



Santiago Basin Saddle Repair Project

Appendix C

Santiago Basins Saddle Repair Project Description and Biological Assessment

Orange County Water District Santiago Basins Saddle Repair Project

Project Description & Biological Assessment



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SECTION 1.0 PROJECT DESCRIPTION

1.1 Background

Santiago Basins are comprised of three basins, Bond Basin, Blue Diamond Basin and Smith Basin. From the early 1950's to 1990 the basins were used as an aggregate quarry operation. In the 1970's a sizable rock apron was placed along the saddle area between the two larger basins to minimize erosion. In 1990 the Orange County Water District purchased the basins for ground water management operations and a pipeline was installed along the saddle to transfer water between the basins. During the 2010 storm season, multiple landslides occurred on both sides of the saddle damaging the rock apron and existing pipeline and restricting flows between the basins. Subsequent storm events in December 2014 and 2016 has caused additional landslides along the slope. Without remediation the slopes around the basin would continue to fail potentially posing safety risks when maintenance activities in the basin are occurring.

1.2 Project Site Location

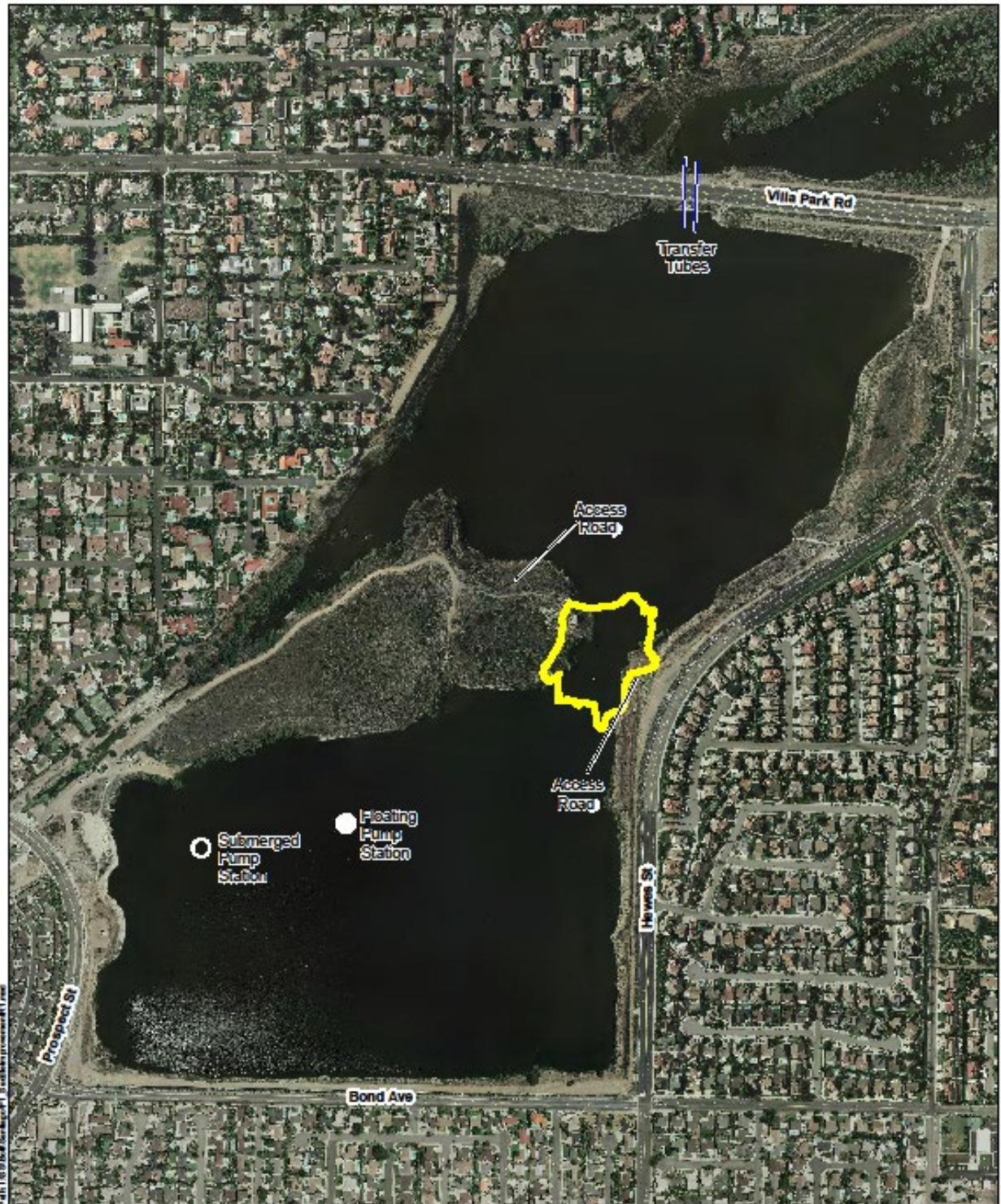
The proposed saddle repair activities would occur in the area between Blue Diamond Basin and Bond Basin at the Santiago Recharge Basins, in the City of Orange in Orange County. As shown in Figure 1, the Santiago Basins are bounded by Prospect Avenue to the west, Hughes Avenue to the east, Bond Avenue to the south and Villa Park Road to the north. The site can be regionally accessed by State Route 55 via the Chapman Avenue exit. The Santiago Basins are located downstream of Santiago Reservoir and receive incoming flows from Santiago Creek which drains into and out of the basins. The project site is located at Township T4 South, Range R9 West on U.S.G.S. Quad Map for Orange.

1.3 Proposed Project

The proposed project improvements include the dewatering of the basin, stabilization of the saddle side slopes, the reconstruction of the saddle apron, reconstruction of an equalization box culvert for the protection of the saddle apron, and restoration of any vegetation removed for the project.

Dewatering of Santiago Basin

All work to be performed in Santiago Basin would be above the 200-foot elevation. Excavation and fill for the slope repairs and saddle apron would be within the 200 – 285-foot elevation range. To complete repairs to the Santiago Saddle, the water surface elevation in Santiago Basin would need to be below the 200-foot elevation during the construction period. The water elevations in Santiago Basin are typically lower than this during summer and fall months.



0 300 600
Feet

**Santiago Basins
Saddle Repair Project
Project Area**

Figure 1

The bottom elevation of Bond Basin is 148 feet, and the bottom elevation of Blue Diamond Basin is 168 feet. The bottoms of both basins are generally flat with steeply sloping sidewalls, and the average water depths during construction will range from 30 - 50 feet. This depth of water is within the typical operating parameters for summer and fall months in Santiago Basin, and based upon previous observations, these depths will be sufficient to support aquatic species during construction.

Saddle Side Slope Repairs

To improve the stability of the saddle side slopes, the slopes of the saddle would need to be cut back to a maximum steepness of 1.8 to 1. The proposed grading activity would remove slope failure related debris and areas prone to failing. A preliminary grading plan showing limits of grading on both sides of the saddle is shown in Figure 2.

Saddle Apron Improvements

In conjunction with the slope grading, the saddle would be widened by approximately 60 feet and the existing grade would be lowered by approximately 30 feet. A 12-foot square by 400-foot concrete box culvert would be excavated and installed between the basins in the saddle area. The underground pipeline would convey flows between Blue Diamond Basin and Bond Basin, allowing the basin levels to equalize without overtopping and destroying the apron. After the culvert is constructed, the trench would be backfilled with native material, and the saddle would be reconstructed. The saddle would also function as an apron allowing water within Blue Diamond Basin to spill over into Bond Basin if the basins cannot equalize due to high basin inflows.

Maintenance Activities

Annually, OCWD would dewater the basin to inspect the condition of the saddle and to remove any debris or trash that might accumulate along the saddle apron. All maintenance activities would be conducted in accordance with USACE Regional General Permit 90 SPL-2012-00066.

Construction Phasing Plan

As shown in Figure 1 access to the construction work site would be from existing roads that are currently used during maintenance activities. All construction equipment would be staged in an upland location above the wetted area. The project would be constructed in four phases:

- Phase 1 – Clearing and Remedial Excavation
- Phase 2 – Culvert Installation and Backfill
- Phase 3 – Saddle Apron Embankment and Finish Grading
- Phase 4 – Vegetation Restoration

Phase 1 – Clearing and Remedial Excavation

Phase 1 would involve clearing the work area of existing vegetation, excavation to create a 1.8:1 slope on either side of the saddle and remedial rough grading to remove loose soil deposits. The loose soil deposits on the existing slopes on the east and west side of the saddle that were left by the erosion damage during storm events would be excavated during the first phase to make the excavation for Phase 2 safe. Equipment used to complete the clearing and excavation during Phase 1 would include an excavator, scrapers, a bulldozer, on-road and off-road dump trucks, a compactor, water truck, and crew truck. These activities are expected to start in late August to September and would occur over a three-week period. Field activities and approximate equipment usage for this phase are shown in Table 1:

Table 1
Phase 1 Clearing and Remedial Excavation

Activity	Equipment Description	Equipment Quantity	Hours Per Day	Total Days	Hours (Total)	HP Rating
Clearing and Grubbing	Bulldozer	1	8	5	40	250
Clearing and Grubbing	Tracked Excavator	1	8	5	40	200
Clearing and Grubbing	Off-Road Haul Truck	1	8	5	40	350
Clearing and Grubbing	Dump Truck	5	8	1	40	350
Clearing and Grubbing	Water Truck	1	8	5	40	350
Clearing and Grubbing	Work Truck	1	8	5	40	300
Grading	Scraper	2	8	10	160	490
Grading	Bulldozer	1	8	10	80	250
Grading	Compactor	1	8	10	80	200
Grading	Water Truck	1	8	10	80	350
Grading	Work Truck	1	8	10	80	300

Phase 2 – Culvert Installation and Backfill

Phase 2 would involve excavation, placement, and backfill of the concrete box culvert. This culvert will allow the basin elevations to rise and fall together and prevent an elevation differential that leads to damaging erosion over the saddle apron. Equipment for the Phase 2 activities would include; a crane, excavators, wheel loader, compactor, water truck, and crew truck to excavate, place and backfill the culvert. These activities are expected to start late September of 2019 and would occur over a 1-month period. Field activities and approximate equipment usage for this phase are shown in Table 2.

Table 2
Phase 2 – Culvert Installation and Backfill

Activity	Equipment Description	Equipment Quantity	Hours Per Day	Total Days	Hours (Total)	HP Rating
Pipelines	Crane	1	8	10	80	300
Pipelines	Tracked Excavator	2	8	20	320	200
Pipelines	Wheel Loader	1	8	20	160	250
Pipelines	Compactor	1	8	20	160	200
Pipelines	Water Truck	1	8	20	160	350
Pipelines	Work Truck	1	8	20	160	300

Phase 3 – Saddle Apron Embankment and Finish Grading

Phase 3 would involve placing fill for the saddle apron and finish grading all surfaces within the work area. The saddle apron would create a divider that would prevent erosive water flows between the two basins and create a buttress that would stabilize the slopes on the east and west sides of the saddle. Equipment for Phase 3 would include; scrapers, a bulldozer, compactor, water truck, and crew truck to place and finish the apron. These activities are expected to start in October of 2019 and would occur over a 1-month period. Field activities and approximate equipment usage for this phase are shown in Table 3.

Table 3
Phase 3 – Saddle Apron Embankment and Finish Grading

Activity	Equipment Description	Equipment Quantity	Hours Per Day	Total Days	Hours (Total)	HP Rating
Grading	Scraper	4	8	15	480	490
Grading	Bulldozer	1	8	15	120	250

Grading	Compactor	1	8	15	120	200
Grading	Water Truck	1	8	15	120	350
Grading	Work Truck	1	8	15	120	300

Phase 4 – Vegetation Restoration

Phase 4 activities include those required to restore the vegetation removed by construction activities. This work would be completed mostly by hand, and the only equipment anticipated for the work consists of support for the planting crew. These activities are expected to start in November of 2019 and would occur over a 1-month period. Field activities and approximate equipment usage for this phase are shown in Table 4.

Table 4
Phase 4 – Vegetation Restoration

Activity	Equipment Description	Equipment Quantity	Hours Per Day	Total Days	Hours (Total)	HP Rating
Veg Restoration	Water Truck	1	4	10	40	350

SECTION 2.0 BIOLOGICAL SETTING

The habitat at the project site is mostly disturbed with patches of recruited riparian habitat. This riparian habitat is a mix of both native and non-native species and showing signs of severe drought stress. Along the upland areas there are remnants of California Coastal Sage Scrub habitat with patches of bare ground and non-native weeds. The replacement of the box culvert and majority of the slope repair would occur below the ordinary high-water mark and would typically be under water for most of the year.

2.1 Vegetation Communities

The vegetation community classifications at the project site include Upland Native, Upland Non-Native, Mixed Upland/Riparian, Bare lands and Open Water. The vegetation communities within the footprint of the construction site are shown in Figure 3 and a quantitative summary of the vegetation communities is shown in Table 5.

Table 5
Vegetation Communities (acres)

Planning Area	Upland Native	Upland Non-Native	Mixed Riparian	Open Water
1	.20	0.0	0.0	0.0
2	.10	0.0	0.0	0.0
3	0.0	0.0	.19	0.0
4	0.0	0.0	0.0	3.44
5	0.0	0.0	.27	0.0
6	0.0	.13	0.0	0.0
7	0.0	0.0	.02	0.0
Total	.30	.13	.48	3.44

The vegetation communities within the footprint of the construction site are described below;

Mixed Riparian

The Mixed Riparian Classification has been applied to lands that are composed of approximately 50% native riparian vegetation and 50% non-native riparian vegetation. Mixed Riparian is located on both the east facing and west facing slopes. The dominant native riparian vegetation in this classification includes Black Willow (*Salix goodingii*), and Mulefat (*Baccharis salicida*). The dominant non-native vegetation includes Tree Tobacco (*Nicotiana glauca*), Tamarisk (*Tamarix ramosissima*), and Castorbean (*Ricinus communis*).



Native Upland

The Native Upland Classification has been applied to lands that are composed of 90% or more native upland vegetation. The dominant species include California Sagebrush (*Artemesia californica*), Laurel Sumac (*Malosma laurina*) Coyotebush (*Baccharis pilularis*), and Brittlebush (*Encelia farinosa*).

Non Native Upland

The Non-Native Upland Classification applies to lands that that are composed of 90% or more of non-native vegetation. The dominant species is Black Mustard (*Brassica nigra*).

Open Water

The Open Water Classification has been applied to lands that are typically submerged underwater from normal operating water levels maintained at Santiago Basin.

Specimen Trees

There are seven large specimens of Black Willow trees located on the project site. The west facing slope has two trees with trunks greater than 20" and the east facing slope has five trees with tree trunk diameters greater than 20".

2.2 Special Status Species

A database search of special status plant and wildlife species listed in the California Native Plant Society Online Survey of Rare Plants, U.S. Department of Interior Information Planning and Conservation System Database and the California Department of Fish and Game Natural Diversity Data Base for the Orange U.S.G.S. Quadrangle was conducted to determine the potential for special status plant and wildlife species to occur on the project site. Subsequent, to the data base search OCWD biologist conducted a survey of the site to determine the presence of any special status species or their habitat. within the study area. Based on the data base search and site survey the potential for the species to occur on the project was determined. A complete listing of special status plant and wildlife species with potential to occur within the study area is shown in Table 6. The determination on the potential occurrence of the species was based on the following criteria:

Present: The species is commonly observed or observed within the study area within the last year.

High: The study area supports suitable habitat and the species has been observed within last 2 years.

Moderate: The study area supports suitable habitat and the species has not been observed within last 2 years.

Low: The study area lacks suitable habitat for the species or species has not been observed for over 5 years.

Table 6
Sensitive Species List

	USFWS	CDFG	CNPS	General Habitat	Project Site Potential Occurrence
Plants					
Chaparral sand verbena (<i>Abronia villosa</i> var. <i>aurita</i>)	NL	NL	1B	Coastal Bluff Scrub & Chaparral	Low Site contains suitable habitat. Species not identified onsite. Last occurrence 1924 along Santa Ana River. Species believed to be extirpated in Orange County.
Plummers mariposa lilly (<i>Calochortus plummerae</i>)	NL	NL	1B	Coastal Bluff Scrub & Chaparral	Low Site contains suitable habitat. Species not observed onsite. Species last occurrence 2008 Peters Canyon Regional Park, approximately 2.89 miles from site.
Southern tarplant (<i>Centromadia parryi</i> ssp. <i>Australis</i>)	NL	NL	1B	Vernal pools, Foothill Grasslands	Low Site lacks suitable habitat.
Many-stemmed dudleya (<i>Dudleya multicaulis</i>)	NL	NL	1B	Coastal Bluff Scrub	Low Site contains suitable habitat. Species not observed onsite. . Species last occurrence 2008, 5.5 miles from site.
Santa Ana River woollystar (<i>Eriastrum</i> <i>densifolium</i> ssp. <i>Sanctorum</i>)	E	E	1B	Sandy Soils on River Floodplain	Low Site lacks suitable habitat.
Reptiles					
Coast horned lizard (<i>Phrynosoma coronatum</i>)	NL	SSC	NL	Low lands Along Sandy Washes	Low Site lacks suitable habitat.
Orange-throat whiptail (<i>Aspidoscelis hyperythra</i>)	NL	SSC	NL	Coastal Scrub	Low Site contains suitable habitat. Species last occurrence 2000, approximately 2 miles from SR 91 at Imperial Highway.
Birds					
Coastal cactus wren (<i>Campylorhynchus</i> <i>brunneicapillus</i> <i>sandiegensis</i>)	NL	SSC	NL	Coastal Sage Scrub. Requires tall opuntia cactus for nesting and roosting.	Low Site does not contain tall opuntia cactus and does not provide suitable habitat.
Least Bell's vireo (<i>Vireo</i> <i>bellii pusillus</i>)	E	E	NL	Riparian Vegetation Near	Present Species reported within

				Water or Along Dry River Bottoms	the last year.
Coastal California Gnatcatcher (<i>Poliioptila californica</i>)	E	E	NL	Coastal Sage Scrub	Present Species reported within last year.
Coopers Hawk (<i>Accipiter cooperii</i>)	NL	WL	NL	Woodlands, Canyon Bottoms, River Floodplains	High Site contains suitable habitat. Species observed within last five years.
White-tailed kite (<i>Elanus leucurus</i>)	NL	FP	NL	Rolling foothills, valley margins, river bottoms and marshes near woodlands	High Site contains suitable habitat. Species observed within last five years.
Mammals					
Mexican long-tongued bat (<i>Choeronycteris Mexicana</i>)	NL	SSC	NL	Well Lighted Caves	Low Site lacks suitable habitat.
Western mastiff bat (<i>Eumops perotis californicus</i>)	NL	SSC	NL	Cliff Faces	Low Site lacks suitable habitat.
Aquatics					
Santa Ana Sucker (<i>Catostomus santaanae</i>)	T	SSC	NL	Cool, Clear Streams, Rivers, rocky Bottom	Low Site lacks suitable habitat.
Legend NL-Not Listed <u>Federal Endangered Species Act</u> E- Endangered T-Threatened SSC- Special Species of Concern C-Candidate for Listing <u>California Endangered Species Act/California Department Fish Game</u>		<u>California Endangered Species Act/California Department Fish Wildlife</u> FP-Fully Protected E-Endangered T-Threatened SSC-Special Species of Concern WL-Watch List		<u>California Native Plant Society CNPS</u> 1A-Plants presumed extinct in California 1B- Plants rare, threatened, or endangered in California and elsewhere 2-Plants rare, threatened, or endangered in California but more common elsewhere 3-Plants about which we need more review 4-Plants of limited distribution Source: California Department Fish and Game Natural Diversity Database	

Critical Habitat

The project site is not located on lands that are designated as Critical Habitat.

2.3 Federal and State Jurisdictional Aquatic Resources

Waters of the United States

A water body is considered Waters of the U.S. if it is: (1) traditional navigable water (TNW); (2) wetlands adjacent to a TNW; (3) non-navigable tributaries of TNW that have perennial or seasonal flow of water; and (4) wetlands that are adjacent to non-navigable tributaries of TNW that have perennial or seasonal flow of water.

Santiago Creek drains into Santiago Basin. Santiago Creek is a seasonal water body that drains into the Santa Ana River, which ultimately drains into the Pacific Ocean. The Pacific Ocean is navigable water and therefore the Santiago Creek is a tributary to navigable water and classified as Waters of the U.S. The Federal jurisdiction extends to

the ordinary high water mark and to adjacent wetland vegetation. Table 3 identifies the amount of Waters of the U.S. on the project site.

Waters of the State

According to the State Water Code, Waters of the State are defined as any surface water body, groundwater or wetlands within the boundary of the State. The State jurisdiction extends to the top of the slope of the water body and adjacent wetland vegetation. Table 3 identifies the amount of Waters of the State on the project site.

Wetland Waters of the U.S./State

Wetland Waters are a subset of jurisdictional Waters of the U.S. and the State. Generally, wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. Presently, there is no single definition of wetlands recognized by the state and the federal government. However, the state and federal definitions do share common terms and concepts. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically the land supports hydrophytes, (2) the substrate is predominantly undrained soil, and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year. Table 3 identifies the amount of wetlands Waters of the U.S./State on the project site.

Table 7 Existing Waters of U.S./State

Waters of the State	Wetland Waters of the State	Waters of US	Wetland Waters of US
3.44	.48	3.44	.48

2.4 Wildlife Movement Corridors

Corridors and linkages facilitate regional wildlife movement and are generally centered near water ways, ridgelines, riparian corridors, flood control channels, contiguous habitat and upland habitat. Different types of wildlife movement corridors provide specific types of functions depending on the landscape of the area and habitat conditions. Santiago Creek provides wildlife movement from the Santa Ana Mountains to Santiago Basins. At Santiago Basins the creek continues downstream to where it joins the Santa Ana River at the Riverview Golf Course. Between Santiago Basin and the Riverview Golf Course, Santiago Creek meanders through patches of open space that provides habitat for some wildlife. However, downstream of the golf course there are limited amounts of open space and Santa Ana River transitions into a lined flood control channel with limited habitat and access and its ability to function as wildlife corridor is severely diminished.

SECTION 3.0 BIOLOGICAL IMPACTS

IMPACT BIO-1: Will the Project have a substantial adverse effect, either directly or through habitat modifications on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Sensitive Plant Species

A search of CDFW California Natural Diversity Database and California Native Plant Society Database in conjunction with site reconnaissance of the project area has determined that there would be low potential for sensitive plant species to occur on the project site. Therefore, implementation of the Project would not result in adverse impacts to sensitive plant species.

Sensitive Wildlife Species

Coastal California Gnatcatcher (Gnatcatcher)

The upland areas in Santiago Basin contain pockets of coastal sage scrub. The Gnatcatcher both inhabits and nests in coastal sage scrub habitat. As shown in Figure 4 there are no known Gnatcatcher territories on the project site. Therefore, no direct construction impacts would occur. Additionally, to avoid direct impacts and indirect construction noise impacts, construction activities would occur when birds are no longer nesting. Additionally, prior to the removal of vegetation the project site would be surveyed by a qualified biologist. If the habitat is occupied, no vegetation removal activities would occur until such time the habitat is no longer occupied. With implementation of Conservation Measures BIO-1 potential significant impacts to the Gnatcatcher would be avoided.

Implementation of the Project would remove 0.30 acre of coastal sage habitat that is suitable for the Coastal California Gnatcatcher. The amount of coastal sage scrub habitat that would be removed would be minimal compared to the overall amount of coastal sage habitat that is provided at Santiago Basin. Once the project is completed, 0.43 acres of native coastal sage scrub habitat would be restored, which would represent 0.13 acre increase of native upland habitat over the current condition.

Least Bell's Vireo (Vireo)

The Vireo occurs in riparian habitats along watercourses that contain dense growth of willow trees, cottonwood trees, mulefat and other dense riparian vegetation. At Santiago Basin the riparian habitat is fragmented and mixed with high amounts of non-native vegetation. Even though the quality of the habitat is marginal, there would be the potential that vireos could occur. As shown in Figure 5, in 2017 a single vireo territory was identified within the project limits of grading.



The construction activities for the Project would temporary impact 0.48 acres of mixed riparian vegetation and would temporary displace the part of this past vireo territory. To avoid potential direct impacts and indirect noise impacts to the vireo, vegetation removal activities will occur outside of nesting season. Additionally, the project site will be surveyed by biologist prior to vegetation removal activities to ensure that no vireos are present. With the implementation of Conservation Measures BIO-1 direct impacts and indirect impacts would be avoided.

Implementation of the Project would remove 0.48 acre of mixed riparian habitat that is suitable for the Vireo. The amount of riparian removed would be minimal compared to the overall amount of riparian habitat that is provided at Santiago Basin. Once the project is completed, 0.48 acres of native riparian habitat would be restored. Assuming, that approximately 50% of the mixed riparian habitat is non-native, the proposed restoration would represent .24 acre increase of native riparian habitat over the current condition.

Cooper Hawk, White-Tailed Kite

The Cooper Hawk and the White-Tailed Kite have been observed flying above Santiago Basin. Both species are known to occupy and nest in trees. However, no nesting sites have been reported in Santiago Basin. The Proposed Project would remove a handful of specimen native trees from the project site. The amount of trees removed would be relatively small compared to the overall number of trees that are present at Santiago Basin. The vegetation and tree removal activities would occur outside of nesting season to avoid impacts to occupied nests. Prior to the removal of any tree from the project site, each tree would be inspected to confirm if unoccupied nests are present. If unoccupied nests are encountered, they would be relocated and if not feasible to be relocated, a substitute nest site would be created and located outside of the construction activity impact area. With the implementation of Conservation Measure BIO-1 and BIO-2 potential impacts to the Cooper Hawk and the White-Tailed Kite would be avoided.

Conservation Measures

BIO-1: All vegetation removing and clearing activities and the operation of heavy equipment will be conducted between September 16 and March 15, outside of bird nesting season. Vegetation removal and operation of heavy equipment may begin in the month of August provided the area is surveyed by a qualified biologist in advance of vegetation removals and the qualified biologist determines that no nesting birds are present within 500 feet of the activities.

BIO-2: During vegetation removals, vegetation and trees planned for removal would be inspected to determine if nests are present. If nests are present, they would either be re-located and if not feasible to be relocated, a new substitute nest would be created and located outside of the construction area.

IMPACT BIO-2: Will the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local regional plans, policies and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

As shown in Table 8 implementation of the Project would temporary impact 0.30 acre of upland native vegetation, 0.13 acre of non-native upland vegetation and 0.48 acre of mixed riparian vegetation. The native riparian and native upland vegetation at the project site would be considered a sensitive vegetation community and the permanent loss of it would be considered a significant impact. The Project would temporary remove native vegetation from the project site as part of the grading activities to repair and stabilize the failed slopes on both sides of the saddle. Without project implementation, further slope failure could result in permanent loss of this acreage of vegetation or more. Once the project is completed, the disturbed areas on the project site would be restored with native riparian and native upland vegetation. The site would be managed by OCWD to prevent the re-establishment of non-native vegetation. Once the proposed restoration activities are implemented there would be a net increase of .13 acre of native upland vegetation and 0.24 acre of native riparian vegetation. Because the potential impacts to native vegetation would be temporary and the non-native vegetation removed from the project site would be replaced with native vegetation, the potential impacts to sensitive vegetation communities would be less than significant. With the implementation of Conservation Measures BIO-4 potential impacts to sensitive vegetation communities would be reduced to a less than significant level. The construction activities for the Proposed Project could also result in indirect adverse effects to sensitive vegetation communities from anthropogenic disturbances, colonization of invasive weeds, disturbances and generation of fugitive dust from construction equipment. With the implementation of Mitigation Measures BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-9, BIO-10 potential adverse indirect construction effects to sensitive vegetation communities would be less than significant.

Table 8 Project Impact Vegetation Communities (acres)

Upland Native	Upland Non-Native	Mix Riparian	Open Water
0.30	0.13	0.48	3.44

Specimen Trees

The west facing slope contains two specimen Black Willow trees that are located within the project site construction activity impact area. During grading activities the trees would be avoided and left in place. However, trimming of a few braches would be required to allow for the access of heavy equipment. On the east face slope there are five specimen Black Willow trees within the limits of grading. Due to extensive slope failures on the east facing slope, all of the slope would need to be graded which would require the removal of all five of the Black Willow trees. To compensate of the removal

of the five trees, OCWD would plant 15 trees at the upper edge of the ordinary high water mark. With the implementation of Conservation Measure BIO5- potential impacts associated with the removal of native specimen trees would be reduced to a less than significant level.

IMPACT BIO-3: Will the Project have a substantially adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling hydrological interruption, or other means?

A wetland assessment was conducted at the project site in accordance with the Regional Supplement to the U.S. Army Corps of Engineers Wetland Delineation Manual Arid Region West. For planning purposes, the project site has been divided into 7 planning areas. At each planning area a three parameter approach was used to identify Waters of the U.S. and State and wetland Waters of the U.S. and State. These three parameters include; (1) the presence of wetland vegetation, (2) the presence of wetland hydrology and (3) the presence of hydric soils.

- **Vegetation:** The project area contains 0.92 acres of mixed native and non-native riparian vegetation; Coast Live Oak, Castor Bean, Cocklebur, Toyon, Flowering Tobacco and Mexican Elderberry. These riparian species are recognized as wetland plant indicators.
- **Hydrology:** The hydrology is largely from inundation from the lowering and rising of the water level in Santiago Basin. The ordinary high water mark and jurisdiction area on the project site is shown on Figure 3. The periodic inundation of vegetation indicates the presence of wetland hydrology.
- **Hydric Soils:** Santiago Basin largely consists of Metz Sandy Loam soil which is classified as hydric soil.

Table 9
Project Impacts Jurisdictional Areas of U.S. /State

Planning Area	Temporary Impacts Waters of State	Permanent Impacts Waters of State	Temporary Impacts Wetland Waters of State	Permanent Impacts Wetland Waters of State	Temporary Impacts Waters of U.S	Permanent Impacts Waters of U.S.	Temporary Impacts Wetland Waters of U.S.	Permanent Impacts Wetland Waters of U.S.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.19	0.0	0.0	0.0	0.19	0.0
4	3.44	0.0	0.0	0.0	3.44	0.0	0.0	0.0
5	0.0	0.0	0.27	0.0	0.0	0.0	0.27	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Planning Area	Temporary Impacts Waters of State	Permanent Impacts Waters of State	Temporary Impacts Wetland Waters of State	Permanent Impacts Wetland Waters of State	Temporary Impacts Waters of U.S	Permanent Impacts Waters of U.S.	Temporary Impacts Wetland Waters of U.S.	Permanent Impacts Wetland Waters of U.S.
7	0.0	0.0	0.02	0.0	0.0	0.0	0.02	0.0
Total	3.44	0.0	0.48	0.0	3.44	0.0	0.48	0.0

Waters of U.S./State

As shown in Table 4 the implementation of the Project would not result in the permanent loss of Water of U.S./State. The Project would temporary impact 4.41 acres of Waters of U.S./State. The impacts would occur from excavation activities to remove and replace the underground box culvert and the reconfiguration of the existing slopes of the saddle located below the ordinary high-water level. All excavated areas would back-filled from existing material at Santiago Basin. No permanent fill would be discharged, or permanent above ground structures would be built. Once the grading activity is completed the temporary disturbed areas would be re-contoured to their pre-project condition to the extent possible. There would be no net loss of Waters of the U.S./State.

Wetland Waters of U.S./State

As shown in Table 4 the implementation of the Project would not result in the permanent loss of wetland Waters of the U.S./State. The Project would temporary impact 0.48 acres of mixed riparian wetland Waters of the U.S./State. The impacts to wetland Waters of the U.S./State would occur from the recontouring of the side slopes of the saddle. The Project impacts to wetland Waters of the U.S./State would be temporary because once the Project is completed OCWD would plant native riparian vegetation in the disturbed areas and would manage the area to prevent the re-establishment of non-native vegetation. With the implementation of Conservation Measure BIO-3 there would be no net loss of wetland habitat and potential impacts would be less than significant.

Conservation Measures

BIO-3: At the completion of the project OCWD will restore 0.43 acres of native coastal sage scrub habitat and 0.48 acre of mixed riparian vegetation on areas of the project site disturbed by the project.

BIO-4: Construction equipment and personnel will utilize designated access roads to access the work area.

BIO-5: Prior to removal of vegetation, access routes in and out of the construction work area will be flagged.

BIO-6: Exposed soils will be watered as needed to control dust on a continual basis.

BIO-7: All construction, site disturbance and vegetation removal will occur within the delineated construction boundaries.

BIO-8: The storage of equipment and materials, temporary stockpiling of soil would be located within designated areas outside of habitat areas.

BIO-9: Areas to remain undisturbed will be clearly flagged or otherwise delineated prior to construction activities. OCWD will be onsite to monitor all activities that result in the removal of sediment or vegetation and will ensure that these activities do not encroach into the delineated areas.

BIO-10: During construction, adjacent vegetation would be monitored by OCWD for signs of plant stress.

IMPACT BIO-4: Will the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The only wildlife movement corridor within the vicinity of the project site is Santiago Creek. The project activities would not occur near Santiago Creek and would not have any impact on wildlife movement along the creek. Additionally the project activities would occur during the day and would not interfere with any wildlife movement activity that occurs at night. All vegetation removal activities would occur outside of the nesting season to avoid impacts to nesting migratory birds. With the implementation of Conservation Measures BIO-1 potential impacts to wildlife movement and nesting migratory birds would be reduced to a less than significant level.

IMPACT BIO-5: Will the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The project site is not subject to any local policies providing for the protection of biological resources. The Project would comply with all federal and state policies providing for the protection of biological resources.

IMPACT BIO-6: Will the Project be in conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The project site is not located on lands that are included in a Habitat Conservation Plan or Natural Community Conservation Plan.