City Protected Tree Survey Report for the Devil's Gate Reservoir Sediment Removal and Management Project Pasadena, Los Angeles County, California

Prepared for:

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

Prepared by:

ECORP Consulting, Inc.
1801 E. Park Court Place
Building B, Suite 103
Santa Ana, CA 92701

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1.0 INTRODUCTION

On behalf of Los Angeles County Department of Public Works (LACDPW), ECORP Consulting, Inc. (ECORP) conducted a tree survey for the Devil's Gate Reservoir Sediment Removal and Management Project (Project), located in the City of Pasadena (City), Los Angeles County, California. The survey was conducted to document the native trees protected under the City of Pasadena Code of Ordinances (Pasadena 2018) that occur within the Project impact areas associated with the initial sediment removal area (ISRA) and access road construction. The City of Pasadena's City Trees and Tree Protection Ordinance under Title 8, Chapter 8.52, defines a native tree as:

> "any tree with a trunk more than 8 inches in diameter at a height of 4 ½ feet above natural grade that is one of the following species: *Quercus agrifolia* (Coast live oak), *Quercus engelmannii* (Engelmann oak), *Quercus chrysolepis* (Canyon oak), *Platanus racemose* (California sycamore), *Juglans californica* (California walnut), *Quercus berberidifolia* (Scrub oak), *Quercus lobata* (Valley oak), *Umbellularia californica* (California bay), *Populus fremontii* (Cottonwood), *Alnus rhombifolia* (California alder), *Populus trichocarpa* (Black cottonwood), *Salix lasiolepis* (Arroyo willow), and *Aesculus californica* (California buckeye)."

In addition, the survey was conducted to comply with Mitigation Measure BIO-7 (MM-BIO-7) of the Final Environmental Impact Report (ECORP 2017) for the Project, which states:

> "Within 90 days prior to ground-disturbing activities, a qualified biologist shall conduct a tree survey within the project footprint, to identify native City-protected trees trees that would be removed or potentially affected by the Proposed Project, native City-protected trees that can be avoided, and native City-protected trees that will require root zone protection. Los Angeles County Flood Control District (LACFCD) would replace native City-protected trees that cannot be avoided. The replacement is expected to be at a 1:1 ratio by canopy acreage."

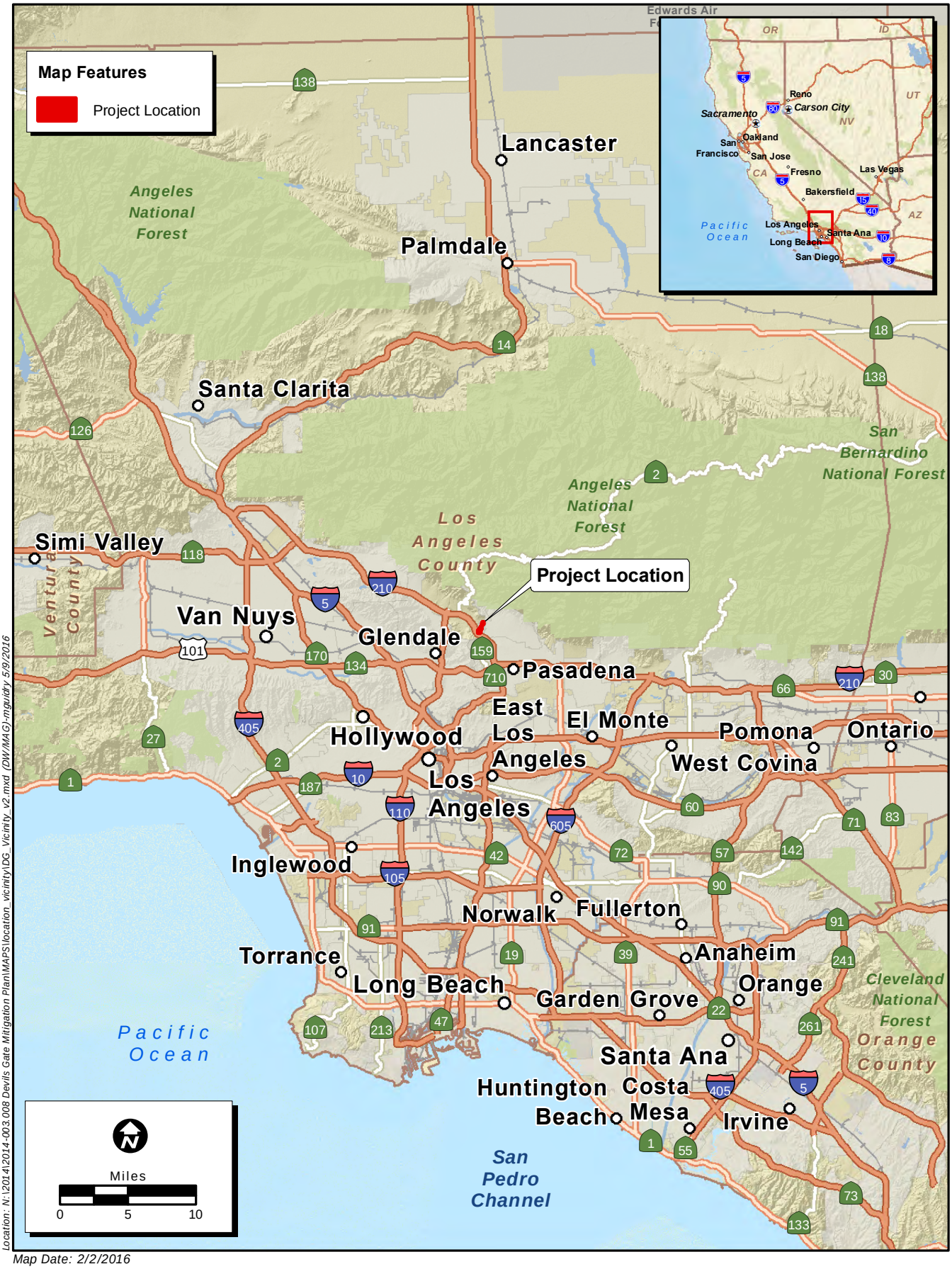
The purpose of this survey was to identify native trees protected under the City's Tree Protection Ordinance that will be removed, have their root protective zone (RPZ) impacted, or that can be avoided during Project activities. In addition, the purpose also included re-evaluating canopy and canopy overlap of native City-protected trees identified during the previous arborist survey conducted within the access road impact area in 2016 (ECORP 2016). The results of the survey will be used to determine the mitigation requirements for direct and indirect impacts to native City protected trees.

2.0 SITE DESCRIPTION

The Project is located within the City of Pasadena in the upper portion of the Arroyo Seco Watershed and within the City's Hahamongna Watershed Park. Downtown Los Angeles is approximately 14 miles to the south of the Project, the San Gabriel Mountains are located just north of the Project, and the City of La Cañada Flintridge and the unincorporated community of Altadena are located to the west and east, respectively. The Project is located within the

"Pasadena, California" 7.5-minute quadrangle (Figure 1. *Project Vicinity*, Figure 2. *Project Location*) (U.S. Geological Survey [USGS], 2015).

The topography in the vicinity of the proposed Project consists of rolling terrain with a decline into the Arroyo Seco basin. The San Gabriel Mountains are located to the north of the proposed Project and are characterized by both the foothills and steep slopes associated with mountainous terrain. The ISRA is composed primarily of black willow thickets (*Salix gooddingii* Woodland Alliance) and mulefat thickets (*Baccharis salicifolia* Shrubland Alliance) towards the southern end and scalebroom scrub (*Lepidospartum squamatum* Shrubland Alliance) towards the northern end. Additionally, some areas towards the southern end of the ISRA were classified as disturbed and/or dominated by weedy species. The access road impact area is comprised primarily of black willow thickets, coast live oak woodland (*Quercus agrifolia* Woodland Alliance) and disturbed or developed areas. Trees within the black willow thickets portion of the ISRA and access road impact area included mainly Goodding's black willow (*Salix gooddingii*) red gum (*Eucalyptus camaldulensis*), and blue gum (*Eucalyptus globulus*). Trees within the mulefat thickets portions of the ISRA included primarily Goodding's black willow, Fremont's cottonwood (*Populus fremontii*), red gum, and blue gum present at low cover. Trees present within the scalebroom scrub portions of the ISRA included primarily Goodding's black willow and coast live oak (*Quercus agrifolia*) present at low cover. Trees present within the coast live oak portions of the access road impact area consisted mostly of coast live oak and shamel ash (*Fraxinus uhdei*). Trees present within the developed portion of the Project Site included ponderosa pine (*Pinus ponderosa*), deodar cedar (*Cedrus deodara*), incense cedar (*Calocedrus decurrens*), and Aleppo pine (*Pinus halepensis*).



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Map Date: 2/2/2016

Service Layer Credits: Sources: USGS, ESRI, TANA, AND

Figure 1. Project Vicinity

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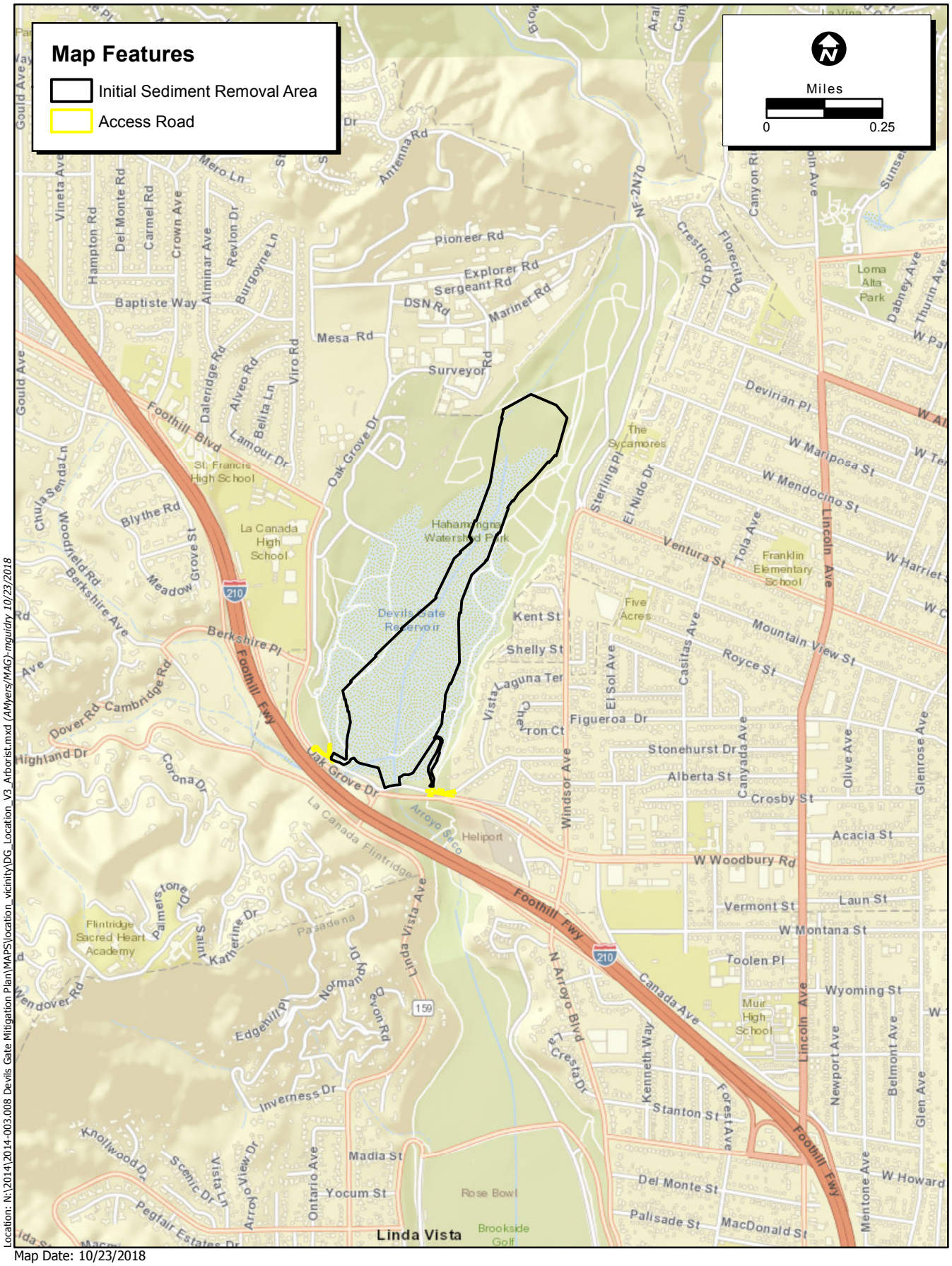

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Map Date: 10/23/2018
Source: ESRI

Figure 2. Project Location

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3.0 METHODS

Carley Lancaster, an arborist with ECORP (ISA Certification #WE-11837A), and Taylor Dee, a biologist with ECORP, conducted the field survey on October 2-5, 2018. During the field survey, the area identified by LACDPW as the ISRA (see Figure 2) was walked and a sub-meter accuracy iSXblue Global Positioning System unit was used in conjunction with ESRI's Collector Application to collect location and survey data. In addition, the impact areas associated with the access roads were walked to re-evaluate native City-protected trees identified during the 2016 survey. Sample photographs of trees that will be removed, impacted, or will need a RPZ were taken during the field survey and are included as Attachment A to this report.

Data collected for all City protected trees included species and dripline radius (canopy area). Because the mitigation requirement is to replace trees by acreage, the arborist measured the canopy area of each native City-protected tree that intersected (was rooted within) the ISRA or access road impact area and estimated the canopy overlap with trees that were not within the Project impact area. Canopies of native City-protected trees inventoried in 2016 were re-evaluated to ensure the most current results were used. The canopy overlap was then calculated into impact acreages to aid in determining mitigation requirements. Please note that the survey results are intended for general project planning purposes only.

During the field survey, ECORP's arborist and biologist also identified native City-protected trees within the 50-foot buffer of the ISRA and access road impact area that can likely be avoided during Project activities. For these trees, ECORP's arborist determined an appropriate RPZ based on the criteria described in Section 22.46.210 of the Los Angeles County Code of Ordinances (LAC 2018).

The following terms define the data that was collected:

Dripline Radius: Imaginary line defined by the branch spread of a single plant or group of trees

Root Protective Zone: The area 15 feet from the trunk(s) of a tree or the area at least five feet outside the dripline (whichever is greater) is considered the Root Protective Zone (RPZ).

4.0 RESULTS

During the survey conducted in 2018, three native City-protected tree species were inventoried within the ISRA, the access road impact area, or the 50-foot buffer. The species inventoried included California sycamore, cottonwood (Fremont's cottonwood), and coast live oak. Additional species were also observed, including other natives (e.g. Goodding's black willow and red willow [*Salix laevigata*]) and nonnatives (e.g. blue gum and shamel ash) but canopy area was not documented for these species as they are not considered native City-protected trees under Pasadena's Tree Protection Ordinance. A total of 0.483 acre of native tree canopy cover will be directly or indirectly impacted as a result of the impacts associated with the ISRA and access road construction; however, due to some of the native City-protected trees being in close proximity to the border of the ISRA or the access road impact area, it may be possible to slightly modify the impact boundaries to protect these trees. In addition, several of the native City-protected trees have canopy overlap within a portion of the access road impact area that is

already paved. The native tree canopy cover that will be directly or indirectly impacted as a result of Project activities is composed of 0.007 acre of California sycamore, 0.196 acre of cottonwood, and 0.280 acre of coast live oak (Table 1. *City Protected Tree Canopy Cover Impacts Survey Data (October 2-5, 2018)*; Figure 3. *Tree Canopy Cover within the Project Impact Area*).

Table 1. City Protected Tree Canopy Cover Impacts Survey Data (October 2-5, 2018)

Common Name	Scientific Name	Impact Area Canopy Overlap (square feet)
California sycamore	*Platanus racemosa*	0.007
Cottonwood (Fremont's cottonwood)	*Populus fremontii*	0.196
Coast Live Oak	*Quercus agrifolia*	0.280
	Total:	**0.483**

5.0 CONCLUSIONS

A total of 0.483 acre of impacts to native City-protected trees, which includes the direct removal of native trees and impacts within the dripline of native trees that won't be completely removed, will occur as a result of the construction of the access roads and initial sediment removal. The total direct impacts (from removal) to the native City protected tree canopy cover is approximately 0.460 acre and the total indirect impacts to City protected tree canopy cover is approximately 0.023 acres; however, it may be possible to minimize these impacts if avoidance is feasible for certain native City-protected trees.

The actual extent of the impacts to the native City-protected trees cannot be determined until the boundaries of the impact areas are flagged in the field and it is determined if modifications to the boundaries can be accommodated. After the boundaries are flagged, a Certified Arborist will conduct an evaluation of the potential impacts to the native City-protected trees and provide recommendations for minimizing impacts, if possible. The final numbers of native City-protected trees and associated canopy acreage affected by the construction will be determined following the completion of the vegetation removal in the ISRA and along the access roads. Native City-protected trees that can be avoided during construction will be monitored during both the construction phase and during the maintenance and monitoring period.

Figure 3.
Tree Canopy Cover within the Project Impact Area

Map Features

- Initial Sediment Removal
- Coast Live Oak
- Root Protective Zone

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

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Scale in Feet
0 130

Photo Source: USGS 2013
[1] LADPW

Map Date: 10/24/2018

Location: N:\2014\2014-003.008 Devils Gate Mitigation Plan\MAPS\sss_survey_and_mapping\arborist_tree_locations\v2\DG_CityTree_V2.mxd (MAG) -mguidry 10/25/2018

Figure 3.
Tree Canopy Cover within the Project Impact Area

Map Features

- Initial Sediment Removal
- California Sycamore
- Coast Live Oak
- Impacted Coast Live Oak
- Removed Coast Live Oak
- Removed Fremont Cottonwood
- Root Protective Zone

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

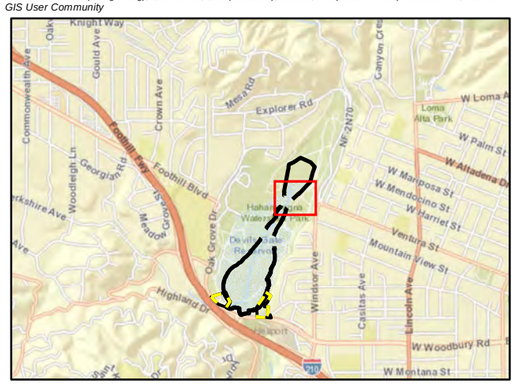

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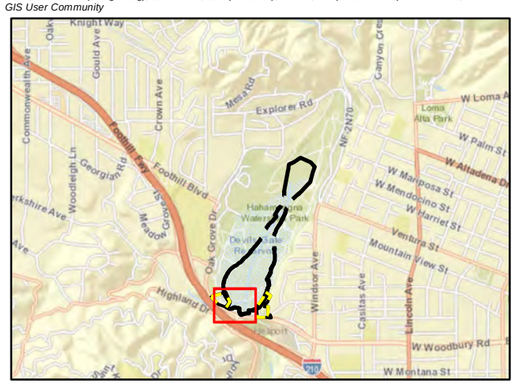
Figure 3.
Tree Canopy Cover within the Project Impact Area

Map Features

- Initial Sediment Removal
- Access Road Impact Area
- Coast Live Oak
- Impacted Coast Live Oak
- Removed Coast Live Oak
- Removed California Sycamore
- Root Protective Zone

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



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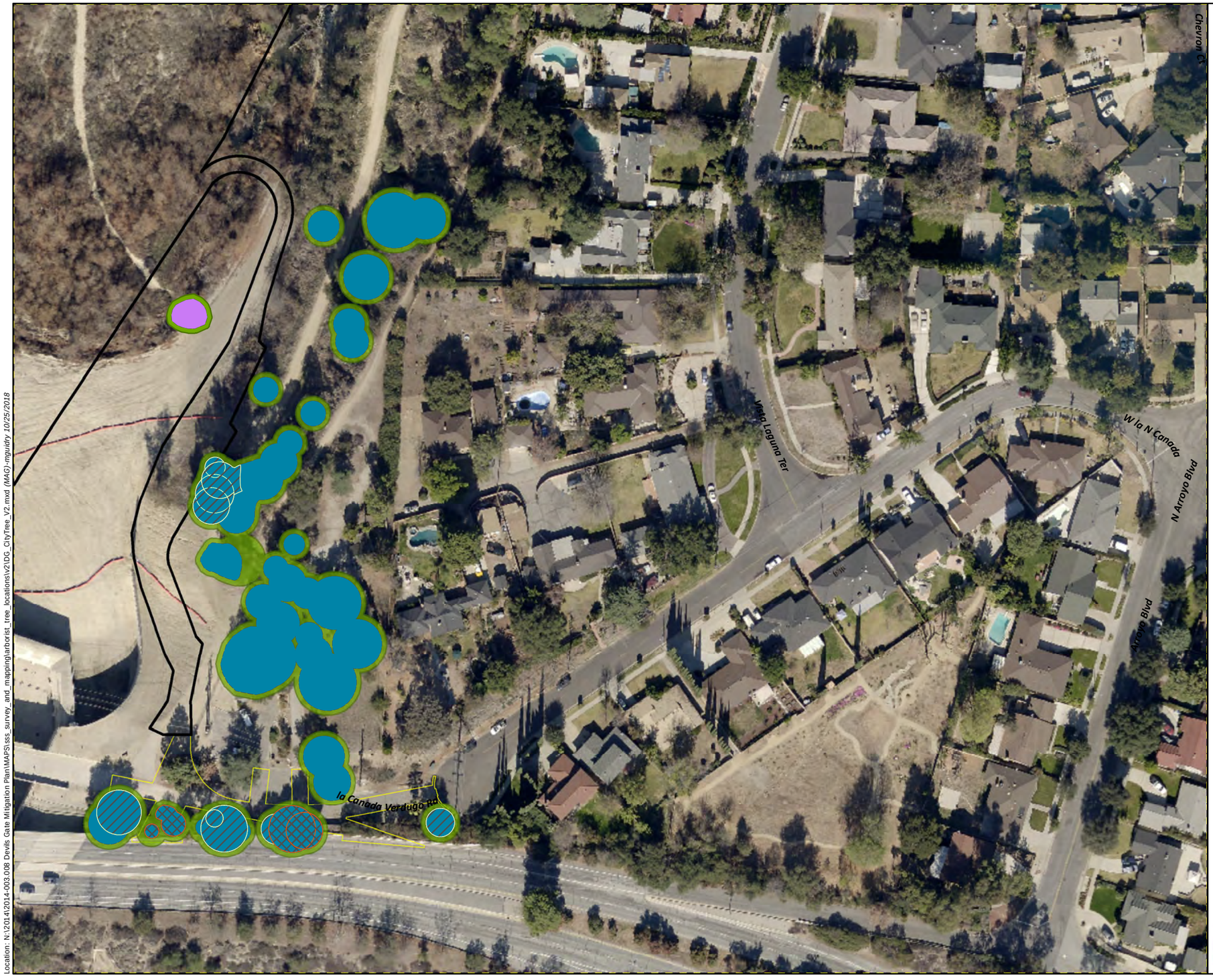

Map Features

- Initial Sediment Removal
- Access Road Impact Area
- California Sycamore
- Coast Live Oak
- Impacted Coast Live Oak
- Removed Coast Live Oak
- Root Protective Zone

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

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Scale in Feet
0 130

Photo Source: USGS 2013
[1] LADPW

Map Date: 10/24/2018

Figure 3.
Tree Canopy Cover within the Project Impact Area

Map Features

- Initial Sediment Removal
- Fremont Cottonwood
- Removed Fremont Cottonwood
- Root Protective Zone

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

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Photo 1: Fremont's cottonwood, protected under the City's Tree Protection Ordinance

Photo 2: Western sycamore, protected under the City's Tree Protection Ordinance

Photo 3: Fremont's cottonwood, protected under the City's Tree Protection Ordinance

Photo 4: Fremont's cottonwood, protected under the City's Tree Protection Ordinance

Photo 5: Coast live oak, protected under the City's Tree Protection Ordinance

Photo 6: Coast live oak, protected under the City's Tree Protection Ordinance