APPENDIX I CONCEPTUAL REVEGETATION PLAN

EL MONTE SAND MINING PROJECT

Conceptual Revegetation Plan

Prepared for
County of San Diego

August 2018

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CHAPTER 1.0 DESCRIPTION OF THE DEVELOPMENT PROJECT / IMPACT SITE FOR WHICH COMPENSATORY MITIGATION IS REQUIRED

1.1 Responsible Parties

El Monte Nature Preserve, LLC is responsible for all aspects of the El Monte Sand Mine project (proposed project).

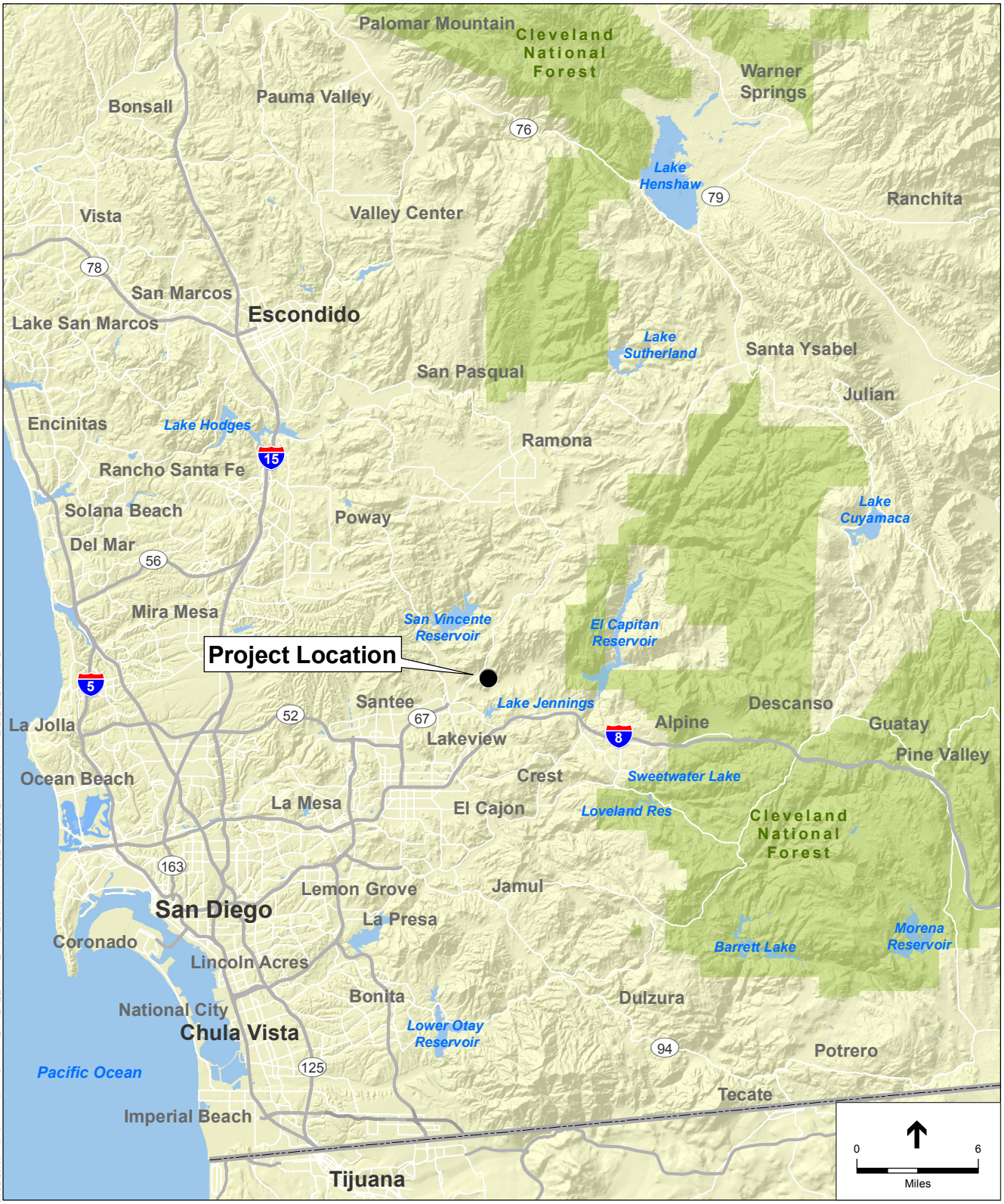
1.2 Location of the Development Project

The proposed project is located in the San Diego River watershed in the Lakeside Community Planning Area, within the unincorporated portion of San Diego County (**Figure 1**). The site consists of approximately 479.5 acres and is bordered by El Monte Road to the south and Willow Road to the north. Highway 67 is located approximately 1.2 miles to the west, and El Capitan Reservoir (also known as El Capitan Lake) is located approximately 2 miles upstream (**Figure 2**). The proposed project is located within Township 15 South; Range 1 East; of portions of Sections 9, 10, and 16 of the El Cajon Mountain, California; USGS 7.5-minute quadrangle; San Bernardino Base and Meridian. A total of six assessor's parcel numbers (APNs) are included within the project area, as shown in **Figure 3** and **Table 1**. All of these parcels are owned by El Monte Nature Preserve.

Table 1
San Diego County Assessor Office Parcel Numbers

APNs
392-060-29
392-150-17
391-061-01
391-071-04
393-011-01
390-040-51

SOURCE: Helix Water District, 2010



SOURCE: ESRI; SanGIS 2015

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Figure 1

Regional Location

SOURCE: ESRI

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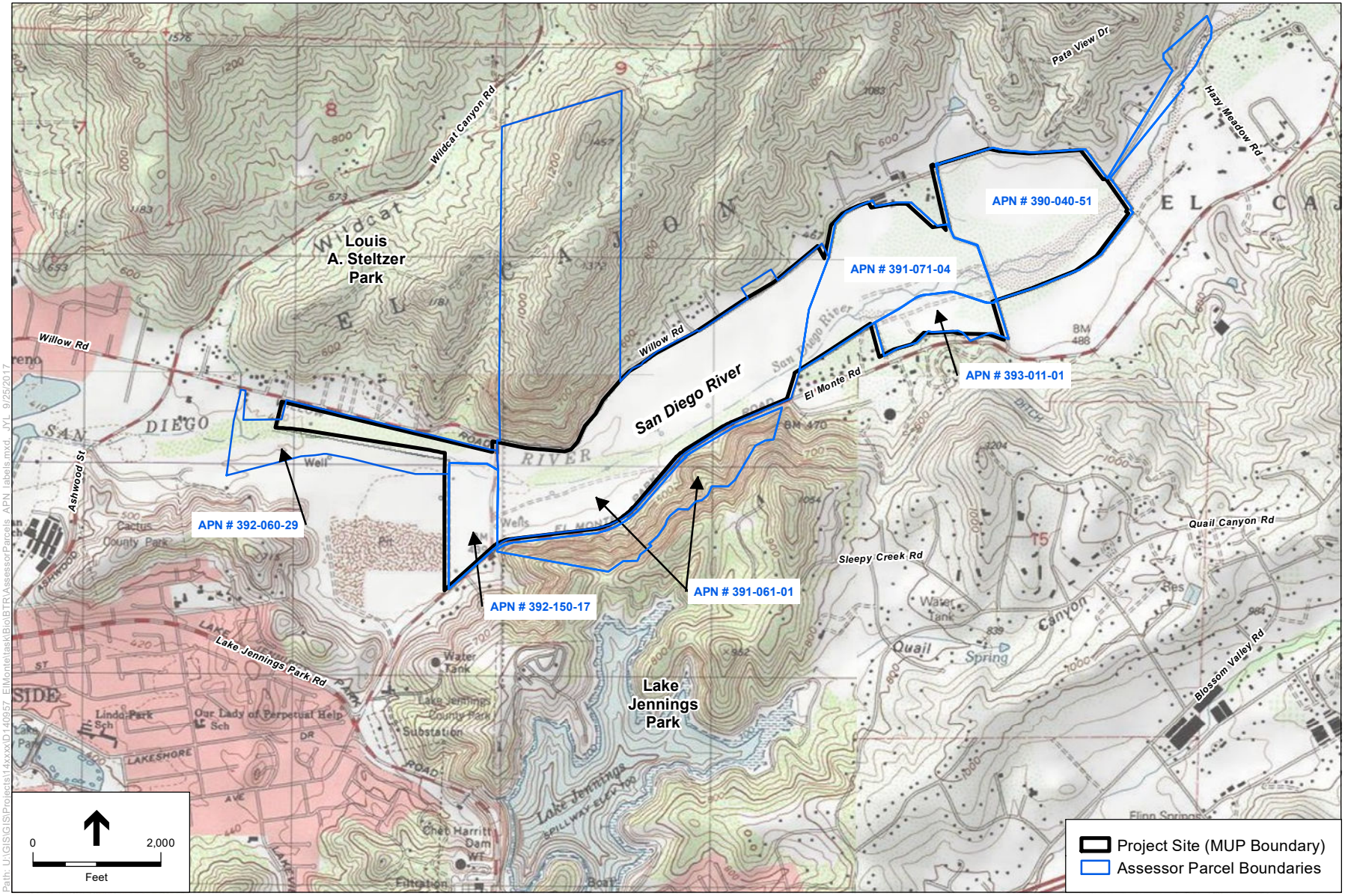
Figure 2

Project Vicinity



SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA;
USGS 7.5' Topo Quad El Cajon 1975, 1978; San Vicente Reservoir 1971, 1973, 1975;
El Cajon Mountain 1980, 1985

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Figure 3

Assessor Parcels

1.3 Summary of Overall Development Project with Proposed Mitigation

This section focuses on the proposed sand mining project components and habitat mitigation and reclamation requirements, but near the end of this section is a discussion of impacts in 2005 from grading of a previously approved golf course and the inclusion of outstanding mitigation from that project into the current project. The proposed sand mining project would be implemented on approximately 479.5 acres of land in the San Diego River watershed within unincorporated San Diego County. The proposed project includes three principal elements:

1) Extract approximately 12.5 million tons of aggregate material from the El Monte Valley for commercial use. The project would extract, process, and market aggregate using conventional earth moving and processing equipment. In addition, during the mining activities, a previously excavated approximately 12.8-acre golf course pond (a dry depression) for a project that was not fully implemented, will be filled in with excavated material. The proposed Mining Component would operate over a 16-year period, with 12 years of active mining and reclamation and an additional 4 years of reclamation following the completion of mining. A trail system will be implemented during and following mining operations, will include riding and hiking trails and staging areas, and has been factored into this Revegetation Plan.

2) Implement a Reclamation Plan that reclaims mined lands to a usable condition for beneficial end uses stabilize landforms and soils, and ensure acceptable water quality post completion of mining activities. The purpose of the Reclamation Plan is to ensure that that land is reclaimed (adequately revegetated and stabilized) according to the Surface Mining and Reclamation Act (SMARA) and Sections 1810 and 6550-6556 of the County Zoning Ordinance. Project temporary impact areas not specified as compensatory mitigation areas for upland and jurisdictional resources would be addressed by the Reclamation Plan.

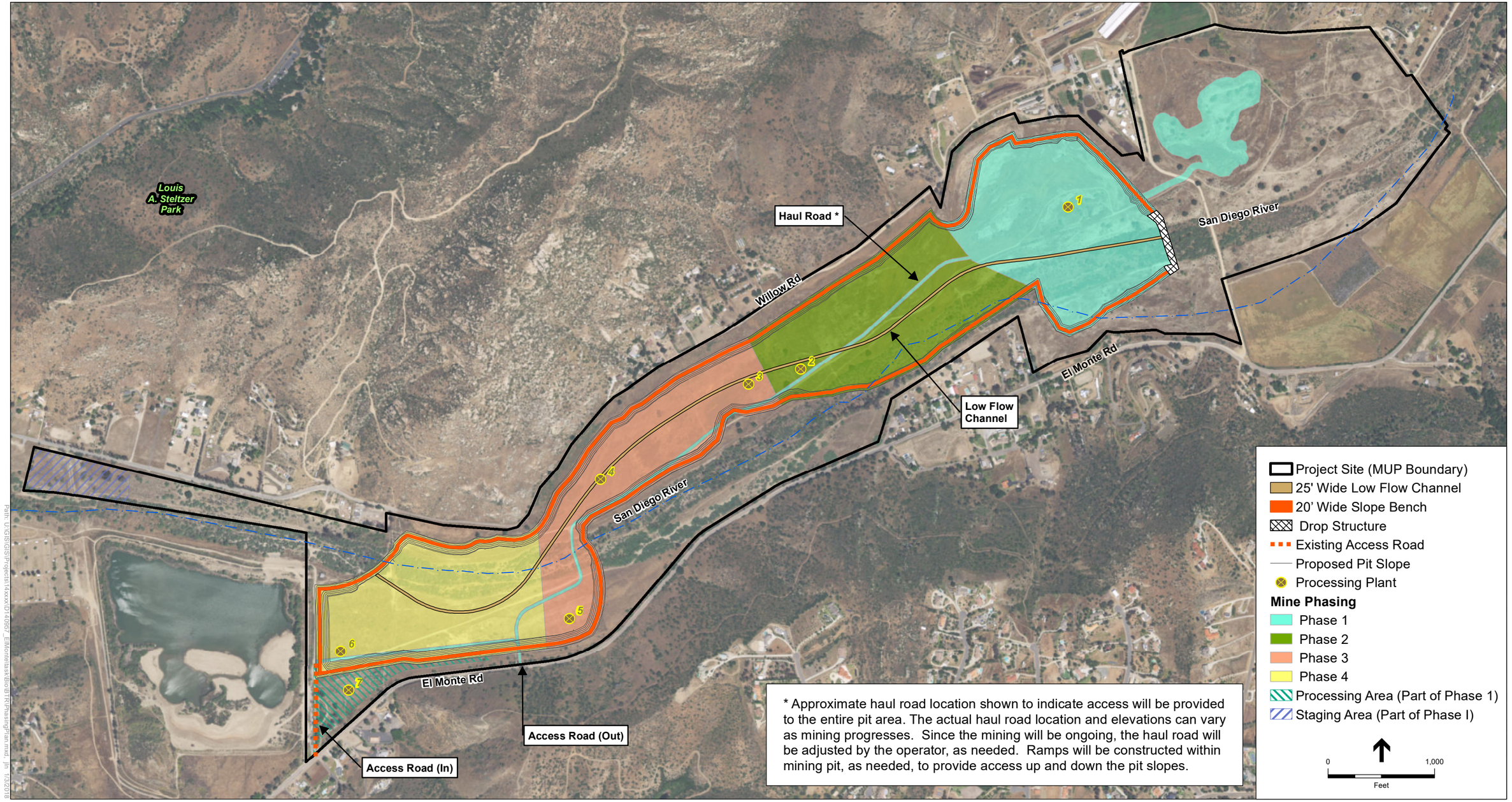
3) Implement a Revegetation Plan (i.e., this Plan) to ensure successful restoration/creation of self-sustaining native habitats, which would serve as mitigation for impacts to sensitive vegetation communities, pursuant to County requirement (e.g., Resource Protection Ordinance, [County 2011], Guidelines for Determining Significance for Biological Resources [County 2010], and Report Format and Content Requirements for Revegetation Plans [County 2007b]). In contrast to the Reclamation Plan, the goal of the Revegetation Plan is to restore the ecological functions and values of the impacted habitats, rather than to provide landscape stability. Although the Revegetation Plan is a separate document from the Reclamation Plan, it was designed to be compatible with the goals and methods of the Reclamation Plan, and implemented concurrently.

The Mining Component would be implemented in four phases, moving generally from the upstream to downstream areas (**Figure 4**). A combination of onsite habitat mitigation (for uplands and jurisdictional resources) and reclamation revegetation would be initiated for each specific phase after completion of mining in that area. For example,

as mining progresses into the Phase 2 area, habitat mitigation and reclamation would begin in the Phase 1 area. In addition to habitat mitigation, revegetation will occur where temporary impacts occur to address Reclamation Plan activities, County, and resource agency requirements. Final landforms would be established and the entire temporary impact area (226.4 acres) would be planted with the native species identified in the Reclamation Plan and Revegetation Plan. This procedure would result in approximately 47 percent of the site (226.4 acres within the mining phases of the total 479.5 acres onsite) being revegetated with native species. And approximately 50 percent of the existing non-native habitats will be revegetated with native species (i.e., of the total of 452.6 acres of disturbed lands and non-native habitats onsite [see Figure 6], 224 acres will be revegetated with native species in the mining phases) by the time extractive operations are complete, in addition to the enhancement of 51 acres of disturbed habitat (i.e., 43.8 acres of tamarisk scrub and 7.2 acres of non-native grassland as part of the overall enhancement of 64.16 acres) outside of the mining phases. Restoration of habitat beyond the mining limits is not required or proposed, other than enhancement of riparian and transitional habitat outside of mining limits within the site to provide a portion of the mitigation for impacts to tamarisk scrub habitat. This proposed revegetation will result in a net increase in native habitat acreage onsite and improve overall native habitat quality and functions. The property currently supports a high biodiversity of species (USGS 2017) but the revegetation plant palettes and seed mixes will provide a more diverse plant composition and the revegetation process will control and remove the majority of non-native plant species that currently exist onsite. In addition, the riparian habitat communities within the post-mining phases will initially be approximately 36 to 41 feet closer to groundwater compared to the existing condition, which should support more vigorous (sustainable) and diverse riparian habitats and therefore improve overall native habitat quality and functions.

Mining Phase 1 is planned to be completed and all equipment dismantled and moved to Mining Phase 2 by 2023 which is when the first phase of habitat mitigation and reclamation/revegetation would be implemented. Habitat mitigation and reclamation/revegetation would continue based on the phasing schedule shown in **Table 2.** Based on habitat mitigation ratios presented in this plan, habitat mitigation (for uplands and jurisdictional resources would occur within 176.64 acres (i.e., within 113.92 acres in the mining basins and 62.72 acres outside the mining limits) and reclamation/revegetation would occur within approximately 112.48 acres within the project area. The enhancement and restoration of 62.72 acres of riparian and transitional habitat would occur outside of mining limits within the site as part of proposed mitigation (note: to include all riparian and transitional habitat areas for enhancement and restoration outside of mining phases, this mitigation acreage has been rounded up to 64.16 acres).

Habitat mitigation standards may add 2 years to reclamation completion dates shown in this schedule. Differences in habitat mitigation and reclamation/revegetation components and requirements are provided at the end of this section.



* Approximate haul road location shown to indicate access will be provided to the entire pit area. The actual haul road location and elevations can vary as mining progresses. Since the mining will be ongoing, the haul road will be adjusted by the operator, as needed. Ramps will be constructed within mining pit, as needed, to provide access up and down the pit slopes.

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SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; SanGIS

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Figure 4
Phasing Plan

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Table 2
Proposed Mining and Reclamation Phasing

Mining Phase	Area of Disturbance (acres)*	Mining Duration (years)	Mining Initiation Date (est.)	Mining Completion Date (est.)	Reclamation Completion Date (est.)
1	93	4	2019	2023	2027
2	52	3	2023	2026	2030
3	48	3	2026	2029	2033
4	50	2	2029	2031	2035
Total	**243**	**12**	**-**	**-**	**-**

*rounded off to the nearest acre.
Source: EnviroMINE 2016; ESA 2016; Chang Consultants 2017

The total area of disturbance for the mining phases is 243 acres (including all impact components) and the final landform would be an approximately 215-acre depression in the excavated area with a single 20-foot-wide bench around the perimeter, located 20 feet above the bottom of the excavated plain and 10 feet below the current level of the top of the river bank. The 12.8-acre dry depression, which is outside of the river channel, would be filled to the same elevation as the surrounding upland habitat. The man made dry depression was determined not to be a jurisdictional feature and therefore, no permits are required for the planned filling. Final cut slopes along the perimeter of the excavated pit would have a 3:1 gradient, sloping up at the western end to the existing grade. The maximum excavation depth would be 36 to 41 feet below ground surface outside the current river channel elevation. A low-flow meandering channel would be constructed in the bottom of the excavated pit to direct water westward from storm events that produce runoff from the surrounding hillsides. This channel would be approximately 5 feet deep, with a 25-foot-wide bottom and 4:1 side slopes.

If enough water runs off the surrounding slopes and/or water is released from El Capitan Reservoir during flood events, a pond may form in the pit. Approximately 2,000 acre-feet would be temporarily stored within approximately 75 acres if the pit were completely filled. If the pit is filled to capacity, it would be a maximum of 20 feet deep and approximately 83 acres in size. This pond would gradually decrease in size and depth during dry seasons/periods as water infiltrates into the groundwater system and evaporates.

As the final slopes of each mining area and final grading are completed, the mined area would be rehabilitated and all machinery, equipment, waste materials, and scrap removed from the area. Pursuant to the Revegetation Plan herein, soils would be stabilized across the area, irrigation systems and drainage contours would be installed, overburden/topsoil and mulch would be spread onsite, and native vegetation would be planted and seeded to accomplish habitat mitigation requirements, with some of these activities overlapping in time within phases.

This Revegetation Plan also incorporates riparian habitat mitigation required for impacts that occurred on the property in 2005 to disturbed riparian habitat (tamarisk scrub). In 2005, grading that had been underway on the El Monte project site for a previously approved golf course project was halted and the golf course project was not completed. As a result, 200.56 acres of the El Monte mine project site was disturbed by the grading activities, 91.86 acres of which are located within the currently proposed mine impact area and 108.7 which are located outside of the currently proposed mine impact area. As part of the entitlement process for the golf course project, biological resource-related EIR mitigation measures and project conditions of approval were adopted and were required to be implemented to mitigate golf course-related grading impacts to onsite biological resources. The EIR mitigation measures and conditions of approval were never implemented, and as a result, are now being included with the biological resource mitigation measures for the proposed mine project. A total of 0.18 acre of disturbed riparian scrub was impacted by the golf course project grading outside of the proposed mine impact area which requires mitigation, and the balance of the golf course-related grading impacts outside of the mine impact area were to agriculture land which does not require mitigation. Golf course-related grading biological resource impacts to the area currently proposed for the mine area are covered by the proposed mine project biological resource mitigation measures. The previous golf course-related impact to 0.18 acre of disturbed riparian scrub is now being incorporated in this Revegetation Plan and mitigated at the current County of San Diego 3:1 replacement ratio (for impacts to riparian scrub habitat) through the restoration of 0.54 acre of riparian scrub onsite. This golf course-related grading impact and mitigation measure has been incorporated into the proposed mine project Biological Resources Report, Revegetation Plan, Reclamation Plan and biological resources EIR section.

For the mine project and golf course project, mitigation monitoring would occur for the first 5 years following installation to ensure the success of plantings and attainment of performance standards. Long-term management will be conducted in accordance with a County and resource agency approved Resource Management Plan (RMP) that will be prepared after this conceptual plan is approved by the County and resource agencies for the 178 acres of proposed mitigation areas which will be designated with a Biological Open Space Easement. Habitat mitigation and reclamation would occur in a manner that stabilizes soils, adequately drains water, complies with the fuel modification zones required by the Lakeside Fire Department, and is compatible with the surrounding topography and land uses.

The primary components and requirements for reclamation and compensatory habitat mitigation (revegetation restoration and enhancement) are reviewed below. In accordance with SMARA (1975), reclamation would be conducted over all areas disturbed from mining and processing activities, not including permanent impact areas (i.e., drop structure/rock dam, fuel management zones, trails, and staging areas), and designated compensatory habitat mitigation areas. The objectives are to utilize native plants species (capable of self-regeneration without dependence on irrigation) applied by seeding to (1) provide vegetative cover sufficient to stabilize the surface against the effects of long-term erosion, (2) provide vegetative cover that visually integrates the site with surrounding areas, and (3) to meet the post-extraction land use objectives of the

site. As part of this effort, if soil analysis conducted prior to implementation of the revegetation plan shows that fertility levels or soil constituents are inadequate to successfully implement the reclamation, soil amendments would be incorporated. As presented in the draft Reclamation Plan (2018), wetland/riparian and upland native plant seed mixes and container plant palettes have been prepared which would be applied to areas based on post-mining grades and ecological conditions. As stated in the draft Reclamation Plan, reclamation is not intended to meet natural habitat (i.e., compensatory mitigation) performance standards. The reclamation performance standards presented in the plan, which are sufficient to meet SMARA standards, include 50 percent cover of all native species combined, 100 percent of the most prevalent species shall be native, and management (control) of noxious weed species. Monitoring by visual observation would occur periodically to determine whether noxious weed control is necessary. And reclamation areas would be quantitatively monitored (by sampling 12 randomly placed 50-meter by 1-meter transects) once per year to compare actual reclamation performance with the performance standards. As presented in the draft Reclamation Plan (2018), when the County agrees the reclamation areas meet performance standards for two consecutive years, no further monitoring would be required and the operator may apply for release of financial assurances.

Jurisdictional resource (wetland/riparian) and upland compensatory mitigation areas would be implemented within the project limits based on final mitigation replacement ratios for sensitive habitats and areas approved by the County and regulatory resource agencies. Planned compensatory mitigation to address County requirements is presented in this plan herein, and objectives include establishment and preservation of good quality, self-sustaining natural habitats. Good quality habitat is defined as a vegetation community that includes a diverse assemblage of native plant species appropriate for site conditions and limited presence of non-native plant species, plus functional attributes including positive buffer and landscape connectivity, and appropriate hydrology, physical structure, and biotic structure. All these conditions and attributes are included in the project's proposed monitoring program and success standards. Final compensatory mitigation areas and requirements of the County and resource agencies may, or may not be, the same. Compensatory mitigation presented herein would include a combination of native container plants and seed; temporary irrigation; maintenance activities including weed control; qualitative and quantitative (e.g., transect) monitoring including a functional assessment of wetland/riparian habitat; success standards for 5 years with annual milestones to verify establishment; and provisions for mitigation area preservation and long-term management. Successful implementation of compensatory mitigation areas would concurrently meet reclamation objectives and performance standards. Additional information on reclamation is included in the Reclamation Plan (2018a).

1.3.1 Current Environmental Setting and Site Conditions

1.3.1.1 Environmental Setting

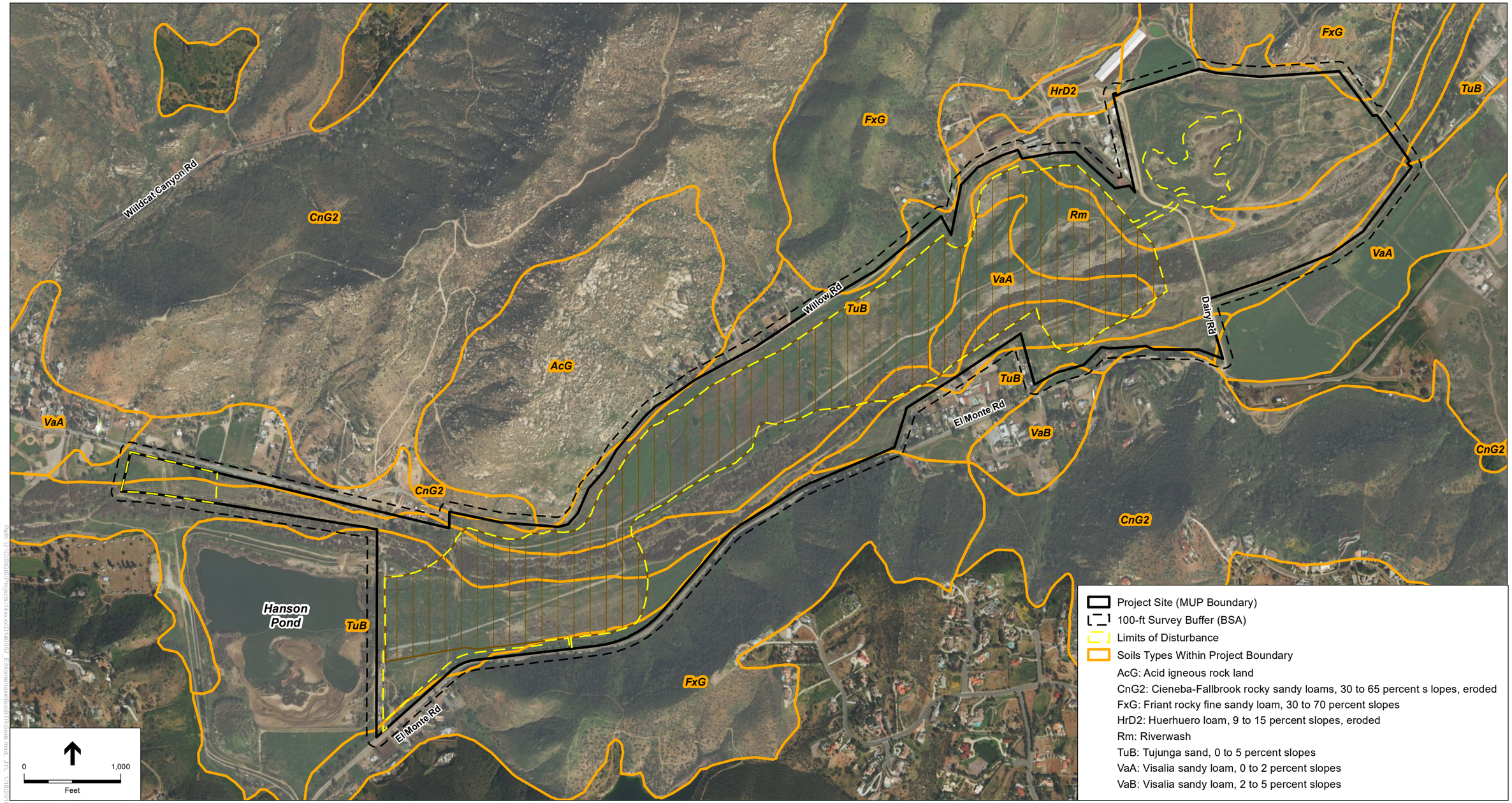
The San Diego River channel crosses through the project area in an east to west direction. The El Capitan Dam and Reservoir is located approximately 2 miles east of

the project area. Construction of the dam and reservoir in 1934 significantly reduced water flows in the El Monte Valley and severed the natural ecological processes of the San Diego River by separating the headwaters from the middle and lower reaches of the river. While the upriver watershed remains a relatively intact landscape, the hydro geomorphology and biology below the dam have been dramatically altered, leaving only vague remnants of the historic natural river system. Sand mining operations that occurred onsite approximately 30 years ago created a clearly defined river channel that varies in width from 250 feet to nearly 400 feet. The channel gradient has been reduced in this stretch of river resulting in sand deposition and the creation of a broad, nearly level alluvial plain above the granitic basement of rocks. Water currently flows in the San Diego River during periods of extended precipitation only, and only for a short distance before percolating into the river channel sand. The groundwater surface within the project area is an average of 40 to 45 feet below ground surface in the channel, which is typically 10 to 20 feet lower than the elevations of the surrounding lands. The groundwater depths within the river channel are typically below the elevations necessary to maintain a self-sustaining native riparian ecosystem.

The project area contains currently vacant, rural lands within a broad floodplain surrounded by steeply sloping valley sidewalls. Although the current vegetation within the project area is primarily composed of exotic species, some native vegetation is sparsely scattered throughout the site. Riparian ecological functions onsite have been diminished as a result of previous disturbances to the project area, including previous sand mining, agriculture, partial grading for the El Capitan Golf Course project, lowered groundwater table, and the reduced water flow caused by the El Capitan Dam. The dam ended seasonal dynamism of the river and blocked processes that previously transferred eroded geologic material from the upper watershed through the El Monte Valley and to downstream reaches. Most river systems include alluvial zones where relatively fine aggregate material is deposited. Natural flood events then episodically deposit these materials downstream which create favorable conditions for plant germination and regeneration of riparian habitats, and native plant and animal populations ebb and flow with these changing environmental conditions. This was the El Monte Valley but these natural processes have mostly been eliminated. As observed in El Monte Valley, ecological degradation in river systems follows losses of hydrogreomorphic function (Shang 2010 and Rosenburg et al. 2000).

1.3.1.2 Soils

As shown in **Figure 5**, the USDA Soil Conservation Series Maps identify the soils along the San Diego River floodway within the project area as Riverwash. Riverwash occurs in intermittent stream channels and is typically sandy, gravelly, or cobbly. Tujunga sand and Visalia sandy loam occur along either side of the river channel. Tujunga sand is derived from granitic alluvium found on alluvial fans and floodplains with slopes less than 5 percent. Visalia sandy loam consists of moderately well-drained, very deep sand loams derived from granitic alluvium. These soils are found on alluvial fans and floodplains and have slopes of 0 to 5 percent.



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SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; SSURGO

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Figure 5

Soils

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1.3.2 Project Size (Acres)

The project area consists of approximately 479.5 acres. Within the project area, approximately 262 acres will be disturbed (i.e., approximately 243 acres within the mining phases and 19 acres outside the mining phases) through vegetation removal and mineral extraction activities. This entire area of temporary impact, as well as the previously excavated approximately 12.8-acre dry depression, which will be filled in during Phase 1 of project implementation, will be reclaimed and/ revegetated for mitigation.

1.3.3 Topography

The topography in the project vicinity is characterized by steep mountains north and south of the alluvial valley. Elevations range from approximately 3,600 feet above mean sea level (AMSL) in the local mountains to 420 feet at the alluvial plain. The topography of the project area is naturally flat; however, recent site alterations due to grading activities have created rugged sandy “dunes” in portions of the upland areas. Elevations range from approximately 540 feet AMSL at the eastern portion of the project area to approximately 420 feet AMSL at the western end of the site. The river basin extends in an east-west direction and consists of a low-flow channel and the associated floodplain. As stated in the Environmental Setting section, sand and mining operations that occurred onsite approximately 30 years ago created a clearly defined river channel, which varies in width from 250 feet to nearly 400 feet. The channel is typically 10 to 20 feet lower than the elevations of the surrounding lands.

1.3.4 Vegetation Types

The majority of plant species observed in the project area are non-native plants. Of the approximately 479.5 acres of vegetation communities and land cover types, 452.6 acres consist of non-native habitats, including disturbed habitat (228.52 acres), non-native grassland (135.75 acres), tamarisk scrub (85.69 acres), and eucalyptus woodland (2.62 acres) (**Table 3; Figure 6**).

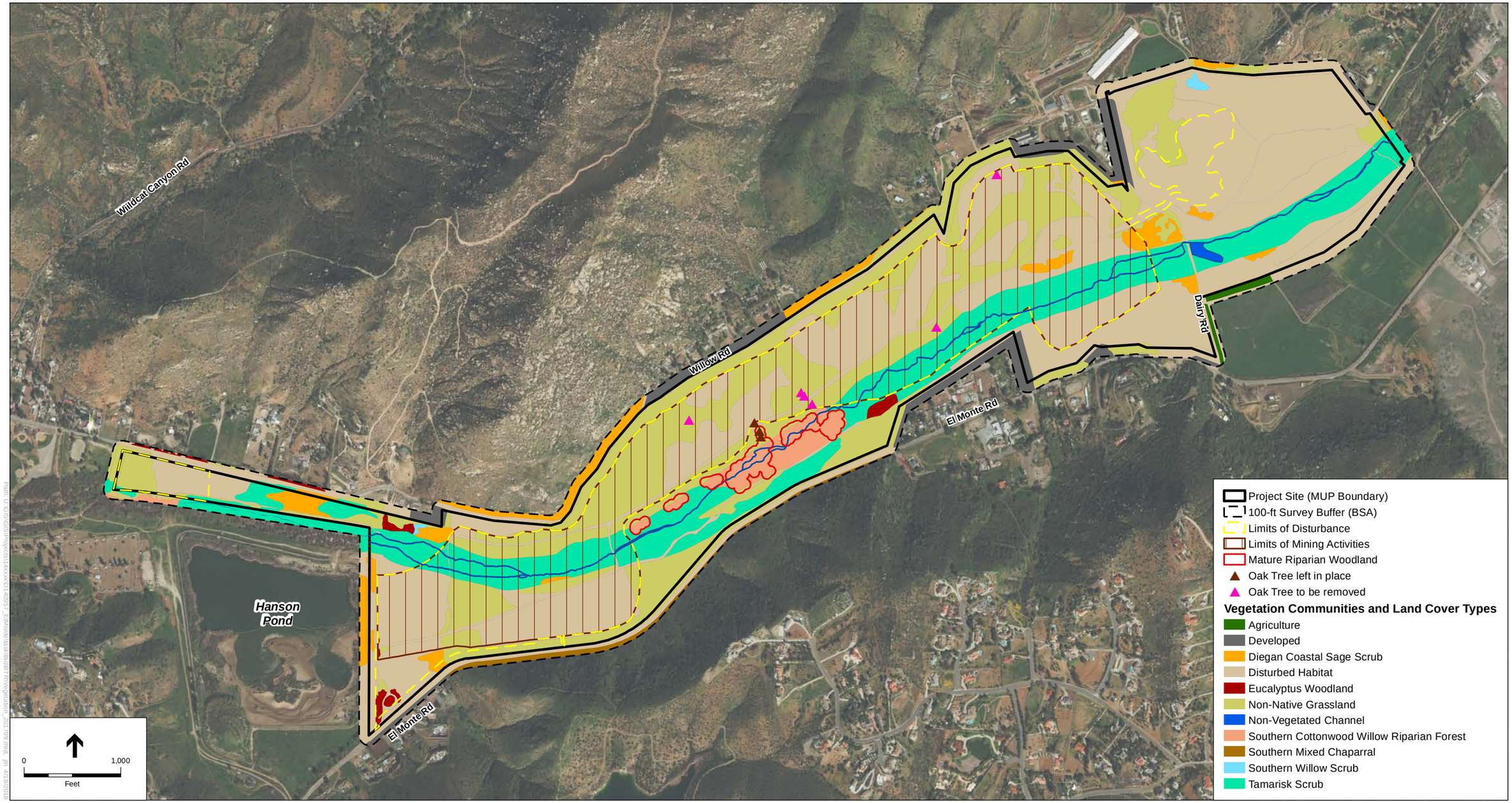
The most abundant cover type on the site, disturbed habitat, has typically undergone intense physical transformation due to prior disturbance and is no longer recognizable as a native or naturalized vegetation association but continues to retain a soil substrate. Scattered vegetation that does occur within disturbed areas primarily includes non-native annual and perennial species, but without enough vegetation cover to classify it as non-native grassland. Non-native grassland is generally dominated by invasive, non-native annual grasses and may contain a small percentage of non-native herbaceous species or remnant patches of native scrub species herbaceous species. Tamarisk scrub onsite is generally a monoculture of tamarisk shrubs that range in density from loosely spaced individuals to dense and impassable, although scattered willows (*Salix* spp.), mule fat (*Baccharis salicifolia*), and other native shrubs and trees are present in some areas.

Table 3
Habitat Types/Vegetation Communities within the Project Area

Vegetation Communities	Project Area (acres)
Riparian and Wetlands	
Southern Cottonwood-Willow Riparian Forest (Holland Code 61330)	11.18
Southern Willow Scrub (Holland Code 63320)	0.71
Tamarisk Scrub (Holland Code 63810)	85.69
Non-Vegetated Channel (Holland Code 64200)	1.66
Uplands	
Diegan Coastal Sage Scrub (Holland Code 32500)	10.38
Non-Native Grassland (Holland Code 42200)	135.75
Eucalyptus Woodland (Holland Code 79100)	2.62
Other Cover Types	
Disturbed Habitat (Holland Code 11300)	228.52
Developed (Holland Code 12000)	3.03
TOTAL	**479.54**

Native habitats accounted for 22.27 acres of the project area, including southern cottonwood-willow riparian forest (11.18 acres), southern willow scrub (0.71), and Diegan coastal sage scrub (10.38 acres). The cottonwood-willow forest consists of a variety of willow species intermixed with cottonwoods (*Populus fremontii*) and mulefat, as well as patches of non-native species, such as pepper trees (*Schinus* spp.), tamarisk, castor bean, and pampas grass (*Cortaderia* spp.). The understory is dominated by non-native grasses. Despite the disturbed nature of this habitat, it supports a high diversity of raptors and songbirds. As previously noted, surface flows which create favorable conditions for germination and establishment of native wetland/riparian plant species rarely occur in El Monte Valley due to the presence of El Capitan Dam upstream. During project surveys it was noted there is minimal presence of younger native plant recruits and the habitat appears to be in a trend of decline as non-native plants are becoming more prevalent. Southern willow scrub occurs as two very small patches of willows near Willow Road. The coastal sage scrub onsite occurs as small, isolated patches that are highly disturbed. The understory of these areas consists of non-native grasses and forbs.

The dominant shrubs consist of California sagebrush (*Artemisia californica*), broom baccharis (*Baccharis sarothroides*), coast goldenbush (*Isocoma menziesii*), or sparsely scattered flat-top buckwheat (*Eriogonum fasciculatum*).



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SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; SanGIS

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Figure 6

Vegetation Communities and Cover Types

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1.3.5 Wildlife

The project area contains habitats suitable for a variety of wildlife commonly observed in areas that have undergone modification and/or degradation, such as in the disturbed areas, non-native grassland and tamarisk scrub and nearby agricultural parcels. Common wildlife observed during field surveys (e.g., by sight) included red-shouldered hawk (*Buteo lineatus*), house finch (*Carpodacus mexicanus*), common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), California towhee (*Pipilo crissalis*), side-blotched lizard (*Uta stansburiana*), western fence lizard (*Sceloporus occidentalis*), California ground squirrel (*Spermophilus beecheyi*), and Audubon's cottontail (*Sylvilagus audubonii*). Common bat species with the potential to forage in the project area include California myotis (*Myotis californicus*), big brown bat (*Eptesicus fuscus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*).

Indirect observations of various larger species, which included visible scat and tracks, indicated that coyote (*Canis latrans*) and bobcat (*Lynx rufus*) are present onsite. Other mammals that may occur within the project area include raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), mountain lion (*Felis concolor*), and mule deer (*Odocoileus hemionus*).

1.3.6 Sensitive Species

1.3.6.1 Sensitive Plant Species

Special-status plant species were evaluated for their potential to occur within the project area based on field surveys and literature review. Appendix C of the Biological Resources Report, prepared by ESA in 2016, includes a complete list of all species evaluated. One special-status species, a single Palmer's goldenbush (*Ericameria palmeri* var. *palmeri*) shrub, was observed in the river channel in 2010 and 2015; two plant species, San Diego sagewort (*Artemisia palmeri*), and decumbent goldenbush (*Isocoma menziesii* var. *decumbens*), were evaluated to have a high potential occur within the survey area based on significant suitable habitat present; no plant species were evaluated to have a moderate potential to occur onsite; and the remaining 41 plant species evaluated were determined to have and unlikely to low potential to occur based on the overall degraded nature of the suitable habitats in the project area or lack of suitable habitat or soil substrate requirements.

1.3.6.2 Sensitive Wildlife Species

Special-status wildlife species were evaluated for their potential to occur on or adjacent to the project area based on field surveys and the literature review conducted. Appendix C of the Biological Resources Report (ESA 2018b) includes a complete list of all species evaluated. Twenty-one special-status wildlife species were observed within the project area during surveys conducted in 2006, 2010, and 2015-2016.

Two occupied territories of the state and federally endangered and County Group I species, least Bell's vireo (*Vireo bellii pusillus*), were detected in cottonwood-willow scrub habitat within the project area during 2010 field surveys. A third individual was

detected adjacent to the site in the vicinity of the eastern boundary of Hanson Pond. In 2015 the least Bell's vireo was detected at the location adjacent to Hanson Pond, but no other vireos were observed during focused species surveys. Least Bell's vireos are known to establish territories in riparian habitats of moderate to high quality such as the remnant riparian woodland patches observed onsite, therefore, the potential for this species to nest in the river channel onsite is considered to be high.

The coastal California gnatcatcher (*Polioptila californica californica*), a federally threatened, County Group I species, was detected in three locations during non-breeding season surveys conducted in 2015. Two of the locations, on the northern border of Hanson Pond and due north of this location near Willow Road, are within the project area, but outside of the impact area. The third location, southeast of Hanson pond just north of El Monte Road, is within the impact area. All three locations are within very small, isolated patches of coastal sage scrub that are highly disturbed. Because the surveys were conducted during the non-breeding season, it is unclear if these gnatcatchers nest onsite; however, it is clear that these areas are used for foraging. In addition, portions of the project area are within U.S. Fish and Wildlife (USFWS) Designated Critical Habitat for the species, but these areas do not currently contain any habitat or other primary constituent elements for the species.

The project area also occurs within USFWS Designated Critical Habitat for the arroyo toad (*Anaxyrus californicus*). This federally endangered species requires slow-moving streams and rivers with shallow, gravelly pools next to sandy beaches for breeding and adjacent scrub or grassland habitat for non-breeding adults. These conditions do not exist in this portion of the San Diego River channel. Therefore, this species is unlikely to occur in the project area.

Nineteen non-listed sensitive species were observed onsite. Species that are a state Species of Special Concern and/or San Diego County Group II species include: western spadefoot toad (*Spea hammondii*), orange-throated whiptail (*Aspidoscelis hyperythrus*), coastal whiptail (*Aspidoscelis tigris stenegegeri*), coast horned lizard (*Phrynosoma blainvillei*), southern California legless lizard (*Anniella stebbinsi*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), glossy snake (*Arizona elegans*), red-diamond rattlesnake (*Crotalus ruber*), yellow warbler (*Setophaga petechia*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). Species that are a state Species of Special Concern and San Diego County Group I species include: San Diego banded gecko (*Coleonyx variegatus abbotti*), osprey (*Pandion haliaetus*), yellow-breasted chat (*Icteria virens*) and loggerhead shrike (*Lanius ludovicianus*). Species that are State Fully Protected and a San Diego County Group I species include the White-tailed kite (*Elanus leucurus*). Species that are a state Special Animal and San Diego County Group I species include: Cooper's hawk (*Accipiter cooperii*) and sharp-shinned hawk (*Accipiter striatus*). Species that are San Diego County Group I species (e.g., no state designation) include the red-shouldered hawk (*Buteo lineatus*), and turkey vulture (*Cathartes aura*). The majority of these species were found in association with the river channel; some species, such as the orange-throated whiptail, turkey vulture, and jackrabbit, were observed throughout the site or in the upland areas.

Two wildlife species have a **high potential** to occur in the project area based on suitable habitat present onsite; these include two-striped garter snake (*Thamnophis hammondii*), and golden eagle (*Aquila chrysaetos*). Five wildlife species have a **moderate potential** to occur in the project area due to the presence of marginally suitable habitat onsite; these include Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), Swainson's hawk (*Buteo swainsoni*), pallid bad (*Antrozous pallidus*), Yuma myotis (*Myotis yumanensis*), and big free-tailed bat (*Nyctinomops macrotis*). The remaining 56 species evaluated were considered to have a **low to unlikely potential** to occur in the project area due to a lack of suitable habitat, such as piñon-juniper woodlands or coastal habitats. Additional details (e.g., habitat preferences, number of individuals observed) for observed species and species with a high potential to occur are given in the following pages.

Additional details about species observed onsite or species that have a high potential to occur onsite are given in the Biological Resources Report (ESA 2018b).

1.3.7 Sensitive Resources Affected, by Habitat

1.3.7.1 Wetlands/Jurisdictional Waters

Federal jurisdiction within project area includes the San Diego River, but is limited to the low-flow channels of the River. USACE jurisdiction does not extend out to the floodplain of the San Diego River due to a lack of an Ordinary High Water Mark (OHWM) and lack of hydrology indicators. All channels and riparian habitat within the San Diego River are considered to be California Department of Fish and Wildlife (CDFW) non-wetland waters and County jurisdictional wetland habitat. The tamarisk scrub located outside the channel on the adjacent flats, outside the 100-year flood plain, is not considered to be CDFW or County wetland habitat because of the lack of a streambed setting. Due to deep roots and the ecology of tamarisk, it is able to establish and persist in upland settings. The small ponded area in the northeastern portion of the project area is also considered to be County, state, and federal jurisdictional wetlands based on its source being a stream, the presence of wetland indicators (including hydric soils and/or hydrophytic vegetation), and its proximity to regulated features within the San Diego River.

Jurisdictional riparian habitat varies in quality along the river. Areas of tamarisk scrub range from moderately dense to relatively sparse with more bare ground and smaller, less developed habitat structure within the less dense areas. The native riparian habitats onsite are all in a disturbed condition but do provide relatively high-quality habitat for wildlife species, especially when compared to the tamarisk scrub onsite. Prior to the 2015 focused species surveys, least Bell's vireo was observed in the most extensive patches of native habitats, and two of the three territories identified in 2010 were primarily associated with the disturbed cottonwood-willow riparian forest found onsite. The third, which was also observed in 2015, was observed adjacent to the project area in habitat next to Hanson Pond.

Wetland function related to hydrologic and biogeochemical functions are limited because of the lack of regular or substantial flooding and short residence time due to sandy, highly pervious soils within the San Diego River. When flooding and flow do occur, the stream in this reach of the San Diego River functions as a losing stream and would be expected to contribute to groundwater recharge, and to a limited extent flood control.

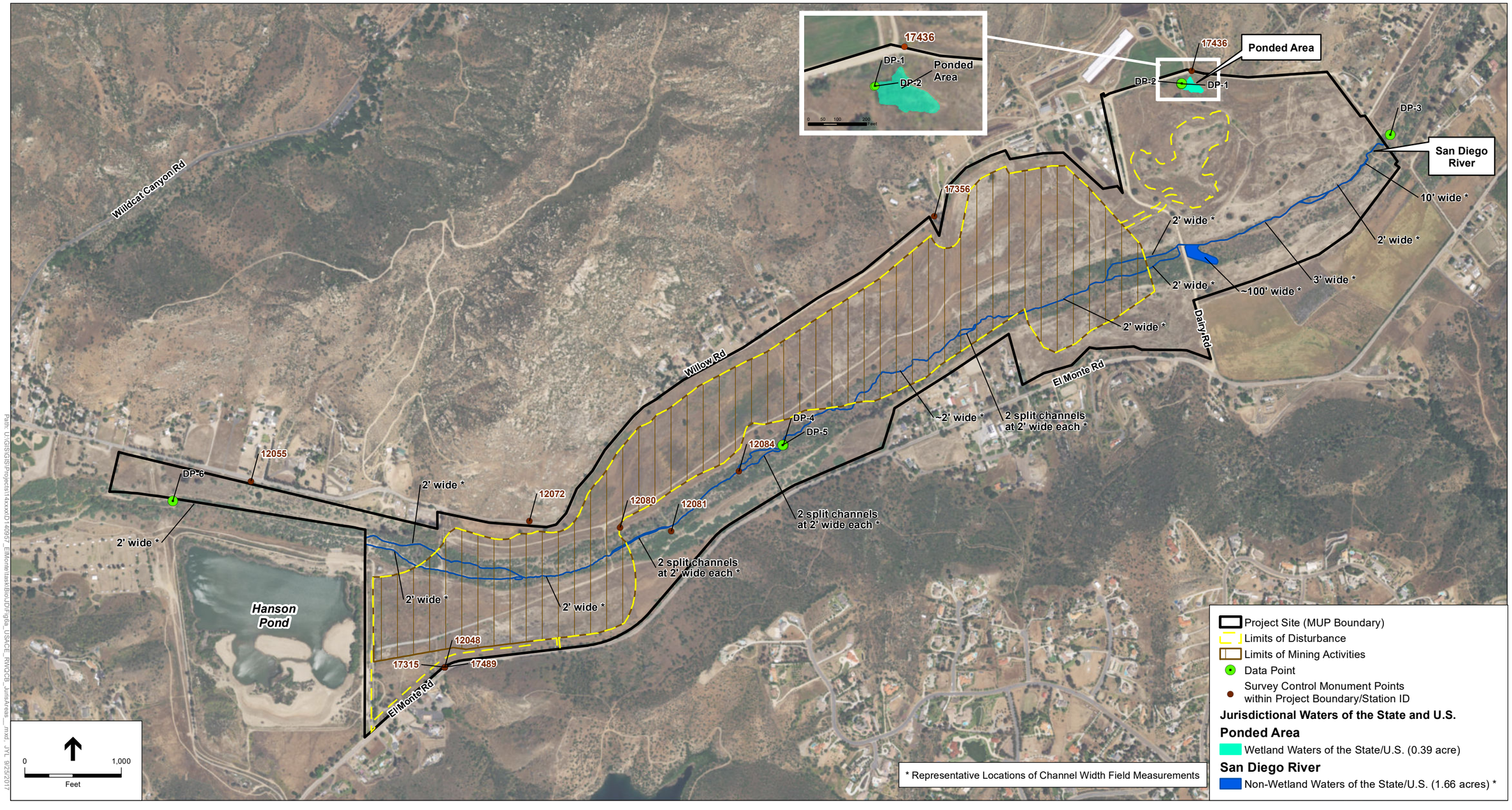
Wetland value and anthropomorphic benefits such as commercial enterprise, recreation, and waste assimilation as well as non-market values such as aesthetics, uniqueness, and heritage are low because of the limited access to the public, the lack of current commercial use, and the non-native status of the majority of the riparian and streambed habitat onsite. **Table 4** presents the acreage of resources classified as county, state, and federal wetlands and jurisdictional waters; these resources are depicted in **Figure 7**.

1.3.8 Types, Functions, and Values of Habitat(s) to Be Restored

1.3.8.1 Development Project Impacts Resulting in the Revegetation Requirement, Both Permanent and Temporary

Potential direct, *temporary* impacts to sensitive vegetation communities from the proposed project include mechanized land clearing and mineral extraction within both jurisdictional (riparian and non-wetland waters) and upland habitats. Temporary impacts also include the previously-excavated dry depression that will be refilled and revegetated. These activities would potentially affect a total of 115.65 acres of sensitive vegetation communities, including 38.80 acres of tamarisk scrub, 0.35 acre of non-vegetated channel, 2.06 acres of coastal sage scrub, and 74.44 acres of non-native grassland.

In addition, the golf course grading in 2005 resulted in temporary impacts to 0.18 acre of riparian scrub (tamarisk scrub) for a planned golf cart crossing of the river in the eastern portion of the property. The golf course project was halted and the cart path crossing was not constructed. This was the only impact to a sensitive vegetation community outside the limits of the proposed mine project.

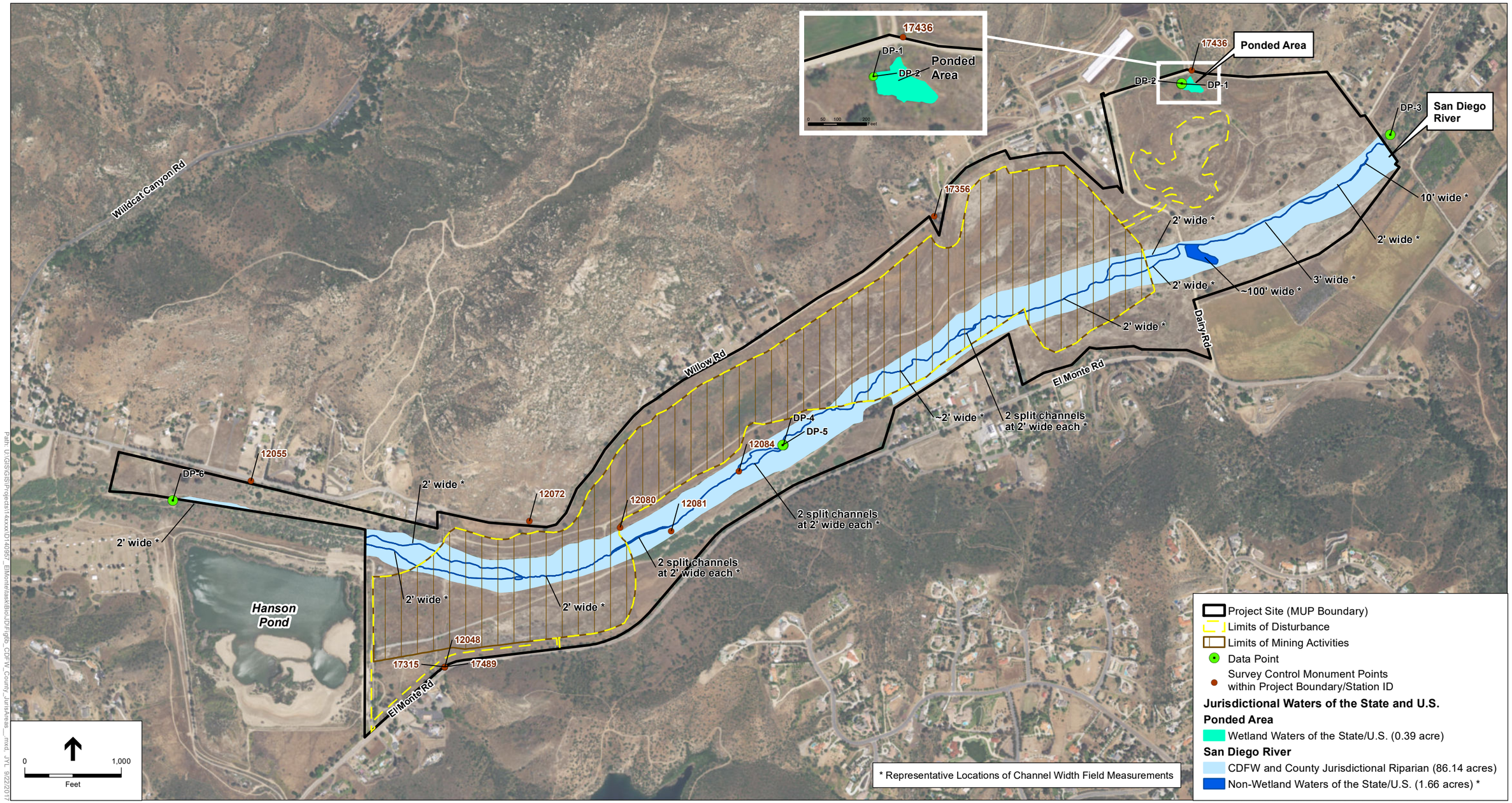


SOURCE: ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; SanGIS

El Monte Sand Mining Project .140957

Figure 7a

USACE/RWQCB Jurisdictional Areas



Path: U:\GIS\GIS\Projects\14xxxx\D140957_ElMontetask\Bio\DFig6b_CDFW_County_JurisAreas_.mxd. JYL 9/22/2017

ESRI; EnviroMine; The Altum Group; Chang Consultants; ESA; SanGIS

El Monte Sand Mining Project .140957

Figure 7b

CDFW/County Jurisdictional Areas

Table 4
Potential Jurisdictional Features within the Project Boundary

Map ID	Type of Feature	Habitat Type	Non-Wetland Waters1	Wetland Waters	Total2
Waters of the United States/State (USACE/RWQCB)					
San Diego River	Ephemeral Channel	Non-vegetated Stream Channel	1.66 ac. (7,264 linear ft.)	0.0	1.66 ac. (7,264 linear ft.)
CDFW/County of San Diego Jurisdiction					
San Diego River	Riparian Habitat	Tamarisk Scrub (74.21 ac.), Southern Cottonwood-Willow Riparian Forest (11.16 ac.), Disturbed Habitat (0.50 ac.), Diegan Coastal Sage Scrub (0.26 ac.), Nonnative Grassland (0.01 ac.)	86.14 ac.	0.0	86.14 ac.
USACE/RWQCB/CDFW/County of San Diego Jurisdiction					
Ponded Area	Wetland	Southern Willow Scrub	0.0	0.39 ac.	0.39 ac.

[1] Linear feet are only provided for linear aquatic resources such as stream/riverine features and wetland/riparian corridors directly adjacent to stream features.

[2] Jurisdictional waters acreage was determined by using ArcGIS. All acreages are rounded to the nearest hundredth if the areas of the potentially jurisdictional features were less than 0.01 acre (which may account for any minor rounding errors).

Potential direct *permanent* impacts will result from permanent changes to the vegetation from the drop structure/rock dam, fuel modification zones, a trail system, and staging areas. The permanent drop structure/rock dam would be built on the eastern end of the mining area. The fuel modifications zones would be established and permanently maintained adjacent to some residential areas to ensure that vegetation remains at or below 3 inches in height. The trail system would provide east-west and north-south trail linkages for hikers, bikers and equestrian users. The permanent trail system segments have been excluded from the planned habitat mitigation areas and reclamation/revegetation areas, and mitigation areas have been sited at least 20 feet away from trails. Trail users who remain on the designated trails would not have a potential negative effect on the success of the mitigation areas.

As reviewed in section 4.4.4, temporary signs will be installed at various locations around the habitat mitigation areas to identify the areas as sensitive and that vegetation is being established, and to describe use restrictions and that the areas are not to be entered (by trail users or others). After the two staging areas are used during the construction phase, they will become trail head parking areas. Permanent impacts will affect a total of 16.82 acres of sensitive vegetation communities, including 0.01 acre of

non-vegetated channel, 0.12 acre of southern willow scrub, 3.01 acres of tamarisk scrub, 1.56 acre of coastal sage scrub, and 12.12 acres of non-native grassland.

A Final Revegetation Plan including landscape construction plans shall be approved by the County prior to the initiation of Phase 1 mining operations, including invasive species removal outside of the mining limits. Individual 40-scale landscape plans (i.e., landscape and irrigation plans and specifications) will be prepared for each phase and approved prior to the initiation of mining for the phase. Once Phase 1 mining has been completed and prior to the second half of Phase 2 mining operations being initiated, Phase 1 revegetation/restoration shall be implemented including, but not limited to, final slope stabilization, salvaged top soil placement and amendments as needed, container planting and hydroseed application/imprinting for revegetation and reclamation, temporary irrigation, erosion control, fencing and signage. Partial grading/mining of the subsequent mining phase is required to create a safe means of access for equipment and personnel to the previously mined phase to facilitate initiation of the above outlined activities. Once the revegetation and reclamation installation have been completed for a particular phase, it will be reviewed by the County for conformance with the approved Revegetation Plan and Reclamation Plan and will trigger the beginning of the monitoring and reporting period. Revegetation and reclamation activities may be further broken down into sub-phases at the discretion of the mine operator. Ongoing maintenance is required to manage invasive species and to prevent unauthorized access and is not part of the revegetation and reclamation activities that must be completed prior to moving on to the next phase of mining, as it is an ongoing activity. Bonding for revegetation and reclamation is required by phase prior to phase mining and will be released upon the successful completion of the phase revegetation and reclamation installation, as determined by the County.

A breakdown of the direct temporary and permanent impacts to vegetation communities from each of the four mining phases are presented in **Tables 5**, **6**, **7** and **8**. **Table 9** presents direct permanent impacts to vegetation communities for the fuel modification zones and trail segments outside of mining limits. And **Table 10** presents overall total direct temporary and permanent impacts to vegetation communities for the mining phases and fuel modification zones and trail segments outside of proposed mining limits. In addition, Table 10 includes the impacts to a sensitive vegetation community from the 2005 golf course grading (outside the proposed mine impact area) and mitigation which has been incorporated in this Revegetation Plan.

Table 5
Project Impact and Mitigation for Mining Phase 1

Habitat Type / Vegetation Community	Permanent[1]	Temporary	Total	Mitigation Ratio[2]	Habitat Mitigation[3]	Reclamation [3]
Riparian and Wetlands						
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00	0.00
Southern Willow Scrub	0.00	0.00	0.00	3:1	0.00	18.87
Tamarisk Scrub	0.80	11.55	12.35	3:1	37.05[4]	0.00
Non-Vegetated Channel	0.01	0.08	0.09	1:1	0.09[5]	1.76
Subtotal	*0.81*	*11.63*	*12.44*		*37.14*	*20.63*
Uplands						
Diegan Coastal Sage Scrub	0.97	1.77	2.74	2:1	5.4	13.13
Non-Native Grassland	4.41	16.85	21.26	0.5:1	10.63.[6]	0.00
Eucalyptus Woodland	0.91	0.01	0.92	N/A	0.00	0.00
Subtotal	*6.29*	*18.63*	*24.92*		*16.11*	*13.13*
Other Cover Types						
Disturbed Habitat	9.08	46.54	55.62	N/A	0.00	0.00
Developed	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*9.08*	*46.54*	*55.62*		*0.00*	*0.00*
Totals[7]	**16.18**	**76.80**	**92.98**		**53.25**	**33.76**

[1] Permanent impacts in Phase 1 are from the drop structure, trails, and two staging areas.

[2] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[3] A combination of habitat mitigation and reclamation/revegetation will occur within the temporary impact acreage (76.80). The balance of 18.52 acres of mitigation for Tamarisk Scrub will occur through restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation. Mitigation for impacts outside of mining limits (trails and fuel modification zones) will be mitigated in Phase 1 and the reclamation acres (i.e., remaining temporary impact area) in this table account for this mitigation.

[4] Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas, and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[5] Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

[6] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[7] Due to rounding, totals may differ slightly from numbers in column.

Table 6
Project Impacts and Mitigation for Mining Phase 2

Habitat Type / Vegetation Community	Permanent[2]	Temporary	Total	Mitigation Ratio[2]	Habitat Mitigation[3]	Reclamation [3]
Riparian and Wetlands						
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00	0.00
Southern Willow Scrub	0.00	0.00	0.00	3:1	0.00	12.28
Tamarisk Scrub	0.10	12.79	12.89	3:1	38.67[4]	0.00
Non-Vegetated Channel	0.00	0.11	0.11	1:1	0.11[5]	2.18
Subtotal	*0.10*	*12.90*	*13.00*		*38.78*	*14.46*
Uplands						
Diegan Coastal Sage Scrub	0.00	0.00	0.00	2:1	0.00	9.23
Non-Native Grassland	0.07	17.65	17.72	0.5:1	8.86[6]	0.00
Eucalyptus Woodland	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.07*	*17.65*	*17.72*		*8.86*	*9.23*
Other Cover Types						
Disturbed Habitat	0.05	21.45	21.50	N/A	0.00	0.00
Developed	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.05*	*21.45*	*21.50*		*0.00*	*0.00*
Totals[7]	**0.22**	**52.00**	**52.22**		**47.64**	**23.69**

[1] Permanent impacts in Phase 2 are from the trails.

[2] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[3] A combination of habitat mitigation and reclamation/revegetation will occur within the temporary impact acreage (52.00 acres). The balance of 19.33 acres of mitigation for Tamarisk Scrub will occur through restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[4] Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas, and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[5] Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

[6] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[7] Due to rounding, totals may differ slightly from numbers in column.

Table 7
Project Impacts and Mitigation for Mining Phase 3

Habitat Type / Vegetation Community	Permanent[2]	Temporary	Total	Mitigation Ratio[2]	Habitat Mitigation[3]	Reclamation [3]
Riparian and Wetlands						
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00	12.43
Southern Willow Scrub	0.00	0.00	0.00	3:1	0.00	5.24
Tamarisk Scrub	0.02	3.76	3.78	3:1	11.34[4]	0.00
Non-Vegetated Channel	0.00	0.03	0.03	1:1	0.03[5]	2.86
Subtotal	*0.02*	*3.79*	*3.81*		*11.37*	*20.53*
Uplands						
Diegan Coastal Sage Scrub	0.00	0.00	0.00	2:1	0.00	8.37
Non-Native Grassland	0.19	25.81	26.00	0.5:1	13.00[6]	0.00
Eucalyptus Woodland	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.19*	*25.81*	*26.00*		*13.00*	*8.37*
Other Cover Types						
Disturbed Habitat	0.14	18.00	18.14	N/A	0.00	0.00
Developed	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.14*	*18.00*	*18.14*		*0.00*	*0.00*
Totals[7]	**0.35**	**47.60**	**47.95**		**24.37**	**28.90**

[1] Permanent impacts in Phase 3 are from the trails.

[2] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[3] A combination of habitat mitigation and reclamation/revegetation will occur within the temporary impact acreage (47.60 acres). The balance of 5.67 acres of mitigation for Tamarisk Scrub will occur through restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[4] Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest habitat within post-mining areas, and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[5] Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

[6] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[7] Due to rounding, totals may differ slightly from numbers in columns.

Table 8
.Project Impacts and Mitigation for Mining Phase 4

Habitat Type / Vegetation Community	Permanent[2]	Temporary	Total	Mitigation Ratio[2]	Habitat Mitigation[3]	Reclamation [3]
Riparian and Wetlands						
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00	0.00
Southern Willow Scrub	0.00	0.00	0.00	3:1	0.00	10.39
Tamarisk Scrub	0.02	10.70	10.72	3:1	32.16[4]	0.00
Non-Vegetated Channel	0.00	0.13	0.13	1:1	0.13[5]	1.75
Subtotal	*0.02*	*10.83*	*10.85*		*32.29*	*12.14*
Uplands						
Diegan Coastal Sage Scrub	0.00	0.28	0.28	2:1	0.56	13.99
Non-Native Grassland	0.08	14.12	14.20	0.5:1	7.10[6]	0.00
Eucalyptus Woodland	0.00	0.07	0.07	N/A	0.00	0.00
Subtotal	*0.08*	*14.47*	*14.55*		*7.66*	*13.99*
Other Cover Types						
Disturbed Habitat	0.14	24.70	24.84	N/A	0.00	0.00
Developed	0.00	0.00	0.00	N/A	0.00	0.00
Subtotal	*0.14*	*24.70*	*24.84*		*0.00*	*0.00*
Totals[7]	**0.24**	**50.00**	**50.24**		**39.95**	**26.13**

[1] Permanent impacts in Phase 4 are from the trails.

[2] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[3] A combination of habitat mitigation and reclamation/revegetation will occur within the temporary impact acreage (50.00 acres). The balance of 16.08 acres of mitigation for Tamarisk Scrub will occur through restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[4] Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas, and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[5] Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

[6] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[7] Due to rounding, totals may differ slightly from numbers in column.

Table 9
.Project Impacts and Mitigation for Outside Mining Phases (Permanent)

Habitat Type/Vegetation Community	Trails Outside Mining Phases	Fuel Mod Zones Outside Mining Phases	Total	Mitigation Ratio[1]	Habitat Mitigation[2]
Riparian and Wetlands					
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	3:1	0.00
Southern Willow Scrub	0.02	0.10	0.1	3:1	0.36
Tamarisk Scrub	0.58	1.49	2.07	3:1	6.21[3]
Non-Vegetated Channel	0.00	0.00	0.00	1:1	0.00
Subtotal	*0.60*	*1.59*	*2.19*		*6.57*
Uplands					
Diegan Coastal Sage Scrub	0.27	0.32	0.59	2:1	1.18
Non-Native Grassland	2.90	4.47	7.37	0.5:1	3.68[4]
Eucalyptus Woodland	0.04	0.27	0.31	N/A	0.00
Subtotal	*3.21*	*5.06*	*8.27*		*4.86*
Other Cover Types					
Disturbed Habitat	3.30	2.64	5.94	N/A	0.00
Developed	0.01	2.54	2.55	N/A	0.00
Subtotal	*3.31*	*5.18*	*8.49*		*0.00*
Totals[4]	**7.12**	**11.83**	**18.95[5]**		**11.43**

[1] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[2] Mitigation for impacts outside of mining phases will occur within the post-mining Phase 1 area.

[3] Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Scrub habitat within post-mining areas, and restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[4] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[5] Due to rounding, totals may differ slightly from numbers in column.

Table 10. Total Project Impacts to Vegetation Communities and Mitigation

Habitat Type / Vegetation Community	Mining Phases 1-4		Trails Outside Mining Phases (Perm)	Fuel Mod Zones Outside Mining Phases (Perm)	Total Impacts	Mitigation Ratio[2]	Habitat Mitigation[3]	Reclamation Revegetation[3]
	Perm[1]	Temp						
Riparian and Wetlands								
Southern Cottonwood-willow Riparian Forest	0.00	0.00	0.00	0.00	0.00	3:1	0.00	12.43
Southern Willow Scrub	0.00	0.00	0.02	0.10	0.12	3:1	0.36	46.78
Tamarisk Scrub	0.94	38.80	0.58	1.49	41.81	3:1	125.43[4]	0.00
Non-Vegetated Channel	0.01	0.35	0.00	0.00	0.36	1:1	0.36[5]	8.55
Subtotal	*0.95*	*39.15*	*0.60*	*1.59*	*42.29*		*126.15*	*67.76*
Uplands								
Diegan Coastal Sage Scrub	0.97	2.06	0.27	0.32	3.61	2:1	7.22	44.72
Non-Native Grassland	4.75	74.44	2.90	4.47	86.55	0.5:1	43.27[6]	0.00
Eucalyptus Woodland	0.91	0.08	0.04	0.27	1.30	N/A	0.00	0.00
Subtotal	*6.63*	*76.58*	*3.21*	*5.06*	*91.46*		*50.49*	*44.72*
Other Cover Types								
Disturbed Habitat	9.40	110.68	3.30	2.64	126.04	N/A	0.00	0.00
Developed	0.00	0.00	0.01	2.54	2.55	N/A	0.00	0.00
Subtotal	*9.40*	*110.68*	*3.31*	*5.18*	*128.59*		*0.00*	*0.00*
Mine Project Totals[7]	**16.99**	**226.40**	**7.12**	**11.83**	**262.34**		**176.64**	**112.48[8]**
2005 Golf Course Totals					**0.18[8]**	**3:1[8]**	**0.54[8]**	**(-0.54)[8]**
TOTAL					**262.52**		**177.18**	**111.94**

[1] Permanent impacts within the mining phases are from the drop structure and trails.

[2] Habitat mitigation ratios (Outside of approved MSCP Plan areas) are provided from the County's Guidelines for Determining Significance for Biological Resources (September 2010).

[3] A combination of habitat mitigation and reclamation/revegetation will occur within the temporary impact acreage (226.40 acres). The balance of 62.72 acres of mitigation for Tamarisk Scrub (1.5:1 of the 3:1 mitigation ratio) will occur through enhancement/restoration of riparian and transitional habitat outside of mining limits but within the project site via exotic plant removal and activities to promote native plant revegetation.

[4] Tamarisk Scrub will be mitigated by a combination of restoration of native Riparian Forest and Riparian Scrub habitats within post-mining areas (62.71 acres), and restoration of riparian and transitional habitat outside of mining limits but within the project site (62.72 acres; rounded up to 64.16 acres to address all riparian areas onsite plus some adjacent transitional habitat) via exotic plant removal and activities to promote native plant revegetation.

[5] Non-Vegetated Channel will be mitigated by restoration of Vegetated Channel since it is expected the post-mining grades and conditions will support native plants in the channel.

[6] Non-Native Grassland will be mitigated by restoration of Diegan Coastal Sage Scrub.

[7] Due to rounding, totals may differ slightly from numbers in column.

[8] Grading in 2005 from the previously approved golf course project that was halted temporarily impacted 0.18 acre of disturbed riparian scrub (tamarisk scrub). The planned golf course cart path crossing of the river associated with this grading was not ultimately constructed. This is the only impact to a sensitive vegetation community outside of the planned mine project footprint that requires mitigation. This riparian habitat shall be mitigated at a 3:1 replacement ratio in accordance with the County's Guidelines for Determining Significance for Biological Resources (September 2010) by conducting 0.54 acre of southern willow scrub restoration in mining Phase 1. The golf course mitigation will occur where mine project riparian scrub reclamation would have occurred, therefore, overall planned reclamation will be reduced by 0.54 acre and riparian habitat reclamation will total 46.24 acres instead of 46.78 acres.

In addition, six individual mature oak trees (*Quercus agrifolia*) are proposed to be impacted. One occurs in disturbed habitat and the others in non-native grassland. Their locations are shown on Figure 6. Three additional oaks within the impact area (proposed Affected Area) can be avoided and will be retained in place (Figure 6). Mitigation for the impacted oaks will be conducted by planting oaks as part of the project revegetation program. This is discussed further in Section 4.4.6

Impact neutral areas are areas that are not considered impacted, but cannot be credited toward mitigation requirements, such as wetland buffers (County 2010). Within the project area, impact neutral areas consist of the areas mapped as "mature riparian woodland" pursuant to the RPO, as these areas, which include a 50-foot buffer from the perimeter of the tree canopy, must be avoided. In the case of this project because of the presence of invasive exotic plant species in the mature riparian woodland, the County is supportive of conducting habitat mitigation activities (e.g., exotic plant removal and measures to promote native plant establishment) within the impact neutral area and other riparian and transitional habitat areas outside of mining limits within the project site to improve habitat more comprehensively within the site.

Of the land cover types that would be removed (temporarily and permanently), developed, disturbed habitat, and eucalyptus woodland, do not require mitigation; these comprise approximately 130 acres that would be impacted within the 479.5-acre site. Pursuant to San Diego County Guidelines for Determining Significance for Biological Resources, impacts to five habitat types require mitigation: southern willow scrub, tamarisk scrub, unvegetated streambed, Diegan coastal sage scrub, and non-native grassland.

The riparian vegetation types provide habitat for a variety of sensitive species, as described in Section 1.3.6, including potential habitat for the state and federally-listed least Bell's vireo. The riparian scrub habitat (southern willow scrub and tamarisk scrub in the channel) that will be impacted onsite lacks appropriate hydrological conditions typical of healthy riparian habitats, is of poor quality, and is dominated by tamarisk and non-native grasses. As part of this plan, approximately 63 acres of riparian habitat suitable to support least Bell's vireo will be revegetated and restored as part of mitigation in the mining basins. In addition, approximately 59 acres of riparian habitat will be reclaimed as part of the reclamation process in the mining basins. Coastal sage scrub onsite provides foraging habitat for the federally threatened coastal California gnatcatcher; however, this habitat is also highly disturbed supporting a sparse cover of native shrubs, high cover of non-native grasses and forbs, and low native species diversity. The non-native grassland onsite could provide habitat for small mammals, which could serve as a prey base for a variety of raptors in the area; however, this habitat is also highly degraded due to past disturbance and includes a significant presence of invasive herbaceous species in addition to non-native grass species. As part of this plan, approximately 50.5 acres of Diegan coastal sage scrub habitat suitable to support coastal California

gnatcatcher will be revegetated and restored as part of mitigation in the mining basins. In addition, approximately 44.7 acres of Diegan coastal sage scrub habitat will be reclaimed as part of the reclamation process in the mining basins. All temporary impact areas onsite will be restored to high quality riparian and upland habitats as part of project habitat mitigation, or subject to reclamation. The applicant will be responsible for conducting the habitat mitigation and reclamation, including exotic plant removal and control and attaining specified performance standards.

1.3.8.2 Type, Function, and Value Components of the Habitat(s) to Be Impacted on the Development Site

Southern Cottonwood-Willow Riparian Forest (Holland Code 61330)

Southern cottonwood-willow forest is defined as a tall, relatively open, broadleaved winter-deciduous riparian forest dominated by cottonwood (*Populus fremontii*) trees and willow tree and shrub species (*Salix* spp.) with occasional emergent western sycamore trees. It usually occurs along stream banks with well-drained mineral soils.

Within the project area, southern cottonwood-willow forest occurs as fragmented patches on either side of the river in the middle region and along the western edges, typically surrounded by non-native habitats such as tamarisk scrub and non-native grassland (described below). Southern cottonwood-willow forest fragments are dominated by cottonwood, arroyo willow (*Salix lasiolepis*), and Gooding's willow (*S. gooddingii*) and have a variably dense understory of native annual forbs such as mugwort (*Artemisia douglasiana*) and nettle (*Urtica dioica* ssp. *holosericea*).

All cottonwood-willow forest fragments observed within the project boundary, which totaled 11.18 acres, are considered disturbed due to the inclusion and relatively high abundance of non-native, invasive species such as castor bean (*Ricinus communis*), tamarisk and pampas grass as well as various upland herbaceous species such as non-native grasses and invasive mustards. The abundance of non-native upland species and fragmented nature of this habitat observed within the survey area are likely indicative of the encroachment of more dry-tolerant and opportunistic, non-native habitats, such as tamarisk scrub (described below). During project surveys it was noted there is minimal presence of younger native plant recruits and the habitat appears to be in a trend of decline as non-native plants are becoming more prevalent.

Based on adjustments to the project design, no temporary or permanent impacts to cottonwood-willow riparian forest habitat will occur. However, restoration of 46.43 aces of cottonwood-willow riparian forest will occur within temporary impact areas of the mining phases to accomplish a portion of the required mitigation for impacts to tamarisk scrub (reviewed below). Implementation of the mitigation in the revegetation plan herein will provide 46.43 acres of cottonwood-

willow riparian forest (riparian forest) with willows, cottonwood, sycamore (*Platanus racemosa*), oak and other riparian and transitional native species. The planted habitat is expected to be of higher quality than the riparian forest habitat currently onsite because there will be a high native species diversity; the ground level will be approximately 30-plus feet closer to groundwater table, which will help sustain the habitat; and the site will be managed in perpetuity to ensure that invasive species are controlled. It is expected that this habitat will provide suitable habitat for the least Bell's vireo and other riparian birds.

Southern Willow Scrub (Holland Code 63320)

Southern Willow Scrub is defined as a deciduous, riparian community dominated by dense thickets of one or more willow tree species and various other scattered shrubs and larger emergent trees. Onsite, this community consists mainly of arroyo willow, Gooding's willow, and sandbar willow (*Salix exigua*), mixed with patches of mulefat (*Baccharis salicifolia*) and cottonwood and western sycamore trees. Much of this habitat within the project area is between 6 and 15 feet in height and varies in density, from relatively open to impenetrable.

A small (0.2-acre) patch of disturbed southern willow scrub occurs in the middle of the site north of the river along Willow Road. The quality of the southern willow scrub on the site was observed to contain a relatively high percentage of various non-native species such as giant reed (*Arundo donax*), tamarisk, and pampas grass. A single (0.5-acre) patch of undisturbed southern willow scrub occurs at the northeastern portion of the site just south of Willow Road; it is defined by a dense thicket of arroyo willows.

A total of 0.12 acre of southern willow scrub habitat will be permanently impacted by the project through establishment of permanent fuel modification zones around existing structures adjacent to the project area and established of the project's trail system. The quality of this vegetation and its potential to support riparian birds or other native species is low due to the highly degraded nature of the habitat and its isolation from other riparian scrub vegetation. Implementation of the mitigation in this revegetation plan will provide 16.64 acres of riparian scrub dominated by mule fat with scattered willows and other riparian and transitional species. Of this total, 0.36 acre of mitigation is for the impact to 0.12 acre of southern willow scrub and the remaining 16.28 acres of mitigation will occur to accomplish a portion of the required mitigation for impacts to tamarisk scrub from the proposed mine project (reviewed below). An additional 0.54 acre of southern willow scrub mitigation will occur as mitigation for the previously approved golf course project impact in 2005 to 0.18 acre of disturbed riparian (tamarisk scrub) (reviewed below). The planted habitat is expected to be of higher quality than the riparian habitat currently onsite for the same reasons listed above for the cottonwood-willow riparian forest mitigation. It is expected that this habitat will provide suitable habitat for the least Bell's vireo and other riparian birds.

Tamarisk Scrub (Holland Code 63810)

Tamarisk scrub usually occurs as a dense monoculture where natural, riparian vegetation has been completely or almost completely replaced often by a single invasive, non-native tamarisk species. It usually forms in sandy or gravelly braided washes or intermittent streams in areas where high evaporation increases stream salinity. Tamarisk is a strong phreatophyte (a plant with a deep root system that draws water from near the water table) and prolific seeder with a high tolerance to changes in salinity and water table depth, attributes which predispose the species to be aggressive competitors in disturbed riparian corridors, where it can quickly supersede existing native riparian.

Tamarisk scrub covers 85.69 acres within the project boundary and is characterized by sparse to dense stands of tamarisk (*Tamarix ramossisima*) monoculture with little to no understory. Dense patches within the river channel are generally impenetrable, while open stands observed both within the channel and in upland areas are punctuated by patches of curly dock (*Rumex* sp.), castor-bean, cockle-bur, tree tobacco, and pampas grass. In various areas this habitat contains remnants of native habitats that include mule fat, broom baccharis, scattered individual willow and cottonwood trees, and infrequent western sycamore trees; however, those areas are not large enough to be identifiable as functional native woodland or scrub communities. Tamarisk scrub is the most commonly observed habitat within and surrounding the river channel and floodplain as well as in some upland areas adjacent to the channel.

A total of 3.01 acres of tamarisk scrub will be permanently impacted by fuel modification zones, installation of trails and a permanent drop structure/rock dam on the eastern border of the mining excavation area, and the staging area (future trail head parking lot) in the northwestern portion of the project. A total of 38.80 acres of tamarisk scrub will be temporarily impacted through vegetation removal and excavation activities. Although this vegetation does provide habitat for native birds, the quality of the habitat is low because of the low native plant species diversity and high cover of non-native, invasive plants, such as tamarisk. Additionally, because the ground water level is approximately 40 to 45 feet below the current ground surface in the channel, and because the El Capitan dam has effectively cut off hydrologic flow from upstream, the channel does not currently support adequate hydrology to sustain high quality riparian habitat. Tamarisk scrub will be mitigated at a 3:1 replacement ratio.

Based on input from the County, the proposed mitigation for impacts to tamarisk scrub includes restoration of native riparian habitat within post-mining areas and enhancement and restoration of riparian and transitional habitat outside of mining limits. This approach would improve habitat more comprehensively within the project site and improve the functions and sustainability of habitat restoration mitigation areas onsite. For the 3:1 mitigation ratio, 1.5:1 of the mitigation (i.e., half) for the mine project will occur via revegetation and restoration of 62.71 acres divided between 46.36 acres of cottonwood-willow riparian forest and

16.28 acres of southern willow scrub. The remaining 1.5:1 of the mitigation ratio will occur via enhancement and restoration of 62.72 acres of riparian and transitional habitat (for a total mitigation requirement of 125.43 acres). Based on an assessment of riparian and transitional habitat with exotic species onsite, 64.16 acres are proposed for enhancement. Therefore, the proposed enhancement and restoration mitigation of 64.16 acres will exceed the 62.72-acre requirement based on the mitigation ratio. In addition, 0.54 acre of mitigation will be implemented via southern willow scrub revegetation and restoration within the post-mining Phase 1 area to provide mitigation for a temporary impact in 2005 to 0.18 acre of disturbed riparian habitat from the previously approved golf course project. Therefore, a total of 16.82 acres of southern willow scrub restoration will occur (instead of 16.28 acres) in the post-mining area to accomplish a portion of the mitigation for impacts to tamarisk scrub. The planted (restored) cottonwood-willow riparian forest and southern willow scrub mitigation habitats will be much higher quality than the tamarisk scrub habitat currently onsite because of the reasons previously listed above. The enhancement of 64.16 acres of riparian and transitional habitat will include initial removal of target exotics including, but not limited to, tamarisk, tree of heaven (*Ailanthus altissima*), eucalyptus, Peruvian pepper (*Schinus molle*), and giant reed, follow-up monitoring and treatments annually as needed, and measures to promote native plant revegetation (e.g., seeding and scattered planting). Additional information regarding this mitigation is provided in section 2.2.1. Both mitigation components would be managed in perpetuity to ensure invasive species are controlled. It is expected that most of these habitat mitigation areas will provide suitable habitat for the least Bell's vireo and other riparian birds.

Non-Vegetated Floodway or Channel (Holland Code 64200)

Non-vegetated floodway or channel consists of the sandy, gravelly, or rocky fringes of waterways or flood channels. These areas tend to remain relatively un-vegetated (generally less than 10% cover) as a result of variable water hydrology, which inhibits the growth of vegetation. It is not uncommon for non-native weedy vegetation to grow along the outer edges of the wash. A total of 1.66 acres of this land cover type occurs within the project boundary along the center of the river channel.

Project-related impacts to non-vegetated channel would consist of 0.01 acre of permanent impact from the installation of a permanent drop structure/rock dam across the channel, and 0.35 acre of temporary impact from mining excavation activities. The unvegetated channel is dry most of the year, and supports cover of scattered non-native species. Implementation of the mitigation in the revegetation plan will provide 0.36 acre of vegetated channel. A low-flow meandering channel would be constructed in the bottom of the excavated basins to direct water westward from storm events that produce runoff from the surrounding hillsides. This channel would be approximately 5 feet deep, with a 25- foot-wide bottom and 4:1 side slopes and planted with low-growing native plants, the planted channel habitat will be of higher quality than the non-vegetated channel currently

onsite. Consistent with the other mitigation areas, the site will be managed in perpetuity to ensure that invasive species are controlled.

Diegan Coastal Sage Scrub (Holland Code 32500)

Diegan coastal sage scrub is typically composed of a predominance of aromatic, drought deciduous perennial shrubs and subshrubs typically growing to no more than 3 feet high, with a diverse understory of herbaceous species of as annual and perennial grasses and herbs. It is usually located on dry, south-facing slopes and intermingles with chaparral, non-native grassland, and other local communities.

Most of the coastal sage scrub onsite is highly disturbed, occurring as small, isolated patches dominated by California buckwheat (*Eriogonum fasciculatum*) in most areas, with some areas also containing California sagebrush (*Artemisia californica*), broom baccharis (*Baccharis sarothroides*), goldenbush (*Isocoma menziesii*), and, to a lesser extent, laurel sumac (*Malosma laurina*). Native grasses such as foothill needlegrass (*Nassella lepida*) and various annual herbs are present in small numbers. The coastal sage scrub within the project boundary (10.38 acres) occurs as grouped patches of shrubs ranging in concentration from dense, abutting clusters to sparse, open assemblages with shrubs spaced several feet apart, permitting native herbaceous species and non-native grasses and weedy annual species to fill in the understory.

Project-related impacts to coastal sage scrub would consist of 1.56 acres of direct permanent impacts from the drop structure/rock dam, establishment of permanent fuel modification zones that will be placed next to existing structures that are adjacent to the project area, establishment of the trail system, and the staging area (i.e., construction processing area and future trail head parking lot) in the southwestern portion of the project. Although the impacted habitat within the southwestern staging area provides foraging habitat for the coastal California gnatcatcher, the habitat within the impact area is considered low quality for native wildlife because it occurs as very small, isolated patches; the patches include non-native species; and the native shrub and forb diversity is low. Direct temporary impacts to 2.06 acres will result from vegetation removal and mining excavation. Implementation of the mitigation in the revegetation plan will provide 7.22 acres of high quality coastal sage scrub habitat. In addition, 43.27 acres of coastal sage scrub restoration will be implemented to provide mitigation for impacts to non-native grassland (reviewed below The planted habitat will be of higher quality than the coastal sage scrub habitat currently onsite because there will be a high native species cover and diversity, and the site will be managed in perpetuity to ensure that invasive species are controlled. It is expected that this habitat will provide habitat for the coastal California gnatcatcher and other upland birds.

Non-Native Grassland (Holland Code 42200)

Non-native grassland is generally dominated by invasive, non-native annual grasses of various species and may contain a small percentage of non-native herbaceous species or remnant patches of native scrub species. It usually occurs in areas of previous disturbance and fallow agricultural fields located on fine-textured, well-drained soils that are moist in winter but very dry in summer months. Non-native grassland in the valley frequently intergrades with disturbed habitats. Imported by European settlers, it is not a native plant community in California and is often indicative of prior disturbance through development or as a remnant of fallow agricultural fields. However, non-native grassland is frequently used as foraging ground for migratory birds and raptors and as habitation for small terrestrial vertebrates such as small mammals, reptiles, and amphibians.

A total of 135.75 acres of non-native grassland occurs within the project boundary in a large, mainly continuous swath north and south of the river interspersed with disturbed habitat. It is composed chiefly of wild oat (*Avena* sp.), red brome (*Bromus madritensis*), and ripgut brome (*B. diandrus*), interspersed with areas dominated by short-pod mustard (*Hirshfeldia incana*) and black mustard (*Brassica nigra*) and other non-native herbaceous species. Scattered native shrubs such as California buckwheat occur very occasionally in the non-native grassland.

Project-related impacts of 86.55 acres of non-native grassland would consist of 12.12 acres of permanent impacts from the establishment of permanent fuel modification zones next to existing structures adjacent to the project area, establishment of the trail system, and the two staging areas (future trail head parking lots). And 74.44 acres of temporary impacts would occur from vegetation removal and mining excavation activities. The impacted habitat is dominated by non-native grasses and forbs, which provides limited habitat for native wildlife. Although the habitat could support small mammals, which may provide a prey base for foraging raptors, there are few native grasses and forbs which could provide high quality habitat for other native species. Implementation of the mitigation for non-native grassland in the revegetation plan will provide 43.27 acres of high quality coastal sage scrub habitat since restoration of non-native grassland with non-native species is not proposed. This will provide higher quality native habitat than non-native grassland, and the coastal sage scrub will provide foraging and nesting habitat for the coastal California gnatcatcher and other upland birds. The coastal sage scrub will be planted with a high native species diversity, and the site will be managed in perpetuity to ensure that non-native species do not invade the mitigation habitat.

Eucalyptus Woodland (Holland Code 79100)

Eucalyptus woodland is a non-native community dominated by ornamentally planted eucalyptus and gum trees (*Eucalyptus* spp.). The understory is usually poorly developed or absent as a result of the allelopathic (toxic) effect of

eucalyptus leaves that inhibit the growth of native and other plants. Although this habitat is not native, it is often used by nesting raptors and other birds or occasionally by roosting bats.

Four patches of eucalyptus woodland totaling 2.62 acres were identified in the project boundary, on either side of the floodplain throughout the middle section of the site. Scattered individual eucalyptus trees were also identified throughout the project area, within assorted patches of disturbed riparian communities, but individually did not account for woodland acreage. The eucalyptus woodland patches within the survey boundary include saplings up to 20 feet tall and mature eucalyptus trees that range from 20 to more than 50 feet in height.

Project-related impacts to eucalyptus woodland would consist of 1.22 acres of permanent impacts from the establishment of permanent fuel modification zones that will be placed next to existing structures that are adjacent to the project area, establishment of the trail system, the southwestern staging area (future trail head parking lot). And 0.08 acre of temporary impacts would occur from vegetation removal and mining excavation. Although eucalyptus woodland may provide habitat for raptors and other native birds, this vegetation type is dominated by non-native eucalyptus and does not provide high quality habitat for wildlife. Mitigation for impacts to this habitat type is not required.

Disturbed Habitat (Holland Code 11300)

Disturbed habitat has typically undergone intense physical transformation due to prior disturbance (usually from past development or agriculture), and is no longer recognizable as a native or naturalized vegetation association but continues to retain a soil substrate. Such habitat is typically found in vacant lots, roadsides, construction staging areas, abandoned fields, and unpaved roads and trails. Typically, disturbed habitats are mostly bare but the vegetation that does occur mostly includes ruderal, weedy non-native, or ornamental species and does not resemble or function as a native plant community. Disturbed habitat typically has little to no foraging or other habitat value for native wildlife species.

A total of 228.52 acres of disturbed habitat occur within the project area. Scattered vegetation that does occur within disturbed areas primarily includes non-native herbaceous annual and perennial species such as Russian thistle (*Salsola tragus*), cockle-bur, tree tobacco, and pampas grass, and to a lesser extent by non-native, weedy annual grasses (*Avena* spp., *Bromus* spp.), but without enough grass cover to classify it as non-native grassland. The larger areas of disturbed habitat primarily occur in the northeastern portion of the site, and several patches occur in the western end of the site. Disturbed areas also include completely un-vegetated areas that consist of existing dirt, paved, and gravel roads, which are located throughout the project area, including footpaths and other access routes associated with previous development.

Project-related impacts to disturbed habitat would consist of 16.56 acres of direct permanent impacts from the establishment of permanent fuel modification zones adjacent to existing structures, a permanent drop structure/rock dam on the east end of the excavation area, establishment of the trail system, and the two staging areas (future trail head parking lots). Direct temporary impacts of 110.68 acres would result from vegetation removal and mining excavation. Disturbed habitat is non-vegetated or mostly vegetated with weedy herbaceous species (i.e., not including enough grass species to be non-native grassland) and does not provide high quality habitat for wildlife. Mitigation for impacts to this habitat type is not required.

Developed (Holland Code 12000)

Developed areas contain commercial or residential buildings and landscaped surfaces and generally do not support natural plant or wildlife species of any kind. The project boundary includes 3.03 acres of developed urban residences adjacent to the northern middle portion of the project area. Although residential and commercial buildings occur very near the project boundary, the boundary itself crosses over landscaped, ornamental, and paved areas only and does not intersect with actual built or any inhabited establishments.

Project-related impacts to developed areas would consist of 2.55 acres of direct permanent impacts from the establishment of permanent fuel modification zones adjacent to existing structures and establishment of the trail system. No direct temporary impacts would occur. Developed areas do not provide habitat for native wildlife. Mitigation for impacts to this habitat type is not required.

Mature Riparian Woodland

Mature riparian woodland occurs onsite but was not mapped as one of the Holland/Oberbauer vegetation communities. Rather, it was mapped separately and overlaid onto the vegetation communities and cover types map (Figure 6) because the County's RPO includes a distinct definition of this vegetation type which differs from the Holland/Oberbauer classification system. Mature riparian woodland occurs in several patches in the central portion of the project area totaling 8.45 acres within the project area over areas mapped as southern cottonwood-willow riparian forest (6.97 acres), non-native grassland (1.37 acres), disturbed habitat (0.04), and non-vegetated channel (0.07 acre). A total of 275 trees were recorded during the tree surveys (see Appendix E of the Biological Resources Report for the complete El Monte Valley Tree Assessment).

There will be no impacts to mature riparian woodland. These areas, which include a 50-foot buffer around the tree canopy, will be avoided. In the case of this project because of the presence of invasive exotic plant species in the mature riparian woodland, the County is supportive of conducting habitat mitigation activities (e.g., exotic plant removal and measures to promote native plant establishment) within the impact neutral area and other riparian and

transitional habitat areas within the project site outside of mining limits to improve habitat more comprehensively within the site.

1.3.8.3 Habitat Connectivity and Wildlife Corridors

The project area runs mainly in an east-west direction along an approximately 2-mile portion of the San Diego River. Existing adjacent land uses bordering the site consist of open space, agriculture, grazing lands, and equestrian and residential development. The riparian vegetation surrounding and within the river floodplain includes thick to sparse stands of both native willow and cottonwood communities and non-native tamarisk scrub, which functions to a limited extent as a feasible habitat for smaller species, such as passerine birds, rodents and reptiles, but is unlikely to serve as consistently adequate cover for most larger species such as mule deer, mountain lions, or bobcats. The densest regions of riparian scrub habitats are bordered by generally open areas of non-native grassland, or otherwise open and disturbed vegetation. Most of the outskirts of the project area abut fenced residential and agricultural developments that constrict wildlife use or direct larger animals longitudinally across the project area. The site does offer some function as east-west and north-south corridor across and through the western portion of El Monte Valley.

A potential habitat linkage connecting the open, natural areas to the north and south of the site exists approximately in the middle of the project area where the undeveloped north-facing hills on the south side of El Monte Road are linked to the south-facing slope on the north side of Willow Road via the vegetated project area. The hills to the south of El Monte Road are covered mainly in grassland and sparse chaparral vegetation, while the south-facing slopes to the north of Willow Road generally possess high quality scrub habitat. The region on the north side is connected to larger, relatively undisturbed regions of abundant scrub habitat.

The region between the riparian area immediately south of Willow road in the middle of the project area and to the east of Hanson Pond consists of disturbed habitat and non-native grassland. Because habitats such as non-native grassland generally do not offer the types of dense vegetation cover preferred by large animals for safe passage between native habitats, the effectiveness of the area as a viable north-south habitat linkage may already be low in its existing condition.

CHAPTER 2.0 GOAL(S) OF THE COMPENSATORY MITIGATION PROJECT

2.1 Responsibilities

The mitigations partners and their responsibilities relative to mitigation funding and implementation are described below.

2.1.1 Project Owner

The El Monte Preserve, LLC (Owner) will be responsible for implementing all mitigation requirements, including the Revegetation Plan. The Owner will retain a qualified restoration ecologist with over 5 years of experience monitoring wetland mitigation and native habitat revegetation programs, and a qualified maintenance contractor with documented successful experience installing and maintaining native habitat revegetation programs.

2.1.2 County of San Diego

The County is a Responsible Agency that must approve and regulate the Major Use Permit (MUP) and Reclamation Plan required for the Mining Component of the proposed project.

2.1.3 Compensatory Mitigation Project Designer

Upon approval of this revegetation plan, a restoration ecologist and a landscape architect holding a valid California license will prepare restoration construction documents, including detailed plans and specifications. The final landscape construction documents and contract specifications will be based on information and relevant sections within this revegetation plan. The detailed final landscape construction documents (plan sheets) and contract specifications will address sources of plant material (Section 4.4.8), site and soil preparation, and plant and seed materials and installation methods (Section 4.5), and irrigation plan information (Section 4.6) in installation-level detail.

The Owner will retain a qualified restoration contractor with demonstrated experience successfully installing native habitat mitigation projects. The contractor will be responsible for implementing and initially maintaining the mitigation effort onsite. The restoration contractor will be a firm (or firms) holding a valid C-27 Landscape Contracting License from the State of California, a valid Maintenance Gardener Pest Control Business License or Pest Control Business License, and a Qualified Applicator Certificate or Qualified Applicator License, with Category B, that will allow them to perform the required work for this project. The Contractor will have specific documented experience with the installation and maintenance of multiple riparian and upland restoration projects in southern San Diego County. The qualified contractor shall also exhibit work that has resulted in successful California native plant seeding establishment. All work shall be performed by a trained crew in accordance with the standards and

practices related to the trade. The restoration contractor shall maintain an experienced full-time supervisor on the project site when planting is in progress.

The contractor must be qualified and willing to implement this mitigation plan per its specifications and in accordance with recommendations provided by the Owner or its representative. The contractor will be familiar with native and non-native plant species in the region. The installation contractor will perform agricultural soil suitability tests on representative samples taken from all soils that may eventually compose the rooting zone. The construction contractor will apply recommended soil amendments, as directed by the restoration ecologist. The responsibility of the habitat mitigation installation contractor is finished when the restoration ecologist and the Owner project manager concur at the end of the 120-day establishment period that this phase of work is completed per the specifications and requirements of this plan.

2.1.4 Restoration Monitor

The Owner will also retain a qualified restoration ecologist with over 5 years of experience successfully monitoring the installation of wetland creation projects. The restoration ecologist will have overall responsibility for implementation of this restoration project, and will oversee the work of the restoration contractor. The restoration ecologist will manage the work of the implementation team and will be personally responsible for all phases of the restoration. One written specification document and one set of plans will be used as the contract documents to complete the restoration. These documents should identify the restoration ecologist by name as the restoration manager. The restoration ecologist can be an individual or a group of qualified professionals with the following minimum qualifications, which must be documented:

1. Bachelor degree in biology, ecology, botany, or an acceptable related field such as landscape architecture.

2. Five years of experience with implementing successful riparian and upland mitigation projects with an emphasis on coastal sage scrub restoration in Southern California. The restoration ecologist will provide documentation of at least three successful coastal sage scrub restoration implementation projects that have been successful after a 3- to 5-year monitoring period.

The restoration ecologist will supervise all phases of compensatory mitigation implementation, including the protection of adjacent biological resources; invasive exotics removal; erosion control; soil preparation; seeding; planting; and maintenance, monitoring, and reporting, as applicable. The restoration ecologist will attend all relevant construction meetings. The restoration ecologist and the Owner will have the authority to redirect construction and maintenance crews in keeping with the goals, objectives, and performance standards of the final mitigation revegetation plan.

The restoration ecologist will oversee site preparation, implementation of erosion-control measures, and/or any additional best management practices (e.g., silt fencing) required by the plan specifications and regulatory permit conditions. In addition to best management practices, other permit conditions are expected to include, but not be limited to, disposal of excess material in suitable offsite non-sensitive areas, disposal of non-native brushed/cleared vegetation offsite, testing of any imported soils for contaminants (if necessary), and removal of weedy species. The restoration ecologist will inspect all container plants and reject plants that are dead, root bound, stunted, pest-infested, diseased, or unacceptable for other reasons. The restoration ecologist will be responsible for qualitative and quantitative monitoring and reporting.

The restoration ecologist will use horticultural and botanical monitoring results to determine if either replanting or reseeding is necessary. The restoration ecologist will approve the container plant replacement lists and layout of the replacement plants before the maintenance contractor installs them. As necessary, the different seed mixes in this plan will be applied to areas below germination/cover performance standards. The restoration ecologist and the Owner must approve any plant or seed substitutions before installation/application.

2.1.5 Revegetation Maintenance Contractor

The maintenance contractor will provide routine maintenance of the mitigation revegetation and enhancement areas during the 5-year monitoring period for each mining phase, as directed by the restoration ecologist. The mitigation maintenance contractor can be the same as the mitigation installation contractor. Primary maintenance activities include weed control, care of container plants, oversight and repair (if necessary) of the irrigation system, erosion control, and trash removal.

The contractor will be responsible for (1) maintaining the existing materials implemented during the planting/seed installation phase and (2) installing and maintaining erosion-control materials in additional areas (identified by the contractor, restoration ecologist, or project manager) where the need for erosion control may develop during the 5-year maintenance program. Any problems identified in the mitigation areas will be addressed in a timely manner (i.e., within 48 hours).

Maintenance of container plants is an important aspect of the overall program. The maintenance of container plants includes maintaining weed-free planting basins until the plants are adequately established (e.g., over 4 feet high for shrubs), maintaining a proper mulch layer around the plants (when necessary), applying appropriate amounts of irrigation water, and addressing disease or pest problems. The maintenance contractor will care for the native plants in the mitigation areas, including container plants, cuttings, seeded species, and native volunteers. Plant care will be sufficient to help ensure the riparian and upland mitigation areas meet their performance standards on schedule. If mitigation

areas are not meeting native plant survival and percent cover performance standards, then the maintenance contractor will be responsible for replanting and supplemental seeding.

2.2 Type(s) and Area(s) of Habitat to Be Established, Revegetated, Restored, Enhanced, and/or Preserved

2.2.1 Habitat Types

Table 10 provides a summary of impacts, mitigation ratios, required mitigation, and reclamation. All 226.40 acres of temporary impact will be revegetated within post-mining areas either as habitat mitigation for the mine project and previous golf course impact (i.e., 114.46 acres) or reclamation (i.e., 111.94 acres). Because the project area is outside of the Multiple Species Conservation Program (MSCP), mitigation ratios are based on Table 5 of the County of San Diego Guidelines for Determining Significance for areas outside of the MSCP (County 2010).

Revegetation mitigation will occur in areas currently supporting non-vegetated channel (will be revegetated as vegetated channel), southern willow scrub, tamarisk scrub (will be revegetated as native cottonwood-willow riparian forest and riparian scrub), coastal sage scrub, and non-native grassland (will be revegetated as coastal sage scrub) (**Table 10** and **Figure 8**). Based on mitigation replacement ratios and projected impacts for the mine project, a total of 126.15 acres of riparian/wetland habitat is required to be revegetated (restored) or enhanced (plus 0.54 acre of riparian habitat restored for the previous golf course project for a total 126.69 acres); and 50.49 acres of upland habitat is required to be revegetated (restored) to mitigate for temporary and permanent impacts. Riparian/wetland habitat restoration will consist of high quality vegetated channel (0.36 acre) planted within the channel, cottonwood-willow and transitional species dominated riparian forest (46.43 acres) planted along the edges of the channel for a width of up to 300 feet, and riparian scrub habitat dominated by mule fat along with scattered willows and transitional species (17.18 acres [16.64 acres for the mine project + 0.54 acre for the previous golf course project]) within the excavated mining pit (basin) and lower slopes. The planted riparian forest mitigation (i.e., 46.43 acres) and the majority of riparian scrub mitigation (i.e.,16.28 acres for the mine project + 0.54 acre for the golf course project) will provide mitigation within post-mining areas for impacts to tamarisk scrub habitat.

As previously discussed, the required balance of mitigation for tamarisk scrub for the mine project (i.e., 62.72 acres) will be accomplished by enhancing and restoring 64.16 acres of riparian and transitional habitat that include invasive exotic species within the project site outside of mining limits. Because all remaining riparian habitats onsite are included in the planned enhancement along with some adjacent transitional habitats (i.e., to establish contiguous enhancement area), the planned enhancement area has been rounded up to 64.16 acres (relative to the 62.72-acre requirement). The enhancement of 64.16

acres of riparian and transitional habitat will include initial removal of target exotics, follow-up monitoring and maintenance treatments annually for five years as needed, and measures to promote native plant revegetation including limited seeding and scattered planting. Removal of exotic species will be conducted with hand-tools (shovels, chain-saws, etc.) along with follow-up application of herbicide to kill exotic plant specimens. No vehicular equipment will be driven into the river bed. Maintenance personnel will walk into the enhancement areas, cut exotic vegetation, and carry it in pieces to nearby vehicles (e.g., pickup trucks) or dumpsters located along project access routes and/or disturbed upland staging areas. Exotic plant biomass will then be hauled to an approved green waste facility. Exotic vegetation will be either dug out with shovels (if specimens are small enough and the root system can be effectively removed), or cut within one foot of the ground surface. Cut stems/stumps will then be treated with herbicide. Based on input from County staff during an August 16, 2017 site visit, the removal of large exotics such as eucalyptus trees which provide screening for adjacent residences on the south side of the river should be removed in a phased approach so that sufficient screening with vegetation is provided (e.g., with existing vegetation and new native plant growth) during the enhancement and restoration program.

The existing riparian and transitional habitat areas that will be enhanced lack typical riparian habitat hydrology and are similar to alluvial fan scrub habitat (except for the extensive presence of tamarisk and other exotic species) which includes a mixture of riparian and transitional and upland species. Within this setting, management of natural recruitment is considered the most appropriate method to establish native habitat over time. However, measures will be conducted as part of the enhancement effort to promote native plant establishment including (1) limited seeding (utilizing some species in the project seed mixes and collection and spread of seed collected onsite during maintenance activities), (2) scattered low-density planting (container plants and cuttings) during wet conditions to help establish small patches/"islands" of native plants (which can help promote more natural recruitment), (3) distribution of mulch (not including non-native seed or propagules) to provide improved microhabitat conditions for native plant germination and establishment, and (4) regular periodic follow-up exotic plant control to reduce competition with native plants. Because of the existing grades, depth to groundwater, and sandy alluvial soils, implementation of a planting program and temporary irrigation system are not considered appropriate or a worthwhile use of resources in the proposed enhancement areas. Relying on natural recruitment and treating exotic species is considered the best approach to establish native vegetation adapted to the site that will be self-sustaining over time. Enhancement mitigation activities are scheduled to start at the beginning of the project concurrent with the initiation of Phase 1 activities. The enhancement areas after the initial five-year maintenance and monitoring period will be managed in perpetuity, consistent with the other project mitigation areas.

Upland habitat mitigation will consist of 50.49 acres of high quality coastal sage scrub habitat, which will be planted along the slopes and bench around the perimeter of the excavated pit and within a portion of the filled-in dry depression (**Figure 8**). The upland habitat restoration will provide mitigation for impacts to coastal sage scrub and non-native grassland habitats. It is considered preferable to provide coastal sage scrub mitigation for impacts to non-native grassland, rather than conduct restoration of non-native grassland with non-native species.

As previously discussed, the remainder of the temporary impact area within the mining phases not designated for habitat mitigation will be subject to reclamation. Based on planned habitat mitigation acreage for the mine project, a total of 112.48 acres of reclamation would be conducted. However, because 0.54 acre of southern willow scrub restoration mitigation required for previous golf course impacts is planned within post-mining Phase 1 area, total reclamation within the mining temporary impact area has been lessened from 112.48 acres to 111.94 acres (**Table 10** and **Figure 8**).

2.2.2 Area(s) of Proposed Revegetation

The final areas of proposed habitat mitigation and reclamation/revegetation are shown in **Figure 8**. The phasing of the mining, after which habitat mitigation and reclamation will occur, are shown in **Figures 4** and **8**.

2.2.3 Mitigation Needs

Please see discussion and tables in Section 1.3.8.1.

2.2.4 Discretionary Permit or Enforcement Action Conditions and Requirements

The County is a Responsible Agency that must approve and regulate the MUP and Reclamation Plan required for the mining component of the proposed project. Because the Owner proposes to mitigate for impacts associated with the mining component on the project area, the County requires the preparation of a conceptual Revegetation Plan, Open Space Map, fencing and sign exhibit, and RMP for the mitigation areas. The proposed biological open space conservation areas including fencing to protect mitigation areas are depicted in **Figure 9**. The RMP (which will be prepared after this conceptual plan is approved by the County and resource agencies) must be prepared in accordance with the County's Report Format and Content Requirements for Biological Resources. And this Conceptual Revegetation Plan must be prepared in accordance with the County's Report Format and content Requirements for Revegetation Plans. Other required permits and approvals that are required to be obtained for the project are included in **Table 11**.

Table 11
Discretionary Permit or Enforcement Action and Approving Agency

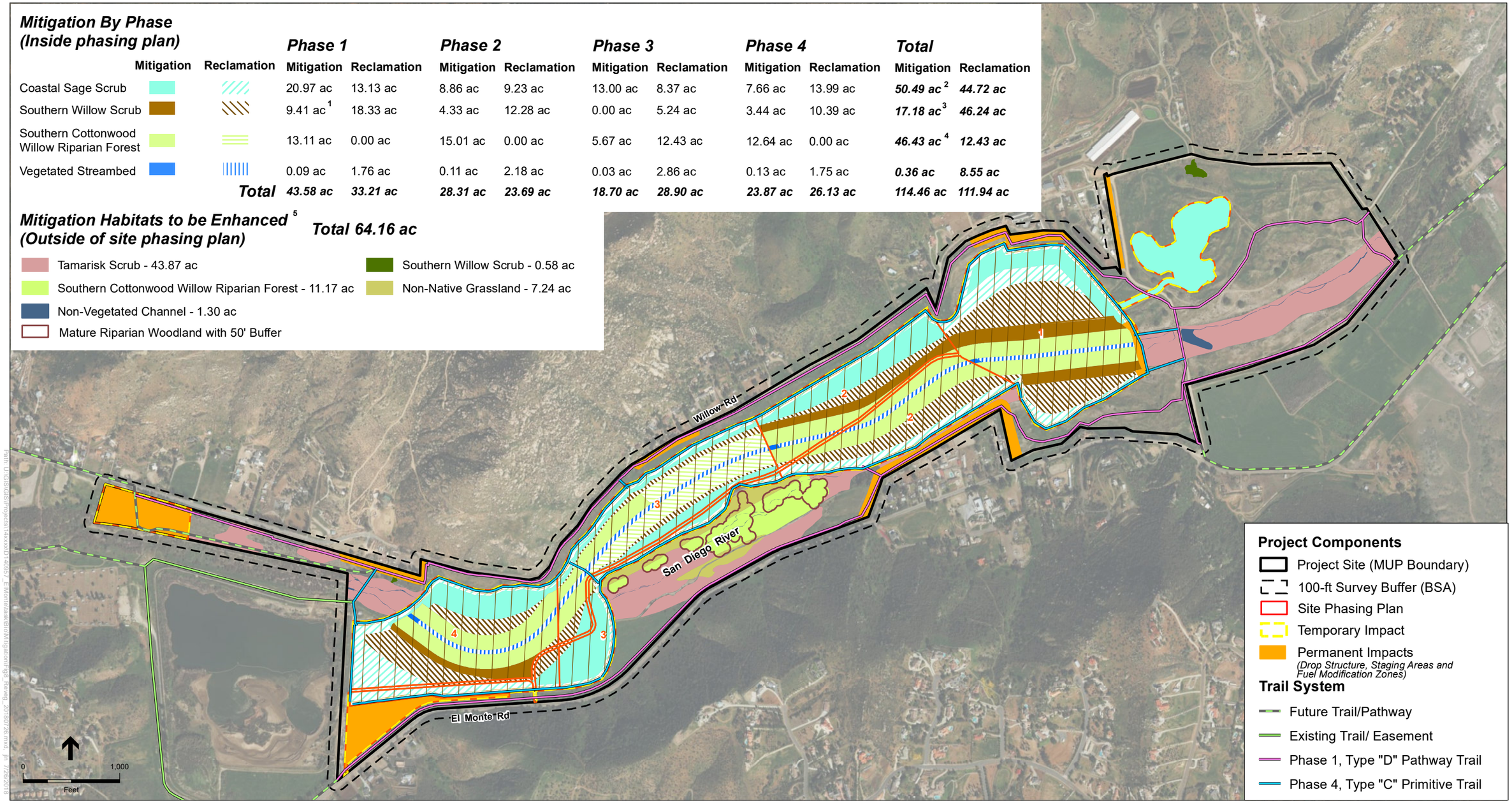
Permit Type/Action	Approving Agency
Major Use Permit Reclamation Plan (pursuant to SMARA) Revegetation Plan Grading Permit Landscape Plans County Right-of-Way Permits Construction Permit Excavation Permit Encroachment Permit	County of San Diego
401 Permit - Water Quality Certification National Pollutant Discharge Elimination System Permit Waste Discharge Requirements Permit General Industrial Storm Water Permit General Construction Storm Water Permit	Regional Water Quality Control Board
Water District Approval	Helix Water District
Fire District Approval	Lakeside Fire Protection District
404 Permit – Dredge and Fill	U.S. Army Corps of Engineers
Engineering Report Conditions of Approval	California Department of Public Health
1603 – Streambed Alteration Agreement	CA Department of Fish and Game
State Highway Encroachment Permit for the crossing of SR-67	California Department of Transportation
Section 7 – Incidental Take	U.S. Fish and Wildlife Service
Permit to Construct	San Diego Gas & Electric

Mitigation By Phase (Inside phasing plan)

	Mitigation	Reclamation	Phase 1 Mitigation	Phase 1 Reclamation	Phase 2 Mitigation	Phase 2 Reclamation	Phase 3 Mitigation	Phase 3 Reclamation	Phase 4 Mitigation	Phase 4 Reclamation	Total Mitigation	Total Reclamation
Coastal Sage Scrub			20.97 ac	13.13 ac	8.86 ac	9.23 ac	13.00 ac	8.37 ac	7.66 ac	13.99 ac	***50.49 ac*** [2]	***44.72 ac***
Southern Willow Scrub			9.41 ac [1]	18.33 ac	4.33 ac	12.28 ac	0.00 ac	5.24 ac	3.44 ac	10.39 ac	***17.18 ac*** [3]	***46.24 ac***
Southern Cottonwood Willow Riparian Forest			13.11 ac	0.00 ac	15.01 ac	0.00 ac	5.67 ac	12.43 ac	12.64 ac	0.00 ac	***46.43 ac*** [4]	***12.43 ac***
Vegetated Streambed			0.09 ac	1.76 ac	0.11 ac	2.18 ac	0.03 ac	2.86 ac	0.13 ac	1.75 ac	***0.36 ac***	***8.55 ac***
Total			***43.58 ac***	***33.21 ac***	***28.31 ac***	***23.69 ac***	***18.70 ac***	***28.90 ac***	***23.87 ac***	***26.13 ac***	114.46 ac	111.94 ac

Mitigation Habitats to be Enhanced [5] (Outside of site phasing plan) *Total 64.16 ac*

- Tamarisk Scrub - 43.87 ac
- Southern Willow Scrub - 0.58 ac
- Southern Cottonwood Willow Riparian Forest - 11.17 ac
- Non-Native Grassland - 7.24 ac
- Non-Vegetated Channel - 1.30 ac
- Mature Riparian Woodland with 50' Buffer



Project Components

- Project Site (MUP Boundary)
- 100-ft Survey Buffer (BSA)
- Site Phasing Plan
- Temporary Impact
- Permanent Impacts *(Drop Structure, Staging Areas and Fuel Modification Zones)*

Trail System

- Future Trail/Pathway
- Existing Trail/ Easement
- Phase 1, Type "D" Pathway Trail
- Phase 4, Type "C" Primitive Trail

Path: U:\GIS\GIS\Projects\14xxxx\D140957_ElMonteHabitatBioMitigationFigs_Reveg_20180726.mxd jin 7/26/2018

SOURCE: ESRI; ESA 2016; EnviroMine 2016

[1] Southern Willow Scrub mitigation in Phase 1 includes 0.54 acre to address mitigation at a 3:1 ratio for previous golf course impacts to 0.18 acre of riparian scrub.

[2] Coastal sage scrub mitigation includes mitigation for coastal sage scrub (7.22 acres) and nonnative grassland (43.27 acres).

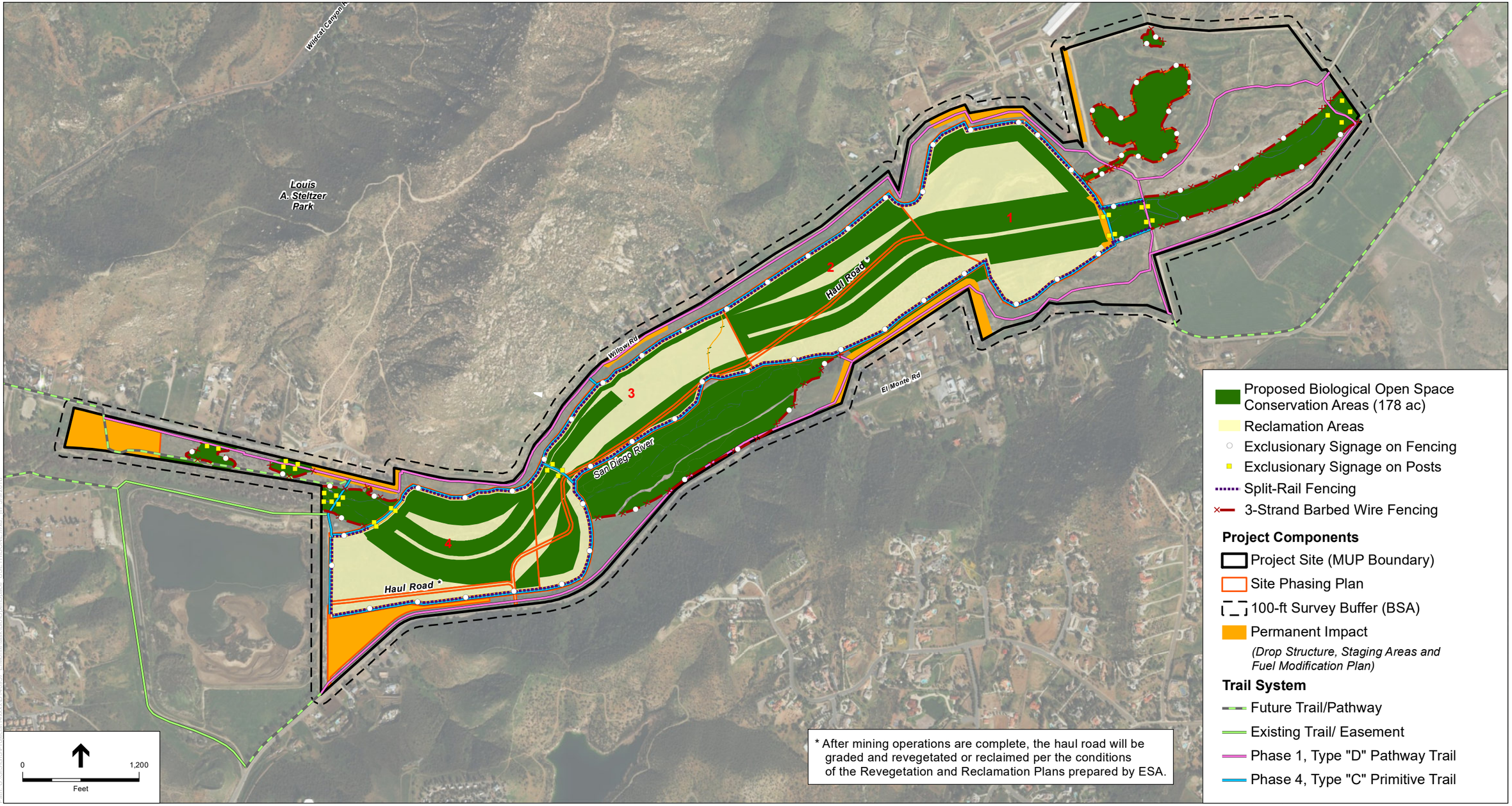
[3] Southern willow scrub mitigation includes mitigation for southern willow scrub (0.36 acre) and a portion of mitigation for tamarisk scrub (16.28 acres) within the site phasing plan.

[4] Southern cottonwood willow riparian forest mitigation includes mitigation for a portion of mitigation for tamarisk scrub within the site phasing plan (46.43 acres)

[5] Mitigation habitats to be enhanced include restoration of riparian and transitional habitat via exotic plant removal and activities to promote native plant revegetation (62.72 acres required, rounded to 64.16 acres).

Figure 8

Habitat Mitigation and Reclamation / Revegtation



SOURCE: ESRI; ESA

El Monte Sand Mining Project. 140957

Figure 9

Proposed Biological Open Space Conservation Areas

2.2.5 Requirements or Concerns of Other Agencies

The Conceptual Revegetation Plan will be reviewed and approved by the USFWS, CDFW, and USACE. The County met with representatives of USFWS and CDFW on October 20, 2016 to briefly review the project and mitigation approach. The County subsequently indicated the County and agency representatives are in general agreement with the proposed restoration and enhancement mitigation approach but no written comments were provided to the project applicant or consultants. Potential future County and agency comments will be incorporated into the final Revegetation Plan.

2.3 Functions and Values

The objective of the mitigation is to restore and enhance habitat to structurally diverse native riparian and upland habitats. The mitigation will involve phased habitat restoration after mining phases are complete.

The target functions of the riparian mitigation include the increase and maintenance of hydrologic (e.g., dynamic water storage and energy dissipation), biogeochemical (e.g., nutrient cycling, detention of imported elements and compounds, organic carbon export), and habitat (e.g., characteristic plant community, spatial structure, interspersion and connectivity) functions. The restored riparian habitat will provide water quality and wildlife habitat functions, including increased canopy cover to facilitate wildlife movement.

A variety of structural elements were considered in determining the potential increase in functional capacity resulting from implementation of the mitigation. Key elements considered in this qualitative evaluation of target riparian functions include structural and species diversity, dominance of native versus non-native plants, plant density, extent of vegetation (e.g., patch sizes), potential wildlife use, adjacent land use, and the apparent frequency and duration of flooding and ponding. For upland habitats the primary evaluation criteria are habitat functions as related to composition, structure, cover, food, and movement.

The mitigation restoration phases will be planted and seeded with a compositionally and structural diverse native plant palettes and seed mixes. Maintenance requirements (Chapter 5) and performance standards (Chapter 6) will ensure that the site has a dominance of native vegetation and low exotic species cover. The mitigation habitat areas are expected to have at least 65 percent cover of native vegetation in year 5 with final densities being attained through container plantings, seeding, and natural mortality and recruitment. The site will be left in a rough grade following mining to create micro and macro topographic complexity such as mounds, and hummocks. This topographic variation around the average baseline elevation will facilitate the development of diverse patches of vegetation contributing to increased habitat interspersion functions. Adjacent low density, rural land uses are generally conducive to the mitigation effort, with native upland and transitional habitats being in proximity to

the north and south of the site, and wetland/riparian habitats upstream and downstream of the proposed mitigation areas.

The mitigation areas will contribute to an overall increase in the extent of native upland and riparian vegetation along this reach of the San Diego River. The creation of an expanded and higher quality riparian corridor and adjacent coastal sage scrub will likely increase foraging habitat and cover for numerous wildlife species by increasing both the extent of native vegetation on the site (cover) and its connectivity with adjacent upland and riparian vegetation. For example, the restoration of an expanded riparian corridor will provide nesting, foraging, and perching habitat for resident riparian associated birds such as song sparrow (*Melospiza melodia*), yellow breasted chat (*Icteria virens*), common yellowthroat (*Geothlypis trichas*), downy woodpecker (*Picoides pubescens*), and Pacific slope flycatcher (*Empidonax difficilis*); as well as stopover and/or breeding habitat for migratory birds such as Wilson's warbler (*Wilsonia pusilla*), Townsend's warbler (*Dendroica townsendi*), yellow warbler (*Setophaga petechia*) and state/federally listed least Bell's vireo; and wintering habitat for species such as the ruby-crowned kinglet (*Regulus calendula*). The mitigation areas will also provide habitat for riparian associated butterflies such as Lorquin's admiral (*Basilarchia lorquini*) and western tiger swallowtail (*Papilio rutulus rutulus*), among others. Similar benefits would be expected in the upland habitat mitigation areas. For example, restoration of coastal sage scrub, which will total 50.5 acres, could provide high quality nesting habitat for the federally threatened coastal California gnatcatcher.

Water quality functions and values within the riparian corridor will include groundwater recharge, nutrient removal and transformation, flood flow retention, and sediment stabilization. The restored riparian corridor will slow flows and hold water, allowing water to infiltrate the substrate and recharge the groundwater table. In addition to recharging the groundwater table, reduced flow rates (1) retain water and increase flood storage capacity, (2) facilitate removal of excess sediment loads, and (3) result in increased duration of flooding, which allows aerobic and anaerobic processes in the root zone to remove and/or transform nutrients, reducing nutrient loading to adjacent waters.

The un-vegetated channel will be regraded and contoured after mining and will be vegetated with low-growing native wetland/riparian species. The riparian habitat mitigation will consist of riparian forest dominated by a variety of willow species, cottonwood, sycamore, oak and other transitional species which will be planted along the low-flow channel at a width of approximately 300 feet, and riparian scrub throughout the rest of the lowered portions of the excavated basin. The riparian scrub will be planted with species appropriate for creating a riparian transitional buffer. These plantings are intended to provide an ecotone between upland and wetland habitats, so the species composition will include both riparian and transitional species, including mulefat, broom baccharis (*Baccharis sarothroides*), and coast goldenbush (*Isocoma menziesii*). The coastal sage scrub areas will be planted in slope and upland areas, consisting of California

sagebrush (*Artemisia californica*), coastal goldenbush, flat-top buckwheat (*Eriogonum fasciculatum*), and a variety of native forbs and grasses.

In general, the mitigation areas will be designed to provide a structurally and compositionally diverse habitats including native plant and animal species, multi-canopy habitat (all areas combined), and a naturally reproducing riparian ecosystem. Because of the range of hydrologic and ecological conditions that may be present during different years, the plant palettes and seed mixes include a range of mesic and less mesic (transitional upland) adapted species to provide confidence that species best adapted to site conditions will establish, persist and reproduce onsite. Attaining the target functions will be achieved through a combination of container plantings, seeding, and natural recruitment of native species. Mitigation maintenance and monitoring will occur for a period of 5 years to ensure these target functions are met. The performance standards (survivorship, percent cover, etc.) for the mitigation areas are described in Section 6.

2.4 Time Lapse

It is likely that the performance standards set forth in this document will be achieved within 3 to 5 years, thus minimizing temporal loss of area and function. However, establishment of multi-canopy, high-quality riparian habitats may take longer. Specifically, tree species such as willows, cottonwoods, and sycamores usually take 10 to 15-plus years to mature, depending on numerous environmental factors, such as water availability and soil. It is anticipated that mature high-quality habitat will develop given enough time, thus the function and values lost as a result of the project should be fully replaced above and beyond their current levels within 5 years.

To minimize temporal loss of habitat values, mitigation for the proposed mine project for impacts outside of the mining footprint (i.e., fuel modification zones and some trail segments) and mitigation for the previous golf course project impact will be mitigated within the post-mine Phase 1 area. In addition, proposed enhancement to 64.14 acres of riparian and transitional habitats (as part of mitigation for impacts to tamarisk scrub) will be initiated at the start the project and Phase 1 mining activities in areas outside the mining footprint.

2.5 Cost

Cost information for implementation, maintenance and monitoring will be provided once 90% construction plans are completed and final project revegetation activities and quantities are confirmed. Provided in **Table 12** are costing line items for the three primary revegetation phases: implementation, maintenance and monitoring. Based on direction from the County, a 3% annual inflation factor and an overall 20% contingency have been included in this costing table.

2.5.1 Compensatory Mitigation Site Preparation, Planting, Maintenance, and Monitoring

When the cost estimate is prepared, the cost to conduct compensatory mitigation will be separated out from the cost to conduct revegetation associated with project site reclamation activities.

2.5.2 Cost Estimate for Installation, Maintenance, and Monitoring for Each Phase of the Mitigation Project

The cost table below has been organized by each project phase.

Table 12
Cost Estimate for Revegetation and Compensatory Mitigation Implementation, Maintenance and Monitoring

Activity[1/2]	Phase 1[3/4]	Phase 2[4]	Phase 3[4]	Phase 4[4]	Total
Site Preparation and Implementation[5]					
Landscape Construction Documents and Specifications	$40K	$35K	$30K	$35K	**$140K**
Fencing and Signage	$7K	$5K	$5K	$5K	**$22K**
Soil Analysis and Soil Amendments (based on soil analysis)	$15K	$10.5K	$9K	$10.5K	**$45K**
Site Preparation: Soil Movement/Contouring and Preparation (e.g., de-compaction)	$10K	$7K	$6K	$7K	**$30K**
Erosion Control Materials	$8K	$6K	$5K	$6K	**$25K**
Container Plants propagation or purchase and installation (including plant protectors and mulch)	$222.5K	$154K	$102K	$130K	**$608.5K**
Cuttings collection and installation	$6K	$4K	$3K	$4K	**$17K**
Hydro seed application (seed collection or purchase and amendments)	$178K	$123.5K	$81.5K	$104K	**$487K**
Dry Seeding application	$6K	$4K	$3K	$4K	**$17K**
Temporary Irrigation System Installation[6]	$306.5K	$212.5K	$140.5K	$180K	**$839.5K**
Meter Connections and WaterFees	$25K	$25K	$25K	$25K	**$100K**
Subtotal	*$824K*	*$586.5K*	*$410K*	*$510.5K*	***$2,331K***

Activity[1/2]	Phase 1[3/4]	Phase 2[4]	Phase 3[4]	Phase 4[4]	Total
Maintenance for 120-Day PEP and 5 Years[5]					
Repair or Replacement of Fencing and Signage	$3K	$2K	$2K	$2K	**$9K**
Weed and Pest Control	$787K	$327.5K	$245.5K	$286.5K	**$1,646.5K**
Operation (including water cost) and Maintenance of Irrigation System	$120K	$96K	$72K	$84K	**$372K**
Erosion Control	$10K	$8K	$7K	$8K	**$33K**
Supplemental Mulch and/or Soil Amendments	$6K	$5K	$4K	$5K	**$20K**
Remedial Planting and Seeding	$20K	$16K	$12K	$14K	**$62K**
Removal of Temporary Irrigation System Components[6]	$10K	$8K	$6K	$7K	**$31K**
Subtotal	*$956K*	*$462.5*	*$348.5K*	*$406.5*	***$2,173.5K***
Monitoring and Reporting for 120-Day PEP and 5 Years[5]					
Qualitative and Quantitative Monitoring	$80K	$70K	$60K	$65K	**$275K**
Coordination with Maintenance Contractor & Oversight of Remedial Measures	$25K	$20K	$17K	$19K	**$81K**
Report Preparation and Coordination with Project Proponent, County of San Diego, and Resource Agencies	$125K	$112K	$90K	$100K	**$427K**
Subtotal	*$230K*	*$202K*	*$167K*	*$184K*	***$783K***
Subtotal of Three Primary Phases	*$2,010K*	*$1,251K*	*$925.5K*	*$1101K*	***$5,287.5K***
3% Annual		*$37.5K*	*$55.5*	*$100K*	***$193K***
20% Contingency (per County direction)	$402K	$257.7K	$196.2	$240.2K	**$1,096.1**
Total	**$2,412K**	**$1,546.2K**	**$1,177.2K**	**$1,441.2K**	**$6,576.6K**

1. Note: Cost information will be provided when project 90% construction plans are completed and additional information is available. Costs provided in thousand dollar (i.e., K) amounts.
2. Cost includes materials, labor and equipment.
3. The first phase includes the enhancement and restoration of 64.16 acres of riparian and transitional habitat (included as part of mitigation for Tamarisk Scrub habitat impacts) since this would be initiated at the beginning of the project.
4. At the time cost estimation information is provided, a 3% annual inflation factor will be included for the project phases.
5. The upland mitigation and riparian compensatory mitigation includes 50.49 acres of Diegan coastal sage scrub restoration, 0.36 acre of vegetated channel, 46.43 acres of riparian woodland, and 17.18 acres of riparian scrub within the mining footprint temporary impact areas (i.e., 16.64 acres for the mine project and 0.54 acre for the golf course

Activity[1/2]	Phase 1[3/4]	Phase 2[4]	Phase 3[4]	Phase 4[4]	Total

project); and 64.16 acres of enhancement and restoration of riparian and transitional habitat via removal of exotic plant species and activities to promote native habitat revegetation.

6. Temporary irrigation will be provided for the 114.46 acres of mitigation planting within the mining basins (i.e., 113.92 acres for the mine project and 0.54 acre for the golf course project), not for the 64.16 acres of enhancement and restoration outside of the mining areas.

CHAPTER 3.0 DESCRIPTION OF THE PROPOSED COMPENSATORY MITIGATION SITE

3.1 Site Selection

The site was selected because the impacts occurring on the site are primarily temporary impacts and mitigation restoration and enhancement of the site is possible and desirable. The currently disturbed condition of the site as a result of past agricultural and grading activities will be dramatically improved by the large-scale habitat mitigation and reclamation/revegetation that will occur as part of the project.

3.1.1 Suitability of the Chosen Revegetation Site

3.1.1.1 Physical

The soils and geomorphology of the site are conducive to establishing the target mitigation habitats. There currently are pockets of native habitat and there is evidence of modest native recruitment into upland areas previously disturbed by agricultural activities. The overall quality of habitat within the existing riparian corridor has degraded due to the presence of tamarisk. Tamarisk is a facultative phreatophyte and does not require a connection with groundwater. It is able to establish and grow in lower soil moisture conditions than native phreatophytes and has out-competed the natives in the face of hydro modification, drought, and fire. The excavation associated with the mining project will lower the grade of the streambed and consequently the depth to groundwater.

3.1.1.2 Biological

The riparian habitat within the impact area to be restored and enhanced is currently occupied by a variety of raptors, woodpeckers, and song birds, as well as a number of native reptiles and mammals. This area is adjacent to suitable habitat for the least Bell's vireo, which was observed nesting on either side of the impacted riparian habitat in 2010. The coastal sage scrub onsite (e.g., within and adjacent to the impact area) supports foraging habitat for the coastal California gnatcatcher. Restoration mitigation of the impacted area would result in an increase in acreage and quality of riparian and upland scrub habitat, which is expected to benefit these target species. Long-term management of the site would enhance the area by providing weed control so that the area is not re-invaded by invasive non-native species.

3.1.1.3 Logistical

The accessibility of the site for mitigation implementation, maintenance, monitoring, and to conduct site protection activities to prevent unauthorized use is very good. The site would be protected from off-road vehicle use or heavy bicycle or foot traffic through fencing and gates, including existing fencing and gates in the surrounding area maintained by Helix Water District, plus new

fencing and gates installed by the project applicant within the project limits. Installation, maintenance and repair of fencing and gates within the project limits will be the sole responsibility of the project applicant. Upon entitlement of the property, Helix Water District will have no responsibility for maintenance of fencing or gates.

3.1.1.4 Historical

Historical land practices in the vicinity of the project, including grading, grazing, historic sand mining, and installation of the El Capitan Dam upstream, has resulted in the degraded conditions that currently exists onsite. Implementation of the mitigation revegetation plan is an opportunity to provide high quality riparian and upland scrub habitat in this disturbed area and to enhance habitat outside of mining limits.

3.1.2 Suitability of Natural Site Hydrology and Salinity

Groundwater levels and depths will be more conducive to riparian establishment and growth after riparian habitat revegetation than current conditions. Currently, the ground water is estimated to be approximately 40 to 50 feet below the surface of the river channel (AECOM 2018). Upon completion of the project, the mined area will be excavated to a level estimated to be 9 to 19 feet above the groundwater level during different years and periods. Based on a trend of groundwater decline (lowering) over recent history, groundwater levels are anticipated to decline by approximately 25 feet if there is not a spill event over the El Capitan Reservoir in the next 15 years (AECOM 2018). In regard to surface flows, a hydraulic analysis was completed for the riparian portion of the proposed mitigation that confirmed that the site will still be subject to periodic runoff and surface flows similar to the current condition. The San Diego River in this reach is and will remain an intermittent stream. The hydro modification from the upstream dam currently limits and will continue to limit the frequency, duration, and intensity of flooding.

Although runoff and surface flows are infrequent and groundwater has been in a general trend of decline (AECOM 2018), riparian habitat is currently supported onsite (albeit in a drier condition than is typical for riparian habitat). Since it is expected the post-mining area elevations will be closer to groundwater and the lowered basins will tend to accumulate more moisture than the existing condition, it is expected riparian species and habitat intermixed with transitional upland species can be successfully established in the lower portions of the basins after mining. The project plant palettes and seed mixes have been tailored (see Sections 4.4.6 and 4.4.7) for the anticipated post-mining ecological and hydrological setting. It is expected planted riparian species will be supported by soil moisture and periodic access to water in the capillary fringe (unsaturated zone of aeration) above the groundwater. In addition, an El Capitan Reservoir spill event would be expected to result in temporary ponding in the mining basins and recharge (raising) of the groundwater that would help support riparian

species, although spill events are expected to be infrequent (e.g., historically approximately every 17 years).

Soil tests will be conducted after mining to determine whether soil amendments are needed to address issues such as salinity.

3.1.3 Soil Suitability

The majority of the soils for the site are mapped as Tujunga sand and Riverwash. Native species are slowly recruiting into some formerly disturbed areas and the soils appear to be suitable for native upland species included in the proposed seed mixes and container plant palettes. The existing riparian corridor still supports native species in at least two distinct patches; therefore, the soils are considered suitable for the riparian species. Soils will be tested and checked post-mining to ensure their suitability and any soil amendments or modification to plant species composition will be made at that that time.

3.2 Location and Size of Compensatory Mitigation Site

The mitigation site is located within the project footprint (**Figure 8**). The coordinates for the mitigation site are as follows:

Western Border	Eastern Border
Latitude: 32º 52’07.76” N Longitude: 116 º 53’45.03” W	Latitude: 32º 53’00.10” N Longitude: 116 º 52’01.99” W

The total area of the proposed mitigation habitats within the post-mining basins is 113.92 acres. This includes 50.49 acres of coastal sage scrub habitat restoration, 0.36 acre of vegetated channel, 16.64 acres of riparian scrub, and 46.43 acres of riparian woodland restoration. In addition, 64.15 acres of riparian and transitional habitat enhancement and restoration will occur outside of the mining limits for total mitigation of 178.08 acres.

3.3 Functions and Values

3.3.1 Baseline Condition of the Area Proposed for Compensatory Mitigation

Since habitat mitigation and reclamation will occur post-mining, the site at project commencement will be in a highly disturbed, bare-ground state with little to no vegetation. Please refer to Section 1.3 for a detailed description of the existing site conditions.

3.3.2 Biological Survey Results of the Mitigation Site

The mitigation will occur on the development and mining site. Site conditions are summarized in Section 1 of this Revegetation Plan and the in the Biological Resources Report for the project (ESA 2018).

3.4 Jurisdictional Delineation

Federal, State, and County jurisdictional waters are present onsite (**Figure 7**). Federal jurisdiction is limited to the low-flow channels within the San Diego River Channel. Adjacent riparian communities were not considered to be under the jurisdiction of the U.S. Army Corps of Engineers (USACE) due to the lack of hydrology indicators. The dam associated with El Capitan Reservoir is a historical feature and conditions onsite are considered normal circumstances. Therefore, the effects of the dam do not need to be considered when assessing the presence of wetland hydrology. Standard delineation methods were used.

All channels and riparian habitat within the San Diego River were considered to be CDFW and County jurisdictional wetland habitat. The tamarisk scrub outside the channel on the adjacent flats outside the 100-year flood plain was not considered to be CDFW or County wetland habitat due to the lack of a streambed setting. The small pond near the northeastern corner of the property was considered to be County, State, and Federal jurisdictional wetlands based on its source being a stream and its proximity to regulated features within the San Diego River.

Implementation of the proposed project would result in the temporary impacts to waters of the United States and streambed and riparian vegetation under the jurisdiction of USACE, pursuant to the Clean Water Act, and CDFW, pursuant to Section 1602 of the California Fish and Game Code (Streambed Alteration Agreements).

Some areas within the project area categorized as wetland habitats fall under the jurisdiction of USACE and/or CDFW and the County. Potentially significant impacts from the temporary impacts from mining activities within USACE and/or CDFW and County jurisdiction would be mitigated to a less-than-significant level with restoration of temporarily affected habitats.

The Owner would obtain Clean Water Act regulatory compliance in the form of a permit from USACE or written documentation from USACE that a permit is not required and a water quality certification or certification by default from the Regional Water Quality Control Board. In permitting projects, USACE (and CDFW) seeks to meet the goal of no net loss of functions and values of wetlands and often other waters of the United States and would require at a minimum the restoration of disturbed areas to original contours and a revegetation program to restore jurisdictional areas disturbed by the proposed project.

The Owner shall obtain California Fish and Game Code Section 1602 compliance in the form of a completed Streambed Alteration Agreement or written documentation from the CDFW that an agreement is not required. The Owner shall implement all the terms and conditions of the CDFW Streambed Alteration Agreement.

3.5 Present and Proposed Uses

3.5.1 Uses of the Compensatory Mitigation Site and All Adjacent Areas

3.5.1.1 Present Uses of Mitigation Site and Adjacent Areas

Land use in the El Monte Valley is limited by physical constraints and the presence of the San Diego River floodway. Existing land uses in the surrounding valley include rural residential, intensive agriculture, dairy farming, extractive, field and orchard crops, public lands, public utilities easements, and open space. Portions of the site south of the San Diego River are actively engaged in agriculture activities. Crops typically grown in the area include bamboo shoots, chives, and snow peas. Existing conditions north of the river consist of partially graded areas and a dairy farm. The two-lane El Monte Road south of the project area serves the adjacent rural residences and is the primary access for the adjacent dairy farm and the sole access point to the El Monte County Park and the El Capitan Reservoir.

The Helix Water District leases land in the El Monte Valley for uses that include baseball fields and the Tumbleweed Riding Club. The El Monte Valley project would not have any impact on the continued lease of property to these tenants.

3.5.1.2 Proposed Uses of Mitigation Site and Adjacent Areas

Upon completion of project implementation and project mitigation, the proposed uses for the mitigation site are protected biological open space for conservation of biological resources and recreational use. Recreational use will be confined to trails as part of the proposed trail system that will be established after the mining activities are complete. Proposed onsite trails have been designed to connect to existing and planned future offsite trails in the vicinity of the project site with consideration given to the biological and habitat restoration goals of the project. The onsite trails are proposed to cross the San Diego River bed three times and the mining pit low flow channel once with Arizona crossings. These trails, which will be placed in the upland setback area between the project boundary and the impact boundary near Willow Road on the north side and El Monte Road on the south side and include a trail segment between mine phases 3 and 4, will allow use by hikers and equestrians.

3.5.1.3 Zoning

Zoning for the property is S-82 Extractive and A-70 Limited Agriculture. The S-82 Extractive Zone is intended to identify areas where mining, quarrying, or oil

extractive uses are permitted. Per the County's Zoning ordinance, the S-82 Extractive Use Regulations would be applied to areas of mineral deposits, to signify and notify adjacent or affected properties of the intention to allow extraction of minerals within the zone. Approximately 487 acres of the project area is zoned as S-82. The site is classified and designated as containing a regionally significant sand resource. The proposed mining extraction project is consistent with this zoning designation.

Approximately 93 acres of the project area is zoned A-70. Per the County's Zoning ordinance, the A-70 Use Regulations are intended to create and preserve areas intended for agricultural crop production and would be applied to areas throughout the County to protect moderate to high quality agricultural land. This zoning designation allows for limited development consistent with rural residential and a variety of agricultural uses. Portions of the project area also have special area designators: F (flood channel area) and/or S (scenic resources).

3.5.1.4 Long-Term Protection Methods

All the mitigation areas will be protected in perpetuity by placing a Biological Open Space Easement or other protective instrument over the property. The approximately 480-acre property was purchased by the project proponent, El Monte Nature Preserve, LLC. To protect the habitat mitigation area in the long term, the entirety of the revegetation and enhancement mitigation areas shall be protected in perpetuity by placing a Biological Open Space Easement over the revegetation and enhancement areas (**Figure 9**). At this time, it is anticipated that once the four proposed mining phases are complete, the entirety of the areas proposed for mitigation, including the revegetation and enhancement areas that totals 178 acres, (1) will be transferred in fee title to a qualified land steward (non-profit) conservancy so that it may be maintained and managed in perpetuity for biological values, and (2) a biological open space easement will be recorded. It is understood, as standard measures, that a biological open space easement will be recorded and a long-term manager will be identified/established (and habitat management funds provided) for designated project habitat mitigation areas.

Once the County and resource agencies approve the Conceptual Revegetation Plan, an RMP will be prepared for the 178 acres of revegetation and enhancement mitigation areas designated as a Biological Open Space Easement (**Figure 9**). The RMP will be prepared in accordance with the County's Report Format and Content Requirements for Biological Resources and approved by the County of San Diego and Wildlife Agencies (CDFW and USFWS).

Permanent fencing and signage shall be installed around the perimeter of the Biological Open Space Easement as proposed in **Figure 9**. Any potential adjustments to the fencing details (e.g., the type and final location of fencing) would be determined upon finalization of the Revegetation Plan.

Currently, the project area is surrounded by three-strand wire fencing, which is used for access control. The only vehicle access to the site is from El Monte Road, which is gated and locked. During the active mining phase, temporary fencing would be installed by the project applicant around the active mining areas to control access and maintain public safety. Where required, construction fencing with a silt fence mounted on the inside face would be constructed by the project applicant between the extraction areas and adjoining environmentally sensitive areas. Maintenance and repair of fencing and gates within the project limits will be the sole responsibility of the project applicant. Upon entitlement of the property, Helix Water District will have no responsibility for maintenance of fencing or gates.

The staging area located southeast of Hanson Pond that would be used during all phases of mining would be used for access to the initial habitat mitigation and reclamation/revegetation phase. Habitat mitigation and reclamation/revegetation of the mining Phase 1 would occur concurrently, and as part of reclamation activities, access roads would be installed if needed to allow for ongoing Helix Water District operations and maintenance and access to San Diego Gas & Electric (SDG&E) facilities as required by law. These access roads would be used for post-implementation mitigation monitoring of restored and enhanced areas. The access roads would be surfaced (as necessary), and SDG&E access areas would be lined with decomposed granite.

3.6 Reference Site(s)

3.6.1 Biological Survey Results of the Reference Site

Reference sites are not currently proposed. The planned habitat mitigation consists of common plant species and habitats whose parameters are well known. Also, no currently suitable reference conditions exist in the El Monte Valley floor for the upland or riparian components of the project. For upland habitats the available reference sites are either too disturbed or otherwise undesirable in their species composition (e.g., grassland), or occur in different soil types with different slopes and aspects, (e.g., coastal sage scrub). No suitable reference site exists in the project vicinity that is comparable to the proposed mitigation habitats. The performance standards outlined in Section 6 are considered to be sufficient to verify successful establishment of the native plant habitats while accounting for natural variability of hydrology, climate and habitat development.

3.6.2 Standards for Tracking the Progress of the Compensatory Mitigation Project

Performance standards/success criteria are presented in Chapter 6.

3.6.3 Reference Site(s) to Determine Mitigation Success Criteria

Reference sites are not proposed because of the lack of suitable reference conditions in the El Monte Valley floor for the upland and riparian components of the project. If suitable reference sites are subsequently identified in the project vicinity, they will be incorporated into the monitoring program after each phase of habitat mitigation has been installed.

3.6.4 Site Flagging for County Review

The site will be flagged in the field as needed so that a County representative can review the site at the time of Revegetation Plan submittal.

CHAPTER 4.0 IMPLEMENTATION PLAN FOR THE COMPENSATORY MITIGATION SITE

4.1 Rationale for Expecting Implementation Success

The proposed mitigation areas currently support patches of native habitats. The site has been disturbed by historic land uses, including previous sand mining, grading, and the El Capitan dam upstream, which have contributed to the current lack of extensive stands of native upland and riparian vegetation in the proposed mitigation areas. The hydrologic conditions appear suitable for native riparian and transitional upland species as evidenced by the presence of scattered patches of native riparian habitat (with upland transitional species) within the channel and along the channel slopes. The presence of appropriate soil conditions in the upland areas and periodic accessibility to groundwater (i.e., the capillary fringe above the groundwater) approximately 9 to 19 in depth within the excavated basins provides confidence the upland and riparian (including transitional species) habitat mitigation can be successfully established.

4.2 Financial Assurances

4.2.1 Type of Assurances and Identity of the Responsible Party

The Financial Assurance amount for implementing the mitigation described in this Revegetation Plan will be determined upon plan approval. The amount of financial assurance by bond, letter of credit or other method will be assessed annually by the County based on the cost to restore and enhance disturbed areas and the areas anticipated to be disturbed by mining activities in the succeeding year.

4.2.2 Revegetation Agreement Statement

A mitigation agreement shall be signed and notarized by the project applicant following approval of this revegetation plan and accompanied by the required security as agreed upon by the County of San Diego. The project applicant will separately bond for the reclamation work by project phase. All other mitigation responsibilities will be bonded in entirety, not by phase.

4.3 Schedule

For any given phase, the general schedule will be as follows:

Task	Completed by
Landscape Plans and Specifications	Fall [Year TBD]
Container Plant and Seed Acquisition	August following mining
Grading and Site Preparation	September
Fencing and/or Flagging	September

Task	Completed by
Irrigation System Installation	October
Container Planting	November
Hydro seeding and Dry Seeding	December
Implementation Monitoring (through 120-day post-installation)	April
Begin 5-Year Monitoring Period	April
Begin 5-Year Maintenance Period	April
End of 5-Year Maintenance/Monitoring Period	April of 5th year

As stated in Section 4.2.2, the project applicant will bond for the reclamation work by project phase. All other mitigation responsibilities will be bonded in entirety, not by phase.

The contractor should be beginning work within seven business days after notice to proceed is received for any given phase of the mitigation. Initial habitat mitigation work should be completed within 3 months of initiating work. The 120-day establishment period shall begin when the restoration ecologist confirms the work has been implemented according to plan. The regular maintenance period begins after the restoration ecologist and the Owner have inspected the site and signed off on the work at the end of the 120-day establishment period.

4.4 Site Preparation

Generally, as the final slopes of each mining area are completed and final grading is completed, the mined area would be rehabilitated and all machinery, equipment, waste materials, and scrap removed from the area, fencing would be installed, and access roads would be surfaced (as necessary). A polymer binding agent, AggreBind®, would be applied to the temporary access road to minimize dust. AggreBind® is a water based, styrene acrylic polymer which is discussed further below in Section 4.4.3. Areas proposed for habitat mitigation will be excavated/graded according to the grading plan and landscape specifications to provide appropriate planting elevations relative to the geomorphic requirements of the habitat to be developed in each location. Pursuant to the landscape plans and specifications, soils would be stabilized across the area, irrigation systems and drainage contours would be installed, overburden/topsoil and mulch would be spread onsite, and native vegetation would be planted and/or seeded, with some of these activities overlapping in time within phases. A mixture of container plantings and seeding will be used.

Spot treatment for invasive weeds may be necessary if weeds emerged after the mining activities are complete and rough grading did not remove all weeds. Prior to habitat mitigation implementation, manual weed control shall be conducted by the restoration contractor in areas where invasive weeds are present. All actively growing non-native vegetation shall be removed prior to the onset of seeds, removing the entire root system, seeds, and seed heads. An acceptable method

of weed removal would be to water and germinate the plants of concern, and then remove them before they set seed. Irrigation of weedy areas for several weeks prior to weed eradication will encourage germination of weed seeds in the soil. However, if sufficient winter rains have encouraged the growth of weedy species, irrigation may not be necessary.

Herbicide can also be applied by a licensed contractor to eradicate weeds if deemed necessary and approved by the restoration ecologist. If this method is chosen, all herbicide use shall be restricted to the mitigation areas and not enter the nearby sensitive areas. Pre-emergents are prohibited and shall not be used. Herbicide use shall be restricted to the use of a non-selective glyphosate such as Ranger-Pro (Round-Up Pro) for the elimination of non-native and invasive upland vegetation located within the project site for purposes of habitat restoration only. No use of any herbicide shall occur during the rainy season (November 1–March 31). In no instance shall herbicide application occur if wind speeds onsite are greater than 5 mph or 48 hours prior to predicted rain. In the event that rain does occur, herbicide application shall not resume until 72 hours after rain.

Final grading will provide the appropriate elevations relative to managed groundwater resources and natural surface hydrology to provide the appropriate conditions to support native riparian species over the long-term. Fine grading will be achieved within the mitigation areas to establish final planting elevations and to help create micro-topography. Adequate stability of graded areas and planting locations will be achieved through the use of erosion-control measures and/or through appropriate planting as needed to provide adequate soil stability to resist erosion.

Soil conditions in the areas to be restored will be tested and evaluated by a soil and plant laboratory to determine soil fertility and agricultural suitability for the intended vegetation and habitat types. Soil analysis tests should be completed after seed bed preparation to determine actual recommended soil amendments. At least three composite agricultural soil samples shall be taken. Each composite soil sample should consist of three individual samples collected within each of three selected areas within the restoration site. The soil analysis shall be furnished by a qualified soil-testing laboratory stating percentages of organic matter, textural classification, textural tests, silt sand clay content, sodium absorption rate, electrical conductivity, cation exchange capacity, boron content, deleterious material, pH, mineral and plant-nutrient content of topsoil and elemental data, corrective recommendations and soil amendment recommendations. Results of the soil tests will be used to determine the appropriate composition and amount of soil amendment to enhance growing conditions. based on the soil analysis, amending infertile soils may be necessary if soil analysis results indicate that deficiencies exist within the site soils that could affect the growth of native species. All amendments will be specified on the final revegetation construction documents.

Site preparation would occur in a manner that stabilizes soils, adequately drains water, complies with the fuel modification zones required by the Lakeside Fire Department, and is compatible with the surrounding topography and land uses.

4.4.1 Type of Equipment Proposed for Use

Table 13 lists the type of equipment proposed for use to implement the proposed Reclamation and Revegetation (habitat mitigation) components of the proposed project.

Table 13
Equipment Required for Reclamation and Revegetation Components

Equipment Description	Quantity
¾ ton Pickup Truck	4
Backhoe	1
Water Truck/Hydro seeder	3
Bobcat	1
Sprinklers/Bubblers	50

4.4.2 Equipment Accessibility to the Site

The project staging/access area would be in place until the habitat mitigation installation and monitoring is complete. This area could include an ongoing nursery to support long-term revegetation success, if necessary. Access to and from the project site on El Monte Road would be controlled by a stop sign. Heavy equipment and construction activities shall be limited to the existing developed and disturbed areas to the degree feasible as determined by the restoration ecologist. Vehicles shall be required to remain within the construction corridor, unless otherwise noted on the construction drawings. All vehicles shall use existing trails and specifically identified staging areas within the restoration site.

4.4.3 Construction Measures for Protecting Adjacent Habitat

Sensitive biological areas, such as adjacent native habitat, are deemed as “no construction” areas. “No-construction” zones shall be clearly flagged by the restoration ecologist prior to the onset of restoration activities. If the restoration ecologist deems it necessary, sensitive biological areas shall be surrounded by fencing or other protections to prevent direct or indirect impacts for each of the restoration phases. Prior to fencing, the restoration ecologist will stake the restoration area. After the initial planting, protective temporary fencing shall be installed around the restoration area to preclude disturbance.

To minimize the threat of dust from temporary haul roads moving onto adjacent habitat, an environmentally-friendly water-based polymer binding agent,

AggreBind®, would be applied to haul roads. This binding agent, which is mixed with water, applied via water truck and compressed with a roller to ensure stabilization, coats the soil mass and compacts and compresses the soil together, so the particles have direct contact with each other. This ensures soil stabilization and complete dust suppression; polymers are cross linked to form a mass that is water resistant, can withstand high temperature, and is not biodegradable. Therefore, migration into the river channel or nearby habitats is not a threat.

The product itself is made from in-situ materials such as sub-soils and sands and environmentally friendly polymers. It is water-based and non-toxic and can be used in environmentally sensitive areas, agricultural roads, and as a surface seal for drainage channels. Because this product binds and hardens similar to cement or asphalt, upon removal of the temporary haul roads, it is easy to contain and remove in its entirety. There will be no negative impacts to groundwater, the river channel, or surrounding vegetation from this method of dust suppression

4.4.4 Protection Measures for the Revegetation Areas

When mining is complete and following implementation of the reclamation and habitat mitigation components, the final configuration of the restored and reclaimed lands would not pose a hazard to the public. Where required, construction fencing with a silt fence mounted on the inside face would be constructed between the extraction areas and adjoining environmentally sensitive areas.

The maintenance contractor will control erosion within and adjacent to the planting areas during the 5-year maintenance period. The restoration ecologist and maintenance contractor will determine the most effective and least damaging application of erosion-control materials to address the identified problem. Appropriate erosion-control materials include, but are not limited to, silt fencing, gravel bags, rice straw wattles, rolled erosion-control products (e.g., jute fabric, coconut husk fabric), and/or supplemental container planting or seed application. Silt fencing to control erosion shall be installed around the entire perimeter of the restoration areas and remain in place until the restoration project is complete. The silt fencing shall be regularly maintained to ensure that it remains effective. Torn or broken fencing shall be replaced routinely.

Temporary signs will be installed at various locations around the restoration site to identify the area as a sensitive habitat restoration site, and to describe use restrictions in the area. The signs will include a project contact name and phone number. The restoration area shall be posted by the restoration contractor with a sign that indicates the area is not to be entered and that vegetation is being established. The sign shall contain a contact telephone number and name of the emergency response entity.

The contractor will remove all trash and debris accumulated within the project boundaries and dispose of the collected debris in an appropriate location offsite. If vandalism or trash dumping becomes a problem, the project team will discuss whether any potential remedies will be implemented, such as more or fewer signs, temporary fencing, and/or security surveillance.

4.4.5 Anticipated Start and Completion Dates

Start and completion dates, including phasing, are discussed in Section 1.3 and outlined in Table 2.

4.4.6 Proposed Container Plants for the Project

As stated in section 2.3, because of the range of hydrologic and ecological conditions that may be present during different years, the plant palettes and seed mixes include a range of mesic and less mesic (transitional upland) adapted species to provide confidence that species best adapted to site conditions will establish, persist and reproduce onsite.

Container stock will be contract grown; container stock acquisition will occur in August following each mining phase. The revised container plant palettes which were approved by the County on August 15, 2017 are provided in **Tables 14** through **17**. Proposed planting density ranges from an average of 7-foot (890 plants per acre) to 8-foot on center (680 plants per acre). Plant species will be installed in natural groupings and intermixed with other species.

To mitigate for projected impacts to six mature oak trees (Figure 6), oaks will be planted and established as part of the project revegetation program. Scattered smaller oaks currently occur in the southern cottonwood willow riparian forest onsite. Therefore, oaks are included in the riparian forest container plant palette (**Table 15**). Five-gallon oaks will be planted at a density of 16 per acre. Since habitat mitigation is planned for 46.43 acres of riparian forest, 742 5-gallon oaks will be planted. Since 80 percent survival of container plants is included in Year 1 of the revegetation success standards, at least 593 oaks will be alive or replacement planting will occur. Oaks and other species in the mitigation program will continue to be maintained and monitored for 5 years after installation to confirm they are established and sufficient native cover is achieved. The proposed planting and maintenance of oaks will mitigate the six mature oaks that will be impacted.

Table 14
Vegetated Streambed Container Plants

Species	Common Name	Container Size	Spacing (feet on center)	Density per Acre
Artemisia douglasiana	Douglas' mugwort	1 gallon	6	220
Artemisia palmeri	San Diego sagewort	1 gallon	12	140
Iva hayesiana	San Diego Marsh elder	1 gallon	12	60
Muhlenbergia rigens	Deergrass	1 gallon	8	130
Rosa californica	California rose	1 gallon	6	130
Total				**680**

Table 15
Riparian Forest Container Plants

Species	Common Name	Container Size	Spacing (feet on center)	Density per Acre
Artemisia douglasiana	Douglas' mugwort	1 gallon	10	100
Artemisia palmeri	San Diego sagewort	1 gallon	12	60
Baccharis salicifoli	Mule fat	1 gallon	14	160
Ericameria palmeri var. *palmeri*	Palmer's sagewort	1 gallon	25	50
Muhlenbergia rigens	Deergrass	1 gallon	10	82
Platanus racemosa	Western sycamore	5 gallon	60	20
Pluchea sericea	Arrow weed	1 gallon	15	70
Populus fremontii	Fremont cottonwood	5 gallon	40	40
Quercus agrifolia	Coast live oak	5 gallon	60	16
Salix exigua	Sandbar willow	1 gallon	15	50
Salix gooddingii	Black willow	1 gallon	50	16
Salix laevigata	Red willow	1 gallon	20	64
Salix lasiolepis	Arroyo willow	1 gallon	16	92
Sambucus mexicana	Blue elderberry	5 gallon	35	40
Thalictrum fendleri var. *polycarpum*	Many fruit meadow-rue	1 gallon	30	30
Total				**890**

Table 16
Riparian Scrub Container Plants

Species	Common Name	Container Size	Spacing (feet on center)	Density per Acre
Artemisia californica	California sagebrush	1 gallon	25	70
Artemisia dracunculus	Tarragon	1 gallon	12	80
Artemisia palmeri	San Diego sagewort	1 gallon	14	110
Baccharis pilularis	Coyote brush	1 gallon	35	50
Baccharis salicifolia	Mule fat	1 gallon	10	270
Ericameria palmeri var. *palmeri*	Palmer's sagewort	1 gallon	30	80
Isocoma menziesii var. *menziesii*	Coastal goldenbush	1 gallon	35	50
Pluchea sericea	Arrow weed	1 gallon	20	50
Salix exigua	Sandbar willow	1 gallon	20	40
Salix lasiolepis	Arroyo willow	1 gallon	35	30
Sambucus mexicana	Blue elderberry	5 gallon	40	60
Total				**890**

Table 17
Coastal Sage Scrub Container Plants

Species	Common Name	Container Size	Spacing (feet on center)	Density per Acre
Artemisia californica	California sagebrush	1 gallon	10	235
Eriogonum fasciculatum	California buckwheat	1 gallon	30	30
Isocoma menziesii var. *menziesii*	Coastal goldenbush	1 gallon	20	60
Malacothamnus fasciculatus	Bush mallow	1 gallon	30	30
Malosma laurina	Laurel sumac	1 gallon	50	15
Mimulus aurantiacus	Bush monkeyflower	1 gallon	30	40
Stipa lepida	Foothill needlegrass	1 gallon	12	160
Stipa pulchra	Purple needlegrass	1 gallon	12	110
Total				**680**

4.4.7 Proposed Seed Mixes

The proposed seed mixes are shown in **Tables 18** through **21**:

Table 18
Vegetated Streambed Seed Mix

Species	Common Name	Lbs. per Acre	Min. Percent Purity/ Germination	Lbs. Pure Live Seed (PLS) per Acre
Ambrosia psilostachya	Western ragweed	5.0	45/45	1.01
Artemisia douglasiana	Douglas' mugwort	6.0	15/40	0.36
Artemisia palmeri	San Diego sagewort	4.0	20/50	0.40
Iva hayesiana	San Diego Marsh elder	4.0	30/30	0.36
Juncus bufonius	Toad rush	3.0	95/60	1.71
Total		**22**		**3.84**

Table 19
Riparian Forest Seed Mix

Species	Common Name	Lbs. per Acre	Min. Percent Purity/ Germination	Lbs. Pure Live Seed (PLS) per Acre
Ambrosia psilostachya	Western ragweed	4.0	45/45	0.81
Artemisia californica	California sagebrush	3.0	30/60	0.54
Artemisia douglasiana	Douglas' mugwort	4.0	15/40	0.24
Artemisia palmeri	San Diego sagewort	3.0	20/50	0.30
Baccharis pilularis	Coyote brush	3.0	10/50	0.15
Camissoniopsis bistorta	California sun cup	1.0	90/80	0.72
Isocoma menziesii var. *menziesii*	Coastal goldenbush	3.0	18/40	0.22
Lupinus hirsutissimus	Stinging lupine	1.0	98/75	0.74
Oenothera elata ssp. *elata*	Tall evening primrose	1.0	98/84	0.82
Phacelia cicutaria	Catterpillar phacelia	1.0	98/90	0.88
Pluchea sericea	Arrowweed	5.0	7/20	0.07
Rosa californica	California rose	1.0	85/53	0.45
Total		**30.0**		**5.94**

Table 20
Riparian Scrub Seed Mix

Species	Common Name	Lbs. per Acre	Min. Percent Purity/ Germination	Lbs. Pure Live Seed (PLS) per Acre
Acmispon glaber	Deerweed	3.0	95/80	2.28
Amsinckia menziesii var. *intermedia*	DeerweedFiddleneck	3.0	45/65	0.87
Artemisia californica	California sagebrush	4.0	30/60	0.72
Artemisia dracunculus	Tarragon	3.0	10/50	0.15
Baccharis pilularis	Coyote brush	2.0	10/50	0.10
Camissoniopsis bistorta	California sun cup	2.0	90/80	1.44
Heterotheca grandiflora	Telegraph weed	2.0	60/55	0.66
Isocoma menziesii var. *menziesii*	Coastal goldenbush	3.0	18/40	0.21
Lupinus bicolor	Dove lupine	1.0	98/85	0.83
Lupinus hirsutissimus	Stinging lupine	1.0	98/75	0.74
Oenothera elata ssp. *hookeri*	Evening primrose	1.0	98/84	0.82
Phacelia cicutara	Caterpillar phacelia	1.0	98/90	0.88
Pseudognaphalium beneolens	Fragrant everlasting	3.0	5/45	0.06
Pseudognaphalium biolettii	Bicolor cudweed	3.0	4/45	0.06
Total		**32.0**		**9.82**

Table 21
Coastal Sage Scrub Seed Mix

Species	Common Name	Lbs. per Acre	Min. Percent Purity/ Germination	Lbs. Pure Live Seed (PLS) per Acre
Acmispon glaber	Deerweed	5.0	95/80	3.80
Amsinckia menziesii var. *intermedia*	Fiddleneck	2.0	45/65	0.58
Artemisia californica	California sagebrush	5.0	30/60	0.90
Camissoniopsis bisorta	California suncup	2.0	90/80	1.44
Chaenactis glabriuscula	Yellow pincushion	2.0	15/55	0.16
Croton californicus	California croton	2.0	90/40	0.72
Eschscholzia californica	California poppy	1.0	98/80	0.78
Heterotheca grandiflora	Telegraph weed	2.0	60/55	0.66
Lupinus bicolor	Dove lupine	3.0	98/85	2.49
Mimulus aurantiacus	Bush monkeyflower	2.0	4/70	0.06
Pseudognaphalium biolettii	Bicolor cudweed	3.0	4/45	0.06
Pseudognaphalium californicum	California everlasting	3.0	5/50	0.06
Sisyrinchium bellum	Blue-eyed grass	1.0	98/80	0.78
Stipa lepida	Foothill needlegrass	3.0	90/71	1.92
Stipa pulchra	Purple needlegrass	2 .0	90/75	1.36
Vulpia microstachys	Small fescue	4.0	90/80	2.88
Total		**42.0**		**18.65**

See **Figure 8** for locations of where the mitigation habitat container plant palettes and seed mixes will be applied.

4.4.8 Sources for Plant Material

All container plants and seed materials should be locally propagated and collected. It is recommended that container plants be provided by a qualified native plant nursery and the seeds come from a supplier certified by the California Crop Improvement Association. It is expected some plant and seed material will be collected and provided from onsite native plant material. Any collections would occur in approved impact areas before impacts occur. If collections do occur, it is expected this would mostly include collection of seed (for application or propagation of container plants) and cuttings (for direct planting or propagation of container plants). If direct planting of cuttings is conducted, this would follow standard methods for preparation of cuttings (i.e., sufficient length and caliper sizes, cutting methods, pre-soaking to promote

rooting, and installation in wet soil) and include species such as willows, mule fat and cottonwood. Since mature vegetation with well-developed root systems is not typically well-suited for whole plant harvesting, digging up existing plant material for transplanting is not anticipated or proposed. If seed and/or cuttings are collected from onsite material for application/installation at a later date, it is expected this material will be transported to a qualified seed company for storage or a qualified native plant nursery to conduct container plant propagation. At this time, no onsite seed storage or plant propagation structure is proposed. If the project would like to establish a temporary seed storage or plant propagation facility onsite during implementation of the project, it would only occur within an approved impact area and would likely be a relatively small shade structure less than 2,500 square feet

The restoration ecologist will inspect all container plants provided to the project before installation and reject plants that are dead, root bound, stunted, pest-infested, diseased, or unacceptable for other reasons. Although mule fat scrub and willows are specified as container plants, it would be preferable to grow these species from locally collected cuttings. Details regarding plant material sources, acceptable growing methods, and acceptable plant material sizes and condition will be included in the landscape construction specification documents.

Seed will be labeled with the species, purity, germination, percent live seed, and quantity of seed in pounds. Prior to application, the restoration ecologist will confirm the specified seed has been delivered to the respective sites. All seed will be evenly applied by a hydro seeding method (with standard amendments including mulch and tackifier) or by hand using a seed grinder type applicator. To ensure any hand-applied seed is placed in a favorable setting to promote germination, some hand raking will be performed to work it into the top 1 inch of soil. No hand raking would be needed for areas that would be hydro seeded.

Pits for container-grown plants will be dug twice as deep and twice as wide as the container, and the planting soil must be thoroughly wetted before planting. Depending on the results of soil analyses, fertilizer amendments may be recommended for the container plant pits. After initial installation, a 1-inch-deep layer of mulch comprised of native material will be placed within the reservoir of each plant to help control weeds and retain moisture.

Volunteer recruitment is expected and desired in the mitigation areas. Seed transport from the high-quality upstream reach and local seed bank in the proposed planting area should result in the germination of volunteer plants. This is especially true due to the increased water availability in the area as a result of the proposed excavation grading.

4.5 Planting Plan

A planting and seeding program will be implemented for the 114.46 acres of planned habitat revegetation and restoration within the mining phases (i.e.,

113.92 acres for the mine project and 0.54 acre for the previous golf course project). Because of site conditions including sandy soils and a deep water table outside the mining footprint, natural plant recruitment is considered the most sustainable method to establish native plants adapted to site conditions; and therefore only limited measures will be taken to promote native habitat revegetation (i.e., limited installation of container plants or cuttings during wet weather and limited seeding) and a temporary irrigation system will not be installed within the proposed enhancement areas.

4.5.1 Requirements for Soil Preparation, Amendments, and/or Additives

Project wide topsoil salvaging and replacement is not proposed because the predominant soils in the proposed mining areas (i.e., Riverwash and Tujunga sand) are low fertility soils without a defined topsoil horizon and much of the topsoil onsite includes a seed bank comprised of non-native species. As discussed in the Reclamation Plan, excavated overburden/topsoil will be salvaged from disturbed area and stored in berms around the pit and at the entrance to the site. The majority of the material will be utilized as fill or sold, but topsoil material stored in the berms will be mixed with wash fines and used as final cover on some areas. The dimensions of stockpile berms would be approximately 6 feet high with a 12-foot-wide base, at a 1:1 slope. Once a phase has been mined, the stockpiled topsoil and wash fines would be redistributed over the mined phase for restoration/revegetation purposes. The overburden/topsoil berms would continue to be placed east to west as mining progresses. Approximately 1.0 million tons of overburden will be retained onsite.

The installation contractor will conduct soil agricultural suitability test and consult with the restoration ecologist to determine whether and what type of amendments may be needed. Native restoration projects typically do not require soil amendments because native plants are adapted to native soil conditions. However, soil amendments, if any, will be added as needed to the disturbed/graded areas and cross-ripped to a minimum depth of 8 inches to incorporate the materials into the soil. The site will then be thoroughly irrigated by water truck.

Mycorrhiza is a symbiotic association between a fungus and the roots of a plant. Vesicular-arbuscular mycorrhiza is the form of endotrophic mycorrhiza that will be used to inoculate the site. In this form, the fungus lives between the cells of the cortex and forms temporary hyphal projections that penetrate the cortical cells. Plants that commonly develop such associations cannot grow normally without the appropriate fungus. As a rule, mycorrhizal infection enhances plant growth by increasing nutrient uptake via increases in the absorbing surface area, by mobilizing sparingly available nutrient sources, or by excretion of chelating compounds or ectoenzymes. Mycorrhizal infection may also protect roots from soil pathogens, thereby increasing root growth and nutrient acquisition of the host root. The imprinting seed mix (coastal sage scrub only) will be supplied with a mycorrhizal inoculation prepared by the seed supplier. Commercially available

(EndoNet™ or equivalent) granular arbuscular mycorrhiza inoculum will be incorporated into the seed mixture prior to application.

After planting is complete, a 1-inch deep layer of aged mulch shall be placed on the site to help control weeds. No fertilizer of any sort shall be incorporated in the applied mulch. In addition, the applied mulch shall be weed free. Much should be from a local source in the form of bark, wood chips, or erosion-control fiber mat materials. The mulch should be applied at the recommended pounds/acre in such a way as to not suppress seed growth when the seeds start to germinate and to cover approximately 50 percent of the soil surface and should be anchored with the underlying soil.

4.5.2 Proposed Planting and Seeding Methods

4.5.2.1 Seed Mix

The following seed specifications for the four seed mixes will be followed to the extent practicable.

- Seed shall be provided by a qualified supplier and seed shall be collected from the project vicinity (within the same watershed or a 25-mile radius) to the extent feasible. Preferably, seed shall be legally collected from the immediate project area. All seed must be delivered to the site in sealed and labeled packaging along with a California State Agricultural Code seed certification including the supplier's name, geographic location and collection date, and the tested purity and germination percentage rates. The restoration ecologist will inspect the seed prior to its application onsite and shall reject seed lacking certified tags or not conforming to specifications.

- Seed application rates are provided in Tables **18**–**21**. If the delivered seed differs from specified purity and germination rates, the total pounds per acre rates shall be adjusted accordingly to achieve the specified pounds of pure live seed (PLS).

- Prior to seeding, the restoration ecologist will confirm that the seed bed is properly prepared. Site preparation shall include removal of weed species and weed litter/debris and trash, sufficient de-compaction and roughening (i.e., scarification) of the soil surface, and implementation of erosion-control materials where necessary, as described above. Seed shall be applied after site preparation, container plant installation, and the installation of any erosion-control measures (see above).

- The specified seed mixes for the riparian areas must be applied as dry-seed mixes. Hydro seed mixes tend to float when exposed to stream flows, transporting the seeds downstream. The riparian transitional and upland mixes can be applied as a hydro seed mix and can include natural

fiber mulch or bonded fiber matrix in the slurry for erosion control. The seeds will be ordered and delivered in separate, original containers by species and inspected by the restoration ecologist. The restoration ecologist will reject any seed that contains weeds or is otherwise not as specified.

4.5.2.2 Container Plants

Container plants will be used in conjunction with the seed mixes. The restoration ecologist will direct the final placement of container plants in the field. The following container plant specifications will be followed to the extent practicable.

- Container plants shall be provided by a qualified nursery and plants shall be propagated from propagules from the project vicinity (within a 10-mile radius) to the extent feasible. Preferably, plants shall be propagated from materials from the immediate project area. Plants shall be certified to be free of Argentine ants prior to delivery onsite.

- The restoration ecologist will confirm all plants are delivered to the site in a healthy and vigorous condition before they are installed. Larger container sizes are acceptable if approved by the restoration ecologist. The restoration ecologist will also help direct plant layout before they are installed.

Container Plant Installation Steps

1. Dig a hole 2 times as deep and 3 times as wide as the container. Break up soil clods and avoid a smooth-sided “bathtub” effect in the hole. Fill the planting hole with water and allow it to drain completely into the soil.

2. Partially backfill the hole with native soil to allow planting at the proper depth. Moisten and gently tamp the backfill into place. Remove the plant from its container and place on top of the moistened backfill so the plant collar is approximately 1 inch above finish grade. Then backfill the remaining hole with native soil.

3. Create a planting basin berm, roughly 2 feet in diameter around the plant, and apply 1 to 2 inches of coarse, organic, weed-free mulch inside the berm. Then water thoroughly and allow to drain.

4.5.3 Planting and Irrigation Plans

Upon approval of the final conceptual revegetation plan, habitat restoration construction planting plans and irrigation plans (i.e., construction bid documents) shall be prepared as separate sheets. The base drawing for the planting and irrigation plans shall include topography, grading with post-mining elevations, and drainage improvements as applicable. The habitat restoration construction plans

and specifications will include appropriate information including fencing locations and access gates, staging areas within approved impact areas, existing vegetation to remain (and be protected), grading limits and elevations, habitat mitigation and reclamation/revegetation limits, landscape planting layout and seeding sheets, and irrigation plans with system components and locations of water points of connection (POCs). Irrigation plans shall be prepared in accordance with the County's Water Conservation in Landscaping Ordinance (10427, April 2016). And landscaping and irrigation plans will be submitted to the County as part of the Final Revegetation Plan submittal for approval prior to implementation.

4.5.4 Planting Locations of Container Stock and Seeded Areas

See **Figure 8** for mitigation habitat planting locations (i.e., 114.46 acres). Planned enhancement areas will not be fully planted or seeded, and a temporary irrigation system is not planned for the enhancement areas. Additional information regarding container species, plant spacing and density (plants per acre) is included in **Tables 14** through **17**. And additional information regarding seed mixes, species and quantities is included in **Tables 18** through **21**.

4.6 Irrigation Plan

4.6.1 Proposed Irrigation Methods

Temporary irrigation for habitat mitigation areas will primarily be provided by an automated overhead spray system, which will be installed and operated within each of the four project phase areas. If automated overhead spray coverage cannot be feasibly extended to all planting areas, then other methods such as hand-watering and/or water truck applications may be employed. Additionally, the use of products that can slowly release water, such as water in nontoxic gel form (e.g., DriWater®) or polymers, may be used to reduce the amount of potential hand watering during plant establishment.

The overall intent is use irrigation judiciously and temporarily, as needed, to help establish the native plant habitats. Minimal use of irrigation will promote the establishment of hearty plants with well-developed root systems. In general, infrequent deep watering will be performed to promote deeper root development, as compared to frequent surface watering. During the 5-year post-installation period, irrigation is expected to be needed for approximately 3 years. Additional information on the irrigation schedule is included in Section 5.2.2. Once the habitats are established within a project phase area, irrigation will be phased out and discontinued and the system components will be removed and disposed of properly.

4.6.2 Irrigation Plan Points of Connection

There are currently water source connections at the southwest corner of the property. Additional water points of connection (POCs) will be identified or

established (e.g., from an existing water pipeline along El Monte Road) as needed and included on the landscape and irrigation construction plan sheets.

CHAPTER 5.0 MAINTENANCE DURING MONITORING

5.1 Maintenance Activities

Native plant care includes maintaining proper soil conditions, removing competing weed species, providing sufficient supplemental water, and identifying any significant disease or pest problems. Use of rodenticides is not proposed and is a prohibited activity in the biological open space easement. If herbivores are found to be a significant problem, plants in the affected area will be caged.

All dead container plants will be replaced “in-kind” at a 1:1 ratio at 3 months, 6 months, and yearly thereafter in the fall during the monitoring period in accordance with the project’s performance standards. Most replanting or reseeding will occur between October and May. The plants will be installed and the seed will be applied in accordance with steps provided herein.

5.1.1 Irrigation Maintenance Needs

The irrigation system will be tested by the maintenance contractor on a monthly basis throughout the first 2 years, quarterly in year 3, and as needed in years 4 and 5 (irrigation is not scheduled to be used in year 4 and 5 except as a contingency). All necessary repairs and replacement of spray heads will be made in a timely manner. The irrigation schedule will provide adequate water to maximize the survival of container plants and seeded species without creating conditions that promote nonnative species dependent upon constant moist soil conditions. The restoration ecologist will determine the need for changes in irrigation schedules in consultation with the maintenance contractor. An accurate record of these activities will be maintained during the maintenance and monitoring period.

5.1.2 Proposed Weeding Schedule

This section provides guidance and recommendations on invasive exotic (i.e., "noxious") species removal methods. For this plan, exotics are those species recognized by California Invasive Plant Council (Cal-IPC) and the University of California Statewide Integrated Pest Management Project. Weeding will be conducted at minimum of four visits will likely be adequate, with weeding conducted 2 to 3 times in the spring and once in the summer to adequately control exotics. The actual schedule should be flexible and be responsive to recruitment timing and infestation patterns.

Non-native (weed) plant control during the maintenance period will involve (1) eradication of resprouting non-natives that were initially cut or treated during the mitigation installation phase, and (2) eradication of target non-natives that establish during the maintenance and monitoring period. The primary non-natives that occur or have the potential to occur onsite are identified along with the proposed methods of control in **Table 22**. Information on life form, growth habitat, reproduction, and removal/eradication methods are provided from *Invasive*

Plants of California's Wildlands (Bossard et al. 2000), the Cal-IPC website, and the University of California Statewide Integrated Pest Management Project. These sources were reviewed for information on physical, biological (e.g., insects and fungi), and chemical/herbicide control methods. The potential control methods are presented here to help illustrate possible methods. The final methods chosen will be based on recommendations provided by a licensed Pest Control Advisor.

Some non-natives may be cut or hand-pulled (e.g., when they are small and the entire root system and/or stolons and rhizomes can be removed), but many species require herbicide application, sometimes in conjunction with cutting, to be eradicated in perpetuity. As required by law, the final recommendations for herbicide use will be made by a licensed Pest Control Advisor and applied under the supervision of a licensed Pest Control Applicator. If weed ecology information indicates herbicide application is necessary to eradicate certain species, then it is recommended that direct application (instead of foliar sprays) and selective herbicides be used. Most weeds should be eradicated before they reach 12 inches high or set seed. In accordance with some control recommendations, non-natives such as arundo and eucalyptus, for example, may have 3-foot- to 6-foot-high resprouts before receiving follow-up eradication treatment. All weeds should be eradicated by hand or herbicide treatment each season before they set seed. All weed debris will be properly disposed of offsite; no parts of any treated non-native must remain on the site.

Invasive plant species will be controlled within the habitat mitigation revegetation restoration areas and enhancement areas throughout the duration of the monitoring period. The goals of the weed eradication program are to (1) comply with project and permit conditions; (2) ensure early achievement of habitat creation/enhancement performance standards; and (3) reduce maintenance costs. At a minimum, the following weed removal methods should be included in the implementation specifications.

- Weed removal shall be performed predominantly by hand (and hand tools), but herbicides can be used under certain conditions to eradicate noxious weeds. The herbicide Rodeo® should be acceptable in most situations and shall be applied by a licensed applicator.

- All weeds shall be removed prior to planting within the revegetation restoration mitigation areas. Pulled weeds with flowers or seed heads shall be transported offsite immediately to prevent onsite seed dispersal.

- Weed eradication shall continue during planting and seeding within the habitat restoration areas and during the post-installation and monitoring periods within the restoration and enhancement mitigation areas, as necessary.

- Weed seedlings and sprouts within the area shall be continually removed before they attain 12 inches in height or before they produce seed, whichever is first.

- The restoration ecologist shall monitor weed eradication and exotic species removal at all times throughout the year.

Nonnative (weed) species are divided between aggressive, invasive exotics, which can out-compete desirable native species if not controlled, and more benign weed species, which tend to fade away as native species become established. Invasive exotics will be eradicated wherever they occur in or adjacent (i.e., within 10 feet) to the revegetation areas. Invasive exotics include, but are not limited to, fennel (*Foeniculum vulgare*), tamarisk (*Tamarix* spp.), arundo (*Arundo donax*), pampas grass (*Cortaderia* ssp.), star-thistle (*Centaurea* ssp.), and wild artichoke (*Cynara cardunculus*). Other weeds such as mustard (*Brassica* ssp.), clover (*Melilotus* ssp.), and horseweed (*Erigeron* ssp.) need to be removed when they proliferate beyond acceptable levels and/or are inhibiting development of native plants. The restoration ecologist will coordinate with the maintenance contractor to identify weed species that must be eradicated. A licensed Pest Control Advisor will supervise the use of herbicide (e.g., for certain invasive exotics).

Table 22 summarizes potential problem weeds and control methods.

5.1.3 Proposed Pruning Program/Restrictions

Pruning is not currently proposed but is not otherwise restricted. For example, pruning of some existing mature plants may be necessary or desirable to allow establishment of young plants between them. The use of pruning will be at the discretion of the restoration ecologist but is not likely to occur in the 5-year maintenance and monitoring period.

5.1.4 Proposed Trash Removal Program

As necessary, trash will be removed by hand from the mitigation areas. This includes trash left by mitigation work or trash deposited in the mitigation areas by wind or human action. Trash will be legally disposed of offsite.

5.1.5 Proposed Pest Control Program

Herbivory cages will be used as necessary.

Table 22
Target Exotic Species (Observed or Potential) and Control Methods

Species	Life Form	Growth Habitat	Reproduction	Potential Control Methods
Arundo (*Arundo donax*) also known as giant reed	perennial grass	erect to >20 feet tall (rhizomatous)	roots and rhizomes	spraying or direct treatment of glyphosate to cut stems between late spring and fall; remove all rhizomes
Bassia (*Bassia hyssopifolia*)	annual chenopod	erect to 1 to 3 feet tall (rhizomatous)	seed	hand pulled, or application of herbicide such as dicamba, 2, 4-D
Bermudagrass (*Cynodon dactylon*)	perennial grass	prostrate, less than 1 foot high	seed and vegetatively	Solarizing (place polyethylene plastic on top for 6 to 8 weeks in the summer to cook soil and destroy seeds and plants), or applying post-emergent herbicide to leaves and stems when they are growing vigorously from spring to late summer
Black mustard and Field mustard (*Brassica nigra* and *B. rapa*)	annual herbs	erect 1 to 4 feet tall	seed	hand pulling when feasible, or herbicide application before it flowers
Brome grasses and Wild Oats (*Bromus* ssp. and *Avena* ssp.)	annual grasses	erect 0.5 to 2 feet tall	seed	hand pulling or herbicide application (glyphosate or other approved) in spring before seed set
*Castor-bean (*Ricinus communis*)	perennial shrub	erect, branching 5 to 15 feet tall	seed	hand pulling is effective if the majority of root system is removed, or cut-stump treatment with application of 25% glyphosate
Crystalline iceplant (*Mesembryanthemum crystallinum*)	succulent perennial	prostrate, creeping	vegetatively and by seed	hand pulled ensuring all live shoot segments must be removed, or application of glyphosate at concentrations of 2% or higher with surfactant
Curly dock (*Rumex crispus*)	perennial	erect 2 to 5 feet tall	seed	hand pulling when feasible, or herbicide application
Globe chamomile (*Oncosiphon piluliferum*)	annual herb	erect 1 to 3 feet tall	seed	hand pulling when feasible, or herbicide application
Horseweed (*Erigeron canadensis*)	annual herb	erect 2 to 10 feet tall	seed	hand pulling when feasible, or herbicide application
London rocket and tumble mustard (*Sisymbrium irio* and *S. altissimum*)	annual herb	erect 2 to 4 feet tall	seed	hand pulling or mowing when feasible, or herbicide application
Mexican fan palm (*Washingtonia robusta*)	perennial tree	erect 60 to 100 feet tall	seed	cutting main stem to remove apical meristem

Species	Life Form	Growth Habitat	Reproduction	Potential Control Methods
Pampas grass (*Cortaderia* ssp.)	perennial grass	erect 6 to 8 feet tall	seed (root crown resprouts)	physically remove ensuring the entire crown and top sections of roots are removed, or treatment with a post-emergent application of glyphosate at about a 2% solution with surfactant
Redstem filaree (*Erodium cicutarium*)	winter annual or biennial herb	spreading or erect, generally from a rosette	seed	pre-emergence application of napropamide in early fall or post-emergence applications of glyphosate, 2.4-D, or paraquat late fall through spring
Puncturevine (*Tribulus terrestris*)	annual herb	Prostrate, close to ground	seed	hand pull to remove taproot; can treat with pre-emergent herbicide or post-emergent herbicide such as glyphosate
Russian thistle (*Salsola tragus*)	summer annual herb	erect, forming rounded shrub-like shape 1.5 to 6 feet in diameter	seed	hand pulling, mowing, or herbicide application during early growth stage before it becomes hardened and starts producing spiny branches.
Sahara mustard (*Brassica tournefortii*)	winter annual	erect 1 to 4 feet tall	seed	Hand pulling or herbicide application several times per season before seed set; mowing or weed whipping not recommended because plants may grow back
Stinkwort (*Dittrichia graveolens*)	late season annual herb	erect 1-3 feet tall	seed	hand pulling or herbicide application early in growth stage before it sets seed; must be treated multiple times throughout season
Sweet fennel (*Foeniculum vulgare*)	perennial herb	erect 4 to 10 feet tall	seed or root crown	apply amine and ester formulations of triclopyr or glyphosate in spring
Tree tobacco (*Nicotiana glauca*)	perennial shrub	erect 6 to 15 feet tall	seed	hand pull if the root system can be removed, or cut and apply triclopyr or glyphosate.
Tocalote (*Centaurea melitensis*)	annual herb	erect 2 to 3 feet tall	seed	repeated mowings at 3-week intervals, or spring or fall application of herbicide
White clover and Indian clover (*Melilotus albus* and *M. indicus*)	annual herbs	erect 2 to 5 feet tall	seed	hand pulling when feasible, or herbicide application before it flowers
Wild radish (*Raphanus sativus*)	annual herb	erect 1 to 3 feet tall	seed	hand pulling when feasible, or herbicide application before it flowers

5.2 Schedule

5.2.1 Proposed Maintenance Schedule

The proposed maintenance schedule applies to each habitat mitigation restoration phase and is as follows:

Task	Occurs in/Completed by
Initial Onsite Meeting after Installation	December
Begin 120-Day Establishment Period	January
End 120-Day Establishment Period	April
Begin 5-Year Maintenance Period	April
Replacement Planting (Year 1)	February
Replacement Planting (Year 2)	February
Shut-Off Artificial Irrigation	January 3rd year
Replacement Planting (Year 3)	February
Replacement Planting (Year 4)	February
Replacement Planting (Year 5)	February
End of 5-Year Maintenance Period	December 5th year

5.2.2 Proposed Irrigation Schedule

The general proposed irrigation schedule will mimic natural patterns of rainfall and help provide enough water to ensure soil moisture levels are similar to what occurs during an average to above-average rainfall year. In the winter and early spring months, irrigation will be used to augment natural rainfall patterns; and in summer months, irrigation will be used as needed on a limited basis to help keep young vegetation alive. To promote deep root growth, periodic deep water applications (e.g., to a depth of 6-8 inches or more) are preferred to frequent light water applications. The restoration ecologist and maintenance contractor will coordinate and adjust the watering schedule during the maintenance period depending on factors such as plant size and health, and weather conditions. An accurate record of these activities will be maintained during the maintenance and monitoring period.

It is planned that temporary irrigation will be used in the revegetation and mitigation areas within the different phases for up to three years of the scheduled 5-year post-installation establishment period. A goal of the revegetation program is to have the restored habitat areas persist and be self-sustaining without temporary irrigation for at least two years before the 5-year establishment period is considered complete.

5.2.3 Proposed Timing for Irrigation System Removal

Once the restoration ecologist in consultation with County and resource agencies determines the mitigation habitats are established and self-sustaining, temporary irrigation can be phased out and discontinued. At that time, all system components (i.e., laterals, spray heads, valve boxes, etc.) will be removed. Components, depending on their condition, can either be reused or recycled, or disposed of properly. All removal work will be conducted outside the breeding season (i.e., breeding season is February 15-September 15), unless a qualified biological monitor determines that nesting birds and other species would not be adversely affected.

CHAPTER 6.0 MONITORING PLAN FOR THE COMPENSATORY MITIGATION SITE

6.1 Performance Standards for Target Dates and Success Criteria

6.1.1 Success Criteria

Performance standards are provided to ensure the mitigation areas achieve desirable native habitat characteristics within 5 years. The performance standards are based on the well-established general composition of native habitats, experience on similar projects, and reasonable expectations regarding the condition of restored and enhanced habitats after 5 years. Attainment of the desired plant composition and cover is expected to result in significant improvement in habitat functions onsite. Yearly performance standards are also provided as milestones to determine whether the mitigation is on an adequate trajectory and whether planting and/or seeding, or other remedial measures are necessary to meet final performance standards. A combination of horticultural, botanical, and functional assessment monitoring results will determine whether performance standards are being met and what, if any, remedial measures need to be implemented to meet the final performance standards. Performance standards and potential remedial measures for the vegetated channel and riparian mitigation areas are presented in **Table 23**, and performance standards for coastal sage scrub mitigation are presented in **Table 24**. Based on monitoring results, the restoration ecologist, County and resource agency personnel will determine when performance standards have been achieved during the milestone periods.

The revegetation restoration mitigation areas will be considered successful at the end of the 5-year monitoring and maintenance period when the areas achieve:

- Have no more than 10 percent relative cover of targeted exotic species
- Have <1 percent cover of high-risk invasive species (species defined by California Invasive Plant Council as “High” threat to California wildlands; http://www.cal-ipc.org/)
- Have no less than 65 percent absolute cover of native species

The enhancement mitigation area will be considered successful at the end of the five-year monitoring and maintenance period when the areas achieve:

- Have no more than 10 percent relative cover of targeted exotic species
- Have <1 percent cover of high-risk invasive species (species defined by California Invasive Plant Council as “High” threat to California wildlands; http://www.cal-ipc.org/)

- Exhibit natural recruitment of alluvial fan scrub species adapted to the site conditions in areas where exotic and invasive species are controlled and removed (a quantified threshold of recruitment is not provided because of the ephemeral conditions and sandy substrate, but a positive trend of native plant recruitment and native plant cover development must be documented during the 5-year maintenance and monitoring period)

Table 23
Performance Standards and Potential Remedial Measures for Vegetated Channel and Riparian Habitats

Milestone	Performance Standards[1/2]	Remedial Measures
Initial Exotics Removal and Seed and Plant Installation	• All target perennial exotics removed or killed in place; • Areas free of debris and decompacted as necessary; • No erosion potential or trash; areas designated for restoration planting and seeding are planted and seeded.	Control remaining perennial exotics; Remove debris and de-compact soil; Repair erosion and/or remove trash
120-Day Establishment Period	• All target exotics removed or killed in place; • Areas free of debris and de-compacted; • No erosion or trash; • 90% survivorship of container plants.	Control remaining perennial exotics; Remove debris and de-compact soil; Repair erosion and/or remove trash; dead plants replaced as deemed necessary by the restoration ecologist
Year 1	• Control of all target exotics (<5% cover) and overall nonnative plant cover under 15%; • Total native cover in restoration areas of 15%; • No significant erosion or trash; • 80% survivorship of container plants.	Intensify exotics and weed control; Repair erosion and/or remove trash
Year 2	• Control of all target exotics (<5% cover) and overall nonnative plant cover under 10%; • Total native cover in restoration areas of 30%; • No significant erosion or trash	Intensify exotics and weed control; If necessary, plant and/or apply seed; If necessary, provide or improve irrigation methods; Repair erosion and/or remove trash
Year 3	• Control of all target exotics (<5% cover) and relative nonnative plant cover of under 10%; • Germination of 50% of seeded species in vegetated channel and riparian habitat seed mixes; • Total native cover (including volunteers) of at least 45% in restoration areas; • No significant erosion or trash	Same as above, as necessary
Year 4	• Control of all target exotics and relative nonnative plant cover not to exceed 10%; • <2% cover high-risk invasives • Total absolute native cover (including volunteers) of 55% in restoration areas; • No significant erosion or trash	Same as above, as necessary (except no irrigation)

Milestone	Performance Standards[1/2]	Remedial Measures
Year 5	• Control of all target exotics and absolute nonnative cover not to exceed 10%; • <1% cover high-risk invasives • Total absolute native cover of 65% (including volunteers); • No significant erosion or trash	Same as above, as necessary (except no irrigation)

1 Based on horticultural and botanical monitoring results and photographic documentation, the restoration ecologist, County and resource agency personnel will determine when performance standards have been achieved.
2 All performance standards apply to restoration mitigation areas that are planted and seeded and receive temporary irrigation within the mining footprint. Whereas, just the standards pertaining to control and cover of exotic and invasive species apply to the enhancement mitigation areas outside the mining footprint.

Table 24
Performance Standards and Potential Remedial Measures for Coastal Sage Scrub Habitat

Milestone	Performance Standards[1]	Remedial Measures
Initial Exotics Removal and Seed and Plant Installation	• All target perennial exotics removed or killed in place; • Areas free of debris and de-compacted as necessary; • No erosion potential or trash; areas designated for restoration planting and seeding are planted and seeded.	Control remaining perennial exotics; Remove debris and de-compact soil; Repair erosion and/or remove trash
120-Day Establishment Period	• All target exotics removed or killed in place; • Areas free of debris and de-compacted; • No erosion or trash; • 90% survivorship of container plants.	Control remaining perennial exotics; Remove debris and de-compact soil; Repair erosion and/or remove trash; dead plants replaced as deemed necessary by the restoration ecologist
Year 1	• Control of all target exotics (<5% cover) and overall nonnative plant cover under 15%; • Total native cover in restoration areas of 10%; • No significant erosion or trash; • 80% survivorship of container plants.	Intensify exotics and weed control; Repair erosion and/or remove trash
Year 2	• Control of all target exotics (<5% cover) and overall nonnative plant cover under 10%; • Total native cover in restoration areas of 20%; • No significant erosion or trash	Intensify exotics and weed control; If necessary, plant and/or apply seed; If necessary, provide or improve irrigation methods; Repair erosion and/or remove trash
Year 3	• Control of all target exotics (<5% cover) and relative nonnative plant cover of under 10%; • Germination of 50% of seeded species in CSS seed mix; • Total native cover (including volunteers) of at least 35% in restoration areas; • No significant erosion or trash	Same as above, as necessary

Milestone	Performance Standards[1]	Remedial Measures
Year 4	• Control of all target exotics and relative nonnative plant cover not to exceed 10%; • <2% high-risk invasives • Total absolute native cover (including volunteers) of 50% in restoration areas; • No significant erosion or trash	Same as above, as necessary (except no irrigation)
Year 5	• Control of all target exotics and absolute nonnative cover not to exceed 10%; • <1% high-risk invasives • Total absolute native cover of 65% (including volunteers); • No significant erosion or trash	Same as above, as necessary (except no irrigation)

[1] Based on horticultural and botanical monitoring results and photographic documentation, the restoration ecologist and County personnel will determine when performance standards have been achieved.

6.1.2 Adaptive Management Program and Remedial Actions

If restoration mitigation areas within the mining footprint are not meeting performance standards, then those areas will be reseeded and possibly planted as needed per the direction of the restoration ecologist. Most planting or reseeding should occur between October and February. If the enhancement mitigation areas outside the mining footprint are not meeting performance standards, then control and removal of exotic and invasive species will be increased per direction of the restoration ecologist. The results of horticultural and botanical monitoring will determine whether mitigation performance standards are being met and if remedial measures are necessary.

6.2 Target Functions and Values

A high-diversity container plant palette and seed mix will be applied in the coastal sage scrub mitigation areas after mining phases are complete. The primary target functions and values are related to improved habitat conditions and an increase in cover and composition sufficient to provide foraging, nesting, and corridor functions. While it is not an explicit goal of the mitigation, creating suitable habitat (approximately 50.5 acres) to attract nesting coastal California gnatcatchers is a desired outcome of the mitigation. Control of non-native weeds will continue throughout the 5-year maintenance and monitoring period. Herbicide control will be used as needed.

High-diversity container plant palettes and seed mixes will be applied in the vegetated channel, riparian forest and riparian scrub mitigation areas after mining phases are complete. The revegetated channel and riparian areas will be sustained by both surface and groundwater hydrology (i.e., during years when the groundwater is higher). The hydrologic regime resulting from implementation of the project is anticipated to be suitable for the target habitats because the

mining excavation will reduce the relative depth to groundwater and result in surface elevations that will be subject to periodic flooding by at least a discharge equaling the mean annual flood. The periodic flood frequency and decreased depth to groundwater are expected to provide the hydrology necessary to support riparian and transitional riparian/upland vegetation. The structure and species composition of the riparian habitat restoration component will be designed to provide suitable habitat (approximately 126 acres) for the least Bell's vireo, which was observed in 2010 in riparian habitat just upstream and downstream of the impact area. The planting plan reflects this goal by providing appropriate spacing and structural diversity and continued habitat maintenance and monitoring will ensure that invasive species are controlled.

6.3 Target Hydrological Regime (Wetlands Only)

The target hydrologic regime is overbank flooding during discharges exceeding the mean annual flood (by definition a recurrence interval of 2.33 years) and seasonally high groundwater table. The hydrology of riverine and riparian systems, however, is highly variable in space and time. An exact and certain description of a specific target hydrologic regime is therefore not practicable. The site should periodically exhibit observable signs of riparian hydrology. However, if the site is not performing to standards set forth in Chapter 6 and hydrology (or lack of it) is suspected as a problem, staff gauges and monitoring wells may be installed to construct hydrographs and determine the hydrologic equivalency of the natural and created riparian habitats. This section presents a general discussion of the potential sources of riparian habitat hydrology along with strategies to ensure the target hydrologic regime can be met.

Implementation of the Mining Component of the proposed project would lower the existing channel bed by approximately 36 to 41 feet below the current ground surface within the channel. The final reclaimed surface would consist of a recontoured valley with side slopes generally with a gradient of 3:1. The finished grades of the mining component would result in groundwater levels that would be expected to support riparian habitat that includes transitional riparian/upland species. Grading during each mining phase would be designed to ameliorate the effects of flooding (should it occur) and attenuate flood flows through the project area. Grading plans for the proposed project also include grading features to accommodate offsite drainage from tributary drainages that discharge onto the project area.

Periodic (anticipated to be rare) overbank flooding and the groundwater in the area are the anticipated sources of riparian hydrology for the mitigation areas. The excavation of the project area plays an important role in achieving the target hydrologic regime. Implementation of the mining component will lower the river banks and create a broader floodplain. The riparian mitigation areas will be graded such that any discharge in excess of the mean annual flood will overbank the restored channel banks. It is anticipated that the riparian forest mitigation habitat will experience some periodic flooding, although less frequently than the

riparian scrub mitigation areas. Inundation of the riparian forest mitigation areas will likely be restricted to high discharge, infrequent flood events.

6.4 Target Acreages

Once mining and physical reclamation is complete, habitat mitigation activities and reclamation/revegetation would be implemented, resulting in the restoration of functional and self-sustaining riparian/wetland and coastal sage scrub habitats. The final reclaimed surface would consist of a recontoured valley with side slopes generally with a gradient of 3:1. The finished grade of the excavated basin would result in groundwater levels that would be expected to support riparian habitats with transitional riparian/upland species. The proposed Revegetation Plan is depicted in **Figure 8** and target acreages of habitat mitigation and reclamation/revegetation can be found in the legend of **Figure 8** and in **Table 10**.

6.5 Monitoring Methods

The monitoring program will consist of qualitative horticultural monitoring, quantitative botanical monitoring, and a functional assessment as described in the following pages.

6.5.1 Qualitative Methods

An experienced restoration ecologist will perform qualitative horticultural monitoring, which will focus on soil conditions (e.g., moisture and fertility), container plant health and growth, seed germination rates, presence of native and non-native plant species, any significant disease or pest problems, and any erosion problems. The goal of this monitoring is to proactively assess site conditions in order to address items before they become a problem. Another important feature of this monitoring effort is to coordinate with the maintenance contractor to exchange information, provide feedback, and agree on priority maintenance items and potential remedial measures during different stages of the mitigation work to ensure that the restoration project meets the success criteria.

During the qualitative surveys the restoration ecologist will (1) visually estimate composition and overall cover, (2) document (by species and strata) evidence of natural recruitment, and (3) estimate container plant and cutting mortality and survivorship. The restoration ecologist will identify potential soil erosion, flood damage, vandalism, weeds, and pest problems. Plant and irrigation maintenance needs will be recorded on standard maintenance checklists and sent to the maintenance contractor and the Owner.

The restoration ecologist will develop a horticultural monitoring form to be filled out during each site inspection. The restoration ecologist must retain copies of all checklists and field notes in order to compile monitoring reports. Any problems identified by the restoration ecologist will be immediately brought to the attention

of the maintenance contractor and the Owner, with corrective measures taken within 2 weeks of identifying the problem.

6.5.2 Quantitative Methods

The goal of quantitative botanical monitoring is to determine success of the mitigation habitats by measuring a trend in the species distribution and richness for the duration of the monitoring period. Methods may consist of container plant survival counts (where applicable), 50-meter point-intercept transects, and quadrats at certain points along the transect using the field sampling protocol designed by the California Native Plant Society (Sawyer and Keeler-Wolf 1995) or other appropriate sampling method. Number and position of permanent transects will be placed at the discretion of the restoration ecologist; however, USACE reserves the right to adjust the number and/or location of transects to ensure an unbiased sample. Each permanent transect must be identified on a map, staked in the field, and photographed, in order to reestablish transects should the stakes be removed. The restoration ecologist will record 'hits' for tree, shrub, and herbaceous vegetation by species and strata along each transect.

Along the established transects, permanent quadrat sampling will be done at set intervals in addition to recording plant species at each 0.5-meter interval. The restoration ecologist will set the intervals of the quadrats to ensure adequate coverage; however, a minimum of four 1-square-meter quadrats per selected transect is recommended. Percent cover, species composition, mortality, and number of natural recruits of all plant species will be recorded within each quadrat. Quadrat monitoring yields best results if restricted to upland restoration monitoring; tree canopy is best monitored using point-intercept transects.

The intention of the monitoring method is to adequately sub-sample a stratified sample of 10 to 30 percent of the study area. The final sampling design and method will be developed by the restoration ecologist and described in the first monitoring report.

Container plant survival counts, if applicable, will be performed once per year in late spring, so any necessary replacement planting can be subsequently organized and implemented in the fall and winter. All container plants will be inspected and a list of dead plants will be provided to the contractor. Based on a determination by the restoration ecologist, dead container plants do not need replacement if native plant recruitment (within approximately 2 feet of the dead container plant) is providing equivalent biological value.

6.5.3 Functional Assessment Methods

As required by USACE for compensatory mitigation monitoring, a functional assessment will be conducted within the riparian/wetland habitat mitigation areas using the Riverine module. The California Rapid Assessment Method (CRAM) is proposed. The overall goal of CRAM is to provide rapid, scientifically defensible,

standardized, cost-effective assessments of the status and trends in the condition of wetlands throughout California. CRAM involves conducting a survey to assign values to metrics and sub metrics that result in scoring for attributes: buffer and landscape context, hydrology, physical structure, and biotic structure. The four attribute scores are then summed to provide a total score for a particular Assessment Area (AA). AAs conducted as part of the CRAM Riverine module are established along channel segments (up to 200 meters long) and the survey includes the floodplain on both sides of the channel. Conducting a baseline survey assessment (e.g., prior to or at the start of the mitigation program) and then conducting periodic assessments during a monitoring program will provide data and trends regarding which attributes and functions are improving. It is proposed when the baseline assessment is conducted that maximum future post-restoration scores be projected to establish goals for the 5-year monitoring program.

For the buffer and landscape attribute, the landscape connectivity metric and buffer metric are not expected to change substantially because the offsite areas adjacent to the project are not expected to change significantly. However, the buffer conditions of the AAs within the site are expected to improve with implementation of the mitigation restoration. The hydrology attribute is expected to change positively because the project riparian/wetland areas will be closer to groundwater (compared to the existing condition) and a natural water source and hydrologic connectivity should be improved because it is expected there will be a larger floodplain closer to the main channel that will have increased soil moisture (compared to the existing condition). Physical structure and structural patch richness (the number of different obvious types of physical surfaces or features that may provide habitat for species) can be improved by creating physical variability in the channel dimensions (sinuousity and micro-pools) and topographic variability within the floodplain, which can be accomplished during soil recontouring (after mining) and site preparation. The biotic structure attribute can be improved by an increase in the diversity of plant layers (strata), number of co-dominants, percent invasion of native volunteers, and a greater diversity of vertical and horizontal structure and interspersion (the variety of plant zones creating a mosaic along environmental gradients). The proposed project plant palettes and seed mixes will improve the diversity of plant layers and co-dominants (compared to the existing condition), and improved structure and interspersion can be accomplished with how the plants are laid-out on the final landscape plans and in the field by the project's restoration ecologist.

It is proposed that CRAM AAs be surveyed after post-mining site recontouring, but before planting and seeding, to establish baseline scores. And it is proposed subsequent surveys be conducted during Year 3 and Year 5 of the mitigation monitoring program. CRAM is not sensitive enough in terms attribute scoring and detecting change to merit a CRAM survey every year of the monitoring program. The proposed success standards for the riparian/wetland mitigation after 5 years are to:

- Exhibit a positive increase and trend in CRAM scores for the riparian/wetland mitigation areas during the 5-year monitoring period; and

- Attain CRAM assessment scores for the riparian/wetland mitigation areas equal to or approximately 90 percent of the projected post-revegetation maximum, and/or a determination the site is on track to meet the maximum projected scores.

6.5.4 Photographic Documentation

Progress of the mitigation areas will be documented with photographs. Each quantitative monitoring visit will include photo documentation of each transect. Photos will be taken from the same vantage point in the same direction at each visit to show a successional trend. All photo documentation points and directions will be mapped and included in the monitoring reports. Photographs from the same viewpoints will be taken each year at the same time of year, either in the late spring/early summer.

High-resolution, color or infrared aerial photography could also be used to document mitigation progress. Infrared aerial photographs can help distinguish between nonnative (e.g., pampas grass and acacia) and native species. Aerial photographs can also help track canopy growth and coverage over time. If possible, aerial photographs should be taken before and after exotics removal and then again at the end of the 5-year maintenance and monitoring program.

6.6 Monitoring Schedule

6.6.1 Proposed Monitoring Schedule and Success Criteria

A monitoring year begins on January 1. Qualitative monitoring will occur monthly for the first year, bimonthly for the second year, and quarterly thereafter. Quarterly visits for qualitative monitoring will occur in March, June, September, and December of each monitoring year.

Quantitative monitoring and photo-documentation will occur once annually. Quantitative monitoring will occur in September of each monitoring year for riparian habitats and March/April/May for grassland and scrub habitats. Exact timing of quantitative monitoring will depend upon rainy season conditions and preferred timing to collect representative data annually. Annual reports for a given monitoring year will be submitted to the agencies in February following the monitoring year.

6.6.2 Monitoring Term

The monitoring term is anticipated to be 5 years. A reduction in the 5-year monitoring may be permitted if success criteria are met in less than 5 years. All monitoring periods begin at the end of the establishment period for each mining

phase. Restored mitigation habitats must be off artificial irrigation for at least two growing seasons prior to sign off and release of short-term responsibilities.

6.7 Monitoring Reports

6.7.1 Submission of Monitoring Reports

The restoration ecologist will prepare annual monitoring reports that will include horticultural and botanical monitoring results, photographic documentation, an assessment of mitigation progress relative to performance standards, and a review of maintenance activities and any remedial measures (e.g., supplemental planting) undertaken during the year. Each report shall include a qualitative and quantitative analysis and compare monitoring results for each monitoring year. Monitoring and maintenance field data shall be included as an addendum to each report.

The monitoring reports shall be submitted to the County as follows:

Year 1: Year-End Report

Year 2: Annual Report

Year 3: Annual Report

Year 4: Annual Report

Year 5: Annual Report

Reports shall be submitted to the resource agencies and the County no later than the last week of January.

6.7.2 Contingency Remediation Requirement

Any significant issue or contingency that arises on the job site (e.g., plant survival issues, herbivory, pest invasions, fire, erosion, or flooding) shall be reported in writing to the resource agencies and the County within 2 weeks from the date of the incident. Accompanying the report shall be a plan for remediation, with an implementation schedule and a monitoring schedule.

CHAPTER 7.0 COMPLETION OF COMPENSATORY MITIGATION

7.1 Notification of Completion

The Owner or their agent will notify the resource agencies and the County in writing that the 5-year mitigation monitoring program has been completed for a phase and request concurrence that the performance standards have been met. The revegetation restoration mitigation sites must be off artificial irrigation for at least two growing seasons prior to final approval. The mitigation habitats (i.e., revegetation restoration areas and enhancement areas) which total 178.08 acres for the mine project and 0.54 acre for the previous golf course project shall be placed in a permanent biological open space easement (or similar instrument) and be protected in perpetuity. The Owner will be responsible for the long-term management of the mitigation sites.

7.2 Agency Confirmation

Following receipt of Notification of Completion, the resource agencies may visit the riparian/wetland /or upland mitigation area phases to confirm completion of mitigation.

CHAPTER 8.0 CONTINGENCY MEASURES

8.1 Initiating Contingency Procedures

If an annual performance criterion is not met for any phase of the mitigation program in any year, or if the final performance standards are not met, the Owner will be responsible for preparing an analysis of the cause(s) of failure, and proposing remedial action for approval by the resource agencies. If the mitigation habitat areas have not met the performance standards, maintenance and monitoring obligations will continue until the standards are met and the resource agencies issue a confirmation of final project approval.

8.2 Alternative Locations for Contingency Compensatory Mitigation

There are no alternative locations for contingency mitigation currently identified. Alternative locations to be considered if the mitigation areas are considered inappropriate include an approved mitigation bank.

8.3 Funding

The Owner will be responsible for funding any contingency measures.

CHAPTER 9.0 REFERENCES

AECOM. 2018. Groundwater Evaluation Technical Memorandum. El Monte Sand Project, Lakeside, San Diego County, California.

Bossard, CC., J. M. Randall, and M.C. Hoshovsky. 2000. Invasive Plants of California's Wildlands. University of California Press. Berkeley and Los Angeles, California.

County of San Diego. 2010. Guidelines for Determining Significance, Biological Resources: Land Use and Environment Group, Department of Planning and Land Use, Department of Public Works, 4th revision, September 15, 2010.

County of San Diego. 2011. San Diego County General Plan, adopted 3 August 2011, Chapter 3: Land Use Element.

County of San Diego. 2016. Water Conservation in Landscaping Ordinance. Ordinance No.: 10427. April 27.

Environmental Science Associates (ESA). 2018a. Reclamation Plan for the El Monte Sand Mine Project. August.

Environmental Science Associates (ESA). 2018b. Biological Resources Report for the El Monte Sand Mining Project. August.

Rosenberg, McCully and Pringle. 2000. Global-Scale Environmental Effects of Hydrological Alterations. *BioScience, 50* (9). September.

Sawyer, J.O., and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society.

Shang, Mao. 2010. Determination of minimum flood flow for regeneration of floodplain forest from inundated forest width-stage curve. *Water Science and Engineering, 3* (3), 257-268. September.

United States Geological Survey (USGS). 2017. El Monte Sand Mining Project – Suggestions for Herpetofaunal Mitigation Plan. September.