2016 Annual Vegetation and Noxious Weed Management Report

Santa Felicia Project

FERC License No. 2153-012

Prepared for:
Federal Energy Regulatory Commission

December 30, 2016

Prepared by:

UNITED WATER CONSERVATION DISTRICT
"Conserving Water Since 1927"

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1.0 EXECUTIVE SUMMARY

This annual report presents information related to implementation activities conducted between January 1 and December 31, 2016, in accordance with the "Vegetation and Noxious Weed Management Plan" (Management Plan) developed to comply with requirements of United Water Conservation District's (United) license issued by the Federal Energy Regulatory Commission (FERC). Activities conducted during 2016 included conducting focused surveys to complete the required 5-year update to the 2011 baseline inventory, conducting tamarisk treatment activities, and consulting with regulatory agencies to review future vegetation management strategies. In support of these efforts, United pursued and obtained a Lake and Streambed Alteration Agreement (LSAA) (issued January 21, 2016) from the California Department of Fish and Wildlife (CDFW) authorizing noxious weed management activities.

Focused surveys for target noxious weed species were conducted in 2016 throughout the Vegetation and Noxious Weed Management Area (Management Area). Tamarisk infestations identified during the surveys were comprised of approximately 4700 individual plants occupying approximately 12.2 total acres within the Management Area. Observed tamarisk infestations were composed of new growth and regrowth in some previously treated areas. Tamarisk control activities were focused in areas that are reasonably accessible along the west shore of Lake Piru, from Reasoner Canyon south to Santa Felicia Dam (Priority Treatment Area). During this reporting period, approximately 1282 individual plants were treated throughout the Priority Treatment Area.

A small amount (0.09 acres) of cattails were removed from lower Piru Creek to improve drainage below the Santa Felicia outlet works. Revegetation of these areas was not appropriate and no revegetation activities were conducted in 2016.

2.0 BACKGROUND

United owns and operates the Santa Felicia Project (Project) on Piru Creek in Ventura County, California. FERC issued a new license to United for the operations of the Project on September 12, 2008 (FERC Project No. 2153). Article 405 of the license requires United to file a vegetation and noxious weed management plan for lands within the project boundary that incorporates provisions of the U.S. Forest Service's (USFS) section 4(e) condition 18(b). United filed the Management Plan, on October 12, 2010, and FERC issued an order modifying and approving the Management Plan on February 14, 2011.

The Management Plan requires United to produce annual technical reports presenting the results of monitoring and control efforts conducted throughout the prior year (reporting period). This report describes activities performed between January 1, 2016, and December 31, 2016.

The Management Plan specifically identifies that the report must contain the following components:

1. Summary of target noxious weed populations including existing and new populations in areas tied-to Project actions or effects.
2. Project area map depicting point and polygon data for target noxious weed populations as recorded for the Noxious Weed GIS Data Layer.
3. Description of control areas and treatments used over the past year.
4. Brief evaluation of priority treatment areas.

5. Recommended control measures for each population/treatment area including proposed chemical controls.
6. Description of revegetation efforts conducted during the reporting period.
7. Evaluation of revegetation efforts conducted prior to and within the reporting period.
8. Summary of proposed revegetation areas.

In addition, on January 29, 2013, FERC issued an order approving and amending a plan to use existing vegetation in Reasoner Canyon Creek to satisfy bank stabilization requirements of Article 407 of the license. The order requires United to include a description of any revegetation activities conducted during the year in Reasoner Canyon Creek for bank stabilization purposes in this annual report.

The regional location of Lake Piru is illustrated in Figure 1. Figure 2 illustrates the Management Area, Priority Treatment Area, infested areas mapped during the inventory update conducted in April 2016, and areas treated in October 2016. Insets shown in Figure 2 are expanded to present more detail for Reasoner Canyon Creek and areas below the Santa Felicia Dam.

2.1 Summary of prior activities

This report serves as the sixth annual report documenting monitoring and control activities conducted in accordance with the Management Plan. Activities described in prior annual reports are summarized in this section.

2.1.1 Reporting period February 14, 2011, through February 28, 2012

United performed a baseline inventory survey of targeted noxious weed species within the Management Area. The inventory survey was conducted in April of 2011. The only targeted noxious weed that was observed during the baseline survey was *Tamarix ramosissima* (tamarisk). The Plan required that United finalize, in consultation with the Los Padres National Forest (LPNF), the priority infestations and treatment methods based on information obtained from the baseline inventory survey. United consulted with the LPNF on February 2, 2012 and presented results of the baseline inventory. Following guidance from the LPNF, United developed a draft "Strategy for Treatment and Eradication of *Tamarix ramosissima"* (Eradication Plan) based on a draft model developed by the LPNF for the purpose of eradicating tamarisk from Piru Creek, Lockwood Creek, Cuyama River, Santa Ynez River, Sisquoc River, and Arroyo Seco River. United provided a draft of the Eradication Plan to LPNF for review.

2.1.2 Reporting period March 1, 2012, through February 28, 2013

Following guidance from LPNF, the Eradication Plan was finalized. United's Board of Directors determined that tamarisk removal activities, as described in the Eradication Plan, are categorically exempt from the California Environmental Quality Act (CEQA) and a Notice of Exemption was filed with the Ventura County Clerk of the Board of Supervisors on December 31, 2012. United consulted with the U.S. Army Corps of Engineers (ACOE) on November 9, 2012, and was informed that the proposed activities would not require a permit under section 404 of the Clean Water Act. United submitted the Eradication Plan along with a Lake and Streambed LSAA notification to CDFW on December 17, 2012. CDFW responded in a letter dated January 14, 2013, with a determination that the project would not substantially adversely affect any existing fish or wildlife resource, and therefore, a lake or streambed alteration agreement was not

required[1]. The activities outlined in the Eradication Plan were implemented between January 30 and February 6, 2013.

2.1.3 Reporting period March 1 through December 31, 2013

The Management Area was surveyed during June 2013 to determine the effectiveness of eradication activities implemented between January 30 and February 6, 2013. A substantial amount of tamarisk was observed. During preparation for a follow-up eradication treatment, several site reconnaissance visits were conducted. Observations made during field reconnaissance visits in July and August 2013 indicated tamarisk infestations in the Management Area had increased since the June 2013 survey. The follow-up eradication treatment was implemented between November 7 and November 18, 2013. The eradication treatment included the "cut and paint" method (which was implemented in the prior eradication effort) for larger more mature tamarisk plants, in combination with foliar spray application of an herbicide for regrowth and new growth populations.

2.1.4 Reporting period January 1 through December 31, 2014

The Management Area was surveyed between May 28 and June 26, 2014, and data collected indicated the extent of the area available for tamarisk colonization, size and age class of tamarisk plants present, and level of tamarisk infestation had changed significantly since initiation of the control efforts. Drought conditions had reduced the wetted perimeter of Lake Piru, resulting in an expansion of the area available for tamarisk colonization. The mature tamarisk plants identified during the baseline survey in 2011 appeared to be successfully treated. Treatment for many of the small to mid-sized tamarisk plants was partially successful, and many of the treated plants had regrowth sprouting from the cut and treated stalks. Tamarisk infestations had increased substantially with significant recruitment occurring in areas where previously submerged shoreline had become exposed by receding water surface elevations.

2.1.5 Reporting period January 1 through December 31, 2015

Activities conducted during 2015 included incidental observations and consultation with regulatory agencies to develop future strategies and obtain authorizations for conducting noxious weed management activities. No eradication treatments or formal surveys were conducted during this reporting period. On December 28, 2015, CDFW issued a draft LSAA authorizing noxious weed management activities for a term of five years. New tamarisk infestations were observed in Reasoner Canyon Creek and in the Spillway Channel pools. Small to mid-sized tamarisk infestation sites that were treated during prior control events showed regrowth sprouting from the cut and treated stalks. Mature tamarisk plants (with stalk diameters of four inches or greater) identified during the 2011 baseline survey within the Priority Treatment Area appear to have been successfully treated.

[1] During follow-up consultation, CDFW requested that United submit a LSAA notification to obtain authorization for all general maintenance activities conducted at the Lake Piru Recreation Area and the Santa Felicia Project. The LSAA was issued on January 21, 2016, as described in this annual report.

3.0 2016 NOXIOUS WEED MANAGEMENT ACTIVITIES

On January 23, 2016, CDFW issued a final LSAA authorizing implementation of noxious weed management activities for a term of five years. In March 2016, United entered into a contract with a consultant to conduct annual tamarisk treatment activities and treatment evaluation surveys over a five-year term (2016 through 2020), and conduct a single five-year update (2016) to the baseline inventory. Field surveys to perform the 5-year update to the baseline inventory were conducted from April 18 to 22, 2016. Tamarisk treatment activities for 2016 were conducted from October 17 to 21.

3.1 Baseline inventory update

During the 2016 reporting period, United conducted a five-year update to the noxious weed baseline inventory. The inventory update included focused surveys for target noxious weeds identified in the Management Plan throughout the Management Area. Occurrences of target noxious weed species were identified and recorded using global positioning system (GPS) data. Photographs and estimates of density and total individuals were taken for each occurrence. Tamarisk (*Tamarix ramocissima*) was the only target noxious weed identified in the Management Area. The inventory update report is attached as Appendix A, and the results are summarized below.

Survey results indicate that tamarisk recruitment has continued to increase in newly exposed lake bed areas, as the wetted perimeter of Lake Piru has receded in response to drought conditions. Tamarisk infestations have also increased in areas south of the Blue Point campground (along Piru Creek at the northern end of Lake Piru). Tamarisk infestations in these transitional areas are not expected to survive once the lake fills and they become submerged, or due to scouring flows from Piru Creek following a significant storm event. The majority of infestations within the newly exposed lake bed areas occur well below the high water mark of Lake Piru (1,055 feet elevation), outside the Management Area, and thus they were not mapped or assessed during the inventory update. Some areas of new growth and regrowth were identified in Reasoner Canyon and the spillway channel. New growth and regrowth in these areas are not as dense as new growth surrounding the wetted perimeter of the lake.

3.2 Priority treatment areas

Areas designated as part of the Priority Treatment Area were those areas above the high water mark of Lake Piru, which are reasonably accessible, along the west shoreline, from below Santa Felicia Dam north to Reasoner Canyon. This Priority Treatment Area was selected to exclude areas within the Management Area that are transitional (i.e., may become inundated or scoured following storm events) or contain sensitive species or habitats.

Tamarisk infestations in the Management Area are composed primarily of new growth with some previously treated areas exhibiting regrowth. New tamarisk plants have been observed in Reasoner Canyon Creek and in the spillway channel pools. Tamarisk individuals within the spillway channel were interspersed among significant native vegetation. Some small to mid-sized tamarisk individuals treated during previous year's exhibit regrowth sprouting from the cut and treated stalks. The majority of previously treated mature tamarisk plants (with stalk diameters of four inches or greater) do not exhibit any regrowth and are considered successfully treated. Treatment was administered successfully in all areas of the Priority Treatment Area. All tamarisk new growth and regrowth observed within the Priority Treatment Area were treated during 2016.

Brief exploratory treatment conducted north of Reasoner Canyon, within a non-priority area, revealed extremely dense native vegetation interspersed with tamarisk individuals, creating challenges for access and treatment.

3.3 Description of control areas and treatments

Eradication treatments were conducted in the Priority Treatment Area from October 17 to 21, 2016. Treated areas are illustrated in Figure 2. Channel Islands Restoration (CIR), United's project contractor, recommended use of a basal bark herbicide (imazapyr based) application for medium to large individuals (greater than one-inch diameter stalk) and foliar application for small individuals (less than one-inch diameter stalk). CIR's professional observations and project experience with this treatment method have indicated high mortality rates. Given the limited success demonstrated by treatments (utilizing cut stump method) in previous years, United adopted this recommended treatment method for 2016. An estimated 1282 individual tamarisk plants treated in 2016. Approximately 649 individuals were treated in areas below Santa Felicia Dam, 542 individuals in Reasoner Canyon, and 91 individuals elsewhere (in isolated patches along the west shoreline and north of Reasoner Canyon).

4.0 REVEGETATION EFFORTS

The Management Plan stipulates conditions that trigger revegetation requirements (i.e., particular project activities resulting in ground disturbance greater than 0.10 acres). No such activities occurred in 2016, and no revegetation activities were conducted during the reporting period.

4.1 Evaluation of revegetation efforts

No revegetation activities have been triggered or conducted within the last three years.

4.2 Summary of proposed revegetation areas

On November 15 and 17, 2016, United removed several small stands of cattails from lower Piru Creek below the Santa Felicia outlet works, totaling 0.09 acres. These stands were removed to prevent potential backwatering at the hydropower facility and allow for the unimpeded conveyance of water downstream of the outlet works. United did not revegetate these areas as this would conflict with dam operations and create safety concerns.

No project activities expected to trigger revegetation requirements are currently proposed; therefore, no revegetation activities are proposed.

4.3 Reasoner Canyon revegetation activities

No revegetation activities occurred during 2016 in Reasoner Canyon Creek for bank stabilization purposes.

5.0 USFS CONSULTATION

United has scheduled a meeting will consult with LPNF on February 2, 2017, to discuss strategies to address tamarisk infestations within the Management Area.

5.1 Tamarisk management in environmentally sensitive areas

Tamarisk plants that fall within critical habitat and areas where arroyo toads may be expected to breed have been excluded as priority plants for removal under the Eradication Plan. United's Eradication Plan is based on a draft model developed by the LPNF for the purpose of eradicating tamarisk from Piru Creek, Lockwood Creek, Cuyama River, Santa Ynez River, Sisquoc River, and Arroyo Seco River. LPNF finalized their plan, "Los Padres National Forest Tamarisk Removal Project," filed a final environmental impact statement for the plan, and on September 9, 2016, issued a draft record of decision, selecting an alternative as the proposed action (LPNF 2016). The selected alternative includes measures to minimize and avoid effects to arroyo toads and their critical habitat. United will continue to consult with LPNF, U.S. Fish and Wildlife Service (USFWS), and CDFW to determine if United can safely remove tamarisk plants in sensitive areas without affecting the arroyo toad or its critical habitat using the approach developed by LPNF. Depending on the outcome of that consultation, United will work with the consulting agencies and FERC to determine how to proceed.

5.2 Annual coordination meeting

USFS section 4(e) conditions 2 and 18(b) require that United consult annually with the USFS on issues related to conditions of the license and implementation of the Management Plan. During the 2016 reporting period, United met with LPNF on March 2, 2016, to provide an update on license activities and the vegetation and noxious weed management planning process as well as anticipated future management activities. Minutes from the meeting were filed with FERC on March 15, 2016.

6.0 FUTURE ACTIVITIES

United has scheduled a meeting to consult with LPNF on February 2, 2017, to provide an update on Management Plan activities.

United will conduct a survey to evaluate the effectiveness of the 2016 treatment effort during the spring of 2017. United will then conduct follow-up treatment activities in September and October 2017, as informed by the treatment evaluation surveys and the outcome of consultation with LPNF. United will also continue to consult with LPNF to develop plans to control and treat tamarisk infestations that fall within where eradication activities have the potential to affect arroyo toads or designated critical habitat.

The information presented in Figure 2 indicates that significantly more tamarisk individuals were identified later in the year during treatment activities, than during the inventory surveys. As mentioned above, United has entered into a five-year contract for treatment and evaluation survey services. For consistency purposes, United intends to request that the consultants coordinate efforts in the future to ensure that the surveys and treatments utilize the most effective methods to identify infestations.

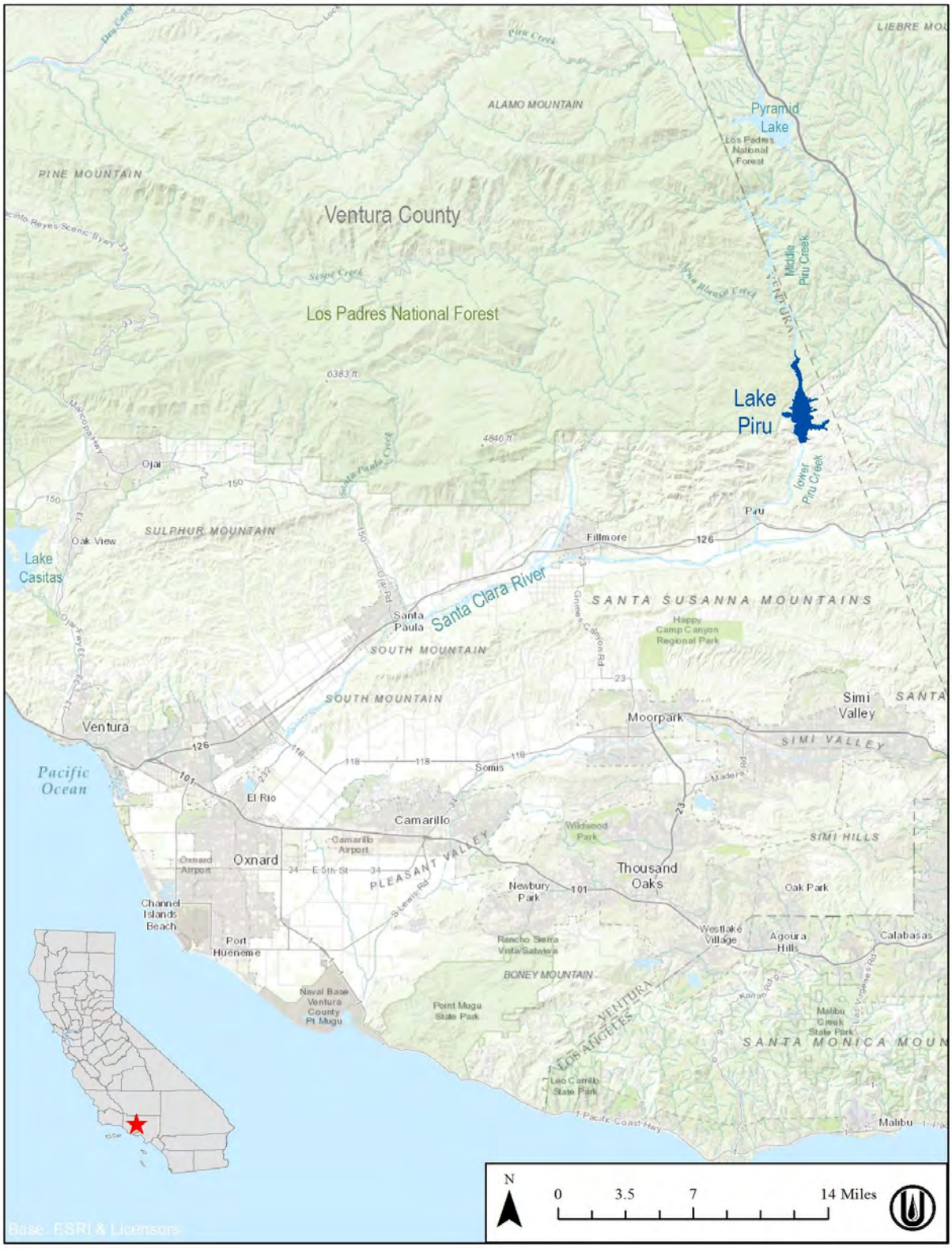

Figure 1 – Lake Piru Regional Location

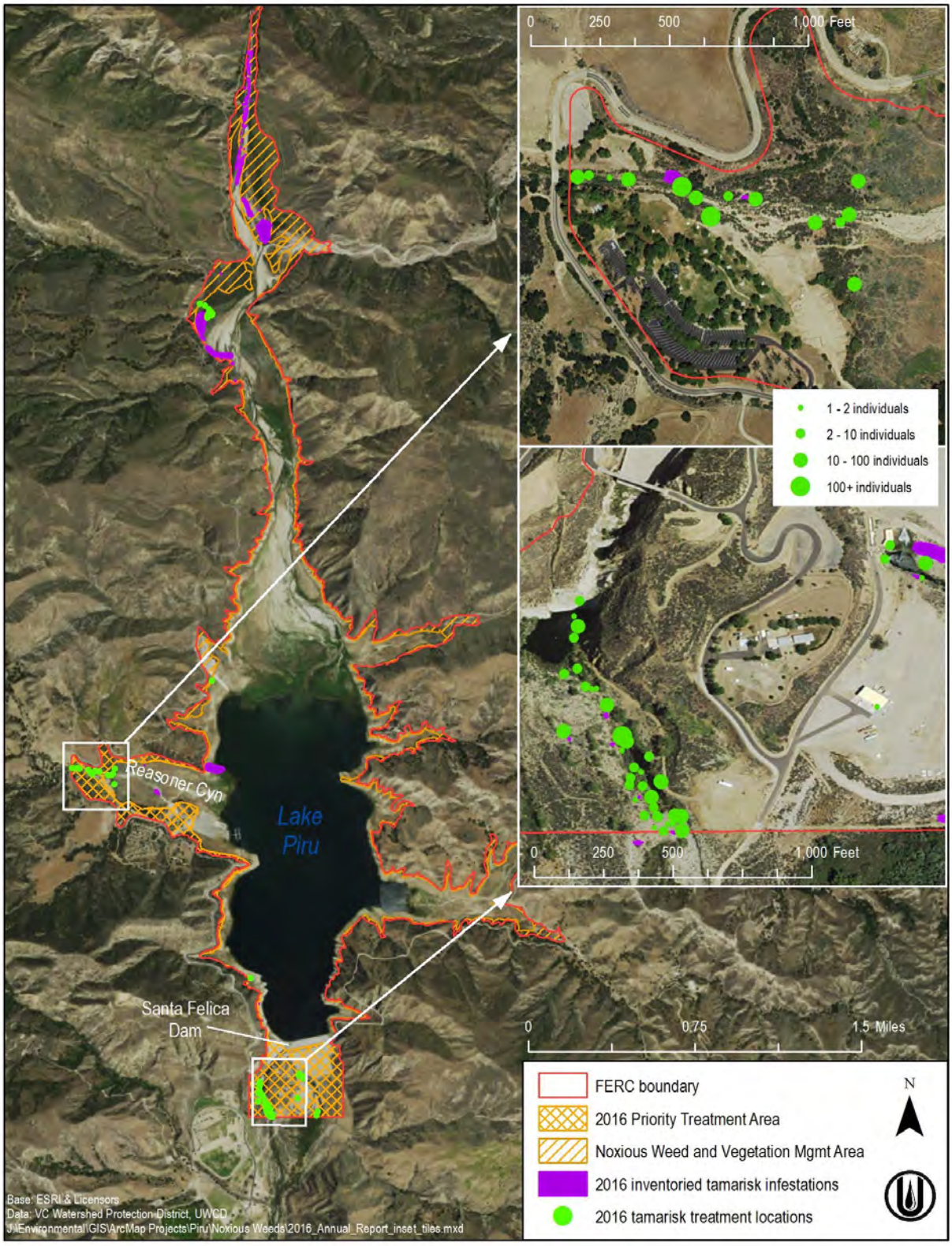

Figure 2 – Noxious Weed Management Areas and 2016 Treatment Activities

7.0 REFERENCES

Los Padres National Forest (LPNF). 2016. *Los Padres Tamarisk Removal Project; Final Environemntal Impact Statement and Draft Record of Decision*. September 9, 2016. Available Online: http://www.fs.usda.gov/project/?project=28147. Accessed November, 2016.

8.0 PROJECT PHOTOS

Work crews in the spillway channel

Treated regrowth, with previously cut stumps visible

Work crew utilizing a boat to reach tamarisk individuals around spillway pond

Treating tamarisk among dense native vegetation

Appendix A:

5-Year Update to Noxious Weed Baseline Inventory
Santa Felicia Project (FERC License No. 2153-029)
Ventura County, California

5-YEAR UPDATE TO NOXIOUS WEED BASELINE INVENTORY SANTA FELICIA PROJECT (FERC LICENSE No. 2153-029) VENTURA COUNTY, CALIFORNIA

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1.0 INTRODUCTION

United Water Conservation District (United) is a public entity and water conservation district established in accordance with California Water Code Section 74000 et seq. Its primary mission is to conserve, manage, protect and enhance the water resources of the Santa Clara River, its tributaries and associated aquifers in a cost-effective and environmentally balanced manner. United manages surface and groundwater resources within all or part of eight groundwater basins, and its boundaries encompass approximately 214,000 acres in central Ventura County, including the Santa Clara River Valley and the Oxnard Coastal Plain.

United owns and operates the Santa Felicia Project, including the Lake Piru Recreation Area, for which the Federal Energy Regulatory Commission (FERC) issued FERC License No. 2153-029. Pursuant to Article 405 of the FERC License, United has developed the *Vegetation and Noxious Weed Management Plan* (Plan) (United 2010) in consultation with the United States Forest Service (USFS), the California Department of Food and Agriculture (CDFA), and the Ventura County Agricultural Commissioner. The overall objective of the Plan is to implement measures to identify, monitor, and control noxious weeds within the Santa Felicia Project area as well as manage the restoration of native plant populations.

This report serves as an update to the noxious weed baseline inventory required in Section 1.2 of the Plan. Pursuant to the Plan, a baseline inventory was conducted in April of 2011 following the Plan's approval. Following the baseline inventory, additional follow-up inventories are to be conducted every 5 years to update the baseline data and identify new infestations, if applicable. This report documents and describes spring 2016 observations of target weed populations as well as incidental special-status plants for the Lake Piru Recreational Area and the Santa Felicia Dam facilities weed management project (Project).

1.1 PROJECT DESCRIPTION

The Project consists of noxious weed monitoring and control efforts at the Lake Piru Recreation Area and Santa Felicia Dam facilities facility in Ventura County, California (Figure 1).

The Project Management Area consists of approximately 250 acres of accessible lands within the FERC (Project No. 2153-012) boundary, which generally follows the 1078.3-foot mean sea level (msl) contour line around Lake Piru, and above Lake Piru's high water mark (1,055 feet elevation). Accessible lands include the area adjacent to Santa Felicia Dam, the area along the western shore of Lake Piru, and the accessible portion of the north end of Lake Piru along Piru Creek to the Bluepoint Campground (Appendix A). The majority of the eastern shore of Lake Piru, from Santa Felicia Dam to Canton Canyon, is only accessible by boat and experiences high mortality of vegetation resulting from fluctuations in water level. Accordingly, the eastern shore of Lake Piru, except for the specified area in the northern portion of the lake, is excluded from the Project Management Area.

The Project treatment area in 2014 was limited to 150 acres above the lake's high water mark adjacent to the Juan Fernandez Boat Launch Area, the Reasoner Canyon region, the coastline south

Figure 1. Project Location

of Reasoner Canyon, and surrounding the Santa Felicia Dam facilities (Appendix A). Additional areas of high-density target weed infestation are being considered for the 2016 control effort (see Section 5 Recommendations).

1.2 BACKGROUND

1.2.1 Existing Noxious Weed Information

Surveys for noxious weeds were conducted in April and July of 2004 in support of the FERC hydroelectric relicensing process for Santa Felicia Dam (United 2004). The surveys focused on those weeds which were listed as A, B, or C species by the CDFA for Ventura County and weeds identified as species of concern by the Los Padres National Forest (LPNF). The survey area for these studies consisted of LPNF lands within the FERC boundary including exposed areas of Lake Piru.

Fourteen species were initially identified as target noxious weed species in 2004. Twelve of these initial target species were observed within the FERC Project Boundary on LPNF lands. These species included the following: wild oat (*Avena fatua* and *A. barbata*), black mustard (*Brassica nigra*), ripgut brome (*Bromus diandrus*), red brome (*B. madritensis* ssp. *rubens*), cheatgrass (*B. tectorum*), tocalote (*Centaurea melitensis*), yellow star thistle (*C. solstitialis*), bull thistle (*Cirsium vulgare*), tree tobacco (*Nicotiana glauca*), Russian thistle (*Salsola tragus*), and tamarisk (*Tamarix ramosissima*). Two target species not observed in the study area for the 2004 survey, wild fennel (*Foeniculum vulgare*) and castor bean (*Ricinus communis*), were observed infrequently elsewhere in the Project vicinity (United 2004).

Pursuant to the Plan approved in 2010, target noxious weed species were reduced to six species which each were listed as A or B species by the CDFA and identified as weed species of concern by the LPNF as indicated by the LPNF Botanist (United 2010). Target noxious weed species are listed in Table 1 below.

Table 1. Target Noxious Weed Species for 2016 Spring Survey.

Scientific Name	Common name	CDFA Rating
Arundo donax	giant reed	B
Cardaria pubescens	hairy white top	B
Centaurea maculosa	spotted knapweed	A
Cortaderia jubata/selloana	pampas grass	B
Onopordum acanthium ssp. *acanthium*	scotch thistle	A
Tamarix ramosissima	tamarisk	B

1.2.2 CDFA Weed Rankings

The CDFA recommend plants for listing, after consultation with outside experts and the Agricultural Commissioners of California's Counties (CACs). The CDFA will designate a plant as a noxious weed if it is found to be "troublesome, aggressive, intrusive, detrimental, or destructive to agriculture, silviculture, or important native species, and difficult to control or eradicate" (CDFA 2015). Target plant CDFA ratings are defined below (CDFA 2015).

Rating 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.

Rating B - A pest of known economic or environmental detriment and, if present in California, it is of limited distribution.

1.2.3 Summary of Weed Control Activities in Previous Years

Activities described in prior annual reports (United 2015) are summarized below.

2011-2012

United performed a baseline inventory survey of targeted noxious weed species within the Project Management Area in April of 2011. The only targeted noxious weed that was observed during the baseline survey was tamarisk. The Plan required that United finalize, in consultation with the LPNF, the priority infestations and treatment methods based on information obtained from the baseline inventory survey. United consulted with the LPNF on February 2, 2012 and presented results of the baseline inventory. Following guidance from the LPNF, United developed a draft *Strategy for Treatment and Eradication of Tamarix ramosissima* (Eradication Plan) based on a draft model developed by the LPNF for the purpose of eradicating tamarisk from Piru Creek, Lockwood Creek, Cuyama River, Santa Ynez River, Sisquoc River, and Arroyo Seco River. United provided a draft of the Eradication Plan to LPNF for review.

2012-2013

Following guidance from LPNF, the Eradication Plan was finalized. United's Board of Directors determined that tamarisk removal activities, as described in the Eradication Plan, are categorically exempt from the California Environmental Quality Act (CEQA) and a Notice of Exemption was filed with the Ventura County Clerk of the Board of Supervisors on December 31, 2012. United consulted with the U.S. Army Corps of Engineers on November 9, 2012, and was informed that the proposed activities would not require a permit under section 404 of the Clean Water Act. United submitted the Eradication Plan along with a streambed alteration notification to the California Department of Fish and Wildlife (CDFW) on December 17, 2012. CDFW responded in a letter dated January 14, 2013, with a determination that the Project would not substantially adversely affect any existing fish or wildlife resource, and therefore, a lake or streambed alteration agreement was not required. The activities outlined in the Eradication Plan were implemented between January 30 and February 6, 2013.

2013

The Project Management Area was surveyed during June 2013 to determine the effectiveness of eradication activities implemented between January 30 and February 6, 2013. A substantial amount of tamarisk was observed. During preparation for a follow-up eradication treatment, several site reconnaissance visits were conducted. Observations made during field reconnaissance visits in July and August, 2013, indicated tamarisk infestations in the Project Management Area had increased since the June 2013 survey. The follow-up eradication treatment was implemented between November 7 and November 18, 2013. The eradication treatment included the "cut and paint" method (which was implemented in the prior eradication effort) for larger more mature tamarisk

plants, in combination with foliar spray application of an herbicide for regrowth and new growth populations.

2014

The Project Management Area was surveyed between May 28 and June 26, 2014. In summary, the extent of the area available for tamarisk recruitment within the Project Management Area, size and age class of tamarisk plants present, and level of tamarisk infestation, changed significantly since initiation of the control efforts. Drought conditions reduced the wetted perimeter of Lake Piru and expanded the area available for tamarisk colonization. The mature tamarisk plants identified during the baseline survey in 2011 appeared successfully treated. Treatment for many of the small to mid-sized tamarisk appeared to be only partially successful, and many of the treated plants had regrowth sprouting from the cut and treated stalks. Tamarisk infestations had increased substantially with significant recruitment occurring in areas where previously submerged shoreline had become exposed by receding water surface elevations.

2015

Observations made during the 2015 reporting period indicated that tamarisk recruitment had continued to increase in newly exposed areas as the wetted perimeter of Lake Piru receded in response to drought conditions. Tamarisk infestations in the transitional area between the wetted perimeter of the lake and the high water mark are not located within the priority management area and are not expected to survive once the lake fills and they become submerged. New, low density tamarisk populations were observed in Reasoner Canyon Creek and in the Spillway Channel pools. Observations in 2015 confirmed that the mature tamarisk plants identified during the 2011 baseline survey within the priority management area had been successfully treated. Small to mid-sized tamarisk infestation sites that were treated had regrowth sprouting from the cut and treated stalks.

2.0 METHODOLOGY

The following section describes the literature review and field survey methodologies and protocols that were applied to characterize noxious weed populations and incidental special-status species within the Project Management Area during the 2016 survey.

2.1 LITERATURE AND DATABASE REVIEW

Prior to field surveys, existing noxious weed data collected from previous studies within the Project Management Area contained within the Plan was reviewed, including the previous noxious weed baseline inventory and annual surveys conducted by United. Information regarding target weed species range maps, documented population abundance, and current management activities was generated for each of the target noxious weeds within the Project vicinity using California Invasive Plant Council's CalWeedMapper (2016) as well as the CalFlora Database (2016). The results of these preliminary database searches provided a foundation for addressing the appropriate noxious weed species with the potential to occur within the footprint of the Project Management Area.

Additionally, a standard database search was conducted to obtain a list of federally- and state-listed special-status plant species known to occur in the region. Information about special-status botanical species and their habitat requirements was obtained from the California Natural Diversity Database (CNDDB; CDFW 2003). The CNDDB search included the *Piru* and the surrounding U.S. Geological Survey (USGS) 7.5-minute quadrangles.

Additional literature and databases referenced include:

- The Jepson Manual (Baldwin 2012)
- The Jepson eFlora Project and Consortium of California Database (Jepson 2016)
- Inventory of Rare and Endangered Plants of California (CNPS 2010)

2.2 FIELD SURVEY METHODS

BioResource Consultants, Inc., (BRC) botanists Steve Jones and Sarah Termondt conducted a focused survey for target noxious weed species within the Project Management Area from April 18 to 21, 2016. Surveys were conducted by walking meandering transects within portions of the Project Management Area that are accessible by foot. Transects were spaced to allow for maximal visual coverage of the Project Management Area while taking into account topography and vegetation density. Handheld GPS units were utilized to record occurrences of target invasive/noxious species in the field and to assess the status of previously mapped infested and/or treated areas. Population densities and representative photos for noxious weed and incidental special-status plant population occurrences were taken.

Plant species were identified in the field or collected for subsequent identification using keys in Baldwin (2012). Nomenclature generally follows Sawyer et al. (2009) for vegetation types and communities, Calflora (2016), Baldwin (2012), and current scientific data (e.g., scientific journals) for individual plant species. Individuals or populations of incidental special-status plant species were keyed out and recorded while in the field.

All wildlife species observed within the Project Management Area during the 2016 survey were recorded based on sight, call, tracks, nests, scat, remains, or other distinguishing sign. Binoculars (10x40) were utilized to identify wildlife species. Wildlife taxonomy follows Stebbins (2012) for amphibians and reptiles, Sibley (2000) for birds, and Jameson and Peeters (2004) for mammals.

3.0 RESULTS

A total of 157 plant species were identified during surveys, including 39 non-native species and one incidental special-status species with California Rare Plant Rankings (CRPR) of 1B.2 (Appendix C). Of the 39 non-native species identified during the survey, only tamarisk is a target noxious weed.

3.1 2016 TARGET NOXIOUS WEED POPULATIONS

Seventy-nine populations of tamarisk, a target noxious weed, were identified during the 2016 survey within the Project Management Area. Within these populations, an estimated total of 4,697 tamarisk individuals covering 12.2 acres with an average canopy cover of 28 percent was documented (Appendix B).

Aerial mapping with detailed delineated polygon areas representing the 2016 extent of tamarisk infestations within the Project Management Area, as well as previous treatment areas, is presented in Appendix A. A corresponding table with characterizations of each polygon encountered in 2016 based on acreage, quantity of plants observed, and percent coverage of tamarisk is presented in Appendix B. Representative photos are provided in Appendix D.

Incidental tamarisk observations made outside of the Project Management Area during the 2016 survey indicate that tamarisk recruitment is increasing in newly exposed areas of Lake Piru as the wetted perimeter recedes. Tamarisk infestations were noted to be prominent in these transitional

areas between the wetted perimeter of the lake and the high water mark. These transitional areas lie adjacent to and outside of the designated Project Management Area.

3.1.1 Tamarisk

Tamarisk, also known as salt cedar, is a shrub or a tree native to Europe and Asia in the family Tamariaceae. It is generally found along streams and lake shores throughout California and most of the southwestern United States. It is associated with dramatic changes in geomorphology, groundwater availability, soil chemistry, fire frequency, plant community composition, and native wildlife diversity (Cal-IPC 2016).

Tamarisk is rated as "High" on the Cal-IPC inventory indicating the species has severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Its reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment.

Mature tamarisk plants have extensive root systems and are able to reproduce vegetatively by adventitious roots or by seed. Each plant can produce as many as 500,000 seeds annually. Tamarisk can produce seed throughout the growing season. Environmental factors, including fire, drought, and herbicide, which induce high stress, can increase flowering and seed production. Seeds are small with a small tuft of hair attached to one end which facilitate wind and water dispersal. They can germinate within 24 hours after dispersal, sometimes while still floating on the water (Zouhar 2003).

Seeds produced during the summer do not form a persistent seed bank, remaining viable for 24 to 45 days. Winter longevity under ideal conditions is approximately 130 days. Seed mortality is generally due to desiccation. If seeds are not germinated during the summer that they are dispersed, almost none germinate the following spring (Zouhar 2003).

3.2 SPECIAL-STATUS PLANT SPECIES

One special-status plant species, slender mariposa lily (*Calochortus clavatus* var. *gracilis*) was observed during the 2016 noxious weed survey. Population locations within the Project Management Area are presented in Appendix A. Representative photos are provided in Appendix D. A species description is found below.

3.2.1 Slender mariposa lily – Listing: CNPS 1B.2

Slender mariposa lily is a perennial herb (bulb) that is native to California. It is generally encountered within chaparral habitat on shaded hillsides of canyons at elevations below 1,000 meters. This species generally blooms from May to June.

The California Native Plant Society designates the slender mariposa lily with CRPR of 1B.2. Plants with a rank of 1B.2 are considered rare throughout their range with 20-80% of known occurrences moderately threatened (CNPS 2010). Most of the plants that are ranked 1B have declined significantly over the last century. All plants constituting CRPR of 1B meet the definitions of the California Endangered Species Act of the California Department of Fish and Game Code and are eligible for state listing. Impacts to these species or their habitat must be analyzed during preparation of environmental documents relating to CEQA, or those considered to be functionally equivalent to CEQA, as they meet the definition of Rare or Endangered under CEQA Guidelines §15125; (c) and/or §15380 (CNPS 2010).

Sixteen locations of slender mariposa lily were incidentally observed during the 2016 noxious weed survey. Approximately 153 individuals were observed to be in full bloom at the time of the surveys, primarily encountered on moderately sloped hills north of the Juan Fernandez Boat Launch Area (Appendixes A and D).

4.0 DISCUSSION

One target weed species, tamarisk, was observed during the 2016 noxious weed survey. Within 79 tamarisk populations observed, an estimated total 4,697 tamarisk individuals covering12.2 acres with an average of 28 percent canopy cover was documented (Appendix B).

The 2016 noxious weed survey identified that the area of greatest tamarisk infestation within the Project Management Area occurs over a mile-long segment south of Blue Point Campground that runs along Piru Creek within Polygons 3-51 (Appendix A, Sheets 1-3). This area is also designated as critical habitat for endangered arroyo toad (*Anaxyrus californicus*), endangered southwestern willow flycatcher (*Empidonax traillii extimus*), and threatened California red-legged frog (*Rana draytonii*) and has not been treated in the past as a result of LPNF consultation to exclude these areas (United 2015).

An additional area of notable infestation within the Project Management Area is the northwestern edge of Piru Lake where Polygons 55-60 are located (Appendix A, Sheets 5-6).

Multiple new tamarisk populations were also observed within the previous treatment areas, specifically the Reasoner Canyon area within Polygons 63-67(Appendix A, Sheet 10-11). New growth in previously treated areas is not as dense as new growth surrounding the wetted perimeter of the lake. Lack of success for control treatments on previous tamarisk plants with smaller stalk diameters is likely attributed to the limited surface area for herbicide uptake following treatment.

In consensus with observations presented during 2014 and 2015 annual reporting (United 2015), observations made during the 2016 survey indicate that tamarisk recruitment is increasing in newly exposed areas as the wetted perimeter of Lake Piru recedes in response to continued drought conditions (NCDC 2016). Tamarisk infestations were noted to be prominent in these transitional areas between the wetted perimeter of the lake and the high water mark. These transitional areas lie adjacent to and outside of the designated Project Management Area.

One special-status plant species, slender mariposa lily, was also incidentally observed during the 2016 survey. Weed removal activities may impact individuals or local populations of this species. Slender mariposa lily was documented to occur on hillsides west and east of tamarisk populations. These areas are avoidable but may be utilized to access the Project Management Area (Appendix A).

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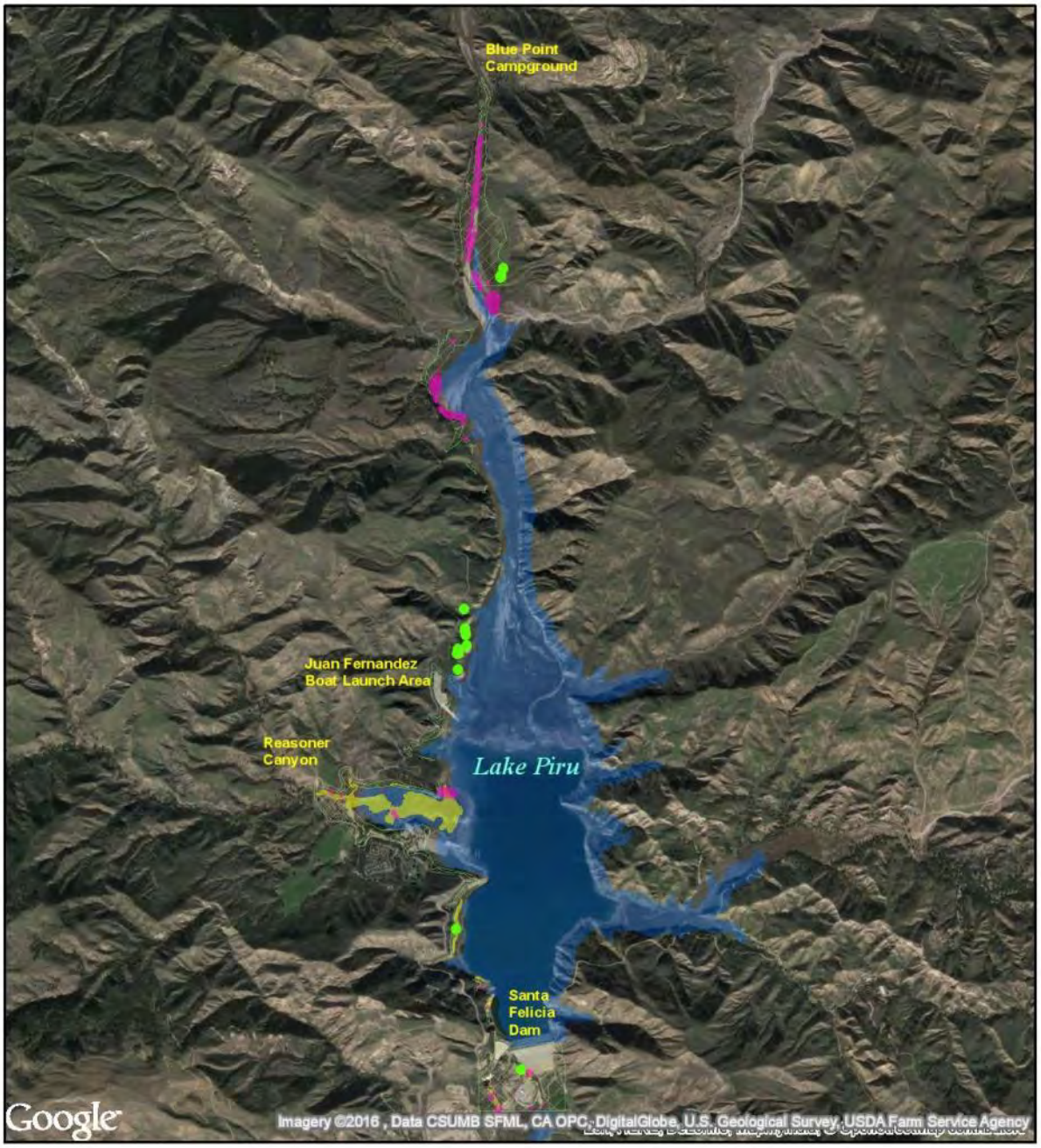
APPENDIX A:
PROJECT MANAGEMENT AREA WITH WEED INFESTATION AND SPECIAL-STATUS PLANT LOCATIONS



Lake Piru

Project Management Area

2016 Tamarisk Infestations

2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

N

0 0.5 1 2
Miles

Lake Piru

Project Management Area

2016 Tamarisk Infestations

2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

N

0 150 300 600
Feet

Lake Piru

Project Management Area

2016 Tamarisk Infestations

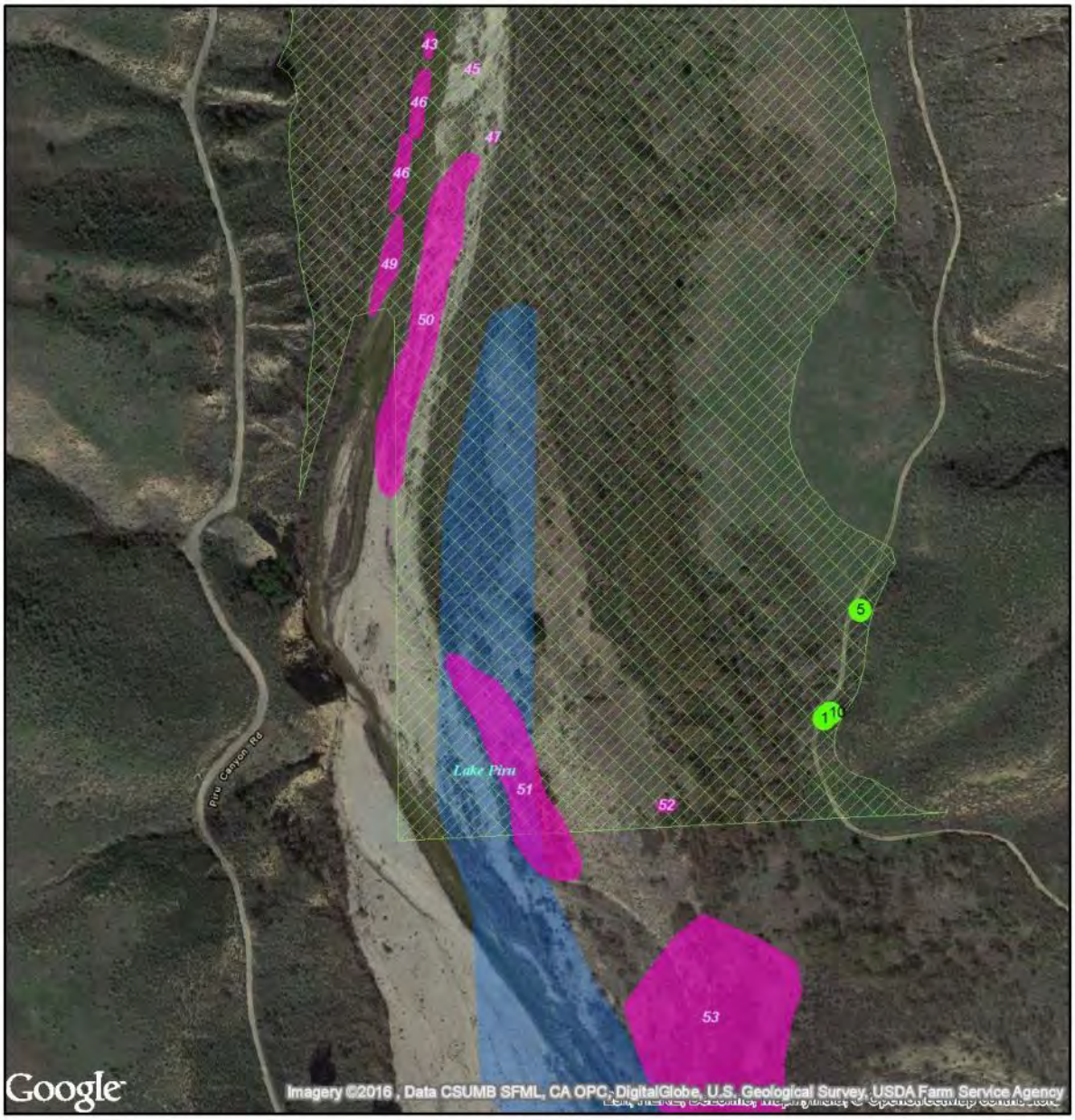
2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

N

0 150 300 600
Feet



Lake Piru

Project Management Area

2016 Tamarisk Infestations

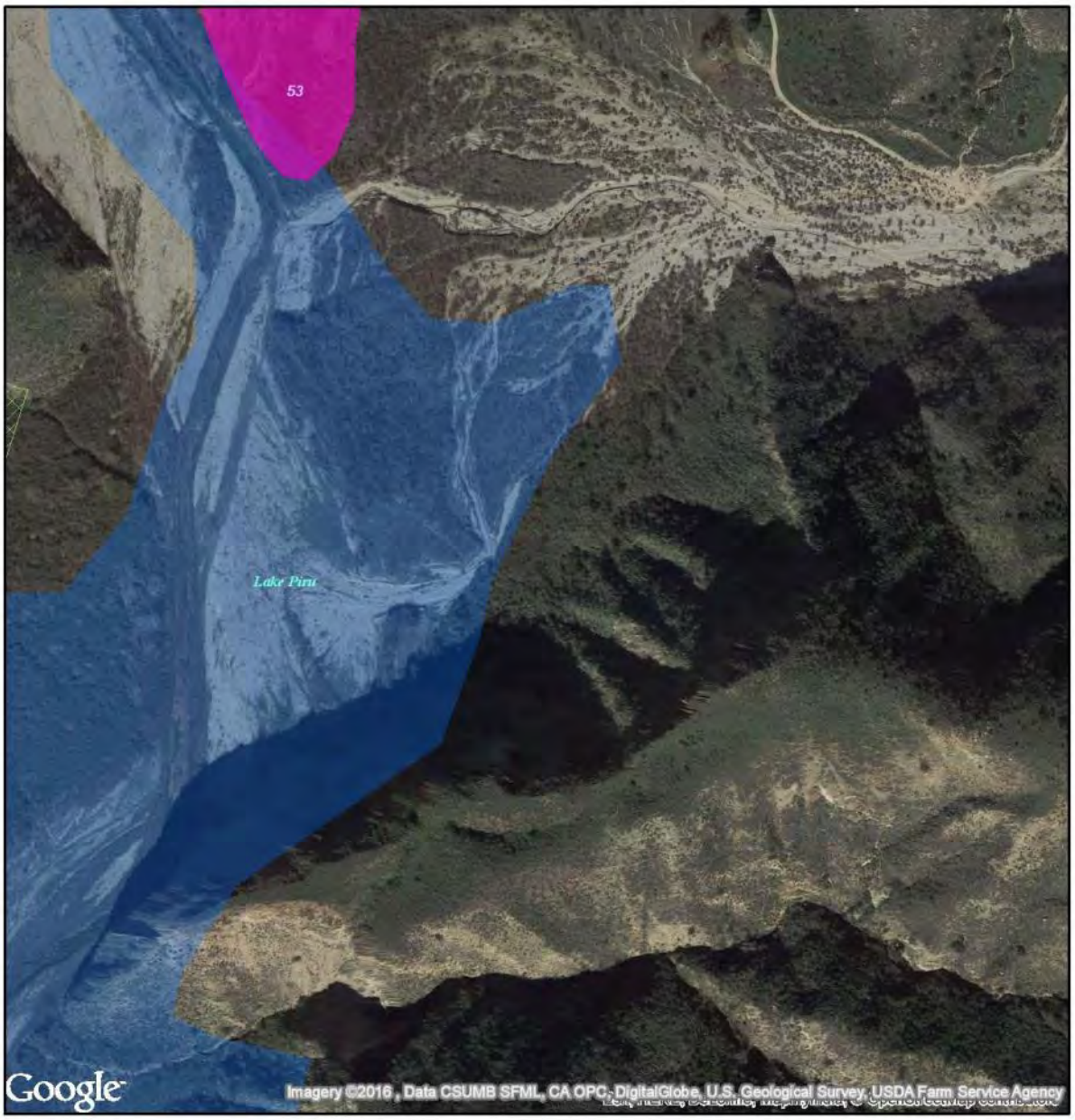
2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

N

0 150 300 600
Feet



Lake Piru
Project Management Area
2016 Tamarisk Infestations
2014 Tamarisk Treatment Areas
Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

N

0 150 300 600
Feet

Lake Piru
Project Management Area
2016 Tamarisk Infestations
2014 Tamarisk Treatment Areas
Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

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Lake Piru

Project Management Area

2016 Tamarisk Infestations

2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)

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BioResource Consultants Inc.

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Lake Piru
Project Management Area
2016 Tamarisk Infestations
2014 Tamarisk Treatment Areas
Calochortus clavatus var. gracilis (Pop.)

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BioResource Consultants Inc.

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Lake Piru
Project Management Area
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2014 Tamarisk Treatment Areas
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Feet

Lake Piru

Project Management Area

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2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)

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BioResource Consultants Inc.

N

0 150 300 600
Feet

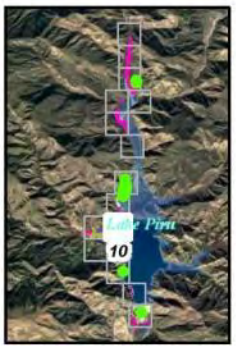
Lake Piru

Project Management Area

2016 Tamarisk Infestations

2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)



BRC
BioResource Consultants Inc.

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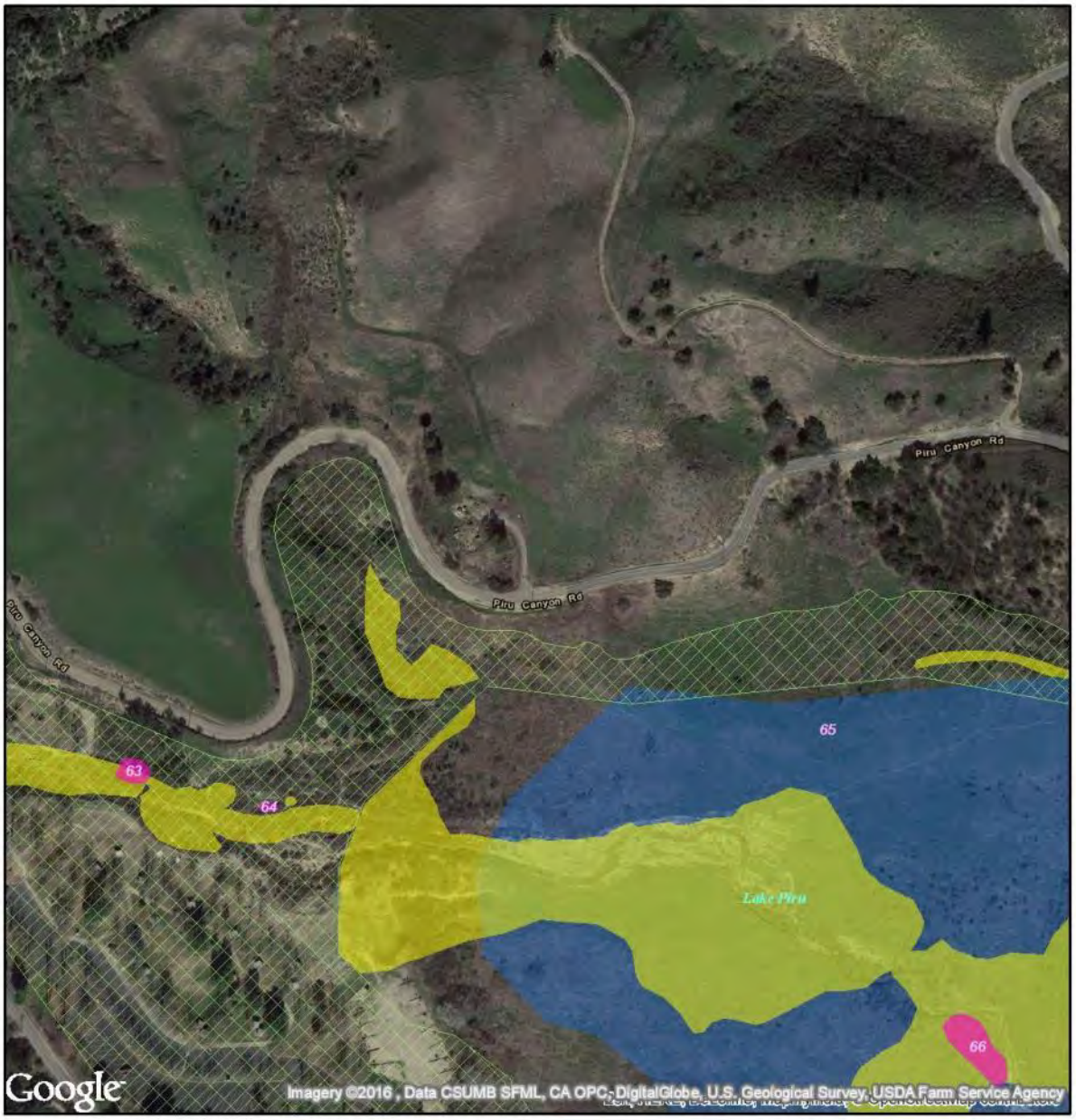
Feet



Lake Piru

Project Management Area

2016 Tamarisk Infestations

2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

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Feet

Lake Piru
Project Management Area
2016 Tamarisk Infestations
2014 Tamarisk Treatment Areas
Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

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Feet

Lake Piru

Project Management Area

2016 Tamarisk Infestations

2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

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0 150 300 600
Feet

Lake Piru
Project Management Area
2016 Tamarisk Infestations
2014 Tamarisk Treatment Areas
Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

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Feet

Lake Piru
Project Management Area
2016 Tamarisk Infestations
2014 Tamarisk Treatment Areas
Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

N

0 150 300 600
Feet

Lake Piru

Project Management Area

2016 Tamarisk Infestations

2014 Tamarisk Treatment Areas

Calochortus clavatus var. gracilis (Pop.)

BRC
BioResource Consultants Inc.

N

0 150 300 600
Feet

APPENDIX B: TABLE OF 2016 TAMARISK OCCURRENCE DETAILS

Sheet Number	Polygon ID	Latitude	Longitude	Acreage	Percent Canopy Cover	Population Count
1	1	34.52731598120	-118.75677891100	0.0022	10	3
1	2	34.52649615840	-118.75675007700	0.0010	10	3
1	3	34.52611607610	-118.75698007600	0.1429	30	150
1	4	34.52588870000	-118.75690510000	0.0346	30	50
1	5	34.52551730000	-118.75710380000	0.1064	40	300
2	6	34.52538860000	-118.75690170000	0.0105	30	10
2	7	34.52533350000	-118.75690480000	0.0022	2	3
2	8	34.52520200000	-118.75707630000	0.0160	25	25
2	9	34.52509070000	-118.75701790000	0.0126	20	6
2	10	34.52492230000	-118.75712730000	0.0039	5	5
2	11	34.52481020000	-118.75697410000	0.0040	5	2
2	12	34.52474930000	-118.75712400000	0.0018	10	2
2	13	34.52473280000	-118.75697480000	0.0033	2	2
2	14	34.52469580000	-118.75697910000	0.0027	2	1
2	15	34.52456510000	-118.75722080000	0.0034	5	2
2	16	34.52449270000	-118.75701590000	0.0006	1	9
2	17	34.52445100000	-118.75707470000	0.0024	2	20
2	18	34.52434680000	-118.75714880000	0.0055	20	10
2	19	34.52395260000	-118.75706490000	0.0026	5	2
2	20	34.52383210000	-118.75734790000	0.0242	40	25
2	21	34.52351140000	-118.75708140000	0.3013	45	250
2	22	34.52304000000	-118.75733870000	0.0075	30	20
2	23	34.52288270000	-118.75725390000	0.1351	60	35

2	24	34.52301630000	-118.75688450000	0.0040	3	15
2	25	34.52277780000	-118.75746170000	0.0314	30	50
**	26	--	--	--	--	--
2	27	34.52249030000	-118.75724360000	0.0034	25	10
2	28	34.52246000000	-118.75731200000	0.0181	40	100
2	29	34.52241930000	-118.75731140000	0.0039	20	25
2	30	34.52223100000	-118.75716400000	0.2606	40	150
2	31	34.52213890000	-118.75739810000	0.0029	10	75
2	32	34.52199430000	-118.75740320000	0.0204	35	100
2	33	34.52190500000	-118.75742900000	0.0266	50	50
2	34	34.52166821060	-118.75738106700	0.0009	10	5
2	35	34.52143940000	-118.75746410000	0.0184	30	30
2	36	34.52141070000	-118.75727290000	0.0046	40	16
2	37	34.52135120000	-118.75726660000	0.0167	30	12
2	38	34.52122630000	-118.75736020000	0.0017	2	1
2	39	34.52110240000	-118.75755350000	0.0012	2	4
2	40	34.52088970000	-118.75759200000	0.0054	5	15
2	41	34.52082790000	-118.75763250000	0.0016	5	10
2	42	34.52042020000	-118.75756710000	0.0177	30	50
2	43	34.51999280000	-118.75765770000	0.0154	10	4
3	44	34.51987370000	-118.75735360000	0.0003	1	1
3	45	34.51984778230	-118.75738810700	0.0009	2	1
3	46	34.51953400000	-118.75779000000	0.1352	30	250
3	47	34.51948350000	-118.75724380000	0.0016	5	2
**	48	--	--	--	--	--

3	49	34.51888561880	-118.75792924300	0.1079	35	250
3	50	34.51840300000	-118.75769700000	0.8683	40	350
3	51	34.51596300000	-118.75700200000	0.8479	30	75
3	52	34.51586259050	-118.75608556000	0.0135	15	5
3	53	34.51465500000	-118.75580800000	2.9342	85	100
5	54	34.51172910000	-118.75913330000	0.0169	85	1
5	55	34.50960130000	-118.76041860000	0.0100	80	1
5	56	34.50846105380	-118.76063391600	2.2776	75	1000
6	57	34.50750041650	-118.76055177300	0.1522	75	75
6	58	34.50671161910	-118.75976655600	0.7041	45	50
6	59	34.50636200000	-118.75892300000	0.8217	75	500
6	60	34.50582196830	-118.75825613700	0.0482	50	100
6	61	34.50472039070	-118.75793561300	0.0195	90	5
9	62	34.48513870000	-118.75967540000	0.0001	10	2
11	63	34.47932660000	-118.76940330000	0.0462	10	7
11	64	34.47913383350	-118.76850988700	0.0055	20	10
11	65	34.47957100000	-118.76485230000	0.0006	40	1
11	66	34.47783500000	-118.76383300000	0.1784	15	20
10	67	34.47944448290	-118.75961098800	1.5975	50	150
15	68	34.46551497720	-118.75641513600	0.0007	90	5
15	69	34.46407120170	-118.75566646500	0.0017	5	10
16	70	34.45945960000	-118.75215600000	0.1127	30	7
**	71	--	--	--	--	--
16	72	34.45917135630	-118.75221949100	0.0034	50	2
16	73	34.45759490000	-118.75561510000	0.0013	2	5

16	74	34.45782670000	-118.75525960000	0.0031	10	5
16	75	34.45753423240	-118.75519439600	0.0016	15	5
16	76	34.45701520000	-118.75492500000	0.0007	5	2
16	77	34.45656410000	-118.75493780000	0.0055	10	2
16	78	34.45673080000	-118.75477780000	0.0005	5	1
16	79	34.45678940000	-118.75455810000	0.0050	25	25
16	80	34.45665926200	-118.75457983500	0.0026	50	3
16	81	34.45681480000	-118.75191930000	0.0106	40	10
16	82	34.45699260000	-118.75089740000	0.0013	90	2
2016 TOTALS				12.2208	28.3*	4697

*Average percent canopy cover across project management area.

**Not mapped; outside of survey area.

APPENDIX C: FLORA AND FAUNA OBSERVED DURING 2016 SURVEY

Table 1. Plant Species Observed During the 2016 Survey.

Scientific Name	Common Name	Family	Native/Non-Native
PLANTS			
Achillea millefolium	yarrow	Asteraceae	Native
Acmispon glaber	deerweed	Fabaceae	Native
Acmispon strigosus	strigose lotus	Fabaceae	Native
Acourtia microcephala	sacapellote	Asteraceae	Native
Adenostoma fasciculatum	chamise	Rosaceae	Native
Alnus rhombifolia	white alder	Betulaceae	Native
Ambrosia psilostachya	ragweed	Asteraceae	Native
Amsinckia intermedia	common fiddleneck	Boraginaceae	Native
Anagallis arvensis	scarlet pimpernell	Myrsinaceae	Non-native
Apiastrum angustifolium	wild celery	Apiaceae	Native
Arctostaphylos glauca	big berry manzanita	Ericaceae	Native
Artemisia californica	coastal sage brush	Asteraceae	Native
Artemisia douglasiana	mugwort	Asteraceae	Native
Asclepias fascicularis	narrow leaf milkweed	Apocynaceae	Native
Atriplex lentiformis	quailbush	Chenopodiaceae	Native
Atriplex semibaccata	Australian saltbush	Chenopodiaceae	Non-native
Avena barbata	wild oats	Poaceae	Non-native
Baccharis pilularis	coyote bush	Asteraceae	Native
Baccharis salicifolia	mulefat	Asteraceae	Native
Bloomeria crocea	golden stars	Liliaceae	Native
Brassica nigra	black mustard	Brassicaceae	Non-native
Brickellia californica	California brickellia	Asteraceae	Native
Bromus diandrus	ripgut brome	Poaceae	Native
Bromus hordeaceus	soft chess	Poaceae	Non-native
Bromus rubens	foxtail chess	Poaceae	Non-native
Calandrinia menziesii	red maids	Montiaceae	Native
Calochortus clavatus* var. *gracilis*	**slender mariposa lily**	**Liliaceae**	**Native**
Calystegia peirsonii	Peirson's morning glory	Convolvulaceae	Native
Cammissonia bistorta	California sun cup	Onagraceae	Native
Capsella bursa-pastoris	shepard's purse	Brassicaceae	Non-native
Castilleja exserta	purple owl's clover	Orobanchaceae	Native
Castilleja foliolosa	Texas paintbrush	Orobanchaceae	Native
Ceanothus crassifolius	hoary-leaved ceanothus	Rhamnaceae	Native
Centaurea mellitensis	tocalote	Asteraceae	Non-native
Chaenactis glabriuscula	yellow pincushion	Asteraceae	Native
Chenopodium album	lamb's quarters	Chenopodiaceae	Non-native
Cirsium occidentale	cobweb thistle	Asteraceae	Native

Clarkia purpurea ssp. *quadrivulnera*	purple clarkia	Onagraceae	Native
Clarkia unguiculata	woodland clarkia	Onagraceae	Native
Claytonia perfoliata	miners lettuce	Montiaceae	Native
Collinsia heterophylla	Chinese houses	Plantaginaceae	Native
Conium maculatum	Poison hemlock	Apiaceae	Non-native
Convolvulus arvensis	bindweed	Convolvulaceae	Non-native
Corethrogyne filaginifolia	common sandaster	Asteraceae	Native
Croton setiger	turkey-mullein	Euphorbiaceae	Native
Croton setigerus	dove weed	Euphorbiaceae	Native
Cryptantha intermedia	common cryptantha	Boraginaceae	Native
Cryptantha sp.	popcorn flower	Boraginaceae	Native
Cucurbita foetidissima	Missouri gourd	Cucurbitaceae	Native
Cynodon dactylon	Bermuda grass	Poaceae	Non-native
Datura wrightii	Jimson's weed	Solanaceae	Native
Deinandra fasciculata	clustered tarweed	Asteraceae	Native
Delphinium sp.	larkspur	Ranunculaceae	Native
Dichelostemma capitatum	blue dicks	Themidaceae	Native
Distichlis spicata	saltgrass	Poaceae	Native
Emmenanthe penduliflora	whispering bells	Boraginaceae	Native
Encelia californica	bush sunflower	Asteraceae	Native
Epilobium canum ssp. canum	California fuchsia	Onagraceae	Native
Eriodictyon crassifolium	thick-leaved yerba santa	Boraginaceae	Native
Eriogonum fasciculatum	California buckwheat	Polygonaceae	Native
Eriophyllum confertiflorum	golden yarrow	Asteraceae	Native
Erodium cicutarium	red stemmed filaree	Geraniaceae	Non-native
Eschscholzia californica	California poppy	Papaveraceae	Native
Eucrypta chrysanthemifolia	spotted eucrypta	Boraginaceae	Native
Euphorbia albomarginata	rattlesnake weed	Euphorbiaceae	Native
Festuca microstachys	small fescue	Poaceae	Non-native
Ficus carica	common fig	Moraceae	Non-native
Foeniculum vulgare	fennel	Apiaceae	Non-native
Fraxinus dipetala	two petaled ash	Oleaceae	Native
Galium angustifolium	narrow leaved bedstraw	Rubiaceae	Native
Gilia sp.	gilia	Polemoniaceae	Native
Hazardia squarrosa	sawtooth goldenbush	Asteraceae	Native
Heliotropium curassavicum	Chinese parsley	Boraginaceae	Native
Helminthotheca echoides	bristly ox tongue	Asteraceae	Non-native
Hesperoyucca whipplei	chaparral yucca	Agavaceae	Native
Heteromeles arbutifolia	toyon	Rosaceae	Native
Heterotheca grandiflora	telegraph weed	Asteraceae	Native
Hirschfeldia incana	summer mustard	Brassicaceae	Non-native
Hordeum murinum	foxtail barley	Poaceae	Native

Juglans californica	California black walnut	Juglandaceae	Native
Keckiella cordifolia	heart leaved keckiella	Plantaginaceae	Native
Lactuca serriola	prickly lettuce	Asteraceae	Non-native
Lepidium nitidum	shining pepper grass	Brassicaceae	Native
Lepidospartum squamatum	scalebroom	Asteraceae	Native
Leymus condensatus	giant wild rye	Poaceae	Native
Linanthus californicus	prickly phlox	Polemoniaceae	Native
Lupinus microcarpus var. *densiflorus*	chick lupine	Fabaceae	Native
Lysimachia arvensis	scarlet pimpernel	Myrsinaceae	Non-native
Malacothamnus fasciculatus	chaparral bush mallow	Malvaceae	Native
Malacothrix saxatilis	cliff aster	Asteraceae	Native
Malosma laurina	laurel sumac	Anacardiaceae	Native
Malva parviflora	cheeseweed	Malvaceae	Non-native
Marah macrocarpa	chilicothe	Cucurbitaceae	Native
Marrubium vulgare	white horehound	Lamiaceae	Non-native
Matricaria discoidea	pineapple weed	Asteraceae	Native
Medicago polymorpha	California burclover	Fabaceae	Non-native
Melica imperfecta	small flowered melica	Poaceae	Native
Melilotus albus	white sweet clover	Fabaceae	Non-native
Melilotus officinalis	yellow sweet clover	Fabaceae	Non-native
Mentzelia micrantha	small flowered stickleaf	Loasaceae	Native
Mimulus aurantiacus	sticky monkeyflower	Phrymaceae	Native
Nassella pulchra	purple needle grass	Poaceae	Native
Nasturtium officinale	watercress	Brassicaceae	Native
Nerium oleander	oleander	Apocynaceae	Non-native
Nicotiana glauca	tree tobacco	Solanaceae	Non-native
Opuntia basilaris var. basilaris	beavertail cactus	Cactaceae	Native
Orobanche sp.	broomrape	Orobanchaceae	Native
Pectocarya linearis	sagebrush combseed	Boraginaceae	Native
Peritoma arborea	bladderpod	Cleomaceae	Native
Phacelia distans	common phacelia	Boraginaceae	Native
Phacelia tanacetifolia	fern-leaf phacelia	Boraginaceae	Native
Phacelia viscida	sticky phacelia	Boraginaceae	Native
Plagiobothrys sp.	popcorn flower	Boraginaceae	Native
Plantago erecta	California plantain	Plantaginaceae	Native
Plantago major	common plantain	Plantaginaceae	Non-native
Platanus racemosa	California sycamore	Plantaceae	Native
Polygonum aviculare	knotweed	Polygonaceae	Non-native
Populus fremontii	Fremont's cottonwood	Salicaceae	Native
Pseudognaphalium biolettii	two tone everlasting	Asteraceae	Native
Pseudognaphalium californicum	ladies' tobacco	Asteraceae	Native

Quercus agrifolia	coast live oak	Fagaceae	Native
Quercus lobata	valley oak	Fagaceae	Native
Rafinesquia californica	chickory	Asteraceae	Native
Rhus ovata	sugar bush	Anacardiaceae	Native
Ribes malvaceum	chaparral currant	Grossulariaceae	Native
Rubus ursinus	California blackberry	Rosaceae	Native
Rumex crispus	curly dock	Polygonaceae	Non-native
Salix exigua	narrowleaf willow	Salicaceae	Native
Salix laevigata	red willow	Saliaceae	Native
Salix lasiolepis	arroyo willow	Saliaceae	Native
Salsola tragus	Russian thistle	Chenopodiaceae	Non-native
Salvia apiana	white sage	Lamiaceae	Native
Salvia columbariae	chia sage	Lamiaceae	Native
Salvia leucophylla	purple sage	Lamiaceae	Native
Salvia mellifera	black sage	Lamiaceae	Native
Sambucus nigra ssp. *caerulea*	blue elderberry	Adoxaceae	Native
Sanicula crassicaulis	Pacific sanicle	Apiaceae	Native
Schinus molle	Peruvian pepper tree	Anacardiaceae	Non-native
Silybum marianum	milk thistle	Asteraceae	Non-native
Sisymbrium irio	London rocket	Brassicaceae	Non-native
Sisyrinchium bellum	blue eyed grass	Iridaceae	Native
Solanum sp.	nightshade	Solanaceae	Native
Solanum xanti	Xanti's nightshade	Solanaceae	Native
Sonchus sasper	sow thistle	Asteraceae	Non-native
Stachys albens	white hedge nettle	Lamiaceae	Native
Stephanomeria virgata	twiggy wreath plant	Asteraceae	Native
Stillingia linearifolia	narrow leaved stillingia	Euphorbiaceae	Native
Tamarisk ramosisima	tamarisk	Tamaricaceae	Non-native
Taraxacum officinale	dandelion	Asteraceae	Non-native
Toxicodendron diversilobum	poison oak	Anacardiaceae	Native
Tribulus terrestris	puncture vine	Zygophyllaceae	Non-native
Typha sp.	cattail	Typhaceae	Native
Uropappus lindleyi	silver puffs	Asteraceae	Native
Urtica dioica	stinging nettle	Urticaceae	Native
Verbena lasiostachys	western vervain	Verbenaceae	Native
Vicia villosa	smooth vetch	Fabaceae	Non-native
Zeltnera venusta	charming centaury	Gentianaceae	Native

Table 2. Wildlife Species Observed During the 2016 Survey.

Scientific Name	Common Name
BIRDS	
Aechmophorus occidentalis	Western Grebe
Aeronautes saxatalis	White-throated Swift
Agelaius phoeniceus	Red-winged Blackbird
Anas cyanoptera	Cinnamon Teal
Anas platyrhynchos	Mallard
Aphelocoma californica	Western Scrub-Jay
Ardea alba	Great Egret
Ardea herodias	Great Blue Heron
Buteo jamaicensis	Red-tailed Hawk
Callipepla californica	California Quail
Calypte anna	Anna's Hummingbird
Calypte costae	Costa's Hummingbird
Cardellina pusilla	Wilson's Warbler
Cathartes aura	Turkey Vulture
Catherpes mexicanus	Canyon Wren
Colaptes auratus	Northern Flicker
Corvus corax	Common Raven
Falco sparverius	American Kestrel
Fulica americana	American Coot
Geothlypis trichas	Common Yellowthroat
Haemorhous mexicanus	House Finch
Haliaeetus leucocephalus	Bald Eagle
Hirundinidae sp.	swallow sp.
Hydroprogne caspia	Caspian Tern
Icterus bullockii	Bullock's Oriole
Megaceryle alcyon	Belted Kingfisher
Melanerpes formicivorus	Acorn Woodpecker
Melanerpes lewis	Lewis's Woodpecker
Melospiza melodia	Song Sparrow
Melozone crissalis	California Towhee
Mergus merganser	Common Merganser
Mimus polyglottos	Northern Mockingbird
Myiarchus cinerascens	Ash-throated Flycatcher
Nycticorax nycticorax	Black-crowned Night-Heron
Oxyura jamaicensis	Ruddy Duck
Passer domesticus	House Sparrow
Passerina amoena	Lazuli Bunting
Petrochelidon pyrrhonota	Cliff Swallow

Scientific Name	Common Name
Phainopepla nitens	Phainopepla
Phalacrocorax auritus	Double-crested Cormorant
Pheucticus melanocephalus	Black-headed Grosbeak
Picoides nuttallii	Nuttall's Woodpecker
Pipilo maculatus	Spotted Towhee
Podiceps nigricollis	Eared Grebe
Podilymbus podiceps	Pied-billed Grebe
Psaltriparus minimus	Bushtit
Quiscalus mexicanus	Great-tailed Grackle
Salpinctes obsoletus	Rock Wren
Sayornis nigricans	Black Phoebe
Sialia mexicana	Western Bluebird
Spinus lawrencei	Lawrence's Goldfinch
Spinus psaltria	Lesser Goldfinch
Sturnus vulgaris	European Starling
Troglodytes aedon	House Wren
Turdus migratorius	American Robin
Tyrannus verticalis	Western Kingbird
Vireo bellii	Bell's Vireo
Zenaida macroura	Mourning Dove
MAMMALS	
Canis latrans	coyote
Otospermophilus beecheyi	California ground squirrel
REPTILES	
Aspidoscelis tigris stejnegeri	San Diego tiger whiptail
Phrynosoma blainvillii	coast horned lizard
Pituophis catenifer	gopher snake
Sceloporus occidentalis	western fence lizard
Uta stansburiana	side-blotched lizard

APPENDIX D: PHOTOS

Photo 1. Reasoner Canyon previous treatment area with new tamarisk populations. Transitional area populations also visible. Photo facing southeast.

Photo 2. Mile long segment of tamarisk infestation just south of Blue Point Campground in the northernmost portion of the Project Management Area. Photo facing north.

Photo 3. Close-up of tamarisk infestation south of Blue Point Campground along Piru Creek in the northernmost portion of the Project Management Area. Photo facing southwest**.**

Photo 4. Close-up of tamarisk infestation south of Blue Point Campground along Piru Creek in the northernmost portion of the Project Management Area. Photo facing south**.**

Photo 5. Close-up of tamarisk infestation south of Blue Point Campground along Piru Creek in the northernmost portion of the Project Management Area. Photo facing west**.**

Photo 6. Slender mariposa lily population observed within the northern portion of the Project Management Area. Photo facing east.