2017 ANNUAL REPORT FOR THE BIG TUJUNGA WASH MITIGATION AREA LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
900 S. Fremont Avenue
Alhambra, CA 91803-1331

Prepared by:

CHAMBERS GROUP, INC.
5 Hutton Centre Drive, Suite 750
Santa Ana, California 92707
(949) 261-5414

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

GUIDE TO COMPLIANCE WITH STREAMBED ALTERATION AGREEMENT

Guide to Compliance with the Terms and Conditions in the California Department of Fish and Wildlife Streambed Alteration Agreement #1600-2008-0253-R5 for the Big Tujunga Wash Mitigation Area, Dated January 29, 2009; Expired March 31, 2014

A draft Streambed Alteration Agreement (SAA) (#1600-2008-0253-R5) was issued to the County of Los Angeles Department of Public Works (LACDPW) from California Department of Fish and Wildlife (CDFW) on January 29, 2009 (Appendix A). The SAA remained in effect through March 31, 2014. Since the expiration of the SAA, activities conducted at the Mitigation Area have been under the direct supervision of CDFW biologist Matthew Chirdon. The following key provides a quick reference as to how the conditions were addressed and where the explanations of activities associated with the conditions are located in this document.

Resource Protection

Condition 1: Vegetation removal activities occurred between the dates of March 1 and September 1, and breeding bird pre-activity surveys were conducted prior to each exotic vegetation removal activity in 2017. In addition, a qualified biological monitor was present during all exotic vegetation removal activities during the breeding season to ensure that no impacts to nesting birds occurred (see Section 4.0). As a result, no impacts occurred to breeding/nesting birds within the Big Tujunga Wash Mitigation Area (Mitigation Area).

Condition 2: Nesting raptor surveys were conducted prior to all vegetation removal activities occurring within the Mitigation Area in 2017. No active raptor nests were identified within the active work areas; therefore, no impacts occurred to nesting raptors, and fencing of nests was not required (see Section 4.0).

Condition 3: Active bird nests were neither destroyed nor disturbed during the 2017 breeding season, in accordance with the Migratory Bird Treaty Act (MBTA) of 1918. Appropriate measures, such as pre-activity surveys and biological monitoring, were taken to prevent impacts to breeding/nesting birds protected under the MBTA.

Condition 4: Pre-activity surveys for sensitive species potentially occurring in the Mitigation Area were conducted prior to exotic vegetation removal activities (see Section 4.0).

Condition 5: CDFW was notified of the presence of all listed and sensitive species occurring within the Mitigation Area.

Condition 6: A qualified biological monitor was on site during clearing, enhancement, and restoration activities (see Section 4.0). The biological monitor conducted the appropriate pre-activity surveys on site prior to each activity occurring in an area.

Condition 7: All native vertebrate species encountered during clearing, enhancement, and restoration activities were safely relocated, as necessary. No native wildlife vertebrate species were harmed as a result of activities occurring in the Mitigation Area. No wildlife exclusionary devices were necessary; thus, none were constructed. No work was conducted on site without the presence of a biological monitor (see Section 4.0).

Condition 8: A Contractor Education Brochure was created in both English and Spanish and was distributed to all contractors and subcontractors working on the site. This brochure also served as an informational brochure that was handed out to recreational user groups as part of the public outreach program (see Section 10.0). In addition, the biological monitor conducted tailgate worker education sessions prior to exotic vegetation activities occurring on the site. A copy of the Contractor Education Brochure is included as Appendix B.

Condition 9: A copy of the 2017 annual report will be submitted to CDFW.

Condition 10: CDFW did not determine that any threatened or endangered species will be affected by the implementation of the Master Mitigation Plan (MMP); therefore, an application for a State Incidental Take Permit was not prepared.

Condition 11: One wildlife-proof trash receptacle has been installed at the northwest corner of the Mitigation Area near the 210 Freeway.

Condition 12: Hunting was neither permitted nor authorized within the Mitigation Area in 2017.

Work Areas and Vegetation Removal

Condition 13: Disturbance and removal of non-native vegetation did not exceed the limits approved by CDFW, as stated in the MMP (see Section 4.0).

Condition 14: All personnel who conducted activities within site boundaries were provided maps, and no native vegetation was removed within the boundaries of the site. The work areas were clearly delineated, and unnecessary impacts did not occur to ephemeral streams or riparian habitats. Activities conducted at the site did not result in any permanent adverse impacts to Haines Canyon Creek and/or Big Tujunga Wash.

Condition 15: Vegetation with a diameter at breast height (dbh) larger than 3 inches was not removed, except as stated in the MMP and approved by CDFW.

Condition 16: Native vegetation was not removed from the channel, bed, or banks of the stream except as provided for in the SAA.

Equipment and Access

Condition 17: Vehicles and equipment were neither operated within nor driven though water-covered portions of the stream.

Condition 18: Access to the site occurred solely via existing roads and established trails for all site maintenance and monitoring activities.

Fill and Spoil

Condition 19: Fill was not placed in any area of the Mitigation Area.

Structures

Condition 20: Materials associated with the MMP activities were not placed in any seasonally dry portions of the stream.

Condition 21: Installation of erosion control structures was not conducted during 2017, nor was there a need for such structures.

Condition 22: Bridges, culverts, and other structures were not constructed as part of activities associated with the MMP.

Condition 23: No construction of any temporary or permanent dams, structures, or flow restrictions occurred as part of the activities associated with the MMP. However, recreational users of the site periodically built rock dams in the creek to create pools. The biologists or properly trained LACDPW Flood Maintenance workers carefully removed them when encountered to restore the natural flow in the creek (see Sections 8.0 and 9.0)

Pollution, Sedimentation, and Litter

Condition 24: All litter and pollution laws were adhered to by the contractors, subcontractors, and employees of LACDPW. Trash pickup was conducted regularly by the site users, the landscape contractor, and volunteers during an organized Trail Cleanup Day (see Section 8.2).

Condition 25: Equipment maintenance was not conducted in the Mitigation Area.

Condition 26: No hazardous spills of any kind occurred in the Mitigation Area during 2017.

Condition 27: Activities conducted within the Mitigation Area in 2017 did not result in any turbid water (from dewatering or other activities) entering existing water courses.

Condition 28: Activities involving equipment washing (or other similar activities) that would have resulted in the production of water containing mud, silt, or other pollutants were not conducted in the Mitigation Area in 2017.

Condition 29: Alteration to the stream's low-flow channel, bed, or banks was not conducted as a result of the implementation of activities in the Mitigation Area.

Condition 30: As stated under Condition 24, the only movement of rocks within the bed or banks of the stream occurred during the removal of rock dams created by recreational users. Removal of the rock dams was conducted by biologists who are familiar with the sensitive fishes in the stream or by properly trained LACDPW Flood Maintenance workers (see Sections 8.0 and 9.0). These activities were conducted with as little silt generation as possible, and the rocks were placed back into the stream in a natural arrangement. Removal of the rock dams is critical for the federally listed (threatened) and California Species of Special Concern (SSC) Santa Ana sucker (*Catostomus santaanae*) that occurs in Haines Canyon Creek. Rock dam removal eliminates habitat that is better suited for exotic wildlife (e.g., American bullfrogs [*Lithobates catesbeianus*], largemouth bass [*Micropterus salmoides*]) that pose a threat to this species.

Permitting and Safeguards

Condition 31: The CDFW, United States Army Corps of Engineers (USACE), and Regional Water Quality Control Board (RWQCB) were consulted very early in the development of the implementation plan for the Mitigation Area (referred to as the Big Tujunga Conservation Area in the SAA). The USACE stated that they did not need to issue a permit because there would not be any fill within their jurisdiction. The continued implementation of the MMP and the Long-term Maintenance and Monitoring Plan (LTMMP) for the Mitigation Area is not expected to have any impact on USACE jurisdiction, nor will it have any water quality impacts. No additional permits or certifications are required from the RWQCB or the USACE.

Condition 32: LACDPW submitted the Conservation Easement (CE) on December 23, 2010. Additional work on the CE was not conducted in 2017.

Administrative-Miscellaneous

Condition 33: No amendments to the SAA were submitted to CDFW during the 2017 reporting period. CDFW did not identify any breaches of the SAA during the 2017 period.

Condition 34: No violations of any terms or conditions of the SAA occurred during the 2017 period.

Condition 35: Copies of the SAA were provided to all the biologists, subcontractors, and workers who conducted activities in the Mitigation Area.

Condition 36: A pre-enhancement restoration meeting/briefing was held on November 11, 2009, prior to any exotic vegetation removal activities occurring in the Mitigation Area. Additional meetings were not necessary during 2017.

Condition 37: CDFW was notified prior to the start of exotic vegetation removal activities occurring within the Mitigation Area during the breeding bird season (see Section 4.0).

Conditions 38 and 39: CDFW conducted a visit to the site on December 18, 2017. Jennifer Pareti with CDFW was onsite to assess the fire damage, survey for fish, and conduct water quality testing following the Creek Fire.

Conditions 40 through 42: CDFW did not issue a suspension or cancellation of the SAA in 2017.

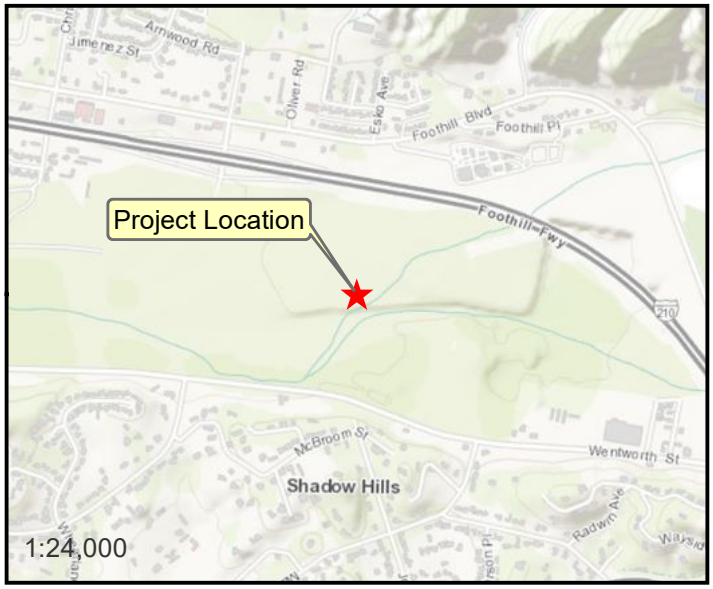
SECTION 1.0 – INTRODUCTION

1.1 PURPOSE

The purpose of this report is to provide a summary of the management activities conducted at the Big Tujunga Wash Mitigation Area (Mitigation Area) from January to December 2017. These activities were conducted in accordance with the Master Mitigation Plan (MMP) for the Mitigation Area (Chambers Group 2000). The MMP was first created in 2000 to serve as a five-year guide for implementation of various enhancement programs and to fulfill the California Department of Fish and Wildlife (CDFW) requirement for the preparation of a management plan for the site. The ultimate goal of the Mitigation Area is to provide for long-term preservation, management, and enhancement of biological resources for the benefit of the state's fish and wildlife resources. The MMP encompasses strategies to enhance and protect existing habitat for wildlife and to create additional natural areas that could be used by native wildlife and numerous user (recreational) groups. In addition, the MMP includes programs for the removal of exotic fishes and reptiles, American bullfrogs (*Lithobates catesbeianus*), and red swamp crayfish (*Procambarus clarkii*) from the Tujunga Ponds; trapping to control brown-headed cowbirds (*Molothrus ater*); development of a formal trails system; and development of a public awareness and education program at the site. Implementation of the MMP began in August 2000 and was completed five years later. An additional year of limited maintenance and surveys was added between late summer 2006 and late summer 2007. ECORP Consulting, Inc. (ECORP) was contracted by the County of Los Angeles Department of Public Works (LACDPW) in July 2007 to continue MMP activities as part of implementation of the Long-term Maintenance and Monitoring Plan (LTMMP) (Chambers Group 2006). In June of 2017 Chambers Group, Inc. (Chambers Group) was again contracted by LACDPW to continue MMP activities in accordance with the LTMMP. This report summarizes all activities conducted in the Mitigation Area by ECORP and Chambers Group between January and December 2017.

1.2 LOCATION AND SETTING

The Mitigation Area is located in Big Tujunga Wash, just downstream of the Interstate (I-) 210 Freeway overcrossing, near the City of Los Angeles' Sunland community in the San Fernando Valley, Los Angeles County. The site is bordered on the north by I-210, on the east by I-210 and the County of Los Angeles Department of Parks and Recreation (LACDPR) Tujunga Ponds, and on the south by Wentworth Street (Figure 1-1). The west side of the site is contiguous with the downstream portion of Big Tujunga Wash. The Mitigation Area supports two watercourses: Big Tujunga Wash and Haines Canyon Creek. Big Tujunga Wash, in the northern portion of the site, is partially controlled by Big Tujunga Dam (Dam). Flow is intermittent based on rainfall amounts and water releases from the Dam. Haines Canyon Creek, located in the southern portion of the site, is a tributary that conveys water flow from Haines Canyon to Big Tujunga Wash. Flow is perennial and may be fed by groundwater and/or runoff from adjacent residential areas. The two drainages merge near the western boundary of the property and continue into the Hansen Dam Flood Control Basin, located approximately one-half mile downstream of the site. The site is located within a state-designated Significant Natural Area (LAX-018) and a Los Angeles County Significant Ecological Area (Designation No. 25, Tujunga Valley/Hansen Dam); and the biological resources found on the site are of local, regional, and statewide significance (Safford and Quinn 1998; CDFW 2016). The Mitigation Area also falls within designated Critical Habitat for the federally listed Santa Ana sucker and the federally and state listed southwestern willow flycatcher (*Empidonax traillii extimus*). The nearby Tujunga Ponds and surrounding habitat are located adjacent to the northeast corner of the site. An aerial photograph showing Big Tujunga Wash, Haines Canyon Creek, the Tujunga Ponds, and other geographic features as well as designated Critical Habitat in the Mitigation Area can be found in Figure 1-2.



Legend

Mitigation Area

L.A. County Park Parcel

N

0 750 1,500

Feet

Figure 1-1

Project Location

Name: 21021 RPT 2017 Fig 1-1 Project Location.Mxd
Print Date: 3/16/2018, Author: esimmons

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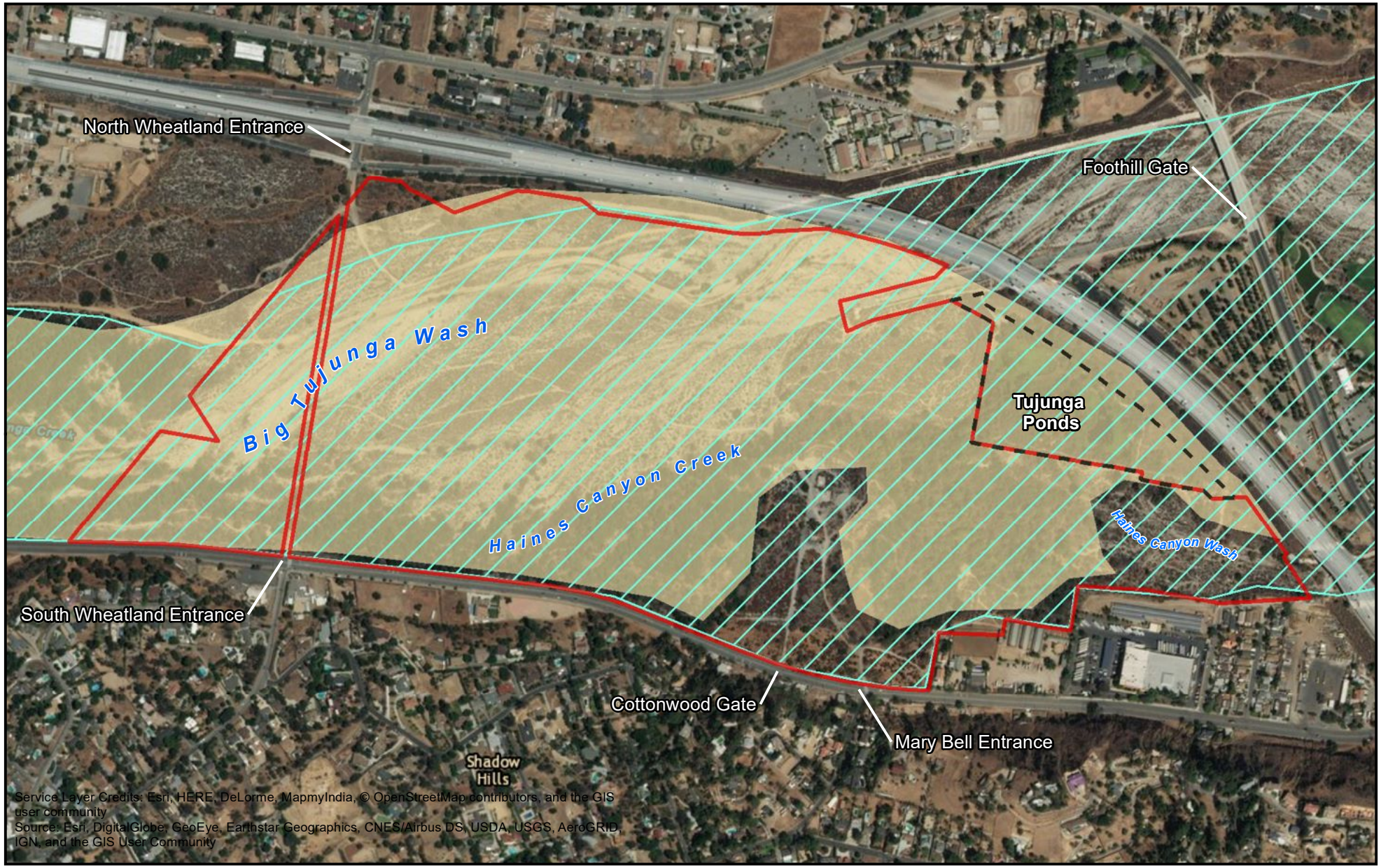

Legend

- Mitigation Area
- L.A. County Park Parcel

USFWS Critical Habitat

- Santa Ana sucker
- Southwestern willow flycatcher

N

0 500 1,000
Feet

Figure 1-2
Big Tujunga Wash
Mitigation Area

Name: 21021 RPT 2017 Fig 1-2 Big T Wash Mit Area.Mxd
Print Date: 3/16/2018, Author: esimmons

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1.3 SUMMARY OF THE ANNUAL REPORT

Table 1-1 provides a list of the tasks described in the MMP that were implemented between January and December 2017. Certain tasks in the MMP were not conducted in 2017 because the scope of work requires that they be done once during a three-year period and that they be conducted during an average or better than average rainfall year. Examples of these include the focused surveys for sensitive native fishes, arroyo toad (*Anaxyrus californicus*), least Bell's vireo (*Vireo bellii pusillus*), and southwestern willow flycatcher. This suite of surveys was not conducted in 2017 because these surveys were last conducted in 2015. Due to the loss of habitat for these species following the Creek Fire, the schedule for these surveys is now tentative. No water lettuce (*Pistia stratiotes*) was observed in the Mitigation Area during 2017 and thus, no Water Lettuce Control Program tasks were conducted in 2017. No additional tasks were conducted under the Special Assessment task in 2017. Compendia of all plant and wildlife species observed in the Mitigation Area in 2017 are included as Appendix C.

Table 1-1. Mitigation and Monitoring Tasks Implemented and/or Continued in 2017

Implemented and/or Continued in 2017	Task
	TASK 1 — Continue Brown-headed Cowbird Trapping Program
✓	Brown-headed Cowbird Trapping Program
✓	Final Trapping Report
	TASK 2 — Continue Exotic Plant Eradication Program
✓	Combined Exotic Plant Removal and Maintenance Program
✓	Exotic Plant Memos
	TASK 3 — Water Lettuce Control Program
-	Water Lettuce Herbicide Application
-	Follow-up Inspections and Memos
	TASK 4 — Continue Exotic Wildlife Eradication Program
✓	Exotic Wildlife Removal Efforts
✓	Exotic Wildlife Memos
	TASK 5 — Water Quality Monitoring Program
✓	Water Quality Monitoring
✓	Water Quality Results Report
	TASK 6 — Trails Monitoring Program
✓	Trails Maintenance and Monitoring Site Visits
✓	Trails Maintenance and Monitoring Memos
✓	Trail Cleanup Day
	TASK 7 — Community Awareness Program
✓	Biannual Newsletters
✓	Community Advisory Committee Meeting
✓	Community Advisory Committee Meeting Minutes
	TASK 8 — Public Outreach Program
✓	Public Outreach Weekend Site Visits
✓	Public Outreach Memo

Table 1-1. Mitigation and Monitoring Tasks Implemented and/or Continued in 2017

Implemented and/or Continued in 2017	Task
	TASK 9 — Special Assessment
-	Special Assessment Site Visits
-	Special Assessment Memos
	TASK 10 — Annual Report
✓	2017 Draft Annual Report
✓	2017 Final Annual Report
	TASK 11 — Meetings
✓	Meetings with LACDPW, Agencies, Public, and Consultants
	TASK 12 — Coordination with LACDPR
✓	Coordination with LACDPR

1.3.1 Continuation of Brown-headed Cowbird Trapping Program

Brown-headed cowbird trapping was conducted in and around the Mitigation Area in the spring and summer of 2017. This program is outlined in the MMP as a method to enhance the ecological value of the site by reducing and ultimately eliminating the occurrence of brood parasitism of native riparian bird species. Two cowbird traps were placed within the Mitigation Area, and two traps were placed outside the Mitigation Area in suitable cowbird foraging habitat. A total of 54 cowbirds were removed from the four traps between March 30 and June 29, 2017. Details of the brown-headed cowbird trapping program are found in Section 2.0.

1.3.2 Continuation of Exotic Plant Eradication Program

This task consisted of ongoing monitoring of past exotic plant removal efforts and continued removal of exotic and invasive vegetation. Periodic site visits were conducted to determine the locations of exotic plant species removal efforts, to strategize the best course of action, and to determine if and where additional treatments were necessary. The removal of exotic plants was conducted at various times throughout the year to ensure that removal techniques would coincide with the exotic plant species' growth cycles. The major focus of this task for the 2017 period was treating exotic plant species (such as mustard species, castor bean [*Ricinus communis*], non-native thistles, and non-native brome grasses) with CDFW-approved herbicides. The exotic plant species eradication activities that were conducted in 2017 are summarized in Section 4.0.

1.3.3 Water Lettuce Control Program

A new task, water lettuce removal, was added to the Exotic Plant Eradication Program in 2011 due to an infestation of this non-native plant in the Tujunga Ponds. Following manual removal in early January 2012, remaining patches of water lettuce were treated with CDFW-approved herbicide in January, July, August, and September 2012 and again in July and August 2013. A small amount of water lettuce was observed on site in June and August 2016 but was manually removed from the ponds in by biologists and

maintenance crews and did not require herbicide treatments. The Tujunga Ponds were searched for water lettuce in July, August, November, and December 2017 and was not observed on site. Details of the water lettuce program are summarized in Section 5.0.

1.3.4 Continuation of Exotic Wildlife Eradication Program

This task consists of the continued removal of non-native, invasive wildlife species. Efforts were focused on removal of exotic aquatic wildlife species, primarily, bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), red swamp crayfish, Mozambique tilapia (*Oreochromis mossambicus*), and western mosquitofish (*Gambusia affinis*), from perennial waters at the Tujunga Ponds and Haines Canyon Creek. Exotic wildlife removal efforts targeted all life stages of American bullfrogs in an effort to maximize the efficiency of the removal program. Exotic wildlife removal methods were revised in 2016 to increase effectiveness through the addition of removal efforts. A total of 10 exotic wildlife removal efforts occurred during the 2017 reporting period. Exotic wildlife removal tasks implemented in 2017 are summarized in Section 6.0.

1.3.5 Water Quality Monitoring Program

Water quality sampling for the Mitigation Area was conducted by Chambers Group on December 21, 2017. All samples were tested by Enthalpy Analytical, LLC. This task is discussed in Section 7.0.

1.3.6 Trails Monitoring Program

The Trails Monitoring Program aims to allow recreational use of the Mitigation Area while still preserving sensitive wildlife and their habitats. Three site visits were conducted in 2017 to look for areas that might qualify for trail closures, identify areas where trails were blocked by trash or debris, and mark locations of extensive stands of poison oak (*Toxicodendron diversilobum*) and other vegetation overgrowing the trails. A majority of the trail maintenance needs that were identified were remedied the same day. More extensive problem areas were mapped and reported to LACDPW for repair at a later time. The Eleventh Annual Trail Cleanup Day was held on Saturday, November 4, 2017. Trail maintenance tasks implemented in 2017 and further information about the Trail Cleanup Day is summarized in Section 8.0.

1.3.7 Community Awareness Program

This program consists of the continued implementation of the Community Advisory Committee (CAC) meeting. The meetings were previously held semiannually, in spring and fall of each year, but changed in 2014 to only be held in the spring. ECORP assisted LACDPW with development of meeting agendas and any supporting handouts (including an updated Mitigation Area Incident Map), summarizing CAC meeting minutes, and producing the spring and fall newsletters for distribution by LACDPW. The status of the Community Awareness Program and activities conducted in 2017 are summarized in Section 9.0.

1.3.8 Public Outreach Program

A new community outreach program was implemented in 2009 to educate the various types of recreational user groups about the sensitivity of plant communities and wildlife species present in the Mitigation Area. This program was continued in 2017 due to its past success. On-site interviews and education about the Mitigation Area were conducted on three separate occasions by Chambers Group's bilingual biologists. The biologists handed out bilingual brochures describing the ecological purpose of the

Mitigation Area, the importance of protecting sensitive biological resources, and approved recreational uses within the Mitigation Area. While on site, they documented any unusual observations or circumstances such as the presence of rock dams or unauthorized activities within the Mitigation Area. A full description of the outreach effort, as well as several notable incidents in 2017, are included in Section 10.0.

1.3.9 Special Assessment

Chambers Group and ECORP staff were available to provide special assessments on an on-call basis. Special assessments include damage assessments (i.e., fire damage, vandalism) and other site issue assessments and the subsequent coordination and response. This task is discussed in Section 11.0.

1.3.10 Preparation and Submittal of Annual Report

This task refers to the preparation of the annual report and the individual task reports that are included as appendices to the annual report.

1.3.11 Attendance at Meetings with Agencies, Public, and Consultants

Chambers Group and ECORP staff attended meetings with LACDPW, agencies, the general public, and consultants as necessary regarding various aspects of the MMP implementation. One post-fire assessment meeting was held with LACDPW and CDFW at the Mitigation Area on December 18, 2017, following the Creek Fire. This is discussed in Section 12.0.

1.3.12 Coordination with LACDPR

Chambers Group and ECORP staff informed and coordinated with LACDPR concerning activities that took place within the Mitigation Area and the Tujunga Ponds LACDPR parcel.

SECTION 2.0 – CONTINUATION OF BROWN-HEADED COWBIRD TRAPPING PROGRAM

The brown-headed cowbird trapping program was established at the Mitigation Area to decrease and ultimately eliminate nest parasitism on sensitive songbird species present or potentially present in the Mitigation Area, such as least Bell's vireo and southwestern willow flycatcher. Trapping and eradicating brown-headed cowbirds increases the ecological value of the site by enhancing the reproductive success of these sensitive riparian songbirds and promoting general breeding activity within the Mitigation Area. Trapping was initiated in the Mitigation Area in 2001 and was conducted yearly between 2001 and 2006 and again between 2009 and 2017. Trapping was not conducted in 2007 and 2008, as it was one of the tasks originally scheduled to occur once every three years. CDFW requested that this task be completed every year in the most recent Streambed Alteration Agreement (SAA) issued for the site (dated January 29, 2009). In 2017, Griffith Wildlife Biology operated two cowbird traps within the Mitigation Area and two traps adjacent to the Mitigation Area between March 30 and June 29, 2017. The methodology, results, and discussion of the 2017 trapping are presented below; and a full copy of the report is included as Appendix D.

2.1 BROWN-HEADED COWBIRD NATURAL HISTORY

Brown-headed cowbirds are brood parasites. Cowbirds do not make a nest of their own, nor do they contribute to raising their young. This species parasitizes the nests of native host species by laying their larger egg(s) in the host species' nests and leaving the egg(s) and chick(s) to be reared by the native host. Brown-headed cowbird young are often larger and more demanding than their host offspring, resulting in the host birds raising the cowbird chick and neglecting their own young. Female cowbirds can lay up to 40 eggs during the breeding season (ranging from two to four months; Scott and Ankney 1980).

Population declines of sensitive native songbirds such as the least Bell's vireo and the southwestern willow flycatcher can be partially attributed to high nest parasitism rates by brown-headed cowbirds. In many areas, the reduction or elimination of brown- headed cowbirds through trapping has been directly related to increases in native bird populations.

2.2 METHODOLOGY

Brown-headed cowbird trapping was conducted by Griffith Wildlife Biology according to the Brown-headed Cowbird Trapping Protocol, the standard protocol accepted by the United States Fish and Wildlife Service (USFWS) and CDFW (Griffith Wildlife Biology 1992). Four traps were established in and around the Mitigation Area: Trap 1 at the Hansen Dam Stables, Traps 2 and 3 inside the Mitigation Area, and Trap 4 at Gibson Ranch (Figure 2-1). Traps 2 and 3 were placed adjacent to riparian and coastal sage scrub habitat, while Traps 1 and 4 were placed in cowbird foraging areas.

Traps were removed from storage and transported to the Mitigation Area. Each trap, measuring approximately 6 feet wide, 8 feet long, and 6 feet tall, was constructed at each trap site. Food, water, perches, and shade were provided inside each trap. A sign was prominently placed outside each trap explaining the significance of the trap and urging recreational users of the area not to tamper with it. Each trap contained the minimum preferred ratio of male to female decoys (two males and three females) as of April 6, 2017. As of April 15, the ratio was increased to three males and five to six females. The traps were opened on March 30 and operated every day (including holidays) until June 29, 2017. Each trap was serviced daily by either the Principal Investigator or a trapping assistant. Daily servicing activities included:

- Replenishing and/or cleaning the water source
- Refilling the feed tray with bait seed
- Repairing the perches, foraging pad, sign, shade cloth, or lock as needed
- Repairing damage as needed
- Wing clipping newly captured female cowbirds
- Adding/removing decoy cowbirds to maintain the appropriate male to female ratio (2:3)
- Removing and releasing non-target native bird species in the traps
- Recording all activities and appropriate data on a data sheet

Traps were disassembled and returned to storage after June 29, 2017. Cowbirds not used as decoys were euthanized with carbon monoxide and moved off site to be provided as forage for raptor rehabilitation/reintroduction facilities.

Legend

- Mitigation Area
- L.A. County Park Parcel
- Brown-headed Cowbird Trap Location

N

0 750 1,500
Feet

Figure 2-1
Brown-headed Cowbird Trap Locations

Name: 21021 RPT 2017 Fig 2-1 BHC Trap Locations.Mxd
Print Date: 3/20/2018, Author: esimmons

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2.3 RESULTS

A total of 54 cowbirds were removed during the 2017 trapping season (27 males, 26 females, and 1 juvenile). Most cowbirds were captured and removed between weeks two and five (April 8 to May 5) of the 13-week trapping period. One trap was vandalized on May 2 by having the front panel mesh cut. The trap was immediately repaired, and no decoys escaped.

A total of 184 non-target birds (i.e., all species except brown-headed cowbirds) of four native bird species were captured in the traps. The four non-target species that were captured included California towhee (*Pipilo crissalis*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*). Banded cowbirds and/or banded non-target species were not captured during the trapping season. Most non-target birds (184 individuals) captured during the trapping period were released unharmed and in good health. One non-target individual (California towhee) was classified as a mortality due to intraspecific competition inside the trap. No mortalities of decoy or non-target birds occurred due to lack of water, food, or shade or because of unclean conditions in the trap. No mortalities of decoy birds occurred inside the traps during the 13 weeks of trapping.

2.4 DISCUSSION

The number of brown-headed cowbirds trapped during the 2017 season is within the range of 2001-2016 numbers. The 2017 capture numbers (54) fall well below the 133 captured in 2016 and are the lowest number captured since the 56 recorded in 2006. However, 2006 was bracketed by 137 in 2005 and 192 in 2007. It is expected that the capture numbers will rebound back to the 2001-2017 average of 112 in 2018 or 2019. Locally raised juveniles are relatively easy to capture within their natal habitat and can be a good indication of the success of a trapping program. Only one juvenile brown-headed cowbird was captured during the 2017 trapping season, indicating that cowbird parasitism was essentially eliminated in the study area in 2017.

In order to effectively reduce regional cowbird populations, brown-headed cowbird trapping would need to be conducted on a yearly basis until the number of cowbirds captured decreases each year. Yearly trapping has been effective at reducing nest parasitism on native host species present in the riparian habitat at the Mitigation Area. Griffith Wildlife Biology recommended no change in the protocol, the number of traps (four), or the dates and duration of cowbird trapping (13 weeks, April 1 to June 30).

SECTION 3.0 – HABITAT RESTORATION PROGRAM

The habitat restoration program was originally established to preserve, improve, and create habitat for Santa Ana sucker, Santa Ana speckled dace (*Rhinichthys osculus* ssp. 3), arroyo chub (*Gila orcuttii*), arroyo toad, least Bell's vireo, and southwestern willow flycatcher, all sensitive and listed species known to either occur or have a high potential to occur on site. These species are associated with aquatic and/or riparian habitats; therefore, the habitat restoration program focused on the restoration of cottonwood-willow riparian habitat. The goal of the initial habitat restoration plan was to remove invasive, non-native, and weedy species, such as giant reed, and to replant these areas with native riparian species. The enhancement plan consisted of various tasks designed to remove the non-native species, prepare the areas prior to planting, install cuttings and container plant materials, and monitor the success of the plantings. Initial installation of willow riparian habitat along Haines Canyon Creek occurred in 2000 and 2001. The habitat restoration program was ongoing through the first part of 2007, when the last plantings were installed. Failure of the plantings due to environmental conditions and vandalism initiated a reevaluation of the restoration program in late 2007.

When ECORP took over the contract for the implementation of the MMP in mid-2007, the habitat restoration plan was revised in order to better address the changing needs of the Mitigation Area and address the long-term maintenance needs of the restoration areas. The habitat restoration plan was also updated in 2009 (ECORP 2009) and is included in Appendix C of the 2009 Annual Report for the Mitigation Area (ECORP 2010).

3.1 SUMMARY OF THE ORIGINAL HABITAT RESTORATION EFFORTS

The original habitat restoration efforts conducted in the Mitigation Area are addressed in detail in Section 2.2 of the 2009 Annual Report for the Big Tujunga Wash Mitigation Area (ECORP 2010). During the first five years following implementation of the original MMP, habitat restoration efforts within the Mitigation Area focused on planting new riparian woodland overstory and understory plants in existing canopy openings or in openings that were created after extensive stands of invasive exotic species were removed. Container plantings and cuttings of native plant species were placed throughout the Mitigation Area and watered on a regular basis to promote survival. In 2004, the cuttings and container plantings were found to have a low survival rate, presumably due to the lack of naturally available water. It was concluded at that time that natural recruitment was more effective at filling openings in the riparian canopy than the active planting program, so no new planting efforts were conducted until 2007.

Additional planting efforts occurred in 2007; however, 2007 was a severe drought year and none of the native plant cuttings survived. A watering program was implemented immediately to promote survival, and the planted container plants did survive. No additional losses of these container plants were noted following the watering program.

3.2 CURRENT STATUS OF THE HABITAT RESTORATION PROGRAM

The planting and maintenance portions of the habitat restoration program were terminated in 2010 (ECORP 2011). The exotic plant removal component of the habitat restoration program, however, was continued; and the exotic plant removal task was absorbed into the new exotic plant eradication and maintenance program during the contract revision in 2012. The exotic plant eradication and maintenance program activities conducted in 2017 are discussed in Section 4.0.

SECTION 4.0 – CONTINUATION OF EXOTIC PLANT ERADICATION AND MAINTENANCE PROGRAM

The purpose of the exotic plant eradication and maintenance program at the Mitigation Area is to increase the ecological value of the existing native vegetation communities. The original exotic plant removal program targeted the riparian communities in and around Haines Canyon Creek, Big Tujunga Wash, and the Tujunga Ponds. This program was expanded in 2012 due to a contract revision and now encompasses the cottonwood/willow restoration area maintenance and oak-sycamore woodland weeding activities. By removing exotic plant species and continually performing maintenance in restoration areas throughout the Mitigation Area, native plant species are able to flourish due to reduced competition for resources, such as light and water. This ultimately allows for natural recovery of native plant communities and increased chances of success within the restoration areas, which results in an improvement in the ecological function of the entire area. Improved habitat function benefits common and sensitive species of plants and wildlife that either occur or have the potential to occur at the Mitigation Area. Table 4-1 lists the exotic plant species targeted for eradication.

Table 4-1. Target Non-Native Weed Species

Common Name	Scientific Name
sticky snakeroot*	*Ageratina adenophora*
palm species*	*Arecastrum* sp., *Washingtonia* sp., etc.
giant reed*	*Arundo donax*
mustard species*	*Brassica* sp., *Hirschfeldia incana*, *Sisymbrium* sp.
Italian thistle	*Carduus pycnocephalus*
non-native thistle*	*Cirsium* sp.
umbrella-plant*	*Cyperus involucratus*
water hyacinth*	*Eichhornia crassipes*
gum tree*	*Eucalyptus* sp.
fennel	*Foeniculum vulgare*
white sweetclover*	*Melilotus albus*
tree tobacco*	*Nicotiana glauca*
common plantain*	*Plantago major*
castor-bean*	*Ricinus communis*
pepper tree*	*Schinus terebinthifolius, S. molle*
milk thistle*	*Silybum marianum*
Mediterranean tamarisk	*Tamarix ramosissima*
Non-Native Annual Grasses	
wild oat*	*Avena fatua*
slender wild oat*	*Avena barbata*
foxtail chess*	*Bromus madritensis* subsp. *madritensis*
ripgut grass*	*Bromus diandrus*
soft chess	*Bromus hordeaceus*
glaucous foxtail barley*	*Hordeum murinum*
annual beard grass*	*Polypogon monspeliensis*
Non-Native Perennial Grasses	
pampas grass	*Cortaderia selloana*
Bermuda grass*	*Cynodon dactylon*
Italian ryegrass	*Festuca perennis*
fountain grass*	*Pennisetum setaceum*
smilo grass*	*Piptatherum miliaceum*

*Observed in 2017

Table 4-2 lists all the additional exotic plant species observed within the Mitigation Area.

Table 4-2. Additional Exotic Plant Species Observed in the Mitigation Area

Common Name	Scientific Name
century plant	*Agave americana*
tree of heaven	*Ailanthus altissima*
pigweed	*Amaranthus albus*
belladonna-lily	*Amaryllis belladonna*
scarlet pimpernel	*Anagallis arvensis*
black mustard	*Brassica nigra*
southern catalpa	*Catalpa bignonioides*
tocalote	*Centaurea melitensis*
spotted spurge	*Chamaesyce maculata*
poison hemlock	*Conium maculatum*
pumpkin	*Cucurbita pepo*
squash	*Cucurbita* sp.
flax-leaved horseweed	*Erigeron bonariensis*
red-stemmed filaree	*Erodium cicutarium*
petty spurge	*Euphorbia peplus*
English ivy	*Hedera helix*
shortpod mustard	*Hirschfeldia incana*
prickly lettuce	*Lactuca serriola*
peppergrass	*Lepidium latifolium*
sweet-alyssum	*Lobularia maritima*
tomato	*Lycopersicon esculentum*
cheeseweed	*Malva parviflora*
horehound	*Marrubium vulgare*
marvel of Peru	*Mirabilis jalapa*
Eurasian milfoil	*Myriophyllum spicatum*
Mexican palo verde	*Parkinsonia aculeata*
Virginia creeper	*Parthenocissus quinquefolia*
bluecrown passionflower	*Passiflora caerulea*
wild radish	*Raphanus sativus*
Himalayan blackberry	*Rubus armeniacus*
London rocket	*Sisymbrium irio*
prickly sow thistle	*Sonchus asper*
common sow thistle	*Sonchus oleraceus*
Spanish broom	*Spartium junceum*
tamarisk	*Tamarix* sp.
feverfew	*Tanacetum parthenium*
puncture vine	*Tribulus terrestris*
wand mullein	*Verbascum virgatum*
greater periwinkle	*Vinca major*
Non-Native Annual Grasses	
barnyard grass	*Echinochloa crus-galli*
goose grass	*Eleusine indica*
barley	*Hordeum vulgare*
fall panicgrass	*Panicum dichotomiflorum* subsp. *dichotomiflorum*
Non-Native Perennial Grasses	
redtop	*Agrostis stolonifera*

The revised approach to the exotic plant eradication and maintenance program also includes a more aggressive program for targeting and eliminating the large, non-native trees that create the dense overstory within the Mitigation Area. Removal of these exotic tree species will create a more open canopy within the Mitigation Area, which will allow more sunlight to reach the native plant species growing beneath the canopy. The tree species targeted under the exotic plant eradication and maintenance program are listed in Table 4-3.

Table 4-3. Target Invasive Exotic Tree Species

Common Name	Scientific Name
acacia species	*Acacia dealbata* and *Acacia* spp.
southern catalpa*	*Catalpa bignonioides*
gum tree*	*Eucalyptus* spp.
edible fig*	*Ficus carica*
shamel ash*	*Fraxinus uhdei*
Japanese privet	*Ligustrum japonicum*
sweetgum	*Liquidambar stryraciflua*
white mulberry*	*Morus alba*
tree tobacco*	*Nicotiana glauca*
castor-bean*	*Ricinus communis*
Peruvian pepper tree*	*Schinus molle*
Brazilian pepper tree	*Schinus terebinthifolius*
Chinese elm*	*Ulmus parvifolia*
palm species*	*Washingtonia* sp., *Phoenix canariensis*, etc.

*Observed in 2017

4.1 METHODS

Exotic plant eradication activities took place throughout the riparian and upland portions of the Mitigation Area. These eradication activities also included weeding in the upland area between Big Tujunga Wash and the northern boundary of the Mitigation Area. Before 2012, this area was not part of the sections that were actively weeded on a regular basis, but infestations of invasive exotic plant species (fountain grass [*Pennisetum setaceum*]) and weeds (thistle [*Cirsium* spp.] and mustard [*Brassica* spp.]) reached levels that needed to be controlled and are now included in regular exotic plant removal efforts. Although exotic plant eradication efforts were conducted throughout the entire Mitigation Area in 2017, Figure 4-1 shows the areas that are considered high priority for targeting exotic plant species.

Pre-activity surveys were conducted by qualified biologists prior to each exotic plant eradication effort to document exotic plant locations and any sensitive biological resources to avoid during the removal efforts. During the pre-activity surveys, the biologists conducted a walkthrough of all trails in the riparian and upland areas. Coordinates of new exotic plant species locations or sensitive biological resources (such as active bird nests) were recorded with Collector for ArcGIS mobile application (an Esri-based application) on either a tablet or personal smart phone. All captured points, whether it is a sensitive species or nesting bird location, the boundary of an environmentally sensitive area, or even a photograph, are geo-referenced (GPS coordinate associated with point), time stamped for accurate inventory, and catalogued. The data is automatically posted to the server and available for all field crew to review throughout the eradication efforts. CDFW was notified prior to the commencement of removal activities, in accordance with the Mitigation Area's SAA.

Legend

- Mitigation Area
- L.A. County Park Parcel
- High Priority Area

N

0 500 1,000
Feet

Figure 4-1
High Priority Exotic Plant Removal Locations

Name: 21021 RPT 2017 Fig 4-1 Plant Removal Locations.Mxd
Print Date: 3/20/2018, Author: esimmons

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During the exotic plant eradication efforts, a biological monitor was present to ensure that crews conducted work within the appropriate pre-defined work areas and that the removal activities did not result in impacts to sensitive biological resources, such as nesting bird activity. The biological monitor also conducted morning tailgate sessions to remind the crews about the sensitive biological resources present in the Mitigation Area. A bilingual worker education brochure that contained general information and guidelines pertaining to the site was distributed to all new workers entering the site (Appendix B). The biological monitor was responsible for showing the crews locations of exotic plant species that had been recorded during previous site visits and pre-activity surveys. Newly identified stands of exotic vegetation were treated as they were discovered. All treated areas were documented by the biological monitor and digital photographs were taken to document removal efforts. Following the completion of each eradication effort, a memo was prepared that documented the eradication activities and locations and the presence of any sensitive biological resources. All exotic plant removal efforts were conducted according to the terms and conditions of the SAA.

Exotic plants and trees were removed either manually (by cutting or sawing) or by herbicide treatment. Hand-saws and hand tools (machetes) were used for cutting small exotic trees. Large exotic trees that were girdled in 2012 were monitored for regrowth and no new growth was observed. All herbicides used during exotic plant eradication efforts were California-approved aquatic herbicides approved for use within 15 feet of any water source including permanent (Haines Canyon Creek, Tujunga Ponds) or temporary (Big Tujunga Wash, ephemeral ponds from rains). Exotic plants measuring more than 5 feet in height were treated with the cut-stump method using an herbicide mixture of 50 percent Polaris (an imazapyr-based herbicide), 2 percent Liberate (a penetrant, deposition, and drift control agent), and Turf Trax (a blue indicator dye). Exotic plants measuring less than 5 feet in height were treated with a foliar herbicide application when possible or were hand-pulled near native vegetation where herbicides had the potential to damage nearby native vegetation. The foliar herbicide mixture contained 2 percent Roundup Custom (a glyphosate-based herbicide), 1 percent Polaris, 1 percent Liberate, and Turf Trax. Cuttings of giant reed stands (and other exotic plant species) were not removed from the site but were arranged in a manner that would prevent re-growth or establishment of new stands. The cuttings were placed in areas that would not impede visitor traffic, pose a safety hazard, or affect the aesthetics of the site.

4.2 NON-NATIVE EXOTIC PLANT ERADICATION EFFORTS IN 2017

Site-wide exotic plant eradication occurred during three different efforts in 2017: March 27 through 31, April 3 through 7, and April 10 through 13 (ECORP, first effort); July 27 and 28, July 31, and August 1 (Chambers Group, second effort); and November 21 and 22, and November 27 (Chambers Group, third effort). ECORP biologists Taylor Dee, Lauren Dorough, and Carley Lancaster conducted the pre-activity surveys and/or the biological monitoring for the first exotic plant eradication effort. Chambers Group biologists Paul Morrissey, Erik Olmos, Jackelyn Mayfield, Jeremy Smith and Director of Restoration Construction Steven Reinoehl conducted the pre-activity surveys and/or the biological monitoring for the second and third exotic plant eradication efforts.

Exotic plant and tree eradication efforts were conducted throughout the entire Mitigation Area. The eradication activities did not result in impacts to any sensitive biological resources. During the first effort, active bird nests and/or birds behaving territorial and exhibiting nesting activity were discovered at 19 locations during exotic plant removal activities. The nests were determined to belong to Bewick's wren (*Thryomanes bewickii)*, red-winged blackbird (*Egelaius phoeniceus*), Anna's hummingbird (*Calypte anna*), bushtit (*Psaltriparus minimus*), lesser nighthawk (*Chordeiles acutipennis*), California thrasher (*Toxostoma redivivum*), house finch (*Haemorhous mexicanus*), western bluebird (*Sialia mexicana*),

Cooper's hawk (*Accipiter cooperii*), California scrub jay (*Aphelocoma californica*), and song sparrow (*Melospiza melodia*). No-work buffers were established around active bird nests, and the biological monitors were present during all work activities occurring outside the buffers to ensure the adults and young associated with each nest were not affected. No active bird nests were identified, and no breeding or nesting behaviors were observed prior-to or during the second exotic plant eradication effort. The third exotic plant removal effort took place outside the nesting season.

Notes and representative site photographs were taken, and the coordinates of additional weed/exotic plant locations were recorded using the Esri-based Collector for ArcGIS application on either smart phones or tablets.

Copies of all memos documenting pre-activity surveys, exotic plant removal, CDFW notifications, and photographs taken during removal efforts can be found in Appendix E.

SECTION 5.0 – WATER LETTUCE CONTROL PROGRAM

During an exotic wildlife removal effort in March 2011, aquatic biologists noticed that the Tujunga Ponds were becoming infested with water lettuce, an invasive plant commonly used in aquariums and ponds. Within one month of the initial observation, the entire East Tujunga Pond was completely covered with the surface-growing plant. Within two months the entire West Tujunga Pond was covered. The infestation was so great that the waterways between the ponds and Haines Canyon Creek became suffocated. Water lettuce is listed under the United States Department of Agriculture's Plant Database as an invasive and noxious weed and is thought to spread via dumping of aquariums (USDA NRCS 2011). The water lettuce at the Tujunga Ponds has the potential to threaten the habitat in Haines Canyon Creek for endangered species, such as the Santa Ana sucker, as well as have a negative impact on the native turtle and bird species that use the ponds as habitat. ECORP contacted LACDPW to create a plan for water lettuce removal from the Mitigation Area waterways.

Intensive water lettuce removal efforts were immediately initiated to control the infestation. Physical removal efforts were conducted between June and December 2011 and between January and September 2012. Detailed descriptions of the physical removal efforts can be found in the 2011 and 2012 Annual Reports for the Big Tujunga Wash Mitigation Area (ECORP 2012, 2013).

Following the initial physical removal of the water lettuce, a monitoring and maintenance program was established in 2012 to keep the water lettuce populations in check and prevent another infestation from occurring in the Tujunga Ponds and Connector Channel. The program consisted of monthly herbicide applications conducted on an as-needed basis paired with follow-up site inspections to monitor the success of the herbicide application. Four herbicide application efforts were conducted in 2012 after the physical removal effort, and two additional applications were applied in 2013 (ECORP 2013, 2014). Renovate®, an herbicide designed for use within aquatic environments and approved by CDFW for use within the Mitigation Area, was applied to patches of hard-to-reach water lettuce within southern cattails (*Typha domingensis*) and other vegetation around the pond perimeters. During regular site visits following the treatments, biologists did not observe any evidence of water lettuce. The absence of water lettuce during the site visit provided evidence that the herbicide applications to the water lettuce were successful. Water lettuce was again observed in the East Tujunga pond on two occasions during the 2016. On both occasions onsite biologists and exotic plant removal crews were able to remove the small patches of water lettuce by hand. The area was monitored during each subsequent site visit in 2016 and no other water lettuce was observed.

A search for water lettuce was conducted by Chambers Group Director of Restoration Construction Steven Reinhoehl on four occasions in 2017. These searches coincided with pre-activity surveys conducted on July 21, 2017, trail maintenance efforts conducted on August 8, 2017, exotic plant removal efforts conducted on November 22, 2017, and during a post-fire assessment visit on December 18, 2017. The Tujunga ponds were searched extensively for water lettuce during these visits and no water lettuce was observed. The Tujunga Ponds will continue to be monitored for any reoccurrence of water lettuce in 2018.

SECTION 6.0 – CONTINUATION OF EXOTIC WILDLIFE ERADICATION PROGRAM

The overall purpose of the exotic wildlife removal program is to maintain, restore, and create suitable habitat for native aquatic species and to remove and eliminate ecological pressures resulting from the presence of exotic species. The program consists of the removal of non-native fishes, American bullfrogs, turtles, and red swamp crayfish from the Tujunga Ponds (East Pond and West Pond) and Haines Canyon Creek.

In an ongoing effort to protect and enhance the existing habitat at the Mitigation Area for native wildlife species, Chambers Group and ECORP continued the exotic aquatic species removal effort as described in the MMP. The MMP provides direction for the eradication of exotic wildlife from the Tujunga Ponds and Haines Canyon Creek to relieve some of the potentially negative impacts to native species. Due to the fecund nature of exotic species and their ability to inhabit various habitat types while tolerating extreme environmental conditions, exotic species can outcompete natives for available space and food resources. Exotics can also directly affect native species through predation of adults and their young, or indirectly through the transmission of pathogens or parasites.

During the 2015 Native Fishes Survey in Haines Canyon Creek, the number of Santa Ana sucker was observed to have declined from 119 to 17 individuals between May and October 2015. The majority of the decline during this period was largely due to the absence of juveniles being detected. During the previous Native Fishes Survey in Haines Canyon Creek in 2012, 592 Santa Ana sucker (502 adults and 90 juveniles) were detected. Despite ongoing exotic wildlife removal efforts, the exotic aquatic species remain widespread throughout Haines Canyon Creek with source populations located both upstream (Tujunga Ponds) and downstream (Hansen Dam). The 2015 Native Fishes report noted a greater abundance of exotic wildlife species nearest the Tujunga Ponds with fewer individuals detected further away from the Tujunga Ponds. At the time, the distribution of Santa Ana sucker in Haines Canyon Creek was patchy and restricted to the lower half of the Mitigation Area below the Cottonwood Avenue equestrian trail crossing.

Based on declining numbers of native species and increasing number of exotic species, the exotic wildlife removal program was reevaluated and modified in 2016. The modification of the exotic wildlife removal program increased the level of effort with fewer days between each visit. Other than the increase in frequency, the methods and techniques of exotic wildlife removal remained the same as in previous efforts.

In addition, a Santa Ana Sucker Working Group was formed which included representatives from CDFW and USFWS. The goal of this group is to discuss issues pertaining to the Santa Ana sucker in Haines Canyon Creek and brainstorm on solutions to better aid in the species recovery. After some discussion within the group, a decision was made to allow electrofishing as a removal method for capturing exotic aquatic species in Haines Canyon Creek in 2016, a technique which had not been previously allowed for exotic wildlife removal.

In June 2016, a fish screen was installed downstream of the Tujunga Ponds to limit the potential for migration of exotic aquatic species from the Tujunga Ponds into Haines Canyon Creek. The fish screen was funded through a USFWS grant (Cooperative Agreement F15AC 00800).

The data presented in this section of the annual report summarize the results of the exotic wildlife removal efforts conducted in 2017.

6.1 METHODS

The 2017 removal of exotic aquatic species from the Mitigation Area was conducted monthly from January to December with the exception of May and June during which time, Chambers Group was in the process of assuming the MMP contract for the BTWMA. Each effort consisted of two to six days for each month.

Exotic wildlife removal efforts were conducted by ECORP from January through April 2017. Removal methods used in the Tujunga Ponds included spearfishing, dip-netting, hand capture, two-person seining, turtle trapping, and electrofishing. Dip-netting, two-person seining, and electrofishing were conducted at the confluence with Haines Canyon Creek and the West Tujunga Pond. Turtle traps were baited with an attractant (i.e., sardines) and remained open overnight. Hand capturing was conducted when necessary while using the other methods. Additionally, during spearfishing activities, any Centrarchid (Sunfish Family) nests were destroyed or removed. Removal methods in Haines Canyon Creek included spearfishing, dip-netting, hand capturing, two-person seining, minnow trapping, and electrofishing. Prior to using any specific gear types, reconnaissance surveys (visual snorkel surveys) were conducted to identify the locations and relative abundance of both target and non-target species.

Exotic wildlife removal efforts were conducted by Chambers Group from July through December 2017 under the direction of Chambers Group biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1). Removal methods used in the Tujunga Ponds included dip-netting, hand capture, two-person seining, rod and reel, and trapping. Dip-netting, two-person seining, and rod and reel fishing were conducted at the confluence with Haines Canyon Creek and the West Tujunga Pond. Small minnow traps were baited with an attractant (i.e., canned cat food punctured with holes) and remained open overnight. Hand capturing was conducted when necessary while using the other methods. Removal efforts in Haines Canyon Creek included dip-netting, hand capturing, two-person seining, and trapping. Prior to using any specific gear types, reconnaissance surveys (visual surveys from banks and snorkel surveys) were conducted to identify the locations and relative abundance of both target and non-target species.

Occupied Santa Ana sucker reaches were not sampled between March 1 and July 31, 2017, in order to avoid disturbances during the breeding season or potential impacts to juvenile individuals. After July 31, when Santa Ana sucker were absent within a reach, or were present with non-native species within a reach, the less invasive seining and dip-netting sampling were used. Minnow traps were baited with an attractant (i.e., cat food) and remained open overnight. Hand capturing was conducted when necessary while performing the other methods. The electrofishing removal method was not used during wildlife removal efforts conducted by Chambers Group between July and December 2017. Native aquatic species encountered were visually counted but not captured.

In an attempt to reduce the potential for theft, removal, or vandalism of the sampling equipment, the trap locations were often strategically deployed into areas that were inaccessible to the public. All wetted portions of the Mitigation Area were surveyed to locate and remove exotic wildlife (Figure 6-1).

6.2 RESULTS

A total of 8,215 individuals consisting of 11 exotic aquatic species (seven fishes, one amphibian, two reptiles, and one invertebrate) and four native species (two fishes and two amphibians) were captured and released or visually counted during the 2017 removal efforts (Table 6-1). Of the total, 81.6 percent (number of individuals [n]=6,706) of the individuals captured were exotic and removed from the site. The remaining 18.4 percent (n=1,509) were native and were released unharmed at their point of capture or

visually counted. Haines Canyon Creek accounted for 96.9 percent of the total exotic species captured (n=6,501), while the remaining 3.1 percent of exotic species were captured in other water features: West Pond (n=101), East Pond (n=101), and the Tujunga Wash (n=3). Table 6-2 shows the taxonomic groups of individuals captured by month.

Table 6-1. Species Captured During the Exotic Aquatic Species Removal Efforts, 2017

Exotic Species		
Common Name	**Scientific Name**	**Total**
red swamp crayfish	*Procambarus clarkii*	4,857
common carp	*Cyprinus carpio*	2
yellow bullhead	*Ameiurus natalis*	1
western mosquitofish	*Gambusia affinis*	1,392
green sunfish	*Lepomis macrochirus*	113
bluegill	*Lepomis macrochirus*	106
largemouth bass	*Micropterus salmoides*	212
Mozambique tilapia	*Oreochromis mossambicus*	10
American bullfrog	*Lithobates catesbeianus*	10
red-eared slider	*Trachemys scripta elegans*	2
common snapping turtle	*Chelydra serpentina*	1
Subtotal		6,706
Native Species		
Common Name	**Scientific Name**	**Total**
Santa Ana sucker	*Catostomus santaanae*	1,220
arroyo chub	*Gila orcutti*	287
western toad	*Anaxyrus boreas*	1
Baja California treefrog	*Pseudacris hypochondriaca hypochondriaca*	1
Subtotal		1,509
TOTAL		**8,215**

Legend

- Mitigation Area
- L.A. County Park Parcel
- Survey Area
- Crossing
- Fish Screen

N

0 500 1,000
Feet

Figure 6-1
Exotic Aquatic Wildlife Species Survey Locations

Name: 21021 RPT 2017 Fig 6-1 Aquatic Survey Locations.Mxd
Print Date: 3/20/2018, Author: esimmons

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Table 6-2. Summary of Species Captured by Month, 2017

Species Captured	Jan.	Feb.	March	April	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Exotic Species											
red swamp crayfish	85	769	551	571	369	443	727	661	675	6	4,857
common carp			2								2
yellow bullhead			1								1
western mosquitofish	77	263	33	27	123	187	187	302	193		1,392
green sunfish		74	20	19							113
bluegill	17		45	42	1	1					106
largemouth bass	5	32	21	23	12	34	3	80	1	1	212
Mozambique tilapia					10						10
American bullfrog			4	4			1	1			10
red-eared slider			2								2
common snapping turtle			1								1
Subtotal	184	1,138	680	686	515	665	918	1,044	869	7	**6,706**
Native Species											
Santa Ana sucker	7	61	2	32	1013	105					1,220
arroyo chub		1	1		260	25					287
western toad						1					1
Baja California treefrog						1					1
Subtotal	7	62	3	32	1273	132					**1,509**
TOTAL	191	1,200	683	718	1788	797	918	1,044	869	7	**8,215**

The removal efforts resulted in the capture and removal of 4,857 red swamp crayfish, 2 common carp (*Cyprinus carpio*), 1 yellow bullhead (*Ameiurus natalis*), 1,392 western mosquitofish (*Gambusia affinis*), 113 green sunfish, 212 largemouth bass, 106 bluegill (*Lepomis macrochirus*), 10 American bullfrogs, 10 Mozambique tilapia (*Oreochromis mossambicus*), 2 red-eared slider (*Trachemys scripta elegans)*, and 1 common snapping turtle (*Chelydra serpentina*).

Additionally, four native species were captured and released or visually counted during the removal efforts (Santa Ana sucker [n=1,220], arroyo chub (*Gila orcutti*) [n=287], Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*) [n=1], and western toad (*Anaxyrus boreas*) [n=1]). Santa Ana sucker and other aquatic natives were visually counted and recorded during the July and August exotic removal efforts but no natives were counted during the remainder of the 2017 efforts. Biologists searched Haines Canyon Creek for Santa Ana sucker during the post-fire assessment visit on December 18, 2017; however, no Santa Ana sucker were observed within the Mitigation Area.

SECTION 7.0 – WATER QUALITY MONITORING PROGRAM

Chambers Group qualified biologists conducted the annual water quality sampling for the site in 2017. The monitoring program has been designed to specifically address inputs to the site from upstream land uses such as the Angeles National Golf Club (previously named Canyon Trails Golf Club). Potential impacts to aquatic species from run-on to the site that contains excessive nutrients or pesticides are of primary concern. A series of sampling parameters were collected in the field from four sampling locations using a YSI 556-01 Multi Probe System. Samples were taken at mid-depth, along a transect perpendicular to the stream channel alignment. All analyses were performed by Enthalpy Analytical, LLC, located in Orange, California, and Test America, located in Savanah, Georgia. Quality assurance/quality control (QA/QC) procedures followed the methods described in the respective Quality Assurance Manuals.

7.1 BASELINE WATER QUALITY

Sampling and analysis conducted by LACDPW prior to implementation of the MMP is considered the baseline for water quality conditions at the site. The results of baseline analyses conducted in April 2000 are listed in

Table 7-1. Baseline Water Quality Sampling Results (2000)

and provided in the 2017 Water Quality Monitoring Report that is included as Appendix F. Higher bacteria and turbidity observed in the April 18, 2000 baseline samples were attributed to a rain event. Phosphorus levels were also high in the April 18, 2000 samples, perhaps due to release from sediments.

Table 7-1. Baseline Water Quality Sampling Results (2000)

Parameter	Units	Date	Haines Canyon Creek, inflow to Tujunga Ponds	Haines Canyon Creek, outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
pH	std units	4/12/00	7.78	7.68	7.96	7.91
		4/18/00	7.18	7.47	7.45	7.06
Ammonia-N	mg/L	4/12/00	0	0	0	0
		4/18/00	0	0	0	0
Kjeldahl-N	mg/L	4/12/00	0	0.1062	0.163	0
		4/18/00	0	0.848	0.42	0.428
Nitrite-N	mg/L	4/12/00	0.061	0	0	0
		4/18/00	0.055	0	0	0
Nitrate-N	mg/L	4/12/00	8.38	5.19	0	3.73
		4/18/00	8.2	3.91	0.253	0.438
Dissolved phosphorus	mg/L	4/12/00	0.078	0.056	0	0.063
		4/18/00	0.089	0.148	0.111	0.163
Total phosphorus	mg/L	4/12/00	0.086	0.062	0	0.066
		4/18/00	0.113	0.153	0.134	0.211
Turbidity	NTU	4/12/00	1.83	0.38	1.75	0.6
		4/18/00	4.24	323	4070	737

Table 7-1. Baseline Water Quality Sampling Results (2000)

Parameter	Units	Date	Haines Canyon Creek, inflow to Tujunga Ponds	Haines Canyon Creek, outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Fecal coliform	MPN/ 100 ml	4/12/00	500	300	40	80
		4/18/00	500	30,000	2,400	50,000
Total coliform	MPN/ 100 ml	4/12/00	3,000	5,000	170	1,700
		4/18/00	2,200	170,000	2,400	70,000

NA – data not available; station dry on the sample date **ND** – non-detect
NTU – nephelometric turbidity units MPN – most probable number

7.2 WATER QUALITY SAMPLING RESULTS FOR 2017

Results of laboratory analyses conducted by Enthalpy Analytical are summarized in Table 7-2. Note that the yields (percent recoveries) of quality control samples were within acceptable limits (percentages) for all samples. In addition, some of the water quality constituents that are tested on an annual basis after the implementation of the MMP were not included in the baseline water quality sampling. Tests for herbicides and pesticides were added to determine whether or not these chemicals were being transported downstream to the Mitigation Area.

Table 7-2. Summary of Water Quality (December 21, 2017)

Parameter	Units	Haines Canyon Creek, Inflow to Tujunga Ponds	Haines Canyon Creek, Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Dissolved Oxygen	mg/L	4.9	4.7	NA	4.5
pH	std units	5.79	6.19	NA	7.6
Total residual chlorine	mg/L	ND	ND	NA	ND
Ammonia-Nitrogen	mg/L	ND	ND	NA	ND
Kjeldahl Nitrogen	mg/L	0.90	0.93	NA	0.48
Nitrite-Nitrogen	mg/L	ND	ND	NA	ND
Nitrate-Nitrogen	mg/L	8.18	6.18	NA	4.73
Orthophosphate-P	mg/L	ND	ND	NA	ND
Total phosphorus-P	mg/L	0.04	0.12	NA	0.04
Glyphosate	µg/L	ND	ND	NA	ND
Chloropyrifos*	µg/L	ND	ND	NA	ND
Pesticides (EPA 608)**	µg/L	ND	ND	NA	ND
Turbidity	NTU	2.47	2.09	NA	0.38
Fecal Coliform Bacteria	(MPN/100 ml)	300	38	NA	9
Total Coliform Bacteria	(MPN/100 ml)	>1600	>1600	NA	670

Table 7-2. Summary of Water Quality (December 21, 2017)

NA – data not available; station dry on the sample date **ND** – non-detect
NTU – nephelometric turbidity units **MPN** – most probable number
* The analytical method used for chloropyrifos (EPA 8141A) also tests for the following chemicals: azinphos- methyl, bolster, coumaphos, diazinon, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stirophos, parathion-methyl, tokuthion, and trichloronate.
**EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, and toxaphene.

7.2.1 Comparison of Results with Aquatic Life Criteria

Table 7-3 provides the results of the December 2017 water quality sampling when compared to objectives established by the Los Angeles Regional Water Quality Control Board for protection of beneficial uses in Big Tujunga Wash (including wildlife habitat) and the Environmental Protection Agency (EPA) criteria for freshwater aquatic life.

Table 7-3. Discussion of December 2017 Big Tujunga Wash Sampling Results

Parameter	Discussion
Dissolved oxygen (DO)	▪ Dissolved oxygen levels ranged from 4.5 mg/L in Haines Canyon Creek leaving the site to 4.9 mg/L in the Tujunga Ponds. DO levels at all three sample stations were below the minimum recommended level (5.0 mg/L) for warmwater fish species.
pH	▪ Lowest pH was observed in the Tujunga Ponds (5.79), with highest pH observed in Haines Canyon Creek leaving the site (7.6). On this date, pH readings in the Haines Canyon Creek leaving the site were within the 6.5 to 8.5 range identified in the Basin Plan; pH readings in Haines Canyon Creek outflow from the Tujunga Ponds and the Tujunga Ponds were below the 6.5 to 8.5 range identified in the Basin Plan.
Total residual chlorine	▪ No residual chlorine was detected at any station.
Nitrogen	▪ Nitrate-nitrogen measurements at all stations were below the drinking water standard of 10 mg/L. ▪ Ammonia was below the detection limit at all stations.
Phosphorus	▪ The observed concentration in the outflow from the ponds, 0.12 mg/L, is above the upper end of EPA's recommended range for streams to prevent excess algae growth (recommended range is <0.05 – 0.1 mg/L). The observed concentration at the ponds (0.04) and in Haines Canyon Creek leaving the site (0.04) is below the lower end of the EPA's recommended range.
Glyphosate	▪ Glyphosate was not detected at any station.
Chloropyrifos and Organophosphorous Pesticides	▪ Chloropyrifos and the other pesticides tested using EPA's analytical method 8141A were not detected at any station.
Organochlorine Pesticides	▪ Pesticides analyzed by EPA Method 608 were not detected at any station.
Turbidity	▪ Turbidity levels were very low (<2.5 NTU) at all stations.

Table 7-3. Discussion of December 2017 Big Tujunga Wash Sampling Results

Parameter	Discussion
Bacteria	▪ The fresh water bacteria standard for water contact recreation is for *E. coli* (126 MPN/100 ml geometric mean, 235 MPN/100 ml single sample limits). Observed fecal coliform levels were below the standard in the outflow from the ponds and Haines Canyon Creek leaving the site. On this date, fecal coliform levels in the ponds were 300 MPN/100 ml. Sampling specifically for *E. coli* was not conducted. ▪ Total coliform levels ranged from 670 MPN/100 ml in the Haines Canyon Creek leaving the site to >1,600 MPN/100 ml in the ponds and at the outflow from the ponds. [Note that recreation standards are for *E. coli*. Total coliform standards apply to marine waters and waterbodies where shellfish can be harvested for human consumption.]

mg/L – milligrams per liter **NTU** – nephelometric turbidity units **MPN** – most probable number

SECTION 8.0 – TRAILS MONITORING PROGRAM

8.1 TRAILS SYSTEM MAINTENANCE

The goal of maintaining a formal trails system at the Mitigation Area is to allow recreational use of the Mitigation Area while still preserving sensitive wildlife and their habitats. The Mitigation Area contains both equestrian and hiking trails (Figure 8-1). The preservation of authorized trails is an essential component in the success of original restoration and enhancement of the site. This program has been continued in order to discourage the establishment of any new trails in the Mitigation Area. By ensuring that the authorized trails are kept clear and can be readily used by equestrians and hikers, the amount of unauthorized creation of new trails and illegal use of the Mitigation Area (e.g., camping, making fires) will be reduced. Maintenance and monitoring of the trail system is a necessary component of the overall restoration and enhancement program.

Three regular trails maintenance visits were conducted in 2017. These visits occurred on March 27 and April 13, 2017 (first visit), August 8 and 9, 2017 (second visit), and November 27, 2017 (third visit). ECORP biologist Lauren Dorough conducted the first pre-activity site visit on March 24, 2017. Subsequent trail maintenance was conducted by ECORP's landscape contractor, Natures Image, and supervised by ECORP biologists that were present on site at the time of maintenance. The second and third trails maintenance pre-activity site visits were conducted by Chambers Group biologists Paul Morrissey, Erik Olmos, and Jackelyn Mayfield, and Director of Restoration Construction Steven Reinoehl on July 21, 2017, and by Steven Reinoehl and biologist Jeremy Smith prior to the start of maintenance activities on November 27, 2017. Subsequent trail maintenance was conducted by Chambers Group's restoration department and was supervised by Chambers Group biologists and restoration specialist who were on site at the time of maintenance.

The focus of these site visits was to look for areas that might qualify for trail closure, identify areas where trails were blocked by trash or debris, and mark locations of extensive stands of poison oak. Assessment of trail signs, portable toilets, site fencing, and gated entrances was included in each survey. Areas that required minor repairs were remedied during the four site visits or in combination with other site visits. More extensive problem areas were mapped for repair at a later time.

During the site visits, the biologists assessed trail conditions and identified locations that were in need of maintenance. Examples of maintenance issues identified during these site visits included:

- Fallen trees and branches obstructing trails
- Overhanging tree branches at hiker and equestrian-height
- Dense vegetation crowding trails
- Erosion
- Large dead trees with the potential to fall on the trail
- Safety concerns
- Rock dams and walls constructed in Haines Canyon Creek
- Poison oak overgrowth
- Unauthorized trail establishment by recreational users

The biologists reported any homeless encampments they encountered during the site visits to LACDPW.

Maintenance activities to address the trail issues were monitored by ECORP biologists during the first visit and by Chambers Group biologists during the second visit. Prior to any work, all members of the trail maintenance crew received an onsite orientation and instruction on the Mitigation Area's regulations and concerns relating to the area's sensitive species and habitat by a qualified ECORP or Chambers Group biologist. These efforts were summarized following each of the maintenance visits. These memos are included as Appendix G.

Legend

- Mitigation Area
- L.A. County Park Parcel
- Trail

N

0 500 1,000
Feet

Figure 8-1
Trails in the Mitigation Area

Name: 21021 RPT 2017 Fig 8-1 Trails.Mxd
Print Date: 3/20/2018, Author: esimmons

CHAMBERS GROUP

8.2 TRAIL CLEANUP DAY

In 2012, the official name of the annual volunteer event held at the Mitigation Area changed to Trail Cleanup Day (previously named Trail Maintenance Day). The Eleventh Annual Trail Cleanup Day was held on Saturday, November 4, 2017. Chambers Group worked together with LACDPW to modify the flyers that provided the information for the Eleventh Annual Trail Cleanup Day. The flyer was posted on LACDPW's website and was also distributed to other interested parties. The flyer was mailed to the individuals and organizations on the mailing list that is used for the CAC meetings and newsletters. A copy of the flyer distributed to the public is included as Figure 8-2.

The Trail Cleanup Day event was attended by approximately 24 volunteers and three project managers from LACDPW. Three biologists and one restoration specialist from Chambers Group attended the event to ensure that sensitive resources were not affected by the activities. Various portions of the site were targeted for trash removal during the event, including Haines Canyon Creek and all trails throughout the Mitigation Area. A large amount of trash was removed throughout the Mitigation Area including: approximately 13 shopping carts, 2 mattresses, suitcases/duffle bags, a large shipping pallet, a wheel/tire, a cooler, several large pieces of scrap metal, plastic corrugated pipes, and approximately 40 large bags of smaller trash items. Photographs taken during the event are included as Figure 8-3.

Figure 8-2: Trail Clean-up Day Flyer for 2017

County of Los Angeles Department of Public Works
and
Los Angeles County Flood Control District

Big Tujunga Wash Mitigation Area

Join us for the 11th Annual

Trail Cleanup Day

November 4, 2017 at 8am

Water, snacks, and trash bags will be provided

Please Bring:

- *Comfortable clothes*
- *Closed-toe shoes*
- *Gloves*
- *Hat*
- *Sun block*
- *Bug repellent*

If there is rain or poor weather on the 4th, the event will be rescheduled to the 5th.

For more information contact David Belicki at (626) 458-6327 or btwma@dpw.lacounty.gov

Figure 8-3ϒ Trail Clean-up Day 2017 Photographs

Photo 1: Community members and a Chambers Group biologist work together to unearth a shopping cart from willow riparian habitat along Haines Canyon Creek on November 4, 2017.

Photo 2: Group photo of LACDPW project managers and Chambers Group volunteers with some of the collected debris items from the cleanup effort on November 4, 2017.

SECTION 9.0 – COMMUNITY AWARENESS PROGRAM

The CAC was formed in early 2001 as part of MMP requirements for a community awareness program. Between 2001 and 2013, the CAC was meeting on a semiannual basis (twice yearly) to update the community on the progress of ongoing restoration activities, ongoing exotic eradication activities, upcoming scheduled activities at the Mitigation Area, and to discuss any issues that the community would like to see addressed. In 2014, the CAC meetings changed from being held on a semiannual basis to being held annually in the spring. In July 2007 ECORP assumed the responsibilities of preparing the spring and fall newsletters, assisting with preparation of meeting agendas and handouts, and recording meeting minutes. In June of 2017 Chambers Group assumed these responsibilities once again. All deliverables were submitted to LACDPW electronically for posting on the LACDPW web page (http://dpw.lacounty.gov/wrd/Projects/BTWMA).

Community residents and representatives from local community organizations serve as the major components of the CAC, but the committee also includes law enforcement, agency, and elected official representatives from various local, state, and federal organizations. A list of the key stakeholders included as part of the most recent mailing is included in Appendix H.

9.1 NEWSLETTERS (SPRING, FALL)

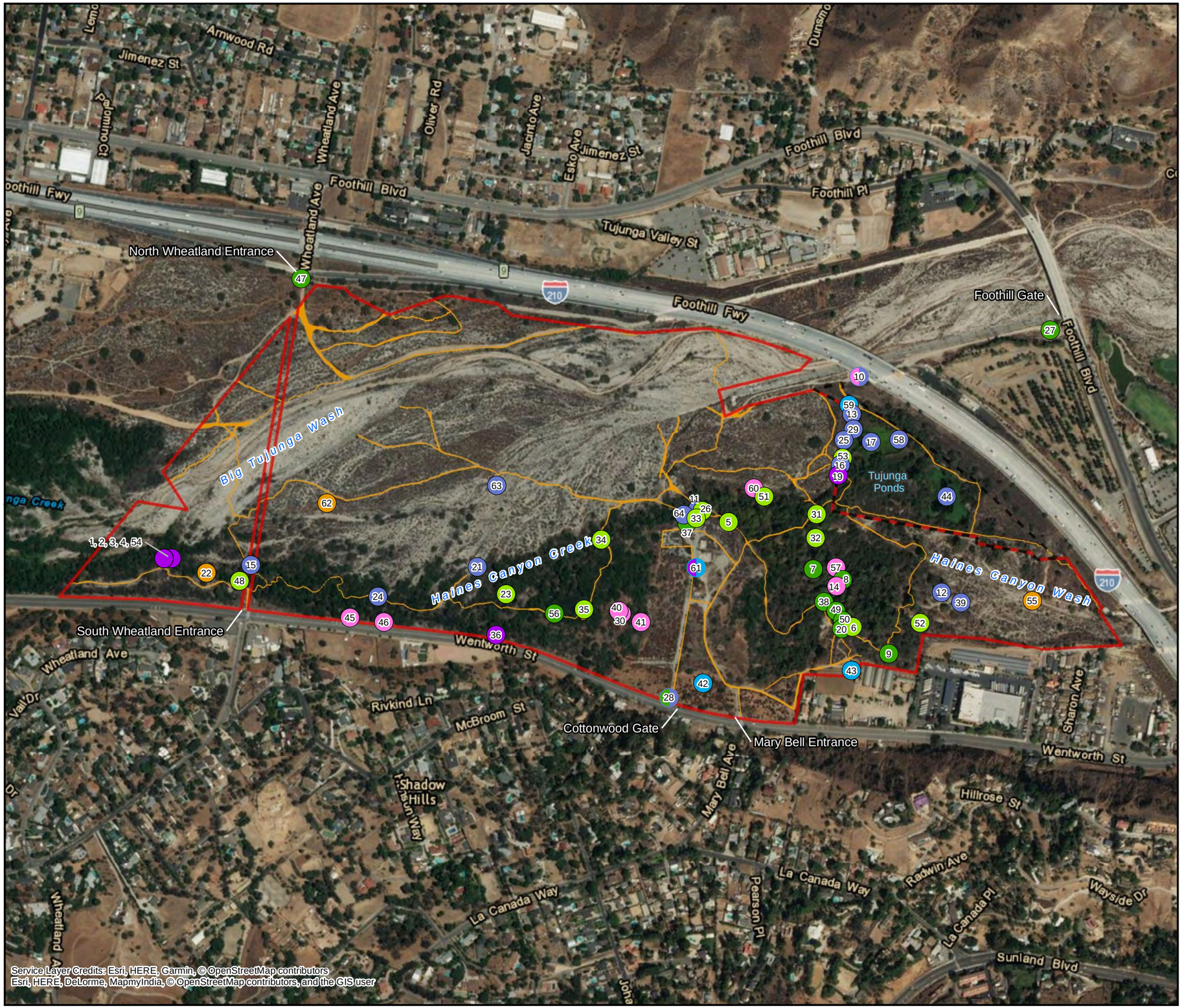
Two newsletters were drafted during 2017. The spring edition was drafted by ECORP in April, and the fall edition was drafted by Chambers Group in October. Electronic versions of these newsletters were submitted to LACDPW for distribution and incorporation on their web page. Hard copies of the newsletters were also mailed to stakeholders and organizations. The newsletters are included in Appendix I.

9.2 CAC MEETING

The CAC meeting was held on Thursday April 27, 2017. The meeting was held from 6:30 to 8:30 p.m. at LACDPW's Hansen Yard, 10179 Glenoaks Boulevard, Sun Valley, California, 91352. The meeting reminder/invitation, meeting agenda, and minutes from the previous meeting were mailed to the most recent CAC mailing list approximately two weeks prior to the scheduled meeting. Additionally, the meeting agenda and the minutes from the previous CAC meeting were posted to the Mitigation Area website. One week prior to the CAC meeting, a final meeting reminder was sent via electronic mail (email) that included a link to the materials posted on the Mitigation Area website.

ECORP representatives Kristen (Mobraaten) Wasz and Jerry Aguirre attended the meeting and provided a sign-in sheet for all attendees. ECORP recorded notes during the meeting in order to prepare the official meeting minutes summarizing the general proceedings. ECORP distributed a map that documented the location and nature of all incidents that occurred within the Mitigation Area between April 2016 and April 2017 (Figure 9-1). The map included locations of rock dams, popular picnicking spots, sites where people are often seen fishing or swimming, and public safety concerns such as homeless encampments and loose, aggressive dog encounters. ECORP submitted draft meeting minutes to LACDPW for review and commenting prior to posting on the LACDPW web page. The proceedings at the 2017 CAC meeting were summarized in the meeting minutes, which were submitted to LACDPW in draft form on April 28, 2017, and are included as Appendix J.

Figure 9-1
Big Tujunga Wash Mitigation Area Incident Map April 2016 to April 2017



Legend

Mitigation Area | L.A. County Park Parcel | Trail

Violation Category

- Vandalism
- Trash/Dumping
- Trail Obstructions
- Site Safety/Maintenance Issue
- Prohibited Activity
- Homeless Encampment
- Creek Obstructions

Violation ID and Description

1 - Rock dam
2 - Swimming, fire pit, alcohol use, smoking
3 - Fallen Tree
4 - Trash accumulation
5 - Branch across trail
6 - Branch across trail
7 - Trail erosion
8 - Trail erosion
9 - Trail erosion
10 - Homeless encampment, ATV use
11 - ATV tracks and cut down trees
12 - Fire damage
13 - ATV use
14 - Homeless encampment
15 - Bathing in creek
16 - Bathing in ponds
17 - Alcohol use, raft in ponds
18 - Trash in creek
19 - Logs and vegetation obstructing creek
20 - Trail erosion
21 - Fire damage
22 - Assorted trash and shopping cart
23 - Fallen tree
24 - Fire damage
25 - Motorcycle, offleash dog
26 - Fallen tree
27 - Missing gate lock
28 - Unauthorized gate lock and vehicle
29 - Fishing in ponds
30 - Homeless encampment
31 - Downed trees and branches
32 - Downed trees and branches
33 - Downed trees and branches
34 - Downed trees and branches
35 - Downed trees and branches
36 - Branches and debris in creek
37 - Trail erosion
38 - Trail erosion
39 - Fire damage
40 - Homeless encampment
41 - Homeless encampment
42 - Damage/cutting of oak trees
43 - Mitigation Area sign removal
44 - Fishing in ponds
45 - Homeless encampment
46 - Homeless encampment
47 - Broken gate and fence
48 - Fallen tree
49 - Trail erosion
50 - Trail erosion
51 - Downed trees and branches
52 - Downed trees and branches
53 - Downed trees and branches
54 - Branches and debris in creek
55 - Trash accumulation
56 - Trail flooded
57 - Homeless encampment
58 - Fishing in ponds
59 - Mitigation Area sign damage
60 - Homeless encampment
61 - Portable restroom burned down
62 - Trash accumulation
63 - Horse ring
64 - Fire pit; trash

N

0 250 500 1,000
Feet

CHAMBERS GROUP

Name: 21021 RPT 2017 Fig 9-1 Incident Map.Mxd
Print Date: 3/19/2018, Author: esimmons

Below is a list of major issues discussed during the 2017 CAC meeting.

- Site Safety and Security Issues
  - Map of incidents reported within the Mitigation Area
  - Homeless encampments
  - Fires in the Mitigation Area
  - Santa Ana sucker habitat and population on site
- Updates on MMP Programs
  - Brown-headed cowbird trapping
  - Exotic plant removal activities
  - Exotic wildlife removal activities
  - Water quality monitoring
  - Trail restoration and maintenance
  - Bilingual community outreach efforts
- High Speed Rail Project

SECTION 10.0 – PUBLIC OUTREACH PROGRAM

In an ongoing effort to enhance and protect existing wildlife and habitats at the Mitigation Area, another task was developed and implemented during the 2009 contract year and continued in 2017. This task was the direct result of increasing evidence of problematic areas associated with recreational use throughout the Mitigation Area. ECORP and LACDPW developed new public outreach efforts to educate all types of recreational user groups about the importance of the Mitigation Area as a conservation area as well as to inform users of approved and prohibited types of recreational activities. This task was continued into the 2017 contract year because of its success in the years from 2009 to 2016.

During site visits in the spring and summer of 2009, ECORP biologists observed increasing problems with visitors using the waterways (Haines Canyon Creek and the Tujunga Ponds) in the Mitigation Area for recreational activities such as picnicking, fishing, swimming, and wading. In rare cases, cooking, barbequing, and alcohol consumption were observed. In areas popular for swimming, recreational users were using rocks, large boulders, and branches from nearby dead trees to dam the creek to create larger and deeper pools so they could swim. Not only are these types of recreational activities prohibited on site, but they can result in damage to the waterways and native riparian habitats, which has the potential to reduce the ecological value of the site as a Mitigation Area. After observing and understanding the various problems associated with the recreational user groups in the Mitigation Area, ECORP and LACDPW created and implemented a bilingual recreational user education program to expand public outreach for the Mitigation Area. The program consisted of site visits conducted by a bilingual biologist on peak use weekends in the spring and summer to educate the various user groups about the approved and prohibited activities within the Mitigation Area. A bilingual educational brochure was developed and distributed to the various user groups during the weekend site visits (Appendix B).

Onsite interviews and education about the Mitigation Area were conducted on three separate occasions in 2017 by Chambers Group bilingual biologists, Erik Olmos, Mauricio Gomez, and Corey Jacobs. These efforts occurred in August and September 2017. All outreach efforts took place on weekends during peak site use hours between 9 a.m. and 1 p.m. During these outreach efforts, the biologists handed out bilingual brochures describing the ecological purpose of the Mitigation Area, the sensitive species found on site, and permitted recreational uses within the Mitigation Area. The brochure also outlines LACDPW's conservation goals, regulations regarding use of the site, and how the behavior and conduct of recreational visitors can further contribute to these goals.

Chambers Group biologists walked the established trails system and popular swimming/wading locations in the Haines Canyon Creek and Tujunga Ponds areas and spoke with visitors they encountered. Most outreach visits consisted of short question-and-answer sessions and informal interviews. Question topics included rules and regulations and the types of sensitive resources found in the Mitigation Area.

Visitors that were interviewed fell into one of two groups: non-equestrian user groups or equestrian user groups. A total of seven non-equestrian site users were encountered during the three outreach visits. Issues such as fishing and children throwing rocks into Haines Canyon Creek were observed during the visits. Groups and individuals encountered during the outreach visits were generally receptive after receiving information about the Mitigation Area. On August 26, three non-equestrian users were encountered fishing at the Tujunga Ponds. The biologist approached the individuals, gave them educational brochures and explained that fishing within the Mitigation Area is prohibited. One individual explained that he fishes at the Tujunga Ponds since designated fishing areas like Hansen Dam are not well stocked. The individual was receptive to the biologist and ceased fishing. Another individual was unaware

of the sensitive resources within the Mitigation Area and after apologizing, prepared to leave the area. On September 24, children between the ages of 5 and 12 years old were observed skipping and throwing rocks into Haines Canyon Creek near the Tujunga Ponds. The biologist approached the adults in the group, provided them with an educational brochure, and discussed how altering the streambed in any way can adversely affect sensitive resources. The adults accepted the information and told the children it was time to move on.

A total of 30 equestrian site users were approached and interviewed along the established trails of the Mitigation Area along Haines Canyon Creek and near the Tujunga Ponds. Outreach interactions with equestrian users were usually brief, as most of the equestrian site visitors were frequent users of the Mitigation Area and were receptive to the outreach efforts. Equestrian users were not observed off-trail or breaking other rules during the 2017 outreach efforts; however, one rider was observed during the August 2017 exotic wildlife removal effort that had ridden her horse into the creek looking for a deeper, ponded area to cool off her horse. Riders were reminded to cross the creek single-file to minimize erosion along the banks and to stay on established trails. Riders who were willing to act as stewards at the site were asked to call LACDPW if they notice any suspicious activity in the Mitigation Area.

Chambers Group and ECORP biologists have documented several effects of visitors on sensitive habitats in the Mitigation Area. The largest negative impacts by non-equestrian user groups are caused by swimming and rock dam construction within Haines Canyon Creek. Rock dams are constructed by individuals to make swimming areas deeper. A few unauthorized swimming areas have become popular spots for non-equestrian users to congregate, picnic, and swim. The most popular location for picnickers and swimmers is the unauthorized swimming area situated approximately 1,000 feet west of the south Wheatland entrance. This area had a large rock dam that required multiple people to remove as well as a rope swing.

Although swimming and the building of rock dams were not observed during 2017 public outreach efforts, several large rock dams were encountered in the creek and removed during 2017 exotic wildlife removal efforts. Rock dams are usually constructed with boulders and tree branches and were often found reinforced with tarps and other materials that reduce the natural flow of the creek and create a buildup of water. The changes to the natural flow of the creek can be detrimental to the sensitive species of fish within the creek. The rock dams reduce the flow of the creek and create large pools of water that are favorable habitat for the exotic, invasive aquatic species such as the red swamp crayfish and American bullfrog, that prey on native species such as the federally listed (threatened) Santa Ana sucker. These pools reduce suitable breeding habitat for sensitive fish species as well. In an effort to reduce these effects, non-equestrian user groups were approached and educated during the outreach site visits. All rock dams encountered during site visits were documented, and the larger rock dams were reported to LACDPW for removal.

Equestrian site visitors have affected sensitive habitat by traveling off the established trail system. The creation of new trails and traveling off established trails can be avoided with continued trail maintenance and equestrian site visitor education.

A memo documenting the results of all outreach efforts in 2017 is included in Appendix K.

SECTION 11.0 – SPECIAL ASSESSMENTS

No special assessment-related tasks were performed in 2017.

SECTION 12.0 – ATTENDANCE AT MEETINGS WITH AGENCIES, PUBLIC, AND CONSULTANTS

Chambers Group and ECORP were available on an on-call basis to attend meetings with agencies, the general public, and other consultants as a representative of LACDPW. One post-fire site visit was held at the Mitigation Area on December 18, 2017, with CDFW representative Jennifer Pareti, LACDPW representatives, and Paul Morrisey from Chambers Group to assess post-fire site conditions. As part of the site assessment CDFW representative Jennifer Pareti conducted water quality testing of Haines Canyon Creek and the Tujunga Ponds.

Additional conference calls and meetings were held on an as-needed basis throughout the year between LACDPW and Chambers Group or ECORP.

SECTION 13.0 – REFERENCES

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APPENDIX A – STREAMBED ALTERATION AGREEMENT #1600-2008-0253-R5

Big T Draft 1600

CALIFORNIA DEPARTMENT OF FISH AND GAME
South Coast Region
4949 Viewridge Avenue
San Diego, CA 92123

January 29, 2009

Notification No. 1600-2008-0253-R5

AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the Department, and County of Los Angeles, Department of Public Works Water Resources Division (LACoDPWWRD), represented by Mr. Christopher Stone, 900 S. Fremont Avenue, Alhambra, California, 91803, (626) 458-6102, hereinafter called the Applicant or LACoDPWWRD, is as follows:

WHEREAS, pursuant to Section 1602 of California Fish and Game Code, the Applicant, on the 23rd day of July, 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: Big Tujunga Wash and Haines Canyon Creek, named tributaries to Hansen Dam Flood Control Basin, in Los Angeles County, to conduct extensive invasive species management and routine maintenance activities within the approximately 247-acre Big Tujunga Conservation Area. Jurisdictional streambeds and waters of the state regulated under Department authority which are to be impacted as a result of the Applicant's project-related activities include: Haines Canyon Creek, wash and ephemeral streambed(s), and wetlands, including vegetated riparian habitats. The portion of Haines Canyon Creek, wash and unnamed ephemeral streambed(s), and wetland to be impacted as a result of the Applicant's project-related activities can be located using the following resources: 1) United States Geological Survey 7.5 Minute Quad Map, Sunland, Township 2 N, Range 14 W, Los Angeles County; 2) Latitude: 34.16.80 North Longitude: 118.20.53 West 3) County Assessor's Parcel Number(s): MR 29-51-52, MB 16-166-167, MB 662-44, and MB 198-8-10

WHEREAS, the Department (represented by Jamie Jackson) during a site visit conducted on August 05, 2007, and based on information received by the Applicant, has determined that such operations may substantially adversely affect those existing fish and wildlife resources within the Haines Canyon Creek and Big Tujunga Wash watershed(s), the project site, and the vicinity of the project site, specifically identified as follows: **Fishes:** arroyo chub (*Gila Orcutti*), Santa Ana speckled dace (*Rhinichthys osculus*), Santa Ana sucker (*Catostomus santaanae*); **Amphibians:** arroyo southwestern toad (*Bufo microscaphus californicus*), California red-legged frog (*Rana aurora*), mountain yellow-legged frog (*Rana muscosa*), western toad (*Bufo boreas*); **Reptiles:** southwestern pond turtle (*Emys marmorata pallida*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), western fence lizard (*Sceloporus occidentalis*), side-botched lizard (*Uta stansburiana*); **Birds:** California gnatcatcher (*Polioptila californica californica*), southwestern willow flycatcher (*Empidonax traillii extimus*), least Bell's vireo (*bellii pusillus*), black-crowned night heron (*Nycticorax nycticorax*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), black-headed grosbeak (*Pheucticus melanocephalus*), great blue heron (*Ardea Herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), black-chinned hummingbird (*Archilochus californica*), rufous hummingbird (*Selasphorus rufus*), western scrub jay (*Aphelocoma californica*), Bullock's oriole (*Icterus bullockii*), California quail (*Callipepla californica*), loggerhead shrike (*Lanius ludovicianus*), barn swallow (*Hirundo rustica*), California towhee (*Pipilo crissalis*), Wilson's warbler (*Wilsonia pusilla*), Bewick's wren (*Thryomanes ludovicianus*), Cooper's hawk (*Accipiter cooperii*); **Mammals:** coyote (*Canis latrans*), brush rabbit (*Sylvilagus Bachmani*), muledeer (*Odocoileus hemionus*), California ground squirrel (*Spermophilus beecheyi*); **Native Plants:** slender-horned spineflower (*Dodecahema leptoceras*), Nevin's barberry (*Berberis nevinii*), Plummer's mariposa lily (*Calochortus plummerae*), Mt. Gleason Indian paintbrush (*Castilleja gleasonii*), San Fernando Valley spineflower (*Chorizanthe parryi* var.

fernandina), Davidson's bush mallow (*Malacothamnus davidsonii*), Orcutt's linanthuis (*Linanthus orcuttii*),California sycamore (*Platanus racemosa*), white alder (*Alnus rhombifolia*), Fremont cottonwood (*Populus fremontii*), mulefat (*Baccharis salicifolia*), Scale-broom (*Lepidospartum squamatum*), cattails (*Typha latifolia*), California sagebrush (*Artemisia californica*), willow (*Salix* sp.), Southern Sycamore-Alder Riparian Woodland; and all other aquatic and wildlife resources in the area, including the riparian vegetation which provides habitat for such species in the area.

These resources are further detailed and more particularly described in the reports entitled "California Department of Fish and Game Streambed Alteration Application Big Tujunga Wash Mitigation Bank" dated July 2008, prepared by Gonzales Environmental Consulting, LLC, prepared for County of Los Angeles, Department of Public Works Water Resources Division; "The Final Master Mitigation Plan for the Big Tujunga Wash Conservation Area (FMMP)", dated April 2000, prepared by Chambers Group, prepared for the County of Los Angeles Department of Public Works, and shall be implemented as proposed, complete with all attachments and exhibits.

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 Operator is precluded from doing other activities 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 Sections 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 of Fish and Game. 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 Department of Fish and Game endorsement of the proposed operation, or assure the Department's concurrence with permits required from other agencies.

This Agreement becomes effective the date of the Department's signature and the restoration and enhancement portion terminates on 03/31/2014. This Agreement shall remain in effect to satisfy the terms/conditions of this Agreement and all mitigation obligations associated with the FMMP. Any provisions of the Agreement may be amended at any time provided such amendment is agreed to in writing by both parties. Mutually approved amendments become part of the original agreement and are subject to all previously negotiated provisions.

Pursuant to Section 1600 et seq., the Applicant may request one extension of the Agreement; 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 Office at the above address. 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 conducted under an expired Agreement are a violation of Fish and Game Code Section 1600 et seq. For complete information see Fish and Game Code Section 1600 et seq.

Project Location:

The approximately 247-acre project site is located within the Big Tujunga Wash, just downstream of the 210 Freeway over-crossing, near the City of Los Angeles' Sunland community in the San Gabriel Valley in Los Angeles County. The site is bordered on the north and east by the I-210 freeway and on the south by Wentworth Street. The west side of the site is contiguous with the downstream portion of the Big Tujunga Wash (2007 Thomas Brothers Guide page 503-B2:C2:D2).

Project Description:

The Final Master Mitigation Plan for the Big Tujunga Wash Conservation Area (FMMP), dated April 2000, prepared for the County of Los Angeles Department of Public Works, prepared by Chambers Group, shall be implemented as proposed. The FMMP proposes the long-term mitigation and management guidelines for the 247 acre Big Tujunga Site. Proposed works described within the FMMP includes elements designed to restore and enhance existing habitats on the Big Tujunga Wash site by removing non-native plant, fish, amphibian, and reptile species. In addition, the FMMP includes future plans to create a diverse coast live oak-California sycamore woodland and coastal sage scrub habitat in an area that is currently heavily disturbed. The FMMP proposes to target the Haines Canyon Creek and Big Tujunga Wash for removal of invasive plant (Arundo (*Arundo donax*), tamarisk (*Tamarix* spp.), eucalyptus (*Eucalyptus* spp.), pepper tree (*Schinus molle*), castor bean (*Ricinus communis)*, umbrella sedge (*Cyperus eragrostis* Nutsedge), mustards (*Brassica* spp.), tree tobacco (*Nicotiana* glauca), water hyacinth (*Eichornia crassipes*), cape ivy (*Delairea odorata*), etc.) and animal (brown-headed cowbird (*Molothrus ater*), bull frog (*Rana catesbeiana*), crayfish (*Theragra Chalcormma*)) species, management, enhancement, and reclamation of existing equestrian and hiking trails, brown-headed cowbird eradication, water quality monitoring, riparian habitat enhancement, site inspection and maintenance, and success monitoring (fish and wildlife) for the Big Tujunga Conservation Area. Contact: Mr. Christopher Stone at Phone: (626) 458-6102 for additional information.

The Department believes that a newer FMMP exists for the Big Tujunga Wash Conservation Area (BTWCA), prepared by Chambers Group for Los Angeles County Department of Public Works Water Resources Division (LACoDPWWRD), dated October 2006, which was not included with the Streambed Notification. The Department is in receipt of a FMMP dated April 2000. The Department requests a copy of the FMMP dated October 2006.

The Applicant shall provide clarification for the following items, as found in the FMMP dated October 2006, PRIOR to the Execution of this Agreement. If the following items are already adequately addressed within the FMMP the Applicant shall identify the location of the items within the FMMP. The Department shall determine if they have been adequately addressed or require further information. Once these items have been verified within the FMMP they may be removed from this draft document PRIOR to its execution.

- Conservation Credits Remaining.

Listed below is a table summarizing the mitigation acres already used within the BTWCA by LACoDPWWRD projects.

100 Channel Clearing	Friendly Wood Drain	Thompson Creek Dam Seismic Rehab	Puddingstone Diversion Cleanout	San Dimas Cleanout	Big Dalton Cleanout	Burro Canyon Debris Basins	Live Oak	Big Tujunga Dam Seismic Rehab	Devil's Gate Cleanout
62.7	1.6	1.7	5.1	5.1	3.34	0.3	2.0	0.43	2.68

The Department has not yet finalized the total number of credits available for use by LACoDPWWRD in the BTWCA. The Applicant estimates a total of 247 acres including both jurisdictional and upland areas. The total acreage for the BTWCA that the Department currently acknowledges is 207 acres with 122.05 remaining for credit. It has been determined that 84.95 acres have already been used. The Department requests that LACoDPWWRD provide detailed maps depicting total acres, acres remaining for mitigation purposes, additional acres utilized not accounted for in the above table, acres representing areas that are not, or will not, be restored to functional habitat. The primary area of concern is found in and around the Cottonwood entrance, where the old gravel mining pad occurred. Some of this area is not going to be restored and will remain in use as parking.

- Existing Public Use

The number of horse trails remains a concern to the Department. The density of trails, side loops, and duplication is a concern, as these areas do not support habitat and reduce wildlife's ability to utilize adjacent habitat. The trail running parallel to Haines Creek, the only perennial water source in this area is also a concern. Acreage for trails used by equestrian groups in the area, particularly wider trails in the alluvial scrub, shall be explicitly identified. Areas beyond five feet in width that are being impacted by trail use shall be calculated and deducted from the total remaining acres as determined by the Applicant available for future mitigation credit. Trail widths in alluvial areas could be narrowed. The LACoDPWWRD shall define and restrict use on pre-determined paths for equestrian uses. Similarly, continued public access to the two large ponds found adjacent to the BTWCA, owned by the Army Corps of Engineers, but maintained by LACoDPWWRD, create an ongoing management problem. Since the ponds were mitigation for wetland impacts to the 210 freeway, the continued presence of visitors disrupting the ecology and the introduction of exotic animals is a concern. Further efforts to explore whether this area can be closed to public access other than special uses, education visits, and similar types of activities need to be addressed.

- Functional Analysis Ratings

Page 10, Sec 2.3.1- indicates the functional condition of alluvial scrub increased from .79 to .88 (although it is unclear if this is the whole area, or just alluvial scrub, and the last paragraph discusses riparian habitat despite an alluvial scrub header). Please clarify what changed to account for this increase in functional condition of alluvial scrub? In addition, please describe the method that was used to determine the functional values of the habitat.

- Invasive Plants

Table 3-1 shows the list of targeted weeds for control. Please add eupatory (*Ageratina adenophora*) to this list (note on page 7 that control of this species is occurring).

- Patrolling

This section does not contain much information. The Department requests LACoDPWWRD provide the following information: What will be the patrol frequency? Who is anticipated to do patrolling? Will they have authority to write tickets? How do they access the site? How much of the site is anticipated to be viewed during a two-hour visit? The Department would like a commitment to regular patrols within the BTWCA.

- Water Quality Monitoring

If conducted annually, the most optimum time of year or hydrologic condition should be specified to maximize the effectiveness of the monitoring.

- Section 3.4- Contingency Measures-wildfire related

A pro-active Wildfire Emergency Response Plan should be included. Wildfire suppression (bulldozing, backfires, firelines, and retardants) can cause substantial damage to resources. This Plan could take the form of a good map that is provided to the local fire stations, with legends indicating: access points, areas of high sensitivity, contacts, request to minimize any ground disturbance, etc. A meeting with the Fire Department to refine the strategy should also occur.

- Site Maintenance Issues:

There is little or no information on maintenance of infrastructure, particularly fencing and gates. Please include this information.

- Arroyo toad surveys:

We suggest these occur ONLY in years of relatively normal rainfall, or wetter. If surveys are conducted every third year as proposed in the plan, and that year happens to be very dry, too much time could pass between surveys. The Department recommends a more flexible plan.

- Santa Ana Sucker

We suggest these occur ONLY in years of relatively normal rainfall, or wetter. If surveys are conducted every third year as proposed in the plan, and that year happens to be very dry, too much time could pass between surveys. The Department recommends a more flexible plan.

- Cowbird trapping

Cowbird trapping should continue each year. The cowbird trapping program was instituted to restore the BTWCA as potential habitat for least Bell's vireo and southwestern flycatcher. The Department requests a detailed analysis of the Applicant's proposed cowbird trapping and reporting program. The Department also requests the report due date for the brown-headed cowbird trapping reports be adjusted to eliminate two separately dated reports. Currently, the due dates are different for the Department versus the United States Fish and Wildlife Service (USFWS).

- Reporting

There are a number of reports that are shown as being sent only to the USFWS. The Department would also like to receive copies of these reports.

- Costs

There is no information on costs contained within the FMMP. Normally, this type of plan would include an operation and maintenance budget estimate. The Department requests that LACoDPWWRD provide a detailed cost analysis and budget outline for funding all future long-term maintenance and restoration efforts within the BTWCA.

IMPACTS

Temporary Impacts:

Temporary, minor impacts are anticipated in Department jurisdictional areas as a result of the Applicant's activities. The FMMP will improve the habitat quality of approximately 60 acres of southern willow woodlands along Haines Canyon Creek and the Big Tujunga Ponds. The Department shall be notified immediately if unforeseen temporary impacts occur within Department jurisdictional areas not previously considered as part of this Agreement or the FMMP as a result of the Applicants project-related activities. Conditions may need to be added or revised, based on new information, to prevent further temporary impacts from occurring in Department jurisdictional areas.

MITIGATION

Mitigation for all Temporary Impacts:

The Applicant shall implement the FMMP as proposed.

CONDITIONS

Resource Protection:

1. The Applicant shall not remove, or otherwise disturb vegetation or conduct any other project-related activities on the project site, to avoid impacts to breeding/nesting birds from March 1st to September 1st, the recognized breeding, nesting and fledging season for most bird species in the San Gabriel Valley.

2. Prior to any project-related activities during the raptor nesting season, January 31st to August 1st, a qualified biologist shall conduct a site survey for active nests two weeks prior to any scheduled project-related activities. If breeding activities and/or an active bird nest(s) are located and concurrence has been received from the Department, the breeding habitat/nest site shall be fenced a minimum of 500 feet in all directions, and this area shall not be disturbed until the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, and the young will no longer be impacted by the project.

3. Be advised, migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918(50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA). This Agreement therefore does not allow the Applicant, any employees, or agents to destroy or disturb any active bird nest (§3503 Fish and Game Code) or any raptor nest (§3503.5) at any time of the year.

4. Due to the potential presence of arroyo chub, Santa Ana speckled dace, Santa Ana sucker, arroyo southwestern toad, California red-legged frog, mountain yellow-legged frog, southwestern pond turtle, San Diego horned lizard, black-crowned night heron, great blue heron, great egret, snowy egret, Cooper's hawk, southwestern willow flycatcher, California gnatcatcher loggerhead shrike, and least Bell's vireo, pre-restoration and enhancement field surveys for these species must be concluded no sooner than three-days prior to any site preparation, clearing, or other project-related activities. Findings, including negative findings, shall be submitted to the Department in written format prior to any site preparation activities.

5. If any of the species identified in condition 4 of this Agreement, any other threatened or endangered species or species of special concern are found within 150 feet of the Haines Canyon Creek or Big Tujunga Wash, the Applicant shall contact the Department immediately of the sighting and shall request an on-site inspection by Department representatives (to be done at the discretion of the Department) to determine if work shall begin/proceed. If work is in progress when sightings are made,

the Applicant shall cease all work within 500 feet of the area in which the sighting(s) occurred and shall contact the Department immediately, to determine if work shall recommence.

6. A qualified biological monitor, with all required collection permits, shall be required on site during clearing, enhancement and restoration activities, and shall conduct surveys sufficient to determine presence/absence for species identified as occurring, or potentially occurring, on site and immediately adjacent to the project location.

7. If any life stages of any native vertebrate species are encountered during clearing, enhancement or restoration activities, the monitor shall make every reasonable effort to relocate the species to a safe location. Exclusionary devices shall be erected to prevent the migration into or the return of species into the work site. If no biological monitor is available, project-related activities shall not begin, or shall be halted, until the biological monitor is present.

8. The Applicant shall have a qualified wildlife biologist and qualified botanists prepare for distribution to all Applicants contractors, subcontractors, project supervisors, and consignees a "Contractor Education Brochure" with pictures and descriptions of all sensitive, threatened, and endangered plant and animal species, known to occur, or potentially occurring, on the project site. Applicant's contractors and consignees shall be instructed to bring to the attention of the project biological monitor any sightings of species described in the brochure. A copy of this brochure shall submit to the Department for approval prior to any site preparation activities.

9. Electronic and written annual reports shall be required. An annual report shall be submitted to the Department by Jan. 1st of each year for 5 years after implementation of the FMMP for all plantings associated with the Applicants mitigation. This report shall include the survival, % cover, and height by species of both trees and shrubs. The number by species of plants replaced, an overview of the revegetation and exotic plant control efforts, and the method used to assess these parameters shall also be included. Photos from designated photo stations shall be included. If after several years it becomes apparent that plants are not surviving, additional mitigation shall be determined at that time, and Applicant shall be responsible for implementation and costs of additional mitigation. Annual reports shall include site enhancement and restoration progress, species encountered during biological surveys, and current conditions of all trails and trail activities. The Annual Report shall include graphics for vegetation communities and trails systems. Electronic reports shall be submitted to the Department no later than January 1st of each year and should be submitted to the following email address: jjackson@dfg.ca.gov. Hard copies shall be submitted to the address that appears on the header of this Agreement with the same deadline as electronic version.

10. If the Department determines that any threatened or endangered species will be impacted by the implementation of the FMMP, the Applicant shall contact Environmental Scientist Scott Harris at (626) 797-3170 to obtain information on applying for the State Take Permit for state-listed species, or contact the San Diego Regional office for the current point of contact. The Applicant certifies by signing this Agreement that the project site has been surveyed and shall not impact any state-listed rare, threatened or endangered species.

11. The Applicant shall install and use fully covered trash receptacles with secure lids (wildlife proof) in all work areas that may contain food, food scrapes, food wrappers, beverage containers, and other miscellaneous trash.

12. No hunting shall be authorized/permitted within the Big Tujunga Wash Conservation Area.

Work Areas and Vegetation Removal:

13. Disturbance or removal of vegetation shall not exceed the limits approved by the Department as stated in the FMMP.

14. The work area shall be flagged to identify its limits within the project footprint to avoid unnecessary impact to ephemeral streams and riparian habitat not included in the FMMP. Vegetation shall not be removed or intentionally damaged beyond these limits.

15. No vegetation with a diameter at breast height (DBH) in excess of three (3) inches, not previously described in the FMMP shall be removed or damaged without prior consultation and Department approval.

16. No living native vegetation shall be removed from the channel, bed, or banks of the stream outside the project footprint, except as otherwise provided for in this Agreement or as proposed in the FMMP.

Equipment and Access:

17. Vehicles shall not be driven or equipment operated in water covered portions of a stream or lake, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in the Agreement or as described in the FMMP, and as necessary to complete authorized work. It is understood that conditions may need to be revised or added based on new information, if the Department becomes aware of activities outside the FMMP.

18. Access to the work site shall be via existing roads and access ramps. If no ramps are available in the immediate area, the Applicant may construct a ramp in the footprint of the project. Any ramp shall be removed upon completion of the project.

Fill and Spoil:

19. This Agreement does not authorize the use of any fill.

Structures:

20. Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

21. Areas of disturbed soils with slopes toward a stream or lake shall be stabilized to reduce erosion potential. Planting, seeding and mulching is conditionally acceptable. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such stabilization. Any installation of non-erodible materials not described in the original project description shall be coordinated with the Department. Coordination may include the negotiation of additional Agreement provisions for this activity.

22. Installation of bridges, culverts, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade. Bottoms of permanent culverts shall be placed below stream channel grade.

23. This Agreement does not authorize the construction of any temporary or permanent dam, structure, flow restriction except as described in the FMMP.

Pollution, Sedimentation, and Litter:

24. 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 insure compliance.

25. No equipment maintenance shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas under any flow.

26. The clean-up of all spills shall begin immediately. The Department shall be notified immediately by the Applicant of any spills and shall be consulted regarding clean-up procedures.

27. Silty/turbid water from dewatering or other activities shall not be discharged into the stream. Such water shall be settled, filtered, or otherwise treated prior to discharge. The Applicant's ability to minimize turbidity/siltation shall be the subject of pre-construction planning and implementation of the FMMP.

28. Water containing mud, silt, or other pollutants from equipment washing or other activities, shall not be allowed to enter an ephemeral stream or flowing stream or placed in locations that may be subjected to high storm flows.

29. If a stream channel offsite or its low flow channel has been altered it shall be returned, as nearly as possible, to pre-project conditions without creating a possible future bank erosion problem, or a flat wide channel or sluice-like area. The gradient of the streambed shall be returned to pre-project grade unless such operation is part of a restoration project, in which case, the change in grade must be approved by the Department prior to project commencement.

30. Rock, gravel, and/or other materials shall not be imported to, taken from or moved within the bed or banks of the stream, except as otherwise addressed in this Agreement.

Permitting and Safeguards:

31. The Department believes that permits/certification may be required from the Regional Water Quality Control Board and the Army Corp of Engineers for this project, should such permits/certification is required, and a copy shall be submitted to the Department.

32. The Department requires that the 247-acre Big Tujunga Wash Conservation Area be preserved in perpetuity by way of a conservation easement (CE). The Department shall be listed as the sole third party beneficiary, if the Applicant retains fee title, on mitigation lands. The Applicant shall arrange to obtain the CE. Current templates for the Department's approved CE format, along with mitigation banking templates, can be downloaded from the Department's website, www.dfg.ca.gov . The legal advisors can be contacted at (916) 654-3821. The Conservation Easement process must be completed prior to December 31, 2010, or as extended by the Department, or the Applicant shall be in violation of the terms and conditions of this Agreement.

Administrative:

33. All provisions of this Agreement remain in force throughout the term of the Agreement. Any provisions of the Agreement may be amended or the Agreement may be terminated at any time provided such amendment and/or termination are agreed to in writing by both parties. Mutually approved amendments become part of the original Agreement and are subject to all previously negotiated provisions.

34. If the Applicant or any employees, agents, contractors and/or subcontractors violate any of the terms or conditions of this Agreement, all work shall terminate immediately and shall not proceed until the Department has taken all of its legal actions.

35. The Applicant shall provide a copy of this Agreement, and all required permits and supporting documents provided with the notification or required by this Agreement, to all contractors, subcontractors, and the Applicant's project supervisors. Copies of this Agreement and all required permits and supporting documents, shall be readily available at work site at all times during periods of active work and must be presented to any Department personnel, or personnel from another agency upon demand. All contractors shall read and become familiar with the contents of this Agreement.

36. A pre-enhancement restoration meeting/briefing shall be held involving all the contractors and subcontractors, concerning the conditions in this Agreement.

37. The Applicant shall notify the Department, in writing, at least five (5) days prior to initiation of restoration enhancement (project) activities and at least five (5) days prior to completion of enhancement and restoration (project) activities. Notification shall be sent to the Department at PO Box 92890, Pasadena, California, 91109. Attn: Jamie Jackson. FAX Number (626) 296-3430, Reference # 1600-2008-0253-R5.

38. The Applicant herein grants to Department employees and/or their consultants (accompanied by a Department employee) the right to enter the project site at any time, to ensure compliance with the terms and conditions of this Agreement and/or to determine the impacts of the project on wildlife and aquatic resources and/or their habitats.

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

40. The Department reserves the right to cancel this Agreement, after giving notice to the Applicant, if the Department determines that the Applicant has breached any of the terms or conditions of the Agreement.

41. The Department reserves the right to suspend or cancel this Agreement for other reasons, including but not limited to, the following:

a. The Department determines that the information provided by the Applicant in support of this Agreement/Notification is incomplete or inaccurate;

b. The Department obtains new information that was not known to it in preparing the terms and conditions of this Agreement;

c. The condition of, or affecting fish and wildlife resources change; and

d. The Department determines that project activities have resulted in a substantial adverse effect on the environment.

42. 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 (7) working days from the date of receipt of the notification to respond in writing to the circumstances described in the Department's notification. During the seven (7) day response period, the Applicant shall immediately cease any project activities which the Department specified in its notification as resulting in a substantial adverse effect on the environment and which will

continue to substantially adversely affect the environment during the response period. The Applicant may continue the specified activities if the Department and the Applicant agree on a method to adequately mitigate or eliminate the substantial adverse effect.

CONCURRENCE

County of Los Angeles
Department of Public Works Water Resources Division
Represented by Mr. Christopher Stone
900 S. Fremont Avenue
Alhambra, California, 91803
(626) 458-6102

_____
Name (signature) Date

_____
Name (printed)

_____
Title

California Department of Fish and Game

_____
Helen R. Birss Date
Environmental Program Manager
South Coast Region

This Agreement was prepared by Jamie Jackson, Environmental Scientist, South Coast Region.

APPENDIX B – PUBLIC OUTREACH AND WORKER EDUCATION BROCHURE

Big-T's future depends on you!
Over time, small changes add up. Changing the Big-T habitat – making new trails, swimming in the stream, or leaving behind litter – adds up over time. In many cases, the changes are irreversible or require a great deal of time and money to return habitat to what it was like before. These are changes that harm Big-T's animals.

Protect Big-T for Future generations.
When people who visit Big-T act to protect its animals and their habitat, everyone wins. Help safeguard Big-T's future by sharing this information with a friend or becoming involved in community projects to preserve Big-T.

¡El futuro de Big-T depende de usted!
Con el tiempo, pequeños cambios se acumulan modificando el hábitat de Big-T por ejemplo: haciendo nuevos caminos, nadando en el arroyo, o dejando basura, la cual se acumula a lo largo del tiempo. En muchos casos, los cambios son irreversibles o requieren una gran inversión de tiempo y dinero para regresar el hábitat original. Estos son los cambios que perjudican a los animales de Big-T.

Proteja Big-T para las futuras generaciones.
¡Cuando las personas que visitan Big-T siguen las regulaciones que lo protegen, les comunican a otros acerca de la importancia de las regulaciones, o participan en proyectos comunitarios para preservar este lugar, los animales que viven en Big-T y la gente que lo visita ganan!

http://dpw.lacounty.gov/wrd/facilities/

All visitors must obey these regulations or a citation will be given:
a.Hours of Operation: Sunrise to Sunset
b. No fires of any kind
c. No swimming
d. No wheeled vehicles
e. No camping
f. Dogs must be on leashes.

Todos los visitantes del Big-T deben obedecer todas las reglas, los que no observan las reglas serán multados.
a. Horas de visita: Salida del sol al Atardecer
b. No fogatas de ningún tipo
c. No nadar
d. No vehículos
e. No acampar
f. Los perros deben estar con correas.

¿Preguntas? / Questions?

LADPW: Valerie De La Cruz
(626) 458-6126
Water Resources Division
County of Los Angeles
Department of Public Works
P.O. Box 1460
Alhambra, CA 91802

Did you know that the Big Tujunga Wash is a protected "forest"?
*Big-T, as we like to call it is maintained by the **County of Los Angeles Department of Public Works** (LADPW). Big-T is so unique that there are regulations to protect it from destruction and abuse. We hope that by learning more about Big-T, you'll agree that these regulations make sense.*

¿Sabía usted que el Big Tujunga Wash es un "bosque" protegido?
Big-T, como nos gusta llamarlo, es mantenido por el Departamento de **Obras Públicas del Condado Los Angeles** (LADPW). Big-T es tan único que hay regulaciones para protegerlo de la destrucción y el abuso. Estas regulaciones provienen del Gobierno Federal, el Estado de California, y del gobierno local. Esperamos que al aprender más sobre Big-T, estará de acuerdo en que estas regulaciones tienen sentido.

Big-T is like a small island

It is surrounded by a large city. Roads, highways, and houses can be found just outside of Big-T that are not suitable habitat for Big-T's animals.

The plants and many of the animals that live here stay here. For several species of birds, Big-T is an important resting place during their migration. For fish, Big-T is their only home.

Over time the island has gotten smaller and smaller. Big-T is sensitive to changes that come from altering or changing habitat. These changes can cause important habitat to disappear. When habitat disappears, animals disappear.

Big-T es como una isla pequeña

Está rodeado de una ciudad grande. Caminos, carreteras, y casas se pueden encontrar a los alrededores de Big-T que no ofrecen hábitat adecuado para los animales de Big-T.

Las plantas y muchos de los animales que habitan este lugar se quedan aquí. Para varias especies de aves, Big-T es un importante lugar de descanso durante su migración. Para los peces, Big-T es su único hogar.

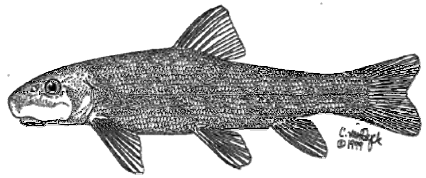
Con el tiempo la isla se ha hecho más pequeña. Big-T es sensible a los cambios de su hábitat. Estos cambios pueden causar que un hábitat tan importante desaparezca. Cuando esto sucede los animales y las plantas también pueden desaparecer.

There is no place like Big-T

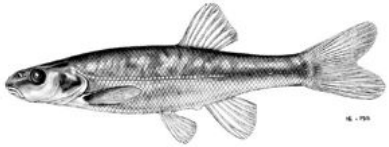
Big-T is unique because of the plants and animals that live here. Several of these animals are so rare that regulations have been made to protect where they live. This means that the plants, water, soil, and rocks that make up their homes (or habitat) must not be disturbed or altered.

No hay lugar como Big-T

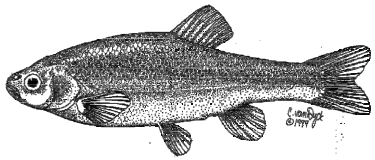
Big-T es único por las plantas y los animales que viven aquí. Varios de estos animales son tan únicos que se han hecho regulaciones para proteger el lugar donde viven. Esto significa que las plantas, el agua, la tierra, y las piedras que componen sus hogares (o hábitat) no debe ser dañado.



Santa Ana sucker
(*Catostomus santaanae*)



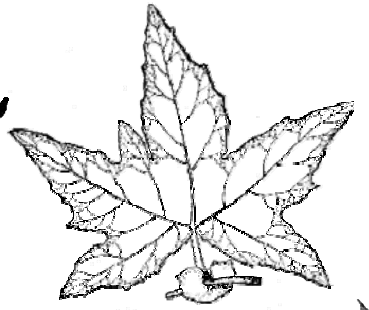
Santa Ana speckled dace / Carpita pinta
(*Rhinichthys osculus*)



Arroyo chub
(*Gila orcutti*)

Southwestern willow flycatcher
(*Empidonax traillii extimus*)

Bell's vireo
(*Vireo bellii*)



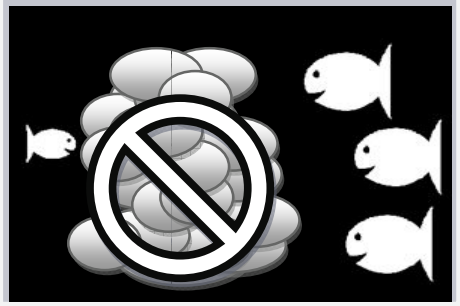
California Sycamore
(*Platanus racemosa*)

Black willow (*Salix nigra*)

Did you know that these plants and animals rely on each other to survive? And did you know that this community could one day disappear if we don't protect it?

¿Sabía usted que estas plantas y animales dependen de unos a otros para sobrevivir? ¿Y sabía usted que un día esta comunidad podría desaparecer si no la protegemos?

No dams/No presas



APPENDIX C – PLANT AND WILDLIFE COMPENDIA

APPENDIX C – PLANT SPECIES LIST

Scientific Name	Common Name
GYMNOSPERMS	
CUPRESSACEAE	**CYPRESS FAMILY**
Cedrus deodara	deodar cedar
PINACEAE	**PINE FAMILY**
*Pinus halepensis**	Aleppo pine
ANGIOSPERMS (EUDICOTS)	
ADOXACEAE	**MUSKROOT FAMILY**
Sambucus nigra subsp. *caerulea*	blue elderberry
AMARANTHACEAE	**AMARANTH FAMILY**
*Amaranthus albus**	tumbling pigweed
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**
Malosma laurina	laurel sumac
Rhus integrifolia	lemonadeberry
*Schinus molle**	Peruvian pepper tree
*Schinus terebinthifolius**	Brazilian pepper tree
Toxicodendron diversilobum	poison oak
APIACEAE	**CARROT FAMILY**
*Conium maculatum**	poison hemlock
*Foeniculum vulgare**	fennel
APOCYNACEAE	**DOGBANE FAMILY**
*Vinca major**	greater periwinkle
ASTERACEAE	**SUNFLOWER FAMILY**
*Ageratina adenophora**	eupatory
Ambrosia acanthicarpa	annual bur-sage
Ambrosia artemisiifolia	common ragweed
Artemisia californica	California sagebrush
Artemisia douglasiana	mugwort
Artemisia dracunculus	tarragon
Baccharis salicifolia subsp. *salicifolia*	mule fat
Carduus pycnocephalus subsp. *pycnocephalus**	Italian thistle
*Centaurea melitensis**	tocalote
Cirsium occidentale var. *occidentale*	cobwebby thistle
Cirsium sp.*	non-native thistle
Erigeron canadensis	horseweed
Heterotheca grandiflora	telegraph weed
Heterotheca sessiliflora	hairy golden-aster
*Hypochaeris glabra**	smooth cat's-ear
*Lactuca serriola**	prickly lettuce
*Lactuca virosa**	poison wild lettuce

Scientific Name	Common Name
Lepidospartum squamatum	scale-broom
Malacothrix saxatilis	cliff malacothrix
Pluchea odorata var. *odorata*	salt marsh fleabane
Pseudognaphalium biolettii	bicolored cudweed
Pseudognaphalium canescens	felty everlasting
Rafinesquia californica	California chicory
Senecio flaccidus var. *douglasii*	sand-wash butterweed
*Silybum marianum**	milk thistle
Sonchus asper subsp. *asper**	prickly sow thistle
*Sonchus oleraceus**	common sow thistle
Stephanomeria pauciflora	wire lettuce
*Tanacetum parthenium**	feverfew
*Taraxacum officinale**	common dandelion
BETULACEAE	**BIRCH FAMILY**
Alnus rhombifolia	white alder
BIGNONIACEAE	**BIGNONIA FAMILY**
*Catalpa bignonioides**	southern catalpa
BORAGINACEAE	**BORAGE FAMILY**
*Echium candicans**	pride of Madeira
Eriodictyon crassifolium	thick-leaved yerba santa
Phacelia ramosissima	branching phacelia
BRASSICACEAE	**MUSTARD FAMILY**
*Hirschfeldia incana**	shortpod mustard
*Lepidium latifolium**	peppergrass
*Lobularia maritima**	sweet-alyssum
Nasturtium officinale	water-cress
*Raphanus sativus**	radish
*Sisymbrium altissimum**	tumble mustard
*Sisymbrium irio**	London rocket
CACTACEAE	**CACTUS FAMILY**
Opuntia littoralis	coastal prickly pear
CARYOPHYLLACEAE	**PINK FAMILY**
*Stellaria media**	common chickweed
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Chenopodium sp.	goosefoot
CONVOLVULACEAE	**MORNING-GLORY FAMILY**
Cuscuta sp.	dodder
CRASSULACEAE	**STONECROP FAMILY**
Dudleya lanceolata	lance-leaved dudleya
CUCURBITACEAE	**GOURD FAMILY**

Scientific Name	Common Name
Marah macrocarpa	wild cucumber
EUPHORBIACEAE	**SPURGE FAMILY**
Croton californicus	California croton
*Euphorbia maculata**	spotted spurge
*Euphorbia peplus**	petty spurge
*Ricinus communis**	castor-bean
FABACEAE	**LEGUME FAMILY**
Acmispon glaber	deerweed
*Medicago sativa**	alfalfa
*Melilotus albus**	white sweetclover
*Parkinsonia aculeate**	Mexican palo verde
*Spartium junceum**	Spanish broom
FAGACEAE	**OAK FAMILY**
Quercus agrifolia	coast live oak
Quercus berberidifolia	scrub oak
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	red-stemmed filaree
*Geranium rotundifolium**	roundleaf geranium
GROSSULARIACEAE	**GOOSEBERRY FAMILY**
Ribes aureum	golden currant
HALORAGACEAE	**WATER-MILFOIL FAMILY**
*Myriophyllum spicatum**	Eurasian milfoil
HAMAMELIDACEAE	**WITCH-HAZEL FAMILY**
*Liquidambar styraciflua**	sweet gum
JUGLANDACEAE	**WALNUT FAMILY**
Juglans californica	California black walnut
LAMIACEAE	**MINT FAMILY**
*Marrubium vulgare**	horehound
Salvia apiana	white sage
Salvia mellifera	black sage
Stachys sp.	hedge-nettle
LOASACEAE	**LOASA FAMILY**
Mentzelia laevicaulis	smoothstem blazingstar
MALVACEAE	**MALLOW FAMILY**
Malacothamnus davidsonii	Davidson's bush mallow
*Malva parviflora**	cheeseweed
*Malva sylvestris**	high mallow
MORACEAE	**MULBERRY FAMILY**
*Ficus carica**	edible fig
*Ficus nitida**	Indian fig

Scientific Name	Common Name
Ficus sp.*	fig
*Morus alba**	white mulberry
MYRSINACEAE	**MYRSINE FAMILY**
*Anagallis arvensis**	scarlet pimpernel
MYRTACEAE	**MYRTLE FAMILY**
Eucalyptus sp.*	gum tree
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
*Mirabilis jalapa**	marvel of Peru
OLEACEAE	**OLIVE FAMILY**
*Fraxinus uhdei**	shamel ash
Fraxinus velutina	velvet ash
*Ligustrum japonicum**	Japanese privet
*Ligustrum lucidum**	glossy privet
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissoniopsis bistorta	California sun cup
Clarkia unguiculata	elegant clarkia
Epilobium brachycarpum	parched fireweed
Eulobus californicus	California evening primrose
Oenothera elata	evening primrose
PAPAVERACEAE	**POPPY FAMILY**
Argemone munita	prickly poppy
Eschscholzia californica	California poppy
PASSIFLORACEAE	**PASSION FLOWER FAMILY**
*Passiflora caerulea**	bluecrown passionflower
PHRYMACEAE	**LOPSEED FAMILY**
Mimulus guttatus	common monkey-flower
PLANTAGINACEAE	**PLANTAIN FAMILY**
*Plantago arenaria**	Indian plantain
*Plantago major**	common plantain
*Veronica anagallis-aquatica**	water speedwell
PLATANACEAE	**SYCAMORE FAMILY**
Platanus racemosa	western sycamore
POLYGONACEAE	**BUCKWHEAT FAMILY**
Eriogonum fasciculatum	California buckwheat
Eriogonum gracile	slender woolly buckwheat
Persicaria hydropiperoides	water pepper
Pterostegia drymarioides	California thread-stem
*Rumex crispus**	curly dock
Rumex pulcher	fiddle dock
Rumex sp.	dock

Scientific Name	Common Name
RANUNCULACEAE	**BUTTERCUP FAMILY**
Delphinium cardinale	scarlet larkspur
RHAMNACEAE	**BUCKTHORN FAMILY**
Ceanothus sp.	ceanothus
ROSACEAE	**ROSE FAMILY**
Heteromeles arbutifolia	toyon
Prunus ilicifolia subsp. *ilicifolia*	islay, holly-leaf cherry
Rosa californica	California wild rose
*Rubus armeniacus**	Himalayan blackberry
Rubus ursinus	California blackberry
SALICACEAE	**WILLOW FAMILY**
Populus fremontii subsp. *fremontii*	Fremont cottonwood
Salix exigua	narrow-leaved willow
Salix gooddingii	black willow
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
SAPINDACEAE	**SOAPBERRY FAMILY**
Acer negundo	California box-elder
SCROPHULARIACEAE	**FIGWORT FAMILY**
*Verbascum virgatum**	wand mullein
SIMAROUBACEAE	**QUASSIA FAMILY**
*Ailanthus altissima**	tree of heaven
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	jimson weed
Nicotiana attenuata	coyote tobacco
*Nicotiana glauca**	tree tobacco
Solanum americanum	small-flowered nightshade
TAMARICACEAE	**TAMARISK FAMILY**
*Tamarix ramosissima**	Mediterranean tamarisk
ULMACEAE	**ELM FAMILY**
*Ulmus parvifolia**	Chinese elm
URTICACEAE	**NETTLE FAMILY**
Urtica dioica	stinging nettle
VITACEAE	**GRAPE FAMILY**
*Parthenocissus quinquefolia**	Virginia creeper
Vitis girdiana	desert wild grape
ZYGOPHYLLACEAE	**CALTROP FAMILY**
*Tribulus terrestris**	puncture vine
ANGIOSPERMS (MONOCOTS)	
AGAVACEAE	**AGAVE FAMILY**

Scientific Name	Common Name
*Agave americana**	century plant
Hesperoyucca whipplei	Our Lord's candle
AMARYLLIDACEAE	**Amaryllis Family**
*Amaryllis belladonna**	belladonna-lily
ARECACEAE	**PALM FAMILY**
*Arecastrum romanzoffianum**	queen palm
*Phoenix canariensis**	Canary Island date palm
Washingtonia sp.	fan palm
ASPHODELACEAE	**ASPHODEL FAMILY**
Aloe sp.*	aloe
CYPERACEAE	**SEDGE FAMILY**
*Cyperus involucratus**	umbrella-plant
Cyperus sp.	sedge
POACEAE	**GRASS FAMILY**
*Agrostis stolonifera**	redtop
*Agrostis viridis**	water bentgrass
*Arundo donax**	giant reed
*Avena barbata**	slender wild oat
*Avena fatua**	wild oat
*Bromus diandrus**	ripgut grass
*Bromus hordeaceus**	soft chess
Bromus madritensis subsp. *madritensis**	foxtail chess
Bromus madritensis subsp. *rubens**	red brome
*Cortaderia selloana**	pampas grass
*Cynodon dactylon**	Bermuda grass
*Echinochloa crus-galli**	barnyard grass
*Ehrharta calycina**	perennial veldt grass
*Eleusine indica**	goose grass
*Festuca myuros**	rat-tail fescue
*Festuca perennis**	Italian ryegrass
Panicum dichotomiflorum subsp. *dichotomiflorum**	fall panicgrass
*Pennisetum setaceum**	fountain grass
*Polypogon monspeliensis**	annual beard grass
*Polypogon viridis**	water beard grass
*Schismus barbatus**	Mediterranean schismus
Stipa miliacea var. *miliacea**	smilo grass
*Triticum aestivum**	wheat
PONTEDERIACEAE	**PICKEREL-WEED FAMILY**
*Eichhornia crassipes**	water hyacinth
TYPHACEAE	**CATTAIL FAMILY**

Scientific Name	Common Name
Typha domingensis	slender cattail

*Non-Native Species, +Ornamental, Unlikely to be Invasive

APPENDIX C – WILDLIFE SPECIES LIST

Scientific Name	Common Name
CLASS MALACOSTRACA	**CRUSTACEANS**
CAMBARIDAE	**CRAYFISH**
Procambarus clarkii	red swamp crawfish
CLASS INSECTA	**INSECTS**
DIPTERA	**FLIES**
Culicidae family	mosquito sp.
HYMENOPTERA	**ANTS, BEES, AND WASPS**
Apis mellifera	honey bee
ODONATA	**DRAGONFLIES AND DAMSELFLIES**
Anisoptera suborder	dragonfly sp.
PAPILIONIDAE	**PARNASSIANS, SWALLOWTAILS**
Papilio rutulus	western tiger swallowtail
PIERIDAE	**WHITES & SULPHURS**
Pieris rapae	cabbage white
CLASS OSTEICTHYES	**BONY FISH**
ATHERINOPSIDAE	**SILVERSIDES**
Menidia beryllina	inland silverside
CYPRINIDAE	**CARPS AND MINNOWS**
Carassius auratus	goldfish
Cyprinus carpio	common carp
Gila orcutti	arroyo chub
Micropterus salmoides	largemouth bass
CATOSTOMIDAE	**SUCKERS**
Catostomus santaanae	Santa Ana sucker
CENTRARCHIDAE	**SUNFISHES**
Lepomis cyanellus	green sunfish
Lepomis macrochirus	bluegill
CICHLIDAE	**CICHLIDS**
Oreochromis mossambicus	Mozambique tilapia
ICTALURIDAE	**BULLHEAD CATFISHES**
Ameiurus natalis	yellow bullhead
POECILIIDAE	**TOOTH-CARPS**
Gambusia affinis	western mosquitofish
CLASS AMPHIBIA	**AMPHIBIANS**
BUFONIDAE	**TRUE TOADS**
Anaxyrus boreas	western toad
HYLIDAE	**TREEFROGS**
Pseudacris hypochondriaca	Baja California chorus frog
RANIDAE	**TRUE FROGS**

Scientific Name	Common Name
Lithobates catesbeianus	bullfrog
CLASS REPTILIA	**REPTILES**
CHELYDRIDAE	**SNAPPING TURTLES**
Chelydra serpentina	common snapping turtle
EMYDIDAE	**BOX AND WATER TURTLES**
Trachemys scripta elegans	red-eared slider
PHRYNOSOMATIDAE	**ZEBRA-TAILED, EARLESS, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS**
Sceloporus occidentalis	western fence lizard
Uta stansburiana	side-blotched lizard
TEIIDAE	**WHIPTAIL LIZARDS**
Aspidoscelis tigris	western whiptail
CLASS AVES	**BIRDS**
PODICIPEDIDAE	**GREBES**
Podilymbus podiceps	pied-billed grebe
ARDEIDAE	**HERONS, BITTERNS**
Ardea herodias	great blue heron
Butorides virescens	green heron
Ardea alba	great egret
Egretta thula	snowy egret
ANATIDAE	**DUCKS, GEESE, SWANS**
Anas platyrhynchos	mallard
Branta canadensis	Canada goose
Oxyura jamaicensis	ruddy duck
CATHARTIDAE	**NEW WORLD VULTURES**
Cathartes aura	turkey vulture
ACCIPITRIDAE	**HAWKS, KITES, EAGLES**
Accipiter cooperii	Cooper's hawk
Buteo jamaicensis	red-tailed hawk
Buteo lineatus	red-shouldered hawk
FALCONIDAE	**FALCONS**
Falco peregrinus	peregrine falcon
ODONTOPHORIDAE	**NEW WORLD QUAIL**
Callipepla californica	California quail
RALLIDAE	**RAILS, GALLINULES, COOTS**
Fulica americana	American coot
COLUMBIDAE	**PIGEONS & DOVES**
Columba fasciata	band-tailed pigeon
Columba livia	rock pigeon
Zenaida macroura	mourning dove
CAPRIMULGIDAE	**NIGHTHAWKS**

Scientific Name	Common Name
Chordeiles acutipennis	lesser nighthawk
APODIDAE	**SWIFTS**
Aeronautes saxatalis	white-throated swift
TROCHILIDAE	**HUMMINGBIRDS**
Calypte anna	Anna's hummingbird
Selasphorus sasin	Allen's hummingbird
ALCEDINIDAE	**KINGFISHERS**
Megaceryle alcyon	belted kingfisher
PICIDAE	**WOODPECKERS**
Colaptes auratus	northern flicker
Melanerpes formicivorus	acorn woodpecker
Picoides nuttallii	Nuttall's woodpecker
Picoides pubescens	downy woodpecker
TYRANNIDAE	**TYRANT FLYCATCHERS**
Myiarchus cinerascens	ash-throated flycatcher
Sayornis nigricans	black phoebe
Tyrannus vociferans	Cassin's kingbird
HIRUNDINIDAE	**SWALLOWS**
Petrochelidon pyrrhonota	cliff swallow
Hirundo rustica	barn swallow
Stelgidopteryx serripennis	northern rough-winged swallow
Tachycineta bicolor	tree swallow
CORVIDAE	**JAYS & CROWS**
Aphelocoma californica	California scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
PARIDAE	**CHICKADEES, TITMICE**
Baeolophus inornatus	oak titmouse
AEGITHALIDAE	**BUSHTITS**
Psaltriparus minimus	bushtit
TROGLODYTIDAE	**WRENS**
Campylorhynchus brunneicapillus	cactus wren
Thryomanes bewickii	Bewick's wren
SYLVIIDAE	**OLD WORLD WARBLERS**
Chamaea fasciata	wrentit
POLIOPTILIDAE	**GNATCATCHERS**
Polioptila californica	California gnatcatcher
TURDIDAE	**THRUSHES**
Sialia mexicana	western bluebird
MIMIDAE	**MOCKINGBIRDS, THRASHERS**
Mimus polyglottos	northern mockingbird

Scientific Name	Common Name
Toxostoma redivivum	California thrasher
PTILOGONATIDAE	**SILKY-FLYCATCHERS**
Phainopepla nitens	phainopepla
STURNIDAE	**STARLINGS**
Sturnus vulgaris	European starling
VIREONIDAE	**VIREOS**
Vireo huttoni	Hutton's vireo
PARULIDAE	**WOOD WARBLERS**
Setophaga coronata	yellow-rumped warbler
Cardellina pusilla	Wilson's warbler
Geothlypis trichas	common yellowthroat
ICTERIDAE	**BLACKBIRDS**
Agelaius phoeniceus	red-winged blackbird
Icterus cucullatus	hooded oriole
Icterus bullockii	Bullock's oriole
Xanthocephalus xanthocephalus	yellow-headed blackbird
Quiscalus mexicanus	great-tailed grackle
Molothrus ater	brown-headed cowbird
EMBERIZIDAE	**EMBERIZIDS**
Melospiza lincolnii	Lincoln's sparrow
Melospiza melodia	song sparrow
Melozone crissalis	California towhee
Pipilo maculatus	spotted towhee
Zonotrichia leucophrys	white-crowned sparrow
CARDINALIDAE	**CARDINALS**
Piranga ludoviciana	western tanager
FRINGILLIDAE	**FINCHES**
Spinus psaltria	lesser goldfinch
Spinus tristis	American goldfinch
Carpodacus mexicanus	house finch
PASSERIDAE	**OLD WORLD SPARROWS**
Passer domesticus	house sparrow
CLASS MAMMALIA	**MAMMALS**
LEPORIDAE	**HARES & RABBITS**
Sylvilagus audubonii	desert cottontail
SCIURIDAE	**SQUIRRELS**
Spermophilus beecheyi	California ground squirrel
MURIDAE	**MICE, RATS, AND VOLES**
Neotoma fuscipes	dusky-footed woodrat
CANIDAE	**WOLVES & FOXES**
Canis familiaris	domestic dog

Scientific Name	Common Name
Canis latrans	coyote
EQUIDAE	**HORSES & BURROS**
Equus caballus	horse

APPENDIX D – 2017 BROWN-HEADED COWBIRD TRAPPING REPORT

2017 BIG TUJUNGA WASH MITIGATION AREA

BROWN-HEADED COWBIRD CONTROL PROGRAM

GRIFFITH WILDLIFE BIOLOGY

2017 BIG TUJUNGA WASH MITIGATION AREA

BROWN-HEADED COWBIRD CONTROL PROGRAM

prepared for:

Chambers Group, Inc
5 Hutton Centre Drive, Suite 750
Santa Ana, California 92707
Primary Contact: Mike McEntee
Project Number 21021

prepared by:

Griffith Wildlife Biology
John T. Griffith and Jane C. Griffith
22670 State Highway M-203
P.O. Box 47
Calumet, Michigan 49913
www.griffithwildlife.com

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Griffith Wildlife Biology 2017. 2017 Big Tujunga Wash Mitigation Area Brown-headed Cowbird Control Program. Unpublished report prepared for Chambers Group Inc., Santa Ana, CA, by Griffith Wildlife Biology, Calumet, MI.

EXECUTIVE SUMMARY

Four cowbird traps were operated in the vicinity of the Big Tujunga Wash Mitigation Area near Hansen Dam in 2017. The purpose of the trapping was to reduce the incidence of brown-headed cowbird (*Molothrus ater*) brood parasitism among local native host species, particularly endangered, threatened, or sensitive host species including the least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and California gnatcatcher (*Polioptila californica californica*). The traps were operated from 30 March to 29 June (92 days, 13 weeks). Each trap contained the minimum preferred number of live decoy cowbirds (2 males, 3 females) as of 6 April, and 3 males and 5-6 female decoys as of 15 April and subsequently.

Fifty-four (54) cowbirds were removed, including 27 males, 26 females, and 1 juvenile. The 2001-2017 average is 129.2, including 54.9 males (r=9-103), 55.4 females (r=11-111), and 3.6 juveniles (r=0-18).

The male: female capture ratio was 1.04:1. The adult capture peak was Weeks 2-5 (8 April to 5 May) when 18/27 males (67%) and 21/26 females (81%) were removed. No banded cowbirds or other banded birds were captured. The traps were vandalized only once in 2017; no decoys escaped and no trap days were lost. In addition to cowbirds, a local adult and later juvenile birds of 4 non-target species were captured, released, and recaptured a total of 184 times; all but 1 (0.5%) were released unharmed. No sensitive or endangered, threatened, or candidate non-target species were captured. No decoy or non-target birds died due to lack of food or water, or because of unclean conditions.

The least Bell's vireo declined due to habitat loss but became endangered due to cowbird parasitism, and would not be recovering without cowbird trapping. The only stable or growing vireo populations exist where cowbird trapping has been consistently performed. Vireos will not re-occupy currently vacant suitable habitat in Southern California and the Central Valley unless trapping is initiated at those areas. Topical trapping (multiple traps placed about 1 mile apart along linear riparian habitat plus at nearby foraging areas, during the host nesting season) is the only method proven to eliminate cowbird parasitism. Full-density topical trapping removes nearly all cowbirds present and allows all local host species (not just the endangered host target) to increase productivity and populations. So few areas are trapped (any site ½ mile or more from a trap is "untrapped"), annual topical trapping has a negligible effect on the regional cowbird population; about the same number of cowbirds disperse to and are removed from trapped areas every year. In the absence of proven regional cowbird control (resulting in the elimination of cowbirds from vireo breeding habitat), topical trapping will be required indefinitely.

No changes to the number of traps, dates of operation, or operation protocol are recommended.

Key words: Big Tujunga Wash, brood parasitism, brown-headed cowbird (*Molothrus ater*), California, California gnatcatcher (*Polioptila californica californica*), coastal sage scrub, Hansen Dam, least Bell's vireo (*Vireo bellii pusillus*), riparian, southwestern willow flycatcher (*Empidonax traillii extimus*).

Table of Contents

List of Figures

List of Tables

List of Appendices

INTRODUCTION

The objective of this study was to remove brown-headed cowbirds (*Molothrus ater*, cowbird) from riparian habitat at Big Tujunga Wash Mitigation Area near Hansen Dam to decrease or eliminate cowbird brood parasitism among the federally endangered least Bell's vireo (*Vireo bellii pusillus*, vireo) and southwestern willow flycatcher (*Empidonax traillii extimus*), and other riparian host species present including the indicator species yellow-breasted chat (*Icteria virens*) and yellow warbler (*Setophaga petechia)*. Similar mitigation trapping was previously performed in 2001-2006 and 2009-2016.

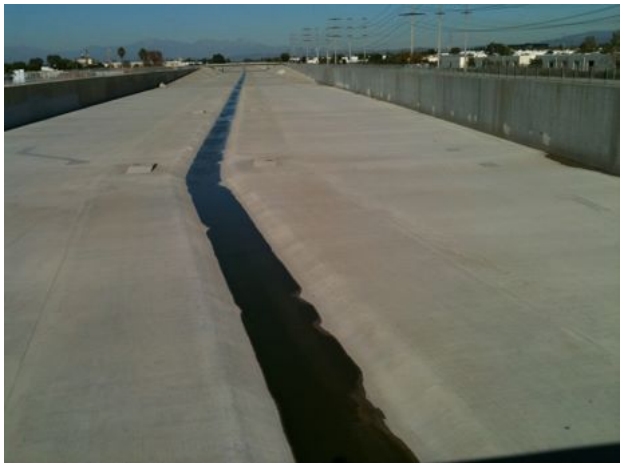
Least Bell's Vireo

The least Bell's vireo is a small gray and white migratory songbird that winters in the Cape District of Baja California Sur, Mexico and nests in willow-dominated riparian (streamside) habitat in northwestern Baja California, Mexico and southern California. Vireos arrive in breeding habitat in mid March through early April, initiate most nests by mid to late April, and fledge most young by late May to mid June. Nest building usually takes 4 days. The typical clutch of 3-4 eggs is incubated for 14 days; the young fledge 12 days after hatching. Double brooding (re-nesting after fledging young) is not uncommon. Vireos are quite fecund (90% of pairs produce 4-8 young per year); they are not endangered due to low reproduction ability. Multiple nesting attempts (up to 7) after nest failure are common. Very few nests are initiated after June. Young vireos can forage on their own after 2-3 weeks, although family groups may remain associated into August or September when they depart to points south (Griffith and Griffith 2000).

The vireo was formerly abundant and bred as far north as Red Bluff in Tehama County (about 130 miles north of Sacramento) (Cooper 1874), but due to habitat loss (agriculture, flood control, livestock) (Smith 1977, USFWS 1986, Wilbur 1981) and brood parasitism by the brown-headed cowbird, by the 1940's there was "a noticeable decline in numbers... apparently coincident with an increase of cowbirds" (Grinnell and Miller 1944). In 1978, only 90 vireo territories could be found, mostly in San Diego and Riverside Counties and none in the Central Valley, which had supported upwards of 80% of the historic population (Goldwasser et al. 1980, Franzreb 1989). Because of the persistent cowbird parasitism and associated low reproductive success causing local extirpations of populations already reduced and fragmented by habitat loss, the least Bell's vireo was declared endangered by the California Department of Fish and Wildlife (CDFW) in 1980 and by the United States Fish and Wildlife Service (USFWS) in 1986.

After listing and with habitat protection and cowbird trapping, vireo populations at each drainage expanded to carrying capacity, then became source populations as excess first-year emigrants began to reoccupy drainages and habitat that had been vacant for decades, expanding slowly northward, with colonizers usually settling within 10 km of their natal home ranges (Griffith and Griffith 2000). New colonizers in suitable habitat established new populations, existed in low numbers, or were extirpated within a few years, depending upon two factors: distance from source populations, and more importantly, whether or not cowbird trapping was implemented. Without trapping, vireo colonizers are re-extirpated.

Willow-dominated vireo habitat at the Santa Ana River.



Former vireo habitat at the lower Santa Ana River

Adult male vireo on nest.

Vireo nest hung in mulefat (*Bacharis salicifolia*)

Hatch-day vireo chick

Hatch-day cowbird chick in vireo nest

Habitat is a critical component for any species, and habitat loss decidedly decimated the historic vireo population. However, throughout the decades-long decline, at the time the vireo was listed as endangered, and today, there were and are thousands of acres of vacant, vireo-quality riparian habitat available. Habitat loss caused the initial decline of the vireo, but persistent cowbird parasitism extirpated the species from all but a few locations and caused the vireo to become endangered, and cowbird trapping (in suitable/ protected habitat) is the primary cause of the ongoing recovery. The goal of the vireo recovery plan is the re-establishment of the vireo in the Central Valley, the center of the vireo's historic range (USFWS 1998); it won't happen without cowbird trapping.

Vireo nestlings 3 days after hatching

12 day-old vireo chicks ready to fledge.

Southwestern Willow Flycatcher

The southwestern willow flycatcher (swfl) was listed as endangered by the USFWS in February 1995 for reasons similar to those cited for the least Bell's vireo: severe habitat loss and degradation exacerbated (though to a lesser degree) by cowbird brood parasitism.

The swfl is one of four *Empidonax traillii* subspecies that occur in the United States and one of three that occur in Southern California during migration. The only reliable way to discern between the three subspecies in the field is by breeding chronology and geography: if a willow flycatcher breeds in Southern California or is reliably territorial after 21 June, it is *E. t. extimus*. All other sightings before or after could be, and likely are (based upon their much larger populations) northbound or southbound migratory *E. t. brewsteri* or *E. t. adastus*.

In southern California, swfl's nest in habitat similar to that of the least Bell's vireo, although usually near running water and with larger canopy trees, and their general breeding biology is similar but 1-2 months "behind" the vireo. Willow flycatchers arrive on breeding grounds from late April through mid-June. Nests are active from mid to late May through early August. Double brooding is uncommon. Most breeding habitat is vacated by mid-September. Extensive information regarding flycatcher natural history and legal status is available in Tibbetts et al (1994) and USFWS (1995).

Southwestern willow flycatcher (image courtesy of Utah Dept. of Natural Resources)

Yellow-breasted Chat and Yellow Warbler

The yellow-breasted chat and yellow warbler are migratory songbirds that breed in willow-dominated riparian woodland in southern California. Both are listed by the CDFW as California Species of Special Concern (CSC) (CDFW 2009) due to declining numbers and local extirpations, again associated with habitat loss and cowbird brood parasitism. The USFWS and CDFWS consider the chat and yellow-warbler as "indicator species" for the vireo and to a lesser extent, the flycatcher. That is, their presence indicates that the habitat is of a type and quality suitable for use by the vireo and flycatcher.

yellow-breasted chat nest

yellow-breasted chat nestlings

Brown-headed Cowbird

The brown-headed cowbird (cowbird) is an obligate brood parasite; they never make nests or raise young. Cowbirds lay eggs in the nests of other birds, called hosts, which then incubate and raise the cowbird. Female cowbirds defend breeding territories (Darley 1968, 1983; Raim 2000) and can lay 40-60 eggs each spring (Scott and Ankney 1983, Holford and Roby 1993, Smith and Arces 1994). Like many birds, cowbirds lay 3-5 egg clutches, but each year they lay 10-15 clutches each separated by only a few days. Cowbirds may remove or puncture host eggs during parasitism events, and may kill older host nestlings to initiate host re-nesting and create parasitism opportunities. Cowbirds are extreme generalists and parasitize nearly every species (at least 220) with which they are sympatric (Friedmann 1963, Friedmann and Kiff 1985). Most cowbird young are fledged from similar-sized hosts (such as red-winged blackbirds). *This lack of host specificity allows the extirpation or extinction of rare species (like the vireo) without harm to the cowbird.*


Brown-headed cowbirds (males dark, females light).


Two cowbird eggs in a least Bell's vireo nest.

Cowbirds are native to the Great Plains and were closely associated with bison. It is possible that brood parasitism developed because cowbirds traveled with bison and seldom remained in one locale long enough to build a nest, lay and incubate a clutch of eggs, raise nestlings, and care for fledglings. Host species that co-evolved with cowbirds on the Great Plains and margins have behavioral defense mechanisms against parasitism, including cowbird egg recognition, cowbird egg removal, cowbird egg covering, nest abandonment, and re-clutching. Hosts in the Far West generally do not.

Cowbirds were first documented in California at Borrego Springs in 1896; the first cowbird egg found in California was in a vireo nest on the San Gabriel River (Unitt 1984). By 1930, cowbirds were "well established" throughout the region (Willett 1933); by 1955 they had reached British Columbia (Flahaut and Schultz 1955). Cowbirds may or may not have reached the Far West without the unwitting aid of man. Regardless, massive anthropogenic landscape alteration, particularly the provision of year-round cowbird forage by agricultural and livestock operations and the coincident wholesale destruction of native habitats, allowed the establishment of an artificially large cowbird population, and the resulting devastating impact upon local hosts.

In contrast to the increase in distribution and abundance of cowbirds in California over the last century, populations of most native birds are in decline, primarily due to their dependence upon increasingly reduced, fragmented, and degraded native habitats in which they are less productive and more susceptible to predation and parasitism (Gaines 1974, Goldwasser et al 1980). Thus there is an inverse relationship between the amount of native habitat and associated avian populations, such as the vireo and flycatcher, and the number and subsequent impact of brown-headed cowbirds and predators upon such populations.

Cowbird eggs hatch sooner than host eggs and the young are larger and more aggressive. Therefore cowbird chicks are able to outcompete their host nest-mates; small host chicks are often simply smothered or starved to death. Large host species can raise a cowbird without significant harm to their own reproductive effort (Weatherhead 1989, Robinson et al. 1995). Small host species like the endangered vireo, flycatcher, and California gnatcatcher (*Polioptila californica californica*) can raise only a cowbird chick, if that, and none of their own young from parasitized nests (Grzybowski 1995). For these small hosts, parasitism and predation have the same result (no young produced), but after predation the host pair often successfully re-nests in 2-14 days, while a parasitism event consumes the time and energy of an entire breeding season (Griffith and Griffith 2000). Decreased productivity caused by persistent cowbird parasitism caused or contributed to the endangered/threatened status of these host species (USFWS 1986, 1993, 1995, 1998).


Cowbird chick in California gnatcatcher nest.


Cowbird chick and smothered/starved gnatcatcher chick.

Cowbird Trapping

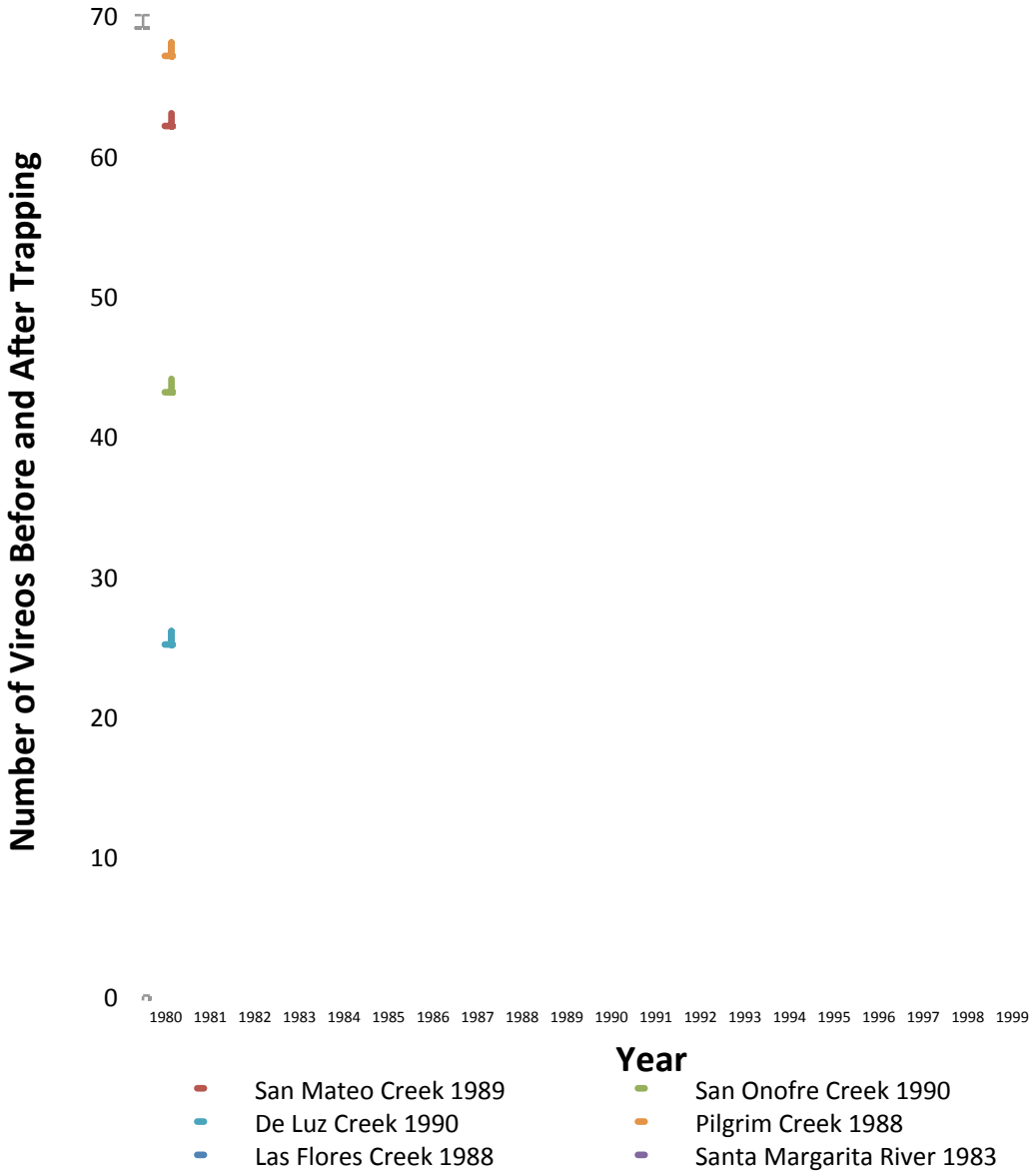
The recipe for least Bell's vireo recovery is simple: habitat protection (including land acquisition, exclusion of motorized vehicles and domestic/feral animals, and removal of invasive plants such as *Arundo donax* and *Tamarisk spp*.) combined with cowbird trapping. Without habitat, cowbird trapping is not worthwhile. Without trapping, vireo habitat is vacant. Cowbird parasitism can be eliminated from any targeted area by topical trapping: operating about one cowbird trap per mile along a typical riparian corridor and at nearby cowbird foraging areas (dairies, stables, golf courses) during the vireo breeding season (typically 1 April – 30 June although non-breeding season trapping can also be helpful).

Topical trapping reduces parasitism rates among the vireo from pre-trapping levels of 50%-100% to at or near 0%, and unlike vireo nest-monitoring and cowbird egg removal, trapping benefits the entire avian host community. For vireos, cowbird trapping increases per-pair productivity from ~1.3 young per pair to ~3.5 per pair; the difference between decreasing populations/ extinction and increasing populations/ recovery (Griffith and Griffith 2000).

"Cowbird Control" has not been accomplished unless 1) Few or no cowbirds are detected during the breeding season in trapped areas during formal or informal surveys, censuses, and point counts, and 2) The parasitism rate among the endangered host species decreases from pre-trapping levels to near zero, as evidenced by finding few to no cowbird eggs or young in host nests, few to no cowbird fledglings in host family groups, and few to no juvenile cowbirds are captured in the trapped area in June, and 3) Host per-pair productivity increases and host populations begin to grow and expand. If the three consequences noted above are not recorded (the first two immediately), then efforts to reduce cowbird parasitism (non-topical trapping, shooting, netting) may have been performed, to some positive effect, but "cowbird control" has not been accomplished (Griffith and Griffith 2000).

The effectiveness of topical trapping (as well as the limited range of each trap) is best illustrated with 1980-1999 data from Marine Corps Base Camp Pendleton, California, during which period the location and fate of every individual and pair of vireo and nearly every vireo nest was known, and where the number and location of cowbird traps grew from 5 traps on one drainage to 40 traps on 6 drainages (Griffith and Griffith 2000). Data from the vireo distribution and abundance and cowbird parasitism data, combined with the de facto experiments in trap placement and density, established that about one trap per mile eliminates parasitism and fewer traps does not (e.g., the effective range of each trap is about ½ mile radius). These comprehensive data conclusively demonstrate that without trapping, vireos are absent or sporadically present in low numbers in suitable habitat for years (e.g. Las Flores Creek), even when quite near to occupied habitat where parasitism has been eliminated and the vireo population is large and growing (e.g. the Santa Margarita River). Conversely, with trapping, vireos grow to habitat carrying capacity then become source populations (produce more fledglings each year than settle in the drainage), and the overflow colonizes vacant habitat (closest first and in highest numbers) where the growth/ capacity/ source-population cycle is repeated.

The best illustration of how cowbird trapping increases vireo numbers and allows for vireo recovery (=increase in number and expand into vacant historic habitat) comes from Camp Pendleton, California (since repeated at many locales, and repeatable at any site with vireo habitat). From 1980-1999, all suitable vireo habitat on 6 separate drainages was surveyed, and the number, location, and fate of every vireo and nearly all vireos nests was recorded (by Jane and John Griffith, 1987-1999). During the same period, the number, location, and density of cowbird traps was experimentally altered, increasing from 5 on the Santa Margarita River (SMR) in 1983 to, ultimately, 40 traps Base-wide. At each drainage, vireo numbers grew (at remarkably similar rates, see slopes) to habitat carrying capacity, *but only after full density topical trapping was initiated* (trap initiation dates shown for each drainage). The number of vireos increased from 15 on 2 drainages in 1980 to 779 on 6 drainages in 1999. These data show 1) the effective range of each trap is a radius of about ½ mile (leading to the "about 1 trap per mile long the river/ topical trapping" rule) and 2) vireos simply do not and will not recover or expand into vacant habitat unless topical cowbird trapping is performed.



(Griffith and Griffith 2000).

Male cowbird interacts with decoys before entering trap.

Cowbirds foraging for seed and insects at a dairy.

The traps are baited with live decoy cowbirds, abundant bait seed and clean water, shade, and perches to attract cowbirds whether they are seeking food, water, shelter, companionship, and/or sex. Since female cowbirds lay the eggs, they are the primary targets of trapping programs. Males are also important as they may participate in egg removal and host nest destruction activities, and are required to fertilize each egg before it is laid. The sex ratio of the at-large cowbird population is assumed to be 1:1. The goal of trapping programs is to capture as many females as possible and achieve a capture sex ratio at or below 1:1.

Male cowbirds are more active and vocal (and therefore more attractive as decoys) when at least 2 are present; female cowbirds are more likely to enter traps containing more females than males (GWB 1992). Therefore, at least 2 male and 3 female decoy cowbirds are utilized in each trap, and often 3m/5-6f if available; the small flock attracts more cowbirds and also discourages or prevents some non-target birds from entering the trap.

The capture of non-target birds (non-cowbirds) is undesirable yet unavoidable. Many non-target birds are less hardy than cowbirds. To reduce non-target mortality and per state live-trap law, the traps are checked daily and non-target species are handled with care and released immediately. To reduce non-target captures, the capture slot is only 1 3/8 inches wide (large enough for cowbirds, small enough to exclude many non-target species), 1-inch hardware cloth is used for the trap panels (small enough to contain cowbirds yet large enough to allow smaller species to exit), and bait seed without sunflower seed is utilized (sunflower seed attracts some non-target species but not cowbirds; cowbirds prefer millet).

The goal of trapping programs is to achieve 0% non-target species mortality. Rates below 2% (due to unavoidable intraspecific competition within the traps, and predation) are acceptable; rates above 2% are usually indicative of unacceptable trap conditions and poorly managed programs (GWB 1992).

Cowbird Trapping at Big Tujunga

The cowbird control project at Big Tujunga Wash Mitigation Area (Mitigation Area) was initiated in 2001 and performed in 2001-2006 and 2009-2017. Its purpose is to enhance reproductive success among the least Bell's vireo and other host species by decreasing or eliminating cowbird brood parasitism by removing cowbirds from riparian habitat.

Additional cowbird traps were also operated downstream of the study area at Hansen Dam Basin (2 traps) in 1996, 1997, and 2001-2017 (GWB 2017), and upstream of Interstate 210 at Angeles National Golf Course (3 traps) in 2008-2017 (GWB 2017a).

STUDY AREA

The Mitigation Area is located in the northwestern portion of the Los Angeles basin in Los Angeles County, California (Figure 1). The site has a typical Mediterranean climate with warm, dry summers and cool, wet winters. The wash supports healthy stands of high-quality willow-dominated habitat of the type preferred by the least Bell's vireo and southwestern willow flycatcher. Some coastal sage scrub of the type preferred by the California gnatcatcher is found in the wash and surrounding hills.

A stable population of least Bell's vireo is found immediately downstream within the Hansen Dam Basin. In 2009 (the last known full survey), 44 sites occupied by vireos (39 pairs, 5 single males) were detected within the Hansen Dam Basin (GWB 2009). Vireos are expanding their range slightly upstream from the basin, but are not known to have occupied the Big Tujunga Wash study area upstream of the Hansen Dam Stables.

A complete natural history of the study area is available in Big Tujunga Wash Master Mitigation Plan (Chambers Group, Inc. 2000).

METHODS

Four cowbird traps were placed, activated, operated, serviced, disassembled, and stored per the *Brown-headed Cowbird Trapping Protocol* (GWB 1992, updates) and state and federal permit requirements (Figure 2-4). Trap 1 (Hansen Dam Stables), Trap 3 (just outside Gibson Ranch), and Trap 4 (Gibson Ranch) were in foraging areas. Trap 2 and Trap 3 were within the Big Tujunga Wash Mitigation Area within coastal sage habitat and adjacent to riparian habitat. The traps were placed, assembled, and activated on March 30, then operated until June 29 (92 days, 13 weeks).

Each trap is 6 feet wide, 8 feet long, and 6 feet tall, with a 1 3/8 inch wide capture slot on top through which cowbirds can drop down and in but cannot fly up and out. The traps include: 1 floor, 2 side, 2 end (door and back), and 2 top panels, and a plywood slot board.

Transporting cowbird trap panels to the trap site.

Cowbird trap placed and "flowered" for easy assembly.

Each trap was aligned in the field on a north-south axis. A foraging tray was placed on the front portion of the floor panel centered under the capture slot. Four perches made of dead giant reed or ½" diameter dowel were installed in each trap: one in each trap corner at chest height (except above the door) and one in a rear corner at knee height (for subordinate birds). A warning/ informational sign was stapled to the front of each trap (Appendix 1). Shade cloth was applied to the west-facing side panel. Finally, a one-gallon water guzzler, approximately 1 lb. of sunflower-free wild birdseed (on the foraging tray), and live decoy cowbirds were added to each trap, and the trap was locked.

Each trap contained the minimum preferred 2 male/ 3 female live decoys as of 6 April, and 3 males/ 5-6 females as of 15 April and subsequently. The right primary wing feathers of each female decoy were kept clipped to ensure their demise upon accidental release or escape. Most of the live decoys used to stock the traps in the early season were captured on site.

Trap assembly supplies.

Bait seed ready to be added through the capture slot.

Shade cloth on the west-facing panel.

Adding live decoy cowbirds to trap from transport cage.

Unclipped wing.

Clipped wing.

The traps were serviced daily from March 30 to June 29. Daily servicing consisted of releasing all non-target birds, adding bait seed, adding water and/or cleaning the water guzzler as needed, wing-clipping newly captured female cowbirds, adding or removing decoy cowbirds to maintain the preferred decoy ratio, repairing or replacing the perches, foraging pad, sign, shade cloth, slotboard wire, or lock as needed, repairing damage from vandals, if any, and recording all activities on a data sheet. Data sheets were submitted daily to the project manager. The traps were deactivated, disassembled, and transported to off-site storage on 29 June.

The number of cowbirds removed is a net number calculated by subtracting from the gross number of cowbirds captured: the number of banded cowbirds released, cowbirds released by vandals, cowbirds accidentally released, and unexplained missing decoy cowbirds. Captured cowbirds not utilized as decoys were humanely euthanized and provided as forage to raptor rehabilitation/reintroduction facilities.

A complete cowbird trapping protocol is available from Griffith Wildlife Biology (GWB 1992).

This project was performed under the authority of USFWS Federal Endangered Species Permit TE 758175-7 and a Letter Permit from the California Department of Fish & Wildlife. The Principal Investigator was J.T. Griffith. The Project Manager was J.C. Griffith. The Trap Technicians were M. Birney, J.C. Grifith, J.T. Griffith, K. Griffith, and E. Sanchez.

RESULTS

Cowbirds Removed Fifty-four (54) cowbirds were removed in 2017, including 27 males, 26 females, and 1 juvenile (Table 1, Table 2). The 2001-2017 average is 129.2, including 54.9 males (r=9-103), 55.4 females (r=11-111), and 3.6 juveniles (r=0-18). The male: female capture ratio was 1.04:1.

The first cowbird was captured on 2 April in Trap 4 (1 male). The adult capture peak was Weeks 2-5 (8 April to 5 May) when 18/27 males (67%) and 21/26 females (81%) were removed (Figure 5). No banded cowbirds or other banded birds were captured.

Non-Target Species In addition to cowbirds, several local adult and later juvenile birds of 4 non-target species were captured, released, and recaptured a total of 184 times (Table 3). All but 1 (0.5%) were released unharmed. No sensitive or endangered, threatened, or candidate non-target species were captured. No decoy or non-target birds died due to lack of food or water, or because of unclean conditions.

Trap Site Performance Trap 2 removed only 1 female cowbird. All other trap sites performed well and should be utilized in 2018. Trap 4 removed the most total cowbirds (30), males (17) and females (12).

Vandalism On 2 May, the front panel mesh of Trap 1 was cut by vandals. The trap was repaired immediately; no decoys escaped and no trap days were lost.

Trap Servicing The time spent at each trap each day, exclusive of travel time, ranged from 5 minutes to 60 minutes depending upon: the number of cowbirds and non-target birds captured and released, the number of live decoy transfers necessary to maintain the proper decoy ratio, the number of water guzzlers scrubbed, the number and severity of vandalism events, and other variables.

Trap Days The traps were operational for 368 (4 traps x 92 days) of the 364 (4 traps x 91 days) contracted trap days (101%).

DISCUSSION AND CONCLUSIONS

The number of cowbirds removed from each trap site and each program varies year-to-year, sometimes independently. The 2017 capture numbers (54 total; 27m,26f,1j) follow the 133 removed in 2016 (47m,86f,0j) and are the lowest since the 56 recorded in 2006 (30m/24f/2j). 2006 was bracketed by 137 in 2005 (53m,66,f,18j) and 192 in 2007 (78m,11f,3j). GWB expects the numbers to rebound to back near the 2001-2017 average of 53.0 males (r=9-103), 55.4 females (r=11-111), and 3.6 juveniles (r=0-18) in 2018 or 2019.

Even in this below-average year, the removal of 26 cowbird females precluded up to 1,040-1,560 parasitism events (40-60 eggs per female) allowing the production of as many as 4,160-6,240 songbird young (4 per otherwise parasitized nest) in the immediate area. Because not all parasitism events are viable and not all cowbird eggs are laid in the nests of small hosts, the actual numbers of cowbird eggs and songbird young are likely much lower but still significant, especially for the disproportionately targeted vireo.

It is good to be reminded that the objective of cowbird trapping is to reduce or eliminate brood parasitism among targeted host species, not (necessarily) to capture large numbers of cowbirds. If the latter were the primary goal, traps would be operated only at dairies and stables (where large numbers of cowbirds can be captured, with little effect on parasitism rates = Traps 3 and 4) and not along the river (where cowbird density is low, but where the females captured are those breeding in the immediate area = Traps 1 and 2). The Mitigation Area foraging area traps are immediately adjacent to the riparian habitat, so they are also de facto riparian area traps so their abundant captures are hugely impactful.

Locally raised cowbirds are easily and quickly captured after fledging, and are therefore good indicators of the efficacy of a trapping program. Only 1 juvenile cowbird was captured in 2017, indicating that cowbird parasitism was essentially eliminated in the study area in 2017.

Trapping at Big Tujunga Wash and elsewhere has reduced or eliminated cowbird parasitism in targeted habitat and increased the reproductive success of host species present. Targeted topical trapping has not, however, impacted the regional cowbird population, primarily because cowbirds are removed from so few sites where cowbirds breed. If the regional cowbird population had been reduced, the number of cowbirds captured at each site would decrease over time. Instead, the number of cowbirds captured at each site has remained fairly consistent over time (notwithstanding typical annual fluctuations; see Table 1 and the previous comments).

Unless and until cowbirds are absent from the study area for several years, by regional cowbird control or other means, the Big Tujunga Wash topical cowbird trapping program will be required indefinitely to control local brood parasitism and allow native birds to reproduce naturally.

MANAGEMENT RECOMMENDATIONS

1. No changes in the number of traps (4), operation dates (April 1 to June 30), or operation protocol are recommended.

2. Trap 2 could be re-situated to another nearby location in hopes of increasing capture totals.

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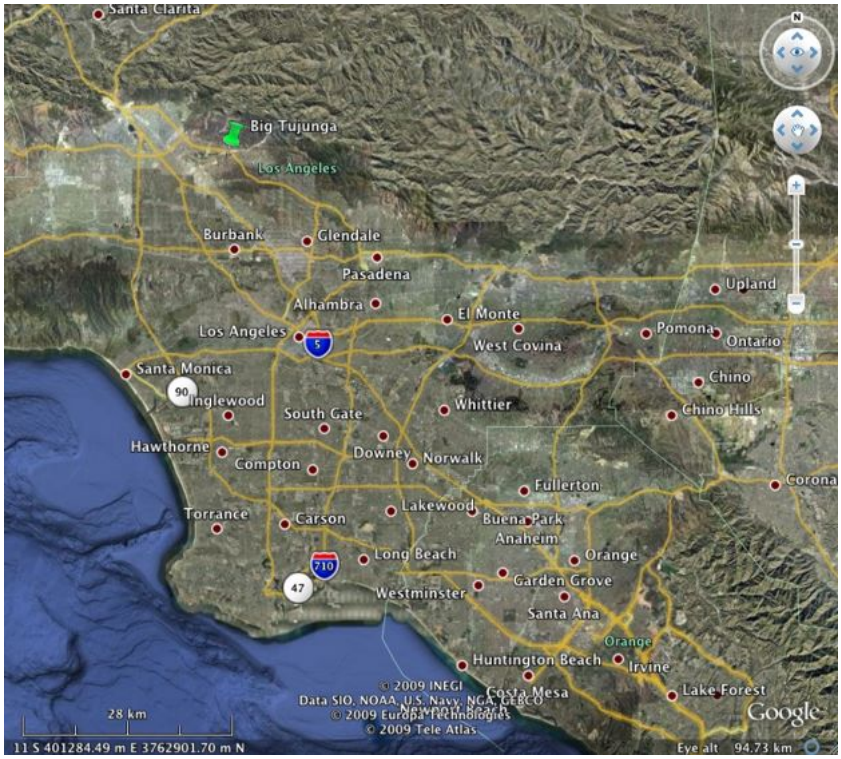
Figure 1. 2017 Big Tujunga Wash Mitigation Area brown-headed cowbird control project study area.



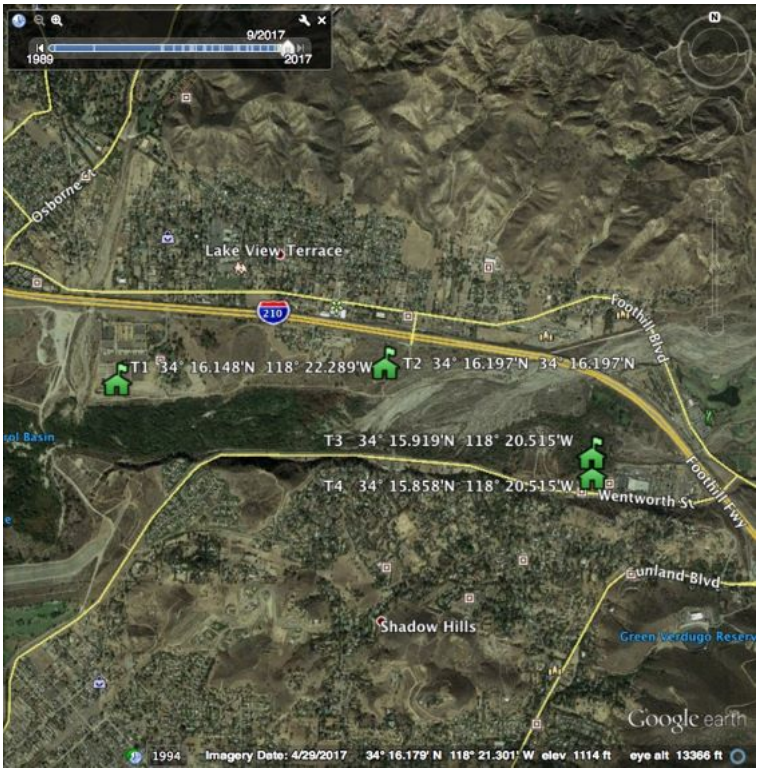


Figure 2. 2017 Big Tujunga Wash Mitigation Area brown-headed cowbird Trap 1 location.

Figure 3. 2017 Big Tujunga Wash Mitigation Area brown-headed cowbird Trap 2 location.

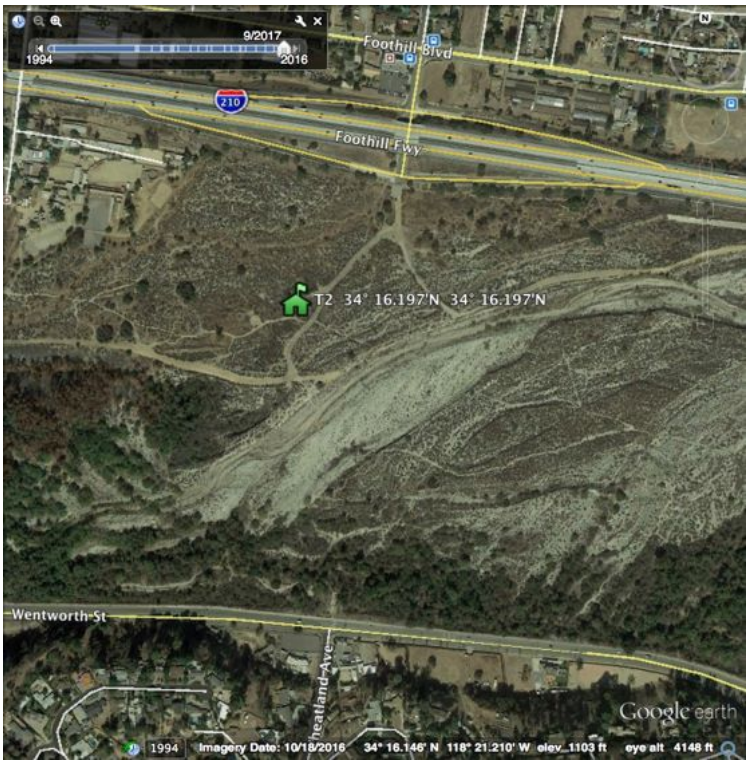
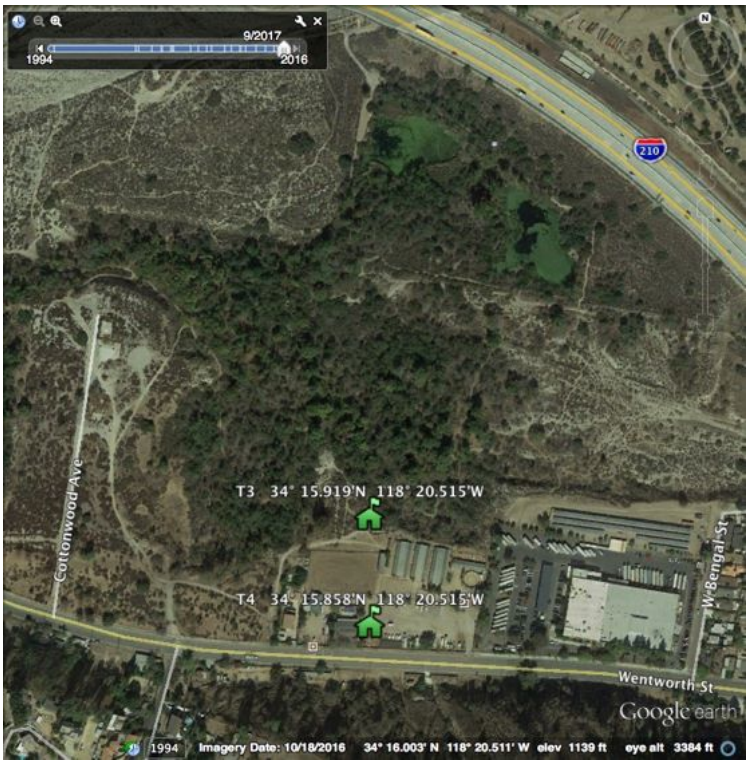


Figure 4. 2017 Big Tujunga Wash Mitigation Area brown-headed cowbird Trap 3-4 locations.



T3

T4

Figure 5. Number of male (M), female (F), and juvenile (J) cowbirds removed per week at and in the Vicinity of Big Tujunga Wash Mitigation Area in 2017.

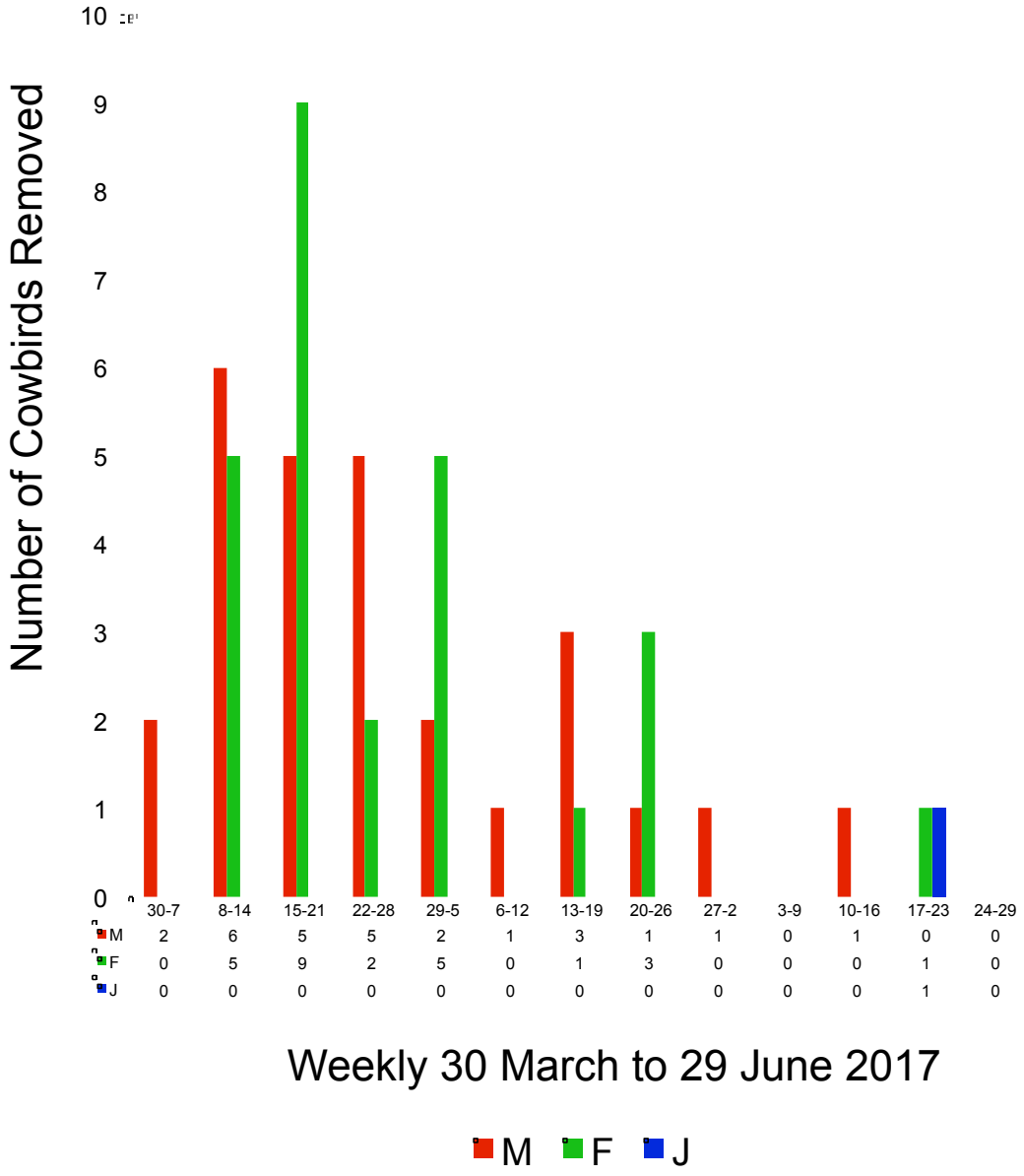


Table 1. Number of brown-headed cowbirds captured at and in the vicinity of Big Tujunga Wash Mitigation Area, 2001-2017.

Year	Number of Traps	Trapping Period	Number of Cowbirds Captured				Number Per Trap	M:F Ratio
			Male	Female	Juvenile	Total		
2001	7	3/15 - 7/15	37	24	9	70	10.00	1.54
2002	7	3/15 - 7/16	66	105	2	173	24.71	0.63
2003	7	3/15 - 6/19	9	11	0	20	2.86	0.82
2004	7	3/15 - 7/15	46	37	6	89	12.71	1.24
2005	7	3/30 - 8/1	53	66	18	137	19.57	0.80
2006	4	4/6 - 6/29	30	24	2	56	14.00	1.25
2009	4	4/1 - 6/30	78	111	3	192	48.00	0.70
2010	4	4/1 - 6/30	78	67	1	146	36.50	1.16
2011	4	4/1 - 6/30	103	99	9	211	52.75	1.04
2012	4	4/2 - 6/30	68	68	1	137	34.25	1.00
2013	4	4/1 - 6/30	54	42	1	97	24.25	1.29
2014	4	4/1 - 6/30	51	24	0	75	18.75	2.13
2015	4	3/30 - 6/29	48	41	1	90	22.50	1.17
2016	4	3/30 - 6/29	47	86	0	133	33.25	0.55
2017	4	3/30 - 6/29	27	26	1	54	13.50	1.04
TOTAL	75	15	795	831	54	1680	22.40	0.96
AVG	5.0		53.0	55.4	3.6	129.2	25.8	0.96

Year	Number of Traps	Trapping Period	Number of Cowbirds Captured				Number Per Trap	M:F Ratio
			Male	Female	Juvenile	Total		

Table 2. Number of male (M), female (F), and juvenile (J) cowbirds captured per day, per week, per trap, and total at and in the vicinity of Big Tujunga Wash Mitigation Area in 2017.

Date		Trap 1			Trap 2			Trap 3			Trap 4			TOTAL		
		M	F	J	M	F	J	M	F	J	M	F	J	**M**	**F**	**J**
Apr	1													0	0	0
	2										1			1	0	0
	3													0	0	0
	4													0	0	0
	5										1			1	0	0
	6													0	0	0
	7													0	0	0
wk 1		0	0	0	0	0	0	0	0	0	2	0	0	2	0	0
	8													0	0	0
	9													0	0	0
	10							1			2	3		3	3	0
	11													0	0	0
	12										1	1		1	1	0
	13		1								1			1	1	0
	14										1			1	0	0
wk 2		0	1	0	0	0	0	1	0	0	5	4	0	6	5	0
	15							1	1			1		1	2	0
	16										4	3		4	3	0
	17													0	0	0
	18		1									1		0	2	0
	19													0	0	0
	20											1		0	1	0
	21								1					0	1	0
wk 3		0	1	0	0	0	0	1	2	0	4	6	0	5	9	0
	22										1			1	0	0
	23	2	1											2	1	0
	24													0	0	0
	25													0	0	0
	26	1				1								1	1	0
	27													0	0	0
	28										1			1	0	0
wk 4		3	1	0	0	1	0	0	0	0	2	0	0	5	2	0
	29										1			1	0	0
	30													0	0	0
May	1								1		1			1	1	0
	2											1		0	1	0
	3											1		0	1	0
	4								2					0	2	0
	5													0	0	0
wk 5		0	0	0	0	0	0	0	3	0	2	2	0	2	5	0
	6													0	0	0
	7													0	0	0
	8													0	0	0
	9													0	0	0
	10													0	0	0
	11													0	0	0
	12							1						1	0	0
wk 6		0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
	13							1						1	0	0
	14													0	0	0
	15							1						1	0	0
	16	1												1	0	0
	17													0	0	0
	18								1					0	1	0
	19													0	0	0
wk 7		1	0	0	0	0	0	2	1	0	0	0	0	3	1	0

Date		Trap 1			Trap 2			Trap 3			Trap 4			TOTAL		
		M	F	J	M	F	J	M	F	J	M	F	J	**M**	**F**	**J**
	20													0	0	0
	21		1											0	1	0
	22								1					0	1	0
	23													0	0	0
	24													0	0	0
	25													0	0	0
	26								1		1			1	1	0
wk 8		0	1	0	0	0	0	0	2	0	1	0	0	1	3	0
	27													0	0	0
	28													0	0	0
	29										1			1	0	0
	30													0	0	0
	31													0	0	0
Jun	1													0	0	0
	2													0	0	0
wk 9		0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
	3													0	0	0
	4													0	0	0
	5													0	0	0
	6													0	0	0
	7													0	0	0
	8													0	0	0
	9													0	0	0
wk 10		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10							1						1	0	0
	11													0	0	0
	12													0	0	0
	13													0	0	0
	14													0	0	0
	15													0	0	0
	16													0	0	0
wk 11		0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
	17													0	0	0
	18													0	0	0
	19								1					0	1	0
	20													0	0	0
	21													0	0	0
	22													0	0	0
	23												1	0	0	0
wk 12		0	0	0	0	0	0	0	1	0	0	0	1	0	1	1
	24													0	0	0
	25													0	0	0
	26													0	0	0
	27													0	0	0
	28													0	0	0
	29													0	0	0
	30													0	0	0
wk 13		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL		**4**	**4**	**0**	**0**	**1**	**0**	**6**	**9**	**0**	**17**	**12**	**1**	**27**	**26**	**1**

Table 3. Number of non-target species captured & released (C&R) or preyed upon (PU) in cowbird traps at and in the vicinity of Big Tujunga Wash Mitigation Area in 2017.

Species	Week 1		Week 2		Week 3		Week 4		Week 5		Week 6		Week 7	
	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU
CATO	1	1			3		2							
YHBL									1					
HOFI			1						3					
HOSP	7		2		1				2		18		23	
TOTAL	8	1	3	0	4	0	2	0	6	0	18	0	23	0

Species	Week 8		Week 9		Week 10		Week 11		Week 12		Week 13		**TOTAL**	
	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU	**C&R**	**PU**
CATO	5		4		1		1						**17**	**1**
YHBL													**1**	**0**
HOFI													**4**	**0**
HOSP	13		23		25		25		12		10		**161**	**0**
TOTAL	18	0	27	0	26	0	26	0	12	0	10	0	**183**	**1**

CATO California towhee
YHBL yellow-headed blackbird
HOFI house finch
HOSP house sparrow

All HOSP euthanized as required by permit; not counted as such here so as to not skew PU data.

Appendix 1. Warning/informational sign placed on cowbird traps at Big Tujunga Wash Mitigation Area in 2017.

COWBIRD TRAP

PLEASE DO NOT DISTURB

This trap removes *non-native* brown-headed cowbirds so that *native* songbirds can reproduce naturally.

***Cowbirds NEVER make their own nests; they ONLY lay eggs in the nests of other birds.**

***Each female cowbird lays 40-60 eggs each spring; the cowbird eggs hatch first and the cowbird chick smothers the songbird young as they hatch.* Each female cowbird removed = 160-240 more songbird young in this area.**

To attract other cowbirds, this trap contains live male (shiny black body, brown head) and female (plain brown) decoy cowbirds.

***THIS TRAP IS SERVICED DAILY* to care for the live decoy birds, release non-cowbirds, and add fresh seed & water.**

If you have questions about the operation of this trap, please call 906.337.0782 or visit www.griffithwildlifebiology.com

Operated by GWB under authority of the U.S. Fish & Wildlife Service and the California Department of Fish & Wildlife.

THE LOCAL SONGBIRDS THANK YOU FOR YOUR COOPERATION

2 cowbird eggs in songbird nest.

Cowbird chick, smothered songbird chick.

Songbird adult feeding cowbird chick.

GRIFFITH WILDLIFE BIOLOGY

APPENDIX E – EXOTIC PLANT REMOVAL MEMOS AND CDFW NOTIFICATIONS

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

March 16, 2017
(2014-003.023/002/2)

Mr. Matthew Chirdon
California Department of Fish and Wildlife
P.O. Box 1797
Ojai, CA 93024

RE: Notification No. 1600-2008-0253-R5 – Big Tujunga Wash Mitigation Area Exotic Plant Removal and Maintenance Activities (Sent via email to matthew.chirdon@wildlife.ca.gov)

Dear Mr. Chirdon:

The purpose of this letter is to provide notification that exotic plant removal activities will be conducted beginning March 27, 2017 at the Los Angeles County Department of Public Works' Big Tujunga Wash Mitigation Area near the City of Sunland in Los Angeles County. The activities will begin with the biologists conducting a pre-activity survey for nesting birds and to identify the areas where weeds, non-native grasses, and invasive exotic plant species will need to be removed. This pre-activity survey will take place on March 24, 2017. The locations of all sensitive biological resources that are found will be identified using a Global Positioning System (GPS) unit and areas that will require maintenance will also be identified using a GPS. If active bird nests are identified, then an appropriately-sized buffer will be established as a "no work" zone. A biological monitor will be on site during all site maintenance and exotic plant removal activities.

If you have any questions regarding the activities or the project in general, please contact me at (909) 307-0046.

Sincerely,

ECORP Consulting, Inc.

Kristen Wasz
Biology Manager / Senior Biologist

215 North Fifth Street
Redlands, California 92374
Phone: (909) 307-0046
Fax: (909) 307-0056

Rocklin
Redlands
San Diego
Santa Ana

April 19, 2017
(2014-003.023/002/2)

Sara Samaan
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: First Phase Memorandum for the Exotic Plant Removal (March/April 2017) in the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Samaan:

This memorandum serves as a documentation of the first phase exotic plant removal activities at the Big Tujunga Wash Mitigation Area (Mitigation Area) during March and April 2017. A pre-activity reconnaissance site visit and nesting bird survey was conducted on March 24, 2017 by ECORP Consulting, Inc. (ECORP) biologist Taylor Dee. This site visit was conducted to identify any sensitive biological resources (such as bird nests because the timing of the event occurred during the breeding bird season) and to identify areas with high densities of exotic plant species. Three areas were documented to contain active bird nests or birds exhibiting breeding behavior within the weeding areas during the pre-activity survey. A pair of Nuttall's woodpeckers (*Picoides nuttallii*) and a pair of western bluebirds (*Sialia mexicana*) were observed investigating tree-holes in a pair of adjacent sycamore (*Platanus racemosa*) trees near the Cottonwood Avenue entrance, within which these species had nested in previous years (North American Datum 1983 [NAD 83], Universal Transverse Mercator [UTM] 376088 E, 3792369 N). An adult red-tailed hawk was observed bringing nesting material to a partially built nest in a cottonwood (*Populus* sp.) tree north of Gibson Ranch (11S 376396 E, 3792495 N), and a female lesser goldfinch (*Spinus psaltria*) was observed nest building in a sugarbush (*Rhus ovata*) shrub near the portable restroom at the Tujunga Ponds (11S 376479 E, 3792852 N). These areas were marked on field maps and their locations were shared with the biological monitor(s) on site during exotic plant removal for the establishment of appropriate no-work buffers. Also during the pre-activity survey, large areas of exotic plant species were flagged and recorded using a global positioning system (GPS) unit. These areas included re-growth of shortpod mustard (*Hirschfeldia incana*), poison hemlock (*Conium maculatum*), crimson fountaingrass (*Pennisetum setaceum*), nonnative grasses, and various other weeds and exotic plant species.

The removal of the invasive exotic plant species was conducted by ECORP's landscape contractor (Natures Image, Inc.) from March 27 through 31, April 3 through 7, and April 10 through 13, 2017. Prior to any work, all members of the landscape contractor crew

received an onsite orientation and instruction on the Mitigation Area's regulations and concerns related to the area's sensitive species and habitat by the qualified biological monitor. ECORP biologists Carley Lancaster, Lauren Dorough, and Taylor Dee monitored all exotic plant removal activities. A pre-activity notification was emailed to Matt Chirdon, California Department of Fish and Wildlife, on March 16, 2017.

The removal effort began in the easternmost portion of Haines Canyon Wash on March 27, 2017 and continued west throughout the day. The removal efforts were focused on removing species such as brome grasses (*Bromus* sp.), shortpod mustard, wild oat (*Avena fatua*), giant reed (*Arundo donax*), castor bean (*Ricinus communis*), red-stemmed filaree (*Erodium cicutarium*), poison hemlock, wild lettuce (*Lactuca* sp.), white sweetclover (*Melilotus* albus), spiny sowthistle (*Sonchus asper*), london rocket (*Sisymbrium* irio), common barley (*Hordeum vulgare*), annual beardgrass (*Polypogon monspeliensis*), crimson fountain grass, and various species of thistle from the wash (Figure 1). Large stands of exotic species were cut down using machetes and then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand.

The removal effort continued on March 28 with work continuing in the far southeast corner of Haines Canyon Wash and moving west along the area north of Gibson Ranch and south of Haines Canyon Creek. Towards the end of the day the crew shifted focus to the southern perimeter of the Tujunga Ponds (Figure 2). The main species targeted were short-pod mustard, poison hemolock, red-stemmed filaree, crimson fountaingrass, white sweetclover, spiny sowthistle, English ivy (*Hedera helix*), and various nonnative grasses (annual beardgrass, brome grasses, wild oat, etc.). Large stands of exotic species were cut down using machetes and then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand.

The removal effort continued on March 29, with work continuing south of the Tujunga Ponds, working west toward the riparian woodland and along Haines Canyon Creek. Work continued west within the riparian woodland along Haines Canyon Creek and concluded west of the Cottonwood Avenue entrance. The main species of focus were short pod mustard, white sweetclover, spiny sowthistle, giant reed, poison hemlock, wild lettuce, castor bean, and various exotic grasses. Large stands of exotic species were cut down using machetes and then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand. A homeless encampment was discovered and LACDPW was immediately notified of the location via email (Figure 3). An individual was also observed walking towards the ponds with a fishing pole, and the biologist observed that the statement regarding the prohibition of fishing in the Mitigation Area had been scratched off the Mitigation Area informational sign near the Tujunga Ponds (Figure 4).

The removal activities continued on March 30 where the crews continued to work along both the north and south sides of Haines Canyon Creek, moving west towards the south Wheatland Avenue entrance. Large stands of exotic species were cut down using machetes and then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand. Along the creek the target species were short pod mustard, spiny sowthistle, poison hemlock, castor bean, giant reed, and brome grasses. Small patches of giant reed and umbrella sedge (*Cyperus involucratus*) were located along the creek and removed with machetes (Figure 5).

The crew continued to work along the north side of Haines Canyon Creek on March 31 from where they left off the day prior and moved toward the western edge of the Mitigation Area. During the latter portion of the day the crew shifted efforts towards the upland area north of Haines Canyon Creek. Targeted species included black mustard (*Brassica nigra*), giant reed, poison hemlock, brome grasses, crimson fountaingrass, and non-native thistle (Figure 6).

On April 3 the crew removed exotic plants in the riparian and upland areas south of Haines Canyon Creek, west of the south Wheatland Ave entrance and in the upland areas between Haines Canyon Creek and Big Tujunga Wash (Figure 7). Targeted species included short pod mustard, poison hemlock, non-native thistle, and non-native grasses. Large stands of exotic species were cut down using machetes and then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand. Several issues in the Mitigation Area were noted by the biologist on this day, including areas with substantial trash, a new fire pit, unoccupied homeless camp, and the burned down/melted portable restroom at the Cottonwood Avenue entrance; LACDPW was notified of these issues immediately.

Exotic plant removal activities continued on April 4, where the crew started work just west of the Tujunga Ponds working east to west along Big Tujunga Wash. Targeted species included short pod mustard, salt cedar (*Tamarisk* sp.), crimson fountaingrass, and giant reed. Several new stands of Spanish broom (*Spartium junceum*) were observed along Big Tujunga Wash and were removed with machetes and sprayed with herbicide (Figure 8). The crew continued along Big Tujunga Creek and within Big Tujunga Wash north of the creek on April 5, targeting primarily mustard, brome grasses, and Spanish broom. During the latter portion of the day the crew worked west to east along the upland areas south of the I-210 gate, targeting short pod mustard, giant reed, and castor bean, and a dense patch of perennial pepperweed (*Lepidium latifolium*) that had formed adjacent to the north Wheatland entrance after recent flooding (Figure 9).

On April 6 the crew spent the day in the upland habitat east and west of Cottonwood Avenue and west of Gibson Ranch. The crew used weed whackers and herbicide to remove large stands of mustard and brome grasses. The crew continued mowing grasses and non-natives and applying herbicide along Wentworth Avenue east and west of Cottonwood Avenue on April 7, east of Mary Bell Avenue and north of Gibson Ranch on April 10, and along Wentworth Avenue west of Cottonwood Avenue and around the Cottonwood Avenue paved road on April 11 (Figure 10).

On April 12 the crew used weed whackers, chain saws, and machetes to clear the overgrown grasses, remove overgrown vegetation and fallen trees and debris and poison oak along the trails in the riparian areas (Figure 11). Trail maintenance activities also included trimming overhanging branches that may obstruct equestrian users. On April 13, the final day of the exotic plant removal effort, the crew focused on clearing and maintaining the bases of planted young cottonwood trees using rakes and hoes and hand pulling grasses along the riparian area and finishing the clearing of mustards and non-native grasses along the Cottonwood Avenue entrance (Figure 12).

On March 27, 2017 a male red-winged blackbird (*Egelaius phoeniceus*) was observed acting territorial within the cattails (*Typha* sp.) along the western border of the Tujunga Ponds. The crew was instructed to quickly move out of the area to avoid encroaching on a potential nest. On March 28, an Anna's hummingbird (*Calypte anna*) nest with an incubating female was located in a hanging branch of a cottonwood tree near Haines Canyon Wash (11S 376536 E, 3792453 N). The nest was located more than 30 feet above the ground and the biologist determined that the crew's activity below would not be of disturbance to the nest. Later that day, an active bushtit (*Psaltriparus minimus*) nest with adult birds delivering nesting material was located by the biologist in a white alder (*Alnus rhombifolia*) tree along the trail south of the riparian area (11S 376454 E, 3792450 N), a 25-foot no work buffer was established around the nest. At the end of the day on March 28, an adult bushtit was observed carrying nesting material south of the cottonwood entrance (11S 376301 E, 3792541 N) but no nest was located nearby. The area was monitored closely by the biologist as the crew worked through.

On March 29, an additional bushtit nest was observed approximately 10 feet above the ground in a willow (*Salix* sp.) tree on the north side of Haines Canyon Creek (11S 376100 E, 3792647 N). A 50-foot no-work buffer was established around the nest. On March 31, a lesser nighthawk (*Chordeiles acutipennis*) was unintentionally flushed from the ground by the crew in a recently burned upland area north of Haines Canyon Creek. Upon inspection of the area, a ground nest with two eggs was observed (11 S 375599 E, 3792589 N). The crew was subsequently instructed to work at least 25 feet from the nest location.

On April 3, a pair of western bluebirds were observed nest-building in a tree-hole in a willow tree south of Haines Canyon Creek (11S 375156 E, 3792539 N); the crew was instructed to maintain a 50-foot no work buffer from the nest. On April 5, a Bewick's wren (*Thryomanes bewickii*) was observed delivering food items to a tree hole in a sycamore tree adjacent to the north Wheatland Avenue entrance (11S 375558 E, 3793028 N). The biologist established a 50-foot no work buffer around the tree.

On April 7, a pair of California thrashers (*Toxostoma redivivum*) were observed exhibiting breeding behavior (singing, acting territorial, etc.) near a coast live oak (*Quercus agrifolia*) tree near the Cottonwood Avenue entrance; later that day an unknown stick/cup nest was observed in a coast live oak tree approximately 6.5 feet off of the ground and was determined likely to be associated with the California thrashers. The crew was instructed to work a minimum of 25 feet from the area. On April 10, three active nests or nesting activity locations were identified by the biologist during the removal effort in the upland area east of Mary Bell Avenue and no-work buffers of 30 to 50 feet were established: an active bushtit nest was located in a Brazilian peppertree (*Schinus terebinthifolius*) (11S 376362 E, 3792318 N), a pair of California thrashers exhibiting nesting behavior were located a dead tree snag near a group of sycamore trees (11S 376351 E, 3792314 N), and a house finch (*Haemorhous mexicanus*) nest was located in an unidentified palm tree (11S 376365 E, 3792321 N). On April 11, two potential Bewick's wren nests were located in cottonwood trees west of Cottonwood Avenue along Wentworth Street (11S 376131 E, 3792052 N and 376242 E, 3792545 N); the crew was instructed to remain at least 25 feet from these potential nesting locations.

On April 12, three new nests were located in the Mitigation Area during exotic plant removal efforts. One bushtit nest was located approximately 15 feet off the ground in a cottonwood tree north of Gibson Ranch (11S 376560 E, 3792476 N), the crew did not encroach upon this nest and a no-work buffer was not established. A Cooper's hawk (*Accipiter cooperii*) nest was observed approximately 30 feet off of the ground in a dead white alder tree (11 S 376435 E, 3792662 N). An adult was observed in an incubating position in the nest and a second adult dove towards the biologist during observation; the crew was instructed to turn off their equipment and immediately move 200 feet outside of the area. Finally, a song sparrow (*Melospiza melodia*) nest was observed in a California blackberry (*Rubus* ursinus) thicket (11S 375410 E, 3792522 N). The crew was instructed to move through the area quickly and avoid spraying in the area close to the nest.

Two potential nesting locations were located on the final day of the exotic plant removal effort, April 13, 2017. A pair of California scrub jays (*Aphelocoma califonica*) were observed carrying food items into a woody area beneath a willow tree approximately 10 feet off the trail (11 S 376474 E, 3792675 N), and a pair of song sparrows were observed delivering food items into a blackberry shrub beneath a willow tree (11S 375386 E, 3792546 N). Both areas were considered as having active nests and the biologists established a 25-foot no work buffer around each area.

During the exotic plant removal and maintenance activities, the following protocols were conducted to minimize disturbance to sensitive habitat and species:

- Nesting bird surveys were conducted prior to the start of the exotic plant removal effort and again on a daily basis by the biological monitors in specific areas the crews planned to work in prior to the start of any removal activities.
- Only water-soluble herbicide was used in areas within a 15-foot distance from all water sources. Water sources include Haines Canyon Creek, Tujunga Ponds, and any standing or ponded water. Outside of the 15-foot distance, oil-based and water-based herbicides were used.
- In the limited cases when the landscape contractor's crew members and ECORP biologists entered Haines Canyon Creek, crossings were made only at established creek crossings to minimize disturbance to sensitive habitat and species.

The second exotic plant removal effort is tentatively scheduled for the summer of 2017.

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED: _____ DATE: April 19, 2017

Lauren Dorough
Associate Biologist

Figure 1. Crew applying herbicide to non-native grasses in Haines Canyon Wash

Figure 2. Crew applying herbicide south of Tujunga Ponds

Figure 3. Homeless encampment discovered on March 29, 2017

Figure 4. Vandalized Mitigation Area Sign ("No Fishing" Scratched Off)

Figure 5. Crew cutting down umbrella sedge in Haines Canyon Creek

Figure 6. Crimson fountaingrass after herbicide application

Figure 7. Crew spraying grasses and mustard in upland area north of Haines Canyon Creek.

Figure 8. Spanish broom in Big Tujunga Wash after machete cutting and herbicide application

Figure 9. Large patch of perennial pepperweed near north Wheatland entrance

Figure 10. Crew using weed whackers to remove non-native grasses around Cottonwood Avenue entrance

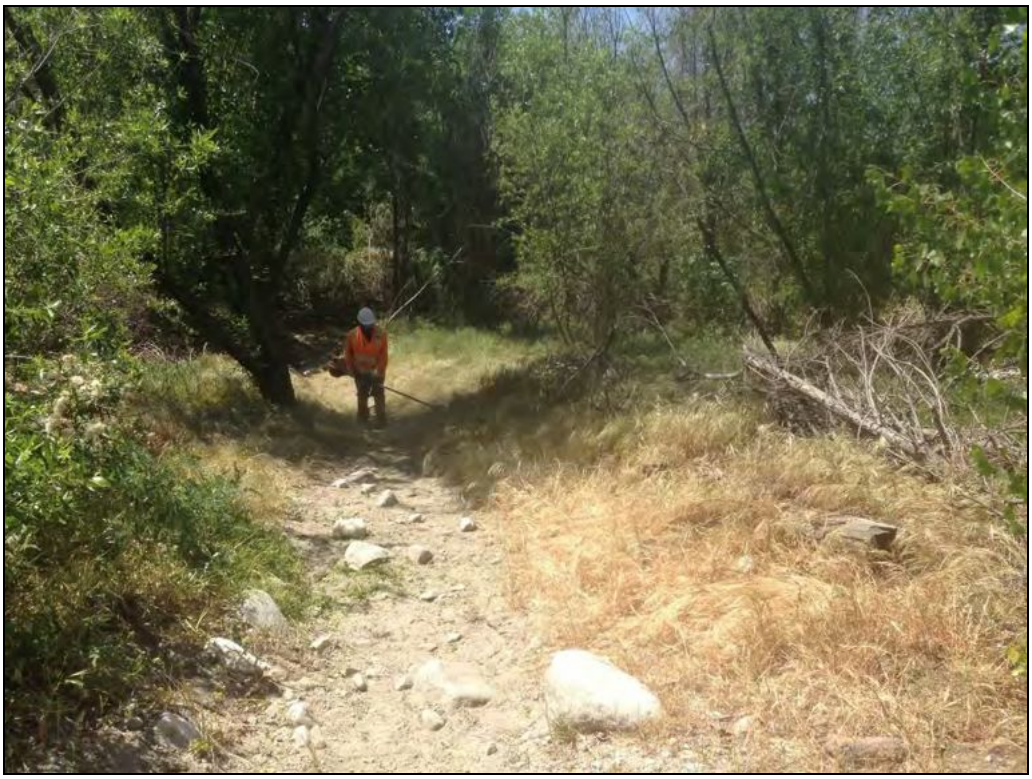


Figure 11. Crew using weed whackers to clear overgrown grasses from trail.

Figure 12. Crew using hand tools to clear the bases of young cottonwood trees.

July 18, 2017

Mr. Matthew Chirdon
California Department of Fish and Wildlife
P.O. Box 1797
Ojai, CA 93024

RE: Notification No. 1600-2008-0253-R5 – Big Tujunga Wash Mitigation Area Exotic Plant Removal and Maintenance Activities

Dear Mr. Chirdon:

The purpose of this letter is to provide notification that exotic plant removal activities will be conducted beginning July 26, 2017 at the Los Angeles County Department of Public Works' Big Tujunga Wash Mitigation Area near the City of Sunland in Los Angeles County. The activities will begin with the biologists conducting a pre-activity survey for nesting birds and to identify the areas where weeds, non-native grasses, and invasive exotic plants species will need to be removed. The biologists will also walk the trails to identify potential trail maintenance issues that will be addressed during scheduled trail maintenance with a tentative start date of July 28, 2017. The pre-activity survey will take place on July 21, 2017 and on July 26, 2017. The locations of all sensitive biological resources that are found will be recorded using a Global Positioning System (GPS) unit. If active bird nests are identified, then an appropriately-sized buffer will be established as a "no work" zone. Areas that will require maintenance will also be recorded using a GPS unit. A biological monitor will be on site during all site maintenance and exotic plant removal activities.

Please do not hesitate to contact me at (949) 261-5414 to discuss any questions or concerns.

Sincerely,

CHAMBERS GROUP, INC.

Paul Morrissey
Principal | Director of Biology

CHAMBERS GROUP

September 29, 2017

David Belicki
County of Los Angeles, Department of Public Works
Water Resources Division
900 South Fremont Avenue
Alhambra, California 91803-1331

RE: Memorandum for the July/August 2017 Riparian and Upland Exotic Plant Eradication Program throughout the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Mr. Belicki,

This memorandum summarizes the first exotic plant eradication effort conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (BTWMA) during treatment in July and August 2017. This memo shows the compliance and adherence to mitigation and avoidance measures set forth in the Master Mitigation Plan (MMP) and the California Department of Fish and Wildlife (CDFW) Agreement Regarding Proposed Stream or Lake Alteration No. 1600-2008-0253-R5 for the Big Tujunga Wash and Haines Canyon Creek, which are named tributaries to the Hansen Dam Flood Control Basin in Los Angeles County, California. Approved Chambers Group biologists participating in exotic plant removal efforts within the BTWMA worked to monitor that all mitigation and avoidance measures were followed by the work crews. Details of the first exotic plant eradication effort including, dates, names of participants, locations and descriptions of eradication activities performed, sensitive resources encountered, and mitigation actions taken are discussed below.

PRE-ACTIVITY SITE ASSESSMENT

A pre-activity site assessment was conducted on July 21, 2017 by Chambers Group biologists Paul Morrissey, Erik Olmos, Jackelyn Mayfield, and Director of Restoration Construction Steven Reinoehl, to identify exotic plant and wildlife locations and densities throughout the BTWMA, identify any active bird nests or nesting behaviors, assess the condition of authorized trails, and to determine the most effective methods for the treatment of exotic plant and wildlife species. The site assessment team reviewed all designated high priority areas according to the 2016 BTWMA Annual Report, including Big Tujunga Wash, Haines Canyon Creek, the Tujunga Ponds, and all authorized trails.

A number of exotic plants were observed in the high priority area around Haines Canyon Creek. The most prevalent exotic plant species observed were castor bean (*Ricinus communis*), tree of heaven (*Ailanthus altissima*), Virginia creeper (*Parthenocissus quinquefolia*), greater periwinkle (*Vinca major*), perennial pepper weed (*Lepidium latifolium*), various mustard species *(Hirschfeldia incana*, *Brassica* spp., *Sisymbrium* spp.), and non-native grass species. During the site assessment it was observed that a majority of the annual exotic grasses and forbs, including many of the mustard species, had already set seed. As a result, perennial exotic plants would be the main focus for herbicide treatments during the removal effort. Areas with high densities of exotic plants were mapped with Collector for ArcGIS, a geographic information systems (GIS) application. No active bird nests were located during the site assessment. An email notification was sent to Sara Samaan with the Los Angeles County Department of Public Works on July 22, 2017 detailing the results of the pre-activity site assessment.

METHODS

All herbicides used during exotic plant eradication efforts were California-approved aquatic herbicides approved for use within 15 feet of any water source. Exotic plants measuring more than 5 feet in height, were treated with the cut-stump method using an herbicide mixture of 50 percent Polaris (an imazapyr-based herbicide), 2 percent Liberate (a penetrant, deposition, and drift control agent), and Turf Trax (a blue indicator dye). Exotic plants measuring less than 5 feet in height were treated with a foliar herbicide application when possible or were hand-pulled near native

vegetation where herbicides had the potential to damage nearby native vegetation. The foliar herbicide mixture contained 2 percent Roundup Custom (a glyphosate-based herbicide), 1 percent Polaris, 1 percent Liberate, and Turf Trax.

RESULTS

Treatment of the exotic plant species was performed on July 27 and 28, July 31, and August 1. The crew averaged six members per day during exotic plant eradication efforts. Prior to the start of work each day, the crew received onsite orientation and instruction regarding safety, permit and mitigation regulations, and sensitive species that may be encountered in work areas. The meetings were conducted by restoration specialist, Steven Reinoehl and onsite biological monitors, Jackelyn Mayfield, Erik Olmos, Heather Clayton, and Jeremy Smith. Biological monitors were present during all exotic plant treatment activities.

The exotic plant removal effort began on July 27 in the high priority areas just east of Cottonwood Avenue and continued east and north throughout the riparian area. Castor bean was estimated to occupy between 5 and 20 percent cover in this area. Large stands of castor bean were cut down and the stumps were treated with herbicide. The cut castor bean was then stacked in clearings where it had been removed. Viable seed heads were cut from the castor bean plants, bagged, and hauled off site for disposal. Other exotic plant species that were encountered and treated included, Virginia creeper, greater periwinkle, barnyard grass (*Echinochloa crus-galli*), mustard species, tree of heaven, Himalayan blackberry (*Rubus armeniacus*), annual beard grass (*Polypogon monspeliensis*), fountain grass (*Pennisetum setaceum*), sweet alyssum (*Lobularia maritima*), milk thistle (*Silybum marianum*), and tree tobacco (*Nicotiana glauca*). Annual grasses and forbs including, red brome (*Bromus madritensis* subsp. *rubens*), ripgut grass (*Bromus diandrus*), wild oat (*Avena fatua*), tocalote (*Centaurea melitensis*), and various thistle (*Cirsium* sp.) and mustard species, were observed but not treated as they had already dropped their seed.

The following day, July 28, 2017, the crews continued to work east from Cottonwood Avenue covering most of the high priority area that extends toward the 210 Freeway and Tujunga Ponds. Castor bean remained the primary focus of removal efforts, with large stands of mature plants being cut down and stacked. Additional exotic plant species encountered and treated included, tomato (*Lycopersicon esculentum*), squash (*Cucurbita* sp.), pumpkin (*Cucurbita pepo*), spotted spurge (*Euphorbia maculata*), poison hemlock (*Conium maculatum*), and scarlet pimpernel (*Lysimachia arvensis*). These species were most often treated with foliar applications of herbicide; however, some were hand-pulled in areas where herbicides had the potential to damage nearby native vegetation.

After the weekend on July 31, 2017, the crews began working west from Cottonwood Avenue in the high priority area along Haines Canyon Creek. The crews worked south of the creek and continued to cut down and treat castor bean. Five small stands of giant reed (*Arundo donax*), were cut down and treated as well. A backpack sprayer containing the foliar herbicide mix was used to treat two of the giant reed stands. Both stands measured less than five feet in height and were located in the northern portion of the Tujunga Wash, which was completely dry. The three other giant reed stands were taller; one stand was approximately 10 feet in height and the other two other stands were approximately 20 feet in height. The cut-stump method was used to treat the taller stands and herbicide was applied to the freshly cut stumps with a spray bottle. These taller stands were located within the riparian area on the south side of the BTWMA more than 100 feet from a water source. All of the giant reed stands appeared to be re-sprouts from previously treated stands and were not new infestations. Additional exotic plants that were treated with herbicides included, umbrella-plant (*Cyperus involucratus*), white sweetclover (*Melilotus albus*), common plantain (*Plantago major*), Bermuda grass (*Cynodon dactylon*), cheeseweed (*Malva parviflora*), horehound (*Marrubium vulgare*), and marvel of Peru (*Mirabilis jalapa*). Rain had been forecasted for the day, however, this rain event did not produce a measurable amount of rain with only light rain falling for a couple of minutes during the morning.

The final day of the effort took place the following day on August 1, 2017. The crews continued working in the high priority area along Haines Canyon Creek heading west from Cottonwood Avenue toward the western boundary of the BTWMA. Exotic plants were also treated in two high priority areas west of Cottonwood Avenue in the Tujunga Wash.

Exotic plant species treated included, several small stands of giant reed, fountain grass, white sweetclover, palm tree saplings, mustard species, thistle species, perennial pepper weed, tree tobacco, horehound, Indian plantain, flax-leaved horseweed (*Erigeron bonariensis*), and edible fig (*Ficus carica*) trees.

SUMMARY

All exotic plant eradication activities were monitored to ensure regulations and requirements were closely followed. Biological monitors reviewed work areas prior to the crews starting work each day and then traveled with each crew to ensure that nesting birds and native plant and wildlife species were not disturbed. No birds showed signs of stress during the effort. Only California-approved aquatic herbicides were used within 15 feet of any water source. Crew members used established creek crossings to minimize disturbance to sensitive stream habitat and species residing in the creek. No active bird nests or homeless encampments were encountered in or near the work areas during the effort. The next exotic plant removal effort is planned to occur in mid fall of 2017.

Please feel free to contact me at (949) 261-5414 extension 7242, or at sreinoehl@chambersgroupinc.com, if you have any questions or are in need of further information.

Sincerely,

CHAMBERS GROUP, INC.

Steven Reinoehl
Director of Restoration Construction

SITE PHOTOS

Photo 1: Virginia creeper

Photo 2: Castor bean and tree of heaven

Photo 3: Perennial pepper weed infestation with late season mustard

Photo 4: Greater periwinkle infestation

Photo 5: Bagging castor bean seed heads

Photo 6: Cut stump treatment on a stand of giant reed

November 29, 2017

David Belicki
County of Los Angeles, Department of Public Works
Water Resources Division
900 South Fremont Avenue
Alhambra, California 91803-1331

RE: Memorandum for the November 2017 Riparian and Upland Exotic Plant Eradication Program throughout the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Mr. Belicki,

This memorandum summarizes the second exotic plant eradication effort conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (BTWMA) during treatment in November 2017. This memo shows the compliance and adherence to mitigation and avoidance measures set forth in the Master Mitigation Plan (MMP) and the California Department of Fish and Wildlife (CDFW) Agreement Regarding Proposed Stream or Lake Alteration No. 1600-2008-0253-R5 for the Big Tujunga Wash and Haines Canyon Creek, which are named tributaries to the Hansen Dam Flood Control Basin in Los Angeles County, California. Approved Chambers Group biologists participating in exotic plant removal efforts within the BTWMA worked to monitor that all mitigation and avoidance measures were followed by the work crews. Details of the second exotic plant eradication effort including, dates, names of participants, locations and descriptions of eradication activities performed, sensitive resources encountered, and mitigation actions taken are discussed below.

METHODS

The exotic plant eradication team focused on designated high priority areas according to the 2016 BTWMA Annual Report, including Big Tujunga Wash, Haines Canyon Creek, the Tujunga Ponds and all authorized trails as well as areas that had been treated during the previous eradication effort. High-density areas of exotic plants that were previously mapped with Collector for ArcGIS (Collector), a geographic information systems (GIS) application, were inspected and herbicide treatments were applied to new or re-sprouting exotic plants.

All herbicides used during exotic plant eradication efforts were California-approved aquatic herbicides approved for use within 15 feet of any water source. Exotic plants measuring more than 5 feet in height, were treated with the cut-stump method using an herbicide mixture of 50 percent Polaris (an imazapyr-based herbicide), 2 percent Liberate (a penetrant, deposition, and drift control agent), and Turf Trax (a blue indicator dye). Exotic plants measuring less than 5 feet in height were treated with a foliar herbicide application when possible or were hand-pulled near native vegetation where herbicides had the potential to damage nearby native vegetation. The foliar herbicide mixture contained 2 percent Roundup Custom (a glyphosate-based herbicide), 1 percent Polaris, 1 percent Liberate, and Turf Trax.

RESULTS

Treatment of the exotic plant species was performed on November 21, November 22, and November 27. The crew averaged three members per day during exotic plant eradication efforts. Prior to the start of work each day, the crew received onsite orientation and instruction regarding safety, permit and mitigation regulations, and sensitive species that may be encountered in work areas. The meetings were conducted by Director of Restoration Construction Steven Reinoehl. Pre-activity sweeps for sensitive plant and wildlife species were conducted onsite prior to exotic plant removal activities by biologist Jeremy smith.

The exotic plant removal effort began on November 21 in the high priority areas just east of Cottonwood Avenue and continued east and south throughout the riparian area to the boundary with the 210 Freeway. Castor bean (*Ricinus*

communis) was estimated to occupy less than 1 percent cover in this area. Large stands of castor bean were treated with the cut-stump method. The cut castor bean was then stacked in clearings where it had been removed. Viable seed heads were cut from the castor bean plants, bagged, and hauled off site for disposal. Other exotic plant species that were encountered and treated included, tree of heaven (*Ailanthus altissima*), Virginia creeper (*Parthenocissus quinquefolia*), greater periwinkle (*Vinca major*), various mustard species (*Hirschfeldia incana*, *Brassica* spp., *Sisymbrium* spp.), white sweet clover (*Melilotus albus*), tree tobacco (*Nicotiana glauca*), pampas grass (*Cortaderia selloana*), poison hemlock (*Conium maculatum*), barnyard grass (*Echinochloa crus-galli*), creeping bent grass (*Agrostis stolonifera*), Himalayan blackberry (*Rubus armeniacus*), annual beard grass (*Polypogon monspeliensis*), fountain grass (*Pennisetum setaceum*), sweet alyssum (*Lobularia maritima*), and milk thistle (*Silybum marianum*).

The following day, November 22, 2017, the crew continued working east for the first half of the day, covering most of the high priority area that extends from Cottonwood Avenue toward the 210 Freeway and the Tujunga Ponds. The crew spent the second half of the day working west of Cottonwood Avenue along Haines Canyon Creek and along authorized trails at the west end of the site. Castor bean remained the primary focus of removal efforts, and the few-remaining, large stands of mature plants were cut down and stacked. Additional exotic plants that were treated with herbicides included, ornamental fig tree *(Ficus carica)*, prickly lettuce (*Lactuca serriola*), common sow thistle (*Sonchus oleraceus*), spotted spurge (*Euphorbia maculate*), Mexican fan palm (*Washingonia robusta*), Bermuda grass (*Cynodon dactylon*), giant reed (*Arundo donax*), and scarlet pimpernel (*Anagallis arvensis*). These species were most often treated with foliar applications of herbicide; however, some were hand-pulled in areas where herbicides had the potential to damage nearby native vegetation.

The crew continued the eradication effort one final day after the Thanksgiving weekend on November 27, 2017.Work continued west from Cottonwood Avenue in the high priority area along Haines Canyon Creek. The crew stayed south of the creek and continued to cut down and treat exotic plants. The previously treated five stands of giant reed, were inspected and showed no signs of re-sprouting. Additional exotic plants that were treated with herbicide included, umbrella plant (*Cyperus involucratus*), artichoke thistle (*Cynara cardunculus*), common plantain (*Plantago major*), cheeseweed (*Malva parviflora*), horehound (*Marrubium vulgare*), and marvel of Peru (*Mirabilis jalapa*).

SUMMARY

All exotic plant eradication activities were supervised by the restoration specialist, Steven Reinoehl, to ensure regulations and requirements were closely followed. Steven inspected work areas prior to the start of each workday and then traveled with the crew to ensure that native species were not disturbed. No birds showed signs of stress during the effort. Only California-approved aquatic herbicides were used within 15 feet of any water source. Crew members used established creek crossings to minimize disturbance to sensitive stream habitat and species residing in the creek. No active bird nests or homeless encampments were encountered in or near the work areas during the effort. The next exotic plant removal effort is projected for mid-spring of 2018.

Please feel free to contact me at (949) 261-5414 extension 7242, or at sreinoehl@chambersgroupinc.com, if you have any questions or are in need of further information.

Sincerely,

CHAMBERS GROUP, INC.

Steven Reinoehl
Director of Restoration Construction

SITE PHOTOS

Photo 1: Giant reed was treated with cut-stump method within the riparian areas along Haines Canyon Creek.

Photo 2: Exotic plants were treated along the trails. Emergent castor bean is shown along the trailside in this photo.

Photo 3: Exotic plants were treated California-approved aquatic herbicides along the Tujunga Ponds shoreline.

Photo 4: Treating hard to reach castor bean with the cut-stump method.

Photo 5: Castor bean was removed from the Tujunga Wash.

APPENDIX F – 2017 WATER QUALITY MONITORING REPORT

2017 WATER QUALITY MONITORING REPORT FOR THE BIG TUJUNGA WASH MITIGATION AREA

Prepared for:

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
900 Fremont Avenue, 2nd Floor Annex
Alhambra, CA 91802

Prepared by:

CHAMBERS GROUP, INC.
5 Hutton Centre Drive, Suite 750
Santa Ana, California 92707
(949) 261-5414

May 2018

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

Distribution

Water quality monitoring reports are distributed to the following agencies:

County of Los Angeles Department of Public Works
Mr. Yi Sak Kim
Water Resources Division
900 South Fremont Avenue
Alhambra, California 91803-1331

California Department of Fish and Wildlife
Mr. Steve Gibson
Senior Environmental Scientist (Specialist)
CA Dept. of Fish and Wildlife
4665 Lampson Ave. suite C
Los Alamitos, CA 90720

Regional Water Quality Control Board, Los Angeles Region (4)
Ms. Valerie Carrillo Zara
320 West 4th Street, Suite 200 Los Angeles, California 90013

U.S. Fish and Wildlife Service
Ms. Christine Medak
2117 Salk Avenue, Suite 250
Carlsbad, California 92008

U.S. Army Corps of Engineers
Mr. Aaron Allen
P.O. Box 532711
Los Angeles, California 90053-2325

Interested Party
Mr. William Eick
2604 Foothill Boulevard, Suite C La Crescenta, California 91214

SECTION 1.0 – EXECUTIVE SUMMARY

As part of a water quality monitoring program on-going since 2000, sampling of the Big Tujunga Ponds and Haines Canyon Creek was conducted on December 21, 2017. The results of the water quality sample are summarized below:

- Dissolved oxygen levels were below the recommended minimum (5.0 mg/L) at all three stations.
- Observed pH levels were within Basin Plan recommendations for aquatic life at one station (Haines Canyon Creek leaving the site). Observed pH levels were below the Basin Plan recommendations at the remaining two sites.
- Nutrient levels were low with one exception; the total phosphorus level was slightly above EPA's recommendations for streams in the outflow from the Tujunga Ponds and slightly below the EPA's recommendations at the remaining two sites.
- No pesticides or residual chlorine were observed.
- Turbidity levels were low.
- Bacteria levels were above the freshwater bacteria standard at two stations (in the ponds and at the outflow from the ponds). However, the standards are for *E.coli* and the water quality results are for fecal coliform and total coliform.

SECTION 2.0 – BACKGROUND

The County of Los Angeles Department of Public Works (LACDPW) purchased an approximately 210-acre parcel in Big Tujunga Wash as a mitigation area for Los Angeles County Flood Control District (LACFCD) projects throughout Los Angeles County. In coordination with local agencies, the LACDPW defined a number of measures to improve habitat quality at the site. A Final Master Mitigation Plan (FMMP) was prepared to guide the implementation of these enhancements. The FMMP also includes a monitoring program to gather data on conditions at the site during implementation of the improvements. The FMMP was prepared and is currently being implemented by Chambers Group, Inc. (Chambers Group). Water quality monitoring was conducted on a quarterly basis from the fourth quarter of 2000 through the fourth quarter of 2005. In 2006, monitoring was conducted on a semi-annual basis. In 2007 through 2009 monitoring was conducted annually, in December. In 2010, monitoring was conducted in November; pesticide sampling was conducted in early December. In 2012, monitoring was conducted in February and November. Since that time, monitoring has been conducted once per year, in October or November. This report presents the results of the water quality sampling for December 2017.

The project site is located just east of Hansen Dam in the Shadow Hills area of the City of Los Angeles. Both Big Tujunga Wash, an intermittent stream, and Haines Canyon Creek, a perennial stream, traverse the project site in an east-to-west direction. The two Tujunga Ponds are located outside of the site boundary, at the far eastern side of the site.

2.1 PROJECT SITE ACTIVITIES

A timeline of project-related activities including water quality sampling events is presented in Table 1.

Table 1: Major Activities to Date at the Big Tujunga Wash Mitigation Area

Date	Activity
4/2000	Baseline water quality sampling
11/2000 to 11/2001	Arundo, tamarisk, and pepper tree removal Chemical (Rodeo®) application
12/2000 to 11/2002	Water hyacinth removal
12/2000	Fish Sampling at Haines Canyon Creek
12/2000	Water quality sampling
1/2001 to present	Exotic aquatic wildlife (non-native fish, crayfish, bullfrog, and turtle) removal – conducted quarterly
2/2001	Partial riparian planting
3/2001	Selective clearing at Canyon Trails Golf Club
3/2001	Water quality sampling
6/2001	Water quality sampling
7/2001	Fish Sampling at Haines Canyon Creek
9/2001	Water quality sampling
10/2001 to 11/2001	Fish Sampling at Haines Canyon Creek
12/2001	Water quality sampling
1/2002	Final riparian planting
2/2002	Upland replacement planting

Date	Activity
3/2002	Water quality sampling
6/2002	Water quality sampling
7/2002	Fish Sampling at Haines Canyon Creek
9/2002	Water quality sampling
10/2002	Grading at Canyon Trails Golf Club begins
11/2002	Fish Sampling at Haines Canyon Creek
12/2002	Water quality sampling
3/2003	Water quality sampling
4/2003	Meeting with Canyon Trails Golf Club to discuss future use of herbicides and fertilizers
6/2003	Water quality sampling
8/2003	Fish Sampling at Haines Canyon Creek
9/2003	Water quality sampling
Fall 2003	Completion of the golf course construction
12/2003	Water quality sampling
1/2004	Fish Sampling at Haines Canyon Creek
4/2004	Water quality sampling
4/2004	Rock Dam Removal Day
6/2004	Angeles National Golf Club (previously named Canyon Trails) opens to the public
7/2004	Water quality sampling
10/2004	Water quality sampling
12/2004	Water quality sampling
4/2005	Water quality sampling
6/2005	Water quality sampling
10/2005	Water quality sampling
12/2005	Water quality sampling
7/2006	Water quality sampling
12/2006	Water quality sampling
12/2007	Water quality sampling
12/2008	Water quality sampling
8/2009 to 10/2009	The Station Fire was the largest fire in the recorded history of Angeles National Forest and the 10th largest fire in California since 1933. The fire burned a total of 160,577 acres. The fire was fully contained on October 16, 2009. (Source: Angeles National Forest Incident Update available - http://www.inciweb.org/incident/1856/)
12/2009	Water quality sampling
11/2010	Water quality sampling
12/2010	Water quality sampling for pesticides
9/2011 to 1/2012	Water lettuce removal
2/2012	Water quality sampling
11/2012	Water quality sampling
10/2013	Water quality sampling
10/2014	Water quality sampling

Date	Activity
11/2015	Water quality sampling
11/07/16	Water quality sampling
12/21/17	Water quality sampling

2.2 UPSTREAM LAND USES

The monitoring program has been designed to specifically address inputs to the site from upstream land uses such as the Angeles National Golf Club (previously named Canyon Trails Golf Club). The golf course has been operating since June 2004. Potential impacts to aquatic species from run-on to the site that contains excessive nutrients or pesticides are of primary concern. Pesticides potentially used at the Angeles National Golf Course include herbicides, insecticides, fungicides, and grass growth inhibitors (Table 2).

Actual use of pesticides is based on golf course maintenance needs. Based on the pesticide use information from the Golf Club, analysis of water samples for glyphosate, chlorpyrifos, other organophosphorous pesticides, and organochlorine pesticides is included in the sampling program for the Big Tujunga Wash Mitigation Area.

Table 2: Pesticides Potentially Used at the Angeles National Golf Club

Manufacturer and Product Name	Active Ingredient	Use
Syngenta Primo Maxx	trinexapac-ethyl	grass growth inhibitor used for turf management
Syngenta Reward	diquat dibromide	landscape and aquatic herbicide
Syngenta Barricade	prodiamine	pre-emergent herbicide
Bayer Prostar 70 WP	flutolanil	fungicide
Monsanto QuikPRO	ammonium salt of glyphosphate and diquat dibromide	herbicide
Monsanto Rodeo® Verdicon Kleenup® Pro Lesco Prosecutor	glyphosate	emerged aquatic weed and brush herbicide
Valent ProGibb T&O	gibberellic acid	plant growth regulator
BASF Insignia 20 WG	pyraclostrobin	fungicide
BASF Stalker	Isopropylamine salt of Imazapyr	herbicide
Dow Agrosciences Surflan A.S.	oryzalin	herbicide
Dow Agrosciences Dursban Pro	chlorpyrifos	insecticide
Mycogen Scythe	pelargonic acid	herbicide

Source: J. Reidinger, Angeles National Golf Club, pers. comm. to M. Chimienti, LACDPW, March 18, 2004 and Angeles National Golf Club Monthly Summary Pesticide Use Reports (December 2004, February 2005 and April 2007).

SECTION 3.0 – MATERIALS AND METHODS

3.1 SAMPLING STATIONS

Four sampling locations have been identified for the monitoring program for the Big Tujunga Wash Mitigation Area (Figure 1). Table 3 summarizes sampling locations and the conditions observed on December 21, 2017.

Legend

Mitigation Area **Water Quality Sampling Station**

- 1 - Inflow to Tujunga Ponds
- 2 - Outflow from Tujunga Ponds
- 3 - Big Tujunga Wash
- 4 - Haines Canyon Creek, just before exit from site

Figure 1
Water Quality
Sampling Stations

N

0 250 500 1,000 Feet

Name: 21021 WQ Figure 1.Mxd
Print Date: 5/7/2018, Author: msimmons

CHAMBERS GROUP

Table 3: Water Quality Sampling Locations and Conditions for December 2017

Date	December 21, 2017		
Air Temperature	Approximately 55 degrees Fahrenheit during sample collection period		
Skies	Sunny, clear		
Observations	Water clear at all locations; extensive *Lemna* cover on surface of ponds		
Sampling Locations	**Latitude**	**Longitude**	**Time of sample**
Haines Canyon Creek	34 16’ 0.092’’ N	118 21’ 25.716’ ’W	1145
Haines Canyon Creek, inflow to Tujunga Ponds	34 16’ 6.040’’ N	118 20’ 22.616’’ W	1018
Haines Canyon Creek, outflow from Tujunga Ponds	34 16’ 8.263’’ N	118 20’ 30.824’’ W	1040
Big Tujunga Wash	34 16’ 11.615’’ N	118 21’ 4.519’’ W	station dry

3.2 SAMPLING PARAMETERS

Water Quality. Table 4 summarizes the sampling parameters included in the water quality monitoring program. The following meter was used in the field:

- Dissolved oxygen, pH and temperature – YSI 556-01 Multi Probe System

Analytical results were performed at Enthalpy Analytical, LLC, located in Orange, California and Test America, located in Savanah, Georgia. Samples were taken at mid-depth, along a transect perpendicular to the stream channel alignment. Quality assurance/quality control (QA/QC) procedures in each laboratory followed the methods described in their respective Quality Assurance Manuals.

Table 4: Water Quality Sampling Parameters

Parameter	Analysis Location	Analytical Method
total Kjeldahl nitrogen (TKN)	laboratory	EPA 351.2
nitrite - nitrogen (NO_2-N)	laboratory	EPA 300.0 by IC
nitrate-nitrogen (NO_3-N)	laboratory	EPA 300.0 by IC
ammonia (NH_4)	laboratory	EPA 350.1
orthophosphate - P	laboratory	Standard Methods 4500PE/EPA 365.1
total phosphorus - P	laboratory	Standard Methods 4500PE/EPA 365.1
total coliform	laboratory	Standard Methods 9221B
fecal coliform	laboratory	Standard Methods 9221C
turbidity	field	EPA 180.1
glyphosate (Roundup/Rodeo)[1]	laboratory	EPA 547
chlorpyrifos and organophosphorous pesticides[2]	laboratory	EPA 8141A
organochlorine pesticides[3]	laboratory	EPA 608
dissolved oxygen	field	Standard Methods 4500-O G
total residual chlorine	laboratory	Standard Methods 4500-Cl
temperature	field	Standard Methods 2550
pH	field	Standard Methods 4500-H+

Sources for analytical methods:
EPA. Method and Guidance for Analysis of Water.
American Public Health Association, American Waterworks Association, and Water Environment Federation. 1998. Standard Methods for the Examination of Water and Wastewater, 20th Edition. Washington D.C.

1 First analysis completed in the first quarter of 2004

2 First analysis completed in the fourth quarter of 2004. This analytical method tests for the following chemicals: azinphos- methyl, bolster, coumaphos, diazinon, chlorpyrifos, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stirophos, parathion-methyl, tokuthion, and trichloronate.

3 First analysis completed in December 2007. EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, toxaphene and PCB.

SECTION 4.0 – RESULTS

4.1 BASELINE WATER QUALITY

Sampling and analysis conducted by LACDPW prior to implementation of the FMMP is considered the baseline for water quality conditions at the site. The results of baseline analyses conducted in April 2000 are presented in Table 5. Higher bacteria and turbidity observed in the 4/18/2000 samples are attributable to a rain event. Phosphorus levels were also high in the 4/18/2000 samples, due to release from sediments.

4.2 DECEMBER 2017 RESULTS

Water Quality. Results of analyses conducted by Enthalpy Analytical and Test America are appended to this report (Appendix A) and summarized in Table 6.

Table 5: Baseline Water Quality (2000)

Parameter	Units	Date	Haines Canyon Creek, Inflow to Tujunga Ponds	Haines Canyon Creek, Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Total coliform	MPN/ 100 ml	4/12/00	3,000	5,000	170	1,700
		4/18/00	2,200	170,000	2,400	70,000
Fecal coliform	MPN/ 100 ml	4/12/00	500	300	40	80
		4/18/00	500	30,000	2,400	50,000
Ammonia-N	mg/L	4/12/00	0	0	0	0
		4/18/00	0	0	0	0
Nitrate-N	mg/L	4/12/00	8.38	5.19	0	3.73
		4/18/00	8.2	3.91	0.253	0.438
Nitrite-N	mg/L	4/12/00	0.061	0	0	0
		4/18/00	0.055	0	0	0
Kjeldahl-N	mg/L	4/12/00	0	0.1062	0.163	0
		4/18/00	0	0.848	0.42	0.428
Dissolved phosphorus	mg/L	4/12/00	0.078	0.056	0	0.063
		4/18/00	0.089	0.148	0.111	0.163
Total phosphorus	mg/L	4/12/00	0.086	0.062	0	0.066
		4/18/00	0.113	0.153	0.134	0.211
pH	std units	4/12/00	7.78	7.68	7.96	7.91
		4/18/00	7.18	7.47	7.45	7.06
Turbidity	NTU	4/12/00	1.83	0.38	1.75	0.6
		4/18/00	4.24	323	4070	737

Table 6: Summary of Water Quality Results – December 21, 2017

Parameter	Units	Haines Canyon Creek, Inflow to Tujunga Ponds	Haines Canyon Creek, Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Dissolved Oxygen	mg/L	4.9	4.7	NA	4.5
pH	std units	5.79	6.19	NA	7.6
Total residual chlorine	mg/L	ND	ND	NA	ND
Ammonia-Nitrogen	mg/L	ND	ND	NA	ND
Kjeldahl Nitrogen	mg/L	0.90	0.93	NA	0.48
Nitrite-Nitrogen	mg/L	ND	ND	NA	ND
Nitrate-Nitrogen	mg/L	8.18	6.18	NA	4.73
Orthophosphate-P	mg/L	ND	ND	NA	ND
Total phosphorus-P	mg/L	0.04	0.12	NA	0.04
Glyphosate	µg/L	ND	ND	NA	ND
Chloropyrifos*	µg/L	ND	ND	NA	ND
Pesticides (EPA 608)**	µg/L	ND	ND	NA	ND
Turbidity	NTU	2.47	2.09	NA	0.38
Fecal Coliform Bacteria	(MPN/100 ml)	300	38	NA	9
Total Coliform Bacteria	(MPN/100 ml)	>1600	>1600	NA	670

NA – data not available; station dry on the sample date
NTU – nephelometric turbidity units MPN – most probable number ND – non-detect
* The analytical method used for chloropyrifos (EPA 8141A) also tests for the following chemicals: azinphos-methyl, bolster, coumaphos, diazinon, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stirophos, parathion-methyl, tokuthion, and trichloronate.
** EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, and toxaphene

4.3 COMPARISON OF RESULTS WITH AQUATIC LIFE CRITERIA

Tables 7 through 12 present objectives established by the United States Environmental Protection Agency (USEPA) and the Los Angeles Regional Water Quality Control Board (Regional Board) for protection of beneficial uses including freshwater aquatic life.

Table 7: National and Local Recommended Water Quality Criteria - Freshwaters

Parameter	Basin Plan Objectives[a]	EPA Criteria		
		CMC	CCC	Human Health
Temperature (^{o}C)	b	See Table 13	See Table 13	--
Dissolved oxygen (mg/L)	>7.0 mean >5.0 min	5.0[c] (warmwater, early life stages, 1-day minimum)	6.0[c] (warmwater, early life stages, 7-day mean)	--
pH	6.5 - 8.5	--	6.5-9.0[d,e]	5.0-9.0[d,e]
Total residual chlorine (mg/L)	0.1	0.019[d,e]	0.011[d,e]	4.0 (maximum residual disinfectant level goal)
Fecal coliform (MPN/100 ml)	126[f] (geometric mean for *E. coli*) (water contact recreation)	--	--	Swimming stds: 33[g] (geometric mean for enterococci) 126[g] (geometric mean for *E. coli*)
Ammonia-nitrogen (mg/L)	See Tables 11 and 12	See Table 9	See Table 10	--
Nitrite-nitrogen (mg/L)	1	--	--	1 (primary drinking water std.)
Nitrate-nitrogen (mg/L)	10	--	--	10 (primary drinking water std.)
Total phosphorus (mg/L)	--	<0.05 – 0.1[e] (recommendation for streams, no criterion)		--
Turbidity (NTU)	h	i	i	5 (secondary drinking water standard) 0.5 – 1.0 (std. for systems that filter)

Notes:

-- No criterion

CMC Criteria Maximum Concentration or acute criterion

CCC Criteria Continuous Concentration or chronic criterion

a Source: California Regional Water Quality Control Board, Los Angeles Region. 1994. Water Quality Control Plan (Basin Plan). As amended.

b Narrative criterion: "The natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses."

c Source: USEPA. 1986. Ambient Water Quality Criteria for Dissolved Oxygen. EPA 440-5-86-003. Washington, D.C. d Source: USEPA. 1999. National Recommended Water Quality Criteria – Correction. EPA 822-Z-99-001. Washington, D.C.

e Source: USEPA. 1986. Quality Criteria for Water. EPA 440/5-86-001. Washington, D.C.

f Single sample limits – E. coli density shall not exceed 235/100 ml.
g Source: USEPA. 1986. Ambient Water Quality Criteria for Bacteria – 1986. EPA 440-5-84-002. Washington, D.C.
h Narrative criterion: "Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses."
i Narrative criterion for freshwater fish and other aquatic life: "Settleable and suspended solids should not reduce the depth of the compensation point for photosynthetic activity by more than 10 percent from the seasonally established norm for aquatic life."

Table 8: Temperature and pH-Dependent Values of the CMC (Acute Criterion) Mussels Absent

CMC: Mussels Absent, mg N/L										
pH	Temperature, C									
	0	14	16	18	20	22	24	26	28	30
6.5	58.0	58.0	58.0	58.0	43.7	37.0	31.4	26.6	22.5	19.1
6.6	55.7	55.7	55.7	55.7	41.9	35.5	30.1	25.5	21.6	18.3
6.7	53.0	53.0	53.0	53.0	39.9	33.8	28.6	24.3	20.6	17.4
6.8	49.9	49.9	49.9	49.9	37.6	31.9	27.0	22.9	19.4	16.4
6.9	46.5	46.5	46.5	46.5	35.1	29.7	25.2	21.3	18.1	15.3
7.0	42.9	42.9	42.9	42.9	32.3	27.4	23.2	19.7	16.7	14.1
7.1	39.1	39.1	39.1	39.1	29.4	24.9	21.1	17.9	15.2	12.8
7.2	35.1	35.1	35.1	35.1	26.4	22.4	19.0	16.1	13.6	11.5
7.3	31.2	31.2	31.2	31.2	23.5	19.9	16.8	14.3	12.1	10.2
7.4	27.3	27.3	27.3	27.3	20.6	17.4	14.8	12.5	10.6	8.98
7.5	23.6	23.6	23.6	23.6	17.8	15.1	12.8	10.8	9.18	7.77
7.6	20.2	20.2	20.2	20.2	15.3	12.9	10.9	9.27	7.86	6.66
7.7	17.2	17.2	17.2	17.2	12.9	11.0	9.28	7.86	6.66	5.64
7.8	14.4	14.4	14.4	14.4	10.9	9.21	7.80	6.61	5.60	4.74
7.9	12.0	12.0	12.0	12.0	9.07	7.69	6.51	5.52	4.67	3.96
8.0	9.99	9.99	9.99	9.99	7.53	6.38	5.40	4.58	3.88	3.29
8.1	8.26	8.26	8.26	8.26	6.22	5.27	4.47	3.78	3.21	2.72
8.2	6.81	6.81	6.81	6.81	5.13	4.34	3.68	3.12	2.64	2.24
8.3	5.60	5.60	5.60	5.60	4.22	3.58	3.03	2.57	2.18	1.84
8.4	4.61	4.61	4.61	4.61	3.48	2.95	2.50	2.11	1.79	1.52
8.5	3.81	3.81	3.81	3.81	2.87	2.43	2.06	1.74	1.48	1.25
8.6	3.15	3.15	3.15	3.15	2.37	2.01	1.70	1.44	1.22	1.04
8.7	2.62	2.62	2.62	2.62	1.97	1.67	1.42	1.20	1.02	0.862
8.8	2.19	2.19	2.19	2.19	1.65	1.40	1.19	1.00	0.851	0.721
8.9	1.85	1.85	1.85	1.85	1.39	1.18	1.00	0.847	0.718	0.608
9.0	1.57	1.57	1.57	1.57	1.19	1.00	0.851	0.721	0.611	0.517

Note: Native species of freshwater mussels are not known for Big Tujunga Wash or Haines Canyon Creek. CMC – Criteria Maximum Concentration (ammonia)
Source: USEPA. 2009. Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater. EPA 822-D-09-001. Washington, D.C

Table 9: Temperature and pH-Dependent Values of the CCC (Chronic Criterion) Mussels Absent and Early Fish Life Stages Present

CCC: Mussels Absent and Early Fish Life Stages Present, mg N/L										
pH	Temperature (° Celsius)									
	0	14	16	18	20	22	24	26	28	30
6.5	6.36	6.36	6.36	6.36	6.36	6.11	5.37	4.72	4.15	3.65
6.6	6.26	6.26	6.26	6.26	6.26	6.02	5.29	4.65	4.09	3.60
6.7	6.15	6.15	6.15	6.15	6.15	5.91	5.19	4.57	4.01	3.53
6.8	6.00	6.00	6.00	6.00	6.00	5.77	5.08	4.46	3.92	3.45
6.9	5.84	5.84	5.84	5.84	5.84	5.61	4.93	4.34	3.81	3.35
7.0	5.64	5.64	5.64	5.64	5.64	5.42	4.76	4.19	3.68	3.24
7.1	5.41	5.41	5.41	5.41	5.41	5.20	4.57	4.02	3.53	3.10
7.2	5.14	5.14	5.14	5.14	5.14	4.94	4.35	3.82	3.36	2.95
7.3	4.84	4.84	4.84	4.84	4.84	4.66	4.09	3.60	3.16	2.78
7.4	4.52	4.52	4.52	4.52	4.52	4.34	3.82	3.36	2.95	2.59
7.5	4.16	4.16	4.16	4.16	4.16	4.00	3.52	3.09	2.72	2.39
7.6	3.79	3.79	3.79	3.79	3.79	3.65	3.21	2.82	2.48	2.18
7.7	3.41	3.41	3.41	3.41	3.41	3.28	2.89	2.54	2.23	1.96
7.8	3.04	3.04	3.04	3.04	3.04	2.92	2.57	2.26	1.98	1.74
7.9	2.67	2.67	2.67	2.67	2.67	2.57	2.26	1.98	1.74	1.53
8.0	2.32	2.32	2.32	2.32	2.32	2.23	1.96	1.72	1.52	1.33
8.1	2.00	2.00	2.00	2.00	2.00	1.92	1.69	1.49	1.31	1.15
8.2	1.71	1.71	1.71	1.71	1.71	1.64	1.45	1.27	1.12	0.982
8.3	1.45	1.45	1.45	1.45	1.45	1.40	1.23	1.08	0.949	0.835
8.4	1.23	1.23	1.23	1.23	1.23	1.18	1.04	0.914	0.804	0.706
8.5	1.04	1.04	1.04	1.04	1.04	0.999	0.878	0.772	0.679	0.597
8.6	0.878	0.878	0.878	0.878	0.878	0.844	0.742	0.652	0.573	0.504
8.7	0.742	0.742	0.742	0.742	0.742	0.714	0.628	0.552	0.485	0.426
8.8	0.631	0.631	0.631	0.631	0.631	0.606	0.533	0.469	0.412	0.362
8.9	0.539	0.539	0.539	0.539	0.539	0.518	0.455	0.400	0.352	0.309
9.0	0.464	0.464	0.464	0.464	0.464	0.446	0.392	0.345	0.303	0.266

Note: Native species of freshwater mussels are not known for Big Tujunga Wash or Haines Canyon Creek. CCC – Criteria Continuous Concentration (ammonia)
Source: USEPA. 2009. Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater. EPA 822-D-09-001. Washington, D.C.

Table 10: 30-Day Average Objective for Ammonia-N for Freshwaters Applicable to Waters Subject to the "Early Life Stage Present" Condition (mg N/L)

pH	Temperature (° Celsius)								
	14	16	18	20	22	24	26	28	30
6.5	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

Source: California Regional Water Quality Control Board, Los Angeles Region. 2005. Amendments to the Water Quality Control Plan – Los Angeles Region with Respect to Early Life Stage Implementation Provisions of the Inland Surface Water Ammonia Objectives for Freshwaters. Taken from USEPA. 1999. 1999 Update of Ambient Water Quality Criteria for Ammonia. EPA 822-R-99-014. Washington, D.C.

Table 11: One-Hour Average Objective for Ammonia-N for Freshwaters (mg N/L)

pH	Waters Designated COLD and/or MIGR	Waters Not Designated COLD and/or MIGR
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

Cold – Beneficial use designation of Cold Freshwater Habitat
MIGR – Beneficial use designation of Migration of Aquatic Organisms
Source: California Regional Water Quality Control Board, Los Angeles Region. 2002. Amendments to the Water Quality Control Plan – Los Angeles Region with Respect to Inland Surface Water Ammonia Objectives. Taken from USEPA. 1999. 1999 Update of Ambient Water Quality Criteria for Ammonia. EPA 822-R-99-014. Washington, D.C.

Table 12: Example Calculated Values for Maximum Weekly Average Temperature for Growth and Short-Term Maxima for Survival of Juvenile and Adult Fishes During the Summer

Species	Growth (°Celsius)	Maxima (°Celsius)
Black crappie	27	--
Bluegill	32	35
Channel catfish	32	35
Emerald shiner	30	--
Largemouth bass	32	34
Brook trout	19	24

Source: USEPA. 1986. Quality Criteria for Water. EPA 440/5-86-001. Washington, D.C.

SECTION 5.0 – DISCUSSION

Results from the December 2017 sampling are described by parameter in Table 14.

Table 13: Discussion of November 2016 Water Quality Sampling Results

Parameter	Discussion
Dissolved oxygen	• Dissolved oxygen levels ranged from 4.5 mg/L in Haines Canyon Creek leaving the site to 4.9 mg/L in the Tujunga Ponds. DO levels at all three sample stations were below the minimum recommended level (5.0 mg/L) for warmwater fish species.
pH	• Lowest pH was observed in the Tujunga Ponds (5.79), with highest pH observed in Haines Canyon Creek leaving the site (7.6). On this date, pH readings in the Haines Canyon Creek leaving the site were within the 6.5 to 8.5 range identified in the Basin Plan; pH readings in Haines Canyon Creek outflow from the Tujunga Ponds and the Tujunga Ponds were below the 6.5 to 8.5 range identified in the Basin Plan.
Total residual chlorine	• No residual chlorine was detected at any station.
Nitrogen	• Nitrate-nitrogen measurements at all stations were below the drinking water standard of 10 mg/L. • Ammonia was below the detection limit at all stations.
Phosphorus	• The observed concentration in the outflow from the ponds, 0.12 mg/L, is above the upper end of EPA's recommended range for streams to prevent excess algae growth (recommended range is <0.05 – 0.1 mg/L). The observed concentration at the ponds (0.04) and in Haines Canyon Creek leaving the site (0.04) is below the lower end of the EPA's recommended range.
Glyphosate	• Glyphosate was not detected at any station.
Chloropyrifos and Organophosphorous Pesticides	• Chloropyrifos and the other pesticides tested using EPA's analytical method 8141A were not detected at any station.
Organochlorine Pesticides	• Pesticides analyzed by EPA Method 608 were not detected at any station.
Turbidity	• Turbidity levels were very low (<2.5 NTU) at all stations.

Bacteria	• The fresh water bacteria standard for water contact recreation is for *E. coli* (126 MPN/100 ml geometric mean, 235 MPN/100 ml single sample limits). Observed fecal coliform levels were below the standard in the outflow from the ponds and Haines Canyon Creek leaving the site. On this date, fecal coliform levels in the ponds were 300 MPN/100 ml. Sampling specifically for *E. coli* was not conducted. • Total coliform levels ranged from 670 MPN/100 ml in the Haines Canyon Creek leaving the site to >1,600 MPN/100 ml in the ponds and at the outflow from the ponds. [Note that recreation standards are for *E. coli*. Total coliform standards apply to marine waters and waterbodies where shellfish can be harvested for human consumption.]

SECTION 6.0 – GLOSSARY

Ammonia-Nitrogen – NH3-N is a gaseous alkaline compound of nitrogen and hydrogen that is highly soluble in water. Un-ionized ammonia (NH3) is toxic to aquatic organisms. The proportions of NH3 and ammonium (NH4+) and hydroxide (OH-) ions are dependent on temperature, pH, and salinity.

Chlorine, residual – The chlorination of water supplies and wastewaters serves to destroy or deactivate disease-producing organisms. Residual chlorine in natural waters is an aquatic toxicant.

Chloropyrifos - white crystal-like solid insecticide widely used in homes and on farms. Used to control cockroaches, fleas, termites, ticks crop pests.

Coliform Bacteria – several genera of bacteria belonging to the family Enterobacteriaceae. Based on the method of detection, the coliform group is historically defined as facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas and acid formation within 48 hours at 35 C.

Fecal Coliform Bacteria – part of the intestinal flora of warm-blooded animals. Presence in surface waters is considered an indication of pollution.

Glyphosate - white compound broad-spectrum herbicide used to kill weeds.

Kjeldahl Nitrogen – Named for the laboratory technique used for detection, Kjeldahl nitrogen includes organic nitrogen and ammonia nitrogen.

Nitrate-Nitrogen – NO3--N is an essential nutrient for many photosynthetic autotrophs.

Nitrite-Nitrogen – NO2--N is an intermediate oxidation state of nitrogen, both in the oxidation of ammonia to nitrate and in the reduction of nitrate.

Orthophosphorus – the reactive form of phosphorus, commonly used as fertilizer.

pH – the hydrogen ion activity of water (pH) is measured on a logarithmic scale, ranging from 0 to 14. The pH of “pure” water at 25°C is 7.0 (neutral). Low pH is acidic; high pH is basic or alkaline.

Total Phosphorus – In natural waters, phosphorus occurs almost solely as orthophosphates, condensed phosphates, and organically bound phosphate. Phosphorus is essential to the growth of organisms.

Turbidity – attributable to the suspended and colloidal matter in water, including clay, silt, finely divided organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms. The reduction of clearness in turbid waters diminishes the penetration of light and therefore can adversely affect photosynthesis.

APPENDIX A –LABORATORY RESULTS

Enthalpy Analytical, LLC
931 W. Barkley Ave - Orange, CA 92868
Tel: (714)771-6900 Fax: (714)538-1209
www.enthalpy.com
info-sc@enthalpy.com

MONTROSE ENVIRONMENTAL

Client:	Chambers Group	Lab Request:	397642
Address:	5 Hutton Centre Drive	Report Date:	01/02/2018
	Suite 750	Date Received:	12/21/2017
	Santa Ana, CA 92707	Client ID:	14294
Attn:	Heather Franklin		

Comments: Big Tajunga

The results for Glyphosate, Chloropyrifos and Ophos-Pesticides will follow in a separate report.

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

Sample #	Client Sample ID
397642-001	Big T-East Pond
397642-002	Big T - West Pond
397642-003	Big T - South Point 4

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Diane M. Galvan

Report Review performed by: Diane Galvan, Project Manager

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

ACCREDITED IN ACCORDANCE WITH nelac

Matrix:	Water	**Client:**	Chambers Group	**Collector:**	client
Sampled:	12/21/2017 10:18	**Site:**			
Sample #:	**397642-001**	**Client Sample #:**	Big T-East Pond	**Sample Type:**	

Analyte	Result	DF	RDL	Units	Prepared	Analyzed	By	Notes
Method: EPA 300.0	Prep Method: Method					QCBatchID:	QC1185856	
Nitrate, as Nitrogen	**8.18**	1	0.1	mg/L		12/22/17 10:38	MH	
Nitrite, as Nitrogen	ND	1	0.1	mg/L		12/22/17 10:38	MH	
Method: EPA 350.1	Prep Method: Method					QCBatchID:	QC1186029	
Ammonia, as Nitrogen	ND	1	0.1	mg/L	12/29/17	12/29/17	TP	
Method: EPA 351.2	Prep Method: Method					QCBatchID:	QC1186085	
Total Kjeldahl Nitrogen	**0.904**	1	0.4	mg/L	12/29/18	01/02/18	TP	P
Method: SM 4500-Cl	Prep Method: Method					QCBatchID:	QC1185842	
Chlorine, Total Residual	ND	1	0.1	mg/L	12/21/17 00:00	12/21/17 17:18	WW	T2
Method: SM 4500-P-B-5-E	Prep Method: 4500-P-B-5					QCBatchID:	QC1186065	
Total Phosphorous as P	**0.041**	1	0.02	mg/L	12/29/17	12/30/17	TP	P
Total Phosphorous as PO4	**0.126**	1	0.06	mg/L	12/29/17	12/30/17	TP	P
Method: SM 4500-P-E	Prep Method: Method					QCBatchID:	QC1185883	
Orthophosphate, as P	ND	1	0.02	mg/L	12/22/17 17:30	12/22/17 17:54	TP	
Orthophosphate, as PO4	ND	1	0.06	mg/L	12/22/17 17:30	12/22/17 17:54	TP	
Method: SM 9221-B	Prep Method: Method					QCBatchID:	QC1186028	
Coliform, Total	**>1600**	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG	
Method: SM 9221-E	Prep Method: Method					QCBatchID:	QC1186028	
Coliform, Fecal	**300**	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG	

Matrix:	Water	**Client:**	Chambers Group	**Collector:**	client
Sampled:	12/21/2017 10:40	**Site:**			
Sample #:	**397642-002**	**Client Sample #:**	Big T - West Pond	**Sample Type:**	

Analyte	Result	DF	RDL	Units	Prepared	Analyzed	By	Notes
Method: EPA 300.0	Prep Method: Method					QCBatchID:	QC1185856	
Nitrate, as Nitrogen	**6.18**	1	0.1	mg/L		12/22/17 10:56	MH	
Nitrite, as Nitrogen	ND	1	0.1	mg/L		12/22/17 10:56	MH	
Method: EPA 350.1	Prep Method: Method					QCBatchID:	QC1186029	
Ammonia, as Nitrogen	ND	1	0.1	mg/L	12/29/17	12/29/17	TP	
Method: EPA 351.2	Prep Method: Method					QCBatchID:	QC1186085	
Total Kjeldahl Nitrogen	**0.930**	1	0.4	mg/L	12/29/18	01/02/18	TP	P
Method: SM 4500-Cl	Prep Method: Method					QCBatchID:	QC1185842	
Chlorine, Total Residual	ND	1	0.1	mg/L	12/21/17 00:00	12/21/17 17:18	WW	T2
Method: SM 4500-P-B-5-E	Prep Method: 4500-P-B-5					QCBatchID:	QC1186065	
Total Phosphorous as P	**0.117**	1	0.02	mg/L	12/29/17	12/30/17	TP	P
Total Phosphorous as PO4	**0.359**	1	0.06	mg/L	12/29/17	12/30/17	TP	P
Method: SM 4500-P-E	Prep Method: Method					QCBatchID:	QC1185883	
Orthophosphate, as P	ND	1	0.02	mg/L	12/22/17 17:30	12/22/17 17:54	TP	
Orthophosphate, as PO4	ND	1	0.06	mg/L	12/22/17 17:30	12/22/17 17:54	TP	
Method: SM 9221-B	Prep Method: Method					QCBatchID:	QC1186028	
Coliform, Total	**>1600**	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG	
Method: SM 9221-E	Prep Method: Method					QCBatchID:	QC1186028	
Coliform, Fecal	**38**	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG	

Matrix:	Water	**Client:**	Chambers Group	**Collector:**	client
Sampled:	12/21/2017 11:45	**Site:**			
Sample #:	**397642-003**	**Client Sample #:**	Big T - South Point 4	**Sample Type:**	

Analyte	Result	DF	RDL	Units	Prepared	Analyzed	By	Notes
Method: EPA 300.0	Prep Method: Method					QCBatchID:	QC1185856	
Nitrate, as Nitrogen	**4.73**	1	0.1	mg/L		12/22/17 11:13	MH	
Nitrite, as Nitrogen	ND	1	0.1	mg/L		12/22/17 11:13	MH	
Method: EPA 350.1	Prep Method: Method					QCBatchID:	QC1186029	
Ammonia, as Nitrogen	ND	1	0.1	mg/L	12/29/17	12/29/17	TP	
Method: EPA 351.2	Prep Method: Method					QCBatchID:	QC1186085	
Total Kjeldahl Nitrogen	**0.475**	1	0.4	mg/L	12/29/18	01/02/18	TP	P
Method: SM 4500-Cl	Prep Method: Method					QCBatchID:	QC1185842	
Chlorine, Total Residual	ND	1	0.1	mg/L	12/21/17 00:00	12/21/17 17:18	WW	T2
Method: SM 4500-P-B-5-E	Prep Method: 4500-P-B-5					QCBatchID:	QC1186065	
Total Phosphorous as P	**0.036**	1	0.02	mg/L	12/29/17	12/30/17	TP	P
Total Phosphorous as PO4	**0.110**	1	0.06	mg/L	12/29/17	12/30/17	TP	P
Method: SM 4500-P-E	Prep Method: Method					QCBatchID:	QC1185883	
Orthophosphate, as P	ND	1	0.02	mg/L	12/22/17 17:30	12/22/17 17:54	TP	
Orthophosphate, as PO4	ND	1	0.06	mg/L	12/22/17 17:30	12/22/17 17:54	TP	
Method: SM 9221-B	Prep Method: Method					QCBatchID:	QC1186028	
Coliform, Total	**670**	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG	
Method: SM 9221-E	Prep Method: Method					QCBatchID:	QC1186028	
Coliform, Fecal	**9**	1		MPN/100ml	12/21/17 17:30	12/24/17 16:06	MG	

QCBatchID: QC1185842	Analyst: wei	Method: SM 4500-Cl
Matrix: Water	Analyzed: 12/21/2017	Instrument: CHEM (group)

Blank Summary

Analyte	Blank Result	Units		RDL	Notes
QC1185842MB1					
Chlorine, Total Residual	ND	mg/L		0.1	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1185842LCS1											
Chlorine, Total Residual	1		0.93		mg/L	93			80-120		

Duplicate Summary

Analyte	Sample Amount	Duplicate Amount	Units	RPD	Limits RPD	Notes
QC1185842DUP1						**Source: 397389-001**
Chlorine, Total Residual	ND	ND	mg/L	0.0	20	

QCBatchID: QC1185856	Analyst: mhuo	Method: EPA 300.0
Matrix: Water	Analyzed: 12/22/2017	Instrument: AAICP (group)

Blank Summary

Analyte	Blank Result	Units		RDL	Notes
QC1185856MB1					
Chloride	ND	mg/L		1	
Nitrate, as Nitrogen	ND	mg/L		0.1	
Nitrate, as NO3	ND	mg/L		0.44	
Nitrite, as Nitrogen	ND	mg/L		0.1	
Nitrite, as NO2	ND	mg/L		0.33	
Sulfate	ND	mg/L		1	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1185856LCS1											
Chloride	100		103		mg/L	103			90-110		
Nitrate, as Nitrogen	9.03		8.94		mg/L	99			90-110		
Nitrate, as NO3	40		39.6		mg/L	99			90-110		
Nitrite, as Nitrogen	9.15		9.35		mg/L	102			90-110		
Nitrite, as NO2	30		30.7		mg/L	102			90-110		
Sulfate	50		52.2		mg/L	104			90-110		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1185856MS1, QC1185856MSD1												**Source: 397515-001**
Chloride	54.7	100	100	155	155	mg/L	100	100	0.0	80-120	20	
Nitrate, as Nitrogen	0.765	9.03	9.03	9.63	9.69	mg/L	98	99	0.6	80-120	20	
Nitrate, as NO3	3.39	40	40	42.6	42.9	mg/L	98	99	0.7	80-120	20	
Nitrite, as Nitrogen	ND	9.15	9.15	8.78	8.84	mg/L	96	97	0.7	80-120	20	
Nitrite, as NO2	ND	30	30	28.8	29.0	mg/L	96	97	0.7	80-120	20	
Sulfate	12.2	50	50	64.3	64.6	mg/L	104	105	0.5	80-120	20	
QC1185856MS2, QC1185856MSD2												**Source: 397642-001**
Chloride	42.7	100	100	143	143	mg/L	100	100	0.0	80-120	20	
Nitrate, as Nitrogen	8.18	9.03	9.03	17.5	17.5	mg/L	103	103	0.0	80-120	20	
Nitrate, as NO3	36.2	40	40	77.7	77.7	mg/L	104	104	0.0	80-120	20	
Nitrite, as Nitrogen	ND	9.15	9.15	8.73	8.76	mg/L	95	96	0.3	80-120	20	
Nitrite, as NO2	ND	30	30	28.6	28.7	mg/L	95	96	0.3	80-120	20	
Sulfate	48.6	50	50	99.3	98.9	mg/L	101	101	0.4	80-120	20	

QCBatchID: QC1185883	Analyst: npham	Method: SM 4500-P-E
Matrix: Water	Analyzed: 12/22/2017	Instrument: CHEM (group)

Blank Summary

Analyte	Blank Result	Units		RDL	Notes
QC1185883MB1					
Orthophosphate, as P	ND	mg/L		0.02	
Orthophosphate, as PO4	ND	mg/L		0.06	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1185883LCS1											
Orthophosphate, as P	0.4		0.432		mg/L	108			80-120		
Orthophosphate, as PO4	1.2264		1.32		mg/L	108			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1185883MS1, QC1185883MSD1												**Source: 397642-001**
Orthophosphate, as P	ND	0.8	0.8	0.834	0.834	mg/L	104	104	0.0	75-125	20	
Orthophosphate, as PO4	ND	2.45	2.45	2.56	2.56	mg/L	104	104	0.0	75-125	20	

QCBatchID: QC1186029	Analyst: trinh	Method: EPA 350.1
Matrix: Water	Analyzed: 12/29/2017	Instrument: CHEM (group)

Blank Summary

Analyte	Blank Result	Units		RDL	Notes
QC1186029MB1					
Ammonia, as Nitrogen	ND	mg/L		0.1	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1186029LCS1											
Ammonia, as Nitrogen	5		5.70		mg/L	114			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1186029MS1, QC1186029MSD1												**Source: 397568-001**
Ammonia, as Nitrogen	ND	5	5	6.03	6.01	mg/L	121	120	0.3	80-120	20	M

QCBatchID: QC1186065	Analyst: trinh	Method: SM 4500-P-B-5-E
Matrix: Water	Analyzed: 12/30/2017	Instrument: CHEM (group)

Blank Summary

Analyte	Blank Result	Units		RDL	Notes
QC1186065MB1					
Total Phosphorous as P	ND	mg/L		0.02	
Total Phosphorous as PO4	ND	mg/L		0.06	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1186065LCS1											
Total Phosphorous as P	0.4		0.391		mg/L	98			80-120		
Total Phosphorous as PO4	1.23		1.199		mg/L	97			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1186065MS1, QC1186065MSD1												**Source: 397642-001**
Total Phosphorous as P	0.041	0.4	0.4	0.444	0.415	mg/L	101	94	6.8	75-125	20	
Total Phosphorous as PO4	0.126	1.23	1.23	1.360	1.270	mg/L	100	93	6.8	75-125	20	

QCBatchID: QC1186085	Analyst: trinh	Method: EPA 351.2
Matrix: Water	Analyzed: 01/02/2018	Instrument: CHEM (group)

Blank Summary

Analyte	Blank Result	Units		RDL	Notes
QC1186085MB1					
Total Kjeldahl Nitrogen	ND	mg/L		0.4	

Lab Control Spike/ Lab Control Spike Duplicate Summary

Analyte	Spike Amount LCS	Spike Amount LCSD	Spike Result LCS	Spike Result LCSD	Units	Recoveries LCS	Recoveries LCSD	RPD	Limits %Rec	Limits RPD	Notes
QC1186085LCS1											
Total Kjeldahl Nitrogen	2.5		2.7		mg/L	108			80-120		

Matrix Spike/Matrix Spike Duplicate Summary

Analyte	Sample Amount	Spike Amount MS	Spike Amount MSD	Spike Result MS	Spike Result MSD	Units	Recoveries MS	Recoveries MSD	RPD	Limits %Rec	Limits RPD	Notes
QC1186085MS1, QC1186085MSD1												**Source: 397674-001**
Total Kjeldahl Nitrogen	9.6	12.5	12.5	20	20	mg/L	83	83	0.0	80-120	20	

Data Qualifiers and Definitions

Qualifiers

A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
D3	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
P3	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
S3	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds

ENTHALPY ANALYTICAL, INC.	Chain of Custody Record	Turn Around Time (Rush by advanced notice only)
931 W. Barkley Ave, Orange, CA 92868 Phone: (714) 771-6900 Fax: (714)771-9933	Lab No: 317642 Page: of	Standard: / 4 Day: / 3 Day: / 2 Day: / 1 Day: / Same Day:
Billing: Enthalpy - Orange c/o Montrose Environmental Group P.O. Box 741137, Los Angeles, CA 90074-1137	**Matrix:** A = Air DW = Drinking Water FL = Food Liquid FS = Food Solid L = Liquid PP = Pure Product S = Solid SeaW = Sea Water SW = Swab W = Water WP = Wipe O = Other	**Preservatives:** 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3 4 = H_2SO_4 5 = NaOH 6 = Other

ENTHALPY ANALYTICAL

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	Chambers Group Inc.	Name:	Big Tajunga
Report To:	Heather Franklin	Number:	
Email:	hfranklin@chambersgroupinc.com	P.O. #:	
Address:		Address:	
Phone:	970-420-0816	Global ID:	
Fax:		Sampled By:	Heather Franklin

	Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	total Kjeldahl nitrogen	nitrite-nitrogen	nitrate-nitrogen	ammonia	orthophosphate	total phosphorus	total coliform	fecal coliform	glyphosate	organophosphorus pesticides & chlorinated	total residual chlorine	Test Instructions / Comments
1	Big T - East Pond	12/21/17	10:18am	W														
2	Big T-West Pond	12/21/17	10:40am															
3	Big T- South Point 4	12/21/17	11:45AM															
4																		
5																		
6																		
7																		
8																		
9																		
10																		

	Signature	Print Name	Company / Title	Date / Time
1 Relinquished By:	[signature]	Heather Franklin	Chambers Group / Biologist	12/21/17 / 2:00 pm
1 Received By:	[signature]	Albert Vargas	EA	12-21-17 14:00
2 Relinquished By:				
2 Received By:				
3 Relinquished By:				
3 Received By:				

ENTHALPY ANALYTICAL

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: Chambers Group Project: Big Tajunga

Date Received: 12-21-17 Sampler's Name Present: ☐ Yes ☐ No

Section 2

Sample(s) received in a cooler? ☐ Yes, How many? _____ ☑ No (skip section 2) Sample Temp (°C) (No Cooler): 16.9

Sample Temp (°C), One from each cooler: #1: _____ #2: _____ #3: _____ #4: _____

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: _____

Section 3

Was the cooler packed with: ☐ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooler Temp (°C): #1: _____ #2: _____ #3: _____ #4: _____

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)		✓	
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?		✓	
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?		✓	

Section 5 Explanations/Comments

Sample bottles cool to the touch but not brought in on ice. The client only gave us a single 1L poly for each sample. She said she is willing to collect more containers for the tests we can't do.

Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: _____ Date/Time _____

☐ Email (email sent to/on): _____ / _____

Project Manager's response:

Completed By: _____ Date: 12-21-17

Enthalpy Analytical, LLC

931 W. Barkley Ave - Orange, CA 92868
Tel: (714)771-6900 Fax: (714)538-1209
www.enthalpy.com
info-sc@enthalpy.com

MONTROSE ENVIRONMENTAL

Client:	Chambers Group	Lab Request:	397775
Address:	5 Hutton Centre Drive	Report Date:	01/17/2018
	Suite 750	Date Received:	12/28/2017
	Santa Ana, CA 92707	Client ID:	14294
Attn:	Heather Franklin		

Comments: Big Tajunga

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

Sample #	Client Sample ID
397775-001	Site 1
397775-002	Site 2
397775-003	Site 4

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Diane M. Galvan

Report Review performed by: Diane Galvan, Project Manager

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

ACCREDITED IN ACCORDANCE WITH nelac

Matrix:	Water	**Client:**	Chambers Group	**Collector:**	client
Sampled:	12/28/2017 08:30	**Site:**			
Sample #:	**397775-001**	**Client Sample #:**	Site 1	**Sample Type:**	

Analyte	Result	DF	RDL	Units	Prepared	Analyzed	By	Notes
Method: EPA 547	Prep Method: Method					QCBatchID:		
Glyphosate	**See Attached**	1	25	ug/L				
Method: EPA 8141A *NELAC*	Prep Method: EPA 3510C					QCBatchID:		
See Attached		1						

Matrix:	Water	**Client:**	Chambers Group	**Collector:**	client
Sampled:	12/28/2017 08:15	**Site:**			
Sample #:	**397775-002**	**Client Sample #:**	Site 2	**Sample Type:**	

Analyte	Result	DF	RDL	Units	Prepared	Analyzed	By	Notes
Method: EPA 547	Prep Method: Method					QCBatchID:		
Glyphosate	**See Attached**	1	25	ug/L				
Method: EPA 8141A *NELAC*	Prep Method: EPA 3510C					QCBatchID:		
See Attached		1						

Matrix:	Water	**Client:**	Chambers Group	**Collector:**	client
Sampled:	12/28/2017 09:00	**Site:**			
Sample #:	**397775-003**	**Client Sample #:**	Site 4	**Sample Type:**	

Analyte	Result	DF	RDL	Units	Prepared	Analyzed	By	Notes
Method: EPA 547	Prep Method: Method					QCBatchID:		
Glyphosate	**See Attached**	1	25	ug/L				
Method: EPA 8141A *NELAC*	Prep Method: EPA 3510C					QCBatchID:		
See Attached		1						

Data Qualifiers and Definitions

Qualifiers

A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
D3	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
P3	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
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S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
S3	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds

ENTHALPY ANALYTICAL, INC.	Chain of Custody Record	Turn Around Time (Rush by advanced notice only)
931 W. Barkley Ave, Orange, CA 92868 Phone: (714) 771-6900 Fax: (714)771-9933	Lab No: 397775 Page: of	Standard: 4 Day: 3 Day: 2 Day: 1 Day: Same Day:
Billing: Enthalpy - Orange c/o Montrose Environmental Group P.O. Box 741137, Los Angeles, CA 90074-1137	**Matrix:** A = Air DW = Drinking Water FL = Food Liquid FS = Food Solid L = Liquid PP = Pure Product S = Solid SeaW = Sea Water SW = Swab W = Water WP = Wipe O = Other	**Preservatives:** 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3 4 = H_2SO_4 5 = NaOH 6 = Other

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	Chambers Group (14294)	Name:	
Report To:	Heather Franklin	Number:	
Email:	hfranklin@chambersgroup.com	P.O. #:	
Address:	5 Hutton Centre Drive, Suite 750	Address:	
	Santa Ana, CA 92707		
Phone:	949-261-5414	Global ID:	
Fax:	714-545-2255	Sampled By:	H. Franklin

	Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	TKN	Nitrite-N, Nitrate-N	Ammonia	Orthophosphate	Total Phosphorous	T Coliform, F Coliform	Glyphosate	Chlorpyrifos	Organophosphorous Pesticides	Total Residual Chlorine	Test Instructions / Comments
1	Site 1	12/28/17	8:30am	W	3								X	X	X		ok to run HF
2	Site 2	12/28/17	8:15am	↓	3								X	X	X		
3	Site 4	12/28/17	9:00am	↓	3								X	X	X		
4																	
5																	
6																	
7																	
8																	
9																	
10																	

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:	[signature]	Heather Franklin	Chambers Group/Biologist	12/28/17 / 10:50am
[1] Received By:	[signature]	Leah Otherman	EA	12/28/17 1050
[2] Relinquished By:				
[2] Received By:				
[3] Relinquished By:				
[3] Received By:				

ENTHALPY ANALYTICAL

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: Chambers

Project:

Date Received: 12/28/17

Sampler's Name Present: [X] Yes [ ] No

Section 2

Sample(s) received in a cooler? [ ] Yes, How many? _____ [X] No (skip section 2)

Sample Temp (°C) (No Cooler): 16.2

Sample Temp (°C), One from each cooler: #1: _____ #2: _____ #3: _____ #4: _____

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: _____

Section 3

Was the cooler packed with: [ ] Ice [ ] Ice Packs [ ] Bubble Wrap [ ] Styrofoam [ ] Paper [ ] None [ ] Other _____

Cooler Temp (°C): #1: _____ #2: _____ #3: _____ #4: _____

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?	✓		
Is there headspace in the VOA vials greater than 5-6 mm in diameter?	✓		
Was a sufficient amount of sample submitted for the requested tests?	✓		

Section 5 Explanations/Comments

Headspace: Site 4 (1/2), Site 2 (2/2),
Out of temp range. Client signed off. Ok to run.

Section 6

For discrepancies, how was the Project Manager notified? [ ] Verbal PM Initials: _____ Date/Time _____

[X] Email (email sent to/on): DG / 12/28/17 @ 1106

Project Manager's response:

Completed By: [signature] Date: 12/28/17

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

TestAmerica Job ID: 680-147345-1
Client Project/Site: 397775

For:
Enthalpy Analytical, Inc
1 Park Plaza
Irvine, California 92614

Attn: Diane Galvan

Kathryn Smith

Authorized for release by:
1/11/2018 2:24:31 PM

Kathryn Smith, Manager of Project Management
(912)354-7858
kathy.smith@testamericainc.com

Definitions/Glossary

Client: Enthalpy Analytical, Inc
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Enthalpy Analytical, Inc
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-147345-1	Site 1 (397775-001)	Water	12/28/17 08:30	12/29/17 09:05
680-147345-2	Site 2 (397775-002)	Water	12/28/17 08:15	12/29/17 09:05
680-147345-3	Site 4 (397775-003)	Water	12/28/17 09:00	12/29/17 09:05

Job ID: 680-147345-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Enthalpy Analytical, Inc

Project: 397775

Report Number: 680-147345-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 12/29/2017; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.7 C.

GLYPHOSATE
Samples Site 1 (397775-001) (680-147345-1), Site 2 (397775-002) (680-147345-2) and Site 4 (397775-003) (680-147345-3) were analyzed for Glyphosate in accordance with EPA Method 547. The samples were analyzed on 01/10/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Enthalpy Analytical, Inc
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

Client Sample ID: Site 1 (397775-001)

Lab Sample ID: 680-147345-1

Date Collected: 12/28/17 08:30

Matrix: Water

Date Received: 12/29/17 09:05

Method: 547 LL - Glyphosate (DAI HPLC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/10/18 20:17	1

Client Sample ID: Site 2 (397775-002)

Lab Sample ID: 680-147345-2

Date Collected: 12/28/17 08:15

Matrix: Water

Date Received: 12/29/17 09:05

Method: 547 LL - Glyphosate (DAI HPLC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/10/18 20:36	1

Client Sample ID: Site 4 (397775-003)

Lab Sample ID: 680-147345-3

Date Collected: 12/28/17 09:00

Matrix: Water

Date Received: 12/29/17 09:05

Method: 547 LL - Glyphosate (DAI HPLC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/10/18 20:55	1

QC Sample Results

Client: Enthalpy Analytical, Inc
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

Method: 547 LL - Glyphosate (DAI HPLC)

Lab Sample ID: MB 680-509072/2
Matrix: Water
Analysis Batch: 509072

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Glyphosate	ND		6.0		ug/L			01/10/18 16:08	1

Lab Sample ID: LCS 680-509072/25
Matrix: Water
Analysis Batch: 509072

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Glyphosate			200	211		ug/L		106	70 - 130		

Lab Sample ID: LCSD 680-509072/26
Matrix: Water
Analysis Batch: 509072

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Glyphosate			200	202		ug/L		101	70 - 130	4	30

Lab Sample ID: 680-147345-3 MS
Matrix: Water
Analysis Batch: 509072

Client Sample ID: Site 4 (397775-003)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Glyphosate	ND		200	207		ug/L		103	70 - 130		

Lab Sample ID: 680-147345-3 MSD
Matrix: Water
Analysis Batch: 509072

Client Sample ID: Site 4 (397775-003)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Glyphosate	ND		200	206		ug/L		103	70 - 130	0	30

QC Association Summary

Client: Enthalpy Analytical, Inc
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

HPLC/IC

Analysis Batch: 509072

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-147345-1	Site 1 (397775-001)	Total/NA	Water	547 LL	
680-147345-2	Site 2 (397775-002)	Total/NA	Water	547 LL	
680-147345-3	Site 4 (397775-003)	Total/NA	Water	547 LL	
MB 680-509072/2	Method Blank	Total/NA	Water	547 LL	
LCS 680-509072/25	Lab Control Sample	Total/NA	Water	547 LL	
LCSD 680-509072/26	Lab Control Sample Dup	Total/NA	Water	547 LL	
680-147345-3 MS	Site 4 (397775-003)	Total/NA	Water	547 LL	
680-147345-3 MSD	Site 4 (397775-003)	Total/NA	Water	547 LL	

Lab Chronicle

Client: Enthalpy Analytical, Inc
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

Client Sample ID: Site 1 (397775-001)

Lab Sample ID: 680-147345-1

Date Collected: 12/28/17 08:30

Matrix: Water

Date Received: 12/29/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	547 LL		1	1 mL	1 mL	509072	01/10/18 20:17	KMB	TAL SAV
	Instrument ID: CLCR									

Client Sample ID: Site 2 (397775-002)

Lab Sample ID: 680-147345-2

Date Collected: 12/28/17 08:15

Matrix: Water

Date Received: 12/29/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	547 LL		1	1 mL	1 mL	509072	01/10/18 20:36	KMB	TAL SAV
	Instrument ID: CLCR									

Client Sample ID: Site 4 (397775-003)

Lab Sample ID: 680-147345-3

Date Collected: 12/28/17 09:00

Matrix: Water

Date Received: 12/29/17 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	547 LL		1	1 mL	1 mL	509072	01/10/18 20:55	KMB	TAL SAV
	Instrument ID: CLCR									

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Enthalpy Analytical, Inc
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

Laboratory: TestAmerica Savannah

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
	AFCEE		SAVLAB	
Alabama	State Program	4	41450	06-30-18
Alaska	State Program	10		06-30-18
Alaska (UST)	State Program	10	UST-104	09-22-19
Arizona	State Program	9	AZ808	12-14-18
Arkansas DEQ	State Program	6	88-0692	02-01-19
California	State Program	9	2939	06-30-18
Colorado	State Program	8	N/A	12-31-18
Connecticut	State Program	1	PH-0161	03-31-19
Florida	NELAP	4	E87052	06-30-18
GA Dept. of Agriculture	State Program	4	N/A	06-12-18
Georgia	State Program	4	803	06-30-18
Guam	State Program	9	15-005r	04-16-18
Hawaii	State Program	9	N/A	06-30-18
Illinois	NELAP	5	200022	11-30-18
Indiana	State Program	5	N/A	06-30-18
Iowa	State Program	7	353	06-30-19
Kentucky (DW)	State Program	4	90084	12-31-18
Kentucky (UST)	State Program	4	18	06-30-18
Kentucky (WW)	State Program	4	90084	12-31-18 *
L-A-B	DoD ELAP		L2463	09-22-19
L-A-B	ISO/IEC 17025		L2463.01	09-22-19
Louisiana	NELAP	6	30690	06-30-18
Louisiana (DW)	NELAP	6	LA160019	12-31-18
Maine	State Program	1	GA00006	09-24-18
Maryland	State Program	3	250	12-31-18
Massachusetts	State Program	1	M-GA006	06-30-18
Michigan	State Program	5	9925	06-30-18
Mississippi	State Program	4	N/A	06-30-18
Nebraska	State Program	7	TestAmerica-Savannah	06-30-18
New Jersey	NELAP	2	GA769	06-30-18
New Mexico	State Program	6	N/A	06-30-18
New York	NELAP	2	10842	03-31-18
North Carolina (DW)	State Program	4	13701	07-31-18
North Carolina (WW/SW)	State Program	4	269	12-31-18
Oklahoma	State Program	6	9984	08-31-18
Pennsylvania	NELAP	3	68-00474	06-30-18
Puerto Rico	State Program	2	GA00006	12-31-18
South Carolina	State Program	4	98001	06-30-18
Tennessee	State Program	4	TN02961	06-30-18
Texas	NELAP	6	T104704185-16-9	11-30-18
Texas	State Program	6	T104704185	06-30-18
US Fish & Wildlife	Federal		LE058448-0	07-31-18
USDA	Federal		SAV 3-04	06-14-20 *
Virginia	NELAP	3	460161	06-14-18
Washington	State Program	10	C805	06-10-18
West Virginia DEP	State Program	3	094	06-30-18
Wisconsin	State Program	5	999819810	08-31-18
Wyoming	State Program	8	8TMS-L	06-30-16 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Enthalpy Analytical, Inc
Project/Site: 397775

TestAmerica Job ID: 680-147345-1

Method	Method Description	Protocol	Laboratory
547 LL	Glyphosate (DAI HPLC)	EPA	TAL SAV

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Enthalpy Analytical
Formerly Associated Labs
1 Park Plaza, Suite 1000
Irvine, CA 92614
Tel: 7 1.6900 Fax: 714.538.1209
info-sc@enthalpy.com

MONTROSE

Subcontract Laboratory:

Test America - Savannah
5102 LaRoche Avenue
Savannah, GA 31404
912-354-7858
ATTN: Kathy Smith
PO# Pending

Project: 397775 **Due:**
PM: Diane Galvan
Email: diane.galvan@enthalpy.com
CC: incomingreports@enthalpy.com

Require: ☐ EDD ☐ EDF ☐ EDT

Report To: ☐ MDL

Note:

Matrix	Sampled	Sample ID	Analysis	Comment
Water	12/28/17 08:30	Site 1 (397775-001)	547 Out	Glyphosate
Water	12/28/17 08:15	Site 2 (397775-002)	547 Out	Glyphosate
Water	12/28/17 09:00	Site 4 (397775-003)	547 Out	Glyphosate

Note:
Standard TAT.

Relinquished By	Received By:
Date/Time 12/28/17 1400	Date/Time
	MTyler
Date/Time	Date/Time 12/29/17 905
	1.10C(CF)0.7oC

680-147345 Chain of Custody

397775-01 12/28/17 13:35 DG

Page 1 of 1

Login Sample Receipt Checklist

Client: Enthalpy Analytical, Inc

Job Number: 680-147345-1

Login Number: 147345

List Source: TestAmerica Savannah

List Number: 1

Creator: Tyler, Matthew M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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WORK ORDER NUMBER: 17-12-2150

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Enthalpy Analytical, Inc.

Client Project Name: 397775

Attention: Diane Galvan
931 W. Barkley Avenue
Orange, CA 92868-1208

Approved for release on 01/15/2018 by:
Xuan Dang
Project Manager

ResultLink

Email your PM

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Contents

Client Project Name: 397775
Work Order Number: 17-12-2150

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Work Order Narrative

Work Order: 17-12-2150 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 12/29/17. They were assigned to Work Order 17-12-2150.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Return to Contents

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Sample Summary

Client:	Enthalpy Analytical, Inc. 931 W. Barkley Avenue Orange, CA 92868-1208	Work Order:	17-12-2150
		Project Name:	397775
		PO Number:	1015049
		Date/Time Received:	12/29/17 12:45
		Number of Containers:	3
Attn:	Diane Galvan		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
Site 1 (397775-001)	17-12-2150-1	12/28/17 08:30	1	Aqueous
Site 2 (397775-002)	17-12-2150-2	12/28/17 08:15	1	Aqueous
Site 4 (397775-003)	17-12-2150-3	12/28/17 09:00	1	Aqueous

Return to Contents

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Analytical Report

Enthalpy Analytical, Inc.		Date Received:	12/29/17
931 W. Barkley Avenue		Work Order:	17-12-2150
Orange, CA 92868-1208		Preparation:	EPA 3510C
		Method:	EPA 8141A
		Units:	mg/L
Project: 397775			Page 1 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Site 1 (397775-001)	**17-12-2150-1-A**	**12/28/17 08:30**	**Aqueous**	**GC 68**	**01/04/18**	**01/11/18 20:30**	**180104L04**

Parameter	Result	RL	DF	Qualifiers
Azinphos Methyl	ND	0.0048	1.00	
Bolstar	ND	0.0048	1.00	
Chlorpyrifos	ND	0.0048	1.00	
Coumaphos	ND	0.0048	1.00	
Diazinon	ND	0.0048	1.00	
Dichlorvos	ND	0.0048	1.00	
Disulfoton	ND	0.0095	1.00	
Ethoprop	ND	0.0048	1.00	
Fensulfothion	ND	0.0048	1.00	
Fenthion	ND	0.0048	1.00	
Merphos	ND	0.0048	1.00	
Methyl Parathion	ND	0.0048	1.00	
Mevinphos	ND	0.0048	1.00	
Naled	ND	0.038	1.00	
Phorate	ND	0.0048	1.00	
Ronnel	ND	0.0048	1.00	
Stirophos	ND	0.019	1.00	
Tokuthion	ND	0.0048	1.00	
Trichloronate	ND	0.0048	1.00	
Demeton-o/s	ND	0.0048	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tributylphosphate	42	30-130	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Enthalpy Analytical, Inc.		Date Received:	12/29/17
931 W. Barkley Avenue		Work Order:	17-12-2150
Orange, CA 92868-1208		Preparation:	EPA 3510C
		Method:	EPA 8141A
		Units:	mg/L
Project: 397775			Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Site 2 (397775-002)	**17-12-2150-2-A**	**12/28/17 08:15**	**Aqueous**	**GC 68**	**01/04/18**	**01/11/18 21:18**	**180104L04**

Parameter	Result	RL	DF	Qualifiers
Azinphos Methyl	ND	0.0048	1.00	
Bolstar	ND	0.0048	1.00	
Chlorpyrifos	ND	0.0048	1.00	
Coumaphos	ND	0.0048	1.00	
Diazinon	ND	0.0048	1.00	
Dichlorvos	ND	0.0048	1.00	
Disulfoton	ND	0.0095	1.00	
Ethoprop	ND	0.0048	1.00	
Fensulfothion	ND	0.0048	1.00	
Fenthion	ND	0.0048	1.00	
Merphos	ND	0.0048	1.00	
Methyl Parathion	ND	0.0048	1.00	
Mevinphos	ND	0.0048	1.00	
Naled	ND	0.038	1.00	
Phorate	ND	0.0048	1.00	
Ronnel	ND	0.0048	1.00	
Stirophos	ND	0.019	1.00	
Tokuthion	ND	0.0048	1.00	
Trichloronate	ND	0.0048	1.00	
Demeton-o/s	ND	0.0048	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tributylphosphate	44	30-130	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Enthalpy Analytical, Inc.		Date Received:	12/29/17
931 W. Barkley Avenue		Work Order:	17-12-2150
Orange, CA 92868-1208		Preparation:	EPA 3510C
		Method:	EPA 8141A
		Units:	mg/L
Project: 397775			Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Site 4 (397775-003)	**17-12-2150-3-A**	**12/28/17 09:00**	**Aqueous**	**GC 68**	**01/04/18**	**01/11/18 22:06**	**180104L04**

Parameter	Result	RL	DF	Qualifiers
Azinphos Methyl	ND	0.0048	1.00	
Bolstar	ND	0.0048	1.00	
Chlorpyrifos	ND	0.0048	1.00	
Coumaphos	ND	0.0048	1.00	
Diazinon	ND	0.0048	1.00	
Dichlorvos	ND	0.0048	1.00	
Disulfoton	ND	0.0095	1.00	
Ethoprop	ND	0.0048	1.00	
Fensulfothion	ND	0.0048	1.00	
Fenthion	ND	0.0048	1.00	
Merphos	ND	0.0048	1.00	
Methyl Parathion	ND	0.0048	1.00	
Mevinphos	ND	0.0048	1.00	
Naled	ND	0.038	1.00	
Phorate	ND	0.0048	1.00	
Ronnel	ND	0.0048	1.00	
Stirophos	ND	0.019	1.00	
Tokuthion	ND	0.0048	1.00	
Trichloronate	ND	0.0048	1.00	
Demeton-o/s	ND	0.0048	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tributylphosphate	40	30-130	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Analytical Report

Enthalpy Analytical, Inc.		Date Received:	12/29/17
931 W. Barkley Avenue		Work Order:	17-12-2150
Orange, CA 92868-1208		Preparation:	EPA 3510C
		Method:	EPA 8141A
		Units:	mg/L
Project: 397775			Page 4 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-963-224**	**N/A**	**Aqueous**	**GC 68**	**01/04/18**	**01/12/18 09:57**	**180104L04**

Parameter	Result	RL	DF	Qualifiers
Azinphos Methyl	ND	0.0050	1.00	
Bolstar	ND	0.0050	1.00	
Chlorpyrifos	ND	0.0050	1.00	
Coumaphos	ND	0.0050	1.00	
Diazinon	ND	0.0050	1.00	
Dichlorvos	ND	0.0050	1.00	
Disulfoton	ND	0.010	1.00	
Ethoprop	ND	0.0050	1.00	
Fensulfothion	ND	0.0050	1.00	
Fenthion	ND	0.0050	1.00	
Merphos	ND	0.0050	1.00	
Methyl Parathion	ND	0.0050	1.00	
Mevinphos	ND	0.0050	1.00	
Naled	ND	0.040	1.00	
Phorate	ND	0.0050	1.00	
Ronnel	ND	0.0050	1.00	
Stirophos	ND	0.020	1.00	
Tokuthion	ND	0.0050	1.00	
Trichloronate	ND	0.0050	1.00	
Demeton-o/s	ND	0.0050	1.00	

Surrogate	Rec. (%)	Control Limits	Qualifiers
Tributylphosphate	70	30-130	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

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Quality Control - LCS/LCSD

Enthalpy Analytical, Inc.		Date Received:	12/29/17
931 W. Barkley Avenue		Work Order:	17-12-2150
Orange, CA 92868-1208		Preparation:	EPA 3510C
		Method:	EPA 8141A
Project: 397775			Page 1 of 1

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-963-224	**LCS**	**Aqueous**	**GC 68**	**01/04/18**	**01/11/18 18:55**	**180104L04**
099-15-963-224	**LCSD**	**Aqueous**	**GC 68**	**01/04/18**	**01/12/18 10:45**	**180104L04**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	ME CL	RPD	RPD CL	Qualifiers
Azinphos Methyl	0.04000	0.03416	85	0.03848	96	30-130	13-147	12	0-30	
Bolstar	0.04000	0.03765	94	0.03819	95	30-130	13-147	1	0-30	
Chlorpyrifos	0.04000	0.03309	83	0.03318	83	30-130	13-147	0	0-30	
Coumaphos	0.04000	0.03329	83	0.03403	85	30-130	13-147	2	0-30	
Diazinon	0.04000	0.03653	91	0.03755	94	30-130	13-147	3	0-30	
Disulfoton	0.04000	0.03978	99	0.03950	99	30-130	13-147	1	0-30	
Ethoprop	0.04000	0.03603	90	0.03680	92	30-130	13-147	2	0-30	
Fensulfothion	0.04000	0.04175	104	0.04207	105	30-130	13-147	1	0-30	
Fenthion	0.04000	0.03724	93	0.03679	92	30-130	13-147	1	0-30	
Merphos	0.04000	0.03408	85	0.03322	83	30-130	13-147	3	0-30	
Methyl Parathion	0.04000	0.04141	104	0.03952	99	30-130	13-147	5	0-30	
Phorate	0.04000	0.04664	117	0.04454	111	30-130	13-147	5	0-30	
Ronnel	0.04000	0.03284	82	0.03336	83	30-130	13-147	2	0-30	
Stirophos	0.04000	0.03417	85	0.03421	86	30-130	13-147	0	0-30	
Tokuthion	0.04000	0.03582	90	0.03567	89	30-130	13-147	0	0-30	
Trichloronate	0.04000	0.03597	90	0.03622	91	30-130	13-147	1	0-30	

Total number of LCS compounds: 16
Total number of ME compounds: 0
Total number of ME compounds allowed: 1
LCS ME CL validation result: Pass

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

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Glossary of Terms and Qualifiers

Work Order: 17-12-2150 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Return to Contents

17-12-2150

Enthalpy Analytical
Formerly Associated Labs
1 Park Plaza, Suite 1000
Irvine, CA 92614
Tel: 714.771.6900 Fax: 714.538.1209
info-sc@enthalpy.com

MONTROSE

Subcontract Laboratory:

Eurofins CalScience - Sub
7440 Lincoln Way
Garden Grove, CA 92841

ATTN: Xuan Dang
PO# Pending

Project: 397775 **Due:**
PM: Diane Galvan
Email: diane.galvan@enthalpy.com
CC: incomingreports@enthalpy.com

Require: ☐ EDD ☐ EDF ☐ EDT

Report To: ☐ MDL

Note:

Matrix	Sampled	Sample ID		Analysis	Comment
Water	12/28/17 08:30	Site 1 (397775-001)	1	8141_Out	Organophosphorus Pesticides
Water	12/28/17 08:15	Site 2 (397775-002)	2	8141_Out	Organophosphorus Pesticides
Water	12/28/17 09:00	Site 4 (397775-003)	3	8141_Out	Organophosphorus Pesticides

Note:
Standard TAT.

Relinquished By	Received By:
[signature]	[signature]
Date/Time 12/29/17 1119	Date/Time 12/29/17 1119
[signature]	[signature] EY
Date/Time 12/29/17 1245	Date/Time 12/29/17 1245

Return to Contents

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WORK ORDER NUMBER: 17-12-2150

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 1

CLIENT: Enthalpy Analytical

DATE: 12/29/2017

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)

Thermometer ID: SC6 (CF: -0.4°C); Temperature (w/o CF): 3.9 °C (w/ CF): 3.5 °C; ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____)

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling

☐ Sample(s) received at ambient temperature; placed on ice for transport by courier

Ambient Temperature: ☐ Air ☐ Filter Checked by: 836

CUSTODY SEAL:

Cooler	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 836
Sample(s)	☐ Present and Intact	☐ Present but Not Intact	☑ Not Present	☐ N/A	Checked by: 836

SAMPLE CONDITION:

	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	☐	☐	☑
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and in good condition	☑	☐	☐
Proper containers for analyses requested	☑	☐	☐
Sufficient volume/mass for analyses requested	☑	☐	☐
Samples received within holding time	☑	☐	☐
Aqueous samples for certain analyses received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation chemical(s) noted on COC and/or sample container	☑	☐	☐
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Acid/base preserved samples - pH within acceptable range	☐	☐	☑
Container(s) for certain analysis free of headspace	☐	☐	☑
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE: (Trip Blank Lot Number: _____)

Aqueous: ☐ VOA ☐ VOAh ☐ VOAna_2 ☐ 100PJ ☐ 100PJna_2 ☐ 125AGB ☐ 125AGBh ☐ 125AGBp ☐ 125PB ☐ 125PBznna (pH__9)
☐ 250AGB ☐ 250CGB ☐ 250CGBs (pH__2) ☐ 250PB ☐ 250PBn (pH__2) ☐ 500AGB ☐ 500AGJ ☐ 500AGJs (pH__2) ☐ 500PB
☑ 1AGB ☐ 1AGBna_2 ☐ 1AGBs (pH__2) ☐ 1AGBs (O&G) ☐ 1PB ☐ 1PBna (pH__12) ☐ _____ ☐ _____ ☐ _____
Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (___) ☐ EnCores® (___) ☐ TerraCores® (___) ☐ _____ ☐ _____ ☐ _____
Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ _____ **Other Matrix** (_____): ☐ _____ ☐ _____ ☐ _____

Container: **A** = Amber, **B** = Bottle, **C** = Clear, **E** = Envelope, **G** = Glass, **J** = Jar, **P** = Plastic, and **Z** = Ziploc/Resealable Bag

Preservative: **b** = buffered, **f** = filtered, **h** = HCl, **n** = HNO_3, **na** = NaOH, **na_2** = $Na_2S_2O_3$, **p** = H_3PO_4, **s** = H_2SO_4, **u** = ultra-pure, **x** = Na_2SO_3+$NaHSO_4.H_2O$, **znna** = Zn $(CH_3CO_2)_2$ + NaOH

Labeled/Checked by: 836

Reviewed by: 1053

APPENDIX G – TRAILS MAINTENANCE AND MONITORING MEMOS

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

April 12, 2017
(2014-003.023/002/2)

Sara Samaan
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: First Phase Memorandum for the Trails Maintenance and Monitoring Site Visit (March 2017) at the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Samaan:

This memorandum serves as documentation for the trails maintenance and monitoring site visit conducted at the Big Tujunga Wash Mitigation Area (Mitigation Area) in March 2017.

All trails within the Mitigation Area were surveyed on March 24, 2017 by an ECORP Consulting, Inc. (ECORP) biologist, Lauren Dorough, to identify any problem areas along the trail system at the Mitigation Area. The biologist surveyed for areas of erosion, fallen trees, poison oak (*Toxicodendron diversilobum*) overgrowth, and potential safety hazards present on and adjacent to the trails. The biologist noted any rock or debris dams observed in Haines Canyon Creek. The current condition of the trails and trail system was documented and representative site photographs were taken.

Major trail erosion, likely a result of the high levels of precipitation documented in the area recently, was observed in four locations along the trail (North American Datum 1983 [NAD 83], Universal Transverse Mercator [UTM] 11 S 376147 E, 3792643 N; 376438 E, 3792485 N; 376450 E, 3792466 N; and 376535 E, 3792413 N; Figures 1, 2-5). Erosion at several locations along the trail has resulted in the pooling of stagnant water (Figure 3). As a result of the pooling water, high densities of mosquitoes were observed by biologists near these eroded trail locations. Other locations with substantial erosion were observed to have accumulated large amounts of trash (Figure 5).

Trail obstruction and major blockages were observed in three locations along the trail (11 S 376301 E, 3792627 N; 376595 E, 3792462 N; and 376450 E, 3792769 N; Figures 1, 6-9). A major trail blockage was observed northeast of the Cottonwood Avenue entrance at which large amounts of debris, fallen trees, and trash were washed into the trail, presumably as a result of the recent heavy rains experienced at the Mitigation Area (Figures 6 and 7). Trail blockages at two additional locations were the result of fallen trees obstructing the trail (Figures 8 and 9). It is anticipated that these obstructions will be cleared during the current exotic plant removal effort to the greatest extent feasible.

The popular picnic area (noted in previous memos) located near the South Wheatland entrance showed minimal signs of use. Small amounts of trash were observed and no rock dams were present. However, a large area of the creek at this location was observed to be obstructed by debris and trash that had washed downstream during recent rains (11 S 375183 E, 3792582 N Figure 10). Issues at this site have been noted during previous site visits and continue to be a problem in this area.

At the eastern boundary of the Mitigation Area, a large accumulation of trash was observed (11 S 376806 E, 3792501 N; Figure 11). It appears that the heavy rains experienced at the Mitigation Area during the previous winter resulted in copious amounts of debris and trash being washed downstream and onto the site.

Several large portions of the trail along the riparian areas between the Cottonwood Avenue entrance and the south Wheatland Avenue entrance were flooded during the site visit (11 S 375911 E, 3792477 N, Figure 12).

During the site visit, the biologists noted several areas where exotic plants had increased in density since previous visits (11 S 376088 E, 3792385 N; 376480 E, 3792449 N; and 376703 E, 3792499 N; Figures 1, 13-15). Poison hemlock (*Conium maculatum*) and prickly sow thistle (*Sonchus asper*), were observed along the trails in the riparian areas (Figure 13). Crimson fountaingrass (*Pennisetum setaceum*) and shortpod mustard (*Hirschfeldia incana*) were observed along the trails in the upland alluvial scrub regions (Figure 14). Further, heavy densities of non-native grasses were observed in the woodland habitat near the Cottonwood Avenue entrance (Figure 15). An exotic plant removal effort scheduled for March 27 through April 13 will target these and any other exotic species that have sprouted due to the fall and winter rains.

Lastly, an area along the trail near the ponds was observed to be densely covered in poison oak to the extent that the poison oak was protruding through the fence and into the trail walkway (11 S 376437 E, 3792730 N; Figure 16). It is anticipated that this area of poison oak will be trimmed back during the current exotic plant removal effort.

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED:_____ DATE: April 12, 2017

Lauren Dorough
Associate Biologist

Figure 1. Map of Issues Observed During the Site Visit

Figure 2. Trail Erosion.

Figure 3. Trail erosion, pooled water with mosquitos

Figure 4. Trail erosion, pooled water with mosquitos

Figure 5. Trail erosion, trash accumulation

Figure 6. Trash and debris blocking trail

Figure 7. Fallen tree blocking trail

Figure 8. Fallen tree blocking trail

Figure 9. Fallen tree partially blocking trail near ponds

Figure 10. Creek obstruction at popular picnic area, debris and trash

Figure 11. Major trash accumulation

Figure 12. Flooded trail

Figure 13. Dense poison hemlock growth along trail

Figure 14. Crimson fountaingrass growth along trail

Figure 15. Dense non-native grass cover near Cottonwood Ave entrance

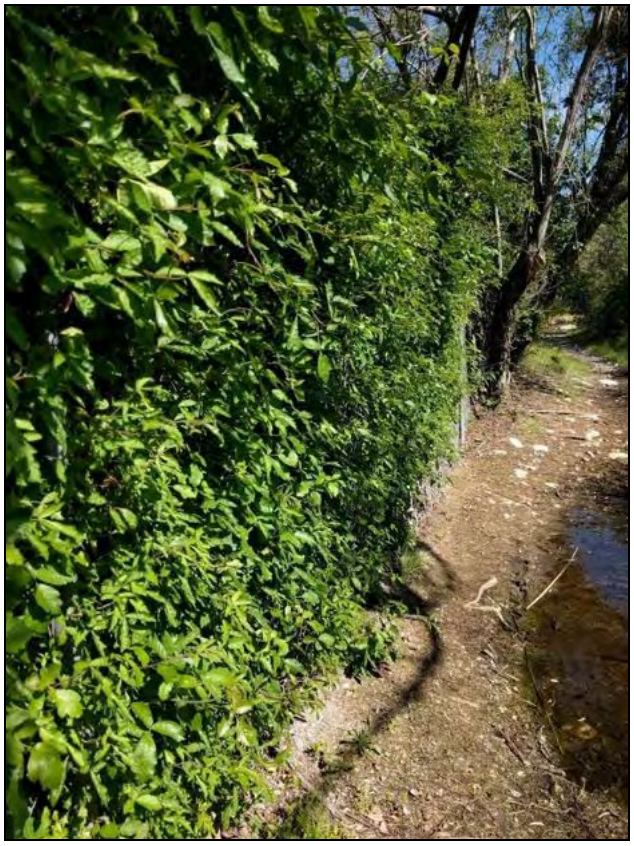


Figure 16. Poison oak encroaching on trail near ponds

September 29, 2017

David Belicki
County of Los Angeles, Department of Public Works
Water Resources Division
900 South Fremont Avenue
Alhambra, California 91803-1331

RE: Memorandum for the August 2017 Riparian and Uplands Trail Maintenance Program throughout the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Mr. Belicki,

This memorandum summarizes the first trail maintenance effort conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (BTWMA) in August 2017. The memo shows compliance and adherence to mitigation and avoidance measures set forth in the Master Mitigation Plan (MMP) and the California Department of Fish and Wildlife (CDFW) Agreement Regarding Proposed Stream or Lake Alteration No. 1600-2008-0253-R5 for the Big Tujunga Wash and Haines Canyon Creek, which are named tributaries to Hansen Dam Flood Control Basin in Los Angeles County, California. Approved Chambers Group biologists participating in trail maintenance activities within the BTWMA worked to monitor that all mitigation and avoidance measures were followed by the work crews. Details of the first trail maintenance effort including, dates, names of participants, locations and descriptions of maintenance activities performed, sensitive resources encountered, and mitigation actions taken are discussed below.

PRE-ACTIVITY SITE ASSESSMENT

A pre-activity site assessment was conducted on July 21, 2017 by Chambers Group biologists, Paul Morrissey, Erik Olmos, Jackelyn Mayfield, and Director of Restoration Construction Steven Reinoehl, to identify exotic plant and wildlife locations and densities throughout the BTWMA, identify any active bird nests or nesting behaviors, assess the condition of authorized trails, and to determine the most effective methods for the treatment of exotic plant and wildlife species. The site assessment team reviewed all the high priority areas according to the 2016 BTWMA Annual Report, including Big Tujunga Wash, Haines Canyon Creek, the Tujunga Ponds and all authorized trails. Areas requiring trail maintenance were mapped with Collector for ArcGIS (Collector), a geographic information system (GIS) application. Overall, the trails were in acceptable condition; however, there were areas where vegetation had started to overgrow the edges of the trails, areas where seedings were growing in the middle of the trails, and areas where grasses had started to cover the trails. In addition, some tree branches were hanging low enough to interfere with equestrian riders on the trails. During the site assessment it was observed that a majority of the annual exotic grasses and forbs, including many of the mustard species, had already set seed. As a result, perennial exotic plants would be the main focus for herbicide treatments during the trail maintenance effort. No active bird nests were located during the site assessment. An email notification was sent to Sara Samaan with the Los Angeles County Department of Public Works on July 22, 2017 detailing the results of the pre-activity site assessment.

METHODS

Exotic plants measuring more than 5 feet in height, were treated with the cut-stump method using an herbicide mix of 50 percent Polaris (an imazapyr-based herbicide), 2 percent Liberate (a penetrant, deposition, and drift control agent), and Turf Trax (a blue indicator dye). Exotic plants measuring less than 5 feet in height were treated with a foliar herbicide application when possible or were hand-pulled near native vegetation where herbicides had the potential to damage the native vegetation. The foliar herbicide mix contained 2 percent Roundup Custom (a glyphosate-based herbicide), 1 percent Polaris, 1 percent Liberate, and Turf Trax. Low-hanging and dead branches

that were found obstructing the trails were cut down and scattered to the sides of the trails. Equipment used to perform these activities included a chainsaw, a pole pruner, loppers, and handsaws. Native vegetation that was found encroaching into the trails was trimmed with hand tools. Exotic vegetation that was found growing in or encroaching onto the trail was treated with the foliar herbicide mix with the addition of 2 percent of Scythe (a contact herbicide that provides fast burndown). Only California-approved aquatic herbicides were used within 15 feet of any water source. A line trimmer was used to trim back vegetation that was not suitable for treatment with herbicides, and along areas of the trails that were covered with grasses.

RESULTS

Trail maintenance was performed on August 8 and 9, 2017. The crew averaged five members per day during the trail maintenance effort. Prior to the start of work each day, the crew received onsite orientation and instruction regarding safety, permit and mitigation regulations, and sensitive species that may be encountered in the work areas. The meetings were conducted by Steven Reinoehl and onsite biological monitors, Jackelyn Mayfield, Erik Olmos, Heather Clayton, and Jeremy Smith. Biological monitors were present during all trail maintenance activities.

All trail maintenance was conducted along authorized trails. One crew worked within the open Tujunga wash and upland areas, while another crew focused their efforts in the riparian areas. Most of the work in the upland areas involved trimming back native shrubs such as California buckwheat (*Eriogonum fasciculatum*), in order to maintain trail width. Biological monitors traveled with the crews and used Collector to identify the location of authorized trails. Monitors accompanied the crews to avoid disturbing any sensitive plants or wildlife during trail maintenance activities. The crew working within the riparian area cut down low-hanging and dead branches that were overhanging the trails. Native vegetation including poison oak (*Toxicodendron diversilobum*) and stinging nettle (*Urtica dioica*) that was encroaching on the trails, was trimmed. Fallen branches and cut plant materials were moved off from the trails but were left onsite in open spaces alongside the trails to serve as snags for wildlife and add to the organic layer in the soil. Care was taken to avoid damaging native plants during this process. No active bird nests or homeless encampments were encountered in or near the work areas during the trail maintenance effort.

SUMMARY

All trail maintenance activities were monitored to ensure regulations and requirements were closely followed. Biological monitors reviewed work areas prior to the start of work each day and then traveled with each crew to ensure that nesting birds and native plant and wildlife species were not disturbed. No birds showed signs of stress during trail maintenance efforts. Only California-approved aquatic herbicides were used within 15 feet of any water source. Crew members used established creek crossings to minimize disturbance to sensitive stream habitat and species residing in the creek.

Please feel free to contact me at (949) 261-5414 extension 7242, or at sreinoehl@chambersgroupinc.com, if you have any questions or are in need of further information.

Sincerely,

CHAMBERS GROUP, INC.

Steven Reinoehl
Director of Restoration Construction

SITE PHOTOS

Photo 1: Bagging castor bean seed heads

Photo 2: Cutting low-hanging branches

Photo 3: Trimming back vegetation along the trails

November 29, 2017

David Belicki
County of Los Angeles, Department of Public Works
Water Resources Division
900 South Fremont Avenue
Alhambra, California 91803-1331

RE: Memorandum for the November 2017 Riparian and Uplands Trail Maintenance Program throughout the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Mr. Belicki,

This memorandum summarizes the second trail maintenance effort conducted by Chambers Group Inc (Chambers Group) at the Big Tujunga Wash Mitigation Area (BTWMA) in November 2017. The memo shows compliance and adherence to mitigation and avoidance measures set forth in the Master Mitigation Plan (MMP) and the California Department of Fish and Wildlife (CDFW) Agreement Regarding Proposed Stream or Lake Alteration No. 1600-2008-0253-R5 for the Big Tujunga Wash and Haines Canyon Creek, which are named tributaries to Hansen Dam Flood Control Basin in Los Angeles County, California. Approved Chambers Group biologists participating in trail maintenance activities within the BTWMA worked to monitor that all mitigation and avoidance measures were followed by the work crews. Details of the second maintenance effort including dates, names of participants, locations of maintenance activities performed, sensitive resources encountered, and mitigation actions taken, are found below. The trail maintenance team reviewed all designated high priority areas according to the 2016 BTWMA Annual Report, including Big Tujunga Wash, Haines Canyon Creek, Tujunga Ponds and all authorized trails. Areas requiring trail maintenance were mapped with Collector for ArcGIS (Collector), a geographic information system (GIS) application. All mapped locations were checked for maintenance needs and additional work was performed where necessary. No active bird nests were observed during the second effort.

Overall, the trails were in acceptable condition. Most maintenance work was conducted in areas where vegetation was encroaching on the edges of the trails, where new seedlings were growing within the trails themselves, and areas where branches and other debris had fallen onto the trails. There was also some bulky and heavy trash that remained at the side of the trails left behind from the volunteer cleanup day.

METHODS

Exotic plants measuring more than 5 feet in height, were treated with the cut-stump method using an herbicide mix of 50 percent Polaris (an imazapyr-based herbicide), 2 percent Liberate (a penetrant, deposition, and drift control agent), and Turf Trax (a blue indicator dye). Exotic plants measuring less than 5 feet in height were treated with a foliar herbicide application when possible or were hand-pulled near native vegetation where herbicides had the potential to damage the native vegetation. The foliar herbicide mix contained 2 percent Roundup Custom (a glyphosate-based herbicide), 1 percent Polaris, 1 percent Liberate, and Turf Trax. Low-hanging and dead branches that were found obstructing the trails were cut down and scattered to the sides of the trails. Equipment used to perform these activities included a chainsaw, a pole pruner, loppers, and handsaws. Native vegetation that was found encroaching into the trails was trimmed with hand tools. Exotic vegetation that was found growing in or encroaching onto the trail was treated with the foliar herbicide mix with the addition of 2 percent of Scythe (a contact herbicide that provides fast burndown). Only California-approved aquatic herbicides were used within 15 feet of any water source. A line trimmer was used to trim back vegetation that was not suitable for treatment with herbicides, and along areas of the trails that were covered with grasses.

RESULTS

Trail maintenance was performed on November 27, 2017. The work took a crew of two, one day to complete. Prior to the start of work, crew members received onsite orientation and instruction regarding safety, permit and mitigation regulations, and sensitive species that may be encountered in the working areas. The meetings were conducted by Director of Restoration Construction Steven Reinoehl, who was present during all trail maintenance activities. Pre-activity sweeps for sensitive plant and wildlife species were conducted prior to the start of trail maintenance activities by biologist Jeremy Smith.

On November 27, the crew performed trail maintenance along authorized trails. The crew worked within the open Tujunga Wash, upland areas, and riparian areas. While in the open wash, the crew treated non-native vegetation such as castor bean (*Ricinus communus*) found within or encroaching upon the trails with an herbicide mix that included contact herbicide formulated to burn down the vegetation quickly. A line trimmer was used to cut back non-native grasses that encroached on the trails. In the upland areas, most of the work involved the trimming back of shrubs such as California buckwheat (*Eriogonum fasciculatum*) in order to maintain trail width. The crew used Collector to navigate and work along authorized trails, and to avoid disturbing any sensitive plants or wildlife during trail maintenance activities. While working within the riparian areas, the crew cut down low-hanging and dead branches that were overhanging the trails. Native vegetation including poison oak (*Toxicodendron diversilobum*) and stinging nettle (*Urtica dioica*) that was encroaching on the trails, was trimmed. Fallen branches and cut plant materials were moved off from the trails but were left onsite in open spaces alongside the trails to serve as snags for wildlife and add to the organic layer in the soil. Care was taken to avoid damaging native plants during this process. The crew also removed bulky items such as shopping carts and mattresses that were left alongside the trail during the volunteer cleanup day held on November 4, 2017. The carts and mattresses were moved to the staging area at the end of Cottonwood Drive and were later picked up by LACDPW. No active bird nests or homeless encampments were encountered in or near the work areas during the trail maintenance effort.

SUMMARY

All trail maintenance activities were monitored by Steven Reinoehl in order to ensure regulations and requirements were closely followed. Steven reviewed work areas with the crew prior to the start of each work day and traveled alongside the crew to ensure that nesting birds and native species were not disturbed. No birds showed signs of stress during trail maintenance efforts. Only California-approved aquatic herbicides were used within 15 feet of any water source. Crew members used established creek crossings to minimize disturbance to sensitive stream habitat and species residing in the creek.

Please feel free to contact me at (949) 261-5414 extension 7242, or at sreinoehl@chambersgroupinc.com, if you have any questions or are in need of further information.

Sincerely,

CHAMBERS GROUP, INC.

Steven Reinoehl
Director of Restoration Construction

SITE PHOTOS

Photo 1: Shopping carts and mattresses were removed from the trailside. LACDPW later removed these debris items from the site.

Photo 2: Fallen branches and cut plant materials were placed along the sides of the trails.

Photo 3: Exotic plants were treated along the trails. Emergent castor bean is shown along the trailside in this photo.

APPENDIX H– STAKEHOLDER MAILING LIST

Mr. Aaron Allen
U.S. Army Corps of Engineers
Office of the Chief, Regulatory Branch
2151 Alessandro Drive, Suite 110
Ventura, CA 93001
Aaron.O.Allen@usace.army.mil

The Honorable Michael Antonovich
Supervisor Fifth District
Attention: Mr. Jarrod DeGonia
County of Los Angeles
21943 Plummer Street
Chatsworth, CA 91311
JDeGonia@lacbos.org

Mr. Eric Baul
County of Los Angeles
Department of Public Works
Watershed Management Division
900 South Freemont
Alhambra, CA 91803
EBAUL@dpw.lacounty.gov

Ms. Mary Benson
City of Los Angeles
District 7
11070 Sheldon Street
Sun Valley, CA 91352
c-maryb@msn.com

Ms. Kim Bosell
County of Los Angeles
Department of Parks and Recreation
1750 North Altadena drive
Pasadena, CA 91321
kbosell@parks.lacounty.gov

Tomi Bowling
8545 Tujunga Valley Street
Sunland, CA 91040
tomi@tomirealty.com

Sergeant John Caffrey
LA County Sherrif's Dept, Parks Bureau
32113 Castaic Lake Drive
Castaic, CA 91384
jtcaffre@lasd.org

Mr. Matthew Chirdon
California Department of Fish and Wildlife
matthew.chirdon@wildlife.ca.gov

Ms. Cindy Cleghorn
Sunland Tujunga Chamber
8250 A Foothill Blvd
Sunland, CA 91040
cindy@cmprintmail.com

Mr. Wesley Collins
Greater LA County Vector Control
District16320 Foothill Boulevard
Sylmar, CA 91342
wcollins@glacvcd.org

Mr. Ken Corey
U.S. Fish and Wildlife Service
Ecological Services
Carlsbad Fish and Wildlife Office
6010 Hidden Valley Road
Carlsbad, CA 92009-4219

Ms. Chris Creekpaum
Shadow Hills Property
Owners Association
9635 La Canada Way
Sunland, CA 91040
chrisarlington43@yahoo.com

Mr. William Eick
Small Wilderness Area Preserve
9647 Stonehurst Avenue
Sun Valley, CA 91352
weeick@pacbell.net

Octaviano Fernandez
County of Los Angeles
Department of Public Works
Flood Maintenance Division
10179 Glenoaks Boulevard
Sun Valley, CA 91352
OFERNANDEZ@dpw.lacounty.gov

Ms. Joyce Fitzpatrick
County of Los Angeles
Department of Parks and Recreation
jfitzpatrick@parks.lacounty.gov

Ms. Linda Fullerton
Equestrian Trails, Inc. & California Trail
Users Coalition
9800 Craig Mitchell
Shadow Hills, CA 91040
linda@wrightcolor.com

Mr. Dale Gibson
Gibson Ranch
9655 Wentworth Street
Sunland, CA 91040
gibsonranch@mac.com

Mr. Randy Hammock
Equestrian Trails, Inc.
11000 Art St
Sun Valley, CA 91352
rhammock.hur@gmail.com

Rene Herrera
Foothill Mounted Patrol
10842 Art Street
Shadow Hills, CA 91040
rnkranch@me.com

Asatur Hovhannisyan
Council Deputy
City of Los Angeles District 7
Office of Councilmember Felipe Fuentes
7747 Foothill Boulevard
Tujunga, CA 91042
asatur.hovhannisyan@lacity.org

Mr. Terry Kaiser
Equestrian Trails, Inc. &
California Trail Users Coalition
10354 McBroom Street
Shadow Hills, CA 91040
hdconcerns@ca.rr.com

Mr. Tony Klecha
California Regional Water Quality Control
Board
320 W. 4th Street, Suite 200
Los Angeles, CA 90013-1105

Ms. Electra Kruger
Shadow Hills Property
Owners Association
10544 Mahoney Drive
Sunland, CA 91040
kalkrugers@earthlink.net

Mr. John Laue
Sunland Tujunga Neighborhood Council
Land Use Committee
11063 Eldora Place
Sunland, CA 91040
lauejp@gmail.com

Ms. Christine L. Medak
U.S. Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008
Christine_Medak@fws.gov

Benny Miranda
County of Los Angeles
Department of Public Works
Flood Maintenance Division
10179 Glenoaks Boulevard
Sun Valley, CA 91352
BMIRANDA@dpw.lacounty.gov

Sergeant Boris Nikolof
LA County Sherrif's Dept, Parks Bureau
32113 Castaic Lake Drive
Castaic, CA 91384

Ms. Debbie Pepe
County of Los Angeles
Department of Parks and Recreation
28000 Devil's Punchbowl Road
Pearblossom, CA 93553
dpepe@parks.lacounty.gov

Mr. Jerry Piro
Sun Valley Watershed Group
8600 Robert Avenue
Sun Valley, CA 91352

Ms. Sarah Rains
California Department of Fish and Wildlife
South Coast Region
P.O. Box 279
Newbury Park, CA 91319
Sarah.Rains@wildlife.ca.gov

Ms. Claudia Rodriguez
Planning Deputy
City of Los Angeles District 7
Office of Councilmember Felipe Fuentes
200 North Spring Street, Room 455
Los Angeles, CA 90012
claudia.rodriguez@lacity.org

Ms. Carol Roper
Shadow Hills Property
Owners Association
9635 La Canada Way
Sunland, CA 91040

Ms. Kristen Sabo
P.O. Box 337
Sunland, CA 91041
ksabo@wildwildwest.org

Ms. Carli Simons
carlisimons@yahoo.com

Mr. Albert Torres
Senior Park Ranger
City of Los Angeles
4730 Crystal Springs Drive
Los Angeles, CA 90027
albert.torres@lacity.org

APPENDIX I – NEWSLETTERS

A Publication of the
County of Los Angeles
Department of Public Works
(LACDPW)

Announcements

Report Any Emergencies! If you see something suspicious occurring in the Mitigation Area, call the LA Sheriff's Department dispatch immediately to report it. LA **Sheriff's Department** Dispatch: 1 (800) 834-0064

LACDPW cannot respond to emergencies; however, please notify BTWMA@dpw.lacounty.gov of any incidents reported to law enforcement and we will gladly follow up.

Wait 'Till Fall to Trim Those Trees! — The bird breeding season has begun so make sure to save all of your tree trimming activities for the fall! Most bird species are protected under the Migratory Bird Treaty Act, a federal law that was established to protect birds, their nests, and their habitat. Violation of this law can lead to fines or even jail time. So do that hummingbird in your hibiscus a favor and wait until September or later to trim your trees and shrubs.

Brown-headed cowbirds — The trapping program for cowbirds has begun again. The cowbirds lay their eggs in nests of native birds but never provide care in raising young. In order to eliminate cowbird nest parasitism, traps will be placed in and around Big T again in 2017. These traps contain food, water, and shade. Don't worry about the other species that might get in because a biologist checks the traps daily and releases the non-target birds! Traps will be in Big T from April to June. Remember to let the traps be!

Biting Bugs! — Getting mosquito bites at Big T? Report mosquito infestations to Vector Control at www.glacvcd.org/Contact/Service-Request.aspx. Mosquitoes can carry deadly diseases such as West Nile Virus. Want to know when the next treatment is planned or which neighborhoods have reported West Nile virus activity? Sign up for the Vector Control newsletters and email alerts at www.glacvcd.org/Contact/Newsletter.aspx.

Fires at Big T — As you know, fire danger is a serious concern. Remember, fires of any kind, including campfires and BBQs, are not permitted within Big T. If you ever see a fire call 911. Please also email us at BTWMA@dpw.lacounty.gov.

Swimming Not Allowed at Big T — Many water recreationists have been seen at Big T. As you know, Big T is a wildlife sanctuary and home to native wildlife that can be harmed by swimmers! In order to preserve the sensitive wildlife and habitats, swimming and wading in the ponds and Haines Creek is prohibited. Local swimming options are available less than 10 miles from Big T:

Hansen Dam Aquatic Center at 11798 Foothill Blvd. Lake View Terrace, CA 91342. Call: (818) 899-3779

ABOUT THE BIG TUJUNGA WASH MITIGATION AREA

Big T is a parcel of land located in the City of Los Angeles' Sunland area (see Page 4). Big T covers an area of approximately 210 acres of sensitive habitat. The site was purchased by LACDPW in 1998 for the purpose of compensating for habitat loss for other LACDPW projects.

LACDPW's implementation of the Master Mitigation Plan for the Big Tujunga Wash Mitigation Area (Big T) has been underway since April 2000.

Big T protects one of the most rapidly diminishing habitat types found in Southern California, willow riparian woodland. Big T is home to several protected species of fish (Santa Ana sucker, Santa Ana speckled dace, arroyo chub) and contains habitat for sensitive bird species (least Bell's vireo, southwestern willow flycatcher).

The purpose of this newsletter is to provide updates to ongoing programs and to explain upcoming enhancement measures that will be implemented on the site. Newsletters are published on a semi-annual basis (spring and fall). More information can be found at

www.dpw.lacounty.gov/wrd/projects/BTWMA

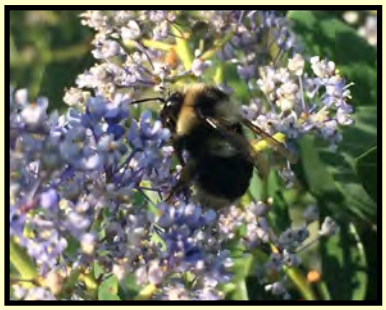
The Importance of Pollinators

The flowers are blooming and they are gorgeous this year! With all the rain that California experienced this year, super-blooms are popping up all over the state! While you smell the roses, keep an eye out for all the pollinators who are also taking advantage of the flowers! What is a pollinator you ask? A pollinator is any animal or insect that assists a plant with reproduction. Plants reproduce when the pollen from one flower is transferred to another flower. The plant then turns the mixed pollen into a seed that will eventually fall to the ground, and grow into a new plant. Flowers encourage pollinators to visit them by producing nectar. When an animal or insect enters the flower to drink the nectar, they end up rubbing against the flower and picking up pollen on their bodies. Then, when they visit another flower, some of that pollen falls off, and new pollen gets picked up.

Skipper moth visiting a thistle flower at Big T

Cabbage white butterfly visiting a black sage flower at Big T

You already know that bees and butterflies are great pollinators, but other insects, birds, and even bats can also act as pollinators. You might be surprised to learn that ants can be pollinators too! Hummingbirds are famous for drinking nectar from flowers, and will even visit backyard nectar feeders. There are some flowers that open only at night, which are pollinated by bats, moths and beetles.



Bumblebee visiting a native lilac shrub at Big T

So why are pollinators important? Without pollinators to help move pollen from plant to plant, plants would have a really difficult time reproducing. All your favorite fruits and vegetables, not to mention the beautiful flowers themselves, can only exist if critters like bees, butterflies, hummingbirds, bats and other pollinators help them out! A lot of pollinators seem to be having a difficult time these days due to pesticides, herbicides, and other types of environmental stressors. You can help them out by planting native flowers in your yard to give them some good natural food sources. Find out what plants are native to your area by going to the California Native Plant Society website below. And don't forget to thank a pollinator the next time you enjoy a juicy strawberry, or stop to enjoy those beautiful flowers on the hillside!

http://www.cnps.org/cnps/grownative/lists.php

2016 Trail Cleanup Day

The 10th Annual Big Tujunga Wash Mitigation Area Trail Cleanup Day was held on October 15, 2016 and had a great turnout! Twenty-four volunteers donated their time on a Saturday morning to help clean up Big T. Local community volunteers, ECORP's biologists, and LACDPW staff enjoyed beautiful weather as they removed trash from the scenic Mitigation Area.

ECORP biologist Taylor Dee removing trash from Haines Canyon Creek

The focus of the event was trash removal in the riparian, creek, and pond areas which typically see the highest volume of recreational users at Big T. ECORP's biologists attended the event to provide guidance on the sensitive habitats, to help out with cleanup activities, and to ensure the safety and protection of the sensitive species at Big T. A large volume of trash was removed from deeper parts of Haines Creek thanks to ECORP's Taylor Dee who threw on her waders and ventured fearlessly into the creek. Nearly 20 large trash bags of garbage were removed from Big T. Many large items were also removed from along the trails, including a shopping cart, a suitcase, and part of a picket fence! A huge thank you goes out to our hard-working volunteers – it's your dedication and love for Big T that help to keep it a beautiful place for all. The 2016 Trail Cleanup Day was a huge success and left Big T clean and safe for recreational visitors and wildlife alike!

Thanks to all that participated in this important effort!

2016 Trail Clean-Up Crew standing proudly by their haul!

The next Annual Trail Cleanup Day will take place in the fall of 2017. We anticipate it will be scheduled in October. Please look for the next Trail Cleanup Day event announcement in the Fall 2017 newsletter or on our website: http://www.ladpw.org/wrd/facilities.

Hope you can join us in 2017! Please bring your friends and family because everyone is welcome! Help us keep Big T beautiful!

Big T Night Life – Who Comes Out after Dark?

While the sun is up and many animals are active, others are waiting for night to fall before venturing out! The animals that are most active at night are called nocturnal. Many types of animals are considered nocturnal including most spiders and many amphibians, reptiles, and mammals. While we humans are biologically programmed to be active during the day, nocturnal animals find advantages to being active at night! Being nocturnal allows critters to be out and about when temperatures are cooler and nocturnal prey are active, and the low light conditions allow these wildlife species to travel under the cover of darkness to help them hunt and forage undetected.

Millipede crawling across the trail at Big T

Without sunlight to guide the way, navigating through the environment, avoiding predators, and finding food can be challenging! But nocturnal critters have got it figured out with some special adaptations to help them move through their sunless world. Nocturnal animals often have one or more of the following adaptations: modified vision to help see in the dark, enhanced hearing to help locate prey, super senses of smell used for foraging and finding mates, and some nocturnal mammals, like bats, use echolocation to hunt and maneuver their way around.

Spider at Big T repairing its web for a night of hunting

There are lots of nocturnal critters that can be found roaming through Big T after dark. These include various invertebrates such as beetles, millipedes, and spiders. Nocturnal creepy-crawlers can benefit from the cooler temperatures and the absence of many daytime predators like various birds and reptiles. Additionally, the spiders at Big T can take advantage of the evening calm to repair webs that may have been damaged during the day and can find nocturnal hunting more successful as insect prey are more active and struggle to see the spiders' webs at night.

Western toad found at Big T

Other nocturnal animals found at Big T include many amphibian species like the western toad and Baja California tree frog. Being nocturnal is advantageous for amphibians because it allows them to avoid the risk of drying out their delicate moist skin during the day when the sun is out and temperatures are typically hotter. Being nocturnal also gives frogs and toads the opportunity to hunt the numerous flying invertebrates that come out at night!

Large ears and long snout of the coyote. Photo: USFWS

The coyote is a great example of a nocturnal critter found at Big T with some nighttime focused adaptations. The coyote's large ears and canine sense of smell make them experts at hunting and searching for food at night when humans are less active. Coyotes aren't the only mammals at Big T that are active at night. Raccoons, opossums, bobcats, woodrats, and bats are all known to call Big T home.

Even some birds are nocturnal! Nocturnal bird predators such as the Great Horned Owl hunt at night and prey on nocturnal small mammals and amphibians like mice and frogs. Great Horned Owls are amazing examples of well-adapted nighttime predators because their big eyes and large pupils provide them with exceptional vision in the dark. These owls also have excellent hearing which allows them to pinpoint scurrying prey with startling accuracy, another advantage in a dark environment! The hooting calls of the Great Horned Owl are often heard as the sun begins to set on Big T!

Large eyes of the Great Horned Owl. Photo: Alan Schmierer

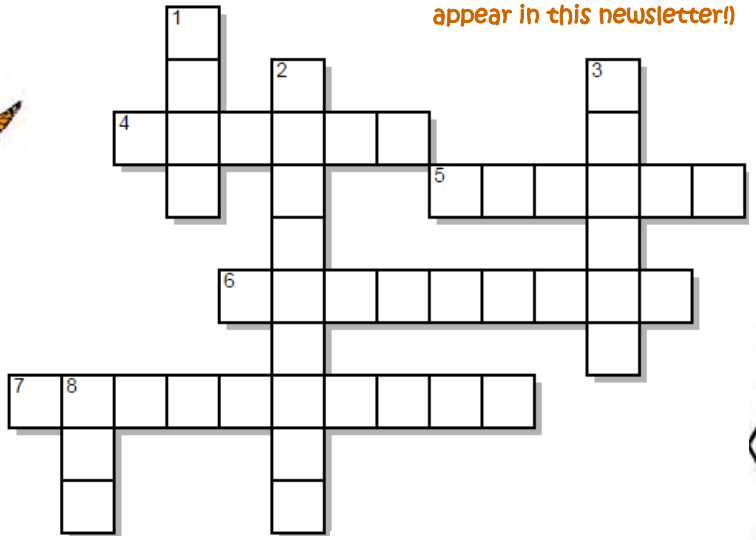
While the full moon may be beautiful and make it easier for humans to see and move around in the dark at night, it actually can present a disadvantage to nocturnal animals! The bright light given off by the full moon makes both predators and prey easier to see at night. This can result in prey animals skipping their daily meals and avoid foraging for the night so they can hide out from prowling predators!

Nocturnal animals are rarely spotted during the day and can even be hard to find at night! But you can sometimes find evidence of their presence through the tracks they leave behind. Many of these creatures of the night leave behind tracks as they walk or evidence of their evening meals. Keep your eyes open when crossing trails throughout Big T, you may see a coyote's paw print or an owl pellet from dinner the night before!

Big Tujunga Word Search & Maze

Kid's Corner!

Can you solve the crossword? (Hint: all the words appear in this newsletter!)



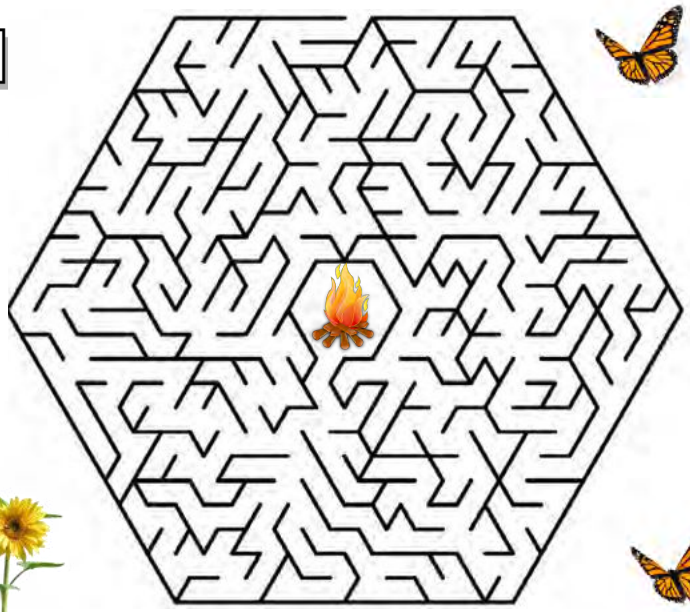
DOWN

1 Object that lights up the night
2 Active at night
3 Nocturnal web builder
8 Nocturnal hunting bird

ACROSS

4 Nocturnal canine
5 Paths through Big T
6 Pollinator that buzzes
7 Animal that helps plants reproduce

Find your way through the maze and put out the fire danger!



Where is the Big T Mitigation Area?

Downstream of Big Tujunga Canyon, right in Lake **View Terrace and south of the 210 freeway, you'll** find a native riparian (water loving plant) natural area filled with cottonwoods, willows, and pools of water that support many native aquatic species. Check out the Big T website for more information at: www.dpw.lacounty.gov/wrd/projects/BTWMA

Emergencies? Incidents? Questions?

- CALL 911 TO REPORT ANY EMERGENCY SUCH AS FIRE OR ACCIDENT
- To report minor incidents or regulation infractions contact the Sheriff's Department at 1-800-834-0064. (Please DO NOT use 911.)
- Do not attempt to enforce regulations yourself; please allow law enforcement to handle the situation/incident.
- For emergency follow up or to report minor incidents, obtain information, or get questions answered during weekday work hours (8:00 a.m. to 5:00 p.m., Monday through Thursday), please contact:

Sara Samaan, Water Resources Division
County of Los Angeles Department of Public Works
900 S. Fremont Avenue
Alhambra, CA 91803
Email: BTWMA@dpw.lacounty.gov
Phone: (626) 458-6327

Big T Wash Line

Fall 2017

A Publication of the County of Los Angeles Department of Public Works

IN THIS ISSUE

ABOUT THE BIG TUJUNGA WASH MITIGATION AREA

"Big T" is a parcel of land located in the City of Los Angeles' Sunland area (see Page 5).

The Big Tujunga Wash Mitigation Area (Big T) covers an area of approximately 210 acres of sensitive habitat. The site was purchased by the Los Angeles County Department of Public Works (LACDPW) in 1998 as compensation for habitat loss in other LACDPW projects.

LACDPW's implementation of the Master Mitigation Plan for Big T has been underway since April 2000. Big T protects one of the most rapidly diminishing habitat types found in Southern California: willow riparian woodland. Big T is home to several protected species of fish, including the Santa Ana sucker, Santa Ana speckled dace, and arroyo chub, and contains habitat for sensitive bird species such as the least Bell's vireo and southwestern willow flycatcher.

The purpose of this newsletter is to provide updates to ongoing programs and to explain upcoming enhancement measures that will be implemented on the site. Newsletters are published on a semi-annual basis (spring and fall).

More information can be found at:

- *dpw.lacounty.gov/wrd/projects/BTWMA*

Fire Prevention and Safety

According to Smokey the Bear, 60,932 human-caused wildfires burned nearly 4 million acres last year alone!

This past September, the La Tuna Fire in the Verdugo Mountains burned over 7,100 acres, the largest city fire in history, and came dangerously close to burning Big T. If you've been to Big T recently, or live in the area, you have likely seen the now black and desolate foothills of the Verdugo Mountains southwest of the site that will serve as a reminder of the damage wildfires can do for many years to come! According to Smokey the Bear, nearly 9 out of 10 wildfires in the nation are human caused and often preventable.

The threat of fires at Big T is especially concerning during late summer and fall when brush is at its driest and our ever-famous Santa Ana winds are in full force. Even though fires and burning of any kind are not permitted within Big T, there is always the risk of a fire breaking out in or adjacent to Big T. The increased fire risks are due in part to surrounding off-road vehicle activities and traffic accidents that could easily spark a fire. We've included fire prevention steps from the Los Angeles Fire Department and California Department of Forestry and Fire Protection that you can take to help reduce the risk of fire around your home.

Home fire prevention

(1) *30-foot fire resistant space*. Keep flammable materials at least 30 feet away from your home, garages, and sheds. This includes dry vegetation, oily or waxing plants (e.g. eucalyptus trees), organic mulch, dry plant clippings, firewood, and propane tanks.

(2) *Maintain your yard*. Prune low hanging branches so that there is 6-10 feet of space between the tree or shrub canopy and the ground. Maintain lawns by keeping them hydrated and mowed to reduce fuel for a fire. Brown and dead lawns should be mowed to reduce fire intensity.

(3) *Prevent ember and spark entry*. Check your roof, and if necessary fix and replace roof tiles and shingles. Cover eaves and exterior vents with 1/8-inch or smaller metal wire mesh.

In case of a wildfire

(1) *Be prepared to evacuate*. Back your car into the garage with the windows closed and keep the garage door unlocked with the automatic door opener disabled in case of power failure. If possible, keep your medicines and valuables (including important documents, photographs, and emergency contact information) near the door so you can quickly pick them up on your way out. Keep your keys, a flashlight, and portable radio with you at all times, and stay up-to-date with the local news station.

(2) *Close all windows and doors*. Close exterior windows and doors to prevent embers from entering the house. If the house catches fire, closing interior doors can slow the spread of the fire.

(3) *Move furniture*. Avoid furniture catching fire from radiant heat by moving it away from windows and sliding glass doors.

(4) *Turn on all lights*. If there is smoke, lighting will help with visibility. Be sure to have a flashlight on hand in case of power failure.

General wildfire prevention

(1) *Smoking*. If smoking, keep a 3-foot clearing from dry vegetation. Grind out cigarettes in the dirt or in an ash tray; do not use a stump or log, and never throw smoking materials into brush or leaves or out your window while driving. Smoking on any trail (including the ones at Big T) is never safe because you cannot predict where the ash will land.

(2) *Controlled Burns*. Fires of any kind are never allowed at Big T; however, if you need to conduct a controlled burn on your property or if you are camping at a campground that allows fires, be sure to always supervise the fire until it is completely out. Drown it with water, turn over the ashes with a shovel, drown again, and repeat multiple times. Please check if fires are allowed in your area and if a permit is required. Never burn if it is windy or surrounding vegetation is very dry.

Immediately call 911 if you detect smoke or fire in your area and report the location. If you see a fire on or near the Mitigation Area, please email us at BTWMA@dpw.lacounty.gov after reporting it to authorities so it can be investigated.

For more information see:

- ***lafd.org/safety/fire-safety***
- ***fire.ca.gov***
- ***fs.fed.us/managing-land/fire***

Freshwater Cattail Marsh: A Uniquely Adapted Plant Community

Big T is made up of many different types of plant communities, some of which are specially adapted to unique environmental conditions.

One such community is Freshwater Cattail Marsh which is found along the margins of the ponds within the Big T wash. This plant community is unique in that it occurs in permanently saturated and often flooded soils of coastal valleys, near river mouths, and around the margins of lakes, ponds, and springs. Plant species found within freshwater cattail marshes primarily consist of cattails and bulrushes which are specially adapted to the saturated soils.

The saturated ponds within the Big T wash exhibit near anaerobic conditions (stinky, sour soil with no oxygen for plant roots to breathe) due to the lack of aeration from the circulation of water. Because of this lack of water circulation, marsh plants have adapted themselves to acquire oxygen via air pumps; pumping air from their leaves down into their roots and the area around their roots in the mud.

Freshwater cattail marshes also provide foraging and nesting habitat for a large number of wading birds and waterfowl, including some rare species such as the tricolored blackbird. Other birds commonly associated with freshwater cattail marshes include red-winged blackbirds, Virginia rails, and marsh wrens.

Announcements

Report Any Emergencies! If you see something suspicious occurring in the Mitigation Area, call the LA Sheriff's Department dispatch immediately to report it. LACDPW cannot respond to emergencies; however, please notify BTWMA@dpw.lacounty.gov of any incidents reported to law enforcement, and we will gladly follow up. LA Sheriff's Department Dispatch: (800) 834-0064

Time to Trim Those Trees!

Late fall is the best time to trim back the trees and shrubs in your yard because the breeding bird season is over! You can safely prune without fear of disturbing birds nesting in your yard. Most birds are protected under the Migratory Bird Treaty Act, which is a federal law that protects birds, their nests, and their habitat. Violating the law can lead to fines or even jail time! So get busy and trim your trees this fall.

Goodbye Exotics!

It's been a busy year for Big T. So far in 2017, two exotic plant and nine exotic aquatic wildlife removal efforts have been conducted on site. Many exotic plants including castor bean and giant reed were removed during the two exotic plant removal efforts, and weeding was performed as part of the general upkeep of the existing trails system. Monthly exotic wildlife removal efforts have been conducted at Big T during 2017 to increase habitat quality for the native fishes that call Big T home. Exotic aquatic species such as largemouth bass, bluegill, Mozambique tilapia, red swamp crayfish, and western mosquitofish can negatively impact sensitive native species by competing for resources, predation, and the transmission of harmful pathogens and parasites.

11th Annual Trail Cleanup Day!

Please join us for the 11th Annual Trail Cleanup Day on November 4th, 2017! Come out and give a helping hand by cleaning up litter along Big T's beautiful trails. Meet us at the Cottonwood entrance (Wentworth St. and Cottonwood Ave.) at 8 am. Water, snacks, and trash bags will be provided. Suggested items to wear or bring: comfortable clothes, gloves, hat, sun block, and bug repellent. *Note: Trail Cleanup Day will be rescheduled for November 5th if there is rain or poor weather.

Wildlife Alert!

An adult male mountain lion known by wildlife biologists as P-41 whose home range was in the Verdugo Mountains was found dead early this October. P-41 was found by residents of the Shadow Hills area just south of Big T who alerted California Department of Fish and Wildlife officials of their findings. At this time, it is still unknown what led to the death of P-41. The recent La Tuna Fire that burned over 7,000 acres in the Verdugo Mountains this past September may be a contributing factor to P-41's ultimate demise.

Habitat loss and fragmentation is the biggest threat to mountain lions, who require large areas of intact habitat for their home range (up to 250 square miles for an adult male), habitat connectivity to facilitate young males finding a new home range, or finding a mate. Wildfires can push wildlife into unburned and urban areas when habitat is destroyed. Be aware of your surroundings and watch for wildlife!

Animal Corner: Northern Raccoon (*Procyon lotor*)

Meet North America's favorite masked bandit: the northern raccoon!

If you live in southern California it is likely that you've seen raccoons snooping around your yard in hope that you've left the lid off the trash can again or ducking into a storm drain late at night. Raccoons are a nocturnal species, meaning that a majority of their feeding and foraging activities occur at night. Raccoons can traditionally be found living in a variety of habitats including mountain terrain, stream habitats, and wooded areas. In these areas, raccoons would likely be found living in the hallow parts of trees or an abandoned burrow, emerging at night to forage on some of their favorite food items including frogs, fish, crayfish, slugs, grubs, insects, eggs, fruits, berries, and nuts. The raccoon's omnivorous diet is also one of opportunity. As raccoons have become adapted to living and foraging in and around urban areas, their diets have expanded to include non-traditional food items such as garbage and pet food.

Raccoons are solitary animals, and are generally only seen in a group when a mother is still caring for her kits. Mating can occur anytime between January and June, and 2 to 5 kits are born after an approximately 65-day gestation. Kits will remain with the mother for more than a year before venturing out on their own. In the wild, a raccoon's lifespan is 2-4 years on average, but they may live up to 20 years in captivity. As cute as they are, raccoons are aggressive fighters, and very few predators exist that are willing to take on a raccoon! Occasionally, a raccoon may fall victim to a coyote, great horned owl, or mountain lion, but diseases, infection, and road mortality pose far greater threats.

Did you Know?

- Raccoons can reach speeds of 10-15 miles per hour over short distances.
- Raccoons have been known to remember solutions to tasks and puzzles for up to 3 years.
- Raccoons are excellent swimmers and can remain in the water for several hours at a time.
- Raccoons rely heavily on their sense of touch to forage and find meals.
- Raccoons have a large repertoire of vocalizations including growls, hisses, screams, barks, whines, whimpers, and whistles.

Don't Feed Me!

Don't let those cute YouTube videos of people interacting with raccoons fool you! It is important to avoid contact with raccoons, and one of the best ways of doing this is to remove food sources such as pet food, bird feeders, and unsecured trash from around your home. Secure areas around your home that may provide shelter for raccoons such as access to attics, crawl spaces, garages, and sheds.

Raccoons will not hesitate to eat your prized koi fish, so if you have a fish pond take appropriate measures to protect fish from raccoons. Never attempt to handfeed a raccoon! It is unlawful to feed any mammalian predator in the City of Los Angeles, including raccoons (53.06.5 L.A.M.C.), and although they may seem tame, they can inflict a serious bite! Raccoons carry diseases that can be transferred to humans and pets, so take care to avoid raccoon interactions. Raccoons are very clever and opportunistic and will take advantage of any resources humans provide them. Let's work together to discourage wildlife from occupying urban areas and keep wild animals wild!

Disease

Raccoons are peridomestic animals, which means they live in or near areas populated by humans. Raccoons are susceptible to a number of diseases including distemper (rabies), roundworms, and trichinosis. Although there are no documented cases of raccoon distemper in California, the disease is slowly making its way west. Perhaps of more concern in California is the roundworm species, *Baylisascaris procyonis,* that is carried and shed by raccoons. Raccoons are the primary host of this roundworm whose eggs are passed in the feces of infected individuals. Raccoons contract this roundworm from infected food sources such as rabbits and birds (the intermediate hosts of the roundworm), or by eating the eggs of the roundworm during foraging. Although rare, humans and dogs can contract this roundworm from ingesting soil contaminated with the roundworm's eggs.

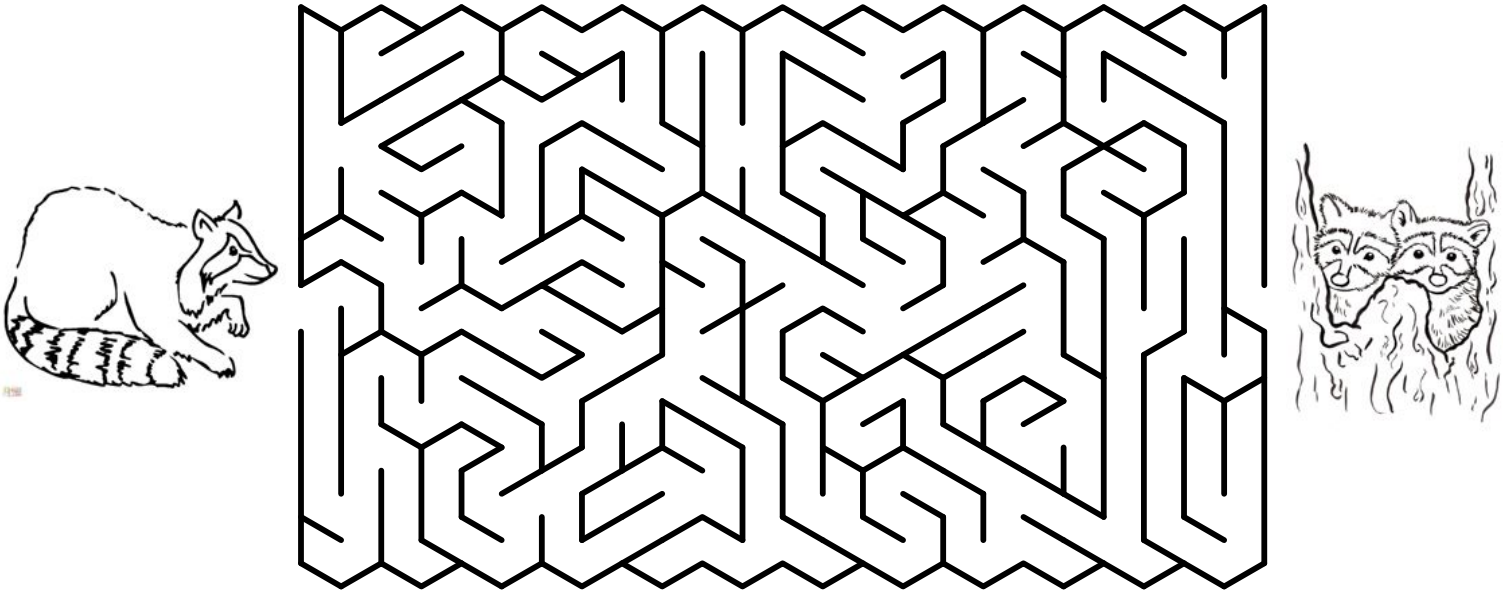
Raccoons defecate in communal sites called latrines. Latrines are often placed at the base or fork of a tree or on a raised horizontal surface of a log, stump, or rock. If raccoons frequent the area around your home, you may find latrines in attic spaces, decks and patios, or your garage. There are a number of steps you can take to discourage raccoons from living around your home including removing food sources like pet food and bird feeders, keeping trash receptacles tightly sealed, and eliminating water sources. It is best to avoid latrine materials when possible; however, if latrine clean-up is necessary take appropriate steps to protect yourself, including wearing disposable gloves during clean-up, wearing a dust mask (or respirator if working in a confined space), washing soiled clothing in hot water and detergent, properly disposing of latrine material and contaminated wash water, and washing your hands!!!

For more information see:

- ***cdc.gov/parasites/baylisascaris/index.html***
- ***cdc.gov/parasites/baylisascaris/resources/raccoonlatrines.pdf***
- ***laanimalservices.com/about-animals/wildlife/raccoons***

KID'S CORNER

Help the raccoon mother reach her kits!



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- *For emergency follow up or to report minor incidents, obtain information, or get questions answered during weekday work hours (8:00 a.m. to 5:00 p.m., Monday through Thursday), please contact:*

David Belicki, Water Resources Division
County of Los Angeles Department of Public Works
900 S. Fremont Avenue
Alhambra, CA 91803
Email: BTWMA@dpw.lacounty.gov
Phone: (626) 458-6327

Where is the Big T Mitigation Area?

Downstream of Big Tujunga Canyon, right in Lake View Terrace and south of the 210 freeway, you'll find a native riparian (water loving plant) natural area filled with cottonwoods, willows, and pools of water that support many native aquatic species.

Check out the Big T website for more information at:

- *dpw.lacounty.gov/wrd/projects/BTWMA*

APPENDIX J – COMMUNITY ADVISORY COMMITTEE MEETING AGENDAS AND MINUTES

PUBLIC NOTICE

BIG TUJUNGA WASH MITIGATION AREA
COMMUNITY ADVISORY COMMITTEE MEETING

Notice is hereby given that annual meeting of the Big Tujunga Wash Mitigation Area Community Advisory Committee (CAC) will be held on:

Thursday, April 27, 2016
6:30 p.m. to 8:30 p.m.
Hansen Yard
10179 Glenoaks Boulevard
Sun Valley, CA 91352

The purpose of the CAC meeting is to update members on the status of site monitoring efforts in the mitigation area and to discuss upcoming activities. We invite all interested parties to attend (see attached agenda). The minutes from the previous meeting are located on the mitigation area website (link is included below). We look forward to seeing you there.

For more information about the mitigation area, please visit www.dpw.lacounty.gov/wrd/projects/BTWMA. If you have changes to your e-mail address or would like to be removed from the CAC distribution list, please contact BTWMA@dpw.lacounty.gov.

BIG TUJUNGA WASH MITIGATION AREA
COMMUNITY ADVISORY COMMITTEE MEETING

AGENDA

Thursday, April 27, 2017
6:30 p.m. to 8:30 p.m.
Hansen Yard
10179 Glenoaks Boulevard
Sun Valley, CA 91352

Panel: County of Los Angeles Department of Public Works
ECORP Consulting, Inc.

I. Welcome/Introduction

II. Review of Meeting Agenda

III. Site Maintenance Issues
Discussion of Action Items from Previous Meeting

IV. Current Status of Programs
1. Exotic Plant Eradication Program
2. Exotic Wildlife Removal/Monitoring
3. Water Quality Analysis
4. Trails Restoration/Maintenance
5. Public Outreach Program

V. Schedule Next CAC Meeting

VI. Comments, Questions, and Answers

Big Tujunga Wash Mitigation Area Community Advisory Committee Meeting

April 27, 2017

	Attendees	Organization	Phone	Email
1	Bill Eick	Shadow Hill Prop Owners Assoc	(w) 818 248-0050	bill@eickfreeborn.com
2	ELEKTRA KRUGER	FTDNC-HDPAB-STNC	818-352-6220	KALKRUGERS@earthlink.net
3	GERHARD KRUGER	" " "	"	
4	Jacqy Gamble	SHPOA	818 426 5226	jacqyagamble@gmail.com
5				
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Big Tujunga Wash Mitigation Area Community Advisory Committee Meeting

April 27, 2017

	Attendees	Organization	Phone	Email
1	Heather A. Driscoll	LA County Parks + Rec	818 481 7470	heatherradriscoll@gmail.com
2	Lynne Toby	SHPOA	8183527558	lynnetoby60@msn.com
3	Cindy Bloom	SHPOA | SAFE	818-4455602	cbloom571@gmail.com
4	Jerry Aguirre	ECORP	909-677-6774	jaguirre@ecorpconsulting.com
5	Kristen Wasz	ECORP	909.307.0046	KWASZ@ECORPCONSULTING.COM
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Big Tujunga Wash Mitigation Area Community Advisory Committee Meeting

April 27, 2017

	Attendees	Organization	Phone	Email
1	Belinda Kwan	DPW	626 458-6175	bkwan@dacounty.dpw.gov
2	Sawa Samaan	DPW		ssamaan@dpw.lacounty.gov.
3				
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Figure 10-1. Big Tujunga Wash Mitigation Area Incident Map April 2016 to April 2017

Big Tujunga Wash Mitigation Area

LA County Park Parcel

Trails

Violation Category

- Creek Obstructions
- Homeless Encampment
- Prohibited Activity
- Site Safety/Maintenance Issue
- Trash/Dumping
- Trail Obstructions
- Vandalism

Violation ID and Description

1 - Rock dam
2 - Swimming, fire pit, alcohol use, smoking
3 - Fallen tree
4 - Trash accumulation
5 - Branch across trail
6 - Branch across trail
7 - Trail erosion
8 - Trail erosion
9 - Trail erosion
10 - Homeless encampment, ATV use
11 - ATV tracks and cut down trees
12 - Fire damage
13 - ATV use
14 - Homeless encampment
15 - Bathing in creek
16 - Bathing in ponds
17 - Alcohol use, raft in ponds
18 - Trash in creek
19 - Logs and vegetation obstructing creek
20 - Trail erosion
21 - Fire damage
22 - Assorted trash and shopping cart
23 - Fallen tree
24 - Fire damage
25 - Motorcycle, offleash dog
26 - Fallen tree
27 - Missing gate lock
28 - Unauthorized gate lock and vehicle
29 - Fishing in ponds
30 - Homeless encampment
31 - Downed trees and branches
32 - Downed trees and branches
33 - Downed trees and branches
34 - Downed trees and branches
35 - Downed trees and branches
36 - Branches and debris in creek
37 - Trail erosion
38 - Trail erosion
39 - Fire damage
40 - Homeless encampment
41 - Homeless encampment
42 - Damage/cutting of oak trees
43 - Mitigation Area sign removal
44 - Fishing in ponds
45 - Homeless encampment
46 - Homeless encampment
47 - Broken gate and fence
48 - Fallen tree
49 - Trail erosion
50 - Trail erosion
51 - Downed trees and branches
52 - Downed trees and branches
53 - Downed trees and branches
54 - Branches and debris in creek
55 - Trash accumulation
56 - Trail flooded
57 - Homeless encampment
58 - Fishing in ponds
59 - Mitigation Area sign damage
60 - Homeless encampment
61 - Portable restroom burned down
62 - Trash accumulation
63 - Horse ring
64 - Fire pit; trash

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Location: N:\2010\2010-116 Big Tujunga Wash Mitigation Area\MAPS\Weeting_Maps_and_Analysis\2017-04-24_Violations_2016-2017\BigT_Violations_20170424.mxd (MAG)-mguidry 4/26/2017

2014-003.005 Big Tujunga Wash Mitigation Area

Scale in Feet
0 1,000

Photo Source: NAIP 2014

Map Date: 4/24/2017

Big Tujunga Wash Mitigation Area Incidents
Table Accompaniment for Incident Map
Updated April 26, 2017

#	Date Observed	Incident	Notes
1	5/6/2016, 6/9/16, 6/24/16, 7/3/16, 8/15/16, 9/4/16, 3/28/17	Rock dam	LACDPW notified
2	5/6/2016, 6/9/16, 6/24/16, 7/3/16, 8/15/16, 9/4/16, 3/28/17	Swimming, fire pit, alcohol use, smoking	LACDPW notified
3	5/6/2016, 6/9/16, 6/24/16, 7/3/16, 8/15/16, 9/4/16, 3/28/17	Fallen tree	LACDPW notified
4	5/6/2016, 6/9/16, 6/24/16, 7/3/16, 8/15/16, 9/4/16, 3/28/17	Trash accumulation	LACDPW notified
5	5/6/2016	Branch across trail	LACDPW notified
6	5/6/2016	Branch across trail	LACDPW notified
7	5/6/2016	Trail erosion	LACDPW notified
8	5/6/2016	Trail erosion	LACDPW notified
9	5/6/2016, 3/24/17	Trail erosion	LACDPW notified
10	5/6/2016	Homeless encampment, ATV use	Law Enforcement contacted, LACDPW notified
11	5/6/2016	ATV tracks and cut down trees	LACDPW notified
12	5/6/2016	Fire damage	LACDPW notified
13	5/9/2016	ATV use	Law Enforcement contacted, LACDPW notified
14	5/11/2016	Homeless encampment	LACDPW notified
15	5/31/2016	Bathing in creek	Law Enforcement contacted, LACDPW notified
16	5/31/2016	Bathing in ponds	Law Enforcement contacted, LACDPW notified
17	5/31/2016	Alcohol use, raft in ponds	Law Enforcement contacted, LACDPW notified
18	7/4/2016	Trash in creek	LACDPW notified
19	7/31/2016	Logs and vegetation obstructing creek	LACDPW notified
20	8/15/2016	Trail erosion	LACDPW notified
21	8/15/2016	Fire damage	LACDPW notified
22	8/18/2016	Assorted trash and shopping cart	LACDPW notified
23	9/4/2016	Fallen tree	LACDPW notified
24	10/13/2016	Fire damage	LACDPW notified
25	11/2/2016	Motorcycle, offleash dog	LACDPW notified
26	11/2/2016	Fallen tree	LACDPW notified
27	11/2/2016	Missing gate lock	LACDPW notified
28	11/2/2016, 1/26/17, 2/14/17	Unauthorized gate lock and vehicle	LACDPW notified
29	11/3/2016	Fishing in ponds	Law Enforcement contacted, LACDPW notified

#	Date Observed	Incident	Notes
30	11/4/2016	Homeless encampment	LACDPW notified
31	11/28/2016, 2/23/17	Downed trees and branches	LACDPW notified
32	11/28/2016	Downed trees and branches	LACDPW notified
33	11/28/2016	Downed trees and branches	LACDPW notified
34	11/28/2016	Downed trees and branches	LACDPW notified
35	11/28/2016	Downed trees and branches	LACDPW notified
36	11/28/2016	Branches and debris in creek	LACDPW notified
37	11/28/2016, 3/24/17	Trail erosion	LACDPW notified
38	11/28/2016	Trail erosion	LACDPW notified
39	11/28/2016	Fire damage	LACDPW notified
40	12/5/2016	Homeless encampment	LACDPW notified
41	12/7/2016	Homeless encampment	LACDPW notified
42	12/7/2016	Damage/cutting of oak trees	LACDPW notified
43	12/7/2016	Mitigation Area sign removal	LACDPW notified
44	1/16/2017	Fishing in ponds	LACDPW notified
45	1/24/2017	Homeless encampment	LACDPW notified
46	1/26/2017	Homeless encampment	LACDPW notified
47	2/23/2017	Broken gate and fence	LACDPW notified
48	2/23/2017	Fallen tree	LACDPW notified
49	3/24/2017	Trail erosion	LACDPW notified
50	3/24/2017	Trail erosion	LACDPW notified
51	3/24/2017	Downed trees and branches	LACDPW notified
52	3/24/2017	Downed trees and branches	LACDPW notified
53	3/24/2017	Downed trees and branches	LACDPW notified
54	3/24/2017	Branches and debris in creek	LACDPW notified
55	3/24/2017	Trash accumulation	LACDPW notified
56	3/24/2017, 4/13/17	Trail flooded	LACDPW notified
57	3/29/2017	Homeless encampment	LACDPW notified
58	3/29/2017	Fishing in ponds	LACDPW notified
59	3/29/2017	Mitigation Area sign damage	LACDPW notified
60	4/3/2017	Homeless encampment	LACDPW notified
61	4/3/2017	Portable restroom burned down	LACDPW notified
62	4/3/2017	Trash accumulation	LACDPW notified
63	4/3/2017	Horse ring	LACDPW notified
64	4/3/2017	Fire pit; trash	LACDPW notified

APPENDIX K – PUBLIC OUTREACH MEMO

January 25, 2018

David Belicki
County of Los Angeles, Department of Public Works
Water Resources Division
900 South Fremont Avenue
Alhambra, California 91803-1331

RE: Public Outreach for August and September 2017 for the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Mr. Belicki,

In an ongoing effort to enhance and protect the existing habitat at the Big Tujunga Wash Mitigation Area (Mitigation Area) for native wildlife species, Chambers Group, Inc. (Chambers Group) has continued bilingual public outreach efforts to non-equestrian and equestrian user groups who regularly visit the Mitigation Area for recreational purposes.

Outreach Efforts

Onsite interviews and education about the Mitigation Area were conducted on three separate occasions in 2017 by Chambers Group bilingual biologists Erik Olmos, Mauricio Gomez, and Corey Jacobs. Outreach efforts took place on August 19, August 26, and September 24, 2017. All outreach efforts took place during the peak site use hours of 9:00 AM to 1:00 PM.

Chambers Group biologists walked the established trails system and popular swimming/wading locations in the Haines Canyon Creek and Tujunga Ponds areas, speaking with visitors they encountered. Visitors that were interviewed fell into one of two groups: non-equestrian user groups or equestrian user groups.

During these three outreach visits, all non-equestrian and equestrian visitors encountered were offered an educational brochure outlining the County of Los Angeles Department of Public Works (LACDPW) conservation goals for the Mitigation Area. The educational brochure contained the Mitigation Area's rules and regulations, as well as a list of the sensitive species found on the site. During each outreach event, Chambers Group biologists provided information on why specific activities are prohibited in the Mitigation Area and the extent of their impacts on the sensitive species. Most outreach events consisted of informal interviews and short question and answer sessions. Questions from the visitors were primarily about the purpose of the Mitigation Area's rules and regulations and the types of sensitive resources found in the Mitigation Area. Most equestrian users expressed appreciation towards the outreach efforts and agreed with the information presented on the pamphlets. In general, equestrian and non-equestrian users were responsive to the public outreach efforts.

Non-Equestrian User Groups

A total of seven non-equestrian site users were encountered during the three outreach visits in 2017. All seven of the non-equestrian site users interviewed were local residents. Most of these individuals were encountered along the trails around Haines Canyon Creek and the Tujunga Ponds. All site users or groups were offered an educational brochure about the site, informed about activities that are prohibited in the Mitigation Area, and asked if they had any questions on any of the information presented. Some of the issues observed during the outreach included fishing and children throwing rocks into Haines Canyon Creek.

Groups and individuals that were encountered during the outreach visits were generally receptive to the information provided on the sensitive resources and rules within the Mitigation Area. Groups and individuals that were unaware of and/or violating rules were generally respectful and receptive to the information provided by the biologist. On August 26, three non-equestrian users were encountered fishing at the Tujunga Ponds. The biologist approached the

individuals, gave them educational brochures and explained that fishing within the Mitigation Area is prohibited. One individual explained that he fishes at the Tujunga Ponds since designated fishing areas like Hansen Dam are not well stocked. The individual was receptive to the biologist and ceased fishing. Another individual was unaware of the sensitive resources within the Mitigation Area and after apologizing, prepared to leave the area. On September 24, children between the ages of 5 and 12 years old were observed skipping and throwing rocks into Haines Canyon Creek near the Tujunga Ponds. The biologist approached the adults in the group, provided them with an educational brochure, and discussed how altering the streambed in any way can adversely affect sensitive resources. The adults accepted the information and told the children it was time to move on.

The primary usage of the Mitigation Area as described by the non-equestrian users interviewed included: hiking/walking, dog walking, bike riding, fishing and general recreation. Concerns raised by non-equestrian users interviewed included: a lack of trash receptacles and portable restrooms throughout the mitigation area, a lack of signage marking trails and outlining the rules for use of the Mitigation Area, the need for stable stream crossings, trash, areas of stagnant water that attract mosquitos, illegal fishing, and the homeless population. One non-equestrian user mentioned observing individuals climbing and damaging fencing around the Mitigation Area and individuals fishing with traps and leaving the traps behind. The biologist asked the individual to contact local law enforcement and LACDPW if suspicious or illegal activities are observed in the Mitigation Area. Recommendations provided by non-equestrian users interviewed included, placing more trash cans and signage throughout the Mitigation Area, more clean-up events, and vector control to combat mosquitos.

Effects on Sensitive Habitat by Non-Equestrian User Groups

The most substantial impacts on sensitive habitat by non-equestrian user groups is caused by swimming and building rock dams within Haines Canyon Creek. Rock dams are constructed by individuals to make swimming areas deeper. There are a few unauthorized swimming areas that have become popular spots for non-equestrian users to congregate, picnic, and swim. The most popular location for picnickers and swimmers is the unauthorized swimming area situated approximately 1,000 feet west of the south Wheatland entrance. This area had a large rock dam that required multiple people to remove as well as a rope swing.

Although swimming and the building of rock dams was not observed during 2017 public outreach efforts, several large rock dams were encountered in the creek and removed during 2017 exotic wildlife removal efforts. Rock dams are usually constructed with boulders and tree branches and were often found reinforced with tarps and other materials that reduce the natural flow of the creek and create a buildup of water. The changes to the natural flow of the creek can be detrimental to the sensitive species of fish within the creek. The rock dams reduce the flow of the creek and create large pools of water that are favorable habitat for the exotic, invasive aquatic species such as the red swamp crayfish (*Procambarus clarkii*) and American bullfrog (*Lithobates catesbeianus*), that prey on native species such as the federally listed (threatened) Santa Ana sucker (*Catostomus santaanae*). These pools reduce suitable breeding habitat for sensitive fish species as well. In an effort to reduce these effects, non-equestrian user groups were approached and educated during the outreach site visits. All rock dams encountered during site visits were documented and the larger rock dams reported to LACDPW for removal. Photos of rock dams are included as photos 1 through 6 below.

Equestrian User Groups

A total of 30 equestrian users were approached and interviewed along the established trails of the Mitigation Area along Haines Canyon Creek and near the Tujunga Ponds. Of the 30 equestrian users interviewed, 23 were local residents. Equestrian users were offered an educational brochure and were informed about various aspects of the Mitigation Area. Outreach events with equestrian users were usually brief, as most of the equestrian site visitors were frequent users of the Mitigation Area and were receptive to the outreach efforts. Many equestrian users commended the outreach efforts and contributed information to the biologists. Most questions to the Chambers Group biologists were about trail maintenance efforts taking place at the Mitigation Area.

Secondary usage of the Mitigation Area as described by the equestrian users interviewed included: hiking/walking, dog walking, and bird watching. Concerns raised by equestrian users interviewed included: a lack of trash receptacles and portable restrooms throughout the mitigation area, a lack of signage marking trails and outlining the rules for use of the Mitigation Area, trail maintenance (particularly vegetation overgrowth and rocks on the trails), trash, illegal dumping, motorcycle and all-terrain vehicle use on the trails, and the homeless population. Equestrian users reported observations of individuals camping in the Mitigation Area, bathing in the creek, illegal camp fires, and illegal dumping by individuals and businesses. The biologist asked the equestrian users to contact local law enforcement and LACDPW if suspicious or illegal activities are observed in the Mitigation Area. Equestrian users that had called law enforcement in the past expressed disappointment in the fact that by the time law enforcement arrives, the offending individual(s) have usually already left the area and hence, issues go unresolved. Recommendations provided by equestrian users interviewed included, more clean-up events, more community meetings regarding the Mitigation Area, increasing oversight and security in the Mitigation area, widening trails, and fining individuals that are observed mis-using the Mitigation Area.

Effects on Sensitive Habitat by Equestrian User Groups

Equestrian site users can affect sensitive terrestrial habitat by traveling off of the established trail systems and disturb sensitive aquatic habitat when traveling through Haines Creek. Riders were reminded to cross the creek single file to minimize erosion along the banks, and to stay on the established trails. Equestrian users were not observed off-trail or breaking other rules during the 2017 outreach efforts; however, one rider was observed during the August 2017 exotic wildlife removal effort that had ridden her horse into the creek looking for a deeper, ponded area to cool off her horse. The creation of new trails and traveling off of the established trails can be avoided with continued trail maintenance and equestrian site visitor education.

Please do not hesitate to contact me at (949) 261-5414 or at pmorrissey@chambersgroupinc.com, to discuss any questions or concerns.

Sincerely,

CHAMBERS GROUP, INC.

Paul Morrissey
Principal | Director of Biology

SITE PHOTOS

Photo 1: Rock dam observed on July 27, 2017 during an exotic wildlife removal effort. The rock dam was located along Haines Canyon Creek west of the Wheatland Site entrance.

Photo 2: Rock and tree dam at a popular swimming location observed on October 30, 2017 during an exotic wildlife removal effort. The rock dam was located along Haines Canyon Creek west of the Wheatland Site entrance.

Photo 3: Rope swing at a popular, dammed swimming location (see photo 2 above) observed on October 30, 2017 during an exotic wildlife removal effort. The rock dam was located along Haines Canyon Creek west of the Wheatland Site entrance.

Photo 4: Rock and tree dam observed on October 30, 2017 during an exotic wildlife removal effort. The rock dam was located along Haines Canyon Creek west of the Wheatland Site entrance.

Photo 5: Rock dam observed on October 30, 2017 during an exotic wildlife removal effort. The rock dam was located along Haines Canyon Creek west of the Wheatland Site entrance.

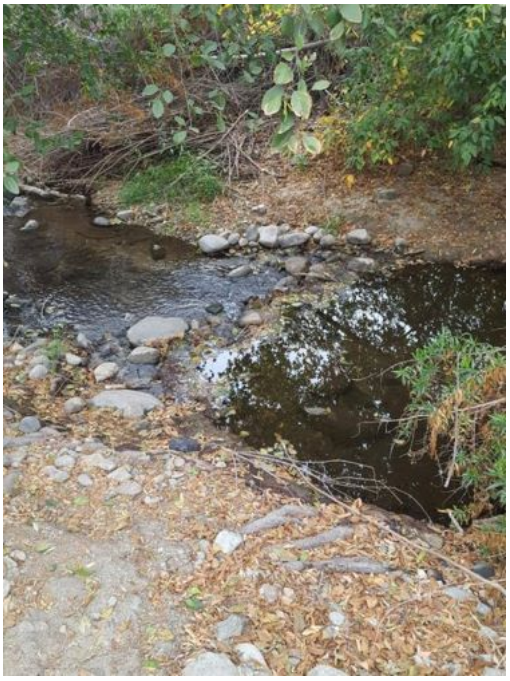

Photo 6: Rock dam observed on October 30, 2017 during an exotic wildlife removal effort. The rock dam was located along Haines Canyon Creek west of the Wheatland Site entrance.