Attachment B.

Revegetation Plan

HELIX Environmental Planning

Cottonwood Sand Mine

Conceptual Revegetation Plan

November 2021 | 02975.00002.002

PDS2018-MUP-18-023
PDS2018-RP-18-001
PDS2018-ER-18-19-007

Prepared for:

County of San Diego
Planning & Development Services
5510 Overland Avenue, Suite 310
San Diego, CA 92123

Prepared for:

New West Investment Group, Inc.
565 N. Magnolia Avenue
El Cajon, CA 92020

Sally Trnka
County-approved Revegetation
Planning Consultant

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

This page intentionally left blank

Cottonwood Sand Mine Project

Conceptual Revegetation Plan

PDS2018-MUP-18-023
PDS2018-RP-18-001
PDS2018-ER-18-19-007

Prepared for:

County of San Diego
Planning and Development Services
5510 Overland Avenue, Suite 310
San Diego, CA 92123

Project Proponent:

New West Investment Group, Inc.
565 N. Magnolia Avenue
El Cajon, CA 92020

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

November 2021 | 02975.00002.002

This page intentionally left blank

TABLE OF CONTENTS

TABLE OF CONTENTS (cont.)

TABLE OF CONTENTS (cont.)

LIST OF FIGURES

TABLE OF CONTENTS (cont.)

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
BTR	Biological Technical Report
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CFG	California Fish and Game
County	County of San Diego
CWA	Clean Water Act
CWMW	California Wetlands Monitoring Workgroup
CY	cubic yards
DCSS	Diegan Coastal Sage Scrub
GPS	global positioning system
ft	feet
HELIX	HELIX Environmental Planning, Inc.
m	meter
MSCP	Multiple Species Conservation Program
MUP	Major Use Permit
NRCS	Natural Resources Conservation Service
PAMA	Pre-Approved Mitigation Area
POC	Point of Connection
Project	Cottonwood Sand Mine Project
RPO	Resource Protection Ordinance
RWQCB	Regional Water Quality Control Board
SDG&E	San Diego Gas & Electric
SDNWR	San Diego National Wildlife Refuge
SHBs	shot-hole borers
SMARA	Surface Mining and Reclamation Act
SR	State Route
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

This page intentionally left blank

1.0 INTRODUCTION

This report presents a revegetation plan for impacts resulting from the Cottonwood Sand Mine Project (project) located in the unincorporated community of Rancho San Diego in eastern San Diego County, California. This plan addresses revegetation of areas temporarily impacted as part of mining activities pursuant to the Surface Mining and Reclamation Act (SMARA) and Sections 1810 and 6550-6556 of the County of San Diego (County) Zoning Ordinance, as well as restoration of wetland buffer areas disturbed as part of mining activities in accordance with Section 86.605(d) of the County's Resource Protection Ordinance (RPO) requirements (County 2011). Included in this document is an implementation, maintenance, and monitoring plan for the on-site revegetation of approximately 109.51 acres of wetland and riparian associated habitat, 11.91 acres of Diegan coastal sage scrub (DCSS) habitat, and 96.09 acres of stabilized non-sensitive uplands. This report has been prepared in conformance with the County's Report Format and Content Requirements for Revegetation Plans (County 2007).

Revegetation is proposed to ensure that areas disturbed as part of mining activities are reclaimed (i.e., adequately revegetated and stabilized) in accordance with SMARA and County requirements, and that existing wetland buffer areas are appropriately restored pursuant to the County RPO (County 2011). A portion of the reclaimed site will also provide compensatory mitigation for impacts to wetland and water resources under the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (CWA; 33 USC 1344), Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the CWA, and California Department of Fish and Wildlife (CDFW) pursuant to Sections 1600 et seq. of the California Fish and Game (CFG) Code, and to areas considered County RPO wetlands. Restoration of the mitigation area is addressed separately from this plan within the project's Conceptual Wetland Mitigation Plan (HELIX Environmental Planning, Inc. [HELIX] 2021a). The wetland mitigation area and native revegetation areas will be concurrently preserved within the project's biological open space area.

Nomenclature used in this report follows Holland (1986) and Oberbauer (2008) for vegetation; Jepson eFlora (2020) and Baldwin et al. (2012) for plants; Pelham (2020) and Davenport (2018) for butterflies; Society for the Study of Amphibians and Reptiles (2020) for reptiles and amphibians; American Ornithological Society (2020) for birds; and Bradley et al. (2014) and Tremor et al. (2017) for mammals.

2.0 PROJECT DESCRIPTION

2.1 RESPONSIBLE PARTIES

New West Investment, Inc. (or its successor in interest) will be responsible for financing the installation and maintenance and monitoring of the revegetation proposed in this plan. Contact information is provided below:

Contact: Jim Conrad, Owner's Representative
New West Investment, Inc.
565 N. Magnolia
El Cajon, CA 92020
619-441-1463

2.2 PROJECT LOCATION

The approximately 280-acre project site is located in the unincorporated community of Rancho San Diego in eastern San Diego County, California (Figure 1, *Regional Location*). It is depicted within unsectioned lands of Township 16 South, Ranges 1 west and 1 east of the Jamul Mountains and El Cajon, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps (Figure 2, *USGS Topograph*y). The site lies north of State Route (SR) 94 and east of SR 54 within the Cottonwood Golf Club. More specifically, the site occurs southeast of Willow Glen Drive, north of Jamul Drive, east of Jamacha Road, and west of Hillsdale Road at 3121 Willow Glen Drive, El Cajon, California (Figure 3, *Aerial Vicinity*). Steele Canyon Road bisects the project site from north to south, near the center of the site. The project site occurs within the following 24 Assessor Parcel Numbers: 506-021-19-00, 506 020-52, 518-012-13, 518-012-14, 518-030-05 through 518-030-08, 518-030-10, 518-030-12, 518 030-13, 518-030-15, 518-030-21, 518-030-22-00, 519-010-15, 519-010-17, 519-010-20, 519-010-21, 519-010-33, 519-010-34, 519-010-37, 519-011-03, 506-021-31, and 506-021-30.

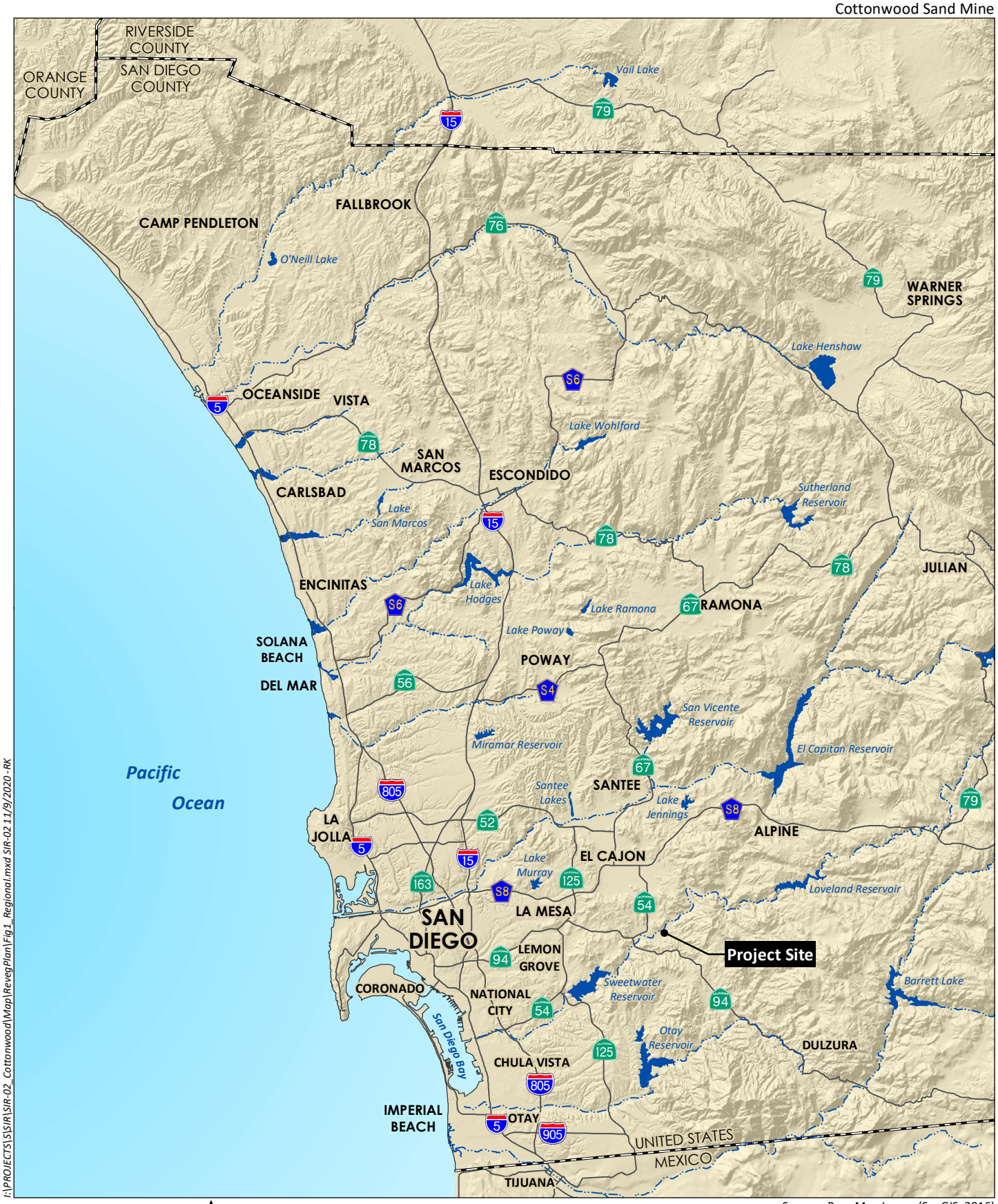
The site is located on unincorporated lands within the South County and Metro-Lakeside-Jamul segments of the County's Multiple Species Conservation Program (MSCP) Subarea Plan (Figure 4, *MSCP Designations*). Within the MSCP, portions of the site along the northeastern, southern, and southeastern boundaries occur within areas identified as Pre-Approved Mitigation Area (PAMA), and Minor Amendment lands occur in the southwestern portion of the site along the Sweetwater River (Figure 4).

2.3 PROJECT SUMMARY

2.3.1 Project Description

The project site is currently occupied by the Cottonwood Golf Club, which consists of two 18-hole golf courses, one east of Steele Canyon Road and the other located to the west. Currently, only the eastern course is operational; operation of the western course was suspended in 2017. The project proposes to convert the two golf courses to a sand mining operation that would be conducted in three phases over 10 years, with a fourth phase for cleanup, equipment removal, and final reclamation (Figure 5, *Site Plan and Mine Phasing*). The project's mining operations would extract, process, and transport sand using conventional earth moving and processing equipment. Approximately 4.3 million cubic yards (CY; 6.40 million tons) of material are proposed to be extracted, with approximately 3.8 million CY (5.7 million tons) sand and gravel for market use, with a 10 percent waste factor from the total amount extracted that includes wash fines and materials undesirable for processing. Extraction operations would be limited to a maximum production of 380,000 CY (570,000 tons) of construction grade aggregate (sand) per calendar year. Material extracted and processed at the site would be suitable for construction uses and would be available to customers in San Diego County. Approximately 214 acres of the approximately 250-acre Major Use Permit (MUP) boundary are proposed for extractive use under a phased extraction program. Surface areas not disturbed by mining would either be left in their current condition or be subject to enhancement through the removal of invasive species. The existing Sweetwater River channel and the majority of native habitat that currently exists on the site would be retained.

The project would be mined in three incremental, and partially overlapping phases, with three to four sub-phases in each major phase. Reclamation would begin after the first sub-phase of mining is complete, and also be conducted on a continuous basis following the completion of each mining sub-phase. Pre-mining activities proposed prior to the initiation of Phase 1 include the restriping of Willow



I:\PROJECTS\SIS\R\SIR-02_Cottonwood\Map\RevegPlan\Fig1_Regional.mxd SIR-02 11/9/2020 - RK

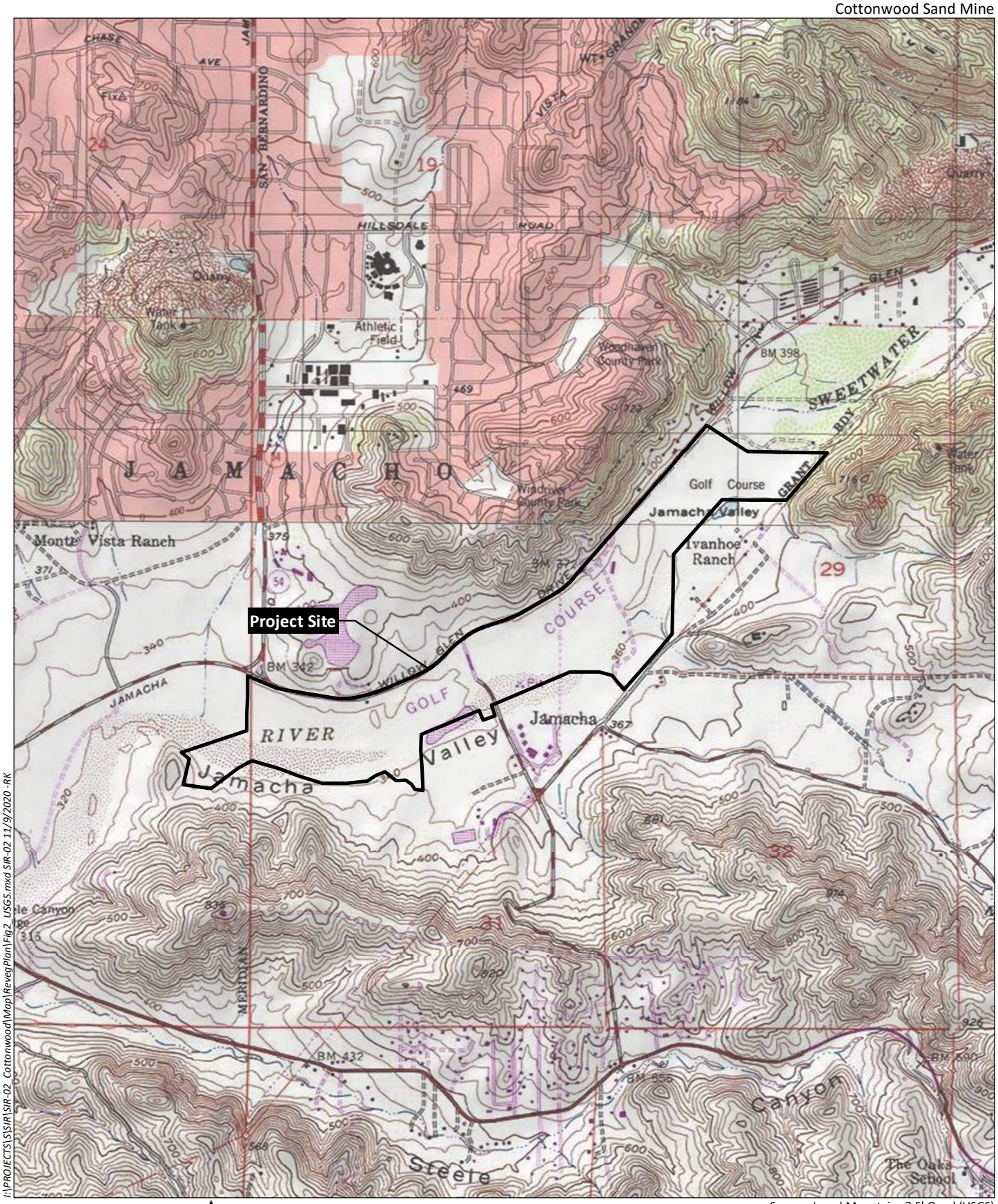
0 8 Miles

Source: Base Map Layers (SanGIS, 2016)

HELIX Environmental Planning

Regional Location

Figure 1



I:\PROJECTS\SIS\SIR\SIR-02_Cottonwood\Map\RevegPlan\Fig2_USGS.mxd SIR-02 11/9/2020 -RK

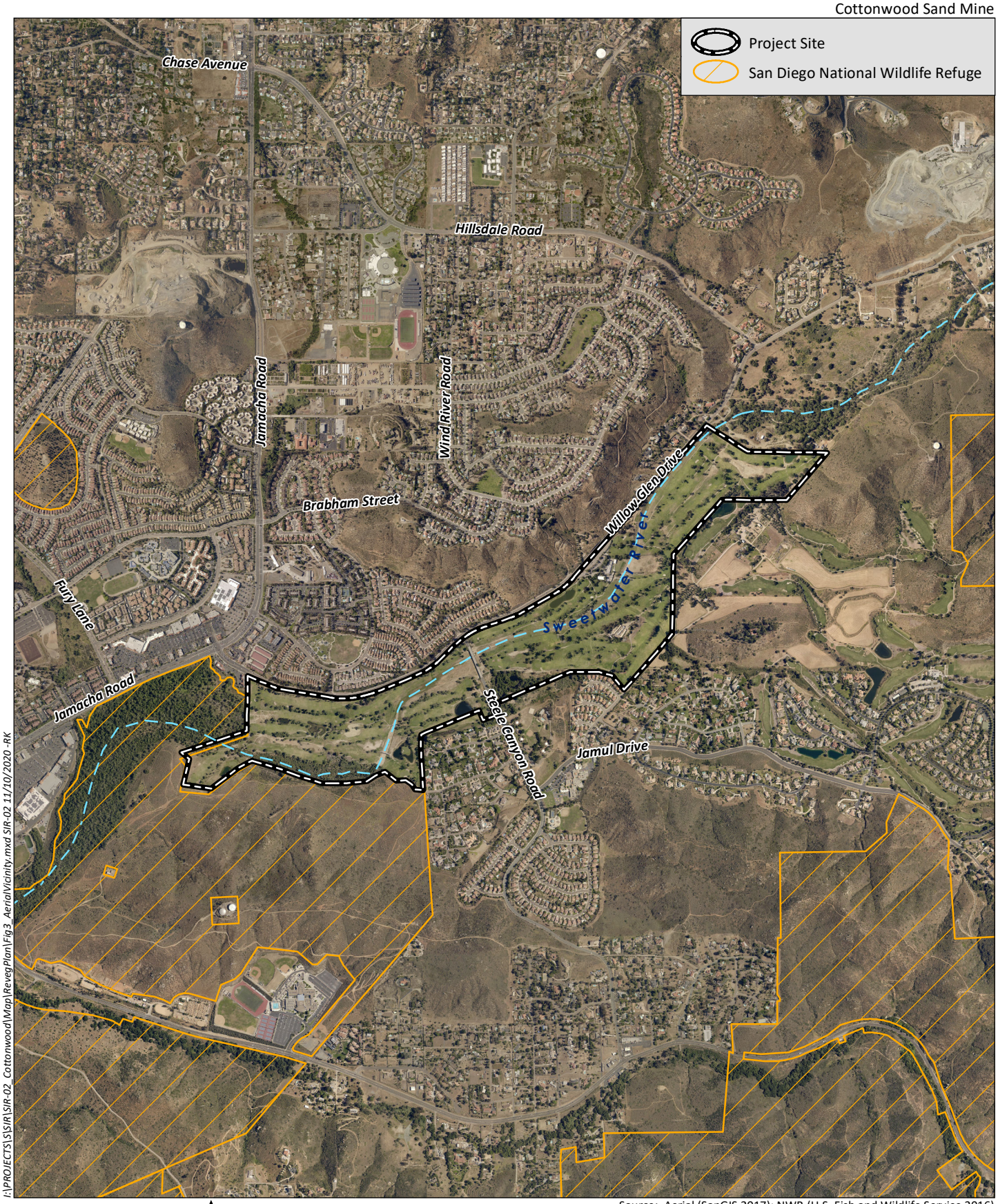
0 2,000 Feet

Source: Jamul Mountains 7.5' Quad (USGS)

HELIX Environmental Planning

USGS Topography

Figure 2

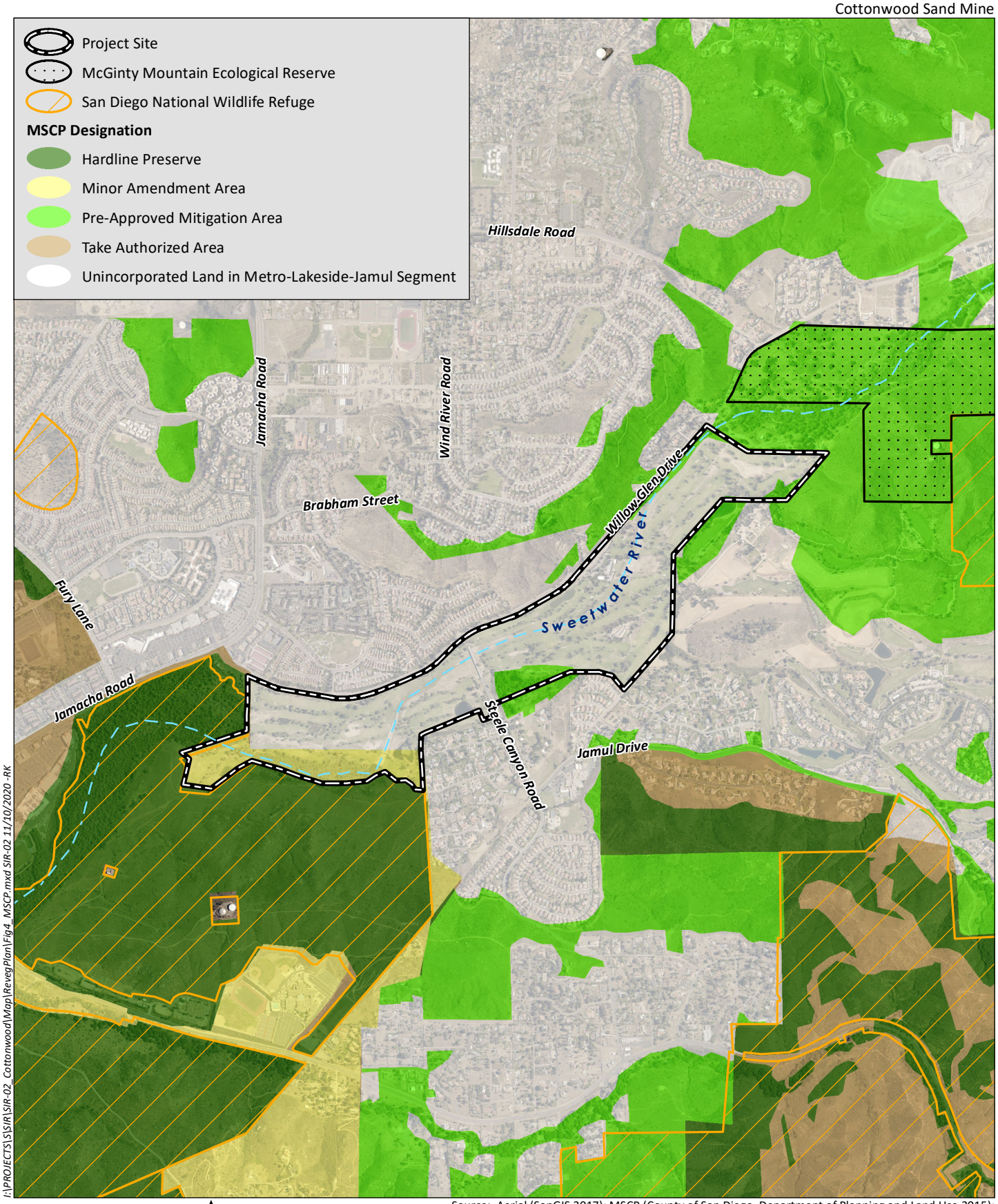


Source: Aerial (SanGIS 2017); NWR (U.S. Fish and Wildlife Service 2016)

HELIX Environmental Planning

Aerial Vicinity

Figure 3



I:\PROJECTS\SIS\SIR\SIR-02_Cottonwood\Map\RevegPlan\Fig4_MSCP.mxd SIR-02 11/10/2020 -RK

0 2,000 Feet

Source: Aerial (SanGIS 2017); MSCP (County of San Diego, Department of Planning and Land Use 2015); NWR (U.S. Fish and Wildlife Service 2016); Ecological Reserves (CDFW 2013)

HELIX Environmental Planning

MSCP Designations

Figure 4

Project Site
Major Use Permit Boundary
Subphase 1
Subphase 2
Subphase 3
Phase 4/Processing Plant
Easements and Rights-of-way
San Diego Gas & Electric Towers

Jamacha Way
Private Road
Seca Street
Sonett Street
Wind River Road
Brabham Street
Hilton Head Road
Via Hacienda
Jamacha Road
Via Rancho San Diego
Willow Glen Drive
Sweetwater River
Processing Plant
Bridge
Right-of-way
Proposed Permanent
Site Access Point
SDG&E
Easement
Access Road
Heatherwood Drive
Steele Canyon Road
Par Four Drive
Ivanhoe Ranch Road
Cottonwood Springs Lane
Wentworth Drive
Jamul Drive
Greystone Drive

3a
3b
3c
3d
2a
2b
2c
1a
1a-1
1b
1c

I:\PROJECTS\S\CambraRealty_02975\SIR-02_Cottonwood\Map\RevegPlan\Fig5_Phasing.mxd SIR-02 11/9/2021 RK

0 700 Feet

N

Source: Aerial (SanGIS 2017)

HELIX
Environmental Planning

Site Plan and Mine Phasing

Figure 5

Glen Drive from Steele Canyon Road to the project ingress driveway to provide Class II buffered bike lanes on both sides of the roadway, improvements to the access point from Willow Glen Drive to the Phase 1 excavation area, and installation of screening landscaping and a pedestrian pathway. To facilitate the deceleration of right-turning vehicles into the project ingress driveway, a dedicated right-turn lane would be constructed, which would serve as the primary access for mining operations, material sales, employees, and vendors. Additionally, a pedestrian pathway would be provided along the northern project frontage/Willow Glen Drive east of Steele Canyon Road to provide pedestrian access within the project vicinity where there are no existing sidewalks. Phase 1 would begin with the placement of the processing plant and the conveyor line from the plant to the western portion of the property where excavation would begin. Processing facilities would be located near the center of the project area, adjacent to Willow Glen Drive and west of the existing golf course parking lot. The plant site would consist of the aggregate processing and washing facilities, three settling ponds, a loadout area, and support structures and buildings (e.g., scale, kiosk, and office trailer). A portable conveyor line would be installed to minimize the use of on-site roads to transport excavated materials from the excavation area to the processing plant.

Mining operations would commence in the western portion of the site as part of Phase 1 and proceed east as subsequent phases are initiated: Phase 1 would be located within the area currently occupied by the closed Lakes Course to the west of Steele Canyon Road; Phase 2 would be located in the center of the site, east of Steele Canyon Road, on the currently operating Ivanhoe Course; Phase 3 would be located to the east of Phase 2. Existing vegetation and infrastructure within the golf courses would be incrementally removed as mining operations proceed, with approximately 20 to 30 acres subject to mining at any one time. Each phase would include three to four sub-phases that are less than 30 acres each and would begin reclamation as soon as possible following the completion of extraction activities. Excavation in each sub-phase would be completed before moving the conveyor and excavation equipment to the next sub-phase, and reclamation would begin in the completed sub-phase. Upon approval of the project, the Ivanhoe Course would be closed. The existing golf clubhouse would be demolished near the end of Phase 2 mining. As each phase of mining is completed final contours would be established via grading, all final clean-up would be conducted and equipment removed, and the mined area would be reclaimed and revegetated. Following completion of Phase 3 mining, the processing plant would be removed as part of a final Phase 4 consisting of final clean-up and equipment removal from the project site.

Prior to initiating work in a sub-phase, existing vegetation will be cleared, topsoil will be salvaged, and an approximately five-foot-high berm will be installed on either side of the existing low-flow channel to both protect the channel and contain stream flows. To maintain living soil microorganisms, topsoil will be stored on-site in windrows not more than three feet tall, in an area cleared of existing vegetation. The maximum excavation depth is proposed to be 40 feet below the existing land surface, with the average depth of excavation outside the main Sweetwater River channel expected to be approximately 20 feet below the existing land surface. Excavation would not occur within the bottom of the existing low-flow channel in order to retain existing hydrologic characteristics. Up to three temporary channel crossings would be utilized to transport heavy equipment across the low-flow channel during mining operations. Channel crossings would only be used when there is no water flow in the channel. An operating procedure would be established to maintain communication with Sweetwater Authority prior to, and during, water transfers to ensure channel crossings during water flows are avoided. As soon as excavation within a sub-phase is completed, the conveyor and excavation equipment would be moved to the next sub-phase, and reclamation of the completed sub-phase would begin.

The project proposes to restripe Willow Glen Drive between Steele Canyon Road and the project ingress driveway to provide Class II buffered bike lanes on both sides of the roadway per the County Roadway Standards and the General Plan Mobility Element roadway classification. To facilitate the deceleration of right-turning vehicles into the Project ingress driveway, a dedicated right-turn lane would also be constructed, which would serve as the primary access for mining operations, material sales, employees, and vendors. A new egress point would be established in the approximate center of the existing parking lot. The project also proposes to construct a two-way left-turn lane between the ingress and egress driveways, which would serve as a refuge lane for trucks to complete their outbound maneuver. A pedestrian pathway would be provided along the northern Project frontage/Willow Glen Drive east of Steele Canyon Road to provide pedestrian access within the Project vicinity where there are no existing sidewalks. In addition, a new access point to the property from Willow Glen Drive west of the Steele Canyon Road (Phase 1 area) would be necessary as the clearance height of the bridge that crosses the Sweetwater River on Steele Canyon Road would not allow most large trucks used by service vendors to pass beneath the bridge. Additional access points are proposed to be constructed at the intersection of Willow Glen Drive and Muirfield Drive. The new driveway would be restricted to servicing the mining operations.

The site would be progressively reclaimed following the completion of extraction activities within each subphase area in accordance with the mining and reclamation plan (EnviroMINE 2021). Reclamation would include: (1) removal of all artificial structures; (2) backfilling and grading to achieve final landforms; (3) incorporation of accumulated wash fines and salvaged topsoil (as applicable); (4) establishment of graded pads that would be hydroseeded with an erosion control mix; (5) revegetation of the expanded Sweetwater River floodplain and constructed cut slopes using appropriate native vegetation; and (6) weed control and monitoring of the revegetation areas for a period of five years. Reclamation would be an ongoing process that immediately commences where mining operations have ceased within a given sub-phase area and continues until all mining-related disturbance is reclaimed.

Post-reclamation, the final landform of the overall mining area is proposed to be a relatively flat plain that gently slopes downward from east to west, with an expanded floodplain bisecting the length of the site and graded pads located above the new floodplain. The expanded floodplain is expected to average approximately 250 to 300 feet in width. The existing low-flow channel shall generally be retained in place; this channel is expected to accommodate annual water transfers from Loveland Reservoir to Sweetwater Reservoir that are controlled by the Sweetwater Authority. Reclaimed areas would be restored to an end-use of native vegetation within a widened floodplain, recreational trails, and land suitable for uses allowed by the Open Space land use designation and existing zoning classifications. Maintenance and monitoring of the restored and revegetated native habitat areas would continue until final performance standards are met in all revegetation areas. Following revegetation completion, nearly 52 percent of the project site (142.8 acres) will be preserved in a biological open space (BOS) easement, which will protect these lands in perpetuity, and will restrict future uses to protect their biological value.

2.3.2 Current Environmental Setting and Site Conditions

The project site is generally located within the Sweetwater River Valley ecoregion of southeast San Diego County. It occurs within the boundaries of the Rancho San Diego Specific Plan Area of the Valle de Oro Community Planning Area. Generalized climate in the region is regarded as dry, sub-humid mesothermal, with warm dry summers and cold moist winters. Mean annual precipitation is between

14 and 18 inches, and the mean annual temperature is between 60- and 62-degrees Fahrenheit. The frost-free season is 260 to 300 days.

Approximately 243.6 acres (88 percent) of the site is currently occupied by a public golf course, or is otherwise disturbed by past land uses, including 0.8 acre of non-native woodland, 3.0 acres of eucalyptus woodland, 4.2 acres of non-native vegetation, 3.5 acres of man-made pond, and 232.1 acres of disturbed habitat and developed lands containing a combination of active and inactive golf course areas, in addition to a clubhouse, parking lot, maintenance facilities and other buildings, golf cart paths, and other areas of hardscape or maintained landscaping.

Undeveloped areas are concentrated along the western and eastern edges of the site and consist primarily of native upland scrub and riparian forest communities. The dominant native habitat type present on-site is southern cottonwood-willow riparian forest, which covers approximately 12.97 acres (five percent) of the site. The project site occurs within both the northeastern portion of the South County Segment and the southwestern portion of the Metro-Lakeside-Jamul Segment of the adopted County MSCP Subarea Plan (County 1997). Three small areas of PAMA, totaling 16.40 acres (six percent), occur along the northeastern, southeastern, and southern project boundaries (Figure 4). Additionally, approximately 37.79 acres (14 percent) of the site at the southwestern boundary represent a Minor Amendment Area.

Prior to the 1940s, the site was used for commercial ranching and agriculture. In the 1950s, mining for construction aggregates was conducted to the south of Sweetwater River, west of Steele Canyon Road, and adjacent to Willow Glen Drive at the western end of the site. Since the 1960s, the project site has operated as a public golf course. Mineral extraction activities within the site initially occurred to the east of Steele Canyon Road and later expanded to the east side of Steele Canyon Road in the 1960s continuing into the 1970s, as both golf courses were developed and expanded. Construction of the golf course initially began in 1962 and was completed in 1964. Sand extraction activities have continued within the site throughout the years, allowing for the creation of water hazards and expanded fairways associated with golf course improvements.

Land uses in the surrounding area include residential and rural residential developments to the north and south, extractive operations to the east, and an adjacent golf course to the southeast. Open space is present in the hills south, east, and west of the site. The San Diego National Wildlife Refuge (SDNWR) abuts the western end of the site along the Sweetwater River.

2.3.3 Topography and Soils

Elevations on-site generally decrease from east to west across the site, with the lowest elevations (approximately 320 feet (ft) above mean sea level [amsl]) occurring along the southwestern boundary, and the highest elevations (approximately 380 ft amsl) along the northeastern boundary. The Sweetwater River runs through the length of the site entering at the northeastern project boundary and continuing in a mostly east-west direction to the southern boundary, where it exits the site and continues southwest towards Sweetwater Reservoir. The Sweetwater River extends from its headwaters in the Cuyamaca Mountains (east of the site) to the Pacific Ocean, approximately 15 miles downstream of the site.

Six soil series, which comprise nine soil types, have been mapped on-site (Natural Resources Conservation Service [NRCS] 2016; Figure 6, *Soils*), with the majority classified as sandy loams. Soil types covering the most area on-site includes Riverwash and those in the Tujunga series.

2.3.4 Vegetation Communities

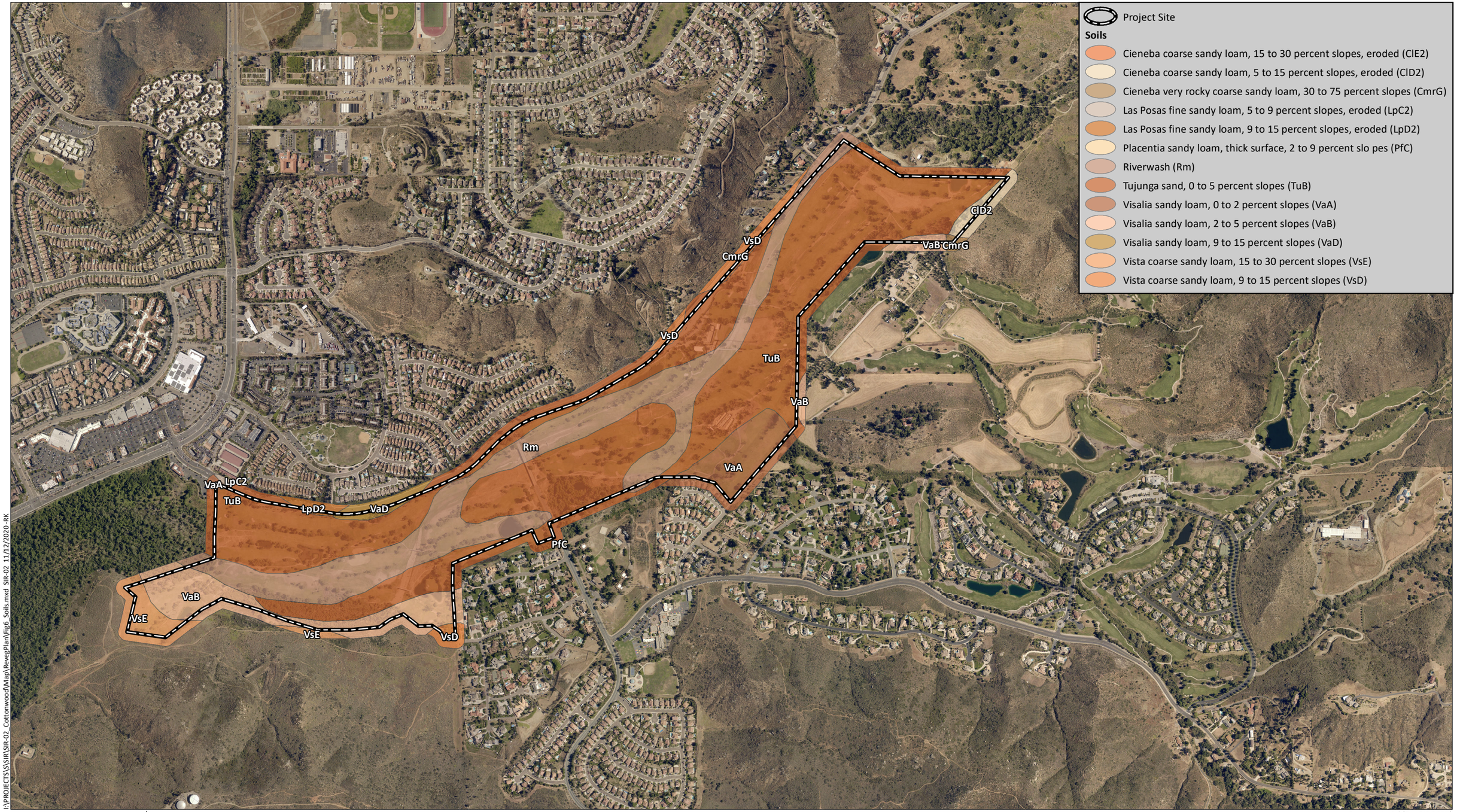
Fourteen vegetation communities/land use types occur on the project site (Table 1, *Existing Vegetation Communities/Land Use Types*; Figure 7, *Vegetation and Sensitive Resources/Impacts*). The numeric codes in parentheses following each community/land use type name are from the Holland classification system (Holland 1986) and as added to by Oberbauer (2008) as presented in the County's Biology Guidelines (County 2010).

Table 1
EXISTING VEGETATION COMMUNITIES/LAND USE TYPES

Vegetation Community[1]	Acres[2]		
	Within MUP	Outside MUP	Total
Tier I[3]			
Disturbed Wetland (11200)	10.41	0	10.41
Freshwater Marsh (52400)	0.31	0	0.31
Southern Cottonwood-willow Riparian Forest (61330)	10.73	2.24	12.97
Southern Cottonwood-willow Riparian Forest - disturbed (61330)	0.86	0.13	0.99
Southern Willow Scrub (63320)	0.80	0	0.80
Southern Willow Scrub - disturbed (63320)	3.87	0	3.87
Tamarisk Scrub (63810)	0.62	0	0.62
Open Water (64140)	0.82	0	0.82
Arundo-dominated Riparian (65100)	0.47	0.07	0.54
Tier II			
Diegan Coastal Sage Scrub (32500)	0.6	0.5	1.1
Diegan Coastal Sage Scrub –disturbed (32500)	0.6	0	0.6
Tier IV			
Non-native Woodland (79000)	0.8	0	0.8
Eucalyptus Woodland (79100)	2.2	0.8	3.0
Non-native Vegetation (11000)	4.2	0	4.2
Disturbed Habitat (11300)	80.7	12.4	93.1
N/A			
Man-made Pond (64140)	3.5	0	3.5
Developed Land (12000)	124.2	14.8	139.0
TOTAL	**245.69**	**30.94**	**276.63**

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Upland habitats are rounded to the nearest 0.1 acre, while wetland habitats are rounded to the nearest 0.01; thus, total reflects rounding.
[3] County Subarea Habitats and Tiers within the MSCP.

Sensitive vegetation communities/habitat types mapped on the project site include disturbed wetland, freshwater marsh, southern cottonwood-willow riparian forest (including disturbed), southern willow scrub (including disturbed), tamarisk scrub, open water, arundo-dominated riparian, and DCSS (including disturbed). Non-native woodland, eucalyptus woodland, non-native vegetation, disturbed habitat, man-



I:\PROJECTS\SS\SIR\SIR-02_Cottonwood\Map\RevegPlan\Fig6_Soils.mxd SIR-02 11/12/2020 RK

0 1,000 Feet

Source: Aerial (SanGIS 2017)

HELIX Environmental Planning

Soils

Figure 6

- Project Site
- Major Use Permit Boundary
- Phase 1
- Phase 2
- Phase 3
- Phase 4/Proccessing Plant
- Impact Area
- Impact Neutral Area
- Roadway Improvement Impacts
- Trail Impacts
- Easements and Rights-of-way
- Proposed Pathway
- Conceptual Multi-Use Trails (Post-Reclamation)

Special Status Species

Plants

- San Diego County Viguiera (*Bahiopsis laciniata*)
- San Diego Sagewort (*Artemisia palmeri*)
- Singlewhorl Burrobrush (*Ambrosia monogyra*)
- Southwestern Spiny Rush (*Juncus acutus* ssp. *leopoldii*)

Animals

- Belding's Orange-throated Whiptail (*Aspidoscelis hyperythra beldingi*)
- Monarch Butterfly (*Danaus plexippus*)
- Coastal California Gnatcatcher(*Polioptila californica californica*)
- Barn Owl (*Tyto alba*)
- Cooper's Hawk (*Accipiter cooperii*)
- Great Blue Heron (*Ardea herodias*)
- Green Heron (*Butorides virescens*)
- Lawrence's Goldfinch (*Spinus lawrencei*)
- Least Bell's Vireo (*Vireo bellii pusillus*)
- Oat Titmouse (*Baeolophus inornatus*)
- Peregrine Falcon (*Falco peregrinus*)
- Red-shouldered Hawk (*Buteo lineatus*)
- Turkey Vulture (*Cathartes aura*)
- Vermilion Flycatcher (*Pyrocephalus rubinus*)
- Western Bluebird (*Sialia mexicana*)
- Yellow Warbler (*Setophaga petechia*)
- Yellow-breasted Chat (*Icteria virens*)

Trail Impacts
Sonett Street
Pair
150
3a
3b
3c
3d
2c
Willow Glen Drive
Bridge
Right-of-way
2a
Sweetwater River
2b
SDG&E
Easement
Jamacha Road
Trail Impacts
Trail Impacts
1a-1
1a
1c
1b
Trail Impacts
Ivanhoe Ranch Road
Cottonwood Springs Lane
Indian Mills Lane
Heatherwood Drive
Steele Canyon Road
Jamul Drive
Par Four Drive
Greystone Drive

Vegetation*

- Freshwater Marsh (52400)
- Coast Live Oak Woodland (71160)
- Southern Cottonwood-willow Riparian Forest (61330)
- Southern Cottonwood-willow Riparian Forest - Disturbed (61330)
- Southern Willow Scrub (63320)
- Southern Willow Scrub - Disturbed (63320)
- Disturbed Wetland (11200)
- Mule Fat Scrub (63310)
- Diegan Coastal Sage Scrub (32500)
- Diegan Coastal Sage Scrub - Disturbed (32500)
- Eucalyptus Woodland (79100)
- Open Water (64140)
- Man-made Pond (64140)
- Non-native Woodland (79000)
- Arundo-dominated Riparian (65100)
- Non-native Grassland (42200)
- Non-native Vegetation (11000)
- Tamarisk Scrub (63810)
- Disturbed Habitat (11300)
- Developed (12000)

**Numeric codes following the vegetation community names are from the County's Biological Resources Guidelines (County 2010) and are based on the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1996, Oberbauer 2008).*

I:\PROJECTS\S\CambraRealty_02975\SIR-02_Cottonwood\Map\RevegPlan\Fig7_Vegetation_Impacts.mxd SIR-02 11/9/2021 - RK

0 700 Feet

Source: Aerial (SanGIS, 2017)

HELIX Environmental Planning

Vegetation and Sensitive Resources/Impacts

Figure 7

made pond, and developed lands do not meet the definition of sensitive habitat under the County's Biology Guidelines (County 2010).

2.3.5 Flora

A total of 151 plant species were identified within the project site, of which 69 (46 percent) are native species, and 82 (54 percent) are non-native species (HELIX 2021b).

2.3.6 Wildlife

A total of 97 animal species were observed or otherwise detected on the project site during recent biological surveys, including 11 invertebrate, four amphibian, four reptile, 74 bird, and four mammal species (HELIX 2021b).

2.3.7 Special Status Species

No federal- or state-listed plant species were observed within the project site during recent surveys (HELIX 2021b); however, four species with other special status were observed: singlewhorl burrobrush (*Ambrosia monogyra*), San Diego sagewort (*Artemisia palmeri*), San Diego County viguiera (*Bahiopsis laciniata*), and southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*). Additionally, although not found on-site, U.S. Fish and Wildlife Service (USFWS) critical habitat for the federally endangered San Diego ambrosia (*Ambrosia pumila*) is present in the southwestern portion of the site (Figure 8, *Critical Habitat*).

Two federal- and/or state-listed wildlife species were observed within the project site during recent surveys (HELIX 2021b): coastal California gnatcatcher (*Polioptila californica californica*) and least Bell's vireo (*Vireo bellii pusillus*). An additional 15 other special status animal species were observed or detected on or directly adjacent to the project site: barn owl (*Tyto alba*), Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), Cooper's hawk (*Accipiter cooperii*), great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), Lawrence's goldfinch (*Spinus lawrencei*), Monarch butterfly (*Danaus plexippus*), oak titmouse (*Baeolophus inornatus*), peregrine falcon (*Falco peregrinus*), red-shouldered hawk (*Buteo lineatus*), turkey vulture (*Cathartes aura*), vermilion flycatcher (*Pyrocephalus rubinus*), western bluebird (*Sialia mexicana*), yellow-breasted chat (*Icteria virens*), and yellow warbler (*Setophaga petechia*). Additionally, USFWS critical habitat for the coastal California gnatcatcher and least Bell's vireo occur in the southwestern portion of the site, and critical habitat for the southwestern willow flycatcher is present immediately adjacent to the site (Figure 8).

2.3.8 Project Impacts

2.3.8.1 Sensitive Vegetation

The project would permanently impact 1.63 acres of sensitive vegetation communities, including 0.8 acre of uplands and 0.83 acres of wetlands. Impacts to 0.8 acre of sensitive upland vegetation communities consist entirely of DCSS (Table 2, *Project Impacts to Vegetation Communities/Habitat Types*; Figure 7; HELIX 2021b).

Table 2
PROJECT IMPACTS TO VEGETATION COMMUNITIES/HABITAT TYPES

Vegetation Community[2]	Impact Neutral Areas (Acres)[1]	On-Site Impacts (Acres)[1]					Off-Site Road Improvement Impacts (Acres)[1]	Total Impacts (Acres)[1]
		Phase 1	Phase 2	Phase 3	Phase 4	Total On-Site		
Sensitive Vegetation Communities								
Tier I[3]								
Disturbed Wetland (11200)	0	0.15	0.26	0.09	0	0.50	0	0.50
Freshwater Marsh (52400)	0	0	0	0	0	0	0	0
Southern Cottonwood-willow Riparian Forest – including disturbed (61330)	0.27	0.27	0	0	0.05	0.32	0	0.32
Southern Willow Scrub – including disturbed (63320)	0	0	0	0	0	0	0	0
Tamarisk Scrub (63810)	0	0	0	0	0	0	0	0
Open Water (64140)	0	0	0	0	0	0	0	0
Arundo-dominated Riparian (65100)	0.07	0.01	0	0	0	0.01	0	0.01
Tier II								
Diegan Coastal Sage Scrub – including disturbed (32500)	0.4	0.2	0	0.4	0	0.6	0.2	0.8
Subtotal Sensitive Communities	***0.74***	***0.63***	***0.26***	***0.49***	***0.05***	***1.43***	***0.2***	***1.63***
Non-Sensitive Vegetation Communities								
Tier IV								
Non-native Woodland (79000)	0	0	0	0.8	0	0.8	0	0.8
Eucalyptus Woodland (79100)	0.8	0.1	0	2.1	0	2.2	<0.1	2.2
Non-native Vegetation (11000)	0	2.0	0.6	1.0	0.3	4.0	1.7	5.7
Disturbed Habitat (11300)	14.3	73.3	1.9	1.4	0	76.6	0.1	76.7
N/A								
Man-made Pond (64100)	0	1.8	0	0.7	1.0	3.5	0	3.5
Developed Land (12000)	15.6	0.5	47.1	66.0	7.5	121.1	2.8	123.9
Subtotal Non-Sensitive Communities	***30.7***	***77.7***	***49.6***	***72.0***	***8.8***	***208.2***	***4.6***	***212.8***
TOTAL	**31.44**	**78.33**	**49.86**	**72.49**	**8.85**	**209.63**	**4.80**	**214.43**

[1] Upland habitats are rounded to the nearest 0.1 acre, while wetland habitats are rounded to the nearest 0.01; thus, total does not reflect rounding.

[2] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).

[3] County Subarea Habitats and Tiers within the MSCP.

Cottonwood Sand Mine

Project Site

Critical Habitat

- Coastal California gnatcatcher
- Least Bell's vireo
- San Diego ambrosia
- Southwestern willow flycatcher

Sweetwater River

I:\PROJECTS\SIS\SIR\SIR-02_Cottonwood\Map\RevegPlan\Fig8_CriticalHabitat.mxd SIR-02 11/10/2020 - RK

0 1,000 Feet

Source: Aerial (SanGIS 2017)

HELIX Environmental Planning

Critical Habitat

Figure 8

2.3.8.2 Special Status Plants

The project would result in impacts to one special status plant species: San Diego County viguiera, a California Rare Plant Rank 4.3, and County List D species. All other special status plant species observed on-site would either remain undisturbed or be conserved in biological open space. Four San Diego viguiera shrubs observed within the project site would be impacted by the proposed project and would be considered a significant impact. Project impacts to special status plant species would be mitigated through on-site habitat re-establishment, rehabilitation, revegetation, and preservation.

2.3.8.3 Special Status Wildlife

The project would result in impacts to suitable breeding or foraging habitat for 17 special status animal species observed or detected on or adjacent to the site, including coastal California gnatcatcher, least Bell's vireo, Cooper's hawk, oak titmouse, red-shouldered hawk, turkey vulture, peregrine falcon, yellow-breasted chat, vermilion flycatcher, Lawrence's goldfinch, monarch butterfly, Belding's orange-throated whiptail, great blue heron, green heron, yellow warbler, western bluebird, and barn owl. The project site provides limited habitat to coastal California gnatcatcher. Suitable gnatcatcher breeding habitat within the project site is limited to small patches of DCSS in the extreme southwestern and southeastern portions of the site that are contiguous with larger blocks of DCSS that continue off-site within the SDNWR. These areas will not be directly impacted by the proposed project; alternatively, these areas would be preserved and placed within the project's biological open space easement. The project would result in impacts to 0.8 acre of disturbed Diegan coastal sage scrub, which provides potential foraging habitat for the species. Impacts to potential gnatcatcher foraging habitat would be significant. The project site provides suitable breeding habitat for least Bell's vireo and multiple individuals were detected within, and adjacent to, the project site during protocol surveys conducted in 2019 (HELIX 2021b). The project would impact 0.32 acre of southern cottonwood-willow riparian forest (including disturbed) in the southwestern portion of the site. Impacts to suitable vireo breeding habitat would be significant.

Project impacts to special status wildlife would be mitigated through on-site habitat re-establishment, rehabilitation, revegetation, and preservation, combined with other project-specific mitigation measures to address potential impacts, such as restrictions on clearing and grubbing during the avian breeding season. Mitigation for impacts to wetland and riparian habitats are addressed separately from this plan in the Conceptual Wetland Mitigation Plan (HELIX 2021a).

2.3.9 Required Compensatory Mitigation

A summary of project impacts to biological resources and required mitigation is provided in the Biological Technical Report (BTR; HELIX 2021b). The project would result in impacts to a total of 1.63 acres of riparian habitat or other sensitive natural communities (Table 2; Figure 9, *Conceptual Reclamation Revegetation and Compensatory Mitigation Areas*), including 0.50 acre of disturbed wetland, 0.32 acre of southern cottonwood-willow riparian forest, 0.01 acre of arundo-dominated riparian, and 0.8 acre of DCSS (including disturbed). This plan addresses mitigation for impacts to sensitive upland vegetation communities (i.e., DCSS) and revegetation of areas temporarily disturbed as part of mining activities. Mitigation for impacts to sensitive wetland and riparian habitats are addressed in the Conceptual Wetland Mitigation Plan (HELIX 2021a). As required by the County's Report Format and Content Requirements for Revegetation Plans (County 2007), relevant sections of the BTR

(i.e., mitigation requirements and habitat being impacted) will be included as an appendix to the Final Revegetation Plan.

BIO-1 Mitigation for 0.8 acre of potential foraging habitat for coastal California gnatcatcher, comprised solely of Diegan coastal sage scrub, shall occur at a 1.5:1 ratio for a total mitigation requirement of 1.2 acres. Mitigation shall occur through on-site preservation of 0.72 acre of Diegan coastal sage scrub and on-site revegetation of 11.28 acres of Diegan coastal sage scrub for a total of 12.00 acres of Diegan coastal sage scrub to be preserved within the biological open space easement.

BIO-3 Mitigation for impacts to 0.32 acre of potential nesting and foraging habitat for least Bell's vireo (southern cottonwood-willow riparian forest) shall occur at a minimum 3:1 ratio with at least 1:1 creation (establishment/re-establishment) for a total mitigation requirement of 0.96 acre. Mitigation shall occur through on-site preservation of 15.01 acres of wetland and riparian habitat, on-site rehabilitation of 6.13 acres of riparian habitat, and on-site re-establishment and revegetation of 107.93 acres of riparian habitat for a total of 129.07 acres of wetland riparian habitat to be preserved within the biological open space easement.

BIO-7 Upon completion of all extraction activities, reclamation and final grading to establish the final landform shall occur in accordance with the approved Reclamation Plan. Revegetation with native species will occur within the expanded Sweetwater River floodplain and constructed bordering slopes according to a revegetation plan to be approved by the County.

BIO-8 Mitigation for impacts to 0.32 acre of southern cottonwood-willow riparian forest, 0.01 acre of arundo-dominated riparian, and 0.50 acre of disturbed wetland shall occur at a 3:1 ratio with at least 1:1 creation (establishment/re-establishment) for a total mitigation requirement of 0.96 acre. Mitigation shall occur through on-site preservation of 15.01 acres of wetland and riparian habitat, on-site rehabilitation of 6.13 acres of riparian habitat, and on-site re-establishment and revegetation of 107.93 acres of riparian habitat for a total of 129.07 acres of wetland riparian habitat to be preserved within the biological open space easement.

BIO-9 Mitigation for 0.8 acre of impacts to Diegan coastal sage scrub shall occur at a 1.5:1 ratio with 1.2 acres of Tier II or Tier I habitat in the South County MSCP area within a biological resource core area. Mitigation shall occur through on-site preservation of 0.72 acre of Diegan coastal sage scrub and on-site revegetation of 11.28 acres of Diegan coastal sage scrub for a total of 12.00 acres of Tier II Diegan coastal sage scrub to be preserved within the biological open space easement.

Table 3, *Project Impacts to Sensitive Vegetation Communities and Required Mitigation Summary*, provides a summary of project impacts to sensitive vegetation communities and required mitigation. The applicable conditions of the Resolution of Approval will be attached to the Final Revegetation Mitigation Plan submitted after discretionary approval and prior to issuance of any permit, and prior to occupancy or use of the premises in reliance of this permit.

Cottonwood Sand Mine

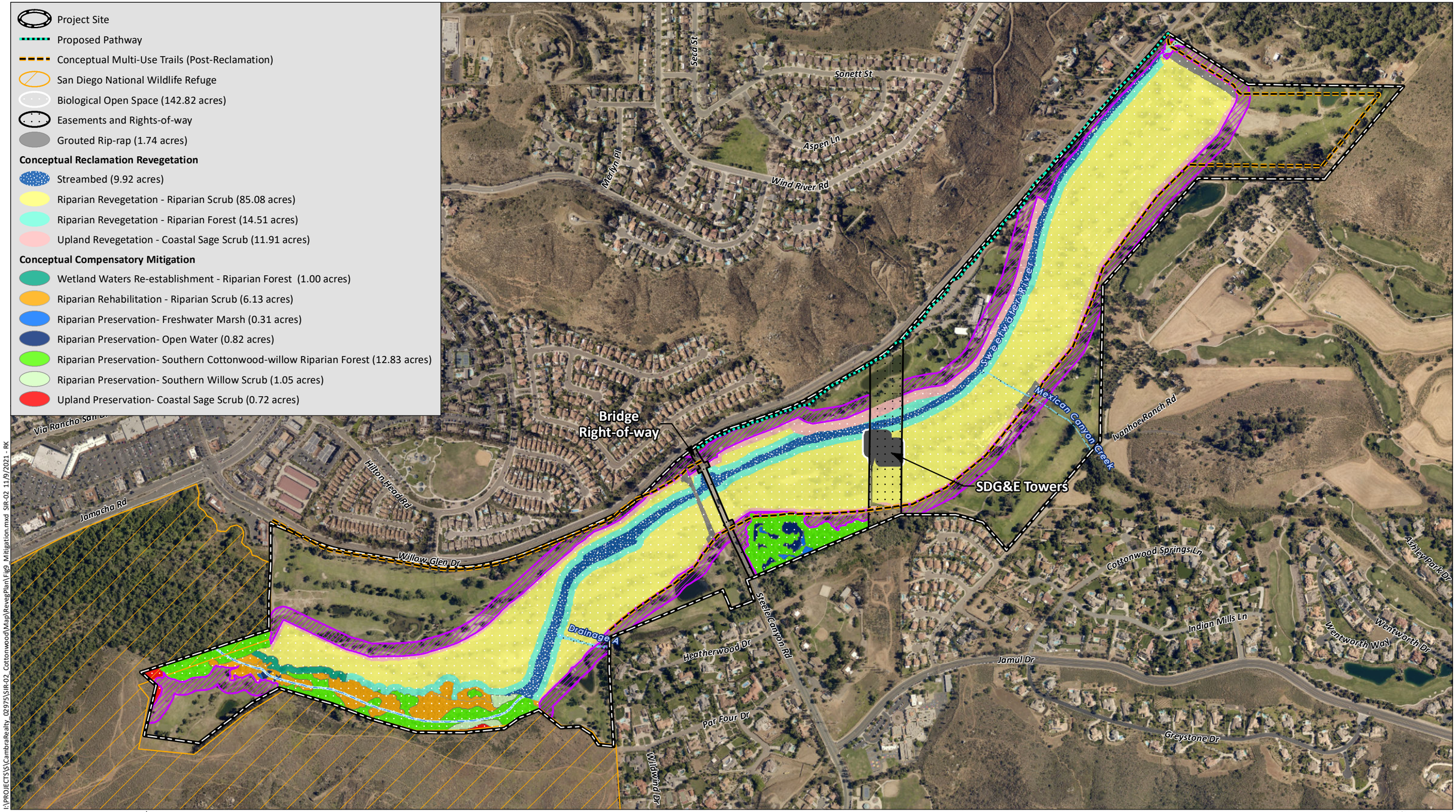
- Project Site
- Proposed Pathway
- Conceptual Multi-Use Trails (Post-Reclamation)
- San Diego National Wildlife Refuge
- Biological Open Space (142.82 acres)
- Easements and Rights-of-way
- Grouted Rip-rap (1.74 acres)

Conceptual Reclamation Revegetation

- Streambed (9.92 acres)
- Riparian Revegetation - Riparian Scrub (85.08 acres)
- Riparian Revegetation - Riparian Forest (14.51 acres)
- Upland Revegetation - Coastal Sage Scrub (11.91 acres)

Conceptual Compensatory Mitigation

- Wetland Waters Re-establishment - Riparian Forest (1.00 acres)
- Riparian Rehabilitation - Riparian Scrub (6.13 acres)
- Riparian Preservation- Freshwater Marsh (0.31 acres)
- Riparian Preservation- Open Water (0.82 acres)
- Riparian Preservation- Southern Cottonwood-willow Riparian Forest (12.83 acres)
- Riparian Preservation- Southern Willow Scrub (1.05 acres)
- Upland Preservation- Coastal Sage Scrub (0.72 acres)



I:\PROJECTS\S\CambraRealty_02975\SIR-02_Cottonwood\Map\RevegPlan\Fig9_Mitigation.mxd SIR-02 11/9/2021 - RK

0 700 Feet

Source: Aerial (SanGIS, 2017)

HELIX Environmental Planning

Conceptual Reclamation Revegetation and Compensatory Mitigation Areas

Figure 9

Table 3
IMPACTS TO SENSITIVE VEGETATION COMMUNITIES AND REQUIRED MITIGATION SUMMARY (acre[s])[1]

Habitat	Impacts	Required Mitigation			
		Ratio	Establishment	Establishment, Re-establishment, Rehabilitation, and/or Enhancement	Total
Tier I					
Disturbed Wetland	0.50	3:1	0.50	1.00	**1.50**
Southern Cottonwood-willow Riparian Forest – including disturbed	0.32	3:1	0.32	0.64	**0.96**
Arundo-Dominated Riparian	0.01	3:1	0.01	0.02	**0.03**
Subtotal	***0.83***	**--**	***0.83***	***1.66***	***2.49***
Tier II					
Diegan Coastal Sage Scrub – including disturbed (32500)	0.8	1.5:1	--	1.20	**1.20**
Subtotal	***0.8***	**--**	**--**	***1.2***	***1.2***
TOTAL	**1.63**	**--**	**0.83**	**2.86**	**3.69**

[1] Rounded to the nearest 0.01 acre; totals do not reflect rounding.

Mitigation for impacts to Tier I riparian habitats and jurisdictional waters and wetlands are addressed separately in the Conceptual Wetland Mitigation Plan (HELIX 2021a). Mitigation for impacts to Tier II upland sensitive habitats (DCSS [including disturbed]) will be met through on-site preservation of 0.72 acre of existing DCSS and the preservation of 11.28 acres of DCSS revegetated as part of site reclamation within a biological open space easement, with no restoration component. The Resolution of Approval, including applicable conditions of approval, will be attached to the Final Revegetation Plan submitted after discretionary approval and prior to grading permit issuance.

2.3.10 Mining Reclamation

Areas temporarily disturbed by mining activities are required to be reclaimed in accordance with the Reclamation Standards as identified in the Public Resources Code, Article 9, Section 3705, and Sections 1810 and 6550-6556 of the County Zoning Ordinance. Extraction activities will temporarily approximately 214.03 acres which are required to be reclaimed. Reclamation includes revegetation of areas that contained vegetation prior to mining.

Additionally, Section 86.605(d) of the County RPO (County 2011) requires that the project implement the following mitigation measures as conditions of the project's Major Use Permit:

- Any wetland buffer area shall be restored to protect environmental values of adjacent wetlands;
- In a floodplain, any net gain in functional wetlands and riparian habitat shall result in or adjacent to the area of extraction;
- Native vegetation shall be used on steep slope lands to revegetate and landscape cut and fill areas in order to substantially restore the original habitat value, and slopes shall be graded to produce contours and soils which reflect a natural landform, which is consistent with the surrounding area; and

- Mature riparian woodland may not be destroyed or reduced in size due to sand, gravel, or mineral extraction.

Currently, wetland buffer areas within the project site consist of patches of existing riparian habitat and extensive areas of golf course development bordering the Sweetwater River. To meet the requirements of the RPO, wetland buffer areas disturbed by mining will be restored via a combination of re-establishment of wetland waters and riparian habitat addressed in the Conceptual Wetland Mitigation Plan (HELIX 2021a) and native habitat revegetation addressed in this plan (Figures 10a through 10e, *Conceptual Reclamation Revegetation Areas*).

The proposed project would involve the widening of the Sweetwater River floodplain by lowering existing upland elevations to a final height of four feet above the existing Sweetwater River low-flow channel. The expanded floodplain will be revegetated with wetland and riparian forest and scrub habitat resulting in a net gain of functional wetlands and riparian habitat. Cut slopes constructed along the margins of the expanded floodplain will be revegetated with native upland habitat (i.e., DCSS), improving upon the current site conditions and resulting in a biologically superior condition.

Existing RPO wetlands within the project site shall be preserved in place and their existing environmental values shall be enhanced through the rehabilitation of existing riparian habitat addressed in the Conceptual Wetland Mitigation Plan (HELIX 2021a). All riparian re-establishment and rehabilitation addressed in the mitigation plan, combined with the revegetation addressed in this plan, shall be preserved within a biological open space easement and managed in perpetuity in accordance with the Conceptual Resource Management Plan (HELIX 2021c).

3.0 GOALS OF REVEGETATION

The goal of this revegetation plan is to provide sufficient vegetative cover to the reclaimed site such that the soil surface is stabilized, existing wetland buffer areas are restored, long-term erosion is prevented, and the post extractive land use objectives of the site are met.

3.1 RESPONSIBILITIES

3.1.1 Project Proponent

New West Investment, Inc. (or its successor in interest, in the event a sale of the property takes place) will be responsible for financing the installation, maintenance, and monitoring of the proposed on-site revegetation effort. Ultimately, the native habitat revegetation areas, together with all biological open space designated on-site, may be transferred in fee title (subject to County approval) to a public or private entity specializing in the long-term management of open space. If such a transfer were to occur prior to County sign-off of the implemented mitigation and revegetation effort, this entity would become responsible for the maintenance program described herein.

- Project Site
- Phase 1
- Phase 2
- Phase 3
- Phase 4/Proccessing Plant
- Proposed Pathway
- Conceptual Multi-Use Trails (Post-Reclamation)
- San Diego National Wildlife Refuge
- Biological Open Space (142.82 acres)
- Easements and Rights-of-way
- Erosional Control Seed Mix (96.09 acres)
- Grouted Rip-rap (1.74 acres)

Conceptual Reclamation Revegetation

- Streambed (9.92 acres)
- Riparian Revegetation - Riparian Scrub (85.08 acres)
- Riparian Revegetation - Riparian Forest (14.51 acres)
- Upland Revegetation - Coastal Sage Scrub (11.91 acres)

Seca St
Sonett St
Greencrest Dr
Greencrest Ct
Marlyn Pl
Aspen Ln
Wind River Rd
Woodpine Dr
Via Rancho San Diego
Hilton Head Rd
Jamacha Rd
Willow Glen Dr
Bridge
Right-of-way
SDG&E Towers
Sweetwater River
Ivanhoe Ranch Rd
Cottonwood Springs Ln
Ashley Park Dr
Indian Mills Ln
Wentworth Way
Wentworth Dr
Steele Canyon Rd
Heatherwood Dr
Jamul Dr
Par Four Dr
Greystone Dr
Wildwind Dr

I:\PROJECTS\S\CambraRealty_02975\SIR-02_Cottonwood\Map\RevegPlan\Fig10a_Revegetation.mxd SIR-02 11/9/2021 - RK

0 700 Feet

N

Source: Aerial (SanGIS, 2017)

HELIX Environmental Planning

Conceptual Reclamation Revegetation Areas - Overview

Figure 10a

- Project Site
- Phase 1
- Phase 2
- Phase 3
- Phase 4/Proccessing Plant
- Proposed Pathway
- Conceptual Multi-Use Trails (Post-Reclamation)
- San Diego National Wildlife Refuge
- Biological Open Space
- Easements and Rights-of-way
- Erosional Control Seed Mix
- Grouted Rip-rap

Conceptual Reclamation Revegetation

- Streambed
- Riparian Revegetation - Riparian Scrub
- Riparian Revegetation - Riparian Forest
- Upland Revegetation - Coastal Sage Scrub

Bridge Right-of-way

SDG&E Towers

Seca St
Sonett St
Aspen Ln
Wind River Rd
Marlyn Pl
Greencrest Dr
Greencrest Ct
Woodpine Dr
Sweetwater River
Via Rancho San Diego
Hilton Head Rd
Jamacha Rd
Willow Glen Dr
Ivanhoe Ranch Rd
Cottonwood Springs Ln
Ashley Park Dr
Indian Mills Ln
Wentworth Wy
Wentworth Dr
Steele Canyon Rd
Heatherwood Dr
Par Four Dr
Wildwind Dr
Jamul Dr
Greystone Dr

i:\PROJECTS\S\CambraRealty_02975\SIR-02_Cottonwood\Map\Revegplan\Fig10b_Revegetation.mxd SIR-02 11/9/2021 - RK

0 700 Feet

Source: Aerial (SanGIS, 2017)

HELIX Environmental Planning

Conceptual Reclamation Revegetation Areas - Phase 1

Figure 10b

Cottonwood Sand Mine

- Project Site
- Phase 1
- Phase 2
- Phase 3
- Phase 4/Proccessing Plant
- Conceptual Multi-Use Trails (Post-Reclamation)
- Proposed Pathway
- San Diego National Wildlife Refuge
- Biological Open Space
- Easements and Rights-of-way
- Erosional Control Seed Mix
- Grouted Rip-rap

Conceptual Reclamation Revegetation

- Streambed
- Riparian Revegetation - Riparian Scrub
- Riparian Revegetation - Riparian Forest
- Upland Revegetation - Coastal Sage Scrub

Seca St
Sonett St
Greencrest Dr
Greencrest Ct
Marlyn Pl
Aspen Ln
Wind River Rd
Woodpine Dr
Sweetwater River
Bridge
Right-of-way
SDG&E Towers
Via Rancho San Diego
Hilton Head Rd
Ivanhoe Ranch Rd
Jamacha Rd
Willow Glen Dr
Steele Canyon Rd
Cottonwood Springs Ln
Ashley Park Dr
Indian Mills Ln
Wentworth Way
Wentworth Dr
Heatherwood Dr
Jamul Dr
Par Four Dr
Greystone Dr
Wildwind Dr

I:\PROJECTS\SCambraRealty_02975\SIR-02_Cottonwood\Map\RevegPlan\Fig10c_Revegetation.mxd SIR-02 11/9/2021 - RK

0 700 Feet

Source: Aerial (SanGIS, 2017)

HELIX Environmental Planning

Conceptual Reclamation Revegetation Areas - Phase 2

Figure 10c

- Project Site
- Phase 1
- Phase 2
- Phase 3
- Phase 4/Proccessing Plant
- Proposed Pathway
- Conceptual Multi-Use Trails (Post-Reclamation)
- San Diego National Wildlife Refuge
- Biological Open Space
- Easements and Rights-of-way
- Erosional Control Seed Mix
- Grouted Rip-rap

Conceptual Reclamation Revegetation

- Streambed
- Riparian Revegetation - Riparian Scrub
- Riparian Revegetation - Riparian Forest
- Upland Revegetation - Coastal Sage Scrub

Bridge Right-of-way

SDG&E Towers

Sweetwater River

Seca St
Sonett St
Greencrest Dr
Greencrest Ct
Marlyn Pl
Aspen Ln
Wind River Rd
Woodpine Dr
Via Rancho San Diego
Hilton Head Rd
Jamacha Rd
Willow Glen Dr
Ivanhoe Ranch Rd
Cottonwood Springs Ln
Ashley Park Dr
Indian Mills Ln
Wentworth Wy
Wentworth Dr
Steele Canyon Rd
Heatherwood Dr
Par Four Dr
Wildwind Dr
Jamul Dr
Greystone Dr

i:\PROJECTS\SCambraRealty_02975\SIR-02_Cottonwood\Map\RevegPlan\Fig10d_Revegetation.mxd SIR-02 11/9/2021 - RK

0 700 Feet

Source: Aerial (SanGIS, 2017)

HELIX Environmental Planning

Conceptual Reclamation Revegetation Areas - Phase 3

Figure 10d

- Project Site
- Phase 1
- Phase 2
- Phase 3
- Phase 4/Proccessing Plant
- Proposed Pathway
- Conceptual Multi-Use Trails (Post-Reclamation)
- San Diego National Wildlife Refuge
- Biological Open Space
- Easements and Rights-of-way
- Erosional Control Seed Mix
- Streambed

Bridge Right-of-way

SDG&E Towers

Greencrest Dr
Greencrest Ct
Seca St
Sonett St
Aspen Ln
Marlyn Pl
Wind River Rd
Woodpine Dr
Sweetwater River
Via Rancho San Diego
Hilton Head Rd
Jamacha Rd
Willow Glen Dr
Ivanhoe Ranch Rd
Cottonwood Springs Ln
Ashley Park Dr
Indian Mills Ln
Wentworth Wy
Wentworth Dr
Steele Canyon Rd
Heatherwood Dr
Par Four Dr
Jamul Dr
Greystone Dr
Wildwind Dr

i:\PROJECTS\SCambraRealty_02975\SIR-02_Cottonwood\Map\Revegplan\Fig10e_Revegetation.mxd SIR-02 11/9/2021 - RK

0 700 Feet

Source: Aerial (SanGIS, 2017)

HELIX Environmental Planning

Conceptual Reclamation Revegetation Areas - Phase 4

Figure 10e

3.1.2 County of San Diego

As part of the monitoring program, annual reports prepared by the Restoration Specialist will be submitted to the County and Wildlife Agencies (USFWS and CDFW). The County will review these reports for completeness and will determine the success of the revegetation effort together with the Wildlife Agencies.

3.1.3 Revegetation Project Designer

The Final Revegetation Plans (i.e., revegetation construction drawings) will consist of construction drawings, including irrigation and planting plans, prepared by a California registered landscape architect. These plans will meet the requirements set forth in Section 2.11 of the County's Report Format and Content Requirements for Revegetation Plans (County 2007). The landscape architect will inspect the irrigation system prior to seeding and planting, as needed, to help ensure proper installation and complete coverage of the revegetation area while minimizing runoff into the adjacent habitat.

3.1.4 Grading Contractor

Following the completion of all mining activities in each mining subphase, the grading contractor will establish final grades and install salvaged topsoil per the Final Revegetation Plans (grading plans). This contractor will have at least five years of experience in successful mine reclamation grading. Final grading and topsoil application will be coordinated with the Restoration Specialist.

3.1.5 Installation Contractor

The installation contractor will have at least five years of experience in successful native upland and wetland habitat restoration in Southern California and be under the direction of the Restoration Specialist, who will assist the contractor with the installation of the target vegetation type. Different contractors may be used for the installation and maintenance phases of the revegetation effort, or they may be the same entity. The project proponent may change contractors at its discretion, as long as the contractor has the required level of experience, as stated above. Installation may include, but is not limited to, ordering plantings and seed, removing non-native plants and trash, mulching dead trees, installing irrigation lines, container plants, and seed.

3.1.6 Restoration Specialist

Overall supervision of the installation, maintenance, and monitoring of this revegetation effort will be the responsibility of a qualified Restoration Specialist with at least five years of experience with successful native upland and wetland habitat restoration in Southern California. The Restoration Specialist will oversee the efforts of the installation and maintenance contractor(s) for the duration of the revegetation effort. Specific tasks of the Restoration Specialist include educating all participants with regard to revegetation goals and requirements, as well as directly overseeing final grading, topsoil application, weeding, planting, and seeding, as well as maintenance activities for the duration of the five-year maintenance period. The Restoration Specialist will explain to the contractor how to avoid impacts to existing sensitive habitat and sensitive species. When necessary to keep the revegetation effort on track to meeting final success criteria, the Restoration Specialist will provide the project proponent and contractor with a written monitoring memorandum, including a list of items in need of attention. The Restoration Specialist also will conduct annual assessments of the revegetation effort and

prepare and submit an annual report to the County and Wildlife Agencies each year during the five-year maintenance and monitoring period.

3.1.7 Maintenance Contractor

The maintenance contractor will have at least five years of experience in successful native upland and wetland habitat restoration in Southern California and be under the direction of the Restoration Specialist, who will assist the contractor with the maintenance of the target vegetation type. Different contractors may be used for the installation and maintenance phases of the revegetation effort, or they may be the same entity. The project proponent may change contractors at its discretion, as long as the contractor has the required level of experience, as stated above. The contractor will service the entire revegetation area as required, meet the Restoration Specialist at the site when requested, and perform all checklist items in a timely manner as directed by the project proponent. The maintenance contractor will be knowledgeable regarding the maintenance of native habitat and the difference between native and non-native plants. Maintenance would include but not be limited to non-native plant species control, trash removal, irrigation adjustments and repairs, and potentially re-seeding and/or re-planting. All maintenance activities would be seasonally appropriate and approved by the Restoration Specialist.

3.1.8 Nursery (Seed/Plant Procurement)

Plants and seed may be purchased from a nursery or supplier specializing in native plants or contract grown. Plant and seed material should be locally propagated and collected from central San Diego County, within 25 miles of the site. Plant/seed orders should be placed by the installation contractor at least six months prior to installation.

3.2 TYPES AND AREAS OF HABITAT TO BE REVEGETATED

Areas temporarily disturbed by mining activities are required to be reclaimed in accordance with the Reclamation Standards as identified in the Public Resources Code, Article 9, Section 3705, and Sections 1810 and 6550-6556 of the County Zoning Ordinance. Additionally, wetland buffer areas disturbed as part of mining activities are required to be restored in accordance with Section 86.605(d) of the County RPO (County 2011). A portion of the reclaimed area, totaling 1.00 acre, will be re-established to wetland and riparian in order to fulfill compensatory mitigation requirements as described in the Conceptual Wetland Mitigation Plan (HELIX 2021a). The remaining areas to be reclaimed shall consist of 109.51 acres of wetland and riparian forest and riparian scrub revegetation located within the widened Sweetwater River floodplain, 11.91 acres of cut slopes that will be revegetated with native upland vegetation (DCSS), and 96.09 acres of level pads to be seeded with an erosion control seed mix (Figure 9; Table 4, *Reclamation Revegetation by Mining Phase*).

Table 4
RECLAMATION REVEGETATION BY MINING PHASE (acre[s])[1]

Habitat Type	Mining Phase				Total
	Phase 1	Phase 2	Phase 3	Phase 4	
Native Habitat Revegetation					
Diegan Coastal Sage Scrub	2.93	3.26	5.72	0	11.91
Upland Revegetation Subtotal	*2.93*	*3.26*	*5.72*	*0*	*11.91*
Riparian Forest	7.81	3.64	3.06	0	14.51
Riparian Scrub	28.94	28.11	28.03	0	85.08
Streambed (Emergent Wetland)	3.86	3.40	2.66	0	9.92
Wetland/Riparian Revegetation Subtotal	*40.61*	*35.15*	*33.75*	*0*	*109.51*
Native Habitat Revegetation Total	**43.54**	**38.41**	**39.47**	**0**	**121.42**
Other Reclamation					
Erosion Control Mix	39.63	12.34	34.79	9.33	96.09
TOTAL	**83.17**	**50.75**	**74.26**	**9.33**	**217.51**

[1] Areas are presented in acre(s) rounded to the nearest 0.01.

3.3 FUNCTIONS AND VALUES

Native habitat revegetation will (1) increase the value of the existing riparian corridor for native flora and fauna; (2) improve areas mapped as USFWS critical habitat for San Diego ambrosia, least Bell's vireo, and coastal California gnatcatcher; (3) provide additional cover for wildlife movement; and (4) provide foraging and nesting habitat for riparian species known from the area, many of which are sensitive, such as least Bell's vireo, yellow warbler, and yellow-breasted chat (HELIX 2021b). The expanded floodplain is expected to provide functions and services typical of naturally occurring intermittent stream channels, such as stream-energy dissipation, to reduce erosion and improve water quality, groundwater recharge, sediment transport, water purification, and foraging, breeding, live-in, and dispersal habitat for wildlife. At the end of five years of maintenance and monitoring, the native revegetation area is expected to provide self-sustaining native habitat (i.e., capable of self-regeneration without continued dependence on irrigation, soil amendments, or fertilizer) that continues on the trajectory toward developing functions and values of adjacent native habitat without further active management.

3.4 TIME LAPSE

Mining operations will occur in three separate phases, in addition to a fourth phase for final reclamation, site cleanup, and equipment removal. It is anticipated that all four phases of mining and final reclamation will be completed in approximately 16 years (Table 5, *Approximate Timing of Mining and Reclamation Activities*). Each of the three main mining phases will include multiple subphases, with each subphase totaling less than 30 acres per phase. Each subphase will begin with vegetation removal, followed by topsoil salvage, resource extraction, backfilling, and finally reclamation of the impacted area. While the precise location and timing of mining and reclamation subphases are subject to market demand and variations in geologic conditions encountered in the field, overall mining followed by reclamation for each subphase will progress, as shown on Figure 5. Reclamation, and subsequent revegetation, will occur within each subphase immediately following the completion of mining activities. Reclamation shall consist of backfilling of excavated areas, grading of final contours, application of salvaged topsoil, and planting of container stock and/or application of seed mix. Sign off of the revegetation effort is expected by the end of the five-year maintenance and monitoring period for each individual subphase.

Table 5
APPROXIMATE TIMING OF MINING AND RECLAMATION ACTIVITIES

Mining Phase	Acres	Mining			Reclamation	
		Mining Duration (Years)	Mining Initiation Date (est.)	Mining Completion Date (est.)	Revegetation Initiation Date (est.)	Revegetation Completion Date (est.)
Phase 1						
Subphase 1A	24.00	1	2022	2023	2023	2028
Subphase 1B	24.43	1	2023	2024	2024	2029
Subphase 1C	29.90	1	2024	2025	2025	2030
Phase 1 Total	***78.33***	***3***	***2022***	***2025***	***2023***	***2030***
Phase 2						
Subphase 2A	15.38	1	2025	2026	2026	2031
Subphase 2B	20.50	1	2026	2027	2027	2032
Subphase 2C	13.98	1	2027	2028	2028	2033
Phase 2 Total	***49.86***	***3***	***2025***	***2028***	***2026***	***2033***
Phase 3						
Subphase 3A	28.60	1	2028	2029	2029	2034
Subphase 3B	14.60	1	2029	2030	2030	2035
Subphase 3C	13.99	1	2030	2031	2031	2036
Subphase 3D	15.30	1	2031	2032	2032	2037
Phase 3 Total	***72.49***	***4***	***2028***	***2032***	***2029***	***2037***
Phase 4	8.85	1	20312	2032	2032	2037
TOTAL	**209.63**	**11**	**2022**	**2032**	**2023**	**2037**

Compensatory mitigation for impacts to riparian habitat, other sensitive vegetation communities, and jurisdictional waters and wetlands will occur prior to or concurrent with initiation of project grading for Phase 1 (Table 6, *Compensatory Mitigation and Reclamation Revegetation Phasing*). Preservation of existing native riparian habitat and riparian habitat rehabilitation will occur prior to or concurrent with initiation of project grading for Subphase 1A. Initiation of wetland waters re-establishment would occur prior to or during the fall of the year in which project reclamation is completed, and revegetation is initiated for Subphase 1B. Sign off of the on-site wetland mitigation effort is expected by the end of the five-year maintenance and monitoring period.

Table 6
COMPENSATORY MITIGATION AND RECLAMATION PHASING

Habitat	Phase 1		Phase 2		Phase 3		Phase 4		Total	
	M[1]	R[1]	M[1]	R[1]	M[1]	R[1]	M[1]	R[1]	M[1]	R[1]
Conceptual Reclamation Revegetation										
Native Habitat Revegetation										
Riparian Forest	0	7.81	0	3.64	0	3.06	0	0	0	14.51
Riparian Scrub	0	28.94	0	28.11	0	28.03	0	0	0	85.08
Streambed (Emergent Wetland)	0	3.86	0	3.40	0	2.66	0	0	0	9.92
Coastal Sage Scrub	0	2.93	0	3.26	0	5.72	0	0	0	11.91
Subtotal	*0*	*43.54*	*0*	*35.15*	*0*	*33.75*	*0*	*0*	*0*	*121.42*
Other Reclamation										
Erosion Control Mix	0	39.63	0	12.34	0	34.79	0	9.33	0	96.09
Revegetation Total	***0***	***83.17***	***0***	***50.75***	***0***	***74.26***	***0***	***9.33***	***0***	***217.51***
Conceptual Compensatory Mitigation										
Wetland Waters Re-Establishment										
Riparian Forest	1.00	0	0	0	0	0	0	0	1.00	0
Rehabilitation										
Riparian Scrub	6.13	0	0	0	0	0	0	0	6.13	0
Preservation										
Open Water	0.31	0	0	0	0	0	0	0	0.31	0
Freshwater Marsh	0.82	0	0	0	0	0	0	0	0.82	0
Southern Cottonwood-Willow Riparian Forest	12.83	0	0	0	0	0	0	0	12.83	0
Southern Willow Scrub	1.05	0	0	0	0	0	0	0	1.05	0
Coastal Sage Scrub	0.72	0	0	0	0	0	0	0	0.72	0
Mitigation Total	**22.86**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22.86**	**0**
TOTAL	**22.86**	**83.17**	**0**	**50.71**	**0**	**74.26**	**0**	**9.33**	**22.86**	**217.51**

[1] M = Compensatory Mitigation; R = Reclamation Native Habitat Revegetation

3.5 COST

A draft cost of $450,000 for the life of the project for biological monitoring and reporting, and approximately $100,000 per acre on average for the installation and maintenance for five years was estimated for the overall reclamation addressed in this plan (averaged for irrigated and non-irrigated areas). Due to the extended nature of this project, this cost is preliminary and does not include the cost of inflation. This cost also does not include any grading, topsoil application, maintenance during the construction period, fencing installation/repairs, or erosion control.

4.0 DESCRIPTION OF THE REVEGETATION SITE

4.1 SITE SELECTION

Target habitat types to be revegetated within the portions of the site disturbed by mining activities were selected based on proposed final landform contours, landscape position, hydrology, existing habitats, and other biological factors. Post-reclamation, the site's final landform will be a relatively flat plain that gently slopes downward from east to west, with a widened river floodplain bisecting the length of the

site. The widened floodplain is expected to average approximately 250 to 300 feet in width, with the existing channel remaining in the center. The existing channel is expected to accommodate most flows from annual water transfers from Loveland Reservoir (located upstream of the site) to Sweetwater Reservoir (located downstream of the site). Cut slopes bordering the widened river channel shall be constructed at no greater than a 3:1 slope and shall slope up to the level pads located outside of the widened river. The top of the slope to the bottom of the channel may be up to 25 feet in areas.

The widened river floodplain shall be vegetated with riparian forest habitat within approximately 50 feet of the existing channel, and riparian scrub habitat in the remainder of the floodplain (Figure 9). Riparian habitat occurs immediately upstream and downstream of the project site, indicating that the site contains suitable hydrology to support riparian habitat. Sweetwater River conveys intermittent flows that are artificially modified by the Sweetwater Authority, which conducts controlled releases and water transfers from Loveland Reservoir (located upstream of the site) to Sweetwater Reservoir (located downstream of the site). An existing low flow channel shall be generally retained in place along the current Sweetwater River flow line to convey these flows. Non-native vegetation within the current channel would be removed, and the streambed would be seeded with an emergent wetland seed mix. The broadened floodplain area bordering the river shall be graded to an elevation approximately four feet above the low flow channel bottom which will allow floodwaters that breach the low flow channel to spread out in the adjacent floodplain area. Mapped soils within the widened river channel are primarily Riverwash and Visalia Sandy Loam (Figure 6), which are frequently found in alluvial floodplains within and near wetlands. The slopes bordering the widened river channel shall be vegetated with DCSS (Figure 10a), which occurs within the project site and surrounding area (Figure 7). The flat graded pads outside of the widened river floodplain shall be seeded with an erosion control seed mix in an effort to stabilize soils and prevent erosion.

4.2 LOCATION AND SIZE OF REVEGETATION SITE

The revegetation area is located on-site, between approximately 32.753919 and 32.740810 north latitude, and between -116.905365 and -116.928629 west longitude. A total of 217.51 acres of disturbed areas will be reclaimed and revegetated; 109.51 acres of wetland and riparian forest and riparian scrub revegetation located within the widened Sweetwater River floodplain, 11.91 acres of cut slopes that will be revegetated with native upland vegetation (DCSS), and 96.09 acres of level pads to be seeded with an erosion control seed mix (Figure 11, *Conceptual Biological Open Space*). Additionally, 1.00 acre of wetland waters re-establishment will be complete as addressed within the Conceptual Wetland Mitigation (HELIX 2021a).

In addition to the revegetation areas, wetland restoration to fulfill the project's compensatory mitigation requirements will occur contiguously with the proposed revegetation, at the downstream portion of Sweetwater River, in the southwestern portion of the site (Figure 9). The wetland mitigation effort, which includes a total of 22.14 acres of wetland waters re-establishment, rehabilitation, and preservation of wetland and riparian habitat on-site, is detailed in the Conceptual Wetland Mitigation Plan (HELIX 2021a).

4.3 FUNCTIONS AND VALUES

The areas proposed for revegetation are currently characterized by golf course fairways and associated infrastructure (i.e., cart paths, artificial ponds, clubhouse, etc.), ruderal vegetation and disturbed habitat associated with previous golf course development and operation, and a mixture of native and non-

native planted landscaped trees. The existing functions and values of these areas are limited as a result of previous development into a golf course; the area is currently dominated by Bermuda grass (*Cynodon dactylon*) or bare ground. Planted trees within the golf course currently provide potential breeding habitat for bird species such as the sensitive western bluebird, which was observed throughout the project site (HELIX 2021b). Patches of existing riparian habitat located east of Steele Canyon Road and in the downstream portion of Sweetwater River provide habitat for some birds, small rodents and mammals, and lizards and amphibians for both foraging, breeding, and live-in habitat. The least Bell's vireo was detected within this area during protocol surveys conducted in 2019 and confirmed to be breeding within existing riparian habitat located to the east of Steele Canyon Road (HELIX 2021b).

4.4 PRESENT AND PROPOSED USES

The site currently contains one operational and one abandoned public golf course (golf play and maintenance of landscaped turf in the western portion of the site was discontinued in 2017). Prior sand mining activities within the project site started in the early 1950s to the south of Sweetwater River and continued through the 1970s. Golf courses were constructed in the 1960s and 1970s. Intermittent mining within portions of the site have been ongoing concurrently with golf course operations. The most recent mining activities occurred in the western and southwestern portions of the site between 2007 and 2009, and in the extreme eastern portion of the site in 2016.

Following mining and reclamation activities, the project site will be characterized by an expanded Sweetwater River floodplain and associated riparian corridor that will be preserved within the project's biological open space (Figure 11) that will be managed over the long term by a habitat manager according to a Resource Management Plan (HELIX 2021c). Hiking trails are proposed to be established around the perimeter of the biological open space area following site reclamation; no hiking trails are proposed within the expanded Sweetwater River floodplain or associated DCSS slopes.

There are two easements that bisect the biological open space that will remain following mining activities and site reclamation. One of the easements consists of the Steele Canyon Road bridge right-of-way (ROW) that occurs within the central portion of the site (Figure 7). The Steele Canyon Road bridge ROW comprises the Steele Canyon Road bridge and associated footings that bisect the project's biological open space in a generally north to south direction across Sweetwater River. The Steele Canyon Road bridge ROW has been excluded from the biological open space; therefore, the presence of the bridge ROW is not expected to affect the long-term viability and management of the biological open space.

The second easement consists of a San Diego Gas & Electric (SDG&E) easement, which occurs within the central portion of the site, east of Steele Canyon Road, and crosses over the northeastern portion of the project site, where reclamation and revegetation activities are proposed to occur (Figure 9). The SDG&E easement bisects the project's biological open space area. The easement consists of overhead utility lines that run in a north/south direction across the Sweetwater River. Three transmission towers poles and other associated infrastructure have been excluded from the biological open space; therefore, the presence of the SDG&E easement is not expected to affect the long-term viability and management of the biological open space. A small portion of the area to be revegetated following extraction activities, approximately 3.20 acres, is proposed to occur within the SDG&E where temporary impacts would occur as a result of mining activities. The easement will be revegetated with the same plant palette as the rest of the revegetation area. Existing elevations would be lowered by 15 to 20 feet, but the three transmission towers would remain at their current elevation, leaving a raised "island" within the

expanded Sweetwater River floodplain. An access ramp would be constructed on the western side of the island to connect to a 28-foot-wide access road within the existing SDG&E right-of-way easement that runs from the towers to the top of the constructed southern slope at the southern boundary of the expanded floodplain. The ramp, access road, and slopes surrounding the towers would be compacted and lined, as needed, for access and to prevent erosion. It is expected that periodic trimming of vegetation to facilitate vehicle access by SDG&E maintenance crews would need to be conducted within the access road. This work would be conducted as needed by SDG&E. Fencing and signage would be installed along the ramp and access road to prevent unauthorized access and impacts to the native habitat revegetation area and biological open space located adjacent to the access road.

4.5 REFERENCE SITE

Native habitat within the southwestern portion of the site shall be used as a reference site for DCSS habitat. Revegetation goals for riparian forest and riparian scrub revegetation areas have been based on visual estimates of native cover noted in similar habitat in San Diego County.

5.0 IMPLEMENTATION PLAN

This section provides the details for the execution of the proposed revegetation.

5.1 RATIONALE FOR EXPECTING IMPLEMENTATION SUCCESS

The proposed revegetation effort is anticipated to be successful based on the following: (1) occurrence of healthy native upland and wetland vegetation within the project site; (2) the presence of appropriate soils within the riparian forest and riparian scrub revegetation areas; (3) flows through the nearby existing Sweetwater River channel, and associated groundwater levels, combined with natural rainfall and periodic surface flooding following major rain events, are expected to provide sufficient hydrology to support riparian vegetation within the riparian forest and riparian scrub revegetation areas; (4) the use of plantings and seed of native species known to occur on-site; (5) the use of temporary irrigation to aid plant establishment; and (6) a financial commitment to ensure the long-term management of the revegetated areas.

5.2 FINANCIAL ASSURANCES

A revegetation agreement shall be signed and notarized by the property owner following the approval of this Revegetation Plan and be accompanied by the required security as agreed upon by the County.

5.3 SCHEDULE

Plant and seed orders should be placed at least six months prior to targeted installation because some species may need to be specially collected and/or grown for the project. Topsoil salvage should occur prior to extraction activities within each mining subphase area. Revegetation activities will be initiated for each subphase immediately following the completion of mining activities in that area, as detailed above in Tables 5 and 6. Reclamation grading of the revegetation area and topsoil application using heavy equipment will follow the bird breeding season timing restrictions outlined in more detail further below. Irrigation (as applicable), plantings, and seed will be installed after final grades have been established. Maintenance of the revegetation area will begin following the completion of installation

- Project Site
- Conceptual Multi-Use Trails (Post-Reclamation)
- Proposed Pathway
- Open Space Conceptual Signage Location
- Existing Fencing
- Proposed Fencing
- Easements and Rights-of-way
- Limited Building Zone Easement
- Biological Open Space
- Non-Biological Open Space
- Additional Reclaimed Areas*
- Retained in Existing Condition

**Additional reclaimed areas are composed of graded upland pads located outside of the expanded Sweetwater River floodplain that will be seeded with an erosion control seed mix.*

Jamacha Way
Sonett St
Aspen Ln
Wind River Rd
Sweetwater River
Sea Pines Rd
Via Rancho San Diego
Bridge Right-of-way
Augusta Ct
SDG&E Towers
Ivanhoe Ranch Rd
Access Road
Jamacha Rd
Hilton Head Rd
Willow Glen Dr
SDG&E Easement
Steele Canyon Rd
Cottonwood Springs Ln
Ashley Park Dr
Indian Mills Ln
Wentworth Way
Heatherwood Dr
Jamul Dr
Par Four Dr
Greystone Dr

I:\PROJECTS\S\CambraRealty_02975\SIR-02_Cottonwood\Map\RevegPlan\Fig11_OpenSpace.mxd SIR-02 11/9/2021 - RK

0 700 Feet

N

Source: Aerial (SanGIS, 2017)

HELIX Environmental Planning

Proposed Biological Open Space

Figure 11

and will continue for five years within each individual subphase. Monitoring and coordination will begin during topsoil salvage and will continue during site preparation and through the five years after revegetation has been installed.

5.4 SITE PREPARATION

5.4.1 Protective Fencing

As part of the project design, temporary fencing will be installed around the perimeter of the project site where fencing is currently not present or in need of repair. In addition, during mining, temporary environmental fencing shall be installed around active work areas to protect sensitive biological resources, such as Sweetwater River and native vegetation communities. All construction-related fencing would be removed within an area that is being actively revegetated. No temporary fencing is proposed to be installed along the boundaries of the wetland and riparian forest and riparian scrub revegetation areas since it would be located within the Sweetwater River floodplain and is expected to periodically flood.

5.4.2 Topsoil Salvage

Prior to mining a subphase, the top two inches of soil will be scraped off and removed from the site. The next 6 to 12 inches of soil, as determined by the Restoration Specialist during salvage operations, would then be collected and stored on-site in windrows that are no more than three feet in height in an area that had been prepared for topsoil storage by clearing all vegetation and scraping away the top two inches. Stored topsoil should not be disturbed until it is installed in the revegetation area. Salvaged topsoil will be applied to the revegetated floodplain, as well as upland slopes around the floodplain perimeter.

5.4.3 Weed Control

Weed control shall be implemented during mining operations as directed in the project's Reclamation Plan (EnviroMINE 2021). Periodic monitoring through visual observations shall be conducted to identify and monitor non-native and invasive plant species populations within the project site. Weed control shall be implemented, if determined to be necessary, to control invasive weed species within the site. Non-native vegetation will be removed by hand or through the use of the wetland-approved herbicide.

5.4.4 Reclamation Grading and Salvaged Topsoil Application

Grading the revegetation area shall be completed as part of site reclamation immediately following the completion of mining operations within each subphase. Grading would include the establishment of all final slopes and topographic features and incorporation of accumulated wash fines and salvaged topsoil. The existing Sweetwater River low-flow channel shall be generally retained in place along the current Sweetwater River flow line to convey these flows and accommodate controlled releases and water transfers from Loveland Reservoir (located upstream of the site) to Sweetwater Reservoir (located downstream of the site), as operated by the Sweetwater Authority. The riparian forest and riparian scrub revegetation areas will be graded in accordance with the grading sheets of the Final Revegetation Plans. Final grade is expected to be approximately four feet above the existing low-flow channel. Graded areas within the expanded Sweetwater River floodplain shall be left in a rough grade state with micro

topographic relief that mimics natural topography. Planting and irrigation should not be installed until the Restoration Specialist has approved the grading.

Rip rap energy dissipation structures are proposed as part of the reclamation (Figures 9 and 10a through 10e). The purpose of the rip rap energy dissipation structures would be to dissipate stream flow energy, protect downstream areas from erosion, and protect existing infrastructure (i.e., Steele Canyon Road bridge and SDG&E transmission towers and powerlines). A rock drop structure is proposed to be installed downstream (west) of the Steele Canyon Road bridge within the widened Sweetwater River channel perpendicular to stream flows. Rock rip rap would be installed in two areas along the cut fill slopes: along the eastern slope of the widened channel where Sweetwater River enters the project site, and along the southern slope to the east of Steele Canyon Road at the confluence of Mexican Canyon Creek and Sweetwater River.

Reclamation grading and installation of salvaged topsoil will occur outside of the general bird nesting season (February 15 to August 31), coastal California gnatcatcher nesting season (March 1 to August 15), and least Bell's vireo nesting season (March 15 to September 15) to avoid impacts to nesting birds. If grading and reclamation activities must occur during one of these bird breeding seasons, the relevant mitigation measures contained in the project's BTR (HELIX 2021b), such as pre-construction surveys, shall be implemented.

5.4.5 Initial Weed Control

The native habitat revegetation areas will have been recently graded following mining and reclamation activities and are not expected to require any initial weed control.

5.4.6 Soil Amendments

No soil amendments are recommended for the native habitat revegetation area due to the proximity of healthy native riparian habitat and soils mapping, indicating that soils in this area consist of Riverwash and Tujunga sand (Figure 6; NRCS 2016), both appropriate for riparian forest and riparian scrub habitat. Soil amendments are likewise not expected for the DCSS habitat area due to the use of salvaged topsoil.

5.4.7 Erosion Control

Erosion control measures will be installed upstream of active revegetation areas wherever deemed necessary to prevent sediment movement to prevent sediment movement into the areas from nearby mining. Potential erosion control measures may include, but are not limited to, windrows of cut vegetation, organic matting, fiber rolls (straw wattles), and silt fencing. Any installed erosion control materials will be removed from the site once sufficient native plant cover is established. In addition, a hydro-slurry containing tackifier and wood fiber/mulch will be applied with the seed mixture to provide erosion control across the site.

5.5 PLANTING PLAN

5.5.1 Planting Palettes/Seed Mixes

After site preparation and irrigation installation have been completed within each reclaimed subphase, native plantings and/or seed will be installed within the riparian forest (Table 7, *Riparian Forest Plant*

Palette), riparian scrub (Table 8, *Riparian Scrub Plant Palette*), emergent wetland (Table 9, *Streambed (Emergent Wetland) Plant Palette*),and upland (Table 10, *Diego Coastal Sage Scrub Plant Palette*) revegetation areas, and an erosion control seed mix (Table 11, *Erosion Control Seed Mix*) will be applied to the graded pads located outside of the widened Sweetwater River floodplain (Figures 10a through 10e). Plantings will be irrigated with well water. The existing low-flow channel will be seeded with low growing herbaceous wetland vegetation to facilitate channel stability while not impeding potential channel maintenance activities.

The species selected for planting and seeding within native revegetation areas have been observed within the on-site habitat or are known to occur within the surrounding area. All plants and seed should be obtained from southern San Diego County, whenever possible. Container stock orders or production from seed may be needed up to 12 months prior to the anticipated installation date. Species substitutions, quantity changes, or use of commercial seed may be allowed, if necessary, at the discretion of the Restoration Specialist. The Restoration Specialist must approve all seed and container stock orders, including source locations, prior to ordering. The Restoration Specialist must inspect all plant material prior to installation; root bound material, any material with Argentine ants or other pests, and any other plants deemed damaged will not be accepted. Fast-growing annual species that are quick to germinate will be included in the seed mix to provide initial cover and help protect against soil erosion. Slower-growing perennials will provide long-term cover and further protection against erosion.

Table 7
RIPARIAN FOREST PLANT PALETTE[1]
(14.51 acres)

CONTAINER STOCK[2]				
Scientific Name	**Common Name**	**Spacing on Center (ft.)**	**Grouping Size**	**Number Per Acre**
Artemisia dracunculus	tarragon	5	5	100
Baccharis salicifolia	mule fat	6	10	230
Distichlis spicata	saltgrass	10	3	150
Iva hayesiana	San Diego marsh elder	5	5	120
Platanus racemosa	western sycamore	15	3	50
Populus fremontii ssp. *fremontii*	western cottonwood	15	3	50
Salix exigua	sand bar willow	8	5	120
Salix gooddingii	black willow	12	5	150
Salix laevigata	red willow	12	5	200
Salix lasiolepis	arroyo willow	12	5	200
Sambucus nigra	blue elderberry	10	3	50
			Total	**1,420**

SEED MIXTURE[2]			
Scientific Name	**Common Name**	**%Purity/ Germination**	**Pounds per Acre**
Ambrosia psilostachya	western ragweed	45/45	4
Ambrosia pumila	San Diego ambrosia	-	0.5[3]
Anemopsis californica	yerba mansa	55/80	1
Artemisia douglasiana	Douglas' sagewort	15/40	3
Artemisia palmeri	Palmer's sagebrush	20/50	2
Baccharis salicifolia	mule fat	10/20	3
Baccharis sarothroides	broom baccharis	7/42	1
Bolboschoenus maritimus	alkali bulrush	90/60	1
Croton californicus	California croton	90/40	1
Eleocharis macrostachys	pale spike-rush	95/60	1
Isocoma menziesii	goldenbush	18/40	1
Juncus acutus ssp. *leopoldii*	southwestern spiny rush	95/80	1
Juncus effusus var. *pacificus*	Pacific rush	95/60	0.5
Oenothera elata ssp. *hookeri*	evening primrose	98/84	0.5
Pluchea odorata	salt marsh fleabane	30/40	2
		Total	**22.5***

[1] The quantity of seed ordered for each phase/subphase will be determined based on the exact size of the area disturbed as part of mining activities.

[2] Substitutions require approval of the Restoration Specialist.

[3] San Diego ambrosia (*Ambrosia pumila*) will only be installed within the 1.00 acre of wetland re-establishment area as detailed in the Conceptual Wetland Mitigation Plan based on availability.

* No less than 20 lbs. per acre of seed shall be installed.

Table 8
RIPARIAN SCRUB PLANT PALETTE[1]
(85.08 acres)

	CONTAINER STOCK[2]			
Scientific Name	**Common Name**	**Spacing on Center (ft.)**	**Grouping Size**	**Number Per Acre**
Artemisia dracunculus	tarragon	5	5	200
Baccharis salicifolia	mule fat	6	10	250
Croton californicus	California croton	5	5	200
Distichlis spicata	saltgrass	10	3	200
Iva hayesiana	San Diego marsh elder	5	5	200
Platanus racemosa	western sycamore	15	3	30
Populus fremontii ssp. *fremontii*	western cottonwood	15	3	30
Salix exigua	sand bar willow	8	5	200
Salix gooddingii	black willow	12	5	100
Salix laevigata	red willow	12	5	30
Salix lasiolepis	arroyo willow	12	5	30
Sambucus nigra	blue elderberry	10	3	100
			Total	**1,570**

SEED MIXTURE[2]			
Scientific Name	**Common Name**	**%Purity/ Germination**	**Pounds per Acre**
Ambrosia psilostachya	western ragweed	45/45	4
Artemisia douglasiana	Douglas' sagewort	15/40	3
Artemisia palmeri	Palmer's sagebrush	20/50	2
Baccharis salicifolia	mule fat	10/20	3
Baccharis sarothroides	broom baccharis	7/42	1
Bolboschoenus maritimus	alkali bulrush	90/60	1
Croton californicus	California croton	90/40	1
Eleocharis macrostachys	pale spike-rush	95/60	1
Isocoma menziesii	goldenbush	18/40	1
Juncus acutus ssp. *leopoldii*	southwestern spiny rush	95/80	1
Juncus effusus var. *pacificus*	Pacific rush	95/60	0.5
Oenothera elata ssp. *hookeri*	evening primrose	98/84	0.5
Pluchea odorata	salt marsh fleabane	30/40	2
		Total	**21.0***

[1] The quantity of seed ordered for each phase/subphase will be determined based on the exact size of the area disturbed as part of mining activities.

[2] Substitutions require approval of the Restoration Specialist.

* No less than 20 lbs. per acre of seed shall be installed.

Table 9
STREAMBED (EMERGENT WETLAND) SEED MIX[1]
(9.92 acres)

SEED MIXTURE[2]			
Scientific Name	**Common Name**	**%Purity/ Germination**	**Pounds per Acre**
Anemopsis californica	yerba mansa	55/80	1
Artemisia douglasiana	Douglas' sagewort	15/40	3
Bolboschoenus maritimus	alkali bulrush	90/60	1
Cyperus eragrostis	tall flatsedge	80/75	1
Eleocharis macrostachys	pale spike-rush	95/60	1
Euthamia occidentalis	western goldenrod	24/45	1
Juncus effusus var. *pacificus*	Pacific rush	95/60	0.5
Pluchea odorata	salt marsh fleabane	30/40	2
		Total	**10.5***

[1] The quantity of seed ordered for each phase/subphase will be determined based on the exact size of the area disturbed as part of mining activities.

[2] Substitutions require approval of the Restoration Specialist.

* No less than 10 lbs. per acre of seed shall be installed.

Table 10
DIEGAN COASTAL SAGE SCRUB PLANT PALETTE[1]
(11.91 acres)

CONTAINER STOCK[2]				
Scientific Name	**Common Name**	**Spacing on Center**	**Grouping Size**	**Number per Acre**
Artemisia californica	California sagebrush	5	25	250
Bebbia juncea	rough sweetbush	10	3	50
Encelia californica	coast sunflower	5	20	100
Eriogonum fasciculatum	flat top buckwheat	5	25	250
Hazardia squarrosa	saw-toothed goldenbush	5	10	100
Hesperoyucca whipplei	chaparral yucca	3	3	50
Heteromeles arbutifolia	toyon	10	3	150
Mimulus aurantiacus	bush monkey flower	5	10	100
Rhus integrifolia	lemonadeberry	10	5	50
Salvia apiana	white sage	5	10	250
			TOTAL	**1,350**

SEED MIX[2]			
Scientific Name	**Common Name**	**Percent Purity/ Germination**	**Pounds Per Acre**
Acmispon glaber	deerweed	95/80	0.5
Amsinckia intermedia	common fiddleneck	45/65	1
Artemisia californica	California sagebrush	30/60	4
Deinandra fasciculata	fascicled tarplant	25/65	3
Encelia californica	California encelia	30/45	2
Ericameria palmeri var. *palmeri*	Palmer's goldenbush	N/A	2
Eriogonum fasciculatum	flat top buckwheat	50/20	7
Eriophyllum confertiflorum	golden-yarrow	N/A	2
Eschscholzia californica	California poppy	98/80	2
Lupinus bicolor	miniature lupine	98/85	1
Phacelia parryi	Parry's phacelia	95/80	1
Salvia apiana	white sage	88/30	3
Stipa lepida, deawned	foothill needlegrass	90/71	3
Stipa pulchra, deawned	purple needlegrass	90/75	3
		TOTAL	**34.5***

[1] The quantity of seed ordered for each phase/subphase will be determined based on the exact size of the area disturbed as part of mining activities.

[2] Substitutions require approval of the Restoration Specialist.

* No less than 30 lbs. per acre of seed shall be installed.

Table 11
EROSION CONTROL SEED MIX[1,2]
(96.09 acres)

Scientific Name	Common Name	Percent Purity/ Germination	Pounds Per Acre
Ambrosia psilostachya	western ragweed	45/45	6
Bromus carinatus	California bromegrass	95/90	8
Plantago insularis	plantain	98/75	20
Vulpia microstachys	small fescue	90/80	20
		TOTAL	**54***

[1] The quantity of seed ordered for each phase/subphase will be determined based on the exact size of the area disturbed as part of mining activities.
[2] Substitutions require approval of the Restoration Specialist.
* No less than 50 lbs. per acre of seed shall be installed.

5.5.2 Container Plantings

Container stock should be one-gallon size, rooted appropriately (i.e., neither root bound nor insufficiently developed), and should be installed in holes that are the same size as the planting container and backfilled afterward. Holes will be dug with mechanical augers where possible and by hand elsewhere. Plants should be installed in a way that mimics natural plant distribution; therefore, container plantings will be installed in groupings proportional to their density per acre. Upland planting holes should be filled with water twice before plantings are installed, and then watered in after planting.

5.5.3 Cuttings

Any riparian tree or shrub cuttings would be in addition to the container plantings and seed specified in Table 7 and Table 8. If feasible, cuttings should be collected from within the existing riparian corridor or the same watershed by personnel experienced in cutting collection and installation. Any species listed for planting can also be readily grown from cuttings installed directly into the ground, with the exception of blue elderberry (*Sambucus nigra*) and western sycamore (*Platanus racemosa*).

Prior to taking cuttings, it is essential that all equipment being used, typically consisting of a bucket of water and wood cutters, is sterilized so no pathogen cross-contamination occurs. To maintain genetic diversity within the restored areas, no more than 10 cuttings should be taken from any one plant. Ideally, cuttings should be stored in water for approximately one week to encourage root development following planting.

In general, willow (*Salix* spp.) and cottonwood (*Populus fremontii*) pole cuttings should be at least three feet long and 0.75 to 1.25 inches in diameter, with the end that will be inserted into the ground (snipped closest to the tree trunk) cut at a 45-degree angle to facilitate soil penetration and maximize surface area for root growth. Mule fat (*Baccharis salicifolia*) cuttings can be slightly smaller. Any foliage or side branches should be stripped from each cutting to minimize water translocation and allow the cutting to put its energy into root growth.

Cuttings should be installed a few feet into the ground such that the base of the cutting is at the water table. If the cutting is not in the water table or getting surface water (e.g., from supplemental irrigation), it will quickly dry out and die. Typically, a pole cutting is installed two to three feet deep. Cuttings should

be installed in groupings according to the spacing recommendations made in Tables 6 and 7. Smaller species such as mule fat can be interspersed between larger over-story plants such as willows and cottonwoods.

5.5.4 Seed

Within the riparian forest and riparian scrub revegetation areas, as well as within the existing channel streambed, seed will be dispersed by hand and/or with the use of a rotary seed applicator and raked into the soil as needed. The DCSS revegetation area and other reclaimed areas (i.e., erosion control seed mix areas) will be hydroseeded with a tackifier to add ground stabilization.

5.6 IRRIGATION PLAN

Temporary, above-ground irrigation lines will be installed in the native habitat revegetation areas (i.e., riparian forest, riparian scrub, and DCSS), which will be temporarily irrigated with well water, if accessible, otherwise, other irrigation connections will need to be established. The project landscape architect, together with the installation contractor, will inspect the irrigation system as well as coverage prior to plant/seed installation. Irrigation will not be installed on the graded pads located outside of the expanded Sweetwater River floodplain or within the existing channel.

Irrigation plan sheets included with the Final Revegetation Plans will show the Point of Connection (POC), available pressure, controller location, valves, piping, and head locations. If the POC is beyond the limits of the native habitat revegetation areas, the off-site irrigation service line to the POC will be identified. Irrigation plans will provide the required backflow protection at the POC, and identify the power source for the irrigation controller, if applicable.

6.0 MAINTENANCE PLAN

6.1 MAINTENANCE ACTIVITIES

A five-year maintenance program, which will be initiated immediately following revegetation installation, is proposed to ensure the successful establishment and persistence of riparian forest/riparian scrub and DCSS habitat within the revegetated portions of the project site. The five-year period will start separately for each sub-phase as revegetation is completed in that area. The maintenance program will involve the removal of non-native species and trash, irrigation maintenance, and any remedial measures deemed necessary for the success of the revegetation program (e.g., re-seeding and re-planting). Maintenance activities will be directed by the Restoration Specialist and implemented by the maintenance contractor.

The maintenance guidelines specified herein are tailored for native plant establishment. Maintenance personnel will be informed of the goals of the revegetation effort and the maintenance requirements. A professional with experience and knowledge in native habitat restoration maintenance will supervise maintenance. It is the maintenance contractor's responsibility to keep seeded and planted areas free of debris, to monitor irrigation function and scheduling as well as plant material condition and health, and to remove non-native vegetation. The maintenance contractor will also be responsible for replacing any dead or terminally stressed plants, at the direction of the Restoration Specialist. Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be

repaired as directed by the Restoration Specialist. The cost of such repairs will be paid for as extra work. The contractor will be responsible for damage caused by the contractor's inadequate maintenance or operation of irrigation systems, as determined by the Restoration Specialist.

6.1.1 Irrigation

The goal is to obtain germination and growth with the least amount of irrigation. Too much irrigation results in abnormal habitat and encourages invasion by non-native plants, leaches nutrients from the soil, and can increase erosion; therefore, water will be applied infrequently and only as needed to prevent plant mortality.

The irrigation system within the riparian forest, riparian scrub and DCSS revegetation areas will be maintained until the Restoration Specialist determines that supplemental water is no longer required. At that time, irrigation will be permanently disconnected (e.g., the mainline will be cut), but not removed. Above-ground portions of irrigation will be removed when directed by the Restoration Specialist, or following restoration sign off by the County.

6.1.2 Non-native Plant Control

Particular emphasis will be placed on the proactive removal of non-native vegetation. As non-native plants become evident, they should be removed by hand or controlled with the proper herbicides (if approved by the Restoration Specialist). The Restoration Specialist will oversee non-native plant control by the maintenance contractor; however, maintenance personnel must be knowledgeable in distinguishing non-native species from desirable native vegetation. If maintenance personnel mistakenly remove native species, the maintenance contractor will be responsible for rectifying the damage, at the direction of the Restoration Specialist.

Non-native plants considered to be moderately or highly invasive by the California Invasive Plant Council (Cal-IPC 2020) shall be eradicated within the boundaries of all native habitat revegetation areas for all five years of maintenance. Examples of invasive plants observed on-site, include but are not limited to, tamarisk (*Tamarix* spp.), giant reed (*Arundo donax*), Mexican fan palm (*Washingtonia robusta*), fennel (*Foeniculum vulgare*), Italian thistle (*Carduus pycnocephalus*), stinkwort (*Dittrichia graveolens*), pampas grass (*Cortaderia selloana*), and purple fountain grass (*Pennisetum setaceum*). Additional species may be added to this list, at the discretion of the Restoration Specialist. Non-native grasses listed as moderately or highly invasive will be controlled on-site, but due to their abundance in the local area, total eradication is not considered feasible.

6.1.3 Pruning

No post-installation pruning is necessary unless otherwise directed by the Restoration Specialist. For example, if it is necessary to remove an obstruction from or for the repair of the irrigation system.

6.1.4 Trash

All trash observed within the native habitat revegetation area should be removed for the duration of maintenance work in the respective sub-phase. All trash will be properly disposed of at a licensed landfill.

6.1.5 Pests

Insects, vertebrate pests, and diseases will be monitored. Generally, pests will be tolerated unless they pose a significant threat to restoration success. If deemed necessary, a licensed pest control adviser will make specific pest control recommendations. All applicable federal and state laws and regulations will be closely followed. The Restoration Specialist will be consulted on any pest control matters and will specifically monitor the native habitat revegetation areas for evidence of invasive shot-hole borers (*Euwallacea* sp.; SHBs). The Restoration Specialist will evaluate any regional methods for control of SHBs to determine if they are necessary at the revegetation area.

6.1.6 Fertilization

Fertilizer will not be applied in the maintenance phase, except in extraordinary circumstances and only at the written direction of the Restoration Specialist.

6.1.7 Special Status Species Issues

Maintenance activities are not anticipated to include the use of heavy equipment or vehicles and as such are not anticipated to have adverse effects on sensitive species. However, mechanical line trimmers may be used if deemed necessary by the Restoration Specialist, and all maintenance activities will be carried out under the direction of the Restoration Specialist, as necessary, to avoid any impacts to sensitive species.

6.1.8 Remedial Installation

Areas with low seed germination and establishment of native cuttings/plantings within the riparian forest and riparian scrub revegetation areas or associated DCSS slopes will be re-seeded and/or re-planted, at the direction of the Restoration Specialist. Areas seeded with the erosion control mix outside of the widened Sweetwater River channel will not be re-seeded.

6.2 SCHEDULE

6.2.1 Maintenance Schedule

Maintenance will be performed as necessary to prevent re-seeding by non-native plants and will likely change with varying site conditions and seasons. The schedule outlined herein (Table 12, *5-Year Maintenance Schedule*) serves only as a guideline, and more frequent maintenance may be required to prevent re-seeding by non-native vegetation and/or to meet interim cover limits for non-native vegetation. The maintenance contractor will complete maintenance requests from the Restoration Specialist within 14 days of any written request.

At a minimum, the maintenance contractor will be responsible for all maintenance activities during the five-year maintenance period. For the first three years, maintenance is expected to be required every month between January through June (to cover the peak establishment period of spring germinating species) and two additional times during the remainder of the year. Maintenance visits may be reduced to four per year in Years 4 and 5 if approved by the Restoration Specialist and County, and shall be timed to best control invasive species, based on weather patterns and monitoring results. The maintenance

contractor will complete maintenance requests from the Restoration Specialist within 14 days of any written request or monitoring report.

Table 12
5-YEAR MAINTENANCE SCHEDULE[1]

Phase	Schedule
Maintenance Contractor	
Year 1 through Year 3 January to June July to December	Total Eight Visits/Year Every Month (six Visits) Two Visits Total
Years 4 and 5	Total Four Visits/Year (three in Spring and one in Summer)

[1] This schedule is only a guideline; maintenance will be performed as necessary and as directed by the Restoration Specialist.

6.2.2 Irrigation Schedule

Following the start of the maintenance period, irrigation shall be applied daily (unless directed otherwise by the Restoration Specialist) to stimulate seed germination and ensure the survival of installed plantings. Once container plantings, cuttings, and seed are established, irrigation should become less frequent and deeper (usually accomplished with several consecutive irrigation events in a 24-hour period followed by several days with no irrigation). Native plants that are infrequently irrigated may grow slower initially but will ultimately be better able to withstand natural variations in rainfall and, therefore, be more successful long-term. Irrigation will be minimized to limit runoff and will be turned off during and following natural rainfall events. In the absence of rain events, irrigation will occur at a minimum of three times per week for the first two years to ensure plant establishment. By Year 3, irrigation shall be reduced and occur mainly during the natural rainy season (October through April), as needed to mimic an average rainy season. If the Restoration Specialist determines that there is sufficient native cover and plants are well-established, irrigation may be deactivated prior to the end of Year 3. To demonstrate that vegetation is self-sustaining, the irrigation system must be turned off for at least two years prior to the end of the five-year maintenance/monitoring period.

7.0 MONITORING PLAN

7.1 PERFORMANCE STANDARDS

Success criteria provide specific standards to evaluate the progress of the revegetation effort. Attainment of these standards indicates that an area is progressing toward the goals and habitat functions and services specified by this plan. Success of the native habitat revegetation area will be determined by comparing planting survivorship, vegetative cover, and species richness within the native habitat revegetation area to targets that have been established based on visual observations of similar native habitat in San Diego County (Table 13, *Success Criteria Milestones for the Native Habitat Revegetation Area*). Success criteria shall only apply to native habitat revegetation areas; no success criteria shall be applied to the erosion control pad.

Table 13
SUCCESS CRITERIA MILESTONES FOR THE NATIVE HABITAT REVEGETATION AREAS

Criteria	Target				
	Year 1	Year 2	Year 3	Year 4	Year 5
Diegan Coastal Sage Scrub Revegetation					
Minimum planting survivorship (percent)	90	80	--	--	--
Minimum native cover (percent)	--	--	40	50	60
Minimum native species richness (number of species)	4	4	5	6	7
Maximum non-native forb cover (percent)	5	5	5	5	5
Maximum non-native annual grass cover (percent)	5	5	10	15	20
Maximum target invasive cover[1] (percent)	0	0	0	0	0
Irrigation	YES	YES	YES	NO	NO
Riparian Forest Revegetation					
Planting survivorship (percent)	90	80	--	--	--
Minimum native cover (percent)	--	--	40	50	60
Minimum native species richness (number of species)	7	6	5	5	5
Maximum non-native cover (percent)	10	10	10	10	10
Maximum target invasive cover[1] (percent)	0	0	0	0	0
Irrigation	YES	YES	YES	NO	NO
Riparian Scrub Revegetation					
Planting survivorship (percent)	90	80	--	--	--
Minimum native cover (percent)	--	--	30	35	40
Minimum native species richness (number of species)	8	7	6	6	6
Maximum non-native cover (percent)	10	10	10	10	10
Maximum target invasive cover[1] (percent)	0	0	0	0	0
Irrigation	YES	YES	YES	NO	NO
Streambed (Emergent Wetland) Seeding[2]					
Maximum non-native forb cover (percent)	5	5	5	5	5
Maximum target invasive cover[1] (percent)	0	0	0	0	0

[1] Seedlings of invasive species are expected to volunteer each year; however, no target invasive species should be allowed to persist, or drop seed within the native habitat revegetation areas; excludes invasive annual grasses.

[2] Sweetwater River is subjected to periodic heavy flows as a result of water releases and transfers between Loveland Reservoir and Sweetwater Reservoir, as controlled by the Sweetwater Authority. As such, vegetation along the Sweetwater River is anticipated to be dynamic and transition between sections of unvegetated streambed and vegetated streambed and no minimum native cover requirement is required.

7.1.1 Survivorship

Container plant survival within the riparian forest, riparian scrub, and DCSS revegetation areas should be 90 percent of the initial plantings in Year 1 and 80 percent in Year 2 (Table 13). If these targets are not met, dead plants should be replaced unless their function has been replaced by natural recruitment.

7.1.2 Native Cover

Cover by native vegetation within the riparian forest and shrub habitat revegetation area should increase over time and ultimately approach that of the similar native habitat that occurs on-site and within adjacent areas. By the end of the five years, native cover in the riparian forest revegetation areas and on the DCSS slopes should be at least 60 percent, while native cover in the relatively dry but periodically scoured riparian scrub revegetation area should be at least 40 percent (Table 13). No native cover criterion has been established for the Sweetwater River low-flow channel (i.e.,

streambed/emergent wetland) as the river is subjected to periodic heavy flows as a result of water releases and transfers between Loveland Reservoir and Sweetwater Reservoir, as controlled by the Sweetwater Authority. As such, vegetation along the Sweetwater River is anticipated to be dynamic and transition between sections of the unvegetated streambed and vegetated streambed.

7.1.3 Native Species Richness

Species richness is the number of native species present in a given area. During the annual monitoring, species richness within the native habitat revegetation area will be determined by visual assessment only in Years 1 and 2 and within the belt and point intercept transects in Years 3 through 5. Annual success criteria for species richness for native species vary by year with at least seven native species present on the DCSS slopes, five species in riparian forest revegetation areas, and six native species present in the riparian scrub revegetation areas at the end of Year 5 (Table 13). If the species richness goal for a given year is not met, corrective measures (e.g., reseeding, planting, etc.), will be taken to ensure the eventual achievement of the five-year goal.

7.1.4 Non-Native Cover

Non-native cover is typically a problem with habitat restoration, particularly at the outset of a restoration effort. However, as the revegetation effort takes hold, and with diligent maintenance efforts, non-native cover should decrease to an acceptable level. Given the maintenance schedule for the site, non-native cover (including invasive annual grasses) within the existing Sweetwater River low-flow channel and riparian forest and riparian scrub revegetation areas should not exceed 10 percent for all five years of the revegetation effort (Table 13). On DCSS slopes, non-native annual grasses are expected to slightly increase over time within a native shrub understory, up to a maximum of 20 percent cover. Cover by non-native forbs, however, should be kept to no more than five percent throughout the five-year maintenance effort (Table 13).

7.1.5 Target Invasive Cover

Target invasive non-native plants ranked as moderately or highly invasive by the Cal-IPC (2020) should be completely eradicated from the native habitat revegetation area each year. New seedlings of invasive plants are expected since these species occur in surrounding open space; however, no target invasive species shall be allowed to persist, or drop seed, within the Sweetwater River low-flow channel, riparian forest, riparian scrub, or DCSS revegetation areas. Annual grasses listed as highly or moderately invasive do not need to be eradicated, rather they are included within the non-native annual grass cover success criterion (Table 13). Perennial invasive grasses, such as Bermuda grass, should be counted as invasive species and be targeted for eradication.

7.1.6 Irrigation

To provide evidence that native vegetation is self-sufficient, irrigation of the native habitat revegetation area must be shut off at least two years prior to the end of the maintenance/monitoring period.

7.2 TARGET FUNCTIONS AND VALUES

Upon meeting success criteria, the native habitat revegetation area will have a net functional lift in habitat values over the existing condition by providing higher quality foraging and breeding habitat as well as greater vegetative cover and microhabitat features.

7.3 TARGET ACREAGES

The native habitat revegetation area target acreages addressed in this plan include revegetation of 11.99 acres of DCSS, 99.59 acres of riparian forest and riparian scrub habitat, and 9.92 acres of streambed (i.e., Sweetwater River) over five years.

7.4 MONITORING METHODS

Monitoring will be carried out by the Restoration Specialist, beginning with plant/seed orders as well as all site preparation and habitat installation, and continuing through final sign-off of the revegetation areas, approximately five years after initial installation activities are completed. Monitoring of the native habitat revegetation area will include: (1) site preparation/installation monitoring; (2) maintenance monitoring; and (3) annual technical monitoring. The methods for the annual technical monitoring are provided below. During each visit, the Restoration Specialist will inspect the site to ensure that the revegetation effort is progressing as planned and identify any problems that may affect the effort.

7.4.1 Site Preparation/Installation Monitoring

The Restoration Specialist will coordinate with the installation contractor regarding all plant and seed orders/contract growing. In addition, they will coordinate with the installation contractor to help direct the harvest of native cuttings, as needed. The Restoration Specialist will be on-site regularly during grading of the final landforms and application of salvaged topsoil, and installation of erosion control measures, irrigation, and plantings/seed to ensure that activities are being conducted per this plan. The Restoration Specialist must inspect and authorize each phase of work before the next phase may begin. The monitoring schedule is outlined in Table 14, *Maintenance Monitoring Schedule*; additional monitoring may be needed if there are problems with the installation contractor's performance or unexpected difficulties with site preparation.

Table 14
MAINTENANCE MONITORING SCHEDULE[1]

Phase	Schedule
Site Preparation/Installation Monitoring	
Site preparation and installation	Daily, or as needed
Maintenance Monitoring	
Year 1 through Year 3 November to April May to October	8 visits Monthly June and August
Years 4 and 5	4 visits
Annual Technical Monitoring	
Once per year	Upland: April/May Wetland: August/September

[1] This schedule is the minimum monitoring frequency; additional monitoring may be required if there are problems with installation or maintenance contractor performance, unexpected difficulties with site preparation, or issues with habitat establishment.

Prior to the start of mining, and again prior to the start of installation for each subphase, the Restoration Specialist will document existing site conditions by taking photographs and noting any special conditions within the proposed native habitat revegetation area. To document the progress of the revegetation effort, the Restoration Specialist will identify at least four photographic documentation locations in each sub-phase area, though additional locations may be established, depending on the exact size of the subphase area. Photo stations will be mapped with a sub-meter accuracy global positioning system (GPS) and plotted on a map. These photos will be used for future comparison with post-installation and annual assessment photos.

7.4.2 Maintenance Monitoring

Maintenance monitoring of the native habitat revegetation area will consist of general site inspections focused on visual observations of native plant establishment and growth and other site conditions (e.g., presence of non-native plants, erosion, etc.), and will document all wildlife observed during each site visit for inclusion in the annual report. Following the installation of irrigation and plantings in the native habitat revegetation area, the Restoration Specialist will monitor and direct maintenance activities for the 5-year maintenance and monitoring period. In Years 1 through 3, visits will be conducted monthly from November through April (to cover the peak establishment and growth period for upland vegetation) and twice in the remainder of the year, for a total of eight visits per year (Table 14). During Years 4 and 5, monitoring will be conducted four times per year, with an emphasis on the spring and summer growing season. This monitoring schedule is the minimum; more frequent inspections may be necessary if there are problems with contractor performance or habitat development. Monitoring memos noting any issues with plant establishment, irrigation, sediment control, etc., will be provided as necessary to the installation/maintenance contractor(s) and the project proponent.

7.4.3 Annual Technical Monitoring

The Restoration Specialist will conduct annual technical monitoring of the native habitat revegetation area each year during the five-year maintenance and monitoring period. Annual monitoring will occur in the spring (April/May) for the DCSS slopes, and in late summer (August/September) for the riparian forest and riparian scrub habitats. The assessments are scheduled to coincide with the peak of the

growing season for the respective target habitat types. The exact timing of the visits will depend on on-site and weather conditions.

Technical monitoring of both the DCSS slopes and riparian areas will include both qualitative (visual) and quantitative (based on data collection) sampling, depending on the year. In Years 1 and 2, only qualitative monitoring will be conducted, consisting of the following: (1) photo documentation; (2) visual estimates of container planting survivorship, cover by native and non-native plants, target invasive species cover, and the average height of tree and shrub species; (3) a complete list of plant and animal species observed and detected; (4) general observations of plant health; and (5) observations of site hydrology and erosion. Starting in Year 3, quantitative sampling consisting of transect sampling will be conducted. The success of the wetland mitigation effort will be evaluated by comparing the habitat development with success criteria milestones (Table 13).

7.4.3.1 Photo Documentation

Photos will be taken as part of all five annual monitoring events and will be included in the respective year's annual report. Photos will be taken at the same photo locations that are established prior to the start of the revegetation effort. To visually demonstrate the progress of the revegetation effort, photos taken immediately after installation of each sub-phase will be included in each report for comparison with the respective year's annual assessment photos.

7.4.3.2 General Wildlife

During each of the five annual assessments, all wildlife incidentally observed or detected will be documented. No focused wildlife surveys will be conducted.

7.4.3.3 Transect Sampling

Starting in Year 3, 50-meter (m) transects will be used to collect quantitative data within the native habitat revegetation areas. These transects will be randomly located during the Year 3 annual assessment, marked in the field with PVC pipes, and mapped onto an aerial figure using a GPS. Plant cover data will be collected along each transect using the point intercept line transect sampling methods described in the California Native Plant Society's Field Sampling Protocol (Sawyer and Keeler-Wolf 1995). Native, non-native, and invasive plant cover data will be collected by recording all of the plant species intercepted at each 0.5-m interval along the length of each transect. Vegetation will be recorded separately for herb (0 to 0.6 m), shrub (0.6 to 2 m), and tree (greater than 2 m) layers. Species richness (the number of native species present in a given area) data will be collected by noting all species occurring along a 5-m belt transect centered on each line transect. A minimum of two 50-meter transects will be installed within both riparian forest and riparian scrub habitat in each sub-phase for a total of 40, 50-meter transects. At least one additional 50-meter transect will be sampled in each sub-phase that contains DCSS revegetation on upland slopes. Additional transects may be installed within a given sub-phase depending on the overall size of the revegetation area.

7.5 MONITORING REPORTS

7.5.1 As-Built Report

The Restoration specialist shall submit a brief as-built letter report to the County within 45 days of completion of revegetation of each individual sub-phase. The report will describe revegetation site preparation, installation methods, and the as-built status of the site. To document the implementation of the revegetation plan and baseline site conditions, the letter will include an as-built graphic on an aerial photo base as well as photos taken from the designated photo stations before and after the revegetation installation. The as-built letter will serve as the "time zero" report, noting when the five-year maintenance and monitoring period began.

7.5.2 Annual Reports

An annual report including qualitative and quantitative analysis will be prepared each year during the five-year monitoring period and submitted to the County and Wildlife Agencies. A single report will be submitted for the project site and shall clearly present the current revegetation status and monitoring results for each active individual sub-phase with active revegetation. Monitoring and maintenance field data shall be included as an addendum to each report.

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

8.0 COMPLETION OF REVEGETATION

Revegetation of the project site will be conducted in a staggered timeline as individual sub-phases are progressively reclaimed and revegetated following the completion of mining activities. As such, completion of the revegetation effort will be similarly accomplished in a staggered effort as each sub-phase is successfully revegetated. The County and Wildlife Agencies will be notified of revegetation completion within each sub-phase through the submittal of annual reports.

When sign-off is recommended for a particular project sub-phase, the County and Wildlife Agencies may inspect that area to determine the success of that revegetation effort. If an area meets all success standards, then the revegetation effort will be considered a success; if final success criteria are not met by the end of Year 5, the maintenance and monitoring program for that area may be extended until the standards are met, subject to County and Wildlife Agencies discretion. Specific remedial measures (approved by the County and Wildlife Agencies) will be used during any extension. Monitoring extensions will be done only for areas that fail to meet final success criteria. This process will continue until all Year 5 success criteria are attained or until the County, together with the Wildlife Agencies, determines that supplemental measures are appropriate. Should the revegetation effort meet all goals prior to the end of the five-year monitoring period, the County and Wildlife Agencies, at their discretion, may terminate the monitoring effort.

9.0 CONTINGENCY MEASURES

9.1 INITIATING CONTINGENCY MEASURES

If the County or Wildlife Agencies determine upon receipt of any of the annual monitoring reports that the revegetation effort is not meeting success standards, they shall notify the project proponent in writing that the revegetation effort may require additional measures for successful implementation. The project proponent shall then have 30 days to respond to the notification. During this period, the project proponent may discuss alternatives with the County and Wildlife Agencies.

9.2 ALTERNATIVE LOCATIONS FOR CONTINGENCY COMPENSATORY MITIGATION

Sufficient area for contingency restoration is present at the project site. If the success criteria are not being met, the County and Wildlife Agencies will work together with the project proponent to reach an alternative mutually acceptable solution.

The project proponent, New West Investment, Inc., shall be responsible for all costs associated with any remedial measures.

9.3 NATURAL DISTASTER

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

10.0 LIST OF PREPARERS

The following individuals contributed to the preparation of this report.

Sally Trnka[1]†	M.S., Biology, emphasis Ecology, San Diego State University, 1998 B.S., Biological Sciences, University of California-Davis, 1992
Benjamin Rosenbaum[2]	B.S., Biology, emphasis in Ecology, San Diego State University, 2009
Erica Harris[1]	B.S., Biology, Emphasis in Zoology, San Diego State University, 2009
Linda Garcia	M.A., English, National University, San Diego, 2012 B.A., Literatures in English, University of California, San Diego, 2003
Rebecca Kress	B.A., Geography, State University of New York, Geneseo, 1999

[1] Primary report author(s)
[2] Contributing author(s)
† County-approved Revegetation Planning Consultant

11.0 REFERENCES

American Ornithological Society (AOS). 2020. AOU Checklist of North and Middle American Birds (online checklist; 58th Supplement) Retrieved from: http://checklist.aou.org/taxa/.

Baldwin, B. G., Goldman, D. H., Keil D. J., Patterson R., Rosatti, T. J. and Wilken, D. H. (eds.). 2012. The Jepson Manual: Vascular Plants of California. Second edition. Berkeley, CA: University of California Press. 1568 pp.

Bradley, R.D., Ammerman, L.K., Baker, R.J., Bradley, L.C., Cook, J.A., Dowler, R.D. Jones, C., Schmidly, D.J, Stangi, F.B., Van De Bussche, R.A., Wursig, B. (2014). Revised checklist of North American mammals north of Mexico. Museum of Texas Tech University Occasional Papers. 327:1-27.

Calflora. 2020. Retrieved from: http://www.calflora.org/.

California Invasive Plant Council (Cal-IPC). 2020. California Invasive Plant Inventory Database. Retrieved from: https://www.cal-ipc.org/plants/inventory/. Accessed February 20, 2018.

County of San Diego (County). 2011. San Diego County Code Title 8 Zoning and Land Use Regulations, Division 6. Miscellaneous Land Use Regulations. Chapter 6. Resource Protection Ordinance. October 14.

2010. Guidelines for Determining Significance and Report Format and Content Requirements, Biological Resources. Fourth Revision, September 15. Retrieved from: https://www.sandiegocounty.gov/content/dam/sdc/pds/ProjectPlanning/docs/Biological_Guidelines.pdf.

2007. County of San Diego Report Format and Contents Requirements Revegetation Plans. July 30. Retrieved from: https://www.sandiegocounty.gov/content/dam/sdc/dplu/docs/Revegetation_Report_Formats.pdf.

1997. Multiple Species Conservation Program, County of San Diego Subarea Plan. October 22.

Davenport, Ken. 2018. Lepidoptera of North America 15. Butterflies of southern California in 2018: updating Emmel and Emmel's 1973 Butterflies of southern California. Colorado State University. Department of Bioagricultural Sciences and Pest Management; C.P. Gillette Museum of Arthropod Diversity. April 20. Retrieved from: https://mountainscholar.org/handle/10217/187314.

EnviroMINE, Inc. 2021. Reclamation Plan for the Cottonwood Sand Mining Project (PDS2018-MUP-003, PDS2018-RP-18-001, PDS2018-ER-18-19-007), Jamacha, Ca. October.

HELIX Environmental Planning, Inc. (HELIX) 2021a. Conceptual Wetland Mitigation Plan for the Cottonwood Sand Mine Project. November.

2021b. Biological Resources Technical Report for the Cottonwood Sand Mine Project. November.

HELIX (cont.)

2021c. Conceptual Resources Management Plan for the Cottonwood Sand Mine Project. November.

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency, 156 pp.

Jepson Flora Project (eds.) 2020. *Jepson eFlora*. Retrieved from: http://ucjeps.berkeley.edu/eflora/.

Natural Resources Conservation Service (NRCS). 2016. National Resource Conservation Service Web Soil Survey. Retrieved from: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

Oberbauer, T., M. Kelly, and J. Buegge. 2008. Draft Vegetation Communities of San Diego County. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California," R. F. Holland, Ph.D., October 1986. March. Revised from 1996 and 2005. July.

Pelham, Jonathon P. 2020. A Catalogue of Butterflies of the United States and Canada. University of Florida. Florida Museum of Natural History, McGuire Center for Lepidoptera and Biodiversity; University of Washington. Burke Museum of Natural History and Culture. Revised June 3. Retrieved from: https://www.butterfliesofamerica.com/US-Can-Cat.htm.

Sawyer, J.O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. CNPS. 472 pp.

Society for the Study of Amphibians and Reptiles (SSAR). 2020. North American Species Names Database. Retrieved from: https://ssarherps.org/cndb/.

Tremor, S., D. Stokes, W. Spencer, J. Diffendorfer, H. Thomas, S. Chives, and P. Unitt. 2017. San Diego Mammal Atlas. San Diego Natural History Museum.