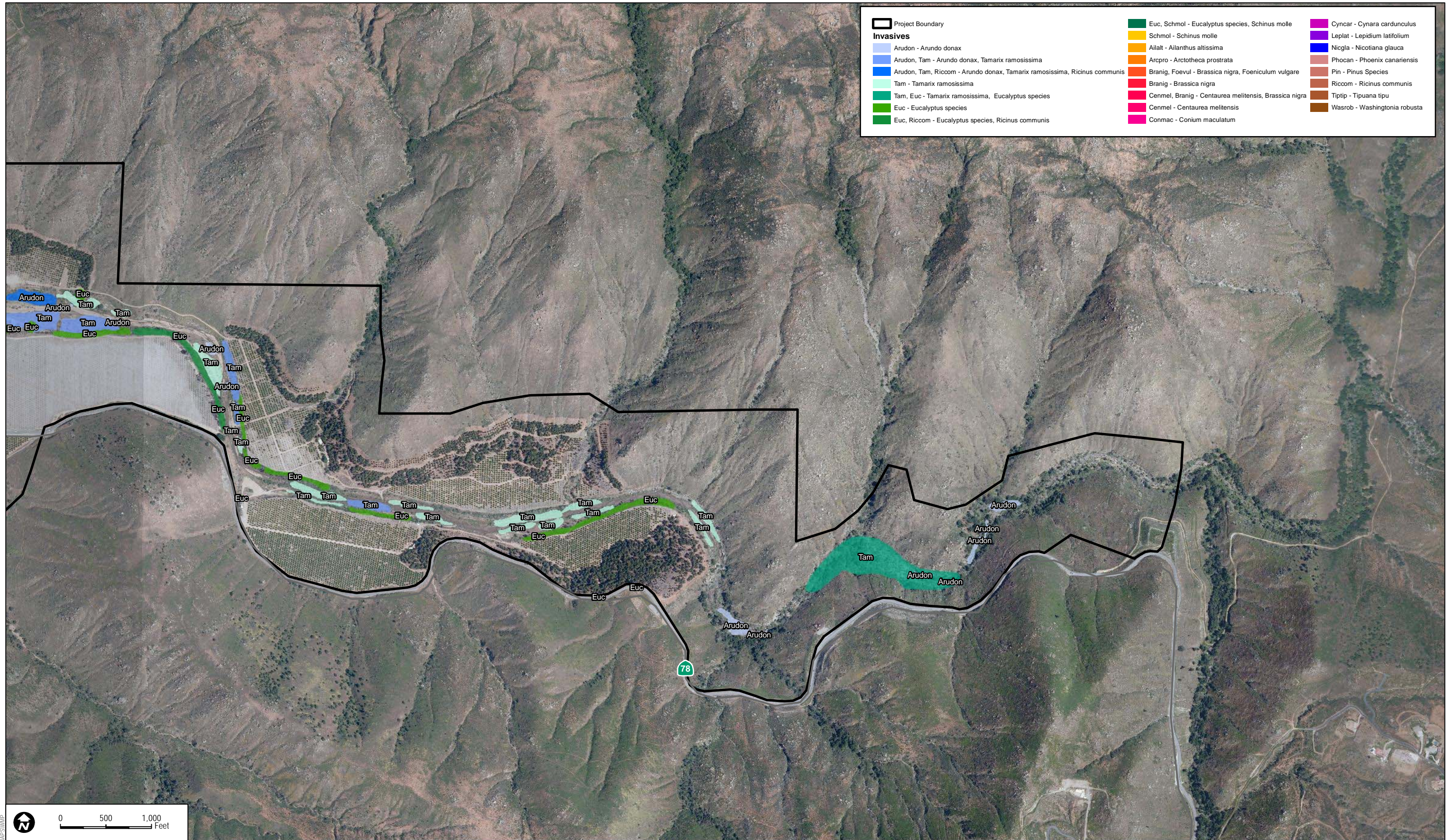


- Project Boundary**
- Invasives**
- Arudon - Arundo donax
  - Arudon, Tam - Arundo donax, Tamarix ramosissima
  - Arudon, Tam, Riccom - Arundo donax, Tamarix ramosissima, Ricinus communis
  - Tam - Tamarix ramosissima
  - Tam, Euc - Tamarix ramosissima, Eucalyptus species
  - Euc - Eucalyptus species
  - Euc, Riccom - Eucalyptus species, Ricinus communis
  - Euc, Schmol - Eucalyptus species, Schinus molle
  - Schmol - Schinus molle
  - Ailalt - Ailanthus altissima
  - Arcpro - Arctotheca prostrata
  - Branig, Foevul - Brassica nigra, Foeniculum vulgare
  - Branig - Brassica nigra
  - Cenmel, Branig - Centaurea melitensis, Brassica nigra
  - Cenmel - Centaurea melitensis
  - Conmac - Conium maculatum
  - Cyncar - Cynara cardunculus
  - Leplat - Lepidium latifolium
  - Nicgla - Nicotiana glauca
  - Phocan - Phoenix canariensis
  - Pin - Pinus Species
  - Riccom - Ricinus communis
  - Tiptip - Tipuana tipu
  - Wasrob - Washingtonia robusta



DUDEK SOURCE: CDFG NAIP 2010, City of San Diego 2011

**FIGURE 5  
Invasive Map**



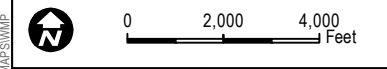
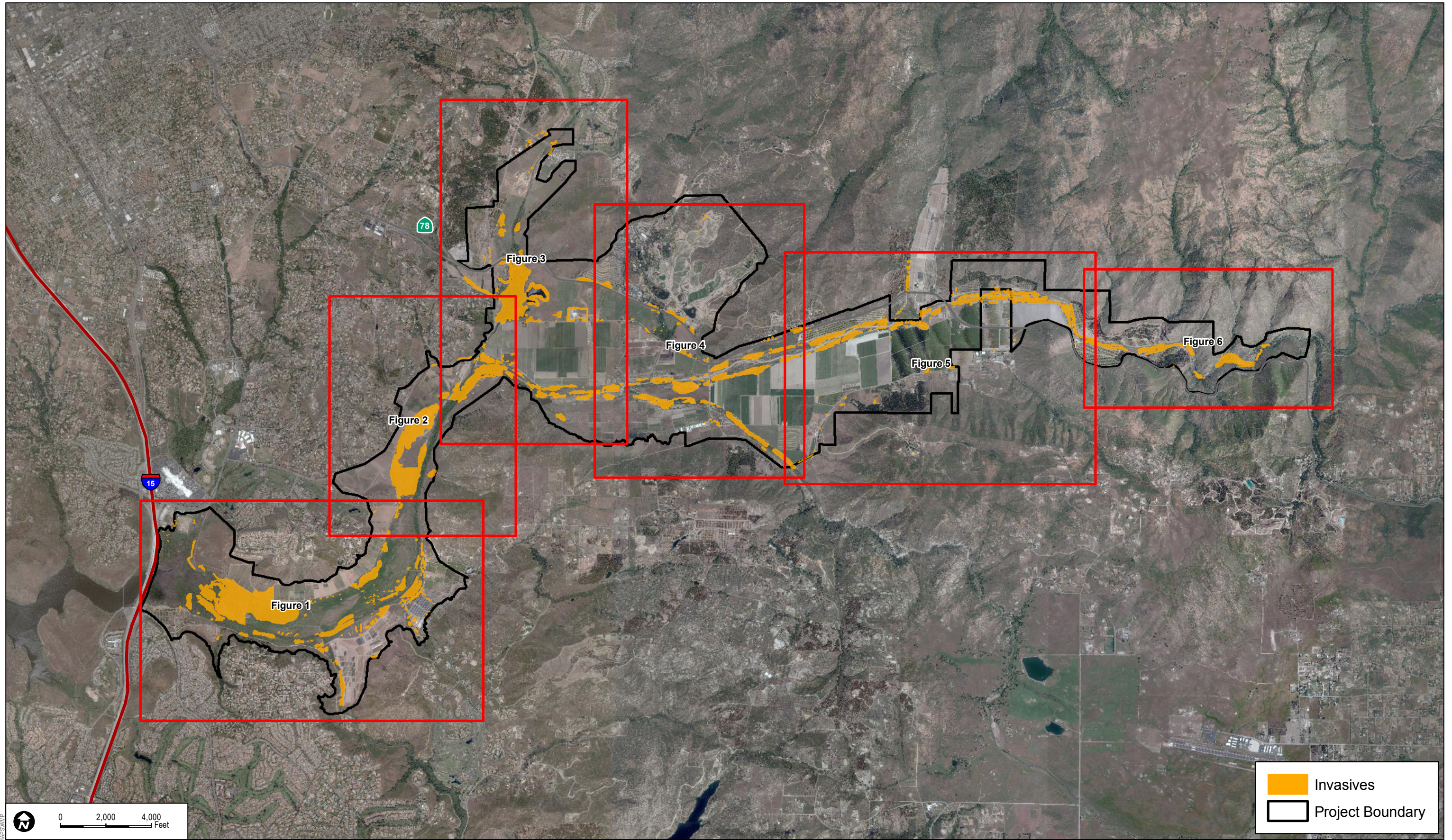
**DUDEK**

6476-05

SOURCE: CDFG NAIP 2010, City of San Diego 2011

San Pasqual Valley Weed Management Plan

**FIGURE 6**  
**Invasive Map**

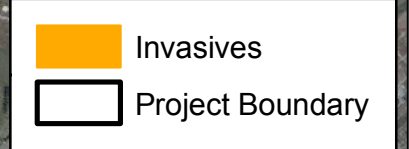


**DUDEK**

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SOURCE: CDFG NAIP 2010, City of San Diego 2011

San Pasqual Valley Weed Management Plan



**Invasive Map Index**

Appendix D



# APPENDIX E

*Protecting Endangered Species, Interim Measures  
for Use of Herbicides in San Diego County  
(EPA 1999)*



# Protecting Endangered Species Interim Measures for Use of Herbicides in San Diego County

The federal Endangered Species Act is intended to protect and promote the recovery of animals and plants that are in danger of becoming extinct due to human activities. Under the Act, the U.S. Environmental Protection Agency (U.S. EPA) must ensure that the use of pesticides it registers will not result in harm to the species listed as endangered or threatened by the U.S. Fish and Wildlife Service, or to habitat critical to those species' survival. This program will protect endangered and threatened species from harm due to pesticide use.

The information provided in this bulletin is similar to what U.S. EPA expects to distribute once the Endangered Species Protection Program is in effect. Individuals who use pesticides during this interim period are not legally required to comply with these suggested measures. At the present time, compliance with the requirements specified on the pesticide product labeling will satisfy all legal requirements regarding pesticides and endangered species protection. While these pesticide use conditions do not yet have the force of law, they are being provided now for your use in voluntarily protecting endangered and threatened species.

Your comments are needed regarding the information presented in this publication. Please contact us to let us know whether the information is clear and correct. Also tell us to what extent following the recommended measures would affect your pesticide use program. This information will be considered by U.S. EPA during the final stages of program development.

Please submit comments to:  
DPR Pesticide Registration Branch  
830 K Street  
Sacramento, CA 95814  
(916) 324-3881

rmarovich@cdpr.ca.gov  
This document is available online:  
<http://www.cdpr.ca.gov/docs/es/index.htm>

## About This Publication

This publication contains a map of the county including a shaded area where pesticide use should be limited to protect listed species. In the Section List, you will find additional information on the individual species that occur in each section, indexed by county, township, range and section.

The Species Descriptions table lists the taxonomic groups for each species. The Active Ingredients tables list certain pesticides and the activity category (mode of action, etc.) of the pesticide and the taxonomic groups they could adversely affect. The use limitations in this bulletin apply only to listed pesticides where the hazard class of the pesticide matches the hazard class (sensitivity of the taxonomic group) of the species that occur in the section where the pesticide will be used. Within a given section, use limitations only apply to sites that are consistent with habitat as noted in the Species Descriptions table. The Use Limitation Codes table indicates which use limitation codes apply to each species. The Use Limitations table translates limitation codes to use limitations.

## Does This Information Apply To You?

To determine whether this information applies to your use of a pesticide, review the questions below. The information applies only if you answer "yes" to all three of these questions:

- Do you intend to use pesticides within the shaded area on the map (p 3) that is further detailed in the Section List (p 29)? If so, note the species from the Section List.
- Are any of the ingredients included in your pesticide product named in the Active Ingredients table (p 10)?
- If so, does the hazard class(es) of the pesticide you intend to use match one or more of the taxonomic groups of the species as shown in the Species Descriptions table (p 17)?

If you answer "yes" to all three questions, you should follow the instructions "Worksheet for Herbicides" (p 2) to help protect listed species.

If you answer "no" to any of the above questions, this bulletin does not apply to you.



# Worksheet for Herbicides

For each section where you will apply herbicides:

1. Is the section inside of the shaded area on the county map (p 3)? Yes ( ) No ( )  
(if yes, or if you are unsure go on to #2, if no, this bulletin does not apply)
2. Is the section listed in the Section List (p 29)? Yes ( ) No ( )  
(if yes, go on to #3, if no, this bulletin does not apply)
3. Is the active ingredient of the herbicide(s) you intend to use listed in the Active Ingredients table (p 10-14)?  
(if yes, go on to #4, if no, this bulletin does not apply) Yes ( ) No ( )
4. For each active ingredient, note the hazard class and activity category (from the Active Ingredients table).

herbicide active ingredient(s) (list each)	Hazard Class (check all that apply)			Activity Category (check one)				
	AQ	PD	PM	a	b	c	d	e
_____	( )	( )	( )	( )	( )	( )	( )	( )
_____	( )	( )	( )	( )	( )	( )	( )	( )
_____	( )	( )	( )	( )	( )	( )	( )	( )
_____	( )	( )	( )	( )	( )	( )	( )	( )
_____	( )	( )	( )	( )	( )	( )	( )	( )

5. For each species in the section to be treated, look up the hazard class (taxonomic group) in the Species Descriptions table (p 17) and check all that apply.

AQ	PD	PM
( )	( )	( )

6. Does one or more hazard class(es) of the herbicide(s) from #4 match the hazard class (taxonomic group) for any of the species from #5? (if yes to any, go on to #7, if no, this bulletin does not apply) Yes ( ) No ( )

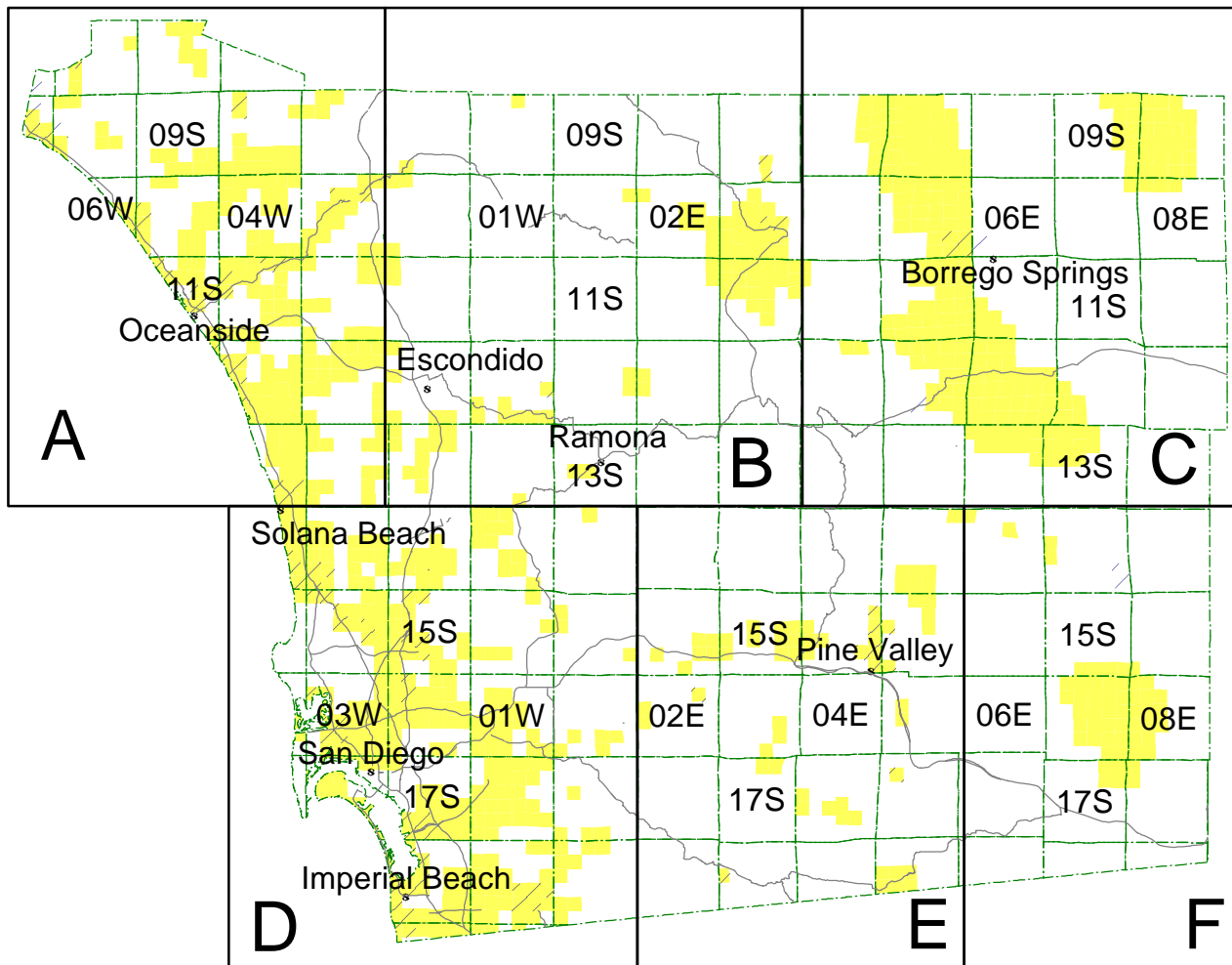
7. Look up the use limitation codes by hazard class and activity category in the Use Limitation Codes table in this section for each pesticide that you intend to use and check all use limitation codes that apply.

Limitation Codes

11 ( )      15 ( )      16 ( )      17 ( )      19 ( )

8. Follow the use limitations corresponding to each code as shown in the Use Limitations table (p 16). If more than one code applies and there is a conflict, follow the most restrictive limitation. Note that use limits apply only to sites that that match or (where buffer zones apply) are adjacent to sites that match the habitat descriptions in the Species Descriptions table (p 17) for each species.

## Distribution of Species Addressed in This Bulletin



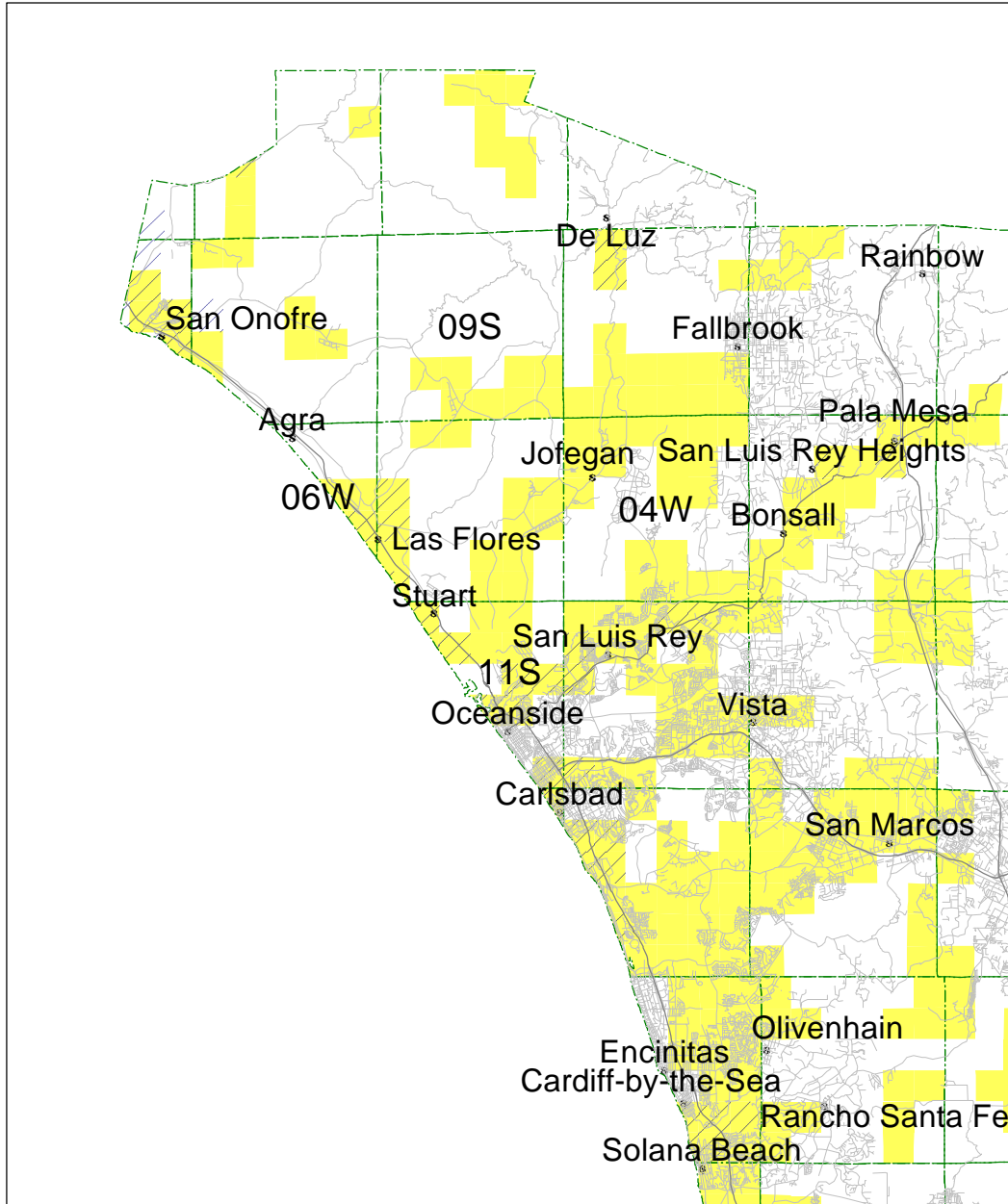
Terrestrial Species



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

### Overview Map

## Distribution of Species Addressed in This Bulletin



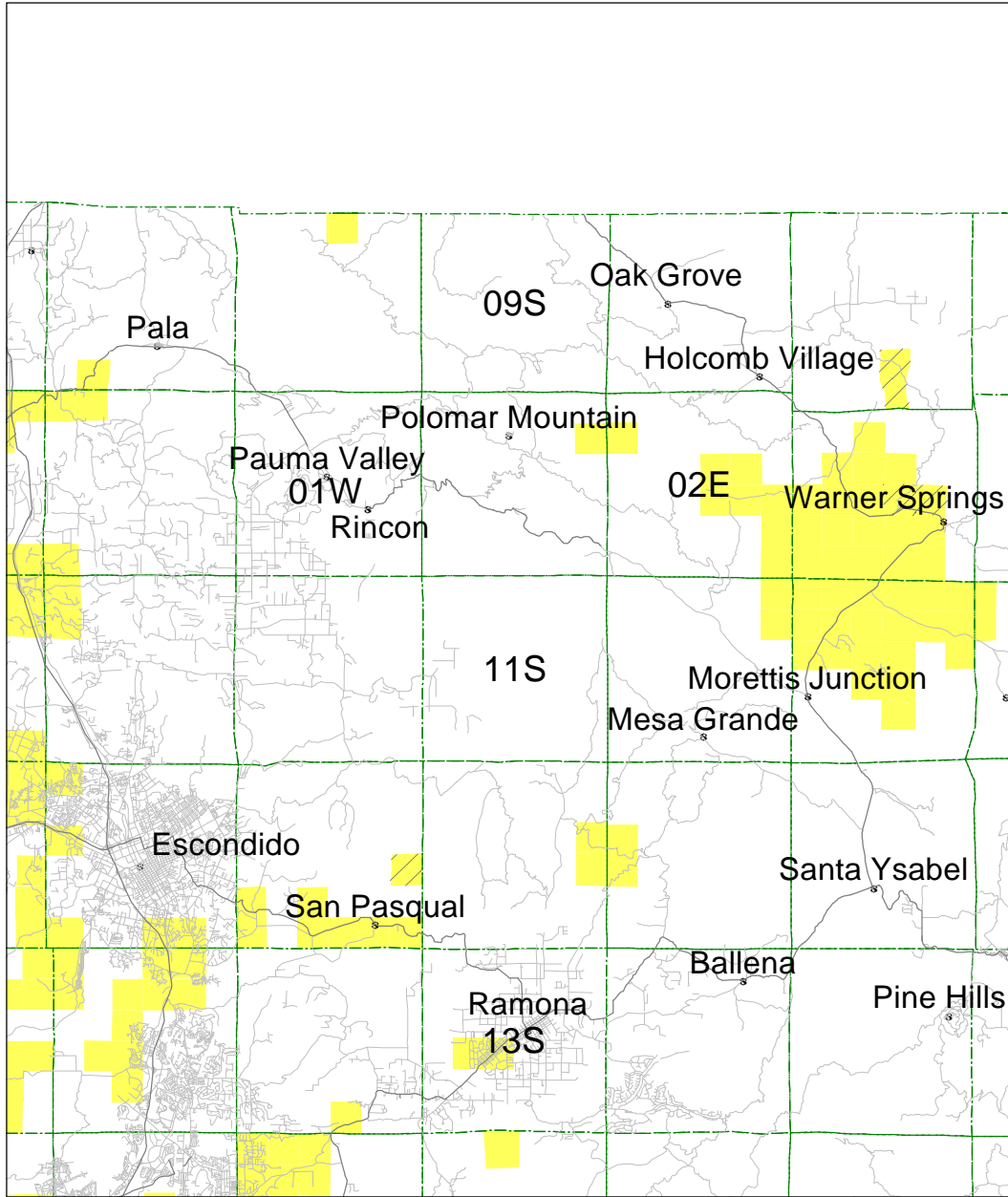
Terrestrial Species



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

### Detail Map A

## Distribution of Species Addressed in This Bulletin



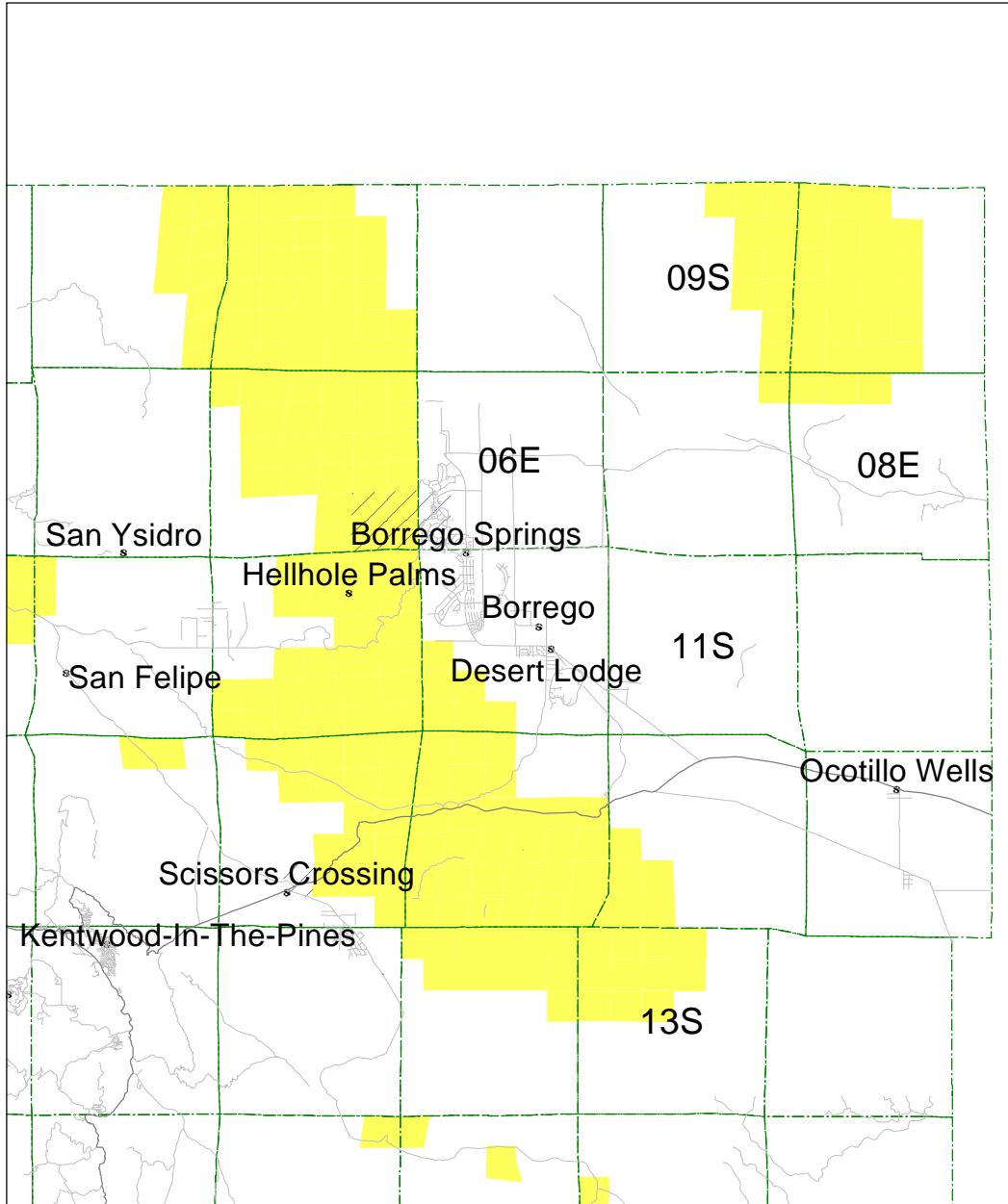
Terrestrial Species



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

### Detail Map B

## Distribution of Species Addressed in This Bulletin



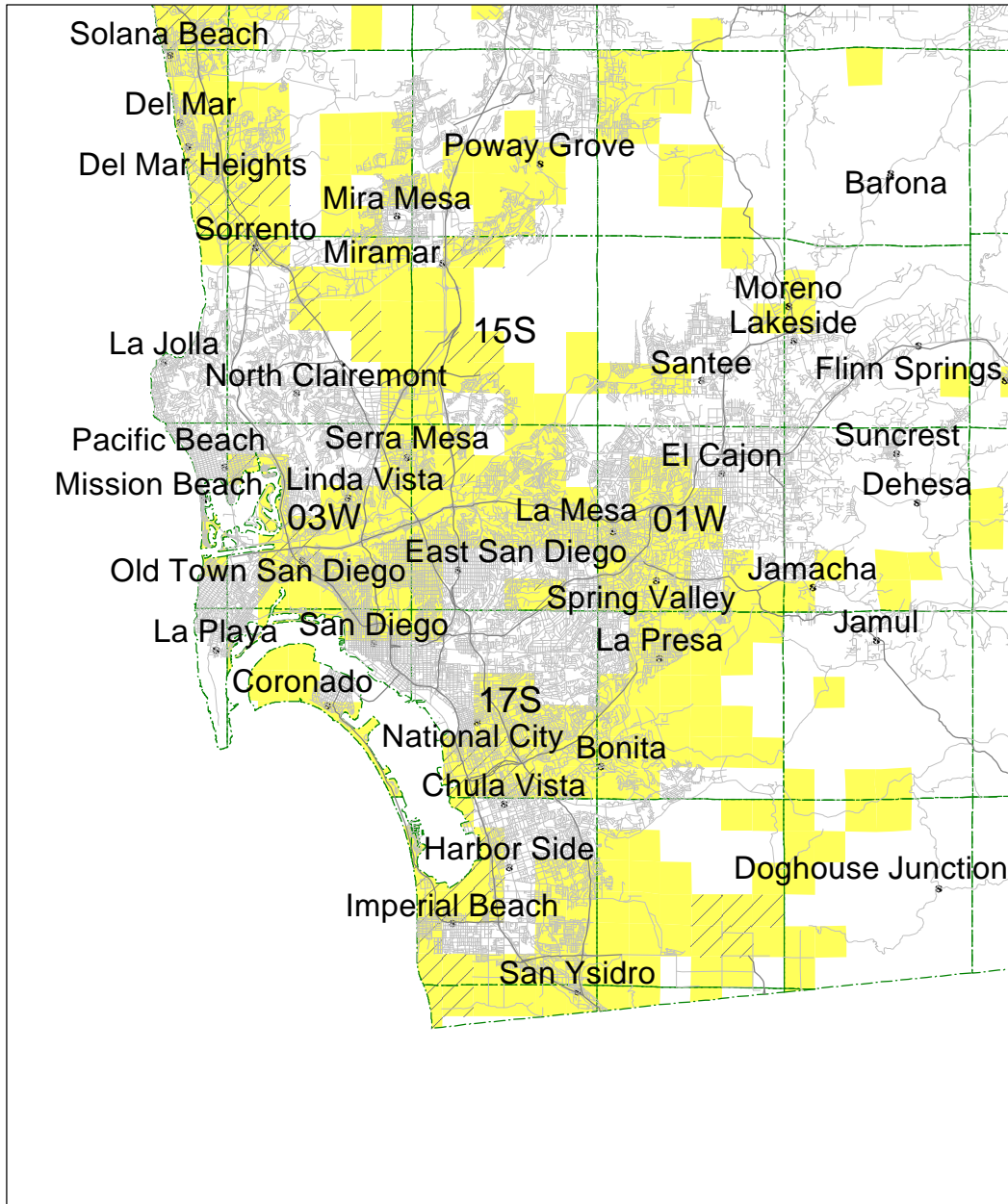
Terrestrial Species



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

### Detail Map C

## Distribution of Species Addressed in This Bulletin



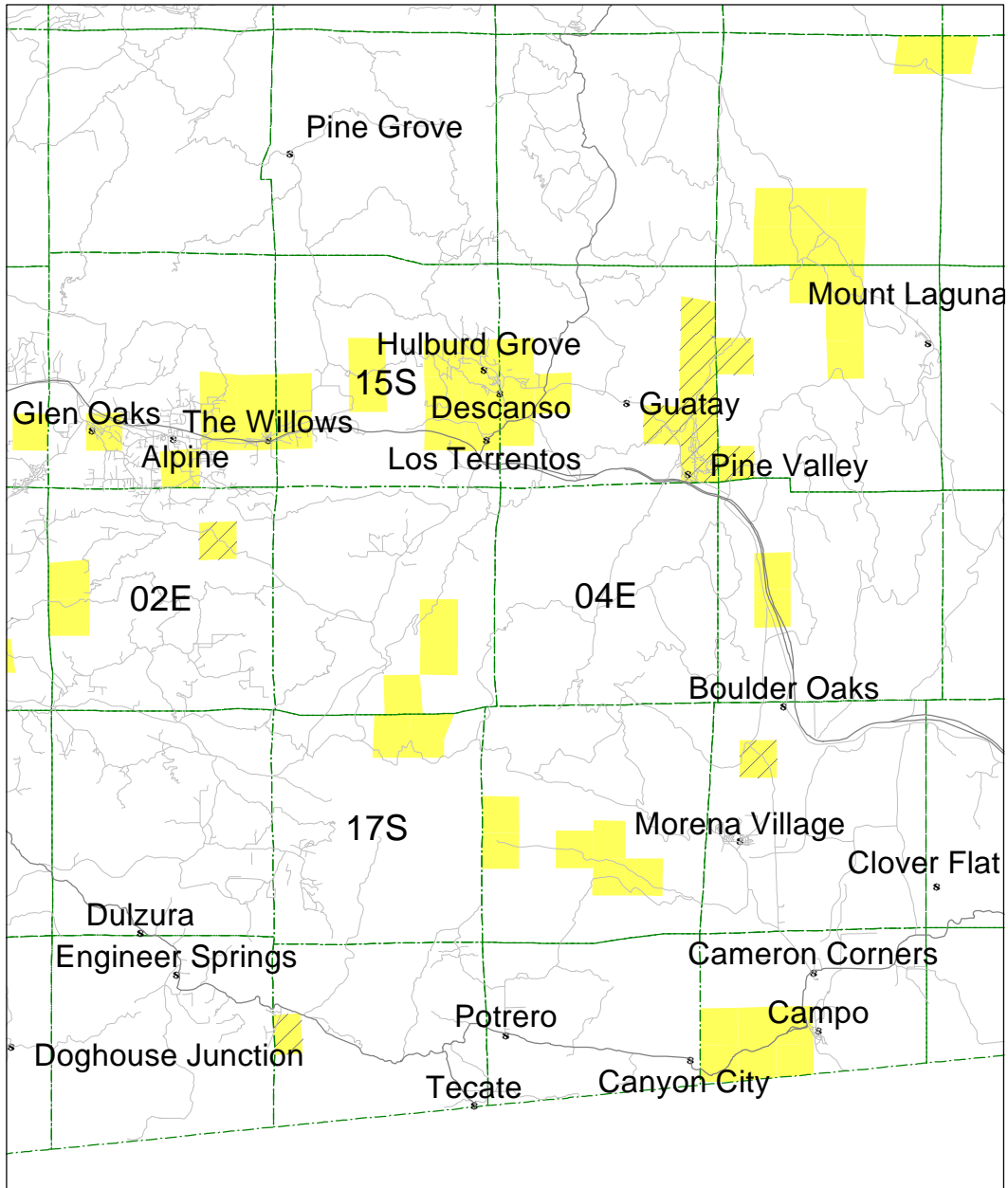
Terrestrial Species



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

### Detail Map D

## Distribution of Species Addressed in This Bulletin



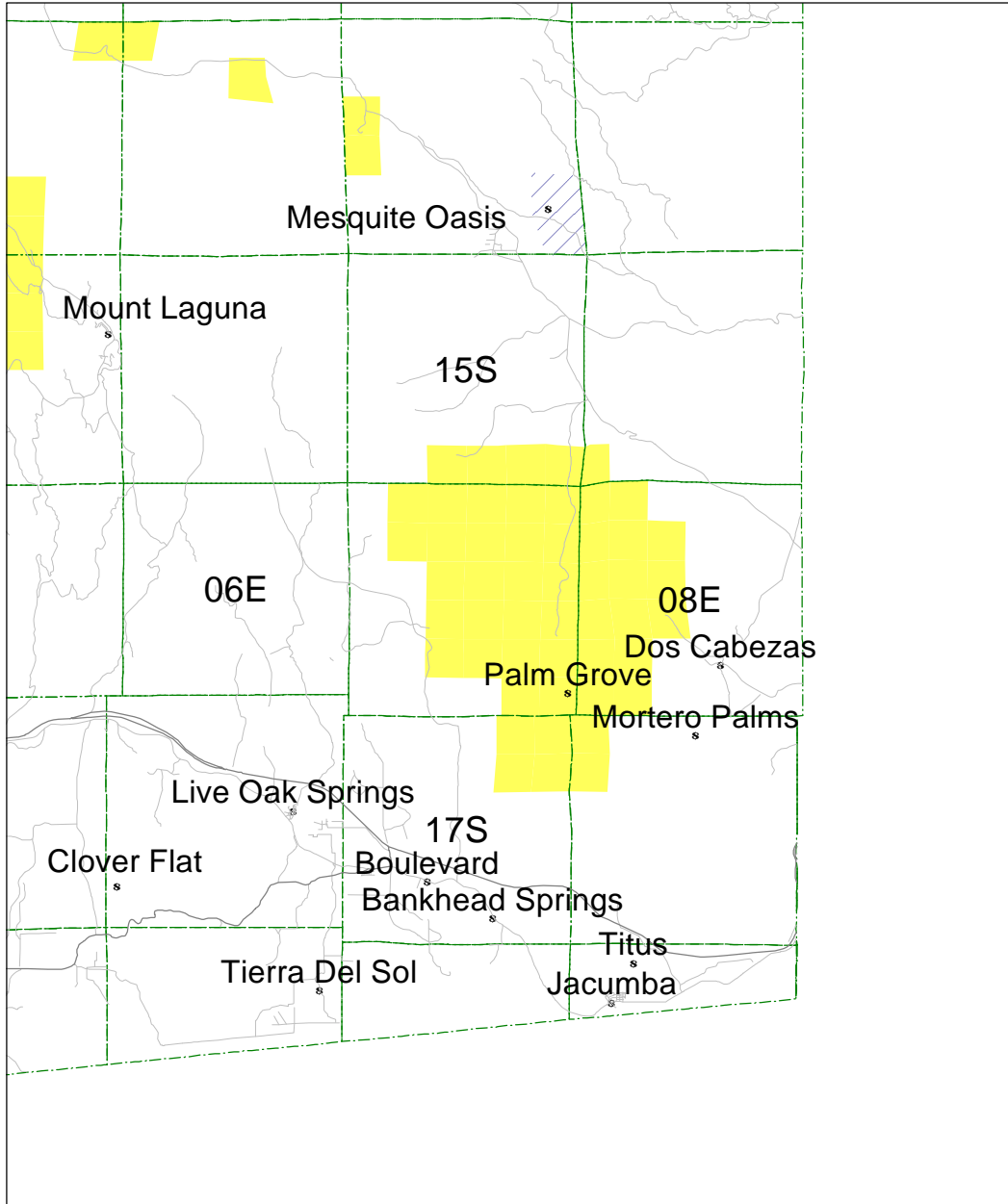
Terrestrial Species



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

### Detail Map E

## Distribution of Species Addressed in This Bulletin



Terrestrial Species



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

### Detail Map F

# Active Ingredients Tables

Active ingredients of pesticides covered by this bulletin are listed in separate tables on the following pages by classification as herbicides, insecticides, fungicides or rodenticides. The active ingredients table for each pesticide class specifies the activity category of each active ingredient and one or more hazard classes that are subsequently used to determine appropriate pesticide use limitations.

## Herbicide Exposure Categories

Herbicides are grouped by activity categories (a-e) that broadly define mode of action and use patterns that in turn determine potential routes of exposure to listed species. The activity category of an herbicide is the exposure component that is used with the hazard class of the pesticide and the taxonomic group of the species to define which pesticide use limitations (if any) to apply.

Activity Category	Description
<b>a</b>	Broad spectrum foliar active herbicides with systemic or contact activity and without pre-emergent or residual soil activity.
<b>b</b>	Herbicides with foliar activity on broadleaved plants (dicots) only.
<b>c</b>	Herbicides with foliar activity on grasses (monocots) only.
<b>d</b>	Broad spectrum herbicides with residual soil activity.
<b>e</b>	Broad spectrum, seedling stage, pre-emergent herbicides.

## Active Ingredients (Herbicides)

Active Ingredients	Activity Category	Hazard Class		
		Aquatic Animals (AQ)	Plants	
			Dicot (PD)	Monocot* (PM)
2,4-D	b		X	
2,4-D, butoxyethanol ester	b		X	
2,4-D, dimethylamine salt	b		X	
2-(2,4-DP), dimethylamine salt	b		X	
4(2,4-DB), dimethylamine salt	b		X	
alachlor	d		X	X
atrazine	d		X	X
benefin	e	X	X	X
bensulfuron methyl	d		X	X
bensulide	d		X	X
bentazon, sodium salt	a		X	X
bromacil	d		X	X
bromoxynil	a	X	X	X
butylate	d		X	X
cacodylic acid	a		X	X
carfentrazone-ethyl	a		X	X
chlorsulfuron	d		X	
chlorthal-dimethyl	e		X	X
clethodim	c			X
clopyralid	b		X	
copper	a	X		
copper ethanolamine complex	a	X		

\* and gymnosperms

## Active Ingredients (Herbicides)

Active Ingredients	Activity Category	Hazard Class		
		Aquatic Animals	Plants	
			Dicot	Monocot*
copper sulfate (basic)	a	X		
copper sulfate pentahydrate	a	X		
cyanazine	d		X	X
cycloate	d		X	X
desmedipham	e		X	X
dicamba, dimethylamine salt	b		X	
dichlobenil	d		X	X
diclofop-methyl	c	X		X
difenzoquat methyl sulfate	a			X
diquat dibromide	a		X	X
dithiopyr	d	X	X	X
diuron	d		X	X
endothall, dipotassium salt	d		X	X
endothall, mono [N,N-dimethyl alkylamine] salt	d		X	X
EPTC	d		X	X
ethafluralin	e	X	X	X
ethofumesate	d		X	X
fenoxaprop	c			X
fluazifop-butyl	c			X
glufosinate	a		X	X
halosulfuron	d		X	X
imazethapyr	d		X	X
isoxaben	d		X	X

\* and gymnosperms

## Active Ingredients (Herbicides)

Active Ingredients	Activity Category	Hazard Class		
		Aquatic Animals (AQ)	Plants	
			Dicot (PD)	Monocot* (PM)
glyphosate, isopropylamine salt	a		X	X
glyphosate, monoammonium salt	a		X	X
hexazinone	d		X	X
imazapyr	d		X	X
linuron	d		X	X
MCPA, dimethylamine salt	b		X	
MCPP, dimethylamine salt	b		X	
metalochlor	d		X	X
metam-sodium	d	X	X	X
metribuzin	d		X	X
molinatate	d		X	X
MSMA	a		X	X
napropamide	d		X	X
nicosulfuron	a		X	X
nonanoic acid	a		X	X
norflurazon	d		X	X
oryzalin	e		X	X
oxadiazon	e	X	X	X
oxyfluorfen	e	X	X	X
paraquat dichloride	a		X	X
pebulate	e		X	X

\* and gymnosperms

## Active Ingredients (Herbicides)

Active Ingredients	Activity Category	Hazard Class		
		Aquatic Animals (AQ)	Plants	
			Dicot (PD)	Monocot* (PM)
pendimethalin	e	X	X	X
petroleum hydrocarbons	a		X	X
petroleum oil, unclassified	a		X	X
phenmedipham	b		X	
prometon	d		X	X
prometryn	d		X	
pronamide	d		X	X
propanil	a		X	X
pyrazon	d		X	X
pyrithiobac	b		X	
rimsulfuron	d		X	X
sethoxydim	c			X
simazine	d		X	X
sulfometuron, methyl	d		X	X
tebuthiuron	d		X	X
thiazopyr	d		X	X
thiobencarb	a		X	X
triclopyr, butoxyethyl ester	b		X	
triclopyr, triethylamine salt	b		X	
trifluralin	e	X	X	X

\* and gymnosperms

# Limitation Codes (Herbicides)

The following table identifies use limitation codes for each combination of hazard class (AQ, PM or PD) and herbicide activity category (a-e). Use the hazard class row(s) that corresponds with both (1) the pesticide (from the Active Ingredients table) and (2) the hazard class (taxonomic group) of the species in the section to be treated (as found in the Species Descriptions table) and the activity category column(s) that corresponds with the herbicide(s) you intend to use. If either (1) the hazard class (taxonomic group) of one or more species does not match at least one of the hazard class(es) of the herbicide you intend to use or (2) if the combination of activity category and hazard class results in a double dash (- -), then no use limitations apply. Note all applicable codes (11-19). These codes are translated in the Use Limitations table (p16)

Hazard Class	Herbicide Activity Category				
	a	b	c	d	e
<b>AQ</b>	11, 17	11, 17	11, 17	11, 15, 16, 17	11, 17
<b>PM</b>	11, 17	- -	11, 17	11, 16, 17, 19	11
<b>PD</b>	11, 17	11, 17	- -	11, 16, 17, 19	11

## Use Limitations

Code	Limitation
<b>11</b>	Do not use in currently occupied habitat except: (1) as specified in Habitat Descriptors, (2) in organized habitat recovery programs, or (3) for selective control of invasive exotic plants.
<b>15</b>	Provide a 20 foot minimum strip of vegetation (on which pesticides should not be applied) along rivers, creeks, streams, wetlands, vernal pools and stock ponds or on the downhill side of fields where run-off could occur. Prepare land around fields to contain run-off by proper leveling, etc. Contain as much water "on-site" as possible. The planting of legumes, or other cover crops for several rows adjacent to off-target water sites is recommended. Mix pesticides in areas not prone to run-off such as concrete mixing/loading pads, disked soil in flat terrain or graveled mix pads, or use a suitable method to contain spills and/or rinsate. Properly empty and triple-rinse pesticide containers at time of use.
<b>16</b>	Conduct irrigations efficiently to prevent excessive loss of irrigation waters through run-off. Schedule irrigations and pesticide applications to maximize the interval of time between the pesticide application and the first subsequent irrigation. Allow at least 24 hours between application of pesticides listed in this bulletin and any irrigation that results in surface run-off into natural waters. Time applications to allow sprays to dry prior to rain or sprinkler irrigations. Do not make aerial applications while irrigation water is on the field unless surface run-off is contained for 72 hours following the application.
<b>17</b>	For sprayable or dust formulations: when the air is calm or moving away from habitat, commence applications on the side nearest the habitat and proceed away from the habitat. When air currents are moving toward habitat, do not make applications within 200 yards by air or 40 yards by ground upwind from occupied habitat. The county agricultural commissioner may reduce or waive buffer zones following a site inspection, if there is an adequate hedgerow, windbreak, riparian corridor or other physical barrier that substantially reduces the probability of drift.
<b>19</b>	Do not apply within 30 yards upslope of habitat unless a suitable method is used to contain or divert runoff waters.

# Species Descriptions

## ARROYO TOAD



**Photo:** Bill Palmer

**Scientific Name:** *BUFO MICROSCAPHUS CALIFORNICUS*

**Federal Status:** Endangered

**Species Description:**

A small (2 to 3 inches), light greenish gray or tan toad with warty skin and dark spots. A light-colored stripe crosses the head and eyelids, and a light area usually occurs on each sacral hump and in the middle of the back.

**Habitat Description:**

RIVERS WITH SANDY BANKS, WILLOWS, COTTONWOODS, AND SYCAMORES; LOOSE, GRAVELLY AREAS OF STREAMS IN DRIER PARTS OF RANGE. SEMI-ARID REGIONS NEAR WASHES OR INTERMITTENT STREAMS, INCLUDING VALLEY-FOOTHILL AND DESERT RIPARIAN, DESERT WASH, ETC.

**Hazard Class:**

**AQ, FS**

## CALIFORNIA LEAST TERN



**Photo:** B. "Moose" Peterson/WRP

**Scientific Name:** *STERNA ANTILLARUM BROWNI (NESTING COLONY)*

**Federal Status:** Endangered

**Species Description:**

A migratory seabird present from April to September, nesting along expansive stretches of shoreline, feeds on small fish near inshore estuaries, river mouths and shallows.

**Habitat Description:**

COLONIAL BREEDER ON BARE OR SPARSELY VEGETATED, FLAT SUBSTRATES: SAND BEACHES, ALKALI FLATS, LAND FILLS, OR PAVED AREAS. NESTS ALONG THE COAST FROM SAN FRANCISCO BAY SOUTH TO NORTHERN BAJA CALIFORNIA.

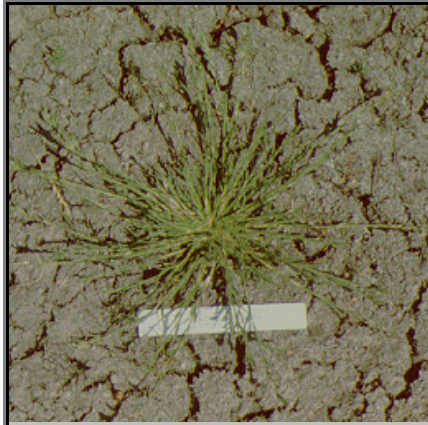
**Hazard Class:**

**AQ, AV**

# Species Descriptions

## CALIFORNIA ORCUTT GRASS

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**Photo:** F. Thomas Griggs

**Scientific Name:** *ORCUTTIA CALIFORNICA*

**Federal Status:** Endangered

**Species Description:**

An annual, prostrate, inconspicuous and very rare grass, to 6 inches high. Occurs in the wettest portions of vernal pools but most growth occurs as pools are drying up.

**Habitat Description:**

15-660M. VERNAL POOLS. KNOWN ONLY FROM SOUTHERN CALIFORNIA AND BAJA.

**Hazard Class:**

**PD**

## COASTAL DUNES MILK-VETCH

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**Photo:** Brousseau Collection

**Scientific Name:** *ASTRAGALUS TENER VAR TITI*

**Federal Status:** Endangered

**Species Description:**

A small annual herb of the pea family with slender stems reaching 4-8 in., compound leaves 0.8 to 2.7 in long with 7 to 11 leaflets, tiny lavender to purple flowers 0.3 in. long seed pods are straight to sickle-shaped and 0.3 to 0.6 in long.

**Habitat Description:**

MOIST, SANDY DEPRESSIONS OF BLUFFS OR DUNES ALONG AND NEAR THE PACIFIC OCEAN; ONE SITE ON A CLAY TERRACE. 1-50M. COASTAL BLUFF SCRUB, COASTAL DUNES. KNOWN ONLY FROM A FEW EXTANT OCCURRENCES; MOSTLY HISTORICAL IN SOUTHERN CALIFORNIA.

**Hazard Class:**

**PD**

# Species Descriptions

## DEL MAR MANZANITA



**Scientific Name:** *ARCTOSTAPHYLOS GLANDULOSA SSP CRASSIFOLIA*

**Federal Status:** Endangered

**Species Description:**

An erect shrub, generally 3.3 to 4 ft tall, distinguished from similar subspecies by its shorter stature (other subspecies are up to 8.2 ft tall), and by its dark gray-green leaves hairless above fuzzy beneath.

**Photo:** Brousseau Collection

Arctostaphylos sp.

**Habitat Description:**

SANDY COASTAL MESAS AND OCEAN BLUFFS; IN CHAPARRAL OR TORREY PINE FOREST. 0-365M. CHAPARRAL, CLOSED-CONE CONIFEROUS FOREST. IN CALIFORNIA, ONLY IN SAN DIEGO COUNTY.

**Hazard Class:**

**PD**

## DESERT PUPFISH



**Scientific Name:** *CYPRINODON MACULARIUS*

**Federal Status:** Endangered

**Species Description:**

A 3 inch silvery fish that matures within 2 to 3 months and lives for 6 to 9 months. Tolerates water temperatures up to 104 F and salinity up to three times seawater. During cold winter months, they become dormant and burrow into a muddy substrate.

**Photo:** B. "Moose" Peterson/WRP

**Habitat Description:**

CAN LIVE IN SALINITIES FROM FRESH WATER TO 68 PPT, CAN WITHSTAND TEMPS FROM 9 - 45 C & D.O. LEVELS DOWN TO 0.1 PPM. DESERT PONDS, SPRINGS, MARSHES AND STREAMS IN SOUTHERN CALIFORNIA.

**Hazard Class:**

**AQ**

# Species Descriptions

## ENCINITAS BACCHARIS



**Photo:** Brousseau Collection

Baccharis sp.

**Scientific Name:** *BACCHARIS VANESSAE*

**Federal Status:** Threatened

**Species Description:**

A broom-like shrub of the sunflower family (Asteraceae), 1.6 to 4.3 ft tall; distinguished from other members of the genus by its thread-like leaves.

**Habitat Description:**

ON SANDSTONE SOILS IN STEEP, OPEN, ROCKY AREAS WITH CHAPARRAL ASSOCIATES. 60-720M. CHAPARRAL. ENDEMIC TO SAN DIEGO COUNTY.

**Hazard Class:**

**PD**

## LEAST BELL'S VIREO



**Photo:** B. "Moose" Peterson

**Scientific Name:** *VIREO BELLII PUSILLUS (NESTING)*

**Federal Status:** Endangered

**Species Description:**

A small migratory insectivorous bird, gray above, white-gray beneath, faint white eyebrow and wingbars, white border beneath eye (lower half of eye ring), dark eyeline and eye, thick bill with hooked upper mandible.

**Habitat Description:**

NESTS PLACED ALONG MARGINS OF BUSHES OR ON TWIGS PROJECTING INTO PATHWAYS, USUALLY WILLOW, BACCHARIS, MESQUITE. SUMMER RESIDENT OF SOUTHERN CALIF. INHABITS LOW RIPARIAN GROWTH IN VIC OF WATER OR IN DRY RIVER BOTTOMS; BELOW 2000 FT.

**Hazard Class:**

**AV**

# Species Descriptions

## LIGHT-FOOTED CLAPPER RAIL



**Photo:** B. "Moose" Peterson

**Scientific Name:** *RALLUS LONGIROSTRIS LEVIPES*

**Federal Status:** Endangered

**Species Description:**

A solitary ground nesting bird up to 19 inches in length, weighing up to 14 ounces. Both sexes with grayish brown to cinnamon brown plumage, darker dorsally than ventrally. Flanks are barred white, dusky, and black.

**Habitat Description:**

REQUIRE DENSE GROWTH OF EITHER PICKLEWEED OR CORDGRASS FOR NESTING OR ESCAPE COVER; FEEDS ON MOLLUSCS AND CRUSTACEANS. FOUND IN SALT MARSHES TRAVERSED BY TIDAL SLOUGHS, WHERE CORDGRASS AND PICKLEWEED ARE THE DOMINANT VEGETATION.

**Hazard Class:**

**AQ, AV**

## OTAY MESA MINT



**Photo:** Dave Bramlet

**Scientific Name:** *POGOGYNE NUDIUSCULA*

**Federal Status:** Endangered

**Species Description:**

A small, aromatic mint that produces whorls of bright purple flowers in May-June.

**Habitat Description:**

DRY BEDS OF VERNAL POOLS AND MOIST SWALES W/ERYNGIUM ARISTULATUM VAR PARISHII AND ORCUTTIA CALIFORNICA. 85-250M. VERNAL POOLS. ONLY KNOWN FROM SAN DIEGO COUNTY AND BAJA.

**Hazard Class:**

**PD**

# Species Descriptions

## OTAY TARPLANT



**Photo:** Brousseau Collection

Hemizonia sp.

**Scientific Name:** *HEMIZONIA CONJUGENS*

**Federal Status:** Threatened

**Species Description:**

A glandular, aromatic annual with a branching stem to 10 inches high and deep green or gray-green leaves with soft, shaggy hairs, yellow flower heads with 8 to 10 ray flowers and 13 to 21 disk flowers and hairless or sparingly downy corollas.

**Habitat Description:**

COASTAL PLAINS, MESAS, AND RIVER BOTTOMS; OFTEN IN OPEN, DISTURBED AREAS; CLAY SOILS. 20-300M. COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND. IN CALIFORNIA, KNOWN ONLY FROM SAN DIEGO COUNTY.

**Hazard Class:**

**PD**

## PACIFIC POCKET MOUSE



**Photo:** Shana Dodd

**Scientific Name:** *PEROGNATHUS LONGIMEMBRIS PACIFICUS*

**Federal Status:** Endangered

**Species Description:**

A nocturnal granivore with brown, pinkish buff or orange-yellow fur on the back, underside whitish with two small patches of lighter hairs at the base of the ear and bicolored tail, up to 5.2 inches total length and weighing 0.25 to 0.33 ounces.

**Habitat Description:**

SEEMS TO PREFER SOILS OF FINE ALLUVIAL SANDS NEAR THE OCEAN, BUT MUCH REMAINS TO BE LEARNED. INHABITS THE NARROW COASTAL PLAINS FROM THE MEXICAN BORDER NORTH TO EL SEGUNDO, LOS ANGELES CO.

**Hazard Class:**

**FS, PP**

# Species Descriptions

## PENINSULAR BIGHORN SHEEP



**Photo:** Tupper Ansel Blake

**Scientific Name:** *OVIS CANADENSIS CREMNOBATES*

**Federal Status:** Proposed Endangered

**Species Description:**

A large mammal up to 3 feet tall at the shoulder, males weighing up to 220 lbs, females to 140 lbs, both sexes with permanent horns, massive and coiled in the males, smaller and not coiled in the females, pelage white to dark brown with a white rump.

**Habitat Description:**

OPTIMAL HABITAT INCLUDES STEEP WALLED CANYONS AND RIDGES BISECTED BY ROCKY OR SANDY WASHES, WITH AVAILABLE WATER. OPEN DESERT SLOPES BELOW 4,000 FT ELEVATION FROM SAN GORGONIO PASS SOUTH INTO MEXICO.

**Hazard Class:**

**BB**

## RIVERSIDE FAIRY SHRIMP



**Photo:** Guy Bruyca

**Scientific Name:** *STREPTOCEPHALUS WOOTTONI*

**Federal Status:** Endangered

**Species Description:**

1/2 to 1-1/2 inch crustaceans swimming upside down (ventral side up), adults have stalked compound eyes, two sets of antennae, and 11 pairs of leaf-like swimming legs. Coloration varies widely from orange to red, blue, gray or green due to food source.

**Habitat Description:**

INHABIT SEASONALLY ASTATIC POOLS FILLED BY WINTER/SPRING RAINS. HATCH IN WARM WATER LATER IN THE SEASON. ENDEMIC TO W RIVERSIDE & SAN DIEGO COS IN AREAS OF TECTONIC SWALES/EARTH SLUMP BASINS IN GRASSLAND & COASTAL SAGE SCRUB.

**Hazard Class:**

**AQ**

# Species Descriptions

## SAN BERNARDINO BLUE GRASS



**Scientific Name:** *POA ATROPURPUREA*

**Federal Status:** Endangered

**Species Description:**

A tufted perennial with creeping rhizomes, erect, dense spike-like panicle (compound floral axis) 8 to 18 in high, flowers from early May to June, distinguished from Kentucky bluegrass in part by shorter inflorescences, contracted panicles.

**Photo:** "Weeds of the West"

Poa sp.

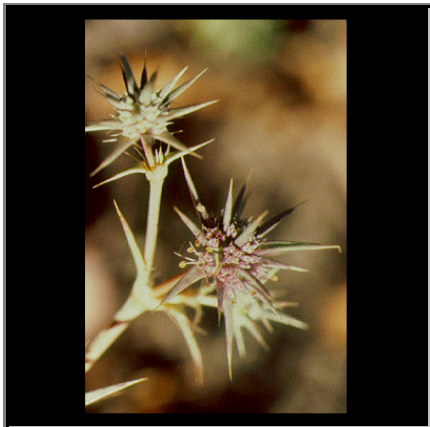
**Habitat Description:**

MESIC MEADOWS OF OPEN PINE FORESTS ND GRASSY SLOPES, LOAMY ALLUVIAL TO SANDY LOAM SOIL. 1350-2455M. MEADOWS AND SEEPS.

**Hazard Class:**

**PM**

## SAN DIEGO BUTTON-CELERY



**Scientific Name:** *ERYNGIUM ARISTULATUM VAR PARISHII*

**Federal Status:** Endangered

**Species Description:**

Basal rosette, white to purplish flowers, to 36 inches.

**Photo:** T. Oberbauer

**Habitat Description:**

SAN DIEGO MESA HARDPAN & CLAYPAN VERNAL POOLS & SOUTHERN INTERIOR BASALT FLOW VERNAL POOLS; USU SURR BY SCRUB. 15-620M. VERNAL POOLS, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND. IN CALIFORNIA, KNOWN ONLY FROM RIVERSIDE & SAN DIEGO CO'S.

**Hazard Class:**

**PD**

# Species Descriptions

## SAN DIEGO FAIRY SHRIMP



**Photo:** Brent Helm, Jones & Stokes  
Branchinecta sp.

**Scientific Name:** *BRANCHINECTA SANDIEGONENSIS*

**Federal Status:** Endangered

**Species Description:**

1/2 to 1-1/2 inch crustaceans swimming upside down (ventral side up), adults have stalked compound eyes, two sets of antennae, and 11 pairs of leaf-like swimming legs. Coloration varies widely from orange to red, blue, gray or green due to food source.

**Habitat Description:**

VERNAL POOLS. ENDEMIC TO SAN DIEGO COUNTY MESAS.

**Hazard Class:**

**AQ**

## SAN DIEGO THORN-MINT



**Photo:** Gerald G. Weland

**Scientific Name:** *ACANTHOMINTHA ILICIFOLIA*

**Federal Status:** Threatened

**Species Description:**

Annual to 6 inches, white to rose tinged flowers.

**Habitat Description:**

ENDEMIC TO ACTIVE VERTISOL CLAY SOILS OF MESAS & VALLEYS. USU ON CLAY LENSES W/IN GRASSLND OR CHAP COMMUNITIES. 10-935M. CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS. RESTRICTED ENDEMIC TO SAN DIEGO COUNTY AND BAJA.

**Hazard Class:**

**PD**

# Species Descriptions

## SPREADING NAVARRETIA



**Photo:** Mark Elvin

**Scientific Name:** *NAVARRETIA FOSSALIS*

**Federal Status:** Threatened

**Species Description:**

A low, mostly spreading or ascending, annual herb, 4 to 6 inches tall with soft, finely divided leaves, 0.4 to 2 inches long, and spine-tipped when dry, the flowers are white to lavender white with linear petals.

**Habitat Description:**

SAN DIEGO HARDPAN & SAN DIEGO CLAYPAN VERNAL POOLS; IN SWALES & V.P.'S, OFTEN SURR. BY OTHER HABITAT TYPES. 30-1300M. VERNAL POOLS, CHENOPOD SCRUB, MARSHES AND SWAMPS, PLAYAS. IN CALIFORNIA, KNOWN ONLY FROM RIVERSIDE AND SAN DIEGO CO.

**Hazard Class:**

**PD**

## STEPHENS' KANGAROO RAT



**Photo:** B. "Moose" Peterson/WRP

**Scientific Name:** *DIPODOMYS STEPHENSI*

**Federal Status:** Endangered

**Species Description:**

A dusky, cinnamon-buff colored mammal with large head and eyes, hip stripe, and tufted tail, head and body to 4-3/4 inches long with tail adding up to 7 inches, adults weigh about 65 grams.

**Habitat Description:**

PREFERS BUCKWHEAT, CHAMISE, BROME GRASS & FILAREE. WILL BURROW INTO FIRM SOIL. PRIMARILY ANNUAL & PERENNIAL GRASSLANDS, BUT ALSO OCCURS IN COASTAL SCRUB & SAGEBRUSH WITH SPARSE CANOPY COVER.

**Hazard Class:**

**FS, KR**

# Species Descriptions

## THREAD-LEAVED BRODIAEA



**Photo:** Brousseau Collection

**Scientific Name:** *BRODIAEA FILIFOLIA*

**Federal Status:** Threatened

**Species Description:**

A perennial in the lily family to 8 to 16 inches tall with several narrow leaves that are shorter than the leafless flower stalk, with violet flowers from May to June.

**Habitat Description:**

USUALLY ASSOCIATED WITH ANNUAL GRASSLAND AND VERNAL POOLS; OFTEN SURR BY SHRUBLAND HABITATS. CLAY SOILS. 35-855M. CISMONTANE WOODLAND, COASTAL SCRUB, PLAYAS, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.

**Hazard Class:**

**PM**

## TIDEWATER GOBY



**Photo:** B. "Moose" Peterson/WRP

**Scientific Name:** *EUCYCLOGOBIUS NEWBERRYI*

**Federal Status:** Endangered

**Species Description:**

A brackish water fish, rarely exceeding 2 inches in length, semitranslucent, gray to dark olive elongated body with dusky fins edged in cream, yellow or pale orange.

**Habitat Description:**

FOUND IN SHALLOW LAGOONS AND LOWER STREAM REACHES, THEY NEED FAIRLY STILL BUT NOT STAGNANT WATER & HIGH OXYGEN LEVELS. BRACKISH WATER HABITATS ALONG THE CALIF COAST FROM AGUA HEDIONDA LAGOON, SAN DIEGO CO. TO THE MOUTH OF THE SMITH RIVER.

**Hazard Class:**

**AQ**

# Species Descriptions

## UNARMORED THREESPINE STICKLEBACK



**Scientific Name:** *GASTEROSTEUS ACULEATUS WILLIAMSONI*

**Federal Status:** Endangered

**Species Description:**

A small, spindle-shaped fish with three angular spines along its back, and skin rather than scales, to 2-1/3 inches long, typically drab-olive color changes to pale blue and scarlet in the males.

**Photo:** B. "Moose" Peterson/WRP

**Habitat Description:**

COOL (<24 C), CLEAR WATER WITH ABUNDANT VEGETATION. WEEDY POOLS, BACKWATERS, AND AMONG EMERGENT VEGETATION AT THE STREAM EDGE IN SMALL SOUTHERN CALIFORNIA STREAMS.

**Hazard Class:**

**AQ**

## WESTERN SNOWY PLOVER



**Scientific Name:** *CHARADRIUS ALEXANDRINUS NIVOSUS (NESTING)*

**Federal Status:** Threatened

**Species Description:**

A shore bird with compact body, short neck, large eyes, dark legs and beak, dark partial neckband, males with black forehead and breast markings, females with dark brown markings. Calls include a low pitched "krut" and "ku-wheet."

**Photo:** Don Baccus

**Habitat Description:**

REQUIRES SANDY, GRAVELLY OR FRIABLE SOIL SUBSTRATE FOR NESTING. SANDY BEACHES ON MARINE AND ESTUARINE SHORES, ALSO SALT POND LEVEES AND THE SHORES OF LARGE ALKALI LAKES.

**Hazard Class:**

**AV**

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
08S01W: S34	Stephens' Kangaroo Rat
08S05W: S3,9-11,22-23,26	Thread-leaved Brodiaea
08S06W: S13	Encinitas Baccharis
08S06W: S19-20	Arroyo Toad
08S06W: S29	Thread-leaved Brodiaea
08S06W: S32	Stephens' Kangaroo Rat
08S07W: S35	Riverside Fairy Shrimp
09S01W: S3	Stephens' Kangaroo Rat
09S02W: S32	Least Bell's Vireo
09S03E: S27,34	Arroyo Toad
09S03W: S4-5,7-8	Least Bell's Vireo
09S04E: S1-2,11-14,24-25,36	Peninsular Bighorn Sheep
09S04W: S12,20	Least Bell's Vireo
09S04W: S25-27	Stephens' Kangaroo Rat
09S04W: S28	Least Bell's Vireo, Stephens' Kangaroo Rat
09S04W: S29,31	Least Bell's Vireo
09S04W: S32-33	Least Bell's Vireo, Stephens' Kangaroo Rat
09S04W: S34	Stephens' Kangaroo Rat
09S04W: S35	Least Bell's Vireo, Stephens' Kangaroo Rat
09S04W: S36	Stephens' Kangaroo Rat
09S04W: S5,8	Arroyo Toad
09S05E: S20	Least Bell's Vireo, Peninsular Bighorn Sheep
09S05E: S21	Peninsular Bighorn Sheep
09S05E: S22-23,25-26	Least Bell's Vireo, Peninsular Bighorn Sheep
09S05E: S27-28	Peninsular Bighorn Sheep
09S05E: S29-32	Least Bell's Vireo, Peninsular Bighorn Sheep
09S05E: S3-4	Peninsular Bighorn Sheep
09S05E: S33-36	Peninsular Bighorn Sheep
09S05E: S5-6	Least Bell's Vireo, Peninsular Bighorn Sheep
09S05E: S7-11,14-19	Peninsular Bighorn Sheep
09S05W: S25-26,28	Stephens' Kangaroo Rat
09S05W: S29	Thread-leaved Brodiaea
09S05W: S33	Least Bell's Vireo, Stephens' Kangaroo Rat
09S05W: S34	Stephens' Kangaroo Rat
09S05W: S35	Stephens' Kangaroo Rat, Thread-leaved Brodiaea
09S05W: S36	Thread-leaved Brodiaea
09S06W: S15	Thread-leaved Brodiaea
09S06W: S18	Tidewater Goby

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
09S06W: S19	California Least Tern
09S06W: S22-23	Thread-leaved Brodiaea
09S06W: S30	California Least Tern
09S06W: S5	Thread-leaved Brodiaea
09S06W: S6	Least Bell's Vireo
09S07E: S1-3,11-14,23-25,36	Peninsular Bighorn Sheep
09S07W: S10	Pacific Pocket Mouse
09S07W: S11	Least Bell's Vireo, Pacific Pocket Mouse, Tidewater Goby
09S07W: S13	Pacific Pocket Mouse, Tidewater Goby
09S07W: S14	Least Bell's Vireo, Tidewater Goby
09S07W: S15,23	Tidewater Goby
09S07W: S2	Tidewater Goby
09S07W: S24	California Least Tern, San Diego Fairy Shrimp, Tidewater Goby
09S08E: S4-10,15-22,27-34	Peninsular Bighorn Sheep
10S01E: S12	San Bernardino Blue Grass
10S02E: S14-15,22-25,36	Stephens' Kangaroo Rat
10S02E: S7	San Bernardino Blue Grass
10S02W: S5-6,31	Least Bell's Vireo
10S03E: S22	Arroyo Toad, Stephens' Kangaroo Rat
10S03E: S23	Arroyo Toad
10S03E: S26-35	Stephens' Kangaroo Rat
10S03E: S9,15-17,19-21	Stephens' Kangaroo Rat
10S03W: S1-2	Least Bell's Vireo
10S03W: S10	Least Bell's Vireo
10S03W: S11	Arroyo Toad
10S03W: S15-17,20-21,29-31,35-36	Least Bell's Vireo
10S03W: S9	Arroyo Toad, Least Bell's Vireo
10S04W: S1-4	Stephens' Kangaroo Rat
10S04W: S10-11,14-15	Stephens' Kangaroo Rat
10S04W: S18,27-28,33-36	Least Bell's Vireo
10S04W: S5	Least Bell's Vireo, Stephens' Kangaroo Rat
10S04W: S6-8	Least Bell's Vireo
10S05E: S1-4	Peninsular Bighorn Sheep
10S05E: S22-23	Least Bell's Vireo, Peninsular Bighorn Sheep
10S05E: S24	Peninsular Bighorn Sheep
10S05E: S25	Desert Pupfish, Peninsular Bighorn Sheep
10S05E: S26	Desert Pupfish, Least Bell's Vireo, Peninsular Bighorn Sheep

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
10S05E: S27,34	Peninsular Bighorn Sheep
10S05E: S35-36	Desert Pupfish, Peninsular Bighorn Sheep
10S05E: S5	Least Bell's Vireo, Peninsular Bighorn Sheep
10S05E: S6,8-17,20-21	Peninsular Bighorn Sheep
10S05W: S18	Least Bell's Vireo, Tidewater Goby
10S05W: S19	Least Bell's Vireo, San Diego Button-celery, Tidewater Goby
10S05W: S23-24,26	Least Bell's Vireo
10S05W: S27	San Diego Button-celery, Spreading Navarretia
10S05W: S30	San Diego Button-celery
10S05W: S31	California Least Tern, San Diego Button-celery, Tidewater Goby, Western Snowy Plover
10S05W: S34	San Diego Button-celery, Spreading Navarretia
10S05W: S35	Least Bell's Vireo
10S05W: S4-5,13-14	Least Bell's Vireo
10S06E: S30-31	Desert Pupfish
10S06W: S13	Least Bell's Vireo, San Diego Button-celery
10S06W: S14,23	San Diego Button-celery
10S06W: S24	Least Bell's Vireo, Light-footed Clapper Rail, San Diego Button-celery, Tidewater Goby
10S06W: S25	San Diego Button-celery
10S07E: S1	Peninsular Bighorn Sheep
10S08E: S4-6	Peninsular Bighorn Sheep
11S02E: S1,12	Stephens' Kangaroo Rat
11S02W: S6-7	Least Bell's Vireo
11S03E: S1-13,15-18,21-22,27	Stephens' Kangaroo Rat
11S03W: S1-2,11-12	Least Bell's Vireo
11S03W: S19-20,31	Thread-leaved Brodiaea
11S03W: S34-36	San Diego Button-celery, Spreading Navarretia
11S04E: S6-7	Stephens' Kangaroo Rat
11S04W: S1	Least Bell's Vireo
11S04W: S18	Least Bell's Vireo, Tidewater Goby
11S04W: S2	California Least Tern, Least Bell's Vireo, Light-footed Clapper Rail, Stephens' Kangaroo Rat
11S04W: S22-27	Thread-leaved Brodiaea
11S04W: S3	California Least Tern, Least Bell's Vireo, Light-footed Clapper Rail
11S04W: S31	California Least Tern, Light-footed Clapper Rail, Tidewater Goby
11S04W: S32	Least Bell's Vireo
11S04W: S33	Thread-leaved Brodiaea
11S04W: S4-6	Least Bell's Vireo

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
11S04W: S7	Least Bell's Vireo, Tidewater Goby
11S04W: S8	Least Bell's Vireo
11S04W: S9,14-16	Thread-leaved Brodiaea
11S05E: S1-4,9	Peninsular Bighorn Sheep
11S05E: S10-11	Least Bell's Vireo, Peninsular Bighorn Sheep
11S05E: S12-14,21-36	Peninsular Bighorn Sheep
11S05W: S10	Least Bell's Vireo
11S05W: S11	Least Bell's Vireo, San Diego Button-celery
11S05W: S13	Least Bell's Vireo, Tidewater Goby
11S05W: S14	Least Bell's Vireo, San Diego Button-celery, Tidewater Goby
11S05W: S2	Least Bell's Vireo, San Diego Button-celery
11S05W: S22-23	Least Bell's Vireo, Tidewater Goby
11S05W: S3	Least Bell's Vireo
11S05W: S36	California Least Tern, Light-footed Clapper Rail, Tidewater Goby
11S05W: S5	Light-footed Clapper Rail, Tidewater Goby
11S05W: S8	California Least Tern, Light-footed Clapper Rail, Western Snowy Plover
11S05W: S9	California Least Tern, Coastal Dunes Milk-vetch, Light-footed Clapper Rail, Western Snowy Plover
11S06E: S19,29-33	Peninsular Bighorn Sheep
12S01E: S13,24	Least Bell's Vireo
12S01W: S24	Arroyo Toad
12S01W: S28	San Diego Thorn-mint
12S01W: S30-31,33-36	Least Bell's Vireo
12S02E: S18-19	Least Bell's Vireo
12S02W: S18	Del Mar Manzanita
12S02W: S31	Encinitas Baccharis
12S02W: S34-35	Least Bell's Vireo
12S02W: S6	San Diego Thorn-mint
12S03W: S1-2	San Diego Button-celery, Spreading Navarretia
12S03W: S11-12	San Diego Button-celery, Spreading Navarretia
12S03W: S15	San Diego Button-celery, San Diego Thorn-mint, Spreading Navarretia, Thread-leaved Brodiaea
12S03W: S16	Least Bell's Vireo, San Diego Button-celery, San Diego Thorn-mint, Spreading Navarretia, Thread-leaved Brodiaea
12S03W: S17	San Diego Thorn-mint, Thread-leaved Brodiaea
12S03W: S18	Del Mar Manzanita, San Diego Thorn-mint, Thread-leaved Brodiaea
12S03W: S19	San Diego Thorn-mint, Thread-leaved Brodiaea
12S03W: S20	Thread-leaved Brodiaea
12S03W: S24-25	Del Mar Manzanita

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
12S03W: S3	San Diego Button-celery, Spreading Navarretia, Thread-leaved Brodiaea
12S03W: S31	San Diego Thorn-mint
12S03W: S36	Encinitas Baccharis
12S03W: S4,6-8	Thread-leaved Brodiaea
12S03W: S9-10	San Diego Button-celery, San Diego Thorn-mint, Spreading Navarretia, Thread-leaved Brodiaea
12S04E: S2-3	Least Bell's Vireo
12S04W: S10	San Diego Thorn-mint, Thread-leaved Brodiaea
12S04W: S12-13	Thread-leaved Brodiaea
12S04W: S14	Del Mar Manzanita, San Diego Thorn-mint
12S04W: S15	Del Mar Manzanita, Thread-leaved Brodiaea
12S04W: S17-18	Tidewater Goby, Western Snowy Plover
12S04W: S20	Spreading Navarretia
12S04W: S21	San Diego Thorn-mint
12S04W: S22	Del Mar Manzanita
12S04W: S23	Del Mar Manzanita, Thread-leaved Brodiaea
12S04W: S24	San Diego Thorn-mint, Thread-leaved Brodiaea
12S04W: S25	Thread-leaved Brodiaea
12S04W: S26	Del Mar Manzanita, Thread-leaved Brodiaea
12S04W: S27	Del Mar Manzanita
12S04W: S28	California Least Tern, Western Snowy Plover
12S04W: S29	Riverside Fairy Shrimp, Spreading Navarretia
12S04W: S33-34	California Least Tern, Western Snowy Plover
12S04W: S35	California Least Tern, Del Mar Manzanita, Western Snowy Plover
12S04W: S36	Del Mar Manzanita
12S04W: S4	Thread-leaved Brodiaea
12S04W: S7-8	Tidewater Goby, Western Snowy Plover
12S05E: S1-5,9-14	Peninsular Bighorn Sheep
12S05E: S22	Least Bell's Vireo
12S05E: S23	Least Bell's Vireo, Peninsular Bighorn Sheep
12S05E: S24-26	Peninsular Bighorn Sheep
12S05E: S27	Least Bell's Vireo
12S05E: S28	Unarmored Threespine Stickleback
12S05E: S36	Peninsular Bighorn Sheep
12S05W: S1	California Least Tern, Light-footed Clapper Rail, Tidewater Goby
12S06E: S17-18	Least Bell's Vireo, Peninsular Bighorn Sheep
12S06E: S19-36	Peninsular Bighorn Sheep
12S06E: S4-7	Peninsular Bighorn Sheep

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
12S06E: S8	Least Bell's Vireo, Peninsular Bighorn Sheep
12S06E: S9,13-16	Peninsular Bighorn Sheep
12S07E: S19,29-32	Peninsular Bighorn Sheep
13S01E: S20-21	Spreading Navarretia
13S01W: S34	Encinitas Baccharis
13S02W: S10-11	Least Bell's Vireo
13S02W: S16,20-21	Encinitas Baccharis
13S02W: S2-3	Least Bell's Vireo
13S02W: S28	San Diego Thorn-mint
13S02W: S6-7,9	Encinitas Baccharis
13S03W: S1	Encinitas Baccharis
13S03W: S11-12	Encinitas Baccharis
13S03W: S23	Del Mar Manzanita
13S03W: S24	San Diego Thorn-mint
13S03W: S26	Spreading Navarretia
13S03W: S29-30	Del Mar Manzanita
13S03W: S31	Del Mar Manzanita, Encinitas Baccharis
13S03W: S35	San Diego Thorn-mint
13S03W: S6	San Diego Thorn-mint, Thread-leaved Brodiaea
13S03W: S7	Del Mar Manzanita, San Diego Thorn-mint
13S03W: S8	Thread-leaved Brodiaea
13S04W: S1	Del Mar Manzanita, Thread-leaved Brodiaea
13S04W: S10	Encinitas Baccharis, San Diego Thorn-mint
13S04W: S11	Del Mar Manzanita, Encinitas Baccharis
13S04W: S12	Del Mar Manzanita, Thread-leaved Brodiaea
13S04W: S13	Del Mar Manzanita
13S04W: S14	Del Mar Manzanita, Encinitas Baccharis
13S04W: S15	Encinitas Baccharis, San Diego Thorn-mint
13S04W: S2-3	Del Mar Manzanita, Encinitas Baccharis
13S04W: S23	Del Mar Manzanita, Encinitas Baccharis, Pacific Pocket Mouse, San Diego Thorn-mint
13S04W: S24	Del Mar Manzanita, Pacific Pocket Mouse, San Diego Thorn-mint
13S04W: S25	California Least Tern, Light-footed Clapper Rail, Western Snowy Plover
13S04W: S26	California Least Tern, Del Mar Manzanita, Light-footed Clapper Rail, Western Snowy Plover
13S04W: S27,34-35	California Least Tern, Light-footed Clapper Rail, Western Snowy Plover
13S04W: S36	Del Mar Manzanita
13S06E: S1-6,8-13	Peninsular Bighorn Sheep
13S07E: S3-10,16-18	Peninsular Bighorn Sheep

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
14S01E: S4	San Diego Thorn-mint
14S01W: S4-9,17-18,21-22,27-28,35	San Diego Thorn-mint
14S02W: S15	Encinitas Baccharis
14S02W: S20	Del Mar Manzanita
14S02W: S21	San Diego Thorn-mint
14S02W: S22-23,26-29	Del Mar Manzanita
14S02W: S30	San Diego Thorn-mint
14S02W: S33-34	Del Mar Manzanita
14S03W: S13-15	San Diego Button-celery
14S03W: S17-20,22	Del Mar Manzanita
14S03W: S23-25	San Diego Button-celery
14S03W: S27	Del Mar Manzanita, San Diego Thorn-mint
14S03W: S29	San Diego Button-celery, San Diego Fairy Shrimp
14S03W: S30	Del Mar Manzanita, Encinitas Baccharis, San Diego Fairy Shrimp
14S03W: S31	Light-footed Clapper Rail, Western Snowy Plover
14S03W: S32,34-35	San Diego Button-celery
14S03W: S7-8	Del Mar Manzanita
14S04W: S1	Del Mar Manzanita
14S04W: S11	California Least Tern, Del Mar Manzanita, Western Snowy Plover
14S04W: S12-13	California Least Tern, Del Mar Manzanita
14S04W: S14	Del Mar Manzanita, Western Snowy Plover
14S04W: S2	California Least Tern, Del Mar Manzanita
14S04W: S23	Del Mar Manzanita, Light-footed Clapper Rail, Western Snowy Plover
14S04W: S24	Del Mar Manzanita
14S04W: S25	Coastal Dunes Milk-vetch, Del Mar Manzanita, Light-footed Clapper Rail, Western Snowy Plover
14S04W: S26	Coastal Dunes Milk-vetch, Light-footed Clapper Rail, Western Snowy Plover
14S04W: S35	Coastal Dunes Milk-vetch
14S04W: S36	Coastal Dunes Milk-vetch, Del Mar Manzanita, Light-footed Clapper Rail, Western Snowy Plover
14S05E: S1	Least Bell's Vireo
14S05E: S27-29,32-34	San Bernardino Blue Grass
14S06E: S6,10	Least Bell's Vireo
14S07E: S18-19	Least Bell's Vireo
14S07E: S25,36	Desert Pupfish
15S01E: S25	Encinitas Baccharis
15S01E: S7,18	Least Bell's Vireo
15S01W: S13,28-30	Least Bell's Vireo

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
15S01W: S2	San Diego Thorn-mint
15S02E: S23-26,34	San Diego Thorn-mint
15S02W: S19	California Orcutt Grass, San Diego Button-celery
15S02W: S20	San Diego Button-celery, San Diego Fairy Shrimp
15S02W: S21	San Diego Fairy Shrimp
15S02W: S24-25	Least Bell's Vireo
15S02W: S27	San Diego Thorn-mint
15S02W: S28	San Diego Fairy Shrimp
15S02W: S29	San Diego Button-celery
15S02W: S30	California Orcutt Grass, San Diego Button-celery, Spreading Navarretia
15S02W: S31	San Diego Button-celery, Spreading Navarretia
15S02W: S34	Least Bell's Vireo, San Diego Thorn-mint
15S02W: S35	Least Bell's Vireo
15S02W: S4	San Diego Fairy Shrimp
15S02W: S5	Riverside Fairy Shrimp, San Diego Button-celery, San Diego Fairy Shrimp
15S02W: S7-8,17-18	San Diego Button-celery
15S03E: S13-14	Least Bell's Vireo
15S03E: S16,21	San Diego Thorn-mint
15S03E: S23-26	Least Bell's Vireo
15S03E: S30	San Diego Thorn-mint
15S03W: S1-2	San Diego Button-celery
15S03W: S10	Otay Mesa Mint, San Diego Button-celery, Spreading Navarretia
15S03W: S11	Otay Mesa Mint, San Diego Button-celery
15S03W: S12-13	San Diego Button-celery
15S03W: S14	San Diego Button-celery, San Diego Fairy Shrimp
15S03W: S15	San Diego Button-celery, Spreading Navarretia
15S03W: S16	San Diego Fairy Shrimp
15S03W: S23	San Diego Button-celery, San Diego Fairy Shrimp
15S03W: S24-25	San Diego Button-celery
15S03W: S36	San Diego Button-celery, Spreading Navarretia
15S03W: S5	Light-footed Clapper Rail, Western Snowy Plover
15S03W: S6	Del Mar Manzanita, Light-footed Clapper Rail, Western Snowy Plover
15S03W: S9	San Diego Button-celery, San Diego Fairy Shrimp
15S04E: S12-13	Arroyo Toad
15S04E: S18-20	Least Bell's Vireo
15S04E: S24-26	Arroyo Toad
15S04E: S30	Least Bell's Vireo
15S04E: S36	Arroyo Toad

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
15S04W: S1	Coastal Dunes Milk-vetch, Del Mar Manzanita
15S05E: S18,31	Arroyo Toad
15S05E: S3-4,15	San Bernardino Blue Grass
15S07E: S33-36	Peninsular Bighorn Sheep
15S08E: S31	Peninsular Bighorn Sheep
16S01E: S26-27	San Diego Thorn-mint
16S01E: S29,31	Least Bell's Vireo
16S01E: S34	San Diego Thorn-mint
16S01W: S19	San Diego Thorn-mint
16S01W: S20-21	Least Bell's Vireo, San Diego Thorn-mint
16S01W: S22,26	Least Bell's Vireo
16S01W: S28-33	San Diego Thorn-mint
16S01W: S35-36	Least Bell's Vireo
16S01W: S8-9,15-17	Least Bell's Vireo
16S02E: S11	Arroyo Toad, Least Bell's Vireo
16S02E: S18-19	Least Bell's Vireo
16S02W: S17-18	Least Bell's Vireo, San Diego Thorn-mint
16S02W: S19	Least Bell's Vireo, Otay Mesa Mint, San Diego Thorn-mint
16S02W: S2-3	Least Bell's Vireo, San Diego Thorn-mint
16S02W: S20	Least Bell's Vireo, San Diego Thorn-mint
16S02W: S21-22	San Diego Button-celery, San Diego Thorn-mint
16S02W: S23-24	San Diego Thorn-mint
16S02W: S30-31	Otay Mesa Mint, San Diego Thorn-mint
16S02W: S34	San Diego Button-celery
16S02W: S35	San Diego Button-celery, San Diego Fairy Shrimp
16S02W: S5	San Diego Fairy Shrimp
16S02W: S6	San Diego Button-celery, Spreading Navarretia
16S02W: S7	Least Bell's Vireo
16S02W: S8	San Diego Fairy Shrimp, San Diego Thorn-mint
16S02W: S9-11,13-16	San Diego Thorn-mint
16S03E: S23,34	Least Bell's Vireo
16S03W: S1	San Diego Button-celery, Spreading Navarretia
16S03W: S12	Least Bell's Vireo
16S03W: S13	Least Bell's Vireo, San Diego Button-celery
16S03W: S14	Otay Mesa Mint, San Diego Button-celery, San Diego Thorn-mint
16S03W: S15	Least Bell's Vireo, Otay Mesa Mint, San Diego Thorn-mint
16S03W: S17	California Least Tern
16S03W: S20	Light-footed Clapper Rail

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
16S03W: S21	Light-footed Clapper Rail, Otay Mesa Mint, San Diego Thorn-mint
16S03W: S22-23	Otay Mesa Mint, San Diego Thorn-mint
16S03W: S24	Least Bell's Vireo, Otay Mesa Mint, San Diego Thorn-mint
16S03W: S25-26	Otay Mesa Mint, San Diego Thorn-mint
16S03W: S27	California Least Tern, Otay Mesa Mint, San Diego Thorn-mint, Western Snowy Plover
16S03W: S28	California Least Tern, Light-footed Clapper Rail, Otay Mesa Mint, San Diego Thorn-mint, Western Snowy Plover
16S03W: S29	Light-footed Clapper Rail, Western Snowy Plover
16S03W: S32-34	California Least Tern, Western Snowy Plover
16S03W: S35	California Least Tern, Otay Mesa Mint
16S03W: S36	Otay Mesa Mint, San Diego Thorn-mint
16S03W: S7	Light-footed Clapper Rail
16S03W: S8	California Least Tern
16S04W: S24-25	California Least Tern
16S05E: S17,20	Least Bell's Vireo
16S07E: S1-5,8-16,21-28,35-36	Peninsular Bighorn Sheep
16S08E: S5-9,16-21,29-32	Peninsular Bighorn Sheep
17S01E: S17	San Diego Button-celery
17S01E: S31	San Diego Thorn-mint
17S01E: S33-34	Least Bell's Vireo
17S01W: S1	Least Bell's Vireo
17S01W: S10	Least Bell's Vireo, San Diego Thorn-mint
17S01W: S11	Least Bell's Vireo
17S01W: S15	Otay Tarplant
17S01W: S16	Otay Tarplant, San Diego Thorn-mint, Spreading Navarretia
17S01W: S17	Otay Tarplant, San Diego Thorn-mint
17S01W: S18	Otay Tarplant
17S01W: S19	San Diego Thorn-mint
17S01W: S2	Least Bell's Vireo, Otay Tarplant
17S01W: S20	Otay Tarplant
17S01W: S21	Otay Tarplant, Spreading Navarretia
17S01W: S22-23,25-29	Otay Tarplant
17S01W: S3	Least Bell's Vireo, San Diego Thorn-mint
17S01W: S30	San Diego Thorn-mint
17S01W: S31	Otay Tarplant, San Diego Thorn-mint
17S01W: S32	Otay Tarplant
17S01W: S4-5	San Diego Thorn-mint
17S01W: S8	Otay Tarplant, San Diego Thorn-mint

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
17S01W: S9	Least Bell's Vireo, Otay Tarplant, San Diego Thorn-mint
17S02W: S15-16,21-26	San Diego Thorn-mint
17S02W: S27-28	Light-footed Clapper Rail, San Diego Thorn-mint
17S02W: S29	Light-footed Clapper Rail
17S02W: S32	California Least Tern, Light-footed Clapper Rail, Western Snowy Plover
17S02W: S33	Light-footed Clapper Rail
17S02W: S34	Least Bell's Vireo, Light-footed Clapper Rail
17S02W: S35	Least Bell's Vireo, San Diego Thorn-mint
17S02W: S36	San Diego Thorn-mint
17S02W: S6	Otay Mesa Mint
17S03E: S2-3	Least Bell's Vireo
17S03W: S1	Otay Mesa Mint
17S03W: S18,20-21	Western Snowy Plover
17S03W: S2	California Least Tern, Otay Mesa Mint
17S03W: S22-23	Coastal Dunes Milk-vetch
17S03W: S26	California Least Tern, Coastal Dunes Milk-vetch
17S03W: S3-4	California Least Tern, Western Snowy Plover
17S03W: S35-36	Coastal Dunes Milk-vetch
17S03W: S5,7	Western Snowy Plover
17S03W: S8-9,16-17	California Least Tern, Western Snowy Plover
17S04E: S18-19,21-22,26-27	Least Bell's Vireo
17S05E: S8	Arroyo Toad
17S07E: S1-2,11-12	Peninsular Bighorn Sheep
17S08E: S6-7	Peninsular Bighorn Sheep
18S01E: S18	Least Bell's Vireo, Otay Mesa Mint, San Diego Button-celery
18S01E: S29-31	Otay Tarplant
18S01E: S3-4	Least Bell's Vireo
18S01E: S6	San Diego Thorn-mint
18S01E: S7-8	San Diego Button-celery
18S01W: S1-2,7	Otay Tarplant
18S01W: S13	Least Bell's Vireo, Otay Mesa Mint, Otay Tarplant, San Diego Button-celery
18S01W: S16	Otay Tarplant
18S01W: S17	Otay Tarplant, Spreading Navarretia
18S01W: S18	Otay Tarplant
18S01W: S19	Least Bell's Vireo, Otay Tarplant
18S01W: S20-21	Otay Tarplant
18S01W: S22	California Orcutt Grass, Otay Mesa Mint, Otay Tarplant, Riverside Fairy Shrimp, San Diego Button-celery, San Diego Fairy Shrimp

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
18S01W: S23	Otay Mesa Mint, Otay Tarplant, Riverside Fairy Shrimp, San Diego Button-celery, San Diego Fairy Shrimp
18S01W: S24	Otay Mesa Mint, San Diego Button-celery, San Diego Fairy Shrimp
18S01W: S25	San Diego Button-celery, Spreading Navarretia
18S01W: S26	Otay Mesa Mint, Riverside Fairy Shrimp, San Diego Button-celery, San Diego Fairy Shrimp
18S01W: S27	California Orcutt Grass, Otay Mesa Mint, Otay Tarplant, Riverside Fairy Shrimp, San Diego Button-celery, San Diego Fairy Shrimp
18S01W: S28	Otay Tarplant
18S01W: S29	Otay Mesa Mint, Otay Tarplant, San Diego Button-celery, Spreading Navarretia
18S01W: S30	Otay Tarplant, San Diego Button-celery, Spreading Navarretia
18S01W: S31	San Diego Button-celery, Spreading Navarretia
18S01W: S32	Otay Mesa Mint, Spreading Navarretia
18S01W: S34	California Orcutt Grass, Otay Mesa Mint, Otay Tarplant, San Diego Button-celery, Spreading Navarretia
18S01W: S35	California Orcutt Grass, Otay Mesa Mint, Spreading Navarretia
18S01W: S8	Otay Tarplant, Spreading Navarretia
18S02W: S13-14	Otay Tarplant
18S02W: S16	Light-footed Clapper Rail, Western Snowy Plover
18S02W: S17	California Least Tern, Light-footed Clapper Rail, Western Snowy Plover
18S02W: S18-19	Light-footed Clapper Rail, Western Snowy Plover
18S02W: S20	California Least Tern, Light-footed Clapper Rail, Western Snowy Plover
18S02W: S21	Light-footed Clapper Rail, Western Snowy Plover
18S02W: S23-26	Otay Tarplant
18S02W: S30	Light-footed Clapper Rail
18S02W: S31	California Least Tern, Light-footed Clapper Rail, Western Snowy Plover
18S02W: S32	Light-footed Clapper Rail
18S02W: S33-35	Least Bell's Vireo
18S02W: S36	San Diego Button-celery
18S02W: S5	California Least Tern, Light-footed Clapper Rail, Western Snowy Plover
18S02W: S7	Western Snowy Plover
18S02W: S9	Light-footed Clapper Rail, Western Snowy Plover
18S03E: S18	Arroyo Toad
18S03W: S12	Western Snowy Plover
18S05E: S16-21	Least Bell's Vireo
19S01E: S6	Otay Tarplant
19S01W: S3	California Orcutt Grass, Otay Mesa Mint, San Diego Button-celery, Spreading Navarretia
19S01W: S5	California Orcutt Grass, San Diego Button-celery

# Section List - San Diego County

<b>Sections</b>	<b>Species</b>
19S01W: S6	California Orcutt Grass, San Diego Button-celery, Spreading Navarretia
19S02W: S1-4	Least Bell's Vireo
19S02W: S5	Least Bell's Vireo, Light-footed Clapper Rail
19S02W: S6-7	Light-footed Clapper Rail

