

**2020 ANNUAL REPORT FOR THE
BIG TUJUNGA WASH MITIGATION AREA
LOS ANGELES COUNTY, CALIFORNIA**

Prepared for:

**LOS ANGELES COUNTY
PUBLIC WORKS**
900 South Fremont Avenue
Alhambra, California 91803-1331

Prepared by:

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

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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 Los Angeles County Public Works (Public Works) 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 Big Tujunga Wash Mitigation Area (Mitigation Area) have been under the direct supervision of CDFW biologists Matthew Chirdon, Steve Gibson, or David Lin (current). 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 March 16 and December 10, 2020. Breeding bird pre-activity surveys were conducted prior to each exotic vegetation removal activity occurring within nesting bird breeding season (March 1 through September 15) in 2020. 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 negative impacts occurred to breeding/nesting birds within the Mitigation Area.

Condition 2: Nesting raptor surveys were conducted prior to all vegetation removal activities occurring within the Mitigation Area in 2020. One Cooper's hawk (*Accipiter cooperii*) nest, one red-shouldered hawk (*Buteo lineatus*) nest, and one red-tailed hawk (*Buteo jamaicensis*) nest were observed during pre-activity surveys; all three nests were flagged with a 500-foot avoidance buffer and the nest areas were avoided by the maintenance crews. No negative impacts occurred to nesting raptors, and the fencing of nests was not required in 2020 (see Section 4.0).

Condition 3: Active bird nests were neither destroyed nor disturbed during the 2020 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 Sections 4.0 and 8.0). 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. The existing exotic fish exclusionary screens were inspected on September 4, 2020, in order to identify any necessary repairs; and the old, damaged screens were removed and replaced the same day. No work was conducted on site without the presence of a biological monitor (see Sections 4.0, 6.0, and 8.0).

Condition 8: A Contractor Education Brochure with information in both English and Spanish 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 2020 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 at the northwest corner of the Mitigation Area near Interstate 210 was burned during the Creek Fire but was replaced in 2018. An additional trash receptacle is located at the Cottonwood Avenue site entrance.

Condition 12: Hunting was neither permitted nor authorized within the Mitigation Area in 2020.

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 live native vegetation was removed from 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 or the Big Tujunga Wash.

Condition 15: Live 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: Live native vegetation was not removed from the channel, bed, or banks of the stream except as provided for in the SAA or as proposed in the MMP.

Equipment and Access

Condition 17: Vehicles and equipment were neither operated within nor driven through 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 (see Section 8.0).

Fill and Spoil

Condition 19: Fill was not placed in any area of the Mitigation Area in 2020 as it is not authorized per the SAA.

Structures

Condition 20: Materials associated with the MMP activities were not placed in any seasonally dry portions of the stream in 2020.

Condition 21: Installation of erosion control structures was not conducted during 2020, nor was there a need for such structures.

Condition 22: Bridges, culverts, and other structures were not constructed in 2020 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 Haines Canyon Creek to create pools. Chambers Group biologists or properly trained Public Works Flood Maintenance workers carefully removed the illegal dams when encountered to restore the natural flow in Haines Canyon Creek.

Pollution, Sedimentation, and Litter

Condition 24: All litter and pollution laws were adhered to by the contractors, subcontractors, and employees of Public Works. Trash pickup was conducted regularly by the site users, employees of Public Works, and the restoration contractor.

Condition 25: Equipment maintenance was not conducted in the Mitigation Area in 2020.

Condition 26: No hazardous spills of any kind occurred in the Mitigation Area during 2020.

Condition 27: Activities conducted within the Mitigation Area in 2020 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 2020.

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 23, the only movement of rocks within the bed or banks of the stream occurred during the removal of rock dams created by recreational site users. Removal of the rock dams was conducted by biologists who are familiar with the sensitive fishes in the stream or by properly trained Public Works flood maintenance workers (see Sections 6.0 and 10.0). 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 in the SAA as the Big Tujunga Conservation Area). 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 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: Public Works submitted the Conservation Easement (CE) on December 23, 2010. Additional work on the CE was not conducted in 2020.

Administrative and Miscellaneous

Condition 33: No amendments to the SAA were submitted to CDFW during the 2020 reporting period. CDFW did not identify any breaches of the SAA during the 2020 period.

Condition 34: No violations of any terms or conditions of the SAA occurred during the 2020 period.

Condition 35: Copies of the SAA were provided to all the biologists, subcontractors, and workers who conducted activities in the Mitigation Area in 2020.

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 2020.

Condition 37: CDFW was notified prior to the start of exotic vegetation removal activities occurring within the Mitigation Area during the breeding bird season in 2020 (see Section 4.0).

Conditions 38 and 39: No CDFW department employees conducted site visits in 2020.

Conditions 40 through 42: CDFW did not issue a suspension or cancellation of the SAA in 2020.

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 March to December 2020. 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; removal of exotic and invasive plants; 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 Los Angeles County Public Works (Public Works) in July 2007 to continue the implementation of MMP activities. In June of 2017 Chambers Group, Inc. (Chambers Group) was again contracted by Public Works to continue the implementation of the MMP. This report summarizes all activities conducted in the Mitigation Area by Chambers Group between March and December 2020.

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 0.5 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.

Figure 1-1. Project Location

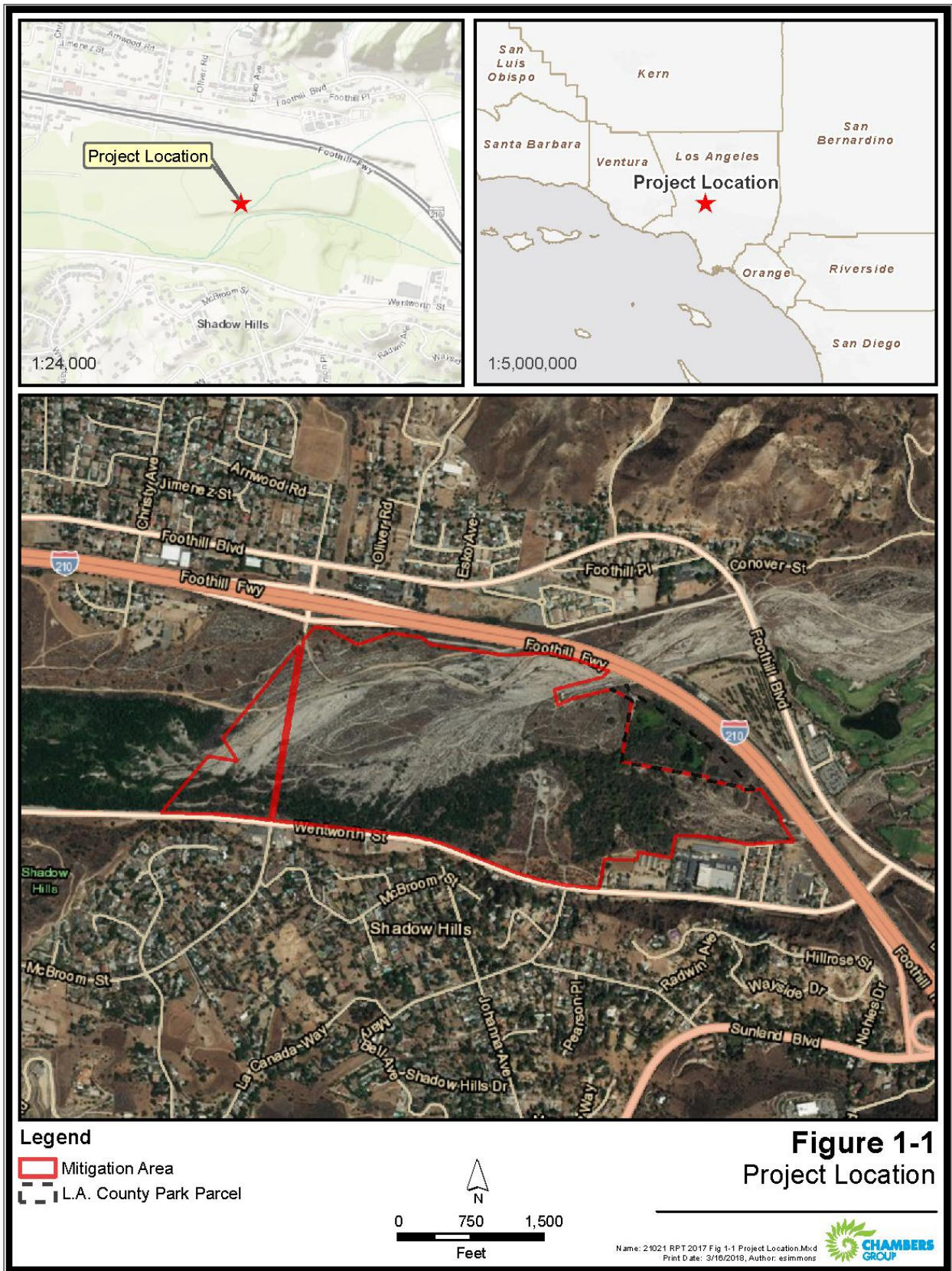
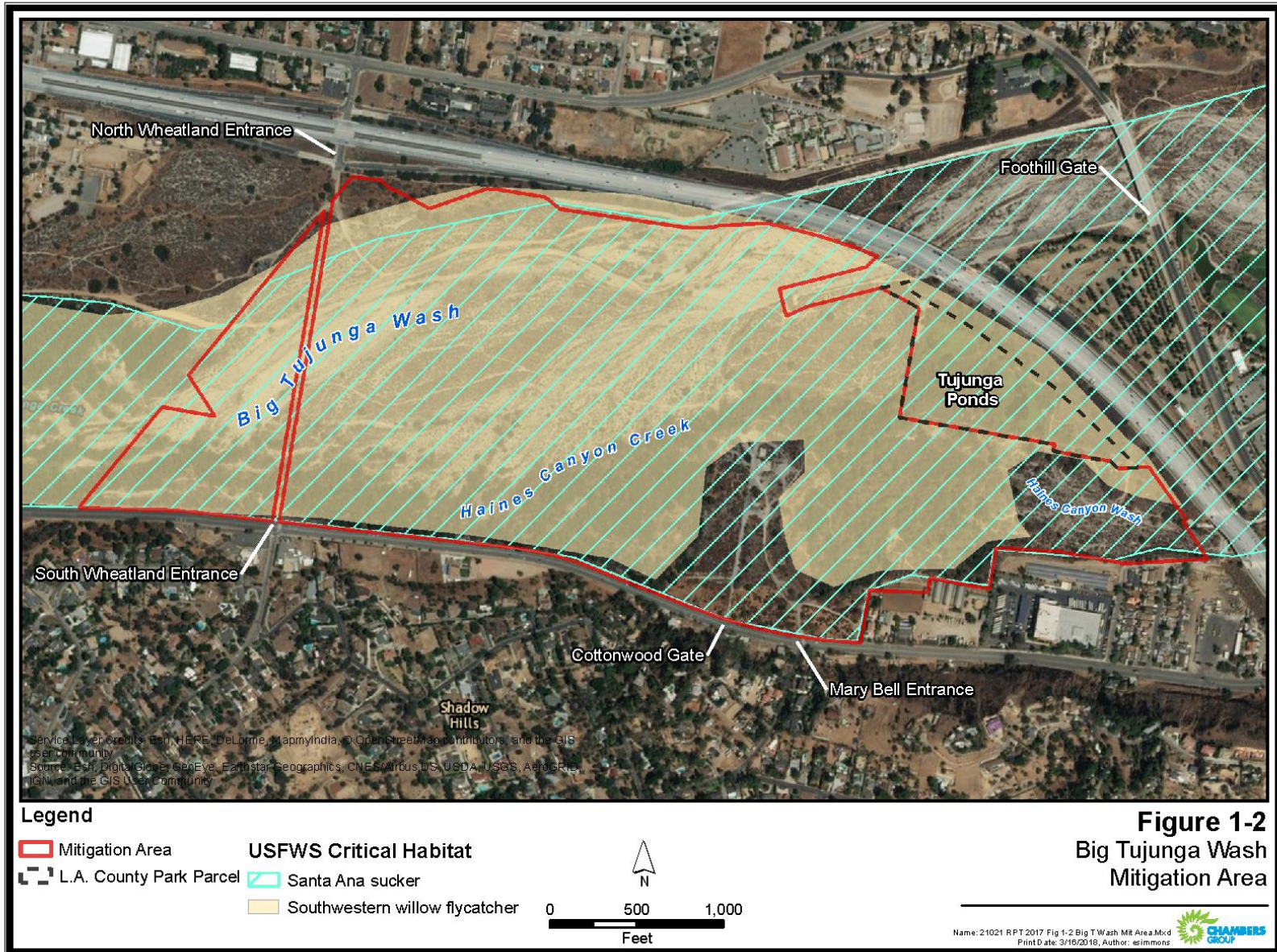


Figure 1-2. Big Tujunga Wash Mitigation Area



1.3 SUMMARY OF THE ANNUAL REPORT

Table 1-1 provides a list of the tasks described in the MMP that were implemented between March and December 2020. Certain tasks in the MMP were not conducted in 2020 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 last conducted in 2015 and, under typical conditions, would have occurred in 2018; however, due to the loss of habitat for these species following the Creek Fire which occurred in December of 2017, the schedule for these surveys remains tentative. No water lettuce (*Pistia stratiotes*) was observed in the Mitigation Area during 2020; and thus, no Water Lettuce Control Program tasks were conducted in 2020. The Fourteenth Annual Trail Cleanup Day, normally conducted as part of the Trails Monitoring task, was canceled in 2020 due to ongoing COVID-19 restrictions. No special assessments were required in 2020. The 2020 mitigation and monitoring tasks are summarized below starting in Section 1.3.1.

Compendia of all plant and wildlife species observed in the Mitigation Area in 2020 are included as Appendix C.

Table 1-1. Mitigation and Monitoring Tasks Implemented and/or Continued in 2020

Implemented and/or Continued in 2020	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
-	Water Lettuce Removal 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
	Task 7 – Community Awareness Program
✓	Spring and Winter Newsletters
✓	Community Advisory Committee Meeting Agenda
✓	Community Advisory Committee Meeting

Table 1-1. Mitigation and Monitoring Tasks Implemented and/or Continued in 2020

Implemented and/or Continued in 2020	Task
✓	Community Advisory Committee Meeting Minutes
✓	Mitigation Area Incident Map 2019
	Task 8 – Public Outreach Program
✓	Public Outreach Weekend Site Visits
✓	Distribute Educational Brochures
✓	Public Outreach Memo
	Task 9 – Native Fish Surveys
✓	Native Fish Surveys
✓	Methods, Results, and Analysis included in 2020 Annual Report
	Task 10 – Special Assessments
-	No special assessments were required in 2020
	Task 11 – Annual Report
✓	2020 Draft Annual Report
-	2020 Final Annual Report
	Task 12 – Meetings
✓	Meetings with Public Works, Agencies, the Public, and Consultants
	Task 13 – 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 2020. 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. Brown-headed cowbird trapping did not occur in 2018 due to lack of nesting habitat after the Creek Fire but was continued in 2019 after it was determined that vegetation regrowth sufficient to accommodate nesting birds had occurred. Details of the brown-headed cowbird trapping program can be found in Section 2.0.

1.3.2 Continuation of Exotic Plant Eradication Program

This task consists 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 removal efforts were necessary. The removal of exotic plants was conducted 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 2020 period was removing exotic plants such as mustard species, castor bean (*Ricinus communis*), non-native thistles, and non-native brome grasses with mechanical removal methods only, as the herbicide ban on County property by the Los Angeles County Board of Supervisors

that went into effect in April 2019 was still in effect throughout 2020. The exotic plant species eradication activities that were conducted in 2020 are summarized in Section 4.0.

1.3.3 Water Lettuce Control Program

Water lettuce removal was added to the Exotic Plant Eradication Program in 2011 due to an infestation of this aquatic, 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 by biologists and maintenance crews and did not require herbicide treatments. No water lettuce was observed at the Tujunga Ponds during any of the site visits conducted from 2017 through 2019. The Tujunga Ponds were searched for water lettuce during several exotic wildlife removal efforts in 2020, and no water lettuce was observed. 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, Mozambique tilapia (*Oreochromis mossambicus*), red swamp crayfish, and western mosquitofish (*Gambusia affinis*) from perennial waters at the Tujunga Ponds and Haines Canyon Creek. Exotic wildlife removal efforts target all life stages of exotic fishes and amphibians (such as 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 nine exotic wildlife removal efforts occurred during the 2020 reporting period. Exotic wildlife removal tasks implemented in 2020 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 November 2, 2020. All samples were tested by Enthalpy Analytical, LLC and Test America. 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. Trail maintenance efforts were conducted in the months of May through July, September, October, and December 2020 to look for areas that might qualify for trail closures; identify and clear areas where trails were blocked by fallen trees, branches, trash or other debris; and identify and clear locations of extensive stands of poison oak (*Toxicodendron diversilobum*) and other vegetation overgrowing the trails. The major focus of 2020 trail maintenance efforts included the removal of snag trees (trees burned in the Creek Fire) that continued to come down throughout the 2020 season, efforts to clear and delineate authorized trails and block off unauthorized trails, the clearing of overgrown vegetation from authorized trails, and reconditioning trails (e.g., removing rocks that had turned up over time) to make trails more comfortable for horses under foot. Trail areas needing extensive maintenance and/or problematic trail areas were mapped and reported to Public Works for maintenance or repair at a later time, if needed. The Fourteenth Annual Trail Cleanup Day was canceled in 2020 due to ongoing COVID-19 restrictions. Trail maintenance tasks implemented in 2020 and further information about the Trail Cleanup Day are 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 be held only in the spring. However, due to ongoing COVID-19 restrictions, the 2020 CAC meeting originally planned to occur in April was cancelled and a virtual meeting via WebEx was held in November. Chambers Group continues to assist Public Works with developing meeting agendas and any supporting handouts (such as Mitigation Area Incident Maps), summarizing CAC meeting minutes, and producing biannual newsletters (typically distributed in the spring and fall) for distribution by Public Works. The status of the Community Awareness Program and activities conducted in 2020 are summarized in Section 9.0.

1.3.8 Public Outreach Program

The Public 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 2020 due to its past success. On-site interviews and education about the Mitigation Area were conducted on four occasions by Chambers Group's bilingual biologists in 2020. 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 and prohibited activities within the Mitigation Area. While on site, the biologists documented any unusual observations or circumstances such as the presence of rock dams in Haines Canyon Creek or other unauthorized activities. A full description of the outreach efforts and notable incidents documented in 2020 is included in Section 10.0.

1.3.9 Special Assessments

Chambers Group staff are available to provide special assessments on an on-call basis. Special assessments include damage assessments (e.g., fire damage, vandalism) and other site issue assessments and the subsequent coordination and response.

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 was available to attend meetings with Public Works, agencies, the public, and other consultants as necessary regarding various aspects of the MMP implementation. With the exception of the CAC meeting discussed in Section 9.0, no other meetings were required or attended by Chambers Group in 2020.

1.3.12 Coordination with LACDPR

Chambers Group staff informed and coordinated with LACDPR concerning activities that took place within the Mitigation Area and the Tujunga Ponds LACDPR parcel. Chambers Group biologists coordinated LACDPR employees to inspect and repair the fish exclusionary screens located in Haines Canyon Creek just downstream from the Tujunga Ponds on September 4, 2020.

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). Brown-headed cowbird trapping was not conducted for the Mitigation Area during 2018 due to lack of suitable nesting habitat after the Creek Fire. It was decided that the continuation of the trapping program would be commensurate with the reestablishment of suitable nesting habitat as determined by qualified Chambers Group avian biologists or as required by CDFW. As suitable habitat had established within the year immediately following the Creek Fire (2018), the brown-headed cowbird trapping program resumed in 2019. Griffith Wildlife Biology operated two cowbird traps within the Mitigation Area and two traps adjacent to the Mitigation Area between April 2 and June 30, 2020 (13 weeks). The methods, results, and discussion of the 2020 trapping program 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's offspring, often resulting in the host birds raising the cowbird chick and neglecting their own young. Female cowbirds can lay more than 40 eggs during the breeding season (Scott and Ankney 1983; Holford and Roby 1993; Smith and Arcese 1994), which can last between two and four months. 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 METHODS

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 (upstream of the Hansen Dam Stables and just outside of Gibson Ranch), 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.

The traps measure approximately 6 feet wide, 8 feet long, and 6 feet tall and were constructed at each trap site. Food, water, perches, and shade were provided inside each trap. A sign was prominently placed

Figure 2-1. Brown-headed Cowbird Trap Locations



outside each trap explaining the significance of the trap and urging recreational users of the area to refrain from tampering with the trap. Each trap contained the minimum preferred ratio of male to female decoys (two males and three females) by April 7, 2020, with two to three males and five to six females by April 15. Trap operation began April 2 and continued every day (including holidays) until June 30, 2020. Each trap was serviced daily by a qualified biologist. 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, lock, and damage from vandals, 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 30, 2020. Cowbirds not used as decoys were humanely euthanized and were provided as forage to raptor rehabilitation/reintroduction facilities.

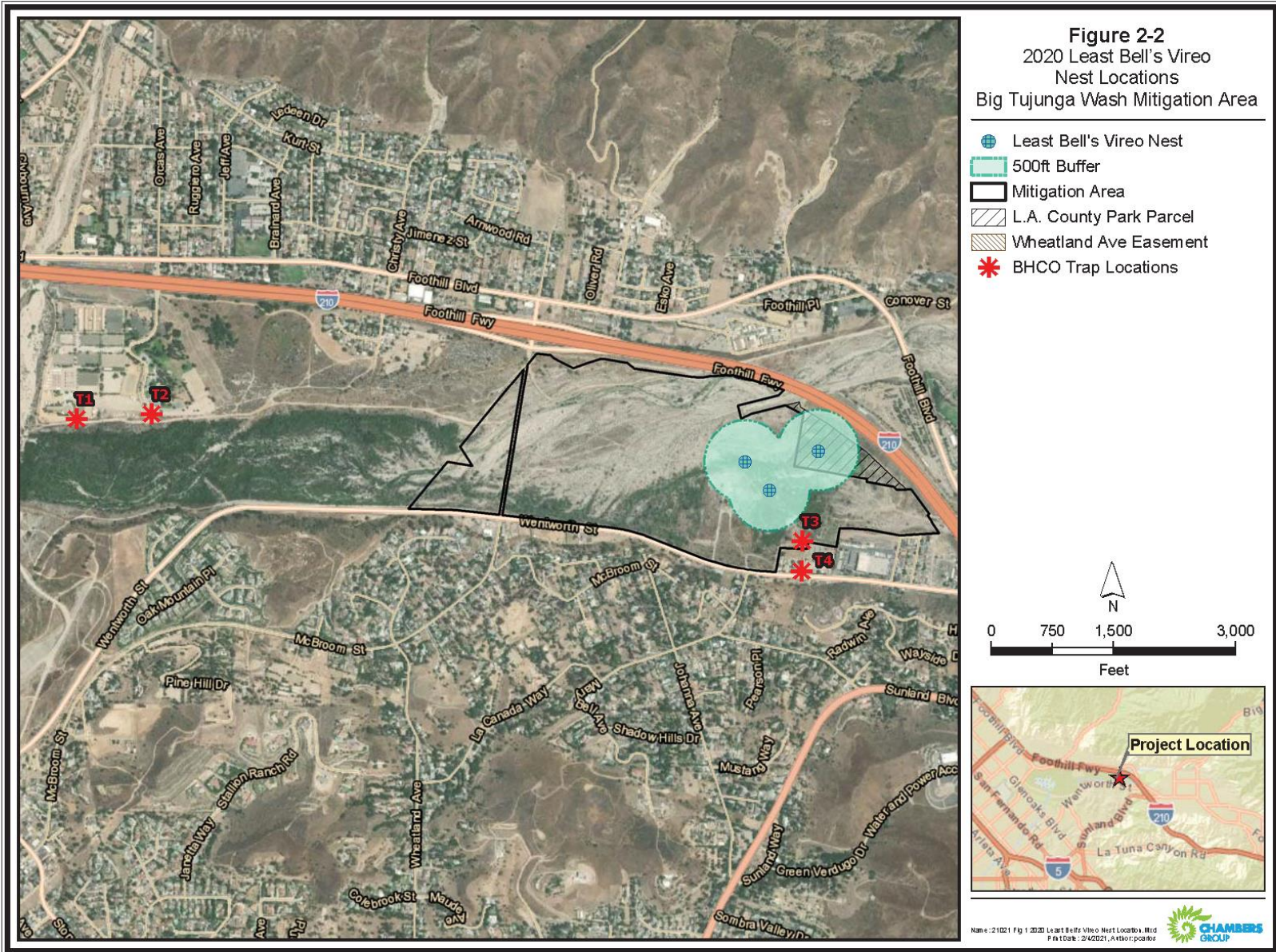
2.3 RESULTS

A total of 55 brown-headed cowbirds were removed during the 2020 trapping season (28 males, 26 females, and 1 juvenile). The male brown-headed cowbird capture peak occurred between week 3 and week 6 (April 15 to May 12) with 25 of the 28 male brown-headed cowbirds captured and removed. The female brown-headed cowbird capture peak also occurred between week 3 and week 5 (April 15 to May 12) with 25 of the 26 female brown-headed cowbirds captured and removed. In 2020, no traps were vandalized, no decoys escaped, and no trapping days were lost.

A total of 42 non-target birds (i.e., all species except brown-headed cowbirds) of 3 bird species were captured in the traps. The three non-target species that were captured included California towhee (*Melospiza crissalis*), house finch (*Carpodacus mexicanus*), and house sparrow (*Passer domesticus*). No banded brown-headed cowbirds or banded non-target species were captured during the trapping season. All non-target birds (42 individuals) captured during the trapping period were released unharmed. No mortalities of decoy or non-target birds occurred inside the traps during the 13 weeks of trapping.

Chambers Group observed three least Bell's vireo pairs and found three parasitized least Bell's vireo nests in the Mitigation Area in June and July 2020. One least Bell's vireo pair had two nests parasitized and one vireo had at least one nest parasitized (in all three cases the least Bell's vireo pairs abandoned the nests and left one brown-headed cowbird egg behind). In one of the three nests broken least Bell's vireo eggs and ants were also present. A least Bell's vireo pair was observed in the Mitigation Area with two fledglings in July, presumed to have been raised in the territory; however, the nest was not observed. Figure 2-2 shows the locations of least Bell's vireo nests identified in 2020 in relation to the locations of the brown-headed cowbird traps.

Figure 2-2. 2020 Least Bell's Vireo Nest Locations



2.4 DISCUSSION

The number of brown-headed cowbirds trapped during the 2020 season was within the range of 2001-2017 and 2019 numbers. The 2020 captured numbers (55 individuals) fell well below the 133 captured in 2016 and were nearly identical to the 2017 and 2019 captured numbers (54 and 55 individuals respectively). The 2017, 2019, and 2020 trapping years had the lowest number of cowbirds captured since 2006 (56 individuals). It is unknown if the number of cowbirds trapped will rebound close to the 16-year average (2001 through 2017) of approximately 53 males, 55 females, and 4 juveniles.

Even in this below-average year, the removal of 26 cowbird females precluded as many as 1,040 to 1,560 parasitism events (40 to 60 eggs per female). However, the three vireo nests that were parasitized from early June to early July shows that not all female cowbirds were removed from the Mitigation Area. Only one female cowbird was captured between May 11 and June 30 (Trap 4 at Gibson Ranch captured one female on June 17), so it is possible that the cowbird female or females active at the vireo nesting territories did not fly south to forage at the Gibson Ranch stables (where Traps 3 and 4 were located) despite being within a quarter mile of the traps. Because of this, it is imperative that one of the four Big Tujunga traps be moved adjacent to the vireo nesting area in 2021.

A comparison of the number of cowbirds trapped by week with the dates of nest failures due to parasitism showed that the nest failures occurred well after the peak cowbird trapping weeks and in weeks where either two or fewer cowbirds were trapped. The last nest failure due to parasitism was recorded on July 9, 2020, more than a week after cowbird trapping had concluded for the season. This supports the theory that there may be female cowbirds that are not returning to the Gibson Ranch stables to forage and that moving a trap closer to the known least Bell's vireo territories may help reduce females that remain in the area or forage elsewhere.

Locally raised juvenile cowbirds 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 cowbird was captured during the 2020 trapping season, indicating that not many cowbirds were raised in the Mitigation Area in 2020. However, that could be due to nest abandonment after nest parasitism, as was observed with the vireo pairs; only direct nest monitoring can provide the exact rate of parasitism in the area.

Trapping in the Mitigation Area and elsewhere has reduced or eliminated cowbird parasitism in targeted habitat and increased the reproductive success of host species present; however, targeted topical trapping in the Mitigation Area has not affected or reduced the regional cowbird population. 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). Unless and until cowbirds are absent from the study area for several years, by regional cowbird control or other means, topical cowbird trapping will be required in the Mitigation Area indefinitely to control local brood parasitism and allow native birds to reproduce naturally.

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 are sensitive and/or listed species either known to occur or that 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 (*Arundo donax*), 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 cottonwood-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 to address the changing needs of the Mitigation Area and to address the long-term maintenance needs of the restoration areas. The habitat restoration plan was 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 immediately implemented 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); however, the exotic plant removal component of the habitat restoration program 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 2020 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 both 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
eupatory*	<i>Ageratina adenophora</i>
palm species	<i>Arecastrum</i> sp., <i>Washingtonia</i> sp., etc.
giant reed*	<i>Arundo donax</i>
mustard species*	<i>Brassica</i> spp., <i>Hirschfeldia incana</i> , <i>Sisymbrium</i> spp.
Italian thistle	<i>Carduus pycnocephalus</i>
non-native thistle	<i>Cirsium</i> spp.
umbrella plant*	<i>Cyperus involucratus</i>
water hyacinth	<i>Eichhornia crassipes</i>
gum tree*	<i>Eucalyptus</i> spp.
fennel	<i>Foeniculum vulgare</i>
white sweetclover*	<i>Melilotus albus</i>
tree tobacco*	<i>Nicotiana glauca</i>
common plantain	<i>Plantago major</i>
castor bean*	<i>Ricinus communis</i>
pepper tree	<i>Schinus terebinthifolius</i> , <i>S. molle</i>
Spanish broom*	<i>Spartium junceum</i>
milk thistle	<i>Silybum marianum</i>
Mediterranean tamarisk*	<i>Tamarix ramosissima</i>
Non-Native Annual Grasses	
wild oat*	<i>Avena fatua</i>
slender wild oat	<i>Avena barbata</i>
foxtail chess*	<i>Bromus madritensis</i> subsp. <i>madritensis</i>
ripgut grass*	<i>Bromus diandrus</i>
soft chess	<i>Bromus hordeaceus</i>
glaucous foxtail barley*	<i>Hordeum murinum</i>
annual beard grass*	<i>Polypogon monspeliensis</i>
Non-Native Perennial Grasses	
pampas grass	<i>Cortaderia selloana</i>
Bermuda grass	<i>Cynodon dactylon</i>
Italian ryegrass	<i>Festuca perennis</i>
fountain grass*	<i>Pennisetum setaceum</i>

Table 4-1. Target Non-Native Weed Species

Common Name	Scientific Name
smilo grass	<i>Stipa miliacea</i> var. <i>miliacea</i>

*Observed in 2020

Table 4-2 lists additional exotic plant species observed within the Mitigation Area in 2020.

Table 4-2. Additional Exotic Plant Species Observed in the Mitigation Area in 2020

Common Name	Scientific Name
tree of heaven	<i>Ailanthus altissima</i>
black mustard	<i>Brassica nigra</i>
lamb's quarters	<i>Chenopodium album</i>
poison hemlock	<i>Conium maculatum</i>
shortpod mustard	<i>Hirschfeldia incana</i>
prickly lettuce	<i>Lactuca serriola</i>
sweet-alyssum	<i>Lobularia maritima</i>
horehound	<i>Marrubium vulgare</i>
marvel of Peru	<i>Mirabilis jalapa</i>
wild radish	<i>Raphanus sativus</i>
Himalayan blackberry	<i>Rubus armeniacus</i>
curly dock	<i>Rumex crispus</i>
tamarisk	<i>Tamarix</i> sp.
wand mullein	<i>Verbascum virgatum</i>
Non-Native Annual Grasses	
rattail sixweeks grass	<i>Festuca myuros</i>

The revised approach to the exotic plant eradication and maintenance program also includes a more aggressive program for targeting and eliminating large, non-native trees that can create a dense overstory within the Mitigation Area. While most of the trees in the Mitigation Area were burned during the Creek Fire in 2017, the continued and diligent removal of these exotic tree species as they develop will allow more sunlight to reach the native plant species growing beneath the redeveloping native tree 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*	<i>Acacia dealbata</i> and <i>Acacia</i> spp.
silktree*	<i>Albizia julibrissin</i>
southern catalpa*	<i>Catalpa bignonioides</i>
gum tree*	<i>Eucalyptus</i> spp.
edible fig	<i>Ficus carica</i>
shamel ash	<i>Fraxinus uhdei</i>
Japanese privet	<i>Ligustrum japonicum</i>
sweetgum*	<i>Liquidambar styraciflua</i>
white mulberry*	<i>Morus alba</i>

Table 4-3. Target Invasive Exotic Tree Species

Common Name	Scientific Name
tree tobacco*	<i>Nicotiana glauca</i>
castor bean*	<i>Ricinus communis</i>
Peruvian pepper tree	<i>Schinus molle</i>
Brazilian pepper tree	<i>Schinus terebinthifolius</i>
Chinese elm	<i>Ulmus parvifolia</i>
palm species*	<i>Washingtonia sp., Phoenix canariensis, etc.</i>

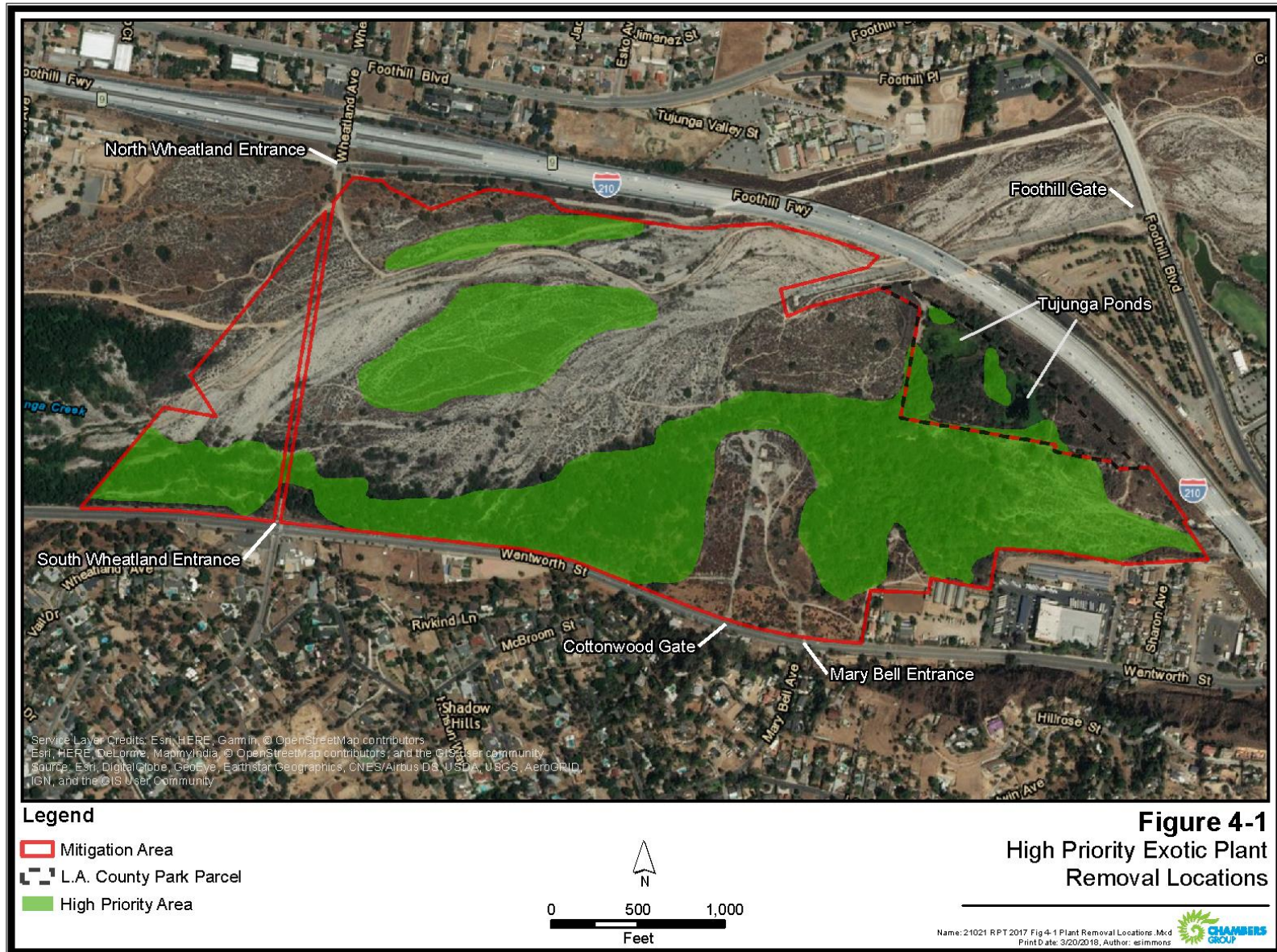
*Observed in 2020

4.1 METHODS

Exotic plant eradication activities took place throughout the Mitigation Area, focusing on riparian and upland portions of the site and around the Tujunga Ponds. 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 weedy species (thistle [*Cirsium spp.*] and mustard [*Brassica spp.*]) reached levels that needed to be controlled and continue to be included in regular exotic plant removal efforts. Although exotic plant eradication efforts were conducted throughout the entire Mitigation Area in 2020, Figure 4-1 shows the areas that are considered high priority for targeting exotic plant species.

Notification to commence planned exotic plant removal and maintenance activities was sent to CDFW on March 2, 2020 (Appendix E). 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 (Collector; an Esri-based application) on either a tablet or personal smart phone. All captured points, including but not limited to sensitive species observations, nesting bird locations, boundaries of environmentally sensitive areas, authorized and unauthorized trails, and photographs, are geo-referenced (GPS coordinate associated with a point), time-stamped for accurate inventory, and catalogued. The data is automatically posted to the server and is 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.

Figure 4-1. High Priority Exotic Plant Removal Locations



During the exotic plant eradication efforts, a biological monitor was present to monitor that crews conducted work within the appropriate predefined work areas and that the removal activities did not result in negative impacts to sensitive biological resources, such as nesting birds. The biological monitor also participated in morning tailgate sessions to remind the crews about the sensitive biological resources present in the Mitigation Area. A bilingual worker education brochure (updated and redesigned in spring 2019) that contained general information and guidelines pertaining to the site was distributed to all new workers entering the site (Appendix B). The biological monitor or restoration biologist was responsible for showing crew members locations of exotic plant species that had been recorded during previous site visits and pre-activity surveys. Newly identified stands of exotic vegetation were manually removed as they were discovered or were mapped with Collector for removal on a subsequent day when necessary. All work areas were documented by the biological monitor, restoration biologists, or restoration foreman, and digital photographs were taken to document removal efforts. Following the completion of each eradication effort or at the end of each month in which eradication efforts were conducted, a memo was prepared that documented the date, locations, and details of the eradication activities conducted and the presence and locations of any sensitive biological resources (Appendix E). All exotic plant removal efforts were conducted according to the terms and conditions of the SAA.

In March 2019, a moratorium (and ultimately a ban) on the use of glyphosate on County property by the Los Angeles County Board of Supervisors was enacted. After April 23, 2019, the use of herbicide treatments within the Mitigation Area ceased. Only manual removal methods (e.g., hand pulling or hand tools) were used to eradicate weeds within the Mitigation Area thereafter including for all exotic removal efforts occurring in 2020. Large stands of annual weed species were either cut down to the ground or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual species (e.g., large mustards and poison hemlock [*Conium maculatum*]) required complete removal of the plant from the roots. Plant material was left on the ground in the same area to decompose on site.

During summer months manual removal methods were coupled with the implementation of seed head collection as means to decrease the future germination of exotic species and reduce the fire fuel present within the target areas. Mature and potentially viable seed heads for all types of non-native species were collected and contained into 3-millimeter black contractor bags. Collection barrels were used to help manage the large volumes of seed heads and vegetation. Collected materials were condensed in the barrels to maximize density without compromising the plastic and were later transferred into the contractor bags for removal from the site.

4.2 NON-NATIVE EXOTIC PLANT ERADICATION EFFORTS IN 2020

Prior to the start of exotic plant removal activities, a pre-activity nesting bird survey was conducted by avian biologist Alisa Muniz on March 12, 2020. Chambers Group conducted site-wide exotic plant eradication during 10 months in 2020: March 16 through 30, April 1 through 30, May 1 through 29, June 1 through 30, July 1 through 31, August 4 through 26, September 8 through 25, October 5 through 26, November 2 through 13, and December 1 through 10. Chambers Group biologists Alisa Muniz, Jessica Calvillo, Corey Jacobs, Heather Clayton, Omar Moquit, Austin Burke, or restoration biologists Valerie Alcantar or Michael Walsh conducted the pre-activity surveys and/or the biological monitoring for all 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing.

The March exotic plant eradication efforts were focused on clearing non-native grasses and other annual weeds from the Cottonwood Avenue bluff and surrounding areas using weed whackers as well as hand-pulling longer-lived annual and perennial weeds. To efficiently cover the large area, weed whackers were used to trim the seed heads of maturing weeds; and hand-pulling was performed as needed.

A relatively dry winter resulted in noticeably fewer weeds as compared to the same time in 2019, with weeds primarily concentrated in wetter areas and areas with less sandy soils (e.g., along the Wheatland Avenue fence). Minimal early season germination and a slow start to the 2020 exotic plant cohort allowed maintenance crews to get ahead of maturing seeds and keep those seeds from entering the seed bank.

By April 1, 2020, the closure of the Mitigation Area to the public was implemented. Los Angeles County sent out an email to the Mitigation Area email list regarding the closure, provided Los Angeles County Public Health-approved signs to post at the Mitigation Area, and posted on their social media page to inform the public to keep out of the Mitigation Area in support of the “Safer at Home” order given by Los Angeles County and the State of California. This was in line with the Los Angeles County Parks and Recreation announcement on COVID-19. During the closure of the Mitigation Area, maintenance work was allowed to proceed with the proper COVID-19 precautions in place.

The April exotic plant eradication efforts were focused on removing non-native grasses and other annual weeds from the southern portion of the Mitigation Area, including the Cottonwood Avenue bluff, the areas surrounding Haines Canyon Creek, and the southern portion of the Big Tujunga Wash. The areas north and east of the Cottonwood Avenue bluff area were avoided due to the 500-foot avoidance buffer for the least Bell’s vireos detected on site. Only mechanical methods were used to remove weeds, including using weed whackers to trim the seed heads of maturing grasses and hand-pulling longer-lived annual and perennial weeds. No trail work occurred within any nest avoidance buffer, and the crews avoided the use of loud, gas-powered equipment when working in proximity to the least Bell’s vireo nest buffers so as not to disturb the species.

Late-season rains that occurred during March resulted in the germination of many exotic plants (e.g., mustard species and poison hemlock) that had not been as prevalent earlier in the year. Regrowth of many grasses and other weed species that had been previously trimmed was also observed. While this late-season rain resulted in more exotic plants sprouting, continual monitoring allowed for the removal of newly germinated weeds as soon as they sprouted, effectively reducing the seed bank, the risk of these weeds producing seeds, and the overall effort needed to remove these weeds in the future.

In early May, Chambers Group was notified that the mitigation area would reopen for public use on May 8. Prior to reopening, crews observed that some members of the public continued to illegally visit the Mitigation Area. These visitors included a lesser number of equestrian riders, though still averaging approximately six riders per day. Prior to reopening, the crews observed an increase in visitors hiking the trail system comparable to the visitor traffic observed prior to the site closure. The number of hikers seen during the closure averaged approximately 12 per day. The continued public use of the Mitigation Area during the closure, and the anticipation that an even greater number of site users would be seen following the reopening, prompted the installation of signs notifying the public of the presence of sensitive species on site. These signs were placed at locations along the trail system that encompassed the avoidance buffer areas that Chambers Group’s maintenance crews and biologists observed to protect the nesting least Bell’s vireos.

The May exotic plant eradication efforts were focused on removing non-native grasses and other annual weeds from the northern portion of the Mitigation Area, primarily the areas north of Big Tujunga Creek. Exotic removal efforts in the southern portions of the Mitigation Area were focused on addressing the regenerating or newly germinating weed species found in areas where resources persisted. The areas north and east of the Cottonwood Avenue bluff area were avoided due to the 500-foot avoidance buffer for the least Bell's vireos detected on site. Only mechanical removal methods were used including using weed whippers to cut the seed heads off maturing grasses and hand-pulling longer-lived annual and perennial weeds, and all maintenance activities occurred outside the avoidance buffers. Crews discovered unauthorized dams constructed along Haines Canyon Creek and Big Tujunga Creek during the May efforts, and the structures were immediately removed to allow the creeks to flow freely. The materials used to build the dams were dispersed away from the dam locations to discourage future reconstruction.

The rain events that occurred during March and April resulted in continued germination of many exotic plants (e.g., mustard species and poison hemlock) that had not been as prevalent during the March exotic plant removal efforts. Regrowth of many grasses and other weed species that had been previously trimmed was also observed.

During the summer months (June through September) exotic plant eradication efforts were focused on areas where small stands of exotic species were discovered and on areas where large, dense stands of exotic plants were removed during previous efforts but had since experienced new weed germination and development. In areas where small stands of exotic plants remained and were found to have fully matured, seed heads were collected for disposal at an offsite waste facility. In areas that were revisited and/or where large stands of exotic species once stood, crew members focused efforts on removing the rapidly developing species that continue to germinate from the existing seed bank. In many of these areas exotic species were adventitiously growing among native species where abundant resources (e.g., water, light, space, shade) allowed them to develop late into the growing season and compete with native species. The removal of these adventitious weed species continued to encourage the development of native plant species by reducing the competition for resources. Only mechanical removal methods were used during summer removal efforts, including using weed whackers in areas where they would not disturb sensitive resources (e.g., least Bell's vireo), and hand-pulling exotic species that were growing near native vegetation. A total of 194 contractor bags of non-native seed heads were collected from the Mitigation Area during the July eradication efforts. All bags of collected seeds heads were removed to an offsite disposal facility.

The biologists conducted nesting bird sweeps within 500 feet of work areas and provided nest updates for any active nests through September 15, the end of nesting bird season. The biologists inspected and maintained the flagging for any active nests and avoidance buffers. No work was performed near any nests that were in active stages. All nests were discussed with the foreman and crews during daily tailboard meetings to determine where maintenance activities would be performed. No maintenance activities were conducted in avoidance buffer areas and no negative impacts to nests occurred due to maintenance activities. All areas north and east of the Cottonwood Avenue bluff were avoided due to the 500-foot avoidance buffers for the least Bell's vireos discovered within the Mitigation Area until buffer restrictions were lifted on September 14 after approval from CDFW.

Exotic plant removal efforts continued in a similar fashion throughout the fall (October through December) with maintenance crews again being able to work in areas that had been within the least Bell's vireo avoidance buffers and were off limits throughout most of the spring and summer. In October, exotic plant removal efforts were focused along the area south of Haines Canyon Creek, the northern bank of

Haines Canyon Creek, and the eastern riparian area. Targeted non-native annual and perennial species included white sweetclover (*Melilotus albus*), shortpod mustard (*Hirschfeldia incana*), tree of heaven (*Ailanthus altissima*), castor bean, and tree tobacco (*Nicotiana glauca*). In November and December, exotic plant removal efforts were conducted in the eastern riparian area south of the Tujunga Ponds and in the western riparian area heading toward the south Wheatland Avenue entrance. Targeted non-native annual and perennial species included white sweetclover, shortpod mustard, castor bean, tree tobacco, umbrella plant (*Cyperus involucratus*), eupatory (*Ageratina adenophora*), poison hemlock, Himalayan blackberry (*Rubus armeniacus*), and gum tree (*Eucalyptus* sp.). During the fall exotic plant removal efforts, the crew used only mechanical removal methods (e.g., hand-pulling, shovels, digging-bars) when removing weeds and concentrated on newly germinating, regenerating, and maturing exotic plant species in areas where resources supported their continued development. Annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual and/or perennial species (e.g., large mustards) required complete removal of the plant from the roots. Seedless plant material was left on the ground in the same area to decompose on site.

Special Status Species

The exotic plant eradication activities did not result in negative impacts to any sensitive biological resources in 2020. Active bird nests, potential bird nests, and/or birds behaving territorially or exhibiting nesting behaviors were documented during exotic plant removal activities occurring within nesting bird season (March 1 through September 15). Forty-two active nests were discovered during pre-activity sweeps and exotic plant removal monitoring occurring between March and June 2020 and were determined to belong to acorn woodpecker (*Melanerpes formicivorus*), Anna's hummingbird (*Calypte anna*), Bewick's wren (*Thryomanes bewickii*; four individual nests), bushtit (*Psaltriparus minimus*; seven individual nests), California towhee (four individual nests), Cooper's hawk, least Bell's vireo (eight individual nests belonging to three separate pairs), lesser goldfinch (*Spinus psaltria*; two individual nests), mourning dove (*Zenaidura macroura*; three individual nests), northern mockingbird (*Mimus polyglottos*; four individual nests), orange-crowned warbler (*Leiothlypis celata*), phainopepla (*Phainopepla nitens*), red-shouldered hawk, red-tailed hawk, song sparrow (*Melospiza melodia*), spotted towhee (*Pipilo maculatus*), and western bluebird (*Sialia mexicana*; two individual nests). No-work buffers were established around all active and potential bird nests until it could be determined that the nestlings had fledged, and the nest was no longer being used (active nests) or that no nest was present (potential nests). The biological monitors were present during all work activities occurring outside the buffers to monitor that the adults and young associated with each nest were not negatively affected. No active bird nests were identified, and no breeding or nesting behaviors were observed prior to or during the July and September exotic plant eradication efforts. The October, November, and December exotic plant eradication efforts took place outside the nesting bird season.

Eight special status wildlife species were observed while monitoring exotic plant removal activities. Five California species of special concern (SSC) were observed including loggerhead shrike (*Lanius ludovicianus*), yellow-breasted chat (*Icteria virens*), yellow warbler (*Setophaga petechia*), olive-sided flycatcher (*Contopus cooperi*), and coastal whiptail (*Cnemidophorus tigris*). One watchlist species, the Cooper's hawk, and a California listed endangered species, the willow flycatcher, were also observed while monitoring exotic plant removal activities. In addition, several federally and state listed endangered least Bell's vireos were observed throughout the Mitigation Area for the first time since pre-activity surveys and monitoring for the species began in 2001. It is believed that the post-fire riparian successional habitat that has developed (since the Creek Fire), combined with regular maintenance efforts to reduce non-

native plant species and invasive brown-headed cowbirds, has helped create the necessary conditions for least Bell's vireo to forage and nest in the Mitigation Area. Three least Bell's vireo pairs/territories were identified in the riparian area north and east of Cottonwood Avenue and south of the Tujunga Ponds during the 2020 nesting bird season. A 500-foot avoidance buffer was established around each territory/active nest, and no maintenance activities occurred in or near the avoidance buffers. Each known active nest was monitored no more than once per week to determine its status and to identify any new nest attempts. No work was conducted within the avoidance buffer of any active least Bell's vireo nest. Details regarding all known least Bell's vireo territories/nests can be found in the exotic plant removal memos included as Appendix E.

Notes and representative site photographs were taken, and the coordinates of exotic plant locations were recorded using Collector 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. Without management, water lettuce at the Tujunga Ponds has the potential to threaten the habitat and endangered species in Haines Canyon Creek, such as the Santa Ana sucker, as well as negatively impact the native turtle and bird species that use the ponds as habitat. ECORP and Public Works created 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 the channel that connects the ponds. 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 conducted 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 2016. On both occasions, onsite biologists and exotic plant removal crews were able to remove the small patches of water lettuce by hand. The ponds were monitored regularly during subsequent site visits between 2016 and 2019, and no other water lettuce was observed.

In 2020 the Tujunga Ponds were inspected for water lettuce during both exotic plant eradication efforts and exotic wildlife removal efforts at the Tujunga Ponds. 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 in 2021 for any reoccurrence of water lettuce.

SECTION 6.0 – CONTINUATION OF EXOTIC WILDLIFE ERADICATION PROGRAM

The purpose of the exotic wildlife removal program is to restore, create, and maintain 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 wildlife species including fishes, turtles, American bullfrogs, 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 continued the effort to remove exotic aquatic species 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 decline during this period was largely attributed to the absence of juveniles. 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 remained 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 the Mitigation Area.

In June 2016, a fish exclusionary 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 exclusionary 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 2020.

6.1 EXOTIC WILDLIFE ERADICATION 2020

6.1.1 Methods

The 2020 removal of exotic aquatic species from the Mitigation Area was conducted monthly by Chambers Group from March through October and December 2020, under the direction of Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1). Each effort consisted of one to three days each month. Safety precautions and COVID-19 precautions including social distancing, gear sanitation, and hand washing were discussed prior to the start of removal activities for each removal effort. Due to the presence of three 500-foot least Bell's vireo avoidance buffers in the Mitigation Area which overlapped a majority of the Tujunga Ponds and a portion of Haines Canyon Creek, removal efforts were not conducted inside the buffers between May and September while buffer restrictions were in place. In addition, during nesting bird breeding season, least Bell's vireo surveys were conducted prior to any exotic removal activities that occurred near the avoidance buffers (e.g., the necessary replacement of the fish exclusionary screen on September 4, 2020) to help ensure that no least Bell's vireos were within 500 feet of the proposed work area prior to beginning work. Removal methods used in the Tujunga Ponds included seining (most often seines were deployed from a small, non-motorized boat), spearfishing, and bowfishing. Spearfishing and bowfishing methods were employed during removal efforts as a means to target larger fish in the deeper areas of the Tujunga Ponds. Spearfishing efforts were successful and resulted in the capture and removal of several largemouth bass and common carp from the Tujunga Ponds. Removal efforts in Haines Canyon Creek included trapping, dip-netting, hand capturing, and two-person seining. The electrofishing removal method was not used during wildlife removal efforts in 2020. Prior to using any specific gear types, reconnaissance surveys (visual surveys from banks) were conducted to identify the locations and relative abundance of both invasive target species and native non-target species.

Exotic species removal did not occur in occupied Santa Ana sucker reaches between March 1 and July 31, 2020, in order to avoid disturbing the species during the breeding season and potential negative impacts to juvenile individuals. After July 31, when Santa Ana sucker were absent within a reach, the less invasive seining and dip-netting removal methods were used. Any native species that was incidentally captured during exotic species removal efforts was immediately released unharmed. All wetted portions of the Mitigation Area were surveyed to locate and remove exotic wildlife during 2020 (Figure 6-1).

6.1.2 Results and Discussion

A total of 14,526 individuals consisting of seven exotic aquatic species (five fishes, one amphibian, and one invertebrate) were captured and removed from the Mitigation Area during the 2020 removal efforts. Of the total individuals captured and removed, 57.06 percent (number of individuals [n]=8,135) were red swamp crawfish, 23.32 percent (n=3,324) were largemouth bass, and 18.79 percent (n=2,678) were western mosquitofish. Common carp (n=76), green sunfish (n=16), American bullfrog (n=14), and bluegill (n=6) totaled less than 1 percent each of the total individuals captured and removed. Haines Canyon Creek accounted for 12.58 percent of the total exotic species captured (n=1,794), while the remaining 87.42 percent of exotic species were captured in the Tujunga Ponds and West Tujunga Pond outlet to Haines Canyon Creek. Table 6-1 shows the number of exotic aquatic species captured by month and the total number of exotic aquatic species captured during 2020.

Figure 6-1. Exotic Aquatic Wildlife Survey Locations

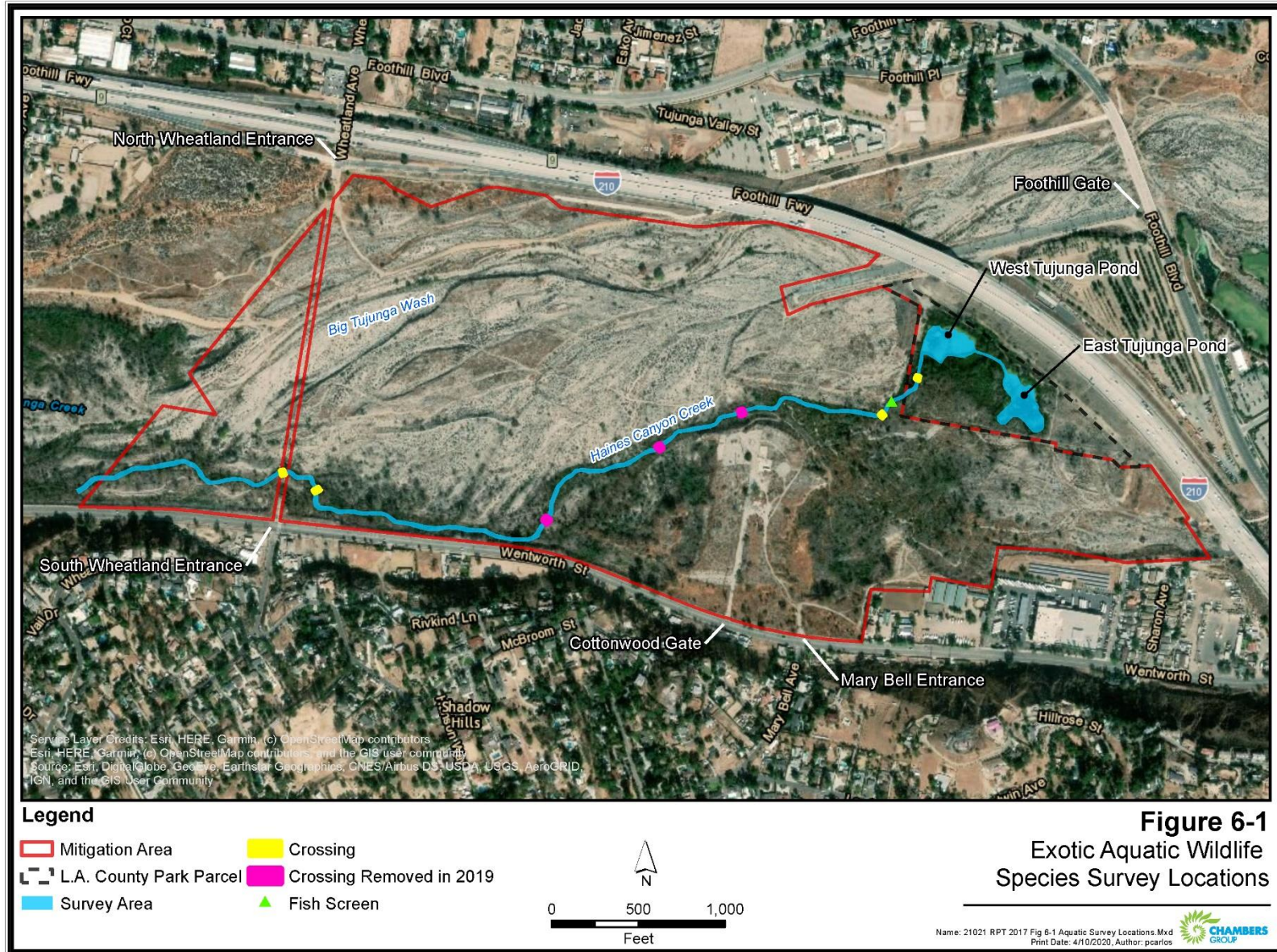


Table 6-1. Exotic Aquatic Species Captured by Month, 2020

Species Captured	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
American bullfrog	0	0	0	0	0	0	14	0	N/A	0	14
bluegill	0	0	0	0	0	2	4	0	N/A	0	6
common carp	2	48	23	3	0	0	0	0	N/A	0	76
green sunfish	0	2	3	0	0	1	10	0	N/A	0	16
largemouth bass	1	123	2,127	896	39	98	7	32	N/A	1	3,324
red swamp crayfish	10	447	1,629	710	1,014	2,013	969	1,343	N/A	0	8,135
western mosquitofish	12	92	322	90	94	439	1,009	620	N/A	0	2,678
TOTAL	25	712	4,104	1,699	1,147	2,553	2,020	1,995	N/A	1	14,256

N/A - No removal efforts conducted

During the investigation of the Haines Canyon Creek in March, it was observed that a pooled area in the creek where dams had been constructed near the South Wheatland Avenue entrance in 2019 no longer had pooled and water was flowing freely. This area was regularly monitored for illegal activity during the wildlife removal efforts in 2020 to help ensure the safety of special status fish species and the public.

Spearfishing efforts were conducted in the Tujunga Ponds starting in April and continued throughout 2020 as a means to capture larger adult fish that typically reside in deeper areas of the ponds. Spearfishing efforts resulted in the capture and removal of 38 adult largemouth bass, 14 adult carp, and 1 adult green sunfish. The removal of these large exotic species is critical to reducing their reproductive success and increasing the health and fitness of sensitive native fish species.

During July exotic species removal efforts in Haines Canyon Creek, a large number of exotic largemouth bass were observed and captured downstream from the Tujunga Ponds. This was due to the damaged exclusionary fence that needed repairs to prevent continued migration of exotic fish downstream. In addition, a total of three illegal dams were encountered in the creek during the July removal efforts and were deconstructed by the biologists. It appeared that a new day-use area was being built approximately 600 feet downstream (west) of the south Wheatland Avenue entrance. Sand had been brought into the area and vegetation had been removed. No individuals associated with the construction of this area were present at the time of the effort. Another new day-use area was also observed approximately 75 feet to the east of the south Wheatland Avenue entrance near the trail. Both of these areas were reported to the Public Works to coordinate their removal.

In September, Chambers Group biologists coordinated with LACDPR employees to inspect the fish exclusionary screens located in Haines Canyon Creek just downstream from the Tujunga Ponds in order to identify and make any necessary repairs. On September 4, 2020, Chambers Group biologists removed the old, damaged fish exclusionary screens and replaced them. On September 29, exotic removal efforts were conducted along the western portion of Haines Canyon Creek, within approximately 1,500 feet of stream. Approximately 171 red swamp crayfish, 7 western mosquitofish, and 2 young-of-the-year (YOY) largemouth bass were removed. The biologists also conducted a general, visual survey of native fish, recording the size class and number of fish. In areas where dense numbers of native fish were found, the biologists surveyed from the banks to prevent potential harm to the fish in the creek. During the survey, approximately 45 adult Santa Ana sucker, 100 second year sucker, and 92 YOY sucker were observed; approximately 35 adult Santa Ana speckled dace, 170 second year dace, and 55 YOY dace were observed; and approximately 65 adult arroyo chub, 105 second year chub, and 65 YOY chub were observed. These

numbers did not represent the total number of fish present in the western reach of stream, as many may have been in shelter, hiding; and a thorough inspection of the stream with the use of aqua-scopes and/or snorkels was not employed. However, these numbers represent a healthy population of native fish species within Haines Canyon Creek. During exotic species removal efforts in the East Tujunga Pond on September 30, 2020, Chambers Group biologists found a deceased barn owl (*Tyto alba*) hanging in a cottonwood tree. The barn owl had fishing line with a frog lure wrapped around both legs and likely died of starvation/dehydration. After removing the owl from the tree, the biologists removed additional fishing line hanging from the tree to prevent any additional wildlife from becoming entrapped. This shows how illegal fishing can negatively impact more than just the intended target. During exotic removal efforts in the Haines Canyon Creek in October, Chambers Group biologists encountered a rock dam approximately 10 feet downstream of the fish exclusionary screen located at the outlet of the West Tujunga Pond. The rock dam was carefully deconstructed by the biologists.

Spearfishing efforts at the Tujunga Ponds in early December was successful with the capture and removal of 12 adult largemouth bass and 2 common carp; however, murky water in the ponds on December 31 due to recent storm activity made it difficult for the biologists to locate exotic fish; and, thus, the spearfishing and bow fishing efforts were less successful than the efforts that had been conducted earlier in the month with the capture and removal of only a single largemouth bass.

Memos with photographs documenting each exotic species removal effort conducted in 2020 can be found in Appendix F.

SECTION 7.0 – WATER QUALITY MONITORING PROGRAM

Chambers Group qualified biologists conducted the annual water quality sampling for the Mitigation Area on November 2, 2020, and collected additional samples on November 13, 2020, to test for organochlorine pesticides. The monitoring program has been designed specifically to 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 was collected in the field from three sampling locations (one sampling location in the Tujunga Wash was dry and therefore was not sampled) using a Milwaukee MW102 PRO+ 2-in-1 Temperature and pH Meter to sample temperature and pH, a Milwaukee MW600 PRO Dissolved Oxygen Meter to sample dissolved oxygen, and a Hanna Instruments HI98703 Turbidity Portable Meter to sample turbidity. Water samples were taken at mid-depth, along a transect perpendicular to the stream channel alignment. All analyses were performed by either Enthalpy Analytical, LLC located in Orange, California, or Test America, located in Savannah, Georgia. Quality assurance/quality control (QA/QC) procedures followed the methods described in their respective quality assurance manuals.

7.1 BASELINE WATER QUALITY

Sampling and analysis conducted by Public Works 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 and are provided in the 2019 Water Quality Monitoring Report that is included as Appendix G. 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	standard 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

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
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
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

MPN – most probable number NTU – nephelometric turbidity units

7.2 WATER QUALITY SAMPLING RESULTS FOR 2020

Results of laboratory analyses conducted by Enthalpy Analytical are summarized in Table 7-2 and are provided in the 2020 Water Quality Monitoring Report included as Appendix G. 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 Results 2020

Parameter	Units	Inflow to Tujunga Ponds	Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Temperature	°C	19.3	16.9	NA	14.4
Dissolved Oxygen	mg/L	6.5	3.8	NA	8.4
pH	std units	5.48	5.64	NA	5.78
Total residual chlorine	mg/L	ND	ND	NA	ND
Ammonia-Nitrogen	mg/L	ND	ND	NA	ND
Kjeldahl Nitrogen	mg/L	0.55	ND	NA	ND
Nitrite-Nitrogen	mg/L	ND	ND	NA	ND
Nitrate-Nitrogen	mg/L	5.8	4.7	NA	4.0
Orthophosphate-P (dissolved phosphorus)	mg/L	0.026	ND	NA	ND
Total phosphorus-P	mg/L	0.060	0.062	NA	0.049

Table 7-2. Summary of Water Quality Results 2020

Parameter	Units	Inflow to Tujunga Ponds	Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Glyphosate	µg/L	ND	ND	NA	ND
Chlorpyrifos* (and other Organophosphorus Pesticides)	µg/L	ND	ND	NA	ND
Pesticides (EPA 608)** (Organochlorine Pesticides)	µg/L	ND	ND	NA	ND
Turbidity	NTU	1.30	0.35	NA	0.30
Fecal Coliform Bacteria	(MPN/100 ml)	47	23	NA	17
Total Coliform Bacteria	(MPN/100 ml)	>1600	>1600	NA	>1600

NA – data not available; station dry on the sample date

NTU – nephelometric turbidity units

MPN – most probable number

ND – non-detect

mg/L – milligrams per liter

µg/L – micrograms per liter

> - Value exceeds indicated concentration

* The analytical method used for chlorpyrifos (EPA 8141A) also tests for the following chemicals: azinphos-methyl, bolster, coumaphos, demeton, diazinon, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, merphos, methyl parathion, mevinphos, naled, phorate, ronnel, stirophos, tokuthion, and trichloronate.

** EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, and toxaphene. Water samples for these pesticides were collected on November 13, 2020.

7.2.1 Comparison of Results with Aquatic Life Criteria

Table 7-3 provides the results of the November 2020 water quality sampling conducted by Chambers Group in November 2020 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. The 2020 Water Quality Monitoring Report is included as Appendix G.

Except for pH, none of the 2020 parameters tested were substantially different from the baseline conditions recorded in 2000 and/or were still within the recommended range for each parameter as provided in the Basin Plan and/or EPA objectives. The first water sampling for Glyphosate, Chlorpyrifos, and other organophosphorus and organochlorine pesticides did not occur until 2004. None of these pesticides were detected in 2004 nor were they detected in 2020. In addition, none of the parameters were substantially different between pre- and post-Creek Fire conditions (2016/2017); and parameters continue to fall largely within or below the recommended range for each parameter as provided in the Basin Plan and/or EPA objectives. Four of the parameters tested in 2020 were above the recommended range for at least one of the sample locations and are discussed in Table 7-3.

Table 7-3. Discussion of November 2020 Big Tujunga Wash Sampling Results

Parameter	Discussion
Temperature	<ul style="list-style-type: none"> Observed temperatures were well below levels of concern for growth and survival of warmwater fish species at all stations with the exception of the inlet to the Tujunga Ponds, which was recorded at 19.3 °C, slightly higher than the weekly average maximum temperature for the growth of brook trout and rainbow trout (example species in Table 12 of the 2020 Water Quality Monitoring Report, Appendix G). In addition, the reference maxima provided in Table 12 for the growth and survival of juvenile and adult fishes during the summer are provided by the EPA and mainly apply to sportfishing species and not the native fish species that occupy the Mitigation Area. According to the USFWS’s Recovery Outline for Santa Ana Sucker, Santa Ana sucker are typically most abundant in clear water, at temperatures generally less than 22°C and have experienced mortality at temperatures greater than 26.7 °C (USFWS 2012). According to UC Davis’ Center for Watershed Sciences, Santa Ana speckled dace prefer summer water temperatures below 20°C but may tolerate temperatures as high as 26 to 28°C (UC Davis 2021a). Arroyo chub are most common in streams with temperatures between 10 and 24°C (UC Davis 2021b). All temperatures recorded were below or within the range for survival of sensitive fish species that occur in the Mitigation Area; however, only a single temperature reading was taken in the fall and the weekly summer average temperature is unknown.
Dissolved oxygen (DO)	<ul style="list-style-type: none"> DO levels were 6.5 mg/L at the inflow to the Tujunga Ponds, 3.8 mg/L at the outflow from the Tujunga Ponds, and 8.4 mg/L where Haines Canyon Creek exits the site. DO levels at one of the sample stations was below the minimum recommended level (5.0 mg/L) for Basin Plan objectives and EPA’s criteria for warmwater fish species. Low DO can be caused by a variety of factors but is commonly caused by the presence of algae in slow-moving or stagnant water bodies such as the Tujunga Ponds. In addition, illegal dams slow the flow of water, inhibiting the natural aeration that occurs in flowing water bodies such as Haines Canyon Creek. The rapid removal of illegal dams as they are discovered and continued public education as to why damming the creek and wash is detrimental to aquatic species is essential to the health of the Mitigation Area.
pH	<ul style="list-style-type: none"> pH readings were 5.48 at the inflow to the Tujunga Ponds, 5.64 at the outflow from the Tujunga Ponds, and 5.78 where Haines Canyon Creek exits the site. The pH readings at all three sample stations were below the recommended range of 6.5 to 8.5 identified in the Basin Plan objectives and were within the recommended range of 5.0 to 9.0 for EPA’s criteria for human health. It is unknown what conditions caused the low pH at the Tujunga Ponds and Haines Canyon Creek. As sampling is conducted in the fall, leaf litter from deciduous trees and shrubs has the potential to acidify the water for a short time until bacteria and other microorganisms can start

Parameter	Discussion
	<p>breaking down plant matter and buffering acidic conditions. Additional sampling throughout the year would be required to try to pinpoint the exact cause of low pH.</p>
Total residual chlorine	<ul style="list-style-type: none"> No residual chlorine was detected at any sample station.
Nitrogen	<ul style="list-style-type: none"> Nitrate-Nitrogen measurements at all sample stations were below the drinking water maximum standard of 10 mg/L for both Basin Plan standards and EPA criteria for human health. Nitrite-Nitrogen was not detected at any sample station. Ammonia-Nitrogen was not detected at any sample station.
Phosphorus	<ul style="list-style-type: none"> The observed Total Phosphorus-P concentrations were 0.060 mg/L at the inflow to the Tujunga Ponds, 0.062 mg/L at the outflow to the Tujunga Ponds, and 0.049 mg/L where Haines Canyon Creek exits the site. Total Phosphorus-P concentration at all sample stations was within or below the lower end of the EPA’s recommended maximum range of 0.05 to 0.10 mg/L for the desired goal of preventing plant nuisances in streams.
Glyphosate	<ul style="list-style-type: none"> Glyphosate was not detected at any sample station
Chlorpyrifos and other Organophosphorus Pesticides	<ul style="list-style-type: none"> Organophosphorus Pesticides, including Chlorpyrifos, that were analyzed by EPA method 8141A were not detected at any sample station.
Organochlorine Pesticides	<ul style="list-style-type: none"> Organochlorine pesticides analyzed by EPA Method 608 were not detected at any sample station.
Turbidity	<ul style="list-style-type: none"> Turbidity readings were 1.30 NTU at the inflow to the Tujunga Ponds, 0.35 NTU at the outflow from the Tujunga Ponds, and 0.30 NTU where Haines Canyon Creek exits the site. Turbidity levels were below the EPA’s secondary drinking water standard of 5 NTU. The turbidity at the inlet of the Tujunga Ponds was slightly above the EPA’s drinking water maximum standard of 1.0 NTU for systems that use conventional or direct filtration; however, waters within the Mitigation Area are not filtered systems intended for human consumption.

Parameter	Discussion
Coliform Bacteria	<ul style="list-style-type: none"> Per the Basin Plan objectives, the freshwater bacteria standard for water contact recreation is for <i>E. coli</i> (126 MPN/100 ml geometric mean, 235 MPN/100 ml single sample limits). Fecal coliform levels were 47 MPN/100 ml at the inflow to the Tujunga Ponds, 23 MPN/100 ml at the outflow from the Tujunga Ponds, and 17 MPN/100 ml where Haines Canyon Creek exits the site. Fecal coliform levels detected were below the standard geometric mean at all sample stations. Sampling specifically for <i>E. coli</i> was not conducted. Total coliform levels were greater than 1600 MPN/100 ml at all sample stations. [Note that recreation standards are for <i>E. coli</i>. Per the Basin Plan, total coliform standards apply to marine waters and waterbodies where shellfish can be harvested for human consumption.] The presence of coliform bacteria indicates fecal contamination by warm-blooded mammal and avian species including waterfowl. While not all coliform bacteria are harmful, elevated levels of coliform bacteria indicate an increased likelihood that harmful coliform bacteria such as <i>E. coli</i> may be present. Sources of coliform pollution in the Mitigation Area may include runoff from surrounding residential areas, horses (equestrian) that utilize the trails, waterfowl that occupy the Tujunga Ponds, other birds, aquatic organisms, and mammals that use the ponds and creek, and illegal human uses of the ponds and creek such as swimming and bathing. Organic materials that carry coliform bacteria have the potential to be harmful to aquatic life, as oxygen in the water may become low during aerobic decomposition of organic materials. Spikes in the levels of coliform bacteria in the Mitigation Area have not been uncommon since water quality sampling began in 2000.

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

SECTION 8.0 – TRAILS MONITORING PROGRAM

8.1 TRAILS SYSTEM MAINTENANCE

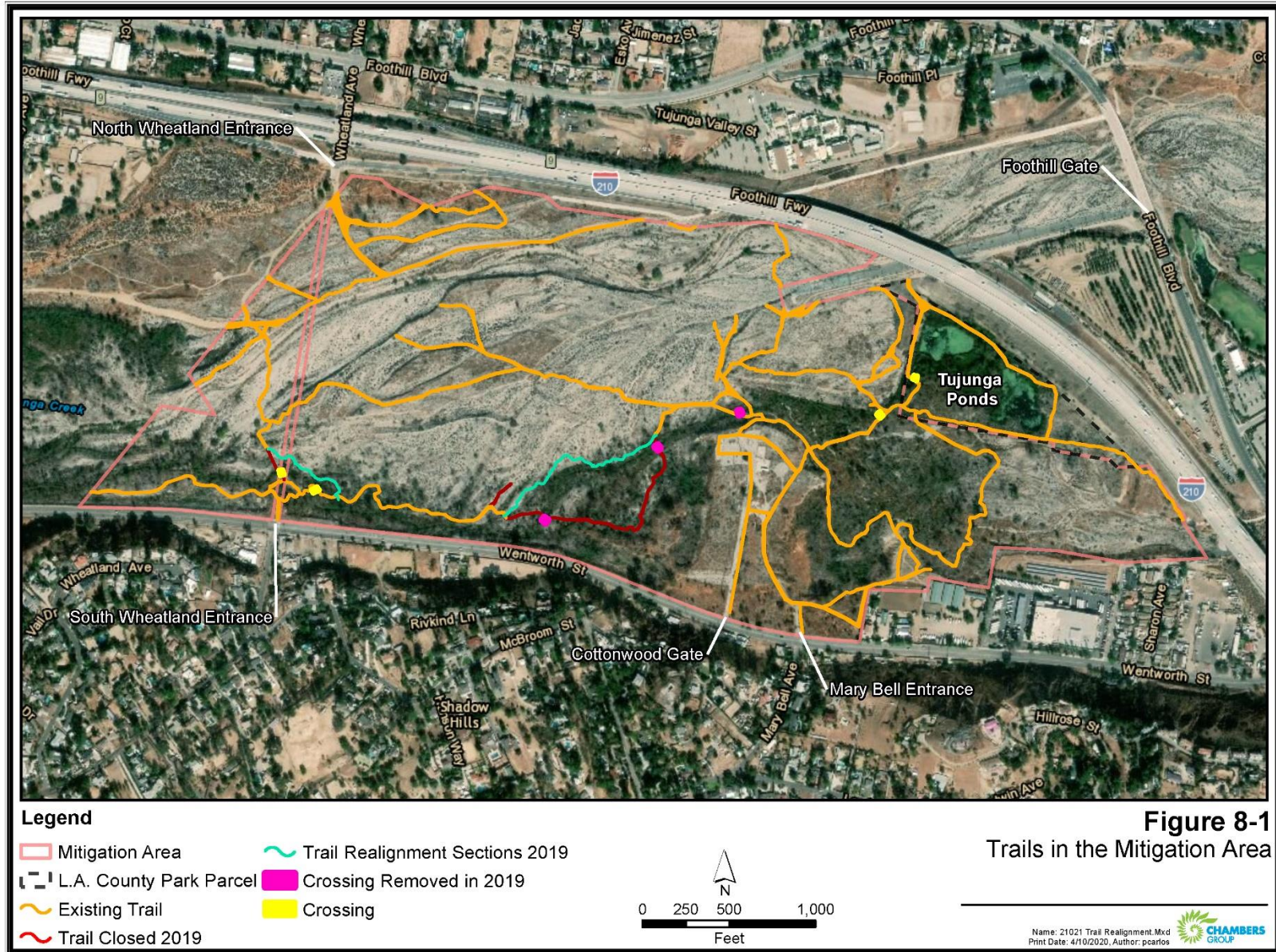
The goal of maintaining a formal trails system at the Mitigation Area is to allow recreational use of the Mitigation Area while still preserving sensitive wildlife and their habitats. The Mitigation Area contains trails for both equestrian use and hiking. Figure 8-1 depicts the current trail alignment since the 2019 trail realignment efforts. The preservation of authorized trails is an essential component in the success of the restoration and enhancement of the site. This program has been continued in order to discourage the establishment of unauthorized trails in the Mitigation Area. By monitoring that the authorized trails are kept clear and can be readily used by equestrians and hikers, the creation of new, unauthorized trails will be reduced. The maintenance and monitoring of the trail system are necessary components of the overall restoration and enhancement program.

8.1.1 Trail Maintenance Efforts in 2020

Trail maintenance efforts were conducted during six different months in 2020. These efforts occurred on May 7; June 4, 5, 12, 19, and 26; July 20 and 31; September 28 through 30; October 1 and 2 and 27 through 30; and December 11, 14, 15, 30, and 31. All pre-activity site sweeps were conducted by Chambers Group biologists Alisa Muniz, Corey Jacobs, Austin Burke, or restoration biologists Michael Walsh and/or Valerie Alcantar. Subsequent trail maintenance was conducted by Chambers Group's restoration department and was supervised by habitat restoration foreman Tim Wood, Jay Belmonte, and/or the restoration biologists who were on site during all maintenance 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing. The meetings also discussed where sensitive resources such as nesting birds and associated avoidance buffer areas were located. This included three 500-foot avoidance buffers for federally and state listed endangered least Bell's vireo nests that were discovered in a riparian area during May and June. No trail work occurred within any nest avoidance buffer; and the crews avoided the use of loud, gas-powered equipment when working in proximity to the least Bell's vireo nest buffers so as not to disturb the species.

The focus of the trail maintenance efforts was to look for areas that might qualify for trail closure, identify areas where trails were blocked by trash or debris and restore them to a safe condition, block off any unauthorized trails, and trim back extensive stands of poison oak or other vegetation overgrowth found in proximity to the trails. Snag trees (trees burned in the Creek Fire) continued to come down throughout the season, particularly during high wind events. Efforts to clear and delineate authorized trails and block off unauthorized trails continued as necessary. Assessment of trail signs, portable toilets, site fencing, and gated entrances was included in each effort. Any minor repairs were remedied during the site visits or in combination with site visits for other maintenance tasks. More extensive problem areas were mapped for repair at a later time or were reported to Public Works for repair if necessary.

Figure 8-1. Trails in the Mitigation Area



Collector was used to navigate and work along authorized trails and to avoid disturbance to any documented sensitive plants and wildlife in areas requiring maintenance. Trail maintenance efforts were focused on maintaining high traffic areas of the authorized trails for public use and safety. All debris and obstructions were cleared from the established trails, allowing for safe passage. Where bypassed sections of the authorized trail system were observed, snag debris from the surrounding areas was used to block off entry points and discourage further deviations from authorized trails. In addition, downed snag debris and/or stones were used to delineate the authorized trails, helping to guide site visitors along the permitted course. Debris obstructions such as downed trees that blocked portions of trails were cut with chainsaws and dragged clear of the trail.

During the 2020 maintenance efforts, the restoration specialists and biologists assessed trail conditions and identified locations that were in need of maintenance. Examples of maintenance issues identified and addressed in 2020 included:

- Removing trees and branches obstructing trails
- Removing large dead trees or loose branches with the potential to fall on the trail
- Trimming dense native and non-native vegetation crowding authorized trails
- Directionally pruning shrubs to grow away from the authorized trails
- Trimming back dense stands of poison oak from along authorized trails
- Removing rock dams and log dams constructed in Haines Canyon Creek and the Big Tujunga Wash
- Repairing vandalized wire fencing used to block off creek crossing
- Removing loose rocks from authorized trails
- Grading and delineating trails for safer passage
- Blocking off unauthorized trails
- Removing trash
- Addressing general safety concerns

In May, trail maintenance efforts were implemented proactively in response to receiving notification on May 6 that trails were to be opened for public use on May 8 after being closed to the public for COVID-19 “Safer at Home” orders. The day before reopening, maintenance crews conducted a walkthrough of the trail system to identify and address any trail maintenance issues in anticipation of an influx of trail users after the month-long closure.

In June, crew members repaired the wire fence that was installed in 2019 during the closure of the westernmost creek crossing, north of the south Wheatland Avenue entrance. Repair of the fence entailed replacing and reinforcing T-posts that had been vandalized and replacing sections of wire that had been cut. To inhibit alternate access points around this creek crossing closure, logs, snag debris, and rocks were used to form a blockade.

During July trail maintenance efforts, it was observed that several of the previously reported illegal encampments present in the Mitigation Area continued to be active. The trail maintenance crew maintained a safe working distance while working near the encampments and monitored around the encampments for signs of incidents that may pose a threat to public safety (e.g., illegal fires). An updated list of all active and inactive illegal encampments (approximately seven active and three inactive) and two illegal day-use areas was provided to Public Works on August 13, 2020.

The restoration specialists and biologists reported to Public Works any new illegal encampments they encountered during the site visits. Maintenance activities to address the trail issues were monitored by

Chambers Group biologists during each effort. Prior to any work, all members of the trail maintenance crew received onsite orientation and instruction on the Mitigation Area's regulations and concerns relating to the area's sensitive species and habitats by a qualified Chambers Group biologist. These efforts were summarized in memo reports following each of the trail maintenance efforts and are included as Appendix H.

8.2 TRAIL CLEANUP DAY

The Fourteenth Annual Trail Cleanup Day was tentatively planned to occur in October 2020; however, the event was cancelled due to ongoing COVID-19 restrictions. Chambers Group and Public Works plan to resume the Trail Cleanup Day in fall 2021 pending that COVID-19 restrictions have been lifted and it is safe to congregate in larger groups at that time. Once the Trail Cleanup Day is safe to resume, the date and details will be announced to the public via Public Works' website, email, and/or the biannual newsletters, once available.

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 met semiannually to update the community on the progress of ongoing restoration activities, ongoing exotic eradication activities, and 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 and assisting with preparation of meeting agendas and handouts and recording meeting minutes. In June 2017 Chambers Group assumed these responsibilities once again and has continued this role through 2020. All deliverables were submitted to Public Works electronically for posting on the Public Works web page (<http://pw.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 I.

9.1 NEWSLETTERS (SUMMER, WINTER)

Chambers Group drafted two newsletters during 2020. The summer edition was distributed to the public in August 2020, and the winter edition was distributed to the public in December 2020. Electronic versions of these newsletters were submitted to Public Works for distribution to the public and stakeholders and to incorporate on their web page. Hard copies of the newsletters were also mailed to stakeholders and organizations. Copies of the newsletters are included in Appendix J.

9.2 CAC MEETING

The CAC meeting was held on Thursday, November 18, 2020. The meeting was held virtually from 5:30 to 7:30 p.m. via WebEx. The meeting reminder/invitation, meeting agenda, minutes from the previous meeting, and information on how to attend the virtual WebEx meeting were mailed to the most recent CAC mailing list approximately two weeks prior to the scheduled meeting. In addition, the meeting agenda and the minutes from the previous CAC meeting (April 24, 2019) were posted to the Mitigation Area website. Approximately one week prior to the CAC meeting, a final meeting reminder was sent via email that included a link to the materials posted on the Mitigation Area web page.

Chambers Group representatives Paul Morrissey, Tim Wood, and Jackelyn Mayfield attended the WebEx meeting and recorded the names of all attendees. Chambers Group biologist Paul Morrissey reviewed the 2019 implementation efforts with the group, discussed the current status and implementation of the enhancement programs for 2020, and was available to discuss various site issues and answer questions from attendees. Notes were recorded by Chambers Group representative Jackelyn Mayfield during the meeting in order to prepare the official meeting minutes summarizing the general proceedings. Chambers Group distributed a map that documented the location and nature of all observed incidents that occurred within the Mitigation Area between January and December 2019 (Figure 9-1). The map included locations of rock dams, prohibited activities observed (such as fishing and swimming), vandalism, and public safety concerns. Chambers Group submitted draft meeting minutes to Public Works for review and commenting prior to posting on the Public Works web page. The proceedings at the 2020 CAC meeting were summarized in the meeting minutes, which were submitted to Public Works in draft form on

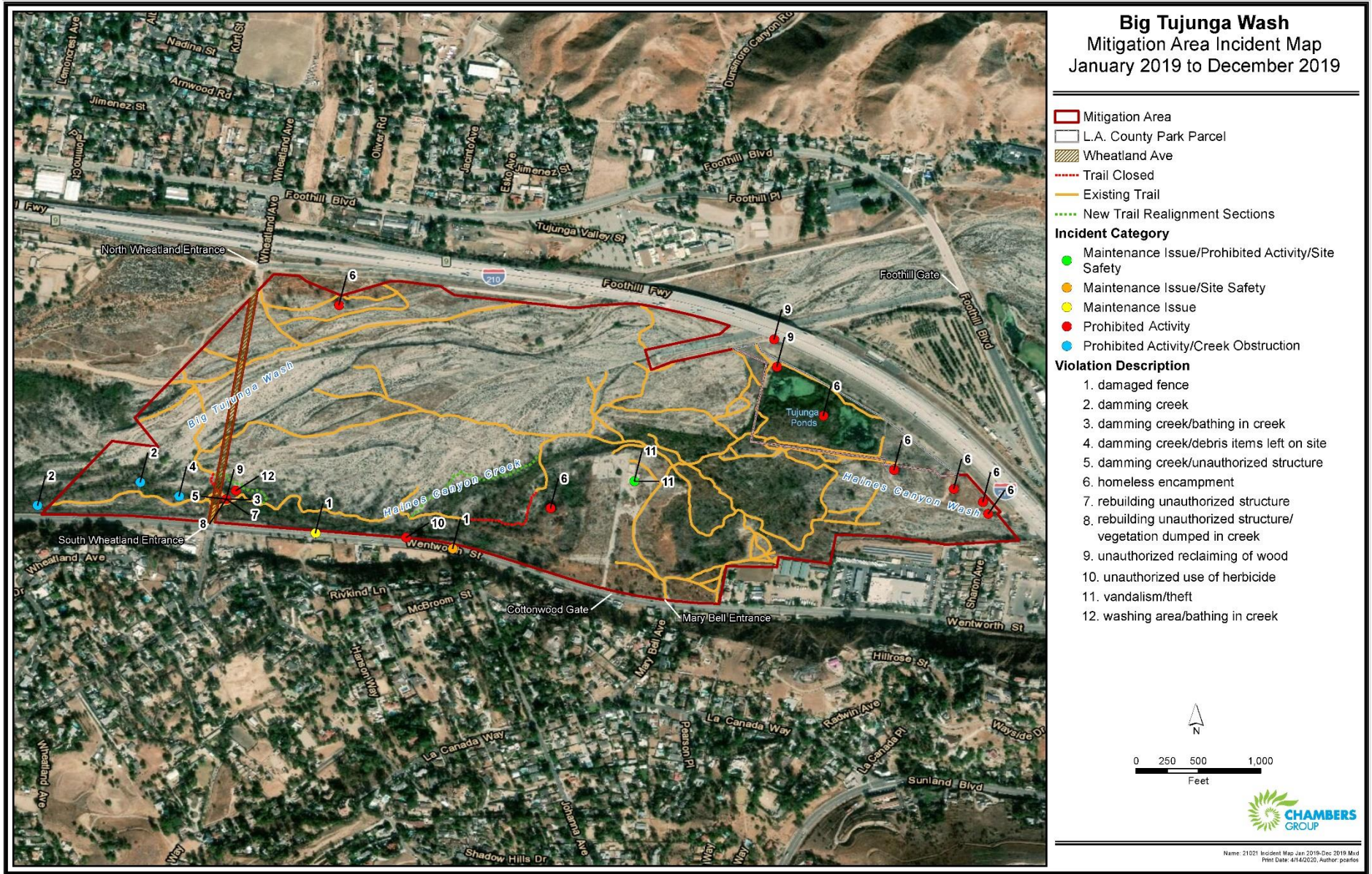
December 24, 2020, and are included as Appendix K. Below is a summarized list of agenda items discussed during the 2020 CAC meeting.

- **Summary of Maintenance Programs in 2019**
 - Brown-headed cowbird trapping
 - Exotic Plant Eradication Program
 - Exotic Wildlife Removal Program
 - Trails Maintenance, Realignment, and Cleanup Day
 - Snag Removal Monitoring (Los Angeles City tree crews)
 - Fuel Reduction Efforts
 - Small Unmanned Aircraft System (sUAS) Post- Creek Fire Vegetation Mapping, Analysis, and Site Recovery
 - Water Quality Monitoring
 - Public Outreach Program
 - Incident Monitoring

- **Current Status of Maintenance Programs for 2020**
 - Brown-headed cowbird trapping
 - Exotic Plant Eradication Program
 - Exotic Wildlife Removal Program
 - Trails Maintenance, Realignment, and Cleanup Day
 - Snag Removal Monitoring (Los Angeles City tree crews)
 - Fuel Reduction Efforts
 - sUAS Post- Creek Fire Vegetation Mapping, Analysis, and Site Recovery
 - Water Quality Monitoring
 - Public Outreach Program
 - Incident Monitoring

- **Comments, Questions, and Answers**

Figure 9-1. Big Tujunga Wash Mitigation Area Incident Map 2019



SECTION 10.0 – PUBLIC OUTREACH PROGRAM

In an ongoing effort to enhance and protect existing wildlife and habitats at the Mitigation Area, the Public Outreach Program was developed and implemented during the 2009 contract year and has continued through 2020. This task was the direct result of increasing evidence of problematic areas associated with recreational use throughout the Mitigation Area. ECORP and Public Works 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 through the 2020 contract year because of its success in the years from 2009 to 2019.

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, barbecuing, 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 for swimming. 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 Public Works 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. The bilingual educational brochure was updated by Chambers Group in the spring of 2019 in order to highlight current issues and to revise the overall appearance and language in the brochure. The updated educational brochure can be found as Appendix B.

By interacting with the public directly through Public Outreach efforts, Chambers Group and Public Works have been able to identify and address site issues early and are able to respond immediately to trail issues or site safety issues that may have otherwise gone unnoticed until regular trail maintenance efforts could occur. In addition, site users contribute valuable information to Chambers Group biologists on the nature and locations of prohibited and illegal activities they observe while recreating in the Mitigation Area. This allows for a more rapid and coordinated response as issues arise.

10.1 OUTREACH EFFORTS 2020

Onsite interviews and education about the Mitigation Area were conducted on four occasions in 2020 by Chambers Group bilingual biologists Erik Olmos, Corey Jacobs, Austin Burke, and Mauricio Gomez. Outreach efforts took place on July 25, August 22, August 30, and October 10, 2020. All outreach efforts took place during the peak site use hours of 8:30 a.m. to 12:00 p.m. All outreach efforts followed the recommendations provided by the Center for Disease Control and Prevention (CDC) to minimize the spread of COVID-19. Chambers Group biologists wore masks, maintained at least 6 feet of distance during any interactions with members of the public, and used hand sanitizers to help minimize the spread of COVID-19.

During public outreach visits at the Mitigation Area, Chambers Group biologists walked the authorized trails system and visited popular swimming/wading locations along Haines Canyon Creek (creek) and around the Tujunga Ponds (ponds), speaking with visitors they encountered. Visitors that were interviewed fell into one of two groups: non-equestrian user groups or equestrian user groups.

During the four outreach visits, all non-equestrian and equestrian visitors encountered were offered an educational brochure outlining Public Works' 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 negative 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 toward the outreach efforts and agreed with the information presented in the educational brochure. In general, equestrian and non-equestrian users were responsive to the public outreach efforts.

10.2 NON-EQUESTRIAN USER GROUPS

A total of seven non-equestrian site users were encountered during the four public outreach visits in 2020. Three of the seven site users interviewed were not local residents. All seven of the site users were encountered along the trails around Haines Canyon Creek (creek) and the Tujunga Ponds (ponds). All site users were offered an educational brochure about the site, informed about activities that are prohibited in the Mitigation Area, and were asked if they had any questions on any of the information presented. Some of the issues observed by the biologists during the outreach included the building of dams, bathing in the creek, and fishing in the ponds.

Individuals encountered during the outreach visits were generally receptive to the information provided on the sensitive resources and rules within the Mitigation Area. Individuals that were unaware of and/or violating rules were generally respectful and receptive to the information provided by the biologists. Interactions with individuals that were observed violating the rules of the Mitigation Area are detailed in the 2020 Public Outreach Memo Report (Appendix L).

Primary usage of the Mitigation Area as described by the non-equestrian users interviewed included, hiking/walking, walking dogs, exercise, fishing, and general recreation. Concerns raised by non-equestrian users interviewed included: trash, vandalism, the presence of dams in the creek, overgrown vegetation along the trails, and the population of people experiencing homelessness. The biologists asked the individuals to contact local law enforcement and Public Works if suspicious or illegal activities are observed in the Mitigation Area. Recommendations provided by non-equestrian users interviewed included, removing dams within the creek, cleaning up trash and glass bottles throughout the Mitigation Area, maintaining trails to keep vegetation (specifically burs from cocklebur [*Xanthium strumarium*]) from sticking to dogs' fur, and removing illegal encampments.

The most substantial impacts on sensitive habitat by non-equestrian user groups are caused by swimming, bathing, and building rock dams within the 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. A newly emerging frequented location is the unauthorized swimming area located approximately 275 feet northwest of the south Wheatland Avenue

entrance. The dam at this location was encountered and removed by Chambers Group biologists during the August 30 visit and was afterward reconstructed by members of the public. Chambers Group biologists encountered the reconstructed dam at the same location on October 10.

Several additional rock dams, both large and small, were encountered in the creek and were removed during 2020 public outreach and 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 upstream of the dam. The changes to the natural flow of the creek can be detrimental to the sensitive species of fish within the creek. 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, large-mouth bass, green sunfish, bluegill, and American bullfrog that prey on or compete for the same food sources as native species such as the federally listed threatened Santa Ana sucker and state species of concern Santa Ana speckled dace and arroyo chub. The reduced flow traps trash/debris and harbors parasites that negatively affect the fishes' ability to breath (flashing of gills observed) and reduces suitable breeding habitat. In addition, the dams prevent migration of fish upstream and downstream along the creek, reducing available food sources and breeding opportunities. 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 Public Works for removal, as necessary.

10.3 EQUESTRIAN USER GROUPS

A total of 29 equestrian users were approached and interviewed during the four public outreach visits in 2020. Six additional equestrian users were seen, but they were not interviewed as they were observed at a distance and were moving in the opposite direction as the biologists. All 29 of the equestrian users interviewed were local residents. All 29 equestrian users were encountered along the authorized trails of the Mitigation Area along the creek and near the ponds. 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 are 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 of the questions asked by equestrian users were about the trail maintenance efforts taking place within the Mitigation Area.

In addition to horse riding, equestrian users mentioned using the Mitigation Area for hiking and walking. Concerns raised by the equestrian users interviewed included: trail maintenance (particularly vegetation overgrowth), the presence of snags/logs along the trails, the presence of fallen trees along the trails, trash, the presence of fishing line found on trails near the ponds, the presence of bee hives near the south Wheatland Avenue entrance and by the creek near the bluff, the presence of large objects blocking trails (specifically chairs), and the population of people experiencing homelessness. Equestrian users reported observations of individuals camping in the Mitigation Area, smoking, and having campfires along the creek. The biologists asked the equestrian users to contact local law enforcement and Public Works if suspicious or illegal activities are observed in the Mitigation Area. Recommendations provided by the equestrian users interviewed included making trail signs bilingual, delineating trails, relocating bee hives, increasing oversight and security in the Mitigation Area, widening the trails, removing large rocks and snags from the trails to eliminate safety issues for horses, removing fishing line from ponds to eliminate safety issues for horses when drinking water, and placing a water fountain spigot within the Mitigation Area for hydration.

Additional interactions with equestrian users that occurred outside Public Outreach efforts usually consisted of equestrian users thanking the work crews for maintaining and beautifying the site and trails and their acknowledgment that they understood the importance of restoring native habitat. Some interactions consisted of specific requests from equestrian users, such as clearing vegetation from the trails (specifically the burs from cocklebur that get stuck in their horses' coats); trimming the top of the vegetation to allow for visibility when using the trails (tall vegetation limits visibility for equestrian users); widening the trails; and opening the old, abandoned trail sections back up. Chambers Group biologists responded to requests to reopen the abandoned trail sections by educating site users on creek ecology and the importance of restoring habitat and decreasing the stream crossings within the abandoned trail areas.

Equestrian site users can affect sensitive terrestrial habitat by traveling off the established trail systems and can disturb sensitive aquatic habitat when traveling through the creek. Riders were reminded to cross the creek single-file to minimize erosion along the banks and to stay on the authorized trails. The creation of new trails and traveling off the authorized trails can be minimized with continued trail maintenance and equestrian site user education. Further details regarding the 2020 efforts can be found in Appendix L.

SECTION 11.0 – SPECIAL ASSESSMENTS

Chambers Group staff is available to provide special assessments on an on-call basis. Special assessments include damage assessments (e.g., fire damage, vandalism) and other site issue assessments and the subsequent coordination and response. No special assessments were required in 2020.

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

Chambers Group was available on an on-call basis to attend meetings with agencies, the general public, and other consultants as a representative of Public Works. Additional conference calls, meetings, and email correspondence were held on an as-needed basis throughout the year between Public Works and Chambers Group. With the exception of the CAC meeting discussed in Section 9.0, no other meetings were required or attended by Chambers Group in 2020.

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
Page 1 of 11

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 Orcuttii*), 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-blotched lizard (*Uta stansburiana*); **Birds:** California gnatcatcher (*Poliioptila 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.

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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.*

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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 Nutssedge*), 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

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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.

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- 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:

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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,

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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:

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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:

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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.

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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

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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
Environmental Program Manager
South Coast Region

Date

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. Check the county website for Big T updates and volunteer opportunities.

¡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! Revise el sitio web del condado por anuncios de Big T y oportunidades para ser voluntario.

¿Preguntas? / Questions?

LACPW: Melanie Morita
(626) 458-6183

Water Resources Division Los Angeles
County Public Works

P.O. Box 1460

Alhambra, CA 91802

dpw.lacounty.gov/wrd/Projects/BTWMA

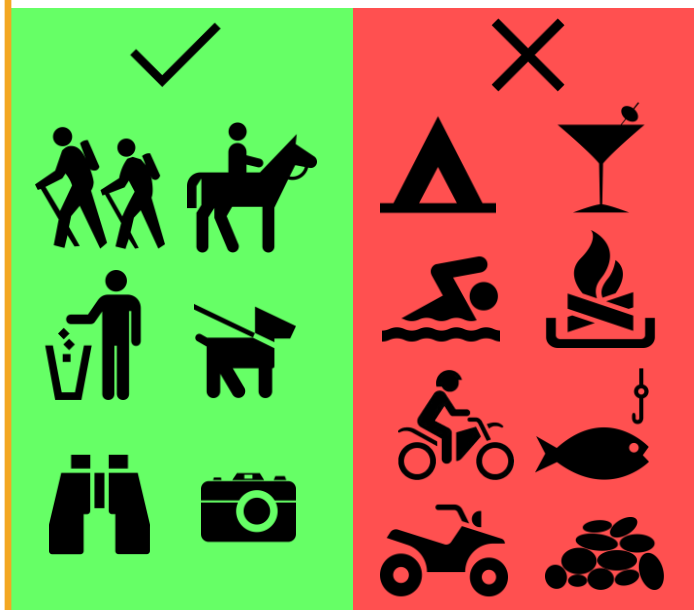
Regulations/Reglas

All visitors must obey these regulations or a citation will be given:

- Hours of Operation: sunrise to sunset
- No fires of any kind
- No swimming
- No wheeled vehicles
- No camping
- Dogs must be on leashes
- No fishing in the creek or ponds
- No damming of the creek to create swimming ponds
- No hiking or equestrian riding off trail

Todos los visitantes del Big T deben obedecer todas las reglas, los que no observan las reglas serán multados:

- Horas de visita: amanecer al atardecer
- No fogatas de ningún tipo
- No nadar
- No vehículos
- No acampar
- Los perros deben estar con correas
- No pescar en el arroyo o lagos
- No represar el arroyo para crear estanques de natacion
- No excursionismo o montage a caballo fuera de los caminos



Big Tujunga Wash Mitigation Area (Big T)

Did you know that Big T is protected?

Big T, as we like to call it, is maintained by the **Los Angeles County Public Works** (Public Works). 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 Big T esta protegida?

Big T, como nos gusta llamarlo, es mantenido por el Departamento de **Obras Públicas del Condado de Los Angeles (Obras Públicas)**. 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 provides valuable nesting habitat, and 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 the habitat such as increased wildfires due to human activities, pollution, damming or swimming in the creek, and traveling off from authorized trails – trampling native plants and spreading invasive weeds.

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 que surgen al alterar y cambiar el hábitat, como un aumento en los fuegos silvestres causados por las actividades humanas, la contaminación, el represar o nadar en el arroyo, y el viajar fuera de los caminos autorizados – que causa el pisoteo de plantas nativas y el esparcimiento de hierbas malas.

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.



Santa Ana sucker
(*Catostomus santaanae*)



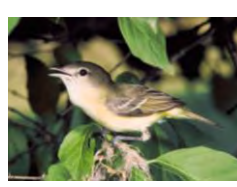
**Santa Ana speckled dace/
Carpita pinta**
(*Rhinichthys osculus*)



Arroyo chub
(*Gila orcutti*)



Jim Rorabaugh/USFWS



Steve Maslowski/USFWS



2016 Zoya Akulova



2015 Richard Spellenberg

**Southwestern
willow flycatcher**
(*Empidonax traillii
extimus*)

least Bell's vireo
(*Vireo bellii
pusillus*)

California Sycamore
(*Platanus racemosa*)

**Goodding's black
willow**
(*Salix gooddingii*)

El represar y nadar en el arroyo es estrictamente prohibido en Big T. Represar el arroyo evita que las especies nativas de peces naden libremente en su hábitat. Con ningún lugar para escapar, las especies de peces pequeñas caen víctimas de especies más grandes, depredadoras e invasoras como la lobina. Especies nativas de peces necesitan agua corriente para mantenerse sanos y libres de parásitos. Agua estancada alberga parásitos y bacterias que son perjudiciales para la salud de los peces nativos. Nadando en el arroyo contribuye a las bacterias dañinas en el agua y trastorna el lecho del arroyo al agitar el sedimento, y descargar nutrientes que pueden causar una falta de oxígeno en el agua. Tan divertido que nadar en el arroyo puede ser para las personas, puede causar la muerte de los peces nativos que llaman Big T su hogar.

Damming and swimming in the creek is strictly prohibited at Big T. Damming the creek prevents native fish species from swimming freely in their habitat. With nowhere to escape, small native fish often fall victim to larger, predatory, invasive species such as largemouth bass. Native fish species need flowing water to stay healthy and free of parasites. Pounded water harbors parasites and bacteria that are detrimental to the health of native fish. Swimming in the creek contributes harmful bacteria to the water and disrupts the stream bed by churning up sediment, and releasing nutrients that can lead to a lack of oxygen in the water. As fun as a swimming hole can be for people, it can mean death for the sensitive native fish species that call Big T home.

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?

APPENDIX C – PLANT AND WILDLIFE COMPENDIA



APPENDIX C – PLANT SPECIES LIST

Scientific Name	Common Name
GYMNOSPERMS	
CUPRESSACEAE	CYPRESS FAMILY
<i>Cedrus deodara*</i>	deodar cedar
PINACEAE	PINE FAMILY
<i>Pinus halepensis*</i>	Aleppo pine
ANGIOSPERMS (EUDICOTS)	
ADOXACEAE	MUSKROOT FAMILY
<i>Sambucus nigra</i> subsp. <i>caerulea</i>	blue elderberry
AMARANTHACEAE	AMARANTH FAMILY
<i>Amaranthus albus*</i>	tumbling pigweed
ANACARDIACEAE	SUMAC OR CASHEW FAMILY
<i>Malosma laurina</i>	laurel sumac
<i>Rhus integrifolia</i>	lemonadeberry
<i>Schinus molle*</i>	Peruvian pepper tree
<i>Schinus terebinthifolius*</i>	Brazilian pepper tree
<i>Toxicodendron diversilobum</i>	poison oak
APIACEAE	CARROT FAMILY
<i>Conium maculatum*</i>	poison hemlock
<i>Foeniculum vulgare*</i>	fennel
APOCYNACEAE	DOGBANE FAMILY
<i>Vinca major*</i>	greater periwinkle
ARALIACEAE	GINSENG FAMILY
<i>Hedera helix*</i>	English ivy
ASTERACEAE	SUNFLOWER FAMILY
<i>Ageratina adenophora*</i>	eupatory
<i>Ambrosia acanthicarpa</i>	annual bur-sage
<i>Ambrosia artemisiifolia</i>	common ragweed
<i>Artemisia californica</i>	California sagebrush
<i>Artemisia douglasiana</i>	mugwort
<i>Artemisia dracunculus</i>	tarragon
<i>Baccharis salicifolia</i> subsp. <i>salicifolia</i>	mulefat
<i>Carduus pycnocephalus</i> subsp. <i>pycnocephalus*</i>	Italian thistle
<i>Centaurea melitensis*</i>	totalote
<i>Cirsium occidentale</i> var. <i>occidentale</i>	cobwebby thistle
<i>Cirsium</i> sp.*	non-native thistle
<i>Erigeron bonariensis*</i>	flax-leaved horseweed
<i>Erigeron canadensis</i>	horseweed
<i>Helianthus annus</i>	common sunflower
<i>Heterotheca grandiflora</i>	telegraph weed
<i>Heterotheca sessiliflora</i>	hairy golden-aster

Scientific Name	Common Name
<i>Hypochaeris glabra</i> *	smooth cat's-ear
<i>Lactuca serriola</i> *	prickly lettuce
<i>Lactuca virosa</i> *	poison wild lettuce
<i>Lepidospartum squamatum</i>	scale-broom
<i>Malacothrix saxatilis</i>	cliff malacothrix
<i>Pluchea odorata</i> var. <i>odorata</i>	salt marsh fleabane
<i>Pseudognaphalium biolettii</i>	bicolored cudweed
<i>Pseudognaphalium canescens</i>	felty everlasting
<i>Rafinesquia californica</i>	California chicory
<i>Senecio flaccidus</i> var. <i>douglasii</i>	sand-wash butterweed
<i>Silybum marianum</i> *	milk thistle
<i>Sonchus asper</i> subsp. <i>asper</i> *	prickly sow thistle
<i>Sonchus oleraceus</i> *	common sow thistle
<i>Stephanomeria pauciflora</i>	wire lettuce
<i>Tanacetum parthenium</i> *	feverfew
<i>Taraxacum officinale</i> *	common dandelion
<i>Xanthium strumarium</i>	cocklebur
BETULACEAE	BIRCH FAMILY
<i>Alnus rhombifolia</i>	white alder
BIGNONIACEAE	BIGNONIA FAMILY
<i>Catalpa bignonioides</i> *	southern catalpa
BORAGINACEAE	BORAGE FAMILY
<i>Echium candicans</i> *	pride of Madeira
<i>Eriodictyon crassifolium</i>	thick-leaved yerba santa
<i>Phacelia ramosissima</i>	branching phacelia
BRASSICACEAE	MUSTARD FAMILY
<i>Brassica nigra</i> *	black mustard
<i>Hirschfeldia incana</i> *	shortpod mustard
<i>Lepidium latifolium</i> *	peppergrass
<i>Lobularia maritima</i> *	sweet-alyssum
<i>Nasturtium officinale</i>	water-cress
<i>Raphanus sativus</i> *	radish
<i>Sisymbrium altissimum</i> *	tumble mustard
<i>Sisymbrium irio</i> *	London rocket
CACTACEAE	CACTUS FAMILY
<i>Cylindropuntia</i> sp.	cholla
<i>Opuntia littoralis</i>	coastal prickly pear
CARYOPHYLLACEAE	PINK FAMILY
<i>Stellaria media</i> *	common chickweed
CHENOPODIACEAE	GOOSEFOOT FAMILY
<i>Chenopodium album</i> *	lamb's quarters
<i>Chenopodium</i> sp.	goosefoot

Scientific Name	Common Name
<i>Salsola</i> sp.*	Russian thistle
CONVOLVULACEAE	MORNING-GLORY FAMILY
<i>Convolvulus arvensis</i> *	bindweed
<i>Cuscuta</i> sp.	dodder
CRASSULACEAE	STONECROP FAMILY
<i>Dudleya lanceolata</i>	lance-leaved dudleya
CUCURBITACEAE	GOURD FAMILY
<i>Cucurbita pepo</i> *	pumpkin
<i>Cucurbita</i> sp.*	squash
<i>Marah macrocarpa</i>	wild cucumber
EUPHORBIACEAE	SPURGE FAMILY
<i>Croton californicus</i>	California croton
<i>Euphorbia maculata</i> *	spotted spurge
<i>Euphorbia peplus</i> *	petty spurge
<i>Ricinus communis</i> *	castor-bean
FABACEAE	LEGUME FAMILY
<i>Acacia baileyana</i> *	Cootumundra wattle
<i>Acacia cyclops</i> *	cyclops acacia
<i>Acacia melanoxylon</i> *	perennial blackwood acacia
<i>Acmispon glaber</i>	deerweed
<i>Albizia julibrissin</i> *	silktree
<i>Medicago sativa</i> *	alfalfa
<i>Melilotus albus</i> *	white sweetclover
<i>Parkinsonia aculeata</i> *	Mexican palo verde
<i>Pisum sativum</i> *	garden pea
<i>Spartium junceum</i> *	Spanish broom
FAGACEAE	OAK FAMILY
<i>Quercus agrifolia</i>	coast live oak
<i>Quercus berberidifolia</i>	scrub oak
GERANIACEAE	GERANIUM FAMILY
<i>Erodium cicutarium</i> *	red-stemmed filaree
<i>Geranium rotundifolium</i> *	roundleaf geranium
GROSSULARIACEAE	GOOSEBERRY FAMILY
<i>Ribes aureum</i>	golden currant
HALORAGACEAE	WATER-MILFOIL FAMILY
<i>Myriophyllum spicatum</i> *	Eurasian milfoil
HAMAMELIDACEAE	WITCH-HAZEL FAMILY
<i>Liquidambar styraciflua</i> *	sweet gum
JUGLANDACEAE	WALNUT FAMILY
<i>Juglans californica</i>	California black walnut
LAMIACEAE	MINT FAMILY
<i>Marrubium vulgare</i> *	horehound

Scientific Name	Common Name
<i>Salvia apiana</i>	white sage
<i>Salvia mellifera</i>	black sage
<i>Stachys</i> sp.	hedge-nettle
LOASACEAE	LOASA FAMILY
<i>Mentzelia laevicaulis</i>	smoothstem blazingstar
MALVACEAE	MALLOW FAMILY
<i>Malacothamnus davidsonii</i>	Davidson's bush mallow
<i>Malva parviflora</i> *	cheeseweed
<i>Malva sylvestris</i> *	high mallow
MONTIACEAE	MINER'S LETTUCE FAMILY
<i>Claytonia parviflora</i>	miner's lettuce
MORACEAE	MULBERRY FAMILY
<i>Ficus carica</i> *	edible fig
<i>Ficus nitida</i> *	Indian fig
<i>Ficus</i> sp.*	fig
<i>Morus alba</i> *	white mulberry
MYRSINACEAE	MYRSINE FAMILY
<i>Anagallis arvensis</i> *	scarlet pimpernel
MYRTACEAE	MYRTLE FAMILY
<i>Callistemon citrinus</i> *	crimson bottlebrush
<i>Eucalyptus</i> sp.*	gum tree
NYCTAGINACEAE	FOUR O'CLOCK FAMILY
<i>Mirabilis jalapa</i> *	marvel of Peru
OLEACEAE	OLIVE FAMILY
<i>Fraxinus uhdei</i> *	shamel ash
<i>Fraxinus velutina</i>	velvet ash
<i>Ligustrum japonicum</i> *	Japanese privet
<i>Ligustrum lucidum</i> *	glossy privet
ONAGRACEAE	EVENING PRIMROSE FAMILY
<i>Camissoniopsis bistorta</i>	California sun cup
<i>Clarkia unguiculata</i>	elegant clarkia
<i>Epilobium brachycarpum</i>	parched fireweed
<i>Eulobus californicus</i>	California evening primrose
<i>Oenothera elata</i>	evening primrose
PAPAVERACEAE	POPPY FAMILY
<i>Argemone munita</i>	prickly poppy
<i>Eschscholzia californica</i>	California poppy
PASSIFLORACEAE	PASSION FLOWER FAMILY
<i>Passiflora caerulea</i> *	bluecrown passionflower
PHRYMACEAE	LOPSEED FAMILY
<i>Erythranthe guttata</i>	yellow monkey flower
<i>Mimulus cardinalis</i>	scarlet monkey flower

Scientific Name	Common Name
PLANTAGINACEAE	PLANTAIN FAMILY
<i>Plantago arenaria</i> *	Indian plantain
<i>Plantago major</i> *	common plantain
<i>Veronica anagallis-aquatica</i> *	water speedwell
PLATANACEAE	SYCAMORE FAMILY
<i>Platanus racemosa</i>	western sycamore
POLYGONACEAE	BUCKWHEAT FAMILY
<i>Eriogonum fasciculatum</i>	California buckwheat
<i>Eriogonum gracile</i>	slender woolly buckwheat
<i>Persicaria hydropiperoides</i>	water pepper
<i>Pterostegia drymarioides</i>	California thread-stem
<i>Rumex crispus</i> *	curly dock
<i>Rumex pulcher</i>	fiddle dock
<i>Rumex</i> sp.	dock
RANUNCULACEAE	BUTTERCUP FAMILY
<i>Delphinium cardinale</i>	scarlet larkspur
RHAMNACEAE	BUCKTHORN FAMILY
<i>Ceanothus</i> sp.	ceanothus
ROSACEAE	ROSE FAMILY
<i>Heteromeles arbutifolia</i>	toyon
<i>Prunus ilicifolia</i> subsp. <i>ilicifolia</i>	islay, holly-leaf cherry
<i>Rosa californica</i>	California wild rose
<i>Rubus armeniacus</i> *	Himalayan blackberry
<i>Rubus ursinus</i>	California blackberry
SALICACEAE	WILLOW FAMILY
<i>Populus fremontii</i> subsp. <i>fremontii</i>	Fremont cottonwood
<i>Salix exigua</i>	narrow-leaved willow
<i>Salix gooddingii</i>	black willow
<i>Salix laevigata</i>	red willow
<i>Salix lasiolepis</i>	arroyo willow
SAPINDACEAE	SOAPBERRY FAMILY
<i>Acer negundo</i>	California box-elder
SCROPHULARIACEAE	FIGWORT FAMILY
<i>Verbascum virgatum</i> *	wand mullein
SIMAROUBACEAE	QUASSIA FAMILY
<i>Ailanthus altissima</i> *	tree of heaven
SOLANACEAE	NIGHTSHADE FAMILY
<i>Datura wrightii</i>	jimson weed
<i>Lycopersicon esculentum</i> *	tomato
<i>Nicotiana attenuata</i>	coyote tobacco
<i>Nicotiana glauca</i> *	tree tobacco
<i>Solanum americanum</i>	small-flowered nightshade

Scientific Name	Common Name
TAMARICACEAE	TAMARISK FAMILY
<i>Tamarix ramosissima</i> *	Mediterranean tamarisk
<i>Tamarix</i> sp.*	tamarisk
ULMACEAE	ELM FAMILY
<i>Ulmus parvifolia</i> *	Chinese elm
URTICACEAE	NETTLE FAMILY
<i>Urtica dioica</i>	stinging nettle
VITACEAE	GRAPE FAMILY
<i>Parthenocissus quinquefolia</i> *	Virginia creeper
<i>Vitis girdiana</i>	desert wild grape
ZYGOPHYLLACEAE	CALTROP FAMILY
<i>Tribulus terrestris</i> *	puncture vine
ANGIOSPERMS (MONOCOTS)	
AGAVACEAE	AGAVE FAMILY
<i>Agave americana</i> *	century plant
<i>Hesperoyucca whipplei</i>	our Lord's candle
AMARYLLIDACEAE	AMARYLLIS FAMILY
<i>Amaryllis belladonna</i> *	belladonna-lily
ARACEAE	PHILODENDRON FAMILY
<i>Colocasia gigantea</i> *	giant elephant ear
ARECACEAE	PALM FAMILY
<i>Arecastrum romanzoffianum</i> *	queen palm
<i>Phoenix canariensis</i> *	Canary Island date palm
<i>Washingtonia</i> sp.	fan palm
ASPHODELACEAE	ASPHODEL FAMILY
<i>Aloe</i> sp.*	aloe
CYPERACEAE	SEDGE FAMILY
<i>Cyperus eragrostis</i>	tall cyperus
<i>Cyperus involucratus</i> *	umbrella-plant
<i>Cyperus odoratus</i>	fragrant flatsedge
<i>Cyperus</i> sp.	sedge
POACEAE	GRASS FAMILY
<i>Agrostis stolonifera</i> *	redtop
<i>Agrostis viridis</i> *	water bentgrass
<i>Arundo donax</i> *	giant reed
<i>Avena barbata</i> *	slender wild oat
<i>Avena fatua</i> *	wild oat
<i>Bromus diandrus</i> *	ripgut grass
<i>Bromus hordeaceus</i> *	soft chess
<i>Bromus madritensis</i> subsp. <i>madritensis</i> *	foxtail chess
<i>Bromus madritensis</i> subsp. <i>rubens</i> *	red brome
<i>Cortaderia selloana</i> *	pampas grass

Scientific Name	Common Name
<i>Cynodon dactylon</i> *	Bermuda grass
<i>Echinochloa crus-galli</i> *	barnyard grass
<i>Ehrharta calycina</i> *	perennial veldt grass
<i>Eleusine indica</i> *	goose grass
<i>Festuca myuros</i> *	rattail sixweeks grass
<i>Festuca perennis</i> *	Italian ryegrass
<i>Hordeum murinum</i> *	foxtail barley
<i>Hordeum vulgare</i> *	barley
<i>Panicum dichotomiflorum</i> subsp. <i>dichotomiflorum</i> *	fall panicgrass
<i>Pennisetum setaceum</i> *	fountain grass
<i>Polypogon monspeliensis</i> *	annual beard grass
<i>Polypogon viridis</i> *	water beard grass
<i>Schismus barbatus</i> *	Mediterranean schismus
<i>Stipa miliacea</i> var. <i>miliacea</i> *	smilo grass
<i>Triticum aestivum</i> *	wheat
PONTEDERIACEAE	PICKEREL-WEED FAMILY
<i>Eichhornia crassipes</i> *	water hyacinth
TYPHACEAE	CATTAIL FAMILY
<i>Typha angustifolia</i>	narrow-leaved cattail
<i>Typha latifolia</i>	broad-leaved cattail
<i>Typha</i> sp.	cattail
*Non-Native Species	

APPENDIX C – WILDLIFE SPECIES LIST

Scientific Name	Common Name
CLASS MALACOSTRACA	CRUSTACEANS
CAMBARIDAE <i>Procambarus clarkii</i>	CRAYFISH red swamp crawfish
CLASS INSECTA	INSECTS
DIPTERA <i>Culicidae family</i>	FLIES mosquito sp.
HYMENOPTERA <i>Apis mellifera</i> <i>Bombus vandykei</i> <i>Megachilidae</i> <i>Xylocopa sonorina</i> <i>Xylocopa sp.</i>	ANTS, BEES, AND WASPS honey bee Van Dyke’s bumble bee leafcutter bee valley carpenter bee carpenter bee sp.
ODONATA <i>Anisoptera suborder</i>	DRAGONFLIES AND DAMSELFLIES dragonfly sp.
PAPILIONIDAE <i>Papilio rutulus</i>	PARNASSIANS, SWALLOWTAILS western tiger swallowtail
PIERIDAE <i>Pieris rapae</i>	WHITES & SULPHURS cabbage white
CLASS OSTEICHTHYES	BONY FISH
ATHERINOPSIDAE <i>Menidia beryllina</i>	SILVERSIDES inland silverside
CYPRINIDAE <i>Carassius auratus</i> <i>Cyprinus carpio</i> <i>Gila orcutti</i> <i>Micropterus salmoides</i> <i>Rhinichthys osculus ssp.</i>	CARPS AND MINNOWS goldfish common carp arroyo chub largemouth bass Santa Ana speckled dace
CATOSTOMIDAE <i>Catostomus santaanae</i>	SUCKERS Santa Ana sucker
CENTRARCHIDAE <i>Lepomis cyanellus</i> <i>Lepomis macrochirus</i>	SUNFISHES green sunfish bluegill
CICHLIDAE <i>Oreochromis mossambicus</i>	CICHLIDS Mozambique tilapia
ICTALURIDAE <i>Ameiurus melas</i> <i>Ameiurus natalis</i>	BULLHEAD CATFISHES black bullhead yellow bullhead
POECILIIDAE <i>Gambusia affinis</i>	TOOTH-CARPS western mosquitofish

Scientific Name	Common Name
CLASS AMPHIBIA	AMPHIBIANS
BUFONIDAE <i>Anaxyrus boreas</i>	TRUE TOADS western toad
HYLIDAE <i>Pseudacris hypochondriaca</i>	TREEFROGS Baja California chorus frog
RANIDAE <i>Lithobates catesbeianus</i>	TRUE FROGS bullfrog
CLASS REPTILIA	REPTILES
CHELYDRIDAE <i>Chelydra serpentina</i>	SNAPPING TURTLES common snapping turtle
EMYDIDAE <i>Trachemys scripta elegans</i>	BOX AND WATER TURTLES red-eared slider
TRIONYCHIDAE <i>species unknown</i>	SOFTSHELL TURTLES softshell turtle
PHRYNOSOMATIDAE <i>Phrynosoma blainvillii</i> <i>Sceloporus occidentalis</i> <i>Uta stansburiana</i>	ZEBRA-TAILED, EARLESS, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS coast horned lizard western fence lizard side-blotched lizard
TEIIDAE <i>Aspidoscelis tigris</i> <i>Aspidoscelis tigris stejnegeri</i>	WHIPTAIL LIZARDS western whiptail coastal whiptail
COLUBRIDAE <i>Coluber flagellum piceus</i>	COLUBRID SNAKES red racer
CLASS AVES	BIRDS
PODICIPEDIDAE <i>Podilymbus podiceps</i>	GREBES pied-billed grebe
PHALACROCORACIDAE <i>Phalacrocorax auritus</i>	CORMORANTS double-crested cormorant
ARDEIDAE <i>Ardea alba</i> <i>Ardea herodias</i> <i>Butorides virescens</i> <i>Egretta thula</i> <i>Nycticorax nycticorax</i>	HERONS AND BITTERNS great egret great blue heron green heron snowy egret black-crowned night heron
ANATIDAE <i>Anas americana</i> <i>Anas clypeata</i> <i>Anas crecca</i> <i>Anas cyanoptera</i> <i>Anas platyrhynchos</i>	DUCKS, GEESE, AND SWANS American wigeon northern shoveler green-winged teal cinnamon teal mallard

Scientific Name	Common Name
<i>Aythya collaris</i>	ring-necked duck
<i>Aythya valisineria</i>	canvasback
<i>Branta canadensis</i>	Canada goose
<i>Bucephala albeola</i>	bufflehead
<i>Lophodytes cucullatus</i>	hooded merganser
<i>Oxyura jamaicensis</i>	ruddy duck
CATHARTIDAE	NEW WORLD VULTURES
<i>Cathartes aura</i>	turkey vulture
ACCIPITRIDAE	HAWKS, KITES, AND EAGLES
<i>Accipiter cooperii</i>	Cooper's hawk
<i>Accipiter striatus</i>	sharp-shinned hawk
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Buteo lineatus</i>	red-shouldered hawk
FALCONIDAE	FALCONS
<i>Falco peregrinus</i>	peregrine falcon
<i>Falco sparverius</i>	American kestrel
ODONTOPHORIDAE	NEW WORLD QUAIL
<i>Callipepla californica</i>	California quail
RALLIDAE	RAILS, GALLINULES, AND COOTS
<i>Fulica americana</i>	American coot
<i>Porzana carolina</i>	sora
SCOLOPACIDAE	SANDPIPERS
<i>Gallinago delicata</i>	Wilson's snipe
COLUMBIDAE	PIGEONS AND DOVES
<i>Columba livia</i>	rock pigeon
<i>Patagioenas fasciata</i>	band-tailed pigeon
<i>Streptopelia decaocto</i>	Eurasian Collared-Dove
<i>Zenaida macroura</i>	mourning dove
TYTONIDAE	BARN OWLS
<i>Tyto alba</i>	barn owl
CAPRIMULGIDAE	NIGHTHAWKS
<i>Chordeiles acutipennis</i>	lesser nighthawk
APODIDAE	SWIFTS
<i>Aeronautes saxatalis</i>	white-throated swift
TROCHILIDAE	HUMMINGBIRDS
<i>Archilochus alexandri</i>	black-chinned hummingbird
<i>Calypte anna</i>	Anna's hummingbird
<i>Selasphorus sasin</i>	Allen's hummingbird
ALCEDINIDAE	KINGFISHERS
<i>Megaceryle alcyon</i>	belted kingfisher
PICIDAE	WOODPECKERS

Scientific Name	Common Name
<i>Colaptes auratus</i>	northern flicker
<i>Dryobates nuttallii</i>	Nuttall's woodpecker
<i>Dryobates pubescens</i>	downy woodpecker
<i>Dryobates villosus</i>	hairy woodpecker
<i>Melanerpes formicivorus</i>	acorn woodpecker
ESTRILDIDAE	ESTRILID FINCHES
<i>Lonchura punctulata</i>	scaly-breasted munia
TYRANNIDAE	TYRANT FLYCATCHERS
<i>Contopus cooperi</i>	olive-sided flycatcher
<i>Empidonax difficilis</i>	Pacific-slope flycatcher
<i>Empidonax traillii</i>	willow flycatcher
<i>Empidonax wrightii</i>	gray flycatcher
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
<i>Sayornis nigricans</i>	black phoebe
<i>Sayornis saya</i>	Say's phoebe
<i>Tyrannus vociferans</i>	Cassin's kingbird
HIRUNDINIDAE	SWALLOWS
<i>Hirundo rustica</i>	barn swallow
<i>Petrochelidon pyrrhonota</i>	cliff swallow
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow
<i>Tachycineta bicolor</i>	tree swallow
CORVIDAE	JAYS AND CROWS
<i>Aphelocoma californica</i>	California scrub-jay
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
PARIDAE	CHICKADEES AND TITMICE
<i>Baeolophus inornatus</i>	oak titmouse
AEGITHALIDAE	BUSHTITS
<i>Psaltriparus minimus</i>	bushtit
TROGLODYTIDAE	WRENS
<i>Campylorhynchus brunneicapillus</i>	cactus wren
<i>Cistothorus palustris</i>	marsh wren
<i>Salpinctes obsoletus</i>	rock wren
<i>Thryomanes bewickii</i>	Bewick's wren
<i>Troglodytes aedon</i>	house wren
SYLVIIDAE	OLD WORLD WARBLERS
<i>Chamaea fasciata</i>	wrentit
<i>Regulus calendula</i>	ruby-crowned kinglet
POLIOPTILIDAE	GNATCATCHERS
<i>Polioptila caerulea</i>	blue-gray gnatcatcher
<i>Polioptila californica</i>	California gnatcatcher

Scientific Name	Common Name
TURDIDAE <i>Catharus guttatus</i> <i>Sialia mexicana</i> <i>Turdus migratorius</i>	THRUSHES hermit thrush western bluebird American robin
MIMIDAE <i>Mimus polyglottos</i> <i>Toxostoma redivivum</i>	MOCKINGBIRDS AND THRASHERS northern mockingbird California thrasher
BOMBYCILLIDAE <i>Bombycilla cedrorum</i>	WAXWINGS cedar waxwing
PTILOGONATIDAE <i>Phainopepla nitens</i>	SILKY-FLYCATCHERS phainopepla
STURNIDAE <i>Sturnus vulgaris</i>	STARLINGS European starling
VIREONIDAE <i>Vireo bellii pusillus</i> <i>Vireo cassinii</i> <i>Vireo gilvusty</i> <i>Vireo huttoni</i>	VIREOS least Bell's vireo Cassin's vireo warbling vireo Hutton's vireo
PARULIDAE <i>Cardellina pusilla</i> <i>Geothlypis trichas</i> <i>Leiothlypis celata</i> <i>Leiothlypis ruficapilla</i> <i>Setophaga petechia</i> <i>Setophaga coronata</i> <i>Setophaga nigrescens</i>	WOOD WARBLERS Wilson's warbler common yellowthroat orange-crowned warbler Nashville warbler yellow warbler yellow-rumped warbler black-throated gray warbler
ICTERIDAE <i>Agelaius phoeniceus</i> <i>Euphagus cyanocephalus</i> <i>Icterus cucullatus</i> <i>Icterus bullockii</i> <i>Molothrus ater</i> <i>Quiscalus mexicanus</i> <i>Sturnella neglecta</i> <i>Xanthocephalus xanthocephalus</i> <i>Icteria virens</i>	BLACKBIRDS red-winged blackbird Brewer's blackbird hooded oriole Bullock's oriole brown-headed cowbird great-tailed grackle western meadowlark yellow-headed blackbird yellow-breasted chat
PASSERELLIDAE <i>Chondestes grammacus</i> <i>Junco hyemalis</i> <i>Melospiza lincolni</i> <i>Melospiza melodia</i>	NEW WORLD SPARROWS lark sparrow dark-eyed junco Lincoln's sparrow song sparrow

Scientific Name	Common Name
<i>Melospiza crissalis</i>	California towhee
<i>Passerculus sandwichensis</i>	savannah sparrow
<i>Pipilo maculatus</i>	spotted towhee
<i>Zonotrichia atricapilla</i>	golden-crowned sparrow
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
CARDINALIDAE	CARDINALS
<i>Passerina amoena</i>	lazuli bunting
<i>Piranga ludoviciana</i>	western tanager
<i>Pheucticus melanocephalus</i>	black-headed grosbeak
FRINGILLIDAE	FINCHES
<i>Haemorhous mexicanus</i>	house finch
<i>Spinus psaltria</i>	lesser goldfinch
<i>Spinus tristis</i>	American goldfinch
PASSERIDAE	OLD WORLD SPARROWS
<i>Passer domesticus</i>	house sparrow
CLASS MAMMALIA	MAMMALS
LEPORIDAE	HARES & RABBITS
<i>Sylvilagus audubonii</i>	desert cottontail
SCIURIDAE	SQUIRRELS
<i>Spermophilus beecheyi</i>	California ground squirrel
MURIDAE	MICE, RATS, AND VOLES
<i>Neotoma fuscipes</i>	dusky-footed woodrat
CANIDAE	WOLVES AND FOXES
<i>Canis familiaris</i>	domestic dog
<i>Canis latrans</i>	coyote
EQUIDAE	HORSES AND BURROS
<i>Equus caballus</i>	horse

APPENDIX D – BROWN-HEADED COWBIRD TRAPPING REPORT



**2020 BIG TUJUNGA WASH MITIGATION AREA
BROWN-HEADED COWBIRD CONTROL PROGRAM**



2020 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: Jackelyn Mayfield
Project Number 21021.05-001-01

prepared by:

Griffith Wildlife Biology
Jane C. Griffith
P.O. Box 47
Calumet, Michigan 49913
www.griffithwildlifebiology.com

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EXECUTIVE SUMMARY

Four cowbird traps were operated in the vicinity of the Big Tujunga Wash Mitigation Area (Mitigation Area) near Hansen Dam in 2020. 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 2 April to 30 June (90 days, 13 weeks). Each trap contained live decoy cowbirds by 7 April, and 2-3 males and 5-6 female decoys as of 15 April and subsequently.

Fifty-five (55) cowbirds were removed, including 28 males, 26 females, and 1 juvenile. The 2001-2017; 2019-2020 average is 105.3, including 49.9 males (r=9-103), 52.1 females (r=11-111), and 3.3 juveniles (r=0-18) and 2019 captures were nearly identical to 2020 (55 cowbirds removed, with 26 males, 28 females and 1 juvenile).

The 2020 male:female capture ratio was 0.96:1. The male capture peak was Weeks 3-6 (15 April to 12 May) with 25/28 males (89%) removed, and the female capture peak was also Weeks 3-6 (15 April to 12 May) when 25/26 females (96%) were removed. No banded cowbirds or other banded birds were captured. The traps were not vandalized in 2020; no decoys escaped and no trap days were lost. In addition to cowbirds, local birds of 3 non-target species were captured, released, and recaptured a total of 42 times; all were released unharmed (0 preyed upon). No sensitive or endangered, threatened, or candidate non-target species were captured.

The least Bell's vireo (LBVI) 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 LBVI populations exist where cowbird trapping has been consistently performed. 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. Because 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.

In 2020 Chambers Group confirmed cowbird parasitism on 3 LBVI nests at Big Tujunga. The nests were fairly close to one of the cowbird traps (within ¼ mile), however there was not a trap immediately adjacent. In 2021 Trap 2 will be moved upstream and placed adjacent to the 2020 LBVI nesting areas so as to preclude cowbird parasitism in this area.

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*).

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INTRODUCTION

The objective of this study was to remove brown-headed cowbirds (*Molothrus ater*, cowbird) from riparian habitat at Big Tujunga Wash Mitigation Area (Mitigation Area) near Hansen Dam to decrease or eliminate cowbird brood parasitism among the federally endangered least Bell's vireo (*Vireo bellii pusillus*, LBVI) 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, 2009-2017 and 2019 (trapping was not performed in 2018 due to the Creek Fire that burned through the Mitigation Area in 2017).

Least Bell's Vireo

The least Bell's vireo (LBVI) 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. LBVI 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. LBVI 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 LBVI can forage on their own after 2-3 weeks, although family groups may remain associated into August or September, after which they migrate south (Griffith and Griffith 2000).

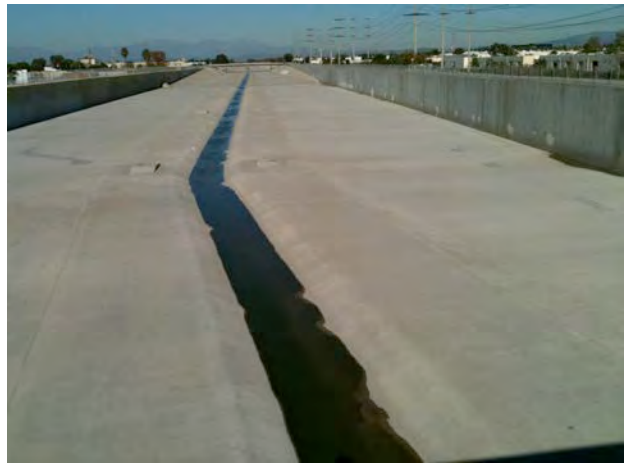
The least Bell's vireo was formerly abundant and bred as far north as Red Bluff in Tehama County (about 130 miles north of Sacramento) (Cooper 1874), but due to habitat loss (agriculture, flood control, livestock) (Smith 1977, USFWS 1986, Wilbur 1981) and brood parasitism by the brown-headed cowbird, 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 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, LBVI 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, LBVI colonizers are re-extirpated.



Willow-dominated LBVI habitat at the Santa Ana River.



Former habitat (now paved), lower Santa Ana River



Adult male LBVI on nest.



LBVI nest hung in mulefat (*Bacharis salicifolia*)



Hatch-day LBVI chick



Hatch-day cowbird chick in LBVI nest

Habitat is a critical component for any species, and habitat loss decidedly decimated the historic LBVI population. However, throughout the decades-long decline, at the time the LBVI was listed as endangered, and today, there were and are thousands of acres of vacant, least Bell's vireo-quality riparian habitat available. Habitat loss caused the initial decline of this vireo, but persistent cowbird parasitism extirpated the species from all but a few locations and caused the to become LBVI endangered, and cowbird trapping (in suitable/ protected habitat) is the primary cause of the ongoing recovery. The goal of the LBVI recovery plan is the re-establishment of the vireo in the Central Valley, the center of the LBVI'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, SWFLs nest in habitat similar to that of the LBVI, although usually near running water and with larger canopy trees, and their general breeding biology is similar but 1-2 months "behind" the LBVI. Southwestern 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. 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 Bird Species of Special Concern (CDFW 2009) due to declining numbers and local extirpations, again associated with habitat loss and cowbird brood parasitism. The USFWS and CDFW consider the chat and yellow-warbler as “indicator species” for the LBVI and to a lesser extent, SWFL. That is, their presence indicates that the habitat is of a type and quality suitable for use by the least Bell’s vireo and southwestern willow flycatcher.



yellow-breasted chat nest



yellow-breasted chat nestlings

Brown-headed Cowbird

The brown-headed 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 LBVI and SWFL, 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, LBVI 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 LBVI breeding season (typically 1 April – 30 June although non-breeding season trapping can also be helpful).

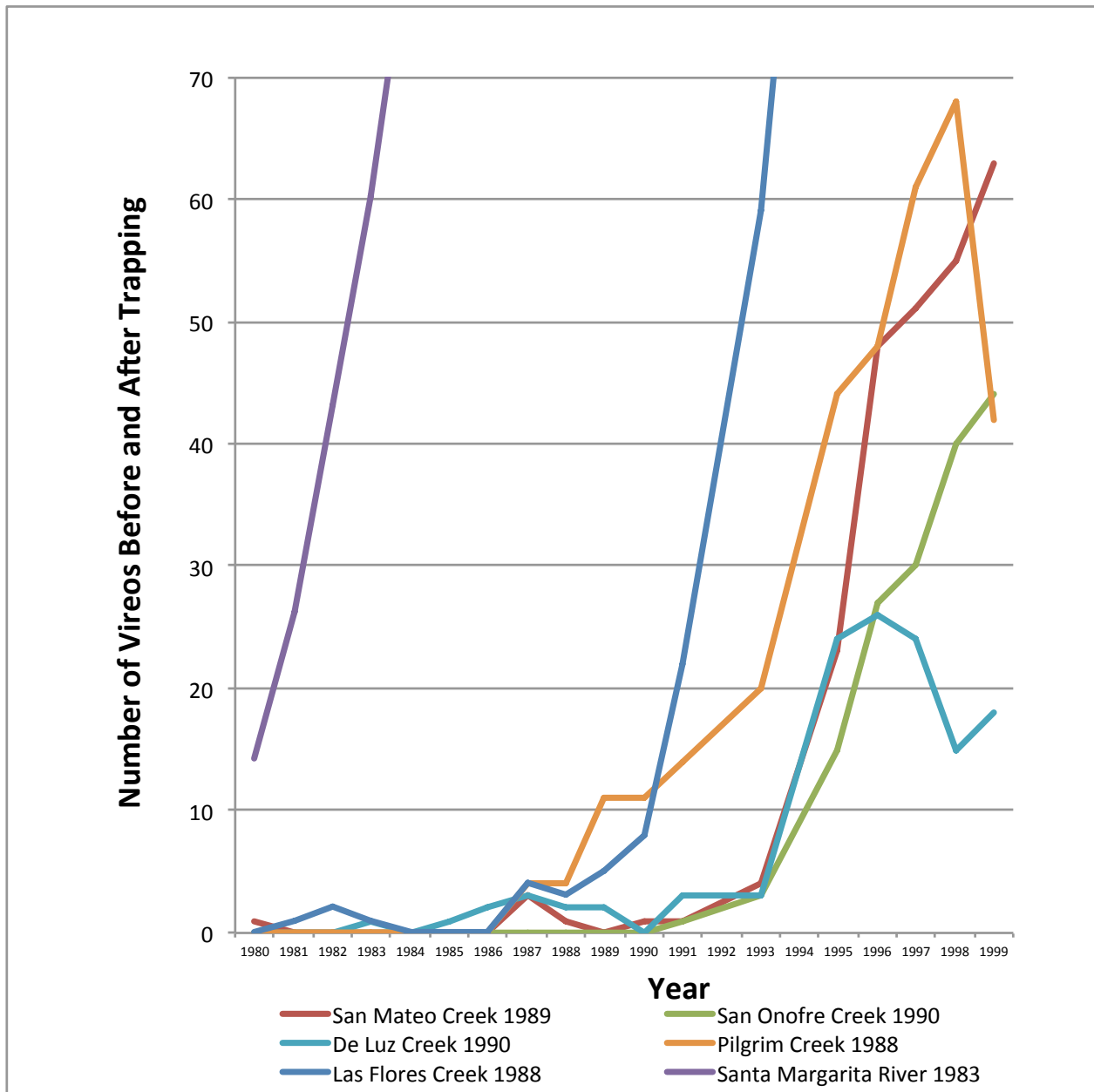
Topical trapping reduces parasitism rates among the LBVI from pre-trapping levels of 50%-100% to at or near 0%, and unlike LBVI nest monitoring and cowbird egg removal, trapping benefits the entire avian host community. For LBVIs, cowbird trapping increases per-

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 LBVI and nearly every LBVI 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 LBVI 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, LBVIs 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 LBVI numbers and allows for LBVI 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) (Griffith and Griffith 2000). From 1980-1999, all suitable vireo habitat on 6 separate drainages was surveyed, and the number, location, and fate of every LBVI and nearly all LBVI 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, LBVI 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 LBVI 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.





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 the Mitigation Area was initiated in 2001 and performed in 2001-2006, 2009-2017, and 2019 (not performed in 2018 due to lack of vegetation and sensitive riparian bird nesting habitats). 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 Mitigation Area at Hansen Dam Basin (2 traps) in 1996, 1997, and 2001-2020 (GWB 2020), and upstream of Interstate 210 at Angeles National Golf Course (3 traps) in 2008-2020 (GWB 2020a).

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 Mitigation Area 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 coastal 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 LBVI (39 pairs, 5 single males) were detected within the Hansen Dam Basin (GWB 2009). LBVIs are expanding their range upstream from the Basin, and have been documented adjacent to the Hansen Dam Stables (GWB, field observations 2019-2020 and before) and are now known to occupy the Mitigation Area and the contiguous Tujunga Ponds Wildlife Sanctuary, north of Gibson Ranch (J. Mayfield, Chambers Group, pers. commun.) (Appendix 2).

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 2 (upstream of Hansen Dam Stables), Trap 3 (just outside Gibson Ranch), and Trap 4 (Gibson Ranch) were in foraging areas adjacent to riparian habitat. The traps were placed, assembled, and activated on April 2, then operated until June 30 (90 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 inch 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 pound of sunflower-free wild birdseed (on the foraging tray), and live decoy cowbirds were added to each trap, as available, and the trap was locked (in 2020, Covid-19 precluded the capture of live decoys at some of GWB's historic off site locations, so not all traps contained the live decoys on April 1).

Each trap contained live decoy cowbirds by 7 April, and 2-3 males and 5-6 female decoys 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 or off site at other programs nearby.



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 2 April 2 to 30 June. 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, slot board 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 30 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 758175-13 and a Letter Permit from the California Department of Fish & Wildlife. The Principal Investigator was K.T. Griffith. The Project Manager was J.C. Griffith. The Trap Technicians were M. Birney, L. Bergeron, N. Gast, and K.T. Griffith.

RESULTS

Cowbirds Removed Fifty-five (55) cowbirds were removed, including 28 males, 26 females, and 1 juvenile (Table 1, Table 2). The 2001-2017, 2019-2020 average is 105.3, including 49.9 males (r=9-103), 52.1 females (r=11-111), and 3.3 juveniles (r=0-18). The 2020 male: female capture ratio was 0.96:1.

The first adult cowbird was captured on 18 April in Trap 3 (1 male); the only juvenile cowbird was captured 30 June in Trap 1. The male capture peak was Weeks 3-6 (15 April to 12 May) with 25/28 males (89%) removed, and the female capture peak was also Weeks 3-6 (15 April to 12 May) when 25/26 females (96%) were removed.

No banded cowbirds or other banded birds were captured.

Non-Target Species In addition to cowbirds, local birds of 3 non-target species were captured, released, and recaptured a total of 42 times (Table 3). All were released unharmed (0 were preyed upon in the traps). 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. All trap sites performed well. Trap 3 removed the most total cowbirds: 21 (15 males and 6 females).

Vandalism There was no trap vandalism in 2020, 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 360 (4 traps x 90 days) of the 364 (4 traps x 91 days) contracted trap days (99%).

Least Bell's Vireo Chambers Group observed 3 LBVI pairs, and found 3 parasitized LBVI nests in the Big Tujunga study area in 2020 in June and July. One LBVI pair had 2 nests parasitized and one LBVI pair had at least one nest parasitized (in all 3 cases the pairs abandoned the nests and left one cowbird egg behind; in 1 of the 3 nests there were also broken vireo eggs and ants present) (J. Mayfield, pers. commun.). One of the LBVI pairs was observed with 2 fledglings in July, presumed to have been raised in the territory (but the nest was not observed).

DISCUSSION AND CONCLUSIONS

The number of cowbirds removed from each trap site and each program varies year-to-year, sometimes independently. The 2020 capture numbers were almost identical to the 2019 (55 total; 26m, 28f, 1j) and 2017 capture numbers (54 total; 27m, 26f, 1j) and follow the 133 removed in 2016 (47m, 86f, 0j). The 2017, 2019, and 2020 annual capture numbers were the lowest since the 56 recorded in 2006 (30m, 24f, 2j). 2006 was bracketed by 137 in 2005 (53m, 66f, 18j) and 192 in 2007 (78m, 11f, 3j). It is unknown if the annual capture numbers will 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).

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). However, the three LBVI nests that were parasitized, from early June to early July, show that not all female cowbirds were removed from the study area. Only 1 female cowbird was captured from 11 May – 30 June (Trap 4 at Gibson Ranch captured 1 female on 17 June), so it is possible that the cowbird female or females active at the LBVI nesting areas did not fly south to forage at the Gibson Ranch stables (where Traps 3 and 4 were located) despite being within $\frac{1}{4}$ mile of the traps. Because of this it is imperative that one of the four Big Tujunga traps be moved next to the LBVI nesting area in 2021.

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 2020, indicating that not many cowbirds were raised in the area in 2020. However, that could be due to nest abandonment after parasitism, as was observed with the LBVI pairs; only direct nest monitoring can give the exact rate of parasitism in an area.

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 should be moved upstream and placed directly adjacent to the 2020 LBVI nesting areas (or adjusted before the season or within the season so as to be adjacent to the 2021 LBVI nesting areas if they have shifted).
3. If during the nesting season LBVI or other native birds are observed to be parasitized, one of the four cowbird traps should be moved to a spot directly adjacent, or as close as practical, to the nest that was parasitized.

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Figure 1. 2020 Big Tujunga Wash Mitigation Area brown-headed cowbird control project study area.

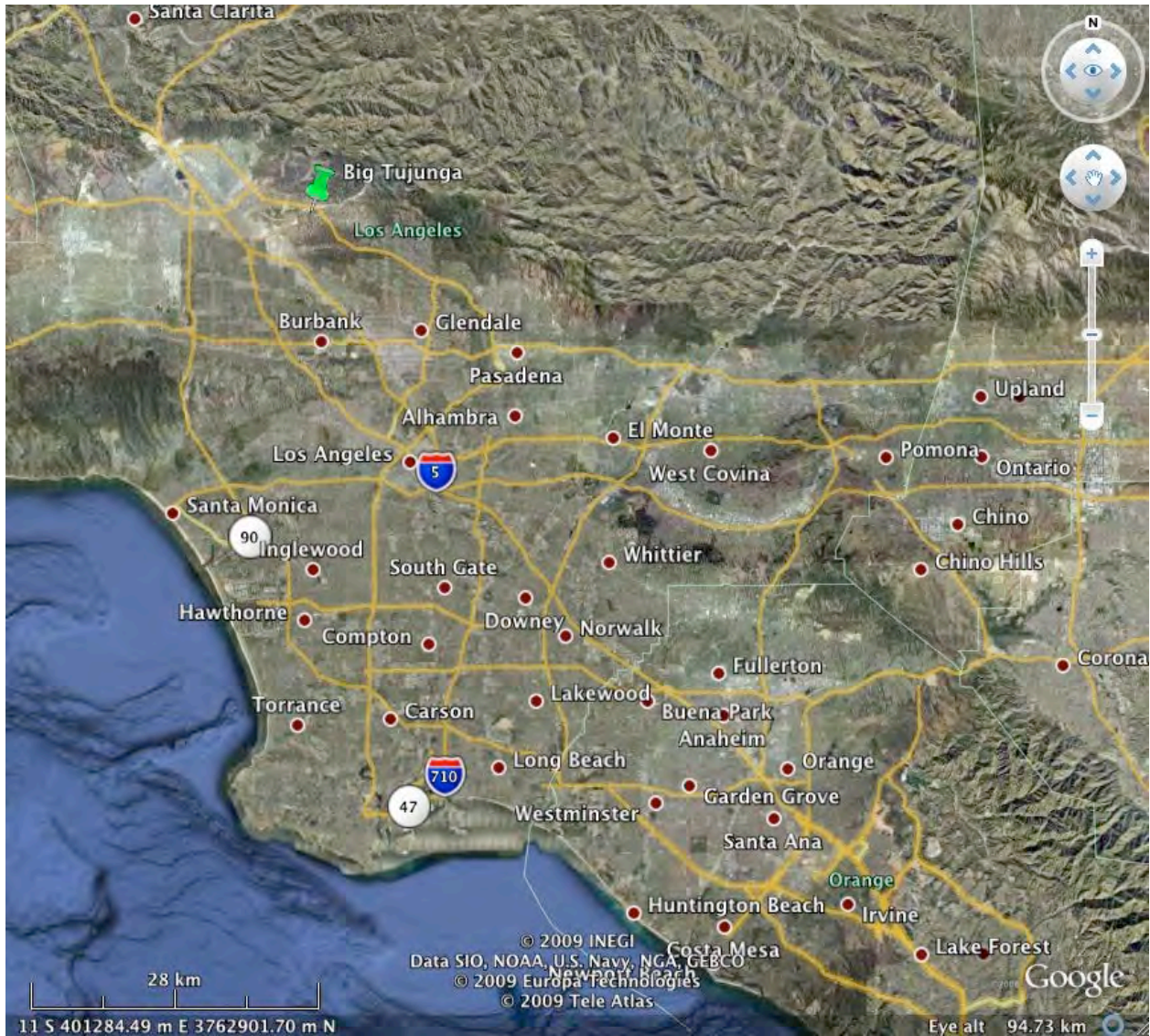


Figure 2. 2020 Big Tujunga Wash Mitigation Area brown-headed cowbird trap locations.



Figure 3. 2020 Big Tujunga Wash Mitigation Area brown-headed cowbird Traps 1 and 2 photos.



Trap 1



Trap 2

Figure 4. 2020 Big Tujunga Wash Mitigation Area brown-headed cowbird Traps 3 and 4 photos.



Trap 3



Trap 4

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 2020.

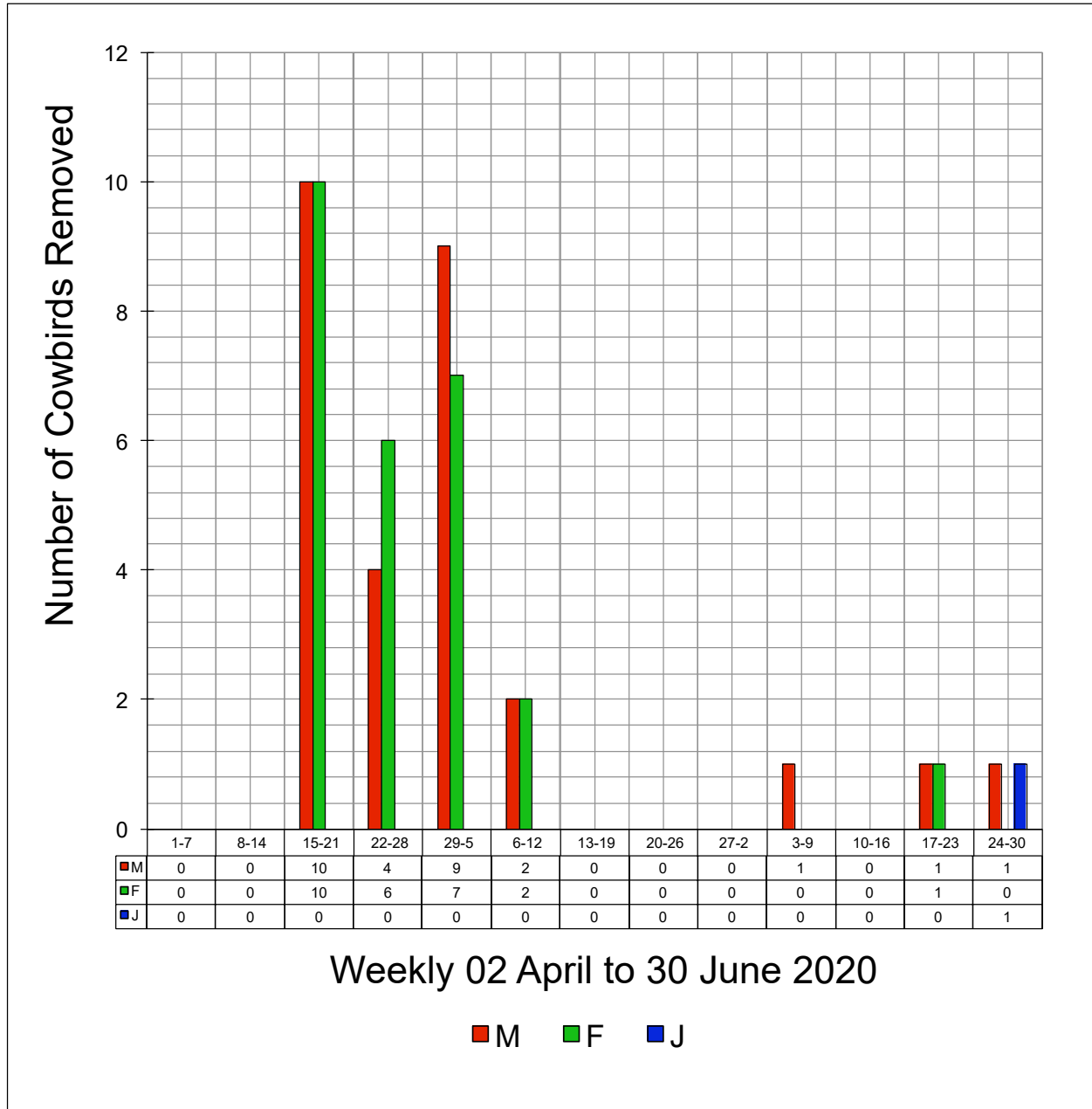


Table 1. Number of brown-headed cowbirds captured at and in the vicinity of Big Tujunga Wash Mitigation Area, 2001-2017; 2019-2020.

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
2019	4	3/29 - 7/1	26	28	1	55	13.75	0.93
2020	4	4/2 - 6/30	28	26	1	55	13.75	1.08
TOTAL	83	17	849	885	56	1790	21.57	0.96
AVG	4.9		49.9	52.1	3.3	105.3		

2001-2005: Chambers Group, Inc. 2005
2006-2017; 2019 Griffith Wildlife Biology (GWB) 2019
2018: the Big T traps were not operated

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 2020.

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
Apr 2													0	0	0
Apr 3													0	0	0
Apr 4													0	0	0
Apr 5													0	0	0
Apr 6													0	0	0
Apr 7													0	0	0
wk 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr 8													0	0	0
Apr 9													0	0	0
Apr 10													0	0	0
Apr 11													0	0	0
Apr 12													0	0	0
Apr 13													0	0	0
Apr 14													0	0	0
wk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apr 15													0	0	0
Apr 16													0	0	0
Apr 17													0	0	0
Apr 18						1							1	1	0
Apr 19					4		2	2					2	6	2
Apr 20					1		2		1				3	1	0
Apr 21					1		4	1		1			4	3	0
wk 3	0	0	0	0	6	0	9	3	0	1	1	0	10	10	0
Apr 22													0	0	0
Apr 23							1	2		1			2	2	0
Apr 24													0	0	0
Apr 25						1				2			0	3	0
Apr 26						1							0	1	0
Apr 27					1		1						2	0	0
Apr 28													0	0	0
wk 4	0	0	0	1	2	0	2	2	0	1	2	0	4	6	0
Apr 29		1											0	1	0
Apr 30		1					1						1	1	0
May 1													0	0	0
May 2													0	0	0
May 3		2		1									1	2	0
May 4		2								2			2	2	0
May 5				1			1			3	1		5	1	0
wk 5	2	4	0	2	0	0	2	0	0	3	3	0	9	7	0
May 6													0	0	0
May 7													0	0	0
May 8								1					0	1	0
May 9													0	0	0
May 10	1	1											1	1	0
May 11													0	0	0
May 12							1						1	0	0
wk 6	1	1	0	0	0	0	1	1	0	0	0	0	2	2	0
May 13													0	0	0
May 14													0	0	0
May 15													0	0	0
May 16													0	0	0
May 17													0	0	0
May 18													0	0	0
May 19													0	0	0
wk 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May 20													0	0	0
May 21													0	0	0
May 22													0	0	0
May 23													0	0	0
wk 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May 24													0	0	0
May 25													0	0	0
May 26													0	0	0
May 27													0	0	0
May 28													0	0	0
May 29													0	0	0
May 30	1			1									1	0	1
wk 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
May 31													0	0	0
Jun 1													0	0	0
Jun 2													0	0	0
wk 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun 3													0	0	0
Jun 4													0	0	0
Jun 5										1			1	0	0
Jun 6													0	0	0
Jun 7													0	0	0
Jun 8													0	0	0
Jun 9													0	0	0
wk 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun 10													0	0	0
Jun 11													0	0	0
Jun 12													0	0	0
Jun 13													0	0	0
Jun 14													0	0	0
Jun 15													0	0	0
Jun 16													0	0	0
wk 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jun 17													0	1	0
Jun 18													0	0	0
Jun 19													1	0	0
Jun 20													0	0	0
Jun 21													0	0	0
Jun 22													0	0	0
Jun 23													0	0	0
wk 13	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0
Jun 24													0	0	0
Jun 25													0	0	0
Jun 26													0	0	0
Jun 27													0	0	0
Jun 28													0	0	0
Jun 29													0	0	0
Jun 30	1			1									1	0	1
TOTAL	4	5	1	4	8	0	15	6	0	5	7	0	28	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 2020.

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														6
HOFI					6						1			3
HOSP					7						1			1
TOTAL	0	0	0	0	13	0	0	0	0	0	2	0	10	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							1				4		11	0
HOFI					3								13	0
HOSP	3		1		2				3				18	0
TOTAL	3	0	1	0	5	0	1	0	3	0	4	0	42	0
CATO	California towhee													
HOFI	house finch													
HOSP	house sparrow													

Appendix 1. Warning/informational sign placed on cowbird traps at Big Tujunga Wash Mitigation Area in 2020.

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.

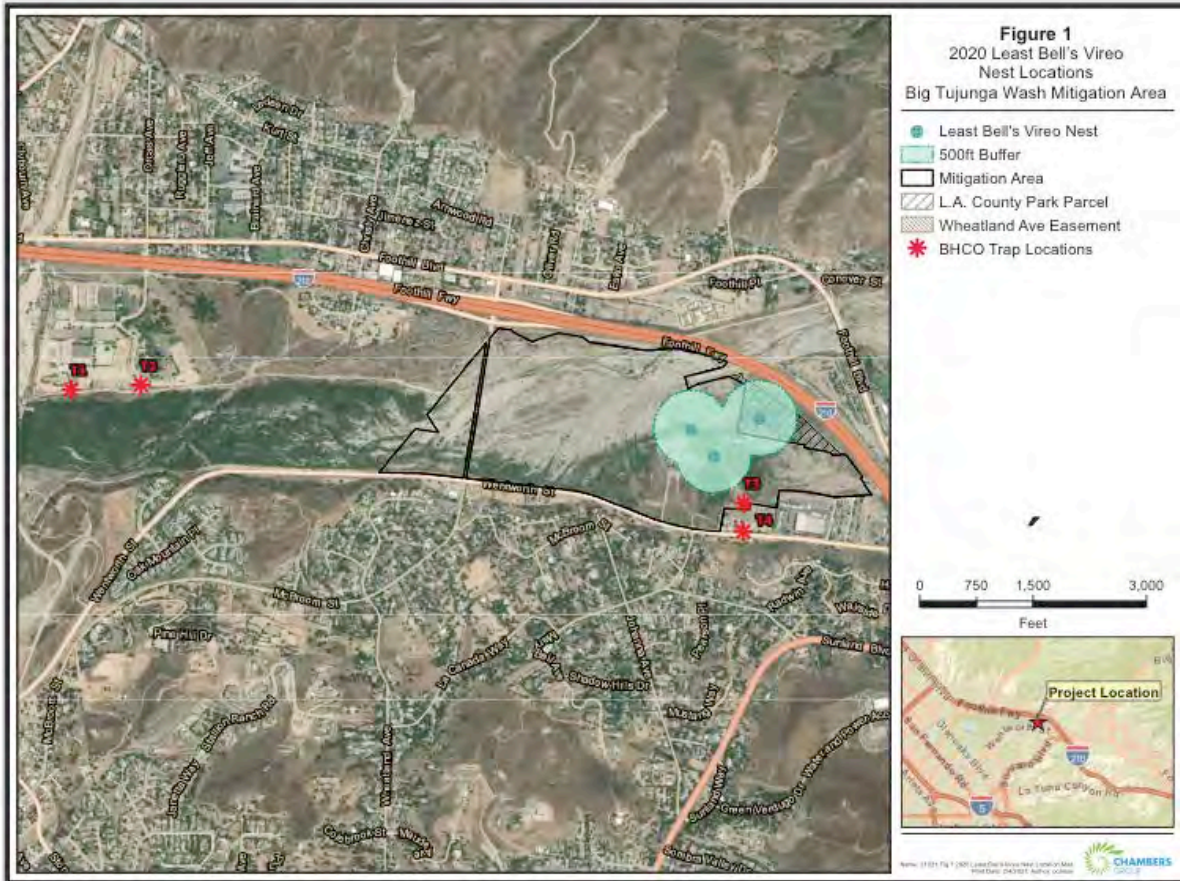


Songbird adult feeding cowbird chick.



GRIFFITH WILDLIFE BIOLOGY

Appendix 2. Least Bell's vireo nesting areas at Big Tujunga Wash Mitigation Area in 2020, from Chambers Group, Inc.



APPENDIX E – EXOTIC PLANT REMOVAL MEMOS AND CDFW NOTIFICATION



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

California Department of Fish and Wildlife

**CHAMBERS
GROUP**

March 2, 2020

Victoria Tang, Senior Environmental Scientist
California Department of Fish and Wildlife
4665 Lampson Ave. Suite C
Los Alamitos, CA 90720

Site: Big Tujunga Wash Mitigation Area, City of Sunland, Los Angeles County, California

Dear Ms. Tang,

The purpose of this letter is to provide notification that exotic plant removal and trail maintenance activities will be conducted at the Los Angeles County Public Works' Big Tujunga Wash Mitigation Area beginning in March 2020. The activities will begin with biologists conducting a pre-activity survey for nesting birds and identifying and recording areas where weeds, including non-native grasses and forbs and invasive exotic plant species, will be mechanically removed. Once work commences, daily sweeps for nesting birds will occur in the planned work areas prior to each day's removal effort through the end of nesting bird season (September 15). 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 and flagged as a "no work" zone. In addition, the biologists will walk the trails to identify any trail maintenance issues. Any trail issues observed will be addressed during scheduled trail maintenance which is also planned to begin in March. 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, and will discuss sensitive biological resources and avoidance measures with the work crew(s) prior to the start of work each day.

Please do not hesitate to contact me to discuss any questions or concerns.

Sincerely,

CHAMBERS GROUP, INC.



Paul Morrissey

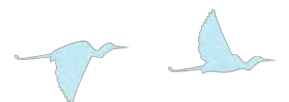
Principal | Director of Biology

pmorrissey@chambersgroupinc.com

(949) 261-5414 ext. 7288

5 Hutton Centre Drive, Suite 750

Santa Ana, CA 92707



April 27, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for March 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during March 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the March 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.

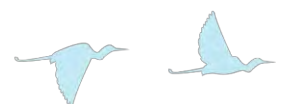
Implementation

Biologist Alisa Muniz led the work progression, and pre-activity sweeps were conducted by biologists Alisa Muniz, Jessica Calvillo, and/or Corey Jacobs ahead of the work crew. In addition, a biologist traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on Covid-19 precautions including social distancing, gear sanitation, and hand washing. The meetings were conducted by habitat restoration foreman Tim Wood, Alisa Muniz, Jessica Calvillo, and/or Corey Jacobs.

During March, exotic plant removal efforts were focused on the Cottonwood Avenue bluff and the eastern riparian area. The crew targeted non-native annual grasses including rattail sixweeks grass (*Festuca myuros*), red brome (*Bromus madritensis* subsp. *rubens*), wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum*), and riggut grass (*Bromus diandrus*), as well as several other exotic plant species including mustards (*Brassica* spp., *Hirschfeldia incana*, *Sisymbrium* spp.), poison hemlock (*Conium maculatum*), and horehound (*Marrubium vulgare*). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, weed whackers) when removing weeds and concentrated efforts on high-density areas. Large stands of annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual species (e.g., large mustards) and perennial species (e.g., horehound) required complete removal of the plant from the roots. Plant material was left on the ground in the same area to decompose onsite.

Execution

An initial pre-activity nesting bird survey was conducted by biologist Alisa Muniz on March 12, prior to the start of exotic plant removal activities. Additional surveys were conducted each morning where the work was proposed. The biologist



surveyed within and adjacent-to planned work areas documenting the locations of any active bird nests, nesting activities, courtship or mating behaviors, and territorial behaviors. Locations of any active nests, and other notable bird activities were recorded using Collector for ArcGIS (Collector), a Geographic Information Systems (GIS) application. Breeding behavior among the detected bird species was relatively low throughout the survey. One bushtit (*Psaltriparus minimus*) nest was discovered during an early stage of building and a buffer was implemented and flagged for avoidance.

On March 16, 17 and 18, the crew began trimming exotic grass species on the Cottonwood Avenue bluff along the Wentworth Street fence using weed whackers (Photo 1 and 2). Because the majority of the grasses on the Cottonwood Avenue bluff were nearing maturity, the crew focused on trimming the seeds heads from the tops of the grass in areas where the grasses were intermixed with native species (Photo 3). In areas where no native vegetation would be harmed, grasses were trimmed to the ground to discourage regrowth.

On March 19, 20 and 23, the crew focused on trimming and hand-pulling exotic grasses and mustard species further north on the Cottonwood Avenue bluff and along the edges of the bluff as they descend into the riparian areas, further east along the southern portion of the bluff, as well as into the eastern seep (Photo 4). Native plants were flagged to reduce the possibility of them being accidentally trimmed.

On March 24, 25, and 26, the crew moved into the riparian area east of the Cottonwood Avenue bluff, trimming grasses and hand-pulling mustards and poison hemlock from the root. These weeds grew thickly along the trails in wetter areas of the Mitigation Area, likely due to visitor traffic that aided in seed dispersal and preferable germination conditions. A bushtit nest was discovered on March 24 in the eastern portion of the Cottonwood Avenue bluff where the crew was not currently working; however, buffer was implemented and flagged for avoidance. Monitoring was performed during the work in the vicinity of the nest to ensure the birds continued to behave normally and without signs of stress.

On March 27 and 30, the crew moved to the western portion of the Cottonwood Avenue bluff, removing non-native grasses, mustard species, and horehound (Photo 5 and 6). Horehound is a perennial species that is particularly difficult to remove due to its ability to re-sprout from root material that is left in the soil. Care was taken to dig out the horehound plants entirely to reduce the likelihood of re-sprouting (Photo 7).

Summary and Results

All exotic plant eradication activities were supervised by Alisa Muniz, Jessica Calvillo, Corey Jacobs and Tim Wood, who monitored that regulations and requirements were closely followed. The crew averaged six members per day during exotic plant eradication efforts. Biologists Alisa Muniz, Jessica Calvillo, and/or Corey Jacobs inspected work areas prior to the start of each workday and then traveled with the crew to monitor that native plants and sensitive wildlife species were not disturbed.

The March exotic plant eradication efforts focused on clearing non-native grasses and other annual weeds from the Cottonwood Avenue bluff and surrounding areas using weed whackers, as well as hand-pulling longer-lived annual and perennial weeds. To efficiently cover the large area, weed whackers were used to trim the seed heads of maturing weeds and hand-pulling was performed as needed.

A relatively dry winter resulted in noticeably fewer weeds as compared to the same time last year, primarily concentrated in wetter areas and those with less sandy soils (i.e., along the Wheatland Avenue fence). While minimal early season germination is promising, the slow start to this year's exotic plant cohort does not guarantee that the seed bank has been sufficiently depleted. The early start on trimming and weeding will ideally put the exotic plant eradication efforts ahead of this round of maturing seeds and keep those seeds from entering the seed bank. Continuous and consistent weeding in this fashion will deplete the exotic plant seed bank over time and reduce the amount of effort needed to maintain the restored habitat.



Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.

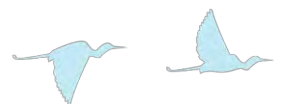
Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1: Non-native annual grasses grew thickly along the southern section of the Cottonwood Avenue bluff.



Photo 2: Crew member trimming grass seed heads near on the Cottonwood Avenue bluff near Wentworth Street.

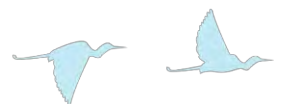




Photo 3: Maturing seed heads of red brome.



Photo 4: Crew member trimming grasses along the eastern edge of the Cottonwood Avenue bluff.





Photo 5: Western section of the Cottonwood Bluff where annual grasses needed to be trimmed.

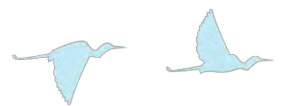


Photo 6: Crew members trimming grasses and mustard on the western portion of the Cottonwood Avenue bluff.





Photo 7: A particularly large horehound plant. Horehound requires the complete removal of the plant, including the roots.



May 26, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for April 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during April 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the April 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.

Implementation

Foreman Jay Belmonte and restoration biologist Michael Walsh led the work progression, and pre-activity sweeps were conducted by biologists Alisa Muniz, Jessica Calvillo, Corey Jacobs, Heather Clayton, and/or Omar Moquit ahead of the work crew. In addition, a biologist traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on Covid-19 precautions including social distancing, gear sanitation, and hand washing. The meetings were conducted by Alisa Muniz, Jessica Calvillo, Corey Jacobs, Heather Clayton, and/or Omar Moquit.

During April, exotic plant removal efforts were focused on the southern portion of the site, including along Haines Canyon Creek and the southern portion of the Big Tujunga Wash. The crew targeted non-native annual grasses including rattail sixweeks grass (*Festuca myuros*), red brome (*Bromus madritensis* subsp. *rubens*), wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum*), and riggut grass (*Bromus diandrus*), as well as several other exotic plant species including mustards (*Brassica* spp., *Hirschfeldia incana*, *Sisymbrium* spp.) and poison hemlock (*Conium maculatum*). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, weed whackers) when removing weeds and concentrated efforts on high-density areas. Large stands of annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual species (e.g., large mustards and poison hemlock) required complete removal of the plant from the roots. Plant material was left on the ground in the same area to decompose onsite.



Execution

Pre-activity nesting bird surveys were conducted each morning where the work was proposed. The biologist surveyed within and adjacent-to planned work areas and documented the locations of any active bird nests or nesting behavior, as well as any sensitive species observations. The locations of any active nests, notable bird activities, and sensitive species were recorded using Collector for ArcGIS (Collector), a Geographic Information Systems (GIS) application that all monitors and the foreman have downloaded on their mobile phones. Breeding behavior among bird species was relatively high throughout the month, and a number of bird nests and sensitive species were discovered (listed by date of discovery below). All bird nests were flagged for avoidance, and discussed daily with the crew at morning tailgate meetings.

On April 1, the crew focused on trimming and hand-pulling exotic grasses and mustard species within the eastern riparian areas.

On April 2 and 3, the crew continued trimming exotic grass species on the Cottonwood Avenue bluff and along the Wentworth Street fence using weed whackers (Photo 1). Because the majority of the grasses on the Cottonwood Avenue bluff were nearing maturity, the crew focused on trimming the seeds heads from the tops of the grass in areas where the grasses were intermixed with native species. In areas where no native vegetation would be harmed, grasses were trimmed to the ground to discourage regrowth.

- On April 2, a red-shouldered hawk (*Buteo lineatus*) nest was discovered in the eastern riparian area. The stage of the nest was presumed incubation due to the adult hawks' behavior, which included sitting silently on the nest, and because no nestling or feeding was observed. The hawks did not appear to be disturbed by the biologist's presence and a buffer was implemented and flagged for avoidance.

On April 8, 10, and 13, the crew shifted focus to the riparian areas west of the Cottonwood Avenue bluff and the along the southern edge of Haines Canyon Creek. The crew targeted annual grasses and poison hemlock in these areas, trimming the grasses using weed whackers and hand-pulling the poison hemlock (Photo 2). Poison hemlock forms dense thickets in areas where sub-surface water is abundant, and as such, dominated sections of the creek edge (Photo 3).

On April 14 and 15, the crew hand-pulled mustard species from the north and western slopes of Cottonwood Avenue bluff and down to the edges of the riparian areas. Shovels were used to pry loose the roots of individuals that were more firmly affixed in the ground.

- On April 14, a Cooper's hawk (*Accipiter cooperii*) nest was discovered in the building stage near the Tujunga Ponds. A 500-foot buffer was implemented and flagged for avoidance.

On April 15, a least Bell's vireo (*Vireo bellii pusillus*; federally and state-listed endangered) was detected singing within the southern portion of the eastern riparian area. After careful observation, it was determined that the bird was a lone male and likely either migrating through or still settling on a territory. A 500-foot buffer was implemented to reduce potential disturbance to the individual. Two yellow-breasted chats (*Icteria virens*) and multiple yellow warblers (*Setophaga petechia*), both California Species of Special Concern (SSC), were also detected in the same area. Multiple yellow-breasted chats and yellow warblers were observed throughout the site for the remainder of the month.

On April 16, the crew trimmed annual grasses on the eastern and western portions of the Cottonwood Avenue bluff where the grasses had begun to re-grow after the initial trimming in March.

- On April 16, a bushtit (*Psaltriparus minimus*) nest was discovered during the building stage. A buffer was implemented and flagged for avoidance.

On April 17, the crew focused exotic plant removal efforts on the northern side of Haines Canyon Creek, across from the Cottonwood Avenue bluff. This included trimming and hand-pulling exotic grasses, mustard species, and poison



hemlock from the wet areas adjacent to the creek. The abundant sub-surface water near the creek allowed these exotic species to grow thickly (Photo 4 and 5).

- On April 17, three least Bell's vireos were detected in the eastern riparian area, including a presumed male and female pair, and a single male. For the paired birds, the male was singing and following around the female, suggesting territory settlement and pre-nesting behavior. The lone male was singing, potentially migrating through or settling a territory. A 500-foot buffer was implemented around each detection area to reduce potential disturbance to the birds. CDFW was notified of the detected least Bell's vireos and GPS coordinates were provided.

On April 20, 21, and 22, the crew continued working west along the northern edge of Haines Canyon Creek, trimming annual grasses and hand-pulling mustard species and poison hemlock. This included clearing these exotic species from the sides of the community trails where they are often prevalent (Photo 6 and 7).

- On April 20, a red-tailed hawk nest was discovered along the southern border of the site, near Wheatland Avenue. The nestlings had recently fledged, and the adults were observed delivering food to three large fledglings. A 500-foot avoidance buffer was implemented and flagged to reduce disturbance to the birds who were still using the nest location.
- On April 22, two bushtit nests were discovered during the building stage. Neither nest was located near proposed working areas; however, a buffer was implemented and flagged for avoidance for each nest in the event that future work should occur in the area.

On April 24 and 27 through 30, the crew continued removing exotic plants from north of Haines Canyon Creek, and began working throughout the southern portion of the Big Tujunga Wash. In this area, exotic grasses and mustard species had become established in areas that retain moisture in the primarily dry habitat. This included along the base of slopes and ravines scattered throughout the wash (Photo 8). On April 29, the crew also disassembled a dam that wash built across Haines Canyon Creek, just north of the south Wheatland Avenue entrance (Photo 9).

- On April 28, three least Bell's vireos were detected near the Tujunga Ponds, including a presumed male and female pair, and a single male. For the paired birds detected southwest of the ponds, the male was singing and following the female around, suggesting territory settlement and pre-nesting behavior. The lone male was detected singing north of the ponds, potentially migrating through or settling a territory. A 500-foot avoidance buffer was implemented around each detection area to reduce potential disturbance to the birds.
- On April 29, a presumed orange-crowned warbler (*Leiothlypis celata*) nest was discovered along the northern edge of Haines Canyon Creek adjacent to the proposed work area. The female was flushed off of the nest when the biologist moved through the area, and the nest was discovered on the ground containing at least three eggs. A buffer was implemented and flagged for avoidance.
- On April 30, a song sparrow (*Melospiza melodia*) nest was discovered during the pre-activity nesting bird sweep. A buffer was implemented and flagged for avoidance.

Summary and Results

By April 1, 2020, the closure of the Mitigation Area to the public was implemented. Los Angeles County sent out an email to the Mitigation Area email list regarding the closure and provided Los Angeles County Public Health approved signs, and posted on their social media page to inform the public to keep out of the Mitigation Area (the Mitigation Area is also a multi-use trail system) in support of the "Safer at Home" order given by Los Angeles County and the state of California. This is in line with the Los Angeles County Parks and Recreation announcement provided at <https://parks.lacounty.gov/covid-19>.



All exotic plant eradication activities were supervised by Jay Belmonte, Michael Walsh, and Alisa Muniz, who monitored that regulations and requirements were closely followed. The crew averaged eight members per day during exotic plant eradication efforts. The crews wore masks during the tailgate meetings and either wore masks during work or had a mask available in the event a pedestrian was illegally within the Mitigation Area.

Biologists Alisa Muniz, Jessica Calvillo, Omar Moquit, and/or Corey Jacobs inspected work areas prior to the start of each workday. The biologists conducted nesting bird surveys within 500 feet of work areas and provided nest updates for active nests. The biologists inspected and maintained the flagging for active nests and avoidance buffers. All nests were discussed with the foreman and crews during daily tailboard meetings to determine where maintenance activities would be performed. No maintenance activities were conducted in avoidance buffer areas and no negative impacts to nests occurred.

The April exotic plant eradication efforts focused on removing non-native grasses and other annual weeds from the southern portion of the Mitigation Area, including the Cottonwood Avenue bluff, the areas surrounding Haines Canyon Creek, and the southern portion of the Big Tujunga Wash. The areas north and east of the Cottonwood Avenue bluff area were avoided due to the 500-foot avoidance buffer for the least Bell's vireos detected on site. Only mechanical methods were used, including using weed whackers to trim the seed heads off of maturing grasses and hand-pulling longer-lived annual and perennial weeds.

The late-season rains that occurred during March resulted in the germination of many exotic plants (e.g., mustard species and poison hemlock) that had not been as prevalent earlier in the year. Re-growth of many grasses and other weed species that had been previously trimmed was also observed. While this late-season rain resulted in more exotic plants sprouting, continual monitoring has allowed for the removal of newly germinated weeds as soon as they sprout, effectively reducing the seed bank, the risk of these weeds producing seeds, and the overall effort needed to remove these weeds in the future. The early start on trimming and weeding has put the exotic plant eradication efforts ahead of this round of maturing seeds and has kept those seeds from entering the seed bank. Continuous and consistent weeding in this fashion will deplete the exotic plant seed bank over time and reduce the amount of effort needed to maintain the restored habitat.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.

Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1. Annual grasses grew thickly on the slopes along the southern border of the Mitigation Area, just north of Wentworth Street.



Photo 2. Crew member trimming exotic grass seed heads near Haines Canyon Creek.

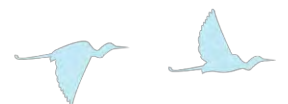




Photo 3. Large patches of poison hemlock growing along Haines Canyon Creek. Because poison hemlock is a longer-lived annual weed, crew members hand-pulled individuals to prevent re-growth.



Photo 4. Large patches of exotic grasses and poison hemlock dominated areas along Haines Canyon Creek.

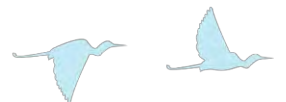




Photo 5. Crew members trimming exotic grasses near Haines Canyon Creek.



Photo 6. Community trails were often lined by exotic weed species, including annual grasses and poison hemlock.

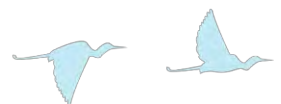




Photo 7. Crew members trimming and hand-pulling exotic plants along the northern edge of Haines Canyon Creek.



Photo 8. Crew members trimming exotic grasses and hand-pulling mustard in the southern portion of Big Tujunga Wash.

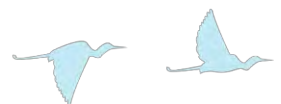
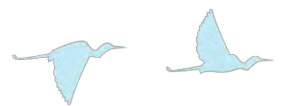




Photo 9. Crew member disassembling a dam that had been built across Haines Canyon Creek.



June 23, 2018

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for May 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during May 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the May 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.

Implementation

Foreman Jay Belmonte and restoration biologists Michael Walsh or Valerie Alcantar led the work crews after pre-activity sweeps were conducted by biologists Alisa Muniz, Jessica Calvillo, Corey Jacobs, Austin Burke, and/or Omar Moquit. In addition, a biologist traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing. The meetings were conducted by Alisa Muniz, Jessica Calvillo, Corey Jacobs, Austin Burke and/or Omar Moquit.

During May, exotic plant removal efforts were focused between two target objectives. These objectives were to address developing exotic plants in the northwestern portion of the Mitigation Area, including but not limited to areas north of the Big Tujunga Creek, and to revisit southern areas where new recurrent germination of exotic plants was observed. The crew targeted non-native annual grasses including rattail sixweeks grass (*Festuca myuros*), red brome (*Bromus madritensis* subsp. *rubens*), wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum*), and riggut grass (*Bromus diandrus*), as well as several other exotic plant species including mustards (*Brassica* spp., *Hirschfeldia incana*, *Sisymbrium* spp.) and poison hemlock (*Conium maculatum*). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, weed whackers) when removing weeds and concentrated efforts on high-density areas. Large stands of annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual species (e.g., large mustards and poison hemlock) required complete removal of the plant from the roots. Plant material was left on the ground in the same area to decompose onsite.

Execution

Pre-activity nesting bird sweeps were conducted each morning where the work was proposed. The biologist surveyed within and adjacent-to planned work areas and documented the locations of any active bird nests or nesting behavior,



as well as any sensitive species observations. The locations of any active nests, notable bird activities, and sensitive species were recorded using Collector for ArcGIS (Collector), a Geographic Information Systems (GIS) application that all monitors and the foreman have downloaded on their mobile phones. Breeding behavior among bird species continued to be high throughout the month, and several bird nests and sensitive species were discovered (listed by date of discovery below). All bird nests were flagged for avoidance and discussed daily with the crew at morning tailgate meetings. All documented active bird nests were continually monitored and completely avoided to ensure that crew activities were not causing harm to the sensitive species; however, the federally and state-endangered least Bell's vireo (*Vireo bellii pusillus*) nests that were identified on site were monitored no more than once per week in order to update avoidance buffer areas as necessary.

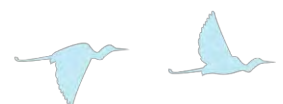
On May 1, the crew focused on cutting down new germination and/or vegetative growth of exotic grasses and mustard species along Haines Canyon Creek, west of the Cottonwood Avenue bluff. The crew also targeted poison hemlock in these areas, where dense thickets had been removed during efforts in previous months and sub-surface water continues to be abundant (Photo 1). While performing exotic species removal an unauthorized dam was discovered in Haines Canyon Creek. The dam had obstructed the flow of water causing the water to pool and preventing sensitive fish species from moving freely. The dam was documented while crew members disassemble the structure, allowing the creek to return to its natural levels and course (Photo 2). During work efforts, a least Bell's vireo was discovered by the biologist. Crews were directed to avoid the area (avoidance buffer of 500 ft) from the protected least Bell's vireo territory discovered in the Mitigation Area.

- On May 1, a least Bell's vireo potential nest was discovered in a riparian area north of the of the Cottonwood Avenue bluff. The male vireo was observed collecting and delivering nesting materials into a stand of willows (*Salix* spp.), though the exact location of the nest was not determined, and area was not approached to avoid potentially disturbing the bird. The male was observed singing and delivering nesting material repeatedly, but no female was detected during this observation. A 500-foot buffer was implemented around this territory. This was the first of three least Bell's vireo pairs detected within the Mitigation Area, and subsequent references to this pair will be specified as least Bell's vireo pair A.

On May 4, 5, and 6, the crew revisited the eastern embankments of the Cottonwood Avenue bluff, the lower-east portions of the bluff abutting the eastern riparian area, and the embankments north of the Mary Bell Avenue entrance area. These portions of the site experienced some new exotic plant germination following light April rains and cool weather patterns that had allowed water resources to persist well into spring. The newly germinating exotic plants found refuge in the shade of native species; this required hand-pulling/hand tool methods to be implemented so as not to damage native vegetation (Photo 3). During work efforts crews adhered to the avoidance buffer from the protected least Bell's vireo territory (pair A) discovered in the Mitigation Area and monitored to ensure all efforts progressed away from the established buffer.

- On May 4, a northern mockingbird (*Mimus polyglottos*) nest was discovered in a scrub oak (*Quercus berberidifolia*) on the southern portion of the Cottonwood Avenue bluff near the Wentworth Avenue property boundary. The nest was located 4 feet above the ground directly in the middle of the scrub oak. The bird was observed actively carrying building materials to the location. A buffer was implemented and flagged for avoidance. A biologist monitored that the mockingbirds were not disturbed while the crew was working in the vicinity of the nest.

On May 8, the crew revisited areas on the Cottonwood Avenue bluff and along the Wentworth Street fence where non-native grasses and mustard species were regenerating following late season rain events in April. The crew focused on hand-pulling in areas where the grasses or new mustard germination were intermixed with native species. In areas where no native vegetation would be harmed, exotic annual species were trimmed to the ground to discourage regrowth (Photo 4). During work efforts crews were documented at a minimum of 730 feet outside of the avoidance buffer of the protected least Bell's vireo territory (pair A) discovered in the Mitigation Area. As preparation for the



reopening of the Mitigation Area to the public after COVID-19 Safer at Home orders, signs were posted at key points of the authorized trail system to inform visitors of the protected species present on site. The sign locations were placed in high-visibility, high-traffic areas, and include as much of the avoidance buffer areas as possible (Photo 11).

On May 13, 14, and 15, the crew focus efforts on removing developing non-native grasses, mustard species, tocalote (*Centaurea melitensis*), and red-stemmed filaree (*Erodium cicutarium*) across the equestrian center entrance bluff, including the lower embankment areas, and progressing towards the Cottonwood Avenue bluff in the southern and central portions of the Mitigation Area. Weed whippers were used in to cut down the dense patches of annual exotic species and shovels were used to pry loose the roots of individuals that were more firmly affixed in the ground (Photo 5). During work efforts the crew took care to avoid the protected least Bell's vireo territory and nest (pairs A and B; pair B documented below) discovered in the Mitigation Area.

- On May 14, a least Bell's vireo nest was discovered in the central portion of the eastern riparian area. The nest was located on a fork of a small willow branch, roughly 3.5 feet above the ground within the regenerative growth of a small willow snag. The female was observed sitting on nest with a male singing in nearby trees. Based on the birds' behavior (i.e., the female spending long bouts sitting on the nest, and no feeding of nestlings observed), the nest was presumed to be in the incubation stage. A 500-foot buffer was implemented. This was the second of three least Bell's vireo pairs detected within the Mitigation Area, and subsequent references to this pair will be specified as least Bell's vireo pair B.

On May 18 through May 22, the crew focused efforts across the northwestern portions of the Mitigation Area, around the north Wheatland Avenue entrance, and the adjacent basin areas south of the property boundary. Weed whippers were used to cut down the developing mustard and non-native grass species found to be late in their vegetative development and were beginning to produce immature seed heads. These annual species were cut low to the ground to cease seed head development and to discourage further vegetative growth (Photo 6 and 7). During work efforts crews were documented at a minimum of 1,000 feet outside of the closest avoidance buffer belonging to the protected least Bell's vireo territory and nests (pairs A, B and C; pair C documented below) discovered in the Mitigation Area.

- On May 20, a bushtit (*Psaltriparus minimus*) nest was discovered in the central area of Haines Canyon Creek that bridges the eastern and western portions of the property. The nest was located roughly 8 feet above the ground in box elder tree (*Acer negundo*). Because nestlings were heard calling from the nest and an adult was scolding the biologist, the nest was presumed to be in the nestling stage. A buffer was implemented and flagged for avoidance.
- On May 21, a lesser goldfinch (*Spinus psaltria*) was discovered north of the East Tujunga Pond in the vicinity of an authorized trail. The nest was being built in the upper crown of a Fremont cottonwood tree (*Populus fremontii* subsp. *fremontii*). The bird was observed actively delivering building materials to the nest. A buffer was implemented and flagged for avoidance, though, the crew did not work in the immediate vicinity.
- On May 21, a least Bell's vireo nest was discovered in regenerating cottonwood and willow vegetation south of the Tujunga Ponds. Both adults were observed collecting and delivering nesting material with the male continuously singing. The nest was located between 2 and 3 feet above the ground, on a fork of a small cottonwood branch, and situated within a thicket of small willow and cottonwood trees. A 500-foot avoidance buffer was implemented. This was the third of three least Bell's vireo pairs detected within the Mitigation Area, and subsequent references to this pair will be specified as least Bell's vireo pair C.
- On May 21, a phainopepla (*Phainopepla nitens*) nest was discovered in the riparian area northwest of the equestrian center entrance bluff. The nest was located in the snag remains of a regenerating willow tree, approximately 15 feet from the ground. Based on the birds' behaviors (i.e. the male sitting on the nest, and no nestling feeding observed), the nest was presumed to be in the incubation stage. A buffer was implemented and flagged for avoidance, though, the crew did not work in the immediate vicinity.



On May 26, 27 and 28, the crew continued to address non-native weed species across the northwestern portions of the property, north of Big Tujunga Creek. Isolated patches of non-native annual grass and mustard species were cut at ground level to exhaust their growth cycle in areas where water and shade resources were becoming less abundant. In some limited instances crews discovered mustard species to be fully developed, and the seed heads were gathered, bagged, and disposed of offsite (Photo 8). Other exotic species addressed through this area of the site included tree tobacco (*Nicotiana glauca*), fountain grass (*Pennisetum setaceum*), and castor bean (*Ricinus communis*). These species are often washed in from offsite locations and drains and are supported by water collection in the low basin formations in that area. These perennial species were removed by the root using shovels. While worked progressed down the creek, three unauthorized dams were discovered. Crew members immediately removed the dam structures and the materials used to build these structures from the vicinity in order to discourage reconstruction and to allow the accumulated water to flow freely reducing negative impacts to native aquatic species (Photo 9). During work efforts crews were documented at a minimum of 785 feet outside of the closest avoidance buffer for the territory and nests of the protected least Bell's vireo (pairs A, B and C) discovered in the Mitigation Area.

- On May 27, a least Bell's vireo nest was discovered in the riparian area north of Haines Canyon Creek in the central area connecting the eastern and western portions of the site. The nest was being built in a stand of willows and was determined to be early in the building stage based on the extent of nest completion (10 to 15 percent complete). The male bird was observed singing and delivering nesting material to the location repeatedly. Based on the nest's location within the known territory of least Bell's vireo pair A, it was presumed that this was a re-nesting attempt by the same pair of vireos for which a potential nest was discovered on May 1. The exact location of the May 1 potential nest was not determined to avoid disturbing the pair, but based on amount of time needed to successfully build a nest and rear a brood (minimum of 30 days), the interval of time between the May 1 potential nest and this nest, and the fact that no fledglings were seen in the area, it was presumed that the May 1 potential nest failed to produce fledglings. This was the second nesting attempt for least Bell's vireo pair A.

On May 29, the crew focused their efforts on the western areas of the Cottonwood Avenue bluff, the adjacent embankments, and the low-lying area to the south. This area between the western end of the bluff and the Wentworth Avenue property boundary provides an abundance of sub-surface water that persists late into the spring and early summer. On the upper portion of the bluff crew efforts were focused on hand-pulling in areas where the grasses or new mustard germination were intermixed with native species (Photo 10). In lower areas hand-pulling/hand tools were used to completely remove adventitious castor bean early in their developmental stage before any seed development could occur. During work efforts crews were maintained a minimum distance of 500 feet outside of the avoidance buffer for the protected least Bell's vireo territory and nests (pairs A, B and C) discovered in the Mitigation Area.

- On May 29, an acorn woodpecker (*Melanerpes formicivorus*) nest was discovered on the southwest portion of the Cottonwood Avenue bluff near the entrance gate. The nest was located within a hollow at the top of a regenerating western sycamore (*Platanus racemosa*) snag. The male woodpecker was observed entering the nest hollow carrying nesting material and/or food items. The biologist did not stay in the area long enough to determine whether the nest was in the building or nestling stage. A buffer was implemented and flagged for avoidance, though, the crew did not work in the immediate vicinity.
- On May 29, a Bewick's wren was discovered on the Mary Bell Avenue bluff. The nest was being built in a natural cavity of a living western sycamore, approximately 25 feet from the ground. An adult was seen carrying nesting material to the nest location. A buffer was implemented and flagged for avoidance, though, the crews were not working in the area.
- On May 29, a spotted towhee (*Pipilo maculatus*) was discovered on the Mary Bell Avenue bluff near the southern site boundary shared with the equestrian center. The nest was located on a young black elderberry (*Sambucus nigra*) limb overhanging the trail, roughly 7 feet from the ground. The adult was seen delivering nesting material



to the nest location. The nest was small, consisting of small twigs and grass. A buffer was implemented and flagged for avoidance, though, the crew was not working in that area at the time.

Summary and Results

By April 1, 2020, the closure of the Mitigation Area to the public was implemented in support of the COVID-19 Safer at Home orders given by Los Angeles County and the state of California. In early May, Chambers Group was notified that the mitigation area would reopen for public use, on May 8. Prior to reopening crews observed that some members of the public continued to illegally visit the Mitigation Area. These visitors included a lesser number of equestrian riders, though still averaging approximately six riders per day, and not limited to any area of the site. Prior to reopening, the crews observed an increase in visitors hiking the trail system comparable to the visitor traffic seen prior to the site closure. The number of hikers seen during the closure averaged approximately 12 per day. The continued public use of the Mitigation Area during the closure, and the anticipation that there would be an even greater number of site users following the reopening, provoked the installation of signs notifying the public of the presence of sensitive species on site. These signs were placed at locations along the trail system that encompass the avoidance buffer areas that Chambers Group crews observe in an effort to protect the nesting least Bell's vireos.

All exotic plant eradication activities were supervised by Jay Belmonte, Michael Walsh, Valerie Alcantar, and numerous biologists who were present to diligently monitor that regulations and requirements were closely followed. The crew averaged eight members per day during exotic plant eradication efforts. Prior-to and following the reopening of the Mitigation Area, the crews continued to wear masks during the tailgate meetings and either wore masks during work or had a mask available in the event of encountering a pedestrian.

Biologists Alisa Muniz, Jessica Calvillo, Omar Moquit, Austin Burke, and/or Corey Jacobs inspected work areas prior to the start of each workday. The biologists conducted nesting bird sweeps within 500 feet of work areas and provided nest updates for active nests. The biologists inspected and maintained the flagging for active nests and avoidance buffers. All nests were discussed with the foreman and crews during daily tailboard meetings to determine where maintenance activities would be performed. All least Bell's vireo, nest locations, and territories were flagged for avoidance within 500 feet. No maintenance activities were conducted in avoidance buffer areas and no negative impacts to nests occurred.

The May exotic plant eradication efforts focused on removing non-native grasses and other annual weeds from the northern portion of the Mitigation Area, primarily the areas north of Big Tujunga Creek. Exotic removal efforts in the southern portions of the Mitigation Area were focused on addressing the occurrence of regeneration or new germination of weed species found in areas where resources persisted. The areas north and east of the Cottonwood Avenue bluff area were avoided due to the 500-foot avoidance buffer for the least Bell's vireos detected on site. Only mechanical removal methods were used outside of the avoidance areas, including using weed whippers to cut the seed heads off maturing grasses and hand pulling longer-lived annual and perennial weeds. When crews discovered unauthorized dams constructed along Haines Canyon Creek and Big Tujunga Creek the structures were immediately removed to allow the creeks to flow freely. The dam construction materials were carried and dispersed away from the structure location to discourage reconstruction in the future.

The rain events that occurred during March and April resulted in the germination of many exotic plants (e.g., mustard species and poison hemlock) that had not been as prevalent earlier in the year. Re-growth of many grasses and other weed species that had been previously trimmed was also observed. While these rain events resulted in more exotic plants sprouting, they have provided the opportunity for crews to continually address and effectively reduce the long-lived seed banks found throughout the Mitigation Area, and the overall effort needed to remove these weeds in the future. Continuous and consistent weeding in this fashion will deplete the exotic plant seed bank over time and reduce the amount of effort needed to maintain the restored habitat.



Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.

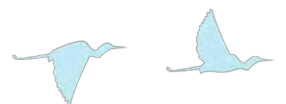
Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1. Crew members pulling poison hemlock along Haines Canyon Creek, on May 1.



Photo 2. Crew member removing a dam structure discovered on Haines Canyon Creek during exotic removal efforts, on May 1.

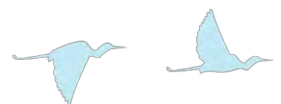




Photo 3. Crew member hand pulling mustard species on the eastern Cottonwood Avenue embankments, on May 4.



Photo 4. Crew members removing exotic species on the Cottonwood Avenue bluff and Wentworth Avenue boundary, on May 8.

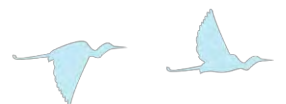




Photo 5. Crew members pulling mustard along the lower toe of the equestrian center bluff, on May 14.



Photo 6. Example of the northern areas before crew efforts, between May 18 through May 22.





Photo 7. Example of the northern areas after crew efforts, between May 18 through May 22.



Photo 8. Crew members collecting isolated thickets of matured mustard for disposal, on May 26.





Photo 9. Crew members disassembling a dam constructed across Big Tujunga Creek during exotic species removal efforts, on May 27.



Photo 10. Crew members hand pulling invasive species growing amongst native plants on the western portion of the Cottonwood Avenue bluff, on May 29.

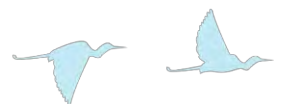
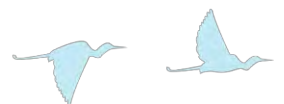




Photo 11. Signs installed around sensitive areas to inform the public of the protected species discovered in the Mitigation Area, on May 8.



June 30, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for June 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during June 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the June 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.

Implementation

Foreman Jay Belmonte and restoration biologist Michael Walsh or Valerie Alcantar led the work progression, and pre-activity sweeps for sensitive resources including nesting birds were conducted by biologists Alisa Muniz, Jessica Calvillo, Corey Jacobs, and/or Austin Burke ahead of the work crew. In addition, a biologist traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing, as well as the locations of avoidance areas where no work is allowed to occur. The meetings were conducted by Alisa Muniz, Jessica Calvillo, Corey Jacobs, and/or Austin Burke.

During June, exotic plant removal efforts were focused on the western portion of the site, including along Haines Canyon Creek and the southern portion of the Big Tujunga Wash. The crew targeted non-native annual grasses including rattail sixweeks grass (*Festuca myuros*), red brome (*Bromus madritensis* subsp. *rubens*), wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum*), and ripgut grass (*Bromus diandrus*), as well as several other exotic plant species including mustards (*Brassica* spp., *Hirschfeldia incana*, *Sisymbrium* spp.), castor bean (*Ricinus communis*), and poison hemlock (*Conium maculatum*). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, weed whackers) when removing weeds and concentrated on newly germinating, regenerating, and maturing exotic plant species in areas where resources supported their continued development. Annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual species (e.g., large mustards and poison hemlock) required complete removal of the plant from the roots. Plant material was left on the ground in the same area to decompose onsite.



Execution

Pre-activity nesting bird sweeps were conducted each morning where the work was proposed. The biologist surveyed within and adjacent-to planned work areas and documented the locations of any active bird nests or nesting behavior, as well as any sensitive species observations. The locations of any active nests, notable bird activities, and sensitive species were recorded using Collector for ArcGIS (Collector), a Geographic Information Systems (GIS) application that all monitors and the foreman have downloaded on their mobile phones. Breeding behavior among bird species continued to be high throughout the month, and several bird nests and sensitive species were discovered (listed by date of discovery below). All active bird nests were flagged for avoidance and were discussed daily with the crew at morning tailgate meetings. All documented active bird nests were continually monitored and completely avoided to ensure that crew activities were not causing harm to the sensitive species; however, the federally and state-endangered least Bell's vireo (*Vireo bellii pusillus*) nests that were identified on site were monitored no more than once per week in order to update avoidance buffer areas as necessary. The least Bell's vireo nests (Pairs A, B, and C, documented in the May exotic plant removal memo) continued to be a focus of monitoring activities to ensure that the work crews did not enter or disturb the established avoidance buffer areas.

On June 1 through 3, removal efforts were focused on the southern property boundary, along the Wentworth Avenue fence line between Cottonwood Avenue and the south Wheatland Avenue entrance. In addition, the previous month's efforts were continued on the southwestern portion of the Cottonwood Avenue bluff. Target species in these areas were primarily annuals such as mustard species, white sweet clover (*Melilotus albus*) and poison hemlock, and lesser amounts of perennial species such as castor bean. Small annuals were removed by hand and/or with weed whackers when determined by the monitoring biologist that noise disturbance would not negatively impact sensitive species in the area (Photo 1). Larger annual and perennial species were removed using shovels when it was necessary for more of the root structure to be removed to reduce the potential for regrowth. Crew members also removed an unauthorized dam that was discovered in Haines Canyon Creek, on June 3. During work efforts the crews were documented at a minimum of 700 feet outside of the avoidance buffer of the protected least Bell's vireo territory (Pair A), and all work progressed away from this point.

- On June 1, a Bewick's wren (*Thyromanes bewickii*) nest was discovered near the southern end of the Cottonwood Avenue bluff. The nest was located in a cavity roughly 25 feet from the ground in a California sycamore tree (*Platanus racemosa*). The adults were observed bringing food into the cavity repeatedly. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On June 1, a least Bell's vireo nest belonging to Pair B was discovered in the riparian area east of the Cottonwood Avenue bluff. Both adults were observed frequently delivering building materials to the nest which appeared roughly 90 percent complete. The nest was located on a small branch fork within a shrubby California walnut tree (*Juglans californica*) roughly 3 feet above the ground. When the pair was discovered building the new nest, the previous nest was visited to ascertain its status. Based on the amount of time that had passed since the discovery of the previous nest on May 14, and the presence of a single brown-headed cowbird (*Molothrus ater*) egg within the nest cup, the previous nest is presumed to have failed due to cowbird parasitism. The new nest was located roughly 265 feet to the northwest of the previous nest. This was the second known nest attempt by this vireo pair (Pair B). A 500-foot buffer was implemented and flagged for avoidance.

On June 4 and 5, removal efforts were focused on the embankments and base of the bluff north of the Mary Bell Avenue and equestrian center entrances. The primary weeds targeted for removal in this area were mustard species and annual grasses (Photo 2). During work efforts the crews were documented at a minimum of 285 feet outside of the closest avoidance buffer of the protected least Bell's vireo territory (Pair B), and all work progressed eastward away from this point.



- On June 4, an Anna's hummingbird (*Calypte anna*) nest was discovered along the southern portion of the trail in the eastern riparian area. The nest was roughly 5 feet from the ground on the branch of a willow tree (*Salix* sp.). A female was observed sitting on the nest and the nest was presumed to be in the incubation stage. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On June 5, a California towhee (*Melospiza crissalis*) nest was discovered below the northern edge of the equestrian center bluff. The nest was roughly 3 feet from the ground in a laurel sumac (*Malosma laurina*) and made of small twigs. The adults were observed feeding hatchlings. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On June 5, a bushtit (*Psaltriparus minimus*) nest was discovered below the northern edge of the equestrian center bluff. The nest was roughly 10 feet from the ground in a willow tree. Adults were observed making frequent trips to the nest while carrying nesting materials. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.

On June 9 through 12, removal efforts were focused in the western riparian area along Haines Canyon Creek, revisiting areas where abundant surface water persists and continues to provide resources for the non-native seed bank to germinate. Exotic removal efforts primarily targeted rapidly germinating and developing species such as mustard and poison hemlock that were encouraged by sub-surface water along Haines Canyon Creek. In addition to the newly developing annual exotic species and numerous larger perennial exotic species were discovered and removed including gum tree (*Eucalyptus* sp.), tree of heaven (*Ailanthus altissima*), castor bean, tree tobacco (*Nicotiana glauca*), silk tree (*Albizia julibrissin*) and white mulberry (*Morus alba*). These species were finally large enough to stand out from the surrounding native vegetation. Larger species were removed with shovels, removing all of the viable roots in order to prevent regrowth (Photo 3). On June 11, a dam was discovered on Haines Canyon Creek and was subsequently removed by the crew (Photo 4). During work efforts, the crew was documented at a minimum of 130 feet outside of the closest avoidance buffer belonging to a protected least Bell's vireo nest (Pair A), with all work progressing west and away from this point.

- On June 9, a western bluebird (*Sialia mexicana*) nest was discovered along the Wentworth Street fence within the riparian area west of the Cottonwood Avenue bluff. The nest was roughly 20 feet from the ground in a north-facing cavity within a dead snag (tree species unknown). The adults were observed making frequent trips to the nest carrying food items and nestlings were observed. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On June 9, a mourning dove (*Zenaidura macroura*) nest was discovered in the southern portion of the riparian area west of the Cottonwood Avenue bluff. The nest was located roughly 5 feet from the ground on the branch of a California sycamore tree along the Haines Canyon Creek that had tipped over and was laying across the creek. An adult was observed bringing nesting materials to the area. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On June 9, a California towhee nest was discovered in the riparian area west of the Cottonwood Avenue bluff. The nest was located roughly 4 feet from the ground in a willow tree, constructed between the willow and a snag. The female was observed sitting on the nest, presumably incubating eggs. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On June 11, a western bluebird nest was discovered along the northern border of the Cottonwood Avenue bluff. The nest was located within a south-facing cavity roughly 30 feet from the ground in a dead snag (tree species unknown). Nestlings were observed and the adults were observed making frequent trips to the nest. A buffer was established and the nest was flagged for avoidance, though, the crew was not working in that area at the time.

On June 16 through 26, crew members continued efforts along Haines Canyon Creek and surrounding areas where water continues to provide resources to the existing, non-native seed bank. Removal efforts proceeded downstream



until reaching the western property boundary. The primary species targeted included mustard, white sweet clover, eupatory (*Ageratina adenophora*) and poison hemlock, with occasional larger perennial seedlings, such as tree of heaven and castor bean. Larger perennials were dug out with shovels, removing the entire viable root-ball to discourage regrowth. The crews also revisited areas where large, dense stands of annual exotic species were removed early in the year. In these areas the removal method shifted to hand-pulling newly germinating target species that were interspersed with native species and were competing for resources. These exotic species were pulled by hand to minimize potential negative impacts to the surrounding native species (Photos 5 through 12). Small stands of exotic species that were not addressed earlier in the year were also visited and were discovered to have matured. The crew members collected and bagged matured seed heads for removal to an offsite disposal facility (Photo 13). During work efforts, the crews were documented at a minimum of 520 feet outside of the closest avoidance buffer of the protected least Bell's vireo territory (Pair A), with all work progressing west away from this point.

- On June 16, a California towhee nest was discovered in the riparian area west of the Cottonwood Avenue bluff. Although the nest was not directly observed, it was presumed to be in the middle of a dense laurel sumac which was roughly 6 feet tall. The adults were observed making trips to the area carrying food items, and nestlings were heard vocalizing whenever an adult was nearby. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On June 18, a least Bell's vireo nest belonging to Pair B was discovered in the riparian area east of the Cottonwood Avenue bluff. Both adults were observed rapidly building the nest which was located roughly 2 feet from the ground at the base of a small box elder (*Acer negundo*). The nest was roughly 90 percent complete. When the pair was discovered building the new nest, the previous nest was visited to ascertain its status. Based on the amount of time that had passed since the previous nest was discovered on June 1, the physical state of the previous nest (i.e., the lining of the nest cup was disheveled and the small branch the nest had been placed upon was sagging), and the abundant California ground squirrels (*Spermophilus beecheyi*) seen in the area, the previous nest was presumed to have been predated. The new nest location was roughly 155 feet to the southwest of the previous nest. This was the third known nest attempt by this vireo pair (Pair B). A 500-foot buffer was implemented around the new nest and the area was flagged for avoidance.
- On June 18, a least Bell's vireo nest belonging to Pair C was discovered south of the Tujunga Ponds. The nest was built within a fork on a small, horizontal willow branch roughly 3 feet from the ground. The status of the nest was presumed incubation based on pair's behavior (i.e., the female was sitting on the nest when discovered and no feeding of nestlings was observed). The biologist was alerted to the presence of the new nest because the male was observed singing and spending the entirety of his time in a different part of the territory without returning to the location of the previous nest. When the new nest was discovered, the previous potential nest was visited to ascertain its status. Based on the amount of time that had passed since the previous nest had been discovered on May 21, the contents of the previous nest (i.e., one vireo eggshell and one brown-headed cowbird egg), and the presence of a very large number of ants, the previous nest was presumed to have failed because of predation and/or brown-headed cowbird parasitism. The new nest was located roughly 180 feet to the northwest of the previous nest. This was the second known nest attempt by this vireo pair (Pair C). A 500-foot buffer was implemented around the new nest and the area was flagged for avoidance. A map of the three least Bell's vireo nest locations and buffers as of the end of June is included as Figure 1.

On June 30, removal efforts were focused on removing matured seed heads in the areas adjacent to Big Tujunga Creek and west of the north Wheatland Avenue entrance. This task necessitated careful hand pulling in order to minimize the amount of seed dropped during collection activities. All collected seed heads were bagged for removal to an offsite disposal facility. During removal efforts, the crew members maintained a minimum distance of 1,730 feet from the closest avoidance buffer for the protected least Bell's vireo nests (Pairs A, B, and C) discovered in the Mitigation Area.



Summary and Results

All exotic plant eradication activities were supervised by Jay Belmonte, Michael Walsh, and Valerie Alcantar, who monitored that regulations and requirements were closely followed. The crew averaged eight members per day during exotic plant eradication efforts. The crews continued to practice social distancing and wore masks during the tailgate meetings, and during work or had a mask available in the event a pedestrian was passing through the work area.

Biologists Alisa Muniz, Jessica Calvillo, Austin Burke, and/or Corey Jacobs inspected work areas prior to the start of each workday. The biologists conducted nesting bird sweeps within 500 feet of work areas and provided nest updates for active nests. The biologists inspected and maintained the flagging for active nests and avoidance buffers. All nests were discussed with the foreman and crews during daily tailboard meetings to determine where maintenance activities would be performed. No maintenance activities were conducted in avoidance buffer areas and no negative impacts to nests occurred due to maintenance activities. All areas north and east of the Cottonwood Avenue bluff were avoided due to the 500-foot avoidance buffers for the least Bell's vireos discovered within the Mitigation Area.

The June exotic plant eradication efforts focused on areas where small stands of exotic species were discovered and on areas where large dense stands of exotic plants were removed during previous efforts but had since experienced new weed germination and development. In areas where small stands of exotic plants remained and were found to have fully matured, seed heads were collected for disposal at an offsite waste facility. In areas that were revisited and/or where large stands of exotic species once stood, crew members focused efforts on removing the rapidly developing species that continue to germinate from the existing seed bank. In many of these areas exotic species were adventitiously growing among native species where abundant resources (e.g., water, light, space, shade) allowed them to develop late into the growing season and compete with native species. The removal of these adventitious weed species will continue to encourage the development of native plant species by reducing the competition for resources. Only mechanical removal methods were used during June efforts, including using weed whackers in areas where they would not disturb sensitive resources, and hand-pulling exotic species that were growing near native vegetation. Continuous and consistent weeding in this fashion will deplete the exotic plant seed bank over time, reduce the amount of competition posed by non-native species, and continue to encourage the development of native species needed to restore the habitat.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.

Sincerely,

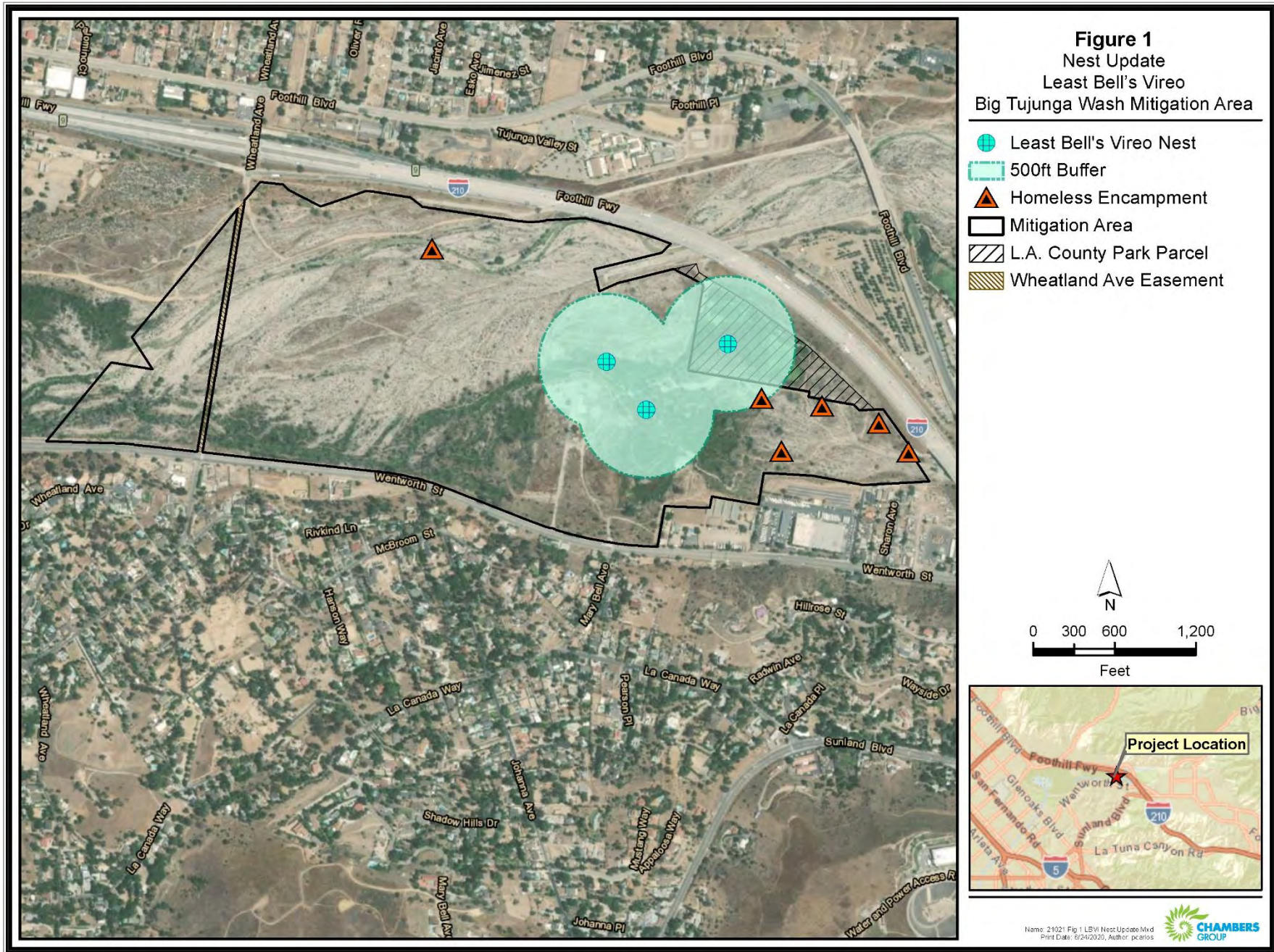
CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman





SITE PHOTOS



Photo 1. Crew members removing large patches of white sweet clover and mustard along the southern property boundary, on June 3.



Photo 2. Crew member cutting down exotic grasses and mustard at the base of the bluff surrounding the equestrian center, on June 5.





Photo 3. A silk tree discovered growing near Haines Canyon Creek during removal efforts, on June 10.



Photo 4. Crew members disassembling an unauthorized dam discovered in Haines Canyon Creek, on June 11.





Photo 5. A thicket of eupatory discovered competing for resources beneath a box elder before crew efforts, on June 18.



Photo 6. Reduced competition for resources beneath a box elder after removing a thicket of eupatory, on June 18.





Photo 7. Large patches of mustard in the western riparian area surrounding Haines Canyon Creek prior to removal efforts, on June 19.



Photo 8. Mustard species after being removed, reducing competition. Removed plants were left to decompose on site in the areas surrounding Haines Canyon Creek, on June 19.

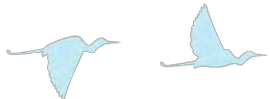




Photo 9. Exotic species interspersed with native species in the western riparian areas before crew efforts, on June 21.



Photo 10. Reduced competition on native species in the western riparian areas after exotic removal efforts, on June 21.





Photo 11. Stands of mustard and castor bean seedlings near Haines Canyon Creek prior to crew efforts, on June 23.



Photo 12. Reduced competition on native species after mustard and castor bean seedlings were removed near Haines Canyon Creek, on June 23.

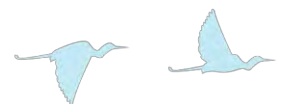




Photo 13. Crew members bagging matured mustard seed heads for removal from the Mitigation Area, on June 30.



July 31, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for July 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during July 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the July 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.

Implementation

Foreman Jay Belmonte and restoration biologist Michael Walsh or Valerie Alcantar led the work progression and pre-activity sweeps for sensitive resources including nesting birds were conducted by biologists Alisa Muniz, Jessica Calvillo, Corey Jacobs, and/or Austin Burke ahead of the work crew. In addition, a biologist traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing, as well as the locations of avoidance areas where no work is allowed to occur. The meetings were conducted by Alisa Muniz, Jessica Calvillo, Corey Jacobs, and/or Austin Burke.

During July, exotic plant removal efforts were focused on the western and northern portions of the site, including along Big Tujunga Creek, the Cottonwood Avenue bluff, and the central arid portion of the Big Tujunga Wash. The crew targeted non-native annual grasses including rattail sixweeks grass (*Festuca myuros*), red brome (*Bromus madritensis* subsp. *rubens*), wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum*), and ripgut grass (*Bromus diandrus*), as well as several other exotic plant species including mustards (*Brassica* spp., *Hirschfeldia incana*, *Sisymbrium* spp.), castor bean (*Ricinus communis*), and poison hemlock (*Conium maculatum*). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, weed whackers) when removing weeds and concentrated on newly germinating, regenerating, and maturing exotic plant species in areas where resources supported their continued development. When target species were discovered to have already matured, the seed heads were collected in heavy-duty contractor bags and were removed from the Mitigation Area in order to decrease future germination of exotic species and reduce the fire fuel present on the site. Annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual species (e.g., large mustards and poison hemlock) required complete removal of the plant from the roots. Plant material was left on the ground in the same area to decompose onsite.



Execution

Pre-activity nesting bird sweeps were conducted each morning where the work was proposed. The biologist surveyed within and adjacent-to planned work areas and documented the locations of any active bird nests or nesting behavior, as well as any sensitive species observations. The locations of any active nests, notable bird activities, and sensitive species were recorded using Collector for ArcGIS (Collector), a Geographic Information Systems (GIS) application that all monitors and the foreman have downloaded on their mobile phones. Breeding behavior among bird species continued to be high throughout the month, and several bird nests and sensitive species were discovered (listed by date of discovery below). All active bird nests were flagged for avoidance and were discussed daily with the crew at morning tailgate meetings. All documented active bird nests were continually monitored and completely avoided to ensure that crew activities were not causing harm to the sensitive species; however, the federally and state-endangered least Bell's vireo (*Vireo bellii pusillus*) nests that were identified on site were monitored no more than once per week in order to update avoidance buffer areas as necessary. The least Bell's vireo nests (Pairs A, B, and C, documented in the May and June exotic plant removal memos) continued to be a focus of monitoring activities to ensure that the work crews did not enter or disturb the established avoidance buffer areas.

On July 1 through 15, removal efforts were focused on the north side of Big Tujunga Creek, south of the 210 freeway embankment. Target species in this area were primarily mustard species, as well as a few larger perennial species including castor bean, Mediterranean tamarisk (*Tamarix ramosissima*), and giant reed (*Arundo donax*; Photos 1 through 8). Annual mustards had already produced mature seeds that required collection to prevent their dispersal. Mustard seed heads were carefully collected by hand and placed in contractor bags in order to minimize the number of seeds entering the seedbank. All bagged seed heads were then removed from the site and were taken to an offsite disposal facility. Mediterranean tamarisk is a deciduous perennial with a high tolerance to saline and alkaline soils, and is equipped with deep taproots which allow it to outcompete many native species for sparse water resources. Giant reed is another robust perennial with rhizomes that grow deep below the soil and require complete removal for plant eradication. After biological monitors had determined that this effort would not negatively impact sensitive species in the area, larger perennial species were removed using shovels, machetes, and prybars as necessary, to remove the full root structure and to reduce the potential for regrowth. During work efforts, the crew was documented at a minimum of 543 feet outside of the closest avoidance buffer of the protected least Bell's vireo territory (Pair A), with all work progressing northwest and away from this point. Though no new nests were discovered in the work area north of Big Tujunga Creek, pre-activity nesting bird sweeps were performed along the Cottonwood Avenue bluff in anticipation of the following week's work. Multiple bird nests were discovered in this area and are described below.

- On July 7, the least Bell's vireo nest belonging to Pair A located north of the Cottonwood Avenue bluff was discovered to have failed due to unknown reasons. The nest location had been originally discovered during the building stage on May 27, and the adults were observed to still be building in the area on June 4. Due to the location of the nest within thick vegetation, it was not possible to directly observe the nest with the use of binoculars without approaching it. Therefore, subsequent observations were performed by observing the adults within the territory. Neither of the adults, nor fledglings, were detected near the nest or within this territory after June 4. These observations confirmed that the nest was inactive, and the nest was subsequently approached to confirm its status. The nest was discovered to be empty and was confirmed inactive. This had been the second known nesting attempt for Pair A. Though no new nests were discovered, a male and two fledglings were discovered to the west of this territory on July 30 and were assumed to belong to Pair A (see summary under the June 30 entry). The 500-foot avoidance buffer was maintained around this territory to avoid disturbing potential future nesting attempts.
- On July 8, a northern mockingbird (*Mimus polyglottos*) nest was discovered on the eastern side of the Cottonwood Avenue bluff. The nest was located roughly 6 feet above the ground in a laurel sumac (*Malosma laurina*). An adult was observed bringing nesting materials to the area. A buffer was implemented and flagged for avoidance, though, the crew was not working in that area at the time.



- On July 8, a lesser goldfinch (*Spinus psaltria*) nest was discovered on the Cottonwood Avenue bluff near the storage container. The nest was located roughly 8 feet above the ground in a pine tree (*Pinus halepensis*). An adult was observed bringing nesting materials to the area. A buffer was implemented and flagged for avoidance, though, the crew was not working in that area at the time.
- On July 9, the least Bell's vireo nest belonging to Pair B located in the riparian area east of the Cottonwood Avenue bluff was discovered to have failed due to presumed predation. The nest had been originally discovered during the building stage on June 18, and was presumed to have advanced to the incubation stage due to the presence of an adult bird sitting on the nest when observed through binoculars on June 24. During the subsequent observations, no adults were seen sitting on the nest or in the vicinity after observing the nest from a distance. These observations, as well as the pair being observed consistently within a different area of their territory, confirmed that the nest was inactive, and the nest was subsequently approached to confirm its status. The nest was discovered empty and was therefore presumed to have been predated. Nest observations were performed with binoculars from a distance of no less than 30 feet to avoid disturbance and the nest was never approached until it was confirmed to be inactive. This had been the third known nesting attempt for Pair B. Though no new nests were discovered, the 500-foot avoidance buffer was maintained to avoid disturbing potential future nesting attempts.
- On July 9, the least Bell's vireo nest belonging to Pair C located south of the Tujunga Ponds was discovered to have failed due to presumed brown-headed cowbird (*Molothrus ater*) parasitism. The nest had been originally discovered during the presumed incubation stage on June 18; however, no adults were seen sitting on the nest or detected in the vicinity of the nest during subsequent observations. The pair was not detected anywhere within their territory during any of these observations. These observations confirmed that the nest was inactive, and it was subsequently approached to confirm its status. The nest was discovered to contain a single brown-headed cowbird egg and no vireo eggs and was therefore presumed to have failed due to parasitism. Nest observations were performed with binoculars from a distance of no less than 30 feet to avoid disturbance and the nest was never approached until it was confirmed to be inactive. This had been the second known nesting attempt for Pair C. Though no new nests were discovered, the 500-foot avoidance buffer was maintained to avoid disturbing potential future nesting attempts
- On July 10, a Bewick's wren (*Thyromanes bewickii*) nest was discovered on the Cottonwood Avenue bluff near the fence line along Wentworth Avenue. The nest was located roughly 5 feet above the ground in a laurel sumac. Adults were observed aggressively scolding a passing crew member. A buffer was implemented and flagged for avoidance, though, the crew was not working in that area at the time.
- On July 10, a second Bewick's wren nest was discovered on the Cottonwood Avenue bluff near the fence line along Wentworth Avenue. The nest was located roughly 5 feet above the ground constructed between an elderberry (*Sambucus nigra*) and sweet gum tree (*Liquidambar styraciflua*). Adults were observed making frequent trips to the nest with food, presumably feeding nestlings. A buffer was implemented and flagged for avoidance, though, the crew was not working in that area at the time.

On July 16 and 17, removal efforts were focused on the southern property boundary along the Wentworth Avenue fence line. Target species in the area were primarily annuals and biennials, including mustard species, white sweetclover (*Melilotus albus*), and lamb's quarters (*Chenopodium album*; Photo 9), with a few perennial species such as castor bean and cyclops acacia (*Acacia cyclops*; Photo 10). This part of the Mitigation Area has been the focus of work efforts several times during the season as it is along a major road which acts as a vector for exotic seeds, and the subsequent disturbance in this area has resulted in their localized dominance. Frequent exotic plant removal along the fence line helps ensure that the sparse resources in this area are saved for the native species, while also depleting the seedbank of exotic species. After biological monitors had determined that this effort would not negatively impact sensitive species in the area, larger perennial species were removed using shovels when it was necessary to remove more of the root structure to reduce the potential for regrowth. Annual species that had already produced mature seeds were carefully removed by hand and were collected in contractor bags in order to minimize the number of seeds entering the



seedbank. All bagged seed heads were then removed from the site and were taken to an offsite disposal facility. During work efforts, the crews were documented at a minimum of 547 feet outside of the closest avoidance buffer of the protected least Bell's vireo territory (Pair B), and all work progressed away from this point.

- On July 16, a northern mockingbird nest was discovered on the Cottonwood Avenue bluff near the fence line along Wentworth Avenue. The nest was located roughly 5 feet above the ground in a coast live oak (*Quercus agrifolia*) tree. Adults were observed making frequent trips to the nest with food, presumably feeding nestlings. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On July 16, a second northern mockingbird nest was discovered on the Cottonwood Avenue bluff near the fence line along Wentworth Avenue. The nest was located roughly 4 feet above the ground in a coast live oak tree. A male was observed bringing nesting materials to the area. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On July 16, a mourning dove nest (*Zenaida macroura*) was discovered on the Cottonwood Avenue bluff near the fence line along Wentworth Avenue. The nest was located roughly 4 feet above the ground in a sycamore tree (*Platanus racemosa*). The female was observed sitting on the nest, presumably incubating eggs. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.
- On July 16, a California towhee (*Melospiza crissalis*) nest was discovered on the Cottonwood Avenue bluff near the fence line along Wentworth Avenue. The nest was located roughly 5 feet above the ground in a laurel sumac. Adults were observed bringing nesting materials to the area. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.

On July 21 through 27, removal efforts were focused on the western edge of the Cottonwood Avenue bluff. The target species in this area was primarily the perennial blackwood acacia (*Acacia melanoxylon*; Photos 11 through 14), as well as mustard species and white sweetclover. After biological monitors had determined that this effort would not negatively impact sensitive species in the area, larger perennial species were removed using shovels, as necessary, to remove more of the root structure and to reduce the potential for regrowth. Small annual species were carefully removed by hand in order to minimize the amount of seed dropped during collection activities. All collected seed heads were then bagged for removal to an offsite disposal facility. During work efforts, the crews were documented at a minimum of 403 feet outside the avoidance buffer territory of the protected least Bell's vireo (Pair A), and all work progressed west away from this point.

- On July 27, a mourning dove nest was discovered on the western edge of the Cottonwood Avenue bluff. The nest was located roughly 4 feet above the ground in a prickly pear (*Opuntia* sp.). The female was observed sitting on the nest, presumably incubating eggs. A buffer was implemented and flagged for avoidance. Normal nesting behavior was observed during work in the vicinity of the avoidance buffer.

On July 27 through 31, removal efforts were focused in the central arid area of the Big Tujunga Wash. The target species in this area was primarily fountain grass (*Pennisetum setaceum*; Photo 15), an annual bunchgrass with an easily ignitable seed head that is known to be a major fuel source during wildfires. Scattered mustard species were present throughout the area as well. After the biological monitors had determined that this effort would not negatively impact sensitive species in the area, fountain grass was removed using shovels as it was necessary to remove the bulk of the root structures to reduce the potential for regrowth. Annual species that had already produced mature seeds were carefully removed by hand and were collected in contractor bags in order to minimize the amount of seed entering the seedbank. All bagged seed heads were then removed from the site and were taken to an offsite disposal facility. During work efforts, the crews were documented at a minimum of 1,025 feet outside of the closest avoidance buffer of the protected least Bell's vireo territory (Pair A), and all work progressed west away from this point.



- On July 30, an adult male least Bell's vireo and two large fledglings were discovered within the riparian vegetation along the western portion of Haines Canyon Creek. The adult vireo was attending to the two large fledglings, both of which were highly mobile and capable of flight. It is assumed that this male belonged to Pair A, and the two fledglings were the result of a successful nest that went undetected. Their relocation further west along Haines Canyon Creek was likely the result of post-breeding movement. A 500-foot buffer was implemented and flagged for avoidance; although the location of the vireos will likely change day to day as the vireos do not appear to display nesting behaviors and are now foraging and migrating through the area.

Summary and Results

All exotic plant eradication activities were supervised by Jay Belmonte, Michael Walsh, and Valerie Alcantar, who monitored that regulations and requirements were closely followed. The crew averaged eight members per day during exotic plant eradication efforts. The crews continued to practice social distancing and wore masks during the tailgate meetings, and during work or had a mask available in the event a pedestrian was passing through the work area.

Biologists Alisa Muniz, Jessica Calvillo, Austin Burke, and/or Corey Jacobs inspected work areas prior to the start of each workday. The biologists conducted nesting bird sweeps within 500 feet of work areas and provided nest updates for active nests. The biologists inspected and maintained the flagging for active nests and avoidance buffers. All nests were discussed with the foreman and crews during daily tailboard meetings to determine where maintenance activities would be performed. No maintenance activities were conducted in avoidance buffer areas and no negative impacts to nests occurred due to maintenance activities. All areas north and east of the Cottonwood Avenue bluff were avoided due to the 500-foot avoidance buffers for the least Bell's vireos discovered within the Mitigation Area.

The July exotic plant eradication efforts focused on areas where small stands of exotic species were newly discovered and on areas where large, dense stands of exotic plants had been previously removed during eradication efforts but had since experienced new weed germination and development. In areas where small stands of exotic plants remained and were found to have fully matured, seed heads were collected for disposal at an offsite waste facility. In areas that were revisited and/or where large stands of exotic species once stood, crew members focused efforts on removing the rapidly developing species that continued to germinate from the existing seed bank. In many of these areas exotic species were adventitiously growing among native species where abundant resources (e.g., water, light, space, shade) allowed them to develop late into the growing season and compete with native species. The removal of these adventitious weed species will continue to encourage the development of native plant species by reducing the competition for resources. Only mechanical removal methods were used during July efforts, including using weed whackers in areas where they would not disturb sensitive resources, and hand-pulling exotic species that were growing near native vegetation. A total of 194 contractor bags of non-native seed heads were collected from the Mitigation Area during the July eradication efforts. All bags of collected seeds heads have been removed to an offsite disposal facility. Continuous and consistent weeding and seed head collection in this fashion will deplete the exotic plant seed bank over time, reduce the amount of competition posed by non-native species, and continue to encourage the development of native species needed to restore the habitat.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.

Sincerely,

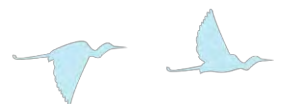
CHAMBERS GROUP, INC.





Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1. Large patches of mature shortpod mustard on the north side of Big Tujunga Creek before removal on July 1.



Photo 2. North side of Big Tujunga Creek after mustard removal on July 1.





Photo 3. A patch of castor bean on the north side of Big Tujunga Creek before removal on July 2. These individuals were nestled between a native laurel sumac and branching phacelia (*Phacelia ramosissima*), competing for sparse nutrient and water resources.



Photo 4. After removal of the castor bean on the north side of Big Tujunga Creek on July 2.





Photo 5. A patch of mature shortpod mustard on the north side of Big Tujunga Creek before removal on July 7.



Photo 6. After removal of the mature shortpod mustard on the north side of Big Tujunga Creek on July 7.





Photo 7. Removal of giant reed found in Big Tujunga Creek, on July 10. This large perennial species has an extensive rhizome which must be fully removed to prevent re-sprouting.



Photo 8. Removal of Mediterranean tamarisk found in Big Tujunga Creek, on July 10. This large perennial species is equipped with a deep taproot that allows it to outcompete native species for sparse nutrient resources.

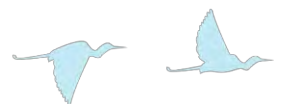




Photo 9. Patches of lamb's quarters on the southern edge of the Cottonwood Avenue bluff before removal, on July 16.



Photo 10. A cyclops acacia on the Cottonwood Avenue bluff competing with native buckwheat (*Eriogonum fasciculatum*) before removal on July 16.





Photo 11. Patches of blackwood acacia before removal on the western edge of the Cottonwood Avenue bluff, on July 21.



Photo 12. After removal of the blackwood acacia on the western edge of the Cottonwood Avenue bluff, on July 26.





Photo 13. Patches of blackwood acacia before removal on the western edge of the Cottonwood Avenue bluff, on July 21.

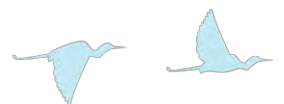


Photo 14. After removal of the blackwood acacia on the western edge of the Cottonwood Avenue bluff, on July 26.





Photo 15. Crew members removing a mature bunch of fountain grass from the central arid area of the Big Tujunga Wash on July 28. This perennial species requires manual removal of the entire root structure to prevent re-sprouting.



September 1, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for August 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during July 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the August 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.

Implementation

Foreman Jay Belmonte and restoration biologist Michael Walsh and/or Valerie Alcantar led the work progression, and pre-activity sweeps for sensitive resources including nesting birds were conducted by biologist Alisa Muniz ahead of the work crew. In addition, a biologist traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing, as well as the locations of avoidance areas where no work is allowed to occur. The meetings were conducted by Alisa Muniz.

During August, exotic plant removal efforts were focused on the western portion of the site, including along Big Tujunga creek and the central arid portion of the Big Tujunga Wash. The crew targeted non-native annual and perennial species including white sweetclover (*Melilotus albus*), wand mullein (*Verbascum virgatum*), shortpod mustard (*Hirschfeldia incana*), fountaingrass (*Pennisetum setaceum*), Mediterranean tamarisk (*Tamarisk ramosissima*), giant reed (*Arundo donax*), and Spanish broom (*Spartium junceum*). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, digging-bars) when removing weeds and concentrated on newly germinating, regenerating, and maturing exotic plant species in areas where resources supported their continued development. Annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual and/or perennial species (e.g., large mustards and fountaingrass) required complete removal of the plant from the roots while others (e.g., white sweetclover) also required the collection of seed heads. Plant material was left on the ground in the same area to decompose onsite and bags of collected seed heads were taken to an offsite disposal facility.



Execution

Pre-activity nesting bird sweeps were conducted each morning where the work was proposed. The biologist surveyed within and adjacent-to planned work areas and documented the locations of any active bird nests or nesting behavior, as well as any sensitive species observations. The locations of any active nests, notable bird activities, and sensitive species were recorded using Collector for ArcGIS (Collector), a Geographic Information Systems (GIS) application that all monitors and the foreman have downloaded on their mobile phones. All documented, active bird nests were continually monitored and completely avoided to ensure that crew activities were not causing harm to the sensitive species; however, the federally and state-endangered least Bell's vireo (*Vireo bellii pusillus*) nests that were identified on site were monitored no more than once per week in order to update avoidance buffer areas as necessary. The least Bell's vireo nests (Pairs A, B, and C, documented in the May exotic plant removal memo) continued to be a focus of monitoring activities to ensure that the work crews did not enter or disturb the established avoidance buffer areas.

On August 4 through 7, removal efforts were focused on the eastern channel of Big Tujunga Creek, working from the northeastern site boundary along the 210 freeway and west along the southern freeway embankment. Target species in this area were primarily white sweetclover, wand mullein, shortpod mustard, and fountaingrass which is a perennial bunchgrass with easily ignitable seed heads that is known to be a major fuel source during wildfires (Photos 1 through 6). White sweetclover and mustard species were discovered to have produced mature seeds. The mature seeds were carefully removed by hand and collected in order to minimize the amount of seed dispersed during collection activities and thus preventing future germination. All collected seed heads were placed in contactor bags for removal to an offsite disposal facility. White sweetclover is an annual or biennial legume that has been observed dominant in areas adjacent to Big Tujunga Creek as well as lining the banks. It is an adaptable, nitrogen-fixing plant that does well in a variety of soil textures but are best suited towards heavy, clayey or sandy soil. Removal efforts along Big Tujunga Creek and the surrounding Big Tujunga Wash were focused on minimizing the spread of invasive species, seed bank development, and successive growth throughout the Mitigation Area. After biological monitors had determined that this effort would not negatively impact sensitive species in the area, fountaingrass was removed using shovels and machetes as it is necessary for all of the root structure of this species to be removed to reduce the potential for regrowth. During work efforts, the crew was documented at a minimum of 270 feet outside of the closest avoidance buffer of the protected least Bell's vireo territory (Pair A), with all work progressing west and away from this point.

On August 10 through 14, removal efforts continued along Big Tujunga Creek starting on the stretch below the trail that is located west of the southern freeway embankment. Target species in this area were primarily white sweetclover, wand mullein, shortpod mustard, as well as a few larger perennial species including Mediterranean tamarisk and giant reed (Photos 7 and 8). Annual white sweetclover and mustard species were discovered to have produced mature seeds. The mature seeds were carefully removed by hand and collected in order to minimize the amount of seed dispersed during collection activities to prevent future germination. All collected seed heads were placed in contactor bags for removal to an offsite disposal facility. Mediterranean tamarisk is a deciduous perennial with a high tolerance to saline and alkaline soils, and is equipped with deep taproots which allow it to outcompete many native species for sparse water resources. Giant reed is another robust perennial with rhizomes that grow deep below the soil and require complete removal for plant eradication. The prominence of these species and their seed banks upstream leads to their spread downstream to the Mitigation Area. As the crew worked west down Big Tujunga Creek, young, vegetative Mediterranean tamarisk and giant reed were observed. Removal of these perennials from upstream portions of the Mitigation Area will aid in the prevention of seed spread and successive growth downstream. After biological monitors had determined that this effort would not negatively impact sensitive species in the area, larger perennial species were removed using shovels, machetes, and digging-bars as it is necessary for all of the root structure of these species to be removed to reduce the potential for regrowth. During work efforts, the crew was documented at a minimum of 534 feet outside of the closest avoidance buffer of the protected least Bell's vireo territory (Pair A), with all work progressing west and away from this point.



Between August 18 to 26, removal efforts continued to progress downstream along Big Tujunga Creek in the area south of the north Wheatland Avenue entrance and ending in the area where the western trail above Big Tujunga Creek begins. Target species in this area were primarily white sweetclover, wand mullein, and mustard species, as well as a few larger perennial species including Mediterranean tamarisk, giant reed, and Spanish broom (Photos 9 through 13). All collected seed heads were placed in contactor bags for removal to an offsite disposal facility. Spanish broom is a perennial, evergreen shrub that outcompetes native plants through nitrogen fixation and is also a fuel source for fires. After biological monitors had determined that this effort would not negatively impact sensitive species in the area, larger perennial species were removed using shovels, machetes, and digging-bars to pry out all of the root structure and thus, reduce the potential for regrowth. During work efforts, the crew was documented at a minimum of 2,160 feet outside of the closest avoidance buffer of the protected least Bell's vireo territory (Pair A), with all work progressing west and away from this point.

Summary and Results

All exotic plant eradication activities were supervised by Jay Belmonte, Michael Walsh, and Valerie Alcantar, who monitored that regulations and requirements were closely followed. The crew averaged eight members per day during exotic plant eradication efforts. The crews continued to practice social distancing and wore masks during the tailgate meetings, and during work or had a mask available in the event a pedestrian was passing through the work area.

Biologist Alisa Muniz inspected work areas prior to the start of each workday. The biologist conducted nesting bird sweeps within 500 feet of work areas and provided nest updates for active nests. The biologist inspected and maintained the flagging for active nests and avoidance buffers. No work was performed near any of the nests that were discovered in July that were still in active stages. All nests were discussed with the foreman and crews during daily tailboard meetings to determine where maintenance activities would be performed. No maintenance activities were conducted in avoidance buffer areas and no negative impacts to nests occurred due to maintenance activities. All areas north and east of the Cottonwood Avenue bluff were avoided due to the 500-foot avoidance buffers for the least Bell's vireos discovered within the Mitigation Area in previous months.

The August exotic plant eradication efforts focused on areas where small stands of exotic species were discovered and on areas where large dense stands of flowering and/or maturing, exotic species persisted. In areas where small stands of exotic plants remained and were found to have fully matured, seed heads were collected for disposal at an offsite waste facility. In areas where large stands of mature, exotic species stood, crew members focused efforts on removing the rapidly developing species. The stands of non-native species that continue to germinate along the Big Tujunga Creek and through Big Tujunga Wash areas are evidence that seeds from exotic species are continually being washed into the Mitigation Area from sources upstream. The crew will continue to target germinating and developing stands of exotic species to reduce the potential for an accumulation of seed banks throughout these areas. In many of these areas exotic species were adventitiously growing among native species where abundant resources (e.g., water, light, space, shade) allowed them to develop late into the growing season and compete with native species. The removal of these adventitious weed species will continue to encourage the development of native plant species by reducing the competition for resources. Only mechanical removal methods were used during August efforts, including hand-pulling exotic species that were growing near native vegetation. Continuous and consistent weeding in this fashion will deplete the exotic plant seed bank over time and will help to prevent offsite influence, thus reducing the amount of competition posed by non-native species, and encouraging the development of native species needed to restore the habitat.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.



Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1. Patches of fountaingrass on the far east side of Big Tujunga Creek, south of the 210 Freeway boundary, on August 4.



Photo 2. After using digging-bars and shovels to remove root structures of fountaingrass to reduce the potential for regrowth, on August 4.

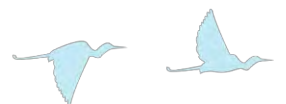




Photo 3. Patches of fountaingrass on the far east side of Big Tujunga Creek, below the 210 freeway, on August 4.



Photo 4. After using digging-bars and shovels to remove root structures of fountaingrass to reduce the potential for regrowth, on August 4.

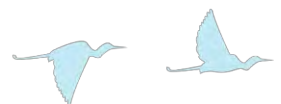




Photo 5. Patches of fountaingrass on the far east side of Big Tujunga Creek, south of the 210 freeway, on August 4.



Photo 6. After using digging-bars and shovels to remove root structures of fountaingrass to reduce the potential for regrowth, on August 4.





Photo 7. Removal and collection of white sweetclover seeds in contractor bags to minimize dispersal, on August 11.



Photo 8. Removal of Mediterranean tamarisk found in Big Tujunga Creek, west of the 210 freeway embankment and property boundary, on August 11.

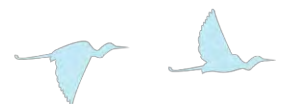




Photo 9. Removal and collection of white sweetclover seeds in contractor bags to minimize dispersal, on August 18.



Photo 10. After white sweetclover seeds were collected on August 18. Collected seed materials will bedisposed at an offsite facility.





Photo 11. Fountaingrass, mustard, and Spanish broom were found overtaking a section of the Big Tujunga Creek, on August 25.



Photo 12. After the removal of fountaingrass, mustard, and Spanish broom using shovels and digging-bars to remove root structures to reduce the potential for regrowth, on August 25.





Photo 13. The crew using a shovel and a digging-bar to uproot Spanish broom, on August 26.



October 2, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for September 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during September 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the September 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.

Implementation

Foreman Jay Belmonte and restoration biologist Michael Walsh or Valerie Alcantar led the work progression, and pre-activity sweeps for sensitive resources including nesting birds were conducted by biologists Alisa Muniz ahead of the work crew. In addition, a biologist traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing, as well as the locations of avoidance areas where no work was allowed to occur. The meetings were conducted by Alisa Muniz.

During September, exotic plant removal efforts were focused along the Wentworth Avenue fence line, the western Cottonwood Avenue riparian area, and the area south of Haines Canyon Creek. Some of the primary non-native annual and perennial species targeted included white sweetclover (*Melilotus albus*), shortpod mustard (*Hirschfeldia incana*), giant reed (*Arundo donax*), tree of heaven (*Ailanthus altissima*), castor bean (*Ricinus communis*), tree tobacco (*Nicotiana glauca*), and Cootamundra wattle (*Acacia baileyana*). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, digging-bars) when removing exotic plant species and concentrated on newly germinating, regenerating, and maturing exotic plant species in areas where resources supported their continued development. Annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual and/or perennial species (e.g., large mustards) required complete removal of the plant from the roots. Seedless plant material was left on the ground in the same area to decompose onsite.

Execution

Pre-activity nesting bird sweeps were conducted each morning where the work was proposed through the end of nesting bird season, September 15. The biologist surveyed within and adjacent-to planned work areas and documented



the locations of any active bird nests or nesting behavior, as well as any sensitive species observations. The locations of any active nests, notable bird activities, and sensitive species, if present, were recorded using Collector for ArcGIS (Collector), a Geographic Information Systems (GIS) application that all monitors and the foreman have downloaded on their mobile phones. All documented, active bird nests were continually monitored and completely avoided to ensure that crew activities were not causing harm to the sensitive species; however, the federally and state-endangered least Bell's vireo (*Vireo bellii pusillus*) nests that were identified on site were monitored no more than once per week until buffer restriction were lifted in order to update avoidance buffer areas as necessary. The least Bell's vireo nests (Pairs A, B, and C, documented in the May exotic plant removal memo) continued to be a focus of monitoring activities to ensure that the work crews did not enter or disturb the established avoidance buffer areas. On September 14, buffer restrictions for the federal- and state-listed least Bell's vireo were lifted upon approval from CDFW, due to several negative findings during nesting bird survey efforts.

On September 8 through 16, removal efforts were focused on the western riparian area below the Cottonwood Avenue bluff. After biological monitors had determined that planned activities would not negatively impact sensitive species in the area, removal efforts began. Target species in this area were primarily white sweetclover, castor bean, shortpod mustard, and tree of heaven (Photos 1 through 4). Both white sweetclover and mustard species were in flowering and early fruiting stages and hand-pulling was sufficient to prevent seed ripening and viability of these species. White sweetclover is an annual or biennial legume that has been observed dominant along the banks of Haines Canyon Creek and in areas adjacent to the creek. It is an adaptable, nitrogen-fixing plant that does well in a variety of soil types but is best suited towards heavy, clayey or sandy soils. Castor bean and tree of heaven were removed using machetes and shovels, as it is necessary for all of the root structure of this species to be removed to reduce the potential for regrowth. Since the crew's most recent work removing poison hemlock (*Conium maculatum*) in that same area during the month of June, a decrease in poison hemlock and an increase in native species was observed. During work efforts, the crew was documented at a minimum of 500 feet outside of the closest avoidance buffer of the protected least Bell's vireo territory (Pair A), with all work progressing west and away from this point.

On September 17 and 18, removal efforts were focused on the southern property boundary along the Wentworth Avenue fence line. Target species in the area were primarily annuals and biennials, including shortpod mustard and white sweetclover, with a few perennial species such as castor bean and tree tobacco. This area has been the focus of work efforts several times during the season due to continued disturbance (this area is located along a major road which has acted as a vector for exotic seeds) that has resulted in localized dominance of non-native species; however, work in the area had been put on hold due to the proximity of active bird nests to the fence line. After a thorough survey of the area to confirm that the bird nests present were no longer active, the crew hand-pulled castor bean and tree tobacco and used shovels to completely remove the roots of the plants. Frequent removal efforts along the fence line helps ensure that sparse nutrient resources are saved for the native species in the area, while also depleting the seedbank of exotic species.

From September 21 through 25, removal efforts were focused on the central area below Cottonwood Avenue bluff, south of Haines Canyon Creek. Target species in this area were white sweetclover, castor bean, tree of heaven, tree tobacco, shortpod mustard, and minimal patches of marvel of Peru (*Mirabilis jalapa*). This was the first time the crews had worked in this area due to the presence of least Bell's vireo nests and the 500-foot avoidance buffers; therefore, much of the castor bean and tree of heaven had grown to nearly 10 feet tall (Photos 5 and 6). In addition, white sweetclover had outcompeted and overgrown the native plants. Having access to Haines Canyon Creek, a perennial water source, castor bean and tree of heaven seedlings were observed concentrated along the creek bank in patches. After a thorough survey through the planned work areas to confirm that any bird nest present were no longer active, mature castor bean and tree of heaven were removed using machetes and shovels, as it is necessary for all of the root structure of this species to be removed to reduce the potential for regrowth. The large patches of flowering white sweetclover and shortpod mustard were both cut to the base using weed-whippers. Marvel of Peru is a drought-tolerant annual or perennial that grows in disturbed sites or waste grounds and can grow tuberous roots that can be



difficult to remove. To help prevent recurrence of this opportunistic plant, they were hand-pulled or dug out using a shovel (Photos 7 and 8).

Summary and Results

All exotic plant eradication activities were supervised by Jay Belmonte, Michael Walsh, and Valerie Alcantar, who monitored that regulations and requirements were closely followed. The crew averaged four members per day during exotic plant eradication efforts. The crews continued to practice social distancing and wore masks during the tailgate meetings and during work, or had a mask available in the event a pedestrian was passing through the work area.

Biologist Alisa Muniz inspected work areas prior to the start of each workday. The biologists conducted nesting bird sweeps within 500 feet of work areas and provided nest updates for any active nests through September 15, the end of nesting bird season. The biologists inspected and maintained the flagging for any active nests and avoidance buffers. No work was performed near any nests that were still in active stages. All nests were discussed with the foreman and crews during daily tailboard meetings to determine where maintenance activities would be performed. No maintenance activities were conducted in avoidance buffer areas and no negative impacts to nests occurred due to maintenance activities. All areas north and east of the Cottonwood Avenue bluff were avoided due to the 500-foot avoidance buffers for the least Bell's vireos discovered within the Mitigation Area in previous months, until buffer restrictions were lifted on September 14 after approval from CDFW.

The September exotic plant eradication efforts focused on areas where small stands of exotic species were discovered and on areas where large dense stands of flowering and/or maturing, exotic species persisted. In areas where large stands of mature, exotic species stood, crew members focused efforts on removing the rapidly developing species. The crew will continue to target germinating and developing stands of exotic species to reduce the potential for an accumulation of seed banks throughout these areas. In many of these areas exotic species were adventitiously growing among native species where abundant resources (e.g., water, light, space, shade) allowed them to develop late into the growing season and compete with native species. The removal of these adventitious weed species will continue to encourage the development of native plant species by reducing the competition for resources. Only mechanical removal methods were used during September efforts, including hand-pulling exotic species that were growing near native vegetation. Continuous and consistent weeding in this fashion will deplete the exotic plant seed bank over time and will help to prevent offsite influence, thus reducing the amount of competition posed by non-native species, and encouraging the development of native species needed to restore the habitat.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.

Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1. Patches of white sweetclover that were flowering and in early fruiting stages were removed below the Cottonwood Avenue bluff in the western riparian area, on September 8.



Photo 2. After the patches of white sweetclover were removed by hand-pulling from the root to prevent seed ripening and viability, on September 8.





Photo 3. Patches of castor bean and tree of heaven located below the Cottonwood Avenue bluff in the western riparian area along Haines Canyon Creek, on September 15.



Photo 4. After using shovels and machetes to remove the root structure of castor bean and tree of heaven to reduce the potential for regrowth, on September 15.

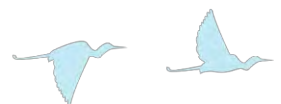




Photo 5. Patches of castor bean and tree of heaven competing with native species along Haines Canyon Creek, on September 21.



Photo 6. After the removal of castor bean and tree of heaven reducing competition for resources along Haines Canyon Creek, on September 25.

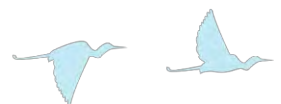




Photo 7. Overview of the central area below the Cottonwood Avenue bluff, south of Haines Canyon Creek. Large tree tobacco, tree of heaven, castor bean, and white sweetclover posing direct competition for resources upon the native species. Photo taken on September 21.



Photo 8. After the removal of tree tobacco, tree of heaven, castor bean, and white sweetclover from the central area below the Cottonwood Avenue bluff, south of Haines Canyon Creek, on September 25.



November 2, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for October 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during October 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the October 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.

Implementation

Foreman Jay Belmonte and restoration biologist Michael Walsh or Valerie Alcantar led the work progression the biologists conducted pre-activity sweeps for sensitive resources ahead of the work crew. In addition, a biologist traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing. The meetings were conducted by Michael Walsh or Valerie Alcantar.

During October, exotic plant removal efforts were focused along area south of Haines Canyon Creek, the northern bank of Haines Canyon Creek, and the eastern riparian area. Some of the primary, targeted non-native annual and perennial species including white sweetclover (*Melilotus albus*), shortpod mustard (*Hirschfeldia incana*), tree of heaven (*Ailanthus altissima*), castor bean (*Ricinus communis*), and tree tobacco (*Nicotiana glauca*). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, digging-bars) when removing weeds and concentrated on newly germinating, regenerating, and maturing exotic plant species in areas where resources supported their continued development. Annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual and/or perennial species (e.g., large mustards) required complete removal of the plant from the roots. Seedless plant material was left on the ground in the same area to decompose onsite.

Execution

On October 5 through 9, removal efforts were resumed from the previous month on the area below the Cottonwood Avenue bluff, south of Haines Canyon Creek. The crew continued to work east towards the trail that follows the western edge of the eastern riparian area. Target species in this area were primarily white sweetclover, Himalayan blackberry



(*Rubus armeniacus*), shortpod mustard, poison hemlock (*Conium maculatum*), tree of heaven, southern catalpa (*Catalpa bignonioides*), and white mulberry (*Morus alba*). Both white sweetclover and mustard species were in flowering and early fruiting stages and weed-whipping was the most efficient course of removal for the large patches of weeds that were observed throughout the eastern riparian area. The crew used hedgers to cut through a Himalayan blackberry thicket that was approximately 15 feet deep by 30 feet wide. Himalayan blackberry is an invasive weed that grows in dense thickets. These thickets shade out native seedlings along streams that are essential for native insects and cool-shaded water they provide for native fish species. Tree of heaven were removed using machetes and shovels, as it is necessary for all of the root structure of this species to be removed to reduce the potential for regrowth. The crew used chainsaws to cut a southern catalpa and white mulberry that had grown intertwined with native trees. Southern catalpa trees are fast-growing trees with an extensive root system that do well in light, loamy, and heavy clay soils but require full-sun exposure. White mulberry is a deciduous tree common in disturbed sites known for its deep tap root and its allelopathic properties that can negatively impact the germination and seedling growth of surrounding plants. Both trees were between 15 and 20 feet tall and were cut to the base to reduce competition for sunlight and space, and to reduce stress upon the native trees (Photos 1 through 12).

From October 12 through 21, removal efforts were focused directly on the northern bank of Haines Canyon Creek, below the Cottonwood Avenue bluff. Target species in the area were primarily annuals and biennials, including shortpod mustard and white sweetclover with a few perennial species such as castor bean, tree of heaven, tree tobacco, and poison hemlock. The crew cleared the patches of white sweet clover and poison hemlock using weed whippers, as it was the most efficient course of removal. Poison hemlock growing in the area were nearly 10 feet tall and were well-rooted in the bank due to being inside nest buffer avoidance areas during nesting bird season (where exotic plant removal activities could not occur) and having immediate access to the perennial waters of Haines Canyon Creek. Poison hemlock have deep roots that function to access water more quickly than the surrounding natives, and therefore, do not structurally support the creek banks like natives such as willows (*Salix* spp.) do. The crew worked carefully to remove the roots using shovels and were attentive to cause minimal soil deposition into the creek. Tree of heaven and tree tobacco were uprooted using shovels and seedlings along the bank were hand-pulled to ensure root removal and to avoid regrowth (Photos 13 through 20).

From October 22 through 26, removal efforts were resumed from where the crew left off during the first week of October and work progressed east of the trail that follows the western edge of the eastern riparian area. Target species in this area were white sweetclover, shortpod mustard, poison hemlock, tree of heaven, and large patches of castor bean. Both white sweetclover and mustard species were in flowering and early fruiting stages and weed-whipping was the most efficient course of removal of the large patches of weeds that were observed throughout the eastern riparian area. Weed whipping the non-natives plants to the base will prevent further ripening and viability of the seeds as well as remove competition for sunlight and space. White sweetclover is an annual or biennial legume that has been observed dominant along the banks of Haines Canyon Creek and in areas adjacent to the creek. It is an adaptable, nitrogen-fixing plant that does well in a variety of soil types but is best suited towards heavy, clayey or sandy soils. The large patch of castor bean was entangled with natives such as rough cocklebur (*Xanthium strumarium*) but the crew was careful to only uproot the non-natives using machetes and shovels, as it is necessary for all of the root structure of this species to be removed to reduce the potential for regrowth (Photos 21 through 26).

Summary and Results

All exotic plant eradication activities were supervised by Jay Belmonte, Michael Walsh, and Valerie Alcantar, who monitored that regulations and requirements were closely followed. The crew averaged three members per day during exotic plant eradication efforts. The crews continued to practice social distancing and wore masks during the tailgate meetings, and during work or had a mask available in the event a pedestrian was passing through the work area.

The October exotic plant eradication efforts focused on areas where small stands of exotic species were discovered and on areas where large dense stands of flowering and/or maturing, exotic species persisted. In areas where large stands



of mature, exotic species stood, crew members focused efforts on removing the rapidly developing species. The crew will continue to target germinating and developing stands of exotic species to reduce the potential for an accumulation of seed banks throughout these areas. In many of these areas exotic species were adventitiously growing among native species where abundant resources (e.g., water, light, space, shade) allowed them to develop late into the growing season and compete with native species. The removal of these adventitious weed species will continue to encourage the development of native plant species by reducing the competition for resources. Only mechanical removal methods were used during October efforts, including hand-pulling exotic species that were growing near native vegetation. Continuous and consistent weeding in this fashion will deplete the exotic plant seed bank over time and will help to prevent offsite influence, thus reducing the amount of competition posed by non-native species, and encouraging the development of native species needed to restore the habitat.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.

Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1. Patches of white sweetclover and shortpod mustard that were flowering below the Cottonwood Avenue bluff west of the trail that follows the western edge of the eastern riparian area, on October 5.



Photo 2. After the patches of white sweetclover and shortpod mustard were cut using weed whippers to prevent seed ripening and viability, on October 6.

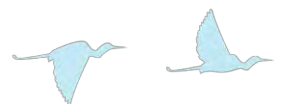




Photo 3. Patches of white sweetclover, shortpod mustard, and tree of heaven below the Cottonwood Avenue bluff west of the trail that follows the western edge of the eastern riparian area, on October 5.



Photo 4. After the patches of white sweetclover and shortpod mustard were cut using weed whippers and tree of heaven were dug out to reduce the potential for regrowth, on October 6.





Photo 5. Patches of white sweetclover, poison hemlock, shortpod mustard, and tree of heaven below Cottonwood Avenue bluff west of the trail that follows the western edge of the eastern riparian area, on October 5.



Photo 6. After the patches of white sweetclover, poison hemlock, and shortpod mustard were cut using weed whippers and tree of heaven were dug out to reduce the potential for regrowth, on October 7.





Photo 7. Patches of white sweetclover, shortpod mustard, and tree of heaven below Cottonwood Avenue bluff west of the trail that follows the western edge of the eastern riparian area, on October 5.



Photo 8. After the patches of white sweetclover and shortpod mustard were cut using weed whippers and tree of heaven were dug out to reduce the potential for regrowth, on October 8.

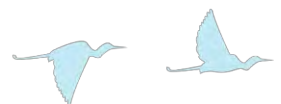




Photo 9. Patches of white sweetclover and a thicket of Himalayan blackberry (not visible) below the Cottonwood Avenue bluff west of the trail that follows the western edge of the eastern riparian area, on October 5.



Photo 10. After the patches of white sweetclover were cut using weed whippers and the Himalayan blackberry was removed using hedgers, on October 9.





Photo 11. The crew used chainsaws to cut a southern catalpa tree that grew intertwined with a native tree, on October 9.



Photo 12. The crew used chainsaws to cut a white mulberry that grew intertwined with a native tree, on October 9.

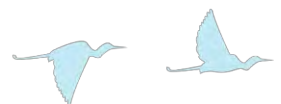




Photo 13. Patches of tree of heaven, castor bean, white sweetclover, and shortpod mustard north of Haines Canyon Creek, on October 12.



Photo 14. After the patches of white sweetclover and shortpod mustard were cut using weed whippers and tree of heavens and castor beans were removed using shovels to remove root structures to reduce the potential for regrowth, on October 16.





Photo 15. Patches of castor bean deeply rooted into the north bank of Haines Canyon Creek, on October 12.



Photo 16. After the careful removal of the castor bean patch using shovels, to minimize soil deposition into the creek, on October 19.





Photo 17. Patches of castor bean deeply rooted into the north bank of Haines Canyon Creek, on October 12.



Photo 18. After the careful removal of the castor bean patch using shovels, to minimize soil deposition into the creek, on October 19.





Photo 19. Patches of castor bean on the north side of Haines Canyon Creek, on October 12.



Photo 20. After the removal of the castor bean patch using shovels to remove root structures to reduce the potential for regrowth, on October 21.





Photo 21. A field of shortpod mustard, white sweetclover, and poison hemlock east of the trail that follows the western edge of the eastern riparian area, on October 22.



Photo 22. After the field of invasive plants was cut using weed whippers to prevent further seed ripening and viability, October 25.

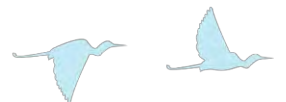




Photo 23. Patches of castor bean in the eastern riparian area, on October 26.



Photo 24. After the removal of castor bean using shovels to remove root the structures to reduce the potential for regrowth, on October 26.

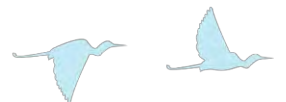




Photo 25. Patches of castor bean in the eastern riparian area, on October 26.



Photo 26. After the removal of castor bean using shovels to remove root the structures to reduce the potential for regrowth, on October 26.



December 3, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for November 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during November 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the November 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.

Implementation

Foreman Maklin Bado and restoration biologist Michael Walsh led the work progression and Michael conducted pre-activity sweeps for sensitive resources ahead of the work crew. In addition, Michael traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing. The meetings were conducted by Michael Walsh.

During November, exotic plant removal efforts were conducted in the eastern riparian area south of the Tujunga Ponds and in the western riparian area heading towards the south Wheatland Avenue entrance. Some of the primary, targeted non-native annual and perennial species included white sweetclover (*Melilotus albus*), shortpod mustard (*Hirschfeldia incana*), castor bean (*Ricinus communis*), tree tobacco (*Nicotiana glauca*), umbrella plant (*Cyperus involucreatus*), and eupatory (*Ageratina adenophora*). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, digging-bars) when removing weeds and concentrated on newly germinating, regenerating, and maturing exotic plant species in areas where resources supported their continued development. Annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual and/or perennial species (e.g., large mustards) required complete removal of the plant from the roots. Seedless plant material was left on the ground in the same area to decompose onsite.



Execution

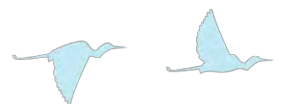
On November 2 through 6, removal efforts were resumed from the previous month, working east of the trail that follows the western edge of the eastern riparian area, south of the Tujunga Ponds. Target species in this area were primarily white sweetclover, shortpod mustard, tree tobacco, castor bean, and horehound (*Marrubium vulgare*). Horehound is a perennial, low shrub that grows an average of 2 feet in height. It utilizes a woody taproot with fibrous horizontal roots that aid in its stabilization in the soil. If horehound becomes established, can form dense stands creating a monoculture. Horehound seed can remain viable in the soil for up to 10 years supporting that its prompt removal in early stages is necessary. Both white sweetclover and shortpod mustard were in flowering and fruiting stages and weed-whipping them, along with horehound, was the most efficient course of removal as these developing weeds were in proximity and had immediate access to both Haines Canyon Creek and the Tujunga Ponds. Tree tobacco and castor bean were removed using machetes and shovels, as it is necessary for all of the root structure of these species to be removed to reduce the potential for regrowth. Due to high winds and rain that took place the weekend prior, the crew also removed fallen snags and tree debris from the trails (Photos 1 through 8).

From November 9 through 13, removal efforts were focused in the western riparian area along Haines Canyon Creek, starting on the west side of the Cottonwood Avenue bluff and working towards Wheatland Avenue. Target species in the area were primarily annuals and biennials, including shortpod mustard and white sweetclover with a few perennial species such as umbrella plant, eupatory, and southern catalpa (*Catalpa bignonioides*). New growth of invasive plants had been observed from the bluff and redirecting removal efforts to this location was necessary to prevent seed maturation and spread to downstream areas throughout the surrounding Big Tujunga Wash. The crew cleared patches of white sweet clover and shortpod mustard using weed whippers, as it was the most efficient course of removal. The southern catalpa was between 15 and 20 feet in height and was cut to the base with a chainsaw to reduce competition for sunlight and space, and to reduce stress upon the native trees. Umbrella plant is an aquatic, deep-rooted sedge with firm triangular stems that shoot upright from its woody rhizome forming thick colonies that can reach 6 feet in height. Umbrella plants were observed along the banks of Haines Canyon Creek and required a hedger and a digging bar to fully uproot the plants. Eupatory is a perennial herbaceous shrub that produces several erect stems from its woody rootstock and has seeds with a pappus (a tuft of hairs) that aids in wind dispersal. This species alters soil microbial and fungal communities and produces chemicals that can be detrimental to other plant species. Shovels were used to remove stands of eupatory plants from the root, minimizing the chance of regrowth (Photos 9 through 12).

Summary and Results

All exotic plant eradication activities were supervised by Maklin Bado and Michael Walsh, who monitored that regulations and requirements were closely followed. The crew averaged three members per day during exotic plant eradication efforts. The crews continued to practice social distancing and wore masks during the tailgate meetings, and during work or had a mask available in the event a pedestrian was passing through the work area.

The November exotic plant eradication efforts focused on areas where small stands of exotic species were discovered and on areas where large dense stands of flowering and/or maturing, exotic species persisted. In areas where large stands of mature, exotic species stood, crew members focused efforts on removing the rapidly developing species. The crew will continue to target germinating and developing stands of exotic species to reduce the potential for an accumulation of seed banks throughout these areas. In many of these areas exotic species were adventitiously growing among native species where abundant resources (e.g., water, light, space, shade) allowed them to develop late into the growing season and compete with native species. The removal of these adventitious weed species will continue to encourage the development of native plant species by reducing the competition for resources. Only mechanical removal methods were used during November efforts, including hand-pulling exotic species that were growing near native vegetation. Continuous and consistent weeding in this fashion will deplete the exotic plant seed bank over time and will help to prevent offsite influence, thus reducing the amount of competition posed by non-native species, and encouraging the development of native species needed to restore the habitat.



Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.

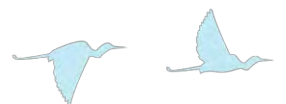
Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1. Patches of white sweetclover, shortpod mustard, and horehound (not visible) that were in flowering and fruiting stages east of the trail that follows the western edge of the eastern riparian area, south of the Tujunga Ponds, on November 2.



Photo 2. After the patches of white sweetclover, shortpod mustard, and horehound were cut using weed whippers to prevent seed ripening and viability, on November 2.

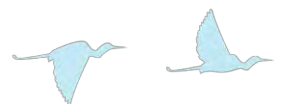




Photo 3. A patch of white sweetclover east of the trail that follows the western edge of the eastern riparian area, south of the Tujunga Ponds, on November 2.



Photo 4. After the patch of white sweetclover was cut using weed whippers to prevent further seed maturation, on November 3.

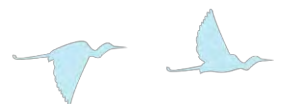




Photo 5. A small field of white sweetclover and shortpod mustard east of the trail that follows the western edge of the eastern riparian area, south of the Tujunga Ponds, on November 2.



Photo 6. After the small field of white sweetclover and shortpod mustard were cut using weed whippers to prevent further seed maturation, on November 6.





Photo 7. A southern catalpa tree that was between 15 and 20 feet in height, was observed in the western riparian area, on November 9.



Photo 8. After the southern catalpa tree was cut to the base with a chainsaw to reduce competition for sunlight and space, and to reduce stress upon the native trees, on November 9.





Photo 9. A patch of umbrella plants was observed along the Haines Canyon Creek bank in the western riparian area, on November 9.



Photo 10. After the patch of umbrella plants in the western riparian area was removed using a hedger and a digging bar to fully uproot the base, on November 11.





Photo 11. A patch of white sweetclover along Haines Canyon Creek in the western riparian area, on November 9.



Photo 12. After the patch of white sweetclover was cut using weed whippers to prevent further seed maturation, on November 13.



January 6, 2021

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for December 2020 Exotic Plant Eradication Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic plant eradication efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) during December 2020. 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. Chambers Group qualified biologists and restoration specialists participating in exotic plant removal efforts within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the December 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.

Implementation

Foreman Maklin Bado and restoration biologist Michael Walsh led the work progression and Michael conducted pre-activity sweeps for sensitive resources ahead of the work crew. In addition, Michael traveled with the work crew each day to monitor that no native plant or wildlife species were negatively impacted by work activities. 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. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing. The meetings were conducted by Michael Walsh.

During December, exotic plant removal efforts were conducted in the eastern riparian area, south of the Tujunga Ponds and in the western riparian area heading towards south Wheatland Avenue entrance. Some of the primary, targeted non-native annual and perennial species including white sweetclover (*Melilotus albus*), shortpod mustard (*Hirschfeldia incana*), castor bean (*Ricinus communis*), Himalayan blackberry (*Rubus armeniacus*), poison hemlock (*Conium maculatum*), and a gum tree (*Eucalyptus* sp.). The crew used only mechanical removal methods (e.g., hand-pulling, shovels, digging-bars) when removing weeds and concentrated on newly germinating, regenerating, and maturing exotic plant species in areas where resources supported their continued development. Annual weed species were either cut down or completely removed as a means to disrupt or end their growth cycle and reduce the likelihood of them producing seeds in the future. Eradication efforts for longer-lived annual and/or perennial species (e.g., large mustards) required complete removal of the plant from the roots. Seedless plant material was left on the ground in the same area to decompose onsite.

Execution

Between December 1 and December 10, removal efforts were focused in the area below Cottonwood Avenue bluff, south of Haines Canyon Creek. Target species in the area were primarily annuals and biennials, including shortpod mustard, white sweetclover, and poison hemlock with a few perennial species such as castor bean, Himalayan blackberry, and a gum tree. During the previous month's efforts, new growth of these invasive plants had been



observed from the Cottonwood Avenue bluff, and thus, required additional removal efforts. Redirecting removal efforts to this location was necessary to avoid seed maturation and spread along the adjacent trail that experiences high equestrian and hiker traffic. The crew cleared patches of white sweet clover using weed whippers, hand-pulled castor bean seedlings, and used shovels to fully uproot mature castor bean plants. Though not directly along the stream, this area holds sufficient surface water providing water-dependent, non-native plants such as poison hemlock, the resources to germinate and grow. Patches of poison hemlock and mature shortpod mustard were cleared using weed whippers giving native plants the opportunity to access scarce resources. As the crew worked their way north towards Haines Canyon Creek, they observed substantial regrowth of a previously trimmed Himalayan blackberry thicket and used hedgers to trim back the thicket once again. These thickets shade out native seedlings along streams that are essential for native insects and the cool-shaded water they provide for native fish species. A gum tree that was approximately 20 feet in height was encountered and was carefully removed using a chainsaw. In order to support the tree stump's decomposition process, 5-inch perpendicular cuts were safely cut into the stump leaving opportunity for pests, water mold, and infection to quicken its decay (Photos 1 to 10).

Summary and Results

All exotic plant eradication activities were supervised by Maklin Bado and Michael Walsh, who monitored that regulations and requirements were closely followed. The crew averaged three members per day during exotic plant eradication efforts. The crew continued to practice social distancing and wore masks during the tailgate meetings, and during work or had a mask available in the event a pedestrian was passing through the work area.

The December exotic plant eradication efforts focused on areas where small stands of exotic species were discovered and on areas where large dense stands of flowering and/or maturing, exotic species persisted. In areas where large stands of mature, exotic species stood, crew members focused efforts on removing the rapidly developing species. The crew will continue to target germinating and developing stands of exotic species to reduce the potential for an accumulation of seed banks throughout these areas. In many of these areas exotic species were adventitiously growing among native species where abundant resources (e.g., water, light, space, shade) allowed them to develop late into the growing season and compete with native species. The removal of these adventitious weed species will continue to encourage the development of native plant species by reducing the competition for resources. Only mechanical removal methods were used during December efforts, including hand-pulling exotic species that were growing near native vegetation. Continuous and consistent weeding in this fashion will deplete the exotic plant seed bank over time and will help to prevent offsite influence, thus reducing the amount of competition posed by non-native species, and encouraging the development of native species needed to restore the habitat.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular exotic plant eradication efforts. Chambers Group staff will continually assess the efficacy of eradication methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like further information.

Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1. Patches of white sweetclover regrowth located below Cottonwood Avenue bluff, south of Haines Canyon Creek, on December 1.



Photo 2. After the patches of white sweetclover were cut using weed whippers to prevent seed ripening and viability, on December 1.

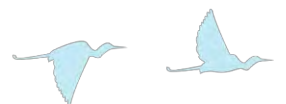




Photo 3. Patches of poison hemlock regrowth and mature shortpod mustard below Cottonwood Avenue bluff, south of Haines Canyon Creek, on December 1.



Photo 4. After the patches of shortpod mustard and poison hemlock were cut using weed whippers to prevent seed ripening and viability, on December 1.

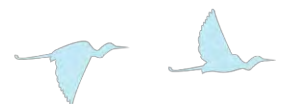




Photo 5. Patches of poison hemlock regrowth and mature shortpod mustard below Cottonwood Avenue bluff, south of Haines Canyon Creek, on December 1.



Photo 6. After the patches of shortpod mustard and poison hemlock were cut using weed whippers to prevent seed ripening and viability, on December 1

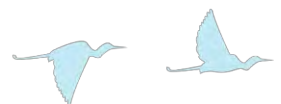




Photo 7. A Himalayan blackberry thicket that had regrown after being trimmed in the previous months, on December 7.



Photo 8. After the Himalayan blackberry thicket had been cut using a hedger, on December 7.





Photo 9. A gum tree nearly twenty feet in height was observed and carefully removed using a chainsaw, on December 10.



Photo 10. A crew member cutting 5-inch perpendicular cuts into the stump to support the decomposition process, on December 10.



APPENDIX F – EXOTIC WILDLIFE REMOVAL MEMOS



April 2, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the March 2020 Exotic Wildlife Removal Effort in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic wildlife removal efforts conducted during the month of March by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area), and 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 Hansen Dam Flood Control Basin in Los Angeles County, California. Chambers Group biologists participating in exotic wildlife removal efforts were approved prior to the initiation of eradication activities within the Mitigation Area. The purpose of the Exotic Wildlife Removal Program is to remove exotic, aquatic wildlife from Big Tujunga Wash (Wash), Haines Canyon Creek (Creek), Eastern Tujunga Pond and Western Tujunga Pond (Ponds), thereby reducing negative impacts on sensitive native species. Potential negative impacts to sensitive native species include but are not limited to, resource competition, predation, and the transmission of harmful pathogens and parasites. Details of the March exotic wildlife removal efforts are provided below.

Methods

The March exotic wildlife removal effort was conducted during three days on March 26, 27 and 30, 2020, by Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1), and supporting biologists Corey Jacobs and Phillip Carlos. The biologists began the effort on March 26 by investigating the Creek for exotic species and setting five traps in areas of the Creek where no Santa Ana sucker (*Catostomus santaanae*) were observed. The traps were baited and set in areas of the Creek with undercut banks and where downed trees were present. Several red swamp crayfish (*Procambarus clarkii*) adults were observed while placing the traps, but not in high numbers. On March 27, the traps were pulled and checked for exotic aquatic species. In addition, dip nets were used to remove any exotic fish species observed. Two small largemouth bass (*Micropterus salmoides*) were observed in the Creek near the South Wheatland Avenue entrance and their location was marked for removal at a later time. The primary species targeted within the Creek included red swamp crayfish and western mosquitofish (*Gambusia affinis*).

On March 30, the biologists began their efforts by investigating the East Tujunga Pond for exotic aquatic species and then used a spear gun to target larger exotic species in deeper areas of the Ponds. One biologist was in the water with a spear gun while the other two biologists assisted from a small boat and bow fished nearby. The primary species targeted within the East Tujunga Pond included, bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), largemouth bass, and common carp (*Cyprinus carpio*).

Any target species captured during the effort was immediately euthanized and detailed notes documenting each day's removal effort were recorded on data sheets. All traps, fish nets, and other field equipment were thoroughly washed both prior-to and after the day's effort.



Results

The exotic aquatic species captured and removed from the Creek during the March effort included 10 adult red swamp crayfish, and 12 young-of-the-year western mosquitofish. Only two of the five traps produced catches for a total of eight crayfish captured in traps. Two additional crayfish that were located outside of the traps were also removed. The exotic aquatic species captured and removed from the East Tujunga Pond during the March effort included one juvenile largemouth bass, and two adult common carp.

Discussion and Conclusions

During the investigation of the Creek it was observed that a pooled area in the Creek where dams had been constructed near the South Wheatland Avenue entrance in 2019 is no longer pooled and water is flowing freely. This area will be monitored for illegal activity during the wildlife removal efforts.

Chambers Group biologists will continue the ongoing effort to protect and enhance the Mitigation Area's native wildlife species by removing exotic aquatic species such as non-native fishes, frogs, turtles, and red swamp crayfish on a monthly basis. Chambers Group biologists will continually assess the efficacy of exotic wildlife removal methods and adjust these methods as needed to best support mitigation goals. The next exotic wildlife removal effort is planned for April, 2020.

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: Example of common carp captured while spearfishing on March 30, 2020.



Photo 2: Example of common carp captured while spearfishing on March 30, 2020.



May 8, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the April 2020 Exotic Wildlife Removal Effort in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic wildlife removal efforts conducted during the month of April by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area), and 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 Hansen Dam Flood Control Basin in Los Angeles County, California. Chambers Group biologists participating in exotic wildlife removal efforts were approved prior to the initiation of eradication activities within the Mitigation Area. The purpose of the Exotic Wildlife Removal Program is to remove exotic, aquatic wildlife from Big Tujunga Wash (Wash), Haines Canyon Creek (Creek), Eastern Tujunga Pond and Western Tujunga Pond (Ponds), thereby reducing negative impacts on sensitive native species. Potential negative impacts to sensitive native species include but are not limited to, resource competition, predation, and the transmission of harmful pathogens and parasites. Details of the April exotic wildlife removal efforts are provided below.

Methods

The April exotic wildlife removal effort was conducted during one day on April 29, 2020, by Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1), and supporting biologists Corey Jacobs, Alisa Muniz, Phillip Carlos, and Alexandra Scicluna. The biologists began the effort on April 29 by conducting four seine pulls in the West Tujunga Pond. The seines were deployed from a small boat with two biologists pulling the boat through the water and dense algae mats as the seine was being dished out the side of the boat by another biologist. The biologists then swam with the seine, pulling the ends together into a purse shape to trap fish. An additional biologist remained on the shore and helped to pull in the seines. During the seine pulls, large mats of algae were removed from the pond and any exotic species that had become entrapped in the algae were collected and counted. In addition to seine pulls, the biologists used spearfishing methods to target larger fish in deeper areas of the pond. During spearfishing, two biologists snorkeled in the ponds locating areas of exotic fish, while another biologist remained in the small boat for safety and communication. Once exotic fish were located, a speargun was rigged and fish were targeted and removed. The primary species targeted within the West Tujunga Pond included largemouth bass (*Micropterus salmoides*), common carp (*Cyprinus carpio*), western mosquitofish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), and red swamp crayfish (*Procambarus clarkii*).

Any target species captured during the effort was immediately euthanized and detailed notes documenting each day's removal effort were recorded on data sheets. All traps, fish nets, and other field equipment were thoroughly washed both prior-to and after the day's effort.



Results

The exotic aquatic species captured and removed from the West Tujunga Pond during the April effort included 123 largemouth bass (102 young-of-the-year [YOY], 3 juveniles, 18 adults), 48 common carp (37 YOY, 11 adults), 92 western mosquitofish (76 YOY, 16 adults), 2 adult green sunfish, and 447 red swamp crayfish (300 larval, 146 YOY, 1 adult).

Discussion and Conclusions

April spearfishing efforts were very successful with the capture and removal of 11 adult common carp and 11 adult largemouth bass.

Chambers Group biologists will continue the ongoing effort to protect and enhance the Mitigation Area's native wildlife species by removing exotic aquatic species such as non-native fishes, frogs, turtles, and red swamp crayfish on a monthly basis. Chambers Group biologists will continually assess the efficacy of exotic wildlife removal methods and adjust these methods as needed to best support mitigation goals. The next exotic wildlife removal effort is planned for May, 2020.

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

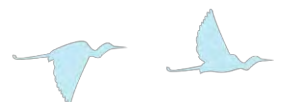
Sincerely,

CHAMBERS GROUP, INC.



Paul Morrissey

Principal | Director of Biology



SITE PHOTOS



Photo 1: Example of a biologist spearfishing in the West Tujunga Pond on April 29, 2020.



Photo 2: Example of a common carp captured while spearfishing on April 29, 2020.





Photo 3: Example of largemouth bass captured and removed from the West Tujunga Pond on April 29, 2020.



Photo 4: Example of green sunfish captured and removed from the West Tujunga Pond on April 29, 2020.





Photo 5: Example of mosquitofish captured and removed from the West Tujunga Pond on April 29, 2020.



June 1, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the May 2020 Exotic Wildlife Removal Effort in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic wildlife removal efforts conducted during the month of May by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area), and 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 Hansen Dam Flood Control Basin in Los Angeles County, California. Chambers Group biologists participating in exotic wildlife removal efforts were approved prior to the initiation of eradication activities within the Mitigation Area. The purpose of the Exotic Wildlife Removal Program is to remove exotic, aquatic wildlife from Big Tujunga Wash (Wash), Haines Canyon Creek (Creek), Eastern Tujunga Pond and Western Tujunga Pond (Ponds), thereby reducing negative impacts on sensitive native species. Potential negative impacts to sensitive native species include but are not limited to, resource competition, predation, and the transmission of harmful pathogens and parasites. Details of the May exotic wildlife removal efforts are provided below.

Methods

The May exotic wildlife removal effort was conducted during two days on May 28 and 29, 2020, by Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1), and supporting biologists Corey Jacobs, Austin Burke, Kendall Blackmon, Jennifer Kendrick, Mauricio Gomez, and Genelle Ives. Safety precautions and COVID-19 precautions including social distancing, gear sanitation, and hand washing were discussed prior to the start of removal activities. The biologists began the effort on May 28 by conducting three seine pulls in the West Tujunga Pond. The seines were deployed from a small boat with two biologists pulling the boat through the water and dense algae mats as the seine was being dished out the side of the boat by another biologist. The biologists then swam with the seine, pulling the ends together into a purse shape to trap fish. An additional biologist remained on the shore and helped to pull in the seines. During the seine pulls, large mats of algae were removed from the pond and any exotic species that had become entrapped in the algae were collected and counted. On May 29 the biologists conducted five seine pulls in the East Tujunga Pond. The same methods used in the West Tujunga Pond were implemented in the East Tujunga Pond. In addition to seine pulls, the biologists used spearfishing methods to target larger fish in deeper areas of the pond. During spearfishing, two biologists snorkeled in the ponds locating areas of exotic fish, while another biologist remained in the small boat for safety and communication. Once exotic fish were located, a speargun was rigged and fish were targeted and removed. The primary species targeted during the removal efforts included largemouth bass (*Micropterus salmoides*), common carp (*Cyprinus carpio*), western mosquitofish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), and red swamp crayfish (*Procambarus clarkii*).

Any target species captured during the effort was immediately euthanized and detailed notes documenting each day's removal effort were recorded on data sheets. All seines, fish nets, and other field equipment were thoroughly washed both prior-to and after the day's effort.



Results

The exotic aquatic species captured and removed from the West Tujunga Pond during the May effort included 14 largemouth bass (13 young-of-the-year [YOY], 1 adult), 120 western mosquitofish (99 YOY, 21 adults), and 607 larval red swamp crayfish. The exotic aquatic species captured and removed from the East Tujunga Pond during the May effort included 2,113 largemouth bass (2,103 YOY, 3 juveniles, 7 adults), 23 YOY common carp, 202 western mosquitofish (181 YOY, 21 adults), 3 adult green sunfish, and 1,022 red swamp crayfish (1,000 larval, 10 juveniles, 12 adults).

Discussion and Conclusions

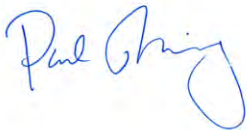
May spearfishing efforts were successful with the capture and removal of five adult largemouth bass and one green sunfish.

Chambers Group biologists will continue the ongoing effort to protect and enhance the Mitigation Area's native wildlife species by removing exotic aquatic species such as non-native fishes, frogs, turtles, and red swamp crayfish on a monthly basis. Chambers Group biologists will continually assess the efficacy of exotic wildlife removal methods and adjust these methods as needed to best support mitigation goals. The next exotic wildlife removal effort is planned for June, 2020.

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

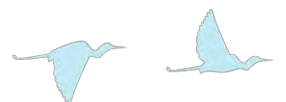
Sincerely,

CHAMBERS GROUP, INC.



Paul Morrissey

Principal | Director of Biology



SITE PHOTOS



Photo 1: Example of a biologist spearfishing in the West Tujunga Pond on May 28, 2020.



Photo 2: Example of adult and YOY bass captured with the seine on May 29, 2020.

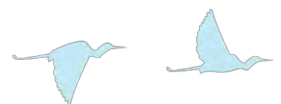




Photo 3: Example of largemouth bass captured and removed from the East Tujunga Pond on May 29, 2020.



Photo 4: Example of green sunfish and largemouth bass captured and removed from the West Tujunga Pond using a speargun on May 29, 2020.



June 23, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the June 2020 Exotic Wildlife Removal Effort in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic wildlife removal efforts conducted during the month of June by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area), and 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 Hansen Dam Flood Control Basin in Los Angeles County, California. Chambers Group biologists participating in exotic wildlife removal efforts were approved prior to the initiation of eradication activities within the Mitigation Area. The purpose of the Exotic Wildlife Removal Program is to remove exotic, aquatic wildlife from Big Tujunga Wash (Wash), Haines Canyon Creek (Creek), Eastern Tujunga Pond and Western Tujunga Pond (Ponds), thereby reducing negative impacts on sensitive native species. Potential negative impacts to sensitive native species include but are not limited to, resource competition, predation, and the transmission of harmful pathogens and parasites. Details of the June exotic wildlife removal efforts are provided below.

Methods

The June exotic wildlife removal effort was conducted during one day on June 11 by Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1), and supporting biologists Corey Jacobs, Austin Burke, Erik Olmos, Heather Franklin, and Alisa Muniz. Safety precautions and COVID-19 precautions including social distancing, gear sanitation, and hand washing were discussed prior to the start of removal activities. The biologists began the effort on June 11 by conducting three seine pulls in the West Tujunga Pond, outside of the avoidance area for the federally and state-endangered least Bell's vireo (*Vireo bellii pusillus*) nests that were discovered in May and June. The seines were deployed from a small boat with two biologists pulling the boat through the water and dense algae mats as the seine was being dished out the side of the boat by another biologist. The biologists then swam with the seine, pulling the ends together into a purse shape to trap fish. An additional biologist remained on the shore and helped to pull in the seines. During the seine pulls, large mats of algae were removed from the pond and any exotic species that had become entrapped in the algae were collected and counted. In addition to seine pulls, the biologists used spearfishing methods to target larger fish in deeper areas of the pond. During spearfishing, two biologists snorkeled in the ponds locating areas of exotic fish, while another biologist remained in the small boat for safety and communication. Once exotic fish were located, a speargun was rigged and fish were targeted and removed. The primary species targeted during the removal efforts included largemouth bass (*Micropterus salmoides*), common carp (*Cyprinus carpio*), western mosquitofish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), and red swamp crayfish (*Procambarus clarkii*).

Any target species captured during the effort was immediately euthanized and detailed notes documenting each day's removal effort were recorded on data sheets. All seines, fish nets, and other field equipment were thoroughly washed both prior-to and after the day's effort.



Results

The exotic aquatic species captured and removed from the West Tujunga Pond during the June effort included 896 largemouth bass (893 young-of-the-year [YOY], 3 adults), 90 western mosquitofish (85 YOY, 5 adults), 710 red swamp crayfish (704 larval, 6 juveniles), and 3 YOY common carp.

Discussion and Conclusions

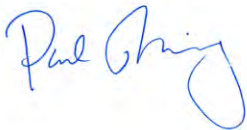
Most of the fish captured by seining were young fish species. The seine is 5 feet tall and the ponds are over 10 feet deep; therefore, many larger fish can avoid the seine by swimming under the net. Spearfishing was conducted to target the large adult fish. June spearfishing efforts were successful with the capture and removal of two adult largemouth bass. Removal efforts were conducted in a small area of the western pond that was located outside of the least Bell's vireo avoidance buffer.

Chambers Group biologists will continue the ongoing effort to protect and enhance the Mitigation Area's native wildlife species by removing exotic aquatic species such as non-native fishes, frogs, turtles, and red swamp crayfish on a monthly basis. Chambers Group biologists will continually assess the efficacy of exotic wildlife removal methods and adjust these methods as needed to best support mitigation goals. The next exotic wildlife removal effort is planned for July, 2020.

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

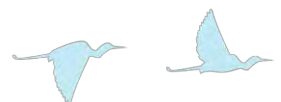
Sincerely,

CHAMBERS GROUP, INC.



Paul Morrissey

Principal | Director of Biology



SITE PHOTOS



Photo 1: Example of a biologist spearfishing in the West Tujunga Pond on June 11, 2020.



Photo 2: Example of YOY bass captured with the seine (entangled in the algae) on June 11, 2020.





Photo 3: Example of largemouth bass captured and removed from the West Tujunga Pond on June 11, 2020.



July 30, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the July 2020 Exotic Wildlife Removal Effort in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic wildlife removal efforts conducted during the month of July by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area), and 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 Hansen Dam Flood Control Basin in Los Angeles County, California. Chambers Group biologists participating in exotic wildlife removal efforts were approved prior to the initiation of eradication activities within the Mitigation Area. The purpose of the Exotic Wildlife Removal Program is to remove exotic, aquatic wildlife from Big Tujunga Wash (Wash), Haines Canyon Creek (Creek), Eastern Tujunga Pond and Western Tujunga Pond (Ponds), thereby reducing negative impacts on sensitive native species. Potential negative impacts to sensitive native species include but are not limited to, resource competition, predation, and the transmission of harmful pathogens and parasites. Details of the July exotic wildlife removal efforts are provided below.

Methods

The July exotic wildlife removal effort was conducted during two days on July 9 and July 30 by Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1), and supporting biologists Corey Jacobs, Austin Burke, Erik Olmos, Heather Franklin, and Alisa Muniz. Safety precautions and COVID-19 precautions including social distancing, gear sanitation, and hand washing were discussed prior to the start of removal activities. The biologists began the effort on July 9 by walking the Creek from the south Wheatland Avenue entrance to the Cottonwood Avenue entrance while using dip nets and beach seines to remove exotic wildlife. All wildlife removal efforts in the Creek occurred outside of the avoidance area for the federally and state listed Endangered least Bell's vireo (*Vireo bellii pusillus*) nests that were discovered in May and June. The primary species targeted within the Creek during July included largemouth bass (*Micropterus salmoides*), red swamp crayfish (*Procambarus clarkii*), and western mosquitofish (*Gambusia affinis*). Areas where Santa Ana sucker (*Catostomus santaanae*), Santa Ana speckled dace (*Rhinichthys osculus* ssp.) and arroyo chub (*Gila orcuttii*) were located were avoided during all efforts in the Creek so as not to cause disturbance to the species. The same methods used during the July 9 removal efforts were used during the July 30 efforts. Any target species captured during the efforts were immediately euthanized and detailed notes documenting each day's removal effort were recorded on data sheets. All fish nets and other field equipment were thoroughly washed both prior-to and after the day's effort.

Results

The exotic aquatic species captured and removed from the Creek during the July efforts included 39 largemouth bass (3 young-of-the-year [YOY], 34 Juveniles, 2 adults), 94 western mosquitofish (40 YOY, 34 Juveniles, 20 adults), and 1,014 red swamp crayfish (83 larval, 597 juveniles, 334 adult).



Discussion and Conclusions

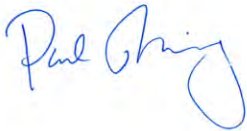
Most of the fish captured with the seine were young. A large number of exotic largemouth bass are being observed and caught downstream of the ponds. This is due to the damaged exclusionary fence that needs repairs to prevent further migration of exotic fish downstream. A total of three illegal dams were also encountered in the Creek during the removal efforts and were deconstructed by the biologists. It appeared that a new day-use area was being built approximately 600 feet downstream (west) of the south Wheatland Avenue entrance. Sand has been brought in to the area and vegetation has been removed. No individuals associated with the construction of this area were present at the time of the effort. Another new day-use area was also observed approximately 75 feet to the east of the south Wheatland Avenue entrance near the trail. Both of these areas have been reported to the County to help secure resources for their removal.

Chambers Group biologists will continue the ongoing effort to protect and enhance the Mitigation Area's native wildlife species by removing exotic aquatic species such as non-native fishes, frogs, turtles, and red swamp crayfish on a monthly basis. Chambers Group biologists will continually assess the efficacy of exotic wildlife removal methods and adjust these methods as needed to best support mitigation goals. The next exotic wildlife removal effort is planned for August 2020.

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: Example of a red swamp crayfish that was captured and removed from Haines Canyon Creek on July 9, 2020.

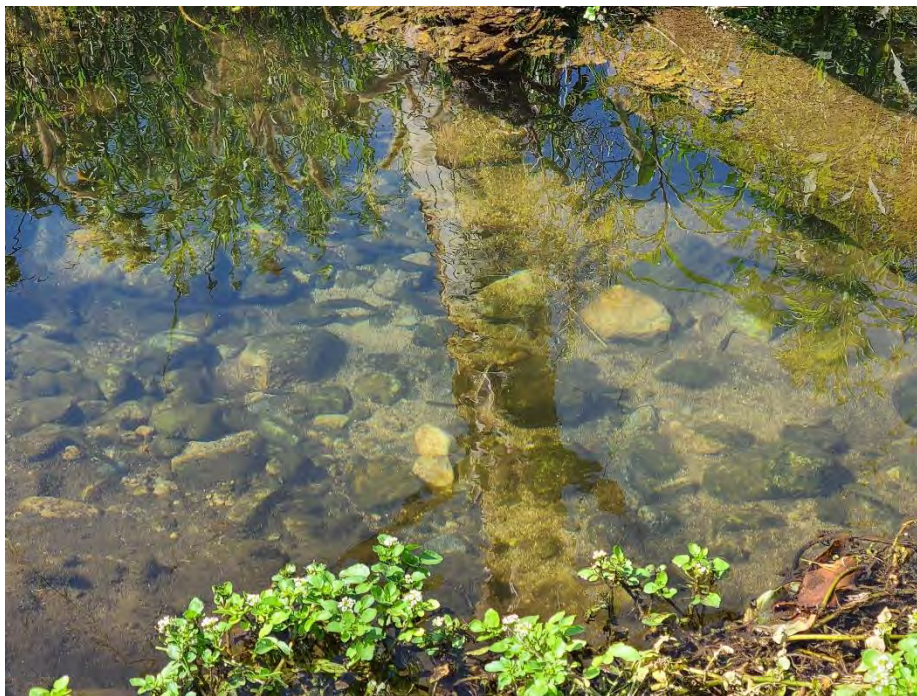


Photo 2: Example of Santa Ana sucker observed in Haines Canyon Creek on July 9, 2020.

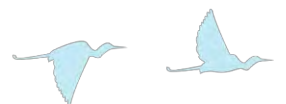




Photo 3: Example of the new day-use area encountered approximately 600 feet downstream from the south Wheatland Avenue entrance, on July 9, 2020.



Photo 4: Example of largemouth bass captured and removed from Haines Canyon Creek on July 30, 2020.

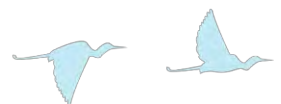




Photo 5: Example of the biologists using a seine to capture and remove largemouth bass from Haines Canyon Creek on July 30, 2020.



August 13, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the August 2020 Exotic Wildlife Removal Effort in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic wildlife removal efforts conducted during the month of August by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area), and 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 Hansen Dam Flood Control Basin in Los Angeles County, California. Chambers Group biologists participating in exotic wildlife removal efforts were approved prior to the initiation of eradication activities within the Mitigation Area. The purpose of the Exotic Wildlife Removal Program is to remove exotic, aquatic wildlife from Big Tujunga Wash (Wash), Haines Canyon Creek (Creek), Eastern Tujunga Pond and Western Tujunga Pond (Ponds), thereby reducing negative impacts on sensitive native species. Potential negative impacts to sensitive native species include but are not limited to, resource competition, predation, and the transmission of harmful pathogens and parasites. Details of the August exotic wildlife removal efforts are provided below.

Methods

The August exotic wildlife removal effort was conducted during one day on August 13 by Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1), and supporting biologists Corey Jacobs, Austin Burke, Heather Madera, and Alisa Muniz. Safety precautions and COVID-19 precautions including social distancing, gear sanitation, and hand washing were discussed prior to the start of removal activities. The biologists began the effort on August 13 by conducting a least Bell's vireo survey in the area to ensure that all work efforts were conducted outside of the least Bell's vireo avoidance buffer. Once confirmed, three seine pulls were conducted in the East Tujunga Pond. The seines were deployed from a small boat with two biologists pulling the boat through the water and dense algae mats as the seine was being dished out the side of the boat by another biologist. The biologists then swam with the seine, pulling the ends together into a purse shape to trap fish. An additional biologist remained on the shore and helped to pull in the seines. During the seine pulls, large mats of algae were removed from the pond and any exotic species that had become entrapped in the algae were collected and counted. In addition to seine pulls, the biologists used spearfishing methods to target larger fish in deeper areas of the pond. During spearfishing, two biologists snorkeled in the ponds locating areas of exotic fish, while another biologist remained in the small boat for safety and communication. Once exotic fish were located, a speargun was rigged and fish were targeted and removed. The primary species targeted during the removal efforts included largemouth bass (*Micropterus salmoides*), western mosquitofish (*Gambusia affinis*), bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), and red swamp crayfish (*Procambarus clarkii*).

Any target species captured during the effort was immediately euthanized and detailed notes documenting each day's removal effort were recorded on data sheets. All seines, fish nets, and other field equipment were thoroughly washed both prior-to and after the day's effort.



Results

The exotic aquatic species captured and removed from the East Tujunga Pond during the August effort included 98 largemouth bass (94 young-of-the-year [YOY], 4 adults), 439 western mosquitofish (14 YOY, 425 juveniles), 2,013 red swamp crayfish (1,980 larval, 26 juveniles, 7 adults), 2 adult bluegill, and 1 adult green sunfish.

Discussion and Conclusions

Most of the fish captured by seining were young fish species. The seine is 5 feet tall and the ponds are over 10 feet deep; therefore, many larger fish can avoid the seine by swimming under the net. Spearfishing was conducted to target the large adult fish. August spearfishing efforts were successful with the capture and removal of three adult largemouth bass. All removal efforts were conducted in the East Tujunga Pond.

Chambers Group biologists will continue the ongoing effort to protect and enhance the Mitigation Area's native wildlife species by removing exotic aquatic species such as non-native fishes, frogs, turtles, and red swamp crayfish on a monthly basis. Chambers Group biologists will continually assess the efficacy of exotic wildlife removal methods and adjust these methods as needed to best support mitigation goals. The next exotic wildlife removal effort is planned for September, 2020.

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

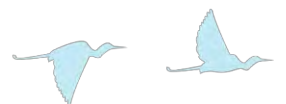
Sincerely,

CHAMBERS GROUP, INC.



Paul Morrissey

Principal | Director of Biology



SITE PHOTOS



Photo 1: Example of young-of-the-year largemouth bass captured in the East Tujunga Pond on August 13, 2020.



Photo 2: Example of Biologists pulling in the seines at the East Tujunga Pond on August 13, 2020.



Photo 3: Example of three largemouth bass removed with the speargun on August 13, 2020.





Photo 4: Example of largemouth bass and green sunfish captured in the seine on August 13, 2020.





October 5, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the September 2020 Exotic Wildlife Removal Effort in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic wildlife removal efforts conducted during the month of September by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area), and 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 Hansen Dam Flood Control Basin in Los Angeles County, California. Chambers Group biologists participating in exotic wildlife removal efforts were approved prior to the initiation of eradication activities within the Mitigation Area. The purpose of the Exotic Wildlife Removal Program is to remove exotic, aquatic wildlife from Big Tujunga Wash (Wash), Haines Canyon Creek (Creek), Eastern Tujunga Pond and Western Tujunga Pond (Ponds), thereby reducing negative impacts on sensitive native species. Potential negative impacts to sensitive native species include but are not limited to, resource competition, predation, and the transmission of harmful pathogens and parasites. Details of the September exotic wildlife removal efforts are provided below.

Methods

The September exotic wildlife removal effort was conducted during three days on September 4, 29 and 30 by Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1), and supporting biologists Corey Jacobs, Austin Burke, Heather Madera, Alisa Muniz, and Jessica Calvillo. Safety precautions and COVID-19 precautions including social distancing, gear sanitation, and hand washing were discussed prior to the start of removal activities. The biologists began the effort on September 4th by conducting a least Bell's vireo survey in the area to ensure that no least Bell's vireos were within 500 feet of the proposed work area prior to beginning work. Once confirmed, the biologists worked to remove the old, damaged exclusionary net and replace it with a new one. Exotic species observed in the vicinity of the exclusionary net during the replacement effort were captured and removed by hand. On September 14, the least Bell's vireo buffer restrictions were lifted by CDFW based on negative results for vireos in the area. On September 29, the biologists walked the Creek from the south Wheatland Avenue entrance to the Cottonwood Avenue entrance and used dip nets and beach seines to remove exotic wildlife. The primary species targeted within the Creek during September included largemouth bass (*Micropterus salmoides*), western mosquitofish (*Gambusia affinis*), red swamp crayfish (*Procambarus clarkii*), and bluegill (*Lepomis macrochirus*). Areas where Santa Ana sucker (*Catostomus santaanae*), arroyo chub (*Gila orcuttii*), and Santa Ana speckled dace (*Rhinichthys osculus* ssp.) were located were avoided during all efforts in the Creek so as not to cause disturbance to the species. During the September 29 efforts, the biologists also conducted a general, visual survey of native fish, recording the size class and number of fish observed. In areas where dense numbers of native fish were found, the biologists surveyed from the banks to prevent potential harm to the fish in the Creek.

On September 30, the biologists conducted three seine pulls in the Eastern Tujunga Pond. The seines were deployed from a small boat with two biologists pulling the boat through the water and dense algae mats as the seine was being



dished out the side of the boat by another biologist. The biologists then swam with the seine, pulling the ends together into a purse shape to trap fish. An additional biologist remained on the shore and helped to pull in the seines. During the seine pulls, large mats of algae were removed from the pond and any exotic species that had become entrapped in the algae were collected and counted. In addition to seine pulls, the biologists used spearfishing methods to target larger fish in deeper areas of the pond. During spearfishing, two biologists snorkeled in the pond locating areas of exotic fish, while another biologist remained in the small boat for safety and communication. Once exotic fish were located, a speargun was rigged and fish were targeted and removed. The primary species targeted during the removal efforts included largemouth bass, western mosquitofish, bluegill, green sunfish (*Lepomis cyanellus*), grass carp (*Ctenopharyngodon idella*) and red swamp crayfish.

Any target species captured during the effort was immediately euthanized and detailed notes documenting each day's removal effort were recorded on data sheets. All seines, fish nets, and other field equipment were thoroughly washed both prior-to and after the day's effort.

Results

The exotic aquatic species captured and removed from the Creek during the September efforts included 2 young-of-the-year (YOY) largemouth bass, 7 western mosquitofish (6 YOY, 1 adult), and 198 red swamp crayfish (12 juveniles, 186 adults). Twenty-seven of the adult red swamp crayfish were captured and removed during the exclusionary net replacement effort.

During the general, visual survey of native fish in the Creek approximately 45 adult Santa Ana sucker, 100 juvenile sucker, and 92 YOY sucker were observed; approximately 35 adult Santa Ana speckled dace, 170 juvenile dace, and 55 YOY dace were observed; and approximately 65 adult arroyo chub, 105 juvenile chub, and 65 YOY chub were observed.

The exotic aquatic species captured and removed from the East Tujunga Pond during the September effort included 5 largemouth bass (1 juvenile, 4 adults), 1,009 western mosquitofish (960 YOY, 16 juveniles, 33 adults), 771 red swamp crayfish (743 larval, 28 adults), 4 adult bluegill, 10 adult green sunfish, and 14 larval American bullfrog (*Lithobates catesbeianus*).

Discussion and Conclusions

Most of the fish captured by seining were young fish species. The seine is 5 feet tall and the ponds are over 10 feet deep; therefore, many larger fish can avoid the seine by swimming under the net. Spearfishing was conducted to target the large adult fish. September spearfishing efforts were successful with the capture and removal of two adult largemouth bass.

The number of native fish counted during the general, visual survey do not represent the total number of fish present in the western reach of stream, as many may have been in shelter hiding and a thorough inspection of the stream with the use of aqua-scopes and/or snorkels was not employed. However, these numbers represent a healthy population of native fish species within Haines Canyon Creek.

Biologists found a deceased barn owl hanging in a Cottonwood tree during removal efforts at the East Tujunga Pond. The barn owl had fishing line wrapped around both legs, and likely died of starvation/dehydration. One biologist used the boat to stand and cut down the barn owl and place into a trash bag while the other biologist was in the water holding the boat steady. After removing the owl from the tree, the biologists removed additional fishing line hanging from the tree to prevent any additional wildlife from becoming entrapped. This shows how illegal fishing can negatively impact more than just the intended target.

Chambers Group biologists will continue the ongoing effort to protect and enhance the Mitigation Area's native wildlife species by removing exotic aquatic species such as non-native fishes, frogs, turtles, and red swamp crayfish on a monthly basis. Chambers Group biologists will continually assess the efficacy of exotic wildlife removal methods and




adjust these methods as needed to best support mitigation goals. The next exotic wildlife removal effort is planned for October 2020.

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

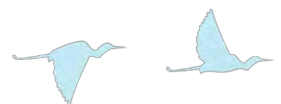
Sincerely,

CHAMBERS GROUP, INC.



Paul Morrissey

Principal | Director of Biology



SITE PHOTOS



Photo 1: Example of biologists installing a new exclusionary net on September 4, 2020.



Photo 2: Example of a biologist using a dip net to catch and remove red swamp crayfish from Haines Canyon Creek on September 29, 2020.





Photo 3: Biologists working to remove a dead barn owl that had become entrapped in fishing line on September 30, 2020.



Photo 4: The barn owl with fishing line and frog lure wrapped around its leg on September 30, 2020.

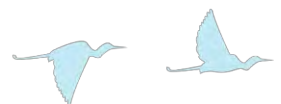
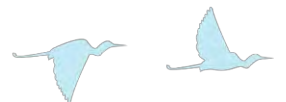




Photo 5: Example of largemouth bass, green sunfish, and bluegill captured and removed from the East Tujung Pond on September 30, 2020.



Photo 6: Example of a largemouth bass captured during spearfishing efforts in the East Tujung Pond on September 30, 2020.



October 26, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the October 2020 Exotic Wildlife Removal Effort in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic wildlife removal efforts conducted during the month of October by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area), and 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 Hansen Dam Flood Control Basin in Los Angeles County, California. Chambers Group biologists participating in exotic wildlife removal efforts were approved prior to the initiation of eradication activities within the Mitigation Area. The purpose of the Exotic Wildlife Removal Program is to remove exotic, aquatic wildlife from Big Tujunga Wash (Wash), Haines Canyon Creek (Creek), Eastern Tujunga Pond and Western Tujunga Pond (Ponds), thereby reducing negative impacts on sensitive native species. Potential negative impacts to sensitive native species include but are not limited to, resource competition, predation, and the transmission of harmful pathogens and parasites. Details of the October exotic wildlife removal efforts are provided below.

Methods

The October exotic wildlife removal effort was conducted during two days on October 7 and 14 by Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1), and supporting biologists Corey Jacobs, Austin Burke, Valerie Alcantar, Alisa Muniz, and Jessica Calvillo. Safety precautions and COVID-19 precautions including social distancing, gear sanitation, and hand washing were discussed prior to the start of removal activities. The biologists began the effort on October 7 by walking the Creek from the Cottonwood Avenue entrance to the West Tujunga Pond outlet while using dip nets and beach seines to remove exotic wildlife. The primary species targeted within the Creek during October included largemouth bass (*Micropterus salmoides*), mosquito fish (*Gambusia affinis*), red swamp crayfish (*Procambarus clarkii*), and bluegill (*Lepomis macrochirus*). Areas where Santa Ana sucker (*Catostomus santaanae*) and arroyo chub (*Gila orcuttii*) were located were avoided during all efforts in the Creek so as not to cause disturbance to the species. On October 14, biologists conducting three seine pulls in the Eastern Tujunga Pond. The seines were deployed from a small boat with two biologists pulling the boat through the water and dense algae mats as the seine was being dished out the side of the boat by another biologist. The biologists then swam with the seine, pulling the ends together into a purse shape to trap fish. An additional biologist remained on the shore and helped to pull in the seines. During the seine pulls, large mats of algae were removed from the pond and any exotic species that had become entrapped in the algae were collected and counted. In addition to seine pulls, the biologists used spearfishing methods to target larger fish in deeper areas of the pond. During spearfishing, two biologists snorkeled in the ponds locating areas of exotic fish, while another biologist remained in the small boat for safety and communication. Once exotic fish were located, a speargun was rigged and fish were targeted and removed. The primary species targeted during the removal efforts in the Ponds included largemouth bass, western mosquitofish, bluegill, green sunfish (*Lepomis cyanellus*), grass carp (*Ctenopharyngodon idella*), and red swamp crayfish.



Any target species captured during the effort was immediately euthanized and detailed notes documenting each day's removal effort were recorded on data sheets. All seines, fish nets, and other field equipment were thoroughly washed both prior-to and after the day's effort.

Results

The exotic aquatic species captured and removed from Haines Canyon Creek during the October effort included 28 young-of-the-year (YOY) largemouth bass, 237 western mosquitofish (130 YOY, 107 adults), and 153 red swamp crayfish (50 larval, 103 adults). The exotic aquatic species captured and removed from the East Tujunga Pond during the October effort included 4 largemouth bass (2 YOY, 2 adults), 383 juvenile western mosquitofish, and 1,190 red swamp crayfish (1,105 larval, 72 juveniles, 13 adults).

Discussion and Conclusions

Most of the fish captured by seining were young fish species. The seine is 5 feet tall and the ponds are over 10 feet deep; therefore, many larger fish can avoid the seine by swimming under the net. Spearfishing was conducted to target the large adult fish. September spearfishing efforts were successful with the capture and removal of two adult largemouth bass.

During exotic removal efforts in the Creek, the biologist encountered a rock dam approximately 10 feet downstream of the exclusionary fence located at the outlet of the West Tujunga Pond. The rock dam was carefully deconstructed by the biologists.

Chambers Group biologists will continue the ongoing effort to protect and enhance the Mitigation Area's native wildlife species by removing exotic aquatic species such as non-native fishes, frogs, turtles, and red swamp crayfish on a monthly basis. Chambers Group biologists will continually assess the efficacy of exotic wildlife removal methods and adjust these methods as needed to best support mitigation goals. The next exotic wildlife removal effort is planned for November 2020.

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: Example of red swamp crayfish captured with dip nets and removed from the Creek on October 7, 2020.



Photo 2: Example of YOY largemouth bass captured and removed from the Creek using a seine on October 7, 2020.

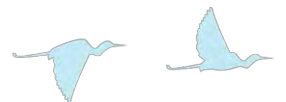




Photo 3: A rock dam was encountered in the Creek approximately 10 feet downstream of the exclusionary net. The biologists removed the dam on October 7, 2020.



Photo 4: Example of biologists spearfishing for largemouth bass in the East Tujunga Pond on October 14, 2020.





Photo 5: Example of biologists using a seine to capture and remove exotic fish from the East Tujunga Pond on October 14, 2020.



Photo 6: Example of two adult largemouth bass captured and removed from the East Tujunga Pond using the spearfishing method on October 14, 2020.



January 4, 2021

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the December 2020 Exotic Wildlife Removal Effort in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes the exotic wildlife removal efforts conducted during the month of December by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area), and 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 Hansen Dam Flood Control Basin in Los Angeles County, California. Chambers Group biologists participating in exotic wildlife removal efforts were approved prior to the initiation of eradication activities within the Mitigation Area. The purpose of the Exotic Wildlife Removal Program is to remove exotic, aquatic wildlife from Big Tujunga Wash (Wash), Haines Canyon Creek (Creek), Eastern Tujunga Pond and Western Tujunga Pond (Ponds), thereby reducing negative impacts on sensitive native species. Potential negative impacts to sensitive native species include but are not limited to, resource competition, predation, and the transmission of harmful pathogens and parasites. Details of the December exotic wildlife removal efforts are provided below.

Methods

The December exotic wildlife removal effort was conducted during three days on December 7, 8, and 31 by Chambers Group wildlife biologist Paul Morrissey (Santa Ana sucker specialist; USFWS permit 182550-1), and supporting biologists Corey Jacobs, Austin Burke, Alisa Muniz, Jessica Calvillo, Mauricio Gomez, and Heather Madera. Safety precautions and COVID-19 precautions including social distancing, gear sanitation, and hand washing were discussed prior to the start of removal activities.

The biologists began the effort on December 7 by walking the Creek from the Cottonwood Avenue entrance to the West Tujunga Pond outlet while using dip nets and beach seines to remove exotic wildlife. Areas where Santa Ana sucker (*Catostomus santaanae*), Santa Ana speckled dace (*Rhinichthys osculus* ssp.) and arroyo chub (*Gila orcuttii*) were located were avoided during all efforts in the Creek so as not to cause disturbance to the species. The biologists then moved to the Eastern Tujunga Pond where efforts to remove exotic species were conducted using seining and speargun methods. The seines were deployed from a small boat with two biologists pulling the boat through the water. The biologists then swam with the seine, pulling the ends together into a purse shape to trap fish. An additional biologist remained on the shore and helped to pull in the seines. In addition to seine pulls, the biologists used spearfishing methods to target larger fish in deeper areas of the pond where the seine was not effective. The primary species targeted within the Creek during December included largemouth bass (*Micropterus salmoides*), mosquito fish (*Gambusia affinis*), red swamp crayfish (*Procambarus clarkii*), and bluegill (*Lepomis macrochirus*). The primary species targeted within the Ponds during December included largemouth bass, mosquitofish, red swamp crayfish, common carp (*Cyprinus carpio*), bluegill, and green sunfish (*Lepomis cyanellus*). On December 8 biologists used spearfishing methods to target larger fish in deeper areas of the Western Tujunga Pond. During spearfishing, two biologists snorkeled in the ponds locating areas of exotic fish, while another biologist remained in the small boat for safety and communication. Once exotic fish were located, a speargun was rigged and fish were targeted and removed. On



December 31 the biologists used spearfishing and bowfishing methods to target larger fish in deeper areas of the Ponds. Bowfishing was conducted from the boat. During spearfishing, three biologists snorkeled the Western Tujunga Pond while one biologist was in the boat to help with safety, communication, and locating fish. The Western Tujunga Pond was murky from a storm that passed through a few days prior. Due to visibility issues from the murky waters, the biologists moved their efforts to the East Tujunga Pond. Three biologists snorkeled the East Tujunga Pond and found it to be less murky so spearfishing was continued at the East Tujunga Pond for the remainder of the effort.

Any target species captured during the effort was immediately euthanized and detailed notes documenting each day's removal effort were recorded on data sheets. All seines, fish nets, and other field equipment were thoroughly washed both prior-to and after the day's effort.

Results

The exotic aquatic species captured and removed from East Tujunga Pond during the December effort included 3 adult largemouth bass, 2 adult western mosquitofish, 3 adult common carp, and 52 red swamp crayfish (50 larval, 2 adults). The exotic aquatic species captured and removed from the Western Tujunga Pond during the December effort included 11 adult largemouth bass.

Discussion and Conclusions

Most of the fish captured by seining were young fish species. The seine is 5 feet tall and the ponds are over 10 feet deep; therefore, many larger fish can avoid the seine by swimming under the net. Spearfishing was conducted to target the large adult fish. December spearfishing efforts were successful with the capture and removal of 12 adult largemouth bass and 3 common carp; however, murky water in the Ponds on December 31 made it difficult for the biologists to locate exotic fish, and thus, the spearfishing and bow fishing efforts were less successful than the efforts that had been conducted earlier in the month.

No exotic aquatic species were observed on December 7 while walking the Creek from the Cottonwood Avenue entrance to the Western Tujunga Pond outlet.

Chambers Group biologists will continue the ongoing effort to protect and enhance the Mitigation Area's native wildlife species by removing exotic aquatic species such as non-native fishes, frogs, turtles, and red swamp crayfish on a monthly basis. Chambers Group biologists will continually assess the efficacy of exotic wildlife removal methods and adjust these methods as needed to best support mitigation goals. The next exotic wildlife removal effort is planned for early spring 2020.

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: Example of biologists using the seine to capture and remove exotic fish in the East Tujunga Pond on December 7, 2020.



Photo 2: Example of common carp captured and removed from the East Tujunga Pond using a speargun on December 7, 2020.

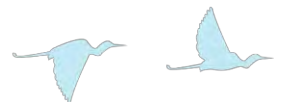




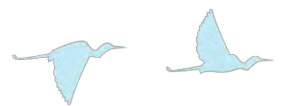
Photo 3: Example of largemouth bass captured and removed from the West Tujunga Pond using a speargun on December 8, 2020.



Photo 4: Example of largemouth bass captured and removed from the West Tujunga Pond using a speargun on December 8, 2020.



Photo 5: Example of a largemouth bass captured and removed from the East Tujunga Pond using a speargun on December 31, 2020.



APPENDIX G – WATER QUALITY MONITORING REPORT



**2020 WATER QUALITY MONITORING
REPORT FOR THE BIG TUJUNGA WASH
MITIGATION AREA**

Prepared for:

LOS ANGELES COUNTY 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

January 2021

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APPENDIX A - 2020 Big Tujunga Wash Mitigation Area Water Quality Monitoring Program Laboratory Results

Distribution

Water quality monitoring reports are distributed to the following agencies:

Los Angeles County Public Works
Ms. Julianna Colwell
900 South Fremont Avenue
Alhambra, California 91803-1331

California Department of Fish and Wildlife
Mr. David T. Lin Ph.D.
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, water quality sampling of the Big Tujunga Ponds and Haines Canyon Creek was conducted on November 2, 2020. Additional water samples were collected on November 13, 2020, to test for organochlorine pesticides. The water quality sampling results are summarized below:

- Observed temperatures were well below levels of concern for growth and survival of warmwater fish species at all stations with the exception of the inlet to the Tujunga Ponds which was recorded at 19.3 degrees Celsius (°C), slightly higher than the weekly average maximum temperature for the growth of brook trout and rainbow trout (example species in Table 12). However, only a single temperature reading was taken in the fall and the weekly summer average temperature is unknown.
- Dissolved oxygen (DO) levels at one of the sample stations was below the minimum recommended level (5.0 mg/L) for Basin Plan objectives and EPA’s criteria for warmwater fish species.
- Potential hydrogen (pH) readings at all three sample stations were below the recommended range of 6.5 to 8.5 identified in the Basin Plan objectives, and were within the recommended range of 5.0 to 9.0 for EPA’s criteria for human health.
- Nitrate-Nitrogen was below the drinking water maximum standard of 10 mg/L for both Basin Plan standards and EPA criteria for human health at all sample stations. Nitrite-Nitrogen and Ammonia-Nitrogen were not detected at any of the sample stations.
- Nutrient levels as measured by total Phosphorus-P concentration were within or below the lower end of the EPA’s recommended maximum range of 0.05 to 0.10 mg/L for the desired goal of preventing plant nuisances in streams.
- No pesticides or residual chlorine were detected at any of the sample stations.
- Turbidity levels were below the EPA’s secondary drinking water standard of 5 NTU. The turbidity at the inlet of the Tujunga Ponds was slightly above the EPA’s drinking water maximum standard of 1.0 NTU for systems that use conventional or direct filtration; however, waters within the Mitigation Area are not filtered systems intended for human consumption.
- Fecal coliform levels detected were below the standard geometric mean of 126 MPN/100 ml at all sample stations. However, the standards are for *E. coli* and the water quality results are for fecal coliform and total coliform.

SECTION 2.0 – BACKGROUND

Los Angeles County Public Works (Public Works) 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, Public Works 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 and pesticide sampling was conducted in early December. In 2012, monitoring was conducted in February and November. From 2013 to present, monitoring has been conducted annually in the fall. This report presents the results of the water quality sampling for November 2020.

The Big Tujunga Wash Mitigation Area (Mitigation Area) 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 Mitigation Area in an east-to-west direction. The East Tujunga Pond and West Tujunga Pond are located outside of the Mitigation Area, at the far northeastern portion 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
2000, April	Baseline water quality sampling
2000, November to 2001, November	Arundo, tamarisk, and pepper tree removal Chemical (Rodeo®) application
2000, December to 2000, November	Water hyacinth removal
2000, December	Fish Sampling at Haines Canyon Creek
2000, December	Water quality sampling
2001, January to present	Exotic aquatic wildlife (non-native fish, crayfish, bullfrog, and turtle) removal – conducted quarterly
2001, February	Partial riparian planting
2001, March	Selective clearing at Canyon Trails Golf Club
2001, March	Water quality sampling
2001, June	Water quality sampling
2001, July	Fish Sampling at Haines Canyon Creek
2001, September	Water quality sampling
2001, October to 2001, November	Fish Sampling at Haines Canyon Creek

Date	Activity
2001, December	Water quality sampling
2002, January	Final riparian planting
2002, July	Upland replacement planting
2002, March	Water quality sampling
2002, June	Water quality sampling
2002, July	Fish Sampling at Haines Canyon Creek
2002, September	Water quality sampling
2002, October	Grading at Canyon Trails Golf Club begins
2002, November	Fish Sampling at Haines Canyon Creek
2002, December	Water quality sampling
2003, March	Water quality sampling
2003, April	Meeting with Canyon Trails Golf Club to discuss future use of herbicides and fertilizers
2003, June	Water quality sampling
2003, August	Fish Sampling at Haines Canyon Creek
2003, September	Water quality sampling
2003, fall	Completion of the golf course construction
2003, December	Water quality sampling
2004, January	Fish Sampling at Haines Canyon Creek
2004, April	Water quality sampling
2004, April	Rock Dam Removal Day
2004, June	Angeles National Golf Club (previously named Canyon Trails) opens to the public
2004, July	Water quality sampling
2004, October	Water quality sampling
2004, December	Water quality sampling
2005, April	Water quality sampling
2005, June	Water quality sampling
2005, October	Water quality sampling
2005, December	Water quality sampling
2006, July	Water quality sampling
2006, December	Water quality sampling
2007, December	Water quality sampling
2008, December	Water quality sampling
2009, August to October	As of 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/)
2009, December	Water quality sampling
2010, November	Water quality sampling
2010, December	Water quality sampling for pesticides
2011, September to 2012, January	Water lettuce removal
2012, February	Water quality sampling

Date	Activity
2012, November	Water quality sampling
2013, October	Water quality sampling
2014, October	Water quality sampling
2015, November	Water quality sampling
2016, November 7	Water quality sampling
2017, December	The Creek Fire began on December 5, 2017, approximately 4 miles east of Sylmar, California. The Creek Fire burned a total of 15,619 acres. Much of the Mitigation Area burned, and close to 75 percent of the entire site exhibited signs of severe surface burns, including approximately all of the riparian communities found along Haines Canyon Creek, and more than half of the vegetation within the Big Tujunga Wash area. The fire was fully contained on January 9, 2018. (Sources: Angeles National Forest Incident Update available - https://inciweb.nwccg.gov/incident/5669/ ; Chambers Group 2018 Post Fire Assessment Report)
2017, December 21	Water quality sampling
2018, December 17	Water quality sampling
2019, April 23	After April 23, 2019 Chambers Group stopped the use of all herbicides within the Mitigation Area. From April 23 onward, exotic plants were (and continue to be) managed with mechanical weed control methods only.
2019, October 30	Water Quality Sampling
2020, November 2	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 negative 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 Angeles National Golf Club, analysis of water samples for glyphosate, chlorpyrifos, other organophosphorous pesticides, and organochlorine pesticides is included in the sampling program for the 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

Manufacturer and Product Name	Active Ingredient	Use
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 Mitigation Area (Figure 1). Table 3 summarizes sampling locations and the conditions observed on November 2, 2020.

Figure 1: Mitigation Area Water Quality Sampling Stations



Table 3: Water Quality Sampling Locations and Conditions for November 2020

Date	November 2, 2020		
Air Temperature	Between 18.3 and 27.2 (°Celsius) during sample collection period		
Skies	Clear		
Observations	Water was clear at all locations		
Sampling Locations	Latitude	Longitude	Time of sample
(1) Inflow to Tujunga Ponds	34.26852 N	118.34000 W	1030
(2) Outflow from Tujunga Ponds	34.26799 N	118.34249 W	0930
(3) Big Tujunga Wash	34.26989 N	118.35126 W	station dry
(4) Haines Canyon Creek, before exit from the site	34.26655 N	118.35786 W	0830

3.2 SAMPLING PARAMETERS

Table 4 summarizes the sampling parameters included in the water quality monitoring program. The following meters were used in the field:

- pH and temperature – Milwaukee MW102 PRO+ 2-in-1 Temperature and pH Meter
- Dissolved oxygen - Milwaukee MW600 PRO Dissolved Oxygen Meter
- Turbidity – Hanna Instruments HI98703 Turbidity Portable Meter

Water testing was performed at Enthalpy Analytical, LLC located in Orange, California and Test America located in Savannah, 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 organophosphorus 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 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.

SECTION 4.0 – RESULTS

4.1 BASELINE WATER QUALITY

Sampling and analysis conducted by Public Works prior to implementation of the FMMP is considered the baseline for water quality conditions at the Mitigation Area. 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.

Table 5: Baseline Water Quality (2000)

Parameter	Units	Date (2000)	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	3,000	5,000	170	1,700
		4/18	2,200	170,000	2,400	70,000
Fecal coliform	MPN/100 ml	4/12	500	300	40	80
		4/18	500	30,000	2,400	50,000
Ammonia-N	mg/L	4/12	0	0	0	0
		4/18	0	0	0	0
Nitrate-N	mg/L	4/12	8.38	5.19	0	3.73
		4/18	8.2	3.91	0.253	0.438
Nitrite-N	mg/L	4/12	0.061	0	0	0
		4/18	0.055	0	0	0
Kjeldahl-N	mg/L	4/12	0	0.1062	0.163	0
		4/18	0	0.848	0.42	0.428
Dissolved phosphorus	mg/L	4/12	0.078	0.056	0	0.063
		4/18	0.089	0.148	0.111	0.163
Total phosphorus	mg/L	4/12	0.086	0.062	0	0.066
		4/18	0.113	0.153	0.134	0.211
pH	std units	4/12	7.78	7.68	7.96	7.91
		4/18	7.18	7.47	7.45	7.06
Turbidity	NTU	4/12	1.83	0.38	1.75	0.6
		4/18	4.24	323	4070	737

MPN – most probable number NTU – nephelometric turbidity units

4.2 NOVEMBER 2020 RESULTS

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

Table 6: Summary of Water Quality Results – November 2, 2020

Parameter	Units	Inflow to Tujunga Ponds	Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Temperature	°C	19.3	16.9	NA	14.4
Dissolved Oxygen	mg/L	6.5	3.8	NA	8.4
pH	std units	5.48	5.64	NA	5.78
Total residual chlorine	mg/L	ND	ND	NA	ND
Ammonia-Nitrogen	mg/L	ND	ND	NA	ND
Kjeldahl Nitrogen	mg/L	0.55	ND	NA	ND
Nitrite-Nitrogen	mg/L	ND	ND	NA	ND
Nitrate-Nitrogen	mg/L	5.8	4.7	NA	4.0
Orthophosphate-P (dissolved phosphorus)	mg/L	0.026	ND	NA	ND
Total phosphorus-P	mg/L	0.060	0.062	NA	0.049
Glyphosate	µg/L	ND	ND	NA	ND
Chlorpyrifos* (and other Organophosphorus Pesticides)	µg/L	ND	ND	NA	ND
Pesticides (EPA 608)** (Organochlorine Pesticides)	µg/L	ND	ND	NA	ND
Turbidity	NTU	1.30	0.35	NA	0.30
Fecal Coliform Bacteria	(MPN/100 ml)	47	23	NA	17
Total Coliform Bacteria	(MPN/100 ml)	>1600	>1600	NA	>1600

NA – data not available; station dry on the sample date NTU – nephelometric turbidity units

MPN – most probable number

ND – non-detect

mg/L – milligrams per liter

µg/L – micrograms per liter

> - Value exceeds indicated concentration

* The analytical method used for chlorpyrifos (EPA 8141A) also tests for the following chemicals: azinphos-methyl, bolster, coumaphos, demeton, diazinon, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, merphos, methyl parathion, mevinphos, naled, phorate, ronnel, stirophos, tokuthion, and trichloronate.

** EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, and toxaphene. Water samples for these pesticides were collected on November 13, 2020.

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 (°C)	b	See Table 12	See Table 12	--
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 <i>E. coli</i>) (water contact recreation)	--	--	Swimming standards: 33 ^g (geometric mean for enterococci) 126 ^g (geometric mean for <i>E. coli</i>)
Ammonia-nitrogen (mg/L)	See Tables 10 and 11	See Table 8	See Table 9	--
Nitrite-nitrogen (mg/L)	1	--	--	1 (primary drinking water standard)
Nitrate-nitrogen (mg/L)	10	--	--	10 (primary drinking water standard)
Total phosphorus (mg/L)	--	<0.05 – 0.1 ^e (recommendation for streams, no criterion)		--
Turbidity (NTU)	h	i	i	5 (secondary drinking water standard) ≤1.0 (standard for systems that filter)

Notes:

MPN most probable number

NTU nephelometric turbidity units

-- 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 (°Celsius)									
	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

CMC: Mussels Absent, mg N/L										
pH	Temperature (°Celsius)									
	0	14	16	18	20	22	24	26	28	30
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 - Maximum Weekly Average Temperature (°C)	Survival - Short-Term Maximum Temperature (°C)
black crappie	27	--
brook trout	19	24
bluegill	32	35
channel catfish	32	35
emerald shiner	30	--
largemouth bass	32	34
rainbow 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 November 2020 sampling are described by parameter in Table 13. Except for pH, none of the 2020 parameters tested were substantially different from the baseline conditions recorded in 2000 and/or were still within the recommended range for each parameter as provided in the Basin Plan and/or EPA objectives. The first water sampling for Glyphosate, Chlorpyrifos, and other organophosphorus and organochlorine pesticides did not occur until 2004. None of these pesticides were detected in 2004 nor were they detected in 2020. Table 14 shows the 2020 water quality sampling results as compared to the 2000 baseline water quality sampling results. In addition, none of the parameters were substantially different between pre- and post-Creek Fire conditions (2016/2017) and parameters continue to fall largely within or below the recommended range for each parameter as provided in the Basin Plan and/or EPA objectives. Four of the parameters tested in 2020 were above the recommended range for at least one of the sample locations and are discussed in Table 13.

Table 13: Discussion of November 2020 Water Quality Sampling Results

Parameter	Discussion
Temperature	<ul style="list-style-type: none"> Observed temperatures were well below levels of concern for growth and survival of warmwater fish species at all stations with the exception of the inlet to the Tujunga Ponds which was recorded at 19.3 °C, slightly higher than the weekly average maximum temperature for the growth of brook trout and rainbow trout (example species in Table 12). In addition, the reference maxima provided in Table 12 for the growth and survival of juvenile and adult fishes during the summer are provided by the EPA and mainly apply to sportfishing species and not the native fish species that occupy the Mitigation Area. According to the US Fish and Wildlife’s Recovery Outline for Santa Ana Sucker, Santa Ana sucker are typically most abundant in clear water, at temperatures generally less than 22°C and have experienced mortality at temperatures greater than 26.7 °C (USFWS 2012⁴). According to UC Davis’ Center for Watershed Sciences, Santa Ana speckled dace prefer summer water temperatures below 20°C but may tolerate temperatures as high as 26 to 28°C (UC Davis 2021a⁵). Arroyo chub are most common in streams with temperatures between 10 and 24°C (UC Davis 2021b⁶). All temperatures recorded were below or within the range for survival of sensitive fish species that occur in the Mitigation Area; however,

⁴ U.S. Fish and Wildlife Service (USFWS)

2012 Recovery Outline for Santa Ana Sucker (*Catostomus santaanae*). Accessed online at: <https://www.fws.gov/carlsbad/tespecies/Recovery/documents/Recovery%20Outline%20for%20Santa%20Ana%20Sucker-3-30-2012.pdf> in June 2021.

⁵ UC Davis

2021a UC Davis Center for Watershed Sciences. Rhinichthys oculus subspecies. Accessed online at: <https://pisces.ucdavis.edu/content/rhinichthys-oculus-subspecies-2> in June 2021.

⁶ UC Davis

2021b UC Davis Center for Watershed Sciences. Gila orcutti. Accessed online at: <https://pisces.ucdavis.edu/content/gila-ocutti> in June 2021.

Parameter	Discussion
	<p>only a single temperature reading was taken in the fall and the weekly summer average temperature is unknown.</p>
Dissolved oxygen (DO)	<ul style="list-style-type: none"> • DO levels were 6.5 mg/L at the inflow to the Tujunga Ponds, 3.8 mg/L at the outflow from the Tujunga Ponds, and 8.4 mg/L where Haines Canyon Creek exits the site. DO levels at one of the sample stations was below the minimum recommended level (5.0 mg/L) for Basin Plan objectives and EPA's criteria for warmwater fish species. Low DO can be caused by a variety of factors but is commonly caused by the presence of algae in slow-moving or stagnant water bodies such as the Tujunga Ponds. In addition, illegal dams slow the flow of water inhibiting the natural aeration that occurs in flowing water bodies such as Haines Canyon Creek. The rapid removal of illegal dams as they are discovered and continued public education as to why damming the creek and wash is detrimental to aquatic species is essential to the health of the Mitigation Area.
pH	<ul style="list-style-type: none"> • pH readings were 5.48 at the inflow to the Tujunga Ponds, 5.64 at the outflow from the Tujunga Ponds, and 5.78 where Haines Canyon Creek exits the site. The pH readings at all three sample stations were below the recommended range of 6.5 to 8.5 identified in the Basin Plan objectives, and were within the recommended range of 5.0 to 9.0 for EPA's criteria for human health. It is unknown what conditions caused the low pH at the Tujunga Ponds and Haines Canyon Creek. As sampling is conducted in the fall, leaf litter from deciduous trees and shrubs has the potential to acidify the water for a short time until bacteria and other microorganisms can start breaking down plant matter and buffering acidic conditions. Additional sampling throughout the year would be required to try to pinpoint the exact cause of low pH.
Total residual chlorine	<ul style="list-style-type: none"> • No residual chlorine was detected at any sample station.
Nitrogen	<ul style="list-style-type: none"> • Nitrate-Nitrogen measurements at all sample stations were below the drinking water maximum standard of 10 mg/L for both Basin Plan standards and EPA criteria for human health. • Nitrite-Nitrogen was not detected at any sample station. • Ammonia-Nitrogen was not detected at any sample station.
Phosphorus	<ul style="list-style-type: none"> • The observed Total Phosphorus-P concentrations were 0.060 mg/L at the inflow to the Tujunga Ponds, 0.062 mg/L at the outflow to the Tujunga Ponds, and 0.049 mg/L where Haines Canyon Creek exits the site. Total Phosphorus-P concentration at all sample stations was within or below the lower end of the EPA's recommended maximum range of 0.05 to 0.10 mg/L for the desired goal of preventing plant nuisances in

Parameter	Discussion
	streams.
Glyphosate	<ul style="list-style-type: none"> • Glyphosate was not detected at any sample station
Chlorpyrifos and other Organophosphorus Pesticides	<ul style="list-style-type: none"> • Organophosphorus Pesticides including Chlorpyrifos, that were analyzed by EPA method 8141A were not detected at any sample station.
Organochlorine Pesticides	<ul style="list-style-type: none"> • Organochlorine pesticides analyzed by EPA Method 608 were not detected at any sample station.
Turbidity	<ul style="list-style-type: none"> • Turbidity readings were 1.30 NTU at the inflow to the Tujunga Ponds, 0.35 NTU at the outflow from the Tujunga Ponds, and 0.30 NTU where Haines Canyon Creek exits the site. Turbidity levels were below the EPA's secondary drinking water standard of 5 NTU. The turbidity at the inlet of the Tujunga Ponds was slightly above the EPA's drinking water maximum standard of 1.0 NTU for systems that use conventional or direct filtration; however, waters within the Mitigation Area are not filtered systems intended for human consumption.
Coliform Bacteria	<ul style="list-style-type: none"> • Per the Basin Plan objectives, the fresh water bacteria standard for water contact recreation is for <i>E. coli</i> (126 MPN/100 ml geometric mean, 235 MPN/100 ml single sample limits). Fecal coliform levels were 47 MPN/100 ml at the inflow to the Tujunga Ponds, 23 MPN/100 ml at the outflow from the Tujunga Ponds, and 17 MPN/100 ml where Haines Canyon Creek exits the site. Fecal coliform levels detected were below the standard geometric mean at all sample stations. Sampling specifically for <i>E. coli</i> was not conducted. • Total coliform levels were greater than 1600 MPN/100 ml at all sample stations. [Note that recreation standards are for <i>E. coli</i>. Per the Basin Plan, total coliform standards apply to marine waters and waterbodies where shellfish can be harvested for human consumption.] • The presence of coliform bacteria indicates fecal contamination by warm-blooded mammal and avian species including waterfowl. While not all coliform bacteria are harmful, elevated levels of coliform bacteria indicate an increased likelihood that harmful coliform bacteria such as <i>E. coli</i>, may be present. Sources of coliform pollution in the Mitigation Area may include run-off from surrounding residential areas, horses (equestrian) that utilize the trails, waterfowl that occupy the Tujunga Ponds, other birds, aquatic organisms, and mammals that use the ponds and creek, and illegal human uses of the ponds and creek such as swimming and bathing. Organic materials that carry coliform bacteria have the potential to be harmful to aquatic life, as

Parameter	Discussion
	<p>oxygen in the water may become low during aerobic decomposition of organic materials. Spikes in the levels of coliform bacteria in the Mitigation Area have not been uncommon since water quality sampling began in 2000.</p>

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

Table 14: 2020 Water Quality Results Compared to Baseline (2000)

Parameter	Units	Date (2000)	Date (2021)	Haines Canyon Creek, Inflow to Tujunga Ponds (2000)	Haines Canyon Creek, Inflow to Tujunga Ponds (2021)	Haines Canyon Creek, Outflow from Tujunga Ponds (2000)	Haines Canyon Creek, Outflow from Tujunga Ponds (2021)	Big Tujunga Wash (2000)	Big Tujunga Wash (2021)	Haines Canyon Creek, just before exit from site (2000)	Haines Canyon Creek, just before exit from site (2021)
Total coliform	MPN/100 ml	4/12	11/2	3,000	>1600	5,000	>1600	170	NA	1,700	>1600
		4/18		2,200		170,000		2,400		70,000	
Fecal coliform	MPN/100 ml	4/12	11/2	500	47	300	23	40	NA	80	17
		4/18		500		30,000		2,400		50,000	
Ammonia-N	mg/L	4/12	11/2	0	ND	0	ND	0	NA	0	ND
		4/18		0		0		0			
Nitrate-N	mg/L	4/12	11/2	8.38	5.8	5.19	4.7	0	NA	3.73	4.0
		4/18		8.2		3.91		0.253		0.438	
Nitrite-N	mg/L	4/12	11/2	0.061	ND	0	ND	0	NA	0	ND
		4/18		0.055		0		0			
Kjeldahl-N	mg/L	4/12	11/2	0	.55	0.1062	ND	0.163	NA	0	ND
		4/18		0		0.848		0.42		0.428	
Dissolved phosphorus	mg/L	4/12	11/2	0.078	0.026	0.056	ND	0	NA	0.063	ND
		4/18		0.089		0.148		0.111		0.163	
Total phosphorus	mg/L	4/12	11/2	0.086	0.060	0.062	0.062	0	NA	0.066	0.049
		4/18		0.113		0.153		0.134		0.211	
pH	std units	4/12	11/2	7.78	5.48	7.68	5.64	7.96	NA	7.91	5.78
		4/18		7.18		7.47		7.45		7.06	
Turbidity	NTU	4/12	11/2	1.83	1.30	0.38	0.35	1.75	NA	0.6	0.30
		4/18		4.24		323		4070		737	

NA – data not available; station dry on the sample date
MPN – most probable number
> - Value exceeds indicated concentration

NTU – nephelometric turbidity units
ND – non-detect

SECTION 6.0 – GLOSSARY

Ammonia-Nitrogen – $\text{NH}_3\text{-N}$ is a gaseous alkaline compound of nitrogen and hydrogen that is highly soluble in water. Un-ionized ammonia (NH_3) is toxic to aquatic organisms. The proportions of NH_3 and ammonium (NH_4^+) 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.

Chlorpyrifos - 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.

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

Dissolved Oxygen - Dissolved oxygen (DO) is the amount of oxygen that is present in water. Water bodies receive oxygen from the atmosphere and from aquatic plants. Running water, such as that of a swift moving stream, dissolves more oxygen than the still water of a pond or lake.

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 – $\text{NO}_3\text{-N}$ is an essential nutrient for many photosynthetic autotrophs.

Nitrite-Nitrogen – $\text{NO}_2\text{-N}$ is an intermediate oxidation state of nitrogen, both in the oxidation of ammonia to nitrate and in the reduction of nitrate.

Organochlorine Pesticides – An older class of pesticides, that are effective against a variety of insects. These chemicals were introduced in the 1940s, and many of their uses have been cancelled or restricted by the U.S. EPA because of their environmental persistence and potential adverse effects on wildlife and human.

Organophosphorus Pesticides – These pesticides are active against a broad spectrum of insects and have accounted for a large share of all insecticides used in the United States. Although organophosphorus insecticides are still used for insect control on many food crops, most residential uses have been phased out in the United States. Certain organophosphorus insecticides are also registered for public health applications (e.g., mosquito control) in the United States.

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.

Phosphorus, Total – 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 – 2020 LABORATORY RESULTS



APPENDIX H – TRAILS MAINTENANCE AND MONITORING MEMOS



June 23, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the May 2020 Trails Monitoring Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes trail monitoring and maintenance efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) in May 2020. This 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. Chambers Group qualified biologists and restoration specialists participating in trail maintenance activities within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the trail 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 focused on historically mapped authorized trails throughout Big Tujunga Wash, Haines Canyon Creek, and the Tujunga Ponds, and all unauthorized trails. All mapped locations were inspected, and maintenance was performed on May 7. The trail monitoring and maintenance efforts focused on increasing visitor safety and minimizing negative impacts to native habitat by prohibiting equestrian riders and hikers from wandering off trail. The negative impacts that are caused by unauthorized, off-trail use include the trampling of native seedlings and resprouting vegetation, compaction of the soil, erosion, and the introduction of fertilizer (e.g., horse droppings) and weed seeds into new areas.

Implementation

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 work areas. These meetings included instructions on Covid-19 precautions including social distancing, gear sanitation, and hand washing. The meetings also discussed where sensitive resources such as nesting birds and associated avoidance areas were located. This included a federally and state-endangered least Bell's vireo (*Vireo bellii pusillus*) potential nest that was discovered in a riparian area north of the of the Cottonwood Avenue bluff on May 1. A 500-foot buffer was implemented around this territory. The meetings were conducted by restoration foreman Tim Wood, Jay Belmonte, and Michael Walsh who were present on site and participated in trail maintenance activities. Collector for ArcGIS (Collector), a Geographic Information System (GIS) application, was used to navigate and work along authorized trails, and to avoid disturbance to any documented sensitive plants and wildlife in areas requiring maintenance. Trail maintenance efforts were focused on maintaining high traffic areas of the authorized trails for public use and safety. Any trails that were excluded from these efforts were previously addressed or did not require any maintenance efforts at the time of inspection. All debris and obstructions were cleared from the established trails allowing for safe passage. Where bypassed sections of the authorized trail system were observed, snag debris from the surrounding areas was used to block off entry points and



discourage further deviations from authorized trails. In addition, downed snag debris and/or stones were used to delineate the authorized trails, helping to guide site visitors along the permitted course. Debris obstructions such as downed trees that blocked portions of trails were cut with chainsaws and dragged clear of the trail. The trail monitoring and maintenance work performed in May required six crew members.

Execution

On May 7, trail maintenance was performed on the eastern trail realignment section between the Haines Canyon Creek crossing north of the Cottonwood Avenue bluff and the intersection to the westward trail leading to the south Wheatland Avenue entrance. A large willow (*Salix* spp.) snag had fallen perpendicular to the trail potentially causing visitors to deviate from the authorized trail. Crew members reduced the snag debris with the use of chainsaws and moved it to the border of the trail to delineate its intended course (Photos 1, 2 and 3). During this trail maintenance effort crews were documented at a minimum of 1,490 feet outside of the 500-foot buffer area established to protect the least Bell's vireo nest discovered in the Mitigation Area on May 1.

The crew addressed a small snag failure at the western intersection of the trail realignment and southern trail that parallels Wentworth Avenue. This snag failure remained navigable by visitors; however, it was discovered that a hollow in the trunk contained a large beehive. Crew members reduced the snag debris so that it could be moved from the trail and so that visitors would not disrupt or potentially be put in danger by aggravating the hive. During this trail maintenance effort crews were documented at a minimum of 2,580 feet outside of the 500-foot buffer area established to protect the least Bell's vireo nest discovered in the Mitigation Area on May 1.

The crew members cleared a trail section on the eastern course of the eastern riparian area. Here, small debris was obstructing the trail, resulting from limb failures that had fallen off a nearby Fremont cottonwood (*Populus fremontii*) snag. The limb debris only required removal and no power equipment was necessary to reduce its size. During this trail maintenance effort crews were documented at a minimum of 1,250 feet outside of the 500-foot buffer area established to protect the least Bell's vireo nest discovered in the Mitigation Area on May 1.

Summary and Discussion

All trail maintenance activities were supervised by Tim Wood, Jay Belmonte, and/or Michael Walsh who monitored that regulations and requirements were closely followed. During trail maintenance efforts, care was taken to avoid damaging native vegetation. Trail maintenance efforts were implemented proactively in response to receiving notification on May 6 that trails were to be opened for public use on May 8 after being closed to the public for COVID-19 Safer at Home orders. The crew will continue to address and maintain high-traffic, authorized trails. General trail maintenance and safety monitoring will continue on all authorized trails to provide public safety and enjoyment. Incidental feedback received from equestrian riders has included comments regarding their appreciation of the removal of overgrown vegetation, fallen debris, and rocks from the trails, as well as the widening of sections of trail. This feedback from equestrian riders, as well as the feedback received during public outreach events, will continue to be incorporated in future trail maintenance efforts.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular trail maintenance efforts. Chambers Group staff will continually assess the efficacy of trail maintenance methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (949) 261-5414 extension 7242, via cell phone at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like any additional information.

Sincerely,

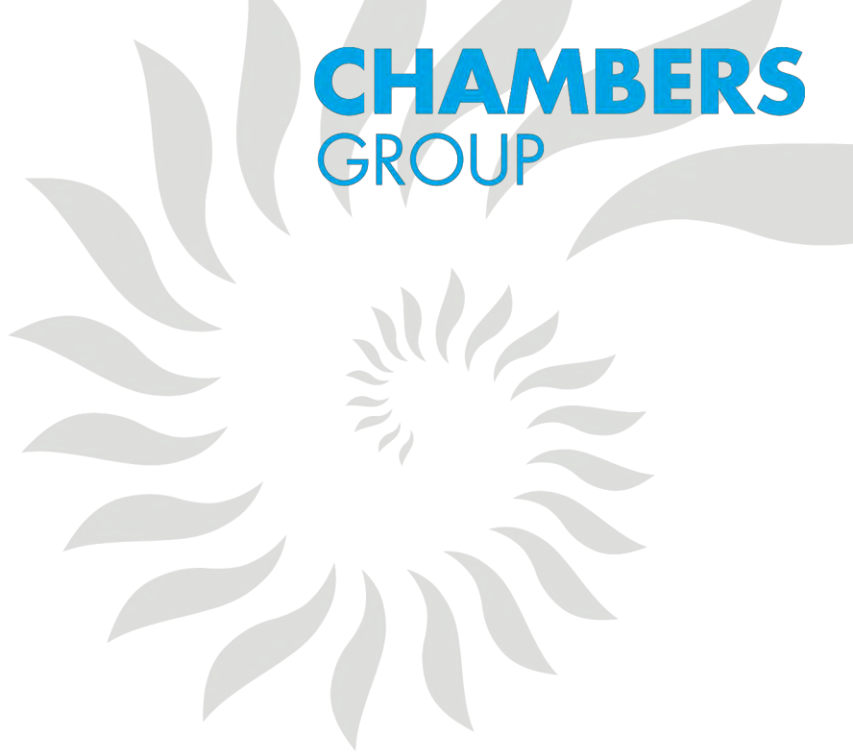
CHAMBERS GROUP, INC.





Tim Wood

Habitat Restoration Foreman



PHOTOS



Photo 1: The eastern trail realignment section where the large willow snag was discovered obstructing the trail **before** trail maintenance efforts, on May 7.



Photo 2: Crew member reducing the willow snag on the eastern trail realignment section, on May 7.

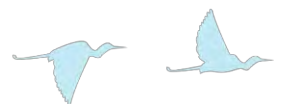




Photo 3: The trail cleared of the large willow snag in the eastern trail realignment section **after** trail maintenance efforts, on May 7.



June 30, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the June 2020 Trails Monitoring Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes trail monitoring and maintenance efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) in June 2020. This 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. Chambers Group qualified biologists and restoration specialists participating in trail maintenance activities within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the trail 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 focused on historically mapped authorized trails throughout Big Tujunga Wash, Haines Canyon Creek, and the Tujunga Ponds, and all unauthorized trails. All mapped locations were inspected, and maintenance was performed between June 4 and June 26. The trail monitoring efforts focused on increasing visitor safety and minimizing negative impacts to native habitat by prohibiting equestrian riders and hikers from wandering off trail. The negative impacts that are caused by unauthorized, off-trail use include the trampling of native seedlings and resprouting vegetation, compaction of the soil, erosion, and the introduction of fertilizer (e.g., horse droppings) and weed seeds into new areas.

Implementation

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 work areas. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing. The meetings also discussed where sensitive resources such as nesting birds and associated avoidance buffer areas were located. This included three 500-foot buffers for federally and state-endangered least Bell's vireo (*Vireo bellii pusillus*) nests that were discovered in a riparian area during May and June. The meetings were conducted by biologists Alisa Muniz, Corey Jacobs, and/or restoration biologist Valerie Alcantar who was present on site to monitor and participate in trail maintenance activities. Collector for ArcGIS (Collector), a Geographic Information System (GIS) application, was used to navigate and work along authorized trails, and to avoid disturbance to any documented sensitive plants and wildlife in areas requiring maintenance. Trail maintenance efforts were focused on maintaining high traffic areas of the authorized trails for public use and safety. Any trails that were excluded from these efforts were previously addressed or did not require any maintenance efforts at the time of inspection. All debris and obstructions were cleared from the established trails allowing for safe passage. Where bypassed sections of the authorized trail system were observed, snag debris from the surrounding areas was used to block off entry points and discourage further deviations from authorized trails. In addition, downed snag debris and/or stones were used to delineate the authorized trails, helping to guide site visitors along the permitted course.



Execution

On June 4 and 5, trail maintenance began south of the eastern riparian area and progressed towards the trail section below the equestrian center entrance. Efforts were focused on clearing vegetation that was impeding on the trail and beginning to obstruct the view and navigation of the trail course. In order to effectively maintain the trail, removal of invasive species including shortpod mustard (*Hirschfeldia incana*), curly dock (*Rumex crispus*), prickly lettuce (*Lactuca serriola*), radish (*Raphanus sativus*), and white sweetclover (*Melilotus albus*) was required as well as clearing a section of poison hemlock (*Conium maculatum*) that lined and congested a portion of the trail (Photo 1). Maintenance and control of native vegetation that was overgrowing the trails was also required. Species such as mugwort (*Artemisia douglasiana*) were trimmed back to prevent further restriction and narrowing of the trail (Photo 2). Overhanging Fremont cottonwood (*Populus fremontii*) branches and downed snag debris were trimmed providing a more navigable route for visitors. No work was performed within any of the 500-foot avoidance buffer areas established to protect the least Bell's vireo nests discovered within the Mitigation Area. To further protect this sensitive species, hand-pulling methods were implemented in the vicinity of the avoidance buffers so that potential negative impacts associated with noise disturbance from motorized machines (e.g., weed whippers) would not occur. The crew was monitored during all trail maintenance activities and no sensitive species showed signs of stress during the trail maintenance efforts.

On June 12, the crew began maintenance activities below the equestrian center entrance and work progressed eastward along the trail that divides the eastern riparian area and Haines Canyon Wash. Trail maintenance efforts continued to address native and non-native vegetation impeding on the authorized trail. No work was performed within any of the 500-foot avoidance buffer established to protect the least Bell's vireo nests discovered within the Mitigation Area. To further protect this sensitive species, hand-pulling methods were implemented in the vicinity of the avoidance buffers so that potential negative impacts associated with noise disturbance from motorized machines (e.g., weed whippers) would not occur. Vegetation clearing activities were executed with hand-pulling/hand tools and a clearance margin of 4 feet on either side of the trail was created to prevent potential disturbance to native vegetation by the public. To further protect native habitat along the trail and to increase public safety, native species (e.g., Fremont cottonwood and mulefat [*Baccharis salicifolia*]) were trimmed to promote upward growth and to help prevent deviations from authorized trails when visitors attempt to navigate around the overgrowth (Photo 3). The crew was monitored during all trail maintenance activities and no sensitive species showed signs of stress during the trail maintenance efforts.

On June 19, trail maintenance continued along the trail sections addressed during previous week's efforts, but the focus was shifted to removing hazardous rocks and debris that had turned up and accumulated on the trail. Heavy equestrian traffic and seasonal water flow turns up gravel and cobble, and over time, changes the trail composition underfoot. The regular clearing of rock and natural debris from the trail is necessary for the safe passage of visitors. These efforts also help to support native vegetation and any sensitive wildlife species adjacent to the trails, by averting deviations and unauthorized bypasses through native habitat. Crew members raked the rock and debris creating a suitable path and delineating a single course for visitor traffic (Photos 4 through 9). No work was performed within any of the 500-foot avoidance buffer established to protect the least Bell's vireo nests discovered within the Mitigation Area. The crew was monitored during all trail maintenance activities and no sensitive species showed signs of stress during the trail maintenance efforts.

On June 26, crew members repaired the wire fence that was installed during the closure of the westernmost creek crossing, north of the south Wheatland Avenue entrance. Repair of the fences entailed replacing and reinforcing T-posts that had been vandalized and replacing sections of wire that had been cut (Photo 10). To inhibit alternate access points around this creek crossing closure, logs, snag debris, and rocks were used to form a blockade. Trail maintenance continued with the blocking of unauthorized trails discovered along western sections of the authorized trail system. Multiple deviations and unauthorized trails were beginning to emerge through high traffic areas from the south Wheatland Avenue entrance, into the Big Tujunga Wash, and through the western trail realignment section and central Big Tujunga Wash crossings. To discourage continued use of these trail deviations large felled snags and/or other



natural debris was collected and placed to camouflage disturbance and form obstructions at unauthorized trailheads and/or creek crossings (Photos 11 through 13). Additional trail maintenance efforts included raking out areas of gravel and cobble, managing native and non-native vegetation growth onto the trail, and removing fallen tree limbs and debris (Photos 14 and 15). No work was performed within any of the 500-foot avoidance buffer established to protect the least Bell's vireo nests discovered within the Mitigation Area. The crew was monitored during all trail maintenance activities and no sensitive species showed signs of stress during the trail maintenance efforts.

Summary and Results

All trail maintenance activities were supervised by biologists Alisa Muniz, Corey Jacobs, and/or restoration biologist Valerie Alcantar who monitored that regulations and requirements were closely followed. June trail maintenance efforts helped to support Mitigation Area goals by maintaining the navigable routes along the authorized trail system and discouraging deviations into the surrounding habitat that could potentially cause negative impacts and disturbances to native vegetation and the sensitive species found throughout the property. Care was taken to avoid damaging native vegetation when trimming back impeding growth, and native species were pruned as necessary to encourage future growth in a sustainable direction away from the trails. The crew will continue to address and maintain high-traffic, authorized trails. General trail maintenance and safety monitoring will continue on all authorized trails to provide public safety and enjoyment. Incidental feedback received from equestrian riders has included comments regarding their appreciation of the removal of overgrown vegetation, fallen debris, and rocks, as well as the widening of sections of trail when necessary. This feedback from equestrian riders, as well as the feedback received during public outreach events, will continue to be incorporated in future trail maintenance efforts.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular trail maintenance efforts. Chambers Group staff will continually assess the efficacy of trail maintenance methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (949) 261-5414 extension 7242, via cell phone at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like any additional information.

Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



PHOTOS



Photo 1: Crew member hand-pulling poison hemlock to control overgrowth onto the trail, on June 4.



Photo 2: Crew member trimming of native vegetation impeding on the trail, on June 5.





Photo 3: Crew member pruning overhanging cottonwood limbs to allow safe passage for equestrians, on June 5.



Photo 4: Gravel and stones cover the trail before crew efforts, on June 19.





Photo 5: Gravel and stones removed from trail to promote safe passage and delineate the trail boundaries after crew efforts, on June 19.



Photo 6. Rocks and debris covering the trail creating a hazardous route for visitor traffic before trail maintenance was performed, on June 19.

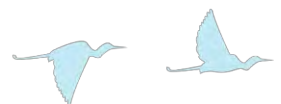




Photo 7. Rocks and debris removed from the trail creating a safe route for visitor traffic after trail maintenance was performed, on June 19.



Photo 8. Seasonal flooding causes stones to surface making navigation along the trails difficult before maintenance was performed, on June 19.





Photo 9. Rocks were removed and used to clearly delineate authorized trails, to minimize off-trail riding, and provide for safe navigation for the public, on June 19.



Photo 10. Crew members repairing the vandalized creek crossing closure, resetting T-posts, and replacing the wire fencing, on June 26.

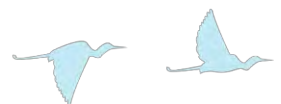




Photo 11. Example of an emerging unauthorized trail before trail maintenance was performed, on June 26.



Photo 12. Example of rocks and snag debris used to discourage unauthorized trail established after trail maintenance was performed, on June 26.





Photo 13. Crew members used rocks and snag debris to discourage unauthorized creek crossings, on June 26.

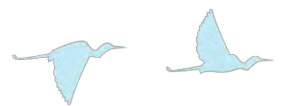


Photo 14. Example of snag debris obstructing the trail and potentially causing visitors to deviate from the authorized trail, on June 26.





Photo 15. Crew members removing the obstruction to promote public safety and minimize the potential for negative impacts on the surrounding habitat, on June 26.



August 14, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the July 2020 Trails Monitoring Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes trail monitoring and maintenance efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) in July 2020. This 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. Chambers Group qualified biologists and restoration specialists participating in trail maintenance activities within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the trail 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 focused on historically mapped authorized trails throughout Big Tujunga Wash and the western riparian trails along Haines Canyon Creek, and any unauthorized trails in these areas. All mapped locations were inspected, and maintenance was performed if required, on July 20 and July 31. The trail monitoring efforts focused on increasing visitor safety and minimizing negative impacts to native habitat by prohibiting equestrian riders and hikers from wandering off trail. The negative impacts that are caused by unauthorized, off-trail use include the trampling of native seedlings and re-sprouting vegetation, compaction of the soil, erosion, and the introduction of fertilizer (e.g., horse droppings) and weed seeds into new areas.

Implementation

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 work areas. These meetings included instructions on COVID-19 precautions including social distancing, gear sanitation, and hand washing. The meetings also discussed where sensitive resources such as nesting birds and associated avoidance buffer areas were located. This included three 500-foot buffers for federally and state listed Endangered least Bell's vireo (*Vireo bellii pusillus*) nests that were discovered in a riparian area during May and June. The meetings were conducted by biologist Austin Burke and/or restoration biologist Valerie Alcantar who were present on site to monitor and participate in trail maintenance activities. Collector for ArcGIS (Collector), a Geographic Information System (GIS) application, was used to navigate and work along authorized trails, and to avoid disturbance to any documented sensitive plants and wildlife in areas requiring maintenance. Trail maintenance efforts were focused on maintaining high traffic areas of the authorized trails for public use and safety. All debris and obstructions were cleared from the established trails allowing for safe passage. Where bypassed sections of the authorized trail system were observed, snag debris from the surrounding areas was used to block off entry points and discourage further deviations from authorized trails. In addition, downed snag debris and/or



stones were used to delineate the authorized trails, helping to guide site visitors along the permitted course. The trail monitoring and maintenance work performed in July required an average of five crew members per day.

Execution

On July 20, trail maintenance was performed on the western riparian trail, beginning below Cottonwood Avenue bluff and heading west towards the western trail alignment and away from the least Bell's vireo avoidance buffers. Efforts were focused on maintaining a clear and safe course by removing non-native species such as shortpod mustard (*Hirschfeldia incana*) and white sweetclover (*Melilotus albus*), and pruning native species such as annual bur-sage (*Ambrosia acanthicarpa*), horseweed (*Erigeron canadensis*), and thick-leaved yerba santa (*Eriodictyon crassifolium*) to prevent further restriction and narrowing of the trails (Photos 1 and 2). No work was performed within any of the 500-foot avoidance buffer areas established to protect the least Bell's vireo nests previously discovered within the Mitigation Area. To further protect this sensitive species, hand-pulling methods were implemented outside and adjacent to the avoidance buffers so that potential negative impacts associated with noise disturbance from motorized machines (e.g., weed whippers) would not occur. The crew was monitored during all trail maintenance activities and no sensitive species or nesting birds showed signs of stress during the trail maintenance efforts.

On July 31, trail maintenance efforts were performed on the trail network within the Big Tujunga Wash. This included raking out areas of gravel and cobble, managing native and non-native vegetation growth onto the trail, and removing other debris. Crew members discovered multiple deviations and unauthorized trails that were beginning to emerge. To discourage continued use of these deviations, large felled snags, rocks, and/or other natural debris were collected and placed to camouflage disturbance and form obstructions at unauthorized trailheads (Photos 3 and 4). No work was performed within any of the 500-foot avoidance buffer areas established to protect the least Bell's vireo nests previously discovered within the Mitigation Area. To further protect this sensitive species, hand-pulling methods were implemented in the vicinity of the avoidance buffers so that potential negative impacts associated with noise disturbance from motorized machines (e.g., weed whippers) would not occur. The crew was monitored during all trail maintenance activities and no sensitive species or nesting birds showed signs of stress during the trail maintenance efforts.

Summary and Results

All trail maintenance activities were supervised by Austin Burke and/or Valerie Alcantar who monitored that regulations and requirements were closely followed. July trail maintenance efforts helped to support Mitigation Area goals by maintaining the navigable routes along the authorized trail system and discouraging deviations into the surrounding habitat that could potentially cause negative impacts and disturbances to native vegetation and the sensitive species found throughout the property. Care was taken to avoid damaging native vegetation when trimming back impeding growth, and native species were pruned as necessary to encourage future growth in a sustainable direction away from the trails. During trail maintenance efforts it was observed that several of the previously reported homeless encampments present in the Mitigation Area continued to be active. The trail maintenance crew maintained a safe working distance while working near the encampments, and monitored around the encampments for signs of incidents that may pose a threat to public safety (e.g., illegal fires). An updated list of all active and inactive homeless encampments (approximately seven active and three inactive) and two illegal day-use areas was provided to Los Angeles County Public Works (Public Works) on August 13, 2020.

The crew will continue to address and maintain high-traffic, authorized trails. General trail maintenance and safety monitoring will continue on all authorized trails to provide public safety and enjoyment. In addition, crews will continue to monitor for any illegal occupancy of the Mitigation Area, any potential threats to public safety, or any violations of the rules and regulations of the site and will document these occurrences and report them to the Public Works. Incidental feedback received from equestrian riders has included comments regarding their appreciation of the removal of overgrown vegetation, fallen debris, and rocks, as well as the widening of sections of trail. This feedback from



equestrian riders, as well as the feedback received during public outreach events, will continue to be incorporated in future trail maintenance efforts.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular trail maintenance efforts. Chambers Group staff will continually assess the efficacy of trail maintenance methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (949) 261-5414 extension 7242, via cell phone at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like any additional information.

Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



PHOTOS



Photo 1: Biologist pulling vegetation that was narrowing an authorized trail, on July 20.



Photo 2: After clearing impeding vegetation, on July 20.





Photo 3: Crew blocking unauthorized trails using snags and other natural debris, on July 31.



Photo 4: Unauthorized trail that had formed crossing Haines Canyon Creek to access the trails in the Big Tujunga Wash. Snags and other natural debris were used to block the area and discourage continued use, on July 31.



October 2, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the September 2020 Trails Monitoring Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes trail monitoring and maintenance efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) in September 2020. This 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. Chambers Group qualified biologists and restoration specialists participating in trail maintenance activities within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the trail 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 focused on all mapped authorized trails surrounding and navigating through the eastern riparian areas. This included trails in the central portion of the Mitigation Area below the Cottonwood Avenue bluff and the trail leading to Tujunga Ponds. This area was previously avoided due to least Bell's vireo nests in the area. All mapped locations were inspected, and maintenance was performed if required, between September 28 and September 30. The trail monitoring efforts focused on increasing visitor safety and minimizing negative impacts to native habitat by taking actions to help prevent equestrian riders and hikers from wandering off trail. The negative impacts that are caused by unauthorized, off-trail use include the trampling of native seedlings and resprouting vegetation, compaction of the soil, erosion, and the introduction of fertilizer (e.g., horse droppings) and weed seeds into new areas.

Implementation

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 work areas. The meetings were conducted by restoration biologist Valerie Alcantar who was present on site to monitor and participated in trail maintenance activities. Collector for ArcGIS (Collector), a Geographic Information System (GIS) application, was used to navigate and work along authorized trails, and to avoid disturbance to any documented sensitive plants and wildlife in areas requiring maintenance. Buffer restrictions for the federally and state-listed least Bell's vireo were lifted on September 14 after approval from CDFW, and crews were again authorized to conduct trail maintenance in areas that had been off-limits for much of the spring and summer. Trail maintenance efforts were focused on maintaining high traffic areas of the authorized trails for public use and safety. All debris and obstructions were cleared from the established trails allowing for safe passage. Obstructions included vegetation overgrowth and downed tree/snag debris that were cut with handsaws and dragged clear of the trail. The trail monitoring and maintenance work performed in September required an average of three crew members per day.



Execution

On September 28 through 30, removal efforts were focused on trails in the eastern riparian areas. Removal efforts were focused on clearing overgrown vegetation and obstructions from the trail in order to help equestrians and hikers remain on the trail and to help prevent unauthorized bypasses. Before trail work began, a thorough survey of the work areas was conducted to confirm that any bird nests present in the area were no longer active.

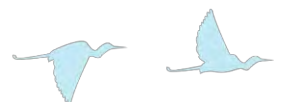
On September 28, trail maintenance started on the central portion of the Mitigation Area below the Cottonwood Avenue bluff working east towards the equestrian center. Due to the overgrowth of vegetation, natives, such as mugwort (*Artemisia douglasiana*), horseweed (*Erigeron canadensis*), annual bur-sage (*Ambrosia acanthacarpa*), California blackberry (*Rubus ursinus*), and common sunflower (*Helianthus annuus*), and non-natives, such as shortpod mustard, curly dock (*Rumex crispus*), prickly lettuce (*Lactuca serriola*), and Himalayan blackberry (*Rubus armeniacus*), were trimmed back or pulled, at a margin of 4 feet, to prevent further constriction and narrowing of the trail. The crew also focused on removing hazardous rocks and debris that had turned up and accumulated on the trail. Heavy equestrian traffic turns up gravel and cobble, and over time, changes the trail composition under foot. Crew members raked the rock and debris creating a suitable path for both equestrians and hikers (Photos 1 through 8).

On September 29, trail maintenance resumed below the equestrian center and continued northwest towards the Tujunga Ponds. The crew focused on pruning overhanging Fremont cottonwood (*Populus fremontii*) for a more navigable route and hand-pulling minor patches of flowering shortpod mustard that lined the trail. The crew observed a patch of 11 young Cootamundra wattle plants (*Acacia baileyana*) within 15 feet of the trail and removed them to prevent their dispersal and colonization elsewhere along the trail. Cootamundra wattle is a fast-growing tree/shrub species native to Australia that produces mass amounts of seed pods that have a high rate of germination. Upon forming dense stands, they shade out native plants and their nitrogen-fixing capabilities create soil unfit for native plant germination. Removal of this species required the use of shovels and machetes to completely uproot the plants. Many portions along the trail were covered in patches of flowering white sweetclover (*Melilotus albus*) that grew nearly 20 feet outward, away from the trail. To prevent further maturation and successive growth, the crew used weed-whippers to trim the large patches down to the base. Targeting white sweetclover along the trail is essential to minimize its dispersal and dominance in the eastern riparian areas (Photos 9 and 10).

On September 30, trail maintenance resumed below Tujunga Ponds and looped back south along the trail that follows the western edge of the eastern riparian area. Trail maintenance efforts continued to address native and non-native vegetation impeding on the authorized trail. The crew worked on removing large patches of castor bean (*Ricinus communis*) using machetes and shovels for complete removal of the root structure to reduce the potential for regrowth. Further along the trail, it was observed that the top portion of a Fremont cottonwood had fallen onto the trail. To safely remove this obstruction, the crew used handsaws to safely chop down and move aside large sections of the tree that were blocking the trail (Photos 11 through 14). Clearing and creating distinguishable paths is essential to minimize deviations from the trails by equestrians and hikers.

Summary and Discussion

All trail maintenance activities were supervised by Valerie Alcantar who monitored that regulations and requirements were closely followed. During trail maintenance efforts, care was taken to avoid damaging native vegetation. No new homeless encampments were encountered in or near the work areas, and previously cleared encampments continue to appear unoccupied. The crew will continue to address and maintain high-traffic, authorized trails. General trail maintenance and safety monitoring will continue on all authorized trails to provide public safety and enjoyment of the Mitigation Area. Incidental feedback received from equestrian riders has included comments regarding their appreciation of the removal of overgrown vegetation, fallen debris, and rocks, as well as the widening of sections of trail. This feedback from equestrian riders, as well as the feedback received during public outreach events, will continue to be incorporated in future trail maintenance efforts.



Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular trail maintenance efforts. Chambers Group staff will continually assess the efficacy of trail maintenance methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (949) 261-5414 extension 7242, via cell phone at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like any additional information.

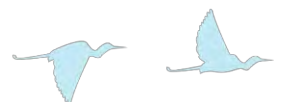
Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



PHOTOS



Photo 1. The overgrowth of natives and non-natives were blocking and narrowing the trail below Cottonwood Avenue bluff, on September 28.



Photo 2. The crew used weed-whippers to clear the trail and trim back vegetation at a margin of 4 feet, on September 28.



Photo 3. Working towards the equestrian center, natives and non-natives were obstructing and narrowing the trail, on September 28.



Photo 4. The crew used weed-whippers to clear the trail and trim back vegetation at a margin of 4 feet, on September 28.





Photo 5. Working towards the equestrian center, natives and non-natives were obstructing and narrowing the trail, on September 28.



Photo 6. The crew used weed-whippers to clear the trail and trim back vegetation in order to help prevent deviations from the authorized trail, on September 28.





Photo 7. Working towards the equestrian center, natives and non-natives were obstructing and narrowing the trail, on September 28.



Photo 8. The crew used weed-whippers to clear the trail and trim back vegetation in order to help prevent deviations from the authorized trail, on September 28.



Photo 9. Example of several areas along the trail that were covered in patches of flowering white sweetclover, on September 29.



Photo 10. After the removal of white sweetclover using weed-whippers to efficiently prevent further maturation and successive growth, on September 29.



Photo 11. Heading south along the trail that follows the western edge of eastern riparian area, large patches of castor bean adjacent to the trail, were blocking the trail, on September 30.



Photo 12. After the removal of castor bean using machetes and shovels to remove root structures to reduce the potential for regrowth, on September 30.





Photo 13. The crew sawed large tree limbs from a fallen tree that was obstructing the trail, on September 30.



Photo 14. The crew used weed-whippers to create a more navigable route where the trail was indistinguishable due to overgrowth of vegetation, on September 30.

November 12, 2020

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the October 2020 Trails Monitoring Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes trail monitoring and maintenance efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) in October 2020. This 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. Chambers Group qualified biologists and restoration specialists participating in trail maintenance activities within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the trail 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 focused on all mapped authorized trails surrounding the western and eastern riparian area. This included trails in the central portion of the Mitigation Area below Cottonwood Avenue bluff and the trail leading to Tujunga Ponds as well as the trail heading towards the western trail alignment. All mapped locations were inspected, and maintenance was performed if required, between October 1 and 2, and October 27 through October 30. The trail monitoring efforts focused on increasing visitor safety and minimizing negative impacts to native habitat by taking actions to help prevent equestrian riders and hikers from wandering off trail. The negative impacts that are caused by unauthorized, off-trail use include the trampling of native seedlings and resprouting vegetation, compaction of the soil, erosion, and the introduction of fertilizer (e.g., horse droppings) and weed seeds into new areas.

Implementation

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 work areas. The meetings were conducted by restoration biologist Valerie Alcantar who was present on site to monitor and participated in trail maintenance activities. Collector for ArcGIS (Collector), a Geographic Information System (GIS) application, was used to navigate and work along authorized trails, and to avoid disturbance to any documented sensitive plants and wildlife in areas requiring maintenance. Trail maintenance efforts were focused on maintaining high traffic areas of the authorized trails for public use and safety. All debris and obstructions were cleared from the established trails allowing for safe passage. Obstructions included vegetation overgrowth and downed tree/snag debris that were cut with handsaws and dragged clear of the trail. The trail monitoring and maintenance work performed in October required an average of three crew members per day.

Execution

On October 1 and 2, trail maintenance started on the eastern portion of the Mitigation Area below Cottonwood Avenue bluff working east towards the equestrian center in the eastern riparian area. Though this area was previously tended to in September, it was necessary to do a walk-through to ensure the paths were clear of fallen tree debris that likely



occurred during the high wind events in prior weeks. As the crew approached the area below the equestrian center, they observed a tree that had fallen and obstructed the trail. The crew used a chainsaw to cut the tree into smaller segments and successfully pulled the crown of the tree off to the side of the trail (Photos 1 and 2). The crew also focused on removing hazardous rocks and debris that had turned up and accumulated on the trail due to heavy equestrian traffic that over time, changes the trail composition under foot. In efforts to conserve native plants and wildlife and to avert unauthorized trail bypasses, the crew raked the larger stones to the sides of the trail and used the smaller rocks to delineate the authorized trail (Photos 3 and 4).

On October 27, crew members walked the length of the trail towards the Tujung Ponds and then looped back south along the trail that follows the western edge of the eastern riparian area to ensure a suitable path for both equestrians and hikers.

On October 28 through 30, the crew started trail maintenance on the western portion of the Mitigation Area below Cottonwood Avenue bluff and worked towards the eastern portion of the alignment in the western riparian area. The crew observed an unauthorized trail that was a shortcut from the top of Cottonwood Avenue bluff down to the trail below. This caused hillside erosion debris to roll down onto the authorized trail creating an unsuitable and hazardous path for horses. Logs and branches were utilized to delineate the authorized trail and the large rocks that had rolled down due to hiker usage were used to cover and block the unauthorized shortcut (Photos 5 and 6). Heading toward the eastern alignment, the crew focused on pruning overgrown thick-leaved yerba santa (*Eriodictyon crassifolium*), bur-sage (*Ambrosia acanthicarpa*), and horseweed (*Erigeron canadensis*) for a more navigable route, and on hand-pulling minor patches of flowering shortpod mustard (*Hirschfeldia incana*) and sweet alyssum (*Lobularia maritima*) that lined the trail. Sweet alyssum is an ornamental groundcover that grows in sandy, loamy, and heavy soil. This annual/perennial has slowly become more prominent in the western riparian area, and thus, was targeted for removal by hand-pulling. Patches of flowering white sweetclover (*Melilotus albus*) grew along several portions of the trail and were uprooted and removed using shovels. Targeting white sweetclover along the trail is essential to minimize its dispersal and dominance in both the western and eastern riparian area. As the crew approached the western portion of the alignment, they trimmed overhanging arroyo willow (*Salix lasiolepis*) that impeded the trail making a less navigable route for equestrians. The crew then walked the remainder of the trail to ensure a maintained and safe path for all users (Photos 7 and 8).

Summary and Discussion

All trail maintenance activities were supervised by Valerie Alcantar who monitored that regulations and requirements were closely followed. During trail maintenance efforts, care was taken to avoid damaging native vegetation. No new homeless encampments were encountered in or near the work areas, and previously cleared encampments continue to appear unoccupied. The crew will continue to address and maintain high-traffic, authorized trails. General trail maintenance and safety monitoring will continue on all authorized trails to provide public safety and enjoyment of the Mitigation Area. Incidental feedback received from equestrian riders has included comments regarding their appreciation of the removal of overgrown vegetation, fallen debris, and rocks, as well as the widening of sections of trail. This feedback from equestrian riders, as well as the feedback received during public outreach events, will continue to be incorporated in future trail maintenance efforts.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular trail maintenance efforts. Chambers Group staff will continually assess the efficacy of trail maintenance methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (949) 261-5414 extension 7242, via cell phone at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like any additional information.

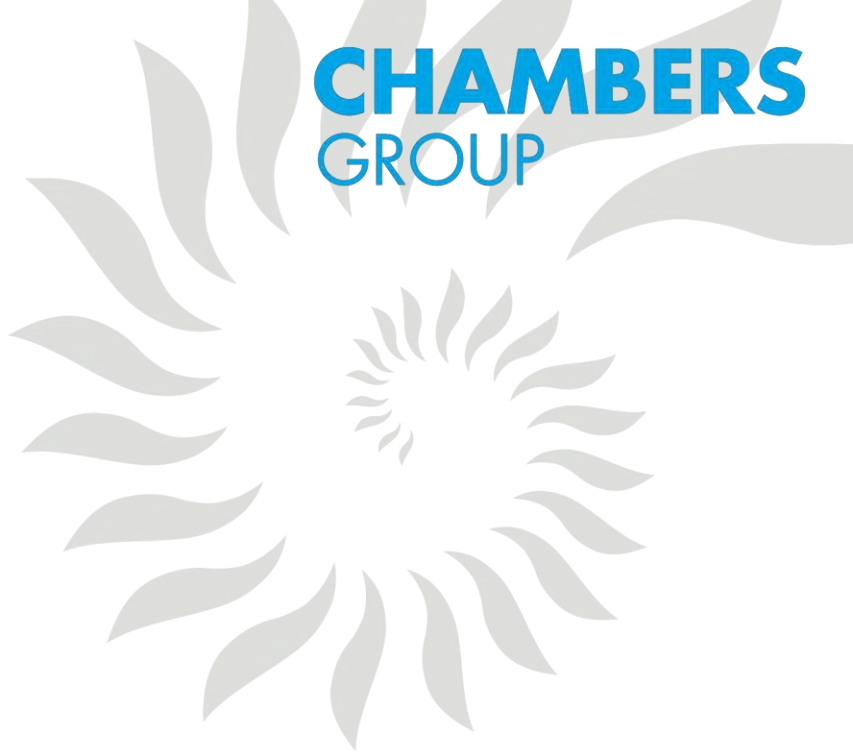
Sincerely,



CHAMBERS GROUP, INC.



Tim Wood
Habitat Restoration Foreman



PHOTOS



Photo 1. The crew encountered a fallen tree below the equestrian center in the eastern riparian area, on October 1.



Photo 2. The crew used a chainsaw to cut the tree into smaller segments and successfully pulled the crown of the tree off to the side of the trail, on October 1.

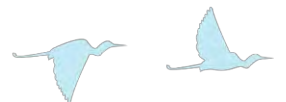




Photo 3. Below the equestrian center, rocks and debris had turned up and accumulated on the trail due to heavy equestrian traffic, on October 2.

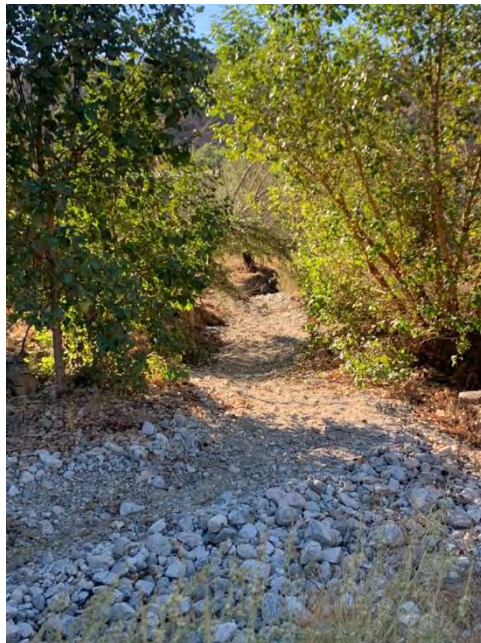


Photo 4. The crew raked the larger stones to the side and used the smaller rocks to delineate the authorized trail, on October 2.

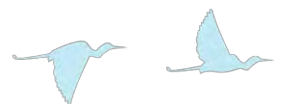




Photo 5. Logs and branches were utilized to delineate the authorized trail after an unauthorized trail that was a shortcut from the top of Cottonwood Avenue bluff down to the trail below was identified and blocked off, on October 28.



Photo 6. Large rocks that had rolled down into the trail due to hiker usage were used to cover and block the unauthorized shortcut, on October 28.

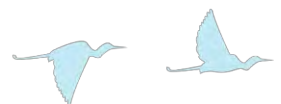




Photo 7. Heading toward the eastern alignment, the crew focused on pruning overgrown thick-leaved yerba santa, bur-sage, and horseweed providing a more navigable route, on October 29.



Photo 8. As the crew approached the western trail alignment, they trimmed overhanging willows that impeded the trail making a less navigable route for equestrians, on October 30.



January 6, 2021

Julianna Colwell
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Memorandum for the December 2020 Trails Monitoring Program Throughout the Riparian and Uplands of the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Colwell,

This memorandum summarizes trail monitoring and maintenance efforts conducted by Chambers Group, Inc. (Chambers Group) at the Big Tujunga Wash Mitigation Area (Mitigation Area) in December 2020. This 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. Chambers Group qualified biologists and restoration specialists participating in trail maintenance activities within the Mitigation Area worked to monitor and enforce that all mitigation and avoidance measures were followed by the work crews. Details of the trail 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 focused on all mapped authorized trails surrounding the western and eastern riparian area as well as the trail heading northwest to the North Wheatland Avenue entrance. This included trails in the central portion of the Mitigation Area below Cottonwood Avenue bluff leading to Tujunga Ponds, the trail below the equestrian center, and the trail heading towards the western trail alignment. All mapped locations were inspected, and maintenance was performed if required, on December 11, 14, 15, 30 and 31. The trail monitoring efforts focused on increasing visitor safety and minimizing negative impacts to native habitat by taking actions to help prevent equestrian riders and hikers from wandering off trail. The negative impacts that are caused by unauthorized, off-trail use include the trampling of native seedlings and resprouting vegetation, compaction of the soil, erosion, and the introduction of fertilizer (e.g., horse droppings) and weed seeds into new areas.

Implementation

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 work areas. The meetings were conducted by restoration biologist Michael Walsh, Alisa Muniz, and/or Corey Jacobs who were present on site to monitor and participate in trail maintenance activities. Collector for ArcGIS (Collector), a Geographic Information System (GIS) application, was used to navigate and work along authorized trails, and to avoid disturbance to any documented sensitive plants and wildlife in areas requiring maintenance. Trail maintenance efforts were focused on maintaining high traffic areas of the authorized trails for public use and safety. All debris and obstructions were cleared from the established trails allowing for safe passage. Obstructions included vegetation overgrowth and downed tree/snag debris that were cut with chainsaws and dragged clear of the trail. The trail monitoring and maintenance work performed in December required an average of three crew members per day.

Execution

On December 11, trail maintenance started on the central portion of the Mitigation Area below Cottonwood Avenue bluff, working north towards the Tujunga Ponds along the trail that follows the western edge of the eastern riparian area. As the crew was performing the walk-through, they encountered a snag that had fallen onto the trail. The crew was able to safely lift and drag the snag to the side of the trail and saw off any remaining branches that were impeding



the trail (Photos 1 and 2). Patches of vegetation found overgrowing the trail were trimmed back including native horseweed (*Erigeron canadensis*) and common sunflower (*Helianthus annuus*) that drooped over into the trail, and non-native shortpod mustard (*Hirschfeldia incana*) and white sweetclover (*Melilotus albus*). These patches of overgrowth were trimmed back or pulled, at a margin of 4 feet, to prevent further constriction and narrowing of the trail. The crew also focused on removing hazardous rocks and debris that had turned up and accumulated on the trail. Heavy equestrian traffic turns up gravel and cobble, and over time, changes the trail composition under foot. Crew members raked the rock and debris creating a distinguishable and suitable path for both equestrians and hikers.

On December 14, trail maintenance resumed from the previous week near the Tujunga Ponds and continued south towards the equestrian center until looping back to the area below Cottonwood Avenue bluff. In this area, another large snag had fallen into the trail that required the use of a chainsaw to cut it smaller segments. The crew then moved the segments to the side of the trail, clearing the obstruction and creating a safe path for equestrians and hikers (Photos 3 through 5).

On December 15, the crew worked on the trails in the western riparian area, starting where work ended the previous day and working east until reaching the western portion of the alignment near the south Wheatland Avenue entrance. Patches of vegetation found overgrowing the trail were trimmed back including native thick leaved yerba santa (*Eriodictyon crassifolium*), horseweed, and annual bur-sage (*Ambrosia acanthacarpa*) that impeded the trail, and non-native shortpod mustard, white sweetclover, and sweet-alyssum (*Lobularia maritima*). These patches of overgrowth were trimmed back or pulled out by the root to prevent further constriction and narrowing of the trail and to minimize the dispersal and spread of non-native species along these high traffic areas. The crew continued to rake aside hazardous rocks and debris that had turned up and accumulated on the trail to create a safe and suitable path. The crew also cleared a fallen sweet gum tree (*Liquidambar styraciflua*) that had landed with its crown protruding into the trail. The fallen tree was pulled to the side where it would not cause a hazard to equestrian users or hikers (Photos 6 through 8).

On December 30, the crew worked in both the eastern and western riparian areas performing maintenance work in the same areas as they had in the previous weeks. An additional walk-through of these high-traffic areas was conducted to manage and clear trails after more high wind events. Below the equestrian center, branches and debris as well as upturned rocks had accumulated on the trail making the trail boundaries less distinguishable (Photos 9 and 10). North of the equestrian center, a tree along the trail had snapped and fallen obstructing the trail. The crew safely used a chainsaw to cut the fallen debris into segments and then pulled the segments off to the side, clearing the obstruction. Clearing debris obstructions is essential to maintaining a safe path for equestrians and hikers and to help keep them from wandering off the authorized trail (Photos 11 and 12).

On December 31, the crew started maintenance on the trail that crosses through the Big Tujunga wash working towards the north Wheatland Avenue entrance. The crew conducted a walk-through of the area checking for any debris that may have fallen/accumulated on the trail due to high wind events and dismantling man-made dams that they encountered in the Big Tujunga Creek. The crew looked out for unauthorized trails as they progressed and performed maintenance on unauthorized trail blockades that had been established in previous months to camouflage unauthorized trails and discourage their use.

Summary and Discussion

All trail maintenance activities were supervised by Michael Walsh, Alisa Muniz, and/or Corey Jacobs who monitored that regulations and requirements were closely followed. During trail maintenance efforts, care was taken to avoid damaging native vegetation. No new homeless encampments were encountered in or near the work areas, and previously cleared encampments continue to appear unoccupied; however, the maintenance crew generally avoids the encampments for safety reasons, and thus, there is potential for activity at the encampments to go unnoticed. The crew will continue to address and maintain high-traffic, authorized trails. General trail maintenance and safety monitoring will continue on all authorized trails to provide public safety and enjoyment of the Mitigation Area.



Incidental feedback received from equestrian riders has included comments regarding their appreciation of the removal of overgrown vegetation, fallen debris, and rocks, as well as the widening of sections of trail. This feedback from equestrian riders, as well as the feedback received during public outreach events, will continue to be incorporated in future trail maintenance efforts.

Chambers Group staff will continue to support the ongoing effort to protect and enhance the Mitigation Area's native habitat through regular trail maintenance efforts. Chambers Group staff will continually assess the efficacy of trail maintenance methods and adjust these methods as needed to best support mitigation goals.

Please feel free to contact me at (949) 261-5414 extension 7242, via cell phone at (626) 437-9935, or at twood@chambersgroupinc.com, if you have any questions or would like any additional information.

Sincerely,

CHAMBERS GROUP, INC.



Tim Wood

Habitat Restoration Foreman



SITE PHOTOS



Photo 1. The crew encountered a snag that had fallen onto the trail that follows the western edge of the eastern riparian area, on December 11.



Photo 2. After the crew safely lifted and dragged the snag over to the side and sawed-off any remaining branches that were impeding the trail, on December 11.

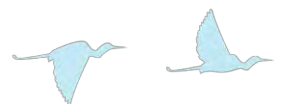




Photo 3. The crew encountered a fallen snag below the equestrian center in the eastern riparian area, on December 14.



Photo 4. The crew used a chainsaw to cut the tree snag into smaller segments, on December 14.

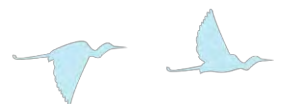




Photo 5. The crew then moved the cut segments off to the sides of the trail, clearing the obstruction and creating a safe path for equestrians and hikers, on December 14.



Photo 6. The crew encountered a fallen sweet gum tree that landed with the crown protruding into the trail, on December 15.





Photo 7. The crew members pulled the fallen tree to the side where it would not cause any risk to equestrian users or hikers, on December 15.



Photo 8. After the sweet gum tree had been fully removed from the trail to create a safe and suitable path, on December 15.





Photo 9. Below the equestrian center, branches and debris as well as upturned rocks had accumulated on the trail making the trail boundaries less distinguishable, on December 30.

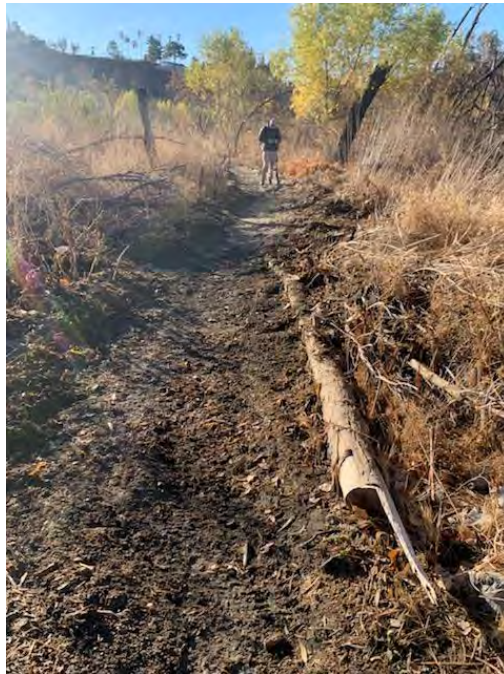


Photo 10. After the crew used rakes to remove rocks, branches, and debris that had accumulated on the trail, on December 30.

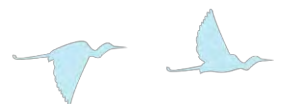




Photo 11. North of the equestrian center, a tree along the trail had snapped and fallen obstructing the trail, on December 30.



Photo 12. After the crew safely used a chainsaw to cut the fallen tree debris into segments and clear it from the trail, on December 30.



APPENDIX I – 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

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

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

Mr. Wesley Collins
Greater LA County Vector Control
District 16320 Foothill Boulevard
Sylmar, CA 91342
wcollins@glacvcd.org

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Ms. Carol Roper
Shadow Hills Property
Owners Association
9635 La Canada Way
Sunland, CA 91040

Mr. Albert Torres
Senior Park Ranger
City of Los Angeles
4730 Crystal Springs Drive
Los Angeles, CA 90027
albert.torres@lacity.org

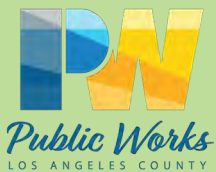
Sergeant Boris Nikolof
LA County Sherrif's Dept, Parks Bureau
32113 Castaic Lake Drive
Castaic, CA 91384

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. Kristen Sabo
P.O. Box 337
Sunland, CA 91041
ksabo@wildwildwest.org

APPENDIX J – NEWSLETTERS





Big T Wash Line

SUMMER 2020

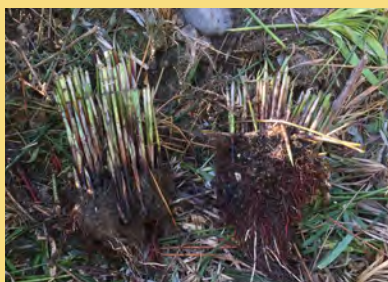
A PUBLICATION OF LOS ANGELES COUNTY PUBLIC WORKS

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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, encompassing the Big Tujunga Wash and Haines Canyon Creek. The site was purchased by Los Angeles County Public Works in 1998 as compensation for habitat loss for other Public Works projects.

LA County’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. The site is home to several protected species

of fish, including the Santa Ana sucker, Santa Ana speckled dace, and arroyo chub. It also contains habitat for sensitive bird species such as the least Bell’s vireo and southwestern willow flycatcher.

This newsletter provides updates to ongoing programs and explains upcoming enhancement measures that will be implemented on the site. Newsletters are published on a semi-annual basis.

For more information, visit:
pw.lacounty.gov/wrd/projects/BTWMA



Flies and Bees

Spring and pollen are in the air. Plants of all shapes and sizes are starting to bloom at Big T.

In just over two years since the Creek Fire burned through the Mitigation Area and surrounding communities, understory vegetation is recovering along Haines Canyon Creek, and many native riparian trees that had been burned are resprouting. These early stages of secondary succession after a fire can be a boon for annual plants. With the reduction in the tree cover comes an increase in light availability, allowing smaller plants to grow vigorously. This improvement in growth conditions favors annual plant species whose seeds require fire to germinate. The increase in light favors both the native and non-native plants along Haines Canyon Creek. Restoration efforts are essential during the earliest stages of succession to limit the spread of exotic plants while competition from native plants is minimal. Pollinators such as bees and flies are rebuilding their populations as well. These insects immigrate from surrounding unburnt areas, attracted by bountiful floral resources.

Different bee and fly species have varied success pollinating the multitude of plants. There are a few features to look out for when identifying different pollinators. Bees have longer antennae and two pairs of wings, though the two pairs of wings are difficult to distinguish as they are attached together with small hooks. Hoverflies in the Syrphidae family can have the similar yellow and black stripes on their abdomen conventionally associated with honey bees. However, flies have much shorter antennae than bees and only one pair of wings. The hoverfly's namesake comes from its tendency to hover and observe its surroundings, unlike the constant meandering path of bees. Bumblebees in the genus *Bombus* are commonly seen earlier in the year during colder weather. They can be observed

buzzing within flowers to dislodge pollen from the flower's anthers. Smaller bees can also make excellent pollinators. Bees in the genus *Andrena* often lack the yellow markings commonly associated with bees, but are quite recognizable once you spot the yellow pollen balls attached to the hairs of their corbiculae (pollen baskets) on their hind legs. These bees will build nests underground, opting to dig into areas of bare soils. One of the most common native bees to encounter later in the spring are those commonly referred to as sweat bees, belonging to the family Halictidae. These bees are attracted to perspiration, and may approach people to sip on human sweat. The metallic green bees of the genus *Agapostemon* are one such example. Although these bees are capable of stinging or biting, the chance of either is unlikely.



Willow catkins are the primary attractant for bees and other pollinators early in the year. Catkins are flower clusters that have an elongated shape similar to a banana, but have a soft, velvety texture due to the dense clusters of hairs and filaments. Willow catkins provide a plethora of pollen to a variety of insects when few other plants have started flowering. Deerweed is a small shrub that can tolerate the drier upland conditions further from Haines Canyon Creek. Deerweed features leaves that are separated into three leaflets, a trait common to the pea family. It is recognizable due to its mix of orange and yellow flowers that start to bloom in mid-February. Its flowers are popular with bumblebees who are capable of navigating past the fused, lower petals that form the keel to access the pollen and nectar within. Intermixed in the upland areas alongside the deerweed is thick-leaved yerba santa. This plant is distinguishable due to the long, dense, gray hairs on its leaves that catch the light, providing a soft glow to its edges. The leaves smell vaguely of strawberries, and its purple tubular flowers provide food to all forms of insects. Some insects will cheat the flower's phonological timing (in plants, the timing of the biological events such as flowering and leafing) by chewing through the bottoms of the petals before the flower has opened to get the first taste of the pollen within.

If you are interested in learning more about the plants and their pollinators around Big T or in your own backyard, visit the website iNaturalist ([inaturalist.org](https://www.inaturalist.org)). iNaturalist is a citizen-science website (and application) in which anyone with a free account may submit observations and identify organisms. It functions as one of the largest publicly available databases of plant and animal populations.

Exotic Plants

Last year was significant for weed removal at Big T. Several exotic plant species which harm the environmental function and resilience of the property were targeted for removal. Following last year's wet winter, many of these exotic weeds were very abundant.

Mustard

Mustard was one of the target weeds last year. Large areas of the site were filled with mustard plants that had grown following last year's wet winter (below photos). These yellow-flowered plants look lovely when they are blooming, but very quickly dry out and turn into a lattice of dead twigs and seed pods. Every mustard flower has the potential to produce over a dozen seeds, and each mustard plant can grow dozens



BEFORE

The area beneath the Equestrian Center at Big T is an example of how mustard forms fields of dry vegetation that connect living vegetation. Fire can easily spread between shrubs and trees.



AFTER

After mustard is removed, there is no longer a bridge between living shrubs and trees.



Mustard plants were hauled off-site after removal.

of flowers. Because mustard plants produce many seeds, they can quickly and easily take over an area.

One of the goals when removing mustard was to collect as many mature seeds as possible before they could enter the "seed bank", a term referring to the accumulation of seeds that build up in the soil year after year. If environmental conditions do not support the seeds' sprouting (for example, if there is not enough rain or if it is too cold), those seeds remain in the soil until favorable weather encourages them to grow. This year's relatively dry winter did not encourage much mustard growth so far, but mustard seeds can survive in the soil for many years before sprouting. So, the lack of mustard this year does not mean that Big T will not be covered with mustard again in the future.

With sustained weeding efforts, weeds are removed every year before they produce seeds, so the total number of weed seeds left in the seed bank will decrease. Eventually, the areas that were once filled with weeds will no longer need as much effort to maintain. This is the overall goal of habitat restoration: to restore an area back to a native plant community that can survive on its own.

Another goal during mustard removal it to reduce the amount of potential fire fuel on the property. After mustard matures, the plants dry out leaving behind a thicket of dry twigs. These dry mustard plants form fields that connect shrubs and trees that would otherwise not likely be exposed to low-burning flames (left photos). The dry twigs act as tinder which allows fires to start and spread quickly and stoke flames that would not normally burn hot enough to set fire to living shrubs and trees.

The restoration crew cut down and collected as much of the dead vegetation and mature seeds as possible (top right photo). The vegetation and seeds were collected in garbage bags and removed from the property. Community members who noticed the large pile of garbage bags along Cottonwood Avenue last year will have an idea of how much dry fuel was collected!

Continued on next page...



Crew members used shovels to remove umbrella plant from the Tujunga Ponds.

Umbrella Plant

Another exotic weed removal target last year was the umbrella plant that grew thickly along Haines Canyon Creek and the Tujunga Ponds (top left photo). Umbrella plant forms thick patches of reeds along creeks and bodies of water and can easily crowd out native plants. As umbrella plant grows, its root system expands outward, so just a few individuals can take over an entire creek bank.

The umbrella plant is also harmful to the natural areas at Big T because its extensive roots solidify the creek banks and do not allow the sediment to shift. The creeks and arroyos at Big T naturally change their flow and location following big flood events, providing water to larger areas from year to year. The cottonwood and willow trees within Big T require a lot of water to grow to the large sizes that provide shade for riders/hikers and habitat for various wildlife species. When the creek is allowed to shift its course, larger areas are provided with enough water to help these species grow.

While working along Haines Canyon Creek the restoration crew discovered large areas of creek that had been entirely dominated by umbrella plant, to the point where no other plant species could grow. In order to remove the umbrella plant, the restoration crew had to use shovels to dig out this extensive network of roots. Areas of creek that once grew thick with umbrella plant are now open for willow and cottonwood seedlings to grow (top right photos).

Eupatory

An exotic weed called eupatory was also removed along Haines Canyon Creek. This weed forms long vines that climb over other vegetation and competes with native plants for light and water (bottom right photo). Eupatory is a particularly invasive weed because its roots secrete a chemical that stops the seeds of other plants from sprouting. By outcompeting native plants for resources, and stopping new individuals from sprouting, eupatory can easily take over the edges of creeks.



Last year's weeding efforts were a big success! The restoration crew cleared large areas of the Mitigation Area that were previously overrun with weeds, providing native plants and trees the space and water they need to thrive. As a result, Big T is now more resilient to potential fires and environmental degradation caused by invasive weeds.



Umbrella plant grew thickly along many sections of Haines Canyon Creek.



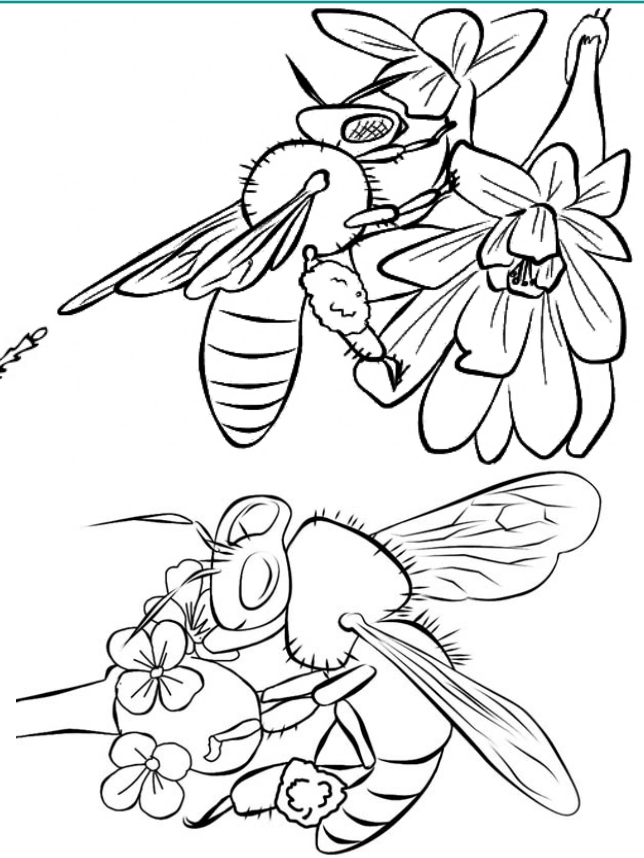
Biologists removing Umbrella plant from Haines Canyon Creek



Eupatory grows as a vine and was found overgrown along sections of Haines Canyon Creek.

KID'S CORNER

Color the pollinators!



Can you tell which one is the fly?

EMERGENCIES? INCIDENTS? QUESTIONS?

CALL 911 TO REPORT ANY EMERGENCY SUCH AS FIRE OR ACCIDENT

- To report minor incidents or regulation infractions contact Los Angeles County Sheriff's Department, Parks Bureau Trails Team at (323) 845-0070. (Please DO NOT use 911.)

- Do not attempt to enforce regulations yourself; please allow law enforcement to handle the situation or incident.

- For emergency follow up or to report minor incidents, obtain information, or get questions answered (8 a.m. to 5 p.m., Monday through Thursday), please contact:

Los Angeles County Public Works

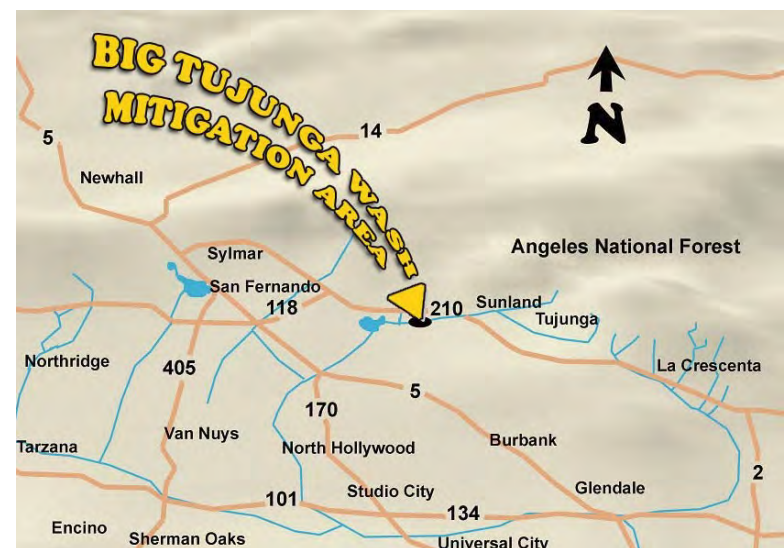
900 S. Fremont Ave
Alhambra, CA 91803
Email: BTWMA@pw.lacounty.gov
Phone: (626) 458-6158

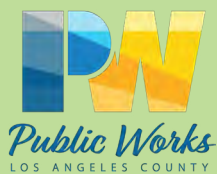
Where is the Big Tujunga Wash Mitigation Area?

Downstream of Big Tujunga Canyon, right in Lake View Terrace and south of the 210 freeway, there is 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:

- pw.lacounty.gov/wrd/projects/BTWMA





Big T Wash Line

WINTER 2020

A PUBLICATION OF LOS ANGELES COUNTY PUBLIC WORKS

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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, encompassing the Big Tujunga Wash and Haines Canyon Creek. The site was purchased by Los Angeles County Public Works in 1998 as compensation for habitat loss for other Public Works projects.

Public Works' 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. The site is home to several protected species

of fish, including the Santa Ana sucker, Santa Ana speckled dace, and arroyo chub. It also 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 in the spring and fall.

More information can be found at:
pw.lacounty.gov/wrd/projects/BTWMA

The Endangered Least Bell's Vireos Habitat at Big T



Photo 1. Example of the dense riparian woodland that dominates areas surrounding Haines Canyon Creek.

Big T hosted a very special bird this spring and summer – the least Bell's vireo. This migratory songbird is endangered throughout its range and only occurs in small pockets of habitat in Southern California during its nesting season (spring and summer) before flying down to western Mexico and Central America for the non-breeding season. They can be recognized by their distinctive song. It is sometimes described as sounding like a cassette being played on fast-forward or like the static sound of a phonograph.

Least Bell's vireos rely on areas that contain dense riparian vegetation for breeding (Photo 1), and the cottonwood and willow woodlands surrounding Haines Canyon Creek provide ideal habitat. While the 2017 Creek Fire left much of the riparian vegetation at Big T burnt to the ground, the habitat that grew back in its wake created the dense understory vegetation that least Bell's vireos need for nesting. The newly resprouting trees and shrubs create what is called "primary successional habitat", or habitat that is early in its recovery after major disturbance, including fires. So, while the Creek Fire was devastating to much of the mature riparian vegetation, it also allowed a natural regeneration of vegetation which serves an environmental purpose.

The male and female vireo build their nest together, selecting a site within thick vegetation, usually just a few feet above the ground. They take turns delivering bark and other plant material to the nest site and use spider webs to glue the whole structure together, which usually hangs between two small twigs (Photos 2 and 3). The female lays 2 to 4 eggs, which the pair then incubates for about two weeks until they hatch. It takes another two weeks of feeding and brooding their young until they are large enough to fledge from the nest. If the vireos' nest

fails, they usually build a new nest soon afterward and can re-nest several times over the course of the breeding season.

A Species at Risk

Populations of least Bell's vireo have declined over the last few decades for two main reasons: habitat loss and nest parasitism by brown-headed cowbirds. These vireos can only breed in dense riparian vegetation that grows around streams and rivers. This type of habitat has been steadily disappearing throughout Southern California because of human development. Riparian woodlands are no longer common in Southern California, making Big T an important patch of habitat for vireos in our area.

Brown-headed cowbirds, which are related to blackbirds, use a breeding strategy referred to as nest parasitism. They never build their own nests and exclusively lay eggs in the nests of other bird species, referred to as hosts. Cowbirds parasitize the nests of many different bird species, including the least Bell's vireo, leaving the vireo hosts to incubate the cowbird eggs and raise the cowbird young. The cowbird eggs and nestlings develop faster than the host's eggs, resulting in the cowbirds hatching sooner and outcompeting the host's own young.

Cowbirds utilize various strategies to ensure that the host birds don't remove or damage the foreign eggs. They often remove some of the host's own eggs from the nest when they lay their own, possibly tricking the hosts into unknowingly raising the cowbirds' young. In addition, if the host birds recognize and remove the cowbird egg, the cowbird often comes back and pecks holes in the host's eggs, resulting in the failure of the nest. This behavior is to deter the hosts from removing cowbird eggs, but also causes the hosts to build another nest, creating another opportunity to parasitize the birds. Female cowbirds can lay 40 to 60 eggs each year, and often parasitize the same birds throughout the breeding season, even if the hosts have already raised cowbird young or lost their nests as a result of previous parasitism. In these ways, cowbirds make it difficult for the host to successfully raise their own young, and least Bell's vireo populations in Southern California have been decimated as a result.

Continued on next page...



Photo 2. A least Bell's vireo nest hanging between twigs.

Photo 3. A least Bell's vireo building its nest.



Brown-headed Cowbird Trapping

In an effort to combat the pressure that cowbirds exert on the breeding birds at Big T, multiple cowbird traps have been deployed regularly throughout the Mitigation Area since 2009. The traps are not used to control the number of cowbirds. The traps are used to decrease the likelihood of cowbirds attempting to nest in riparian areas where endangered birds can be found and thereby increasing the potential for successful nesting by our native songbirds. These traps are baited with decoy cowbirds, and are serviced every day from the end of March through early July. The traps capture the cowbirds in a large cage where they are provided with food and water until they are humanely euthanized. In 2019 alone, 55 cowbirds were removed from the Mitigation Area, providing nesting birds in the area with needed relief.

Trouble for the Vireos at Big T

Three pairs of least Bell's vireos were detected at Big T this year in the riparian habitat that dominates the southern and eastern sections of the Mitigation Area. Unfortunately, of these three pairs, only one nest was observed to have successfully fledged young. Roughly half of the other observed nests were parasitized by cowbirds (Photo 4), resulting in the failure of the nests, with the remaining nests failing for unknown reasons (possibly from parasitism or predators eating the eggs or young). While these observations were unfortunate, they do inform the strategies that will be implemented in the future at Big T to protect the vireos, particularly where to place cowbird traps within the Mitigation Area to provide the most relief.



Photo 4. A failed least Bell's vireo nest containing a brown-headed cowbird egg.

Annual Cleanup Day Cancelled

The Big Tujunga Wash Annual Cleanup Day was canceled this year due to COVID-19 restrictions that remain in place and limit group size. While this situation is unfortunate, the health and safety of our community members is of the utmost importance, and we will look forward to resuming the Annual Cleanup Day in 2021.

Please Report Prohibited Activities

Evidence of prohibited activities, including campfire use and fishing at the Tujunga Ponds has been observed by maintenance crews this past summer and fall. While fishing may seem like a relatively benign activity, lost or discarded fishing line is a hazard to wildlife.

In late September, a barn owl was observed hanging in a tree, and upon closer inspection it was apparent that it had become entangled in fishing line and was unable to escape, likely dying of starvation. In addition, campfire remains, including a couple of areas where the surrounding vegetation had burned, were observed. Considering the current fire climate, it is important to remain vigilant in reporting any illegal fires to keep Big T and the surrounding communities safe. Please report any prohibited activities observed at Big T to Public Works or call local authorities to report emergencies.

Maintenance crews will resume onsite maintenance starting in the early spring of 2021. Until then, no maintenance crews will be on site. If unauthorized activities such as fishing or recreating are observed in Haines Canyon Creek or the Tujunga Ponds during that time, please notify Public Works.

Fighting Fire with Fire: The Past, Present, and Future of Wildlands Management

In recent years, California has experienced some of the state's most catastrophic and destructive wildfires, with this current fire season already breaking records as the worst in California history even before the end of September.

These fires have displaced whole communities, destroyed homes, and damaged precious habitat while leaving behind silent moonscapes of ash and rubble in their wake. California is no stranger to wildfire, and the 2017 Creek Fire was a reminder of how quickly fire can alter a landscape. In fact, fire has played an intrinsic and irreplaceable role to the complex and interconnected life cycles of many of California's ecosystems. However, the fires of today share only a scant resemblance to those which burned throughout the state before colonization. So, what is causing this acceleration in the size and destruction of wildfires? Despite the negative effects of fire, what beneficial role does it play in the environment? How these pressing questions are addressed by Californians may determine the future of this place so loved for its diversity of wildlife, terrain, people, and opportunities.

According to CAL FIRE on September 24, 2020, from the most reliable records available from 1932 to 2020, 17 of the 20 largest fires in California history have burned in just the last 18 out of 88 years. Of the 5,681,236 total acres burned by these notorious fires, 5,113,945 acres (90 percent) were burned in that 18-year period, and 2,218,495 of those acres (39 percent) have burned so far this year from 5 fires alone. These numbers may be startling, but more importantly they reveal an interconnected pattern that has set the stage for these increasingly voracious blazes. The culprits are factors associated with climate change paired with the suppression of the indigenous land management practices that many California ecosystems have evolved to depend on.

The popular trope of the "untouched wilderness" before colonization is not only false but does a great disservice to the vast wealth of knowledge developed by indigenous peoples who once skillfully stewarded the land. In her book, "Tending the Wild", author and researcher, M. Kat Anderson describes indigenous land management practices that included selective pruning, coppicing, removal of vegetation, developing irrigation channels, sowing seed, tilling soil, transplanting plants, weeding, and setting seasonally scheduled burns in grasslands, meadows, and forest and woodland understories. The scheduled burns in particular sustained much of the resources the indigenous peoples depended upon for survival while at the same time rejuvenating and maintaining these ecosystems. Anderson sums up the important role that fire played for their cultures and the health of the land.

"Deliberate burning increased the abundance and density of [wild plant foods]; enhanced feed for wildlife; controlled the insects and diseases that could damage wild foods and basketry material; increased the quantity and quality of materials used for basketry and cordage; and encouraged

the sprouts used for making household items [and tools]. It also removed dead material and promoted growth through the recycling of nutrients, decreased plant competition, and maintained specific plant communities [...]"

These complex symbiotic relationships made living sustainably off the land possible and fruitful, but once indigenous people were forced from their homes and into reservations, their ability to continue these practices became nearly impossible. Then around the early 20th century began a well-meaning yet woefully misinformed conservation movement that sought to preserve and protect nature. It largely overlooked the role of indigenous people in shaping the land and sought to preserve nature without human intervention. Though there was push back from people like Galen Clark, advocate for the Sierra Miwok and their traditional ways, his words were overshadowed by the momentum gained by those pushing for strict preservation and fire suppression. This helped solidify the path towards today's predicament.

Moving forward to 2020, smoke laden skies loomed for days on end from the local Bobcat Fire and two dozen other fires throughout the state as the sun glowed red in the sky like a fading warning light. The Bobcat Fire in particular has challenged firefighters due to a set of underlying factors. "This fire was man-made on many levels," said Bill Patzert, a climatologist who spent several decades working at the NASA Jet Propulsion Laboratory in La Cañada Flintridge. "Record heat, population growth, fossil fuels, and other factors related to climate change have contributed not only to the state's unprecedented fire season," Patzert said, "but also to the particular challenges of the Bobcat Fire," the Los Angeles Times reported on September 15, 2020. According to Angeles National Forest spokesman, Andrew Mitchell, the challenges making this a nightmare for firefighters are the aforementioned factors in combination with rugged terrain and built up dry vegetation in an area that, "hasn't burned in 60, 70 years".

With so much fuel available to burn, little rain this past winter and spring, and record-breaking heat waves, fires are burning hotter and more aggressively than prescribed burns of the past, making it harder for ecosystems and communities to cope. Because of the complexity of the situation, a multilayered approach that includes climate change action, invasive weed management, selective vegetation thinning, and the careful reintroduction of fire regimes may be needed. As stated by fire ecologist Richard Minnich, "[...] the ecological bottom line [is the] more burns in a given area, the smaller and more manageable fires will be in the future." Reaching that future will require a wealth of societal support for our firefighters and scientists and mass pressure on the political forces capable of allocating resources to this cause.

KID'S CORNER

My Fire Inspection Checklist

Become an official Safety Inspector!

Make sure your home is safe and inspect for risks. Ask a grown-up for help.

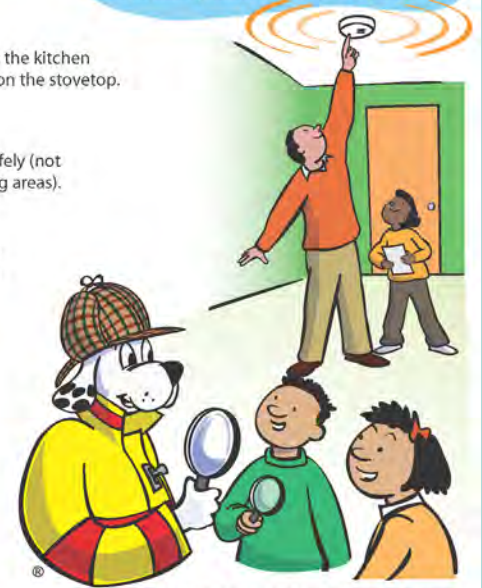
If the item on your list is **SAFE**, color the circle next to it **GREEN**.
If the item on your list is **UNSAFE**, color the circle next to it **RED**.
If you are **NOT SURE** if the item on the list is safe, color the circle **YELLOW**.

-  Electrical cords are in good condition (not damaged).
-  Appliances and lights are plugged into separate electrical outlets.
-  All smoke alarms work when tested by a grown-up.
-  All escape routes are clear of clutter and easily accessible.
-  Curtains and other things that can burn are away from the stovetop.
-  Portable space heaters are off whenever a grown-up leaves the room and goes to sleep.

-  The clothes dryer has a clean vent and filter (no lint build-up).
-  A grown-up always stays in the kitchen whenever food is cooking on the stovetop.
-  All extension cords are used safely (not under carpets or across walking areas).
-  Portable space heaters are 3 feet away from anything that can burn.
-  The furnace has been inspected in the past year.
-  The chimney has been inspected and cleaned in the past year.

If any of your circles are **YELLOW** or **RED**, ask a grown-up to make it safe.

Parent Signature: _____



Check out Sparky the Fire Dog® at sparky.org
Sparky® is a trademark of NFPA

EMERGENCIES? INCIDENTS? QUESTIONS?

CALL 911 TO REPORT ANY EMERGENCY SUCH AS FIRE OR ACCIDENT

• To report minor incidents or regulation infractions contact Los Angeles County Sheriff's Department, Parks Bureau Trails Team at (323) 845-0070. (Please DO NOT use 911.)

• Do not attempt to enforce regulations yourself; please allow law enforcement to handle the situation or incident.

• For emergency follow up or to report minor incidents, obtain information, or get questions answered (8 a.m. to 5 p.m., Monday through Thursday), please contact:

Los Angeles County Public Works

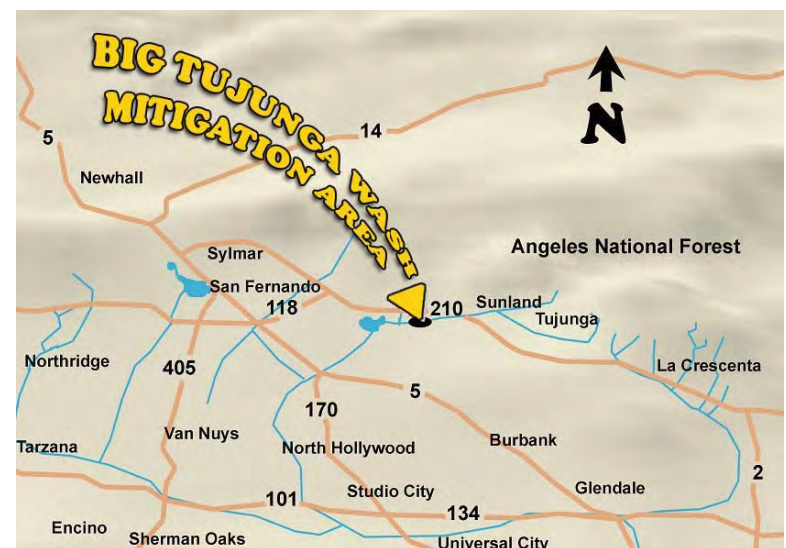
900 S. Fremont Ave
Alhambra, CA 91803
Email: BTWMA@pw.lacounty.gov
Phone: (626) 458-6158

Where is the Big Tujunga Wash Mitigation Area?

Downstream of Big Tujunga Canyon, right in Lake View Terrace and south of the 210 freeway, there is 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:

- pw.lacounty.gov/wrd/projects/BTWMA



APPENDIX K – COMMUNITY ADVISORY COMMITTEE MEETING DOCUMENTS





**BIG TUJUNGA WASH MITIGATION AREA
COMMUNITY ADVISORY COMMITTEE MEETING**

AGENDA

**Thursday, November 19, 2020
5:30 p.m. to 7:30 p.m.**

Click [here](#) to join the Webex meeting event

Event number: 146 896 8103

Event password: PW4118

Webex meeting event call-in info

Audio conference: +1-408-418-9388

Access code: 146 896 8103

Panel: Los Angeles County PublicWorks (Public Works)
Chambers Group, Inc. (Chambers Group)

I. Welcome/Introduction

II. Review of Meeting Agenda

III. Site Maintenance Issues

Discussion of Action Items from 2019 CAC Meeting

IV. Summary of 2019 Programs

1. Brown-headed cowbird trapping
2. Exotic Plant Eradication Program
3. Exotic Wildlife Removal Program
4. Trails Maintenance, Realignment, and Cleanup Day
5. Snag Removal Monitoring (LA City tree crews)
6. Fuel Reduction Efforts
7. sUAS Post- Creek Fire Vegetation Mapping, Analysis, and Site Recovery
8. Water Quality Monitoring
9. Public Outreach Program
10. Incident Monitoring

V. Current Status of 2020 Programs

1. Brown-headed cowbird trapping
2. Exotic Plant Eradication Program
3. Exotic Wildlife Removal Program
4. Trails Maintenance Program and Cleanup Day (Cancelled)
5. Water Quality Monitoring
6. Public Outreach Program
7. Continued Incident Monitoring

VI. Schedule Next CAC Meeting

VII. Comments, Questions, and Answers

November 19, 2020

Dear Julianna Colwell, Civil Engineer
Los Angeles County Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Big Tujunga Wash Mitigation Area Community Advisory Committee Meeting Minutes

Dear Julianna Colwell,

This memo summarizes the Community Advisory Committee (CAC) Meeting held on Thursday, November 19, 2020, from 5:30 p.m. to 7:30 p.m. via WebEx.

Meeting Minutes

I. Welcome/Introduction/Housekeeping Rules

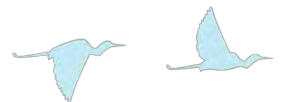
Attendees:

- Heather Driscoll (Parks and Recreation)
- Olivia Miseroy (Parks and Recreation)
- Tim Wood (Chambers Group)
- Paul Morrissey (Chambers Group)
- Jackie Mayfield (Chambers Group)
- Julianna Colwell (Public Works)
- Maria Lee (Public Works)
- Lily Sam (Public Works)

II. Review of Meeting Agenda

III. Summary of 2019 Eradication Program

1. Brown-headed cowbird trapping
 - a. Brown-headed cowbirds (BHCO) are parasitic species that lay their eggs in the nests of songbird species, and will often remove or damage the songbird's own eggs.
 - b. BHCO trapping occurs between April and July to reduce nest parasitism on songbirds during their prime nesting season.
 - c. Fifty-five BHCOs were captured and removed from the Mitigation Area in 2019.
2. Exotic Plant Eradication Program
 - a. The main purpose is to remove non-native and invasive plant species from the Mitigation Area, thus increasing resources for native plants to survive and thrive.
 - b. Maintenance crews were removing exotic plants on an almost daily basis in 2019.
 - c. At the end of April, herbicide use as a means to control weeds was banned, and the maintenance crew shifted exclusively to mechanical removal methods.
 - d. Substantial rainfall in the 2018/2019 season and alternating warm and cool weather patterns led to a lot of weed growth and weed regrowth throughout the spring and summer months.



- e. Many of the weeds removed in 2019 were bagged and disposed of at an off-site facility so that the dry material did not become a fire hazard.

3. Exotic Wildlife Removal Program

- a. Exotic wildlife removal efforts are conducted to protect special status fish species including the Santa Ana sucker, the arroyo chub, and the Santa Ana speckled dace.
- b. Regular exotic species removal efforts have helped native fish species to rebound.
- c. 14,839 exotic aquatic individuals were removed from Haines Canyon Creek and the Tujunga Ponds in 2019.
- d. Largemouth bass are voracious predators and can be detrimental to the native fish populations in Haines Canyon Creek.
- e. Illegal dams continued to be an issue, obstructing the flow of water, thus trapping and creating water quality issues for native fish.

4. Trails Maintenance, Realignment

- a. Trail maintenance is conducted to keep the trails safe and clear for equestrian users and hikers.
- b. Trails can become degraded with use. Trail crews work to remove cobble and rock that turns up in the trail over time, and to regrade and delineate the trail boundaries to make the trails more comfortable for horses.
- c. Trail maintenance included the removal of snags, downed trees, and branches; removal of irritating plants such as poison oak and trimming back overgrown vegetation; removal of rock and log dams from the creek; clearing and delineating trails for safe passage; and blocking off unauthorized trails.
- d. Trail realignment efforts occurred in 2019 to minimize the number of locations where the trails cross the creek. This was done to help protect special status fish species, riparian bird species, and riparian plant communities.

5. Snag Removal Monitoring (LA City tree crews)

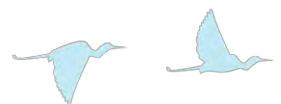
- a. April 2019 as part of a larger 2017 Creek Fire cleanup project paid for by a National Dislocated Worker's Grant, San Gabriel Valley Conservation Corps, Los Angeles Conservation Corps, Northern California Construction Training, and Chambers Group collaborated with Public Works staff to facilitate the safe removal of more than 50 snag trees from the Mitigation Area.
- b. These snag trees were identified as potential safety and/or fire hazards and were removed from the site to support public safety.

6. Trail Cleanup Day

- a. The Trail Cleanup Day event was attended by approximately 18 volunteers including 3 Public Works employees, 11 Chambers Group employees, and 4 members of the public.
- b. A large amount of trash was removed from the Mitigation Area, including several shopping carts, mattress springs, lawn chairs, clothing items, tarps, tires, several large pieces of scrap metal, and approximately 40 large bags of smaller trash items.

7. Fuel Reduction Efforts

- a. The City of Los Angeles Fire Department required some brush clearance around properties that neighbor the Mitigation Area (along Gibson Ranch) and along Wentworth Avenue.



- b. All non-native species were removed in accordance with the County Code, and native species were trimmed and limbed from the ground to reduce the risk of fire in those areas.

8. Water Quality Monitoring

- a. Upstream contamination sources can affect the water quality onsite, particularly within Big Tujunga Wash; however, the Tujunga Ponds originate from an underground source and thus, the water quality in the ponds and Haines Canyon Creek is generally very good.
- b. In 2019 Haines Canyon Creek and the Tujunga Ponds were within the recommended ranges for the EPA's criteria on human health for the parameters monitored.

9. Public Outreach Program

- a. On June 30 outreach efforts took place at the Foothill Trails District Neighborhood Council Equine Fair in conjunction with Los Angeles County Public Works.
- b. Outreach efforts were conducted at the Mitigation on several days during the summer.
- c. Some of the concerns raised by the non-equestrian users interviewed included: trash, vandalism, the presence of snags along trails, and the homeless population.
- d. Some of the concerns raised by equestrian users included: vegetation overgrowth and relocating rocks on the trails, trash, the realigned trails, illegal dumping, the presence of poison oak along trails, off-highway vehicle use on the trails, and the homeless population.

10. Incident Monitoring

- a. All site incidents are recorded and reported to Public Works and/or the appropriate law enforcement agency as appropriate.

IV. Current Status of Programs for 2020 and Site Photo Share.

1. Brown-headed cowbird trapping

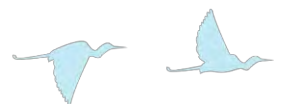
- a. Fifty-five BHCOS were captured and removed from the Mitigation Area in 2020.

2. Special status wildlife species

- a. Three nesting pairs of the federally endangered least Bell's Vireo (LBVI) were monitored in the Mitigation Area in 2020 - the first recorded nests since the monitoring began in the early 2000s. This is likely in part to successful BHCOS trapping efforts, restoration efforts, and monitoring requirements.
- b. During LBVI nesting season, work crews were not allowed to work within nest buffer areas and some site users may have noticed a lack of trail maintenance in these areas.
- c. Other special status species observed in 2020 included Cooper's hawk, loggerhead shrike, and willow flycatchers.

3. Exotic Plant Eradication Program

- a. Only mechanical weed removal methods were used in 2020 as the pesticide ban is still in effect.
- b. All weed materials were either cut and left on the ground or were cut and bagged for removal off-site.



4. Exotic Wildlife Removal Program

- a. Approximately 700 fewer exotic aquatic individuals were removed from Haines Canyon Creek and the Tujunga Ponds than in 2019 as of November 2020; however, maintenance crews will be conducting removal efforts in December as well and will likely meet the 2019 capture totals by the end of 2020.
- b. Photo share and explanation of wildlife removal methods (seine capture) in the Tujunga Ponds.
- c. Photo share of the exclusionary fish nests and explanation of how they work to exclude exotic aquatic species from Haines Canyon Creek.
- d. Photo share of a rock dam and explanation of how they are detrimental to special status species and the health of Haines Canyon Creek.

5. Trails Maintenance Program and Cleanup Day (Cancelled)

- a. Before and after photos of trail maintenance efforts were shared and discussed.
- b. The group was asked to inform Public Works/Chambers Group of any trail maintenance issues (e.g., downed trees, overgrown poison oak etc.) so that they can be dealt with as soon as possible.
- c. One of the biggest goals of trail maintenance aside from public safety, is keeping trail users on authorized trails and not diverging into habitat to get around trail issues.
- d. The Annual Trail Cleanup day was canceled in 2020 due COVID-19 safety issues and restrictions but is planned to continue in 2021 pending the COVID-19 situation next fall.

6. Water Quality Monitoring

- a. Water quality samples have been collected but are pending lab results.

7. Public Outreach Program

- a. Four Public Outreach events were conducted in the summer and fall of 2020, and approximately 35 equestrian users and 5 hikers were interviewed.
- b. Site users had similar concerns to those mentioned in 2019 including: removing debris to reduce fire hazards, trimming back weeds along trails to increase visibility, bees, overgrown vegetation blocking trails, people leaving large items in the trails (e.g., chairs) that pose a hazard to horses, litter, illegal rock dams and homeless activity.
- c. The group was asked to let the maintenance crews or on-site biologists know about any trail issues so that they can be remedied as soon as possible.

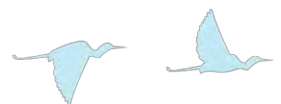
8. Continued Incident Monitoring

- a. Chambers Group continues to monitor and report incidents in 2020. Julianna Colwell with Public Works provided an email address specific to the Mitigation Area to report any incidents or other site issues: btwma@dpw.lacounty.gov.

V. Comments, Questions, and Answers

1. The floor was opened up to the group for comments and questions.

- a. Heather Driscoll with Parks and Recreation took the opportunity introduce herself and commended Public Works and Chambers Group on a job well-done and thanked them for all of their hard work.
- b. No other comments or questions were raised.



VI. Scheduling the 2021 CAC Meeting

1. The 2021 CAC Meeting is tentatively schedule for April 2021 and may be virtual depending on the COVID-19 situation at that time. No comments or objections were raised.

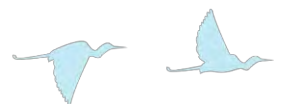
If you have any questions regarding this memo, please feel free to reach out to me.

Sincerely,

CHAMBERS GROUP, INC.



Paul Morrissey
Director of Biology
pmorrissey@chambersgroupinc.com
(949) 261-5414 ext7288



Big Tujunga Wash

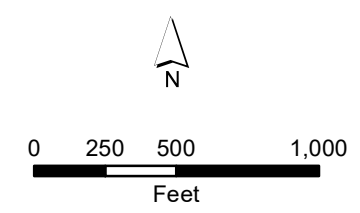
Mitigation Area Incident Map

January 2019 to December 2019



- Mitigation Area
 - L.A. County Park Parcel
 - Wheatland Ave
 - Trail Closed
 - Existing Trail
 - New Trail Realignment Sections
- Incident Category**
- Maintenance Issue/Prohibited Activity/Site Safety
 - Maintenance Issue/Site Safety
 - Maintenance Issue
 - Prohibited Activity
 - Prohibited Activity/Creek Obstruction

- Violation Description**
1. damaged fence
 2. damming creek
 3. damming creek/bathing in creek
 4. damming creek/debris items left on site
 5. damming creek/unauthorized structure
 6. homeless encampment
 7. rebuilding unauthorized structure
 8. rebuilding unauthorized structure/vegetation dumped in creek
 9. unauthorized reclaiming of wood
 10. unauthorized use of herbicide
 11. vandalism/theft
 12. washing area/bathing in creek



APPENDIX L – PUBLIC OUTREACH MEMO REPORT



December 20, 2020

Julianna Colwell
County of Los Angeles, Department of Public Works
900 South Fremont Avenue
Alhambra, California 91803-1331

Subject: Public Outreach for July through October 2020 for the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Colwell,

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 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 four occasions in 2020 by Chambers Group bilingual biologists Erik Olmos, Corey Jacobs, Austin Burke, and Mauricio Gomez. Outreach efforts took place on July 25, August 22, August 30, and October 10, 2020. All outreach efforts took place during the peak site use hours of 8:30 a.m. to 12:00 p.m. All outreach efforts followed the recommendations provided by the Center for Disease Control and Prevention (CDC) to minimize the spread of COVID-19. Chamber Group biologists wore masks, maintained at least 6 feet of distance during any interactions with members of the public and used hand sanitizers to help minimize the spread of COVID-19.

During public outreach visits at the Mitigation Area, Chambers Group biologists walked the authorized trails system and visited popular swimming/wading locations along Haines Canyon Creek (creek) and around the Tujunga Ponds (ponds), speaking with visitors they encountered. Visitors that were interviewed fell into one of two groups: non-equestrian user groups or equestrian user groups.

During the four outreach visits, all non-equestrian and equestrian visitors encountered were offered an educational brochure outlining Los Angeles County Public Works' (Public Works) 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 negative 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 in the educational brochure. 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 four public outreach visits in 2020. Three of the seven site users interviewed were not local residents. All seven of the site users were encountered along the trails around Haines Canyon Creek (creek) and the Tujunga Ponds (ponds). All site users were offered an educational brochure about the site, informed about activities that are prohibited in the Mitigation Area, and were asked if they had any questions on any of the information presented. Some of the issues observed by the biologists during the outreach included the building of dams, bathing in the creek, and fishing in the ponds.

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. Individuals that were unaware of and/or violating rules



were generally respectful and receptive to the information provided by the biologists. Interactions with individuals that were observed violating the rules of the Mitigation Area are described below.

During a public outreach effort conducted by biologists Austin Burke and Mauricio Gomez on October 10, three individuals were encountered at different locations around the ponds and were observed to be fishing. One individual was encountered fishing by the inlet to the ponds, and the other two individuals were encountered fishing by the outlet to the ponds. The biologists approached the individuals and gave them educational brochures and explained that fishing within the Mitigation Area is prohibited. They explained that they do not fish in the ponds regularly, but only whenever they are in the area, which is limited to a few times a year. They explained that the long commute limits their trips to visit the Mitigation Area often. The individuals were receptive to the biologists and began gathering their belongings, but remained in the area after being informed about the sensitive resources within the Mitigation Area.

Primary usage of the Mitigation Area as described by the non-equestrian users interviewed included, hiking/walking, walking dogs, exercise, fishing, and general recreation. Concerns raised by non-equestrian users interviewed included: trash, vandalism, the presence of dams in the creek, overgrown vegetation along the trails, and the homeless population. The biologists asked the individuals to contact local law enforcement and Public Works if suspicious or illegal activities are observed in the Mitigation Area. Recommendations provided by non-equestrian users interviewed included, removing dams within the creek, cleaning up trash and glass bottles throughout the Mitigation Area, maintaining trails to keep vegetation (specifically burs from cocklebur [*Xanthium strumarium*]) from sticking to dog's fur, and removing homeless encampments.

Effects on Sensitive Habitat by Non-Equestrian User Groups

The most substantial impacts on sensitive habitat by non-equestrian user groups are caused by swimming, bathing, and building rock dams within the 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. A newly emerging frequented location is the unauthorized swimming area located approximately 275 feet northwest of the south Wheatland Avenue entrance. The dam at this location had been encountered and removed by Chambers Group biologists during the August 30 visit, and was then re-constructed by members of the public. Chambers Group biologists encountered the re-constructed dam at the same location on October 10. Photos of the dam composed of large rocks and boulders are included below (Photos 1, 2, and 3).

Several additional rock dams, both large and small, were encountered in the creek and were removed during 2020 public outreach and 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 upstream of the dam. The changes to the natural flow of the creek can be detrimental to the sensitive species of fish within the creek. 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*), large-mouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*) and American bullfrog (*Lithobates catesbeianus*), that prey on or compete for the same food sources as native species such as the federally listed threatened Santa Ana sucker (*Catostomus santaanae*), and state species of concern Santa Ana speckled dace (*Rhinichthys osculus* ssp.) and arroyo chub (*Gila orcuttii*). The reduced flow traps trash/debris and harbors parasites that negatively affect the fishes' ability to breath (flashing of gills observed) and reduces suitable breeding habitat. In addition, the dams prevent migration of fish upstream and downstream along the creek reducing available food sources and breeding opportunities. 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 Public Works for removal, as necessary.



Equestrian User Groups

A total of 29 equestrian users were approached and interviewed during the four public outreach visits in 2020. Six additional equestrian users were seen, but they were not interviewed as they were observed at a distance and were moving in the opposite direction as the biologists. All 29 of the equestrian users interviewed were local residents. All 29 equestrian users were encountered along the authorized trails of the Mitigation Area along the creek and near the ponds. 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 are 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 of the questions asked by equestrian users were about the trail maintenance efforts taking place within the Mitigation Area.

In addition to horse riding, equestrian users mentioned using the Mitigation Area for hiking and walking. Concerns raised by the equestrian users interviewed included: trail maintenance (particularly vegetation overgrowth), the presence of snags/logs along the trails, the presence of fallen trees along the trails, trash, the presence of fishing line found on trails near the ponds, the presence of bee hives near the south Wheatland Avenue entrance and by the creek near the bluff, the presence of large objects blocking trails (specifically chairs), and the homeless population. Equestrian users reported observations of individuals camping in the Mitigation Area, smoking, and having campfires along the creek. The biologists asked the equestrian users to contact local law enforcement and Public Works if suspicious or illegal activities are observed in the Mitigation Area. Recommendations provided by the equestrian users interviewed included making trail signs bilingual, delineating trails, relocating bee hives, increasing oversight and security in the Mitigation Area, widening the trails, removing large rocks and snags from the trails to eliminate safety issues for horses, removing fishing line from ponds to eliminate safety issues for horses when drinking water, and placing a water fountain spigot within the Mitigation Area for hydration.

Additional interactions with equestrian users that occurred outside of Public Outreach efforts usually consisted of equestrian users thanking the work crews for maintaining and beautifying the site and trails, and their acknowledgment that they understood the importance of restoring native habitat. Some interactions consisted of specific requests from equestrian users such as, clearing vegetation from the trails (specifically the burs from cocklebur that get stuck in their horses' coats), trimming the top of the vegetation to allow for visibility when using the trails (tall vegetation limits visibility for equestrian users), widening the trails, and opening the old, abandoned trail sections back up. Chambers Group biologists responded to requests to reopen the abandoned trail sections by educating site users on creek ecology and the importance of restoring habitat and decreasing the stream crossings within the abandoned trail areas.

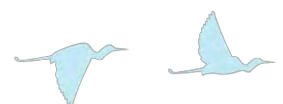
Effects on Sensitive Habitat by Equestrian User Groups

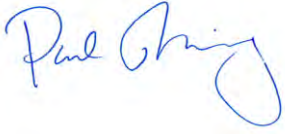
Equestrian site users can negatively affect sensitive terrestrial habitat by traveling off from the established trail systems and can disturb sensitive aquatic habitat when traveling through the creek. Riders were reminded to cross the creek single-file to minimize erosion along the banks, and to stay on the authorized trails. The creation of new trails and traveling off from the authorized trails can be minimized with continued trail maintenance and equestrian site user education.

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

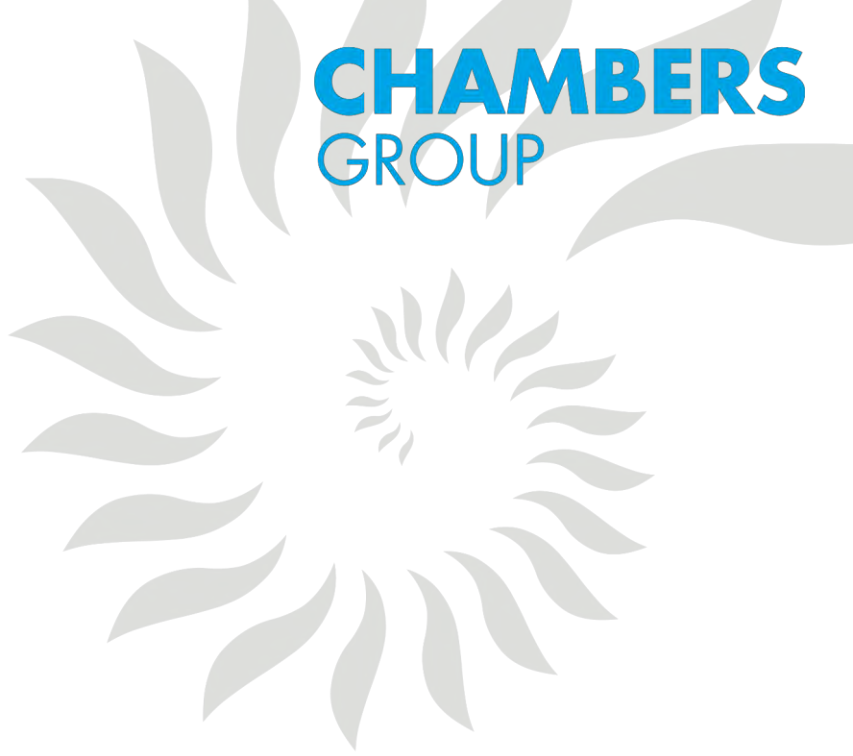
Sincerely,

CHAMBERS GROUP, INC.





Paul Morrissey
Principal | Director of Biology



SITE PHOTOS



Photo 1: Illegal dam composed of large rocks and boulders observed on August 30, 2020, during a public outreach effort. The dam was located along Haines Canyon Creek northwest of the south Wheatland Avenue entrance.



Photo 2: Illegal dam composed of large rocks and boulders observed at the same location as Photo 1 during the October 10, 2020 public outreach effort. The dam was located along Haines Canyon Creek northwest of the south Wheatland Avenue entrance.





Photo 3: Post-removal of dam during the October 10, 2020 public outreach effort. The dam was located along Haines Canyon Creek northwest of the south Wheatland Avenue entrance.

