APPENDIX D:
BIOLOGICAL RESOURCES REPORTS

THIS PAGE
INTENTIONALLY
LEFT BLANK

APPENDIX D-1:
SEIS BIOLOGICAL RESOURCES TECHNICAL REPORT

THIS PAGE
INTENTIONALLY
LEFT BLANK

BIOLOGICAL RESOURCES TECHNICAL REPORT
United States Gypsum Company
Expansion and Modernization Project

Prepared for:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, CA 92408

Prepared by:

Aspen Environmental Group
615 N. Benson Avenue, Suite E
Upland, CA 91786

March 2019

BIOLOGICAL RESOURCES TECHNICAL REPORT: United States Gypsum Company Expansion and Modernization Project

ASPEN ENVIRONMENTAL GROUP
March 2019

Contents

I. Executive Summary 1

II. Project and Property Description 1

III. Methods 3

IV. Results 4
IV. A. Vegetation 4
IV. B. Wildlife Habitat 7
IV. C. Climate 9
IV. D. Special-Status Species 9
IV. D. 1. Special-status Plants 10
IV. D. 2. Special-status Wildlife 26

V. Conclusions and Recommendations 35
V. A. Summary of Biological Resources Impacts 35
V. B. Existing and Recommended Biological Resource Mitigation Measures 43
V. B. 1. Adopted Biological Resource Mitigation Measures 43
V. B. Recommended General Avoidance and Minimization Measures 45
V. C. Recommended Species-specific Avoidance and Minimization Measures 47

VI. Literature Cited 49

Tables

Table 1. Survey Personnel and Dates 3
Table 2. Vegetation and Land Cover Types by Acreage 6
Table 3. Special-Status Plant Occurrence Probabilities in the Project Area. 11
Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas. 18

Attachments

Attachment 1 Figures
Attachment 2 Photo Exhibit
Attachment 3 California Natural Diversity Database Results
Attachment 4 Species List
Attachment 5 Special-Status Species Not Addressed
Attachment 6 California Natural Diversity Database Completed Forms

BIOLOGICAL RESOURCES TECHNICAL REPORT: United States Gypsum Company Expansion and Modernization Project

ASPEN ENVIRONMENTAL GROUP
March 2019

I. Executive Summary

This Biological Resources Technical Report (BRTR) was prepared under contract to the Lilburn Corporation to support National Environmental Protection Act (NEPA) review of the proposed United States Gypsum (USG) Expansion and Modernization Project. This report describes biological resources present at USG's Plaster City Quarry (quarry) and along two proposed water lines. This report incorporates and updates biological resources described in a Final Environmental Impact Report/ Environmental Impact Statement and attachments, published in 2008, by Imperial County and Bureau of Land Management (CEQA and NEPA lead agencies, respectively).

New biological field surveys were conducted in 2014, 2016, and 2017. This report provides updates mapping of vegetation and habitat; quantifies as well as updated reviews of potential occurrences for special-status species known from the region.

Special-status plants: No state or federally listed threatened or endangered plants, and no BLM-designated Sensitive Plants, have been recorded on the quarry site or pipeline routes. Three special-status plants (California Rare Plant Rank [CRPR] 2B) have been recorded in or around the proposed quarry expansion areas: annual rock-nettle, brown turbans, and narrow-leaf sandpaper-plant. In addition, four plants recognized as "watch-list" species (CRPR 4) have been recorded in or around the quarry area. Potential occurrence for all other special-status plants (not observed during surveys) is summarized in Table 3.

Special-status wildlife: One state and federally listed wildlife species, Peninsular bighorn sheep, occurs in and around the existing and proposed future quarrying areas. In addition, the state and federally listed desert pupfish occurs in the watershed, several miles north of the existing and proposed project facilities. Burrowing owl, a BLM-designated Sensitive Species was observed during Fall of 2014, but no burrowing owls were observed during field surveys conducted during breeding season. Two other BLM Sensitive Species, golden eagle and flat-tailed horned lizard, could occur in or around the project facilities, although they were not observed during field surveys. Other special-status wildlife species observed during field surveys were loggerhead shrike and black-tailed gnatcatcher. Potential occurrence for all other special-status wildlife (not observed during surveys) is summarized in Table 4.

This report briefly summarizes expected project impacts to biological resources, and recommends several mitigation measures to avoid, minimize, or offset those impacts.

II. Project and Property Description

This BRTR describes biological resources at USG's Plaster City Quarry (quarry) and along two proposed water lines to support a Supplemental Environmental Impact Statement (SEIS) in preparation for the USG Quarry Expansion and Modernization Project. The SEIS will supplement a Final Environmental Impact Report / Environmental Impact Statement (EIR/EIS) prepared by the County of Imperial and

Bureau of Land Management in 2008, and subsequently approved by the County. The project is briefly summarized here and shown on Figure 1 (Project Overview); a more complete project description may be found in the 2008 Final EIR/EIS and in Chapter 2 of the SEIS (in preparation). All proposed project activities and facilities would be located in Imperial County, California. The Proposed Action consists of:

- A replacement water line from USG's wells in Ocotillo to the existing Plaster City plant
- A new water line to serve the Plaster City Quarry
- Continuing and expanded quarrying operations at the Plaster City Quarry, including quarry reclamation

Replacement water line. The replacement water line route originates at a well field just south of the Interstate 8 (I-8) freeway in Ocotillo at about 375 feet elevation. It crosses beneath the freeway, and parallels Imperial County Route S80 to the north and east to Plaster City. Along the remainder of its length, the water line is within the existing road right-of-way, on the south side of the road. The eastern five miles of the water line are at the boundary of the BLM Plaster City Open Area for off-highway vehicles (OHVs) (BLM, 1998), and a designated OHV staging area is on the north side of Route S80 west of the Plaster City Plant. The Proposed Action would replace the existing water line by installing a larger line within approximately twenty feet of the existing alignment.

New water line. The proposed new quarry water line would originate at Quarry Well Number 3 and follow an existing narrow-gauge rail line to the quarry itself (Figure 1, Project Overview). The narrow-gauge line is owned and operated by USG to deliver raw materials from the Plaster City Quarry to the Plaster City Plant. The proposed pipeline route is within the narrow-gauge railroad right-of-way, originating at the well site and paralleling the railway to the quarry site. Habitat at the proposed well site and pipeline alignment is relatively stable sandy desert bajada supporting desert shrubland dominated by creosote bush.

Quarry location and operations. The USG Plaster City Quarry is located in the Fish Creek Mountains, about 26 miles northwest of the plant site, on the lower slopes of the Fish Creek Mountains (Figure 1, Project Overview and Figure 2, Plaster City Quarry Vegetation and Landcover). The Proposed Action includes expansion of the quarry areas on a series of mining claims to the south and southeast of the existing quarries. The existing and proposed quarry would be located primarily on private lands, but also would include new disturbance within mining claims on public lands managed by the Bureau of Land Management (BLM). The total acreage of USG's claims on public lands is 73.2 acres, and planned disturbance would be limited to 18.1 acres within them.

The area proposed for continuing and future quarrying is on middle and lower slopes and a broad alluvial wash. Elevation ranges from about 300 feet in the northwest corner to 1,041 feet at a small peak near the eastern boundary of the study area. Undisturbed upland slopes are composed of two parent materials: gypsum outcrops and metamorphosed sedimentary rock overlying older granitic rock. Both rock types support very sparse desert shrublands dominated by pygmy cedar (*Peucephyllum schottii*) on the gypsum and creosote bush (*Larrea tridentata*) on the metamorphic sedimentary material. The alluvial wash has a series of braided channels that evidently are scoured and redirected by infrequent flash flooding. Alluvial soils throughout the wash area support desert shrublands composed primarily of creosote bush, with stands of smoke tree (*Psorothamnus spinosus*) and catclaw acacia (*Senegalia* [*Acacia*] *greggii*) in the main channels. Quarrying activities would take place on the slopes and on the alluvial wash (to reach below-grade gypsum deposits, as shown in EIS Figure 2-10).

The primary wash and several of its tributaries are shown as ephemeral streams on the U.S. Geological Survey (USGS) topographic maps. Runoff from the project site drains to the north into Fish Creek Wash and then to the Salton Sea, an intrastate lake.

III. Methods

Justin Wood of Aspen Environmental Group reviewed available literature to identify special-status plants, wildlife, or plant communities known from the project vicinity. We reviewed the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2018) for USGS 7.5-minute topographic quadrangles (quads) on which the Plaster City plant, rail line, water line, or quarry expansion areas occur (Borrego Mountain SE, Carrizo Mountain NE, Harpers Well, Plaster City NW, Painted Gorge, Plaster City, and Coyote Wells) and several adjacent quads (Arroyo Tapiado, Harper Canyon, Yuha Basin, Carrizo Mountain, and In-Ko-Pah Gorge).

We also reviewed the California Native Plant Society (CNPS) *On-line Electronic Inventory* (CNPS 2018, for the quads listed above), and searched the Consortium of California Herbaria (2018) for records of special-status plants known from the area. Several special-status species occur only in specialized native habitats that are absent from the project site or occur at higher elevations that were included during the CNDDB search. These plants and animals are listed in Attachment 5, but are not addressed further in this report. All special-status plants and animals known from comparable habitats within the region are identified in Table 3 (plants) and Table 4 (wildlife), which summarize their habitat, distribution, conservation status, and probability of occurrence on the Project site.

This report incorporates the results of biological field surveys by White and Leatherman BioServices conducted in 2002 to support the previous CEQA and NEPA analysis, as follows: Scott White and Brian Leatherman drove the narrow-gauge rail line alignment on 23 April 2002; White drove the length of the replacement water line of 19 June 2002; White and Leatherman drove the replacement water line on 24 July 2002; White and Leatherman surveyed uplands within the quarry expansion area on 23 April 2002; Leatherman conducted surveys on the quarry from 27 to 29 March 2002.

Biological surveys to support the current NEPA review were conducted during October of 2014, April and October of 2016, and March and April of 2017 by Justin Wood (JW), Brian Leatherman (BL), Sandy Leatherman (SL), Greg Stratton (GS), Chez Brungraber (CB), and Michelle Cloud-Hughes (MC) as shown in Table 1. Members of the survey team have extensive experience with the special-status plants from the region, including the State and Federally listed species. They also have experience of the special-status wildlife species of the area.

Table 1. Survey Personnel and Dates

Personnel	Survey Dates	Area Surveyed
JW and SL	October 28-29, 2014	Quarry
JW, BL, GS, CB, and MC	April 4-5, 2016	Quarry
JW, SL, GS, CB, and MC	April 6-7, 2016	Quarry and proposed new pipeline
JW, SL, GS, and CB	April 11-13, 2016	Quarry and proposed replacement pipeline
JW, SL, GS, and MC	October 26-28, 2016	Quarry, both proposed pipelines
SL and CB	March 30-31, 2017	Both proposed pipelines

Surveys were conducted throughout the survey area which included all phases of the planned quarry expansion, the proposed new pipeline alignment, new well location, and existing Ocotillo water line alignment (proposed replacement pipeline). Surveys were conducted using the complete coverage method as described in the Survey Protocols for Special Status Plants which has been developed by BLM-California (BLM, 2009). This method was developed to survey for special status plants on projects that must comply with BLM policy, the National Environmental Policy Act (NEPA), and the Endangered

Species Act (ESA). The spacing between transects was typically ten meters but increased as the topography changed making ten meters spacing impracticable. The ten-meter spacing was intended to allow surveyors to locate small non-descript special-status annual plants. During the survey all special-status plants with a California Rare Plant Rank (CRPR) of 1 or 2 were recorded with a GPS unit. Following the surveys, a CNDDB form was completed for all occurrences separated by more than 0.25 miles.

In conformance with California Department of Fish and Wildlife guidelines (CDFG, 2009), botanical surveys were (a) conducted during flowering seasons for the special-status plants known from the area, (b) floristic in nature, (c) consistent with conservation ethics, (d) systematically covered all habitat types on the sites, and (e) well documented, by this report, photos that will be uploaded to CalPhotos (BSCIT, 2018), and by voucher specimens to be deposited at Rancho Santa Ana Botanic Garden and other herbaria. Documenting the flora with photos and vouchered specimens allows others to verify the identifications of species found within the survey area and can also be used by researchers and scientists to determine what plants have been found in the survey area.

During the field surveys, all plant and wildlife species noted were recorded in field notes. Plants of uncertain identity were collected and identified later using keys, descriptions, and illustrations in Baldwin et al. (2012), the Jepson eFlora database of California plants (Jepson Flora Project, 2018), and other regional references. All plant species observed during the surveys are listed in Attachment 4. All special-status plant locations within or immediately adjacent to the survey area will be reported to the CNDDB.

During the surveys Wood mapped vegetation within the Project area by drawing vegetation transitions on aerial images. These field maps were then digitizing into GIS shapefiles using ArcGIS (version 10.4) and one-foot pixel aerial imagery on a 22" diagonal flat screen monitor at the office. Vegetation was named using the names and descriptions in *A Manual of California Vegetation* (Sawyer et al 2009), when possible. The smallest mapping unit mapped was approximately 0.10 acres and most mapped vegetation boundaries are accurate to within approximately 10 feet. The small scale PDF vegetation map provided with this report was generated from ArcGIS shapefiles; the shapefiles were used to calculate areas of each vegetation type and may be viewed at larger scale for management or analysis purposes, if needed. Any vegetation map is subject to imprecision for several reasons:

- Vegetation types tend to intergrade on the landscape so that there are no true boundaries in the vegetation itself. In these cases, a mapped boundary represents best professional judgment.
- Vegetation types as they are named and described tend to intergrade; that is, a given stand of real-world vegetation may not fit into any named type in the classification scheme used. Thus, a mapped and labeled polygon is given the best name available in the classification, but this name does not imply that the vegetation unambiguously matches its mapped name.
- Vegetation types tend to be patchy. Small patches of one named type are often included within mapped polygons of another type. The size of these patches varies, depending on the minimum mapping units and scale of available aerial imagery.

IV. Results

IV. A. Vegetation

The quarry area is characterized by broad sandy wash and adjacent upland slopes and mountains. The wash slopes gently toward the northwest and is fed by several canyons in the Fish Creek Mountains (on

the northeast) and Split Mountain (on the southwest). The wash is vegetated by several types of wash shrubland and woodland as described below. The uplands are also vegetated by a variety of shrubland types. A total of seven vegetation types were mapped within the Project site. Other land cover types including sparsely vegetated sandy wash and existing development were also mapped within the Project area. Vegetation and cover types within the Project area are described in the following paragraphs and mapped on Figure 2 (Plaster City Quarry Vegetation and Landcover). Acreages of each vegetation and cover type within the Project site are shown in Table 2.

Creosote bush scrub (*Larrea tridentata* Shrubland Alliance). Creosote bush scrub is an upland vegetation type that is characterized by creosote bush (*Larrea tridentata*) which is the dominant shrub. Other species such as dyebush (*Psorothamnus emoryi*), desert straw (*Stephanomeria pauciflora*), and indigo bush (Psoro-Thamnus schottii) are also present but in much lower numbers. It is most common in the uplands along the northwest portion of the Project site.

Creosote bush–white bursage scrub (*Larrea tridentata–Ambrosia dumosa* Shrubland Alliance). Creosote bush–white bursage scrub is an upland vegetation that is characterized by creosote bush and white bursage (*Ambrosia dumosa*) which co-dominate these areas. Several other species are present in these areas including (*Condea emoryi*), desert straw, ocotillo (*Foquieria splendens*), and three species of cholla (*Cylindropuntia* spp.). Scattered catclaw (*Senegalia greggii*) are also present in some of the smaller upland swales that originate in these areas and eventually change to catclaw acacia thorn scrub further downstream.

Catclaw acacia thorn scrub (*Acacia greggii* Shrubland Alliance). Catclaw acacia thorn scrub is a wash vegetation that is dominated by catclaw. Other species such as desert lavender, smoke tree (*Psorothamnus spinosus*), cheesebrush (*Ambrosia salsola*), and sweetbush (*Bebbia juncea*). It is most common in the upper washes and in more isolated portions of the main wash that are slightly protected from scouring flows.

Smoke tree woodland (*Psorothamnus spinosus* Woodland Alliance). Smoke tree woodland is a wash vegetation that is dominated by smoke tree. Other species such as desert lavender, indigo bush, catclaw, desert willow (*Chilopsis linearis*), and cheesebrush (*Ambrosia salsola*) are also present. Several desert ironwood (*Olneya tesota*) were also present within the smoke tree woodlands along the Ocotillo pipeline alignment. It is most common in the large wash that flows through the lower elevations within the Project site. It grows in the most active portion of the wash that is frequently scoured. Some areas mapped as smoke tree woodland have very little vegetative cover, primarily because of scouring floods that hit the area in 2014. Many of the dominate trees and shrubs survived but were buried or knocked over and are continuing to recover. Smoke tree woodland is ranked by CDFW as a sensitive natural community (CDFW 2010).

Desert fir scrub (*Peucephyllum schottii* Shrubland Alliance). Desert fir scrub is an upland vegetation type that grows on the gypsum outcrops within the Project site. It is dominated by desert fir (*Peucephyllum schottii*) with other species such as flat-topped buckwheat (*Eriogonum plumatella*), and creosote bush also present but in much lower numbers. The areas mapped as this vegetation type do not match any of the vegetation types named or described in *A Manual of California Vegetation* (Sawyer et al. 2009). Therefore, we have named it to best match the naming convention used in Sawyer et al (2009). It is a very sparse vegetation type that is made up of three species including desert fir,

Allscale scrub (*Atriplex polycarpa* Shrubland Alliance). Allscale scrub is a dominated by allscale (*Atriplex polycarpa*) and is present along the Ocotillo pipeline alignment. It grows on fine sandy soils and old playa-like habitats near the community of Ocotillo. Other species such as cheesebrush, dyebush, creosote bush,

white bursage, and big galleta (*Hilaria rigida*). Fine wind-blown sands are present at several areas along the Ocotillo pipeline.

Tamarisk thickets (*Tamarix* spp. Shrubland Semi-Natural Alliance). Tamarisk thickets was used to map one patch of vegetation dominated by saltcedar (*Tamarix ramosissima*) and athel tamarisk (*Tamarix aphylla*). Tamarisk thickets are present in a single location within the Project area where flood waters in 2014 ponded and allowed these species to flourish.

Sparsely vegetated sandy wash. Sparsely vegetated sandy washes are present within the quarry, the northern pipeline alignments and along the Ocotillo pipeline alignment. It is used to map areas that are largely unvegetated washes with scattered shrubs such as sweetbush and cheesebrush. Seedling trees such as smoke tree and desert ironwood may be present but in very low numbers. These washes have a high abundance of spring annuals.

Table 2. Vegetation and Land Cover Types by Acreage

	Vegetation and Land Cover Types							
Project Component	Creosote bush scrub	Creosote bush – white bursage scrub	Catclaw acacia thorn scrub	Desert fir scrub	Sparsely vegetated sandy wash	Smoketree Woodland	Tamarisk Thickets	Disturbed/Developed
Existing Phase 1A	0	0	0	2.3	0	0	0	161.4
Existing Quarry 1B	0	0	0	4.1	0	0	0	146.0
Existing Phase S1	2.6	0	0	6.9	0	0	0	22.5
Existing Phase S2	0.8	0	0	16.9	0	0	0	6.7
Existing Phase S3	2.0	0	0	15.4	0	0	0	1.6
Existing Shoveler Haul Rd	0	0	0	0	0	0	0	3.0
Phase 2	28.2	1.4	17.5	4.7	12.7	3.2	0	20.2
Phase 2p	0	1.8	3.0	0	0.6	0	0	0
Phase 3	7.9	0	15.7	0	3.9	0.6	0.4	7.9
Phase 3p	8.8	0	0	0	1.0	1.1	0	0
Phase 4	0	0	9.4	0.9	7.2	12.8	0.05	16.2
Phase 5	0	0	10.4	0	6.7	4.5	0	9.4
Phase 6	18.6	13.1	1.8	32.6	2.7	0	0	2.4
Phase 6Bp	4.3	0	0	42.9	0	0	0	0.02
Phase 6 Haul Rd	3.3	0	0	0.1	0	0	0	0.2
Phase 7	2.8	25.0	11.3	46.1	2.7	0	0	3.6
Phase 7Bp	1.8	0	0	30.5	0	0	0	0.05
Phase 7 Haul Rd	1.7	0	0	0	0	0	0	0
Phase 8	1.9	70.4	8.0	30.5	2.8	0	0	2.8
Phase 8p	0	4.6	2.0	0	0	0	0	0.2

Table 2. Vegetation and Land Cover Types by Acreage

	Vegetation and Land Cover Types							
Project Component	Creosote bush scrub	Creosote bush – white bursage scrub	Catclaw acacia thorn scrub	Desert fir scrub	Sparsely vegetated sandy wash	Smoketree Woodland	Tamarisk Thickets	Disturbed/Developed
Phase 9	0	15.6	1.5	36.1	1.0	0	0	0.1
Phase 10	0	0	8.2	0	0.6	0.3	0	4.2
Phase 10p	0	0	19.6	0	0.4	14.2	0	0.3
Mill site claims (multiple)	0.3	10.5	3.1	0	2.3	1.5	0	1.0
Processing Area	0	0	0	1.3	0	0	0	37.8
Total	85.0	142.4	111.5	271.3	44.6	38.2	0.45	447.6

Note that acreage total (1,141) varies slightly from Plan of Operations (1,145) due to rounding error and minor digitizing discrepancies.

Existing development (quarry, roads, railway, and other infrastructure). This cover type was used to map areas that are active quarry, roads (paved and unpaved), railroad, and other developed areas. These areas have a very limited amount of vegetation.

IV. B. Wildlife Habitat

The term *habitat* refers to the environment and ecological conditions where a species is found. Wildlife habitat is often described in terms of vegetation, though a more thorough explanation encompasses further detail such as availability or proximity to water, suitable nesting or denning sites, shade, foraging perches, cover sites to escape from predators, soils that are suitable for burrowing or hiding, proximity of noise and disturbance, and other factors that are unique to each species. For many wildlife species, vegetation reflects important components of habitat, including regional climate, physical structure, and biological productivity and food resources. Thus, the vegetation descriptions in Section IV.A. are useful overarching descriptors for wildlife habitat. The predominant vegetation types in the project area correspond to habitats identified as desert wash (described in Section IV.A., above, as smoke tree woodland and catclaw acacia thorn scrub), desert scrub (described above as creosote bush scrub and creosote bush–white bursage scrub) and alkali desert scrub (described above as allscale scrub) as classified by the California Wildlife Habitat Relationships (Mayer and Laudenslayer, 1988).

Where additional details of habitat suitability are necessary to this analysis, they are provided in the discussion of special-status wildlife species. Examples include the availability of steep slopes and water sources for Peninsular bighorn sheep. The following paragraphs summarize wildlife habitat and list a few of the wildlife species that either have been observed or are expected to occur in the habitat types found within the project site and surrounding area.

Plaster City Quarry. The existing quarry and proposed quarry expansion area is in an elongated valley along an unnamed wash and on the lower hillsides of the northeastern Fish Creek Mountains. The dominant landforms are a broad alluvial wash and adjacent toeslopes and mountainsides. The planned

quarry expansion area is on middle and lower slopes and the adjacent part of the alluvial wash. Undisturbed upland slopes are composed of two parent materials: gypsum outcrops and metamorphosed sedimentary rock overlying older granitic rock. Both rock types support very sparse desert shrublands dominated by creosote bush on the igneous material and by pygmy cedar on the gypsum. The mountainsides are very steep (average slopes are about 20 percent) and rocky with frequent areas of exposed bedrock and actively eroding talus. Exposed ridgetops have thin soil overlying bedrock.

The alluvial wash slopes gently (about 2 percent), generally toward the northwest. It drains slopes of the Fish Creek Mountains (on the northeast) and Split Mountain (on the southwest) via unnamed washes and smaller tributaries, and by sheet flow. Surface runoff drains to the north across the alluvial fan into Fish Creek Wash, through a system of braided tributaries across the bajada to San Felipe Creek and San Sebastian Marsh, and then to the Salton Sea. The alluvial wash has a series of braided channels that evidently are scoured and redirected by infrequent flash flooding. In some areas, the channels are deeply incised, reaching bedrock. Alluvial soils throughout the wash are poorly developed and consist of sands with high rock content (primarily cobbles in the 3- to 10-inch range, but also larger rocks and boulders). Eroded channel banks show similar high rock content in the subsurface layers. These soils present a poor substrate for burrowing wildlife. The alluvial soils support desert shrublands composed primarily of creosote bush, with stands of smoke tree and catclaw acacia in the main channels.

Gypsum deposits are found on a north-south trend for about 4.5 miles along the northern portion of the Fish Creek Mountains. Contiguous gypsum outcrops range in elevation from 920 feet above mean sea level (MSL) at the southernmost limit of the deposit to about 325 feet MSL at the northernmost exposures. Outlying deposits of gypsum occur east of the main deposit at elevations of 700 to 1,000 feet MSL.

The quarry and adjacent mountains evidently have no permanent or long-lasting seasonal water sources (based on field observations and absence of mapped springs or perennial streams on USGS topographic maps). However, there is a series of natural rock tinajas[1] located about 1.8 miles southeast of the quarry area. The tinajas have been reported as holding water for much of the year, although a volunteer checked the site in November 2017 and found it to be dry. Several additional water sources are located west of the quarry area, within Anza Borrego Desert State Park. These tinajas appear to supply a dependable water source throughout much of the year for wildlife.

A few of the characteristic wildlife species observed in the quarry expansion area are: desert horned lizard (*Phrynosoma platyrhinos*), zebra-tailed lizard (*Callisaurus draconoides*), desert iguana (*Dipsosaurus dorsalis*), mourning dove (*Zenaida macroura*), Costa's hummingbird (*Calypte costae*), verdin (*Auriparus flavipes*), common raven (*Corvus corax*), coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*) and desert woodrat (*Neotoma lepida*). A full list of wildlife species observed at the quarry expansion area is included in Attachment 4.

New water line. The proposed new water line route crosses open desert shrubland on the alluvial slope and immediately adjacent toeslopes northward from the existing quarry, and along the desert bajada to the proposed well site. Soils are generally a mix of rocky coarse-textured alluvium overlain in some areas by windblown sand. The water line route is expected to support common desert wildlife species such as

[1] A tinaja is a natural cistern-like basin which fills during rainstorms and retains water for an extended period. They are often created by erosional processes in intermittent stream channels, and can serve as water sources for wildlife in otherwise dry landscapes.

those identified for the quarry expansion area, as well as animals such as flat-tailed horned lizard, with specialized adaptations for windblown sands.

Replacement water line. The replacement water line route crosses the desert floor within open desert shrublands and, often, barren areas along roadways. The route is expected to support common desert wildlife species such as those identified for the quarry expansion area, as well as animals such as flat-tailed horned lizard, with specialized adaptations for windblown sands, and opportunistic wildlife species commonly seen in disturbed, ruderal, and non-vegetated areas. Examples include common ravens which frequently perch or nest near roadways and feed opportunistically on road-killed animals. Coyotes may also take advantage of these habitats.

Wildlife Movement. In many regions, land development and linear structures such as roadways, railroads, and canals have converted once-contiguous habitat into scattered patches separated by barriers, so that individual animals and entire populations are now isolated in remnant habitat "fragments." Depending on their size and other characteristics, these fragments may not support viable populations of some animals. For example, certain bird populations become locally extinct when their habitat is fragmented by urban development. The Quarry site is in an area that has not been significantly fragmented. Much of the surrounding land is either public open space managed by the BLM or California State Parks, or privately owned undeveloped land. Adequate habitat is available for wildlife movement throughout the general area, especially along ridgelines to the northeast and southwest and in large open areas to the south. In the immediate area, no true barriers to wildlife movement exist, but several man-made deterrents to wildlife movement include active mining and associated facilities, access roads and haul roads. The two pipeline routes are adjacent to existing linear facilities which also may deter wildlife movement to some extent.

IV. C. Climate

Average rainfall in Borrego Springs, approximately 18 miles northwest of the Project area is 5.32 inches (U.S. Climate Data 2018). The rainfall total for the 2015-2016 rainfall year (July-June) in Borrego Springs was 2.18 inches, approximately 41% of the average (U.S. Climate Data 2018). The rainfall total for the 2016-2017 rainfall year In Borrego Springs was 4.43 inches, approximately 83% of the average (U.S. Climate Data 2018). Average rainfall in El Centro, approximately 17 miles east of the existing pipeline is 2.87 inches (U.S. Climate Data 2018). The rainfall total for the 2015-2016 rainfall year in El Centro was 1.89 inches, approximately 66% of the average (U.S. Climate Data 2018). The rainfall total for the 2016-2017 rainfall year was 2.72 inches, approximately 94% of the average (U.S. Climate Data 2018).

IV. D. Special-Status Species

Plants or wildlife may be ranked as special-status species due to declining populations, vulnerability to habitat change, or restricted distributions. Certain species have been listed as threatened or endangered under state or federal Endangered Species Acts. Others have not been listed, but declining populations or habitat availability cause concern for their long-term viability. These appear on lists compiled by resource agencies or private conservation organizations. In this report, "special-status species" is used to include all plants and animals listed as threatened or endangered, recognized by the BLM sensitive, or identified by the California Department of Fish and Wildlife. Table 3 represents all special-status species and their potential to occur on the Project site.

IV. D. 1. Special-status Plants

Table 3 and Attachment 5 list the special-status plant species reported within the USGS 7.5-minute quads surrounding the Project area. No State or federally listed plants were observed during the surveys or have potential to be present. Five special-status plant species (Wolf's opuntia, CRPR 4; winged cryptantha, CRPR 4; annual rock nettle, CRPR 2B; Coulter's lyrepod, CRPR 2B; brown turbans, CRPR 4) were observed and are discussed below. Annual rock nettle was observed at locations shown on Figure 3 (Biological Resources). The other species locations were not mapped due to either widespread occurrences (brown turbans) or low-priority conservation status (Wolf's opuntia, winged cryptantha, and Coulter's lyrepod).

Listed Threatened or Endangered Plants

One State and federally listed endangered plant species, San Diego button-celery (*Eryngium aristulatum* var. *parishii*), has been reported from the USGS 7.5-minute quads surrounding the Project area (CDFW, 2018). This plant occurs only in vernal pools in San Diego, Orange, and Riverside counties, inland as far as the In-Ko-Pah Gorge area. It is considered absent from the Project area due to lack of any suitable vernal pool habitat. No other State or federally listed plants have potential to be present or were identified during the literature review.

BLM Sensitive Plants

Six plants recognized by the BLM as sensitive have at least some potential to be present within the Project area. Of these, none were observed and only two species have at least a moderate potential to be present and are discussed below (text continues following the tables).

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Abronia villosa var. *aurita* Chaparral sand verbena	Annual or perennial herb; sand, about 250–5300 ft. elev.; San Jacinto Mtns, Inland Empire, adj. Colorado Des, Orange & San Diego cos; mostly alluvial fans and benches in western Riverside Co; dunes in deserts; not rare in the deserts	Feb-Jul	FED: none BLM: S CA: S2 CRPR: 1B.1	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.	Moderate: suitable habitat present.
Acmispon haydonii (Lotus haydonii) Pygmy lotus	Perennial herb; rocky places in desert scrub, pinyon juniper woodland; about 1700–4000 ft. elev.; San Diego and Imperial Cos., Baja	Jan-Jun	FED: none BLM: S CA: S3 CRPR: 1B.3	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.
Astragalus crotalariae Salton milk-vetch	Perennial herb; sandy flats and alluvial fans; below about 1000 ft. elev.; Sonoran Desert, to Arizona and Baja	Jan-Apr	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.	High: Suitable habitat present; records from within 1 mile of Project area.
Astragalus insularis var. *harwoodii* Harwood's milk vetch	Annual herb; sand, mainly dunes, also washes and slopes; below about 1200 ft. elev.; SE Calif. to Ariz., Baja and Sonora (Mexico)	Jan-May	FED: none BLM: none CA: S2 CRPR: 2B.2	High: suitable habitat throughout survey area.	High: suitable habitat throughout survey area.	High: suitable habitat throughout survey area.
Astragalus lentiginosus var. *borreganus* Borrego milk-vetch	Annual herb; windblown or stabilized dune sand; below about 800 ft. elev.; E Mojave and S Sonoran deserts, Ariz., Baja, Sonora (Mexico);	Feb-May	FED: none BLM: none CA: S4 CRPR: 4.3	Minimal: no suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.
Astragalus sabulonum Gravel milk-vetch	Annual/perennial herb; sandy or gravelly soil in flats, washes, roadsides in desert dunes, Mojavean desert scrub, Sonoran Desert scrub; 200–3050 ft. elev.; Imperial, Inyo, Riv., and San Diego Cos.	Feb-Jun	FED: none BLM: none CA: S2 CRPR: 2B.2	Low: marginally suitable habitat, at edge of geographic range.	Low: marginally suitable habitat, at edge of geographic range.	Low: marginally suitable habitat, at edge of geographic range.
Bursera microphylla Little-leaf elephant tree	Drought deciduous tree; rocky slopes, about 600–2300 ft. elev.; scattered occurrences in Imperial, Riverside, San Diego counties to Ariz., Baja, and mainland Mexico	Jun-Jul	FED: none BLM: none CA: S2 CRPR: 2B.3	Low: known from just north of survey area.	Minimal: marginally suitable habitat, not known from within 5 miles of survey area.	Low: known from just northwest of survey area.

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Calliandra eriophylla Pink fairy-duster	Perennial deciduous shrub; sandy or rocky areas in Sonoran Desert Scrub; 400–4900 ft. elev.; SW U.S. and Baja, Imperial, Riv., and San Diego Cos.	Jan-Mar	FED: none BLM: none CA: S3 CRPR: 2B.3	Low: suitable habitat present, nearest known population more than 5 miles west of Project area.	Low: suitable habitat present, nearest known population more than 5 miles west of Project area.	Low: suitable habitat present, nearest known population more than 5 miles west of Project area.
Castela emoryi Crucifixion thorn	Perennial shrub; fine sand or silt, slopes, washes, plains, non-saline bottomlands, about 350–2100 ft. elev;. widespread but rare, Calif. deserts to Ariz., Baja and Sonora;	Jun-Jul	FED: none BLM: none CA: S2S3 CRPR: 2B.2	Minimal: suitable habitat present, no record within 10 miles.	Low: suitable habitat present,	Minimal: suitable habitat present, no record within 10 miles.
Chaenactis carphoclinia var. *piersonii* Pierson's pincushion	Annual herb; open desert vegetation; about sea level to 1700 ft. elev.; lower slopes of Santa Rosa Mtns, San Diego, Riv. and Imperial Cos;	Mar-Apr	FED: none BLM: S CA: S2 CRPR: 1B.3	Low: suitable habitat present,	Minimal: suitable habitat present, well outside of geographic range.	Low: suitable habitat present,
Chylismia arenaria (Camissonia arenaria) Sand evening-primrose	Annual or perennial herb; desert shrublands, sandy or rocky washes or slopes below about 3000 ft. elev.; Imperial Co., eastern margins of Riv. Co., to Ariz. and Baja Calif.	Mar-May	FED: none BLM: none CA: S2S3 CRPR: 2B.2	Low: suitable habitat present, not known from within 10 miles,	Minimal: suitable habitat present, outside of geographic range.	Low: suitable habitat present, not known from within 10 miles,
Cryptantha costata Ribbed cryptantha	Annual herb; windblown and stabilized sand, desert shrublands; below about 1650 ft. elev.; Calif., E Mojave and Sonoran deserts, to Ariz. and Baja	Feb-May	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat in washes.	Moderate: suitable habitat in survey area.	Low: marginally suitable habitat in washes.
Cryptantha holoptera Winged cryptantha	Annual herb; desert shrublands; about 100–4000 ft. elev.; E Mojave Desert, Sonoran Desert, to W Ariz. and Nevada (widely scattered)	Mar-Apr	FED: none BLM: none CA: S4 CRPR: 4.3	**Present**: numerous plants observed within several phases of the quarry.	Moderate: suitable habitat in survey area.	Moderate: suitable habitat in survey area.
Cylindropuntia (*Opuntia*) *wigginsii* Wiggin's cholla	Cactus; sandy soils in Sonoran Desert scrub; about 100–2900 ft. elev.; known from six localities in San Diego, Imperial, and San Bernardino Cos. A sporadic hybrid of *Cylindropuntia ramosissima* and *C. echinocarpa*, generally not considered a valid species.	Mar	FED: none BLM: none CA: S1? CRPR: 3.3	Low: not seen during field surveys, suitable habitat is present	Low: not seen during field surveys, suitable habitat is present	Low: not seen during field surveys, suitable habitat is present

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Cylindropuntia wolfii Wolf's opuntia	Cactus; Sonoran Desert scrub; about 330–4000 ft. elev.; restricted to Imperial and San Diego Cos. In California and south into Baja	Mar-May	FED: none BLM: none CA: S3 CRPR: 4.3	**Present**: dozens of plants observed growing in the southern phases of the quarry.	Low: marginally suitable habitat in survey area.	Moderate: suitable habitat in survey area.
Ditaxis serrata var. *californica* California ditaxis	Perennial herb; sandy washes and canyons, low desert and adj. mtns.; about 100–3250 ft. elev.; La Quinta E to Desert Center, also Anza-Borrego	Mar-Dec	FED: none BLM: none CA: S2? CRPR: 3.2	Moderate: suitable habitat present.	Minimal: outside of geographic range.	Moderate: suitable habitat present.
Eucnide rupestris Annual rock-nettle	Annual herb; rock crevices & cliffs; Sonoran Desert shrubland, about 1600–2000 ft. elev.; Imperial and San Diego cos, Ariz., Baja & mainland Mexico	Dec-Apr	FED: none BLM: none CA: S1 CRPR: 2B.2	**Present**: dozens of plants present within the southern phases of the quarry.	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.
Euphorbia abramsiana (*Chamaesyce abramsiana*) Abrams' spurge	Annual herb; sandy flats; about sea level to 3,000 ft. elev.; East Mojave Desert, Joshua tree NP, and low desert, to Ariz. and Mexico	Aug-Nov	FED: none BLM: none CA: S2 CRPR: 2B.2	Low: marginally suitable habitat.	Low: marginally suitable habitat.	Low: marginally suitable habitat.
Euphorbia arizonica (Chamaesyce arizonica) Arizona spurge	Perennial herb; creosote bush scrub, stabilized sandy flats (in Calif.); below about 1000 ft. elev.; Palm Springs and Borrego Valley areas E to Texas and mainl. Mexico, S to central Baja	Mar-Apr	FED: none BLM: none CA: S3 CRPR: 2B.3	Low: marginally suitable habitat.	Low: marginally suitable habitat.	Low: marginally suitable habitat.
Euphorbia platysperma Flat-seeded spurge	Annual herb; sandy soils in desert dunes and Sonoran Desert scrub; 200–330 ft. elev.; Calif., Ariz., Sonora Mex.; Imperial, Riv., San Bern. (?), San Diego Cos.	Feb-Sep	FED: none BLM: S CA: S1 CRPR: 1B.2	Low: marginally suitable habitat.	Low: marginally suitable habitat	Low: marginally suitable habitat
Funastrum utahense (*Cynanchum utahense*) Utah vine milkweed	Climbing perennial herb; sandy or gravelly soils; about 500–4700 ft. elev.; E and S Mojave Desert through Joshua Tree NP and Anza-Borrego regions, to S Nevada, NW Ariz., and SW Utah	Apr-Jun	FED: none BLM: none CA: S4 CRPR: 4.2	Low: marginally suitable habitat.	Low: marginally suitable habitat	Moderate: suitable habitat

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Horsfordia alata Pink velvet-mallow	Perennial shrub; Sonoran Desert shrublands, rocky canyons or sandy washes; below about 1700 ft. elev.; Riv. and Imperial Cos., Ariz., Baja, and Sonora, Mexico	Winter or spring	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Horsfordia newberryi Newberry velvet-mallow	Rocky places, Sonoran Desert shrublands; below about 2600 ft. elev.; Riv., San Diego, Imperial Cos., Ariz., Baja, and Sonora, Mexico	Winter or spring	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Ipomopsis tenuifolia Slender-leaved ipomopsis	Perennial herb; rocky or gravelly soils in chaparral, desert shrublands, pinyon juniper woodlands; about 300–4000 ft. elev.; San Diego and Imperial Cos., Baja	Mar-May	FED: none BLM: none CA: S2 CRPR: 2B.3	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Lupinus excubitus var. *medius* Mountain Springs bush lupine	Shrub; desert shrubland, pinyon juniper woodland; about 1400–4500 ft. elev.; San Diego and Imperial Cos., Baja	Mar-May	FED: none BLM: S CA: S2 CRPR: 1B.3	Minimal: suitable habitat present, outside of geographic range.	Low: marginally suitable habitat present, known from just west of alignment.	Minimal: suitable habitat present, outside of geographic range.
Lycium parishii Parish's desert thorn	Perennial shrub; arid slopes and sand flats; below about 3300 ft. elev.; W low desert (Riv., Imperial, and San Diego Cos.) and (historically) interior valleys (Riv. Co.), disjunct to Ariz. and Sonora, Mexico	Mar-Apr	FED: none BLM: none CA: S1 CRPR: 2B.3	Low: marginally suitable habitat present.	Moderate: suitable habitat, known from just east of the alignment.	Low: minimally suitable habitat
Lyrocarpa coulteri Coulter's (Palmer's) lyrepod	Annual; rocky slopes, washes, gravelly flats, Sonoran Desert shrubland; about 400–2600 ft. elev.; San Diego, Imperial, Riv. Cos., N and central Baja	Dec-Apr	FED: none BLM: none CA: S4 CRPR: 4.3	**Present**: Very few (<5) plants observed within the quarry (see text).	Moderate: marginally suitable habitat, known from just south of the alignment.	Low: marginally suitable habitat
Malperia tenuis Brown turbans	Annual; sandy soils in desert shrublands; about sea level to 1100 ft. elev.; Sonoran Desert, few locations in Calif. (incl. Split Mtn); N Baja	Mar-Apr	FED: none BLM: none CA: S2 CRPR: 2B.3	**Present**: dozens of plants observed at several phases of the quarry expansion.	High: suitable habitat present, known from within 0.5 miles of the alignment.	**Present**: a few plants observed along the alignment near the quarry gate.

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Mentzelia hirsutissima Hairy stickleaf	Annual; desert washes, alluvial fans, talus slopes; below about 2000 ft. elev.; scattered Sonoran Desert locations in California and Baja	Mar-Apr	FED: none BLM: none CA: S3 CRPR: 2B.3	Moderate: suitable habitat present; known from within about 2 miles of the quarry.	Moderate: suitable habitat is present; known from within about 5 miles of the alignment.	High: suitable habitat is present; known from within about 1 mile of the alignment.
Mirabilis tenuiloba Slender-lobed four o'clock	Perennial herb; rocky slopes in Sonoran Desert shrublands; about 1000–3600 ft. elev.; Riv., San Diego, Imperial Cos., Ariz., Baja, Sonora, Mexico	Mar-May	FED: none BLM: none CA: S4 CRPR: 4.3	Moderate: suitable habitat is present	Low: marginally suitable habitat	Low: marginally suitable habitat
Nemacaulis denudata var. gracilis Slender woolly-heads	Annual herb; coastal and desert dunes, desert shrubland; below about 2600 ft. elev.; Coachella Valley and (disjunct) San Diego Co. coast, Ariz., Baja, Sonora, Mexico	Mar-May	FED: none BLM: none CA: S2 CRPR: 2B.2	Minimal: no suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.
Petalonyx linearis Narrow-leaf sandpaper-plant	Perennial shrub; sandy and rocky canyons in Sonoran and Mojavean Desert scrubs; below about 4,000 ft. elev.; Riv., San Diego, Imperial Cos., Ariz., Baja, Sonora, Mexico	Mar-May	FED: none BLM: none CA: S2S3 CRPR: 2B.3	High; reported from the quarry in 2005. Suitable habitat is present.	Low: marginally suitable habitat.	High; suitable habitat present; known from within about 1 miles of the alignment.
Pholistoma auritum var. *arizonicum* Arizona pholistoma	Annual herb; Mojavean Desert scrub; 900–2740 ft. elev.; Calif., Ariz., Baja and Sonora Mexico	Mar	FED: none BLM: none CA: S3 CRPR: 2B.3	Low: suitable habitat present; more than 10 miles from nearest record.	Low: suitable habitat present; not observed during surveys; more than 10 miles from nearest record.	Low: suitable habitat present; not observed during surveys; more than 10 miles from nearest record.
Pilostyles thurberi Thurber's pilostyles	Internal stem parasite on *Psorothamnus*, esp. *P. emoryi*; usually windblown or stabilized sand; below about 1000 ft. elev.; Colorado Desert through SW states and Sonora, Mexico	Jan	FED: none BLM: none CA: S4 CRPR: 4.3	Moderate: suitable habitat present	High: suitable habitat is present and *Psorothamnus emoryi* is common along the alignment.	**Present**: approximately ten plants observed on the northern pipeline alignment.

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Proboscidea althaeifolia Desert unicorn-plant	Perennial herb; generally sandy soils, desert shrubland, about 500–3300 ft. elev.; Sonoran Desert to Arizona and Mexico	May-Aug	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat present	Low: marginally suitable habitat present	Low: marginally suitable habitat present
Selaginella eremophila Desert spike-moss	Perennial herb; mountainous or hillside rock outcrops and crevices, about 600–3000 ft. elev.; lower desert-facing slopes of San Jacinto Mtns and adj. desert, to Texas and Baja	May-Jul	FED: none BLM: none CA: S2S3 CRPR: 2B.2	Low: marginally suitable habitat present.	Minimal: no suitable habitat present	Minimal: no suitable habitat present.
Senna covesii Coves's cassia	Low-growing, mostly herbaceous perennial; desert washes; 740–4250 ft. elev.; Colorado Desert to Nevada, Arizona and Baja Calif.	Apr-Jun	FED: none BLM: none CA: S3 CRPR: 2B.2	Low: marginally suitable habitat present	Minimal: well below the elevation range.	Minimal: well below the elevation range.
Teucrium cubense ssp. *depressum* Dwarf germander	Annual or perennial herb; sandy alluvium, washes, etc., below about 1300 ft. elev.; scattered Sonoran Desert locations, to Texas and Baja Calif.	Mar-May	FED: none BLM: none CA: S2 CRPR: 2B.2	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Xylorhiza orcuttii (Machaeranthera orcuttii) Orcutt's woody aster	Perennial herb; gen. on gypsum soils; canyons or lower slopes, desert shrublands; sea level to about 1200 ft. elev.; Riv., Imperial, and San Diego Cos., N Baja	Mar-Apr	FED: none BLM: S CA: S2 CRPR: 1B.2	Moderate: suitable habitat present, known from numerous occurrences in the vicinity	Moderate: suitable habitat present, known from numerous occurrences in the vicinity	Moderate: suitable habitat present, known from numerous occurrences in the vicinity

General references: Baldwin et al., 2012; BLM, 2010; CDFW, 2018; CNPS, 2018; CCH, 2018.

***Federal designations* (*Fed*):** (federal ESA, USFWS).
END: Federally listed, endangered.
THR: Federally listed, threatened.
Candidate: Sufficient data are available to support federal listing, but not yet listed.
Proposed: Formally proposed for the federal status shown.
BGEPA: Bald and golden eagle protection act.
BCC: Birds of conservation concern.

Bureau of Land Management (BLM)
Sensitive: Species recognized by the BLM as sensitive.

State designations (CA): (CESA, CDFW)
END: State listed, endangered.
THR: State listed, threatened.
RARE: State listed as rare (applied only to certain plants).
CSC: California Species of Special Concern. Considered vulnerable to extinction due to declining numbers, limited geographic ranges, or ongoing threats.
WL: Species that were either previously listed as SC and have not been state listed under CESA; or were previously state or federally listed and now are on neither list; or are on the list of "Fully Protected" species.
FP: Fully protected. May not be taken or possessed without permit from CDFG.
SA: Special animal. Tracked by the CNDDB as species of conservation concern.

CDFW Natural Diversity Data Base Designations: Applied to special-status species; where correct category is uncertain, CDFW uses two categories or question marks.
S1: Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres.
S1.1: Very threatened
S1.2: Threatened
S1.3: No current threats known
S2: 6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above).
S3: 21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above).
S4: Apparently secure in California; this rank is clearly lower than S3 but factors exist to cause some concern, i.e., there is some threat or somewhat narrow habitat. No threat rank.
S5: Demonstrably secure or ineradicable in California. No threat rank.
SH: All California occurrences historical (i.e., no records in > 20 years).
SX: Presumed extirpated in California.

California Rare Plant Rank designations. Note: According to the California Native Plant Society (http://www.cnps.org/cnps/rareplants/ranking.php), plants ranked as CRPR 1A, 1B, and 2 meet definitions as threatened or endangered and are eligible for state listing. That interpretation of the state Endangered Species Act is not in general use.
1A: Plants presumed extinct in California.
1B: Plants rare and endangered in California and throughout their range.
2A Plants presumed extinct in California but more common elsewhere in their range.
2B: Plants rare, threatened or endangered in California but more common elsewhere in their range.
3: Plants about which we need more information; a review list.
4: Plants of limited distribution; a watch list.

California Rare Plant Rank Threat designation extensions:
.1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Fairly endangered in California (20-80% occurrences threatened)
.3 Not very endangered in California (<20% of occurrences threatened or no current threats known)

Definitions of occurrence probability: Estimated occurrence probabilities are based on literature sources cited earlier, field surveys, and habitat analyses reported here.
Present: Observed on the site by qualified biologists.
High: Habitat is a type often utilized by the species and the site is within the known range of the species.
Moderate: Site is within the known range of the species and habitat on the site is a type occasionally used.
Low: Site is within the species' known range but habitat is rarely used, or the species was not detected during focused survey(s) covering less than 100% of potential habitat or completed in marginal seasons.
Minimal: No suitable habitat on the site; or well outside the species' known elevational or geographic ranges; or the species was not detected during focused survey(s) covering 100% of all suitable habitat, completed during the appropriate season and during a year of appropriate rainfall.
Absent: No suitable habitat on the site and these has no potential to be present.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
FISHES						
Cyprinodon macularius Desert pupfish	Desert ponds, springs, marshes, and creeks in southern California. Restricted to tributaries of the Salton Sea (i.e. Salt Creek and San Felipe Creek) and several refuge populations.	Year-around	FED: **END** BLM: none CA: **END,** S1	Absent: no aquatic habitat within the Project area. Known from approx. 9.5 miles to the NE.	Absent: no aquatic habitat within the Project area. No record near the pipeline alignment.	Absent: no aquatic habitat within the Project area. Known from approx. 7 miles to the NE
REPTILES						
Coleonyx switaki Barefoot banded gecko	Massive rock outcrops and boulders; below about 2000 ft. elev.; Anza-Borrego Desert State Park through much of NE Baja	Spring-Summer	FED: none BLM: S CA: **THR**, S1	Low: no suitable habitat on gypsum outcrops or alluvial wash; marginally suitable habitat on adjacent metamorphic outcrops; not found during field surveys.	Minimal: no suitable habitat.	Minimal: no suitable habitat.
Phrynosoma mcalli Flat-tailed horned lizard	Open, sand flats and dunes; below about 850 ft. elev. Coachella Valley southward to N Baja	Spring-Summer	FED: none BLM: S CA: SSC, S2	Minimal: marginally suitable habitat.	Moderate: suitable habitat present; heavy off-road vehicle use reduces likelihood of occurrence.	High: suitable habitat present; known from two recent records along alignment.
Uma notata Colorado Desert fringe-toed lizard	Fine, loose, windblown sand; sparse desert scrub, desert dunes, dry lakebeds, desert wash, sandy beach or riverbank; below 590 ft. elev.; Colorado and Sonoran deserts south of Salton Sea in Imperial and San Diego Cos.	Mar-Oct	FED: none BLM: S CA: SSC, S2	Minimal: marginally suitable habitat.	Minimal: marginally suitable habitat; heavy off-road vehicle use reduces likelihood of occurrence.	Moderate: suitable habitat; no records in vicinity.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
BIRDS						
Accipiter striatus Sharp-shinned hawk	Nests and hunts in forest & woodland mainly north of S Calif. (may breed in S Calif. mtn woodlands); also forages in open areas; regularly winters in S Calif.	Spring-early Summer	FED: none BLM: none CA: WL, S4	Minimal (Nesting): no suitable nesting trees. Low (Wintering): marginal foraging habitat present.	Minimal (Nesting): no suitable nesting trees. Low (Wintering): marginal foraging habitat present.	Minimal (Nesting): no suitable nesting trees. Low (Wintering): marginal foraging habitat present.
Aquila chrysaetos Golden eagle	Nests in remote trees and cliffs; forages over shrublands and grasslands; breeds throughout W N America, winters to E coast	Year-around	FED: BGEPA, BCC BLM: S CA: FP, WL, S3	Low (Nesting): no nests observed, marginally suitable nesting habitat. High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout
Athene cunicularia Burrowing owl	Nests mainly in rodent burrows, usually in open grassland or shrubland; forages in open habitat; increasingly uncommon in S Calif.; occurs through W US and Mexico; sparse in desert scrub	Year-around	FED: BCC BLM: S CA: SSC, S3	Moderate (Nesting): suitable nesting habitat present; not observed during nesting season. **Present** (Wintering): one occupied burrow observed during surveys.	Moderate (Nesting): suitable nesting habitat present; not observed during nesting season. High (Wintering): suitable foraging habitat throughout.	Moderate (Nesting): suitable nesting habitat present; not observed during nesting season. High (Wintering): suitable foraging habitat throughout.
Buteo regalis Ferruginous hawk	Forages over grassland and shrubland; winters in W and SW N Amer.; breeds in Great Basin and N plains.	Winter	FED: BCC BLM: none CA: WL, S3S4	Absent (Nesting): does not breed within region. High (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. High (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. High (Winter): foraging habitat present throughout.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Buteo swainsoni Swainson's hawk	Forages in open grasslands, agricultural areas, sparse shrublands, and small open woodlands. Nests in Western Antelope, San Joaquin, and Owens Valleys in scattered trees within grasslands, shrublands, or agricultural landscapes.	Spring and Fall	FED: none BLM: S CA: THR, S3	Absent (Nesting): does not breed within region. High (Migration): foraging habitat present, known to migrate through region.	Absent (Nesting): does not breed within region. High (Migration): foraging habitat present, known to migrate through region.	Absent (Nesting): does not breed within region. High (Migration): foraging habitat present, known to migrate through region.
Chondestes grammacus Lark sparrow	Lowlands, foothills; brushy habitats with scattered trees or shrubs; much of Calif.	Year-around	FED: none BLM: none CA: SA, S4S5	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.
Circus cyaneus Northern harrier	Breeds colonially in grasslands and wetlands; forages over open terrain; throughout N America	Winter; rare in Summer	FED: none BLM: none CA: SSC, S3	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.
Falco columbarius Merlin	Uncommon in winter in S Calif. desert and valleys; breeds in northern N America	Winter	FED: none BLM: none CA: WL, S3S4	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.
Falco mexicanus Prairie falcon	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western US and Mexico	Year-around	FED: none BLM: none CA: WL, S4	Moderate (Nesting): no nests observed, suitable nesting habitat present. High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Lanius ludovicianus Loggerhead shrike	Woodlands, shrublands, open areas with scattered perch sites; not dense forest; widespread in N America (declining significantly in midwest); valley floors to about 7000 ft. elev.	Year-around	FED: none BLM: none CA: SSC, S4	**Present**: observed during surveys.	High**:** suitable habitat is present throughout.	High**:** suitable habitat is present throughout.
Polioptila melanura Black-tailed gnatcatcher	Desert shrublands, gen. thickets of mesquite, palo verde, or acacia, occas. in open shrubland (mostly winter); Calif. deserts thru S Texas, Baja, and arid mainl. Mexico	Year-around	FED: none BLM: none CA: WL, S3S4	**Present**: observed nesting during surveys.	Low: marginally suitable habitat within alignment.	Moderate: suitable habitat within alignment; not observed.
Toxostoma lecontei LeConte's thrasher	Open shrubland, often sandy or alkaline flats; Mojave and Colorado deserts, SW Central Val. & Owens Valley, east to Nevada, Utah, Arizona;	Year-around	FED: BCC BLM: none CA: SA, S3	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.
MAMMALS						
Macrotus californicus (*M. waterhousii*) California leaf-nosed bat	Desert shrublands and arid lowlands, W San Diego Co. to W Ariz., Baja and Sonora, Mexico; gen. roosts in mineshafts, forages over open shrublands	Year-around	FED: none BLM: S CA: SSC, S3	Minimal (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Antrozous pallidus Pallid bat	Rock outcrops in shrublands, mostly below about 6000 ft. elev.; Calif, SW N Amer. through interior Oregon and Washington; hibernates in winter	Warm season	FED: none BLM: S CA: SSC, S3	Low (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Corynorhinus (*Plecotus*) *townsendii* Townsend's big-eared bat (incl. "pale," "western," and other subspecies)	Many habitats throughout Calif and W N Amer., scattered populations in E; day roosts in caves, tunnels, mines; feeds primarily on moths	Year-around	FED: none BLM: S CA: SSC, S2	Minimal (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Euderma maculatum Spotted bat	Desert (cool seasons) to pine forest (summer), much of SW N Amer. but very rare; roosts in deep crevices in cliffs, feeds on moths captured over open water	Unknown	FED: none BLM: S CA: SSC, S3	Minimal (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Eumops perotis californicus Western mastiff bat	Lowlands (with rare exceptions); cent. and S Calif., S Ariz., NM, SW Tex., N Mexico; roosts in deep rock crevices, forages over wide area	Year-around	FED: none BLM: S CA: SSC, S3S4	High (Roosting): roosts just west of the Project area, suitable roosting habitat present. High (Foraging): suitable foraging habitat throughout	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Nyctinomops femorosaccus (*Tadarida femorosaccus*) Pocketed free-tailed bat	Deserts and arid lowlands, E Riv. and San Diego Cos. Thru SW US, Baja, mainland Mexico; roosts mainly in crevices of high cliffs; forages over water and open shrubland	Year-around	FED: none BLM: none CA: SSC, S3	High (Roosting): known to roost on sandstone cliffs just west of the Project area, suitable roosting habitat present. High (Foraging): suitable foraging habitat throughout	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Chaetodipus fallax pallidus Pallid San Diego pocket mouse	Desert scrub, desert succulent scrub, pinyon and juniper woodland; prefers sandy, herbaceous areas, usually in association with boulders, rocks or coarse gravel.	Year-around	FED: none BLM: none CA: SSC, S3S4	Low: At eastern edge of range; suitable habitat present.	Minimal: At eastern edge of range; marginally suitable habitat.	Low: At eastern edge of range; suitable habitat present.
Neotoma albigula venusta Colorado Valley woodrat	Desert shrublands; SE Calif., SW Ariz., adj. Mexico, and southernmost Nevada; closely associated with beavertail or mesquite thickets	Year- around	FED: none BLM: none CA: SA, S1S2	Low: At edge of range; suitable habitat present.	Minimal: At edge of range; marginally suitable habitat.	Low: At edge of range; suitable habitat present.
Onychomys torridus ramona Southern grasshopper mouse	Mainly desert scrub, also chaparral, coastal scrub, riparian, and other habitats; Mojave Desert and southern Central Valley of Calif.	Year-around	FED: none BLM: none CA: SSC, S3	Low: suitable habitat present; not captured during mammal trapping, no records within 5 miles.	Low: suitable habitat present; not captured during mammal trapping, no records within 5 miles.	Low: suitable habitat present; not captured during mammal trapping, no records within 5 miles.
Taxidea taxus American badger	Mountains, deserts, interior valleys where burrowing animals are avail as prey and soil permits digging; throughout cent and W N Amer.	Year-around	FED: none BLM: none CA: SSC, S3	High: suitable habitat present; no sign observed during surveys.	Moderate: suitable habitat present; heavy disturbance in area, no sign observed during surveys.	High: suitable habitat present; no sign observed during surveys.
Ovis canadensis nelsoni pop. 2 (*O. c. cremnobates*) Peninsular bighorn sheep Distinct Population Segment	Desert shrublands to conifer forest, gen. remote mountains; scattered populations in Peninsular Ranges, Riv. Co. to N Baja	Year-around	FED: **END** BLM: none CA: **THR**, FP, S2	**Present**: observed during surveys.	Minimal: marginally suitable habitat and isolated from nearby mountains by a busy highway.	Low: marginally suitable habitat and isolated from nearby mountains by a railway.
Vulpes macrotis arsipus Desert kit fox	Arid areas with grasslands, agricultural lands, or scrub areas with scattered shrubby vegetation. Requires open, level areas with loose-textured, sandy loamy soils for digging dens. SW US and N Mex.	Year-around	FED: none BLM: CA: FP	High: no sign observed during surveys, suitable habitat present throughout.	Moderate: no sign observed during surveys, marginally suitable habitat present.	High: no sign observed during surveys, suitable habitat present throughout.

References: American Ornithologists Union, 1998 (including supplements through 2013); Barbour and Davis, 1969; BLM, 2010; CDFW, 2018; Feldhammer et al., 2003; Garrett and Dunn, 1981; Hall, 1981; Jennings and Hayes, 1994; Stebbins, 2003; Wilson and Ruff, 1999.
Conservation Status and Occurrence Probability defined in footnote to Table 3.

Chaparral sand verbena (*Abronia villosa* var. *aurita*). Chaparral sand verbena is a BLM sensitive species and has a CRPR of 1B.1. It is a perennial herb in the four o'clock (Nyctaginaceae) family. It grows in the western Sonoran Desert, San Jacinto Mountains, and coastal sides of southern California mountains (CNPS, 2018). In the desert, it is found in desert shrublands on dunes, sandfields, and sandy washes. Chaparral sand-verbena is an annual or perennial herb that tends to integrate with the common desert sand-verbena (*A. villosa* var. *villosa*). Its distribution and identification are unclear in published reference works, including Murdock (2012), CNPS (2018), and CNDDB (CDFW, 2018). The conservation concern is primarily for chaparral sand-verbena occurrences in western Riverside County and other locations outside the desert where the variety is considered rare (Roberts et al. 2004).

Chaparral sand verbena was not observed within the Project area during focused surveys, which were conducted during two years with below average rainfall. It has a moderate potential to be present along the northern pipeline alignment following a year with higher than average rainfall.

Orcutt's aster (*Xylorhiza orcuttii*). Orcutt's aster is a BLM sensitive species and has a CRPR of 1B.2. It is a woody perennial in the aster (Asteraceae) family that blooms from March to April (CNPS, 2018). It grows in the western Sonoran Desert from the Salton Sea in the east to Anza Borrego State Park in the west, north to near Salton City and south to near Interstate 8. It is a woody perennial that is present year-round and flowers in the spring (CNPS, 2018). It is most commonly found in arid canyons and nearly barren slopes in areas vegetated by creosote-bush scrub (Baldwin et al. 2012). Several of the records also note that it grows on sandy, clay, alkali, and gypsum substrates (CDFW, 2018).

Orcutt's aster was not observed during focused surveys of the Project area. It has a moderate potential to be present within all three components of the Project area as a waif from upstream populations that are known to occur within 0.75 miles of the Project area.

Other Special-status Plants

Several other special-status plant species ranked by CNPS and CDFW has at least a moderate potential to be present. These include several plants ranked a CRPR 2 species and CRPR 4 species. These species, with at least a moderate potential to be present are described below.

Harwood's milk vetch (*Astragalus insularis* var. *harwoodii*). Harwood's milk vetch has a CRPR of 2B.2. It is an annual herb in the pea (Fabaceae) family that blooms from March to April (CNPS, 2018). It grows in sandy, windblown soils throughout much of the western Sonoran Desert from near Anza Borrego State Park in the south, to the Whipple Mountains in the north and east into Arizona (CDFW, 2018). It is an annual that requires adequate rainfall to trigger germination. It is known from several records in the immediate vicinity of the existing pipeline near Plaster City, and was documented in 2017 within about 0.5 miles of the proposed pipeline alignment (CCH, 2018 and Calflora, 2018).

Harwood's milk vetch was not observed during focused surveys of the Project area, which were conducted during two years with below average rainfall. It has a high potential to be present in fine sand accumulations within all three components of the Project area in a year with higher than average rainfall.

Annual rock-nettle (*Eucnide rupestris*). Annual rock-nettle has a CRPR of 2B.2. It is an annual herb in the stick-leaf (Loasaceae) family and blooms from December through April. It is found in Sonoran Desert scrub at elevations from about 400 to 2,000 feet in California (Imperial and San Diego counties), Arizona, and northern Mexico. In California, it has been documented growing on gypsum soils. However, further

south into Mexico it does not seem to show any soil affinity and has been observed on volcanic soils as well as more typical granitic substrates (SEINET, 2018).

Annual rock-nettle was observed within the Project area during focused surveys. Dozens of plants were growing on eroded gypsum cliffs, in adjacent gypsum bedrock, and downstream in sandy washes. All observations were in the southeastern phases of the quarry including Phases 6 through 9. Additional plants are not expected in other portions of the Project area.

Parish's desert thorn (*Lycium parishii*). Parish's desert thorn has a CRPR of 2B.3. It is a shrub in the nightshade (Solanaceae) family and blooms in the Spring (CNPS, 2018). It is found in a number of isolated locations throughout southern California with the largest concentration in Anza Borrego State Park (CCH, 2018). It is historically known from within about 1 mile of the existing pipeline near Plaster City.

Parish's desert thorn was not observed during the focused surveys of the Project area. It has a moderate potential to be present along the existing pipeline near Plaster City.

Brown turbans (*Malperia tenuis*). Brown turbans has a CRPR of 2B.3. It is an annual herb in the aster (Asteraceae) family and blooms from February through April (CNPS, 2018). It is found in sandy or gravelly areas of Sonoran Desert scrub at elevations from about 50 to 1,100 feet in California (Imperial and San Diego counties) and Baja California, Mexico. It is known from numerous locations in the vicinity of the Project area (CCH, 2018).

Dozens of plants were observed within Phases 7 through 9, primarily on rocky slopes and flats adjacent to the sandy washes. Several plants were also observed along the proposed pipeline near the entrance gate to the quarry. Additional plants are likely to be present in similar habitats within the Project area in a year with higher than average rainfall. It also has a high potential to be present along the existing pipeline although it was not observed during the surveys.

Hairy blazingstar (*Mentzelia hirsutissima*). Hairy blazingstar has a CRPR of 2B.3. It is an annual herb is the stick-leaf (Loasaceae) family and blooms from March to May (CNPS, 2018). It is found on rocky substrates and talus in the Sonoran Desert at elevations up to about 2,000 feet in California (Imperial and San Diego counties) and in Baja California, Mexico. It was documented in 2017 within about 0.5 miles of the proposed pipeline alignment (CCH, 2018 and Calflora, 2018).

Hairy blazingstar was not observed during the focused surveys of the Project area, which were conducted during two years with below average rainfall. It has a high potential to be present within the quarry and along the proposed pipeline alignment in a year with higher than average rainfall.

Narrow-leaf sandpaper-plant (*Petalonyx linearis*). Narrow-leaf sandpaper-plant has a CRPR of 2B.3. It is a shrub in the stick-leaf (Loasaceae) family and blooms from March to May (CNPS, 2018). It is found on sandy and rocky substrates in a variety of habitats throughout the Sonoran Desert. It was documented on gypsum soil in 2015 just south of the Project area. Narrow-leaf sandpaper-plant was reported from the Project area in an earlier report (White and Leatherman, 2005) although it was not observed during the recent surveys and may no longer be present. It has a high potential to be present in the quarry and has a moderate potential to be present within the proposed pipeline alignment.

California Rare Plant Rank 4 Species. Four special-status plants with a CRPR of 4 were observed during the surveys: winged cryptantha (*Cryptantha holoptera*), Wolf's opuntia (*Cylindropuntia wolfii*), Thurber's pilostyles (*Pilostyles thurberi*), and Coulter's lyrepod (*Lyrocarpa coulteri*). Winged cryptantha and Coulter's lyrepod were both observed at several locations in the upper wash within Phases 6 through 9.

Dozens of Wolf's opuntia were observed on upland terraces within Phases 7 through 9. Thurber's pilostyles were observed growing on dyebush along the proposed pipeline.

Four special-status plants with a CRPR of 4 have at least a moderate potential to be present: Salton milk-vetch (*Astragalus crotalariae*), ribbed cryptantha (*Cryptantha costata*), Utah vine milkweed (*Funastrum utahense*), and slender-lobed four o'clock (*Mirabilis tenuiloba*). These plants are ranked as CRPR 4 species (i.e., a "watch list," not indicating rarity) and none are listed as threatened or endangered.

IV. D. 2. Special-status Wildlife

Table 4 and Attachment 5 list the special-status wildlife species reported within the USGS 7.5-minute quads surrounding the Project site. The State and federally listed Peninsular bighorn sheep is present in the area. Two candidates for State listing, flat-tailed horned lizard and Townsend's big-eared bat, may also occur. Loggerhead shrike, San Diego desert woodrat, and burrowing owl, all California Species of Special Concern, have been observed on the Project site. The locations of field observations of burrowing owl and peninsular bighorn sheep remains are shown on Figure 3 (Biological Resources). Several other special-status wildlife species could also be present (see Table 4); those species with at least a moderate potential to be present are described below.

Listed Threatened or Endangered Wildlife

Peninsular bighorn sheep (*Ovis canadensis nelsoni* DPS). The Peninsular bighorn sheep (PBS) is federally listed as endangered, State-listed as threatened and designated as a "fully protected animal" by the California Fish and Game Code. Under the federal Endangered Species Act listing (USFWS, 2009) "Peninsular bighorn sheep" refers to the regional Distinct Population Segment (DPS) of desert bighorn sheep (or Nelson's bighorn sheep). Under the 1971 California Endangered Species Act listing, Peninsular bighorn sheep refers to the subspecies *Ovis canadensis cremnobates*, although that subspecies is no longer recognized in more recent literature. Regardless of nomenclature, both listing designations refer to the same animals: the bighorn sheep population found in the Peninsular Ranges of southern California and southward into Baja California. This population is recognized as genetically isolated from other populations located farther to the north and east. PBS inhabit the desert slopes of the Peninsular ranges from Riverside County south to Baja California, Mexico, including the Fish Creek Mountains, where the Plaster City Quarry is located. PBS biology, life history, and conservation status are described by the US Fish and Wildlife Service (USFWS 2011a) in its 5-year review. A few key aspects of its life history are seasonal movements and habitat use, reliance on surface water availability, and metapopulation geography.

The decline of PBS is attributed to combined effects of disease and parasitism; low lamb recruitment; habitat loss, degradation, and fragmentation; non-adaptive behavioral responses associated with residential and commercial development; and high predation rates.

The USFWS (2000) has prepared a Recovery Plan for PBS, identifying 9 Recovery Regions, extending from the northernmost Recovery Region 1 on the desert-facing slopes of the San Jacinto Mountains (about 50 miles north of the Plaster City Quarry), to the southernmost Recovery Region 9 extending from the Coyote Mountains (about 10 miles south of the quarry expansion area) south to the international border (the range of the animals within Recovery Region 9 extends southward through the Coyote Mountains, across Interstate 8, and across the international border into Mexico). The Plaster City Quarry is located within Recovery Region 8 (Vallecito Mountains). The estimated numbers of Peninsular bighorn sheep in Recovery Regions 8 and 9 increased during the period from 1998 to 2016 (USFWS, 2011a; Colby and

Botta, 2017). CDFW (Colby and Botta, 2017) estimated the Region 8 and Region 9 populations at 163 and 256 animals respectively.

The behavioral response of desert bighorn sheep (including PBS) to human activity is considered to be highly variable and dependent upon many factors, including: (1) the type of activity, (2) an animal's previous experience with humans, (3) size or composition of the bighorn sheep group, (4) location of the bighorn sheep relative to elevation of the activity, (5) distance to escape terrain, and (6) distance to the activity (USFWS 2011a, p. 14). Responses can range from cautious curiosity to immediate flight or abandonment of habitat, as well as disruption of normal social patterns and resource use. In some cases, Nelson's bighorn sheep have become acclimated to quarrying activities. For example, in local resident Nelson's bighorn sheep the northern San Bernardino Mountains have become acclimated to limestone quarrying and make regular use of inactive quarries and even active quarries during inactive hours (personal observations and communications with quarry staff by Scott D. White).

There are several research publications on Nelson's bighorn sheep activity in the vicinity of mining operations. None of these papers addresses PBS; however the following three address Nelson's bighorn sheep populations in arid habitats in California or Arizona that are comparable to the Plaster City Quarry site. The summary that follows is based on these three publications, particularly the discussion by Bleich and coauthors (2009), which is the most recent of the three, comparing and contrasting their own study results with the others and with broader Nelson's bighorn sheep literature.

- Panamint Mountains, California (Oehler et al., 2005)
- Silver Bell Mountains, Arizona (Jansen et al., 2007)
- San Bernardino Mountains, California (Bleich et al., 2009)

Bleich and coauthors (2009) state that "the characteristic that best defines mountain sheep habitat is the presence of escape terrain," and that many habitat studies have found that juxtaposition of escape terrain with valuable water or food sources has been important. They identify potential mining-related habitat benefits and deterrents, as follows: Mining can enhance escape terrain by removing vegetation (i.e., improving visibility) and creating steeper topography, especially if the improved escape terrain is near valuable food or water sources. However, mining-related disturbance could outweigh the benefits of improved escape terrain if it causes sheep to avoid the quarry areas. They found that Nelson's bighorn sheep in the San Bernardino Mountains limestone mining areas generally avoided roads (human disturbance) but did not avoid mined areas and in fact favored them over random locations.

Bleich and coauthors (2009) cite several publications indicating that Nelson's bighorn sheep can habituate to disturbance, and are frequently observed on or near active mines, stating "we speculate that such disturbance is of minimal concern to sheep when it is consistent in nature and occurs in highly predictable locations." In the Panamint Mountains study, Oheler and coauthors found that proximity to active mining did not affect home ranges, diet composition, or demographic indices, and that Nelson's bighorn sheep activity in the mining area was not affected by frequency of blasting or mine productivity.

The USFWS designated critical habitat for PBS in 2009. Much of the proposed quarry expansion area, as well as the southern and western currently active quarry areas, are within designated critical habitat (see Figure 4, Peninsular Bighorn Sheep Critical Habitat). In its critical habitat designation (2009), the USFWS described "primary constituent elements" (PCEs) essential to the conservation of Peninsular bighorn sheep. The 5 PCEs are paraphrased below:

- Moderate to steep, open slopes and canyons, that provide space for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups;

- Presence of a variety of forage plants, including shrubs that provide a primary food source year-round, grasses, and cacti that provide a source of forage in the fall, and forbs that provide a source of forage in the spring;
- Steep, rugged, slopes (60 percent slope or greater) that provide secluded space for lambing and terrain for predator evasion;
- Alluvial fans, washes, and valley bottoms that provide important foraging areas where nutritious and digestible plants can be more readily found during times of drought and lactation, and that provide and maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resource areas (e.g., foraging areas and escape terrain); and
- Intermittent and permanent water sources that are available during extended dry periods and provide relatively nutritious plants and drinking water.

On the whole, the USG claims and the surrounding slopes and canyon provide all PCEs identified above. Intermittent or permanent water is available from a natural rock tinaja water source located in the Fish Creek Mountains south of the quarry area. Several additional water sources are located about one to three miles west of the quarry area, within Anza Borrego Desert State Park (Colby and Botta, 2017). Open slopes and canyons, as well as steep rugged slopes, are largely found above or in between the active quarry areas and the gypsum deposits proposed for future quarrying. Alluvial fans and washes, recognized as important foraging areas, are found throughout the area, including the large unnamed alluvial wash where below-grade quarrying would occur.

The Plaster City Quarry expansion would take place on two landforms: gypsum outcrops located above the level of the alluvial wash, and below-grade gypsum deposits, located beneath the alluvial wash. The planned expansion areas are located within larger claims, which also include more extensive upland and alluvial topography. In terms of the PCEs, the gypsum outcrops provide limited habitat value because of their sparse vegetation cover and minimal plant species diversity (predominantly desert fir, which is not identified as a PBS food plant). In addition, the surfaces of the undisturbed outcrops are covered by a crusted clay material that collapses underfoot, possibly affecting its habitat value for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups (the first PCE).

The existing alluvial wash habitat located in the expansion areas planned for below-grade mining provides the high diversity of food plants identified in the second and fourth PCEs and may provide habitat connectivity within the canyon (per the fourth PCE), although most evidence of PBS movement in the area is found on the steep slopes and ridges, rather than in the canyon.

CDFW conducts regular monitoring of radio-collared Peninsular bighorn sheep throughout the area. The annual reports identify several “ewe groups” within each Recovery Region; each ewe group comprises a few adult female Peninsular bighorn sheep and their offspring. There are four identified ewe groups in Recovery Region 8 (Colby and Botta, 2017). The Plaster City Quarry is located between the mapped home ranges of Vallecito Mountains ewe group and the Fish Creek Mountains ewe group. Suitable and occupied PBS habitat occurs to the west, northwest, south, and east of the USG Quarry site, but not to the north. CDFW radio collar data provided by R. Botta (see Figure 5, Fish Creek Mountains Radio Collared Ewe Locations) show numerous PBS occurrences around the Plaster City Quarry, around Split Mountain (west of the quarry) and the Fish Creek Mountains (east, south, and southeast of the quarry). Ewes with young lambs have been reported within about 1 mile of the project area.

The existing quarry and planned expansion areas are located along the eastern (Phases 1 through 10) and western (Phases S1, S2, and S3) slopes above a broad alluvial wash between the home ranges of two ewe groups whose core ranges are in the steeper mountains to the east and west. The two home

ranges are in steep topography above the active quarry and planned expansion areas. At the narrowest point the overlap where the two ewe groups share territories (and, thus, biological connectivity) is about 4,000 feet wide, ranging in elevation between about 800 and 1,800 feet above MSL, with a few peaks above 2,100 feet above MSL. The existing quarry and planned expansion may limit potential east-west movement across the canyon, although the animals seem to avoid the canyon floor (even to the south of the active quarry area). Proposed quarry development would not prevent continued geographic contact between the two ewe groups south of the planned quarry areas.

Peninsular bighorn sheep give birth mainly in late winter through early spring (February - April). Lambing is the period from one month before birth until weaning (at about 4 to 6 months of age). Births can occur over much of the winter or spring, so lambing activity can extend from January through August, but lambing season is generally identified as the period from 1 January through 30 May. During pregnancy and lactation, ewes require high-protein forage, as found on deeper more productive soils of alluvial fans and canyon bottoms but retreat to better escape terrain late in pregnancy and to give birth. Lambing areas are associated with ridge benches or canyon rims adjacent to steep slopes or escarpments. The Fish Creek Mountains surrounding the Project site provide suitable habitat components for lambing habitat and appear to be used by radio-collared females (ewes) during lambing season.

Peninsular bighorn sheep also occasionally move across valleys (not generally considered suitable habitat for most activities) between disjunct habitat areas. These movements can supplement small sub-populations with new members and provide for gene flow among multiple small groups. This pattern of partially-isolated sub-populations with occasional demographic and genetic movement among them is known as a metapopulation. The proposed project would not prevent long-distance movement among distant sub-populations.

Peninsular bighorn sheep have been observed, albeit infrequently, at the existing quarry site and the proposed quarry expansion areas. During biological surveys conducted for this report, Peninsular bighorn sheep sign such as tracks, scat (feces), and “beds” (i.e., cleared areas for resting or sleeping) were commonly observed on upland slopes above the proposed quarry expansion areas, especially near the southern end of the proposed quarry areas, and less often observed in the unnamed alluvial wash. Skeletal remains of an apparent bighorn sheep were also observed near the southern end of the proposed quarry areas (Figure 3). Peninsular bighorn sheep tracks were also observed commonly near the active quarry area in 2014, following a year of heavy rainfall and subsequent ponding within the quarry. Due to the ponding, USG pumped water from the quarry, and multiple sheep tracks indicated the animals had repeatedly crossed the wide wash (from the west) to reach the water discharge. California Department of Parks and Recreation unpublished data also include Peninsular bighorn sheep occurrences in the Project area: sign was observed in the Shoveler claims area on the west part of the Project site, and at the narrow-gauge rail line where a sheep evidently crossed from west to east north of the USG processing area, and went into the Fish Creek Mountains above the existing Quarry. Finally, a Peninsular bighorn sheep was documented on the USG Project site in 2006. In early August, quarry staff saw an animal in the Shoveler claims area at the west part of the Project site; over the next few days, it was seen twice more near the processing area (though the workers did not get good views). Finally, on August 7, 2006, the remains of a dead immature male Peninsular bighorn sheep were found at the Shoveler claims area. The USG Quarry Manager contacted Anza-Borrego Desert State Park. A Park officer investigated the site and disposed of the remains. There was no evidence of predation (e.g., by mountain lion) or major injury and the cause of death is unknown.

The CDFW has only recently begun to understand ewe group structure and seasonal movements within the Fish Creek Mountains (FCM). CDFW observed 15 PBS, including 1 lamb, 1 yearling ewe, 6 ewes and 4 rams in the FCM during the 2016 aerial survey. However, during more recent ground telemetry monitoring upwards of 30 sheep have been observed.

There is no abundance estimate for the FCM ewe group alone. Because PBS move between the Fish Creek Mountains and Vallecito Mountains by way of Split Mountain, CDFW's surveys of the two mountain ranges are combined. For the 2016 aerial survey the total Vallecito and FCM adult ewe estimate was 79, the adult ewe/yearling ewe estimate was 101 and the adult and yearling ewe and ram estimate was 163. Given the increase in the PBS population over the last 10+ years and CDFW's improved understanding of ewe group structure, CDFW hopes to estimate PBS abundance by individual ewe groups. Doing so will depend on funding availability.

To date, CDFW has data from 3 GPS-collared ewes. Thus far, the core use area is in a large north-south running drainage on the eastern side of the Fish Creek Mountains (east of the ridgeline above the USG quarry). As of 2017 the distribution and movement patterns had not changed significantly in the Vallecito and FCM ewe groups.

There are only a few known water sources within the Fish Creek Mountains, including the north/south trending canyon at the northeast end of the FCM ewe group's home range. In summer 2016, the lower tinaja was checked and found to be dry; however, CDFW GPS data show this canyon to be the most heavily used during the summer months. As of 2017, numerous tinajas in the FCM have been dry for the past few years (prior to above-average rainfall in 2019). If recurring drought conditions continue these water sources may no longer meet the needs of PBS within FCM and water enhancement projects may be warranted.

In summary, CFDW's monitoring efforts indicate two potential mitigation opportunities proposed action. First, additional funding for the monitoring project could lead to a more complete understanding of the FCM ewe group's numbers, habitat usage, and relationship to USG quarry activities. Second, a supplemental water source could improve habitat conditions during recurring drought years.

Swainson's hawk (*Buteo swainsoni*). Swainson's hawk is a listed as Threatened by CDFW and is recognized as sensitive by the BLM. It is a hawk that preys on small mammals, birds, large insects, reptiles, and amphibians. Swainson's hawks usually hunt from perches such as fence posts and low trees, or from vantage points on the ground. This species is most commonly found over open plains and prairies in the Great Plains and relatively arid areas of western North America. It builds rather flimsy nests in shrubs and trees along wetlands and drainages and in windbreaks in fields and around farmsteads. They nest in the San Joaquin, Owens, and western Antelope Valleys of California. The primary wintering grounds for this species is in Argentina. They migrate through southern California every spring and fall. Suitable foraging habitat for this species is present throughout the Project area.

Barefoot banded gecko (*Coleonyx switaki*). This summary is based on reviews by Stebbins (2003) and CDFG (2005). The barefoot banded gecko is a state-listed threatened species and a BLM sensitive species. It is not listed under the federal ESA. Its documented geographic range extends from San Diego and Imperial counties south to central Baja California, Mexico. It occurs in rock outcrops and boulder-strewn slopes and canyons. It is rarely observed because of its steep, poorly accessible habitat, and because it spends most of its time in rock crevices or below ground. Due to its behavior and inaccessible habitats, its range in southern California may be more extensive that shown by documented occurrences. For example, Stebbins (2003) reported it as far north as State Highway 74 in the Santa Rosa Mountains, Riverside County. The nearest known occurrences to the USG Project Site are within Anza

Borrego Desert State Park and in the Coyote Mountains. The principle threats to barefoot banded gecko appear to be collecting live animals for the reptile hobbyist trade, and consequent habitat destruction (e.g., prying rock crevices apart). Barefoot banded gecko is unlikely to occur on the quarry site or pipeline alignments. The gypsum outcrops do not provide suitable boulders or crevices. The surrounding metamorphic rock outcrops and perhaps the alluvial wash may offer marginal habitat such as boulders and crevices. There is no suitable habitat on any of the pipeline project components. Barefoot banded geckos were not found during field surveys conducted or the 2008 Final EIR/EIS or during recent field surveys in a portion of the gypsum quarry conducted in compliance with Mitigation Measure 3.5-1e of the 2008 EIR/EIS (see Section V. B. 1. Adopted Biological Resource Mitigation Measures) and current CDFW survey protocol (CDFG, 2011).

Desert pupfish (*Cyprinodon macularius*). Desert pupfish are absent from the proposed Project site due to the absence of perennial surface water. However, desert pupfish occurs lower in the watershed, several miles downstream from the quarry. Critical habitat at San Felipe Creek, Carrizo Wash, and Fish Creek Wash and occupied habitat at San Sebastian Marsh are located about 7 miles northeast of proposed Quarry Well No. 3, 11 miles northeast of the Quarry, about 20 miles north of the Plaster City Plant, and about 24 miles north of the proposed wells near Ocotillo.

Historically, desert pupfish were widespread and common in shallow water of stream margins, marshes, springs, and slow-flowing reaches of major rivers in the lower Gila River and Colorado River watersheds in Arizona, California, Baja California, and Sonora Mexico. They are exceptionally hardy, surviving in a broad range of water chemistry and temperature regimes, but they are vulnerable to competition and predation by non-native species. The desert pupfish is endangered due to habitat loss and the introduction of non-native competitors and predators (e.g., *Tilapia*) into its habitat (Minckley et al. 1991; USFWS 1986; Moyle 2002). Dam construction on several of its river and tributary habitats in Arizona and on the Colorado River inundated some occurrences and dewatered others. Surface water diversions have eliminated habitat in some areas, and lowered water tables due to groundwater pumping and groundwater use by invasive shrubs (*Tamarix ramosissima*) have eliminated other occurrences (USFWS 1986, 1993; CDFG 2005). Agricultural pollution may threaten some occurrences. In California, desert pupfish populations persist in native populations, at San Sebastian Marsh and upstream in San Felipe Creek and tributaries (Imperial County), at Salt Creek (Riverside County), and in shoreline pools and irrigation ditches around the Salton Sea (USFWS 1993). They also persist in irrigation canals near the Salton Sea and in a few introduced “refugia” sites, including three in Anza Borrego Desert State Park.

The USFWS designated critical habitat for desert pupfish at San Sebastian Marsh and along portions of its tributaries, San Felipe Creek, Carrizo Wash, and Fish Creek Wash in Imperial County (USFWS 1986). In the critical habitat designation, the USFWS listed several activities that could adversely modify critical habitat, including withdrawal of water, either directly or indirectly, from San Sebastian Marsh. In addition, the USFWS (1993) published a Desert Pupfish Recovery Plan with recommendations for land management and recovery.

BLM Sensitive Species

Flat-tailed horned lizard (*Phrynosoma mcalli*). The flat-tailed homed lizard is recognized as a sensitive species by the BLM and is a CDFW Species of Special Concern. The flat-tailed horned lizard has been proposed for federal listing several times but in each case the USFWS determined that listing was not warranted (USFWS, 2011b). Although not federally listed, an interagency management strategy and conservation agreement for the flat-tailed homed lizard was established in 1997 and remains in place (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003); its signatory agencies include the Bureau of Land Management and El Centro Naval Air Command. Together, these agencies manage

several large reserves, including the West Mesa Management Area. A portion of the existing narrow-gauge rail line crosses the West Mesa Management Area (see Figure 1, Project Overview), but none of the project areas identified in this BRTR are located within it. The West Mesa Management Area is located approximately 2 miles north of the proposed replacement pipeline alignment and about 5 miles east of the proposed new pipeline alignment (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003).

The flat-tailed horned lizard's historic range extends throughout much of southeastern California, southwestern Arizona, northwestern Sonora and northeastern Baja California, Mexico. Populations are becoming isolated from one another by development. They occur almost exclusively in windblown sand dunes and partially stabilized sand flats. They overwinter by burying themselves in loose sand at depths to 8 inches (20 cm). They also bury themselves in sand to escape predators and to escape extreme high temperatures during their summer activity period (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003)

Flat-tailed horned lizard was not observed during the surveys. They were observed in the immediate vicinity of the proposed pipeline alignment in 2016 and 2017 (inaturalist 2018). They have a high potential to be present along both pipeline alignments and only a moderate potential to be present in the washes at the downstream end of the quarry.

The USFWS (2011b) determined that flat-tailed horned lizard populations within Management Areas are not low or declining and that most populations (with the exception of occurrences in the Coachella Valley) are not likely to become endangered in the foreseeable future. The USFWS evaluated the conservation efforts implemented under the Rangewide Management Strategy and recognized that these efforts reduce threats and "promote actions that benefit the flat-tailed horned lizard throughout its range." The USFWS states that "there is no information to suggest that the flat-tailed horned lizard population is declining or is in danger of becoming an endangered species in the foreseeable future."

Colorado Desert fringe-toed lizard (*Uma notata*). Colorado Desert fringe-toed lizard is recognized as a sensitive species by the BLM and is a CDFW Species of Special Concern. It lives in fine, loose, wind-blown sand, primarily in desert dunes and sandy washes. Their range in California includes the Sonoran Desert from Anza Borrego State Park to the Arizona and Mexico borders in Imperial and San Diego counties. Suitable windblown habitat is present along both pipeline alignments. There are recent records of Colorado Desert fringe-toed lizard within about 5 miles of the proposed pipeline (inaturalist 2018). It has the highest potential for occurrence along the proposed pipeline where the habitat is intact and has relatively little disturbance. There is minimal suitable habitat and very few records near the existing pipeline, therefore it has a low potential to be present. No suitable habitat is present within quarry.

Golden eagle (*Aquila chrysaetos*). Golden eagle is federally protected under the Bald and Golden Eagle Protection Act (BGEPA), recognized as sensitive species by the BLM, and considered a fully protected species by CDFW. They are year-round residents throughout most of their range in the western U.S. In the southwest, they are more common during Winter when eagles that nest in Canada migrate south into the region. They breed from late January through August, mainly during late Winter and early Spring in the California deserts. In the desert, they generally nest in steep, rugged terrain, often on sites with overhanging ledges, cliffs, or large trees that are used as cover. Golden eagles are wide-ranging predators, especially outside of the nesting season, when they have no need to return daily to tend eggs or young at their nests. Foraging habitat consists of open terrain including grasslands, deserts, savanna, and early successional forest and shrubland habitats. They prey primarily on rabbits and rodents, but will take other mammals, birds, reptiles, and some carrion.

Golden eagle home ranges in the Mojave Desert ranged from 1.7 to 1,369 square miles, and averaged 119 square miles (Braham et al., 2015). In any given year, eagles may initiate nesting behavior at one nest, without any activity at the other nests. Eagles may complete breeding by laying eggs and raising chicks, or may abandon the nest without successfully raising young. In any given year, all or most nests in a territory may be inactive, but eagles may return in future years to nest at previously inactive sites.

Marginally suitable nesting habitat is present within the Project area and there is a low potential for nesting. Numerous cliffs were observed within 0.5 miles of the Project area, and are likely to provide suitable nesting habitat. Suitable foraging habitat is present throughout the Project area and there is a high potential to golden eagles to forage throughout.

Burrowing owl (*Athene cunicularia*). Burrowing owl is a CDFW Species of Special Concern and recognized as sensitive by the BLM. It inhabits arid lands throughout much of the western U.S. and southern interior of western Canada (Poulin et al., 2011). In this portion of its range, some owls are migratory, while some are year-round residents. Burrowing owls prefer flat, open annual or perennial grassland or gentle slopes and spare shrub or tree cover. However, they are routinely found in desert shrub communities, including those that are present in the Project area. Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. Burrowing owls often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al., 2008). The breeding season in southern California generally occurs from February to August with peak breeding activity from April through July (Poulin et al., 2011).

A single burrowing owl was observed during surveys of the Project area in October 2014. Given the timing of the survey and that the owl was unpaired, this was likely a dispersing or wintering individual. Subsequent surveys of the Project area conducted during the breeding season did not detect any burrowing owls. However, suitable burrowing owl nesting habitat and foraging habitat is present throughout the Project area. This species is considered to have moderate potential to nest in the Project area.

Bats. Five special-status bat species recognized as sensitive by the BLM have at least a moderate potential to forage over the Project area: California leaf-nosed bat (*Macrotus californicus*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), and Western mastiff bat (*Eumops perotis californicus*). Pocketed free-tailed bat (*Nyctinomops femorosaccus*) also has at least a moderate potential to be present but is not recognized by the BLM as sensitive but is recognized as a CDFW Species of Special Concern. The pallid bat, Western mastiff bat, and California leaf-nosed bat forage in open areas over grasslands, agricultural areas, and other shrublands and roost in a variety of habitats including buildings, rock crevices, and caves (Harvey et. al., 2011). Townsend's big-eared bat roosts primarily in caves and abandoned mines (Harvey et. al., 2011). The spotted bat forages on moths in the desert during winter months and roosts in deep crevices in cliffs (CDFW 2018). The gypsum cliffs and other cliffs and outcrops immediately adjacent to the quarry provide suitable roosting habitat for most of these species. In addition, the entire Project area provides suitable foraging habitat for these bats.

Other Special-status Wildlife

Loggerhead shrike (*Lanius ludovicianus*). The loggerhead shrike is a CDFW Species of Special Concern. It is a widespread species in the United States and throughout California. It prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. It most often occurs in open-

canopied forest and woodland habitats. It nests in well-concealed microsites in densely foliaged trees or shrubs (Miller, 1931; Bent, 1950). It feeds on large insects, but will also take small birds, mammals, amphibians, reptiles, fish, carrion, and various invertebrates. Loggerhead shrikes often impale their prey on thorns, barbed wire, or other sharp objects. Loggerhead shrike was present within the quarry during nesting season and likely nested there. It has a high potential to be present along the pipeline alignments.

Black-tailed gnatcatcher (*Polioptila melanura*). The black-tailed gnatcatcher is recognized as a watch list species by CDFW. It is a small song bird that nests in desert shrublands, typically in areas with thickets of mesquites, palo verdes, or acacias. They occur from the deserts of southern California east through Texas and south into Mexico. Black-tailed gnatcatchers were observed nesting within the quarry during surveys in the spring of 2016. They were nesting in habitat mapped as catclaw acacia thorn scrub. Suitable nesting habitat is present throughout the Project area with the highest potential for occurrence within the quarry and along the proposed pipeline.

American badger (*Taxidea taxus*). American badger is a CDFW Species of Special Concern. Badger natural history is summarized by Brehme et al. (2012). They were once widespread throughout open grassland habitats of California. They are now uncommon, permanent residents throughout most of the State. They are found in open shrubland, forest, and herbaceous habitats with friable soils. In the southwest, badgers are typically associated with creosote bush and sagebrush shrublands. Badgers are fossorial, digging large burrows in dry, friable soils and use multiple dens and cover burrows within their home range. Badgers move among burrows daily, although they can use a den for a few days at a time. Badger home range sizes are dependent upon prey availability and other habitat characteristics. In general, home ranges are several hundred acres in size. They feed mainly on small mammals, especially ground squirrels, pocket gophers, rats, mice, and chipmunks. Badgers also prey on birds, eggs, reptiles, invertebrates, and carrion. The diet shifts seasonally and yearly depending upon prey availability.

The gypsum outcrops and the alluvial areas of the planned quarry expansion areas provide unsuitable or poorly suitable habitat for digging and burrowing (the gypsum outcrops consist of bedrock overlain by relatively thin layers of weathered, clay-like gypsum material; the alluvium has very high rock content). The two pipeline routes provide suitable burrowing substrates, although their proximity to roads, OHV activity, and the narrow-gauge rail line may dissuade badgers from using those areas. No American badger or its sign was observed during the surveys. Suitable foraging habitat is present throughout the Project area and badgers have a moderate to high potential to occur occasionally, but relatively low probability of denning in the Project area.

Desert kit fox (*Vulpes macrotis arsipus*). Desert kit fox is protected under Title 14, Section 460, California Code of Regulations, as well as the California Fish and Game Code (Sections 4000-4012), which defines kit fox as a protected furbearing mammal. Both regulations prohibit take of the species. Desert kit fox is an uncommon to rare permanent resident of arid regions of southern California. Kit fox occur in annual grasslands, or grassy open, arid stages of vegetation dominated by scattered herbaceous species. Kit fox prey on rabbits, ground squirrels, kangaroo rats, and various species of insects, lizards, and birds (Zeiner et al., 1990). Desert kit fox is primarily nocturnal, and inhabits open, flat areas with patchy shrubs. Friable soils are necessary for the construction of dens, which are used throughout the year for cover, thermoregulation, water conservation, and pup rearing.

No kit fox or kit fox sign was observed during the surveys. As described above for American badger, suitable foraging habitat is present throughout the Project area and kit foxes have a moderate to high potential to occur occasionally, but relatively low probability of denning in the Project area.

Prairie falcon (*Falco mexicanus*). Prairie falcon is a watch list species in California. It breeds throughout much of arid western North America. They prey on a variety of small mammals, birds, reptiles, and some large insects. They nest almost exclusively on ledges of cliffs and rock escarpments or, occasionally, in stick nests built on the ledges by ravens or other raptors. There are a few regional breeding records (e.g., at Anza-Borrego Desert State Park [Unitt, 1984]) and nesting prairie falcons may forage over very wide ranges (Johnsgard, 1990). Almost all prairie falcon sightings in the region are made during winter or migration seasons. Suitable nesting habitat is present in the Project area and they have a moderate potential to utilize the habitat. They are likely to occasionally forage within the Project area.

Other Raptors: Several special-status birds of prey are found seasonally in the region, especially during winter and migration: sharp-shinned hawk (*Accipiter striatus*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), and merlin (*Falco columbarius*). Suitable winter or migratory season foraging habitat for these raptors is widely available throughout the region. These species, if present, may forage within the Project area but would not nest because of a lack of suitable habitat.

Native birds. Most birds, including their nestlings and eggs, are protected under the California Fish and Game Code Sections 3503, 3503.5, and 3513, and the federal Migratory Bird Treaty Act. Most of these species have no other special conservation status. Fifteen bird species have been recorded on the site during field surveys (see Attachment 4). Suitable foraging and nesting habitat for protected bird species, as well as “stopover” habitat for migratory songbirds, is found throughout the project area.

V. Conclusions and Recommendations

V. A. Summary of Biological Resources Impacts

The proposed project would directly affect vegetation, habitat, and common species within the project footprint areas, and may directly affect special-status plants or animals. In addition, the project may indirectly affect biological resources in the vicinity of the project footprint, through noise, lighting, disturbance, dust, or other indirect effects. The following paragraphs briefly summarize the expected impacts to biological resources, and several mitigation measures are recommended in the sections that follow.

V. A. 1. Vegetation and Habitat Impacts

Expanded quarrying activities would result in permanent and long-term impacts to native vegetation and habitat (see Table 2). Pipeline construction would affect additional acreage. During quarrying or pipeline construction activities, most wildlife are expected to avoid the project footprint area and immediate vicinity due to unsuitable habitat conditions and human disturbance. After the completion of quarrying or construction activities, vegetation and habitat will remain in a disturbed state for many years, although removal of the disturbance and subsequent recovery (through reclamation) will ultimately replace some habitat components. Quarry phasing and on-site reclamation as specified in the Imperial County authorization would reduce the habitat impacts over time, and measures recommended below would minimize the project footprint area. In addition, habitat effects could be offset through any habitat compensation that may result from permitting for jurisdictional waters impacts through the US Army Corps of Engineers or CDFW, or federal ESA consultation with the USFWS. Project activities could lead to the spread of invasive weeds or introduction of new weed species in the area.

Mitigation measures to avoid or minimize general vegetation and habitat impacts are listed below. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas
- EIR-2. Mining and Reclamation
- EIR 3.5-1a. Revegetation
- EIR 3.5-1b. Phasing of Quarry development and closure
- BIO-1. Integrated Weed Management Plan
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program

V. A. 2. Special-status Plant Impacts

No State or federally listed plants and no BLM Sensitive Plants were observed during the surveys or have potential to be present. Several special-status plants with a CRPR 2B (rare in California but more common elsewhere) or CRPR 4 (watch list) were observed in the quarry expansion areas or new pipeline route. The proposed project would probably take small occurrences of Thurber's pilostyles, brown turbans, Coulter's lyrepod, and annual rock-nettle. Based on the distribution and conservation status of these species and extensive undisturbed ad protected habitat in the surrounding area, this impact would be relatively minor and no mitigation is recommended.

V. A. 3. General Wildlife Impacts

Most wildlife would avoid moving equipment, and equipment operators would avoid clearly visible wildlife (such as large mammals). However, quarrying or pipeline construction could cause mortality of small mammals and reptiles within the project footprint area, particularly during initial grading or site clearing work. Food or water could attract wildlife into the work area, putting animals at risk of injury. Domestic or feral dogs, if present on the site, could prey on native wildlife, or cause injury or mortality by chasing animals. Other potential hazards include vehicle strikes or wildlife entrapment within bores, trenches, or materials (e.g., pipes). The project footprint and surrounding area provide suitable nesting habitat for numerous resident and migratory birds, which may be vulnerable to project activities. Most adult birds would flee from equipment during initial vegetation clearing; however, nestlings and eggs would be vulnerable to mortality during initial site clearing construction, and are also protected by the MBTA and Fish and Game Code. These potential impacts can be minimized or avoided through scheduling initial site disturbance outside the nesting season. One special-status bird species, the burrowing owl, is unlikely to flee the site during construction, due to its characteristic behavior of taking cover in burrows. An avoidance and mitigation strategy for burrowing owl is recommended. In addition, certain bird species can become entrapped in vertical or horizontal open pipes with diameters from 1 to 10 inches. Cavity-nesting species such as Say's phoebes, owls, woodpeckers, kestrels, and ash-throated flycatchers are particularly vulnerable. Several avoidance and minimization measures, as well as pre-construction clearance surveys and clearly-delineated work areas are recommended below to minimize or avoid these potential impacts.

The quarry expansion and pipeline construction could affect local wildlife movement patterns. Quarrying and construction operations would tend to dissuade most terrestrial animals from crossing the site due to the removal of vegetation and soil which would otherwise provide food, shade, burrowing substrate, and most other native habitat elements. Indirect impacts, including light, noise, and equipment traffic, could also tend to reduce wildlife dispersal across the property. But surrounding undeveloped open space would continue to provide adequate travel routes around the existing and proposed quarry

operations, and the short-term nature of pipeline construction would have only minimal effects to local wildlife movement. Potential impacts to wildlife movement would be minor and no mitigation specific to wildlife movement is recommended, although avoidance and minimization measures recommended below would serve to minimize potential impacts to local wildlife movement.

Mitigation measures to avoid or minimize general wildlife and habitat impacts are listed below. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas
- EIR-2. Mining and Reclamation
- EIR-4. Domestic Animals
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures

V. A. 4. Special-status Wildlife Impacts

The proposed project could directly or indirectly affect special-status wildlife through injury or mortality or through habitat loss or degradation described above. With implementation of avoidance measures recommended below, the project is not expected to take[2] Peninsular bighorn sheep, desert kit fox, America badger, barefoot banded gecko, nesting birds (including burrowing owl) or other special-status wildlife. The planned quarry expansion areas are within designated PBS critical habitat, and the project would directly affect critical habitat, although the planned expansion areas show little evidence of PBS usage. Initial site clearing activities could cause take of special-status reptile (e.g., flat-tailed horned lizard), bird (e.g., burrowing owl), or mammal (e.g., American badger) species if the animals or their active nests or dens are present during the clearing; however, avoidance measures identified below would prevent take. A hydrology analysis indicates that the project would not affect off-site desert pupfish habitat (Bookman-Edmonston 2002a, 2002b). Pre-construction clearance surveys and clearly-delineated work areas are recommended below to minimize or avoid direct impacts. In addition, habitat effects could be offset through any habitat compensation that may result from federal ESA consultation with the USFWS. Note that any habitat compensation for PBS may also provide suitable nesting or foraging habitat for one or more other special-status species of the area, depending on specific habitat characteristics. Potential impacts are described further for each special-status species in the paragraphs that follow.

Peninsular bighorn sheep. Potential project impacts to PBS are categorized below, into habitat impacts, potential for injury or mortality, disruption of behavior, interruption of access to foraging areas, reproduction and lambing activities, and habitat fragmentation and connectivity.

[2] Under the California Fish and Game Code, " 'take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." As a state-designated Fully Protected species, no project-related take of Peninsular bighorn sheep is permitted under California law. Under the federal Endangered Species Act, "the term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 'Harass' and 'harm' (not included in the state definition) are further defined in federal regulations as activities, including significant habitat impacts, that are likely to kill or injure wildlife by significantly disrupting or impairing normal behavior patterns such as breeding, feeding, and sheltering, The US Fish and Wildlife Service may authorize take of a federally listed wildlife species through Endangered Species Act Section 7 consultation with BLM.

The project would affect suitable and occupied PBS habitat located adjacent to the existing disturbance area and would occur in phases over the 73-year mining authorization (80-year estimate for mining and final reclamation). In general, mining will proceed from currently active quarry areas in the north toward future phases in the south. Site-specific mining will depend on multiple factors such as gypsum characteristics in various parts of the quarry, blending needs for production, and market conditions. This total habitat effect is diminished because (1) quarry areas would be reclaimed after completion of mining in each area, so that the previously mined areas would be under reclamation as new areas are developed and mined; (2) former quarry areas, even without reclamation, can serve several habitat values for PBS, including escape terrain, sheltering, and bedding; (3) the habitat value of upland gypsum outcrops appears to be relatively low, based on PBS location data (Figure 5), probably due to minimal forage availability and crusted clay surface; and (4) excluding the gypsum outcrops, habitat (e.g., topography and vegetation) in the planned quarry expansion area is similar to habitat throughout Recovery Region 8 (USFWS 2000b); there are no known special habitat resources such as surface water sources or lambing areas within the active planned quarry expansion areas.

Future quarrying would directly affect two habitat types: upland gypsum outcrops and alluvial wash. The upland gypsum outcrops appear to have minimal habitat value, based on vegetation, topography, soil conditions, and PBS location data. The alluvial wash habitat likely supports higher-quality PBS forage, although it is mostly not adjacent to escape terrain due to presence of gypsum outcrops located between the alluvial wash and the upslope escape terrain. PBS locations indicate only infrequent occurrence in the alluvial wash areas. Mining activities would remove forage plants and other habitat components from the alluvial mining areas, and would significantly alter the outcrop quarry areas, possibly creating steep slopes and benches that may serve as escape terrain (Bleich et al., 2009). The total area of planned disturbance to the alluvial wash is approximately 400 acres, mapped primarily as creosote bush scrub, creosote bush – white bursage scrub, catclaw acacia thorn scrub, and smoketree woodland. Upon completion of mining, each below-grade quarry area will be reclaimed to a condition suitable for use as foraging. The new pipeline construction and pipeline replacement components of the Proposed Action are not expected to affect PBS habitat.

The potential PBS direct habitat impacts would be minimized, offset, or reduced over time primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas.
- EIR-2. Mining and Reclamation.
- BIO-1. Integrated Weed Management Plan
- PBS-1. Peninsular Bighorn Sheep Habitat Mitigation

Mining and reclamation have little potential for causing direct injury or mortality to PBS. There exists a possibility of transportation accidents (truck and train) as well as blasting accidents. Truck and train traffic and blasting have occurred on the site since 1921 (the mine has been in continuous operation by USG since 1945) and these activities are visible to PBS from sufficient distances to allow avoidance by PBS. Given the apparent avoidance of active quarry areas by PBS, the probability of injury or death is small. In addition, if the project were to attract or introduce domestic livestock or feral dogs to the site, those animals could either transmit livestock diseases to PBS, or prey on PBS.

The potential for injury or mortality would be minimized or avoided primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-3. PBS Avoidance, Worker Training.

- EIR-4. Domestic Animals.
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures (including 15 mph speed limit)
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Human presence, lighting, dust, construction noise, blasting, noise and vibrations from heavy equipment, may affect PBS behavior in the quarry vicinity. Quarry noise or disturbance impacts may cause PBS to avoid upland habitat adjacent to the planned mining areas that PBS currently use as escape terrain, foraging, or movement among local ewe groups. A number of studies have been conducted to evaluate bighorn sheep responses to human activities (e.g., Hicks and Elder 1979; Keller and Bender 2007; Papouchis et al. 2001) and generally conclude that bighorn sheep increase their distance to humans, especially when they are approached, but the effects of disturbance are temporary. Additionally, PBS appear to acclimate to ongoing activities such as mining (Bleich, 2009 and references cited therein) and fluctuating levels of mining activity, including blasting, did not appear to affect Nelson's bighorn sheep in the Panamint Mountains (Oehler et al. 2005; Bleich et al. 2009).

Urban Crossroads (2018) prepared a study of quarrying noise at the USG Plaster City Quarry, consisting of long-term (one-hour) measurements from several locations in the existing and planned quarry areas, short-duration noise levels within short distances of quarrying equipment, and short-duration measurement of blasting noise. Urban Crossroads recorded operational levels ranging from 30.8 dBA[3] near the southern end of the planned quarry expansion (about 2 miles from the current activity) to 47.7 dBA in the vicinity of ongoing operations where background noise sources include electrical equipment, people talking, truck engines starting, truck movements, and truck horns sounding for safety purposes. These correspond to faint (below 40 dBA) or moderately loud (above 40 dBA) levels. Short-duration measurement of equipment noise, such as truck pass-by, truck unloading, and crusher activity ranged from 67.7 dBA to 88.2dBA at 50-foot distances, corresponding to loud or very noisy levels. Blasting measured over a 1-second duration registered 128.7 dBZ[4] at a distance of 425 feet, corresponding to 134.9 dBZ at a standard 50-foot distance.

The most likely behavioral response by PBS will be to temporarily avoid active quarrying or materials processing areas, including nearby undisturbed habitat. PBS location data include many data points in the immediate vicinity of the active quarry area, consistent with literature reports indicating acclimation to quarrying activities including blasting. Under the Proposed Action, quarry production and quarrying activities may increase. The Urban Crossroads analysis indicates only a minimal increase in overall noise levels from increased quarry production. Consistent with the behavior of Nelson's bighorn sheep as quarry production increased and decreased in the Panamint Mountains (Oehler et al. 2005; Bleich et al. 2009), the level of overall disturbance to PBS is not expected to change. The new pipeline construction is unlikely to affect PBS behavior due to the location along the existing narrow-gauge rail line, where PBS occurrence is rare. If PBS are in the vicinity during construction, then the construction activities would likely affect PBS behavior as described above for quarry activities. The pipeline replacement and canal pipeline components of the Proposed Action are not expected to affect PBS behavior because they would not be located in PBS occupied habitat.

[3] A-weighted sound level, from one-hour recording periods (Urban Crossroads, 2018).

[4] Non-weighted sound level (Urban Crossroads, 2018).

The potential to disrupt PBS behavior would be minimized primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas.
- EIR-2. Mining and Reclamation.
- EIR-3. PBS Avoidance, Worker Training.
- EIR-4. Domestic Animals.
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Mining and reclamation will disrupt portions of the site for at least 80 years, causing habitat loss, disturbance, and potential behavioral effects described above. Mining-related disturbance may cause PBS to avoid accessing foraging habitat within the alluvial wash, if the disturbance is located between regularly-used slope habitat and the alluvial foraging area. Nonetheless, extensive upland and alluvial habitat are available in the surrounding area. The potential extent of interrupted access to foraging areas in the vicinity of the quarry cannot be quantified. The new pipeline construction and pipeline replacement components of the Proposed Action are not expected to affect PBS access for foraging habitat.

The potential to interrupt PBS access to foraging habitat would be minimized primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas.
- EIR-2. Mining and Reclamation.
- EIR-3. PBS Avoidance, Worker Training.
- EIR-4. Domestic Animals.
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Peninsular bighorn sheep lambs and yearlings have been observed in the Fish Creek Mountains east of the quarry. Based on data indicating year-round PBS occupancy, lambing activity (i.e., birth and nursing) presumably occur in the Fish Creek Mountains. GPS location data suggest the most likely lambing area is the north-south trending canyon east of the quarry. Future quarry phases 6Bp, 7Bp, 8, and 9 are nearest to the presumed lambing habitat.

Although there are no expected impacts to reproduction and lambing activities, the project includes a requirement that new ground-disturbing activities (i.e., initial quarry development) and blasting may not take place during lambing season (Jan 1- May 30), except with the approval of USFWS and CDFW. This requirement is identified in:

- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Continuing and expanded quarry operations would tend to dissuade most terrestrial animals, including PBS, from crossing the active quarry areas. Future mining in the southern end of the planned quarry expansion areas (Phases 8 and 9) is near a habitat linkage between occupied habitat to the east and

west of the planned quarry expansion area. This linkage is about 4,000 feet wide. Based on location data, PBS regularly use habitat immediately adjacent to the active quarrying areas (Phases 1A, 1B, S1, S2, and S3). Based on these activity patterns, PBS are expected to continue to occupy the upland slopes south of Phases 8 and 9. Quarry areas undergoing reclamation would be accessible to PBS, although their localized behavioral response to the previously active quarry areas is unknown. Nelson's bighorn sheep populations in other areas regularly use inactive quarries for routine activities (Bleich, 2009; San Bernardino National Forest, 2014 and citations therein). Throughout the life of the project, surrounding undeveloped open space would continue to provide access to PBS throughout nearly all of the habitat currently in use by PBS. The new pipeline construction and pipeline replacement components are not expected to affect biological connectivity for PBS. Pipeline construction activities may temporarily dissuade terrestrial animals from using the area. But surrounding undeveloped open space would continue to provide adequate travel routes around the existing and proposed plant operations.

The potential to affect biological connectivity would be minimized primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas
- EIR-2. Mining and Reclamation
- EIR-3. PBS Avoidance, Worker Training
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Desert pupfish. The project would not directly affect suitable aquatic habitat for desert pupfish. Desert pupfish occurs at San Sebastian Marsh, which is lower in the Fish Creek watershed, about 7 miles northeast of the nearest USG facilities. Potential effects of the project on desert pupfish, if any, would be indirect impact to surface water availability in off-site desert pupfish habitat.

Groundwater extraction was identified as a threat in the desert pupfish listing (USFWS, 1986) and in the recovery plan (USFWS, 1993). It is still considered a threat; especially at occurrences outside California (USFWS, 2010). The potential link between groundwater extraction and off-site aquatic habitat availability to desert pupfish depends on the rate or volume of extraction and groundwater passage within the affected basin or basins. Reduced groundwater level at a given well location could lead to reduced surface water at a spring or seep, depending on the amount of draw-down and the hydrologic link between the well site and the aquatic habitat.

Hydrologic studies prepared by Bookman-Edmonson (2002a; 2002b) and Dudek (2018) addressed the quarry area and proposed Quarry Well No. 3, indicating that neither component of the project would affect occupied pupfish habitat. These studies are described in the following paragraphs.

Hydrologists preparing the analysis have concluded that no impacts will occur to basin water supplies or to San Felipe Creek. The analysis shows a drainage area contributing to the San Felipe Creek of 965,388 acres with a volume calculated on annual average precipitation of 583,883 acre-feet of water. The Quarry, including the planned expansion area, contributes 396 acre-feet of water to the basin (0.07 percent by volume). This surface drainage would continue uninterrupted with all drainage from the Quarry directed to the wash.

Hydrogeologists also addressed the possible impacts of withdrawing approximately 26 acre-feet per year of well water from the same basin for use at the Quarry. A calculated draw down of the proposed well at maximum capacity would have a draw down at Fish Creek and San Felipe Creek Springs of

approximately 1 millimeter. This is a conservative estimate because values produced by the Theis equation are for drawdowns in confined aquifers. However, the aquifer in the well area is unconfined, and drawdowns will be much less than those for a confined aquifer. Pumping 26 acre-feet per year from an unconfined aquifer will not produce drawdowns that are noticeable at distances of 1,000 feet or less. Additionally, the location of the San Jacinto Fault, a probable groundwater barrier between the well and Fish Creek and San Felipe Creek Springs, would most likely prevent a cone of depression extending beyond the fault. Thus, the extraction of water from the well at capacity will not have a detectable impact directly or cumulatively on habitat supporting the desert pupfish.

Additionally, recent significant loss of surface water in the occupied habitat is believed to be linked to seismic activity (Poff, 2017) or cessation of nearby irrigation due to conversion of agricultural lands to a solar facility (Todd Groundwater, 2018).

Barefoot banded gecko. The barefoot banded gecko is not expected to occur on the site. However, due to its cryptic nature and inaccessible habitats, it may be more widespread than currently understood. If barefoot banded gecko were to occur on a future mining site, potential impacts would be similar to those described for general wildlife (above), especially the potential for injury or mortality by vehicle crushing. Most potential impacts would be minimized through measures identified for general wildlife impacts (above). Due to its status as a CESA-listed threatened species and a BLM sensitive species, the following additional mitigation measure was included in the 2008 Final EIR/EIS. The full text of the measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- EIR 3.5-1e. Barefoot banded gecko

Flat-tailed horned lizard. Suitable habitat for flat-tailed horned lizard is present along several parts of the planned pipeline routes. Potential impacts would be similar to those described for general wildlife (above), especially the potential for injury or mortality by vehicle crushing. Although not state or federally listed, an interagency management strategy and conservation agreement for the flat-tailed homed lizard was established in 1997 and remains in place (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003). In order to minimize potential impacts to flat-tailed horned lizard, Mitigation Measure EIR 3.5-2was included in the 2008 Final EIR/EIS, and additional Mitigation Measure FTHL-1 is recommended. The full text of the measures may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR 3.5-2. Flat-tailed Horned Lizard Rangewide Management Strategy
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- FTHL-1. Flat-tailed Horned Lizard Mitigation

Special-status bats. Several special-status bats could forage over the site or possibly roost in rock crevices within planned quarry expansion areas. Impacts to foraging habitat would be minimal and would be mitigated through measures identified above under Vegetation and Habitat Impacts. Potential impacts to roosts could cause injury or mortality to special-status bats. This potential impact would be avoided or minimized through Mitigation Measure BIO-4 (Wildlife Impact Avoidance and Minimization Measures). The full text of BIO-4 may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

Desert kit fox and American badger. Both species could use the quarry or pipeline project areas, although they were not observed during field surveys. Potential direct impacts to American badger and desert kit fox include mechanical crushing of individuals or burrows by vehicles and construction

equipment, habitat loss, and noise and disturbance to surrounding habitat. Mitigation measures identified under general wildlife impacts would minimize this potential impact.

Nesting birds including burrowing owl. Native birds are protected under the California Fish and Game Code and federal Migratory Bird Treaty Act. Special-status birds of the region are addressed in Section IV. D. but most protected bird species have no special conservation status. The entire Project site and surrounding area provides suitable nesting habitat for numerous resident and migratory bird species. Bird nests including eggs and nestlings are vulnerable to Project construction activities that may disrupt nesting behavior or damage nests, birds, or eggs. Burrowing owls reside in burrows year-round and may retreat into their burrows if threatened by human activities; therefore, burrowing owl avoidance requires pre-construction surveys and avoidance measure for occupied burrows at any time of year. Mitigation measures identified under general wildlife impacts, in combination with the measures identified below, would minimize potential impacts to nesting birds. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR 3.5-1c. Migratory birds
- BO-1. Burrowing owl avoidance
- BIO-4. Wildlife Impact Avoidance and Minimization Measures

V. B. Existing and Recommended Biological Resource Mitigation Measures

The proposed project includes quarry reclamation in compliance with the California Surface Mining and Reclamation Act (SMARA). In addition, the Imperial County project authorization includes eleven measures to mitigate biological resources impacts, quoted in Section V.B.1. below. Aspen recommends several additional measures in Sections V.B.2. and V.B.3. to mitigate biological resource impacts, including several general avoidance and minimization measures and several additional measures for specific resources.

V. B. 1. Adopted Biological Resource Mitigation Measures

The following eleven measures are identified in the 2008 Final EIR/EIS and included as project requirements under the Imperial County authorization. These measures are still applicable and would reduce adverse effects identified herein. Additional mitigation measures are recommended in Sections V.B.2. and V.B.3. to supplement these adopted measures and further reduce biological resources impacts.

EIR-1. Minimize Temporary Use Areas. During pipeline construction the need for temporary use areas would be minimized by using the USG private parcels on either end of the alignment for staging and equipment and material storage. Materials would be transported to the project areas as needed, for immediate use.

EIR-2. Mining and Reclamation. Mining and reclamation shall be conducted only as approved in the Plan of Operation and Mine Reclamation Plan. Reclamation shall be conducted concurrently with mining and it shall be initiated within each phase as soon as is feasible. Reclamation shall include slope contouring and revegetation with native plant species as specified in the reclamation plan.

EIR-3. PBS Avoidance, Worker Training. The project proponent shall instruct employees and other visitors to the mine to avoid Peninsular bighorn sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. The project

proponent shall establish a training program, including new-employee orientation and annual refreshers, to educate employees regarding bighorn sheep and the importance of avoidance.

EIR-4. Domestic Animals. The project proponent shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the environmental manager. Upon receiving any such reports, the environmental manager shall contact the appropriate authorities for removal of domestic animals.

EIR 3.5-1a. Revegetation. Consistent with the California Surface Mining and Reclamation Act (SMARA), USG shall implement the revegetation plan. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation should be concurrent with closure of individual Quarry areas; wherever ongoing Quarry operation may eliminate access to closed upper Quarry benches, those benches should be revegetated while access is still available.

EIR 3.5-1b. Phasing of Quarry development and closure. Wherever possible, USG shall begin revegetation of Quarry areas to restore native habitat values concurrently or in advance of opening new Quarry areas.

EIR 3.5-1c. Migratory birds. In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat.

EIR 3.5-1d. Peninsular bighorn sheep. USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the USFWS that will: (1) provide a statement about whether the proposed project is "likely or not likely to jeopardize" the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them.

EIR 3.5-1e. Barefoot banded gecko. Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the CDFG [now CDFW] and field biologists would be required to hold Memoranda of Understanding with the CDFG to search for this species. If the species is present, then consultation with CDFG under Section 2081 of CESA to "take" barefoot banded gecko must be completed prior to land disturbance.

EIR 3.5-1f. Agency contacts for impacts to streambeds. Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the CDFG and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act, respectively.

EIR 3.5-2. Flat-tailed Horned Lizard Rangewide Management Strategy. USG will comply with the FTHL Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.

V. B. 2. Recommended General Avoidance and Minimization Measures

BIO-1. Integrated Weed Management Plan. USG will prepare and implement an integrated weed management plan to control invasive weeds including tamarisk and fountain grass in cooperation with the BLM and County of Imperial. The plan will include procedures to help minimize the introduction of new weed species, an assessment of the invasive weed species known within the project area, and procedures to control their spread on site and to adjacent offsite areas. This plan will be submitted to the BLM and County of Imperial for review and approval prior to the start of construction and will be implemented for the life of the project.

BIO-2. Mining and Construction Activity Monitoring and Reporting. Prior to the beginning of any quarry expansion activities, USG will identify a Designated Biologist and may additionally identify one or more Biological Monitors to support the Designated Biologist. The Designated Biologist and Biological Monitors will be subject to approval by the BLM and USFWS. The Designated Biologist will be in direct contact with BLM and USFWS.

The Designated Biologist or Biological Monitor will have the authority and responsibility to halt any project activities that are in violation of the conservation measures. To avoid and minimize effects to biological resources, the Designated Biologist and/or Biological Monitor will be responsible for the following:

- The Designated Biologist will notify BLM's Authorized Officer and Service at least 14 calendar days before the initiation of quarry expansion of new ground-disturbing activities.
- The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys (see BIO-4, below) and will be on-site during any quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no quarry expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity (see PBS-3, below).
- The Designated Biologist or Biological Monitor will immediately notify BLM's Authorized Officer and Service in writing if USG does not comply with any conservation measures including, but not limited to, any actual or anticipated failure to implement conservation measures within the periods specified.
- The Designated Biologist or Biological Monitor will visit the quarry site periodically (no less than once per month) throughout the life of the project to administer the WEAP and ensure compliance with the Impact Avoidance and Minimization Measures listed below, and
- The Designated Biologist will submit an annual compliance report no later than January 31 of each year to BLM's Authorized Officer throughout the life of the project documenting the implementation of the following programs/plans as well as compliance/non-compliance with each conservation measure:
    - Integrated Weed Management Plan
    - Worker Education Awareness Program
    - Reclamation Plan
    - Wildlife Mortality Reporting Program
    - Peninsular Bighorn Sheep Monitoring Plan

BIO-3. Worker Education Awareness Program. This measure supplements measure EIR-4, above, by expanding on the worker training program. Prior to project approval, USG will develop a worker education awareness program (WEAP), to be implemented upon final approval by BLM and USFWS. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the project site throughout the life of the project. Multiple sessions of the presentation may be given to

accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all construction and O&M personnel. The WEAP will be approved by the BLM, Service, and CDFG, and will include the following:

- Descriptions of special-status wildlife of the region, including Peninsular bighorn sheep, and including photos and how to identify adult and subadult male and female PBS.
- The biology and status of special-status species of the area, including Peninsular bighorn sheep.
- A summary of the avoidance and minimization measures and other conservation measures.
- An explanation of the PBS observation log (see PBS-2), including instruction on correctly filing data.
- An explanation of the flagging or other marking that designates authorized work areas.
- Actions and reporting procedures to be used if any wildlife, including Peninsular bighorn sheep is encountered.

BIO-4. Wildlife Impact Avoidance and Minimization Measures. USG will implement the following measures throughout the life of the project.

- To the extent feasible, initial site clearing for quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) should be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs.
- The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys no more than seven (7) days prior to initial site clearing for quarry expansion or pipeline construction. To the extent feasible, special-status wildlife (e.g., reptiles) will be removed from "harm's way" prior to site clearing. If an active bird nest, including active burrowing owl burrows are present, the biologist will mark a suitable buffer area around the nest and project activities will not proceed within the buffer area until the nest is no longer active. If potential special-status bat roosting habitat is present (e.g., rock crevices) the biologist will check to see if bats are present. If an occupied bat roost is present, USG will confer with a bat specialist to determine if avoidance or pre-disturbance eviction is feasible or necessary.
- For project activities in windblown sand habitats on pipeline routes, the Designated Biologist or Biological Monitor shall be present in each area of active surface disturbance throughout the work day. the Designated Biologist or Biological Monitor will survey work areas immediately prior to ground-disturbing activities and will examine areas of active surface disturbance periodically (at least hourly when surface temperatures exceed 85ºF) for the presence of FTHL or Colorado fringe-toed lizard. In addition, all potential wildlife hazards (e.g., open pipeline trenches, holes, or other deep excavations) shall be inspected for the presence of FTHL or Colorado fringe-toed lizard prior to backfilling.
- The Designated Biologist or Biological Monitor will be on-site during any quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no quarry expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity.
- Speed limits along all access roads will not exceed 15 miles per hour.
- Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.
- The boundaries of all areas to be newly disturbed (including quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground disturbing activities occur outside the staked area during initial quarry expansion or ground disturbance.

- Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the Plan of Operations).
- No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Covered pitfalls will be covered completely to prevent access by small mammals or reptiles.
- To avoid wildlife entrapment (including birds) all pipes or other construction materials or supplies will be covered or capped in storage or laydown area, and at the end of each work day in construction, quarrying and processing/handling areas. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.
- No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the Project site, on off-site project facilities and activities, or in support of any other Project activities.
- Avoid wildlife attractants. All trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.
- Any injured or dead wildlife encountered during project-related activities shall be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the Designated Biologist or Biological Monitor shall notify the BLM, USFWS, and/or CDFW, as appropriate, within 24 hours of the discovery.

In addition to these measures, Aspen recommends incorporating measures for noise management, dust control, hazardous materials management, erosion control, and water quality in the appropriate sections of the SEIS, to avoid or minimize potential effects of these environmental issues to biological resources.

V. B. 3. Recommended Species-specific Avoidance and Minimization Measures

The following additional measures are recommended to avoid, minimize, or offset project impacts to burrowing owl (BO) and Peninsular bighorn sheep (PBS).

BO-1. Burrowing owl avoidance. If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where Project activities will not be permitted. The buffer area will be based on the nature of Project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is no longer present. If avoidance of quarrying or pipeline construction within the buffer area is infeasible, burrowing owls may be excluded from an active wintering season burrow in coordination with CDFW and in accordance with CDFW guidelines, including provision of replacement burrows prior to the exclusion.

FTHL-1. Flat-tailed Horned Lizard Mitigation. This measure supplements EIR Mitigation Measure 3.5-2, above. In addition to implementing standard mitigation measures contained within the Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003) while constructing Quarry Well #3 and the Quarry pipelines (specified in Mitigation Measure 3.5-2), USG will

implement those standard measures during ground-disturbing activities on the Replacement Pipeline Route or other project activities located in windblown sand habitat.

PBS-1. Peninsular Bighorn Sheep Habitat Mitigation. Mitigation of Peninsular bighorn sheep habitat impacts will include 1:1 on-site reclamation as specified in the Mining and Reclamation Plan and Mitigation Measure EIR-2 (above, from the 2008 Final EIR/EIS). Additionally, mitigation may include habitat compensation that may result from federal ESA consultation with the USFWS. Potential compensation lands may include claim areas that are not disturbed by the mining project. Any lands proposed for acquisition as compensation habitat will be subject to review and approval by the BLM and Wildlife Agencies.

PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting. USG will record and report all on-site PBS observations to CDFW and BLM and will support the CDFW PBS monitoring and reporting program within the Fish Creek and Vallecito Mountains. USG will develop a reporting form for all PBS observations, including data fields for observer, date and time, number and descriptions of animals observed, and location (to be shown on an aerial view of the quarry area), and will submit completed forms for each observation. In addition USG will fund the purchase of radio collars and the capture of ten (10) PBS in the Fish Creek and Vallecito Mountains Ewe Group areas, to provide location monitoring data within these ewe groups over a ten-year period. The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed up by USG, BLM, and CDFW. The funding agreement will include a requirement that the funding will be specifically targeted to the Fish Creek and Vallecito Mountains Ewe Groups, and all resulting data will be available to BLM to support the long-term analysis of PBS activities in the federal action area.

PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures. USG will implement the following measures throughout the life of the project.

- New ground-disturbing activities (i.e., initial quarry development, quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within Peninsular bighorn sheep lambing season (January 1 through May 30) as defined in the Recovery Plan, except with prior approval by USFWS and CDFW (the Wildlife Agencies).
- Minimize blasting during the lambing season (January 1 through May 30) within Quarry Phases 6Bp, 7Bp, 8, and 9 by building up a stockpile of material during the other months.
- The Designated Biologist or Biological Monitor will be on-site during any quarry expansion activities or other new ground disturbing activities and will walk the perimeter of the expansion area and view surrounding habitat with binoculars, stopping work if PBS are within a 0.25-mile radius of the activity.
- If a bighorn sheep enters an active work area, all heavy equipment operations will be halted until it leaves. Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify USFWS and BLM.
- Fencing installed anywhere within the Plaster City Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 7 feet tall. Any proposed permanent fencing design will be submitted for BLM and USFWS review and approval to confirm that the fence design is not likely to pose a threat to Peninsular bighorn sheep.

- When mobile or stationary equipment at the quarry is replaced, upgraded, or relocated, any feasible opportunities to reduce noise levels will be implemented (e.g., quieter designs for new equipment will be used if feasible).
- Quarrying procedures such as loading and unloading rock will be modified wherever practicable to minimize noise (e.g., by unloading rock into the crusher bin while it is partially full).

VI. Literature Cited

American Ornithologists' Union. 1998. Checklist of North American birds, seventh edition, and supplements. American Ornithologists' Union, Washington, D.C.

Baldwin, B.G., D.H., Goldman, D.J. Keil, R. Patterson, and T.J. Rosatti (eds.). 2012. The Jepson Manual: Higher Plants of California. 2nd edition. University of California Press, Berkeley, California.

Barbour, R.W. and W.H. Davis. 1969. Bats of America. University Press of Kentucky, Lexington, Kentucky.

Bent, A.C. 1950. Life histories of North American wagtails, shrikes, vireos, and their allies. U.S. National Museum Bulletin 197.

Bleich, V.C, J.H. Davis, J.P. Marshal, S.G. Torres, and B.J. Gonzales. 2009. Mining activity and habitat use by mountain sheep (*Ovis canadensis*). European Journal of Wildlife Research 55:183–191.

BLM (Bureau of Land Management). 1998. I: I 00,000 scale Surface Management Status Map: El Centro. USDI Bureau of Land Management, Riverside, California.

_____. 2009. Survey Protocols Required for NEPA and ESA Compliance for BLM Special Status Plant Species. Instruction Memorandum No. CA-2009-026.

_____. 2010a. Special-status plants. BLM California State Director's Office, Sacramento. Online: http://www.blm.gov/ca/st/en/prog/ssp.html.

_____. 2010b. Special-status animals in California, including BLM designated Sensitive Species. BLM California State Director's Office, Sacramento. Online: http://www.blm.gov/ca/dir/pdfs/2010/im/CAIM2010-008ATT1.pdf.

Bookman-Edmonsonon. 2002a. Memo from John Rotert to Lilburn Corp reg. Potential impacts of pumping the Fat Pat well.

Bookman-Edmonsonon. 2002b. Memo from John Rotert to Lilburn Corp. reg. Hydrologic impacts attachment to Biological Technical Report.

Braham, M, T. Miller, A. E. Duerr, M. Lanzone, A. Fesnock, L. LaPre, D. Driscoll, and T. Katzner. 2015. Home in the heat: Dramatic seasonal variation in home range of desert golden eagles informs management for renewable energy development. Biological Conservation 186:225-232. https://www.fs.fed.us/nrs/pubs/jrnl/2015/nrs_2015_braham_001.pdf

Brehme, C.S., C.J. Rochester, S.A. Hathaway, B.H. Smith and R.N. Fisher. 2012. Rapid Assessment of the Distribution of American Badgers Within Western San Diego County. U.S. Geological Survey Western Ecological Research Center. 42 pp.

BSCIT (Biodiversity Sciences Technology Group). 2018. CalPhotos database. University of California, Berkeley. [Online]: http://calphotos.berkeley.edu/

California Department of Fish and Game (CDFG). 2005, The Status of Rare, Threatened and Endangered Plants and Animals of California 2000-2004. CDFG, Sacramento http://www.dfg.ca.gov/hcpb/species/t_e_spp/ann_te_rpt.shtml).

Calflora. 2018. [Online]: http://www.calflora.org/

CCH (Consortium of California Herbaria). 2016. [Online]: http://ucjeps.berkeley.edu/consortium/

CDFG (California Department of Fish and Game). 2005. The Status of Rare, Threatened, and Endangered Plants and Animals of California 2000–2004. http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/new_te_rpt.html.

_____. 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. Unpublished. California Department of Fish and Game, Sacramento, California.

_____. 2010. List of natural communities. Vegetation Classification and Mapping Program, CDFG, Sacramento. http://www.dfg.ca.gov/biogeodata/ vegcamp/natural_communities.asp.

_____. 2011. "Survey Protocol for Presence of or Negative Finding for the Barefoot Banded Gecko (*Coleonyx switaki*)." California Department of Fish and Game. August 2011. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=39305

CDFW (California Department of Fish and Wildlife). 2018. RareFind (records of special-status species on the USGS Borrego Mountain SE, Carrizo Mountain NE, Harpers Well, Plaster City NW, Painted Gorge, Plaster City, Coyote Wells, Arroyo Tapiado, Harper Canyon, Yuha Basin, Carrizo Mountain, and In-Ko-Pah Gorge 7.5-minute topographic quads). Natural Heritage Division, CDFW, Sacramento.

CNPS (California Native Plant Society). 2018. Online Electronic Inventory (records of special-status species on the USGS Borrego Mountain SE, Carrizo Mountain NE, Harpers Well, Plaster City NW, Painted Gorge, Plaster City, Coyote Wells, Arroyo Tapiado, Harper Canyon, Yuha Basin, Carrizo Mountain, and In-Ko-Pah Gorge 7.5-minute topographic quads). CNPS, Sacramento.

Colby, J. and R. Botta. 2015. California Department of Fish and Wildlife Peninsular Bighorn Sheep 2015 Annual Report. CDFW, San Diego, California. https://www.wildlife.ca.gov/Conservation/Mammals/Bighorn-Sheep/Desert/Peninsular/Literature#312051077-annual-reports

Colby, J. and R. Botta. 2017. California Department of Fish and Wildlife Peninsular Bighorn Sheep 2016-17 Annual Report. CDFW, San Diego, California. https://www.wildlife.ca.gov/Conservation/Mammals/Bighorn-Sheep/Desert/Peninsular/Literature#312051077-annual-reports

Consortium of California Herbaria. 2018. http://ucjeps.berkeley.edu/consortium/

County of Imperial and Bureau of Land Management. 2008. United States Gypsum Company Expansion/Modernization Project, Imperial County, California; Final Environmental Impact Report/Environmental Impact Statement. El Centro California.

Dudek. 2018. Hydrologic and Water Quality Study for the U.S. Gypsum Company Supplemental Environmental Impact Study (EIS) Plaster City, California. Prepared for Lilburn Corporation and submitted to BLM El Centro Field Office.

Feldhamer, G.A., B.C. Thompson, and J.A. Chapman (eds.). 2003. Wild Mammals of North America: Biology, Management and Conservation, 2nd ed. Johns Hopkins University Press, Baltimore MD.

Flat-tailed Horned Lizard Interagency Coordinating Committee. 2003. Flat-tailed horned lizard rangewide management strategy, 2003 revision. 80 pp. plus appendices.

Garrett, K. and J. Dunn. 1981. Birds of Southern California: Status and Distribution. Los Angeles Audubon Society, Los Angeles, California.

Gervais, J. A., D. K. Rosenberg, and L. A. Comrack 2008 – Burrowing Owl (Athene cunicularia). In. Shuford, W. D., and Gardali, T., eds. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Hall, E.R. 1981. The Mammals of North America. John Wiley and Sons, New York.

Harvey, M. J., J. S. Altenbach, and T.L. Best. 2011. Bats of the United States and Canada. John Hopkins University Press, Baltimore, Maryland.

Hicks, L.L. and J.M. Elder. 1979. Human disturbance of Sierra bighorn sheep. Journal of Wildlife Management. 43(4): 909-915.

Inaturalist. 2018. [Online]: https://www.inaturalist.org/observations

Jansen, B.D., P.R. Krausman, J.R. Heffelfinger, and J.C. De Vos, Jr. 2007. Influence of Mining on Behavior of Bighorn Sheep. Southwestern Naturalist 52:418–423.

Keller, B.J. and L.C. Bender. 2010. Bighorn Sheep Response to Road-Related Disturbances in Rocky Mountain National Park, Colorado. Journal of Wildlife Management. https://onlinelibrary.wiley.com/doi/abs/10.2193/2006-486.

Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. California Dept. of Fish and Game, Sacramento.

Jepson Flora Project. 2018. Jepson eFlora. [Online]: http://ucjeps.berkeley.edu/IJM.html. Accessed January 2018.

Johnsgard, P.A. 1990. Hawks, Eagles and Falcons of North America. Smithsonian Institution Press, Washington DC. 403 pp.

Krausman, P.R., B.D. Leopold, R.F., Seegmiller, and S.C. Torres. 1989. Relationships between desert bighorn sheep and habitats in western Arizona. Wildl. Monogr. 102.

Krausman, P., R., A.V. Sandoval, and R.C. Etchberger. 1999. Natural history of desert bighorn sheep. Pages 139-191 in R. Valdez and P.R. Krausman (eds.), Mountain Sheep of North America. University of Arizona Press, Tucson. 353 pp.

K.E. Meyer and W.F. Laudenslayer, eds. 1988. A Guide to Wildlife Habitats of California. California Dept. of Fish and Game, Sacramento.

Miller, A.H. 1931. Systematic revision and natural history of the American shrikes (*Lanius*). Univ. Calif. Publ. Zool. 38: 11-242.

Minckley, W.L. Meffe, and D.L. Soltz, 1991. Conservation and Management of Shortlived Fishes: the Cyprinodontoids. Pages 247-282 in W.L. Minckley & J.E Deacon (eds.), Battle Against Extinction: Native Fish Management in the American West. University of Arizona Press, Tucson.

Moyle, P. B. 2002, Inland Fishes of California, University of California Press, Berkley.

Murdock, A.G. 2010. Nyctaginaceae. In Baldwin et al., The Jepson Manual: Higher Plants of California. 2nd edition. University of California Press, Berkeley, California.

Oehler, M.W. Sr., V.C. Bleich, R.T. Bowyer, and M.C. Nicholson. 2005. Mountain Sheep and Mining: Implications for Conservation and Management. California Fish and Game 91:149-178.

Papouchis, C.M., F.J. Singer, and W.B. Sloan. 2001. Responses of desert bighorn sheep to increased human recreation. Journal of Wildlife Management 65(3): 573-582.

Poff, B. 2017. BLM Information/Briefing Memorandum: Desert Pupfish Management in San Sebastian Marsh, for the California Desert District, El Centro Field Office, September 29, 2017.

Poulin, R. G., L. D. Todd, E. A. Haug, B. A. Millsap and M. S. Martell. 2011. Burrowing Owl (Athene cunicularia), version 2.0. In the Birds of North America (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bna.61

Roberts, F.M., S.D. White, A.C. Sanders, D.E. Bramlet, and S. Boyd. 2004. Vascular plants of western Riverside County, California: An annotated checklist. F.M. Roberts Publications, San Luis Rey, California.

San Bernardino National Forest. 2014. Biological Assessment/Evaluation, Non-Native Species Risk Assessment, Wildlife, and Botany Reports, and Management Indicator Species Evaluations for the Mitsubishi South Quarry Project, Mountaintop Ranger District, San Bernardino National Forest.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. A manual of California vegetation, 2nd ed., CA Native Plant Society and CA Dept. Fish and Game, Sacramento, CA. 1300 pp.

SEINET. 2018. [Online]: http://swbiodiversity.org/seinet/

Stebbins, R.C. 2003. Western Reptiles and Amphibians. Houghton Mifflin Company, Boston Mass.

Todd Groundwater. 2018. Update on Groundwater Conditions. Memorandum to C. Tubbs, Lilburn Corp., San Bernardino, California.

Urban Crossroads. 2018. U.S. Gypsum Expansion Noise Assessment. Prepared for Lilburn Corporation, San Bernardino, California.

USFWS (United States Fish and Wildlife Service). 1986. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status and Critical Habitat for the Desert pupfish, Final Rule. Federal Register 51:10852-10851.

_____. 1993, Desert pupfish recovery plan. USFWS, Phoenix, Arizona.

_____. 2000. Recovery plan for bighorn sheep in the Peninsular Ranges, California. US Fish and Wildlife Service, Portland, Oregon. 255 pp.

_____. 2009. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Peninsular Bighorn Sheep and Determination of a Distinct Population Segment of Desert Bighorn Sheep (Ovis canadensis nelsoni); Final Rule. Federal Register 74(70):17288-17365. April 14, 2009.

_____. 2011a. Peninsular bighorn sheep (*Ovis canadensis nelson*) 5-year review. Carlsbad Fish and Wildlife Office, Carlsbad, CA. https://www.fws.gov/carlsbad/SpeciesStatusList/5YR/20110421_5YR_PBS.pdf

_____. 2011b. Endangered and Threatened Wildlife and Plants; Withdrawal of Proposed Rule to List the Flat-tailed Horned Lizard as Threatened. Federal Register 76(50):14210-14268.

Unitt, P. 1984. The Birds of San Diego County. Memoir 13, San Diego Society of Natural History, San Diego, Calif.

U.S. Climate Data. 2018. Weather data for Borrego Springs and El Centro, CA. [online]: http://www.usclimatedata.com/. (accessed January 2018).

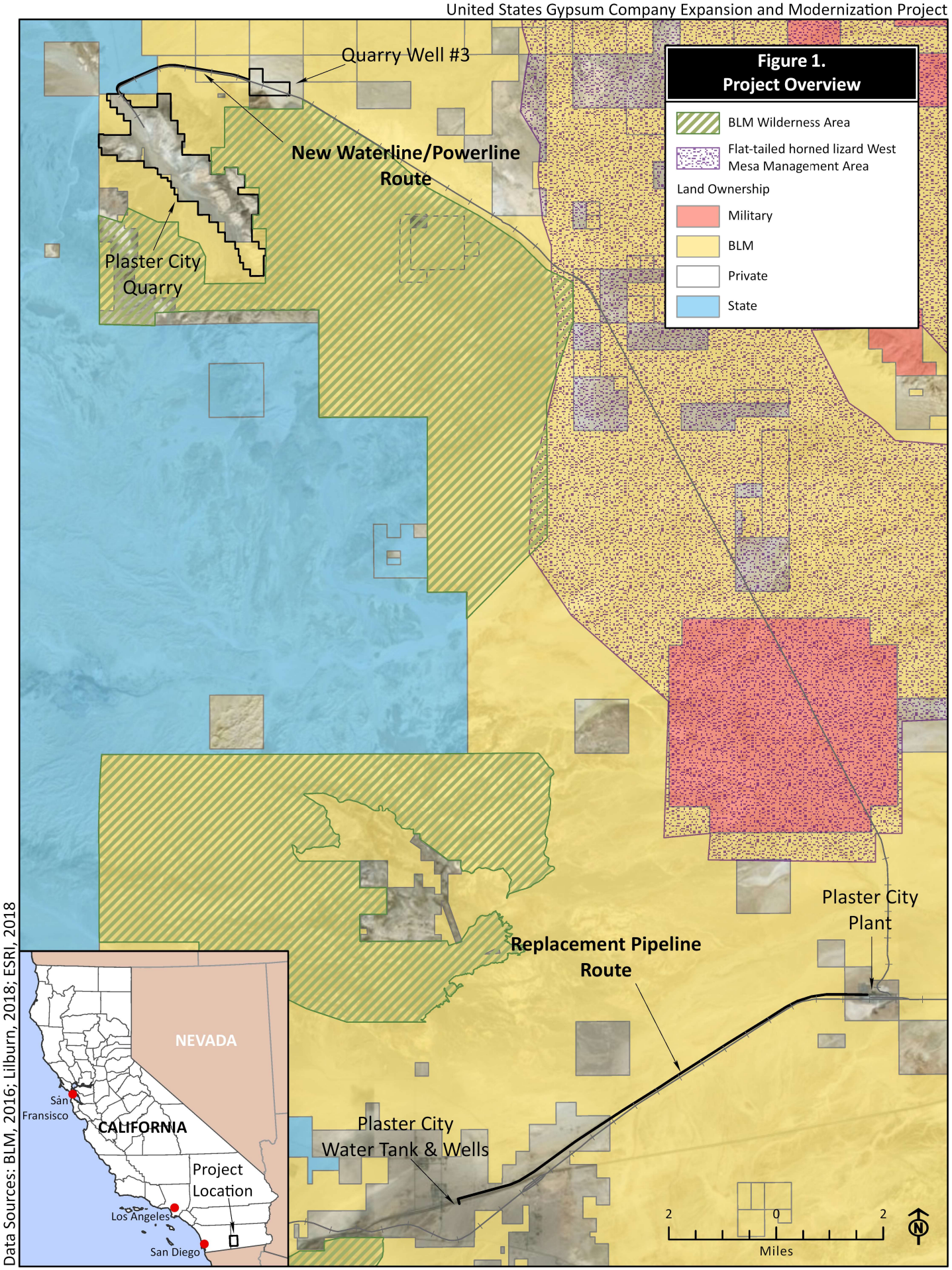
White S.D., and B. Leatherman. 2005. United States Gypsum Company Plaster City Plant Biological Technical Report. Prepared by White & Leatherman Bioservices for Lilburn Corporation. (Revised February 2005).

Wilson, D. E., and S. Ruff. 1999. The Smithsonian Book of North American Mammals. Smithsonian Institution Press, Washington D.C.

Zeiner, D.C., W. F. Laudenslayer, K.E. Mayer, and M. White. 1988-1990. California's Wildlife, Vol. I: Amphibians and Reptiles; Vol. II: Birds; Vol. III: Mammals. California Department of Fish and Game, Sacramento.

ATTACHMENTS

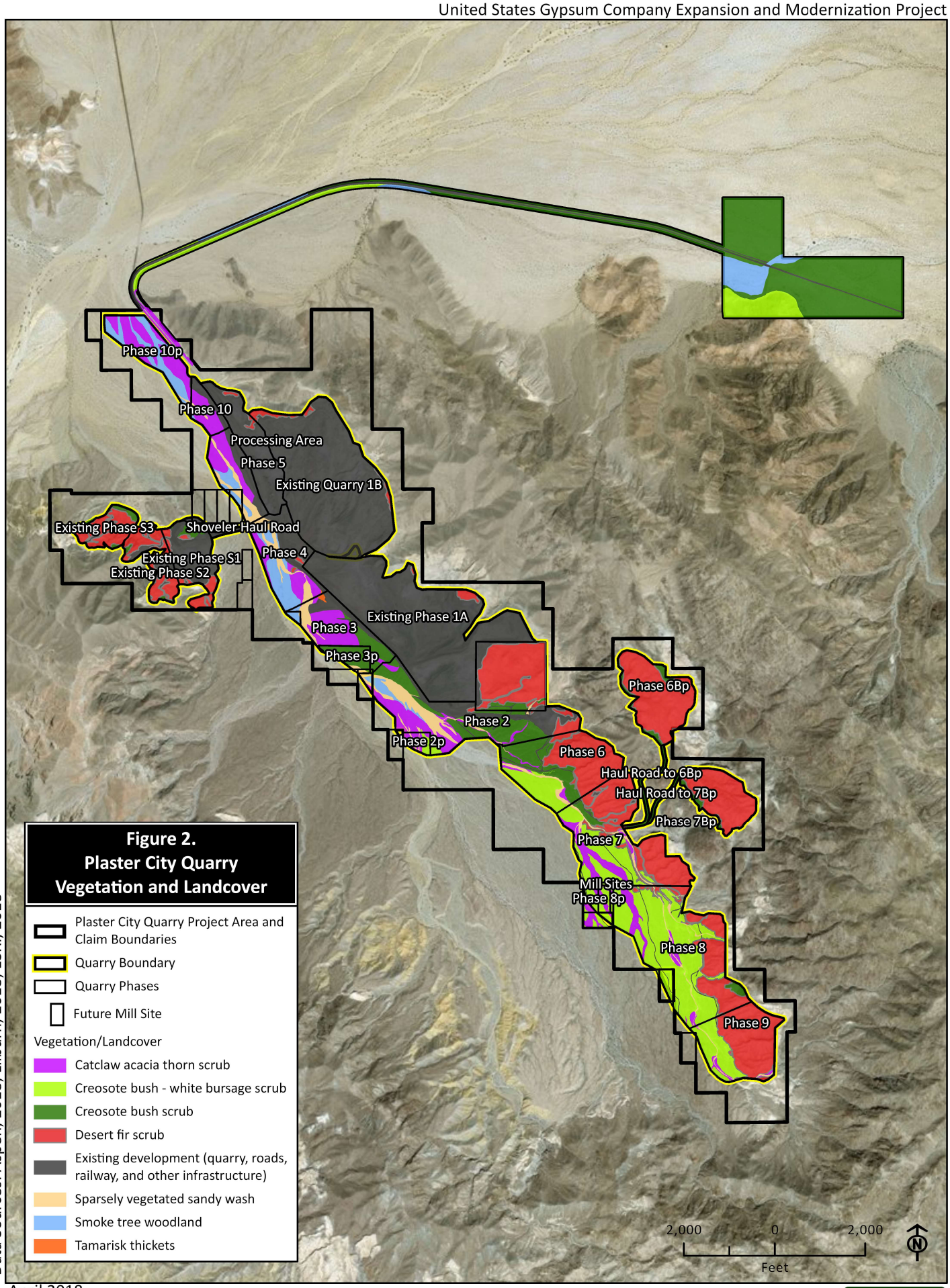
ATTACHMENT 1
FIGURES



Data Sources: BLM, 2016; Lilburn, 2018; ESRI, 2018

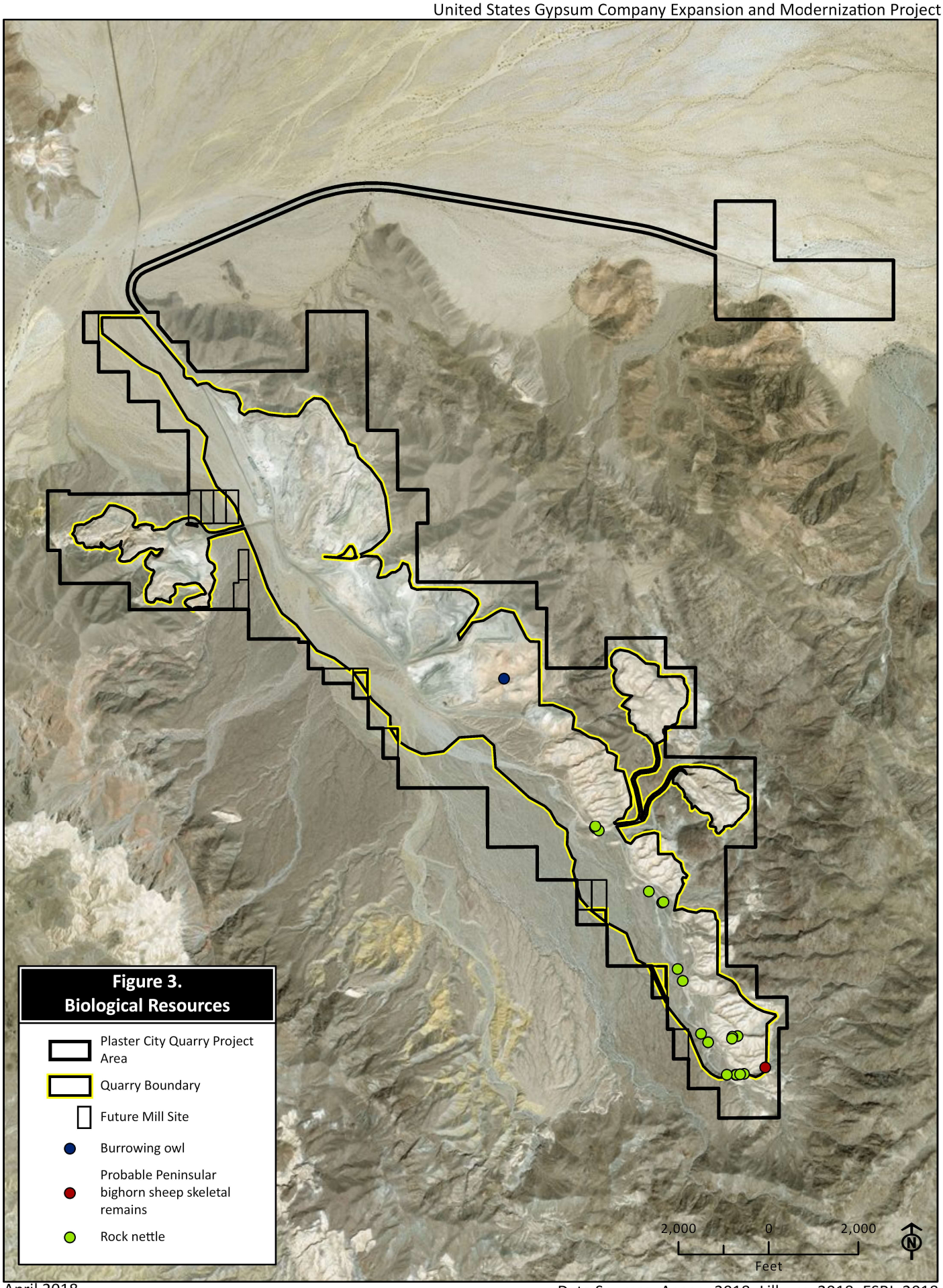
April 2018

Aspen Environmental Group

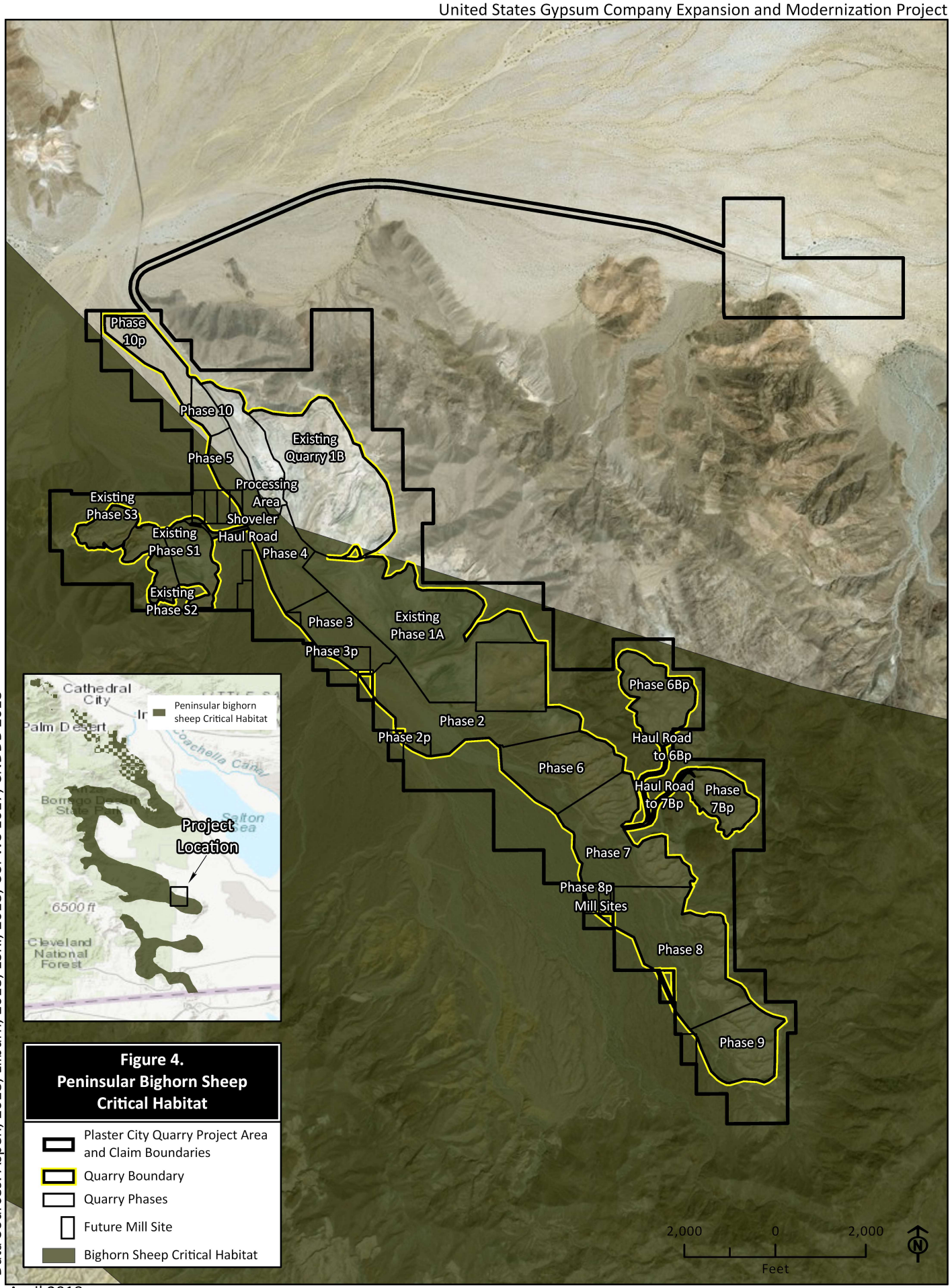


Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018

April 2018

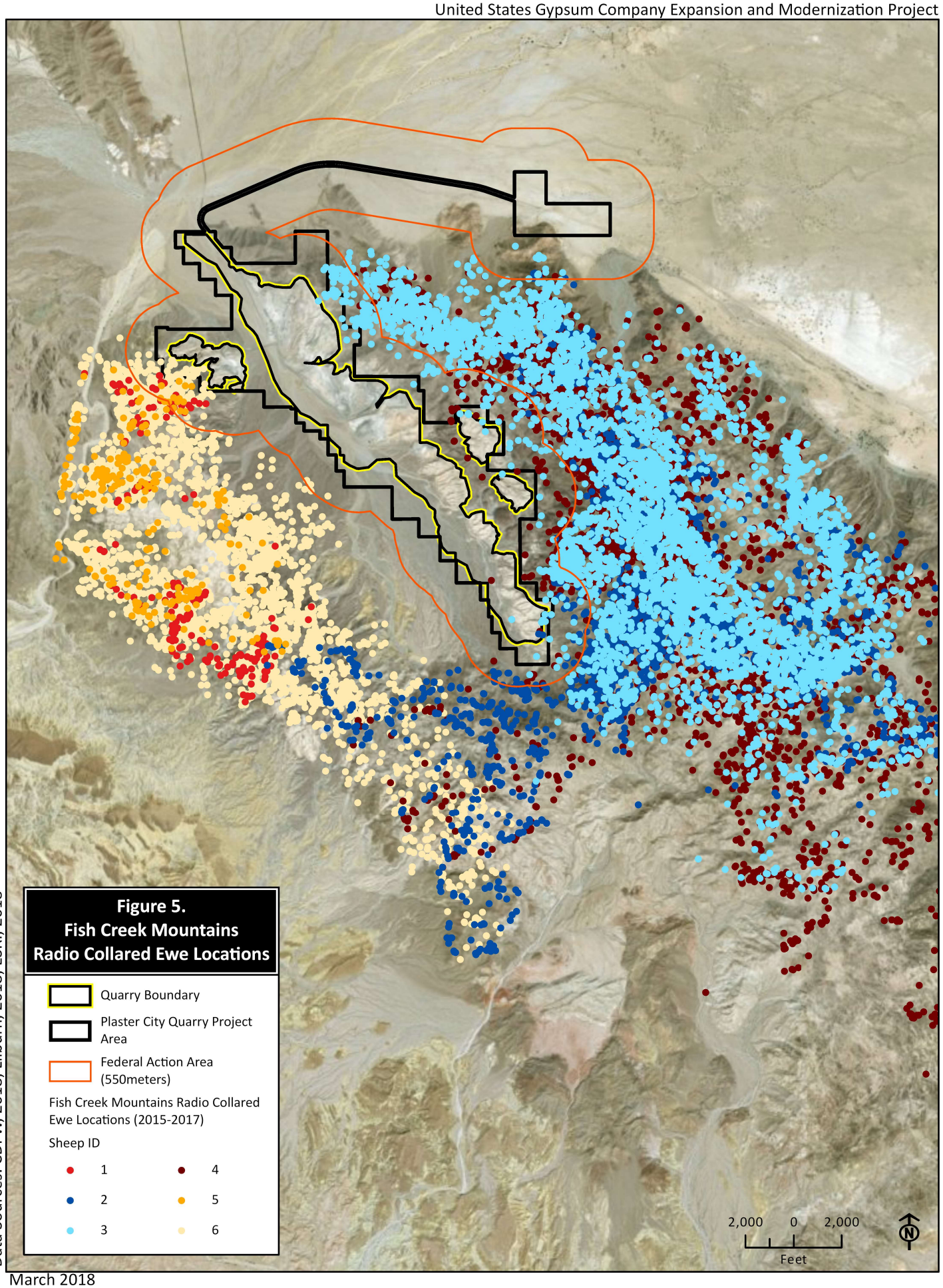


Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018



Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018; USFWS 2017, CNDDB 2018

Aspen Environmental Group



Data Sources: CDFW, 2018; Lilburn, 2018; ESRI, 2018

March 2018

ATTACHMENT 2
PHOTO EXHIBIT

Photo 1: View of typical creosote bush scrub within the quarry expansion area.

Photo 2: View of typical creosote bush – white bursage scrub within the quarry expansion area.

Photo 3: View of catclaw acacia thorn scrub within the wash of the quarry expansion area.

Photo 4: View of smoke tree woodland within the wash of the quarry expansion area.

Photo 5: View of the sparse desert fir scrub growing on gypsum within the quarry expansion area.

Photo 6: View of tamarisk thickets mapped within the wash of the quarry expansion area.

Photo 7: Overview of a portion of the active quarry.

Photo 8: Wind-blown sand habitat along the proposed replacement pipeline alignment.

Photo 9: Wind-blown sand habitat along the proposed new pipeline alignment.

Photo 10: Annual rock-nettle on gypsum within the quarry expansion area.

Photo 11: Brown turbans identified within the quarry expansion area.

Photo 12: Wolf's opuntia (right) growing alongside silver cholla (left) within the quarry expansion area.

Photo 13: Coulter's lyrepod within the quarry expansion area.

Photo 14: Thurber’s pilostyles growing along the proposed new pipeline alignment.

Photo 15: Peninsular bighorn sheep tracks observed within the quarry expansion area.

Photo 16: Apparent Peninsular bighorn sheep skeletal remains observed within the quarry expansion area (see Figure 3).

Photo 17: Burrowing owl observed within the quarry expansion area (non-breeding season).

Photo 18: Black-tailed gnatcatcher nest observed within the quarry expansion area.

ATTACHMENT 3
CALIFORNIA NATURAL DIVERSITY DATABASE RESULTS

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Harper Canyon (3311612) OR Borrego Mountain SE (3311611) OR Harpers Well (3311518) OR Arroyo Tapiado (3211682) OR Carrizo Mtn. NE (3211681) OR Plaster City NW (3211588) OR Carrizo Mtn. (3211671) OR Painted Gorge (3211578) OR Plaster City (3211577) OR Yuha Basin (3211567) OR Coyote Wells (3211568) OR In-ko-pah Gorge (3211661))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Acmispon haydonii pygmy lotus	PDFAB2A0H0	None	None	G3	S3	1B.3
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Astragalus douglasii var. perstrictus Jacumba milk-vetch	PDFAB0F303	None	None	G5T3?	S2S3	1B.2
Astragalus insularis var. harwoodii Harwood's milk-vetch	PDFAB0F491	None	None	G5T4	S2	2B.2
Astragalus sabulonum gravel milk-vetch	PDFAB0F7R0	None	None	G4G5	S2	2B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bursera microphylla little-leaf elephant tree	PDBUR01020	None	None	G4	S2	2B.3
Calliandra eriophylla pink fairy-duster	PDFAB0N040	None	None	G5	S3	2B.3
Castela emoryi Emory's crucifixion-thorn	PDSIM03030	None	None	G3G4	S2S3	2B.2
Chaenactis carphoclinia var. peirsonii Peirson's pincushion	PDAST20042	None	None	G5T2	S2	1B.3
Chaetodipus fallax pallidus pallid San Diego pocket mouse	AMAFD05032	None	None	G5T34	S3S4	SSC
Coleonyx switaki barefoot gecko	ARACD01040	None	Threatened	G4	S1	
Crotalus ruber red-diamond rattlesnake	ARADE02090	None	None	G4	S3	SSC
Croton wigginsii Wiggins' croton	PDEUP0H140	None	Rare	G2G3	S2	2B.2
Crucifixion Thorn Woodland Crucifixion Thorn Woodland	CTT75200CA	None	None	G3	S1.2	
Cylindropuntia fosbergii pink teddy-bear cholla	PDCAC0D2U0	None	None	G2	S2	1B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cyprinodon macularius desert pupfish	AFCNB02060	Endangered	Endangered	G1	S1	
Desert Fan Palm Oasis Woodland Desert Fan Palm Oasis Woodland	CTT62300CA	None	None	G3	S3.2	
Eryngium aristulatum var. parishii San Diego button-celery	PDAPI0Z042	Endangered	Endangered	G5T1	S1	1B.1
Eucnide rupestris annual rock-nettle	PDLOA02020	None	None	G3	S1	2B.2
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Euphorbia abramsiana Abrams' spurge	PDEUP0D010	None	None	G4	S2	2B.2
Euphorbia arizonica Arizona spurge	PDEUP0D060	None	None	G5	S3	2B.3
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Geraea viscida sticky geraea	PDAST42020	None	None	G2G3	S2	2B.2
Gopherus agassizii desert tortoise	ARAAF01012	Threatened	Threatened	G3	S2S3	
Herissantia crispa curly herissantia	PDMAL0F010	None	None	G5	S1	2B.3
Hulsea mexicana Mexican hulsea	PDAST4Z050	None	None	G3G4	S1	2B.3
Ipomopsis effusa Baja California ipomopsis	PDPLM060U0	None	None	G3?	SH	2B.1
Ipomopsis tenuifolia slender-leaved ipomopsis	PDPLM060J0	None	None	G3	S2	2B.3
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Linanthus maculatus ssp. emaculatus Jacumba Mountains linanthus	PDPLM041Y2	None	None	G2T1	S1	1B.1
Lithobates yavapaiensis lowland leopard frog	AAABH01250	None	None	G4	SX	SSC
Lupinus albifrons var. medius Mountain Springs bush lupine	PDFAB2B1J5	None	None	G4T3	S2	1B.3
Lycium parishii Parish's desert-thorn	PDSOL0G0D0	None	None	G3?	S1	2B.3
Malperia tenuis brown turbans	PDAST67010	None	None	G4?	S2?	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Matelea parvifolia spear-leaf matelea	PDASC0A0J0	None	None	G5	S3	2B.3
Mentzelia hirsutissima hairy stickleaf	PDLOA030K0	None	None	G4	S3	2B.3
Mentzelia tricuspis spiny-hair blazing star	PDLOA031T0	None	None	G4	S2	2B.1
Mesquite Bosque Mesquite Bosque	CTT61820CA	None	None	G3	S2.1	
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Nemacaulis denudata var. gracilis slender cottonheads	PDPGN0G012	None	None	G3G4T3?	S2	2B.2
Neotoma albigula venusta Colorado Valley woodrat	AMAFF08031	None	None	G5T3T4	S1S2	
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Nyctinomops femorosaccus pocketed free-tailed bat	AMACD04010	None	None	G4	S3	SSC
Onychomys torridus ramona southern grasshopper mouse	AMAFF06022	None	None	G5T3	S3	SSC
Opuntia wigginsii Wiggins' cholla	PDCAC0D1P0	None	None	G3?Q	S1?	3.3
Ovis canadensis nelsoni pop. 2 Peninsular bighorn sheep DPS	AMALE04012	Endangered	Threatened	G4T3Q	S1	FP
Panicum hirticaule ssp. hirticaule roughstalk witch grass	PMPOA4K170	None	None	G5T5	S2	2B.1
Petalonyx linearis narrow-leaf sandpaper-plant	PDLOA04010	None	None	G4	S3?	2B.3
Pholistoma auritum var. arizonicum Arizona pholistoma	PDHYD0D011	None	None	G5T4?	S3	2B.3
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Phrynosoma mcallii flat-tailed horned lizard	ARACF12040	None	None	G3	S2	SSC
Pilostyles thurberi Thurber's pilostyles	PDRAF01010	None	None	G5	S4	4.3
Polioptila melanura black-tailed gnatcatcher	ABPBJ08030	None	None	G5	S3S4	WL
Pseudorontium cyathiferum Deep Canyon snapdragon	PDSCR2R010	None	None	G4G5	S1	2B.3
Selaginella eremophila desert spike-moss	PPSEL010G0	None	None	G4	S2S3	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sigmodon hispidus eremicus Yuma hispid cotton rat	AMAFF07013	None	None	G5T2T3	S2	SSC
Streptanthus campestris southern jewelflower	PDBRA2G0B0	None	None	G3	S3	1B.3
Symphyotrichum defoliatum San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Teucrium cubense ssp. depressum dwarf germander	PDLAM20032	None	None	G4G5T3T4	S2	2B.2
Toxostoma lecontei Le Conte's thrasher	ABPBK06100	None	None	G4	S3	SSC
Transmontane Alkali Marsh Transmontane Alkali Marsh	CTT52320CA	None	None	G3	S2.1	
Uma notata Colorado Desert fringe-toed lizard	ARACF15020	None	None	G3	S2	SSC
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
Xylorhiza orcuttii Orcutt's woody-aster	PDASTA1040	None	None	G3?	S2	1B.2

Record Count: 70

ATTACHMENT 4
SPECIES LIST

Scientific Name	Common Name	Project Component		
		Quarry Expansion Area	Replacement pipeline route	New pipeline route
Filicales	**Fern families**			
Cheilanthes parryi	Parry's lip fern	x		
Dicotyledons				
ACANTHACEAE	ACANTHUS FAMILY			
Justicia californica	Chuparosa			x
AMARANTHACEAE	AMARANTH FAMILY			
Amaranthus fimbriatus	Fringed amaranth	x		
Tidestromia suffruticosa var. *oblongifolia*	Honeysweet	x	x	x
APOCYNACEAE	DOGBANE FAMILY			
Asclepias albicans	White-stemmed milkweed	x		
Asclepias subulata	rush milkweed	x		
Funastrum hirtellum	trailing townula	x	x	
APODANTHACEAE	STEMSUCKER FAMILY			
** *Pilostyles thurberi*	Thurber's pilostyles		x	
ASTERACEAE	ASTER FAMILY			
Adenophyllum porophylloides (Dyssodia poryphylloides)	San Felipe dyssodia	x		
Ambrosia dumosa	White bur-sage, burrobush	x	x	x
Ambrosia salsola (Hymenoclea salsola)	Common burrobrush, cheesebush	x	x	x
Baileya pleniradiata	Woolly desert-marigold		x	
Bebbia juncea var. aspera	Sweetbush	x	x	
Calycoseris wrightii	white tackstem	x		
Chaenactis carphoclinia	Pebble pincushion	x	x	
Chaenactis stevioides (?)	Desert pincushion	x		
Dicoria canescens	Desert dicoria	x	x	
Encelia farinosa	Brittlebush	x		x
Encelia frutescens	Rayless encelia	x	x	x
Geraea canescens	Hairy desert sunflower	x	x	x
Gutierrezia sp.	Unid. matchweed	x		
Isocoma acradenia var. *eremophila*	Alkali goldenbush		x	x
* *Lactuca serriola*	Prickly lettuce	x		x
Malacothrix glabrata	Desert dandelion	x		
** *Malperia tenuis*	Brown turbans	x	x	
Monoptilon bellioides	Desert star	x		
Palafoxia arida var. arida	Spanish needles	x	x	x
Pectis papposa var. papposa	Chinch-weed	x		
Perityle emoryi	Emory's rock daisy	x	x	
Peucephyllum schottii	Pygmy-cedar	x		
Pleurocoronis pluriseta	Arrowleaf	x		
Pluchea sericea	Arrowweed	x		x
Prenanthella exigua	Brightwhite	x		

	Psathrotes ramosissima	Turtleback	x	x	
	Rafinesquia neomexicana	Desert chicory	x		
	Senecio mohavensis	Mojave ragwort groundsel	x		
*	*Sonchus oleraceus*	Common sow thistle	x		
	Stephanomeria pauciflora var. *pauciflora*	Wire-lettuce, desert straw	x	x	x
	Stylocline micropoides	Desert neststraw	x		
	Trichoptilium incisum	Yellow head	x		
BIGNONIACEAE		TRUMPET-CREEPER FAMILY			
	Chilopsis linearis ssp. arcuata	Desert-willow	x	x	
BORAGINACEAE		BORAGE FAMILY			
	Cryptantha angustifolia	Panamint cryptantha	x	x	x
	Cryptantha barbigera	Bearded cryptantha	x		
**	*Cryptantha holoptera*	Winged cryptantha	x		
	Cryptantha maritima	Guadalupe cryptantha	x	x	
	Cryptantha sp.	Unid. annual cryptantha	x		
	Emmenanthe penduliflora	Whispering bells	x		
	Pectocarya heterocarpa	Mixed-nut pectocarya	x		
	Pectocarya platycarpa	Wide-toothed pectocarya	x		
	Pectocarya recurvata	Arched-nut pectocarya	x		
	Phacelia crenulata	Cleftleaf phacelia	x		
	Phacelia crenulata var. *minutiflora*	Cleftleaf wildheliotrope	x		
	Phacelia distans	Distant phacelia	x		
	Phacelia pedicellata	Specter phacelia	x		
	Phacelia sp.	Unid. phacelia		x	
	Tiquilia palmeri	Palmer's tiquilia	x	x	x
	Tiquilia plicata	Fanleaf crinklemat	x	x	x
BRASSICACEAE		MUSTARD FAMILY			
*	*Brassica tournefortii*	Sahara mustard	x	x	x
	Caulanthus lasiophyllus	California mustard	x		
	Draba cuneifolia	Sonora draba	x		
	Lepidium lasiocarpum	Shaggyfruit pepperweed	x	x	
**	*Lyrocarpa coulteri* var. *palmeri*	Coulter's lyrepod	x		
CACTACEAE		CACTUS FAMILY			
	Cylindropuntia echinocarpa	Silver cholla	x	x	x
	Cylindropuntia ramosissima	Pencil cholla	x		
**	*Cylindropuntia wolfii*	Wolf's cholla	x		
	Ferocactus cylindraceus	California barrel cactus	x	x	
	Mammillaria tetrancistra	Fishhook cactus	x		
	Opuntia basilaris var. *basilaris*	Beavertail cactus	x		
CAMPANULACEAE		BELLFLOWER FAMILY			
	Nemacladus tenuis	Desert nemacladus	x		
CARYOPHYLLACEAE		PINK FAMILY			
	Achyronychia cooperi	Onyx flower		x	
CHENOPODIACEAE		GOOSEFOOT FAMILY			
	Atriplex canescens	Four-wing saltbush			x
	Atriplex hymenelytra	Desert holly			x
	Atriplex polycarpa	Allscale saltbush			x

	Salsola tragus	Russian thistle		x	
	Suaeda nigra	Bush seepweed	x		x
CONVOLVULACEAE	MORNING-GLORY FAMILY				
	Cuscuta sp.	Dodder	x		
CUCURBITACEAE	CUCUMBER FAMILY				
	Cucurbita palmata	Coyote melon	x		x
EPHEDRACEAE	EPHEDRA FAMILY				
	Ephedra aspera	Rough jointfir	x	x	x
	Ephedra californica (?)	Desert tea, California ephedra		x	
EUPHORBIACEAE	SPURGE FAMILY				
	Croton californicus	California croton		x	
	Ditaxis lanceolata	Narrow-leaved ditaxis	x		x
	Ditaxis neomexicana	Common ditaxis	x		
	Euphorbia polycarpa	Smallseed sandmat	x	x	x
	Euphorbia setiloba	Yuma sandmat, Yuma spurge	x	x	x
	Stillingia spinulosa	Annual stillingia	x	x	x
FABACEAE	LEGUME FAMILY				
	Acmispon strigosus	Strigose lotus	x		
	Dalea mollissima	Rust dalea	x		x
	Hoffmannseggia microphylla	Small-leaved caesalpinia	x	x	x
	Lupinus arizonicus	Arizona lupine	x		
	Parkinsonia aculeata	Mexican palo verde			x
	Parkinsonia florida	Blue palo verde	x		
	Prosopis glandulosa var. *torreyana*	Honey mesquite, mesquite	x		x
	Psorothamnus emoryi	Emory indigo-bush, dye-weed	x	x	x
	Psorothamnus schottii	Indigo-bush	x	x	x
	Psorothamnus spinosus	Smoke tree	x	x	x
	Senegalia greggii (Acacia greggii)	Catclaw, catclaw acacia	x	x	x
FOUQUIERIACEAE	OCOTILLO FAMILY				
	Fouquieria splendens ssp. *splendens*	Ocotillo	x	x	x
KRAMERIACEAE	RHATANY FAMILY				
	Krameria bicolor (K. grayi)	White rhatany	x	x	x
LAMIACEAE	MINT FAMILY				
	Condea emoryi (Hyptis emoryi)	Desert lavender	x	x	
LOASACEAE	LOASA FAMILY, STICK-LEAF FAMILY				
	Eucnide rupestris	Rock nettle	x		
	Mentzelia involucrata	Sand blazing star	x	x	
	Mentzelia sp.	Unid. annual	x		
**	*Petalonyx linearis*	Narrow leaved sandpaper-plant	x		
	Petalonyx thurberi ssp. *thurberi*	Sandpaper-plant	x	x	x
MALVACEAE	MALLOW FAMILY				
	Eremalche rotundifolia	Desert fivespot	x		
	Hibiscus denudatus	Paleface	x		

Sphaeralcea ambigua	Apricot mallow	x		
NYCTAGINACEAE	FOUR O'CLOCK FAMILY			
Abronia villosa var. *villosa*	Sand verbena	x	x	
Allionia incarnata var. *villosa*	Trailing windmills	x		x
Boerhavia coccinea (?)	Scarlet spiderling, red ringstem	x		
Boerhavia wrightii	Wright's boerhavia	x		
Mirabilis laevis	Desert wishbone bush	x		
ONAGRACEAE	EVENING-PRIMROSE FAMILY			
Chylismia brevipes ssp. *brevipes (Camissonia brevipes)*	Desert primrose		x	
Chylismia cardiophylla (Camissonia cardiophylla)	Heart-leaved camissonia	x		
Chylismia claviformis (Camissonia claviformis)	Clavate evening primrose	x		
Chylismia claviformis ssp. peirsonii (Camissonia claviformis var. peirsonii)	Peirson's yellow evening primrose	x	x	
Eremothera boothii ssp. *condensata (Camissonia boothii ssp. condensata)*	Desert lantern	x	x	
Eremothera refracta (Camissonia refracta)	Refracted desert primrose	x		
Eulobus californica (Camissonia californica)	California false mustard	x		
Oenothera deltoides	Birdcage evening primrose	x		
PAPAVERACEAE	POPPY FAMILY			
Argemone munita	Chicalote, prickly poppy	x	x	
Eschscholzia glyptosperma	Desert poppy	x	x	
Eschscholzia minutiflora	Pygmy poppy	x	x	
Eschscholzia parishii	Parish's gold poppy	x		
PLANTAGINACEAE	PLANTAIN FAMILY			
Mimulus bigelovii	Bigelow's monkeyflower	x		
Mohavea confertiflora	Ghost flower	x		
Plantago ovata	Desert plantain	x	x	x
POLEMONIACEAE	PHLOX FAMILY			
Aliciella latifolia	Broadleaf gilia	x	x	
Gilia sp.	Gilia	x		
Langloisia setosissima var. *setosissima*	Great Basin langloisia	x	x	
Loeseliastrum matthewsii	Desert calico	x	x	
Loeseliastrum schottii	Schott's langloisia	x	x	
POLYGONACEAE	BUCKWHEAT FAMILY			
Chorizanthe brevicornu	Brittle spineflower	x	x	
Chorizanthe corrugata	Wrinkled spineflower	x	x	
Chorizanthe rigida	Devil's spineflower	x	x	x
Eriogonum deflexum var. deflexum	Skeleton weed	x	x	

	Eriogonum deflexum var. rectum	Flat-crowned buckwheat	x		
	Eriogonum inflatum	Desert trumpet	x	x	
	Eriogonum thomasii	Thomas' wild buckwheat	x	x	
	Eriogonum trichopes	Little desert trumpet	x		
RESEDACEAE		MIGNONETTE FAMILY			
	Oligomeris linifolia	Narrowleaf oligomeris	x	x	
SOLANACEAE		NIGHTSHADE FAMILY			
	Datura discolor	Jimsonweed	x	x	
	Datura wrightii	Jimsonweed, tolguacha			x
	Lycium andersonii	Boxthorn	x		
	Nicotiana obtusifolia	Desert tobacco	x		x
	Physalis crassifolia	Thick-leaf ground-cherry	x	x	
TAMARICACEAE		TAMARISK FAMILY			
*	*Tamarix aphylla*	Athel	x		x
*	*Tamarix ramosissima*	Saltcedar, tamarisk	x		x
VISCACEAE		MISTLETOE FAMILY			
	Phoradendron californicum	Desert mistletoe	x		
ZYGOPHYLLACEAE		CALTROP FAMILY			
	Fagonia laevis	Smooth-stem fagonia	x		
	Fagonia pachyacantha	Glandular fagonia	x	x	x
	Kallstroemia californica	California caltrop			x
	Larrea tridentata	Creosote bush	x	x	x
Monocotyledons					
AGAVACEAE		CENTURY PLANT FAMILY			
	Agave deserti	Desert agave	x		x
	Hesperocallis undulata	Desert lily		x	
POACEAE		GRASS FAMILY			
	Aristida adscensionis	Sixweeks three-awn grass	x	x	x
	Aristida purpurea	Three-awn grass	x		
	Bouteloua aristidoides var. *aristidoides*	Needle grama	x		
	Bouteloua barbata var. *barbata*	Sixweeks grama	x		
*	*Bromus madritensis* ssp. *rubens*	Red brome	x		
	Cynodon dactylon	Bermuda grass			x
	Dasyochloa pulchella	Low fluffgrass	x		
*	*Festuca myuros*	Rattail sixweeks grass	x		
	Hilaria rigida	Big galleta	x	x	x
	Schismus barbatus	Mediterranean grass	x	x	x
*	*Sorghum bicolor*	Sorghum	x		
*	*Sorghum halepense*	Johnson grass	x		
	Stipa speciosa	Desert needle grass		x	
TYPHACEAE		CATTAIL FAMILY			
	Typha sp.	cattails			x

Scientific Name	Common Name	Project Component		
VERTEBRATE ANIMALS		**Quarry Expansion Area**	**Replacement pipeline route**	**New pipeline route**
REPTILIA	REPTILES	x	x	x
IGUANIDAE	IGUANID LIZARDS	x	x	x
Dipsosaurus dorsalis	Desert iguana	x	x	x
Callisaurus draconoides	Zebra-tailed lizard	x	x	
Uta stansburiana	Side-blotched lizard	x	x	x
Phrynosoma platyrhinos	Desert horned lizard		x	
TEIIDAE	WHIPTAILS	x	x	
Aspidoscelis tigris tigris	Great Basin whiptail	x	x	
VIPERIDAE	VIPERS		x	
Crotalus cerastes	Sidewinder		x	
AVES	BIRDS		x	
COLUMBIDAE	PIGEONS AND DOVES		x	
* *Streptopelia decaocto*	Eurasian collared dove		x	
Zenaida macroura	Mourning dove	x	x	
STRIGIDAE	TYPICAL OWLS	x		
Bubo virginianus	Great horned owl	x		
** *Speotyto cunicularia*	Burrowing owl	x		
TROCHILIDAE	HUMMINGBIRDS	x		
Calypte anna	Anna's hummingbird	x		
Calypte costae	Costa's hummingbird	x		
TYRANNIDAE	TYRANT FLYCATCHERS		x	
Sayornis saya	Say's phoebe		x	
Myiarchus cinerascens	Ash-throated flycatcher		x	
CORVIDAE	CROWS AND JAYS		x	
Corvus corax	Common raven		x	
REMIZIDAE	VERDINS	x	x	x
Auriparus flavipes	Verdin	x	x	x
TROGLODYTIDAE	WRENS			
Salpinctes obsoletus	Rock wren	x		
MUSCICAPIDAE	THRUSHES AND ALLIES	x		
** *Polioptila melanura*	Black-tailed gnatcatcher	x		
PTILOGONATIDAE	SILKY FLYCATCHERS	x		
Phainopepla nitens	Phainopepla	x		
LANIIDAE	SHRIKES	x		
** *Lanius ludovicianus*	Loggerhead shrike	x		
FRINGILLIDAE	FINCHES	x	x	x
Carpodacus mexicanus	House finch	x	x	x
MAMMALIA	MAMMALS	x		
LEPORIDAE	HARES AND RABBITS	x		
Lepus californicus	Black-tailed hare	x		
HETEROMYIDAE	POCKET MICE	x		
Dipodomys sp.	Kangaroo rat	x		

CRICETIDAE	RATS AND MICE	x
Neotoma lepida intermedia	San Diego desert woodrat	x
CANIDAE	FOXES, WOLVES AND COYOTES	
Canis latrans	Coyote	x
FELIDAE	CATS	x
Lynx rufus	Bobcat	x
BOVIDAE	SHEEP AND GOATS	x
Ovis canadensis nelsoni	Peninsular bighorn sheep	x

This list includes species observed or detected on the project site. Non-native species are indicated by an asterisk. Special Status species indicated by two asterisks. Other species may have been overlooked or inactive/absent because of the season (amphibians are active during rains, reptiles during summer, some birds (and bats) migrate out of the area for summer or winter, some mammals hibernate etc.). Taxonomy and nomenclature generally follow Stebbins (2003) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals.

ATTACHMENT 5
SPECIAL-STATUS SPECIES NOT ADDRESSED

Attachment 5. Special-status Species Not Addressed in the Report.

Scientific Name	Common Name	Reason for Exclusion
PLANTS		
Astragalus douglasii var. *perstrictus*	Jacumba milk-vetch	Below elevation range
Astragalus pachypus var. *jaegeri*	Jaeger's milk-vetch	Well outside of geographic range.
Ayenia compacta	Ayenia	Well outside of geographic range.
Colubrina californica	Las Animas colubrina	Well outside of geographic range.
Condalia globosa var. *pubescens*	Spiny abrojo	Well outside of geographic range.
Coryphantha alversonii	Alverson's foxtail cactus	Well outside of geographic range.
Croton wigginsii	Wiggins' croton	Well outside of geographic range.
Cylindropuntia fosbergii	Pink teddy-bear cholla	Well outside of geographic range.
Delphinium parishii ssp. *subglobosum*	Colorado Desert larkspur	Well below elevation range
Ditaxis claryana	Glandular ditaxis	Well outside of geographic range.
Eryngium aristulatum var. *parishii*	San Diego button-celery	No suitable vernal pool habitat
Geraea viscida	Sticky geraea	No suitable habitat and below elevation range
Herissantia crispa	Curly herissantia	Locally rare, below elevation range
Hulsea mexicana	Mexican hulsea	No suitable habitat
Ipomopsis effusa	Baja California ipomopsis	Well outside of geographic range.
Linanthus maculatus ssp. *emaculatus*	Jacumba Mountains linanthus	Well outside of geographic range.
Matelea parvifolia	Spear-leaf matelea	Well below elevation range.
Mentzelia tricuspis	Spiny-hair blazing star	Well outside of geographic range, most records in vicinity are misidentified *M. hirsutissima.*
Nama stenocarpa	Mud nama	No suitable aquatic habitat.
Opuntia wigginsi	Wiggins cholla	Margin of geographic range
Panicum hirticaule ssp. *hirticaule*	Roughstalk witch grass	Well outside of geographic range.
Penstemon clevelandii var. *connatus*	San Jacinto Mountain penstemon	Well below elevation range.
Penstemon thurberi	Thurber's beardtongue	Well below elevation range.
Pseudorontium cyathiferum (Antirrhinum cyathiferum)	Deep Canyon snapdragon	Well outside of geographic range.
Rhus aromatica var. *simplicifolia (Rhus trilobata* var. *simplicifolius)*	Single-leaved skunkbrush	Well below elevation range.
Salvia eremostachya	Desert sage	Below elevation range, margin of geographic range
Salvia greatae	Orocopia sage	Well outside of geographic range.
Stemodia durantifolia	Purple stemodia	No suitable habitat
Streptanthus campestris	Southern jewelflower	Well below elevation range and no suitable habitat.
Symphyotrichum defoliatum	San Bernardino aster	No suitable wetland or marsh habitat.
AMPHIBIANS		
Lithobates yavapaiensis	Lowland leopard frog	No suitable aquatic habitat
REPTILES		

Scientific Name	Common Name	Reason for Exclusion
Arizona elegans occidentalis	California glossy snake	Outside of geographic range. This is a coastal subspecies that reaches In-ko-pah Gorge where it integrates within the desert subspecies (*A. e. eburnata*).
Crotalus ruber ruber	Northern red diamond rattlesnake	East of geographic range.
Gopherus agassizii	Desert tortoise	Well outside of geographic range
Phyrnosoma blainvillii	Coast horned lizard	Well outside of geographic range
BIRDS		
Empidonax traillii extimus	Southwestern willow flycatcher	No suitable riparian habitat
Laterallus jamaicensis coturniculus	California black rail	No suitable wetland habitat
Pyrocephalus rubinus	Vermilion flycatcher	No suitable riparian habitat.
Toxostoma crissale	Crissal thrasher	No suitable riparian habitat.
Vireo bellii pusillus	Least Bell's vireo	No suitable riparian habitat
Junco hyemalis caniceps	California gray-headed junco	Well outside of geographic range, no suitable habitat.
MAMMALS		
Neotoma lepida intermedia	San Diego desert woodrat	Well outside of geographic range.
Sigmodon hispidus eremicus	Yuma hispid cotton rat	No suitable wetland or grassland habitat.

ATTACHMENT 6
CALIFORNIA NATURAL DIVERSITY DATABASE
COMPLETED FORMS

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/05/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Eucnide rupestris*

Common Name: Annual rock-nettle

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 28 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: 5667 Number RSA Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:
25 % vegetative | 75 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, gypsum deposits southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carizzo Mountain NE, Borrego Mountain SE Elevation: 590-800 ft.

T 13S R 9E Sec 33 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( )

T 14S R 9E Sec 4 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( )

Source of Coordinates (GPS, topo. map & type): GPS

GPS Make & Model: Trimble Juno

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( )

Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )

Coordinates: 587470.46 mE, 3652023.18 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Plants growing on north-facing slopes of gypsum outcrops. Growing on nearly vertical canyon walls and sporatic plants also observed in wash downstream. Total of 28 plants observed at approximately 15 locations in the upper wash, GPS point is for the downstream-most plants

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

[X] Keyed (cite reference): Baldwin et al, 2012
[ ] Compared with specimen housed at: _____
[ ] Compared with photo / drawing in: _____
[ ] By another person (name): _____
[ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[X]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[X]

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/05/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Malperia tenuis*

Common Name: Brown turbans

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: >30 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: 5656 Number RSA Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

_____ % vegetative 100 % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Borrego Mountain SE Elevation: 590 ft.

T 13S R 9E Sec 33 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Trimble Juno

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )

Coordinates: 587835.94 m E, 3652121.92 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Scattered plants growing on alluvium in upper wash from the GPS point provided, south into upper wash.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

[X] Keyed (cite reference): Baldwin et al, 2012
[ ] Compared with specimen housed at: _____
[ ] Compared with photo / drawing in: _____
[ ] By another person (name): _____
[ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[X]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/05/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Cryptantha holoptera*

Common Name: Winged cryptantha

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: ~12 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: 5665 Number _____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

_____ % vegetative 100 % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Borrego Mountain SE Elevation: 520 ft.

T 13S R 9E Sec 33 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Trimble Juno

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )

Coordinates: 587217.92 m E, 3652213.39 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Scattered plants growing on sandy alluvium in upper wash from the GPS point provided, south into upper wash.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

[X] Keyed (cite reference): Baldwin et al, 2012
[ ] Compared with specimen housed at: _____
[ ] Compared with photo / drawing in: _____
[ ] By another person (name): _____
[ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[ ]
Habitat	[ ]	[ ]	[ ]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/06/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Cylindropuntia wolfii*

Common Name: Wolf's opuntia

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: >50 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: 515 Number (Michelle Cloud-Hughes) Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:
100 % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private
Quad Name: Carrizo Mountain NE Elevation: 750 ft.
T 14S R 9E Sec 4 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS
T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Trimble Juno
DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet
Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )
Coordinates: 588327.12 m E, 3650406.25 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Large population of plants in the upper end of the wash, primarilly on alluvial terraces and benches.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor
Immediate AND surrounding land use: Gypsum quarry to northwest
Visible disturbances: None
Threats: _____
Comments:

Determination: *(check one or more, and fill in blanks)*
- [ ] Keyed (cite reference): _____
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [X] By another person (name): Michelle Cloud-Hughes
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[X]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 10/26/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Lyrocarpa coulteri*

Common Name: Coulter's lyrepod

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [ ] No [X] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:
100 % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, narrow side canyon that flows from mountains to the east. Southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private
Quad Name: Borrego Mountain SE Elevation: 600 ft.
T 13S R 9E Sec 33 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS
T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Trimble Juno
DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet
Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )
Coordinates: 587872.29 m E, 3652241.62 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Single plant growing in sandy substarte at the base of a large bedrock outcrop on south side of canyon.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor
Immediate AND surrounding land use: Gypsum quarry to northwest
Visible disturbances: None
Threats: _____
Comments:

Determination: *(check one or more, and fill in blanks)*
[X] Keyed (cite reference): Baldwin et al, 2012
[ ] Compared with specimen housed at: _____
[ ] Compared with photo / drawing in: _____
[ ] By another person (name): _____
[ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[X]
Habitat	[ ]	[ ]	[ ]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): 04/07/2016

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Pilostyles thurberi*

Common Name: Thurber's pilostyles

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: ~5 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [ ] No [X] Unk.

Collection? If yes: 5653 Number RSA Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

_____ % vegetative 100 % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Lower Borrego Valley, south of Fish Creek Wash, along north side of US Gypsum railroad and unpaved road.

County: Imperial Landowner / Mgr: Unknown

Quad Name: Borrego Mountain SE Elevation: 80 ft.

T 13S R 9E Sec 16, SE ¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___ ¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Trimble Juno

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )

Coordinates: 588226.11 m E, 3655951.59 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Small patch of plants growing on Psorothamnus emoryi in sandy substrates.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Natural lands to north, railroad and unpaved road to south.

Visible disturbances: Shooting and offroad vehciles use in area.

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

- [X] Keyed (cite reference): Baldwin et al, 2012
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[X]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 10/26/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Ovis canadensis nelsoni*

Common Name: Peninsular bighorn sheep

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults 1 # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carrizo Mountain NE Elevation: 770 ft.

T 14S R 9E Sec 4 , ___ ¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___ ¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Trimble Juno

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )

Coordinates: 588629.00 m E, 3650409.00 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Skeletal remains of a possible juvenile bighorn sheep observed in upper wash, near where wash turns to an easterly direction. Bighorn sheep tracks abundant throughout upper wash. No evidence of bighorn sheep using gypsum outcrops but evidence of moderate use of washes. Bighorn sheep tracks also observed further down the wash in 2014 when sheep were observed drinking water from a quarry pit that filled with water following significant floods in the area. The water has since dried up and sheep are no longer observed in the quarry pit.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 10/30/2014

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Athene cunicularia*

Common Name: Burrowing owl

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [ ] No [X] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [X] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, gypsum outcrops just southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Borrego Mountain SE Elevation: 580 ft.

T 13S R 9E Sec 29 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Trimble Juno

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )

Coordinates: 586847.00 m E, 3653026.00 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

A single wintering burrowing owl observed on a gypsum deposit. No burrow observed at the location of the owl but suitable burrows are present in the vicinity.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

- [ ] Keyed (cite reference): _____
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[X]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/07/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Lanius ludovicianus*

Common Name: Loggerhead shrike

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 2 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [ ] No [X] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

2 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [X] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carrizo Mountain NE Elevation: 625 ft.

T 13S R 9E Sec 33 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Trimble Juno

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )

Coordinates: 587621.39 m E, 3651698.92 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Two loggerhead shrikes observed in broad alluvial wash. No nest observed but probable in the area.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

- [ ] Keyed (cite reference): _____
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[ ]
Habitat	[ ]	[ ]	[ ]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? ( ) yes (●) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/07/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Polioptila melanura*

Common Name: Black-tailed gnatcatcher

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: 6 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

_____ % vegetative _____ % flowering _____ % fruiting

Animal Information

2 # adults 4 # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carrizo Mountain NE Elevation: 625 ft.

T 13S R 9E Sec 33 , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Trimble Juno

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( ) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 (●) *OR* Geographic (Latitude & Longitude) ( )

Coordinates: 587693.61 m E, 3651483.41 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Nest with four juvenile birds observed in a desert lavender (Condea emoryi) shrub in small wash just west of the main wash. Both adults were in the area and scoulded the biologist upon approaching the nest.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: _____

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? (●) yes ( ) no

APPENDIX L-1
TAMARISK REMOVAL PLAN

Appendix L-1
Yuha Basin ACEC Tamarisk Removal Plan

Introduction

This document presents a proposal to remove tamarisk trees in the Yuha Basin Area of Critical Environmental Concern (ACEC), located within the El Centro Field Office of the California Desert District of the Bureau of Land Management. The removal is proposed to mitigate impacts to the ACEC associated with the U.S. Gypsum Mine Expansion/Modernization project (U.S. Gypsum project) currently under consideration for a right-of-way grant, in conformance with Mitigation Measure 3.4-13 of the Supplemental Environmental Impact Statement (SEIS). The project proposes to replace an existing water line and some project alternatives include construction of a new one within the boundaries of the ACEC. The ACEC location, the proposed replacement water line, and the potential new line are shown on Figure 1.

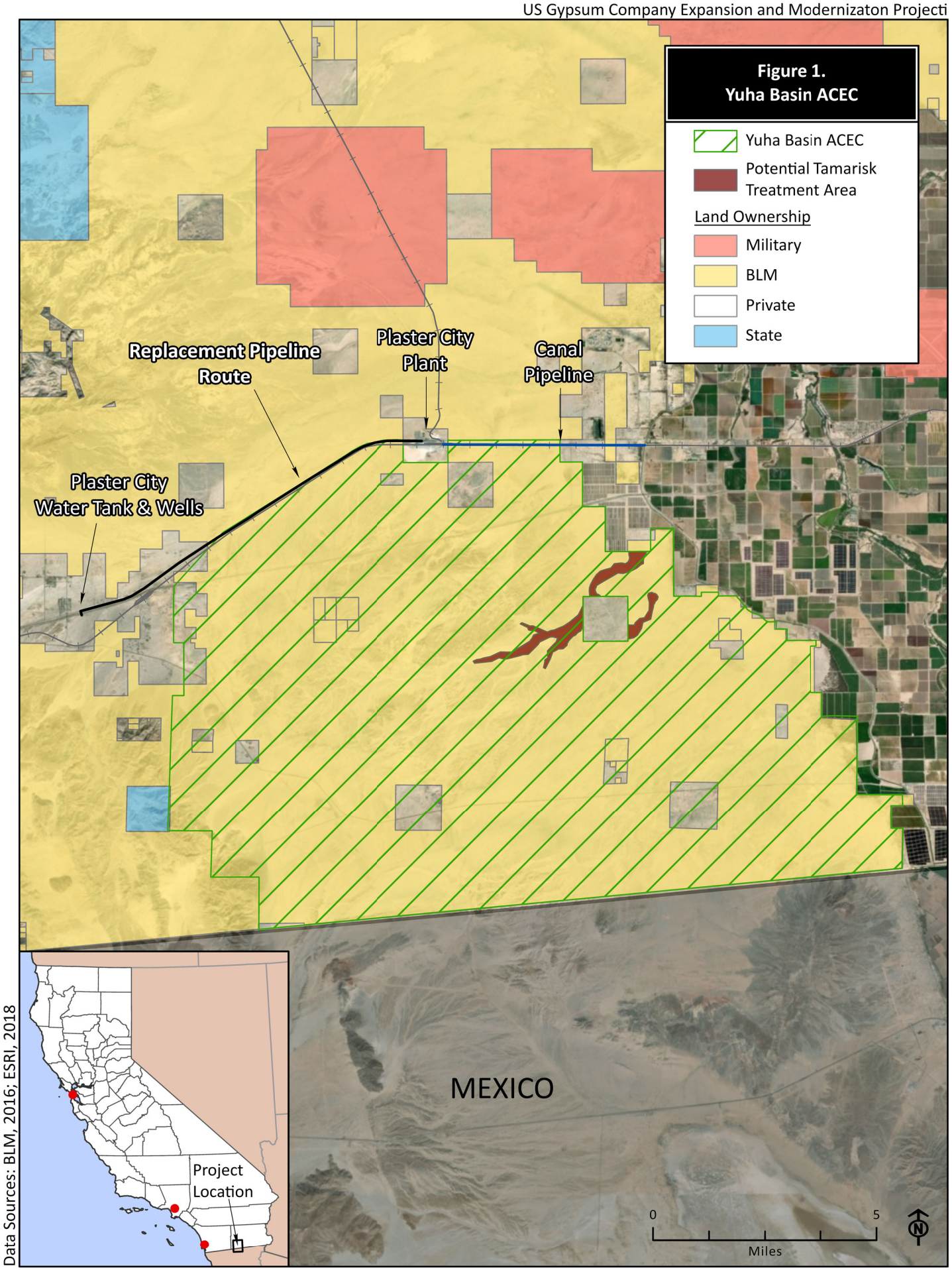
The ACEC includes habitat for the flat-tailed horned lizard and several unique vegetation communities, and provides biological connectivity between the Jacumba Wilderness, the Ocotillo Conservation Lands, and Anza- Borrego Desert State Park. In combination these lands preserve one of the most intact and diverse landscapes in the Sonoran/Colorado Desert. The ACEC contains important cultural resources such as Paleoindian sites, campsites of ancestors of living Kumeyaay, Quechan, and Cocopah Indians, and habitation sites at the shoreline of ancient Lake Cahuilla. The ACEC also contains historic sites such as those related to mining, the Old Stage Road, and a historic railroad. It includes a portion of the Juan Batista de Anza National Historic Trail and one of the Anza campsites (Yuha Well). Paleontological localities are also included in the ACEC, including the Oyster Shell Beds, the relatively undisturbed Lake Cahuilla sediments, and the Palm Springs Group.

Management goals within the ACEC are to protect cultural, ecological, and recreational values while providing for other compatible uses. BLM established a limit on the amount of surface disturbance permitted in the ACEC through an amendment to the land use plan by which the BLM manages this area[1]. Disturbance in the Yuha ACEC is limited to 1% of the surface area. This disturbance cap has been exceeded; therefore new disturbance due to the proposed project must be mitigated.

Tamarisk Characteristics

Athel tamarisk (*Tamarix aphylla*), also called athel or saltcedar, is known to occur within the Yuha Desert ACEC along the eastern portion of the Yuha Wash, shown in Figure 1. Tamarisk in this area tend to be larger trees like the one shown in Figure 2. They are somewhat spaced out on the landscape as shown in Figure 3, in which many of the darker spots along the wash are tamarisk trees.

[1] Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA), 2016.



Data Sources: BLM, 2016; ESRI, 2018

April 2019

Figure 2: Athel Tamarisk *(Tamarix aphylla)*

Figure 3: Aerial view of tamarisk on Yuha Wash

Tamarisk is a non-native, invasive species that grows on arid land streambanks, sandbars, lake margins, and saline environments (CalIPC 2018). It takes up salts through its roots and salinates surface soils by both salty litterfall and salt drip. It also creates dense shade and litter cover beneath its canopy, excluding other plants. Athel tamarisk is native to Eurasia and Africa and was introduced into the western United States as an ornamental tree in the early 1800s. It occurs throughout the western and central United States but is most problematic in the Southwest.

The flowering season for athel tamarisk is during spring and summer, extending into fall. All species of tamarisk produce thousands of small flowers. Their seeds mature during the cold season after the flowers close and wilt; each seed is very small with a tuft of hairs allowing wind dispersal. The trees can produce hundreds of thousands of seeds in a year. These seeds are typically short-lived and must reach a suitable location and germinate within a few months after dispersal. Tamarisk removal could cause inadvertent seed dispersal if cutting and transporting the material introduces tamarisk seed into suitable habitat areas where it does not already occur. However, this will be minimized to the extent feasible by covering the material during transport. Additionally, the effect of removing tamarisk trees will remove long-term seed sources, thus reducing overall tamarisk seed production and seedfall within the ACEC.

Tamarisk Treatment Plan

Under this plan, new ground disturbance within the ACEC resulting from the U.S. Gypsum project would be mitigated by removing athel tamarisk trees from the ACEC along the Yuha Wash. BLM has identified about 747 acres along Yuha Wash where athel tamarisk occurs in an open woodland. Removing the tamarisk would improve habitat conditions for native plants, and would remove the seed source for further tamarisk spread. This would support the ACEC management goals by protecting or improving ecological values while supporting the water line construction as a compatible use.

Areas to be treated. DRECP requires a ratio of 1.5:1 for addressing surface disturbance in an ACEC where the disturbance cap is already exceeded before a project is initiated. That is, for

each acre of new surface disturbance in the ACEC from the project, all the tamarisk occurring within an area of 1.5 acres will be removed, and that will count as 1.5 acres mitigated. The acreage of anticipated disturbance within the ACEC differs among the eight alternatives identified in the SEIS (see Table 1).

Table 1
Estimated disturbance and mitigation acreage by Alternative
(based on 30-foot estimated construction corridor width).

Alternative	Remove existing Ocotillo Pipeline	Construct New Replacement Ocotillo Pipeline	Construct New Canal Pipeline	Estimated ACEC Disturbance Acreage	Estimated Mitigation Acreage (1.5:1)
1: Proposed Action	17.9	17.9	-	35.8	53.7
2: No Action	-	-	-	-	-
3: Partial IID Water Supply	17.9	17.9	20	65.8	98.7
4: Full IID Water Supply	17.9	-	20	37.9	56.9
5 through 8: Reduced Mining Footprint Alternatives	17.9	17.9	-	35.8	53.7

Impacts of Treatment. The proposed tamarisk treatment would result in ground disturbance in the upper few inches of the soil surface from vehicle and foot traffic, and from dragging cut tamarisk material. No excavation or other ground disturbing activities would be conducted. The potential for adverse impacts of tamarisk treatment to biological resources includes the risk of damaging the nests of native birds that could be in the tamarisk trees at the time of removal, and the risk of killing or injuring special-status wildlife (e.g., flat-tailed horned lizard) that could be present along access routes or within treatment areas. These impacts can be avoided or minimized by scheduling the tamarisk treatment outside the bird nesting season as much as possible, reducing driving speeds, and using on-site biological monitoring and avoidance measures to prevent wildlife injury[2].

Pre-treatment Surveys and Monitoring. Before tamarisk removal could begin, existing tamarisk locations will be recorded with hand-held GPS units. This information would be used to identify the specific area(s) and individual trees to be treated based on the requirements described above.

[2] Consistent with mitigation measures identified in the Biological Resources section of the Supplemental EIS, including BIO-3 (Worker Education Awareness Program) and BIO-4 (Wildlife Impact Avoidance and Minimization Measures).

USG will be responsible for all notifications, authorizations, pre-treatment surveys, and monitoring. A Pesticide Use Permit (PUP) must be issued by the BLM prior to any treatment and must be maintained throughout the treatment and subsequent 5-year monitoring period. USG should allow at least 60 days prior to planned treatment activities for BLM to process the PUP. Additionally, USG will notify the BLM Authorized Officer at least two weeks prior to initiating treatment.

A survey for cultural resources will also be conducted prior to ground disturbance and, if the survey were to indicate it, cultural resources monitoring during treatment would be conducted. Cultural surveyors must request a Fieldwork Authorization from the BLM ECFO. The request must be made at least 30 days in advance of planned field work.

Biological surveys in advance of tamarisk removal would be required only if vegetation removal work would occur during the breeding bird season. Breeding bird season is identified as beginning on January 1 for early breeding species such as hummingbirds and raptors, and continues through August 31. Breeding activity varies from year to year depending on rainfall. For example, in a dry year there may be little or no breeding activity within the treatment area so that breeding birds would not present a scheduling constraint. Similarly, summer breeding activity is likely to be completed earlier than August, except in unusually productive years. Pre-activity nesting surveys would be used to determine site specific conditions in any given year. Biological monitoring during vegetation removal work would be required.

Treatment Methods. Tamarisk removal and treatment are most effective when conducted in late summer or early fall, while the trees are most actively transporting carbohydrate from the foliage to below-ground root and stem storage. Very small seedlings would be pulled by hand, taking care to keep their roots intact. Established trees would be felled. Each tamarisk tree in the treatment area would be cut 3 to 6 inches above ground level and the cut stump would be immediately painted or sprayed with the herbicide. A cut tamarisk tree can develop roots and grow into a new tree if left on the ground where enough moisture is present; therefore, all cut material would be removed from the site and legally disposed of at a licensed facility that is not located on BLM lands.

The method of herbicide treatment would be consistent with those herbicides analyzed and approved in the BLM's 2007 Programmatic Environmental Impact Statement (PEIS) on herbicide use[3]. Only those herbicides approved for use in California and analyzed in the PEIS would be used, and only at application methods and rates consistent with the label and the PEIS. All treatments would be supervised or overseen by a certified pesticide applicator who is knowledgeable in plant identification and familiar with proper herbicide application techniques. The University of California Weed Control and Information Center (2018) identifies several compatible herbicides and describes treatment methods, summarized below. All four are described as effective.

- Triclopyr (Garlon; several registered product names): Cut stump treatment using varying dilutions or undiluted Garlon (according to specific product formulations); best to apply

[3] Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement, 2007.

in summer or fall when plants are still growing and not water stressed, to maximize herbicide translocation to the below-ground tissues. Apply herbicide solution to cover the outer 20% of the stump face. Basal bark treatments can be made to smaller trees with thin bark.

- Glyphosate (Roundup, Rodeo, Aquamaster; several registered product names): Undiluted. Late summer or early fall; avoid treatment under drought conditions. Glyphosate provides only partial control.
- Imazapyr (Arsenal, Habitat, Stalker, Chopper, Polaris). Ten percent concentrate applied late summer or early fall. Noted as the most widely used herbicide to control saltcedar.
- Imazapyr plus glyphosate: Used as foliar treatment; details for cut stump treatment not provided.

All cut material would be chipped and removed from the site, or hauled intact for off-site disposal. All cut or chipped tamarisk material would be covered during transport to minimize seed dispersal. The equipment used would include two 3-axle, heavy-duty trucks to transport personnel, tools, and cut or chipped tamarisk material, and to tow a mechanical chipper. Both trucks would be used to haul material off-site. Vehicle access would be on BLM-designated routes or, if necessary and only with prior BLM authorization, driving within the channel of the Yuha Wash. Vehicles would carry crews and equipment close enough to each treatment site to hand-carry cut material back to the trucks (i.e., within a few hundred feet of the trees). Additional equipment would include chainsaws, handsaws, and herbicide application equipment such as spray bottles or backpack sprayers.

Post-treatment Monitoring

After treatment, the area would be monitored twice a year for five years to monitor regrowth from cut stumps or establishment of new seedlings within the treatment areas. New tamarisk seedlings would be pulled by hand, taking care to keep their roots intact. Regrown stumps would be re-cut and treated with a new application of herbicide painted or sprayed onto the stump according to the methods described above. USG will notify the BLM Authorized Officer at least two weeks prior to initiating each monitoring effort and will submit a summary report of monitoring results and retreatment following each monitoring effort.

References

Cal-IPC (California Invasive Plant Council). 2019. Cal-IPC Inventory. Site visited January 2019. https://www.cal-ipc.org/plants/inventory/

University of California Weed Control and Information Center. 2019. Weed Report: Saltcedar and tamarisk. Site visited January 2019. https://wric.ucdavis.edu/information/natural%20areas/wr_T/Tamarix.pdf

DRECP EIR/EIS Appendix L. Yuha Basin ACEC. https://www.fws.gov/carlsbad/palmsprings/DRECP/Appendix%20L_Bureau%20of%20Land%20Management%20Worksheets/Appendix%20L_BLM%20Worksheets%20-%20ACEC_Part7_12.pdf

CABI Invasive Species Compendium: Tamarix aphylla (athel). https://www.cabi.org/isc/datasheet/52483

THIS PAGE
INTENTIONALLY
LEFT BLANK

APPENDIX D-2:
2016 JURISDICTIONAL DELINEATION

THIS PAGE
INTENTIONALLY
LEFT BLANK

JURISDICTIONAL DELINEATION

FOR

UNITED STATES GYPSUM COMPANY

PLASTER CITY

EXPANSION/MODERNIZATION PROJECT

Submitted to:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, CA 92408

Prepared by:

Hernandez Environmental Services
17037 Lakeshore Drive
Lake Elsinore, CA 92530

November 2016

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1
1.0 INTRODUCTION 3
1.1 PURPOSE OF JURISDICTIONAL DELINEATION 3
1.2 PROJECT LOCATION 3
1.3 BACKGROUND 4
1.4 PROPOSED ACTION 4
1.4.1 Plaster City Plant 5
1.4.2 Plaster City Quarry 5
2.0 REGULATORY FRAMEWORK 9
2.1 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE STREAMBED ALTERATION AGREEMENT 9
2.2 REGIONAL WATER QUALITY CONTROL BOARD 401 CERTIFICATION/WASTE DISCHARGE REQUIREMENTS 10
2.3 UNITED STATES ARMY CORPS OF ENGINEERS CLEAN WATER ACT 404 PERMIT 11
3.0 PROJECT SETTING 12
3.1 VEGETATION COMMUNITY 12
3.2 HYDROLOGY 13
3.3 SOILS 14
4.0 METHODOLOGY 17
5.0 RESULTS 18
5.1 RESULTS OF THE JURISDICTIONAL DELINEATION 18
5.2 EXISTING RESOURCES ASSOCIATED WITH DRAINAGES 18
5.2.1 Plaster City Quarry 19
5.2.2 Plaster City Quarry Water Supply 19
5.2.3 Plaster City Plant Water Supply 19
5.3 AGENCY JURISDICTION 20
5.3.1 California Department of Fish and Wildlife 20
5.3.2 Regional Water Quality Control Board 20
5.3.3 Army Corps of Engineers 20
5.4 PROJECT IMPACTS TO JURISDICTIONAL AREAS 21
5.4.1 Impacts to Jurisdictional Drainages 21
5.4.2 Project Impacts to Wetlands 23
6.0 CONCLUSIONS AND RECOMMENDATIONS 23
6.1 PERMITS 23
6.1.1 Streambed Alteration Agreement Notification 23
6.1.2 Regional Water Quality Control Board 24
6.1.3 United States Army Corps of Engineers 24
6.2 AVOIDANCE AND MINIMIZATION RECOMMENDATIONS 24
7.0 REFERENCES CITED 27

FIGURES

Figure 1 – Vicinity Map
Figure 2 – Quarry Location Map
Figure 3 – Plaster City Location Map
Figure 4 – Water Line Replacement Location Map
Figure 5 – Hydrologic Unit Map
Figure 6 – Plaster City Mine Jurisdictional Waters Map
Figure 7 (1 of 8) – Water Line Replacement Jurisdictional Waters Map
Figure 7 (2 of 8) – Water Line Replacement Jurisdictional Waters Map
Figure 7 (3 of 8) – Water Line Replacement Jurisdictional Waters Map
Figure 7 (4 of 8) – Water Line Replacement Jurisdictional Waters Map
Figure 7 (5 of 8) – Water Line Replacement Jurisdictional Waters Map
Figure 7 (6 of 8) – Water Line Replacement Jurisdictional Waters Map
Figure 7 (7 of 8) – Water Line Replacement Jurisdictional Waters Map
Figure 7 (8 of 8) – Water Line Replacement Jurisdictional Waters Map

APPENDICES

Appendix A – Jurisdictional Waters Impacts Calculations
Appendix B – Soils Map

EXECUTIVE SUMMARY

Hernandez Environmental Services was contracted by United States Gypsum Company (USG) to prepare a Jurisdictional Delineation for the USG Plaster City Expansion/Modernization Project. Approximate 2,080.4-acre Plaster City Quarry located in the northwestern portion of Imperial County adjacent to the San Diego County line, approximately 17 miles from Interstate 8 and 6.5 miles from Highway 78. The proposed Plaster City Quarry Expansion/Modernization Project includes the expansion of quarrying activities to approximately 682 acres of private lands and 18.1 acres of public lands; the replacement of the existing 8-inch diameter water pipeline from USG's wells in Ocotillo to the Plant site; the installation of a new production water well, approximately 20,719 linear feet of water pipeline and power service line to serve the well pump; and, ultimately, reclamation of the disturbed areas to a state of natural open space.

Field survey of the proposed Plaster City Expansion/Modernization Project areas were conducted on April 19, 2016 through April 21, 2016. Field surveys were conducted to delineate jurisdictional drainages and wetland resources associated with jurisdictional drainages. The proposed Plaster City Expansion/Modernization Project areas contain a total of 327.55 acres of unnamed streambeds that ultimately flow into the Salton Sea. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in the drainages include: **s**moke tree *(Psorothamnus spinosus),* white bur-sage *(Ambrosia dumosa),* catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose),* ocotillo *(Foquieria splendens),* and Schott's indigo bush (*Psorothamnus schotti).*

The proposed Plaster City Mine Quarry Expansion/Modernization Project areas contain approximately 327.55 acres of ephemeral drainages that fall under the jurisdiction of the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and the Regional Water Quality Control Board. The proposed Plaster City Mine Quarry Expansion/Modernization Project areas contain no wetlands or vernal pools as defined by the 1987 Corps of Engineers Wetland Delineation Manual.

Full build-out of the Plaster City Quarry would result in permanent impacts to approximately 134.29 acres of streambeds within the jurisdiction of the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and the Regional Water Quality Control Board. Activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. United States Gypsum Company will be required to obtain a 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife for impacts to California Department of Fish and Wildlife jurisdictional streambeds. Further, United States Gypsum Company will be required to obtain a 404 Permit from the U.S. Army Corps of

Engineers and a 401 Water Quality Certification from the Regional Water Quality Control Board for impacts to Waters of the U.S. prior to commencing the proposed Plaster City Mine Quarry Expansion/Modernization Project.

1.0 INTRODUCTION

1.1 PURPOSE OF JURISDICTIONAL DELINEATION

The purpose of this jurisdictional delineation is to assess the impacts of the proposed United States Gypsum Company (USG) Plaster City Mine Quarry Expansion/Modernization Project, on any State or federally regulated streams, rivers or lakes.

The following tasks were completed and are presented herein:

1. Delineation of all state or federal jurisdictional waters present within the project property;
2. Determination of impacts associated with the Plaster City Mine Quarry Expansion/Modernization Project on jurisdictional waters;
3. Determination of applicable state or federal regulatory permits necessary to work within these jurisdictional areas;
4. Recommendation of mitigation measures to offset impacts to state or federal jurisdictional waters.

1.2 PROJECT LOCATION

The United States Gypsum Company (USG) Plaster City Expansion/Modernization Project activities are proposed at two locations: (1) at the Plaster City Quarry and (2) at the Plaster City Plant (Figures 1 through 4). The location of the two areas is described below.

Plaster City Quarry

The Plaster City Quarry is located in the northwestern portion of Imperial County adjacent to the San Diego County line, approximately 17 miles from Interstate 8 and 6.5 miles from Highway 78 (Figure 2). The site is located at the northwest end of the Fish Creek Mountains, east of Split Mountain and south and east of the Fish Creek Wash. Specifically, USG's properties and unpatented placer claims and mill sites are located in portions of Sections 19, 20, 28, 29, 30, 32, and 33 of Township 13 South, Range 9 East, and portions of Section and 4, Township 14 South, Range 9 East (San Bernardino Baseline and Meridian) and found on the U.S. Geological Survey Borrego Mountain Southeast Quadrangle and Carrizo Mountain Northeast Quadrangle. The Plaster City Quarry site is bounded by the Anza Borrego Desert State Park on the west and northwest, the Fish Creek Mountains Wilderness Area on the east and to the south, and public lands administered by the Bureau of Land Management (BLM) to the south. Access to the Plaster City Quarry is via State Highway 78 from both San Diego and Imperial counties.

Plaster City Plant

The Plaster City Plant is located on a 473-acre site at 3810 West Highway 80 (Evan Hewes Highway) in Plaster City, California approximately 18 miles west of El Centro in Imperial County (Figure 3). Access to the Plant is via Highway 80 immediately north of I-8.

1.3 BACKGROUND

The United States Gypsum Company (USG) owns and operates an existing wallboard manufacturing Plant and gypsum Quarry in Imperial County, California. Both the Plant and Quarry were the subject of the 2006 *United States Gypsum Company Expansion/Modernization Project Draft Environmental Impact Report/Environmental Impact Statement* (2006 Draft EIR/EIS) and 2008 *United States Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement* (2008 Final EIR/EIS). In compliance with CEQA, the Imperial County Board of Supervisors certified the Final EIR/EIS, adopted findings of fact, a statement of overriding considerations, and a mitigation monitoring program in March 2008. The federal Lead Agency was the U.S. Bureau of Land Management (BLM). To date, the BLM has not issued a Record of Decision and no aspects of the federal actions as analyzed in the 2006 and 2008 EIR/EIS documents have been implemented.

Presently, USG is in the process of preparing a Supplemental EIS to update technical information in the 2008 United States Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement and to include the USACE as a cooperating agency based on USACE's jurisdiction by law and special expertise pursuant to section 404 of the Clean Water Act (33 USC 1344).

This JD has been prepared to provide technical information regarding jurisdictional water resources within the Action Area and in response to a USACE Additional Information Request dated August 15, 2014.

1.4 PROPOSED ACTION

The USG Plaster City Expansion/Modernization Project proposes activities at two different locations: at the Plaster City Quarry and at the Plaster City Plant. For purposes of organization, aspects of the Proposed Action at the USG Plaster City Quarry ("Quarry") and at the USG Plaster City Plant ("Plant") are described separately.

1.4.1 Plaster City Plant

Proposed Water Pipeline Replacement

The proposed Plaster City Expansion/Modernization Project includes the replacement of an existing 8-inch diameter water pipeline from USG's groundwater storage tank in Ocotillo to the Plaster City Plant site. The existing pipeline would be replaced with a new 10-inch diameter water pipeline. The 2006 Draft EIR/EIS describes the 8-inch water pipeline as nearing the end of its useful life. Due to its age, the pipeline does not provide a reliable water supply for the USG Plant. Under existing conditions, the line experiences surges due to air in the line and water hammer caused by rapid changes in flow such as a sudden closure of a water control valve. The proposed 10-inch pipeline would provide a more reliable water supply, minimize line surges and associated leaks/rupture, provide faster water system recovery after water pipeline breaks/leaks or maintenance, and improve fire protection at the Plant.

As described in the BLM application CACA-044014 the proposed replacement waterline would be installed within a 75-foot wide right-of-way south of the Evan Hewes Highway centerline. The replacement pipeline would be installed approximately 50 feet south of the Evan Hewes Highway centerline. The existing pipeline would be abandoned in place.

USG would require access for equipment along the entire length of the pipeline, approximately 8.77 miles from the USG groundwater storage tank in the community of Ocotillo east to the Plaster City Plant. Construction equipment would include but not be limited to service trucks, tractors, backhoes, graders for excavation of a trench and installation of the replacement pipeline. Installation of the pipeline would include excavation of a trench, placement of the new pipeline, and fill/compaction, or material to pre-project conditions. The proposed final depth of the pipeline ranges from two (2) to six (6) feet below ground surface.

1.4.2 Plaster City Quarry

The Plaster City Expansion/Modernization Project includes two activities proposed at the Plaster City Quarry: (1) installation of a waterline/powerline from Quarry Well No. 3 located on Assessor's Parcel Number (APN) 033-020-09; and (2) build out the of the Plaster City Quarry as described in the Mine Reclamation Plan (Lilburn 2003).

Proposed Plaster City Quarry Water Supply

USG proposes to install a waterline/powerline extending from the Quarry to Quarry Well No. 3. Water from the well would be transported to the Quarry via a proposed pipeline installed alongside of the existing alignment of the narrow-gauge railroad right-of-way (ROW) CALA-040412 to the Plaster City Quarry site. In addition, a power service line would be installed underground from the well head to the USG Quarry gate; power poles will be installed within the Plaster City Quarry property. The proposed 20,719 linear foot water pipeline and power line

alignment is proposed approximately 30 feet north of the centerline of the existing tram road ROW CALA-040412 between the railroad and the existing railroad access/maintenance road within Sections 16, 17, 18, and 19 Township 13 South, Range 9 East. The proposed locations of these facilities are depicted on Figure 2. The proposed utility line will be 12 inches or less in diameter. A trench, approximately five (5) feet wide and seven (7) feet deep would be excavated between the railroad and maintenance road for installation of the utilities. Material would be temporarily stockpiled along the alignment and used as backfill. Import of fill material is not anticipated. Access for equipment will be provided on the existing railroad maintenance road. Construction is expected to occur within a 30-foot wide area along the length of the alignment. All waterline/powerline construction areas will be restored to pre-project conditions following the completion of construction activities. Impacts associated with the waterline/powerline are considered temporary.

Plaster City Quarry – Mine Development Activities

USG's Quarry holdings total approximately 2,080.4 acres; 2,032.2-acres are owned by USG and 48.2-acres are active unpatented mill site claims. Ongoing development of the Plaster City Quarry per the approved 2003 Mine Reclamation Plan would develop approximately 1,118.7 acres of USG's 2,032.2 acres of private land. The mine plan includes approximately 48.2 acres comprised of ten existing mill site claims; an additional five mill sites (25 acres) are proposed as part of the SEIS Proposed Action. Approximately 18.1 acres of Public Land under the management of the BLM would be disturbed by the proposed mine development. Build-out of the 2003 Mine Reclamation Plan would result in impacts to a total of 1,136.8 acres on both private and public land.

Mining activities would be conducted in phases as outlined in Table 1 below.

Table 1
2016 Existing and Planned Disturbance
Plaster City Quarry Mine Plan

Phase & Areas	USG Private Lands			BLM Lands		
	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)
Processing Area	39.2	39.2	0			
Phase 1A	163.6	163.6	0.0			
Phase 1B	151.8	151.8	0.0			

Phase & Areas	USG Private Lands			BLM Lands		
	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)
Phase 2	87.9	18.5	69.4			
Phase 2p	5.3	0.0	5.3			
Butte Mill Site				5.0	0.0	0.9
Phase 3	36.4	5.0	31.4			
Phase 3p	1.2	0.0	1.2			
Phase 4	46.4	15.3	31.1			
Phase 5	29.8	7.4	22.4			
Annex Mill Site #4				5.0	0.0	2.5
Annex Mill Site #3				5.0	0.0	0.3
Phase 6	78.9	1.7	77.2			
Phase 6Bp	47.2	0.0	47.2			
Haul Road to 6Bp	9.1	0.0	9.1			
Phase 7Bp	32.5	0.0	32.5			
Haul Road to 7Bp	5.8	0.0	5.8			
Phase 7	90.3	1.8	88.5			
Phase 8	114.3	0.0	114.3			
Cactus Mill Site				5.0	0.0	3.2
Phase 9	54.2	0.0	54.2			
Desert Mill Site				5.0	0.0	0.1
Phase 10	13.2	2.1	11.1			
Phase 10p	34.2	0.0	34.2			
Shoveler Haul Road		2.1	0.0			
Annex Mill Site #1				5.0	1.1	0.0
Phase S1	31.9	21.5	10.4			

Phase & Areas	USG Private Lands			BLM Lands		
	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)
Phase S2	24.5	3.2	21.3			
Phase S3	18.9	3.5	15.4			
Peoria Mill Site				3.4	0.0	0.0
Springfield Mill Site				4.8	0.0	0.0
Anchorage Mill Site				5.0	0	0
Annex Mill Site #2				5.0	0	0
Future Mill Site 1				5.0	0.0	0.4
Future Mill Site 2				5.0	0.0	3.2
Future Mill Site 3				5.0	0.0	1.8
Future Mill Site 4				5.0	0.0	4.9
Future Mill Site 5				5.0	0.0	0.8
TOTALS	**1,118.7**	**436.7**	**682.0**	**73.2**	**1.1**	**18.1**

Alluvial Quarrying and Ephemeral Drainages

As shown in the 2003 Mine Plan, as quarrying of gypsum outcrops extends southward in the mine plan area, the gypsum underlying alluvial overburden will be developed and extracted. Quarrying of the alluvial wash deposits will progress downward and westward to a maximum overburden depth of 100 feet. Extraction of the underlying gypsum will progress downward from the toe of the overburden strip slope in 25-foot vertical benches at a maximum stable slope of 1H:1V (Horizontal:Vertical) until the bottom of the mineable zone is reached. The depth of each Plaster City Mine Quarry phase will vary based on the bottom limit of gypsum.

An earthen berm will be constructed along the west side of the developed quarry in order to preserve the natural drainage pathway. The proposed berm would work as a natural earth channel, with one side of the channel that will preserve the existing characteristic of the drainage area to the west and will protect the quarry operations to the east from floodwaters. A hydrology study and drainage analysis (Joseph E. Bonadiman & Associates Inc., July 2004) determined that a 5-foot high by 20-foot wide retention berm that includes two feet of freeboard would adequately divert flows towards Fish Creek Wash.

Phases or portions of phases in the alluvial wash will require the stripping of alluvial material or overburden to expose the gypsum. As overburden is stripped a portion will be pushed to the east bank of the wash and the furthest south limits of the planned disturbance to form a permanent retention berm. The purpose of the berm is to divert sheet flow from the Plaster City Mine Quarry operations in the event of storm runoff. A second berm consisting of the top one foot of surface alluvium will be pushed over the western wash quarry slopes and used as surface soil upon reclamation. Remaining overburden may be stockpiled for a short period of time but will typically be pushed into the adjoining mined out areas for reclamation of the slopes such that overburden from Phase 3 will be used in Phase 2, overburden from Phase 4 will be used in Phase 3, and so forth.

Plaster City Quarry Reclamation

The Mine Reclamation Plan is divided into areas based upon the current geological data, quantity and quality of gypsum, market demand and proximity to the Plant. Following the removal of gypsum, the disturbed areas would be reclaimed to a state of natural open space. Reclamation activities are described in the *Mine Reclamation Plan* (Lilburn 2003); reclamation activities associated with restoration of drainages are summarized herein.

As described in the Mine Reclamation Plan, on-site hillsides and outcrops are erosional features of the landscape and are expected to continue to erode throughout mining and reclamation. This process would continue to sculpt the Quarry benches, eroding the manmade lines of the bench faces. Pre-mining drainages would be maintained where possible. Disturbance would be limited in these drainages. If necessary, standard erosion control measures such as rip-rap would be placed in the drainages to reduce flow and erosion. Surface flows would be directed around the quarry phases and into the main quarry wash by the proposed Quarry berm.

The Mine Plan would retain drainage within the main quarry wash with berms created from overburden materials. Ultimately, the wash would be lowered along its eastern edge, extending from Phase 9 of the Mine Plan at the uppermost elevation to Phase 10 at the lowest. Phase 10 would be mined contiguous with Phase 5 at its upstream end and to grade at its downstream end. Surface flow that exits the ultimate reclaimed channel would merge with the existing wash at the foot of Phase 10 in buildout conditions.

2.0 REGULATORY FRAMEWORK

2.1 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE STREAMBED ALTERATION AGREEMENT

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the California Fish and Game Code (F&GC), requires that the CDFW be

consulted if a proposed development project has the potential to detrimentally effect a stream and thereby wildlife resources that depend on a stream for continued viability (F&GC Division 2, Chapter 5, section 1600-1616). A Section 1602 Lake or Streambed Alteration Agreement is required, should the CDFW determine that the proposed project may do one or more of the following:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or
- Deposit debris, waste or other materials that could pass into any river, stream or lake.

For the purposes of clarification, a stream is defined by CDFW as "a body of water that flows perennially or episodically and that is defined by the area in which water currently flows, or has flowed, over a given course during the historic hydrologic regime, and where the width of its course can reasonably be identified by physical or biological indicators." The historic hydrologic regime is defined as circa 1800 to the present (CDFW 2010).

2.2 REGIONAL WATER QUALITY CONTROL BOARD 401 CERTIFICATION/WASTE DISCHARGE REQUIREMENTS

The Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401(a)(1) of the federal Clean Water Act (CWA) as well as the Porter Cologne Act (Water Code section 13260). Section 401 of the CWA specifies that certification from the State is required for any project requesting a federal license or permit to conduct any activities including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable water at the point where the discharge originates or will originate. Any such discharges will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of the CWA. The Porter Cologne Act requires "any person discharging waste, or proposing to discharge waste, within any region that could affect the waters of the state to file a report of discharge. Discharge of fill material into "waters" of the State which does not fall under the jurisdiction of the United States Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act, may require authorization through application of waste discharge requirements or through waiver of Waste Discharge Requirements.

2.3 UNITED STATES ARMY CORPS OF ENGINEERS CLEAN WATER ACT 404 PERMIT

The United States Army Corps of Engineers (USACE) regulates "discharge of dredged or fill material" into wetlands and waters of the United States, which includes tidal waters, interstate waters, and "all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide" (33 C.F.R. 328.3(a)), pursuant to provisions of Section 404 of the Clean Water Act.

The USACE requires that the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratories, 1987) be used for delineating wetlands and waters of the United States. To qualify for wetlands status; vegetation, soils, and hydrologic parameters must all be met. "Waters" of the U.S. are delineated based upon the "ordinary high water mark" (OHWM) as determined by erosion, the deposition of vegetation or debris, and changes in vegetation within rivers and streams and described in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (August 2008).

For the purposes of this section, the term "fill" is defined as: material placed in waters of the United States where the material has the effect of:

- Replacing any portion of a water of the United States with dry land; or
- Changing the bottom elevation of any portion of a water of the United States.

Examples of such fill material include, but are not limited to: rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure in the waters of the United States. The term fill material does not include trash or garbage.

The definition of "discharge of dredged material" is defined as: any addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States. The term includes, but is not limited to, the following:

- The addition of dredged material to a specified discharge site located in waters of the United States;
- The runoff or overflow, associated with a dredging operation, from a contained land or water disposal area; and
- Any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States which is incidental to any

activity, including mechanized land clearing, ditching, channelization, or other excavation.

The term discharge of dredged material does not include the following:

- Discharges of pollutants into waters of the United States resulting from the onshore subsequent processing of dredged material that is extracted for any commercial use (other than fill). These discharges are subject to section 402 of the Clean Water Act even though the extraction and deposit of such material may require a permit from the Corps or applicable State.
- Activities that involve only the cutting or removing of vegetation above the ground (e.g., mowing, rotary cutting, and chain-sawing) where the activity neither substantially disturbs the root system nor involves mechanized pushing, dragging, or other similar activities that redeposit excavated soil material.
- Incidental fallback.

3.0 PROJECT SETTING

3.1 VEGETATION COMMUNITY

Plaster City Quarry

The Plaster City Quarry is located in the arid Colorado Desert. The vicinity is characterized by sparse desert shrubland dominated by creosote bush (*Larrea tridentata*) with white bursage (*Ambrosia dumosa*), hollyleaf bursage (*Franseria ilicilolia*), brittlebush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), pygmy cedar (*Peucephulum schottii*), catclaw acacia (*Acacia greggii*), indigo bush (*Psorothamnus schottii*), and smoketree (*Psorothamnus spinosus*); as well as several varieties of cactus such as barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), and ocotillo (*Foquieria splendens*).

Undisturbed uplands on the site support desert shrubland of the creosote bush series, creosote bush – white bursage series, and (on metamorphic bedrock) ocotillo series. Dominant plants include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and pygmy cedar (*Peucephyllum schottii*). Gypsum outcrops have pygmy cedar and are almost devoid of vegetation.

The dominant drainage feature at the Plaster City Quarry is the alluvial wash in the valley formed by the Fish Creek Mountains. The alluvial wash is made up of a braided channel network and is generally covered by creosote bush, and creosote bush–white bursage series. In

the braided channels, there is little or no ocotillo. Drainage channels had a higher occurrence of cheesebush and indigo bush than the upland areas. The larger braided channels also support catclaw acacia, smoketree, and desert lavender (*Hyptis emoryi*).

Other drainage features at the Plaster City Quarry consist of upland drainages located in the gypsum outcrops. These drainages are characterized by fast draining channels with vegetation that is similar to the surrounding upland areas. The dominant vegetation at the Gypsum outcrops is pygmy cedar. Plant species associated with the gypsum outcrops include white bursage, creosote bush, brittlebush, and cheesebush.

Plaster City Plant

The proposed 8.77 miles of replacement waterline which runs from the USG groundwater storage tank in the community of Ocotillo east to the Plaster City Plant, is located in the arid Colorado Desert. The vicinity is characterized by desert shrubland dominated by creosote bush with white bursage, hollyleaf bursage, brittlebush, cheesebush, pygmy cedar, catclaw acacia, indigo bush, and smoketree; as well as several varieties of cactus such as barrel cactus, beavertail cactus, silver cholla, and ocotillo. Some areas of the waterline replacement area have been disturbed by activities associated with road maintenance. Dominant vegetation in these areas are four-wing saltbush (*Atriplex canescens*), cattle spinach (*Atriplex polycarpa*), big sagebrush (*Atriplex lentiformis*) and cheesebush.

3.2 HYDROLOGY

Plaster City Quarry

The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Average annual rainfall in El Centro is approximately three inches. At the Anza Borrego State Park headquarters, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year.[1] Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon conditions bringing moisture from the Gulf of California. During these episodes, it is not uncommon for thunderstorms to drop several inches of rain in just a few hours, causing severe flash flooding, washing out roads, scouring washes and uprooting vegetation. Average rainfall for the Plaster City Quarry and Fish Creek Wash is approximately three inches per year.

The USG Plaster City Quarry is identified by the National Hydrography Dataset to be located in HUC12-181002030602. The sub-watershed is 35.314 square miles. Rain waters flow from the Fish Creek Mountains located to the east and south and from the Split Mountain located to the

[1] Schoenherr, Allen A, *A Natural History of California*, University of California Press, 1992.

west. Flows move in a north, northeasterly direction forming Fish Creek Wash. The flows eventually enter the Salton Sea located 18 miles northeast of the Plaster City Quarry.

The Plaster City Quarry is located in the Colorado River Basin Plan, the Anza Borrego and Imperial hydrologic units, and the Ocotillo Lower Felipe, Brawley, Coyote Wells hydrologic areas (Figure 5).

Plaster City Plant

The USG Plaster City Plant is identified by the National Hydrography Dataset to be located in HUC12-181002041004 and HUC12-181002041008. The Plaster City Plant is located within the Anza Borrego and Imperial hydrologic units (Figure 5). Hydrologic flows travel east through Coyote Wash and northeast through the New River. The flows eventually enter the Salton Sea located approximately 22 miles northeast of the Plaster City Plant..

3.3 SOILS

Plaster City Quarry

Soils at the Plaster City Quarry and in the vicinity consist predominantly of beds of gypsum dated from the Miocene age. The gypsum beds are part of a conformable sequence consisting of Miocene non-marine Split Mountain Formation, Fish Creek Gypsum, and Pliocene Marine Imperial Formation. The gypsum beds in the Plaster City Quarry area are 100–200 feet thick, and are exposed continuously on the surface for a distance of about 2.5 miles. Structurally, they form the northeast limb of a northwest trending syncline, the axis of which lies in the broad valley to the west. The general strike of the gypsum beds is north 10–20 degrees west and dip 25–35 degrees southwest. Locally, the beds are warped into minor folds. The material is a light buff-gray, fine to medium-grained compact, equi-granular rock composed almost entirely of gypsum. Minor amounts of anhydrite are present in some parts of the deposit mainly as thin beds and lenses. Very minor shreds of biotite occur disseminated in the beds along with a finely divided opaque material, which is probably iron and manganese oxides.

The following descriptions of the geologic units in the Plaster City Quarry area and vicinity are summarized from the Draft Environmental Impact Report/Environmental Impact Statement for the USG Plaster City Expansion/Modernization Project (Resource Design 2006).

<u>Granitic Bedrock (Kgr)</u>

Granitic bedrock of tonalite composition is exposed along the eastern side of the mapped area. The tonalite is coarse-grained and dark gray to black, with minor felsic dikes and sills. Foliation is moderately developed, with no preferred orientation observed. In many places, the rock grades

to granitic gneiss. Natural slopes include some rounded boulders. These rocks are Cretaceous and older.

Split Mountain Conglomerate (Tsm)

This unit consists primarily of massive, well-consolidated conglomerate with subrounded clasts up to approximately 10 feet in maximum dimension. Clast types are largely tonalite in the mapped area. Weathered exposures are dark reddish brown and contrast with the dark gray color of fresh exposures. This unit rests on the tonalite and is a basal conglomerate derived from it. In the Split Mountain Gorge area to the west, the conglomerate is overlain by a lens of rock slide megabreccia, but the megabreccia is not present in the mapped area. In the mapped area, the uppermost portion of the Split Mountain Conglomerate consists of fine-grained sandstone with minor shale. The fine-grained beds grade upward into the Fish Creek Gypsum. The thickness of the Split Mountain Conglomerate decreases from at least 600 feet in the northern part of the mapped area to less than approximately 100 feet in the southern portion.

Fish Creek Gypsum (Tfc)

The Fish Creek Gypsum is up to 200 feet thick and averages about 125 feet in thickness in the mapped area. The gypsum is generally greater than 95 percent pure, with minor impurities consisting of clays, carbonate and detrital minerals. The color is variable, but is generally light gray to white, with patches of red and black. The gypsum is an evaporite deposit, formed in a shallow marine environment in Miocene time. As exposed in outcrop and in Plaster City Quarry faces, the gypsum is generally very dense, hard and massive. Blasting is required for efficient excavation. Where thinly bedded exposures are present, the bedding is often highly contorted on a small scale, similar to other evaporite deposits. The deformation is attributed to plastic flow due to gravity and volumetric expansion associated with the change from anhydrite to gypsum. However, the deformation is internal to the gypsum bed. The underlying clastic material does not display similar deformation.

Older Alluvium (Qoa)

The broad wash that traverses the mapped area includes a number of relatively stable and elevated erosion surfaces (geomorphic surfaces), particularly in the southern third of the site. The stability of these surfaces is evidenced by various factors including the degree of soil development, the presence of desert pavements and the local topography. The desert pavements are identified by the concentration of surficial clasts and the presence of varnish on the top sides of clasts and rubification (reddening) on the bottom sides. Bar and swale topography is present in these areas, suggesting a long period of gradual dissection. Where exposed in the sides of active drainages, these soils exhibit strong carbonate and gypsum cementation in their upper horizons. All of these factors indicate a long period of subaerial exposure, probably at least 20,000 years and up to approximately 200,000 years. As such, the stable, uplifted surfaces were mapped as

older alluvium of late Pleistocene age. Many surfaces of varying ages are present, but all were mapped as older alluvium.

The older alluvium consists of gray to brown, gravelly sands with silt, cobbles and boulders. Clasts are largely subangular tonalite, but metamorphic and gypsum rock clasts are present.

Observation of steep side slopes in incised drainages in the southern third of the site indicates that the older alluvium is only a thin veneer above a relatively planar erosion surface developed on the Fish Creek Gypsum.

Younger Alluvium (Qya)

Active washes incise all of the other units in the mapped area. The active washes merge in the northern portion of the mapped area, becoming a single broad wash several hundred feet wide. The wash deposits are generally coarse sands with cobbles in the southern portion of the site, grading to silty fine sands in the northern portion of the site. Clasts are largely subangular to subrounded tonalite, but metamorphic and gypsum rock clasts are present. No soil development was observed and these materials are entirely unconsolidated.

No hydric soils are present.

Plaster City Plant

Approximately 98.5 percent of the soils at the Plaster City Plant and the vicinity are not mapped. The remaining 1.5 percent of the soils that are mapped consist of Indio-Vint complex and Rositas silt loam. These mapped soils are located within the eastern portion of the Plaster City Plant (Appendix B). The following descriptions of the soils located within the Plaster City Plant area and vicinity are summarized from the U.S. Department of Agriculture Soil Conservation Service Soil Survey of Imperial County, California, Imperial Valley Area (1981).

Indio-Vint Complex (119)

These soils are found on flood plains and alluvial basin floors at elevations of 200 feet above sea level to 230 feet below. This unit averages about 35 percent Indio loam and 30 percent Vint loamy fine sand. The remaining 35 percent is Rositas, Meloland, and Holtville soils; soils that are highly stratified with sand to silt loam textures; narrow areas with slopes of 2 to 5 percent; and areas that have hummocky or dune topography.

The Indio soil is very deep and well drained. It formed in alluvial and eolian sediments of mixed origin. Some areas are saline. Permeability of the Indio soil is moderate, and availa- ble water capacity is high to very high. Surface runoff is slow, and the hazard of erosion is slight. The hazard of soil blowing is moderate. The effective rooting depth is

60 inches or more.

The Vint soil is very deep and well drained. It formed in alluvial and eolian sediments from diverse sources. Permeability of the Vint soil is moderately rapid, and available water capacity is moderate. Surface runoff is slow, and the hazard of erosion is slight. The hazard of soil blowing is high. The effective rooting depth is 60 inches or more.

Rositas Silt Loam (137)

This very deep, somewhat excessively drained, nearly level soil is on flood plains, basins, and terracesat elevations of 35 to 300 feet. Included with this soil in mapping are areas of Vint and Meloland soils and scattered coppice dunes of Rositas fine sand. Permeability is rapid, and available water capacity is low. Surface runoff is slow, and the hazard of water erosion is slight. There is a moderate hazard of soil blowing and abrasion to young plants. The effective root- ing depth is 60 inches or more.

4.0 METHODOLOGY

Prior to the site visit, project plans, topographic maps, and satellite imaging were examined to establish an accurate project location, project description, watershed, soils, and surrounding land uses. The project location was reviewed and studied for information that would aid in determining the potential for wetlands, perennial, intermittent, or episodic drainages, and associated riparian vegetation. Current and historic aerial imagery of the project area were reviewed for signs of stream activity. Changes in landscape, color, vegetation density, and drainage pattern were noted. Anthropogenic disturbances within the project area were also identified.

Potential watercourses and related landform boundaries, such as changes in landscape color, vegetation densities, and drainage patterns, were then outlined on aerial photography. Transects were then selected for field verification of stream presence indicators. Reference points along each transect were recorded on a hand-held Global Positioning System (GPS) for field reference.

Field surveys of the proposed Plaster City Expansion/Modernization Project areas were conducted on April 19, 2016 through April 21, 2016. The jurisdictional delineation survey area included all of USG holdings at the Plaster City Quarry, a 150-foot wide alignment north of the Quarry tram railroad for the proposed waterline/powerline form the Quarry to Quarry Well No. 3, and the alignment between the existing Evan Hewes Highway and old Evan Hewes Highway where replacement of the waterline from Ocotillo to the Plaster City Plant is proposed.

During the field survey, the selected transects were walked a minimum of 100 feet upstream and downstream, noting the presence or absence of fluvial activity, boundaries of geomorphic units,

changes in plant species composition between different geomorphic units, photographing points of transition, and mapping the watercourse and watercourse boundaries. The guidelines followed are those established in the 2014 *Mapping Episodic Stream Activity (MESA) Field Guide*. Areas measured were also recorded using a hand-held GPS for accurate location reference.

Furthermore, the presence of an ordinary high water mark was recorded. Where the presence of an OHWM was evident, a second measurement was taken for the width of the OHWM and recorded. The OHWM was determined based upon erosion, the deposition of vegetation or debris, and changes in vegetation, as described in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (August 2008).

Where changes in plant community composition were apparent, the area was examined for the possibility of wetlands. Whether or not adjacent to WUS, the potential wetland area is evaluated for the presence of the three wetland indicators: hydrology, hydric soils and hydrophytic vegetation. The guidelines followed are those established in the 1987 *Army Corps of Engineers Manual.*

Jurisdictional drainages and wetlands were evaluated for impacts associated with all aspects of the proposed Plaster City Expansion/Modernization Project. The mine development plan and mine development information obtained from the USG administrative staff was referenced to delineate and quantify the area to be impacted by the proposed Plaster City Quarry. The expansion footprint, vegetation, wildlife, hydrology, and water quality impacts were all calculated and recorded. The jurisdictional drainages and wetlands were also evaluated for their connectivity to "navigable waters" as described in "The Clean Water Act". The field assessments for the waterline/powerline north of the quarry and the waterline at the Plaster City Plant followed similar procedures.

5.0 RESULTS

5.1 RESULTS OF THE JURISDICTIONAL DELINEATION

A total of 327.55 acres of jurisdictional drainages were identified to occur within the proposed Plaster City Quarry Expansion/Modernization Project boundaries (Figures 6 and 7, 1 through 8). No significant amount of riparian vegetation was observed to occur on the drainages; therefore, the same jurisdictional areas were identified for the CDFW, USACE, and RWQCB.

5.2 EXISTING RESOURCES ASSOCIATED WITH DRAINAGES

Jurisdictional drainages that are unnamed drainages are identified on the figures and discussed below as they occur within each of the proposed Plaster City Quarry Expansion/Modernization Project areas: Plaster City Quarry, the Plaster City Quarry new proposed water/power supply alignment, and the Plaster City Plant water supply line replacement area.

5.2.1 Plaster City Quarry

A total of 325.79 acres of unnamed streambeds occur in the Plaster City Quarry area (Figure 6). The drainages exhibit a bed, bank and channel, and appear to convey water only during intense storm events. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in these drainages include: smoke tree *(Psorothamnus spinosus),* white bursage *(Ambrosia dumosa),* catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose),* ocotillo *(Foquieria splendens),* and Schott's indigo bush (*Psorothamnus schotti).*

No wetland habitat was identified to occur in the Plaster City Quarry area.

5.2.2 Plaster City Quarry Water Supply

A total of 0.21 acre of unnamed streambeds were identified in the portion of the survey area corresponding the alignment for a proposed waterline/powerline extending from the Quarry to Quarry Well No. 3 (APN 033-020-09). The streambeds in this survey area exhibit a bed, bank and channel, and appear to convey water only during intense storm events. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in the drainages include: **s**moke tree *(Psorothamnus spinosus),* white bursage *(Ambrosia dumosa),* catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose),* ocotillo *(Foquieria splendens),* and Schott's indigo bush (*Psorothamnus schotti).*

No wetland habitat was identified to occur in the waterline/powerline survey area.

5.2.3 Plaster City Plant Water Supply

A total of 1.55 acres of unnamed streambeds were identified in the survey area corresponding to the Plaster City Plant waterline replacement (Figures 7, 1 through 8). The streambeds in this survey area exhibit a bed, bank and channel, and appear to convey water only during intense storm events. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in the drainages include: **s**moke tree *(Psorothamnus spinosus),* white bursage *(Ambrosia dumosa),* catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose),* ocotillo *(Foquieria splendens),* and Schott's indigo bush (*Psorothamnus schotti).*

No wetland habitat was identified to occur in the water supply line replacement survey area.

5.3 AGENCY JURISDICTION

5.3.1 California Department of Fish and Wildlife

Under the Lake and Streambed Alteration Program, the California Department of Fish and Wildlife has jurisdiction over portions of the site identified as stream or lake as defined by the presence of a bed, bank or channel and where riparian vegetation was present on a bank to the outside drip-line of the vegetation. The California Department of Fish and Wildlife would assert jurisdiction over all 327.55 acres of onsite streambeds located within the proposed Plaster City Quarry Expansion/Modernization Project boundaries. These streambeds would fall under the jurisdiction of California Fish and Game Code Section 1602. Any impacts to these drainages would require notification to the Department of Fish and Wildlife for review under the Streambed Alteration Agreement Program.

5.3.2 Regional Water Quality Control Board

Section 401 of the CWA specifies that certification from the State is required for any project requesting a federal license or permit to conduct any activities including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters. Impacts to any of the 327.55 acres of streams located within the proposed Plaster City Expansion/Modernization Project boundaries will require a 404 permit from the USACE; therefore, a 401 Certification from the Colorado River RWQCB will be needed upon issuance of a 404 permit.

5.3.3 Army Corps of Engineers

The USACE regulates discharge of dredged or fill material into wetlands and "waters of the United States", which includes "tidal waters", "interstate waters", and "all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide" pursuant to provisions of Section 404 of the Clean Water Act.

The 327.55 acres of streams located within the proposed Plaster City Expansion/Modernization Project boundaries consist of a series of unnamed desert ephemeral streambeds that flow only during severe rain events. These streambeds have a definable "ordinary high water mark" distinguishable by erosional and sedimentary characteristics. These drainages ultimately flow into the Salton Sea. The Salton Sea is a traditional navigable water as defined by the Clean Water

Act. Therefore, drainages located within the proposed Plaster City Expansion/Modernization Project boundaries have a significant nexus to "traditional navigable water" and a 404 Clean Water Act permit from the USACE would be required for any fill associated with the within the proposed Plaster City Expansion/Modernization Project.

5.4 PROJECT IMPACTS TO JURISDICTIONAL AREAS

5.4.1 Impacts to Jurisdictional Drainages

Plaster City Quarry

The proposed Plaster City Expansion/Modernization Project will permanently impact portions of jurisdictional streambeds located within the Plaster City Quarry area of development as shown in the Mine Plan. Impacts to these drainages are considered permanent because restoration activities are not anticipated to occur until reclamation of the Plaster City Quarry is undertaken. Furthermore, the reclamation plan does not specifically address restoration of streams.

Ephemeral streambeds and washes located within the Plaster City Quarry, will be excavated and filled as the Plaster City Quarry expands to access new deposits of gypsum. Proposed operations within this area will utilize heavy machinery and explosives to excavate the new phases of the Quarry as outlined in Table 1 above and described in the Mine Reclamation Plan (Lilburn 2003). Alluvial wash quarrying will involve the construction of a berm beginning at the southernmost limit of the disturbance area. The expansion of quarrying activities within the Plaster City Quarry is anticipated to result in approximately 134.08 acres (107,458 linear feet) of permanent impacts to CDFW, USACE, and RWQCB jurisdictional drainages (Appendix A).

Plaster City Quarry Water Supply

Installation of new well and approximate 20,719 lineal feet of water supply pipeline and power supply lines will result in the filling of all ephemeral streambeds and washes within the waterline/powerline area. Ephemeral streambeds and washes located within the waterline/powerline area will be excavated and filled as a result of the proposed waterline/powerline installation activities. The proposed waterline/powerline installation activities are anticipated to result in approximately 0.21 acres of impacts to CDFW, USACE, and RWQCB jurisdictional drainages (Figures 7, 1 through 8).

Plaster City Plant Water Supply

As described in the BLM application CACA-044014 the proposed replacement waterline would be installed within a 75-foot wide right-of-way south of the Evan Hewes Highway centerline.

The replacement pipeline would be installed approximately 50 feet south of the Evan Hewes Highway centerline. The existing pipeline would be abandoned in place.

USG would require access for equipment along the entire length of the pipeline, approximately 8.77 miles from the USG groundwater storage tank in the community of Ocotillo east to the Plaster City Plant. Construction equipment would include but not be limited to service trucks, tractors, backhoes, graders for excavation of a trench and installation of the replacement pipeline. Installation of the pipeline would include excavation of a trench, placement of the new pipeline, and fill/compaction, or material to pre-project conditions. The proposed final depth of the pipeline ranges from two (2) to six (6) feet below ground surface.

The proposed water pipeline replacement activities will result in the filling of all ephemeral streambeds and washes within the water supply line replacement area. Ephemeral streambeds and washes located within the water supply line replacement area will be excavated and filled as a result of the proposed water supply pipeline replacement activities. The proposed water supply pipeline replacement activities are anticipated to result in approximately 1.55 acres of temporary impacts to CDFW, USACE, and RWQCB jurisdictional drainages (Figures 7, 1 through 8). All waterline construction areas will be restored to pre-project conditions following the completion of construction activities.

Overall Project Impacts

Implementation of the Plaster City Expansion/Modernization project would impact a total of 135.84 acres of CDFW, USACE, and RWQCB jurisdictional streambeds. Full build-out of the Plaster City Quarry would result in permanent impacts to approximately 134.29 acres of jurisdictional drainages. Activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. The impacts to jurisdictional drainages for each project area is outlined in Tables 2 and 3 below.

Table 2.

PLASTER CITY QUARRY JURISDICTIONAL WATERS IMPACT CALCULATIONS							
		50' Wide Quarry Wash Diversion Berm Jurisdictional Water Impacts		Jurisdictional Water Impacts		TOTALS IMPACTS	
		A	B	C	D	E	F
Item	Status	Linear Feet	Acres	Linear Feet	Acres	Linear Feet (A+C)	Acres (B+D)
Phase 1A Quarry	Existing	0	0.000	0	0.000	0	0.00
Phase 1B Quarry	Existing	0	0.000	180	0.030	180	0.03
Processing Area	Existing	0	0.000	0	0.000	0	0.00
Phase 2	Proposed	1520	1.596	10685	25.773	12205	27.37
Phase 2P	Proposed	0	0.000	450	2.100	450	2.10
Phase 3	Proposed	2500	2.869	1000	3.962	3500	6.83
Phase 3P (a)	Proposed	0	0.000	310	1.223	310	1.22
Phase 3P (b)	Proposed	0	0.000	1200	2.097	1200	2.10
Phase 4	Proposed	1450	1.488	2715	20.106	4165	21.59
Phase 5	Proposed	2000	2.202	3000	12.276	5000	14.48
Phase 6	Proposed	350	0.224	20737	7.584	21087	7.81
Phase 6Bp	Proposed	0	0.000	6168	0.935	6168	0.94
Phase 7	Proposed	415	0.265	15766	13.642	16181	13.91
Phase 7Bp	Proposed	0	0.000	0	0.000	0	0.00
Phase 8	Proposed	585	0.447	16280	13.312	16865	13.76
Phase 9	Proposed	795	0.320	8220	2.519	9015	2.84
Phase 10	Proposed	180	0.096	900	1.572	1080	1.67
Phase 10P	Proposed	2840	2.901	5850	13.839	8690	16.74
Phase S1	Existing	0	0.000	145	0.221	145	0.22
Phase S2	Existing	0	0.000	60	0.023	60	0.02
Phase S3	Existing	0	0.000	250	0.056	250	0.06
Haul Road to Phase 6Bp	Proposed	0	0.000	100	0.033	100	0.03
Haul Road to Phase 7Bp	Proposed	0	0.000	735	0.364	735	0.36
Tramroad Easement	Existing	0	0.000	0	0.000	0	0.00
Water Pipeline and Powerline	Proposed	0	0.000	0	0.000	0	0.00
Well Site #3	Existing	0	0.000	72	0.214	72	0.21
	TOTALS	**12,635.00**	**12.408**	**94,823.00**	**121.881**	**107,458.00**	**134.29**

Table 3.

PLASTER CITY PLANT JURISDICTIONAL WATERS IMPACT CALCULATIONS			
		Jurisdictional Water Impacts	
Item	Status	Permanent (Acres)	Temporary (Acres)
Water Supply	Proposed	0.000	1.550

5.4.2 Project Impacts to Wetlands

No wetlands were identified or recorded within the Plaster City Expansion/Modernization Project survey area. The project will not impact wetlands.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 PERMITS

6.1.1 Streambed Alteration Agreement Notification

The proposed Plaster City Expansion/Modernization Project will result in approximately 134.29 acres of permanent impacts and streambeds within the jurisdiction of the CDFW. In addition,

the activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. USG will be required to submit a notification for a 1602 Streambed Alteration Agreement to the California Department of Fish and Wildlife for impacts to jurisdictional streambeds prior to commencing activities associated with the proposed Plaster City Expansion/Modernization Project activities.

6.1.2 Regional Water Quality Control Board

In 2014 the Colorado River Basin Regional Water Quality Control Board issued an Order for a Technically-Conditioned Clean Water Act Section 401 Water Quality Certification. This 401 Certification covers an approximately 111-acre area consisting of Quarry Phases 2 and 2P and an approximately 25-acre area at the Shoveler Quarry.

The proposed Plaster City Expansion/Modernization Project will result in permanent impacts to approximately 134.29 acres of streambeds within the jurisdiction of the Colorado River Water Quality Control Board. In addition, the activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. USG will be required to obtain a 401 Certification for impacts to Waters of the U.S. from the Colorado River RWQCB for project activities not covered under the existing 401 Water Quality Certification prior to commencing the proposed Plaster City Expansion/Modernization Project activities.

6.1.3 United States Army Corps of Engineers

The proposed Plaster City Expansion/Modernization Project will result in permanent impacts to approximately 134.29 acres of streambeds within the jurisdiction of the USACE. In addition, the activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. USG will be required to obtain a 404 Permit from the USACE for impacts to Waters of the U.S. prior to commencing the proposed Plaster City Expansion/Modernization Project activities.

6.2 AVOIDANCE AND MINIMIZATION RECOMMENDATIONS

To minimize impacts associated with the proposed Plaster City Expansion/Modernization Project on resources associated with the drainages, the following avoidance and minimization measures are recommended:

Wildlife

- USG shall instruct employees and other visitors at the mine to avoid Peninsular Bighorn Sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. The project proponent has established a training program, including new-employee orientation and annual refreshers, to educate employees/visitors regarding bighorn sheep and the importance of avoidance. A Section 7 consultation was initiated by BLM with USFWS in 2008 to determine potential impacts to Peninsular Bighorn Sheep and determine recommended methods of avoidance. To date USFWS has not rendered an opinion.
- The project proponent shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the mine manager. Upon receiving any such reports, the mine manager shall contact the appropriate authorities for removal of domestic animals.
- In project areas where nesting birds may occur, the applicant: 1) shall avoid removing potential nesting riparian vegetation from March 15 through September 15, or 2) shall survey all potential nesting riparian vegetation within the project site for active bird nests. If an active bird nest is located, the nest site shall be flagged or staked a minimum of 5 yards in all directions, the flagged zone shall not be disturbed until the nest becomes inactive.

Habitat/Vegetation

- When appropriate, mitigation for the removal of vegetation associated with the drainage shall include re-vegetation of suitable areas with desirable vegetation native to the area.
- Work areas within jurisdictional drainages shall be delineated with flagging or other means of marking prior to ground disturbance to assure work activities and impacts do not exceed permitted limits.
- All areas of disturbed soils with slopes towards a wash shall be stabilized to reduce erosion potential. Where possible, stabilization shall include the re-vegetation of stripped or exposed areas with vegetation native to the area. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials may be used for such stabilization.

Best Management Practices

- Structures and associated materials, including debris, not designed to withstand high seasonal flows shall be relocated to areas above the high water mark before such flows occur.

- All debris, bark, slash, sawdust, rubbish, silt, cement or concrete or washings thereof, asphalt, paint or other coating materials, oil or other petroleum products, or any other substance resulting from project-related activities which would be hazardous to aquatic life or jurisdictional waters, shall be prevented from contaminating the soil and/or entering the waters of the state. None of these materials shall be allowed to enter into or be placed within or where they may be washed by rainfall or runoff into jurisdictional waters. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream.
- Any project-disturbed portions of drainages not permanently impacted by this project will be restored to as near pre-project conditions as possible.
- Precautions to minimize turbidity/siltation shall be taken into account during project planning and implementation. This will include the work site to be isolated and/or the construction of silt catchment basins, so the silt or other deleterious materials are not allowed to pass to the downstream reaches.
- Spoil sites shall not be located within a wash, where spoil can be washed back into a stream, or where it will cover aquatic or riparian vegetation. The applicant will remove all human-generated debris.

7.0 REFERENCES CITED

CDFG (California Department of Fish and Game) and California State University, Fresno, 2014. The MESA Field Guide: Mapping Episodic Stream Activity. Sacramento, California.

CDFG (California Department of Fish and Game) and California State University, Fresno, 2014. Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes For Permitting Utility-Scale Solar Power Plants. Sacramento, California.

CDFG (California Department of Fish and Game). 2010. A Review of Stream Processes and Forms in Dryland Watersheds. State of California Resources Agency. Sacramento, California.

CDFG (California Department of Fish and Game). 1988a. California's Wildlife, Volume I: Amphibians and Reptiles. State of California Resources Agency. Sacramento, California.

CDFG (California Department of Fish and Game). 1988b. California's Wildlife, Volume II: Birds. State of California's Resource Agency. Sacramento, California.

CDFG (California Department of Fish and Game). 1988c. California's Wildlife, Volume III: Mammals. State of California Resources Agency. Sacramento, California.

CDFG (California Department of Fish and Game). 2010 (July). Natural Communities List. The Resources Agency of California, Department of Fish and Game, Natural Diversity Data Base. Sacramento, California.

Department of the Army. 1986 (Nov 13). 33 CFR Parts 320-330, Regulatory Programs of the Corps of Engineers, Final Rule. *Federal Registrar*. 51 (219):41206-260.

Department of the Army. 1600 (Mar 9). 33 CFR Parts 320-330, Regulatory Programs of the Corps of Engineers, Final Rule. *Federal Registrar*. Vol. 65 No. 47: 12818-899.

Department of the Army. 1602 (Jan. 15). 33 CFR Parts 320-330, Regulatory Programs of the Corps of Engineers, Final Rule. *Federal Registrar*. Vol. 67 No. 10:2020-2095.

Federal Interagency Committee For Wetland Delineation. 1989. *Federal Manual For Identifying and Delineating Jurisdictional Wetlands*. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Services, and U.S.D.A. Soil Conservation Service. Washington D.C. Cooperative Technical Publication.

Kollmorgen Corporation, 1975. Munsell Soil Color Charts. Macbeth Division of Kollmorgen Corporation, Baltimore, MD.

Lichvar, and C.V. Noble. ERDC/EL TR. U.S. Army Engineer Research and Development Center. Vicksburg, Mississippi.

Rapanos et ux., et al. v. United states, 547 U.S. 04-1034 (2006).

U.S. Army Corps of Engineers. 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States.* Cold Regions Research and Engineering Laboratory.

U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0).* Environmental Laboratory.

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency. 2007. *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook.* Available: http://www.epa.gov/owow/wetlands/guidance/cwawaters.html. Accessed March 31, 2008.

U.S. Department of Agriculture, Natural Resources Conservation Service. *Web Soil Surveys* Available at: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed March 31, 2008.

U.S. Department of Agriculture Soil Conservation Service. 1981. *Soil Survey of Imperial County California, Imperial Valley Area*.

U.S. Department of Agriculture Soil Conservation Service. 1987. *Hydric Soils of the United States*. In cooperation with the National Technical Committee for Hydric Soils. U.S.D.A. Soil Conservation Service. Washington, D.C.

U.S. Fish and Wildlife Service. 1988 (May). National List of Plant Species that Occur in Wetlands: California (Region 0). Biological Report 88(26.19) Washington, D.C.: USFWS.

Project Specific References

Lilburn Corporation. *Mine Reclamation Plan: Application for the Plaster City Quarry, United States Gypsum Company*. Revised June 2003.

Resource Design Technology, Inc. *United States Gypsum Company Expansion/Modernization Project, Draft Environmental Impact Report/ Environmental Impact Statement*. State Clearinghouse No. 2001121133. April 2006.

FIGURES

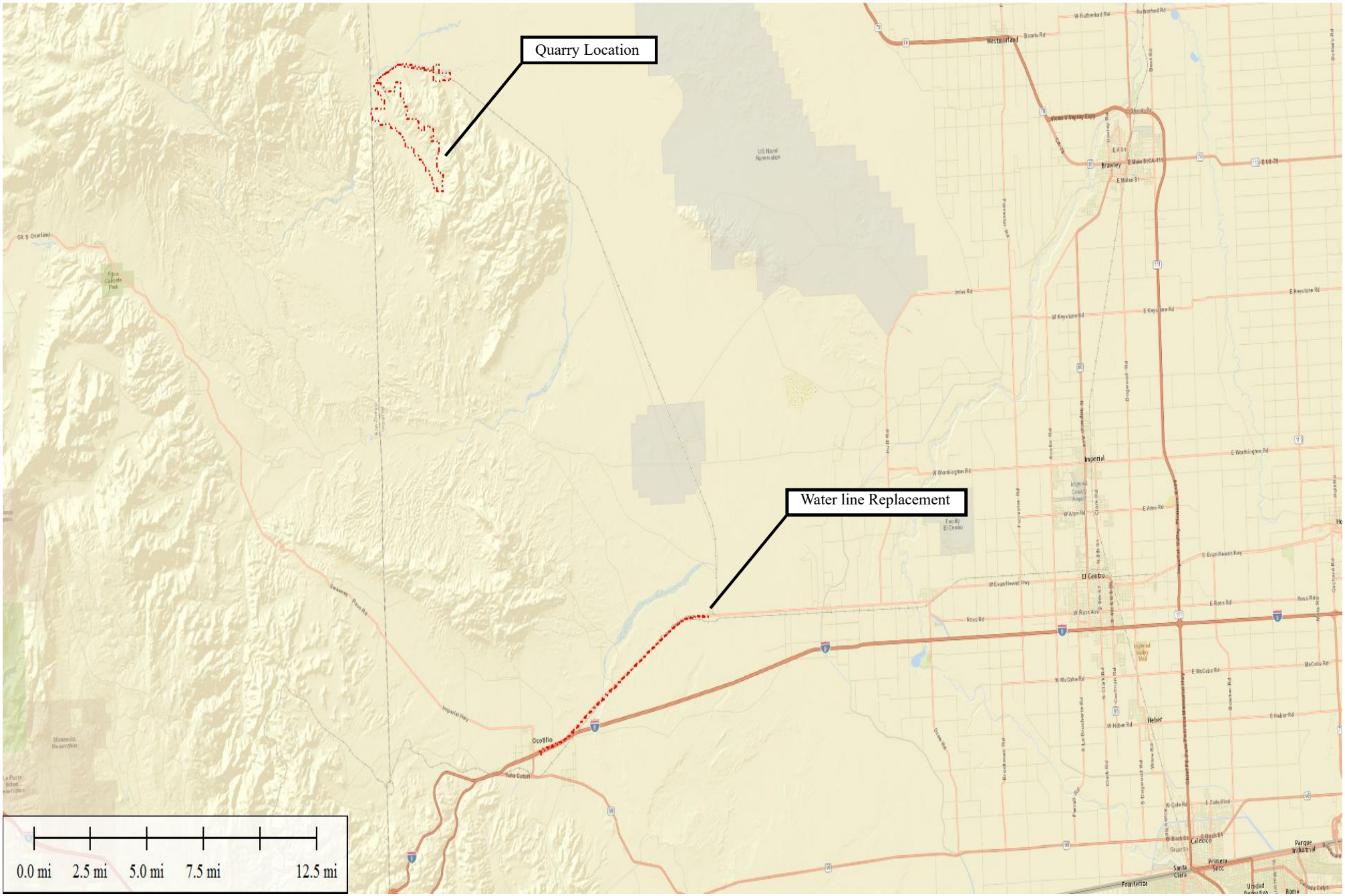


Figure 1

Vicinity Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Project Locations

N

Hernandez Environmental Services

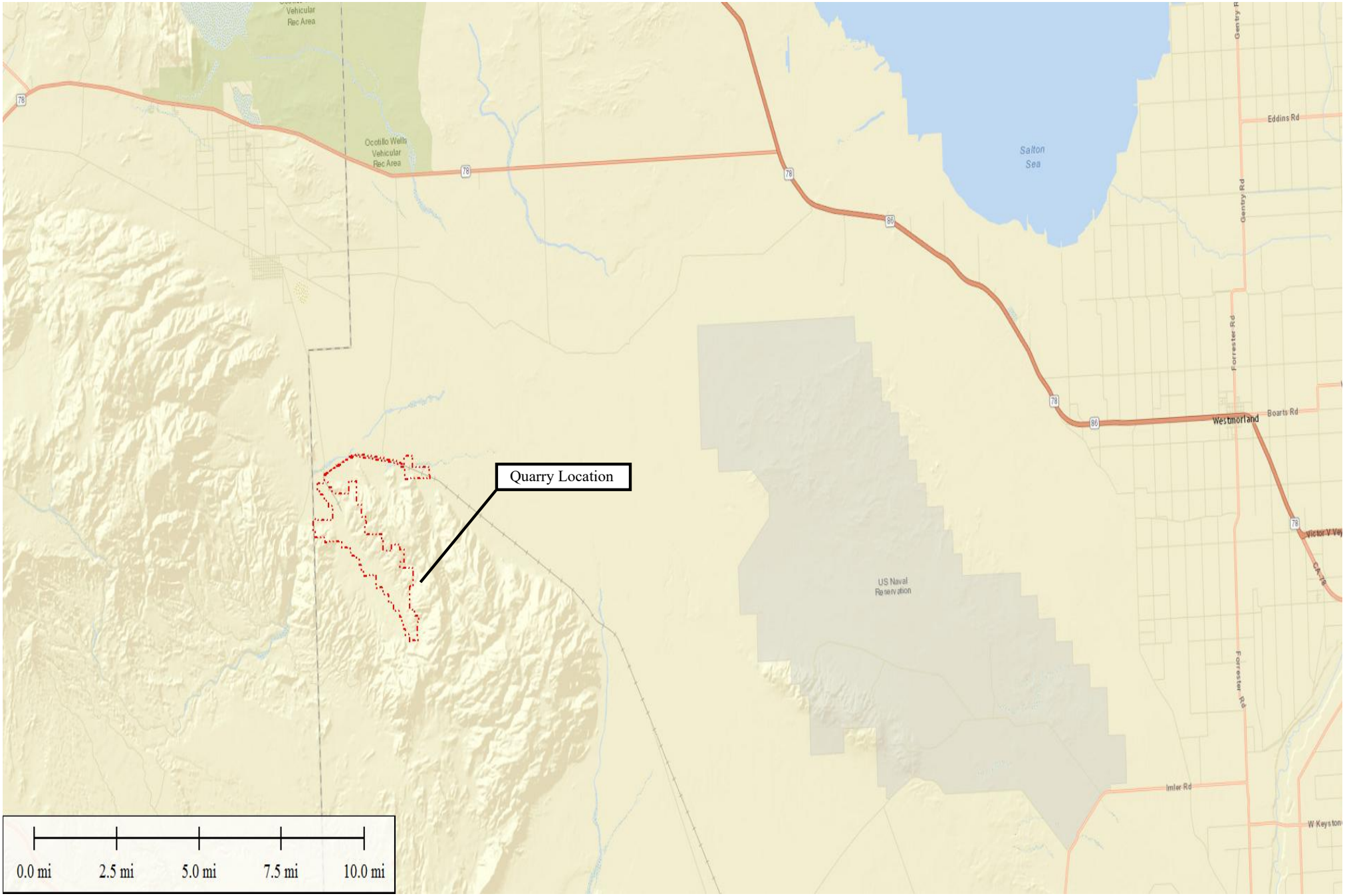


Figure 2

Quarry Location Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Plaster City Quarry Location

N

Hernandez Environmental Services

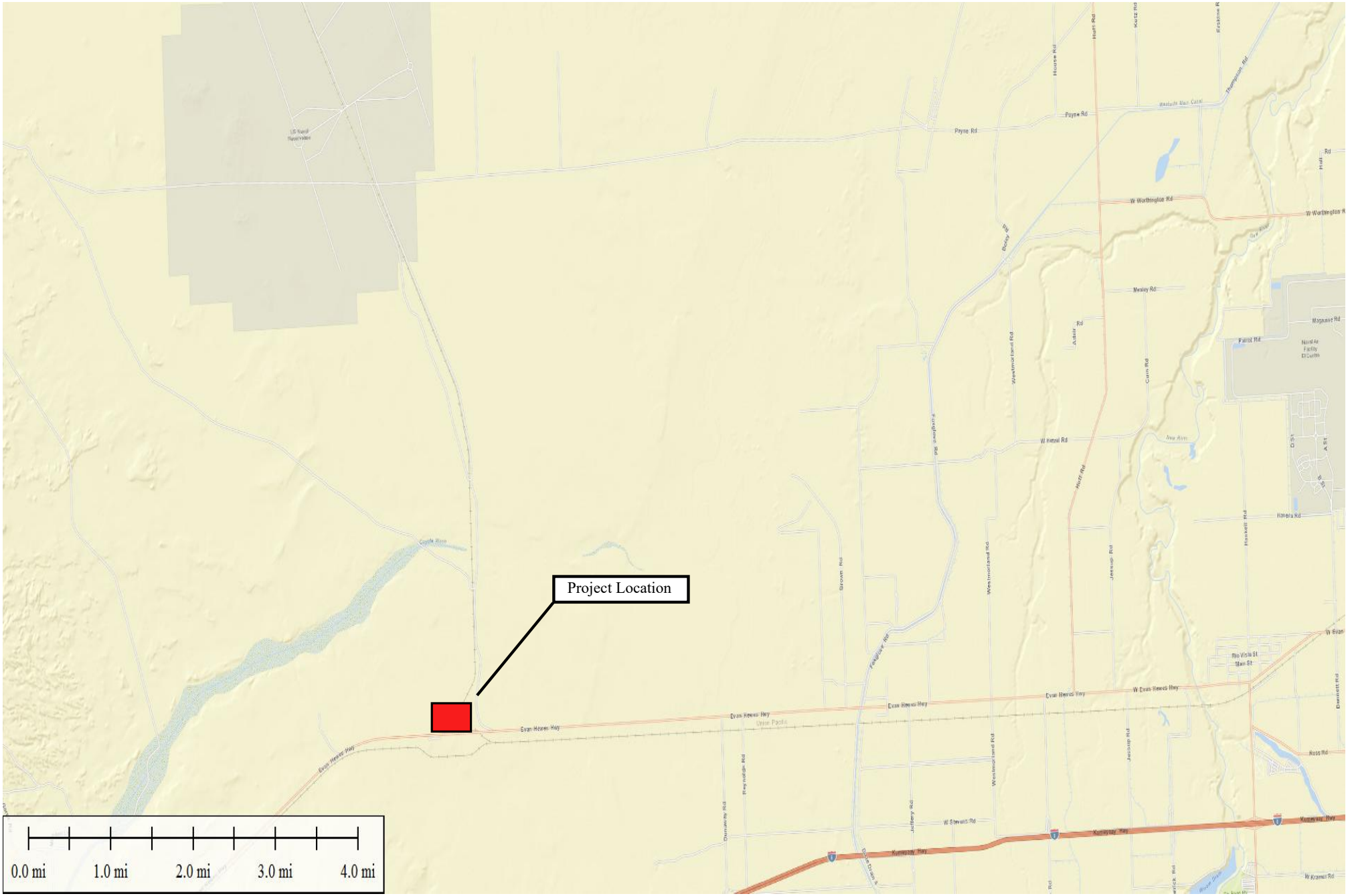


Figure 3

Plaster City Location Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

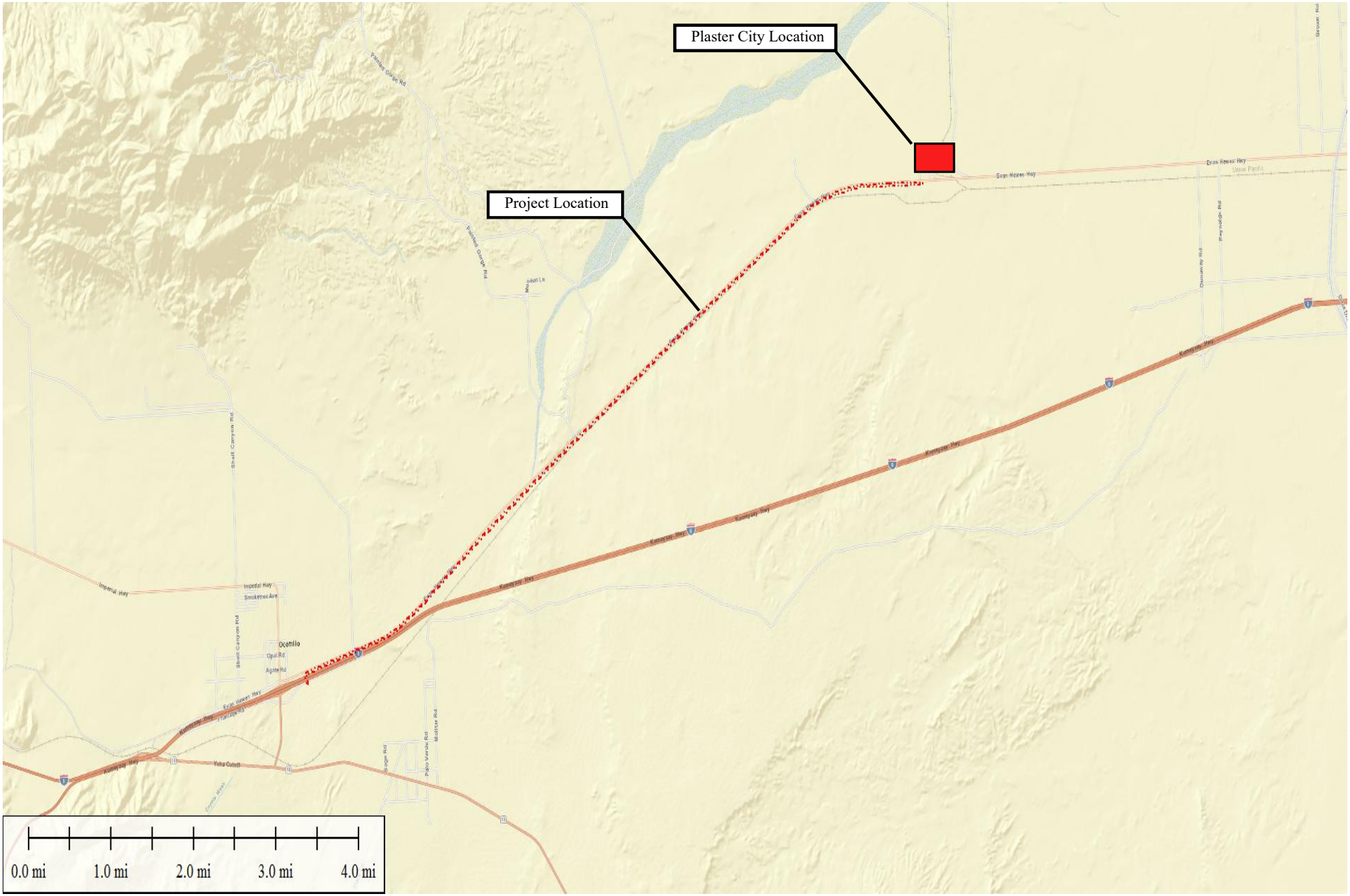


Figure 4

Water Line Replacement Location Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Plaster City Plant Location

Water Line Replacement Location

N

Hernandez Environmental Services

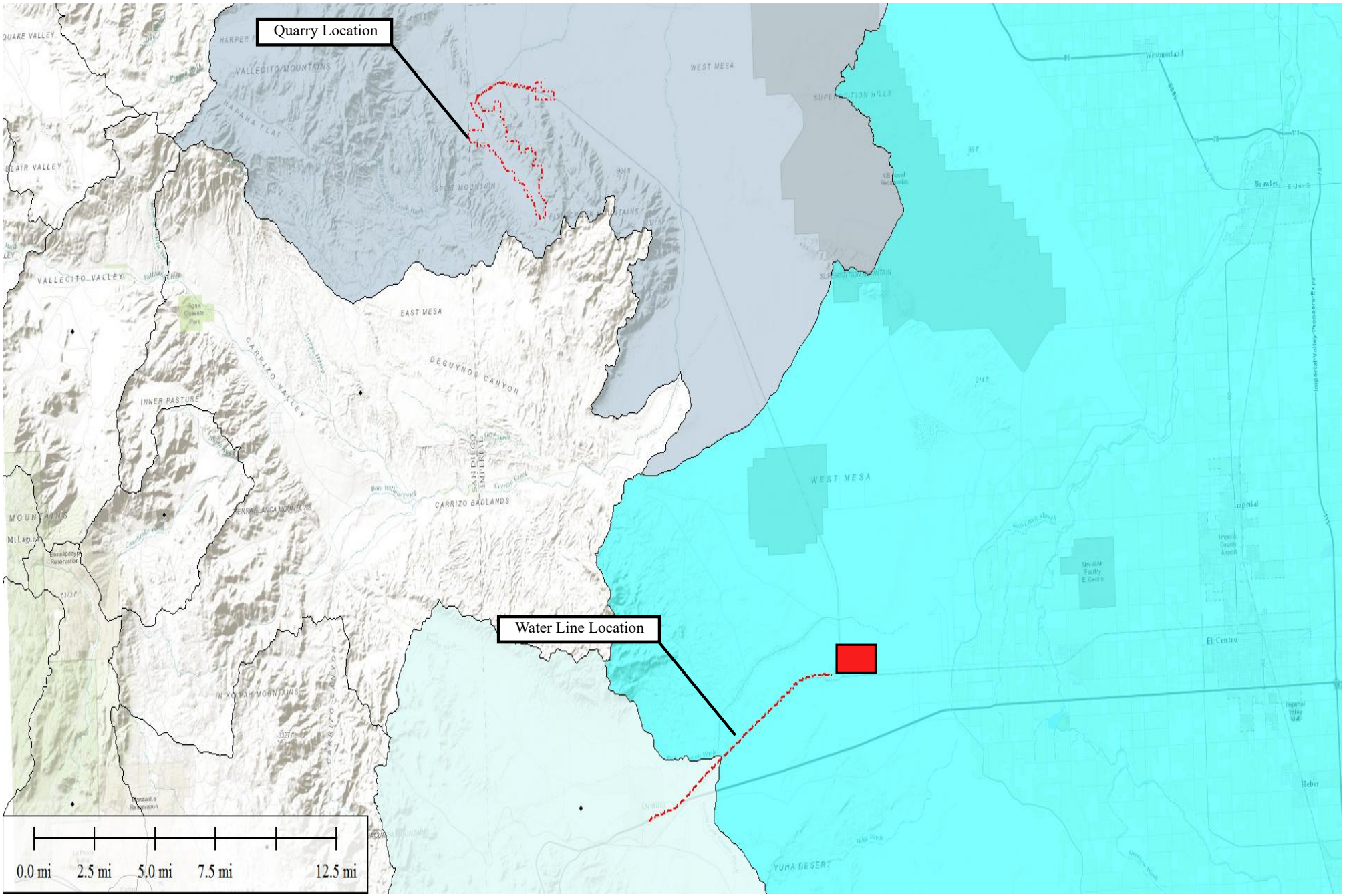


Figure 5

Hydrologic Unit Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

- Plaster City Plant Location
- Plaster City QuarryLocation
- Water Line Replacement Location
- Imperial Hydrologic Unit Coyote Wells
- Imperial Hydrologic Unit Brawley
- Anza Borrego Hydrologic Unit

N

Hernandez Environmental Services

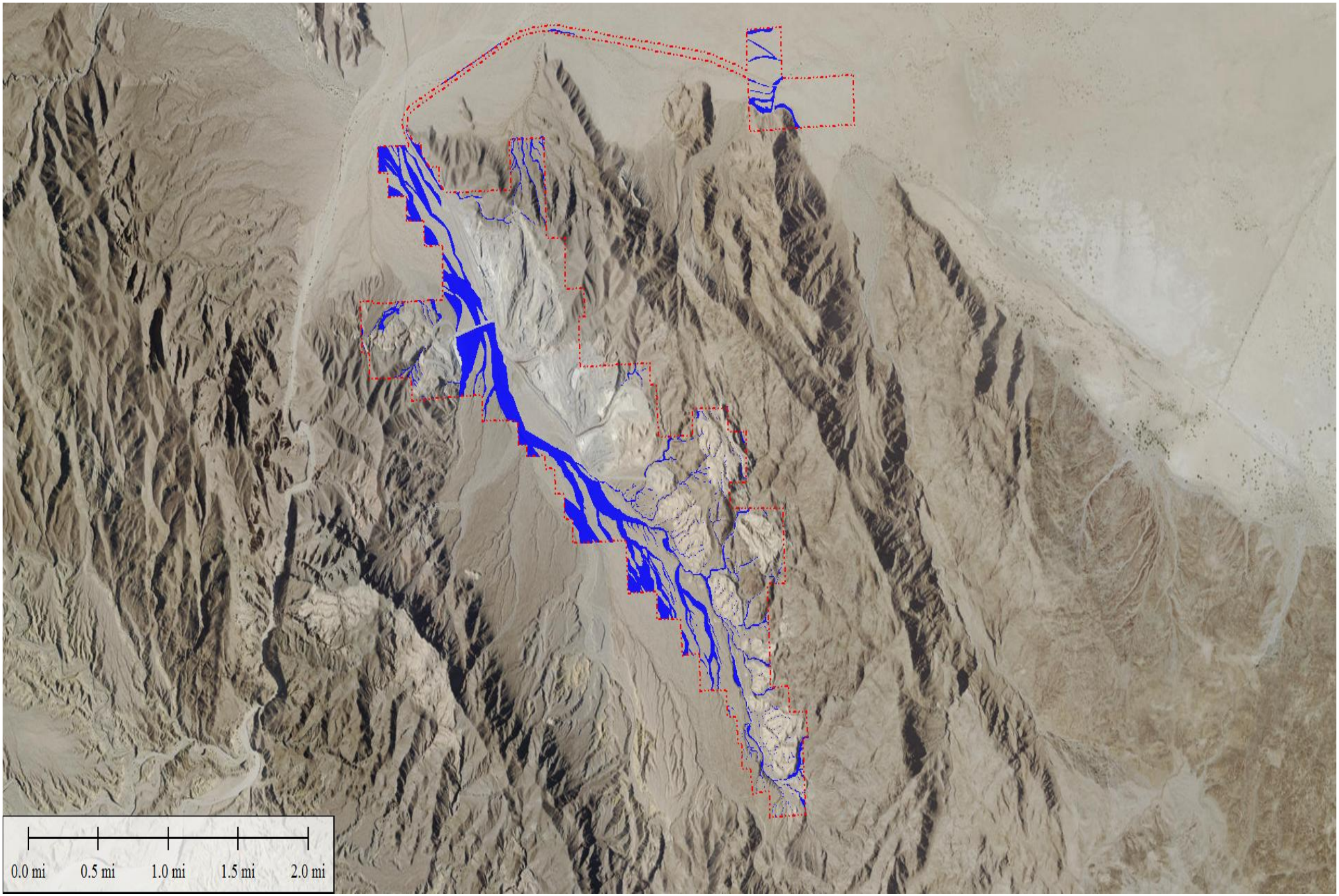


Figure 6

Plaster City Mine Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Figure 7 (1 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Waterline Alignment Survey Area

1.55 Acres State and Federal Jurisdictional Streams

N

Hernandez Environmental Services

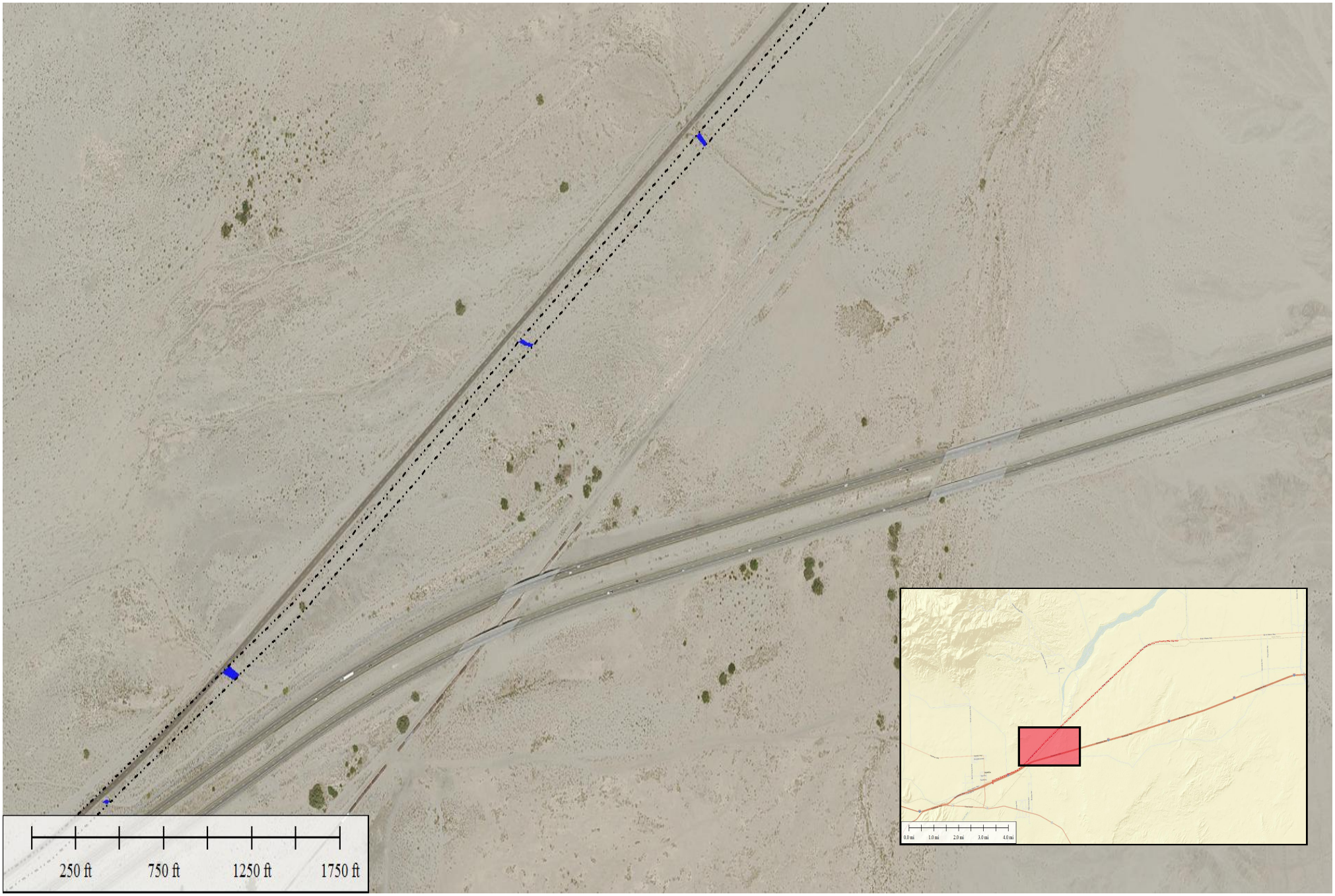


Figure 7 (2 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Waterline Alignment Survey Area

1.55 Acres State and Federal Jurisdictional Streams

N

Hernandez Environmental Services

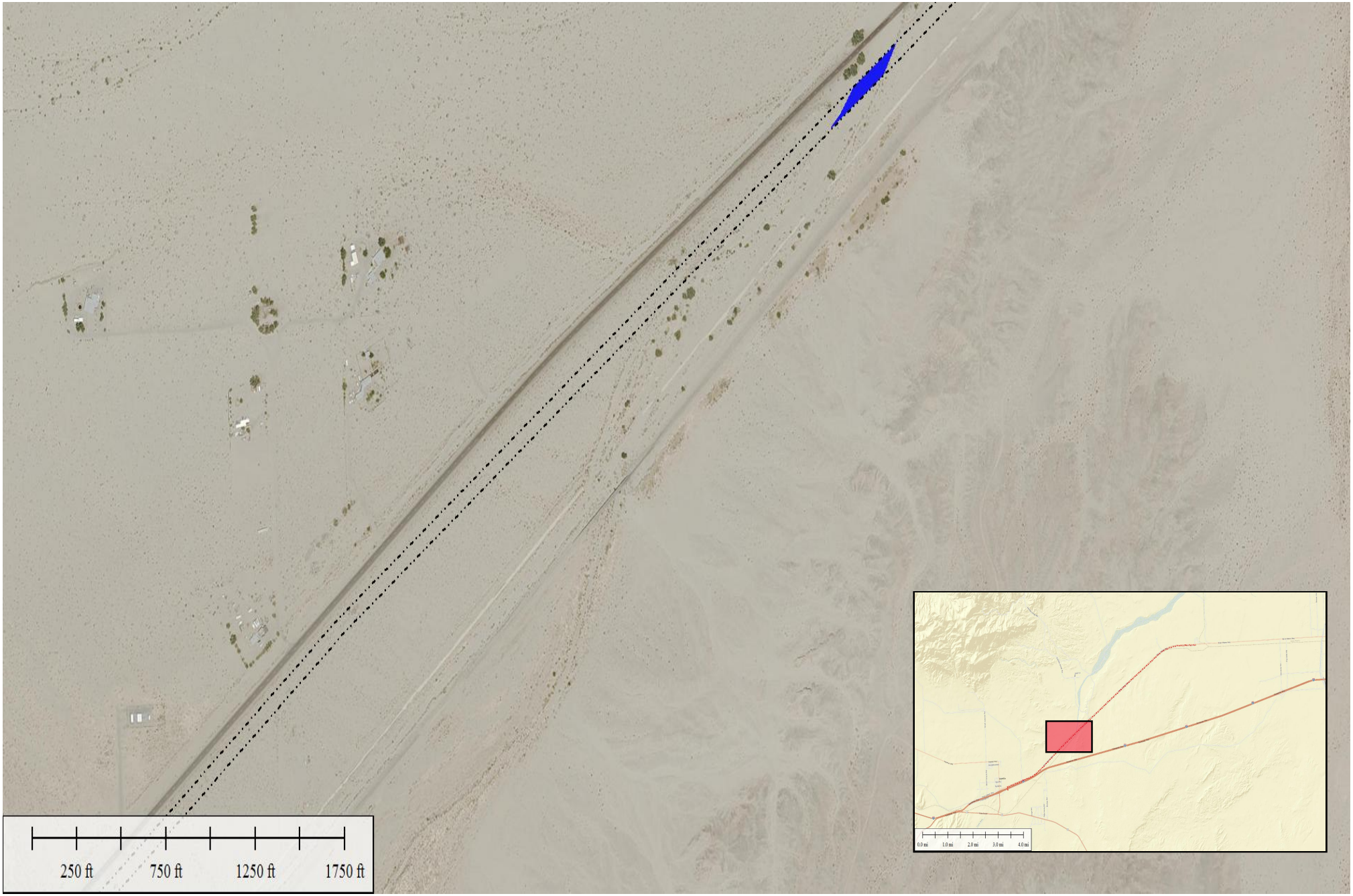


Figure 7 (3 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Waterline Alignment Survey Area

1.55 Acres State and Federal Jurisdictional Streams

N

Hernandez Environmental Services

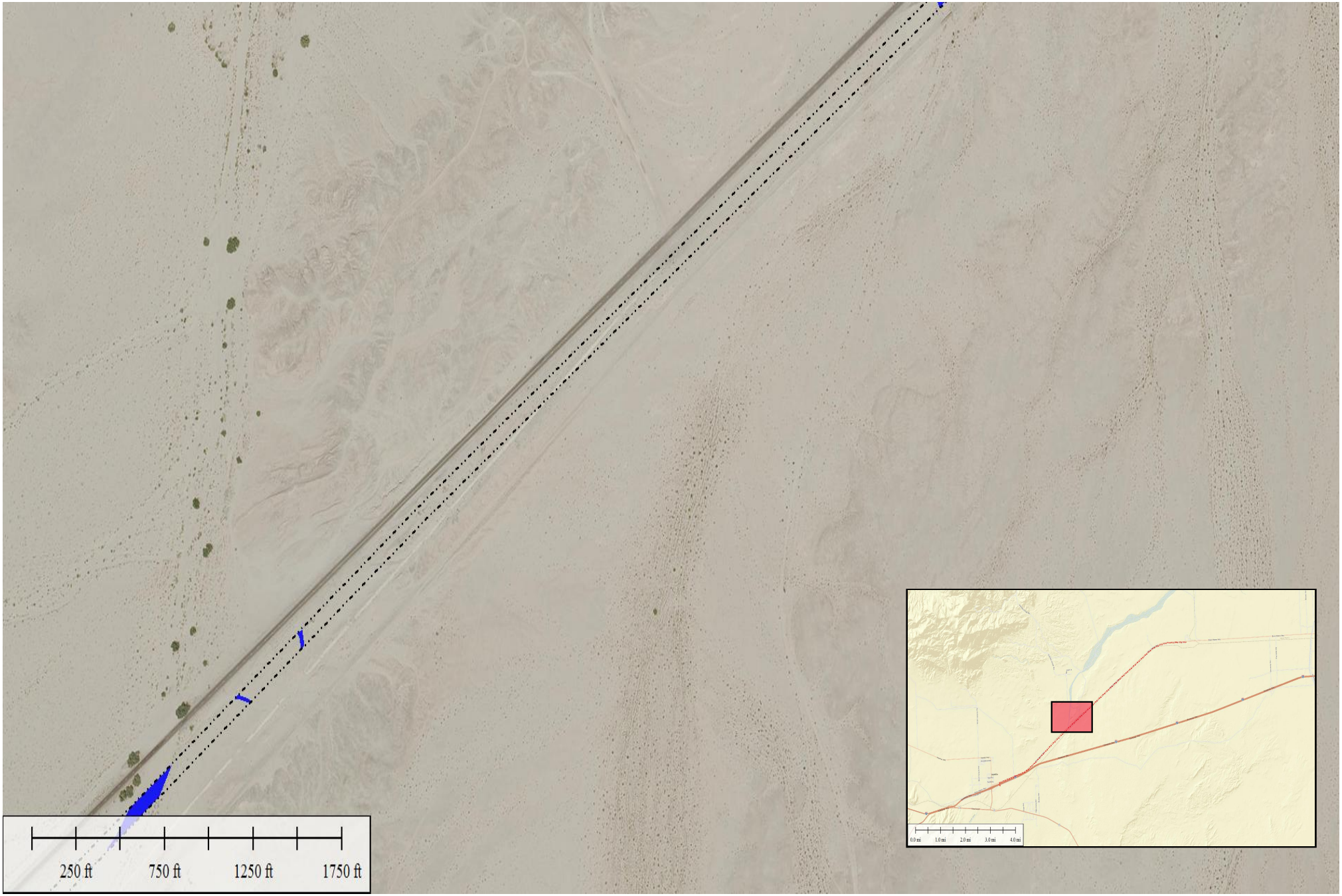


Figure 7 (4 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Waterline Alignment Survey Area

1.55 Acres State and Federal Jurisdictional Streams

N

Hernandez Environmental Services

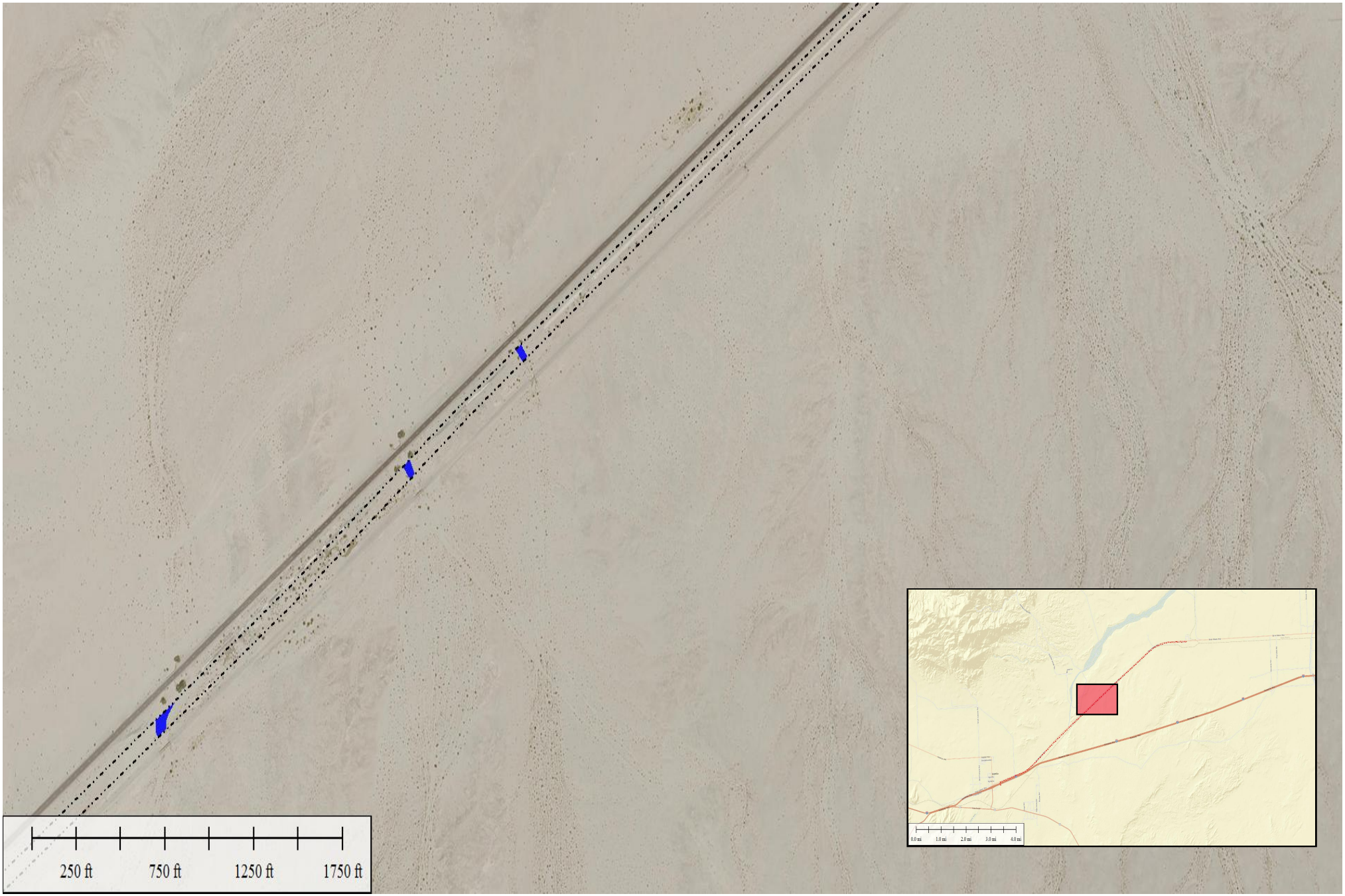


Figure 7 (5 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Waterline Alignment Survey Area

1.55 Acres State and Federal Jurisdictional Streams

N

Hernandez Environmental Services

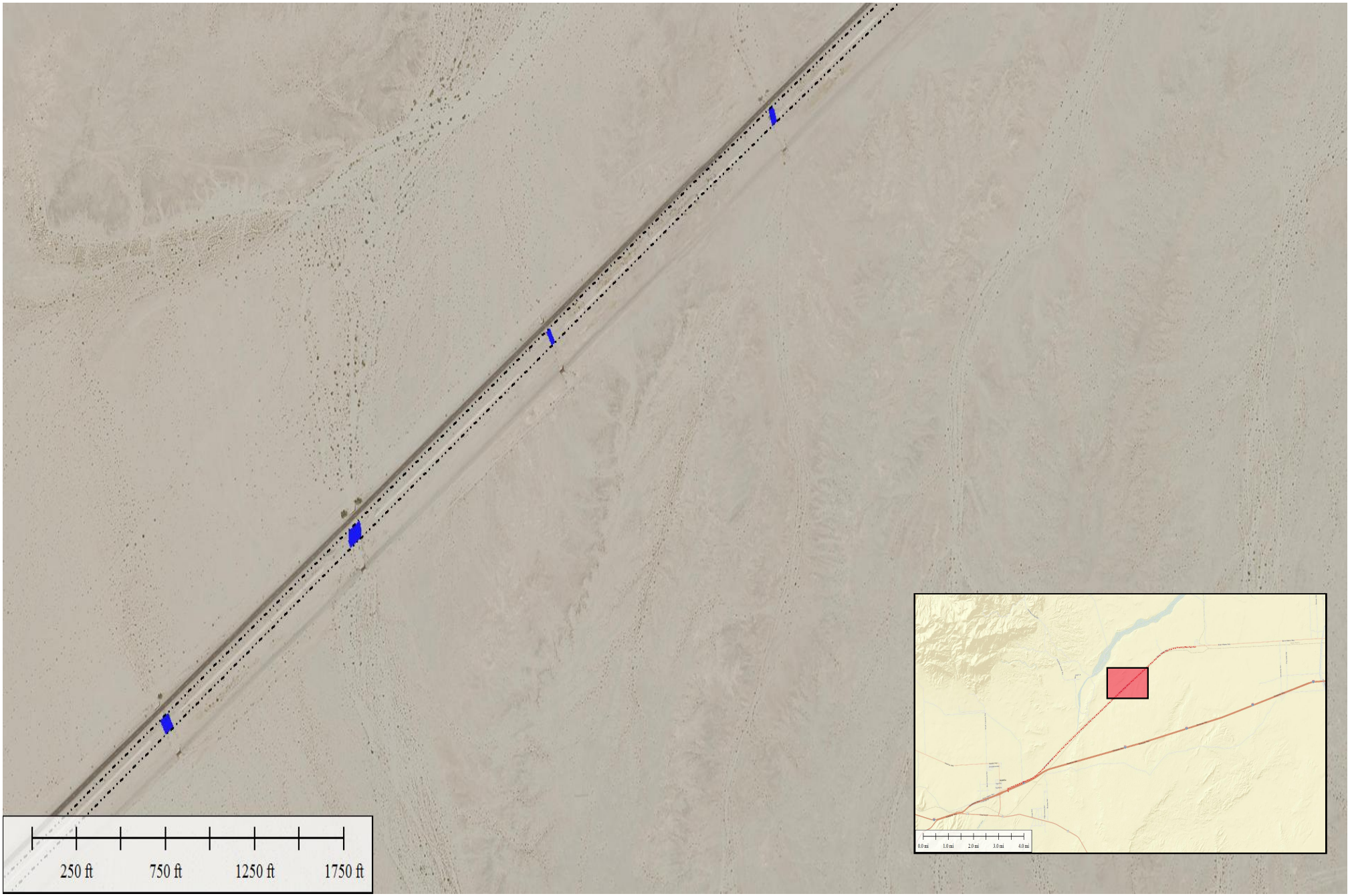


Figure 7 (6 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Waterline Alignment Survey Area

1.55 Acres State and Federal Jurisdictional Streams

N

Hernandez Environmental Services

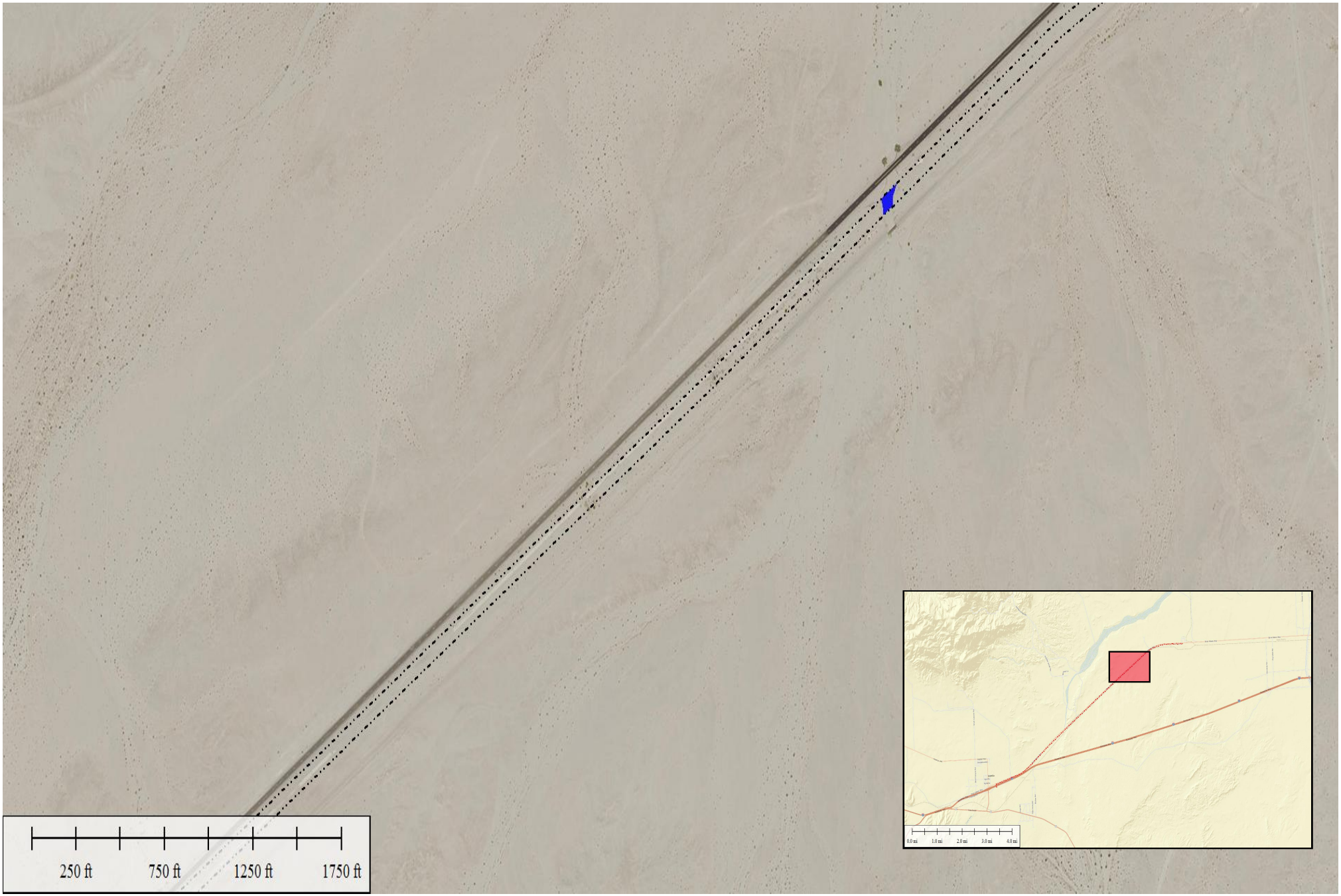


Figure 7 (7 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

Waterline Alignment Survey Area

1.55 Acres State and Federal Jurisdictional Streams

N

Hernandez Environmental Services

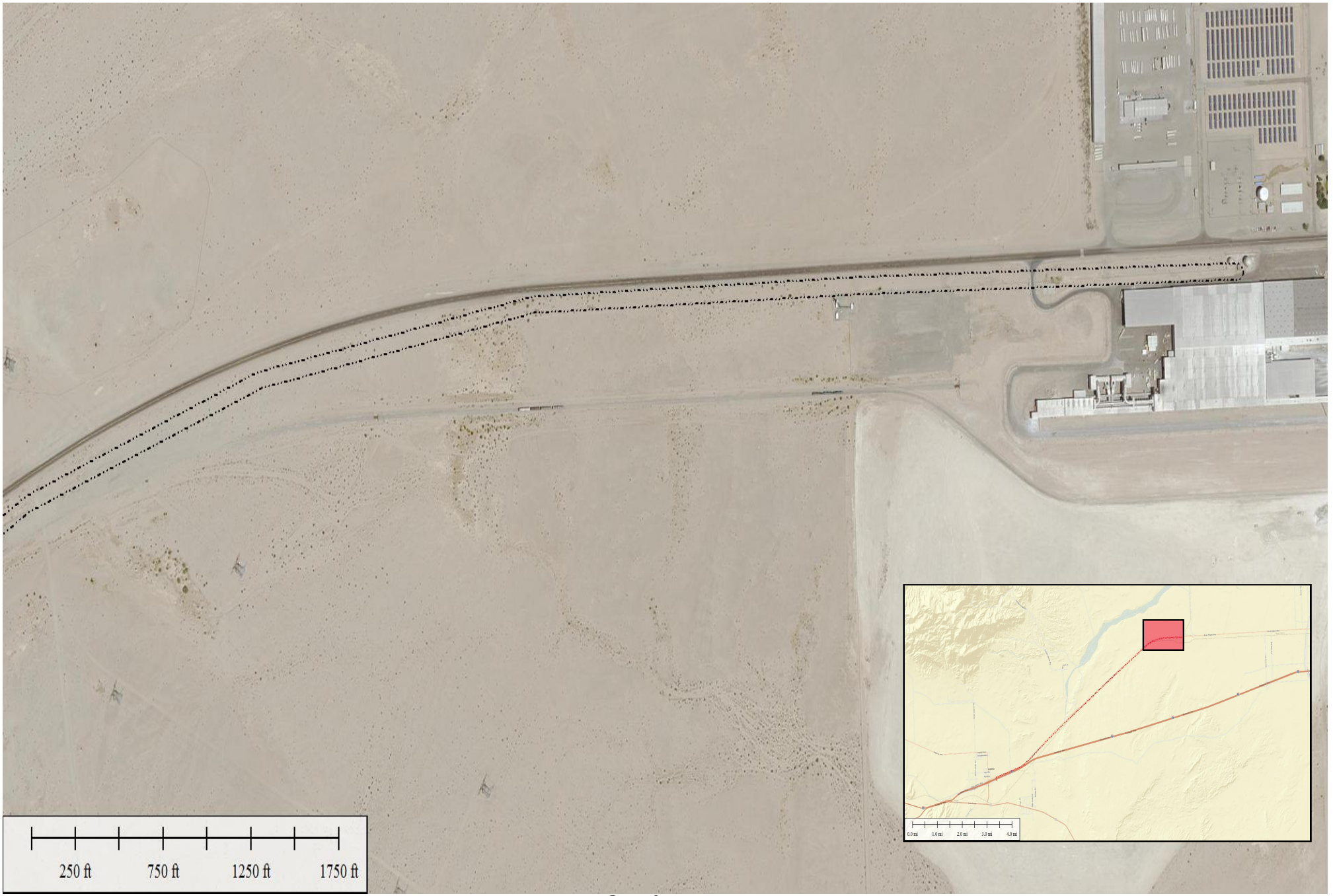


Figure 7 (8 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

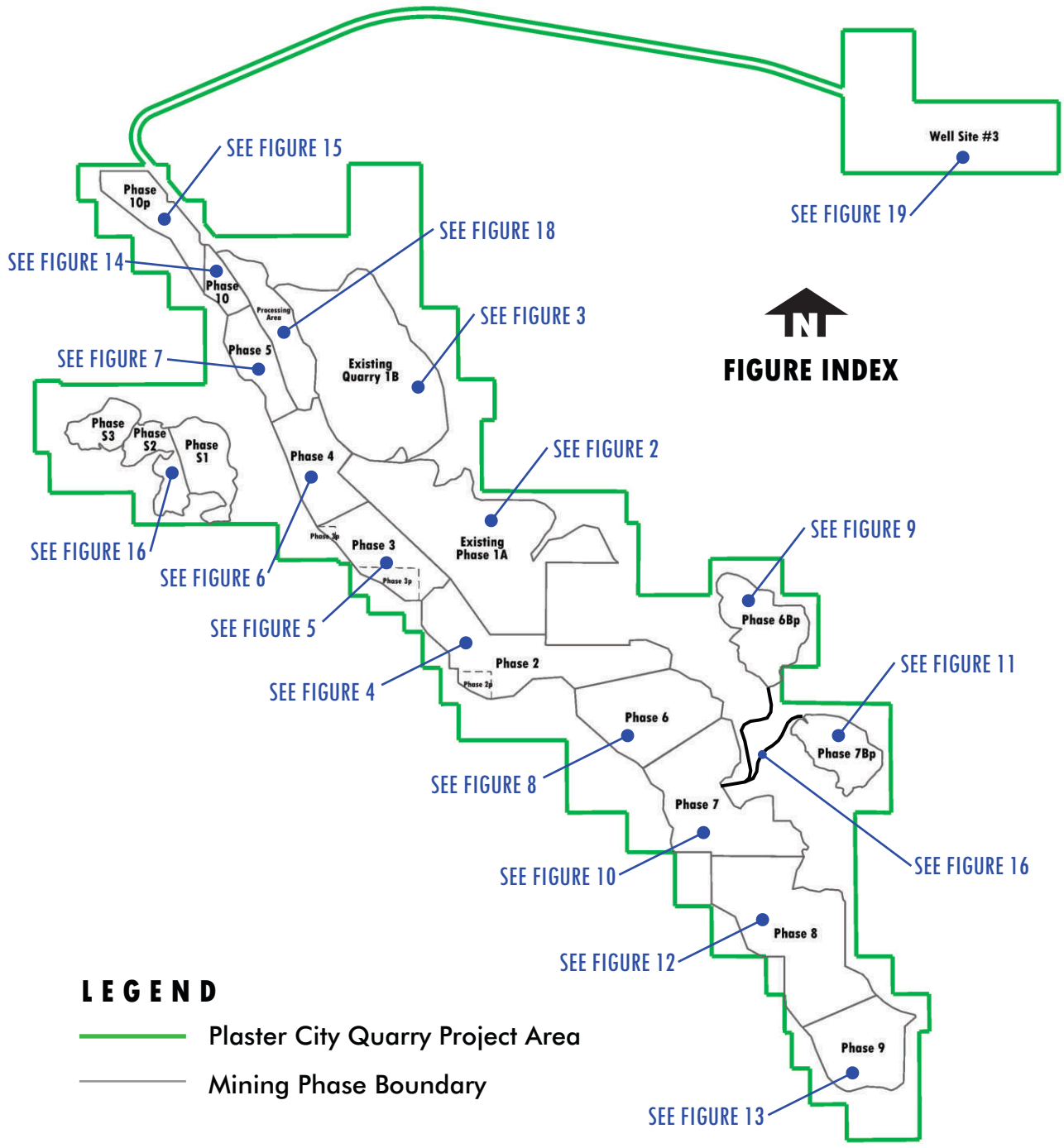
Waterline Alignment Survey Area

1.55 Acres State and Federal Jurisdictional Streams

N

Hernandez Environmental Services

APPENDIX A



PLASTER CITY QUARRY JURISDICTIONAL WATERS IMPACT CALCULATIONS

Item	Status	50' Wide Quarry Wash Diversion Berm Jurisdictional Water Impacts		Jurisdictional Water Impacts		TOTALS IMPACTS	
		A	B	C	D	E	F
		Linear Feet	Acres	Linear Feet	Acres	Linear Feet (A+C)	Acres (B+D)
Phase 1A Quarry	Existing	0	0.000	0	0.000	0	0.00
Phase 1B Quarry	Existing	0	0.000	180	0.030	180	0.03
Processing Area	Existing	0	0.000	0	0.000	0	0.00
Phase 2	Proposed	1520	1.596	10685	25.773	12205	27.37
Phase 2P	Proposed	0	0.000	450	2.100	450	2.10
Phase 3	Proposed	2500	2.869	1000	3.962	3500	6.83
Phase 3P (a)	Proposed	0	0.000	310	1.223	310	1.22
Phase 3P (b)	Proposed	0	0.000	1200	2.097	1200	2.10
Phase 4	Proposed	1450	1.488	2715	20.106	4165	21.59
Phase 5	Proposed	2000	2.202	3000	12.276	5000	14.48
Phase 6	Proposed	350	0.224	20737	7.584	21087	7.81
Phase 6Bp	Proposed	0	0.000	6168	0.935	6168	0.94
Phase 7	Proposed	415	0.265	15766	13.642	16181	13.91
Phase 7Bp	Proposed	0	0.000	0	0.000	0	0.00
Phase 8	Proposed	585	0.447	16280	13.312	16865	13.76
Phase 9	Proposed	795	0.320	8220	2.519	9015	2.84
Phase 10	Proposed	180	0.096	900	1.572	1080	1.67
Phase 10P	Proposed	2840	2.901	5850	13.839	8690	16.74
Phase S1	Existing	0	0.000	145	0.221	145	0.22
Phase S2	Existing	0	0.000	60	0.023	60	0.02
Phase S3	Existing	0	0.000	250	0.056	250	0.06
Haul Road to Phase 6Bp	Proposed	0	0.000	100	0.033	100	0.03
Haul Road to Phase 7Bp	Proposed	0	0.000	735	0.364	735	0.36
Tramroad Easement	Existing	0	0.000	0	0.000	0	0.00
Water Pipeline and Powerline	Proposed	0	0.000	0	0.000	0	0.00
Well Site #3	Existing	0	0.000	72	0.214	72	0.21
	TOTALS	**12,635.00**	**12.408**	**94,823.00**	**121.881**	**107,458.00**	**134.29**

JURISDICTIONAL WATERS IMPACT CALCULATIONS - SUMMARY

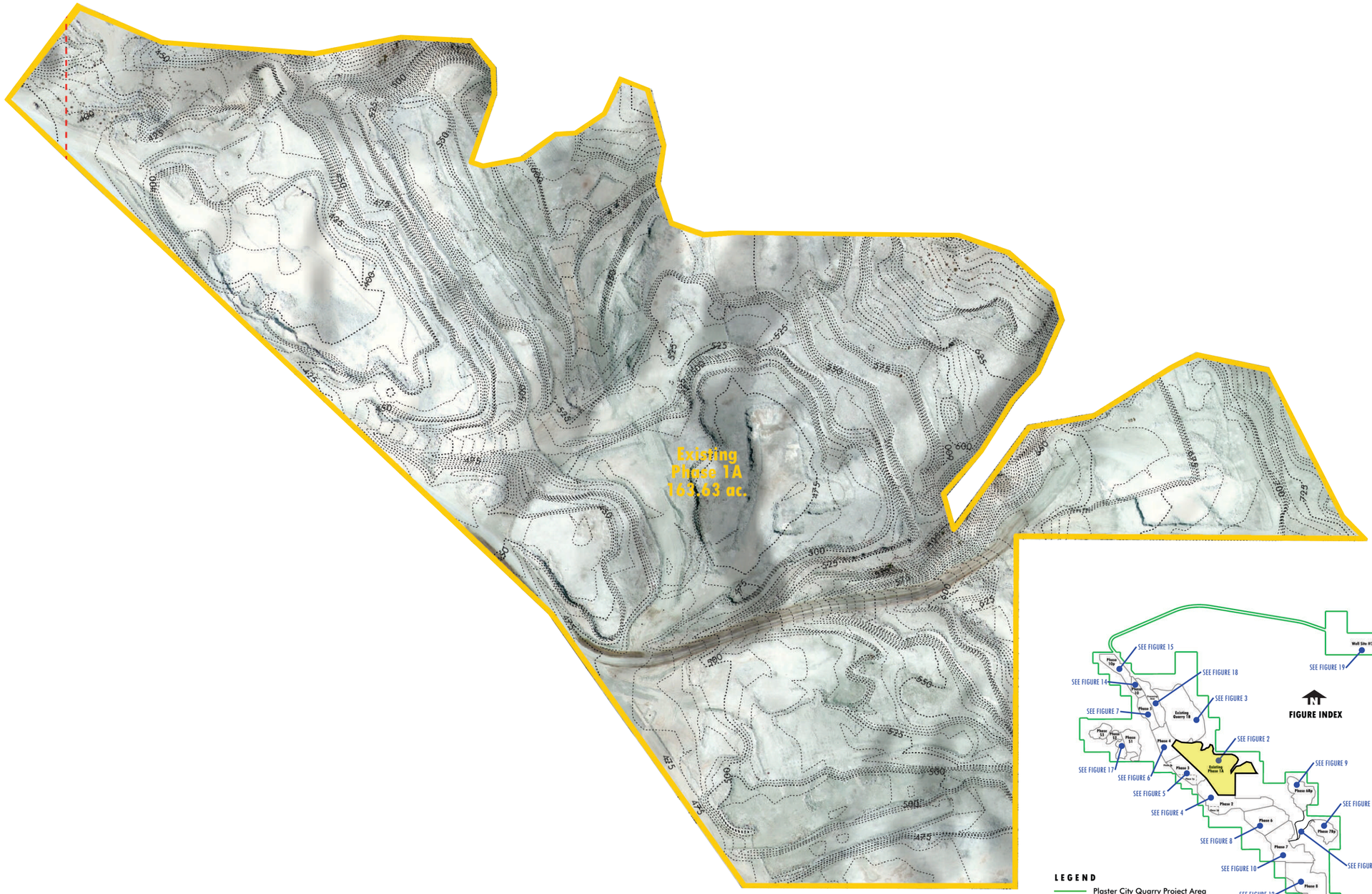
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

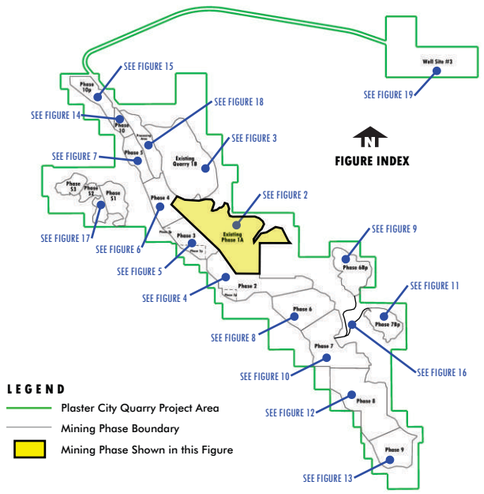
Prepared By (TAG 11/02/16):
LILBURN CORPORATION

Figure 1

Jurisdictional Waters Impact Areas

No Impacts





LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

0 400
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 1A

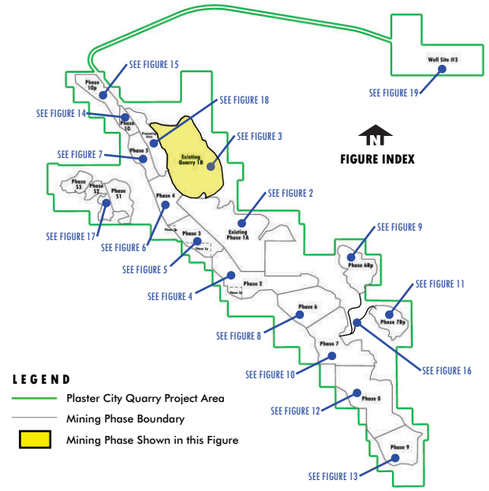
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 2

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	180	0.03

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

N
0 400
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 1B

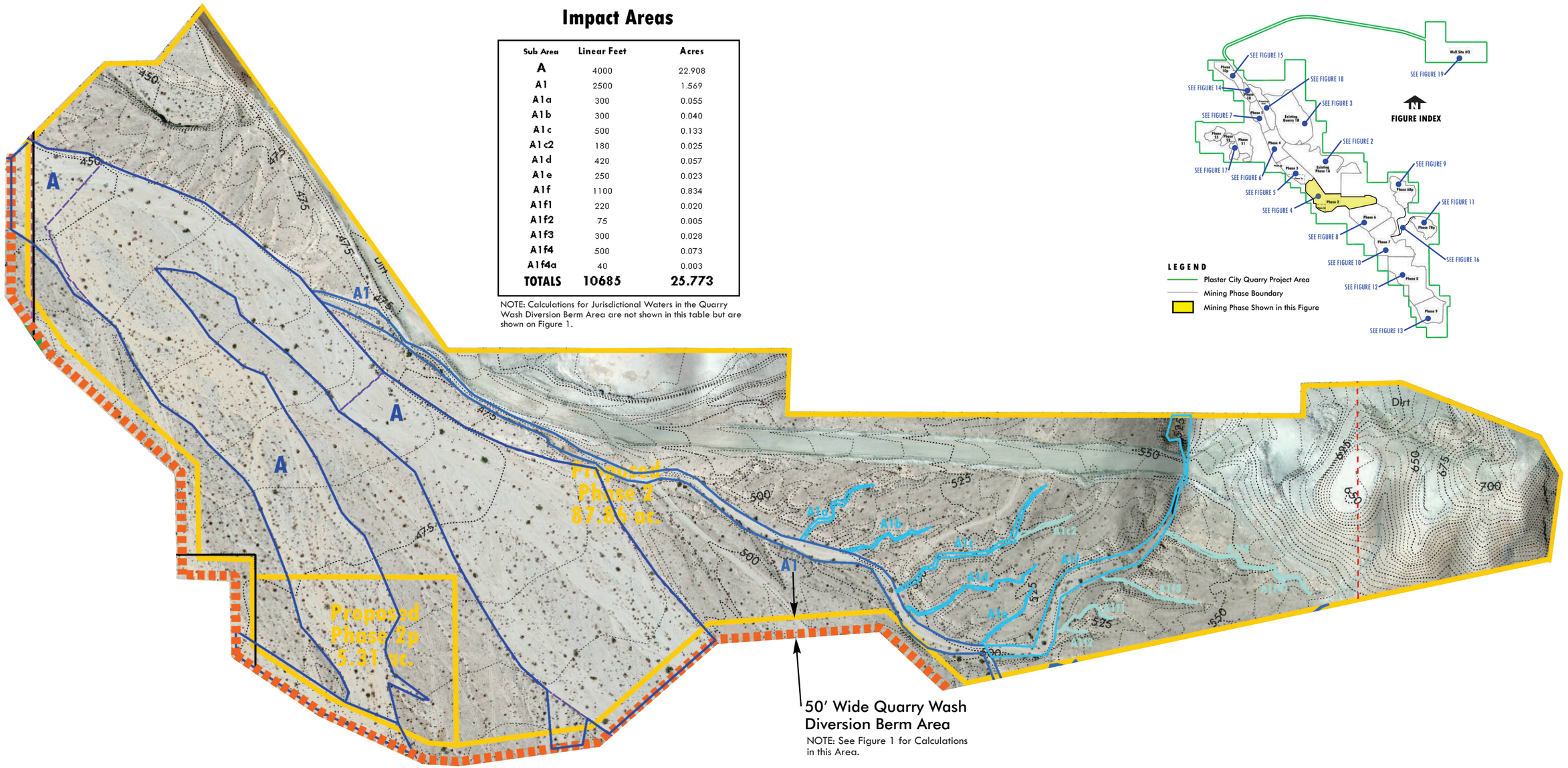
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 3

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	4000	22.908
A1	2500	1.569
A1a	300	0.055
A1b	300	0.040
A1c	500	0.133
A1c2	180	0.025
A1d	420	0.057
A1e	250	0.023
A1f	1100	0.834
A1f1	220	0.020
A1f2	75	0.005
A1f3	300	0.028
A1f4	500	0.073
A1f4a	40	0.003
TOTALS	**10685**	**25.773**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

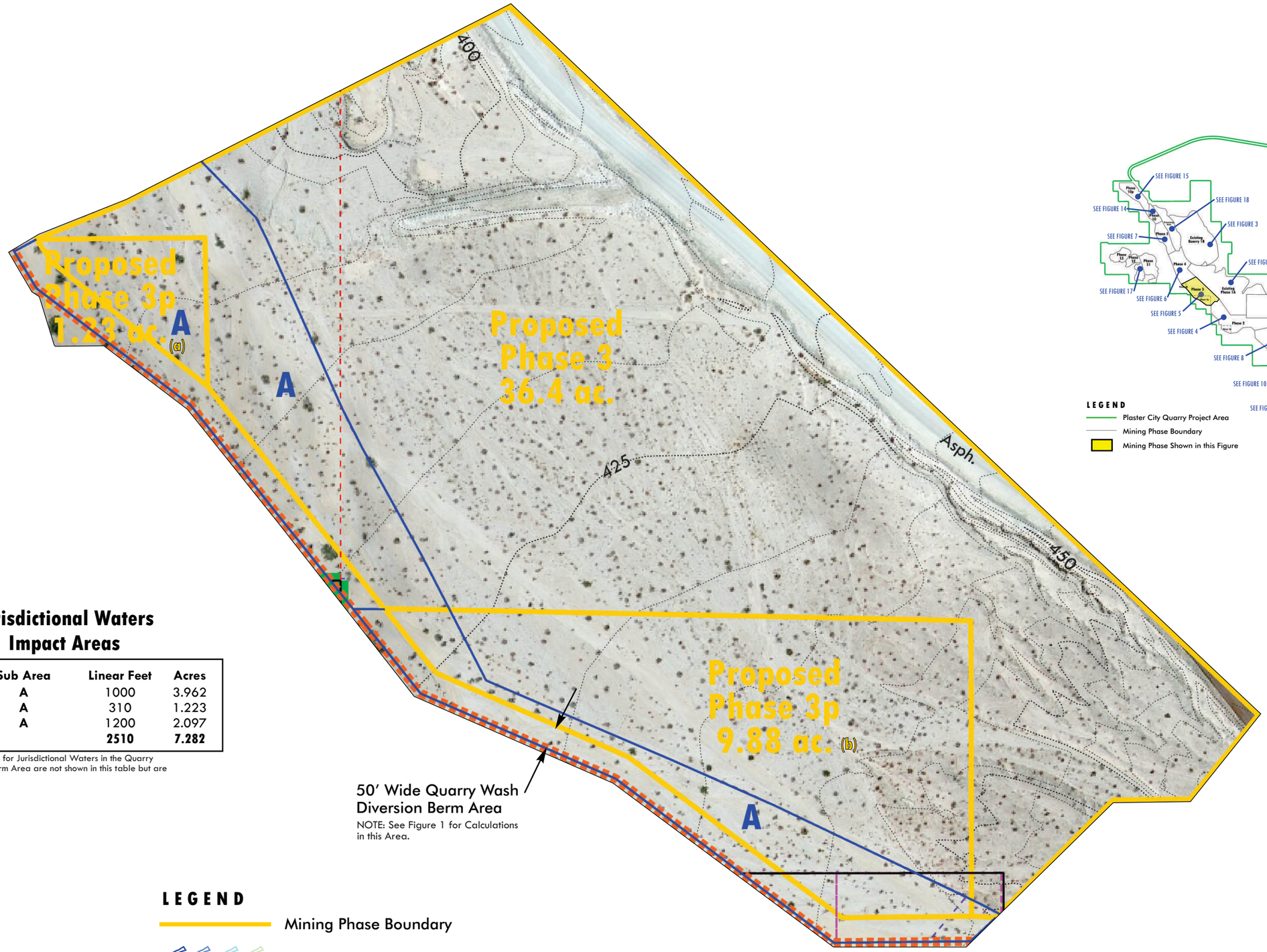
N
0 300
FEET

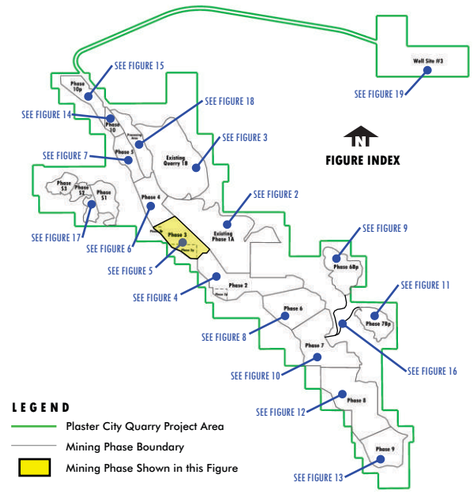
Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 2

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 4





Jurisdictional Waters Impact Areas

Phase	Sub Area	Linear Feet	Acres
3	A	1000	3.962
3p (a)	A	310	1.223
3p (b)	A	1200	2.097
TOTALS		**2510**	**7.282**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

0 200
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASES 3 and 3p

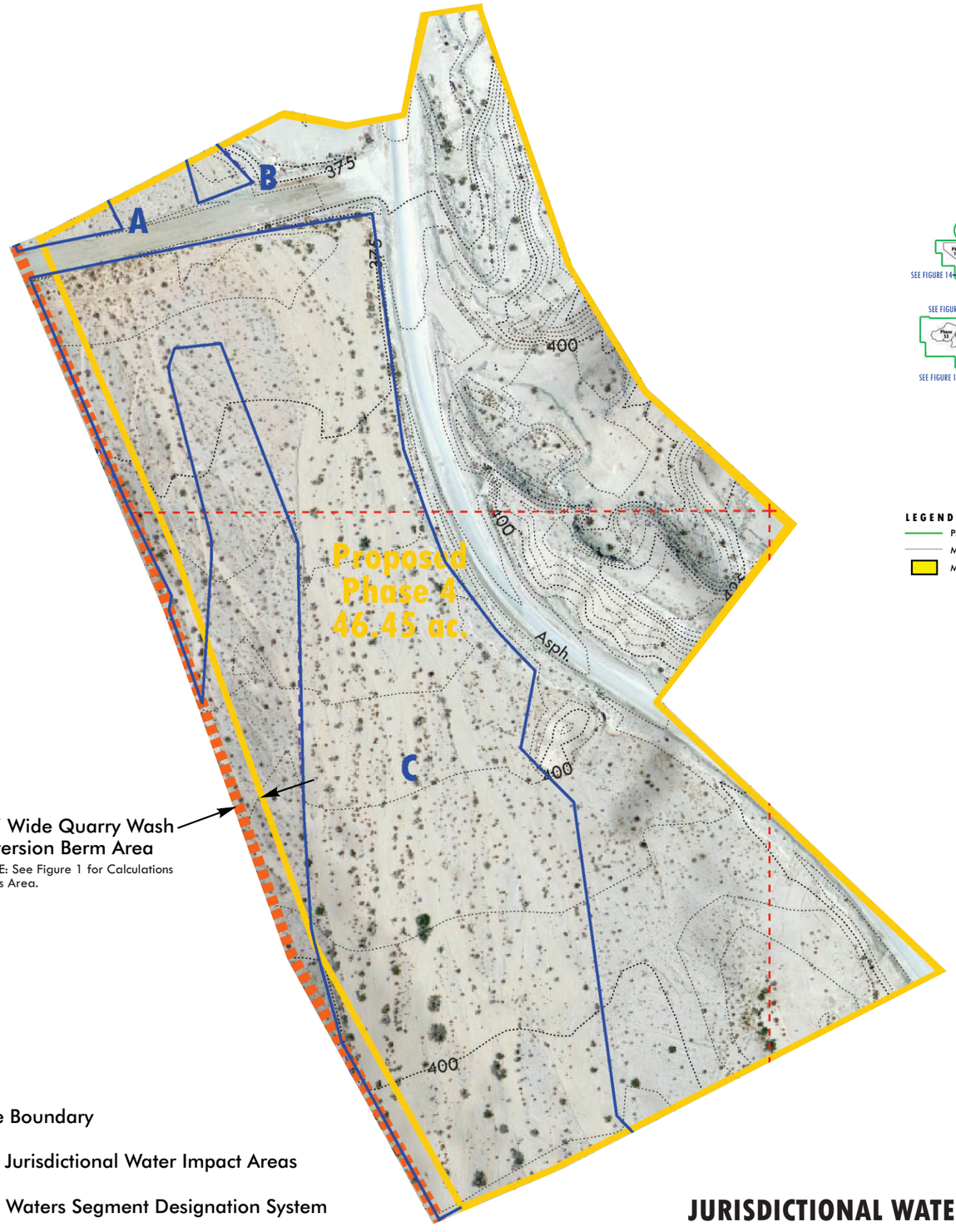
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

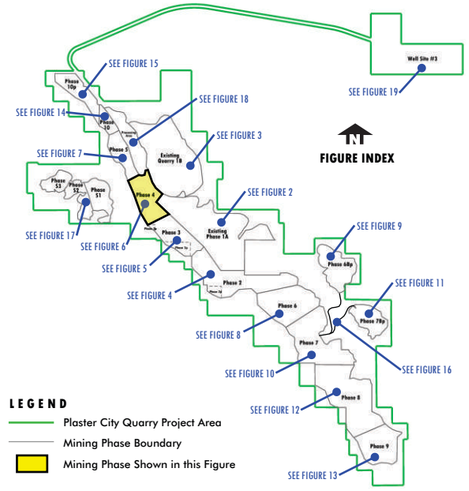
Figure 5

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	30	0.121
B	85	0.182
C	2600	19.803
TOTALS	**2715**	**20.106**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.





LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

0 250
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 4

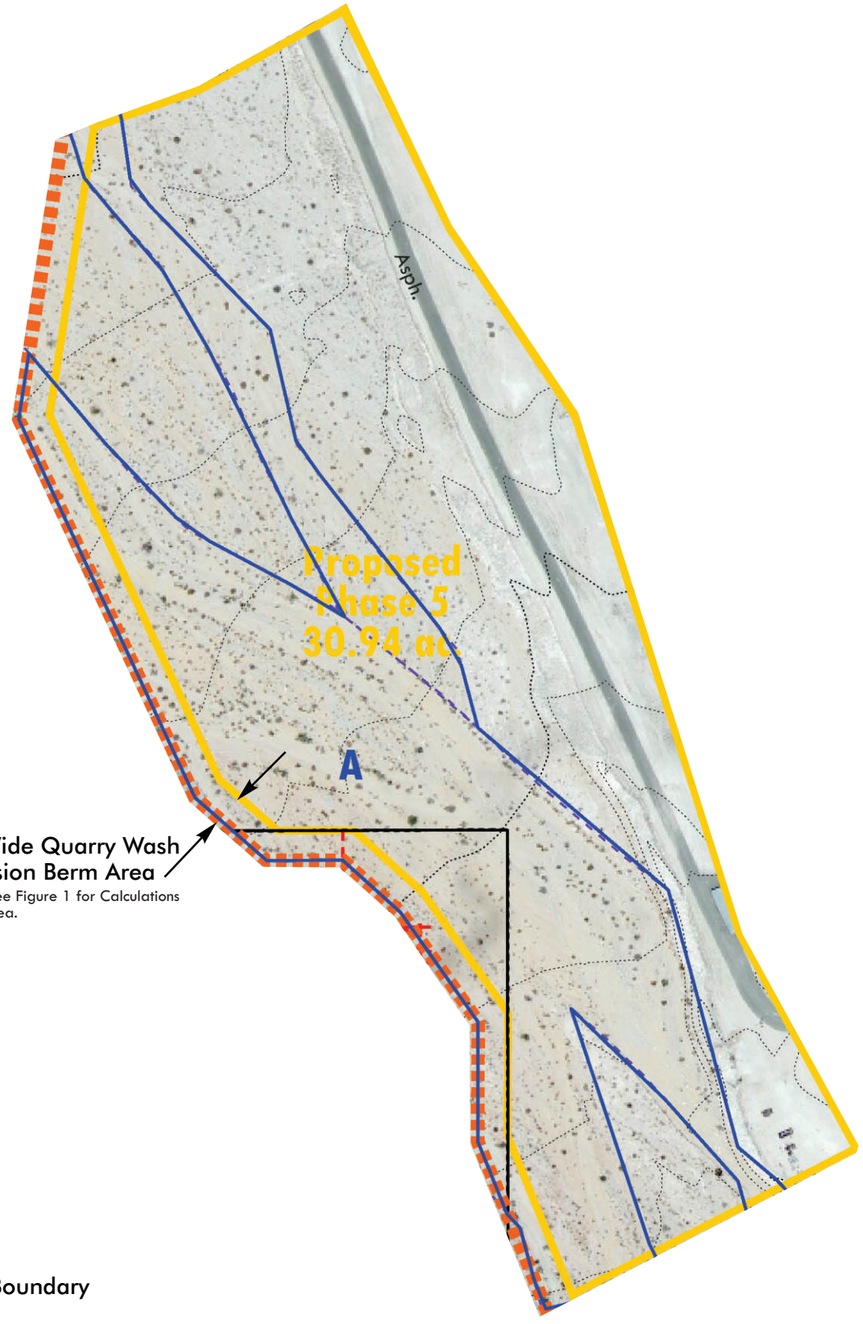
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

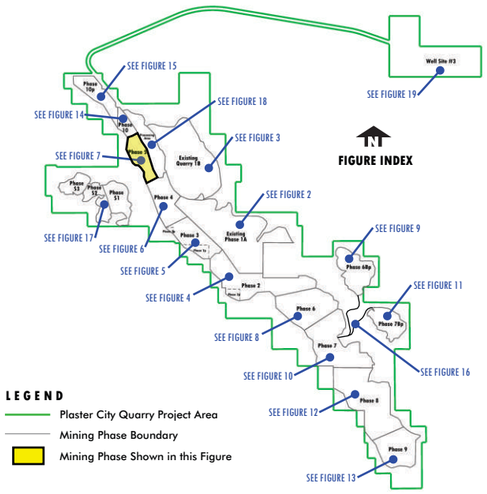
Figure 6

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	3000	12.276

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.





LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

0 250
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 5

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 7

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	2450	0.968
A1	1165	0.117
A1a	475	0.041
A1a1	161	0.013
A1b	111	0.009
A1c	50	0.003
A2	390	0.035
A3	150	0.012
A4	440	0.042
A4a	265	0.021
B	2200	4.205
B1	130	0.064
B2	700	0.27
B3	530	0.189
B4	750	0.34
B5	825	0.05
B5a	63	0.006
B6	2044	0.242
B6a	575	0.043
B6a1	38	0.002
B6a2	165	0.010
B6b	60	0.005
B6c	65	0.004
B6d	72	0.003
B6e	35	0.003
B6f	50	0.001
B6g	95	0.007
B6h	60	0.004
B6i	50	0.004
B6j	20	0.001
B6k	222	0.018
B6l	130	0.009
B6m	233	0.015
B6m1	50	0.002
B6m2	45	0.002
B6n	44	0.003
B7	552	0.175
B7a	222	0.039
B7b	1222	0.094
B7b1	203	0.018
B7b2	57	0.004
B7bs	750	0.060
B7c	52	0.004
B7d	1500	0.232
B7d1	121	0.014
B7d2	25	0.001
B7b3	100	0.013
B7b4	105	0.012
B7e	684	0.091
B8	237	0.064
TOTALS	**20737**	**7.584**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

Proposed Phase 6 70.86 ac.

50' Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.

FIGURE INDEX

SEE FIGURE 1 … SEE FIGURE 19

LEGEND

Plaster City Quarry Project Area

Mining Phase Boundary

Mining Phase Shown in this Figure

LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

0 200 FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

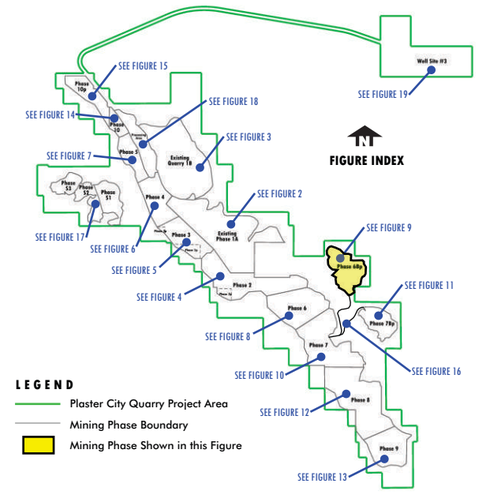
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 6

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 8

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	250	0.050
A1	100	0.017
A2	65	0.011
B	850	0.156
B1	280	0.033
B1a	110	0.008
B2	320	0.047
B2a	160	0.019
B3	60	0.002
B4	60	0.007
C	220	0.041
D	25	0.001
E	125	0.016
F	50	0.003
G	650	0.116
G1	250	0.027
G2	280	0.059
G2a	65	0.009
H	850	0.091
H1	190	0.015
I	150	0.012
J	70	0.009
K	900	0.170
K1	88	0.017
TOTALS	**6168**	**0.935**



LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

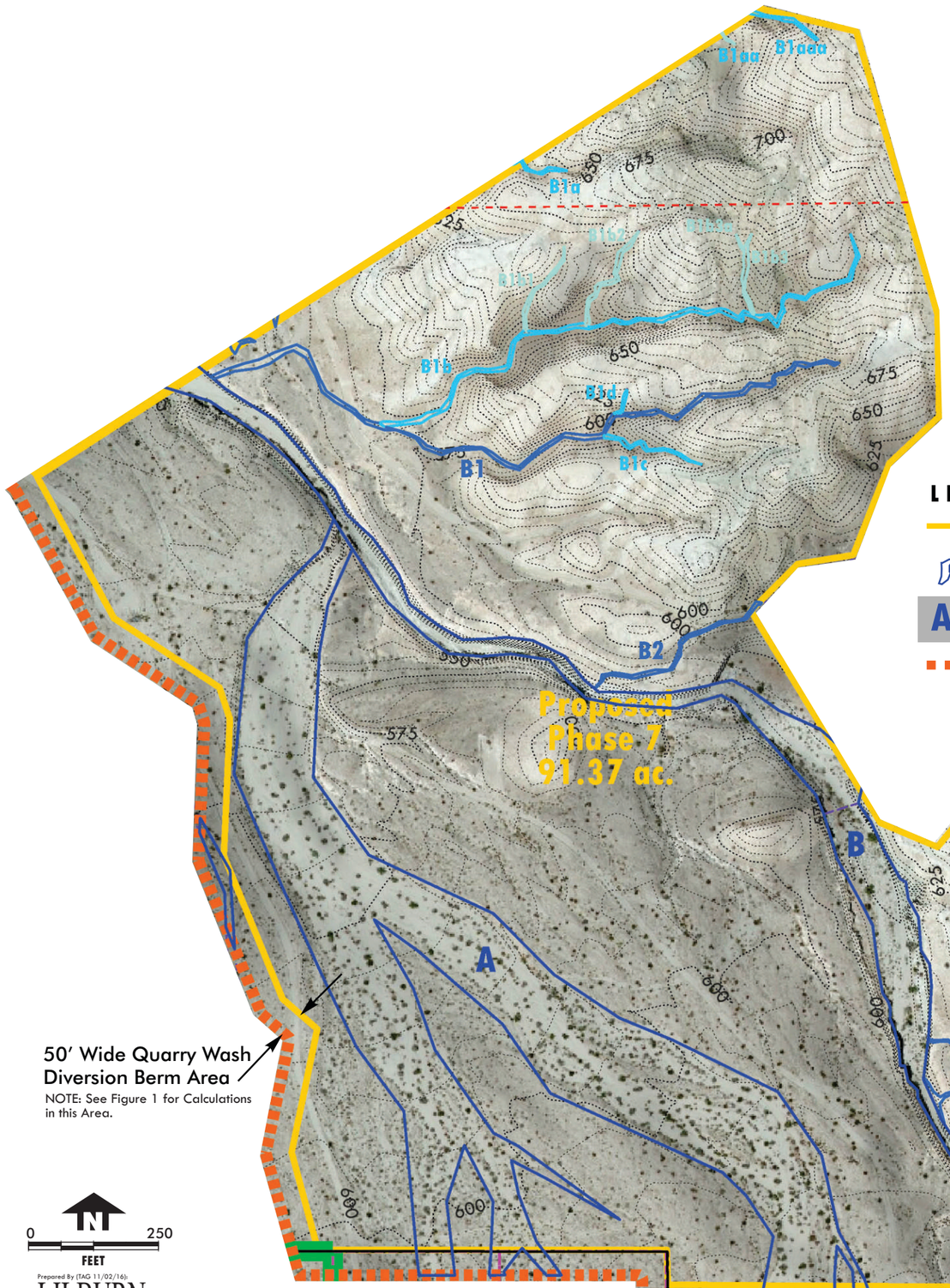
0 250
FEET

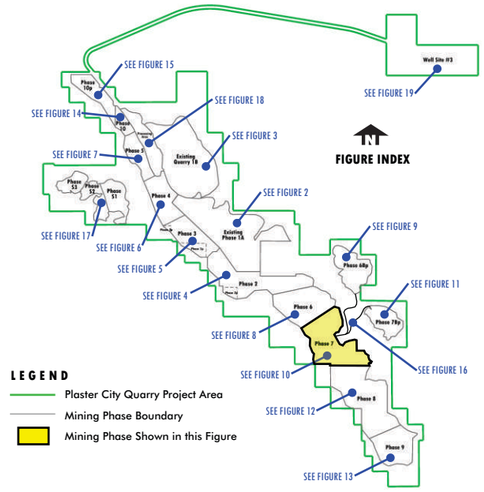
Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 6Bp

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 9





LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50' Wide Quarry Wash Diversion Berm
  NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	3200	9.670
B	3000	2.941
B1	1500	0.229
B1a	100	0.009
B1aa	35	0.001
B1aaa	150	0.017
B1b	1230	0.168
B1c	230	0.023
B1d	65	0.006
B1b1	200	0.020
Bib2	250	0.033
B1b3	175	0.023
B1b3a	35	0.001
B2	410	0.043
B3	1050	0.114
B3a	550	0.062
B3a2	40	0.002
B3a1	75	0.005
B3a1a	30	0.001
B3a3	110	0.009
B3b	120	0.007
B3c	31	0.002
B3d	70	0.004
B3e	10	0.001
B4	1250	0.119
B4a	50	0.002
B4b	75	0.004
B5	1000	0.071
B6	85	0.015
B6a	550	0.035
B6a2	50	0.002
B6a1	40	0.003
TOTALS	**15766**	**13.642**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

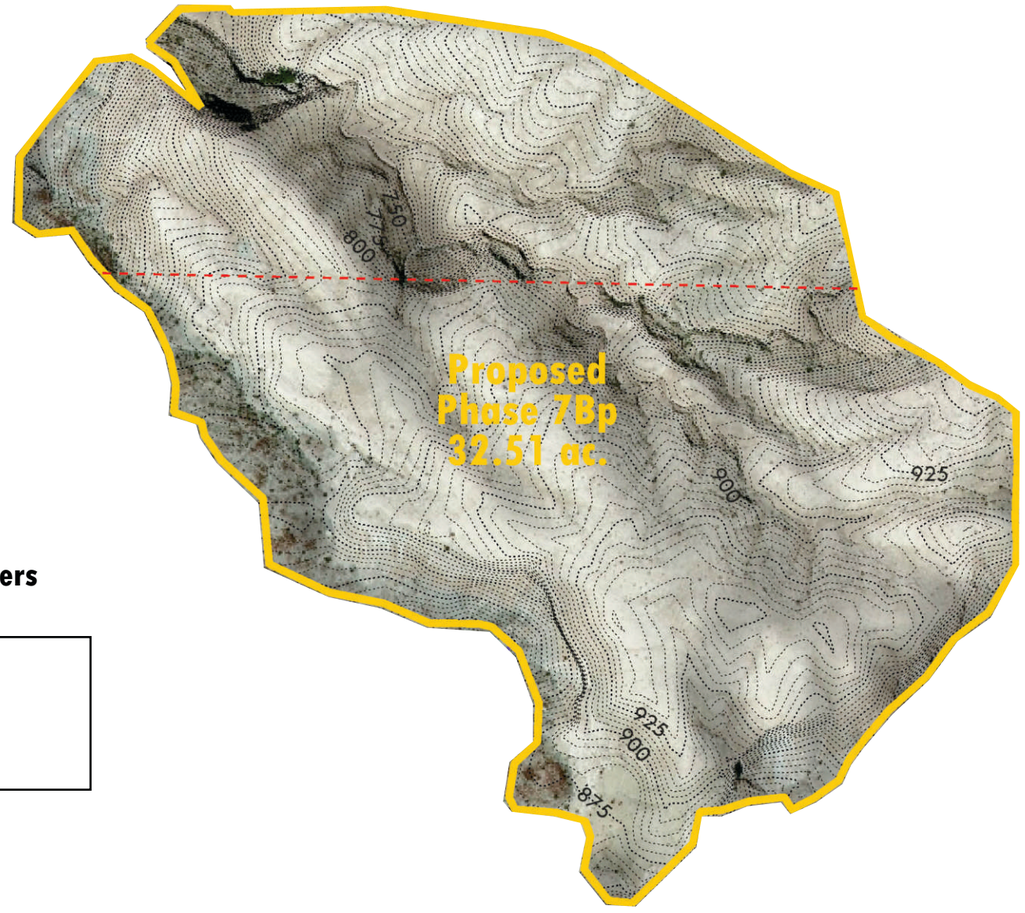
0 250
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 7

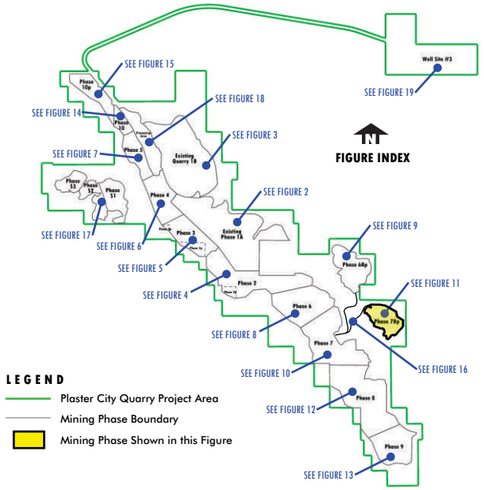
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 10



Jurisdictional Waters Impact Areas

No Impacts



LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

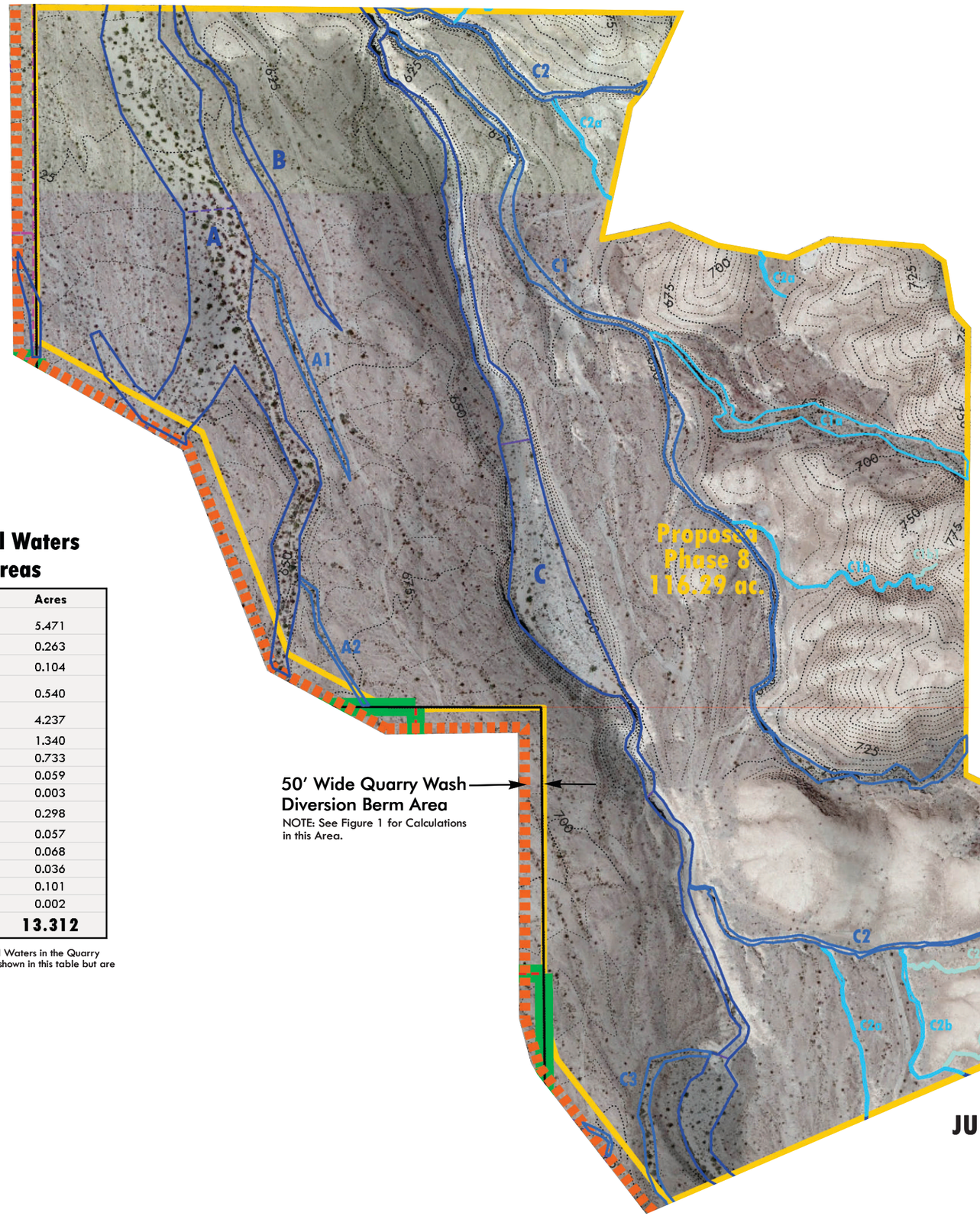
0 250
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 7Bp

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

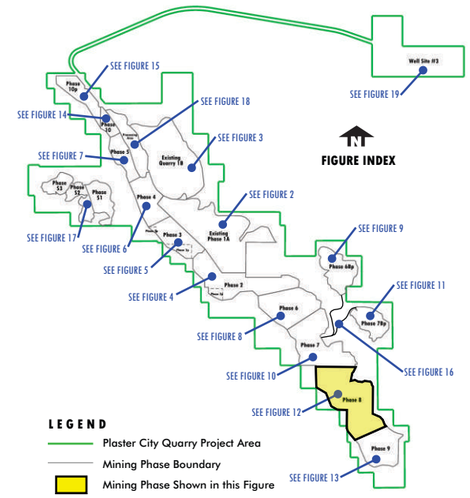
Figure 11



Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	2300	5.471
A1	600	0.263
A2	350	0.104
B	1000	0.540
C	3500	4.237
C1	3000	1.340
C1a	1000	0.733
C1b	750	0.059
C1b1	80	0.003
C2	1300	0.298
C2a	500	0.057
C2b	500	0.068
C2b1	450	0.036
C2b2	900	0.101
C2b1a	50	0.002
TOTALS	**16280**	**13.312**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50' Wide Quarry Wash Diversion Berm
  NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

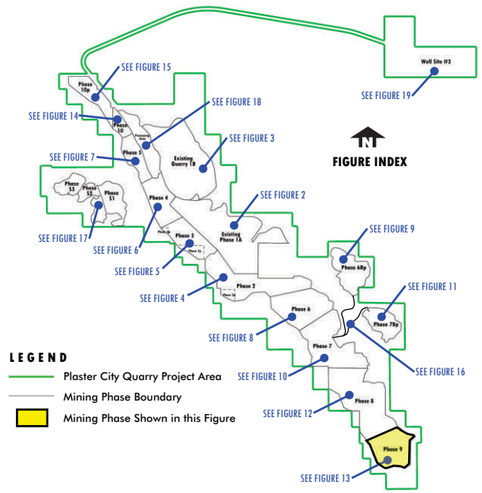
0 300
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 8

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

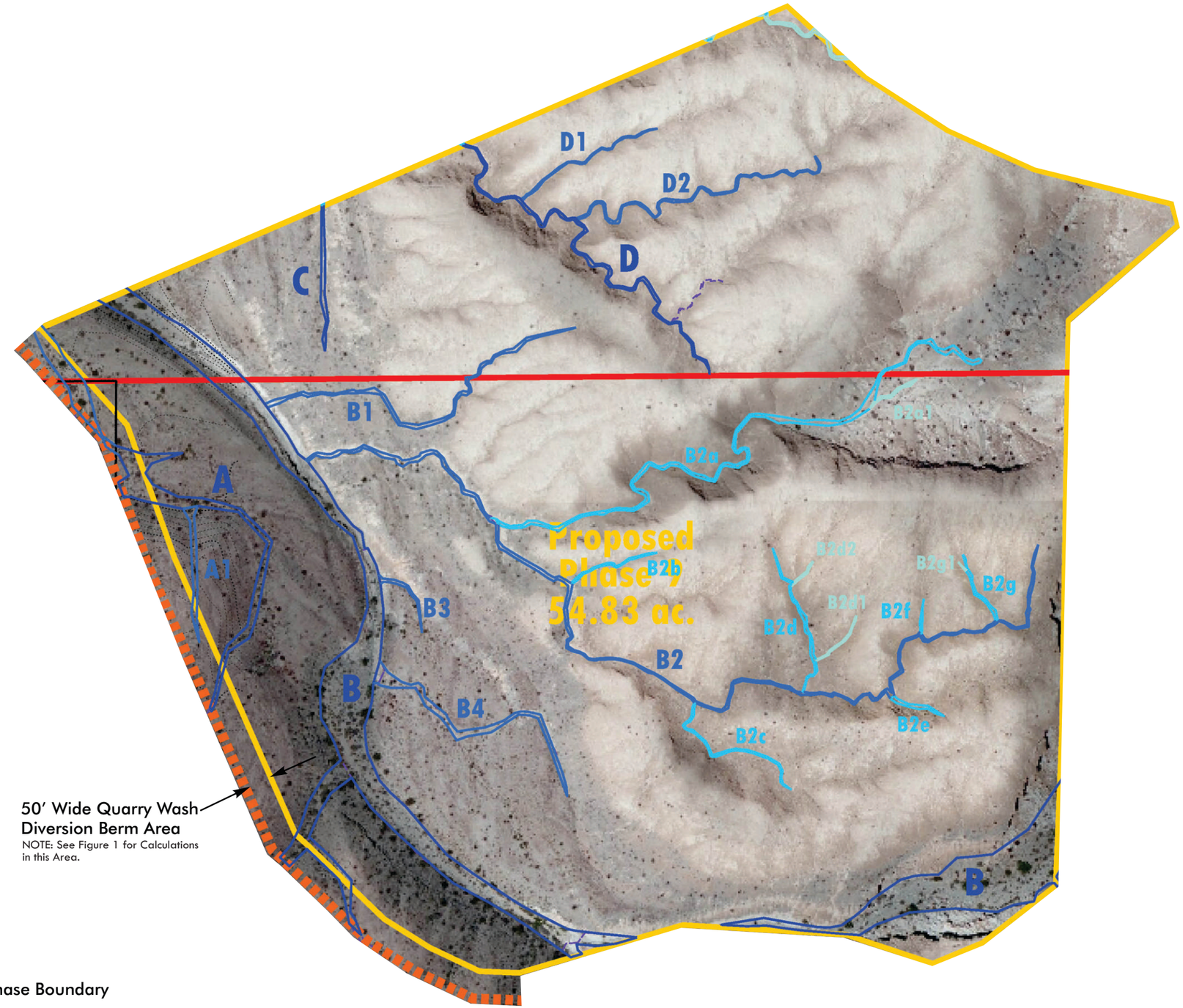
Figure 12



Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	600	0.176
A1	200	0.040
B	2000	1.657
B1	700	0.077
B2	2000	0.190
B2a	1200	0.156
B2a1	100	0.007
B2b	150	0.010
B2c	300	0.021
B2d	300	0.022
B2d1	125	0.005
B2d2	60	0.003
B2e	100	0.013
B2f	70	0.003
B2g	140	0.012
B2g1	25	0.001
B3	150	0.012
B4	500	0.114
TOTALS	**8220**	**2.519**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

N
0 200
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 9

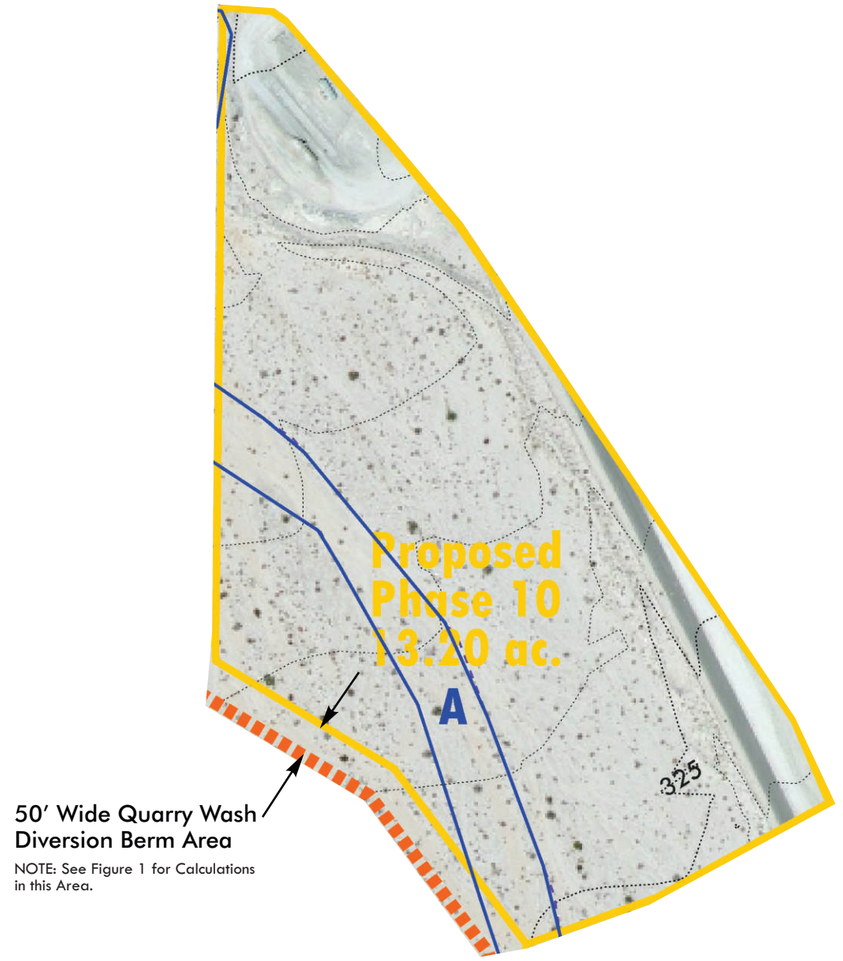
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

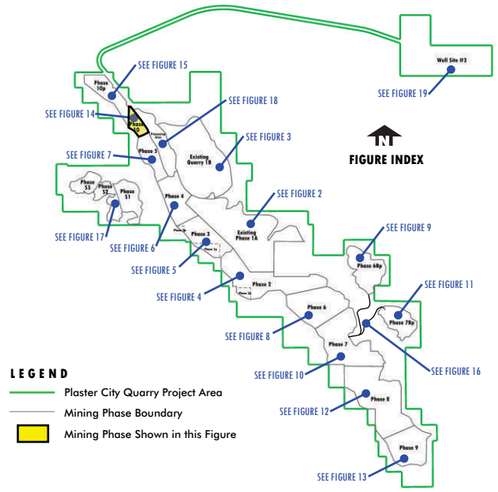
Figure 13

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	900	1.572

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.





LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

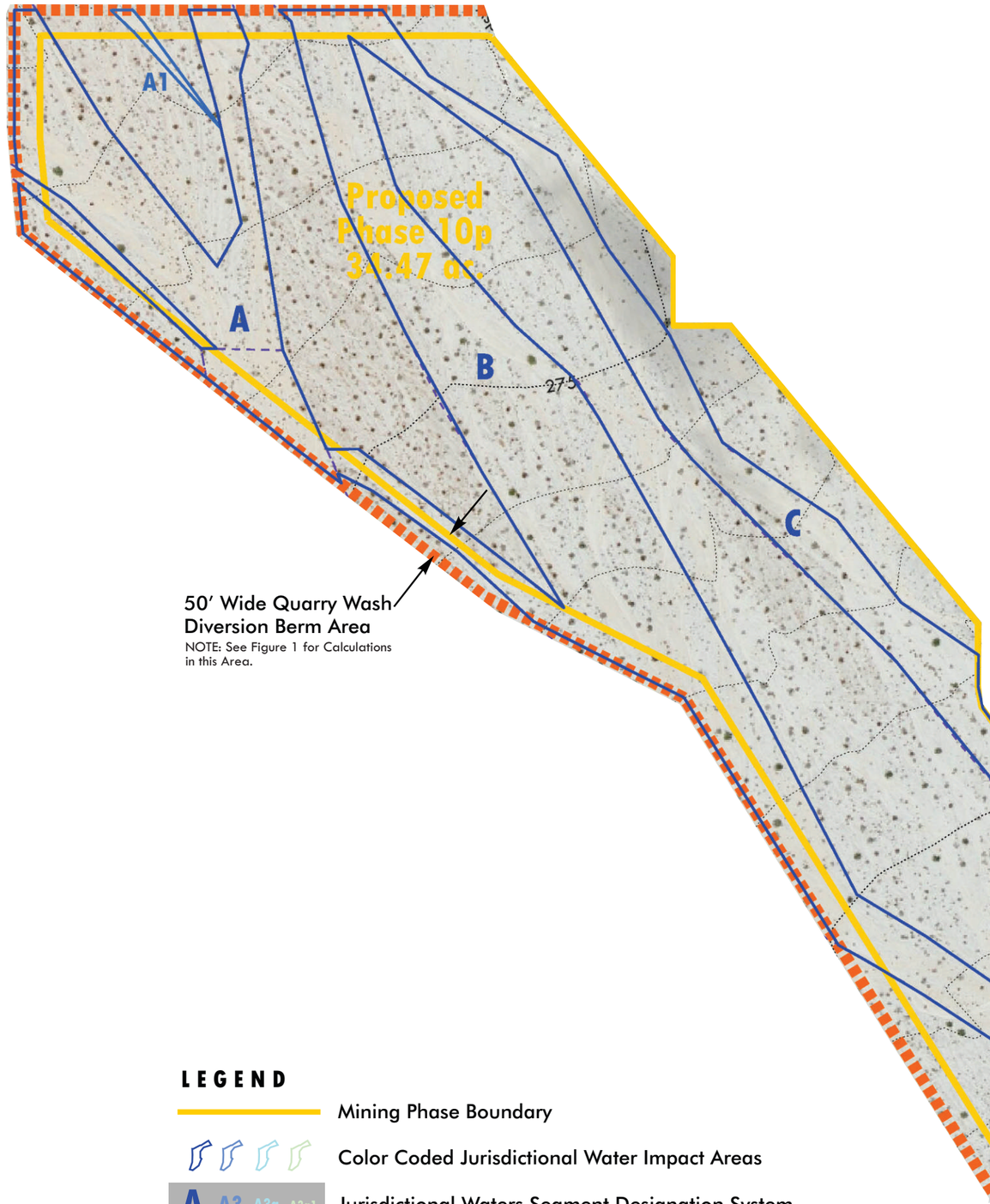
N
0 200
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 10

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 14



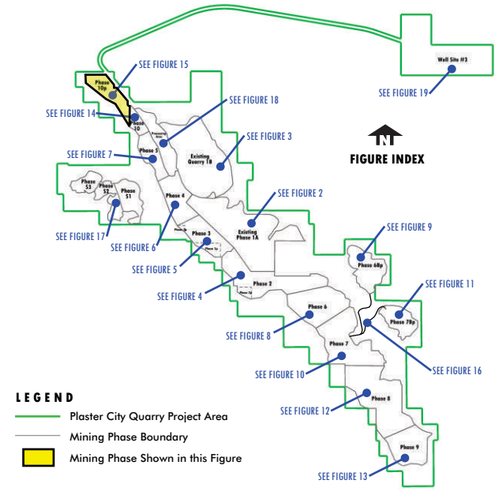
50′ Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.

LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.



Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	1400	3.007
B	2450	7.194
C	2000	3.638
TOTALS	**5850**	**13.839**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

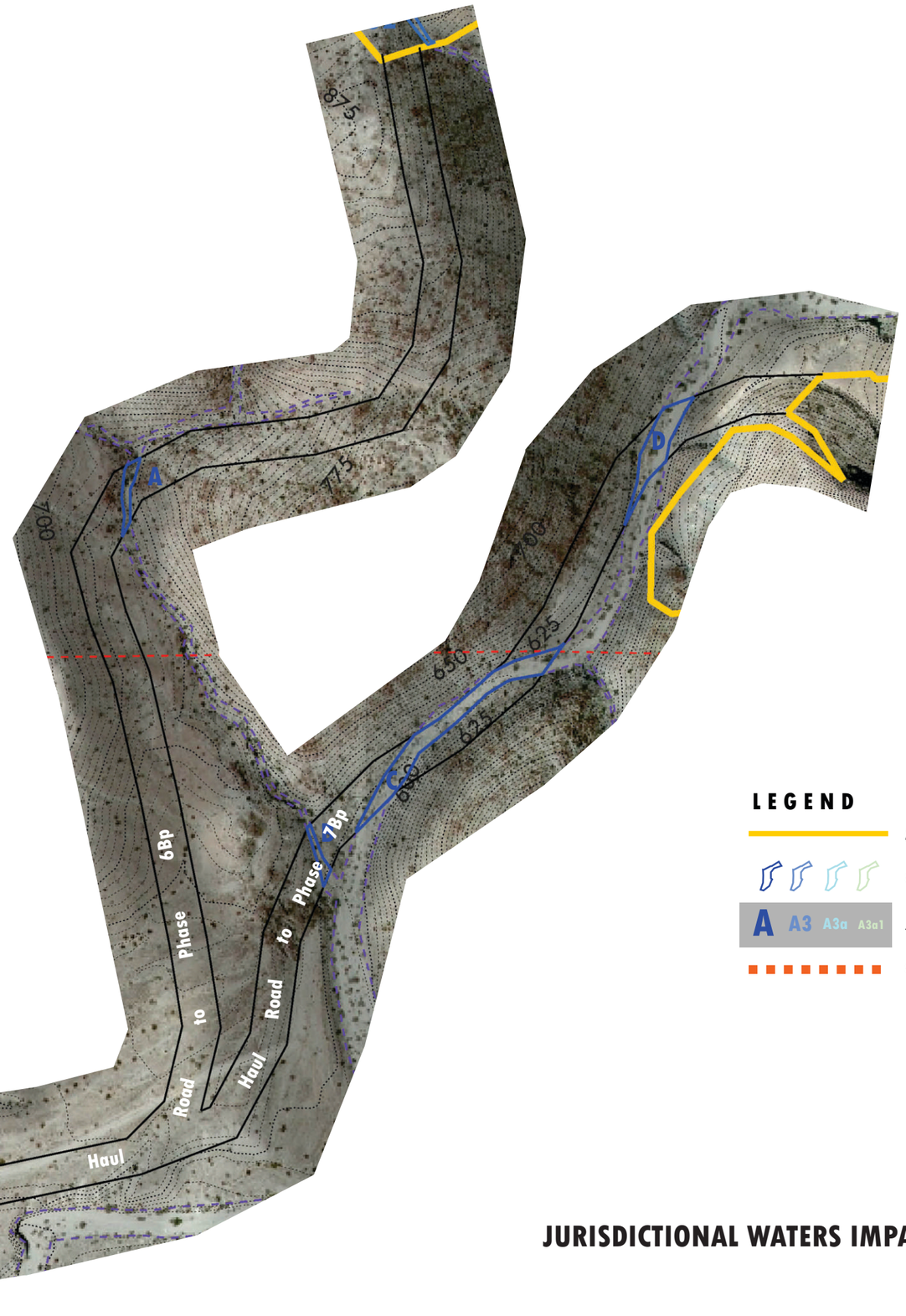
0 250
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 10p

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

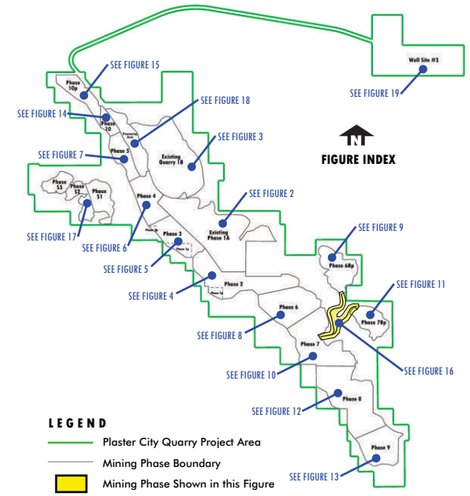
Figure 15



Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	100	0.033
B	85	0.022
C	450	0.227
D	200	0.115
TOTALS	**835**	**0.398**

NOTE: Haul Road Impacts may increase after final design of cut and fill slopes.



LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

N

0 200

FEET

Prepared By (TAG 11/02/16):

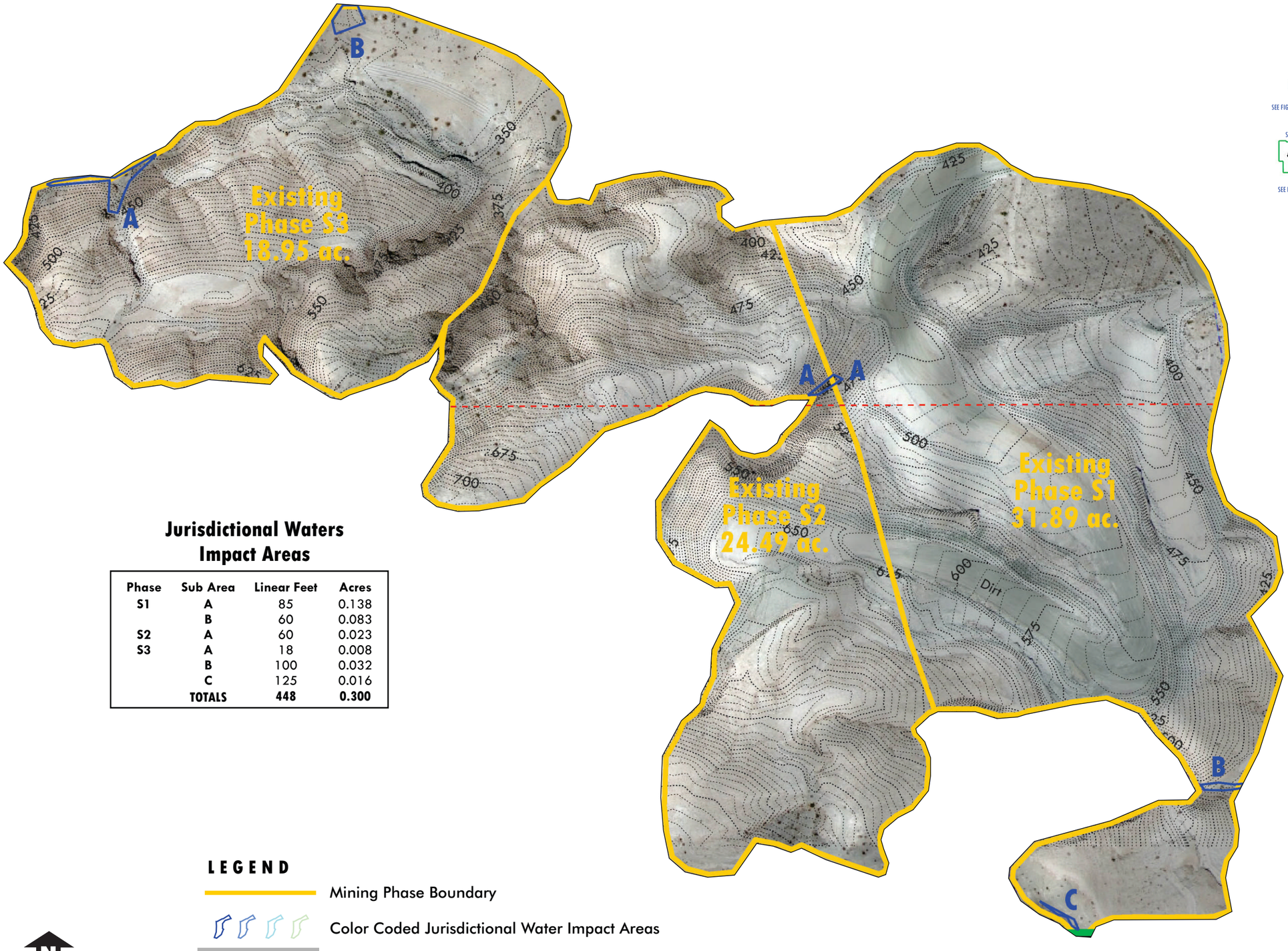
LILBURN CORPORATION

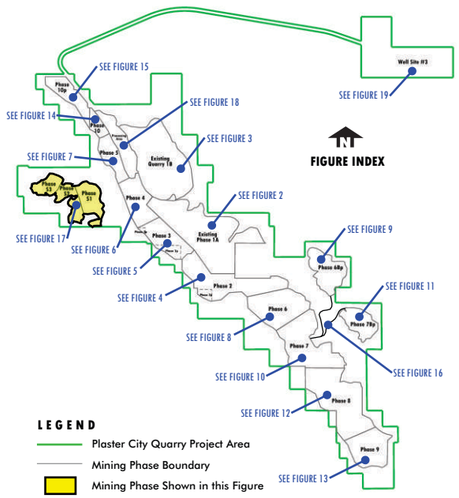
JURISDICTIONAL WATERS IMPACT CALCULATIONS - HAUL ROADS NORTH and SOUTH

SEIS - United States Gypsum Company - Plaster City Quarry

County of Imperial, California

Figure 16





Jurisdictional Waters Impact Areas

Phase	Sub Area	Linear Feet	Acres
S1	A	85	0.138
	B	60	0.083
S2	A	60	0.023
S3	A	18	0.008
	B	100	0.032
	C	125	0.016
	TOTALS	**448**	**0.300**

LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50' Wide Quarry Wash Diversion Berm

0 250
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

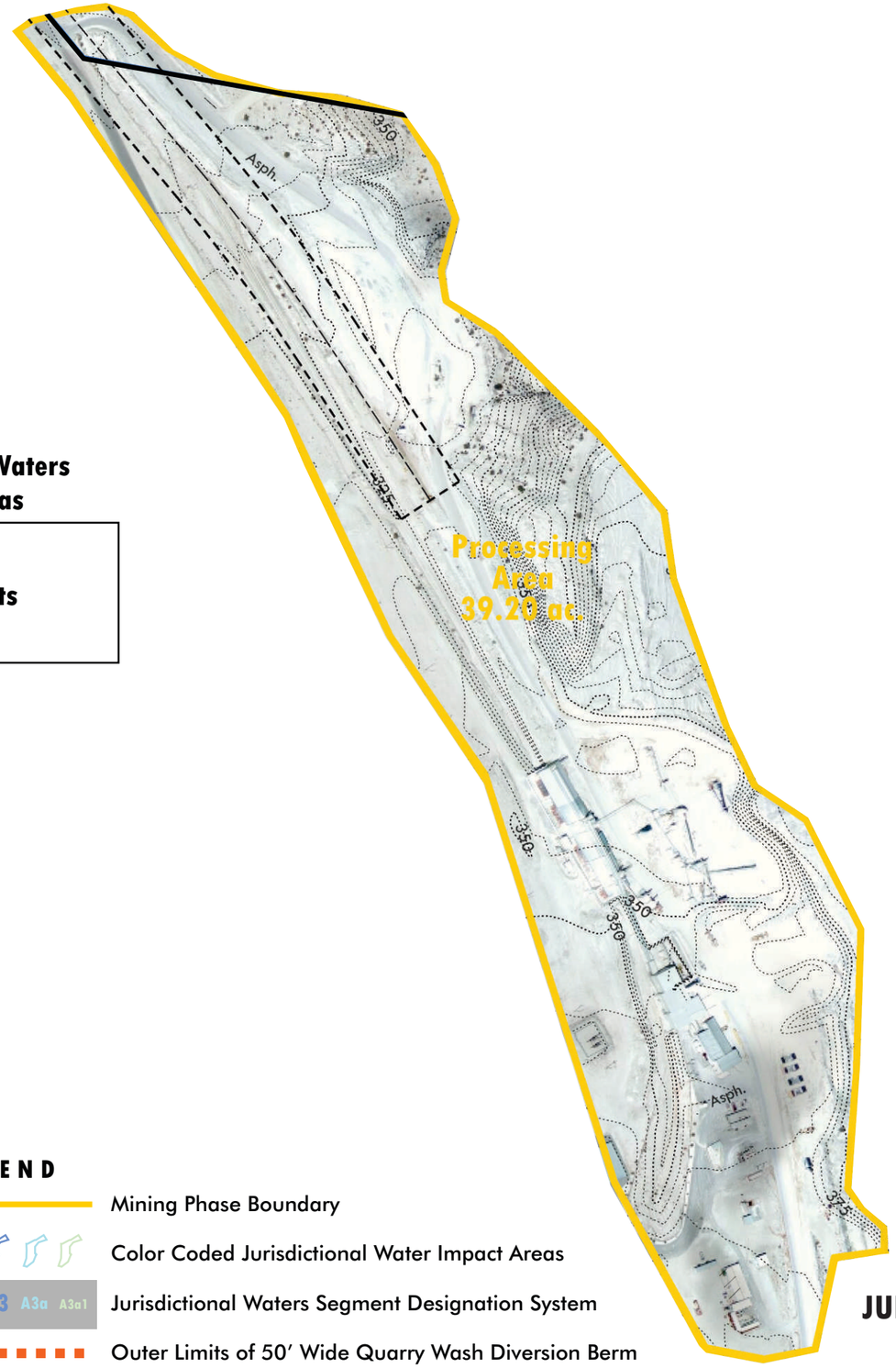
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASES S1, S2 and S3

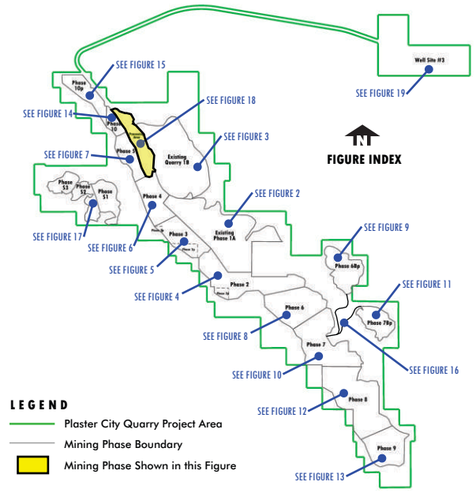
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 17

Jurisdictional Waters Impact Areas

No Impacts





LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A3 A3a A3a1 — Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

N

0 300

FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

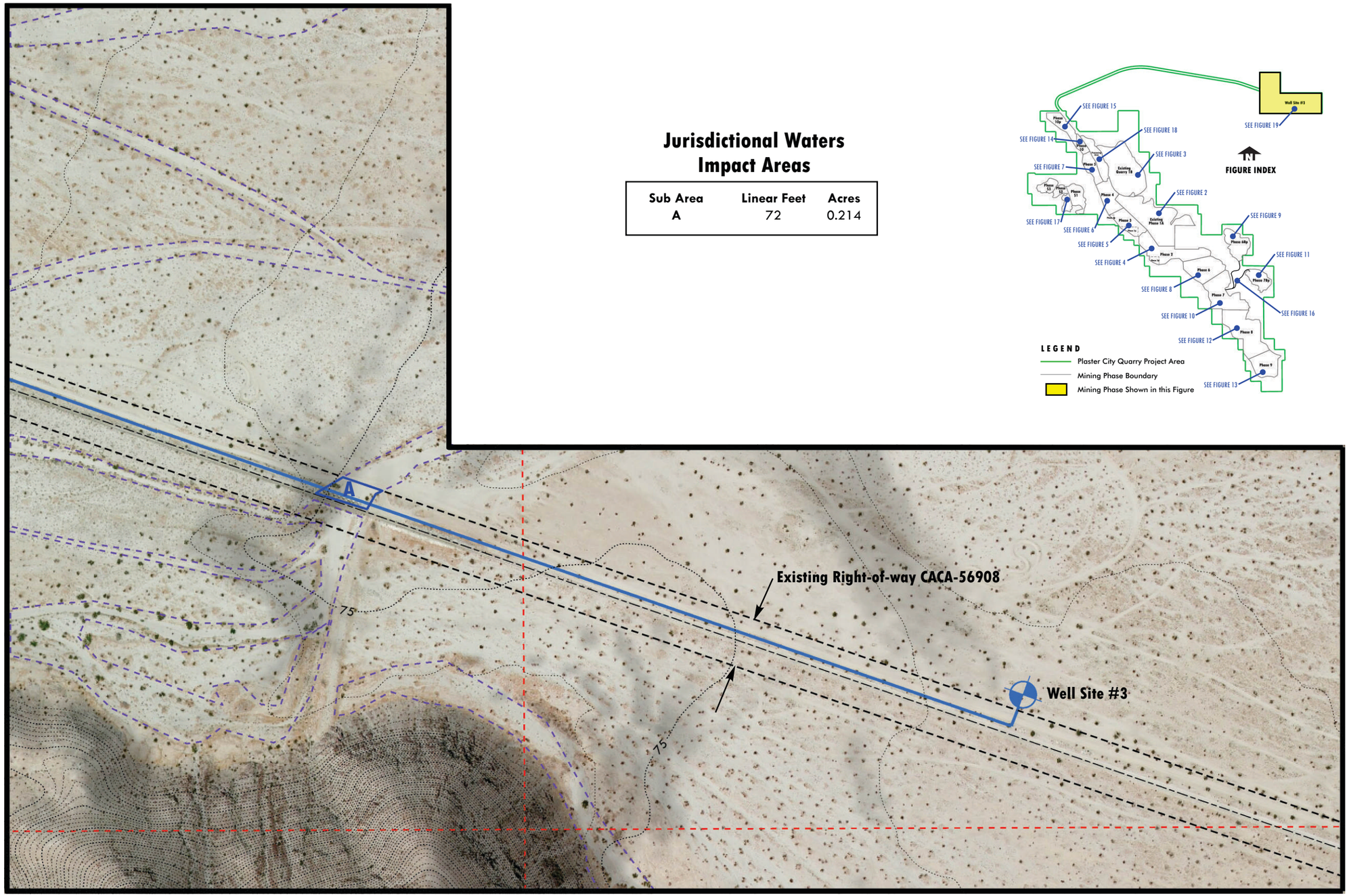
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PROCESSING AREA

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 18

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	72	0.214



LEGEND

- USG Patented Land
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 Jurisdictional Waters Segment Designation System
- Proposed Waterline/Powerline

0 300
FEET

Prepared By (TAG 11/02/16):
LILBURN CORPORATION

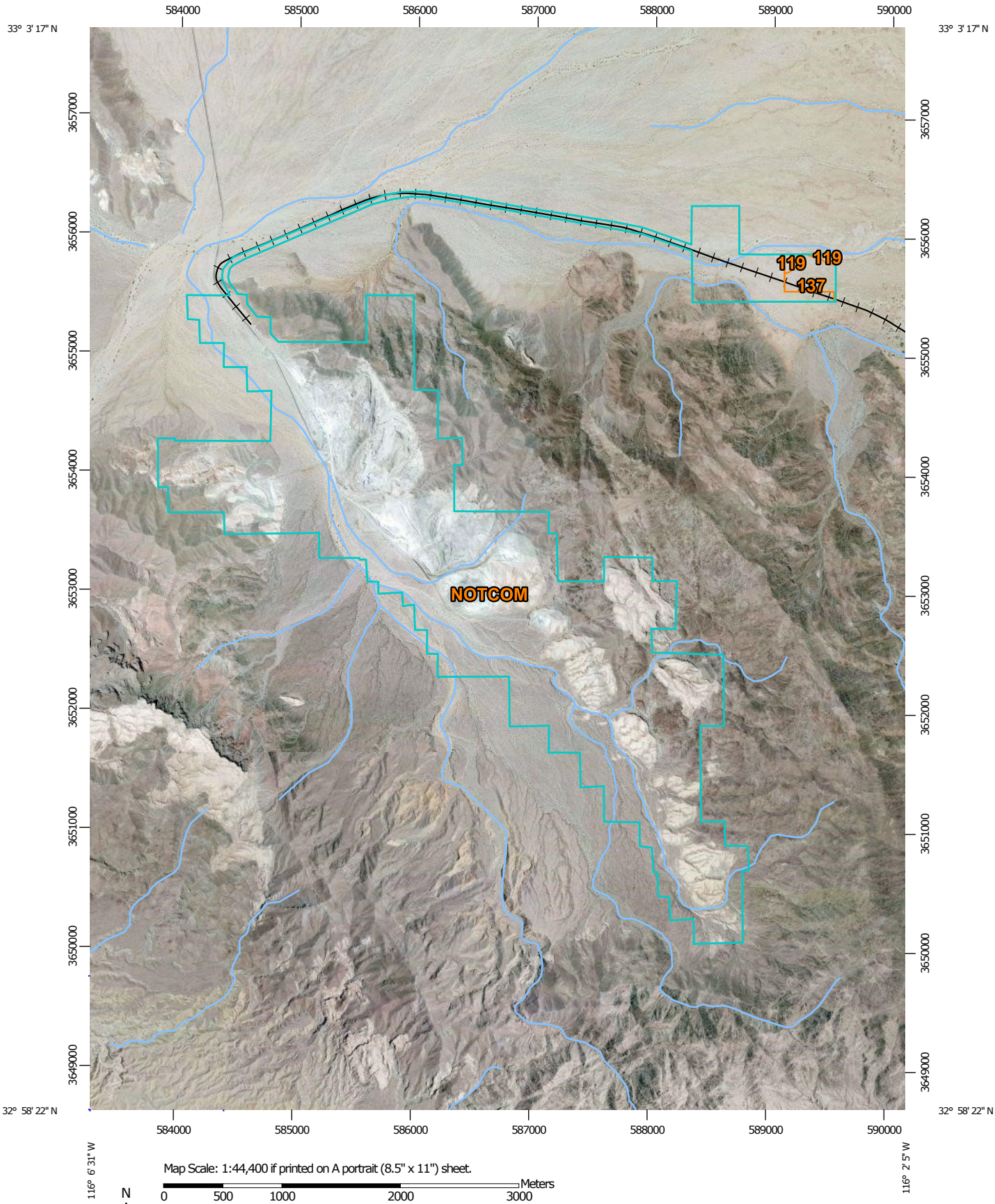
JURISDICTIONAL WATERS IMPACT CALCULATIONS - WELL SITE #3

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 19

APPENDIX B

Soil Map—Anza-Borrego Area, California; and Imperial County, California, Imperial Valley Area
(JD Project Area Mine)



Map Scale: 1:44,400 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 500 1000 2000 3000

Feet
0 2000 4000 8000 12000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Anza-Borrego Area, California
Survey Area Data: Version 1, Dec 13, 2013

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 2, 2010—Jun 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Anza-Borrego Area, California (CA804)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
NOTCOM	No Digital Data Available	2,271.7	98.5%
Subtotals for Soil Survey Area		**2,271.7**	**98.5%**
Totals for Area of Interest		**2,305.7**	**100.0%**

Imperial County, California, Imperial Valley Area (CA683)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
119	Indio-Vint complex	6.5	0.3%
137	Rositas silt loam, 0 to 2 percent slopes	27.5	1.2%
Subtotals for Soil Survey Area		**34.0**	**1.5%**
Totals for Area of Interest		**2,305.7**	**100.0%**

APPENDIX D-3:
BIOLOGICAL OPINION

THIS PAGE
INTENTIONALLY
LEFT BLANK

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

In Reply Refer to:
FWS-ERIV-11B0345-19F1352

November 22, 2019
Sent by Email

Memorandum

To: Field Manager, Bureau of Land Management, El Centro Field Office
El Centro, California
Attention: Mark Massar

From: Field Supervisor, Carlsbad Fish and Wildlife Office
Carlsbad, California

SCOTT SOBIECH Digitally signed by SCOTT SOBIECH
Date: 2019.11.22 10:29:42 -08'00'

Subject: Section 7 Biological Opinion for the United States Gypsum Company Expansion/Modernization Project, Imperial County, California

This memorandum transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the proposed issuance of a right-of-way (ROW) grant by the Bureau of Land Management (BLM) and proposed issuance of an individual permit under section 404 of the Clean Water Act by the U.S. Army Corps of Engineers (Corps) that would authorize construction, operation, and reclamation activities associated with the expansion and modernization of an existing gypsum mine operated by U.S. Gypsum Company (USG, or Applicant) in Imperial County, California. In accordance with the National Environmental Policy Act, the BLM is the lead Federal agency and the Corps is identified as a cooperating agency. This biological opinion analyzes the effects of the gypsum mine expansion on the federally endangered distinct population segment of Nelson bighorn sheep (Peninsular Range DPS; Peninsular bighorn sheep) *[Ovis canadensis nelson]* and its designated critical habitat in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq*.).

Updates to the regulations governing interagency consultation (50 CFR 402) were effective on October 28, 2019 (84 FR 44976). This consultation was pending at that time, and we are applying the updated regulations to the consultation. As the preamble to the final rule adopting the regulations noted, "[t]his final rule does not lower or raise the bar on section 7 consultations, and it does not alter what is required or analyzed during a consultation. Instead, it improves clarity and consistency, streamlines consultations, and codifies existing practice." We have reviewed the information and analyses relied upon to complete this biological opinion in light of the updated regulations and conclude the biological opinion is fully consistent with the updated regulations.

This biological opinion is based on information provided in the following documents and communications: (1) Biological Assessment: United States Gypsum Company Expansion/Modernization Project (BLM 2019a); (2) Imperial County, California, United States

Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement (Resource Design Technology, Inc. 2008, hereinafter 2008 Final EIR/EIS); (3) United States Gypsum Company Expansion/Modernization Project Imperial County, California, Draft Supplemental Environmental Impact Statement (BLM 2019b, hereinafter 2019 Draft Supplemental EIS), (4) 2018 Revised Plan of Operation (USG 2018); (5) written, telephone, and electronic mail correspondence received during the consultation time period; and (6) pertinent literature contained in our files. The project file for this consultation is located at the Carlsbad Fish and Wildlife Office.

CONSULTATION HISTORY

In 2008, the BLM initiated section 7 consultation with the Service to determine if the Gypsum Mine Expansion and Modernization Project (Project) as described in the 2008 Final EIR/EIS would adversely affect the Peninsular bighorn sheep or adversely modify its designated critical habitat. The BLM and the Service did not complete the section 7 consultation and the BLM did not issue a Record of Decision. In 2014, USG requested the BLM issue a Record of Decision for the Project. Coordination between the BLM and the Corps in 2015 led to the determination that a 2019 Supplemental EIS must be prepared to analyze new information and changes to the proposed action that have occurred since the release of the 2008 Final EIR/EIS.

Between February 2015 and August 2019, staff from the Palm Springs Fish and Wildlife Office (PSFWO) worked with the BLM, USG, the Corps, and staff from the California Department of Fish and Wildlife (CDFW) to clarify the project description, Project build-out scenarios, effects to Peninsular bighorn sheep and desert pupfish, and avoidance and minimization measures. The BLM and Corps determined there would be no effect to desert pupfish or its designated critical habitat with implementation of the Project. Their determination is based on information provided in the biological assessment indicating that there is no desert pupfish suitable habitat within Project impact areas and there would be no adverse effects on downstream surface water or groundwater in occupied desert pupfish habitat in San Felipe Creek. Efforts to clarify these issues included participating in site visits and meetings, assessing baseline conditions, and providing comments on the Project's draft biological assessment (BLM 2019a).

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the BLM's issuance of a ROW grant and the Corps issuance of Clean Water Act section 404 individual permit that would authorize construction, operation, and reclamation activities associated with the expansion and modernization of an existing gypsum mine. The ROW grant and individual permit would cover mining and reclamation activities for approximately 80 years, which includes mining and final reclamation (i.e., restoration) activities. The USG mine is located on the lower slopes of the Fish Creek Mountains in western Imperial County, California (Figure 1).

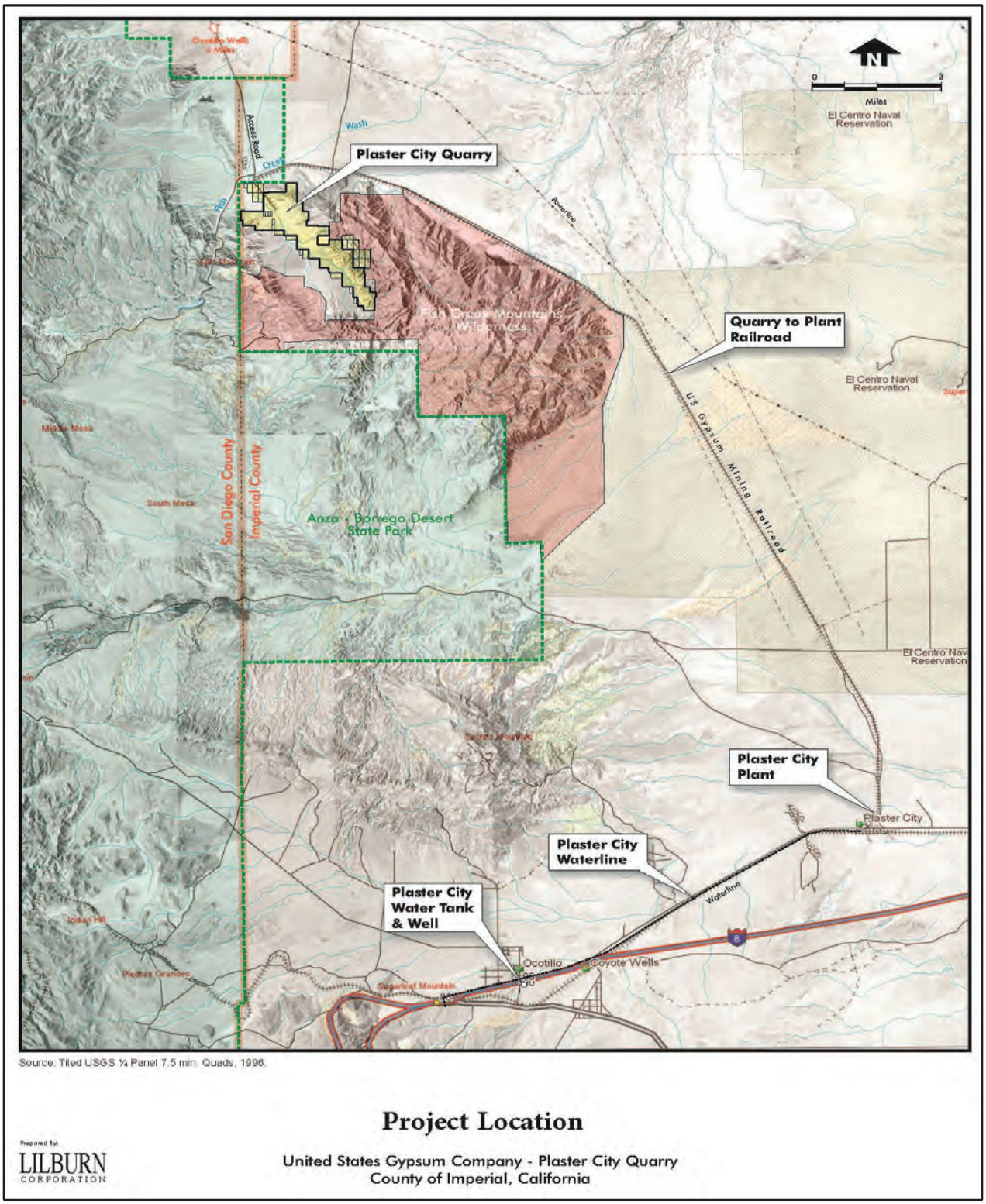


Figure 1: USG Company Expansion/Modernization Project – Project Component Areas

Mining activities have been ongoing since 1922 and USG has owned and continuously operated the quarry since 1945. Since 1922, the amount of gypsum production has varied based on demand, so mining and processing activities are reduced during times of low gypsum demand, e.g., during economic recessions. Currently, mining operations cover approximately 431 acres (Table 1). The Phases and associated acreage impacts are only for the Plaster City Quarry Expansion Project component.

Table 1. USG Company Plaster City Quarry Expansion Existing and Future Phase Acres

Phase Name	Habitat Condition	Phase Area (Acres)	Designated Critical Habitat (Acres)	Designated Critical Habitat Existing Disturbance (Acres)
Existing Phase 1A	Existing mining	163.3	0	0
Existing Phase 1B	Existing mining	150.1	0	0
Existing Phase S1	Existing mining	32	0	0
Existing Phase S2	Existing mining	24.4	0	0
Existing Phase S3	Existing mining	19	0	0
Processing Area	Existing mining	39.1	0	0
Existing Shoveler Haul Road	Existing mining	3	0	0
Total	Existing mining	430.9	0	0
Phase 2	Partially disturbed by existing mining	87.9	66.7	21.2
Phase 3	Partially disturbed by existing mining	36.4	33.5	2.9
Phase 4	Partially disturbed by existing mining	46.5	31.3	15.2
Phase 5	Partially disturbed by existing mining	31	17.3	0
Phase 6	Partially disturbed by existing mining	71.2	70.5	0.7
Total	Partial disturbance	273	219.3	40
Phase 2p	Undisturbed	5.4	5.4	0
Phase 3p	Undisturbed	10.9	10.9	0
Phase 6Bp	Undisturbed	47.2	47.2	0
Phase 6 Haul Road	Undisturbed	3.6	3.6	0

Phase Name	Habitat Condition	Phase Area (Acres)	Designated Critical Habitat (Acres)	Designated Critical Habitat Existing Disturbance (Acres)
Phase 7	Undisturbed	91.5	91.5	0
Phase 7Bp	Undisturbed	32.4	32.4	0
Phase 7 Haul Road	Undisturbed	1.7	1.7	0
Phase 8	Undisturbed	116.4	116.4	0
Phase 8p	Undisturbed	6.8	6.8	0
Phase 9	Undisturbed	54.3	54.3	0
Phase 10	Undisturbed	13.3	0	0
Phase 10p	Undisturbed	34.5	0	0
Mill Site Claims	Undisturbed	18.7	18.7	0
Total	Undisturbed	436.7	388.9	0
Grand Totals		**1,140.6**	**608.2**	**40**

In addition to the Plaster City Quarry, USG operates a manufacturing plant (USG Plaster City Plant) for wallboard and other gypsum products at Plaster City in southwestern Imperial County, located about 26 miles southeast of the quarry (see Figure 1). The proposed replacement pipeline and canal pipeline as described below would serve the Plaster City Plant. USG also operates a narrow-gauge railroad line to deliver gypsum ore from the Plaster City Quarry to the Plaster City Plant. USG does not propose upgrades or improvements to the narrow-gauge railroad line.

The proposed Project consists of five main components: (1) expansion of the Plaster City Quarry (includes all the partially built and unbuilt Phases shown in Table 1); (2) construction of a new water well, Quarry Well No. 3, and pipeline to supply the Plaster City Quarry (see Figure 2); (3) reclamation activities at the Plaster City Quarry (includes all Phases); (replacement of an existing water pipeline from existing wells and storage tank to supply USG's Plaster City Plant (associated with the Plaster City Plant); and (5) construction of a second new water pipeline (canal pipeline) from the Imperial Irrigation District's (IID) Westside Main Canal to the Plaster City Plant to supplement the water supply (associated with the Plaster City Plant). The Project also contains a series of measures to avoid and minimize the effects of the proposed action on biological resources. The Project components are shown on Figure 1 in the biological assessment (BLM 2019a).

The following sections provide a summary of each of the Project components. A full description of each component can be found in the biological assessment (BLM 2019a).

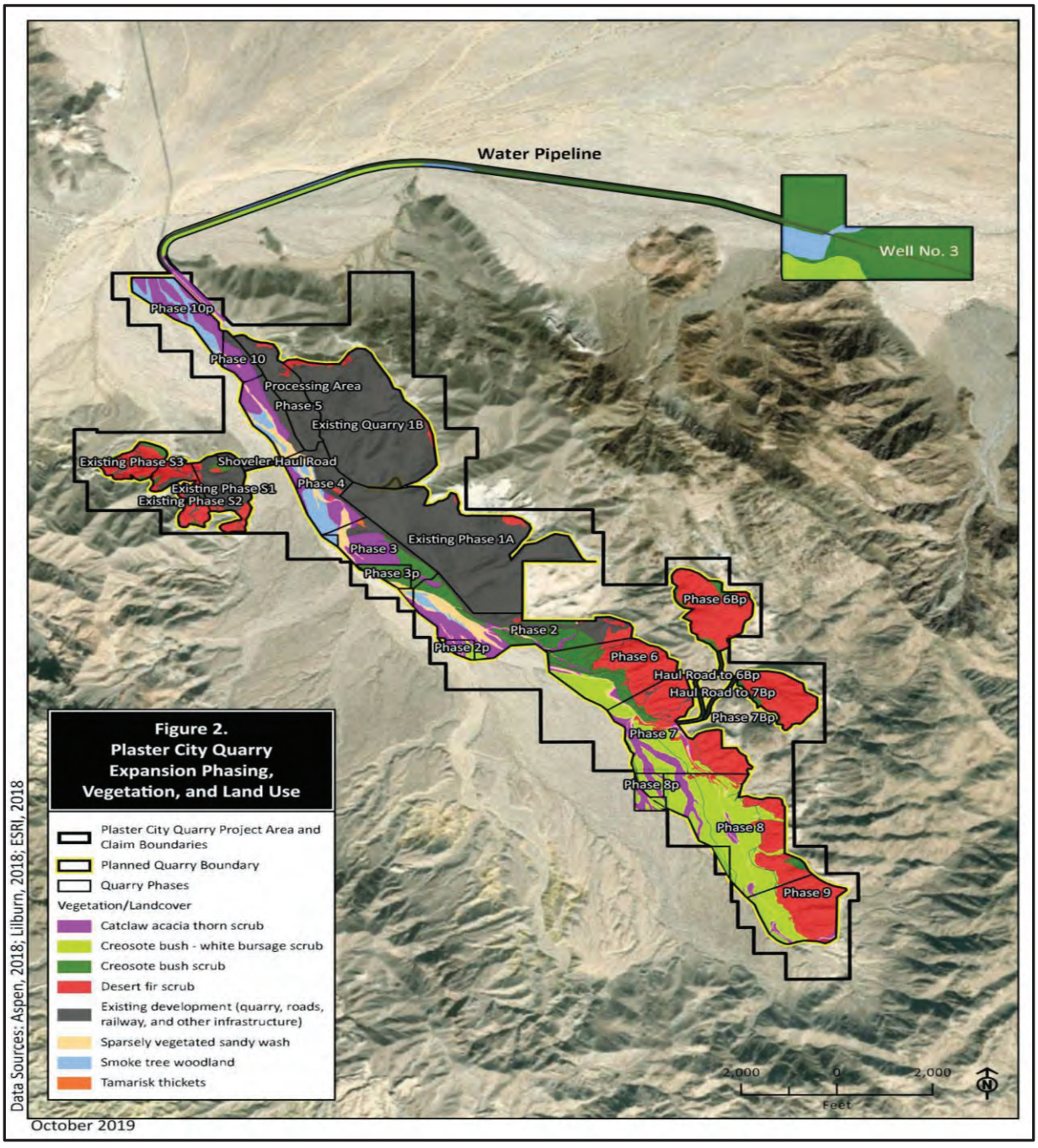


Figure 2: Plaster City Quarry, Expansion Area and Phases

Plaster City Quarry Expansion

The Project consists of a multi-phased quarry plan that would systematically quarry and process approximately 1.92 million tons of gypsum annually over a period of approximately 73 years, plus 7 years to complete reclamation activities (see Figure 2). Mining and reclamation are divided into phases based upon quantity and quality of gypsum and projected market demand. The multi-phased plan includes opening new hillside quarries to remove outcrops of high-grade gypsum. The existing hillside quarry activity along the west-facing slope of the Fish Creek Mountains would be expanded to the south to access the subsurface gypsum deposits. Overburden (sand, gravel, and boulders) would be stripped to a depth of approximately 100 feet and used in reclamation. Quarrying and reclamation operations would take place simultaneously in phases throughout the life of the mine.

The existing disturbance consists of Phases 1A, 1B, the Shoveler Annex (Phases S1, S2, and S3), and processing facilities and access roads. The Project would authorize additional mining disturbance within Phases 2 through 9. All planned new disturbance, as well as quarry areas post-dating the California Surface Mining and Reclamation Act of 1975 (SMARA), are subject to SMARA's reclamation requirements.

Plaster City Quarry expansion activities include site grading, quarrying, pre-milling (primary and secondary crushing and screening), and shipping material via the existing narrow-gauge railroad to the Plaster City Plant for processing. Initial Plaster City Quarry construction (grading) entails a heavy equipment pass over a previously unmined (undisturbed) surface, to remove vegetation and a top layer of alluvium or clay. It includes driving heavy equipment over the undisturbed area, pushing the vegetation and the top few inches of overburden into spoils stockpile areas. Typically, an operator can clear about five acres per day. Quarrying activities also include blasting, which occurs two to four times per month. Each blast results in the fragmentation of an average of 55,000 tons of gypsum. During the period 2015 through 2018, blasting, on average, occurred twice monthly. No modification or expansion of the existing pre-milling facility is proposed. Haul road alignments within the Plaster City Quarry would be changed to accommodate individual quarry phases and the railroad and access roads would continue to be maintained.

As indicated above, the USG mine expansion would take place over the course of about 80 years. USG is currently mining Phases 1A and 1B, and S1 and S2. Expansion into Phases 2, 2P, 3, 3P, as the initial mining activities, would last approximately 29 years. From there, the quarry would expand north and south into adjacent phases as gypsum is extracted and reclamation continues. Timing would be dependent on quantity and quality of recoverable gypsum, blending formulas, plant demand, overburden placement, and reclamation phasing. The logical progression of mining would be into Phase 4 to the north and Phase 6 to the south, then Phase 5 and Phase 7. Total mine life is approximately 73 years at maximum production (Table 2). The logical final phases would be Phases 9 to the south, Phase 10 to the north, and outcrop Phases 6BP and 7BP to the east, but these may vary as outcrop and alluvial deposits are depleted and blending scenarios dictate. Phases may be mined concurrently depending on gypsum quality (lilburn 2019, pers. comm.).

The train on the narrow-gauge railroad consists of up to 25 bottom dump hopper cars (45-ton capacity) and the train currently makes an average of 950 round trips between the Plaster City Quarry and the Plaster City Plant each year. With the proposed new production, the number of train trips could reach 1,800 round trips annually.

Construction of Plaster City Quarry Water Well and Pipeline

USG proposes to construct and operate a new production water well, Well No. 3 (Figure 2). The original water well was constructed in 1983 and is permitted under Imperial County Conditional Use Permit (CUP) No. 635-83 for a maximum withdrawal of 2,862 acre-feet per year. USG is proposing a replacement well be drilled on USG-owned land. This action was analyzed in the 2008 Final EIR/EIS and approved by Imperial County. A new underground pipeline would deliver water from Well No. 3 to the Plaster City Quarry, and a new electrical service line would provide electrical power to the pump. The power line and water pipeline would be located between the existing railroad alignment and the existing access road. The power line would be located underground from the well head to the Plaster City Quarry gate; within the quarry property it would be installed on either existing overhead power poles or on replacements of the existing poles, if needed. The total length of utility improvements from the well site to the Plaster City Quarry site would be approximately 18,240 linear feet.

Table 2: Projected Life (in Years) of Quarry Phases

Phase	Estimated Life (Years)	Phase	Estimated Life (Years)
1B	0	7BP	1.36
1A	9.72	6	7.39
2	7.68	S3	2.11
2P	0.1	7	8.22
3	4.47	8	11.25
3P North	0	8P	0.19
3P South	0.67	10	0.48
S1	3.9	9	4.44
S2	2.15	5	2.34
10P	1.64	4	1.71
6BP	2.7	**Total**	**72.52**

Plaster City Quarry Reclamation

Following the removal of gypsum, the areas disturbed by mining activities would be reclaimed as open space. Reclamation would be conducted concurrently, where feasible, during operations. Details of facilities decommissioning can be found in the 2019 Draft Supplemental EIS, Chapter 2 (Proposed Action and Alternatives). On completion of quarrying, the steepest portion of the hillside quarries would consist of maximum 1:1 slopes along a back-wall with a broad area

excavated to approximately 100 feet deep at the base of the excavations and in the adjacent sparsely vegetated sandy wash (see Figure 2). The benched hillsides would be re-contoured by blasting or bulldozing the benches to soften the topography. Reclamation of the Plaster City Quarry phases would include the following activities:

- Backfilling and grading of phased quarries
- Stabilization of slopes
- Rehabilitation of pre-mining drainages
- Removal, disposal, or utilization of residual equipment, structures, and refuse
- Control and disposal of contaminants
- Treatment of streambeds to control erosion and sedimentation
- Revegetation of phased quarries

Reclamation efforts would follow a series of steps that would likely vary over the life of the mine operation. As new information or techniques become available that could improve the results of the revegetation activities, they would be integrated into revegetation practices. Thus far, revegetation efforts have taken a passive approach by re-contouring portions of quarried areas, allowing them to remain undisturbed, and monitoring the re-establishment of native vegetation. After approximately 5 years, natural vegetation has become established on the re-contoured slopes. USG has successfully re-vegetated 20 acres within Phase 1A using this approach (USG 2018).

Replacement of Existing Plaster City Plant Water Pipeline

The Project would replace the existing water line serving the Plaster City Plant with a new 10-inch line parallel to and within approximately twenty feet of the existing alignment. Water is supplied to the Plaster City Plant by private groundwater wells located approximately 8 miles west of the plant in the community of Ocotillo (Figure 1). The amount of groundwater pumped varies annually to meet plant processing demands; USG currently has the right to pump up to a maximum of 767 acre-feet per year. The groundwater is transmitted to the plant via an 8-inch gravity fed water pipeline, located along Imperial County Route S80 and within the existing road right-of-way.

Construction of New Canal Water Pipeline

The Project may include a new pipeline to deliver IID water from the Westside Main Canal to supplement the Plaster City Plant's water supply if this alternative is selected. The alignment is approximately 5.5 miles long and is proposed to be constructed within the right-of-way of the Union Pacific Rail Line and a minimum of 85 feet from the centerline of the tracks.

Conservation Measures (CM)

The Proposed Action includes a number of avoidance and minimization measures (conservation measures) to reduce adverse effects to natural resources. These include general biological

resources conservation measures as well as measures specifically applicable to avoid and reduce adverse effects to Peninsular bighorn sheep.

CM 1. **Minimize Temporary Use Areas**. During construction of the Plaster City Quarry water pipeline, the need for temporary use areas will be minimized by using the USG private parcels on either end of the pipeline alignment for staging and equipment and material storage. Materials will be transported to the Project areas as needed, for immediate use.

CM 2. **Mining and Reclamation**. Mining and reclamation will be conducted only as approved in the Plan of Operation and Mine Reclamation Plan. Reclamation activities will be conducted concurrently with mining and will be initiated within each phase as soon as is feasible. Reclamation will include slope contouring and revegetation with native plant species as specified in the reclamation plan.

CM 3. **Domestic Animals**. The Project proponent will not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees will include instructions to report observations of domestic animals to the Quarry Manager. Upon receiving any such reports, the Quarry Manager will contact the appropriate authorities for removal of domestic animals.

CM 4. **Revegetation (Reclamation)**. Consistent with the California Surface Mining and Reclamation Act (SMARA), USG will implement the revegetation plan. In general, revegetation will be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation will be concurrent with closure of individual phases. Wherever ongoing Plaster City Quarry operations may eliminate access to closed upper benches, those benches will be revegetated while access is still available. Due to the continually changing bench configuration and access within the working quarry, revegetation scheduling for each quarry bench will be based on the geotechnical safety of slopes and resources remaining of the gypsum deposit. Wherever possible, USG will begin revegetation of phases to restore native habitat values concurrently or in advance of opening new phases.

CM 5. **Integrated Weed Management Plan**. USG will prepare and implement an integrated weed management plan to control invasive weeds, including tamarisk and fountain grass, in cooperation with the BLM and Imperial County. The plan will include procedures to help minimize the introduction of new weed species, an assessment of the invasive weed species known within the Project area, and procedures to control their spread on site and to adjacent offsite areas. This plan will be submitted to the BLM and Imperial County for review and approval prior to the start of construction and will be implemented for the life of the Project.

CM 6. **Mining and Construction Activity Monitoring and Reporting**. Prior to the beginning of any Plaster City Quarry expansion activities, USG will identify a

Designated Biologist and may additionally identify one or more Biological Monitors to support the Designated Biologist. The Designated Biologist and Biological Monitors will be subject to approval by the BLM and Service. The Designated Biologist will be in direct contact with BLM and the Service. The Designated Biologist and Biological Monitors will have the authority and responsibility to halt any Project activities that are in violation of the conservation measures. To avoid and minimize effects to biological resources, the Designated Biologist and/or Biological Monitor will be responsible for the following:

a. The Designated Biologist will notify BLM's Authorized Officer and the Service at least 14 calendar days before the initiation of Plaster City Quarry expansion of new ground-disturbing activities.

b. The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys (see CM 8 below) and will be on site during any Plaster City Quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils or stockpile areas) and will be responsible for ensuring that no expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity (see CM 11 below).

c. The Designated Biologist or Biological Monitor will immediately notify BLM's Authorized Officer and the Service in writing if USG does not comply with any conservation measures including, but not limited to, any actual or anticipated failure to implement conservation measures within the periods specified.

d. The Designated Biologist or Biological Monitor will visit the quarry site periodically (no less than once per month) throughout the life of the Project to administer the Worker Education Awareness Program (CM 7) and ensure compliance with the conservation measures. The Designated Biologist will submit an annual compliance report no later than January 31 of each year to BLM's Authorized Officer throughout the life of the Project documenting the implementation of the following programs and plans, as well as compliance or non-compliance with each conservation measure:

- Integrated Weed Management Plan
- Worker Education Awareness Program
- Reclamation Plan
- Wildlife Mortality Reporting Program
- Peninsular Bighorn Sheep Monitoring Plan

CM 7. **Worker Education Awareness Program**. Prior to Project approval, USG will develop a Worker Education Awareness Program (WEAP), to be implemented upon final approval by BLM and the Service. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the Project site throughout

the life of the Project. Multiple sessions of the presentation may be given to accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all personnel. The WEAP will be approved by the BLM, Service, and CDFW, and will include the following:

a. Descriptions of special-status wildlife of the region, including Peninsular bighorn sheep, and including photos and how to identify adult and subadult male and female sheep.

b. The biology and status of special-status species of the area, including Peninsular bighorn sheep.

c. A summary of the avoidance and minimization measures and other conservation measures.

d. An explanation of the Peninsular bighorn sheep observation log (see CM 10), including instruction on correctly filling out data.

e. An explanation of the flagging or other marking that designates authorized work areas.

f. Actions and reporting procedures to be used if any wildlife, including Peninsular bighorn sheep, is encountered.

CM 8. **Wildlife Impact Avoidance and Minimization Measures**. USG will implement the following measures throughout the life of the Project.

a. The Designated Biologist or Biological Monitor will be on site during any quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no quarry expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity. Speed limits along all access roads will not exceed 15 miles per hour.

b. Night lighting will be avoided or minimized by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.

c. The boundaries of all areas to be newly disturbed (including quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground disturbing activities occur outside the staked area during initial quarry expansion or ground disturbance.

d. Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the Plan of Operations).

e. No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight to prevent injury to Peninsular bighorn sheep. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Pitfalls will be covered completely to prevent access by small mammals or reptiles.

f. No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the Project site, on off-site Project facilities and activities, or in support of any other Project activities.

g. All trash and food-related waste will be placed in self-closing coyote-proof containers and removed regularly from the site to prevent overflow. Workers will not feed wildlife.

h. Water applied to dirt roads and construction areas for dust abatement will use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife such as coyotes and other sheep predators. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.

i. Any injured or dead wildlife encountered during Project-related activities will be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, including Peninsular bighorn sheep, the Designated Biologist or Biological Monitor will notify the BLM, Service, and/or CDFW, as appropriate, within 24 hours of the discovery.

CM 9. **Minimize Impact to Designated Critical Habitat**. To minimize impacts to Peninsular bighorn sheep designated critical habitat, USG will conduct 1:1 onsite reclamation as specified in the Mining and Reclamation Plan for all Project disturbance areas. Additionally, USG will acquire critical habitat for long-term wildlife habitat conservation to minimize the loss of 14.6 acres of designated critical habitat on public lands within the Plaster City Quarry. USG would provide 29.2 acres of compensation habitat. This compensation land is currently under private USG ownership and would be permanently protected as Peninsular bighorn sheep habitat through a conservation easement or similar instrument, to be developed in coordination with BLM. Any lands proposed for acquisition to minimize the loss of critical habitat will be subject to review and approval by the BLM, CDFW, and the Service.

CM 10. **Peninsular Bighorn Sheep Monitoring and Reporting**. USG will record and report all onsite Peninsular bighorn sheep observations to BLM, CDFW, and the Service and will support the CDFW Peninsular bighorn sheep monitoring and reporting program within the Fish Creek Mountains and Vallecito Mountains. USG will continue implementing a reporting form (observation log) for all Peninsular bighorn sheep observations, including completing data fields for observer, date and time, number and descriptions of animals observed, and location (to be shown on an aerial view of the quarry area), and will submit completed forms for each observation to the Quarry Manager. In addition, USG will fund the purchase of radio collars and the capture of 10 Peninsular bighorn sheep in the Fish Creek Mountains and Vallecito Mountains ewe group areas, to provide location monitoring data within these ewe groups over a 10-year period. The funding amount will be $157,115 (per cost estimate provided by CDFW), to be transferred to the CDFW program via a means agreed upon by USG, BLM, and CDFW. The funding agreement will include a requirement that the funding will be specifically targeted to the Fish Creek Mountains and Vallecito Mountains ewe groups, and all resulting data will be available to BLM to support the long-term analysis of Peninsular bighorn sheep activities in the Federal action area.

CM 11. **Peninsular Bighorn Sheep Avoidance and Minimization Measures**. USG will implement the following measures throughout the life of the Project:

a. New ground-disturbing activities (i.e., initial quarry development, quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within Peninsular bighorn sheep lambing season (January 1 through June 30) as defined in the Peninsular bighorn sheep recovery plan, except with prior approval by the Service and CDFW.

b. Blasting will be minimized during the lambing season (January 1 through June 30) within the Plaster City Quarry Phases 6Bp, 7Bp, 8, and 9 by building up a stockpile of material during the other months.

c. The Designated Biologist or Biological Monitor will be on site during any quarry expansion activities or other new ground disturbing activities, and will walk the perimeter of the expansion area and view surrounding habitat with binoculars, stopping work if Peninsular bighorn sheep are within a 0.25-mile radius of the activity.

d. If a Peninsular bighorn sheep enters an active work area, all heavy equipment operations will be halted until it leaves. Plaster City Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify the BLM, CDFW, and the Service.

e. Fencing installed anywhere within the Plaster City Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 8 feet tall. Any proposed permanent fencing design will be submitted for BLM, CDFW, and the Service review and approval to confirm that the fence design is not likely to pose a threat to Peninsular bighorn sheep.

f. When mobile or stationary equipment at the quarry is replaced, upgraded, or relocated, any feasible opportunities to reduce noise levels will be implemented (e.g., quieter designs for new equipment will be used if feasible).

g. Quarrying procedures such as loading and unloading rock will be modified wherever practicable to minimize noise (e.g., by unloading rock into the crusher bin while it is partially full).

h. In consultation with BLM, CDFW, and the Service, USG may construct and maintain a supplemental water source to ensure water availability to Peninsular bighorn sheep in the Fish Creek Mountains ewe group during summer drought.

CM 12. **Future Plaster City Quarry Phasing Notification and Review.** USG will notify the BLM, CDFW, and the Service 90 days prior to initiating future mining activities in the four phases nearest to the highest Peninsular bighorn sheep occurrence and habitat connectivity areas (i.e., Phases 6BP, 7BP, 8, and 9). Upon notification, the agencies will coordinate with USG to review Peninsular bighorn sheep occurrence and activity in the vicinity obtained during the intervening years. Peninsular bighorn sheep avoidance and minimization measures may be revised as needed to conform to new information.

Action Area

The implementing regulations to section 7(a)(2) of the Act describe the action area as all areas affected directly or indirectly by the Federal action and not merely the immediate area affected by the proposed project (50 CFR §402.02). Analyses of the environmental baseline, effects of the action on the species and designated critical habitat, cumulative effects, and the impacts of the incidental taking, are based upon the action area as determined by the Service (Service and NMFS 1998).

The action area for the Project includes all suitable Peninsular bighorn sheep habitat within the Vallecito Mountains/Fish Creek Mountains recovery region (recovery region 8; 173,978 acres), which includes the quarry expansion area and the new water well and pipeline alignment (Figure 3). We have identified the recovery region as the action area because ewe groups within recovery regions are connected via ram movements and rarer dispersal by ewes; therefore, the Peninsular bighorn sheep population is comprised of a metapopulation structure (Service 2000). Effects to one ewe group in a recovery region will have consequences to other ewe groups within that same recovery region.

ANALYTICAL FRAMEWORK FOR THE SECTION 7(A)(2) DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which are all consequences to listed species caused by the proposed action that are reasonably certain to occur; and (4) the Cumulative Effects, which evaluate the effects of future, non-Federal activities in the action area on the species.

As such, in accordance with policy and regulation, the jeopardy determination is made by evaluating the aforementioned components to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild by reducing the reproduction, numbers, and distribution.

Adverse Modification Determination

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat of listed species. "Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species" (50 CFR 402.02).

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the status of critical habitat, which describes the rangewide condition of designated critical habitat for the Peninsular bighorn sheep in terms of its physical and biological features, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the environmental baseline, which analyzes the condition of the designated critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the effects of the action, which analyze all consequences to critical habitat caused by the proposed action that are reasonably certain to occur and their influence on the recovery role of the affected designated critical habitat units; and (4) cumulative effects, which evaluates the effects of future non-Federal activities in the action area on the physical and biological features of critical habitat and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the designated critical habitat of the Peninsular bighorn sheep are evaluated in the context of the rangewide condition of the critical habitat, taking into account any cumulative effects, to determine if the consequences of the proposed action are likely to appreciably reduce the value of critical habitat for the conservation of the species.

STATUS OF THE SPECIES AND CRITICAL HABITAT

The following discussion briefly summarizes information about Peninsular bighorn sheep relative to its legal status and biology, as discussed in the Service's (1) 5-year review for the species (Service 2011a); (2) recovery plan (Service 2000); and (3) revised designated critical habitat (Service 2009a). Please refer to these documents for more detailed information.

The Service listed the Peninsular bighorn sheep as a distinct population segment (DPS) of the species *Ovis canadensis* on March 18, 1998 (63 FR 13134). The Service revised this listing on April 14, 2009, to identify the listed unit as an endangered DPS of the subspecies (*Ovis canadensis nelsoni*) (74 FR 17288).

Reproduction

Peninsular bighorn sheep reproduction begins during the rut when adult bighorn sheep, who tend to loosely segregate during much of the year, intermingle from August through October (Rubin *et al.* 2000). Gestation time is approximately 174 days (Shackleton *et al*. 1984) and lambs are born between January and August; however, most lambs are born between February and April. Failure to acquire sufficient nutrients during the last 2 months of gestation (typically December and January) and during nursing can adversely affect the survival of newborns (Thorne *et al.* 1976, Holl *et al.* 1979), and the time period surrounding lambing and nursing is very demanding in terms of the energy and protein required by ewes. Therefore, access to food resources with sufficient nutrients can influence reproductive success (Etchberger and Krausman 1999).

In the Peninsular Ranges, ewes estimated to be between 2 and 16 years of age have been documented to produce lambs (Rubin *et at.* 2000; Ostermann *et al*. 2001). As parturition (the act of giving birth) approaches, ewes seek isolated sites with shelter and unobstructed views (Turner and Hansen 1980), and seclude themselves from other females while finding sites to give birth (lambing sites). When ewes are ready to give birth, they will typically seek out the steepest terrain, where they and their lambs will be safest (Geist 1971). Lamb and yearling age classes experience higher mortality rates relative to adult bighorn sheep. After reaching adulthood at 2 years of age, Peninsular bighorn sheep survival rate is high, generally above 70 percent (Service 2000).

Numbers

In 1974, the Peninsular bighorn sheep population was estimated at 1,171 (Weaver 1975), but by 1996 the rangewide population estimate had declined to 276 adult sheep (Service 2000); since that time the population has steadily increased. Currently, the population is considered stable

with an estimated 884 adult bighorn sheep in the Peninsular Ranges (Colby and Botta 2017). In 2016, the rangewide ewe population estimate was 552 with more than 25 ewes in each of the 9 recovery regions. Criteria for downlisting Peninsular bighorn sheep from endangered to threatened include, among other things, the occurrence of at least 25 ewes in each recovery region. No rangewide population surveys have been conducted since 2016 so current rangewide population numbers are not available.

Distribution

Within the United States, the range of Peninsular bighorn sheep extends along the Peninsular Ranges from the San Jacinto Mountains in Riverside County, California, south to the U.S.-Mexico border in Imperial County, California. Peninsular bighorn sheep habitat in the Peninsular Ranges is restricted to the east facing, lower elevation slopes that are typically below 4,600 feet and located along the northwestern edge of the Colorado Division of the Sonoran Desert, commonly referred to as the Colorado Desert. Peninsular bighorn sheep regularly use steep, open slopes and ridgelines that offer unobstructed views of wide areas within these mountain ranges. These types of terrain are a crucial component of Peninsular bighorn sheep habitat as it is used for escape from predators (escape terrain), lambing areas, and shelter in both excessive heat and severe storms (Service 2000, Bleich *et al*. 2009).

Designated Critical Habitat

The Service designated approximately 844,897 acres of critical habitat on February 1, 2001 (66 FR 8650) based largely on information from the Peninsular bighorn sheep recovery plan (Service 2000). Following a challenge in court and a review of the best scientific information available at the time, the Service re-designated approximately 376,938 acres of revised designated critical habitat on April 14, 2009 (74 FR 17288).

The Peninsular bighorn sheep revised designated critical habitat rule identifies physical and biological features that are essential to the conservation of the species. As identified in the final revised critical habitat rule (74 FR 17288), the physical and biological features are:

1. Moderate to steep, open slopes (20 to 60 percent) and canyons, with canopy cover of 30 percent or less below 4,600 feet elevation in the Peninsular Ranges that provide space for breeding, feeding, and sheltering and movement within and between ewe groups.
2. Valley floors, foothills, and alluvial fans and washes with productive soils that support a variety of forage plants to meet the annual and drought-related variations in forage quality and availability.
3. Steep, rugged slopes (60 percent slope or greater) below 4,600 feet elevation that provide secluded space for lambing as well as terrain for predator evasion.
4. Alluvial fans and washes that maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resource areas, such as foraging areas.
5. Intermittent and permanent water sources within the Peninsular Ranges.

Since 2009, there have been temporary disturbances to approximately 12,000 acres of designated critical habitat consisting of transmission line construction and wildland fires (Service 2009b, Service 2019). This is approximately 3 percent of the area under designated critical habitat. We do not have information to indicate that these disturbances are adversely affecting the physical and biological features that are essential to the conservation of the species. Also, a majority of the lands under the critical habitat designation are included in Federal or State lands with conservation mandates such as the Santa Rosa and San Jacinto Mountains National Monument and Anza Borrego Desert State Park. In addition, the Peninsular bighorn sheep is a species covered by the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP), which includes designated critical habitat within its Santa Rosa and San Jacinto Mountains Conservation Area. Lastly, based on land use information contained in California's Farmland Mapping and Monitoring Program (FMMP 2016), there has been no significant changes in land use from open space to urban uses between 2010 and 2016 in areas of designated critical habitat.

Recovery

There are nine recovery regions identified within the Peninsular Ranges, including: (1) San Jacinto Mountains, (2) Northern Santa Rosa Mountains, (3) Central Santa Rosa Mountains, (4) Southern Santa Rosa Mountains, (5) Coyote Canyon, (6) Northern San Ysidro Mountains, (7) Southern San Ysidro Mountains, (8) Vallecito Mountains/Fish Creek Mountains, and (9) Carrizo Canyon (Service 2000). The recovery strategy for Peninsular bighorn sheep, as outlined in the recovery plan (Service 2000), included three delisting criteria:

1. At least 25 ewes must be present in each of the nine regions described in the recovery plan, during each of 12 consecutive years, without continued population augmentation.

2. The rangewide population must average 750 individuals (adults and yearlings) with a stable or increasing population trend over 12 consecutive years.

3. Regulatory mechanisms and land management commitments have been established that provide for long-term protection of Peninsular bighorn sheep and all suitable habitat. In addition, connectivity among all portions of habitat must be established and assured through land management commitments such that bighorn sheep are able to move freely throughout the Peninsular Ranges

Challenges to the recovery of Peninsular bighorn sheep within these regions were identified as habitat fragmentation, degradation, and loss due to urban and commercial development; disease; predation coinciding with low population numbers; response to human disturbance; insufficient lamb recruitment; and prolonged drought. Since the time of listing, threats from habitat loss in the Northern Peninsular Ranges (Recovery Regions 1, 2, 3, and 4) have declined due to the CVMSHCP, a large regional conservation plan that facilitates the purchase and conservation of suitable habitat within these recovery regions (Service 2011a).

Although not identified as threats at listing, invasive nonnative plants, fire suppression, and catastrophic fire impact Peninsular bighorn sheep habitat rangewide (Service 2011a). Impacts of

both fire suppression at the higher elevations and more frequent wildfires at lower elevations (due to nonnative plant cover) have increased the magnitude of this threat throughout the range since listing (Service 2011a). It is unknown whether fire caused any mortality of Peninsular bighorn sheep, but large wildfires may threaten individuals in the future. However, Peninsular bighorn sheep have been documented foraging in burned areas at high elevation, suggesting a potential, if transient, benefit (Service 2011a). Lastly, changes in climate, including higher temperatures, drought, and longer time intervals between heavy rainfall events, affect the amount of water available to Peninsular bighorn sheep rangewide, and pose challenges to recovery (Service 2011a).

Since listing, Peninsular bighorn sheep population growth has increased significantly in all recovery regions, with the exception of the San Jacinto Mountains. As stated above, the 2016 rangewide ewe population estimate was 552 with more than 25 ewes in each of the 9 recovery regions, which meets one of the criteria for downlisting the species. While the number of adults in most all of the recovery regions continues to improve, low lamb recruitment continues to be documented in several recovery regions (Colby and Botta 2018).

ENVIRONMENTAL BASELINE

Revised regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action (Project). The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

The action area occurs at the west margin of the Salton Basin in Imperial and San Diego Counties within the Peninsular Ranges. Summer temperatures are hot, generally above 100 degrees Fahrenheit. Total annual precipitation averages about 5 inches per year, with most precipitation falling in the winter months, but some precipitation also occurs in the summer months during irregular summer thunderstorms. USG's existing quarry and quarry expansion area is located in a broad alluvial fan canyon at the base of the Fish Creek Mountains to the east and Split Mountain (part of the larger Vallecito Mountain chain) to the west. The Project is bounded by the Anza Borrego Desert State Park on the west and northwest, and the Fish Creek Mountains Wilderness Area on the east and south within public lands administered by the BLM (Figure 1). Existing approvals authorize mining activities on 464 acres (all on private lands), of which approximately 431 of these authorized acres have been disturbed by previous and ongoing mining activities and approximately 20 of these acres have been restored. Under the proposed action, new mining would occur on a total of approximately 709.7 acres, 608.2 of which are Peninsular bighorn sheep designated critical habitat (Table 1).

Past Consultations within the Action Area

The Service issued a programmatic biological opinion evaluating the effects of the California Desert Conservation Area Plan, as amended, on Peninsular Bighorn Sheep, Riverside and Imperial Counties, California (Service 2010). The Service found the BLM's plan guidance was not likely to jeopardize the continued existence of Peninsular bighorn sheep or adversely modify designated critical habitat. Our 2010 programmatic biological opinion concluded that effects to Peninsular bighorn sheep related to the USG mine expansion was the subject of an ongoing section 7 consultation and effects of the mine expansion were not analyzed in that biological opinion.

Status of the Species in the Action Area

The action area encompasses the Peninsular bighorn sheep Vallecito Mountains/Fish Creek Mountains recovery region, which contains about 173,978 acres of Peninsular bighorn sheep habitat. This recovery region supports the Lizard Wash, Sunset, Vallecito Mountains, and Fish Creek Mountains ewe groups (Colby and Botta 2017), as shown below in Figure 3. Over a 5-year period from 2012-2016, the Peninsular bighorn sheep ewe survival rate in this recovery region was very high, above 90 percent (Colby and Botta 2017). During the 2017-2018 reporting period, there were six documented radio-collared sheep mortalities (five ewes, one ram) in the recovery region, all of which were likely due to mountain lion predation (Colby and Botta 2018). Lamb survival and recruitment are not documented in this recovery region (Colby and Botta 2017).

The estimated population abundance of Peninsular bighorn sheep in this recovery region increased during the period from 1998 to 2016. The region had an estimated population of 45 animals in 1998 and an estimated population of 163 animals (ewes, rams, and yearlings) in 2016 (Colby and Botta 2017). Current population estimates for the recovery region are not available, but we have no information to indicate any reasons for a significant drop in population numbers. To date, past mining activities do not appear to have had an adverse effect on numbers of Peninsular bighorn sheep in the recovery region.

The CDFW radio-collar location data in the action area indicate there are two ewe groups, Vallecito Mountains and Fish Creek Mountains that use the mountain slopes and foothills surrounding the Plaster City Quarry and will occasionally use alluvial fans in the canyon areas south of the actively mined areas (Figure 4). Ewes with lambs have been reported within about one mile of the active mining areas. Rams have also been documented on the Project site. Based on the observation log records maintained by USG since 2008, there have been six Peninsular bighorn sheep seen within the active mining areas (White 2019, pers. comm.). Recent Peninsular bighorn sheep sightings include one ewe on September 9, 2019, and one ram on October 21, 2019; neither animal was injured and both were allowed to wander off the mining area of their own accord (Massar 2019, pers. comm.).

The distribution of Peninsular bighorn sheep in the recovery region has not changed significantly since active monitoring began in 1992 (Colby and Botta 2018) and the available acres that

support resource needs have not significantly declined since most of the habitat is within areas protected from development (see Recovery section below). Wildland fires have burned about 3,464 acres or about 2 percent of the habitat within the recovery region. There are only a few known water sources within the Vallecito Mountains/Fish Creek Mountains recovery region, all of which are small, water-filled depressions in rocks, referred to as a tinajas. Based on the biological assessment (BLM 2019a), as of 2017, numerous tinajas in the Fish Creek Mountains have been dry for the past few years (prior to above-average rainfall in 2019).

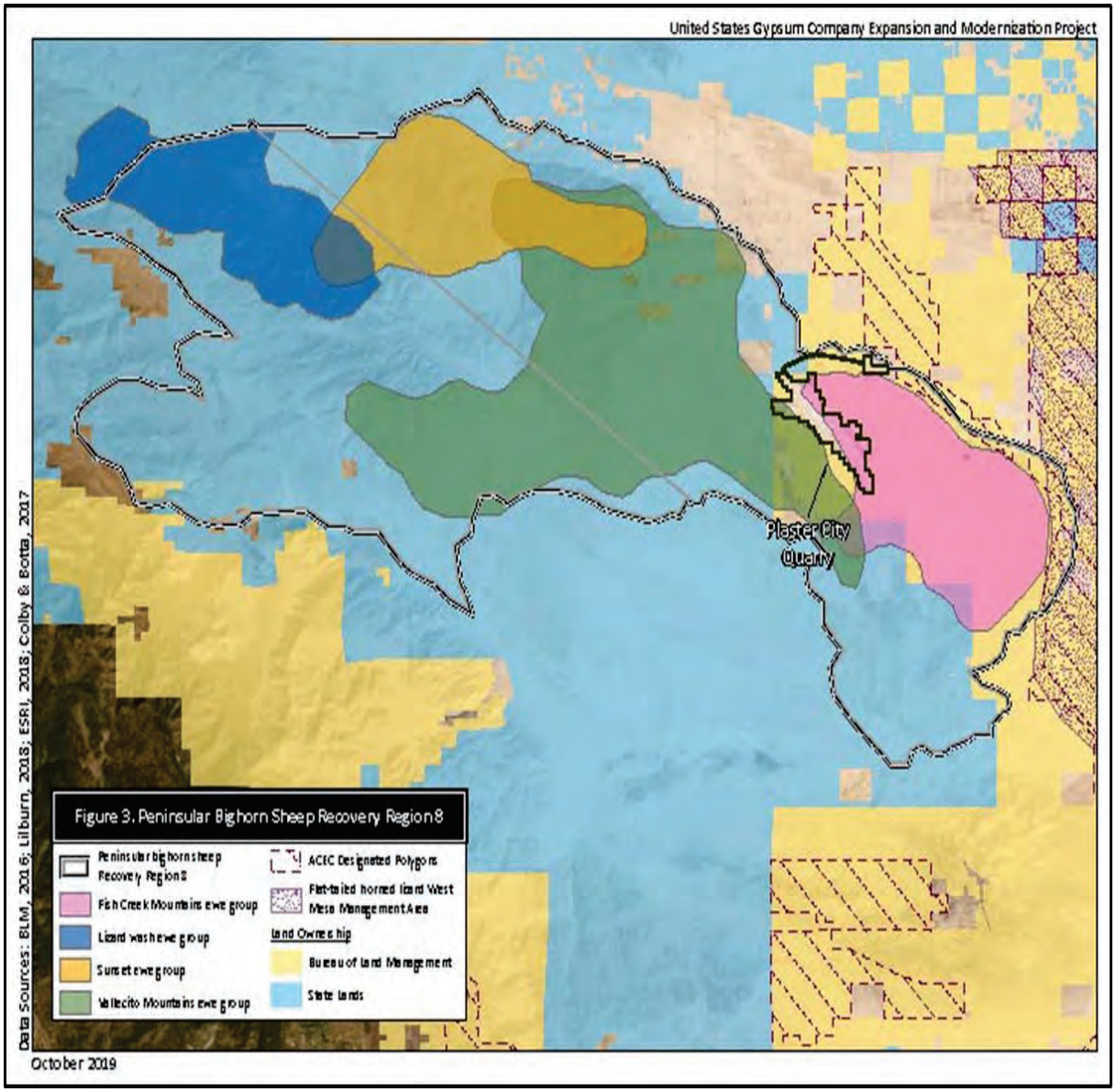


Figure 3. USG Mine Expansion and Modernization Project.

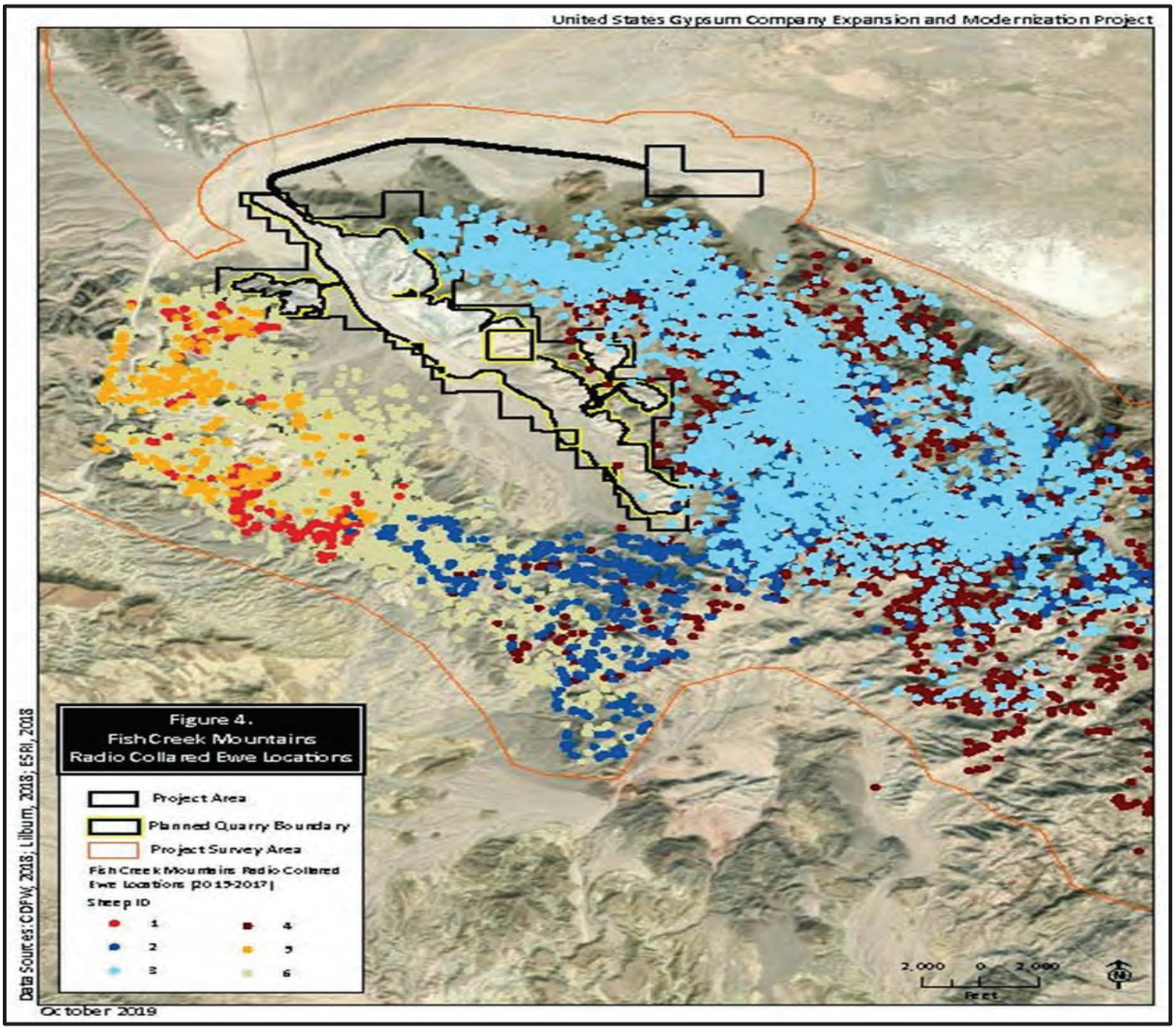


Figure 4. Radio-collared Peninsular Bighorn Sheep Locations 2015-2017

Status of Designated Critical Habitat in the Action Area

The action area is within unit 2B, the Southern Santa Rosa Mountains south to Vallecito Mountains, of Peninsular bighorn sheep designated critical habitat. This unit includes about 248,021 acres of habitat that support the physical and biological features essential to the conservation of Peninsular bighorn sheep. The action area includes about 97,077 acres of designated critical habitat. The final Peninsular bighorn sheep critical habitat rule excluded most of the existing USG mine areas from the critical habitat designation because active mining pits do not generally provide suitable habitat or suitable conditions for the Peninsular bighorn sheep (Service 2009a). However, 608.2 acres of designated critical habitat are within the planned quarry expansion area. This represents about 0.63 percent of the critical habitat within the action area and a negligible percentage of the entire designated critical habitat rangewide. Designated critical habitat in the action area contains moderate to steep rugged slopes, foothills, water sources, and alluvial fans and washes, which are the physical and biological features

essential to the conservation of the species. There have been no disturbances due to wildland fires or urban development in the action area since the 2009 designation that would degrade or eliminate these physical and biological features. In addition, a majority of the acres within designated critical habitat are protected from development (see below). The undisturbed alluvial fans, washes, and foothills located in the Project's quarry expansion areas provide a high diversity of food plants that support the physical and biological features needed to meet the annual and drought-related variations in forage quality and availability and areas to maintain habitat connectivity (Service 2009a). Based on radio-collared individuals, Peninsular bighorn sheep most frequently use the habitat areas associated with the steep slopes and ridges, rather than the alluvial fans in the canyon. However, washes and alluvial fans play an important role in providing Peninsular bighorn sheep quality forage during the heat of summer months and through times of drought (Service 2009a).

Recovery

As stated above, challenges to Peninsular bighorn sheep recovery include habitat fragmentation, degradation, and loss due to urban and commercial development; disease; predation coinciding with low population numbers; response to human disturbance; insufficient lamb recruitment; and prolonged drought. Based on information in CDFW's most current Peninsular bighorn sheep monitoring report, habitat loss and lack of water sources are impediments to recovery in the Vallecito Mountains/Fish Creek Mountains recovery region (Colby and Botta 2018). The Fish Creek Mountains ewe group is more vulnerable to human disturbance since it resides adjacent to the Project's expansion areas to the west, and off-road vehicle use and target shooting on BLM lands to the east (Colby and Botta 2018). However, about 93 percent of the lands within the recovery region are protected from development since they are either within the Anza Borrego Desert State Park (ABDSP) or BLM wilderness areas (Table 3). Therefore, it is unlikely the recovery region is vulnerable to habitat fragmentation and loss due to urban and commercial development.

Table 3. Land Management Designations – Recovery region 8

Land Management	Acres
Anza Borrego Desert State Park	142,273
BLM Wilderness Area	
BLM	5,947
Private	
California State Lands Commission	1,154
San Felipe Valley Wildlife Area	
Vallecito County Park and Stage Station, San Diego County	21
Total	**173,998**

For over 30 years, staff from ABDSP has maintained numerous guzzlers within the Vallecito Mountains and sheep have become dependent upon their use. Due to drought conditions, there has been insufficient rain to fill most of the guzzlers. Currently, ABDSP and CDFW are working

together to develop a long-term maintenance plan for guzzlers and access to water sources throughout ABDSP to assure year-round water availability. A few recovery actions identified in the recovery plan have been implemented in the Vallecito Mountains/Fish Creek Mountains recovery region, including providing and maintaining water sources, and securing funds and methods to monitor ewe groups.

In 2016, the estimated number of ewes in the Vallecito Mountains/Fish Creek Mountains recovery region was 101 ± 28 (Colby and Botta 2017), which exceeds one of the recovery criteria for 25 ewes necessary for downlisting. Therefore, as of the 2016 count, this recovery unit is exceeding that recovery goal. As explained in the Peninsular bighorn sheep recovery plan, these ewe groups are considered subpopulations in a metapopulation context; thus their recovery and persistence depend upon maintaining habitat connections between the ewe groups. Based on radio-collared sheep location data, Peninsular bighorn sheep are currently moving among ewe groups in the recovery region and will occasionally move to adjacent recovery regions (Colby and Botta 2018) so habitat connections appear to be suitable for movement. Wildland fires have burned about 3,464 acres or about 2 percent of the habitat within the recovery region. Long-term drought, mountain lion predation, and disease episodes are the natural factors most likely to affect the population numbers in the future.

EFFECTS OF THE ACTION

Revised regulations implementing the Act (50 CFR § 402.02) define the effects of the action as all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see § 402.17).

The replacement of the existing Plaster City Plant water pipeline and canal pipeline components of the Project are not expected to have adverse effects on Peninsular bighorn sheep because they would not be located in or near occupied Peninsular bighorn sheep habitat or designated critical habitat. Therefore, only the Plaster City Quarry expansion, Well No. 3 and water pipeline construction, and reclamation components of the Project are evaluated in this section.

Effects to the Species

Quarry Expansion and Operation

As mentioned in the Environmental Baseline section above, the mountains surrounding the Plaster City Quarry support four ewe groups. The number of ewes within each of these groups is unknown but the action area supported about 163 animals in 2016, about 101 of which were ewes (Colby and Botta 2017). Of these four ewe groups, the Vallecito Mountains and Fish Creek Mountains ewe groups use the mountains and foothills adjacent to the USG quarry. As such, the ewes and rams within these groups will be exposed to the activity and noise associated with the Project. These activities include site grading, quarrying, pre-milling (primary and secondary

crushing and screening), reclamation, well and water pipeline construction, and transporting material via the existing narrow-gauge railroad to the Plaster City Plant for finish processing. Expansion and operation could adversely affect the Peninsular bighorn sheep that occupy these hillsides by (1) loss of suitable habitat due to vegetation removal and heavy grading, and behavioral avoidance of the mine site and adjacent habitat; (2) disrupting reproduction or lambing activities; and (3) limiting movement among ewe groups. The two ewe groups, Fish Creek Mountains and Vallecito Mountains, occurring in the mountains adjacent to the mine would be most affected by expansion activities. Direct individual injury or fatality from active mining activities is not expected to occur, for reasons explained below.

The Project would result in the loss of 608.2 acres of suitable habitat over the course of 80 years (Table 1). The loss of habitat would be incremental over that time and quarrying and reclamation activities would take place simultaneously in phases throughout the life of the mine. In general, expansion activities would proceed from currently active quarry areas in the north part of the Project site to future quarry areas (phases) in the south. Because the Project would be implemented in phases, not all 608.2 acres would be unavailable to Peninsular bighorn sheep at the same time. Since the expansion phases are located in the alluvial canyon, loss of habitat would generally result in the elimination of habitat used for foraging. Loss of forage habitat would be minimized by limiting habitat disturbance (CM 1), restoring mined sites (CM 2), and acquiring lands for long-term habitat conservation in the action area (CM 9).

Human presence, lighting, dust, blasting, and noise and vibrations from construction and heavy equipment may alter Peninsular bighorn sheep behavior in the mine vicinity. Based on a site specific noise study, as the mine expands south, noise levels will increase from faint to moderately loud, with loud to very loud level short-duration noise, such as blasting (Urban Crossroads 2018). A number of studies have been conducted to evaluate bighorn sheep responses to human activities and the general conclusion is that bighorn sheep increase their distance away from humans, especially when they are approached by people and dogs. There is evidence that under some circumstances bighorn sheep may habituate to predictable human activity through learning in response to predictable, localized, and avoidable disturbance, including highway traffic, hiking, and aircraft (Service 2000, 2011a). However, even in otherwise optimal habitat, sheep are known to abandon areas either temporarily or permanently, when the limit of their tolerance to disturbance is exceeded (Service 2000, 2011a). Based on radio-collar location data, Peninsular bighorn ewes currently use the hillsides directly above actively mined sites (Figure 4). Furthermore, studies conducted looking specifically at mining effects on other Nelson's bighorn sheep populations indicate that sheep acclimate to ongoing mining activities (Oehler *et al*. 2005, Jansen *et al*. 2007, Bleich *et al*. 2009). Based on these studies, an increase in noise activity may cause Peninsular bighorn sheep to temporarily avoid habitat adjacent to the mine they currently use as escape terrain, foraging, or movement among local ewe groups. However, we anticipate they will also acclimate to future noise and activity over time and will not abandon the hillsides adjacent to future mining activities.

As mentioned in the Environmental Baseline Section above, Peninsular bighorn sheep occupy the Fish Creek Mountains year-round so it is also likely that lambing activity (i.e., birth and nursing) occurs in the Fish Creek Mountains and Vallecito Mountains surrounding the mine site.

Ewes are particularly sensitive to disturbance during the lambing season. The CDFW recommends buffer distances between 400- to 600-yards to avoid disturbance to ewes during lambing activity (Service 2011b). Within the Fish Creek Mountains, location data from radio-collared sheep suggest the most likely lambing activity areas are located in the north-south trending canyon east of the quarry (see Figure 7 in the biological assessment). Future quarry phases 6BP, 7BP, 8, and 9 are nearest to, and are within 600 yards of, this lambing habitat, so the human disturbance and noise associated with mining activity could disrupt reproduction. However, to avoid and/or minimize adverse effects to reproduction or lambing activities, new ground-disturbing activities (i.e., initial quarry development) and blasting would not take place during lambing season (January 1– June 30), except with the approval of the Service and CDFW (CM 11). Also, no ground disturbing activities will be conducted while Peninsular bighorn sheep are within a 0.25-mile radius (440 yards) of the activity (CM 8).

Of the 608.2 acres affected by Project activities, about 368 acres include alluvial fan habitat (see Table 3 in the biological assessment) that sustains forage plant resources with sufficient nutrients to support successful reproduction. Loss of these food resources could adversely affect future reproduction success. However, this loss will occur over the course of 80 years, so not all the acres supporting forage resources will be unavailable simultaneously. Also, about 287 acres of alluvial fan habitat will remain in the canyon. Lastly, based on radio-collared location data, sheep activity is confined to the steep slopes and ridges, rather than in the canyon, so ewes in the action area likely forage outside of the canyon and closer to escape terrain.

Based on Peninsular bighorn sheep radio-collar data, at least six ewes use the mountains, foothills, and alluvial fans surrounding the USG mine. Truck and train traffic and blasting have occurred on the site since 1921, with continuous operation since 1945 and no Peninsular bighorn sheep deaths have been reported due to mining activities. Given the apparent avoidance of active quarry areas by Peninsular bighorn sheep (see Figure 4), the probability of injury or death as the mine is expanded is unlikely. In addition, USG has an active monitoring program (observation log) that entails shutting down operations once a Peninsular bighorn sheep is seen near mining activities. The animals are then monitored until they are out of harm's way. The Project includes conservation measures that will continue this active monitoring program (CM 10 and CM 11).

Expanding quarry operations would likely inhibit sheep from crossing the active quarry areas. Future mining in the southern end of the quarry expansion (Phases 8 and 9) is adjacent to habitat that currently facilitates movement and connectivity between ewe groups on either side of the canyon. Therefore, once construction starts in those phases, connectivity among ewe groups could be compromised. Based on radio-collar location data, Peninsular bighorn sheep regularly use habitat immediately adjacent to the active quarrying Phases 1A, 1B, S1, S2, and S3 (Figure 4). Based on these activity patterns, Peninsular bighorn sheep are expected to continue to occupy the foothills south of Phases 8 and 9 and movement between ewe groups would continue along those areas. Quarry areas undergoing restoration would also be accessible to Peninsular bighorn sheep, although their localized behavioral response to the disturbance involved with previously active quarry areas is unknown. However, as mentioned above, studies evaluating sheep response to mining activities in other parts of Nelson's bighorn sheep range indicate that mining

activities have a minor influence on distribution. Therefore, we anticipate insignificant effects on movement and connectivity with implementation of the Project.

To summarize, loss of suitable habitat, disruption of reproduction or lambing activities, and limiting movement will be minimized, offset, or reduced over time primarily through implementation of the Project's conservation measures. These measures include minimizing habitat disturbance (CM 1), restoring mined sites (CM 2), training workers to avoid adverse effects (CM 7), implementing avoidance buffers (CM 8), acquiring lands for long-term habitat conservation (CM 9), avoiding new ground-disturbing activities during lambing season (CM 11), and notification of new quarry activities in active use areas (CM 12). Implementation of these measures, the gradually phased nature of the Project, and the ability of Peninsular bighorn sheep to acclimate to human activity would help to ensure that mine expansion does not lead to an appreciable (measureable) reduction in reproduction, numbers, and distribution of Peninsular bighorn sheep.

Reclamation (Restoration)

Reclamation activities would entail re-contouring hillsides post-mining and would be conducted by blasting or bulldozing the benches created by mining to soften the topography. Effects to Peninsular bighorn sheep would be similar to those for mine expansion activities with increased human presence, lighting, dust, blasting, and noise and vibrations from heavy equipment. Noise or disturbance effects may cause Peninsular bighorn sheep to avoid habitat they currently use as escape terrain, foraging, or movement among local ewe groups. However, the restoration activities will result in reclaiming disturbed areas that will eventually support habitat for Peninsular bighorn sheep, mainly forage resources. Additionally, Project conservation measures will minimize potential adverse effects by minimizing habitat disturbance (CM 1), training workers to avoid adverse effects to Peninsular bighorn sheep (CM 7), implementing avoidance buffers (CM 8), avoiding new ground-disturbing activities during lambing season (CM 11), and future notification of new quarry activities in active Peninsular bighorn sheep use areas (CM 12).

Based on the gradually phased nature of the project, the ability of Peninsular bighorn sheep to acclimate to human activity, and implementation of the conservation measures, the adverse effects to Peninsular bighorn sheep associated with the reclamation activities will be avoided and/or minimized. Therefore, reclamation activities are not likely to appreciably reduce the reproduction, numbers, and distribution of Peninsular bighorn sheep in the action area.

Effects to Critical Habitat

Mining activities will result in loss of 608.2 acres of designated critical habitat in Unit 2B. Unit 2B is 248,021 acres in size, of which 97,077 acres occurs in the action area. Loss of these 608.2 acres of critical habitat represents 0.63 percent of the critical habitat in the action area, 0.25 percent of the critical habitat in Unit 2B, and 0.16 percent of the total amount of critical habitat rangewide. Habitat lost through Project activities will no longer provide suitable habitat or suitable conditions for the Peninsular bighorn sheep until they are restored. Also, the almost constant presence of workers and machinery may reduce or prevent Peninsular bighorn sheep

from using the active mine site for many years, thus rendering 608.2 acres of designated critical habitat unavailable to Peninsular bighorn sheep. As mentioned above, Peninsular bighorn sheep designated critical habitat in the action area provides space for breeding, feeding, and sheltering and movement among ewe groups. The mine expansion will eliminate alluvial fans and wash areas with productive soils that support annual forage areas and maintain habitat connectivity. However, based on radio-collared sheep movement, a majority of the Peninsular bighorn sheep use area is along the foothills and higher up the slopes, with occasional forays into the alluvial fans and wash areas.

Adverse effects to designated critical habitat impacts would also be minimized, offset, or reduced over time primarily through implementation of the conservation measures. These measures include minimizing habitat disturbance (CM 1), restoring mined sites (CM 2), training workers to avoid adverse effects (CM 7), implementing avoidance buffers (CM 8), avoiding new ground-disturbing activities during lambing season (CM 11), and notification of new quarry activities in active use areas (CM 12). The Project applicant will also conserve lands to minimize the loss of designated critical habitat on public lands within the Plaster City Quarry (CM 9) and conduct 1:1 onsite reclamation (restoration) for all Project disturbance areas. Based on implementation of the conservation measures and the small loss of designated critical habitat, the action area will retain the physical and biological features essential to the conservation of Peninsular bighorn sheep and the Project will not appreciably diminish the value of critical habitat as a whole for the conservation of Peninsular bighorn sheep.

Effects to Recovery

As described in the Environmental Baseline section, the number of Peninsular bighorn sheep in the action area has increased, adult survival rates are high, and movement among ewe groups is occurring. A recovery plan for the species was issued in 2000 and actions by several agencies and a regional habitat conservation plan are taking Peninsular bighorn sheep conservation into account. Population estimates derived during the 2016 survey indicate the number of ewes in the recovery region exceed the number needed for downlisting, which demonstrates a major milestone towards recovery (delisting). This increase in the population has occurred during active mining operations at the Project site.

The loss of 608.2 acres of available habitat within the recovery region and the noise that may lead to temporary abandonment of suitable habitat or a disruption in reproduction or lambing activities will be mitigated with implementation of conservation measures. These include minimizing habitat disturbance (CM 1), restoring mined sites (CM 2), implementing avoidance buffers (CM 8), acquiring lands for long-term habitat conservation (CM 9), avoiding new ground-disturbing activities during lambing season (CM 11), and notification of new quarry activities in active use areas (CM 12). The conservation measures provided by the Applicant are commensurate to the likely Project impacts considering the species status and threats. In this context, they appropriately minimize effects of the proposed project and adequately mitigate its net, residual effects, such that it is not likely to cause significant impairment of recovery efforts for the species. Therefore, we do not anticipate the Project will lead to a significant decline in reproduction, numbers, or distribution and we do not anticipate adverse effects to recovery.

Cumulative Effects

Cumulative effects include the effects of future State, local, private, or certain tribal actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service has no information regarding any future State, local, private, or certain tribal actions that are reasonably certain to occur in the action area that would have an adverse effect on Peninsular bighorn sheep that would result in a loss to reproduction, numbers, and distribution in the action area.

Conclusion

After reviewing the status, environmental baseline for the action area, effects of the proposed action, and cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the Peninsular bighorn sheep or destroy or adversely modify, as a whole, designated critical habitat. We base this decision on the following:

1. While the proposed Project is adjacent to habitat with resources that support feeding, breeding, and sheltering, and Peninsular bighorn sheep occur within the mountains surrounding the Project site, location data from radio-collared sheep indicate that Peninsular bighorn sheep use the hillsides and slopes rather than the canyon where the Project is located; therefore, most of the resources to support reproduction, numbers, and distribution of the species will be avoided by mining and reclamation activities.

2. Peninsular bighorn sheep continue to use habitat in and around the action area despite active mine operations ongoing since 1921. Because ewe groups adjacent to active mining have become accustomed to some degree to human presence and noise and the Project will be implemented incrementally in phases over the course of 80 years, we expect the increase of noise and human activity would not result in sheep abandoning the hillsides around the Project site and the existing distribution of sheep around the mine will be unaffected.

3. The adverse effects of mine expansion and reclamation activities on reproduction would be avoided and/or minimized by implementation of conservation measures described above in the Description of the Proposed Action section.

4. The rugged mountain habitat on three sides of the Project, which includes critical habitat, would continue to provide necessary resources essential to the conservation of the species.

5. The potential loss of up to 608.2 acres of designated critical habitat represents a negligible percentage of the designated critical habitat otherwise available to the population in the recovery region, and this potential loss would not disrupt population connectivity or cause other significant impacts to the physical and biological features in the action area. Therefore, the Project would not result in the adverse modification or

destruction of critical habitat that would appreciably diminish the value of critical habitat as a whole for the conservation of the species.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and Federal regulation pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below for Peninsular bighorn sheep are non-discretionary and must be undertaken by the BLM and the Corps as binding conditions of any grant or permit issued to the Applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The BLM and the Corps have a continuing duty to regulate the activity covered by this incidental take statement. If the BLM or the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the Applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the BLM and the Corps must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

AMOUNT AND EXTENT OF TAKE

Based on information from the mine site, existing mining and reclamation have caused no direct death or injury to Peninsular bighorn sheep. We anticipate that implementation of the Project will not result in death or injury to any Peninsular bighorn sheep. However, we do anticipate that Peninsular bighorn sheep inhabiting the area within and adjacent to future mine phases will alter their behavior to some extent until they habituate to the new mining activity. While we know there are at least six ewes that use the habitat around the mine, we cannot quantify the exact numbers inhabiting the two ewe groups adjacent to the mine. Nonetheless, all the sheep inhabiting these ewe groups will experience the effects of the mine expansion and may temporarily abandon areas they currently use for feeding, breeding, and sheltering, as discussed in the effects section. Therefore, we anticipate some harm to those individuals due to loss or abandonment of habitat, and we use habitat loss and disturbance as surrogates to assess take and set a clear standard for determining when the amount or extent of the taking has been exceeded. Because we cannot quantify the number of individuals, take to sheep will be exempted based on the amount of habitat that will be mined over the life of the project. Therefore, take of Peninsular bighorn sheep is anticipated and exempted as follows:

1. The loss of up to 608.2 acres of habitat from construction, operation, and reclamation activities.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy or adversely modify or destroy critical habitat for Peninsular bighorn sheep.

REASONABLE AND PRUDENT MEASURES

The Service's evaluation of the Project's effects in this biological opinion includes consideration of the conservation measures developed by the BLM and USG to reduce the adverse effects of the proposed Project on Peninsular bighorn sheep. Any subsequent changes in the conservation measures proposed by the BLM, Corps, or USG or in the conditions under which these activities will occur may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR § 402.16. These reasonable and prudent measures are intended to supplement the conservation measures that were proposed by the BLM, Corps, and USG as part of the proposed action, and are necessary and appropriate to minimize the impact of the taking on Peninsular bighorn sheep.

1. The BLM, Corps, and USG shall fully implement the conservation measures for this Project as part of the proposed action to minimize the taking of Peninsular bighorn sheep.

2. The BLM, Corps, and USG shall monitor and report the level of incidental take of Peninsular bighorn sheep to the Service throughout the life of the Project and report on the effectiveness of the Project's conservation measures to reduce the impact of incidental take.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, BLM, the Corps, and USG, and their agents and contractors, must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and are intended to minimize the impact of the incidental taking. These terms and conditions are non-discretionary (see section 7(o)(2)).

The following terms and conditions implement the reasonable and prudent measures above:

1. To implement reasonable and prudent measure number 1, the BLM, Corps, and USG, including all of their agents/contractors, shall fully implement all Project specifications and conservation measures outlined in this biological opinion as they relate to Peninsular bighorn sheep.

2. To implement reasonable and prudent measure number 2, the BLM, Corps, and USG shall report on compliance with and effectiveness of the Project's conservation

measures, and compliance with the established take threshold for Peninsular bighorn sheep. To do this, USG shall prepare and provide to the Service, BLM, and Corps an annual report by January 31 of each year of the Project. The annual report shall document but not be limited to the following:

a. Any activities determined by the Designated Biologist and Biological Monitors to be out of compliance with Project-specifications and conservation measures outlined in this biological opinion and the corrective measures implemented to bring the Project back into compliance.

b. The total amount and location of Peninsular bighorn sheep habitat, including designated critical habitat, disturbed by construction activities and restored by reclamation activities during the reporting year.

DISPOSITION OF SICK, INJURED, OR DEAD SPECIMENS

Pursuant to 50 CFR § 402.14(i)(1)(v), the BLM must notify the Service immediately at 760-322-2070 (Palm Spring Fish and Wildlife Office) if any Peninsular bighorn sheep are found sick, injured, or dead in the action area. Immediate notification means verbal (if possible) and written notice within 1 workday, and must include the date, time, location, and photograph of the sick or injured animal or carcass, and any other pertinent information. Care must be taken in handling sick or injured individuals to ensure effective treatment, and care in handling dead specimens to preserve biological material in the best possible state.

The BLM must also notify the Service immediately at 760-320-2070 if any endangered or threatened species not addressed in this biological opinion is found dead or injured in the Project footprint during the life of the Project. The same reporting requirements also shall pertain to any healthy individual(s) of any threatened or endangered species found in the action area and handled to remove the animal to a more secure location. Refer to the Terms and Conditions section above for details on reporting procedures.

REINITIATION NOTICE

This concludes formal consultation on the proposed Project for the Peninsular bighorn sheep. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) may lapse and any further take may be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending re-initiation.

If you have any questions regarding this document, please contact Felicia Sirchia of the Palm Springs Fish and Wildlife Office at 760-322-2070, extension 405; or felicia_sirchia@fws.gov.

LITERATURE CITED

Bleich, V.C, J.H. Davis, J.P. Marshal, S.G. Torres, and B.J. Gonzales. 2009. Mining activity and habitat use by mountain sheep (*Ovis canadensis*). European Journal of Wildlife Research 55:183–191.

[BLM] Bureau of Land Management. 2019a. Biological Assessment: United States Gypsum Company Expansion/Modernization Project. May 2019, El Centro, CA.

[BLM] Bureau of Land Management. 2019b. United States Gypsum Company Expansion/Modernization Project, Imperial County, California. Draft Supplemental Environmental Impact Statement, DOI-BLM-CA-D070-2018-0049-EIS. July 2019, El Centro, CA.

Colby, J. and R. Botta. 2017. California Department of Fish and Wildlife Peninsular Bighorn Sheep 2016-17 Annual Report. CDFW, San Diego, California.

Colby, J. and R. Botta. 2018. California Department of Fish and Wildlife Peninsular Bighorn Sheep 2017-18 Annual Report. CDFW, San Diego, California.

Etchberger, R. C. and P. R. Krausman. 1999. Frequency of birth and lambing sites of a small population of mountain sheep. *Southwestern Naturalist* 44:354-360.

Geist, V. 1971. Mountain sheep–a study in behavior and evolution. University of Chicago Press, Illinois.

Holl, S. A., H. Salwasser, and B. Browning. 1979. The diet composition and energy reserves of California mule deer during pregnancy. *California Fish and Game* 65:68-79.

Jansen, B.D., P.R. Krausman, J.R. Heffelfinger, and J.C. De Vos, Jr. 2007. Influence of Mining on Behavior of Bighorn Sheep. Southwestern Naturalist 52:418–423.

Oehler, M.W., Sr., V.C. Bleich, R.T. Bowyer, and M.C. Nicholson. 2005. Mountain Sheep and Mining: Implications for Conservation and Management. California Fish and Game 91:149-178.

Ostermann, S. D., J. R. DeForge, and W. D. Edge. 2001. Captive breeding and reintroduction evaluation criteria: a case study of Peninsular bighorn sheep. Conservation Biology 15:749-760.

Rubin, E. S., W. M. Boyce, and V. C. Bleich. 2000. Reproductive strategies of desert bighorn sheep. Journal of Mammalogy 81:769-786.

Shackleton, D. M., R. G. Peterson, J. Haywood, and A. Bottrell. 1984. Gestation period in *Ovis canadensis*. Journal of Mammalogy. 65:337-338.

Thorne, E, T., R. E. Dean, and W. G. Hepworth. 1976. Nutrition during gestation in relation to successful reproduction in elk. *Journal of Wildlife Management* 40:330-335.

Turner, J. C. and C. G. Hansen. 1980. Reproduction. Pages 145-151 *in* G. Monson and L. Sumner (eds.), The desert bighorn: Its life history, ecology, and management. The University of Arizona Press, Tucson.

[Service] U.S. Fish and Wildlife Service and National Marine Fisheries Service (Service and NMFS). 1998. Endangered species consultation handbook available at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

[Service] U.S. Fish and Wildlife Service. 2000. Recovery plan for bighorn sheep in the Peninsular Ranges, California. U.S. Fish and Wildlife Service, Portland, Oregon.

[Service] U.S. Fish and Wildlife Service. 2009a. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Peninsular Bighorn Sheep and Determination of a Distinct Population Segment of Desert Bighorn Sheep (*Ovis canadensis nelsoni*); Final Rule. Federal Register 74(70):17288-17365. April 14, 2009.

[Service] U.S. Fish and Wildlife Service. 2009b. Section 7 biological opinion on Sunrise Powerlink (FWS-08B0423-09F0097). U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California.

[Service] U.S. Fish and Wildlife Service. 2010. Reinitiation of formal consultation on the effects of the California Desert Conservation Area Plan, as amended, on Peninsular Bighorn Sheep, Riverside and Imperial Counties, California (FWS-ERIV/IMP-10B0673-10F0935).

[Service] U.S. Fish and Wildlife Service. 2011a. Peninsular bighorn sheep (*Ovis canadensis nelsoni*) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California.

[Service] U.S. Fish and Wildlife Service. 2011b. Formal Section 7 consultation on Cornishe of Bighorn Project, Riverside County, California (FWS-ERIV-06B0008-11FC0417). U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, Carlsbad, California.

[Service] U.S. Fish and Wildlife Service. 2019. Unpublished GIS Data for California State fire perimeters through 2018. https://frap.fire.ca.gov/frap-projects/fire-perimeters/ Downloaded May 2019.

Urban Crossroads. 2018. U.S. Gypsum Expansion Noise Assessment. Prepared for Lilburn Corporation, San Bernardino, California.

[USG] U.S. Gypsum. 2018. 2003 Plan of Operations Revised April 2018. Submitted to the Bureau of Land Management, December 20, 2018.

Weaver, R. A. 1975. Status of the bighorn sheep in California. Pages 58-64 *in* J.V. Trefethern editor. The wild sheep in modern North America. The Winchester Press, New York, USA.

Personal Communications

Lilburn, S. 2019. Lilburn Corporation. Information on timing of mine Phases, transmitted via email August 6, 2019.

Massar, M. 2019. Wildlife Biologist, BLM, California Desert District, Palm Springs, California. Current data from USG on Peninsular bighorn sheep sightings at the active mine, transmitted via email October 22, 2019.

White, S. 2019. Senior Biologist, Aspen Environmental Group, Upland, California. Data from USG on Peninsular bighorn sheep sightings at the active mine, transmitted via email October 22, 2019.

APPENDIX D-4:
DRAFT HABITAT
MITIGATION AND MONITORING PLAN

THIS PAGE
INTENTIONALLY
LEFT BLANK

DRAFT HABITAT MITIGATION AND MONITORING PLAN
for the
United States Gypsum Company Plaster City Expansion/Modernization Project
Ocotillo Wells, California

U.S. Army Corps of Engineers
File No. SPL-2014-00216-SAS

Regional Water Quality Control Board
401 Certification No. -WDID7A133159

California Department of Fish and Wildlife
SAA No. 600-2014-0067-R6; 1600-2019-0168-R6

Prepared for:

United States Gypsum Company
3810 West Evan Hewes Highway
Imperial, California 92251
Contact: Luis Carrazco
760.358.3234

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Michael Sweesy
760.479.425

SEPTEMBER 2021

Printed on 30% post-consumer recycled material.

CONTRIBUTORS

The following staff performed services and/or contributed to the mitigation design and/or preparation of the Habitat Mitigation and Monitoring Plan.

Name	Title	Role	Address	Phone Number	Email Address
Erin McKinney	Senior Habitat Restoration Specialist	Principal Author	2280 Historic Decatur Road, Suite 200 San Diego, CA 92106	760.479.4189	emckinney@dudek.com
Michael Sweesy	Principal	Site Selection, Mitigation Concept, HMMP Contributor	605 Third Street Encinitas, CA 92024	760.479.4259	msweesy@dudek.com
Callie Amoaku	Senior Biologist	Field Data Collection	605 Third Street Encinitas, CA 92024	760.479.4293	cford@dudek.com
Charles Adams	Associate Habitat Restoration Specialist	Field Data Collection	605 Third Street Encinitas, CA 92024	760.479.4177	cadams@dudek.com
Cody Schaaf	Biologist	Field Data Collection	605 Third Street Encinitas, CA 92024	760.479.4138	cschaaf@dudek.com
Doug Gettinger	Habitat Restoration Specialist	On-Site CRAM Assessment	605 Third Street Encinitas, CA 92024	760.479.4285	dgettinger@dudek.com
Erin Bergman	Senior Biologist	Field Data Collection	2280 Historic Decatur Road, Suite 200 San Diego, CA 92106	760.479.4221	ebergman@dudek.com
Kathleen Dayton	Senior Biologist	Field Data Collection; CRAM, Jurisdictional Delineation	605 Third Street Encinitas, CA 92024	760.479.4241	kdayton@dudek.com
Patricia Schuyler	Senior Biologist	Field Data Collection Jurisdictional Delineation	605 Third Street Encinitas, CA 92024	760.479.4264	pschuyler@dudek.com
Tricia Wotipka	Senior Project Manager	Permit Processing	2280 Historic Decatur Road, Suite 200 San Diego, CA 92106	760.479.4295	twotipka@dudek.com

Name	Title	Role	Address	Phone Number	Email Address
Mike Howard	Senior Biologist	PAR	605 Third Street Encinitas, CA 92024	760.479.4212	mhoward@dudek.com
Brad Comeau	Archeologist	Cultural Resource Research	605 Third Street, Encinitas, CA 92024	760.479.4211	bcomeau@dudek.com
Hannah Wertheimer	Technical Editor	Word Processing	605 Third Street Encinitas, CA 92024	760.479.4885	hwertheimer@dudek.com
Lesley Terry	Restoration CAAS Specialist	Figures	605 Third Street Encinitas, CA 92024	760.479.4229	lterry@dudek.com

INTENTIONALLY LEFT BLANK

DISTRIBUTION LIST

The following Agencies and staff have received a copy of this plan for review and/or approval.

Agency Name	Staff Name	Title	Phone Number	Email Address
RWQCB	Kai Dunn			kai.dunn@waterboards.ca.gov
RWQCB	Brendan Reed			Brendan.Reed@waterboards.ca.gov
CDFW	Dr. Shankar Sharma			Shankar.Sharma@wildlife.ca.gov

INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

Section **Page No.**

CONTRIBUTORS ..... **I**

DISTRIBUTION LIST ..... **IV**

SUMMARY ..... **XI**

1 PROJECT DESCRIPTION **13**
1.1 Responsible Parties 13
1.2 Project Background 13

2 OBJECTIVES **16**
2.1 Project Impacts 17
2.2 Mitigation for Permanent Impacts 19

3 SITE SELECTION CRITERIA **21**
3.1 Watershed Approach 21
3.1.1 Identification of Watershed needs 21
3.1.2 Identification of Desired Outcomes 22
3.1.3 Identification of Potential Mitigation Sites 22
3.1.4 Assessment of Potential Mitigation Sites to Meet Watershed Needs 25
3.1.5 Prioritization of Mitigation Projects 26
3.2 Mitigation Site Locations 27

4 BASELINE INFORMATION **28**
4.1 Viking Ranch Baseline Conditions 28
4.1.1 Hydrology 28
4.1.2 Soil Conditions 32
4.1.3 Existing Vegetation 34
4.1.4 Wildlife Evaluation 38
4.1.5 Restoration Site Cultural Resources Evaluation 39
4.1.6 Native Plant Communities to be Enhanced 39
4.2 Old Kane Springs Road Baseline Conditions 39
4.2.1 Hydrology 40
4.2.2 Soil Conditions 42
4.2.3 Existing Vegetation 42
4.2.4 Wildlife Evaluation 44

5 DETERMINATION OF MITIGATION CREDITS **45**
5.1 Viking Ranch Restoration Site 45

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

5.2 Old Kane Springs Road Preservation Site 47
5.3 Overall Mitigation Ratio 48

6 SITE PROTECTION MEASURES 49
6.1 Viking Ranch 49
6.2 Old Kane Springs Road 49

7 MITIGATION WORK PLAN 51
7.1 Viking Ranch Restoration Site 51
7.1.1 Project Implementation Personnel 51
7.1.2 Site Preparation 52
7.2 Old Kane Springs Road Preservation Site 58

8 MAINTENANCE PLAN 59
8.1 Maintenance Guidelines 59
8.1.1 Viking Ranch Restoration Site 59
8.1.2 Old Kane Springs Road Preservation Site 61

9 ECOLOGICAL PERFORMANCE STANDARDS 62
9.1 Viking Ranch Restoration Site 62
9.1.1 Restoration Performance Standards 63
9.1.2 Reference Site 67
9.2 Old Kane Springs Road Preservation Site 68

10 MONITORING AND REPORTING REQUIREMENTS 69
10.1 Viking Ranch Restoration Site 69
10.1.1 Monitoring and Reporting Schedule 69
10.1.2 Qualitative Monitoring 70
10.1.3 California Rapid Assessment Method 71
10.1.4 Relevé 71
10.1.5 Reporting 72
10.2 Old Kane Springs Road Preservation Site 74

11 ADAPTIVE MANAGEMENT PLAN 75
11.1 Drought 75
11.2 Adverse Hydrologic Changes 76
11.3 Fire 76

12 FINANCIAL ASSURANCES 77

TABLE OF CONTENTS (CONTINUED)

Section **Page No.**

12.1 Viking Ranch Restoration Site 77
12.2 Old Kane Springs Road Preservation Site 80

13 COMPLETION OF MITIGATION 81
13.1 Viking Ranch Restoration Site 81
13.2 Old Kane Springs Road Preservation Site 81

14 LONG-TERM MANAGEMENT PLAN 82
14.1 Viking Ranch Restoration Site 82
14.1.1 Land Manager and Responsibilities 82
14.1.2 Biological Resources Requirements 82
14.1.3 Security, Safety, and Public Access 84
14.1.4 Reporting and Administration 84
14.1.5 Annual Task Cost Estimates 85
14.1.6 Funding 85
14.1.7 Task Prioritization 85
14.1.8 Prohibitions 85
14.1.9 Contingency Measures 86
14.2 Old Kane Springs Road Preservation Site 87
14.2.1 Land Manager and Responsibilities 87
14.2.2 Biological Resources Requirements 87
14.2.3 Security, Safety, and Public Access 89
14.2.4 Reporting and Administration 89
14.2.5 Annual Task Cost Estimates 89
14.2.6 Funding 90
14.2.7 Task Prioritization 90
14.2.8 Prohibitions 90

15 REFERENCES 92

TABLE OF CONTENTS (CONTINUED)

Page No.

APPENDICES

Appendix A Figures
Appendix B Anticipated Mine Schedule
Appendix C Viking Ranch Reconnaissance Photographs
Appendix D California Department of Water Resources Hydrology Well Log
Appendix E Viking Ranch U.S. Army Corps of Engineers Jurisdictional Delineation Raw Datasheets
Appendix F Viking Ranch Soils Laboratory Test Results
Appendix G Viking Ranch Plant Compendium
Appendix H Viking Ranch Wildlife Compendium
Appendix I Viking Ranch Cultural Resources Report
Appendix J Old Kane Springs Road Photos
Appendix K U.S. Army Corps of Engineers Jurisdictional Delineation Raw Datasheets
Appendix L Old Kane Springs Road Plant Compendium
Appendix M Old Kane Springs Road Wildlife Compendium
Appendix N USG Plaster City Mine Expansion and Modernization Project CRAM Evaluation
Appendix O Property Assessment Record or Equivalent Endowment Estimate

TABLES

Table 1 Recoverable Gypsum and Estimated Mining Life per Development Area 14
Table 2 Summary of Impacts to Non-wetland Waters of the State 18
Table 3 Impacts to Aquatic Resources.....19
Table 4 Potential Compensatory Mitigation Sites 24
Table 5 Jurisdictional Resources 32
Table 6 Vegetation Communities and Land Covers Types within the Viking Ranch Restoration Site.....35
Table 7 Jurisdictional Resources within the Preservation Site 42
Table 8 Vegetation Communities within the Old Kane Road Preservation Site 43
Table 9. Project Mitigation for Permanent Impacts to the Expansion Project.....48
Table 10 Desert Saltbush Scrub Seed Mix 56
Table 11 Viking Ranch Restoration Site Maintenance Schedule 59
Table 12 Restoration Performance Standards for Non-Wetland Waters.....64

TABLE OF CONTENTS (CONTINUED)

Page No.

Table 13 Restoration Site Target Vegetation Percent Cover 67
Table 14 Reference Site Woody Shrub Desktop Analysis Results 68
Table 15 Monitoring Schedule 69

SUMMARY

The proposed mitigation outlined herein is compensation for impacts to aquatic resources associated with the expansion and modernization of the U.S. Gypsum Company (USG) Plaster City Mine (Expansion Project). The Expansion Project consists of a multiphase mine development plan divided into proposed development areas based upon the geological data, gypsum quantity and chemical quality, market demand, and proximity to USG's existing quarry processing plant. There are 15 development areas, or mining phases, proposed under the mine expansion work. Gypsum extraction from all mine phases is expected to require 69 years to complete. This mitigation plan provides compensatory mitigation for all impacts that are anticipated to occur within the lifespan of the Expansion Project.

The Expansion Project will result in direct, permanent impacts to a total of 139 acres of non-wetland waters of the waters of the state over a 69-year period. The first 10 years of operation will impact a total of 29.47 acres, and the subsequent 11-69 years will impact 110.02 acres. Expansion activities are estimated to require 69 years to extract 161 million tons of the gypsum deposit. Mitigation will be initiated in the first year of the mine expansion operation.

Permanent impacts to non-wetland waters at the Expansion Site will be mitigated at a 1.92:1 mitigation-to-impact-ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation locations include the Viking Ranch Restoration Site (Restoration Site), and Old Kane Springs Road Preservation Site (Preservation Site). The Preservation Site will preserve an additional 59 acres of riparian bottomland and upland resources. These mitigation locations are within the same parent watershed as the impacted aquatic resources.

Dominant vegetation habitat within the Viking Ranch Restoration Site is desert saltbush scrub, disturbed habitat, Sonoran creosote bush scrub. The jurisdictional delineation identifies a total of 53.12 acres of non-wetland waters in the form of braded channels, ephemeral channels and floodplain.

Dominant vegetation habitat within the Preservation Site include 50.55 acres of Sonoran Mixed Woody Scrub and 69.08 acres of Desert Dry Wash Woodland. The jurisdictional delineation identifies 60.99 acres of RWQCB-jurisdictional non-wetland waters present both inside and outside of alluvial fan/wash and outside of alluvial fan wash.

This Habitat Mitigation and Monitoring Plan (HMMP) provides guidelines for 108.6 acres of rehabilitation, 97.7 acres of enhancement, and 121 acres of preservation for permanent impacts to aquatic resources. and associated native desert vegetation for compensatory mitigation. The mitigation program described in this document provides information on the impacted aquatic

resources, the proposed compensatory mitigation required to offset the impacted resources, guidelines for compensatory mitigation design, installation, maintenance, monitoring, reporting, performance standards, financial assurances, and long-term management.

1 PROJECT DESCRIPTION

1.1 Responsible Parties

Applicant/Permittee

United States Gypsum Company
3810 West Evan Hewes Highway
Imperial, California 92251
Contact: Luis Carrazco
760.358.3234

Biological Consultant

Dudek
605 Third Street
Encinitas, California 92024
Contact: Michael Sweesy
Phone: 760.479.4253

1.2 Project Background

The expansion of the Plaster City Mine, located in the Fish Creek Mountains south of Ocotillo Wells (Appendix A, Figures; Figure 1, Regional Vicinity Map), will result in direct, permanent impacts to a total of 139 acres of waters of the state over a 69 year period. The first 10 years of operation will impact a total of 29.47 acres, and the subsequent 11-69 years will impact 110.02 acres. Figures for this project are provided in Appendix A.

A multiphase mining plan (Appendix B, Anticipated Mine Schedule and Phase Plan)has been prepared for the development and extraction of gypsum reserves and to concurrently reclaim the land at USG's Quarry over the life of the mine through an approved mine reclamation plan. The proposed Expansion Project has been divided into proposed development areas based upon the geological data, quantity and chemical quality of gypsum, market demand, amount of overburden to be removed to access gypsum deposits, and proximity to USG's existing gypsum processing plant. There are 15 mine expansion areas, or mining phases, proposed under the Expansion Project. Each area has been numbered for purposes of identification only and do not represent the order in which they will be mined (Table 1). The Mine Reclamation Plan includes reclamation of individual phases upon completion of quarrying activities. The ultimate result would be a fully quarried deposit reclaimed to a state of open space. The plan includes opening new hillside quarries to remove gypsum outcrops of high-grade gypsum. The hillside quarry workings along the west-facing slope of the Fish Creek Mountains would be expanded down slope beneath the wash for recovery of subsurface gypsum deposits. Overburden (sand, gravel, and boulders)

would be stripped to a depth of approximately 100 feet and used in site reclamation. Quarrying and reclamation operations would take place simultaneously in multiple phases.

Table 1
Recoverable Gypsum and Estimated Mining Life per Development Area

Development Area	Recoverable Gypsum (million tons)	Estimated Mining Life (years)
Phase 2	17.35	7.68
Phase 2P	0.24	0.10
Phase 3	12.4	4.47
Phase 3P (a)	0	0
Phase 3P (b)	2.09	0.67
Phase 4	3.89	1.71
Phase 5	4.88	2.4
Phase 6	16.82	7.39
Phase 6Bp	6.17	2.70
Phase 7	16.5	8.22
Phase 7Bp	3.1	7.39
Phase 8	23.02	11.25
Phase 9	10.46	4.44
Phase 10	1.16	0.48
Phase 10P	4.24	1.64

The mitigation program will include active restoration of approximately 163 acres within and directly adjacent to the Viking Ranch Restoration Site, 42.7 acres of enhancement directly adjacent to the Viking Ranch Restoration Site, and the preservation of 121 acres of Old Kane Springs Road (Figure 1), for a total of 326.7 acres of compensatory mitigation.

The Viking Ranch parcel was formerly agricultural land located in Borrego Springs and within Coyote Wash (Figure 1). The mitigation site is located approximately 26 miles from the USG mine impacts and within the San Felipe Creek watershed. Therefore, mitigation will occur within the same watershed as the mine impacts. Viking Ranch was historically used for orchard production until the site was purchased by the Borrego Water District in 2017. Various post-agricultural land uses have been explored including installation of percolation basins to capture storm flow and enhance groundwater recharge. Currently the land is highly disturbed, with berms designed to divert water around the site and windrows of soil and coarse woody debris that further impede the normal flows on site.

The restoration program will restore desert wash within Viking Ranch by allowing water from Coyote Creek to flow across the mitigation site with no unnatural impediments. Previous agricultural land modifications were constructed that diverted hydrology of Coyote Creek around

the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. The diversion features will be removed to re-establish braided, unconstrained flow across the site, consistent with the existing Coyote Creek floodplain

The preservation program will preserve the existing desert wash, braided channels, fluvial process, and associated vegetation and wildlife within site by protecting it in-place via recordation of a permanent conservation easement, over the entire Preservation Site. The protection mechanism shall be adequate to demonstrate that the preservation site will be protected in-place in perpetuity without threat of future development, disturbance and/or encroachment Permitting regulatory agencies include the Regional Water Quality Control Board (RWQCB) and the California Department of Fish and Wildlife (CDFW).

2 OBJECTIVES

The overall goal of this HMMP is to provide the appropriate compensatory mitigation for impacts to aquatic resources associated with the United States Gypsum Company (USG) Plaster City Mine Expansion/Modernization Project (Expansion Project) of 139 acres of non-wetland waters of the state. This mitigation goal is intended to be met through the following objectives:

- Re-establishment of the aquatic resources, functions, and values within and directly adjacent to the Viking Ranch Restoration Site;
- Enhancement of native habitat within and directly adjacent to the Viking Ranch Restoration Site; the quality of the existing habitat will be enhanced;
- Increased ecological benefits to off-site areas adjacent to the Viking Ranch Restoration Site.

Preservation of natural fluvial features and native habitat withing the Viking Ranch Restoration Site and the Old Kane Springs Road Preservation Site. The re-establishment and enhancement objectives will be accomplished by increasing the surface area of Coyote Creek Wash and re-establishing historic hydrologic connections and aquatic functions within ad directly adjacent to Viking Ranch. The quality of the existing habitat will be enhanced through on-site seeding and weed control. The mitigation within the Viking Ranch site will provide a net increase in habitat functions and values and aquatic resources both inside and outside of Viking Ranch.

Approximately 50 acres within the Viking Ranch Restoration Site are assumed to be jurisdictional non-wetland waters of the State. The balance of the Restoration Site (110 acres) consists of disturbed habitat, desert saltbush scrub, Sonoran creosote bush scrub, mesquite bosque, and orchards and vineyards with no observable indicators of recent water flows. Where flow occurs, it is restricted to a small aperture in the berm leading to concentrated flow that is atypical for braided desert washes. In addition, water flow is highly modified once on site by substantial topographic modification from the fallowing activities. These activities left large amounts of coarse woody debris and soil windrows that impede the normal flow of water, further modifying natural braided flow across the site. This flow had resulted in bed instability in the southeast corner of the site where a substantial head cut is forming, threatening the site with long term future adverse modification that, if not corrected, will further degrade the site and downstream jurisdictional areas.

Natural off-site waters that flow in Coyote Creek are modified by constructed berms that divert flow around the property. Approximately 8 acres of adjacent off-site desert wash area has been documented to artificially impound water upstream of the western berm. An additional

approximately 42 acres of adjacent off-site desert wash does not receive flows from Coyote Creek because of the upstream diversion. Removal of the berms and diversion ditch will enhance and re-establish normal desert hydrology in these off-site areas by returning the area to a typical braided flow regime.

The existing vegetation is highly disturbed throughout the Viking Ranch Restoration Site as a result of previous farming land use. The remnant vegetation is sparse, patchy and scattered, and tree chippings were either scattered across the site or piled into windrows. Invasive, non-native vegetation is present on-site. The primary objective of this restoration is to restore natural watershed functions and allow the hydrology to dictate the braiding pattern and vegetated upland areas as the project ages over time.. As a secondary objective, seeding will be conducted using the imprinting technique and conducted on the graded areas on the upper terraces of the mitigation site (not within the contoured drainage areas). Any areas of softer sand that may not take the imprinting well, or areas in which the equipment can't access for any reason will be hand broadcast and raking. Once completed, the plants may take root in those imprinted locations, or once water flows over the mitigation areas, seeds will be carried downstream to take root where appropriate in relation to the alluvial flows.

Approximately 61 acres within the Old Kane Springs Road Preservation Site are assumed to be jurisdictional non-wetland waters of the State. The balance of the Preservation Site (59 acres) consists of Sonoran mixed woody scrub and desert dry wash woodland. The Preservation Site will preserve a total of 121 acres. These mitigation locations are within the same parent watershed as the impacted aquatic resources.

The preservation objectives will be accomplished by protecting the Restoration and Preservation Sites in-place via recordation of a permanent conservation easement, deed restriction, or other approved protective mechanism over the entire Restoration Site and Preservation Site, and promoting long-term viability of the Preservation Site's waters of the state and surrounding habitat by conducting long-term management. See Section 14.2 for the long-term management plan objectives and tasks.

2.1 Project Impacts

The proposed action within the Expansion Project will permanently impact jurisdictional tributaries (non-wetland waters of the State) located within the proposed quarry area of development (Figure 2, Impact Map). Impacts to these washes are considered permanent, because reclamation activities are not anticipated to occur until mining extraction in each phase of the quarry is completed and reclamation will only partially replace the former aquatic functions of the

original washes. Table 2 presents permanent and temporary impacts to waters of the State by mine phase.

Table 2
Summary of Impacts to Non-wetland Waters of the State

Item	Impacts (acres)	
	Permanent	*Temporary*
Plaster City Quarry – Mine Expansion		
Phase 2	26.61	0
Phase 2P	2.80	0
Phase 3	4.39	0
Phase 3P (a)	1.77	0
Phase 3P (b)	3.44	0
Phase 4	21.30	0
Phase 5	13.90	0
Phase 6	7.83	0
Phase 6Bp	0.95	0
Phase 7	13.90	0
Phase 7Bp	0	0
Phase 8	14.38	0
Phase 9	3.85	0
Phase 10	1.62	0
Phase 10P	16.89	0
Subtotal	*133.63*	*0*
Plaster City Quarry – Mine Haul Roads		
Haul Road to Phase 6Bp	0.03	0
Haul Road to Phase 7Bp	0.36	0
Subtotal	*0.39*	*0*
Plaster City Quarry Water and Power Supply Elements		
Plaster City Quarry Water Pipeline, Power Line, and Well No. 3	0	0.21
Subtotal	*0*	*0.21*
Plaster City Quarry – Mill Sites		
Annex Mill Site No. 3	0.12	0
Annex Mill Site No. 4	1.53	0
Mill Site 1	0.26	0
Mill Site 2	1.76	0
Mill Site 3	0.11	0
Mill Site 4	0.09	0
Mill Site 5	0.18	0
Cactus Mill Site	1.18	0
Subtotal	*5.23*	*0*
Total	139.25	0.21

2.2 Mitigation for Permanent Impacts

The Expansion Project will permanently impact 29.47 acres over the first 10 years and 110.02 acres during years 11-69 for a total of 139.25 acres over a 69-year period. These impacts are considered permanent because restoration activities within the Expansion Project are not anticipated to occur until reclamation of the Quarry is undertaken and completed.

To offset 139.25 acres of impacts to waters of the State at the Plaster City Mine, USG proposes to rehabilitate 108.6 acres and enhance 97.7 acres of non-wetland waters within and directly adjacent to the Viking Ranch Restoration Site, and preserve 121 acres of non-wetland waters of the state within the Old Kane Springs Road Preservation Site. This provides a total of 327.3 acres of overall mitigation at a ratio of 2.35:1.

Table 3
Impacts to Aquatic Resources

Impact Type	Impact Timing	Hydraulic Regime	Impacts (Acre)	Proposed Mitigation Timing	Proposed Mitigation Type
Permanent					
Non-wetland waters	Years 1- 10 of expansion operation	Ephemeral	29.47	Concurrent Mitigation	327.3 acres [a] of Rehabilitation, Enhancement, and Preservation
Non-wetland waters	Years 11-69 of expansion operation	Ephemeral	110.02	Concurrent and Pre-Mitigation	327.3 acres [a] of Rehabilitation, Enhancement, and Preservation
Total	Years 1-69	Ephemeral	139.49	Concurrent and Pre-Mitigation	327.3 acres [a] of Rehabilitation, Enhancement, and Preservation

a Total mitigation acreage for impacts to non-wetland waters of the state.

Although the former orchard within Viking Ranch was abandoned several years ago, the fallowing process was not conducted in a manner that re-established normal desert ecological systems on the property and a hydrologic disconnection with the Coyote Creek floodplain remains. Compound channels are characterized by a single low flow meandering channel which is inset into a wider braided channel network (Graf 1988). These areas include a mosaic of terraces within the active floodplain. In a natural, uncompromised setting, this area would have frequent shifting low-flow

channels and the hydrology would include the activation of braided channels after extreme flow events, meandering channels that develop after long sequence of low to moderate flow events, and a rapid widening of the floodplain in response to increase in sediment transport capacity during brief but extreme flow events (ACOE 2008b). The compound channels at Viking Ranch are deeply incised into geologic formations and no longer shift or active braided channels. Windrows of coarse organic materials from the ground up orchard trees and on-site topographic modification imped water flows from following a normal path and flow characteristics across the site.

Old Kane Springs Road bisects the Preservation Site. However, the compound channels within the Preservation Site function in a natural, uncompromised manner. The vegetation consists of Sonoran mixed woody scrub and desert dry wash woodland habitat with little non-native species. In summary, the proposed mitigation will replace, improve, or preserve the following ecological functions and values:

- Provide no net loss of aquatic resource acreage via habitat re-establishment within the former Coyote Creek wash;
- Improve functions and values of existing habitat by removing berms and ditches, large woody debris, surface irrigation pipe and stand pipes, electrical infrastructure and existing non-native species;
- Removing invasive species and weeds;
- Provide a net increase in native habitat area for wildlife including habitat;
- Replace and improve short term water storage capacity via stream channel rehabilitation;
- Improve water quality via improved nutrient uptake, reduced soil erosion and improving sediment entrapment (retention) by slowing runoff velocity and improving habitat structure, density and cover;
- Reduce downstream proliferation of invasive species propagules by removing the source via habitat enhancement and establishment.
- Preserve desert wash, braided channels, fluvial processes, and associated native vegetation and wildlife.

3 SITE SELECTION CRITERIA

The Expansion Project is located within the Salton Sea Transboundary Watershed, Anza Borrego Hydrologic Unit, Ocotillo Lower Felipe Hydrologic Area, which is the priority watershed in the Colorado River Basin Region (Water boards) identified by the National Hydrography Dataset to be located in HUC12-181002030602. The sub-watershed is 35.314 square miles. Rainwaters flow from the Fish Creek Mountains located to the east and south, and from the Split Mountain located to the west. Flows move in a north, northeasterly direction forming Fish Creek Wash. The flows eventually enter the Salton Sea located 18 miles northeast of the Plaster City Quarry (Hernandez Environmental Services 2016).

HUC 8- San Felipe Creek Watershed, 18100203; HUC 10- Fish Creek Wash, 1810020306 HUC 12 Lower Fish Creek Wash 181002030602.

Currently there are no resource agency approved ILF or Bank sites within the hydrologic unit where the Expansion Project is located. Any mitigation proposed would be "permittee responsible" meaning that the mitigation must comply with the ACOE final mitigation rule (33 CFR 332.4(c)(2) and (c)(14)). If financial assurances are required they must in place prior to commencement of the permitted activity (33 CFR 332.3(n)). Additionally, long term management requirements of the Mitigation Site must be established in a document such as an HMMP (33 CFR 332.7(d)).

3.1 Watershed Approach

The Environmental Law Institute (ELI) and the Nature Conservancy (TNC), with funding from the EPA, developed the Watershed Approach Handbook (ELI 2014). This handbook identifies five elements in the use of the watershed approach for wetland and stream restoration projects. These elements include:

1. Identification of watershed needs.
2. Identification of desired watershed outcomes.
3. Identification of potential project sites.
4. Assessment of potential sites to meet watershed needs.
5. Prioritization of projects.

3.1.1 Identification of Watershed needs

The Borrego Springs Community Plan outlines threats and needs of the surrounding watershed. Watershed needs are focused on groundwater supply, accessibility, and sustainability. However, there is acknowledgment that Coyote Creek serves as the main conduit for groundwater recharge and ecological functions.

- The aquifer is replenished primarily from the Coyote Creek flow coming from the Collins Valley to the north. Coyote Creek runs year-round in the Anza-Borrego Desert State Park and supplies water to the Borrego Valley sub-flow migration. During the infrequent seasonal rains, surface flows sometimes reach the valley floor, making their way to the Borrego Sink which is the terminal catchment basin in the area. These infrequent flows sustain the Borrego Sink eco-system.

3.1.2 Identification of Desired Outcomes

The mitigation project will result in attainment of several desired outcomes that are consistent with the community general plan. These include:

- Rehabilitate and enhance the functions and values of the San Felipe Watershed through re-establishment re-formation of fluvial features such as braided channels and sediment transport under normal episodic desert flow regimes at the Viking Ranch Restoration Site.
- Re-seeding the upper terraces of the floodplain and passive vegetation enhancement/restoration at the Viking Ranch Restoration Site. The priority of this mitigation program will focus on control of non-native vegetation through maintenance efforts. The mitigation project will provide a net increase in habitat functions and values.
- Advance the goals of the Borrego Valley Community Plan (County of San Diego 2011; amended 2014) and the Borrego Valley Groundwater Sustainability Plan (GSP; Borrego Valley Groundwater Sustainability Agency 2019).
- Preserve of existing non-wetland waters desert wash, braided channels, fluvial process, and associated vegetation and wildlife at the Old Kane Springs Road Preservation Site. Additionally, remove the threat of future development, disturbance and/or encroachment.

3.1.3 Identification of Potential Mitigation Sites

A comprehensive search for potential mitigation sites was conducted to identify appropriate sites within and outside of the impacted watershed. The search considered sites that offered preservation of existing, intact desert waters of the State, and re-establishment/rehabilitation of previously disturbed waters of the State. USG holds title to excess lands located in desert regions in the Mojave Desert. These excess lands offered opportunities for preservation and

rehabilitation/enhancement of waters of the State. A brief description of each compensatory mitigation opportunity is provided below with a rationale for selection or rejection of each site as the proposed mitigation of the Expansion Project. Table 4 presents the parcels considered for compensatory mitigation and Figure 3 depicts each site location relative to the Expansion Project.

The Viking Ranch Restoration Site was selected as compensatory mitigation for the Expansion project because the site was a former agricultural field that is situated in the Coyote Creek wash. Following agricultural practices that are common in the desert, diversion ditches and berms were constructed to divert the flow of Coyote Creek around the field to protect the orchard that was planted. These diversions removed hydrology of Coyote Creek and the episodic flows that form the characteristic braided streams during flood events. Lacking hydrology, these areas are no longer considered non-wetland waters and not likely to become jurisdictional without a re-establishment project that removes the diversion features and establishes topography that fosters braided streamflow across the entire site. Compensatory mitigation activities will re-establish RWQCB jurisdiction that was lost when the agricultural field was developed. Along with hydrology, a substantial functional lift will occur to multiple aquatic functions. Viking Ranch project will provide 63 percent of the compensatory mitigation and Old Kane Springs Road will provide the remaining 37 percent of the compensatory mitigation needed to fully mitigate Expansion Project impacts over the 69-year timeframe for the mine project.

USG holds title to several properties that have resources that could be mined at a future date, but that have not yet been mined. In most cases, exploration of potential resource deposits has been conducted resulting in some site disturbance. These explorations occurred decades ago. The Midland parcels are located in the Little Maria Mountains near Midland, California, approximately 21 miles NNW of Blythe, California and approximately 95 miles NE of the Expansion Project. Drainages within this area are tributary to the Colorado River. These sites are mainly upland desert hills with small, scattered ephemeral drainages. The acreage of these drainages represents a small portion of each parcel. Therefore, use of these parcels as preservation of waters of the State was not deemed practical. In addition, the sites are out-of-watershed and of limited compensatory mitigation value.

Similarly, the Amboy parcel is located out-of-watershed. The parcel is situated at the edge of the Amboy dry lakebed approximately 2 miles south of the town of Amboy and approximately 107 miles north of the Expansion Project. While Amboy dry lakebed may be considered jurisdictional, the type of aquatic resource is different from the ephemeral drainages that would be impacted by the Expansion Project. Therefore, preservation of the parcel as compensatory mitigation was considered to be of low value for the Expansion project mitigation.

There are four separate, but contiguous, parcels that make up the Laws parcels. These parcels are located approximately 7 miles NE of Bishop, CA and approximately 330 miles NNW of the Expansion Project. As such, the parcels are out-of-watershed. The parcels are situated on the lower slopes of the White =Mountains where the mountain ridgelines meet the valley floor. Although there are ephemeral drainages within the parcels, the majority of the acreage is uplands. The distance from the project impacts and small acreage of jurisdictional area that could be preserved to offset Expansion Project impacts eliminated these parcels for consideration.

The Empire parcel is a privately held 680-acre parcel located in the Fish Creek floodplain and watershed. The site is approximately four miles north of the Expansion project. The parcel is situated in an area of braided ephemeral channels and desert habitat. On-site vegetation appears to be relatively intact with little non-native vegetation. While the proximity to impacts provides greater value of this property to offset impacts, the site only presents opportunities to preserve aquatic features and resources. This parcel was rejected because it could not compensate for the entire Expansion Project impacts.

The Old Kane Springs Road parcel is a privately owned parcel located approximately 3 miles southwest of Ocotillo Wells and 10 miles northwest of the mine project. The 121-acre parcel is bisected by Old Kane Springs Road and an associated overhead power transmission line supported by wooden poles. The property is situated within an unnamed desert and all of the property is subject to flow during episodic rainfall events. Fluvial features are present in all areas of the property except for the maintained unpaved roadway. However, fluvial drainage patterns are not interrupted by the road, suggesting that during flood events, the road does not pose an impediment to flow. Other private parcels are present within the area but the predominate ownership in the area is Anza Borrego State Park. The property is zoned for low density residential development (one unit/40 acres) and therefore the property is under threat of development.

Table 4
Potential Compensatory Mitigation Sites

Parcel Name	Mitigation Type	Assessor's Parcel Number	County	In/Out of Watershed	Latitude	Longitude	Size (acres)
Midland	Preservation	809-150-003	Riverside	Out	30°51'59" N	114°31'34" W	160
Midland	Preservation	809-170-002	Riverside	Out	33°50'15" N	114°50'54" W	142
Midland	Preservation	809-170-003	Riverside	Out	33°50'28" N	114°50'01" W	103
Midland	Preservation	809-170-004	Riverside	Out	33°50'20" N	114°50'15" W	19.8
Midland	Preservation	809-170-022	Riverside	Out	33°50'27" N	114°50'35" W	39.9

Midland	Preservation	809-052-002	Riverside	Out	33°54'36" N	114°49'31" W	39.5
Amboy	Preservation	055-611-118	San Bernardino	Out	34°31'34" N	115°44'46" W	552
Laws	Preservation	4 parcels	Inyo	Out	37°26'56" N	118°17'22" W	2,472
Empire	Preservation	033-010003	Imperial	In	33°04'02" N	116°03'50" W	680
Viking Ranch	Re-Establishment	140-030-09	San Diego	In	33°19'43" N	116°21'17" W	62.5
Viking Ranch	Re-Establishment	140-030-11	San Diego	In	33°19'43" N	116°21'17" W	87.5
Viking Ranch	Re-Establishment	140-030-10	San Diego	In	33°19'43" N	116°21'17" W	9.75
Yuha Creek	Enhancement	BLM	Imperial	Out	32°44'23" N	115°47'42" W	n/a
Old Kane Springs Road	Preservation		San Diego	In	33°07'23" N	116°10'46" W	121

Additional compensatory mitigation sites were explored prior to settling on the Viking Ranch and Old Kane Springs Road sites. The Seville Solar project is being constructed on former agricultural fields approximately 6 miles east of Ocotillo Wells and immediately south of Highway 78. Lots 1-3 of that project share similar characteristics with Viking Ranch because these fields were constructed using a diversion in a branch of San Filipe Creek. Unfortunately, the lots already have an approve Conditional Use Permit (CUP) from Imperial County that allows for development of these parcels. Therefore, these parcels are not available for compensatory mitigation.

The Yuha Creek Wash was reviewed for potential mitigation. In accordance with Bureau of Land Management (BLM) policy, the Expansion Project will have to mitigate the effects of another project within the Yuha Creek Area of Ecological Concern (ACEC). The mitigation would remove tamarisk trees that dot the Yuha Creek wash. Tamarisk occur at very low density, limiting the compensatory value of this mitigation opportunity. The project area is out-of-watershed. Therefore, this mitigation opportunity was rejected in favor of a higher value mitigation site.

3.1.4 Assessment of Potential Mitigation Sites to Meet Watershed Needs

Both the Expansion Project and the Viking Ranch Site are located within the San Felipe Watershed. The Restoration Site occurs in a natural setting with self-sustaining hydrology sources (surface water, groundwater, and precipitation) from the surrounding mountains encompassing a watershed area of approximately 164 square miles (Figure 1). It is located within the same Parent Watershed, HUC 8, San Felipe Creek Watershed 18100203; with the upper northeastern half within HUC 10 Coyote Creek 1810020302, HUC 12 Lower Coyote Creek 181002030206; and the lower southwestern half within

HUC 10 Borrego Valley-Borrego Sink Wash 1810020303, HUC 12 Borrego Valley 181002030303.The Viking Ranch Restoration Site is located approximately 26 miles from the USG mine impacts and within the San Felipe watershed. Viking Ranch was historically used for orchard production until the site was purchased by the Borrego Water District in 2017. Agricultural land modifications including excavation of ditches and creation of berms were constructed that diverted hydrology of Coyote Creek around the agricultural field. Before abandoning the agricultural field, the orchard was chopped up and placed throughout the project site in windrows. These windrows further diverted any waters that did enter the site and stunted natural recruitment of native species. The site is currently vacant land. Approximately 116 acres of the 160-acre site was formerly used for agriculture.

Implementation of the Viking Ranch restoration will improve and increase water infiltration and groundwater recharge by spreading water flows across the full Coyote Creek floodplain. This will be accomplished by preserving the site in perpetuity and removing historical topographic modifications that were used to divert water around the Viking Ranch orchard. These features concentrated flow, increased water velocity, and decreased the resident time needed to maximize water infiltration. Restoration of normal braided stream flow across the site will create greater opportunity for flood flows to contact more acreage and infiltrate into the coarse floodplain soils.

The Old Kane Springs Road Preservation Site is located approximately 7 miles north-west from the USG mine Expansion Project and within the San Felipe watershed. It occurs in a natural setting with self-sustaining hydrology sources (surface water, groundwater, and precipitation) from the surrounding mountains encompassing a watershed area of approximately 164 square miles (Figure 1). It is located within the same Parent Watershed, HUC 8, San Felipe Creek Watershed 18100203 as the Expansion HUC 8, Lower Borrego Valley 1810020305 HUC 10, Upper Lower Borrego Valley 181002030502 HUC 12.

All three of these sub-basins (Expansion Site, Restoration Site, and Preservation Site) drain to the Salton Sea, which is the receiving water. Of greatest ecological significance is San Felipe Creek, which supports a population of desert pupfish and persists in discharging groundwater from upstream regions.

3.1.5 Prioritization of Mitigation Projects

Given the limited available lands for purchase and/or mitigation opportunities and the overall intact nature of the San Felipe watershed, locating, prioritizing, and modeling multiple restoration locations was not necessary in order to select the mitigation sites.

3.2 Mitigation Site Locations

The Viking Ranch Restoration Site is located north-east of the town of Borrego Springs in San Diego County, California (Figure 1). The Restoration Site is located on the U.S. Geological Survey (USGS) 7.5 minute Clark Dry Lake quadrangle map (Clark Lake NW quarter) in the southeast corner of Section 4, Township 10 South, and Range 6 East. The Restoration Site consists of approximately 206.3 acres of land (160 acres within its boundary and 46 acres directly adjacent to the site boundary) located roughly 0.5 miles east of the north end of Di Gorgio Road. The site is in unincorporated San Diego County, northeast of the City of Borrego Springs, California. APNs 140-030-09-00, 140-030-10-00, and 140-030-11-00 comprise the site.

The Old Kane Springs Road site is located southwest of the community of Ocotillo Wells, California, south of Highway 78 and west of Split Mountain Road. The approximately 120-acre site spans privately owned desert open space along Old Kane Springs Road in the far eastern portion of San Diego County, California (Figure 1, Project Location). The approximate center of the Mitigation site is 33.122841° N and -116.179786° W (decimal degrees).

4 BASELINE INFORMATION

Baseline conditions are included below and are used to help determine the appropriate compensatory mitigation, success criteria, and guide mitigation design, installation and maintenance.

4.1 Viking Ranch Baseline Conditions

The proposed Viking Ranch Restoration Site is located within the Borrego Springs Groundwater Subbasin 7-024.01 (DWR 2016) and the Anza Borrego Hydrologic Unit of the Ocotillo Lower Felipe Hydraulic Area (Hydrological Area Code 722.20) and in the Groundwater Basin 7-24 Ocotillo Wells. The site is underline by Pleistocene to Holocene marine and continental sedimentary rock. The Coyote Creek fault bisects the northeast corner of the property.

General topographic information for the site and the surrounding area was obtained from a review of the Clark Dry Lake and Borrego Palm Canyon 7.5-minute U.S. Geological Survey topographic map (Figure 1), and from a site reconnaissance. The topography of the site slopes gently from the northwest to the southeast. The elevation of the site ranges from 700- to less than 750-feet above mean sea level.

4.1.1 Hydrology

The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Average annual rainfall in El Centro is approximately three inches. At the Anza Borrego State Park headquarters, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year. Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon conditions bringing moisture from the Gulf of California. During these episodes, it is not uncommon for thunderstorms to drop several inches of rain in just a few hours, causing severe flash flooding, washing out roads, scouring washes and uprooting vegetation (Hernandez Environmental Services 2016).

A site reconnaissance of the Viking Ranch site was conducted on June 1, 2018, by Hugh McManus of Dudek. The site reconnaissance consisted of walking the site and viewing adjacent properties from the site. Photographs are included in Appendix C. The site was accessed by a dirt road roughly 0.5 miles east of the end of the paved section of Di Giorgio Road. No residence or other habitable structures were observed on the site. Evidence of past agricultural activity was observed in the form of irrigation lines and remnants of chipped trees in windrows. Additional notable observations include a decommissioned water well, a power distribution board, electrical power hook ups, debris, containers storing oil, and a weather station maintained and operated by University of California Irvine (UCI 2018; Dudek 2018).

Coyote creek splits just northwest of the project site and bisects both the southwestern and northeastern corners of the site. Berms, located along the entire north side of the site, appear to divert flood water from the north to the east and off the site (Photograph 7). Surface water appeared to have flowed over areas of the site. Various water-cut channels and mud cracks were observed, likely due to runoff of water from high rainfall events (Dudek 2018).

Surface water was observed flowing along the southern boundary of the site from the west to the east (Photograph 8). The source of the surface water was not observed due to dense vegetation but was likely irrigation water from the adjacent property to the south. Surface water was flowing at roughly 0.25 cubic feet per second (cfs) [1] and sustained flow for over 50 feet prior to infiltrating into the underlying sediments. Plant health and type near the surface water flow indicated that surface water regularly flows in that area. Surface water was not observed flowing off of the site (see Dudek 2018).

No unnatural pits, ponds, or lagoons were observed on site. Ponding of stormwater likely occurs in various low points on the site as observed by the presence of mud cracks (Photograph 9). Incised channels, likely associated with Coyote Creek flooding, were observed throughout the site (Photograph 10).

A water well was observed on a cement pad on the southwest corner of the site. According to the well log obtained from the California Department of Water Resources (DWR), the well was drilled in 1993 and completed to 700 feet below ground surface (bgs) (Appendix D). The well appears to be equipped with a turbine discharge head and impeller shaft (Photograph 16). The well was not equipped with a motor or power and appeared decommissioned. A groundwater level measurement was not recorded from the well due the absence of an access port or sounding tube. The well was not capped or locked and was partially open to the environment. No cisterns, cesspools, or septic tanks were observed on the site.

Traces of Coyote Creek currently bisect the property and, based on observations during the site reconnaissance, surface water occasionally flows southeast across the site during high rainfall events. Based on a review of historical aerial imagery and topographic maps, Coyote Creek meandered across the site creating braided channels through the unconfined basin area. Coyote Creek is within the Borrego Springs Sub-basin 18100203, which lies within the same sub-basin as the Expansion Project. The area receives water from direct precipitation that flows from Coyote Creek, the surrounding Coyote and Indianhead mountains and which provides runoff to the surrounding watershed, and potentially from irrigation runoff from adjacent farmlands.

Agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. Based on a review of historical aerial imagery, the majority of water was diverted around the north end of the mitigation site.

Based on sources searched by Environmental Data Resources (EDR), five water wells were mapped within 1 mile of the site. Water wells are located to the south of the site. The most recent water level measurement for the nearest well was recorded in 2008 and is approximately 336.34 feet below ground surface (bgs) (USGS 2018). During the site reconnaissance, one additional water well was observed near the southwest corner of the site. The most recent water level measurements from the on-site well was recorded in 2008 and measured 340.10 feet bgs (USGS 2018). The highest groundwater level measurement from the on-site well was recorded in 1998 and measured 250 feet bgs (USGS 2018).

The California Division of Oil, Gas, and Geothermal Resources online database was reviewed for wells on/near the site (DOGGR 2018). According to this database, which shows all known oil and gas wells in the state, no oil, gas, or geothermal wells are/were located on the site. No oil, gas, or geothermal wells are located within 10 miles of the site.

4.1.1.1 Jurisdictional Delineation

The jurisdictional wetland delineation was conducted in accordance with the methods prescribed in the 1987 Wetland Delineation Manual (ACOE 1987), the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (ACOE 2008a), and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (ACOE 2008b). The information required to process an approved jurisdictional determination in accordance with the ACOE/U.S. Environmental Protection Agency (EPA) Rapanos Guidance (ACOE and EPA 2008) was gathered for the Viking Ranch site. During the jurisdictional delineation survey, the site was walked and evaluated for evidence of an ordinary high water mark, surface water, saturation, wetland vegetation, and nexus to a traditional navigable water of the United States. The extent of any identified jurisdictional areas was determined by mapping the areas with similar vegetation and topography to the sampled locations (Figure 4).

Pursuant to the federal Clean Water Act, ACOE and RWQCB, jurisdictional areas include those supporting all three wetlands criteria described in the ACOE manual: hydric soils, hydrology, and hydrophytic vegetation. Areas regulated by the RWQCB are generally coincident with the ACOE, but can also include waters of the state that may be regulated, pursuant to the state Porter Cologne Act.

A predominance of hydrophytic vegetation, where associated with a stream channel, was used to delineate CDFW-regulated riparian areas. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (Cowardin et al. 1979).

Features that convey or hold water are regulated by multiple agencies. Federal, state, and local agencies have different definitions and terminology for these types of features. Water-dependent resources regulated by ACOE, RWQCB, CDFW, and the County are collectively referred to as jurisdictional aquatic resources herein. Terminology used in this document to distinguish each jurisdictional aquatic resource according to the agency that regulates the resource is as follows:

- **ACOE and RWQCB:** "Wetland" and "non-wetland waters." Wetland waters of the United States and non-wetland waters of the United States are subject to regulation by ACOE and RWQCB, pursuant to the Clean Water Act. Within the mitigation site, ACOE waters of the United States, and RWQCB waters of the United States overlap, and therefore are combined under one term: "non-wetland waters".
- **CDFW:** "Riparian areas" and "streambeds." Lakes, rivers, and streambeds, including any associated riparian habitat, are subject to regulation by CDFW, pursuant to the California Fish and Game Code. Within the mitigation site, CDFW streambeds are synonymous with ACOE and RWQCB non-wetland waters.

The County's RPO (County of San Diego 2012) identifies environmental resources, including wetlands, present within the County, and provides measures to preserve these resources. The RPO defines wetlands as lands that have one or more of the following attributes: (1) lands that periodically support a predominance of hydrophytes (plants whose habitat is water or very wet places); (2) lands in which the substratum is predominantly undrained hydric soil; or (3) lands where an ephemeral or perennial stream is present and whose substratum is predominantly non-soil, and where such lands contribute substantially to the biological functions or values of wetlands in the drainage system. County-regulated wetlands would be identified where a predominance of hydrophytic vegetation is associated with a stream channel.

During the jurisdictional delineation surveys, the mitigation site was walked and evaluated for evidence of an ordinary high water mark, surface water, saturation, wetland or hydrophytic vegetation, and nexus to a traditional navigable water of the United States. The extent of any identified jurisdictional areas was determined by mapping the areas with similar vegetation and topography to the sampled locations.

Results of the jurisdictional delineation are shown in Table 5, on Figure 4, and the jurisdictional delineation raw data forms in Appendix E. There are approximately 53.12 acres of RWQCB-

jurisdictional non-wetland waters present within a braided channel, ephemeral channels, and floodplain on the Viking Ranch site. However, the condition of these jurisdictional areas remain highly modified from the historic agricultural use including remnant windows of chipped trees and topographic modifications that alter the normal braided water flows across the Viking Ranch Site.

Table 5
Jurisdictional Resources

General Vegetation Community/Land Cover Category	Vegetation Type (Oberbauer Code[a])	Jurisdictional Resource Type			Acres
		Braided Channel	*Ephemeral Channel*	*Floodplain*	
Disturbed or Developed Areas (10000)	Disturbed Habitat (11300)	—	0.04	—	0.04
	Orchards and Vineyards (18100)	—	0.44	—	0.44
Disturbed or Developed Areas Subtotal		—	*0.48*	—	*0.48*
Riparian and Bottomland Habitat (60000)	Mesquite Bosque (61820)	0.23	—	14.92	15.15
Riparian and Bottomland Habitat Subtotal		*0.23*	—	*14.92*	*15.15*
Scrub and Chaparral (30000)	Desert Saltbush Scrub (36110)	0.10	0.04	—	0.14
	Sonoran Creosote Bush Scrub (33100)	0.09	0.02	35.89	36.00
	Sonoran Wash Scrub (33230)	1.35	—	—	1.35
Scrub and Chaparral Subtotal		*1.54*	*0.06*	*35.89*	*37.49*
Total RWQCB Non-Wetland Waters and CDFW Streambeds[b]		1.77	0.54	50.81	53.12

[a] Oberbauer et al. (2008).
[b] Totals may not sum due to rounding.

4.1.2 Soil Conditions

Soils on the site are mapped as Carrizo (CeC) very gravelly sand, 0% to 9% slopes, eroded; and Rositas (RsA) loamy coarse sand, 0% to 2% slopes (USDA 2019).

According to the Natural Resource Conservation Service (NRCS), the Carrizo series consists of very deep, excessively drained soils formed in mixed igneous alluvium. Carrizo soils are on numerous landforms on flood plains, fan piedmonts and bolson floors. Slopes range from 0% to 15%. The mean annual precipitation is about 100 millimeters (4 inches) and the mean annual air temperature is about 21.5°C (71°F) (USDA 2019). Carrizo extremely gravelly sand, rangeland and wildlife habitat. (Colors are for dry soil unless otherwise noted.) The soil surface is covered by approximately 70% gravel, 6% cobbles and 4% stones. Soil moisture control section: usually dry, moist in some parts for short periods during winter and early spring and for 10 to 20 days cumulative between July and September following convection storms. The soils have a typic-aridic

soil moisture regime. These soils are excessively drained; negligible to low runoff; high saturated hydraulic conductivity. These soils are used for rangeland, recreation and wildlife habitat. Present vegetation is creosote bush, burrobush and range ratany (USDA 2019).

The Rositas series consists of very deep, somewhat excessively drained soils formed in sandy eolian material. Rositas soils are on dunes and sand sheets. Slope ranges from 0% to 30% with hummocky or dune micro relief. Mean annual precipitation is about 4 inches and the mean annual air temperature is about 72°F. The soil is within the aridic soil moisture regime and is usually dry and is not moist for as long as 60 consecutive days, the driest being during the months of May and June. Organic matter is less than 0.5% and decreases regularly with depth. These soils are used for rangeland and wildlife habitat, and growing citrus fruits, grapes, alfalfa, and truck crops. Present vegetation is creosote bush, white bursage, desert buckwheat and mesquite (USDA 2019).

An evaluation of soils and soil sampling is included as part of the Preliminary Environmental Site Assessment Report (Dudek 2018). A summary of the findings is included below.

- No subsurface geologic investigations were performed as part of the Preliminary ESA. According to the U.S. Department of Agriculture National Cooperative Soil Survey, the site is mapped as underlain by Rositas loamy coarse sand and Carrizo very gravelly sand. Rositas and Carrizo soils are well- to excessively drained sands and gravels with high infiltration rates (NRCS 2018).
- Soil samples collected at the site were below laboratory reporting limits for pesticides and herbicides (Appendix F). Ten soil samples were collected and analyzed for OCPs by Environmental Protection Agency (EPA) Method 8081A. No OCPs were detected at or above the laboratory reporting limits in any of the ten samples analyzed. Laboratory reporting limits are below regulatory screening levels. Arsenic was detected above regulatory screening levels but below the acceptable background concentration (Dudek 2018). The site is currently fallow farmland land and unoccupied by human habitation. Historical use of the site consists of a citrus farm. Adjacent and nearby properties have included undeveloped land and agriculture. Based on the records reviewed and visual observations of surrounding properties, it is unlikely that adjacent or surrounding properties have impacted the environmental conditions at the site. Dudek identified items of concern in connection with the site. These items are discussed below along with recommendations (Dudek 2018):
    - Two oil filled plastic containers observed on the site should be removed and properly disposed of in accordance with applicable local, state, and federal guidelines.

- Stained soil was observed on the site near a cement platform located in the southwest corner of the site. The stained soil should be removed and disposed of in accordance with applicable local, state, and federal guidelines.
- A water well was located on the site. If the owner of the site plans to use the well in the future, the well should be capped with a lockable lid. If no future use of the well is planned, the turbine discharge head and impeller shaft should be removed and the well should be abandoned in accordance with local, state, and federal guidelines. Alternatively, the well may be converted to a monitoring well.
- Surface water was observed flowing on the site from the adjacent property to the south. The source of the surface water should be identified. The surface water should then be prevented from entering the site or rerouted off of the site. Surface water from unknown sources has the potential to carry contamination onto the site.
- There was no detection of OCPs and herbicides in the soil samples collected. Arsenic was detected in all five of the soil samples, but was below DTSC-accepted background concentrations. Dudek does not recommend additional soil sampling for OCPs, herbicides and/or arsenic. However, additional soil sampling could be requested by regulatory agencies for future permitting requirements.

No additional soil testing will be completed within the proposed Restoration Site as this is a passive restoration exercise and therefore amendment of soils in not necessary as there is an existing native seed bank.

4.1.3 Existing Vegetation

The existing vegetation is highly disturbed throughout the mitigation site as a result of the previous land use as an orchard. The proposed Restoration Site is currently a mixture of sparse, scattered, patchy, or remnant vegetation. Tree chippings were either compiled into windrows or spread evenly as ground cover (Photograph 1). Tree stumps and larger branches were observed on site (Photograph 2). Windblown sand and sediment have covered tree chippings in some areas, especially the northwest section (Photograph 3). Black plastic irrigation lines were observed in areas of chipped trees both at the surface and in the ground (Photographs 4 and 5). Vertically installed polyvinyl chloride (PVC) pipes, assumed to be used for irrigation, were observed on the site (Photograph 6) (Dudek 2018).

Four native vegetation communities and two land cover types were mapped by Dudek biologists within the Restoration Site (Table 6). These vegetation communities and land cover types are described below. Their spatial distributions are presented in Figure 4. These vegetation communities follow the Draft Vegetation Communities of San Diego County (Oberbauer et al.

2008). Vegetation communities considered special status may require mitigation by the County (County of San Diego 2010).

Table 6
Vegetation Communities and Land Covers Types within the Viking Ranch Restoration Site

Vegetation Communities and Land Cover Types		
Vegetation Class (Oberbauer Code)	*Vegetation Type (Oberbauer Code)*	*Total (Acres)*
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	49.0
	Orchards and Vineyards (18100)	1.9
	Disturbed and Developed Areas Subtotal	50.9
Scrub and Chaparral (30000)	Sonoran Creosote Bush Scrub (33100)[b]	53.2
	Sonoran Wash Scrub (33230)[b]	1.4
	Desert Saltbush Scrub (36110)[b]	35.0
	Scrub and Chaparral Subtotal	89.6
Riparian and Bottomland Habitat (60000)	*Mesquite Bosque (61820)[b]*	*19.5*
	Riparian and Bottomland Habitat Subtotal[c]	*19.5*
	Total[c]	160

[a] Oberbauer et al. (2008).
[b] Considered special status by the County (2010).
[c] Totals may not sum due to rounding.

4.1.3.1 Disturbed Habitat (11300)

Disturbed habitats are areas that have been physically disturbed and are no longer recognizable as a native or naturalized vegetation association (Oberbauer et al. 2008). These areas may continue to retain soil substrate. If vegetation is present, it is almost entirely composed of non-native vegetation, such as ornamentals or ruderal exotic species. Examples of these areas may include graded landscapes or areas, graded firebreaks, graded construction pads, temporary construction staging areas, off-road-vehicle trails, areas repeatedly cleared for fuel management, or areas that are repeatedly used in ways that prevent revegetation (e.g., parking lots, trails that have persisted for years).

Within the Restoration Site, disturbed habitat is mapped primarily in the eastern portion of the Project Site and is characterized by the disturbed soils and lines of wood chip mulch and the predominance of Russian-thistle (*Salsola paulsenii, S. tragus*) with some Mediterranean schismus (*Schismus barbatus*). There is no significant shrub cover, but occasional patches of plicate tiquilia (*Tiquilia plicata*) and desert dicoria (*Dicoria canescens*) are present in some areas.

4.1.3.2 Orchards and Vineyards (18100)

Orchards and vineyards are usually artificially irrigated and dominated by one (or sometimes several) non-native tree or shrub species. Understory growth of orchards and vineyards often include short grasses and other herbaceous plants between the rows of trees or vines (Oberbauer et al. 2008). Although orchards and vineyards are of limited value to most native plants and animals, they can provide nesting and perching sites for several bird species.

On site, orchards and vineyards is mapped along the southern boundary in the eastern portion of the Restoration Site where a windrow of horsetail tree (*Casuarina equisetifolia*) has been planted, as well as rows of citrus trees. The citrus trees may actually be located on the adjacent parcel. The edges of the orchard in the eastern portion of the site include giant reed (*Arundo donax*), saltcedar (*Tamarix ramosissima*) and honey mesquite (*Prosopis glandulosa* var. *torreyana*).

4.1.3.3 Sonoran Creosote Bush Scrub (33100)

Sonoran creosote bush scrub is an upland vegetation type that is dominated by creosote bush (*Larrea tridentata*) and may include white bur-sage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and ocotillo (*Fouquieria splendens* ssp. *splendens*). Shrubs are generally widely spaced; the ground layer is generally dominated by bare ground with seasonal ephemeral herbs (Oberbauer et al. 2008).

Sonoran creosote scrub dominates the southwestern portion of the Restoration Site and also occurs in the northeastern and northwestern corners. The Sonoran creosote scrub on site is dominated by creosote and includes the following associated species: four-wing saltbush (*Atriplex canescens*), desert dicoria, and white bur-sage. The understory is dominated by sparse Mediterranean schismus, but some areas include cryptantha (*Cryptantha* spp.). Overall, the community is sparse with less than 15% total vegetative cover. Disturbance of this community is evident with tree chippings patchily distributed throughout.

4.1.3.4 Sonoran Wash Scrub (33230)

Sonoran wash scrub is a desert wash vegetation community located in the drier parts of desert streams. This community is generally dominated or co-dominated by leafy burrobush (*Ambrosia monogyra*), desert-lavender (*Condea emoryi*), and/or chuperosa (*Justicia californica*). Other associated species include catclaw acacia (*Senegalia greggii*), desert willow (*Chilopsis linearis* ssp. *arcuata*), dalea (*Psorothamnus* spp.), ironwood (Olne*ya tesota*), and/or mesquite (*Prosopis glandulosa*) (Oberbauer et al. 2008).

Sonoran wash scrub occurs in a wash in the northeastern corner of the Restoration Site. On site, this community is co-dominated by desert dicoria and creosote bush with smoke tree (*Psorothamnus spinosus*). Other species with less cover include desert willow, leafy burrobush, many-fruit saltbush

(*Atriplex polycarpa*), and plicate tiquilia. Overall, vegetation density is relatively low with less than 10% cover. The community is disturbed with evidence of tree chippings in clumps throughout.

4.1.3.5 Desert Saltbush Scrub (36110)

Desert saltbush scrub is typically strongly dominated by a single saltbush (*Atriplex* spp.) species with some succulent species. This community occurs in areas with high alkalinity and/or salinity (Oberbauer et al. 2008).

Desert saltbush scrub occurs in the northwestern and southeastern portions of the project site. On site, this community is generally dominated by many-fruit saltbush. Associated species include creosote bush, desert dicoria, smoke tree, honey mesquite, arrow weed (*Pluchea sericea*), barbwire Russian-thistle (*Salsola paulsenii*), white bur-sage, cryptantha, and four-wing saltbush. In the southern portion of the site, this open community is codominated by big saltbush (*Atriplex lentiformis*), many-fruit saltbush, and desert-holly (*Atriplex hymenelytra*) and moderately disturbed by Russian-thistle, Mediterranean schismus, and mustard (*Sisymbrium* spp.). There is also evidence of past orchard use within the desert saltbush scrub on site (i.e., soil disturbance and tree chippings). Overall, the community is sparse with low cover of shrubs.

4.1.3.6 Mesquite Bosque (61820)

Mesquite bosque is a drought-deciduous streamside thorn forest dominated by mesquite with scattered saltbush and open understories dominated by annual and perennial grasses. This community is generally maintained by frequent flooding or fire (Oberbauer et al. 2008).

On site, mesquite bosque occurs in a swath that extends from the northwestern quadrant to the southeastern corner of the site. This community on site is generally dominated by mesquite and many-fruit saltbush. Some smoke tree, tamarisk (*Tamarix* spp.), creosote, and desert willow are also present at low cover. The understory generally consists of scattered Mediterranean schismus. Overall, the community is relatively open with less that approximately 20% vegetation cover. Much of the mesquite bosque is mapped within the floodplain on site (see Section 4.1.1.1).

For additional information on the existing plant species, see Appendix G of this report.

4.1.4 Wildlife Evaluation

A general biological survey and habitat assessment for sensitive species was conducted on the Restoration Site on October 17, 2019 by Callie Amoaku and Kathleen Dayton. Wildlife species that were observed were documented and an evaluation of wildlife resources and potential to occur is included as a summary below.

Fifteen species of wildlife were observed during the surveys. Seven species of birds were observed including black phoebe (*Sayornis nigricans)*, black-tailed gnatcatcher (*Polioptila melanura*), black-throated sparrow (*Amphispiza bilineata*), loggerhead shrike (*Lanius ludovicianus*), orange-crowned warbler (*Oreothlypis celata*) rock wren (*Salpinctes obsoletus*), and Say's phoebe (*Sayornis saya*). One reptile, desert iguana (*Dipsosaurus dorsalis*) and Five mammals were recorded on site including bobcat (*Lynx rufus*), black-tailed jackrabbit (*Lepus californicus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). No amphibian species were recorded during surveys.

No special-status amphibians or reptiles were observed within the Restoration Site or have high potential to occur in the Restoration Site.

Flat-tailed horned lizard (*Phrynosoma mcallii*; FTHL) has a low potential to occur based on the current status of the habitat. The site is covered in Mediterranean schismus, woody debris, and shrubs. As the upland areas are re-established on the Restoration Site, FTHL would have a moderate potential to occur. The re-establishment of waters and seeding of the area would provide higher quality habitat.

Two special-status birds were observed within the Restoration Site, black-tailed gnatcatcher and loggerhead shrike. Additionally, Swainson's hawk has a high potential to forage within the Restoration Site, however, there is insufficient nesting habitat.

One special-status mammal was observed within the Restoration Site, San Diego black-tailed jack. The site contains open and disturbed area, which this species prefers. No other special-status mammals have high potential to occur in the Restoration Site.

Peninsular bighorn sheep (*Ovis Canadensis nelson*; PBS) habitat (i.e., areas classified by USFWS as Essential Habitat) occurs adjacent to the Restoration Site boundaries. Composition of dominant plant species is similar to adjacent habitat. The OHV use within PBS habitat is expected to be little to none, as trespass is expected to be minimal. The area west of the site Restoration Site is owned by the Anza Borrego Foundation, the areas north and east of the Restoration Site are a part of Anza Borrego State Park and patrolled by State Parks, and areas south of the Restoration Site are privately owned orchards (Figure 3). Due to the degradation of the potential PBS foraging habitat within the Restoration Site, the re-establishment of waters and seeding of the area would provide higher quality habitat.

In order to avoid impacts to nesting birds the clearing of vegetation shall occur outside of the migratory bird nesting season. Grading of the Restoration Site should take place between September 1st and March 1st. If grading must occur during the nesting season a qualified wildlife biologist shall conduct a nesting bird survey prior to clearing work. If an active nest is found it shall be protected in place with a work-free buffer with a radius determined by the biologist in consultation with the CDFW.

For additional information on the existing wildlife species, see Appendix H of this report.

4.1.5 Restoration Site Cultural Resources Evaluation

A record search for potential cultural resources was conducted by Dudek archeologists for the Restoration Site. No cultural resources have been recorded within the proposed Restoration Site and within a 1-mile buffer area. Appendix I includes verification that SHPO has approved the reports. While no significant impacts or known tribal resources have been identified, there is potential for the proposed project to result in impacts on unknown subsurface tribal resources during grading. Cultural monitoring is recommended during earth disturbance work during restoration implementation.

4.1.6 Native Plant Communities to be Enhanced

As a part of this restoration program a native seed mix will be imprinted within the graded upland areas. Creosote habitat will be enhanced by removing the windrows, reconnecting the aquatic hydrology, and seeding the graded areas. See Section 7, Mitigation Work Plan for restoration information.

This HMMP is intended to satisfy mitigation requirements for the Expansion project. The mitigation proposed is compensatory mitigation to offset jurisdictional impacts to aquatic resources, outlined in Section 2, Objectives, of this report.

4.2 Old Kane Springs Road Baseline Conditions

The proposed Old Kane Springs Road Preservation Site is located within the Borrego Valley Groundwater Basin, and the Ocotillo Wells Groundwater Subbasin 7-024.02 (County of San Diego 2019). It is directly north of the Anza Borrego State Park, and bordered to the south by the Vallecito Mountains, a flat valley to the east, and undulating gullied lands to the north and west. The Preservation Site is within the San Felipe Creek 18100203 HUC 8, Lower Borrego Valley 1810020305 HUC 10, Upper Lower Borrego Valley 181002030502 HUC 12.

General topographic information for the site and the surrounding area was obtained from a review of the Harper Canyon and Borrego Mountain 7.5-minute U.S. Geological Survey topographic map

(Figure 1). The topography of the site slopes gently from the southwest down to the northeast. The elevation of the site ranges from 360 to 440 feet above mean sea level

4.2.1 Hydrology

Based on a review of historical aerial imagery and topographic maps, the area receives water from direct precipitation that flows from the Vallecito Mountains into an unnamed stream that flows down to the valley floor. The stream meanders across the site creating braided channels through the unconfined basin area. The Preservation Site is within the Borrego Springs Sub-basin 18100203, which lies within the same sub-basin as the Expansion Project.

According to USFWS NWI mapping (USFWS 2021), riverine features on the site continue off site to the east and flow through the alluvial fan until it widens and becomes undefined near Split Mountain Road, approximately 4 miles east of the site; at this point, the features are no longer mapped. Hydrologic connectivity to downstream washes or known creeks and rivers is unclear, but it is likely that sheet flows or groundwater from these features that cross the site eventually drain into San Felipe Creek and later the Salton Sea, east of the site.

4.2.1.1 Jurisdictional Delineation

The site was evaluated for evidence of fluvial indicators such as drainage swales, mud cracks, drift, wracking, cut banks, and sediment transportation and sorting. The extent of any potential aquatic resources was determined by mapping the areas with fluvial characteristics and topography showing evidence of consistent flow patterns and hydrologic connectivity. To assist in the mapping of non-wetland waters, data was collected using the USACE's *A Field Guide to the Identification of the Ordinary High Water Mark* (*OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (USACE 2008). Dudek also utilized the *Episodic Stream Indicator Data Sheet* of the California Energy Commission (CEC) document *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (CEC 2014) to document several of the features within the study area. These data sheets can be found in Appendix K.

Since no hydrophytic vegetation and/or associated wetlands were present on the site, streambed and non-wetland waters mapping was the focus of the delineation. These features, hereafter referred to simply as "non-wetland waters," were delineated from bank to bank, using the top of the bank as the boundaries of the channel.

Non-wetland waters were delineated using a Trimble R1 GNSS Receiver with Esri Collector on a mobile device. The widths of each non-wetland water were determined in the field according to the top of bank of each feature. OHWM data forms describing channel attributes across the site are included in Appendix K.

4.1 Non-Wetland Waters

Overall, the site landscape drains water in an easterly direction, mainly through a large alluvial fan/wash consisting of numerous braided low-flow channels within the desert dry wash woodland vegetation community; this wash was mapped from bank to bank to include all low-flow channels within its banks as one large non-wetland water. Additionally, several smaller non-wetland waters flowing through the upland Sonoran mixed woody scrub were mapped adjacent to or connecting to the wash; these features had well-defined banks (albeit smaller and less pronounced than those associated with the larger wash) and stood out from the surrounding upland vegetation community. All aquatic features in the study area deemed to be potentially jurisdictional are displayed in Figure 3, Aquatic Resources Map.

Non-wetland waters on site are ephemeral meaning they only flow during storm events. These features were mapped because they had evidence of flow and hydrology indicators, such as bed and bank, drift deposits, sediment sorting, and/or mud cracks. These features are classified as non-wetland waters and are likely regulated by RWQCB and CDFW as waters of the state.

4.2 Swales

Several potential swale features without well-defined banks may present on site; these include areas of occasional surface sheet flow with slight topographic depressions and occasional, but often inconsistent, fluvial indicators that may not be subject to regulation by any of the agencies. These features were not mapped under the scope of this delineation but may be considered jurisdictional upon agency review; they can be added to the map using aerial signatures at a later date if needed. Representative photos of these potential swale features are provided in Appendix J.

Results of the jurisdictional delineation are summarized in Table 7, on Figure 5, and the jurisdictional delineation raw data forms in Appendix K. There are approximately 60.99 acres of RWQCB-jurisdictional non-wetland waters present both inside and outside of alluvial fan/wash and outside of alluvial fan wash.

Table 7
Jurisdictional Resources within the Preservation Site

Type	Jurisdiction	Acres [a]
Non-Wetland Waters of the State (Within Alluvial Fan/Wash)	CDFW and RWQCB	59.76
Non-Wetland Waters of the State (Outside of Alluvial Fan/Wash)	CDFW and RWQCB	*1.23*
Total ACOE/RWQCB Non-Wetland Waters and CDFW Streambeds[b]		60.99

[a] Totals may not sum due to rounding.

4.2.2 Soil Conditions

Federal and state soil mapping typically used to obtain data on soils underlaying the Preservation Site are not available within the boundaries of the Mitigation site (UC Davis/NRCS 2021). However, based on topographic features it appears that the adjacent soil series adjacent soils include are mapped as Carrizo (CeC) very gravelly sand, 0% to 9% slopes, eroded; Riverwash (Rm), Rositas (RsC) loamy coarse sand, 2% to 9% slopes , and Sloping gullied land (SrD) (USDA 2019).

The Carrioz and Rositas soil series are described above in Section 4.1.2. According to the Natural Resource Conservation Service (NRCS), Sloping gullied lands are drainageways containing minor components of hydric soils. Gullys are steep-sided channels caused by erosion and cut in unconsolidated materials by concentrated by intermittent flow of water. Riverwash are drainageways with parent material of sandy gravelly or cobbly alluvium derived from mixed sources. These areas are excessively drained (USDA 2019).

No soil testing will be completed within the proposed Preservation Site as no restoration will occur within this site and therefore amendment of soils in not necessary as there is an existing native seed bank.

4.2.3 Existing Vegetation

Two native vegetation communities were mapped by Dudek biologists within the Preservation Site (Table 8). These vegetation communities are described below. Their spatial distributions are presented in Figure 6. These vegetation communities follow the Draft Vegetation Communities of San Diego County (Oberbauer et al. 2008).

Table 8
Vegetation Communities within the Old Kane Road Preservation Site

Vegetation Communities		
Vegetation Class (Oberbauer Code)	*Vegetation Type (Oberbauer Code)*	*Total (Acres)*
Scrub and Chaparral (30000)	Sonoran Mixed Woody Scrub (33210) [b]	50.55
Riparian and Bottomland Habitat (60000)	Desert Dry Wash Woodland (62200) [b]	69.08
	Totalc	119.63

[a] Oberbauer et al. (2008).
[b] Considered special status by the County (2010).
[c] Totals may not sum due to rounding.

4.2.3.1 Sonoran Mixed Woody Scrub (33210)

Sonoran Mixed Woody Scrub is described as a Colorado desert community with mixed woody species occurring on well-drained slopes and alluvial fans, usually at the base of mountains. The three most characteristic species of this community also dominate this vegetation community on site: creosote bush, white bursage and ocotillo (Oberbauer et al. 2008).

This community occurs outside of the well-defined alluvial fans/drainages on the site.

4.2.3.2 Desert Dry Wash Woodland (62200)

Desert Dry Wash Woodland is described as an open to dense, drought-deciduous riparian scrub woodland 30-60 feet tall that is typically dominated by ironwood, desert willow) or blue palo verde (*Parkinsonia florida*). It occurs in sandy, gravelly washes and arroyos of the lower Mojave and Colorado deserts. These washes typically have braided channels that are substantially rearranged with every surface flow event (Oberbauer et al. 2008).

On site, this community is dominated by ironwood and occupies the main alluvial fan/wash in the center of the site. Scattered creosote bush shrubs occur within this community, along with white bursage.

For additional information on the existing plant species, see Appendix L of this report.

4.2.4 Wildlife Evaluation

A general biological survey and habitat assessment for sensitive species was conducted on the Preservation Site September 1, 2021 by Dudek biologists Callie Amoaku, Cody Schaaf, Erin Bergman and Charles Adams.. Wildlife species that were observed were documented and an evaluation of wildlife resources and potential to occur is included as a summary below.

Seven species of wildlife were observed during the surveys. Two species of birds were observed including bushtit (*Psaltriparus minimus*), and mourning dove (*Zenaida macroura*). One invertebrate, dainty sulphur (*Nathalis iole*) Two reptiles sidewinder (*Crotalus cerastes)* and tiger whiptail (*Aspidoscelis tigris*), and Two mammals were recorded on site including desert kangaroo rat (*Dipodomys deserti)* and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)No amphibian species were recorded during surveys.

No special-status amphibians, reptiles, or birds were observed within the Preservation Site or have high potential to occur in the Preservation Site.

Flat-tailed horned lizard (*Phrynosoma mcallii*; FTHL) has a moderate potential to occur based on the habitat present at the site.

One special-status mammal was observed within the Preservation Site, San Diego black-tailed jack. The site contains open and disturbed area, which this species prefers. No other special-status mammals have high potential to occur in the Preservation Site.

Peninsular bighorn sheep (*Ovis Canadensis nelson*; PBS) habitat (i.e., areas classified by USFWS as Essential Habitat) occurs adjacent to the Preservation Site boundaries. Composition of dominant plant species is similar to adjacent habitat.

For additional information on the existing wildlife species, see Appendix M of this report.

5 DETERMINATION OF MITIGATION CREDITS

Definitions of establishment and rehabilitation vary between regulatory agencies. For the purpose of this Plan, the following definitions apply:

Rehabilitation Manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing the natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function but does not result in a gain in aquatic resource area (ACOE 2015) This mitigation type is generally referred to as rehabilitation by RWQCB, and as restoration by CDFW.

Enhancement is defined as Manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area (ACOE 2015). This mitigation type is generally referred to as enhancement by This mitigation type is generally referred to as rehabilitation by RWQCB, and as restoration by CDFW,

Preservation Removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions (ACOE 2015). This mitigation type is generally referred to as enhancement by This mitigation type is generally referred to as rehabilitation by RWQCB, and as restoration by CDFW,

5.1 Viking Ranch Restoration Site

Restoration on the Viking Ranch Site will provide rehabilitation and enhancement mitigation credits. Rehabilitation of approximately 108 acres will remove impediments to flows, restore the natural fluvial functions of desert wash, and improve the native desert saltbush scrub. Enhancement will take place on approximately 50 acres within the Viking Ranch Restoration Site, approximately 8 acres directly east (upstream) of the restoration site, and approximately 42 acres west (downstream) of the Restoration Site through the removal of natural impediments to flow and passive restoration on-site. The Restoration Site is designed to be self-functioning and self-sustaining after the 10-year maintenance and monitoring period. Factors that affect the mitigation on the Restoration Site are included below.

- The Expansion Project will be implemented over a long period. It is currently estimated that mining activities will require 69 years to extract 161 million tons of the gypsum deposit (See table of anticipated mine schedule in Appendix B). Restoration will be initiated on Viking Ranch in the first year of the mine operation. Compensatory mitigation has been discussed for the impact acreage that would occur in the first 10 years of mine operations., consistent with Permittee-Responsible Mitigation where mitigation is concurrent with impacts, even though the primary functional impact associated with waters of the state is hydrology that is replaced early in the mitigation process. The balance of the mitigation required will be fully implemented after the first 10 years of mining prior to years 11-69 of mining..
- It is located within the same Parent Watershed, HUC 8, San Felipe Creek Watershed 18100203 as the Expansion Project.
- The mitigation is desert wash and therefore in-kind mitigation.
- A portion of the Restoration Site presently experiences episodic water flow from Coyote Creek where water has broken through the perimeter berm and flowed onto the site. These flow areas were mapped using submeter global positioning system (GPS) equipment. Approximately 50 acres are assumed to be jurisdictional and the balance of the mitigation site (108 acres) is not jurisdictional due to the effects of agricultural practices. Where flow occurs, it is restricted to a small aperture in the berm leading to concentrated flow that is atypical for braided desert washes. In addition, water flow is highly modified once on site by substantial topographic modification from the fallowing activities. These activities left large amounts of coarse woody debris and soil windrows that impede the normal flow of water, further modifying natural braided flow across the site. This flow had resulted in bed instability in the southeast corner of the site where a substantial head cut is forming, threatening the site with long term future adverse modification that, if not corrected, will further degrade the site and areas downstream.
- A structure will be required at the southeast corner of the site where bed instability has occurred from land modifications leading to a six-foot head cut. A grade structure will be built to stabilize the bed and create a transition from the mitigation site to the downstream channel. This structure would become obsolete and unnecessary if downstream orchards are retired and restored as contemplated in the Borrego Groundwater Sustainability Plan.
- Natural off-site water flow in Coyote Creek is modified by the berms that diverts flow around the property. Approximately 8 acres of adjacent off-site desert wash area has been documented to artificially impound water upstream of the western berm. Removal of the berms and diversion ditch will enhance and re-establish normal desert hydrology in these off-site areas by returning the area to a typical braided flow regime. Beneficial effects that

will result from berm removal include natural transport of suspended fine soil particles that have accumulated in the ponded areas and stifled vegetation recruitment.

- Similarly, approximately 34 acres of off-site areas downstream of the Restoration Site currently do not receive flows from Coyote Creek due to the diversion ditch and berm. Removal of the diversion features will re-establish creek flows and, in so doing, improve a number of aquatic functions that benefit species diversity, wildlife habitat, and groundwater recharge.

- Additional compensatory mitigation credit (in the form of enhancement) for the off-site benefits created by the proposed restoration may be granted in accordance with the ACOE Regulatory Guidance Letter (September 25, 2018; ACOE 2018) for the Determination of Mitigation Credits for the Removal of Obsolete Dams and Other in stream structures.

5.2 Old Kane Springs Road Preservation Site

Preservation of approximately 121 acres within the Old Kane Springs Road Preservation Site will removal of a threat of development within the parcel preventing the decline of aquatic resources and associated native vegetation providing preservation credit. Factors that affect the mitigation are included below.

- As Previously discussed, the Expansion Project will be implemented over a long period. It is currently estimated that mining activities will require 69 years to extract 161 million tons of the gypsum deposit. The Preservation Site will be protected in place once the permanent conservation easement has been accepted by the RWQCB. The balance of the mitigation required will be fully implemented after the first 10 years of mining prior to years 11-69 of mining.

- This 121-acre site will preserve the existing desert wash, braided channels, fluvial process, and associated vegetation and wildlife within site by protecting it in-place via recordation of a permanent conservation easement, over the entire Preservation Site.

- It is located within the same Parent Watershed, HUC 8, San Felipe Creek Watershed 18100203 as the Expansion Project.

- The Preservation Site will be protected in-place in perpetuity without threat of future development, disturbance and/or encroachment.

5.3 Overall Mitigation Ratio

Determination of mitigation ratio, type of mitigation, and location of off-site mitigation was based on coordination with regulatory agencies and are presented in Table 9. All permanent impacts to aquatic resources will be mitigated at a 1.92:1 (overall) mitigation- ratio, and include a 108.6 acre rehabilitation component, a 97.7 acre enhancement component, and a 61 acre preservation component for a total of 267.3 acres of mitigation.

Table 9. Project Mitigation for Permanent Impacts to the Expansion Project

Expansion Project Impact Type	Expansion Project Impact Acreage	Hydraulic Regime	Mitigation Timing	Location of Mitigation	Mitigation Type	Mitigation Ratio	Mitigation Acreage
Non-wetland Waters	139.49	Ephemeral	Concurrent and Pre-mitigation	Viking Ranch Restoration Site	Rehabilitation	0.78:1	108.6
					Enhancement	0.7:1	97.7
				Old Kane Springs Road Preservation Site	Preservation	0.44:1	61.0
Total	139.49	--	--		--	1.92:1	267.3

6 SITE PROTECTION MEASURES

6.1 Viking Ranch

The Restoration Site boundaries will be surveyed, posted with signage indicating the area is a natural open space preserve and that trespassing is not allowed. A fence is not proposed because the area is surrounded by public open space lands on three sides and by active orchards on the south with restricted access. A locked gate will be installed across the access road into the site to restrict vehicular access to the Restoration site.

Prior to completion of the 10-year mitigation program the Restoration Site will be protected in-place via recordation of a permanent conservation easement, over the entire Restoration Site. The protection mechanism shall be adequate to demonstrate that the Restoration Site will be protected in-place in perpetuity without threat of future development, disturbance and/or encroachment. The conservation easement shall prohibit all residential, commercial, industrial, institutional, and transportation development, and any other infrastructure development that would not maintain or enhance the natural functions and values of the Restoration Site. The well will be retained on site as a groundwater monitoring well to be used exclusively by the Borrego Water District. Utility lines, sewer lines, drainage lines, access roads, and other passive and/or active recreation areas shall not be allowed in the Restoration Site where these easements/uses do not currently exist. Upon meeting the final success criteria the site will be managed by a qualified long-term (in-perpetuity) natural lands manager. The identification of the long-term manager would be subject to regulatory agency approval.

6.2 Old Kane Springs Road

The preservation site boundaries will be surveyed, posted with signage indicating the area is a natural open space preserve and that trespassing is not allowed. A fence is not proposed because the area is surrounded by public open space lands on all sides with restricted access. A locked gate will be installed across access roads into the site to restrict vehicular access to the preservation site.

the preservation site will be protected in-place via recordation of a permanent conservation easement, over the entire preservation site. The protection mechanism shall be adequate to demonstrate that the preservation site will be protected in-place in perpetuity without threat of future development, disturbance and/or encroachment. The conservation easement shall prohibit all residential, commercial, industrial, institutional, and transportation development, and any other infrastructure development that would not maintain or enhance the natural functions and values of the preservation site. Utility lines, sewer lines, drainage lines, access roads, and other passive and/or active recreation areas shall not be allowed in the Restoration Site where these easements/uses do not currently exist.

The preservation site will be managed by a qualified long-term (in-perpetuity) natural lands manager. The identification of the long-term manager would be subject to regulatory agency approval.

7 MITIGATION WORK PLAN

This section describes in detail who will be responsible for each task and how the proposed compensatory mitigation program will be accomplished.

7.1 Viking Ranch Restoration Site

7.1.1 Project Implementation Personnel

7.1.1.1 Permittee/Project Manager

United States Gypsum Company (USG) will own the property once acquisition from the Borrego Water District is complete. As the permittee, USG will be responsible for restoration implementation, installation and successful implementation of this HMMP. Project management will be provided by USG (or subsequent legal owners) who shall be financially responsible for the implementation and management of this project.

7.1.1.2 Project Biologist

USG will select a qualified Project Biologist who will review the environmental permits, documents, final HMMP and restoration construction documents; and help to ensure that all site protections, pre-work bird surveys, and any other required items are adequately performed prior to beginning restoration work.

The Project Biologist will perform site monitoring during restoration implementation and throughout the 10-year maintenance and monitoring period. The project biologist will prepare restoration annual reports with required biological data and submit them to USG and the regulatory agencies. The Project Biologist shall have a degree in biology, ecology, or related field and be able to demonstrate experience with similar restoration projects in San Diego County. The Project Biologist shall possess at least 10 years of habitat restoration experience in Southern California.

7.1.1.3 Restoration Contractor

USG will select a qualified Restoration Contractor to implement the restoration installation work and provide subsequent Restoration Site maintenance. Restoration installation work shall be performed by a contractor possessing a valid California landscape contractor's license (Class C-27), who has previous experience with native habitat restoration in San Diego County and who can demonstrate at least three successful similar restoration projects in Southern California. The

contractor must be able to identify California native plants and common weed species and demonstrate knowledge of habitat restoration techniques.

The contractor will be responsible for conformance to (1) this HMMP, and (2) regulatory agency permit requirements. The contractor's responsibility for installation will continue until successful completion and final acceptance by USG and the Project Biologist. The contractor will not be released from contractual obligations for installation until written notification is received from USG, that all required installation tasks as defined in the installation contract, final plans and specifications, this HMMP, and the project permits have been successfully completed.

After initial installation and completion of implementation, USG will contract for 10 years of maintenance services performed by a qualified maintenance contractor that specializes in the maintenance/management of habitat restoration/natural lands. Maintenance work shall be performed as indicated herein and per the Project Biologist's recommendations. USG may choose to hire a maintenance contractor that is separate from the installation contractor or relieve a contractor that fails to perform work satisfactorily.

7.1.1.4 Seed Supplier

The seed supplier must be a qualified commercial native plant seed supplier, having collection sources from within the San Felipe Watershed area, and must have experience collecting seeds from native upland desert areas appropriate for this restoration project.

Conditions for seed collection should follow sound ecological restoration practices. The project biologist may substitute plant species should the species listed in the HMMP not be available at the time of collection as appropriate. Seed collection shall comply with all resource agency permits and requirements.

7.1.2 Site Preparation

Site preparation shall be conducted under direction from USG and the Project Biologist. The grading has been designed to ensure the flows of Coyote Creek have an equal chance to flow across any portion of the compensatory Restoration Site as appropriate for the watershed location and physical/hydrologic condition (Figure 1). The site topography is designed to allow flows to freely migrate laterally over the re-established floodplain to create naturally braided channels.

Specific site preparation tasks are outlined below. Prior to site preparation, photo points will be selected and pre-implementation photos taken to document site conditions prior to restoration implementation.

7.1.2.1 Weed and Invasive Species Removal

Prior to vegetation removal the Restoration Contractor shall meet with the Project Biologist to determine the best way to access the areas and remove vegetation without damaging adjacent native habitat. Although a former orchard was demolished several years ago, the fallowing process was not conducted in a manner that re-established normal desert ecological systems on the property and the hydraulic disconnection with Coyote Creek remains. Orchard debris wood chips and larger stumps and branches remain a significant impediment to flow as well as diversion berms and ditches. The project will clean the site of all large and/or coarse woody debris, surface irrigation pipe, irrigation stand pipes, electrical infrastructure, etc. Existing native and non-native vegetation will be removed where necessary. Topsoil containing the seed bank of existing native vegetation will be retained on site.

Within the Restoration Site the non-native tamarisk shall be cut to grade and treated with a systemic herbicide approved for use in wetland areas. Cut tree segments shall be carefully removed from the site avoiding damage to adjacent habitat. Any other non-native herbaceous species present in the enhancement areas shall be removed using hand tools. Cut vegetation shall be bagged/containerized and disposed of off-site in a legal manner.

7.1.2.2 Grading

Following non-native vegetation removal, the northern berm and diversion ditch will be backfilled and leveled with the adjacent upstream topography to remove the impediment to downgradient braided flow (Figure 7, Conceptual Mitigation Plan). The eastern berm will be graded to create numerous breaks in the berm to create multiple flow paths for flood waters to enter the Restoration Site. Portions of the eastern berm will be retained as dune features where possible, without impeding re-establishment of braided flow onto the Restoration Site from the floodplain to the east and northeast of the Restoration Site. Interior non-jurisdictional areas of the Restoration Site will be graded to provide the opportunity for flood water to flow in braided pattern across the entire Restoration Site. No soil import or export is anticipated for the project.

The overall site will be graded to be compatible with the surrounding native land surface elevations, setting the top 2" of topsoil aside and used for final grade. Rough contour grading of ephemeral channels will take place to create micro-topographic variances as shown in Figure 7. The design is intended to re-establish braided flow patterns across the Restoration Site, consistent with adjacent Coyote Creek wash. It is anticipated that flood flows will naturally create macro- and micro-topographic fluvial features within the Restoration Site and a diversity of hydrologic and geomorphic conditions, leading to characteristic desert plant communities and animal habitat. The final grade shall be reviewed and approved by the Project Biologist prior to removing grading equipment off site.

A grade structure is planned to be constructed in the south east corner of the project where channel incision sis beginning to run up into the proposed Restoration Site. If left unchecked, the head cut will continue to migrate upstream into the Restoration Site resulting in erosion of the land surface and destabilization of the floodplain. The structure will be constructed of wood timbers and slats to retain the soil on the Restoration Site (Figure 8, Typical Retaining Grade Structure Detail). The effect of the structure will be to retain the upstream channel bed to stabilize the head cut that is presently causing unnatural flow and erosion on the site. The structure will be built to withstand water flow over the top, creating a stable bed gradient upstream (within the Restorations Site)and allowing water to continue flowing to the lower elevation floodplain present downstream.

Long term, the Restoration Site will once again become part of the wash and will receive hydrologic inputs from the surface flows of Coyote Creek.

Final Restoration Site construction grading plans and specifications shall be prepared by a registered landscape architect and, or civil engineer in consultation with the Project Biologist. Final structure alteration plans are subject to regulatory agency approval.

7.1.2.3 Erosion Control BMPs

Heavy sediment transport is a typical function of desert washes and flood plains. The intent of the restoration project is to return the former agricultural field into the functional floodplain of Coyote Creek wash. As such, the goal of the project is to provide a stable land surface under dynamic flow conditions. It is expected that sediment will be deposited and exported from the Restoration Site during flood events. Erosion control best management practices (BMPs) will be used where necessary to maintain normal sediment transport functions while limiting destabilization of the Restoration Site. In general, the native vegetation established through seeding will provide effective erosion control, however additional BMPs such as burlap encased straw wattles/fiber rolls or burlap gravel bags may be needed, as determined by the Project Biologist and, or Qualified SWPPP Practitioner (QSP). Any recommendations made by the QSP or anyone else for the Restoration Site shall be pre-approved by the Project Biologist. BMPs with nylon netting shall not be used in Restoration Site. All straw wattles/fiber rolls shall be certified free of noxious weeds. Erosion control seeding may not be applied to Restoration Site unless pre-approved by the Project Biologist. Non-native seeds shall be avoided at all times

7.1.2.4 Interim Weed Control

If weed seedlings are detected following initial site clearing work and before planting and seeding occurs the Restoration Contractor shall remove all weeds. Areas to be seeded shall be completely free of weeds and have only bare mineral soil exposed at the time of seeding. Weed control will

include hand-pulling of weeds, use of hand tools, weed whips, and/or foliar treatments of appropriate herbicides as determined by the Biological Monitor. Specific herbicide application rates and methods will be based on manufacturer specifications, and will follow the general guidelines summarized below:

- Application methods will follow manufacturer specifications regarding application and safety procedures. Herbicide application shall comply with state and local regulations. All application tasks will be performed by or under supervision of a licensed applicator with the Pest Control Business License issued by the State of California Department of Parks and Recreation (DPR) and registered with the County Agricultural Commissioner.
- Herbicide Application will consist of (1) spot applications to individual plants where weed coverage is sparse and (2) broadcast applications to dense patches of weed species. Applications should be uniform and complete. Contact with native species must be avoided; in the event of gusty winds or winds in excess of 5 miles per hour (mph), application work will be temporarily discontinued to protect applicators and adjacent natural resources. Treatments should also be temporarily discontinued in the event of rainfall since rainfall reduces the effectiveness of the herbicide.
- Sprayed vegetation should be left undisturbed for 7 days to allow the herbicide to be distributed throughout the entire plant. Visible effects of herbicide application consist of wilted foliage, brown foliage, and disintegrated root material.
- All dead weed materials shall be removed from the soil surface and disposed of.

7.1.2.5 Seed Selection

A native seed mix of appropriate desert plant species that are present within the Coyote Creek Wash will be imprinted onto the Restoration Site (Table 10). Should imprinting cause grade changes, seed drilling may be required in some areas in order to maintain flow. All seed will be of local origin within the San Felipe Creek watershed. Should the seed be unavailable, the Project Biologist will provide a suitable substitute, if applicable and as availability provides.

The seed mix is intended to augment the existing seed bank and natural transport of seed and propagules from the surrounding native landscape. Seed bank augmentation will help accelerate vegetation establishment and species diversity. However, this plan relies solely on passive vegetation recruitment due to the infeasibility of irrigation and the episodic nature of rain in the desert. It should be noted that vegetation recruitment is not necessary to re-establish or enhance waters of the state and this is consistent with the project impacts to waters of the state functions.

Once the Restoration Site has been graded, temporary BMPs installed, and the soil surface free of weeds, and trash, seeding may occur under direction of the Project Biologist. Fall and early winter are optimal seeding times in terms of natural rainfall potential, and dormancy of many plant species.

Table 10
Desert Saltbush Scrub Seed Mix

Botanical Name	Common Name	Percent P/G[a]	Application Rate (Pounds/Acre)
Ambrosia dumosa	White bursage	90/50	3.0
Ambrosia salsola	Cheesebush	95/50	3.0
Atriplex canescens	Four-wing saltbush	95/40	1.0
Atriplex polycarpa	many-fruit saltbush	75/50	4.0
Baileya multiradiata	Desert Marigold	95/85	1.0
Croton californica	California croton	90/40	0.5
Cryptantha angustifolia	Narrow-leaved Cryptantha	20/40	0.5
Dicoria canescens	desert dicoria	n/a	1.0
Larrea tridentata	Creosote bush	90/40	2.0
Prosopis glandulosa	mesquite	95/50	0.5
Tiquilia plicata	Plicate coldenia	n/a	0.5
		Total	18.0

[a] All seed will originate from within the watershed either from previous seed collections or field collected for this project. Seed purity and germination can vary dramatically for field collected seed from wild populations. The purity and germination rates shown are typical of each species.

7.1.2.6 Seed Application

All seeds shall be clearly labeled showing type of seed, test date, the name of the supplier, origins, and percentage of the following: pure seed, crop seed, inert matter, weed seed, noxious weeds, and total germination content. All material will be delivered to the site in original, unopened bags bearing the seed supplier's guaranteed analysis. Prior to delivery and application the restoration Contractor shall submit material data including copies of the seed bag certificates to the Project Biologist for review and approval.

The seed will be applied using the seed imprinting technique as described below:

- Any seed indicated on the drawings as requiring pretreatment shall be treated by the seed supplier prior to shipment.
- The seed box/bin shall be mounted above the roller and calibrated to disperse seed at the required rates as indicated on the drawings. The seed bin shall be cleared of all residual seed prior to loading seed mix. Seed bin shall have the ability to drop seed on the roller or in front on the ground in front of the imprinter.

- The imprinting operation shall be carried out on bare earth or on land that has only a minimal vegetative cover
- Seed imprinting shall be performed within 24 hours after a light rain (0.75 to 1.5 inches in a 24-hour period).
- Imprint impressions shall be V-shaped and approximately 4 to 6 inches in depth. Faces of imprints shall join to make an angle between 60 and 90 degrees. Length of each imprint shall be 10 inches. Imprinting teeth shall be arranged in alternating patterns with the ends of the teeth separated by 2 inches to discourage water channeling.
- The long dimension of the imprint shall be parallel with slope contours.
- Imprinting shall provide a raised soil ridge that prevents continuous movement of water between impressions.
- At least 75% of all imprinted surfaces shall bear quality impressions, apart from areas deemed unsuitable due to shallow soils, rocks, or other natural features.
- Seed dispensed by the imprinting device shall be in firm contact with the soil.
- A minimum of 75% of all impressions shall reach full tooth depth of approximately 4-6 inches and shall have smooth and firm soil on the impression surface area.
- Imprinter shall operate at a speed that allows full tooth penetration and dispersal of seed at the required rates (typically between 2-5 miles per hour).
- Wheat bran or approval substitute shall be mixed with seed to appropriate dilution ratio to prevent seed segregation. The optimum mixing radio is usually 1:1 by volume.
- Where unusual site conditions (fences, sign posts, at-grade features, etc.) prevent the seed imprinting machine from reaching completely to the edge of the revegetation area, hand seed and hand rake in the seed mix to ensure 100% seed coverage of these areas.

Additional seed may be hand broadcast and raked into the soil if the seed of selected species is not available at the time of initial imprinting. The contractor should consult the Project Biologist in the event that a given species on the plant palette is not be available for inclusion into the initial seed mix installation.

7.1.2.7 Avoidance and Minimization Measures

Temporary post and rope fencing will be installed at the limits of the restoration footprint (including around the diversion ditch, staging areas, and access routes) to prevent inadvertent impacts to areas outside of the restoration footprint.

Impacts from fugitive dust that may occur during berm demolition, filling of the diversion ditch, and Restoration Site grading, would be avoided to the maximum extent practicable and minimized through water application for dust control during grading activities.

A biologist will be on site to oversee installation of temporary fencing, any grading within 100 feet of existing waters of the state to ensure permit compliance (404, other permits for the project), and educate contractors as needed on biological resources associated with the project.

Equipment will be checked for fluid leaks prior to operation and repaired as necessary. A spill kit for each piece of construction related equipment should be on site and must be used in the event of a spill.

7.1.2.8 Fencing and Signage

The Restoration Site is bordered by Government owned land to the north and east, by the Anza Borrego Foundation to the west, and private property to the south. Although trespassing is low in the surrounding areas and so not anticipated on the Restoration Site, the contractor shall install free standing gates at the access point and/or bollards for extra protection. Fencing that entraps or otherwise adversely impacts wildlife shall not be used. Temporary fencing will not be installed around enhancement areas or the stream channel establishment area.

Signage shall be installed to at the gate(s) to identify the site as a habitat restoration project, and that trespassing and access from unauthorized personnel is prohibited.

7.2 Old Kane Springs Road Preservation Site

The Preservation Site will enter into long-term maintenance once the permanent conservation easement has been accepted by the RWQCB. See section 14 for the long-term maintenance information for this site.

8 MAINTENANCE PLAN

Maintenance activities will begin upon completion and approval of installation work. The Restoration Contractor's maintenance activities shall be performed as indicated herein and as necessary to meet the established performance standards.

8.1 Maintenance Guidelines

8.1.1 Viking Ranch Restoration Site

Following installation, site maintenance shall occur quarterly (seasonally) throughout the 10-year maintenance and monitoring period, or more frequently if needed to meet the performance standards indicated herein. During the first year following completion of project installation, maintenance visits will be conducted monthly during spring months when germination and rapid plant growth are anticipated, then quarterly for the remainder of each monitoring year. A schedule is shown in Table 11.

Table 11
Viking Ranch Restoration Site Maintenance Schedule

Year	Weed and Pest Control	General Site Maintenance	Erosion Control and Sedimentation	Fencing and Signage Maintenance
1	Monthly (spring); Quarterly thereafter	Monthly	Monthly when recorded rainfall occurs	Monthly (spring); Quarterly thereafter
2	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
3	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
4	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
5	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
6	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
7	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
8	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
9	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
10	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly

8.1.1.1 Weed and Pest Control

Non-native plant control measures will include the following: (1) hand pulling, hand cutting, (2) cutting with handheld mechanical devices, and (3) application of approved herbicides. Hand removal of non-natives is the most desirable method of control and will be used within seeded areas where feasible. Weeds shall be pulled when plants are 6–12 inches tall or when they can be positively identified, and prior to the formation of seed heads.

The maintenance contractor shall coordinate with the Project Biologist to identify weeds for removal as needed. Chemical herbicide control will be used for perennial species that are difficult to control by hand pulling. Herbicide treatments must be pre-approved by the Project Biologist and applied by a licensed or certified pest control applicator. The herbicide must be approved for use in wetland areas. Application of herbicide will be suspended should precipitation be expected to occur within 24 hours of application and/or if wind exceeds 6 mile per hour.

Plant pests will be controlled utilizing Integrated Pest Management Techniques (IPM). Pests control will be performed by the Restoration Contractor using the least toxic method available, such as washing pests off of plants with a strong stream of water, utilizing insecticidal soap, or installing plant protection devices.

8.1.1.2 General Site Maintenance

Trash will be removed from the Restoration Site by the contractor on a regular basis. Trash consists of all anthropogenic materials, equipment, or debris dumped, thrown, washed, blown, and left within the Restoration Site.

Pruning or clearing of native vegetation will generally not be allowed within the Restoration Site, except as directed by the Project Biologist. Dead biomass and plant litter will not be removed and will be left in place, with the exception of the orchard debris which may become exposed where localized soil scour occurs and new braided channels are formed by flood water. Native organic biomass and leaf litter provide valuable microhabitats for benthic and terrestrial invertebrates, reptiles, small mammals, and birds. In addition, the decomposition of plant material is essential for the replenishment of soil nutrients and minerals. Fertilizers will not be used unless deemed necessary by the Project Biologist to rectify a specific nutrient deficiency.

8.1.1.3 Erosion and Sedimentation

BMPs are not anticipated to be needed after vegetation has established in the Restoration Site. However, temporary BMPs such as burlap fiber rolls, silt fence, and burlap gravel bags will be maintained as needed for proper function until the site has reached Year 3, or until the Project Biologist has deemed the BMP's unnecessary. Once the site is stabilized by native vegetation the contractor shall remove and dispose of

temporary BMPs. If after year 3, there is active erosion or sedimentation within or directly adjacent to the project AND this may affect adjacent farmlands, the Project Biologist will utilize the methods and protocol set forth under the Adaptive Management section of this plan.

8.1.1.4 Fence and Signage Maintenance

The location of gates and signage, and the language for the signage are included in the grading plans. Maintenance shall include repair of project gates and signage, and replacement as needed.

8.1.2 Old Kane Springs Road Preservation Site

The preservation site will enter into long-term maintenance once the permanent conservation easement has been accepted by the RWQCB. See section 14 for the long-term maintenance information for this site.

9 ECOLOGICAL PERFORMANCE STANDARDS

9.1 Viking Ranch Restoration Site

The goal of this Restoration Project is to compensate for the loss of aquatic functions associated with non-wetland waters of the state that will be impacted over the life of the Expansion Project. Aquatic functions have been documented, assessed, and quantified through a CRAM assessment of the Mine Expansion Project (Appendix N).

The Jurisdictional Delineation for the United States Gypsum Company Plaster City Expansion/Modernization Project (Hernandez Environmental Services 2016) found no wetlands within the project area. On-site observations identified two types of waters of the state: alluvial washes made up of a braided channel network that supports low density creosote bush-white bursage series vegetation, and incised upland drainages occurring within bedrock and gypsum formations that support little vegetation.

Aquatic functions of the proposed waters of the state impacts are generally associated with the interaction of water flowing over unvegetated soil and rock substrate. As such, these functions are related to hydrology and the formation of fluvial features rather than vegetation with an emphasis on chemical and non-biological benefits including:

- Short- or long-term surface water storage
- Subsurface water storage
- Moderation of groundwater flow or discharge
- Dissipation of energy
- Cycling of nutrients
- Removal of elements and compounds
- Retention of particulates
- Export of organic carbon

Performance standards are used as guideposts to inform the 10-year monitoring program of the progress toward successful compensatory mitigation. Performance standards for the Restoration Site will address these functions to determine appropriate compensation for the Expansion Project impacts.

Mitigation within the Restoration Site will be achieved primarily through site grading that removes flow diversions that keep floodwater from entering areas of the Restoration Site. Re-Establishment of site hydrology will create waters of the state and associated aquatic functions to replace those lost through the Expansion Project Impacts. A reference site in the adjacent Coyote Creek wash

has been identified to compare the ecological responses of the Restoration Site to ambient environmental conditions including flood frequency, fluvial micro-topographic feature formation (e.g., braided ephemeral channels, cut banks and slip faces, sandbars, etc.), sediment transport, and debris wracking. Natural recruitment of desert vegetation either from the applied seed mix or from seed and propagule transport through flood water will be assessed as an indication of normal ecological function.

Restoration maintenance will focus on control of non-native vegetation through the 10-year maintenance effort. As this is a desert setting, the vegetation within the Restoration Site is not expected to reach a high coverage by the end of the 10-year restoration period. Currently, the Restoration Site contains patchy desert vegetation. Therefore, the quality of the existing habitat will be enhanced through supplemental seed application following site grading. This will provide a net increase in vegetation functions and wildlife values. For the purposes of this Restoration project, passive revegetation through native seed establishment is appropriate.

Additionally, the Restoration Site must exhibit signs of evidence of wildlife use during the final two years of monitoring.

The Restoration Site will be monitored for a period of ten- years after restoration implementation is complete or until performance standards are achieved. A biological consultant will monitor the site on a quarterly basis to determine progress toward performance standards and appropriate and timely maintenance activities. CRAM monitoring is considered “semi-qualitative”, all other data collected will be qualitative derived from direct site observations. Interim monitoring of the adjacent approximately 47 acres (8 acres of land on the west side, 34 acres of land on the east side of the Restoration Site, and the 5 acres of berm removal on the north and east side) will be included in the monitoring program..

9.1.1 Restoration Performance Standards

Annual performance standards are provided to serve as a benchmark towards achieving the final performance standards. These interim performance targets will be used to assess the progress of the restoration project each year. Tables 12 summarizes the non-wetland waters hydrology performance Standards and Table 13 summarizes the vegetative performance standards through Year 10.

Table 12
Restoration Performance Standards for Non-Wetland Waters

Year	Evidence of Surface Hydrology Via Active Storm or Post-Storm Flow[1]	Formation of Fluvial Features[2]
1	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 1 fluvial feature[2] observed
2	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 1 fluvial feature[2] observed
3	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 1 fluvial feature[2] observed
4	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
5	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
6	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
7	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
8	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
9	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
10	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed

1 Evidence of surface hydrology indicators include: Drift and/or organic debris, small break/texture break in bank slope, change in average sediment, mud cracks, ripples, benches, surface relief, change vegetation density between the channel and the surrounding areas, soil development, minor erosional channels, evidence of surface hydrology via active storm or post-storm flow, debris wracking, sediment deposition, organic deposition, leaf staining, and micro-channel formation.

2 Fluvial features include: short- or long-term surface water storage, subsurface water storage, moderation of groundwater flow or discharge, dissipation of energy, cycling of nutrients, removal of elements and compounds, retention of particulates, and export of organic carbon.

9.1.1.1 Qualitative

The main goal of the restoration project is to create conditions whereby water has no topographic impediments to flow and may become part of the active floodplain in a flood event. As such, the performance standards for unvegetated stream channel establishment shall be compared to the baseline wetland delineation to determine hydrological change over time. . Observations of hydrologic conditions, hydrologic flow after storm events, and overall presence of hydrology indicators shall be documented. The presence of hydrology indicators and fluvial features will be mapped annually to present a picture of the dynamic nature of the Restoration Site by the end of the 10-year monitoring period. Observation of hydrologic indicators shall include the presence and/or absence of the following:

- Drift and/or organic debris
- Small break/texture break in bank slope,
- Change in average sediment,
- Mudcracks,
- Ripples,
- Benches,
- Surface relief,
- Change vegetation density between the channel and the surrounding areas,
- Soil development,
- Minor erosional channels,
- Evidence of surface hydrology via active storm or post-storm flow,
- Debris wracking,
- Sediment deposition,
- Organic deposition,
- Leaf staining, and
- Micro-channel formation.

While not all of these indicators may be present at least three shall be present by the end of Year 10, and hydrologic features and functions shall be similar to the reference site in terms of surface hydrology during or directly after a storm event and in terms of evidence of "quality" of hydrologic indicators.

In addition, the Restoration Site must contain some evidence of micro- and macro-topographic complexity such as pits, ponds, hummocks, bars, rills, rock or boulders, meanders, bars, braiding, secondary channels, backwaters, and terraces. Topographic complexity will provide greater flood flow modification and flood storage functions.

Channels shall have less than 10% cover by weeds species and be free of perennial invasive species. Although there will be no official success standards required for native vegetation, the relevé method shall be used to qualitatively evaluate the Restoration Site. The channels shall have less than 10% cover by weeds species, relative to the reference site and be free of perennial invasive species. All plant species present on the Restoration Site will be documented, and

characterized in terms of density, life cycle, reproductive success (i.e., flowering, seed production, seedlings observed).

9.1.1.2 California Rapid Assessment Method (CRAM)

The purpose of CRAM surveys for Restoration Site is to evaluate the wetland function and value of the ephemeral drainages (washes and braided channels) and to quantify improvement of these functions and values over time. CRAM metrics will be compared to previous CRAM studies and used to inform management decisions. CRAM provides guidelines for identifying stressors that may reflect a low score. Adaptive management strategies, if necessary, will be identified, prioritized, and implemented, in part, using CRAM survey results.

CRAM scores will be used to evaluate form and function of the Restoration Site and therefore general achievement of non-wetland waters restoration requirements for compensatory mitigation. When compared to the implementation condition, the results of the Years 5 and 10 CRAM surveys should show at a minimum the following:

- Physical form and structure that are suitable for ephemeral drainage flow and conveyance,
- Development of hydrologic features within the floodplain (wash and braided channels) that provide evidence of expected function

The goal of the CRAM surveys is to achieve at the end of the 10-year mitigation and monitoring period CRAM scores that reflect the following:

- Improvement in hydrology metric score over time
- Improvement in biotic structure metric scores over time,
- No significant decline in physical structure metric score over time
- No significant decline in the CRAM scores over time
- Overall trajectory toward improved rather than degraded condition
- Overall increase in CRAM score from implementation through year 10.

9.1.1.3 Relevé Survey for Vegetative Cover Calculation

Relevé surveys are useful when sampling large areas such as desert landscapes due to wide spacing of plants and sample plots with one vegetation stand are differentiated from adjacent stands by separate plots. A total of 10 relevé plots will be qualitatively monitored as part of the revegetation effort and will be focused during the general growing season for non-native and native species woody species within the Restoration Site (generally February through May).

Table 13
Restoration Site Target Vegetation Percent Cover

Year	Native Woody Species Diversity (Percent Relative to the Reference Site[1]	Minimum Percent Native Woody Plant Cover (Relative to the Reference Site)[1,2]	Maximum Percent Total Non-Native Cover[1]	Maximum Percent Perennial Invasive and Cal-IPC Species
1	40	10	15	2
2	40	20	15	1
3	50	30	15	1
4	50	40	10	0
5	60	50	10	0
6	66	50	10	0
7	70	50	10	0
8	70	50	10	0
9	70	50	10	0
10	75	50	10	0

Cal-IPC = California Invasive Plant Council.
1 Average of all quadrat data.
2 In-kind natural recruitment of native vegetation through seedling germination can serve to compensate for container plant mortality.

9.1.2 Reference Site

A desktop analysis was conducted using aerial imagery to visually identify an appropriate reference site. A 4.18 acre reference site was selected within the Coyote Creek wash approximately 350 feet north of the north west corner of the Viking Ranch Restoration Site (Figure 9) The Reference Site is within the same landscape position and within the same watershed as the Restoration Site. The visual analysis identified a natural landscape of unencumbered braided channels and associated vegetation. Using the aerial imagery, the analysis also included visually estimating the woody shrubs on site and found approximately 3.46 woody shrubs per meter^2 (Table 14).

Table 14
Reference Site Woody Shrub Desktop Analysis Results

Cover Type	Total Cover (per Meter^2)	Absolute Cover	Number of Woody Shrubs	Average Area Occupied by Woody Shrub (per Meter^2)	Total Number of Shrubs (per Meter^2)
Woody Shrubs	708.84	4.19%	205	3.46	0.012
Non-woody Shrubs	8564.21	50.60%	0	N/A	N/A
Bare Ground	7651.15	45.21%	0	N/A	N/A
Total	16924.2	100%	205	3.04	0.012

Relevé will be taken within the reference site during Year 1 of the restoration program with which to compare the Restoration Site relevé results. Relative not direct comparisons to the Reference Site, will be provided in the first annual monitoring report. The reference site will be used to determine if progress of Restoration Site is consistent with response of reference site to prevailing weather and environmental conditions. The RWQCB and the CDFW must review and approve this reference sites.

9.2 Old Kane Springs Road Preservation Site

The Preservation Site will enter into long-term maintenance and monitoring once the permanent conservation easement has been accepted by the RWQCB. Therefore, no Ecological Performance Standards are included as this mitigation area is already intact. See section 14 for the long-term maintenance and monitoring information for this site.

10 MONITORING AND REPORTING REQUIREMENTS

10.1 Viking Ranch Restoration Site

The Project biologist will perform Restoration Site monitoring during Implementation through Year 10 to ensure the restoration program requirements are adhered to, document progress toward interim and final performance standards, and that site maintenance is being adequately performed by the maintenance contractor. Monitoring will consist of qualitative monitoring, a functional assessment using the California Rapid Assessment Method (CRAM), and relevé monitoring. Annual Reporting will allow for comparisons of the Restoration Site performance from year to year which will help drive adaptive management for project success. The monitoring methods and reporting requirements for the restoration project shall be conducted as outlined below.

10.1.1 Monitoring and Reporting Schedule

Monitoring will consist of monthly qualitative site visits conducted each year during the spring months February-May and quarterly qualitative field monitoring visits thereafter; and CRAM surveys at prior to construction and at Years 5 and 10 (Table 15). Qualitative monitoring will be conducted by the Project Biologist to determine if the site is on trajectory to meet the annual performance standards. If restoration efforts fail to meet the performance standards in any given year, the Project Biologist will recommend remedial actions to bring the site into alignment with the performance standards.

Each qualitative monitoring visit will include a visual evaluation of weed species cover, native plant and seedling establishment, plant health, plant pests, plant mortality, soil moisture, trash accumulation, hydrology/erosion, and project fencing and signage. Similar monitoring will occur on the adjacent reference site. Following each site visit, the Project Biologist will generate a brief Site Observation Report indicating the condition of the site and any maintenance and/or remedial actions needed to help ensure the project meets its annual performance goals. Copies of the Site Observation Report will be provided to USG and the Restoration Contractor.

Table 15
Monitoring Schedule

Year	Qualitative Monitoring	CRAM Monitoring	Relevé and Feature Mapping	Reporting
1	Monthly (Feb-May); Quarterly June-January	Start of Year 1	Annually	As-built (Implementation), Site Observation (monthly quarterly), Annual (January)

Table 15
Monitoring Schedule

Year	Qualitative Monitoring	CRAM Monitoring	Relevé and Feature Mapping	Reporting
2	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
3	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
4	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
5	Monthly (Feb-May); Quarterly June-January	Annually	Annually	Site Observation (quarterly); Annual (January)
6	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
7	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
8	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
9	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
10	Monthly (Feb-May); Quarterly June-January	Annually	Annually	Site Observation (quarterly); Annual (January)

10.1.2 Qualitative Monitoring

Prior to implementation, the Project Biologist will establish permanent photo points at key locations to visually document progress of the Restoration Site. These photo points shall coincide with the relevé sampling areas and serve as photographic evidence for the Restoration Site. Photos will be taken at milestone events during installation and annually through the 10-year monitoring phase of the project. Additionally, photographs will be taken of any significant management issues or biological observations, including photographs of changing conditions within the Mitigation Sites. Photos from photo-documentation points and mapped locations will be included in annual reports.

Qualitative assessments will be conducted monthly for the first year and then quarterly thereafter. Monitoring visits consist of data collection conducted by the Project Biologist. Qualitative monitoring is conducted in order to determine if the site is on trajectory to meet the annual performance standards. If restoration efforts fail to meet the performance standards in any given year, the Project Biologist will recommend remedial actions to bring the site into alignment with the performance standards. While no focused wildlife surveys will be conducted, wildlife usage will be documented.

Qualitative monitoring will include documentation of the following elements:

- Visual evaluation of hydraulic functions and conditions,
- Evidence of surface hydrology via active storm or post-storm flow if present
- Number and type of hydric indicators present
- Visual estimate of weed species cover,
- Visual evaluation of native seed establishment
- Visual evaluation of health of plants,
- Plant pests,
- Estimated percentage of plant mortality,
- Number of perennial invasive species
- Trash accumulation,
- Erosion,
- Status of project fencing and signage, and
- Wildlife usage.

All qualitative monitoring elements will be included in each Site Observation Report and discussed in the Annual Reports.

10.1.3 California Rapid Assessment Method

All CRAM surveys will be conducted by trained CRAM practitioners and will follow the approved methodologies for the CRAM Episodic Riverine Module (CMWM 2013; field book version 1.0 or most current; Datasheet version 6.1 or most current). Results of the CRAM surveys will be included in the Annual Reports for Years 1, 3, and 5 and entered into the CRAM online database.

10.1.4 Relevé

The method of data collection will occur using the CDFW-CNPS Protocol for the Combined Vegetation rapid assessment and relevé field form (CNPS 2018; CDFW-CNPS 2019). The relevé method is plot-based and is generally considered a “semiquantitative” method. This methodology relies on ocular estimates of plant cover.

Data collected will be recorded on the Combined Vegetation Rapid Assessment and Relevé Field Form Field Form (see CNPS 2018). Ten plots (1000-square meter plots) will be established throughout the Restoration Site and will be compared to 3 plots established within the reference site containing like vegetation and drainage patterns. These plots will be permanently marked so that the same areas are monitored from year to year.

Relevé monitoring will begin in year three and be conducted in late spring during years 3 through 10 The results of the relevé will be documented in the annual reports and compared to the previous year.

10.1.5 Reporting

Reporting will occur upon commencement of impacts, at the completion on restoration construction, and during the 10-year monitoring period. Site observation reports and annual monitoring reports are integral in documenting Restoration Site status, progress toward interim and final performance standards, and comparisons from year to year to help drive adaptive management for project success. At the end of Year 10, the annual report shall summarize achievement of the ecological and restoration performance standards and document procedures for final sign-off/acceptance by the ACOE. If at the end of Year 10 not all of the performance standards have been met, then the final report will summarize recommendations for either continued maintenance and monitoring on the Viking Ranch Restoration Site, or implementation of contingency measures. Reporting requirements are described in further detail below.

10.1.5.1 As-Built Report

Prior to implementation, photo points will be selected, and photos of the Project site taken. These photo points will coincide with the transect sampling areas and serve as photographic evidence for the wetland restoration area.

Within 45 days of successful completion of the installation of the native container plants or hydroseed (whichever is later), the Project biologist will submit a post-installation memorandum to the City and applicable regulatory agencies documenting the completion of the grading, plant and seed installation, and weed removal of the installation phase and describing the as-built conditions of the wetland restoration area. The report will include a copy of the reduced set of construction drawings and a figure showing the final as-built limits of the wetland restoration area. Photographs will be included in the "as-built" report to document the site at the completion of the initial phase of implementation. The post-installation memorandum will include the following:

- Date(s) work within waters of the state were initiated and completed.
- Summary of compliance status for each regulatory agency permit condition.

- Color photographs (including maps of photo points) taken at the Restoration Site before and after installation work.
- One copy of the as-built drawings for the entire wetland restoration area.
- Schedule for future Restoration Site monitoring and reporting.

10.1.5.2 Site Observation Reports

Each qualitative monitoring visit will include a visual evaluation of hydraulic functions and conditions, weed species cover, native seed establishment and health, plant pests, visual estimate of plant mortality, soil moisture, trash accumulation, hydrology/erosion, and project fencing and signage. Following each site visit, the Project Biologist will generate a brief Site Observation Report indicating the condition of the site and any maintenance and/or remedial actions needed to help ensure the project meets its annual performance goals. Copies of the Site Observation Report will be provided to USG and the Restoration Contractor.

10.1.5.3 Annual Mitigation Monitoring Reports

An annual biological monitoring report summarizing the progress of the Restoration Site will be submitted to USG and regulatory agencies annually following completion of all installation work. Annual reporting will be due January 1st each year. If no As-built report was required for this restoration project, then the first annual report will include a discussion of the As-built conditions according to the grading plan and any minor changes that occurred to the grading plans were Each report will document the condition of the Restoration Site with photographs taken from the same fixed points in the same directions. Annual reports will identify any shortcomings of the restoration program and recommend remedial measures if necessary, for the successful completion of the restoration project.

All monitoring reports should include the following in the report:

- Vicinity map(s)
- Compensatory Restoration Site Map(s) (including the following information): Polygons by compensatory mitigation type as described in the approved HMMP; photo station locations; and annotated locations of sample points/transects/quadrants/soil pits/monitoring stations. Note: maps must comply with the SPD Map and Drawings Standard.
- Reference Site Map(s)
- Photographic record of the reference site, the original photos taken from the designated photo points, and the most recent photos taken for the annual monitoring visit at designated photo points.

- Results of functional/condition assessments as required to be used for the compensatory mitigation project.
- Narrative describing overall condition of the Restoration Site in comparison to the reference site, status of hydrology, hydrologic indicators, seed mix and any changes to plant species listed in this report, seed application and germination status/cover, fencing, signage, erosion, vandalism, trespassing, any additional changes made from to this plan and/or the grading plan, reason for changes occurred from the original grading plans, adaptive management strategy should it need to be implemented, conclusions of overall project status compared to the ecological and restoration performance standards.
- Original grading plans

10.2 Old Kane Springs Road Preservation Site

The Preservation Site will enter into long-term maintenance and monitoring once the permanent conservation easement has been accepted by the RWQCB. See Section 14 of this document for the long-term maintenance and monitoring information for this site.

11 ADAPTIVE MANAGEMENT PLAN

Adaptive management is defined, for the purposes of this mitigation project, as a flexible, iterative approach to the long-term management of biological resources that is directed over time by the results of ongoing monitoring activities and direct observation of environmental stressors that are producing adverse results within the Restoration Site.

An integral part of a successful compensatory mitigation project is early detection of problems determining the cause(s) of those problems and attempting to correct those problems so that the compensatory mitigation project achieves its objectives and ecological performance standards. If annual performance guidelines are not met for any given year in the 10 year restoration period and/or if the project experiences a significant unexpected problem, the project biologist will prepare an analysis of the cause(s) of failure and shall propose remedial actions in the annual report.

Adaptive management measures will include the utilization of qualitative data gathered in the field prior to and throughout the monitoring period to assess the aquatic functions and values, effects of weeding maintenance, and status of seed germination and cover within the Restoration Site. Following an event that causes damage to all or part of the Restoration Site, this data will be used in part to drive management considerations for the repair of the damaged areas. Achieving the key goals of the restoration program and establishing a naturally functioning aquatic resource will be the focus of all adaptive management decisions.

If determined necessary by, the Project Biologist in consultation with USG will notify the regulatory agencies and prepare an analysis of the project's problem(s), and propose remedial actions to correct the problems in order to meet the performance standards and success criteria at the end of the 10- year maintenance and monitoring period. The maintenance and monitoring obligations will continue and/or alternative contingency measures and interim performance standards will be negotiated, until the resource agencies give final permit compliance/approval or approval for alternative compensation measures. Individual environmental stressors are discussed below along with an anticipated range of management responses to correct any damage that may occur to the Restoration Site.

11.1 Drought

Seasonal drought is a normal annual cycle in San Diego County, especially in low-precipitation areas like the desert. The seed mix has been designed with drought-tolerant desert plant species that are capable of withstanding seasonal fluctuations in available moisture. However, periods of extended drought could occur, including low seasonal rainfall and prolonged high temperatures that may

negatively affect the Restoration Site (e.g., lower native cover, higher plant mortality, increased potential for pest infestations on site).

If drought conditions limit native vegetation development, an additional seed application may be considered to replenish the native seed bank to allow the site to respond normally in the event of renewed rainfall and/or flooding.

11.2 Adverse Hydrologic Changes

Floodplains are dynamic systems that can experience topographic modification due to flood events. It is expected that sediment will be deposited and exported from the Restoration Site during flood events. If elevations within the Restoration Site (such as excessive aggradation or degradation) change in such a way that compromise the success of the project, localized grading or recontouring may be necessary for the project to achieve success. In the event of adverse hydrologic and/or topographic changes affecting the Restoration Site, the Project Biologist will assess the conditions and provide adaptive management recommendations to the Corps including but not limited to weed free BMPs such as burlap encased straw wattles, fiber rolls or burlap gravel bags; and/or additional grading.

11.3 Fire

San Diego County experiences periodic wildfires. Vegetation communities native to the area are adapted to this periodic fire regime, with plant species possessing the ability to stump, sprout, or otherwise regenerate from underground plant material. While fire is a co-evolutionary factor, it also presents the possibility for faster-growing, early successional non-natives to out-compete the recovering native species. In the event of fire affecting the Restoration Site, the Project Biologist will assess the post-fire conditions and provide adaptive management recommendations.

12 FINANCIAL ASSURANCES

12.1 Viking Ranch Restoration Site

As owner and permittee of the Restoration Project, USG is financially responsible for implementation and management of the project. Costs include planning and design, construction, interim maintenance and monitoring, and long-term management through funding of a non-wasting endowment. USG must post a performance bond to cover the initial implementation and 10-year maintenance and monitoring activities outlined in this HMMP. The same funding source established by USG will be available in order to complete the compensatory mitigation project, provide alternative compensatory mitigation, and/or for use by a third party to complete requires tasks, should the initial restoration effort fail to be successful.

Financial Assurance in the form of two separate performance bonds will be provided to cover the cost to 1) construction and implement the Restoration Site , and 2) monitor and maintain the Restoration Site until formal acceptance by the RWQCB. In accordance with the Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division USACE (ACOE 2015) each bond will contain 120 percent of the total cost for each bond.

The estimated cost to construct and implement the project is $1,309,816.00. The total implementation cost, including a 20 percent risk premium, will require a financial assurance for construction and implementation of $1,571,779.20 (Table 16). The estimated cost for monitoring and maintenance over a 10-year post-construction and implementation period is $964,940.00. The total, including a 20 percent risk premium, will require a financial assurance for maintenance and monitoring of $1,157,928.00 (Table 16).

Table 16
Construction and Implementation Costs

Item	*quantity*	*units*	*unit cost*	*extended cost*
Land Acquisition - Conservation Easement	***160***	***AC***	***2,500.00***	$170,000.00
Mobilization	1	LS	$34,000.00	$34,000.00
Water Pollution Control and BMPs	1	LS	$25,000.00	$25,000.00
Misc. Construction Items				
Staging area prep/weed-free	50,000	SF	$0.05	$2,500.00
remove existing power	1	EA	$2,200.00	$2,200.00
Remove Palm trees	6	EA	$2,500.00	$15,000.00
Map and remove sub-surface irrigation mainline system	160	AC	$350.00	$56,000.00
Mulch chipping	80	AC	$500.00	$40,000.00
Incorporate mulch	120	AC	$125.00	$15,000.00
Grade Control Structure	1	LS	$50,000.00	$50,000.00
Earthwork				
Cut	23,232	CY	$6.00	$139,392.00
Fill	23,232	CY	$6.00	$139,392.00
Berm grade and spread	40,333	CY	$4.00	$161,332.00
Planting				
Site preparation	40	AC	$1,500.00	$60,000.00
Seed Mix A -	160.00	AC	$2,500.00	$400,000.00
Subtotal				$1,309,816.00
Additional 20%				*$261,963.20*
Total				**$1,571,779.20**

Table 17
10-Year Maintenance and Monitoring Costs

Item	*quantity*	*units*	*unit cost*	*extended cost*
Maintenance - 10 years	40	Qrly Events	$20,000.00	$800,000.00
Monitoring - 10 Years	10	Annual	$16,494.00	$164,940.00
Subtotal				$964,940.00
Additional 20%				*$192,988.00*
Total				**$1,157,928.00**

Additionally, USG will provide an estimated $701,085, which includes the initial and capital costs plus the endowment (at a 3.5% capitalization rate) for the long-term management and monitoring of the property (Appendix O).

The non-wasting endowment will be provided to fund in perpetuity management of the Restoration Site. The endowment will be based on the long-term management plan (Section 14 of this report) to be fully funded by the end of the third year of the 10-year monitoring period. The endowment value will be determined through a Property Assessment Record or similar analysis of management costs and return on the investment of endowment principal to generate sufficient funds to pay for ongoing management actions.

12.2 Old Kane Springs Road Preservation Site

USG will provide an estimated $TBD, which includes the initial and capital costs plus the endowment (at a 3.5% capitalization rate) for the long-term management and monitoring of the property (Appendix O).

A non-wasting endowment will be provided to fund in perpetuity management of the Preservation Site. The endowment will be based on the long-term management plan (Section 14 of this report) to be fully funded by the end of the third year of the 10-year Viking Ranch restoration monitoring period. The endowment value will be determined through a Property Assessment Record or similar analysis of management costs and return on the investment of endowment principal to generate sufficient funds to pay for ongoing management actions.

13 COMPLETION OF MITIGATION

13.1 Viking Ranch Restoration Site

At the end of the tenth year of restoration, or at such time that the restoration site has achieved the performance standards, a notification of completion and final monitoring report will be submitted by USG to the RWQCB. The final report will include the evaluation of the success of the restoration program and make a determination of whether the requirements and performance standards criteria of the mitigation program have been achieved.

Following receipt of the notification of completion, the RWQCB may visit the Restoration Site to confirm the completion of the restoration effort and to verify compliance with the permit conditions. Written acceptance and/or concurrence from RWQCB shall be requested by the project biologist in order to signify and document completion of the restoration obligations. Upon written confirmation of the project success by the RWQCB, the agency shall release the project proponent/applicant of all obligations associated with the 10-year maintenance and monitoring program. Henceforth, the project will transition into long term management under the approved long-term management plan.

13.2 Old Kane Springs Road Preservation Site

The Preservation Site does not have an implementation maintenance and monitoring as the site is already intact. As such, there is no requirement for completion of mitigation. This site will enter directly into the long-term maintenance and monitoring phase once the permanent conservation easement has been accepted by the RWQCB. See section 14 for the long-term maintenance and monitoring information for this site.

14 LONG-TERM MANAGEMENT PLAN

14.1 Viking Ranch Restoration Site

Upon meeting the final performance standards and approval by the regulatory agencies the site will begin long-term management (in-perpetuity) by a qualified long-term natural lands manager. USG will be responsible for ensuring the long-term management of the restoration project. Prior to completion of the 10-year restoration program the proposed Restoration Site will be protected in-place via recordation of a permanent conservation easement, deed restriction, or other approved protective mechanism over the entire Restoration Site.

The overall goal of long-term management is to promote long-term viability of the Restoration Site's waters of the state and surrounding habitat. Routine monitoring and minor maintenance tasks are included herein to assure the viability of the Restoration Site in perpetuity.

14.1.1 Land Manager and Responsibilities

The initial land manager is USG. USG and subsequent designated land manager upon transfer of property to Anza-Borrego State Park, shall implement the following long-term management plan. The Anza-Borrego Foundation will hold the conservation easement, and Anza-Borrego State Park shall manage and monitor the restoration property in perpetuity to preserve its habitat and conservation values in accordance with the conservation easement and the long-term management plan. The land manager shall be responsible for providing an annual report to the signatory agencies detailing the time period covered, an itemized account of the management tasks, and total amount expended.

14.1.2 Biological Resources Requirements

While it is not anticipated that major management actions will be required during the long-term management and monitoring, an objective of this management plan is to conduct monitoring to identify any issues that arise and use adaptive management to determine what actions might be appropriate to correct any issues that may arise threatening the Restoration Site. These monitoring surveys should occur annually, with the exception of CRAM monitoring, which should occur every five years. Surveys should assess the Restoration Site's overall condition, water quality, degree of erosion, percentage of cover of exotic and/or invasive species, native plant health, cover and diversity, fire hazard, trespassing issues, and/or other aspects that may warrant management actions.

Recommendations for management and monitoring are included for several categories below. Additional categories and/or tasks may be required. The land manager for the Restoration Site shall implement the following.

14.1.2.1 California Rapid Assessment Methodology Monitoring

Objective: Monitor, conserve, and maintain the non-wetland water Restoration Site's functions and values. Identify and limit any adverse impacts to waters of the state.

Task: CRAM monitoring within the Restoration Site should be conducted at least once every five years in order to determine if conditions are changing or have the potential to change the non-wetland water functions and values within the Restoration Site. CRAM metrics will be compared to previous CRAM studies and used to inform management decisions. Adaptive management strategies will be identified, prioritized, and implemented as funding becomes available.

14.1.2.2 Sensitive Species Monitoring and Management

Objective: Identify, monitor, conserve, and maintain the non-wetland water Restoration Site's sensitive species.

Task: As part of the Restoration Site monitoring, the identification, status, and any changes to sensitive species will be noted. Sensitive species may colonize the site from adjacent Anza Borrego Park, BLM land, and open spaces. Sensitive species surveys will be compared to previous surveys and used to inform management decisions. Adaptive management strategies will be identified, prioritized, and implemented as funding becomes available. This task shall be included in annual qualitative biological monitoring.

14.1.2.3 Habitat Monitoring and Management

Objective: Monitor, conserve, and maintain the Restoration Site's native vegetation communities.

Task: As part of the Restoration Site monitoring, the Restoration Site's habitat will be examined for any changes, current condition, or pending needs. Any necessary tasks will be identified, prioritized and implemented as funding becomes available. This task shall be included in annual qualitative biological monitoring.

14.1.2.4 Invasive Species Monitoring and Management

Objective: Monitor and maintain control of invasive exotic weeds that diminish the site functions, values, and quality.

Tasks: As part of the Restoration Site monitoring, a qualitative assessment of potential or observed weed invasions should occur. The monitor will make recommendations to control any exotic species, particularly weeds listed by the California Invasive Plant Council as invasive. Aggressive and/or invasive species will be noted and addressed through either hand removal or selective

approved herbicide applications. Surveys will be compared to previous surveys conducted in the Restoration Site and used to inform management decisions.

Additional actions to control invasive species will be evaluated and prioritized. Weed control monitoring shall be included in annual qualitative biological monitoring. Weed control will be conducted on an as needed basis as determined by the designated land manage.

14.1.3 Security, Safety, and Public Access

The Restoration Site shall have no general public access, nor any regular public or private use. Research and/or other educational programs or efforts will be allowed within the Restoration Site, but are not specifically funded or a part of this long-term management plan.

14.1.3.1 Trespass Monitoring and Management

Objective: Install and maintain access control fencing and signage. Fencing shall be installed. Signage shall be posted and maintained at the gate(s).

Task: During each site visit, the condition of fencing and signage and any evidence of trespassing shall be recorded. The location, type, and adaptive management recommendations shall be monitored annually. Any necessary tasks will be identified, prioritized, and implemented as funding becomes available.

14.1.3.2 Trash Monitoring and Management

Objective: Monitor and Manage sources of trash and/or visible pollutants in the water.

Task: During each site visit, record occurrences of trash and/or visible pollutants in the water. Record type, location, and management restoration recommendations to avoid, minimize or rectify a trash and/or pollutant impact. This task shall occur annually.

14.1.4 Reporting and Administration

Objective: Provide a report on all management tasks conducted and general site conditions to appropriate agencies at least once every five years

Task: Prepare and provide a report and any additional documentation at least once every five years to summarize site conditions and management actions. The report will make recommendations with regard to (1) any habitat enhancement measures deemed to be warranted, (2) any problems that need near-term attention (i.e., weed removal, fence repair, erosion control, trash removal),

and/or (3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date.

14.1.5 Annual Task Cost Estimates

A summary of estimated annual costs associated with the identified long-term management tasks is $21,623 and include, but are not limited to, qualitative monitoring, CRAM monitoring; maintenance, field supplies, trespass and trash monitoring, fence and signage repairs, and annual reporting. For additional information, see Appendix O.

14.1.6 Funding

The funding mechanism for the long-term management of the Restoration Site shall be a non-wasting endowment or other method approved by the agencies. The funding amount necessary shall be deemed through a Property Analysis Record (PAR; Center for Natural Lands Management 1998) or PAR equivalent cost estimation method which shall consider the ongoing funding for the perpetual long-term management, maintenance, and monitoring of the conservation easement (Appendix O). It is anticipated that the State Parks will conduct the long-term maintenance for this restoration project. Documentation verifying the endowment funds are in place must be submitted to the agencies prior to the end of the second year of the 10 year maintenance and monitoring period.

14.1.7 Task Prioritization

Due to unforeseen circumstances, prioritization of tasks, including tasks resulting from new requirements, may be necessary if insufficient funding is available to accomplish all tasks. The land manager will assess task priorities and funding available to determine which tasks will be implemented. In general, tasks are prioritized in this order: (1) required by a local, state, or federal agency; (2) tasks necessary to maintain or remediate habitat quality; (3) tasks that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority tasks will also be considered priorities. Final determination of task priorities in any given year of insufficient funding will be determined be the Signatory Agencies in writing.

14.1.8 Prohibitions

The following activities are prohibited with the Restoration Site:

1. Unseasonal watering which may adversely affect the conservation watershed;

2. Use of herbicides, rodenticides, pesticides, or other such chemicals without prior Agency authorization;
3. Use of off-road vehicles;
4. Grazing or surface entry for exploration or extraction of minerals;
5. Erecting of any building, billboard, or sign (except information signs associated with the Restoration Site);
6. Deposition of soil, trash, waste, or any other material; soil deposition in associated with an approved restoration program is allowed, and/or as an adaptive management strategy in favor of promoting Restoration Site value and functions is allowed;
7. Excavating or removing of soils, rock, sand, or other material; excavation or moving of soil, rock, sand, or other material in association with an approved restoration program is allowed, and/or as an adaptive management strategy in favor of promoting Restoration Site value and functions is allowed;
8. Otherwise altering the general topography except as approved with a restoration program, and/or as an adaptive management strategy in favor of promoting Restoration Site value and functions;
9. The building of roads or any other infrastructure unless otherwise approved by the Agencies;
10. Removing, destroying, or cutting of vegetation other than for the long-term management the weeding requirements.

14.1.9 Contingency Measures

Contingency measures shall be implemented by USG to address any portion of the Restoration Site that has not met the annual performance standards. Contingency measures for the restoration project may include removal of additional berm sections, re-contouring smaller sections using hand tools. The Project Biologist will prepare a contingency plan that identifies the underperforming areas and an approach to meet annual performance criteria. If recommendations deviate from the original plan, and or permits, or require modification to the original seed mix, the plan will be submitted to the regulatory agencies for review and approval as indicated under Adaptive Management.

14.1.9.1 Alternative Locations for Contingency Compensatory Mitigation

If it is decided that an alternative location is required to complete compensatory restoration requirements, then the project proponent shall coordinate with the resource agencies to locate an approved site. Alternative locations for Restoration Site may be found within the same watershed or as credits purchased from an approved off-site preservation of intact/semi intact desert habitat.

14.1.9.2 Funding

The project proponent will be responsible for providing all necessary funds to cover costs associated with any required contingency compensatory mitigation. Sufficient funds will be provided to cover the implementation of the contingency restoration plan, associated maintenance and monitoring program, and report preparation.

14.2 Old Kane Springs Road Preservation Site

The proposed Preservation Site will be protected in-place via recordation of a permanent conservation easement, deed restriction, or other approved protective mechanism over the entire Preservation Site.

The overall goal of long-term management is to promote long-term viability of the Preservation Site's waters of the state and surrounding habitat. Routine monitoring and minor maintenance tasks are included herein to assure the viability of the Preservation Site in perpetuity.

14.2.1 Land Manager and Responsibilities

The initial land manager is USG. USG and subsequent designated land manager upon transfer of property to Anza-Borrego State Park, shall implement the following long-term management plan. The Anza-Borrego Foundation will hold the conservation easement, and Anza-Borrego State Park shall manage and monitor the preservation property in perpetuity to preserve its habitat and conservation values in accordance with the conservation easement and the long-term management plan. The land manager shall be responsible for providing an annual report to the signatory agencies detailing the time period covered, an itemized account of the management tasks, and total amount expended.

14.2.2 Biological Resources Requirements

While it is not anticipated that major management actions will be required during the long-term management and monitoring, an objective of this management plan is to conduct monitoring to identify any issues that arise and use adaptive management to determine what actions might be appropriate to correct any issues that may arise threatening the Preservation Site. These monitoring surveys should occur annually. Surveys should assess the Preservation Site's overall condition, water quality, degree of erosion, percentage of cover of exotic and/or invasive species, native plant health, cover and diversity, fire hazard, trespassing issues, and/or other aspects that may warrant management actions.

Recommendations for management and monitoring are included for several categories below. Additional categories and/or tasks may be required. The land manager for the Preservation Site shall implement the following.

14.2.2.1 Sensitive Species Monitoring and Management

Objective: Identify, monitor, conserve, and maintain the Preservation Site's sensitive species.

Task: As part of the Preservation Site monitoring, the identification, status, and any changes to sensitive species will be noted. Sensitive species may colonize the site from adjacent Anza Borrego Park, BLM land, and open spaces. Sensitive species surveys will be compared to previous surveys and used to inform management decisions. Adaptive management strategies will be identified, prioritized, and implemented as funding becomes available. This task shall be included in annual qualitative biological monitoring.

14.2.2.2 Habitat Monitoring and Management

Objective: Monitor, conserve, and maintain the Preservation Site's native vegetation communities.

Task: As part of the Preservation Site monitoring, the Preservation Site's habitat will be examined for any changes, current condition, or pending needs. Any necessary tasks will be identified, prioritized and implemented as funding becomes available. This task shall be included in annual qualitative biological monitoring.

14.2.2.3 Invasive Species Monitoring and Management

Objective: Monitor and maintain control of invasive exotic weeds that diminish the site functions, values, and quality.

Tasks: As part of the Preservation Site monitoring, a qualitative assessment of potential or observed weed invasions should occur. The monitor will make recommendations to control any exotic species, particularly weeds listed by the California Invasive Plant Council as invasive. Aggressive and/or invasive species will be noted and addressed through either hand removal or selective approved herbicide applications. Surveys will be compared to previous surveys conducted in the Preservation Site and used to inform management decisions.

Additional actions to control invasive species will be evaluated and prioritized. Weed control monitoring shall be included in annual qualitative biological monitoring. Weed control will be conducted on an as needed basis as determined by the designated land manage.

14.2.3 Security, Safety, and Public Access

The Preservation Site shall have no general public access, nor any regular public or private use. Research and/or other educational programs or efforts will be allowed within the Preservation Site, but are not specifically funded or a part of this long-term management plan.

14.2.3.1 Trespass Monitoring and Management

Objective: Install and maintain signage. Signage shall be posted and maintained at the road entry and exit.

Task: During each site visit, the condition of signage and any evidence of trespassing shall be recorded. The location, type, and adaptive management recommendations shall be monitored annually. Any necessary tasks will be identified, prioritized, and implemented as funding becomes available.

14.2.3.2 Trash Monitoring and Management

Objective: Monitor and Manage sources of trash and/or visible pollutants in the water.

Task: During each site visit, record occurrences of trash and/or visible pollutants in the water. Record type, location, and management mitigation recommendations to avoid, minimize or rectify a trash and/or pollutant impact. This task shall occur annually.

14.2.4 Reporting and Administration

Objective: Provide a report on all management tasks conducted and general site conditions to appropriate agencies at least once every five years

Task: Prepare and provide a report and any additional documentation at least once every five years to summarize site conditions and management actions. The report will make recommendations with regard to (1) any habitat enhancement measures deemed to be warranted, (2) any problems that need near-term attention (i.e., weed removal, fence repair, erosion control, trash removal), and/or (3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date.

14.2.5 Annual Task Cost Estimates

A summary of estimated annual costs associated with the identified long-term management tasks is $XX and include, but are not limited to, qualitative monitoring, maintenance, field supplies,

trespass and trash monitoring, fence and signage repairs, and annual reporting. For additional information, see Appendix O.

14.2.6 Funding

The funding mechanism for the long-term management of the Preservation Site shall be a non-wasting endowment or other method approved by the agencies. The funding amount necessary shall be deemed through a Property Analysis Record (PAR; Center for Natural Lands Management 1998) or PAR equivalent cost estimation method which shall consider the ongoing funding for the perpetual long-term management, maintenance, and monitoring of the conservation easement (Appendix O). It is anticipated that the State Parks will conduct the long-term maintenance for this mitigation project. Documentation verifying the endowment funds are in place must be submitted to the agencies prior to the end of the second year of the Viking Ranch 10-year restoration maintenance and monitoring period.

14.2.7 Task Prioritization

Due to unforeseen circumstances, prioritization of tasks, including tasks resulting from new requirements, may be necessary if insufficient funding is available to accomplish all tasks. The land manager will assess task priorities and funding available to determine which tasks will be implemented. In general, tasks are prioritized in this order: (1) required by a local, state, or federal agency; (2) tasks necessary to maintain or remediate habitat quality; (3) tasks that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority tasks will also be considered priorities. Final determination of task priorities in any given year of insufficient funding will be determined be the Signatory Agencies in writing.

14.2.8 Prohibitions

The following activities are prohibited with the Preservation Site:

11. Unseasonal watering which may adversely affect the conservation watershed;
12. Use of herbicides, rodenticides, pesticides, or other such chemicals without prior Agency authorization;
13. Use of off-road vehicles;
14. Grazing or surface entry for exploration or extraction of minerals;
15. Erecting of any building, billboard, or sign (except information signs associated with the Preservation Site);

16. Deposition of soil, trash, waste, or any other material; soil deposition in associated with an approved restoration program is allowed, and/or as an adaptive management strategy in favor of promoting Preservation Site value and functions is allowed;
17. Excavating or removing of soils, rock, sand, or other material; excavation or moving of soil, rock, sand, or other material in association with an approved restoration program is allowed, and/or as an adaptive management strategy in favor of promoting Preservation Site value and functions is allowed;
18. Otherwise altering the general topography except as approved with a restoration program, and/or as an adaptive management strategy in favor of promoting Preservation Site value and functions;
19. The building of roads or any other infrastructure unless otherwise approved by the Agencies;
20. Removing, destroying, or cutting of vegetation other than for the long term management the weeding requirements.

15 REFERENCES

ACOE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetlands Delineation Manual.* Online ed. Environmental Laboratory, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineer Waterways Experiment Station. January 1987. http://www.cpe.rutgers.edu/ Wetlands/ 1987-Army-Corps-Wetlands-Delineation-Manual.pdf.

ACOE. 2008a. *2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. Environmental Laboratory, ERDC/EL TR-08-28. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center. September 2008. http://el.erdc.ACOE.army.mil/elpubs/pdf/trel08-28.pdf.

ACOE. 2008b. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. ERDC/CRREL TR-08-12. Prepared by R.W. Lichvar and S.M. McColley, ACOE Research and Development Center, Cold Regions Research and Engineering Laboratory. August 2008. http://www.spk.ACOE.army.mil/Portals/12/documents/regulatory/pdf/ Ordinary_High_Watermark_Manual_Aug_2008.pdf.

ACOE. 2015. Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for Southwest Pacific Division USACE. https://www.spd.usace.army.mil/Portals/13/docs/regulatory/mitigation/MitMon.pdf

ACOE. 2018. Regulatory Guidance Letter. No. 18-01. September 25, 2018. https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll9/id/1473.

ACOE (U.S. Army Corps of Engineers). 2019. Attachment 12501.1 – SPD Mitigation Ratio Setting Checklist.

ACOE and EPA (U.S. Army Corps of Engineers and U.S. Environmental Protection Agency). 2008. "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States*." December 2, 2008. http://water.epa.gov/ lawsregs/guidance/wetlands/upload/2008_12_3_wetlands_CWA_Jurisdiction_Following_ Rapanos120208.pdf.Borrego Valley Groundwater Sustainability Agency 2019. Groundwater Sustainability Plan for the Borrego Springs Groundwater Subbasin.

CDFW-CNPS (California Department of Fish and Wildlife-California Native Plant Society). 2019. CDFW-CNPS Protocol for the Combined Vegetation Rapid Assessment and

Relevé Field Form. February 21, 2019. https://www.cnps.org/wp-content/uploads/2019/03/veg-releve-field-protocol.pdf

CNPS 2018. Combined Vegetation Rapid Assessment and Releve Field Form. Revised March 27, 2018. https://www.cnps.org/wp-content/uploads/2019/03/veg-releve-field-form.pdf

Chernoff, G., W. Bosan, & D. Oudiz. n.d. Determination of a Southern California Regional Background Arsenic Concentration in Soil. California Department of Toxic Substances Control.

County of San Diego. 2010. *County of San Diego Report Format and Content Requirements: Biological Resources*. Fourth Revision. Land Use and Environment Group, Department of Land Use and Planning & Development Services, Department of Public Works. September 15, 2010.

County of San Diego 2011. County of San Diego General Plan; Borrego Springs Community Plan. Amended June 18 2014.

County of San Diego. 2012. San Diego County Code of Regulatory Ordinances, Title 8 Zoning and Land Use Regulations; Division 6. Miscellaneous Land Use Regulations (Amended by Ord. No. 10224 (N.S.), Adopted on 10-25-2012); Chapter 6. Resource Protection Ordinance.

County of San Diego. 2019. Draft Final Groundwater Sustainability Plan for the Borrego Valley Groundwater Basin. Completed August 30. Accessed August 26, 2021. https://www.sandiegocounty.gov/content/sdc/pds/SGMA/borrego-valley/GSP.html

Cowardin, L.M., Carter, V., Golet, F.C., and LaRoe, E.T. 1979. Classification of Wetlands and Deepwater Habitats of the United States, FWS/OBS-79/31, US Fish and Wildlife Service, Office of Biological Services, Washington, D.C.

CWMW (California Wetlands Monitoring Workgroup). 2013. California Rapid Assessment Method (CRAM) for Wetlands, CRAM Field Books - Episodic Riverine. Episodic Riverine version 1.0. December 2015

DOGGR (California Department of Conservation, Division of Oil, Gas, and Geothermal Resources). 2018. Well Finder application. Accessed June 25, 2018. https://maps.conservation.ca.gov/doggr/wellfinder/#close.

Dudek. 2018. *Preliminary Environmental Site Assessment Viking Ranch Borrego, San Diego County, California APNs 140-030-09, 140-030-10, and 140-030-11*

DWR. 2016. Bulletin 118 Interim Update 2016. December 22, 2016.

DWR. 2018. Well Completion Report Map Application. Accessed June 25, 2018 https://dwr.maps.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37

ELI (Environmental Law Institute). 2014. Watershed Approach Handbook: Improving Outcomes and Increasing Benefits Associated with Wetland and Stream Restoration and Protection Projects. September.

Graf, W.L. 1988. Definition of floodplains along arid-region rivers. *In Flood geomorphology*. V.R. Baker, R.C. Kochel, P.C. Patton, ed. New York: Springer-Verlag.

Hernandez Environmental Services. 2016. Jurisdictional Delineation for United States Gypsum Company Plaster City Expansion/Modernization Project.

Lilburn Corporation. 2003. *Mine Reclamation Plan Application for the Plaster City Quarry United State Gypsum Company*. Revised June 2003.

NRCS (Natural Resources Conservation Service). 2018. United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for San Diego, CA. Accessed June 25, 2018.https://websoilsurvey.sc.egov.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," by R.F. Holland, PhD, October 1986. March 2008.

UCI (University California Irvine). 2018. UCI Anza-Borrego Desert Research Center. Weather Station Locations. Accessed July 23, 2018. http://anzaborrego.ucnrs.org/weather2/

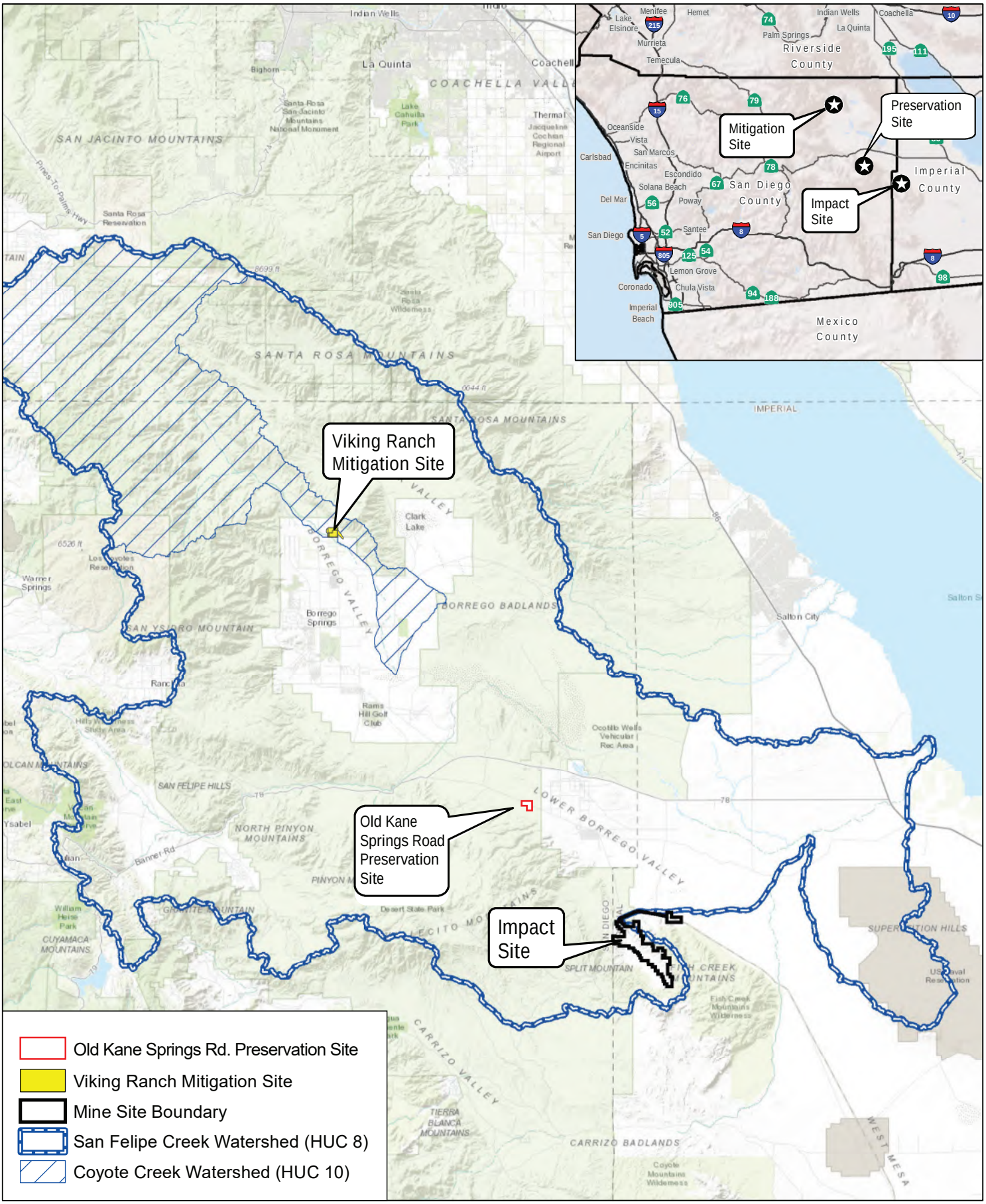
USDA (U.S. Department of Agriculture). 2019. "Web Soil Survey." https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

USGS (United States Geological Survey). 2018. National Water Information System: Mapper. Accessed June 25, 2018. https://maps.waterdata.usgs.gov/mapper/index.html.

INTENTIONALLY LEFT BLANK

APPENDIX A

Figures



SOURCE: BASEMAP-USGS

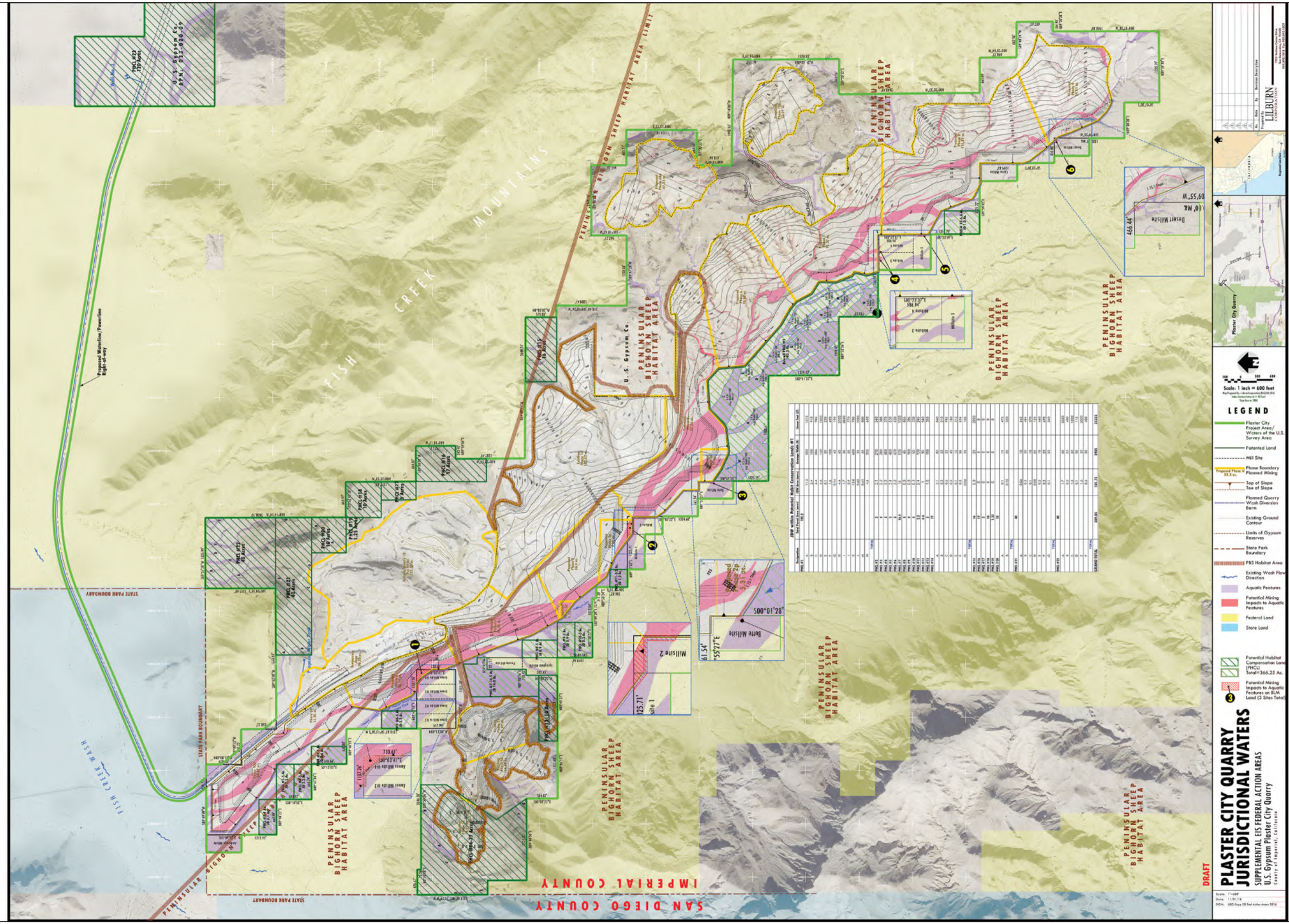
DUDEK

0 3 6 Miles

FIGURE 1

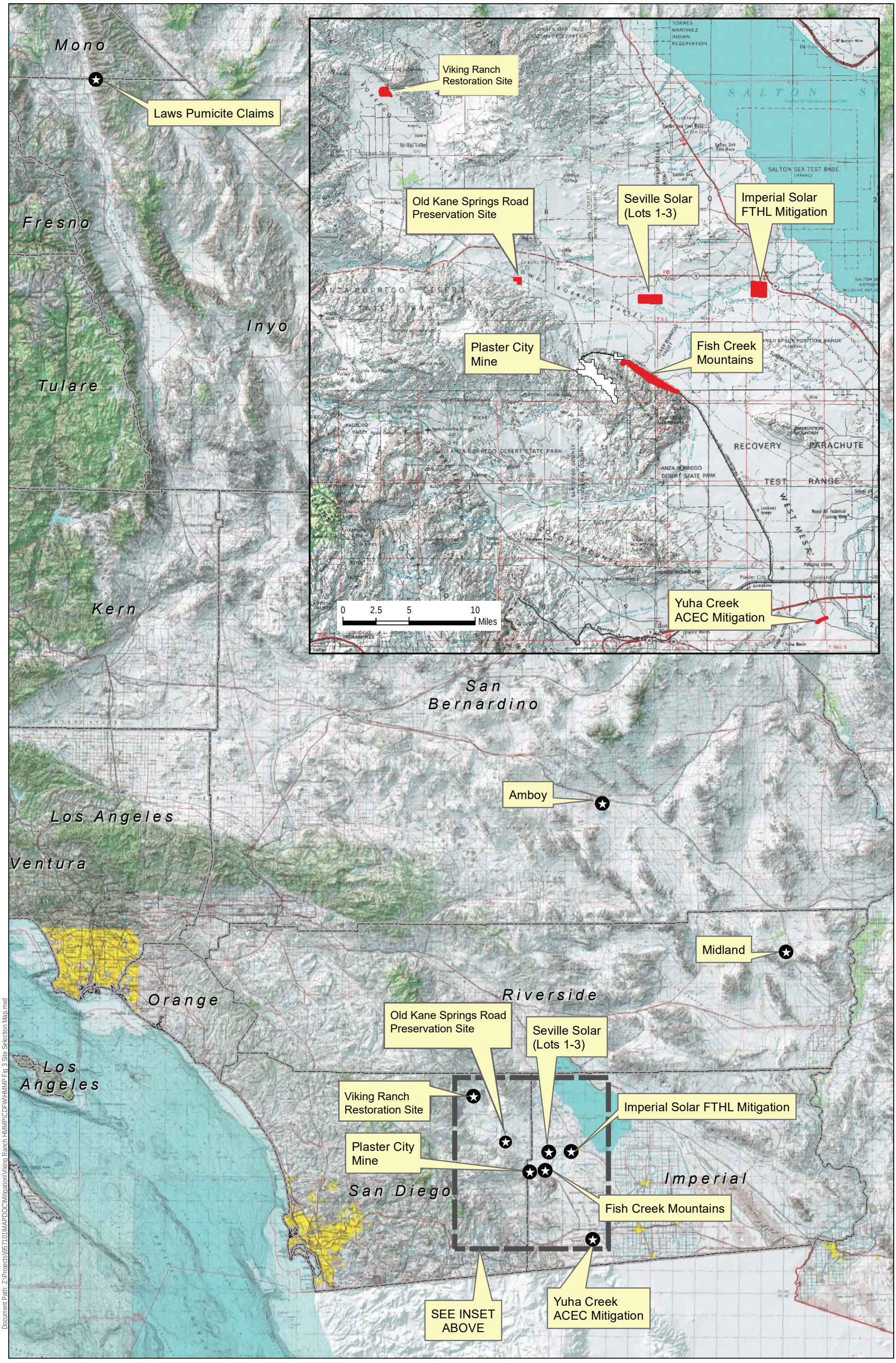
Regional Vicinity Map

Habitat Mitigation and Monitoring Plan for the
U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



SOURCE: LILBURN CORPORATION 2019

FIGURE 2
Proposed Mine Expansion Impact Map
Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



SOURCE: BASE-USGS

DUDEK

FIGURE 3

Site Selection Map

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project

Document Path: Z:\Projects\957101\MAPDOC\Mitigation\Viking Ranch HMMP\CDFW\HMMP Fig 4 JurDel+VegComm+Historic Flow Diversionmxd mxd

SOURCE: AERIAL-BING MAPPING SERVICE 2018

0 100 200 Meters

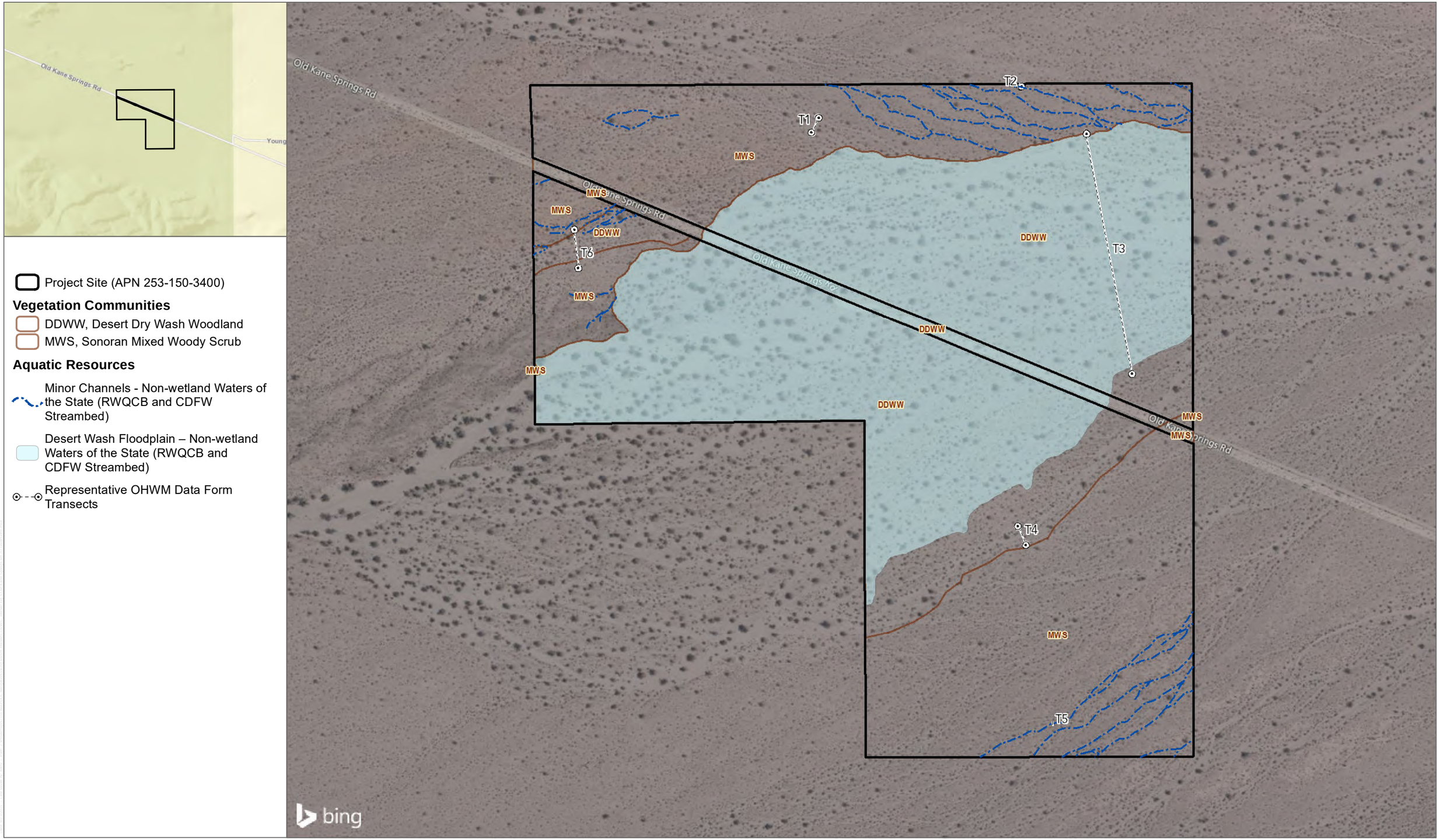
0 200 400 800 Feet

DUDEK

FIGURE 4

Viking Ranch Jurisdictional Delineation with Vegetation Communities and Historic/Existing Flow Diversions

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



Project Site (APN 253-150-3400)

Vegetation Communities

DDWW, Desert Dry Wash Woodland

MWS, Sonoran Mixed Woody Scrub

Aquatic Resources

Minor Channels - Non-wetland Waters of the State (RWQCB and CDFW Streambed)

Desert Wash Floodplain – Non-wetland Waters of the State (RWQCB and CDFW Streambed)

Representative OHWM Data Form Transects

SOURCE: AERIAL- BING MAPPING SERVICE 2020

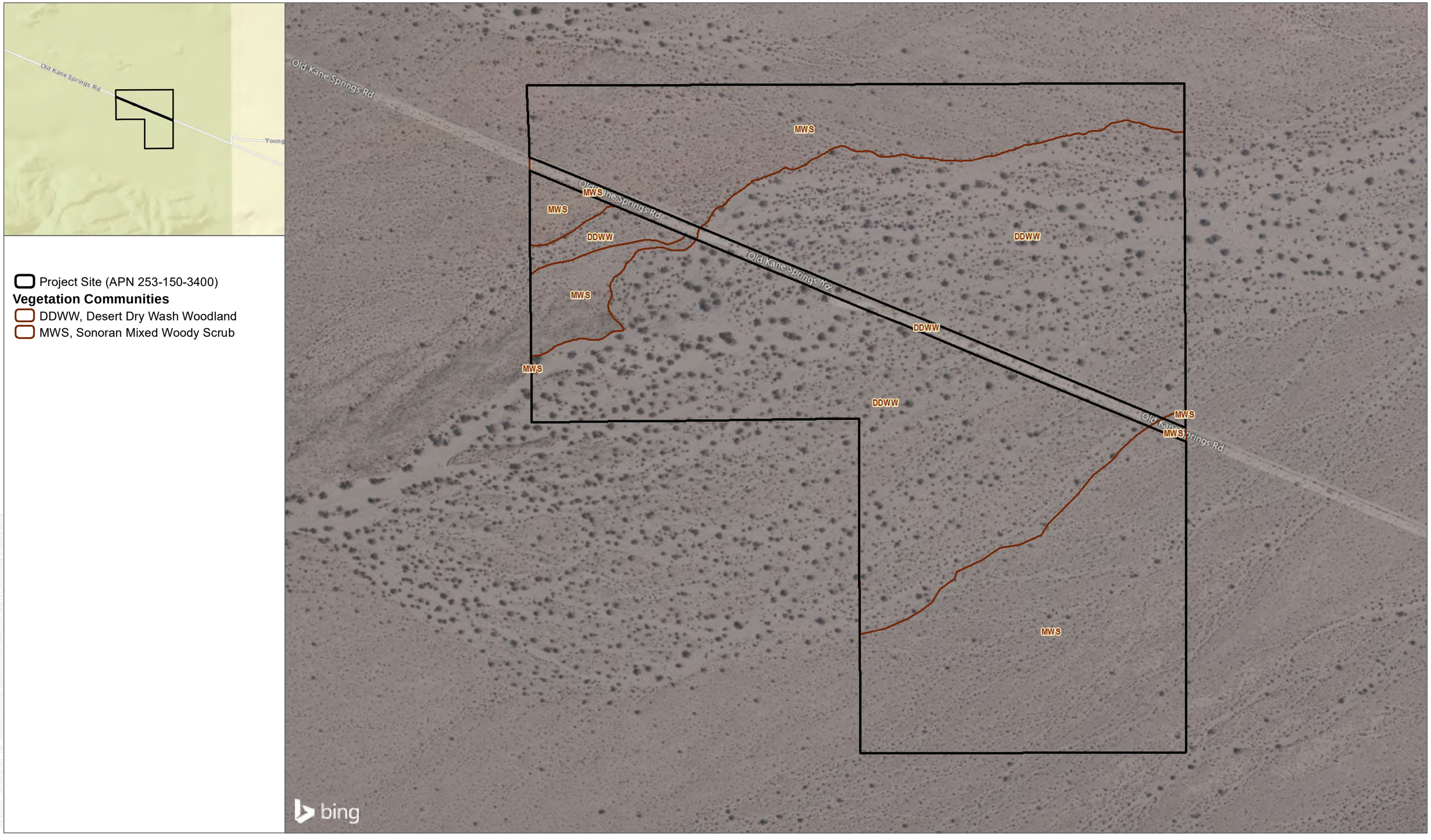
DUDEK

0 175 350 Feet

FIGURE 5

Old Kane Springs Road Jurisdictional Delineation Historic/Existing Flow Diversions

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



Project Site (APN 253-150-3400)

Vegetation Communities

DDWW, Desert Dry Wash Woodland

MWS, Sonoran Mixed Woody Scrub

SOURCE: AERIAL- BING MAPPING SERVICE 2020

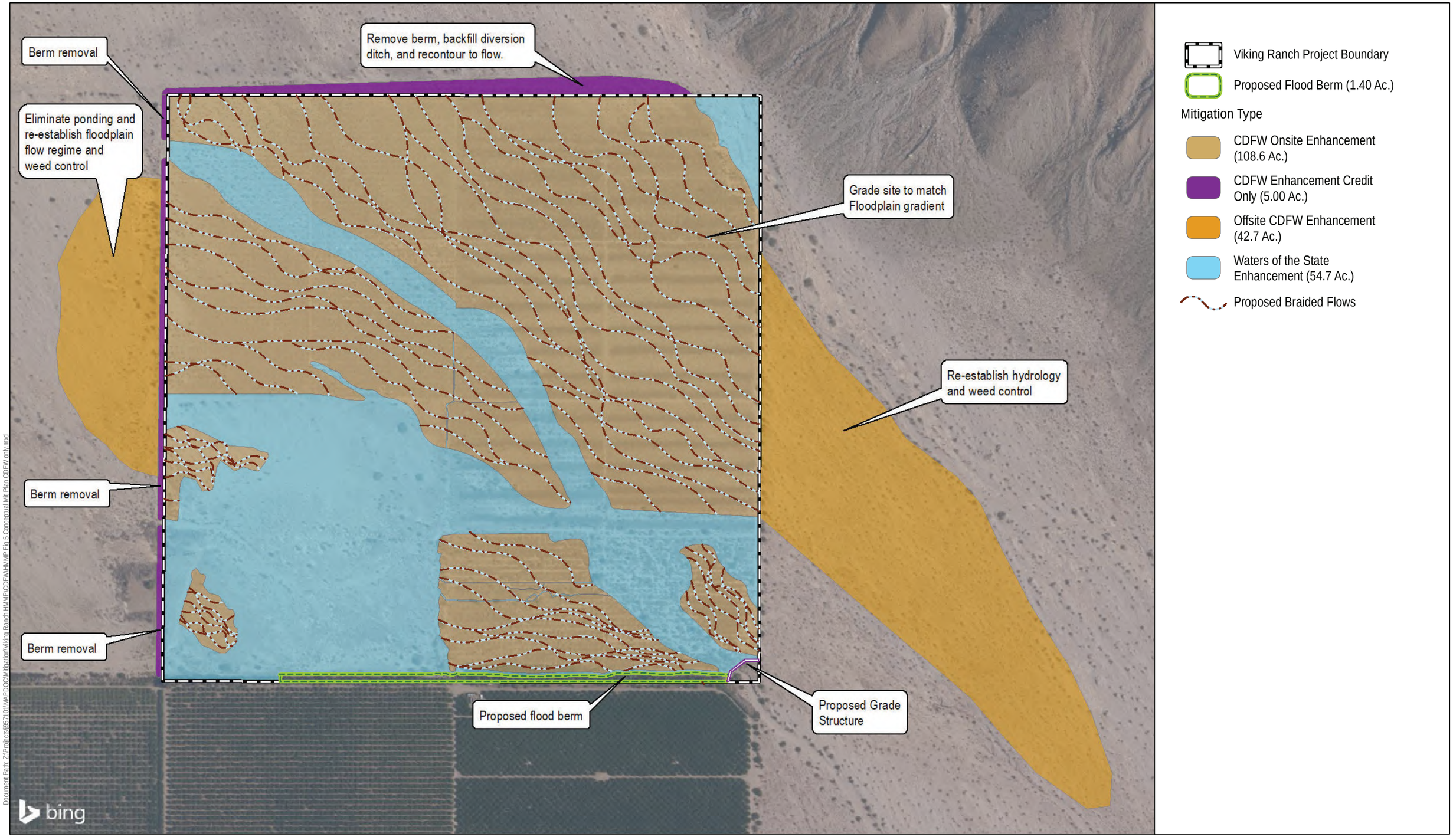
DUDEK

0 175 350 Feet

FIGURE 6

Old Kane Springs Road Vegetation Communities

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



Document Path: Z:\Projects\857101\MAPDOC\Mitigation\Viking Ranch HMMP\CDFWHMMP Fig 5 Conceptual Mit Plan CDFW only.mxd

SOURCE: AERIAL-BING MAPPING SERVICE 2018

0 100 200 Meters

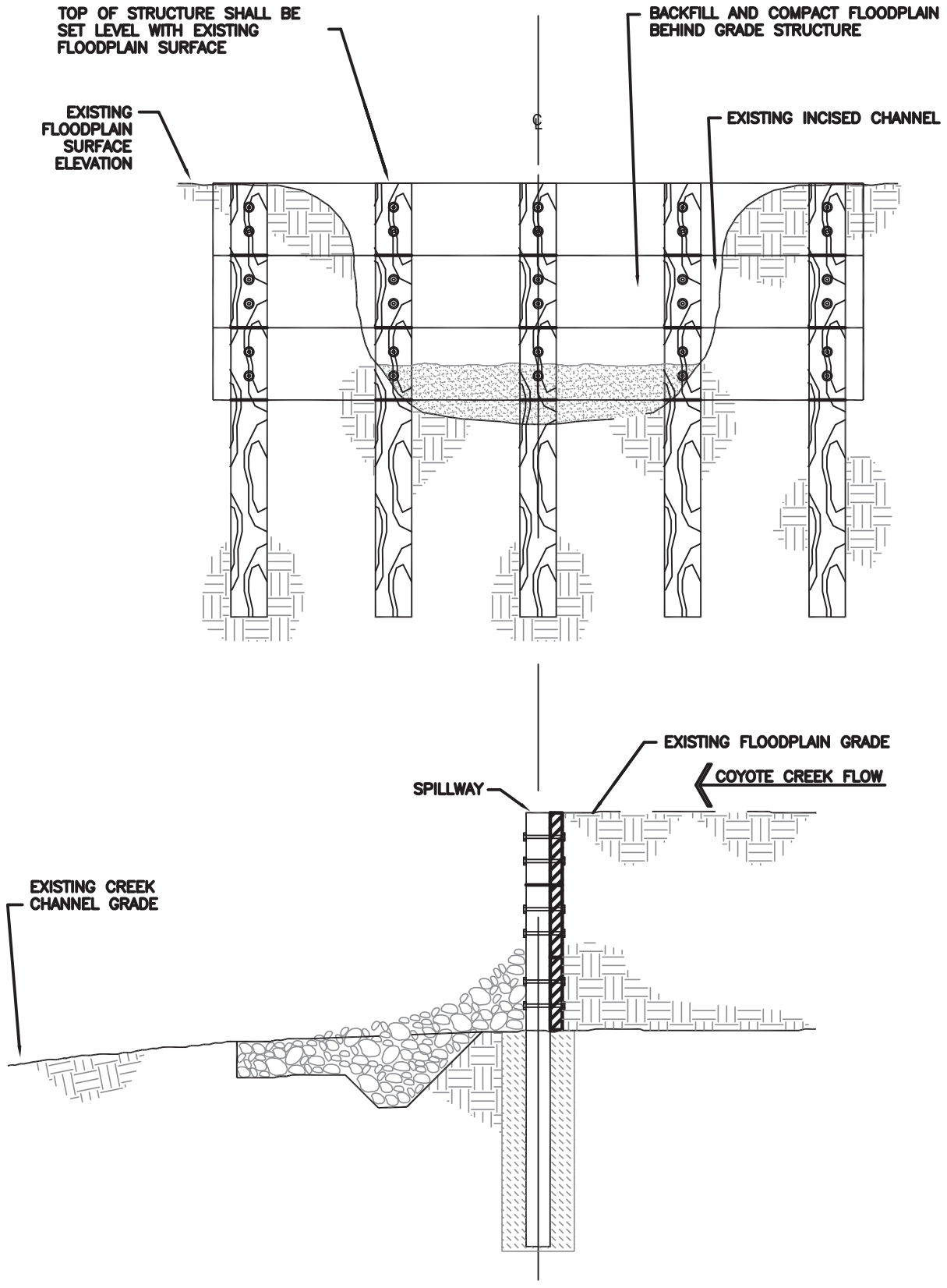
0 200 400 800 Feet

DUDEK

FIGURE 7

Viking Ranch Conceptual Restoration Plan

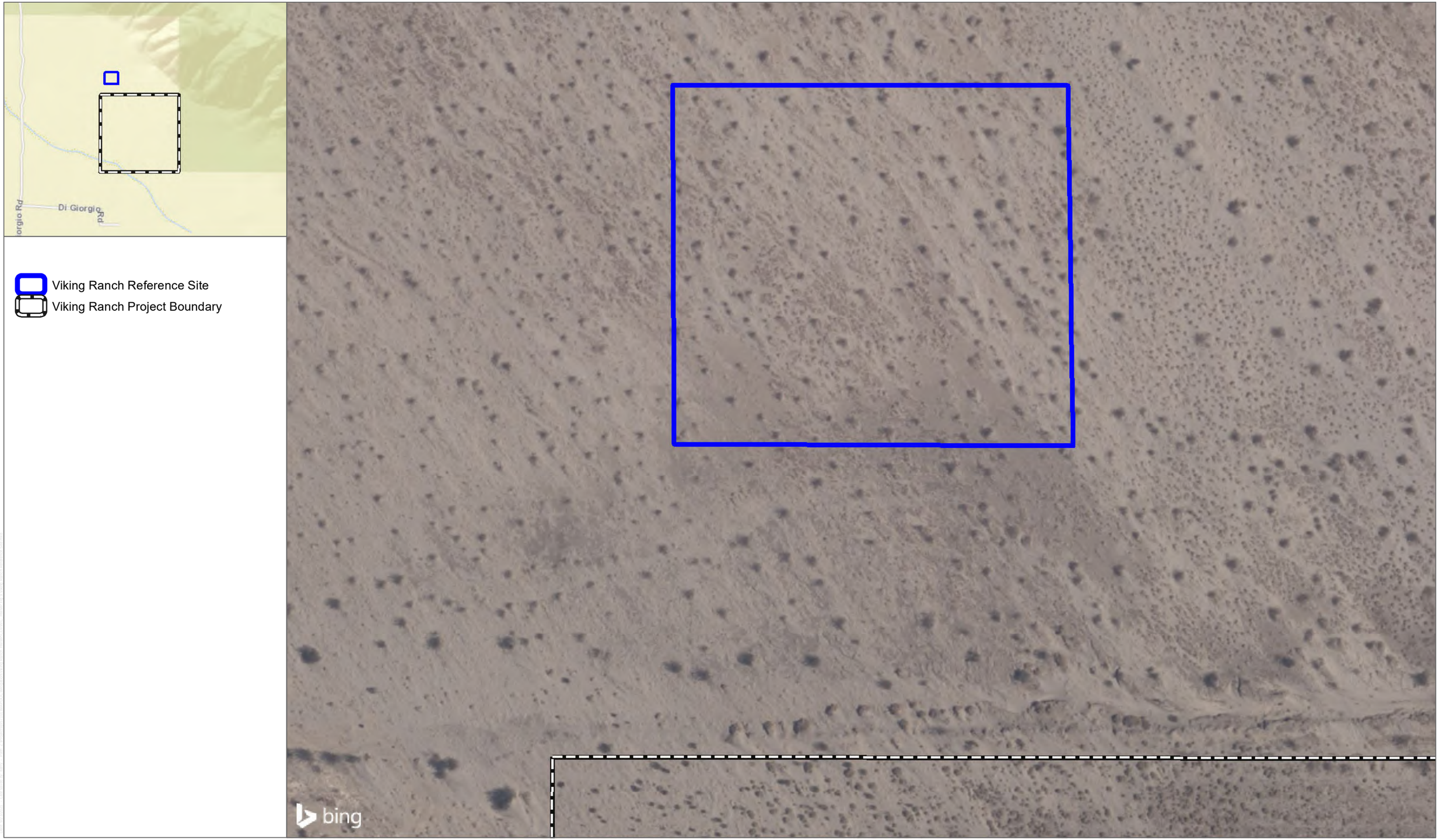
Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



SOURCE: DUDEK 2020

FIGURE 8

Viking Ranch Typical Retaining Grade Structure Detail



SOURCE: AERIAL- BING MAPPING SERVICE 2020

DUDEK

0 50 100 Feet

FIGURE 9

Viking Ranch Reference Site

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project

THIS PAGE
INTENTIONALLY
LEFT BLANK