RECLAMATION PLAN
LEBATA BIG ROCK CREEK
AGGREGATE SURFACE MINE AND PROCESSING FACILITIES

AUGUST 2014

ATTACHMENT E

Supplemental Biological Resource Studies

ATTACHMENT E

Exhibit 1 - *Updated Special-status Plant Survey and General Wildlife Survey Results*, prepared by ECORP Consulting, Inc., August 24, 2014

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

July 24, 2014
(2014-054)

Mr. John Hecht
SESPE Consulting, Inc.
468 Poli Street, Suite 2E
Ventura, CA 93001

SUBJECT: Updated Special-status Plant Survey and General Wildlife Survey Results for the Lebata Big Rock Creek Surface Mining Project Site, Los Angeles County, California

Dear Mr. Hecht,

The purpose of this letter report is to document the results of a special-status plant survey where Lebata, Inc. (Lebata) has proposed surface mining activities on approximately 310 acres (125 hectares [ha]) near Big Rock Creek, near the community of Pearblossom, Los Angeles County, California. ECORP Consulting, Inc. (ECORP) was contracted to conduct a literature review and focused survey on approximately 135 acres (55 ha) of the project site for the presence or absence of listed and/or sensitive plant species Phases 1 and 3 (APN 3039-021-009 and 3039-036-002) of the project. In addition, a general wildlife survey was also conducted to update the wildlife compendium for the project area.

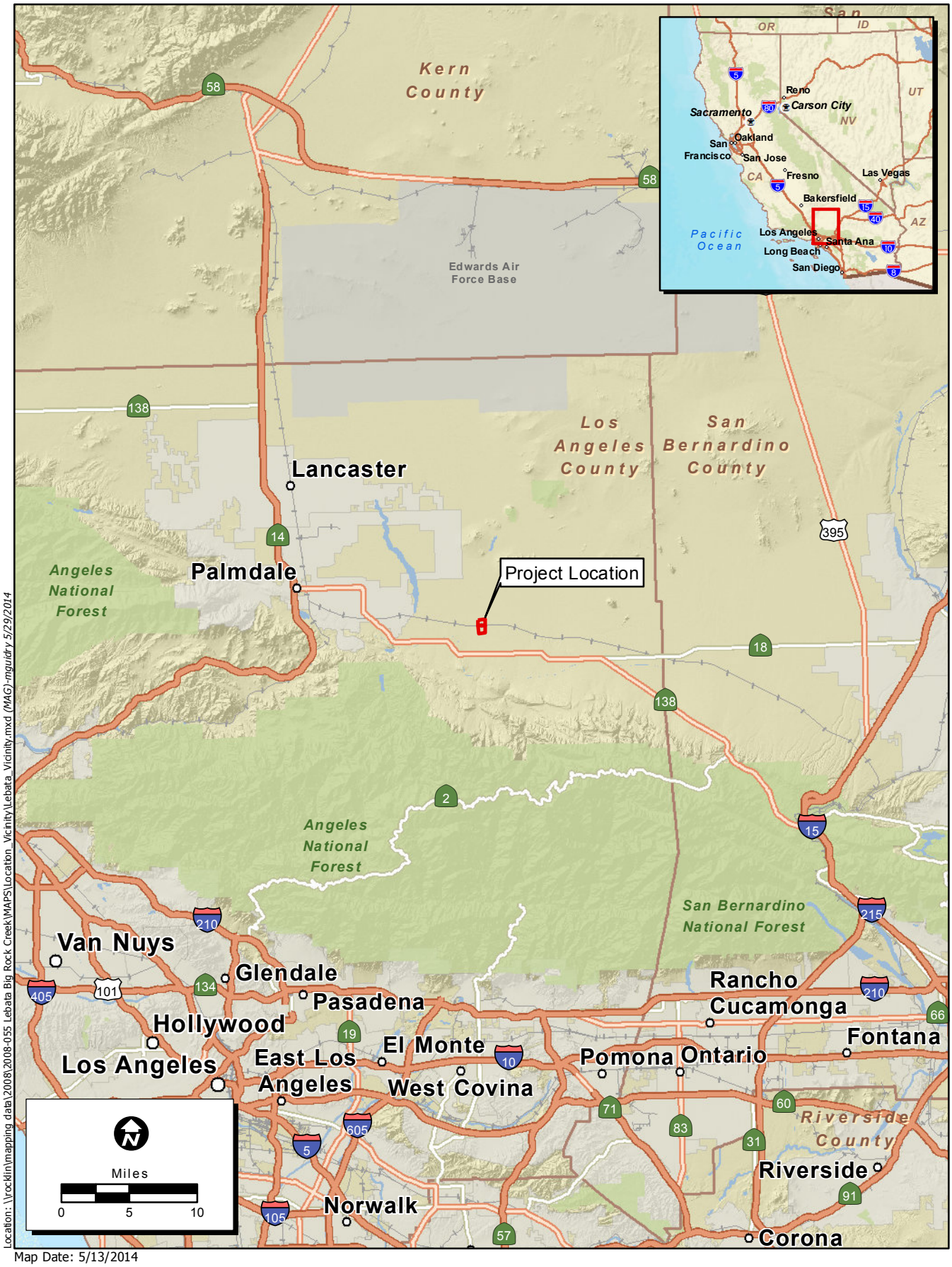
Prior to conducting the focused surveys, a review of plant database and regional literature was conducted in order to identify the potential for occurrence of plant species based on the habitat types present on the project site. The 2008 special-status plant report and the 2010 sensitive plant species occurrence memo update prepared for the project site by ECORP were also reviewed (ECORP 2008, ECORP 2010).

The results of the surveys indicate that no federally or state-listed (threatened or endangered) plant species were observed on site. One sensitive plant species, the crowned muilla (*Muilla coronata*), which was observed during the 2008 focused surveys, was also observed during the 2014 focused surveys. The crowned muilla has a limited distribution and is currently on the California Native Plant Society (CNPS) watch list, but it does not have any state or federal protection. Additionally, beavertail cactus (*Opuntia basilaris* var. *basilaris*) was also observed and these appear to contain genes of short-joint beavertail cactus (*Opuntia basilaris* var. *brachyclada*). Documented intermediates or hybrids of these two species were found on another site close by in 2002 (Chambers Group 2002). The intermediate between the two beavertail cactus species does not have any protection under state or federal legislation.

Introduction

Project Location and Description

The approximately 310-acre (125-ha) project site is located south of Avenue T between 131st and 136th Streets East in the unincorporated community of Pearblossom, Los Angeles County (Figure 1). The project site is bisected by the Union Pacific Railroad (UPRR), located approximately 0.5 mile (mi) (1 kilometer [km]) south of Avenue T.



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Map Date: 5/13/2014

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

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Figure 1. Project Vicinity

2014-054 Lebata Big Rock Creek

Mining activities in the northern portion of the project site (approximately 135 acres (55 ha)), which is bordered by the UPRR on the south, are being proposed and are expected to break ground in early 2015 (Figure 2). The northern portion of the project site will be mined under Phases 1 and 3 of the proposed work plan. The southern portion of the project site, approximately 175 acres (71 ha) bounded by the UPRR to the north, is also proposed for surface mining activities; however, the activities in this portion of the project site are not proposed to break ground until a later date. The southern portion of the project site will be mined under Phase 2 of the proposed work plan. Elevations on the site range from approximately 2,850 to 2,940 feet (ft) (870 to 896 meters [m]) above mean sea level (msl).

Purpose of Surveys

A special-status plant survey was conducted on the entire project site in 2008 (ECORP 2008) and a memo documenting changes to the sensitive plant species occurrences was prepared for the site in 2010 (ECORP 2010). The results of these efforts are pertinent, but were considered in need of a current update. Additionally, wildlife surveys that were previously conducted on the site were also considered in need of an update. An updated survey for special-status plants and a general wildlife survey were conducted at the request of the California Department of Fish and Wildlife (CDFW) in order to provide current information in support of future permitting for the project.

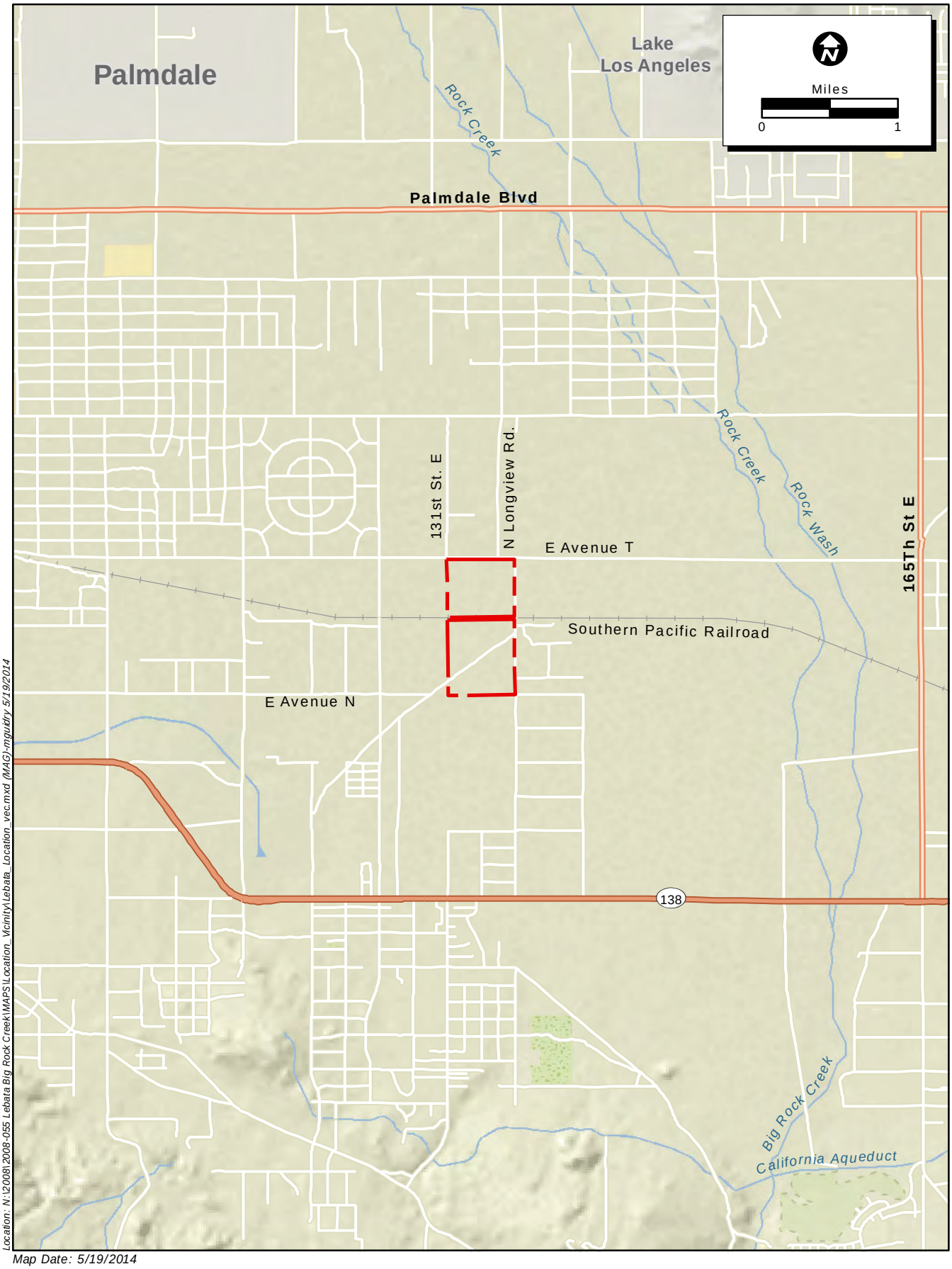
Due to the fact that Phases 1 and 3 are proposed for ground breaking activities in early 2015, only the northern portion of the project site was focused on during the 2014 surveys. For the purposes of this report, the northern portion will be referred to as the study area.

Methods

Literature Review

Prior to the surveys, a review of the California Natural Diversity Database (CDFW 2014), the CNPS Rare Plant Inventory (CNPS 2014), University of California Berkeley's Specimen Management System of California Herbaria (SMASCH) database (UCB 2010), the CalFlora database (CalFlora 2014), and previous reports and documentation available for the study area (Chambers Group 2002, ECORP 2008, ECORP 2010) was conducted for the study area and the surrounding areas. In addition, the Los Angeles County Sensitive Bird Species list and the Los Angeles County Bird Watchlist were also reviewed (LA County 2009). Nine United States Geological Survey (USGS) 7.5-minute topographic quadrangles were searched: Littlerock, Palmdale, Lancaster East, Alpine Butte, Hi Vista, Lovejoy Buttes, Valyermo, Juniper Hills, and Pacifico Mountain. Additional reference data regarding local special-status and common plants likely to occur within the study area was also gathered from the following sources:

- The Jepson Manual (Baldwin et al. 2012),
- Mojave Desert Wildflowers (MacKay 2003), and
- Online websites (CalPhotos 2014).



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Map Date: 5/19/2014
Source: ESRI

Figure 2. Project Location

2014-054 Lebata Big Rock Creek

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Updated Special-status Plant Surveys

Focused special-status plant surveys of the project area were conducted by ECORP biologists Alisa Flint, Brad Haley, Emily Graf, and Kevin Cornell on April 3, 2014 according to the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2009). The field surveys consisted of walking transects spaced 10 m (33 ft) apart throughout the entire study area including a 100-ft (30-m) buffer. The biologists characterized the plant communities present on site and verified vegetation communities described in the literature review. Plant species were recorded and those that could not be identified in the field were later identified using taxonomic keys. A global positioning system (GPS) unit was used to record the coordinates of any sensitive plant species observed and site reference photographs were taken with a digital camera. Weather data were recorded during surveys, including time, temperature, and wind speed for each day surveys were conducted.

General Wildlife Survey

A general wildlife survey was conducted in the project area to update the list of wildlife species observed or detected in the study area. The survey consisted of biologists driving the perimeter of the study area and walking 30-m (98-ft) transects in selected portions of the study area. During the survey all wildlife species were documented, animal sign (e.g. scat, tracks) was recorded, and burrows and another other special habitat features were documented. Coordinates of any sensitive and/or listed wildlife species or other sensitive biological resources observed, such as bird nests, on the site were recorded. Weather data were recorded at the beginning and end of each survey, including time, temperature, and wind speed.

Results

Literature Review

A total of 20 special-status plant species were found to have potential to occur in the study area. The following guidelines were used to assess each special-status species' potential to occur:

Presumed Absent: Species was not observed during focused surveys conducted at an appropriate time for identification, or environmental conditions (including elevation, soils and vegetation communities) associated with species occurrence are not present on the site.

Low: Recent or historic records do not exist for the species within the study area or its immediate vicinity (approximately 5 mi [8 km]), and environmental conditions on site (including elevation, soils and vegetation communities) associated with the given species are of poor quality.

Moderate: Either a historic record exists for the species within the immediate vicinity of the study area (approximately 5 mi [8 km]), or the environmental conditions (including elevation, soils and vegetation communities) associated with the given species exist within the study area.

High: A historic record of the species exists within the study area or its immediate vicinity (approximately 5 mi [8 km]), and the environmental conditions (including elevation, soils and vegetation communities) associated with the given species exist within the project area.

Present: Species was observed within the study area during the survey.

***Note:** Location information on some sensitive species is not available; therefore, for survey purposes, landscape factors associated with species occurrence requirements may be considered sufficient to give a species a positive potential for occurrence.

One species considered rare in California and nineteen other special-status plant species were identified during the literature search as potentially occurring in the vicinity of the site (CDFW 2014, CNPS 2014). However, the majority of species previously documented in the literature search in the vicinity of the study area were presumed absent based on the lack of suitable habitat and/or lack of detection during the focused surveys. All plant species identified during the literature search Attachment 1. Species for which habitat is present in the study area are discussed individually below.

Preuss's milk-vetch (*Astragalus preussii* var. *preussii*) is a CNPS List 2.3 perennial herb associated with chenopod scrub and Mojavean desert scrub habitats on selenium-bearing soils. It typically occurs from 2,460 to 2,707 ft (750 to 825 m) above msl and its bloom period is from May to June. Suitable habitat exists throughout the study area for this species, but it was not observed during the focused survey. Although the survey was conducted before the normal bloom period for this species, the vegetative parts of the plant should have been present, which would make observation possible. This species is presumed absent from the study area.

Alkali mariposa lily (*Calochortus striatus*) is a CNPS 1B.2 bulbiferous herb. This species typically occurs in chaparral, chenopod scrub, Mojave Desert scrub, alkaline meadows, and ephemeral washes at elevations ranging from 295 to 5,233 ft (90 to 1,595 m) above msl and usually blooms from April to June. Suitable habitat exists throughout the study area but no occurrence records were found within a 5 mi (8 km) radius. The focused special-status plant survey was conducted during the appropriate bloom period for this species; however, no individuals were observed. This species is presumed absent from the study area.

Sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*) is a CNPS List 2.2 species that is associated with Great Basin scrub, Sonoran Desert scrub, desert dunes, sandy flats and dune habitats, often around clay slicks. It is found from 2,296 to 3,937 ft (700 to 1,200 m) above msl and its bloom period is from April to May. Even though limited habitat is present in the sandy soils within the study area, this species was not observed during the focused surveys. Therefore, it is presumed absent from the study area.

Peirson's lupine (*Lupinus peirsonii*) is a CNPS List 1B.3 species that typically occurs in Joshua tree woodland, lower montane coniferous forest, pinyon/juniper woodland and upper montane coniferous forest from 3,281 to 8,202 ft (1,000 to 2,500 m) above msl. Only limited habitat is present on site. This species was not observed during the focused surveys (conducted within the appropriate bloom period [April to June] for this species); therefore, it is presumed absent from the study area.

Crowned muilla (*Muilla coronata*) is a CNPS List 4.2 bulbiferous herb that typically occurs in chenopod scrub, Joshua tree woodland, Mojave desert scrub, and pinyon-juniper woodland from 2,510 to 6,430 ft (765 to 1,960 m) above msl. A total of 27 individuals of crowned muilla were observed on the site, details of which can be found in and are included in the Updated Special-status Plant Survey section below.

Short-joint beavertail cactus (*Opuntia basilaris* var. *brachyclada*) is a CNPS List 1B.2 species that is usually found in a range of habitats including chaparral, Joshua tree woodland, Mojave Desert scrub, pinyon/juniper woodland, and riparian woodland between 4,101 to 5,971 ft (1,250 and 1,820 m) above msl. Suitable habitat exists in the study area and known populations occur within 10 mi (16 km) of the property. The locations of numerous individuals of *Opuntia basilaris* (not the sensitive *brachyclada* variation) were recorded within the study area, details of which are found in the Updated Special-status Plant Survey section below.

Parish's popcorn-flower (*Plagiobothrys parishii*) is a CNPS List 1B.1 species that occurs within Great Basin scrub and Joshua tree woodland habitats in mesic areas with alkaline soils from 2,460 to 4,593 ft (750 to 1,400 m) above msl. Limited habitat for the popcorn-flower is present in the study area and no individuals were observed during the focused survey conducted during the appropriate bloom period (March to June). Therefore, this species is presumed absent from the site

Updated Special-status Plant Survey

A focused special-status plant survey of the study area was conducted by ECORP biologists Alisa Flint, Brad Haley, Emily Graf, and Kevin Cornell on April 3, 2014. The entire focused special-status plant survey occurred between the hours of 0800 and 1730; weather conditions were suitable for the effort (Table 1). Representative site photographs taken during the survey are included as Attachment 2.

Table 1 - Weather Conditions during the Special-status Plant Survey

Date	Time		Temperature (°F)	Cloud Cover (%)	Wind Speed (mph)
	Start	End			
4/3/14	0800	1730	65	25	3-8

Common Plant Species

During the focused special-status plant survey, 105 different species of plants were observed and recorded. Examples of common plant species observed include creosote bush (*Larrea tridentata*), four-wing saltbush (*Atriplex canescens*), Mormon tea (*Ephedra nevadensis*), desert calico (*Loeseliastrum matthewsii*), and desert dandelion (*Malacothrix glabrata*). Appendix 3 contains a compendium of all plant species observed.

Special-status Plant Species

One special-status plant species was observed during the focused plant survey, crowned muilla (*Muilla coronata*). Twenty-seven individuals of crowned muilla were observed in the study area (Figure 3).This species had also been identified in the 2008 survey (ECORP 2008). Figure 4 shows a crowned muilla specimen observed during the 2014 survey.

Map Date: 5/23/2014
Photo Source: NAIP (2012)

Figure 3. Crowned Muilla and Beavertail Cactus Locations

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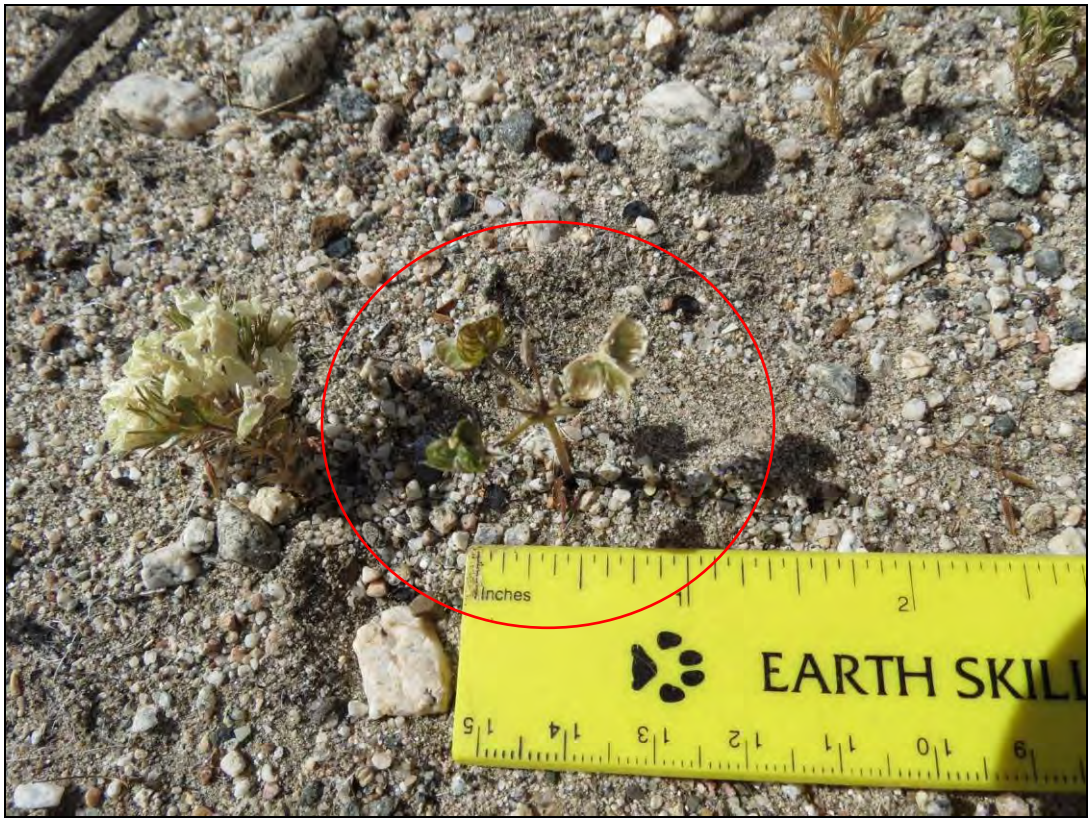


Figure 4. Crowned muilla (*Muilla coronata*) specimen found on the study area.

Individuals of beavertail cactus with some characteristics of the sensitive variety (*Opuntia basilaris* var. *brachyclada*) were recorded at numerous locations on site in 2008 and in 2014 (Figure 3). A taxonomic study including collection and comparative propagation through Rancho Santa Ana Botanic Garden was conducted of similar beavertail specimens on a nearby property in Big Rock Wash. The individuals of the study were determined to be intermediates expressing some genes of the sensitive variety (*O. basilaris* var. *brachyclada*) (Chambers Group 2002) along with the common variety (*O. basilaris basilaris*). Botanist Pamela DeVries, who was involved with the prior study, was consulted regarding the individuals observed at the Lebata study area. She confirmed that these individuals are most likely intermediates containing physical characteristics of both the common and the sensitive varieties and that they are not likely the pure *brachyclada* varietal (personal communication 2008). A photograph of the beavertail cactus observed during the survey is shown in Figure 5.

Figure 5. Beavertail cactus (*Opuntia basilaris*) specimen found on the study area.

General Wildlife Survey

A general wildlife survey was conducted in the northern portion of the site by wildlife biologists Kristen (Mobraaten) Wasz and Amy Trost on April 22 and 23, 2014. The wildlife survey was conducted in conjunction with Mohave ground squirrel (*Xerospermophilus mohavensis*) (MGS) trapping study occurring from April 19 to April 23, 2014. Weather conditions experienced during the survey are included in Table 2.

Table 2 - Weather Conditions during the General Wildlife Survey

Date	Time		Temperature (°F)	Cloud Cover (%)	Wind Speed (mph)
	Start	End			
4/22/14	1120	1220	72	25	7-15
4/23/14	1545	1700	76	60	0-1

Additional wildlife species were observed during the second and third MGS trapping sessions, which were conducted from May 19 through 23 and June 17 through June 21, 2014 (a total of 15 survey days). The number of wildlife species identified during the survey and additional trapping sessions included 31 species (nine reptile species, 16 bird species, and six mammal species). Some of the common wildlife species observed on the site include long-nosed leopard lizard (*Gambelia wislizenii*), horned lark (*Eremophila alpestris*), and white-tailed antelope ground squirrel (*Ammospermophilus leucurus*). Although not observed during the wildlife survey, the following common species are also expected to occur on or immediately adjacent to the site: Mojave green rattlesnake (*Crotalus scutulatus*), phainopepla (*Phainopepla nitens*), northern flicker (*Colaptes auratus*), and pocket mice species (*Perognathus* sp. and *Chaetodipus* sp.). Attachment 4 contains a compendium of all wildlife species observed during the wildlife survey and MGS trapping.

Burrow sites used by the desert kit fox (Vulpes macrotus) were not found in the project area during the survey. This species is protected as a fur-bearing mammal under Title 14 of the California Code of Regulations § 460. This species likely forages for small mammals, birds, and reptiles in the region surrounding the project area but there are no active fox burrows in the project area.

One previously occupied burrow was discovered in the study area with old burrowing owl sign (old whitewash and pellets; Figure 6). This burrow was observed in the northwestern portion of the study area. The biologists did not observe or detect any burrowing owls or currently occupied burrows during the survey. The burrowing owl is on the Los Angeles County Sensitive Bird Species List Part II (LA County 2009), which includes County sensitive bird species listed by other agencies.

One bird species on the Los Angeles County Sensitive Bird Species County Sensitive Bird Species List Part I (LA County 2009) is the greater roadrunner (*Geococcyx californianus*). This species was not observed during the surveys. It occurs in open arid habitats and is likely common in the vicinity of the site due to the abundance of suitable habitat. Other bird species on the Los Angeles County Sensitive Bird Species List Part II that may occur in the vicinity of the site but were not observed during multiple surveys between April and June of 2014 include golden eagle (*Aquila chrysaetos*) and loggerhead shrike (*Lanius ludovicianus*).

Three bird species identified during the surveys are on the Los Angeles County Bird Watchlist (LA County 2009), including the lesser nighthawk (*Chordeiles acutipennis*), Bell's sparrow (*Artemisiospiza belli*), and the cactus wren (*Campylorhynchus brunneicapillus*). The watchlist includes bird species that do not share the same level of risk as those on the Los Angeles County Sensitive Bird Species list but if one or more risk factors are actualized, they could be moved into higher rankings. Populations of species on the watchlist are those that warrant monitoring (LA County 2009).

Figure 6. Previously occupied burrowing owl burrow at the study area.

One lesser nighthawk was observed on the site during the survey but there was no sign that this species was nesting in the area. Lesser nighthawks are likely relatively common in the vicinity of the site considering the open nature of the habitat on and in the vicinity of the site.

Bell's sparrows were observed using the creosote bush scrub community on the site during the surveys. This species is common in open desert habitats and would be expected to occur throughout the undeveloped habitat in the region surrounding the site.

Two cactus wren nests were found in a silver cholla (*Cylindropuntia echinocarpa*) during the general wildlife survey. The nests were in good condition but the biologists didn't note any activities that would have indicated they were currently being used. A photograph of the two nests is found in Figure 7. Cactus wrens are relatively common in the region surrounding the site due to the presence of undeveloped, suitable habitat areas.

Figure 7. Two cactus wren nests found in a silver cholla.

Conclusion

Special-status Plant Species

State or federally-listed plant species were not observed during the updated focused survey of the study area. Only one sensitive (CNPS List 4.2) plant species, crowned muilla, was detected on the site. This species has a limited distribution and is currently on the CNPS Watch List, but it does not have any state or federal protection.

Numerous individuals of beavertail cactus were recorded on the site during the survey. These specimens were determined to be intermediates between the sensitive (*Opuntia basilaris* var. *brachyclada*) and common (*O. basilaris basilaris*) varieties. The individuals recorded within the project area do not currently have protection under any state or federal legislation.

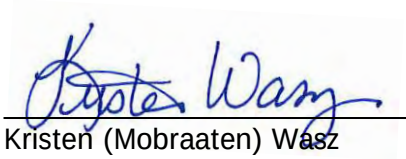
General Wildlife

A total of 31 wildlife species were observed or detected within the study area. One fairly large burrow was documented in the northwestern portion of the study area that had evidence of previous burrowing owl use (whitewash and pellets); however, this sign appeared very old and the burrow did not look as though it had been recently used. The burrowing owl is on the Los Angeles County Sensitive Bird Species List Part II, which includes County sensitive bird species listed by other agencies. Based on the condition of the old burrow, this species is considered absent from the area that was surveyed. Three bird species that are on the Los Angeles County

Bird Watchlist were detected during the survey, including lesser nighthawk, Bell's sparrow, and cactus wren. The lesser nighthawk was observed but no evidence of nesting was found and Bell's sparrows were observed flying and foraging in the creosote bush scrub on the site. Both of these species are commonly seen in the region around the site. Two cactus wren nests were observed in one cholla in the central portion of the study area. The nests appeared to be in good condition but the biologists did not observe any activities that would indicate they were actively being used.

If you have any questions regarding the content of this letter report, please contact me at (714) 648-0630.

I hereby certify that the statements furnished above present the data and information required for this biological survey results report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.



Kristen (Mobraaten) Wasz 7/23/2014
Date

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Attachment 1

Special-status Plant Species Potential for Occurrence

Attachment 1
Potential for Occurrence of Sensitive Plant Species

Scientific Name Common Name	**Status**		**Flowering Period Elevation (meters)**	**Potential for Occurrence; Habitat**
Abronia villosa var. aurita Chaparral Sand-verbena	Fed: Ca: CNPS: BLM:	none none 1B.1 none	January-September 80-1600	**Presumed Absent;** Chaparral, Coastal Scrub Sandy Areas. No suitable habitat occurs on the site.
Arctostaphylos gabrielensis San Gabriel Manzanita	Fed: Ca: CNPS: BLM:	none none 1B.2 none	March 1500	**Presumed Absent;** Chaparral (Rocky). No suitable habitat occurs on the site.
Astragalus lentiginosus* var. *antonius San Antonio Milk-vetch	Fed: Ca: CNPS: BLM:	none none 1B.3 none	April-July 1500-2600	**Presumed Absent;** Dry Slopes In Open Yellow Pine Forest. No suitable habitat occurs on the site.
Astragalus preussii* var. *preussii Preuss's Milk-vetch	Fed: Ca: CNPS: BLM:	none none 2.3 none	May-June 750-825	**Presumed Absent;** Chenopod Scrub, Mojavean Desert Scrub. Confined To Selenium-Bearing Soils. Limited habitat occurs on the site, but species was not observed during focused surveys.
Calochortus striatus Alkali Mariposa Lily	Fed: Ca: CNPS: BLM:	none none 1B.2 SEN	April-June 90-1595	**Presumed Absent;** Chaparral, Chenopod Scrub, Mojavean Desert Scrub, Meadows. Alkaline Meadows And Ephemeral Washes. Limited habitat occurs on the site, but species was not observed during focused surveys.
Calystegia peirsonii Peirson's morning glory	Fed: Ca: CNPS: BLM:	none none 4.2 SEN	April-June 30-1500	**Presumed Absent;** Chaparral, Chenopod Scrub, Cismontane Woodland, Lower Montane Coniferous Forest. No suitable habitat occurs on the site.
Carex vulpinoidea Fox Sedge	Fed: Ca: CNPS: BLM:	none none 2.2 none	May-June 30-1200	**Presumed Absent;** Marshes And Swamps (Freshwater), Riparian Woodland. No suitable habitat occurs on the site.
Castilleja gleasonii Mount Gleason Indian Paintbrush	Fed: Ca: CNPS: BLM:	none **RAR** 1B.2 none	May-June 1160-2170	**Presumed Absent;** Lower Montane Coniferous Forest, Pinyon And Juniper Woodland/Granitic. No suitable habitat occurs on the site.
Chorizanthe parryi* var. *parryi Parry's Spineflower	Fed: Ca: CNPS: BLM:	none none 3.2 none	April-June 40-1705	**Presumed Absent;** Coastal Scrub, Chaparral. Dry, Sandy Soils. No suitable habitat occurs on the site.

Scientific Name Common Name	**Status**		**Flowering Period Elevation (meters)**	**Potential for Occurrence; Habitat**
Clarkia xantiana* ssp. *parviflora Kern Canyon Clarkia	Fed: Ca: CNPS: BLM:	none none 1B.2 none	May-June 1000-1500	**Presumed Absent;** Cismontane Woodland, Great Basin Scrub. No suitable habitat occurs on the site.
Layia heterotricha Pale-yellow Layia	Fed: Ca: CNPS: BLM:	none none 1B.1 SEN	March-June	**Presumed Absent;** Cismontane Woodland, Pinyon And Juniper Woodland, Valley And Foothill Grassland/Alkaline Or Clay. No suitable habitat occurs on the site.
Lilium parryi Lemon Lily	Fed: Ca: CNPS: BLM:	none none 1B.2 none	July-August 1300-2790	**Presumed Absent;** Wet, Mountainous Terrain; Gen. In Forested Areas; On Shady Edges Of Streams, In Open Boggy Meadows & Seeps. No suitable habitat occurs on the site.
Linanthus concinnus San Gabriel Linanthus	Fed: Ca: CNPS: BLM:	none none 1B.2 none	April-June 1575-2545	**Presumed Absent;** Lower Montane Coniferous Forest, Upper Montane Coniferous Forest. Dry Rocky Slopes. No suitable habitat occurs on the site.
Loeflingia squarrosa* var. *artemisiarum Sagebrush Loeflingia	Fed: Ca: CNPS: BLM:	none none 2.2 SEN	April-May 700-1200	**Presumed Absent;** Great Basin Scrub, Sonoran Desert Scrub, Desert Dunes. Sandy Flats And Dunes. Sandy Areas Around Clay Slicks. Limited suitable habitat occurs on the site, but this species was not observed during focused surveys during the bloom period.
Lupinus peirsonii Peirson's Lupine	Fed: Ca: CNPS: BLM:	none none 1B.3 none	April-June 1000-2500	**Presumed Absent;** Joshua Tree Woodland, Lower Montane Coniferous Forest, Pinyon/Juniper Woodland, Upper Montane Coniferous Forest. Limited suitable habitat occurs on the site, but this species was not observed during the focused surveys.
Muhlenbergia californica California muhly	Fed: Ca: CNPS: BLM:	none none 4.3 none	June-September 100-2000	**Presumed Absent;** Coastal Sage, Chaparral, Lower Montane Coniferous Forest, Meadows, near Streams or Seeps. No suitable habitat is present on the site.

Scientific Name Common Name	**Status**		**Flowering Period Elevation (meters)**	**Potential for Occurrence; Habitat**
Muilla coronata Crowned muilla	Fed: Ca: CNPS: BLM:	none none 4.2 none	March-May 765-1960	**Present;** Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland. Crowned muilla individuals were observed during the focused survey.
Opuntia basilaris* var. *brachyclada Short-joint Beavertail	Fed: Ca: CNPS: BLM:	none none 1B.2 none	April-June 425-1800	**Presumed Absent;** Chaparral, Joshua Tree Woodland, Mojavean Desert Scrub, Pinyon-Juniper Woodland, Riparian Woodland. Opuntia basilaris individuals were observed during the focused survey and determined to be an intermediate form, not pure *brachyclada.*
Orobanche valida* ssp. *valida Rock Creek Broomrape	Fed: Ca: CNPS: BLM:	none none 1B.2 none	May-June 1250-1820	**Presumed Absent;** Chaparral, Pinyon-Juniper Woodland. On Slopes Of Loose Decomposed Granite; Parasitic On Various Chaparral Shrubs. No suitable habitat is present on the site.
Plagiobothrys parishii Parish's Popcorn-flower	Fed: Ca: CNPS: BLM:	none none 1B.1 none	March-June (November) 750-1400	**Presumed Absent;** Great Basin Scrub, Joshua Tree Woodland. Alkaline Soils; Mesic Sites. Limited suitable habitat occurs on the site, but this species was not observed during the focused surveys during the bloom period.
Symphyotrichum defoliatum San Bernardino Aster	Fed: Ca: CNPS: BLM:	none none 1B.2 none	July-November 2-2040	**Presumed Absent;** Meadows, Seeps, Marshes And Swamps, Coastal Scrub, Cismontane Woodland, Lower Montane Coniferous Forest. No suitable habitat is present on the site.

Federal Designations:
(Federal Endangered Species Act, United State Fish and Wildlife Service [USFWS])
END: Federally listed, endangered
THR: Federally listed, threatened

State Designations:
(California Endangered Species Act, California Department of Fish and Wildlife [CDFW])
END: State-listed, endangered
THR: State-listed, threatened
FP: State-fully protected
SSC: Species of Special Concern

California Rare Plant Ranks (CRPR):
1A: Presumed extirpated in California and rare or extinct elsewhere
1B: Rare, threatened, or endangered in California and elsewhere
2A: Presumed extirpated in California, but more common elsewhere
2B: Rare, threatened, or endangered in California, but more common elsewhere
3: Review list of plants requiring more study
4: Watch list of plants of limited distribution

California Native Plant Society (CNPS) Threat Code:

Scientific Name Common Name	**Status**	**Flowering Period** **Elevation** **(meters)**	**Potential for Occurrence;** **Habitat**
RAR: State rare species		**0.1:** Seriously threatened in California **0.2:** Moderately threatened in California **0.3:** Not very threatened in California	
Sources: California Natural Diversity Data Base (CDFW 2014) and California Native Plant Society Electronic Inventory (CNPS 2014) Littlerock, Palmdale, Lancaster East, Alpine Butte, Hi Vista, Lovejoy Buttes, Valyermo, Juniper Hills, and Pacifico Mountain 7.5- minute USGS topographic quadrangles.			

Attachment 2

Representative Site Photographs

Attachment 2
Representative Site Photographs

Photo 1. Overview of vegetation found on the study area.

Photo 2. Overview of annuals found on the study area.

Photo 3. Longview Road running north to south, bisecting the study area.

Photo 4. Trash found in the study area, concentrated around Longview Road.

Photo 5. Gravel and rock mounds found in the southeastern portion of the study area.

Photo 6. Representative creosote bush scrub habitat within the study area.

Attachment 3

Plant Compendium

Attachment 3
Plant Compendium

Scientific Name	Common Name
VASCULAR PLANTS	
ANGIOSPERMS (DICOTYLEDONS)	
AMARANTHACEAE	**AMARANTHE FAMILY**
Grayia spinosa	spiny hop-sage
ASTERACEAE	**SUNFLOWER FAMILY**
Acamptopappus sphaerocephalus	rayless goldenhead
Ambrosia acanthicarpa	annual burweed
Ambrosia dumosa	white bursage
Ambrosia psilostachya	ragweed
Anisocoma acaulis	scale bud
Artemisia tridentata	basin sagebrush
Chaenactis fremontii	Fremont pincushion
Coreopsis bigelovii	Bigelow's tickseed
Encelia frutescens	rayless encelia
Ericameria nauseosa	Mojave rabbitbrush
Ericameria linearifolia	interior goldenbush
Eriophyllum pringlei	Pringle's woolly sunflower
Eriophyllum wallacei	Wallace eriophyllum
Glyptopleura marginata	carveseed
Gutierrezia sarothrae	matchweed
Hymenoclea salsola	cheesebush
Lasthenia californica	California goldfields
Malacothrix glabrata	desert dandelion
Nicolletia occidentalis	hole in the sand plant
Stephanomeria pauciflora	Desert straw
Stephanomeria spinosa	thorn skeletonweed
Rafinesquia neomexicana	Desert chicory
Tetradymia spinosa	spiny horsebrush
Tetradymia stenolepis	Mojave cottonthorn
Xylorhiza tortifolia var. *tortifolia*	Mojave aster
BORAGINACEAE	**BORAGE fAMILY**
Amsinckia menziesii var. intermedia	common fiddleneck
Amsinckia tessellata	Checker fiddleneck
Cryptantha circumscissa	Western forget me not
*Cryptantha sp.***	Popcorn flower
Nama demissum	purple mat
Pectocarya penicillata	combseed
Phacelia crenulata	notch-leaved phacelia
Phacelia distans	distant phacelia
Tiquilia plicata	fanleaf crinklemat

Scientific Name	Common Name
BRASSICACEAE	**MUSTARD FAMILY**
*Hirschfeldia incana**	short-pod mustard
Lepidium flavuum var. *flavum*	peppergrass
Lepidium fremontii	desert peppergrass
*Sysimbrium irio**	London rocket
CACTACEAE	**CACTUS FAMILY**
Opuntia basilaris	beavertail cactus
Opuntia echinocarpa	silver cholla
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex canescens	four-wing saltbush
Atriplex spinifera	Mojave saltbush
Krascheninnikovia lanata	winterfat
*Salsola tragus**	Russian thistle
CUSCUTACEAE	**DODDER FAMILY**
Cuscuta sp.**	dodder
EPHEDRACEAE	**EPHEDRA FAMILY**
Ephedra nevadensis	Mormon tea
FABACEAE	**PEA FAMILY**
Lupinus bicolor	miniature lupine
Lupinus odoratus	Mojave lupine
GERANIACEAE	**GERANIUM FAMILY**
Erodium cicutarium	filaree
LAMIACEAE	**MINT FAMILY**
Monardella exilis	Mojave monardella
Monardella viridis	Green monardella
Salazaria mexicana	bladdersage
LOASACEAE	**LOASA FAMILY**
Mentzelia albicaulis	blazing star
MALVACEAE	**MALLOW FAMILY**
Eremalche exilis	small-flowered eremalche
*Malva pariflora**	cheeseweed
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Abronia pogonantha	Mojave sand verbena
Abronia villosa	Desert sand verbena
Mirabilis californica	California four o'clock

Scientific Name	Common Name
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissonia campestris	field primrose
Camissonia brevipes	yellow cups
Chylismia claviformis ssp. *claviformis*	Brown-eyed primrose
Eremothera boothii	Woody bottle-washer
Oneothera californica	Evening primrose
Oneothera deltoides	Dune evening primrose
OROBANCHACEAE	**BROOMRAPE FAMILY**
Orobanche sp.**	broomrape
PAPAVERACEAE	**POPPY FAMILY**
Eschscholzia minutiflora	Coville's poppy
POLEMONIACEAE	**PHLOX FAMILY**
Aliciella micromeria	dainty gilia
Eriastrum sapphirinum	sapphire eriastrum
Leptosiphon breviculus	Mojave linathus
Gilia brecciarum	small gilia
Gilia latiflora	broad-flowered gilia
Linanthus aureus (=leptosiphon)	golden linanthus
Linanthus dichotomus	evening snow
Linanthus parryae	sand blossoms
Loeseliastrum matthewsii	desert calico
POLYGONACEAE	**BUCKWHEAT FAMILY**
Centrostegia thurberi	Thurber's spineflower
Chorizanthe brevicornu var. *brevicornu*	brittle spineflower
Chorizanthe watsonii	Watson's spineflower
Eriogonum deflexum	flat-topped buckwheat
Eriogonum fasciculatum	California buckwheat
Eriogonum gracillimum	rose and white buckwheat
Eriogonum cf. *mohavense*	Western Mojave buckwheat
Eriogonum palmerianum	Palmer's buckwheat
Eriogonum cf. *plumatella*	Yucca buckwheat
Eriogonum trichopes	little desert trumpet
Lastarriaea coriacea	leather spineflower
Rumex hymenosepalus	wild rhubarb
PORTULACACEAE	**PURSLANE FAMILY**
Calyptridium monandrum	common pussy paws
RANUNCULACEAE	**BUTTERCUP FAMILY**
Delphinium parryi ssp. *parryi*	San Bernardino larkspur

Scientific Name	Common Name
ROSACEAE	**ROSE FAMILY**
Purshia tridentata var. *glandulosa*	antelope brush
SCROPHULARIACEAE	**FIGWORT FAMILY**
Castilleja exserta ssp. *venusta*	purple owl's clover
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura discolor	Desert thorn apple
Lycium cooperi	peach thorn
ZYGOPHYLLACEAE	**CALTROP FAMILY**
Larrea tridentata	creosote bush
ANGIOSPERMS (MONOCOTYLEDONS)	
AGAVACEAE	**AGAVE FAMILY**
Yucca brevifolia	Joshua tree
LILIACEAE	**LILY FAMILY**
Muilla coronata[1]	crowned muilla
Dichelostemma capitatum	blue dicks
POACEAE	**GRASS FAMILY**
Achnatherum hymenoides	Indian rice grass
Achnatherum speciosum	desert needlegrass
*Bromus madritensis ssp. rubens**	foxtail chess
*Hordeum vulgare**	wild barley
Nasella pulchra	purple needlegrass
*Schismus barbatus**	Mediterranean grass
*Vulpia myuros**	vulpia

[1] sensitive species
***non-native species**
****dried out condition of the plant made it unidentifiable to species level**

Attachment 4

Wildlife Compendium

Attachment 4
Wildlife Compendium

Scientific Name	**Common Name**
REPTILES	
Phrynosomatidae (North American Spiny Lizards)	
Phrynosoma platyrhinos	desert horned lizard
Sceloporus magister	desert spiny lizard
Sceloporus occidentalis	western fence lizard
Uta stansburiana	side-blotched lizard
Crotophytidae (Collard Lizards, Leopard Lizards)	
Gambelia wislizenii	long-nosed leopard lizard
Teiidae (Ground Lizards, Racerunners, and Whiptails)	
Aspidoscelis tigris	western whiptail
Iguanidae (American Arboreal Lizards, Chuckwallas, Iguanas)	
Dipsosaurus dorsalis	desert iguana
Colubridae (Typical Snakes)	
Masticophus flagellum	coachwhip
Pituophis catenifer	gopher snake
BIRDS	
Troglodytidae (Wrens)	
*Campylorhynchus brunneicapillus***	cactus wren
Corvidae (Crows, Jays, and Magpies)	
Corvus corax	common raven
Tyrannidae (Tyrant Flycatchers)	
Myiarchus cinerascens	ash-throated flycatcher
Tyrannus vociferans Swainson	Cassin's kingbird
Emberizidae (Buntings, Finches, Sparrows, and Towhees)	
Carpodacus mexicanus	house finch
Artemisiospiza belli	Bell's sparrow
Zonotrichia leucophrys	white-crowned sparrow
Alaudidae (Larks)	
Eremophilia alpestris	horned lark
Accipitridae (Eagles, Hawks, and Kites)	
Buteo jamaicensis	red-tailed hawk
Mimidae (Mockingbirds and Thrashers)	
Mimus polyglottos	northern mockingbird
Apodinae (Swifts)	
*Chaetura vauxi**	Vaux's Swift
Hirundinidae (Swallows)	
Hirundo rustica	barn swallow
Caprimulgidae (Nightjars)	
*Chordeiles acutipennis***	lesser nighthawk
Aegithalidae (Bushtits)	
Psaltriparus minimus	bushtit
Columbidae (Doves and Pigeons)	
Zenaida maroura	mourning dove

Scientific Name	**Common Name**
Picidae (Woodpeckers)	
Picoides scalaris	ladder-backed woodpecker
MAMMALS	
Sciuridae (Chipmunks, Marmots, and Squirrels)	
Ammospermophilus leucurus	white-tailed antelope ground squirrel
Heteromyidae (Kangaroo Mice, Kangaroo Rats, and Pocket Mice)	
Dipodomys sp.	unidentified kangaroo rat tracks and burrows
Muridae (Mice, Rats, and Voles)	
Noetoma lepida	desert woodrat
Leporidae (Hares and Rabbits)	
Sylvilagus audubonii	desert cottontail
Lepus californicus	black-tailed jackrabbit
Canidae (Dogs and Their Allies)	
Canis latrans	coyote (scat)

*California Department of Fish and Wildlife (CDFW) Species of Special Concern (SSC)
**Los Angeles County Bird Watchlist Species

ATTACHMENT E

Exhibit 2 - *Results of Baseline Vegetation Study and Development of Performance Standards*, prepared by ECORP Consulting, Inc., August 24, 2014

July 24, 2014
(2014-054.003/001/001)

Mr. John Hecht
SESPE Consulting, Inc.
468 Poli Street, Suite 2E
Ventura, CA 93001

SUBJECT: Results of Baseline Vegetation Study and Development of Performance Standards for the Lebata Mine Site near Big Rock Creek in Pearblossom, Los Angeles County, California

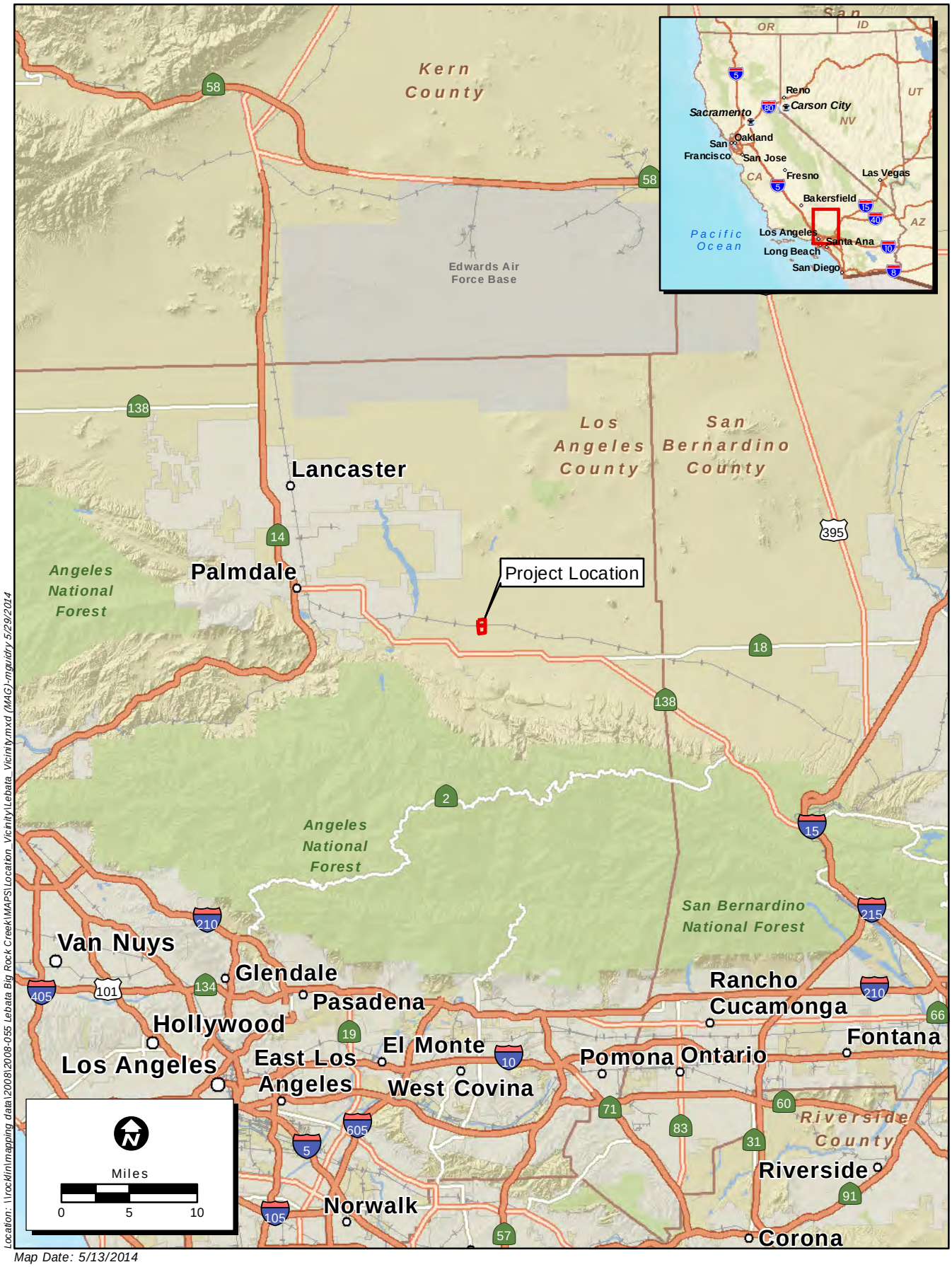
Dear Mr. Hecht,

During May 2014, ECORP Consulting, Inc. (ECORP) conducted baseline vegetation sampling on an approximately 310-acre (125-hectare [ha]) site where Lebata, Inc. (Lebata) is proposing to conduct surface mining activities. The purpose of this letter report is to summarize the results of vegetation sampling. In addition, revegetation performance standards are proposed for inclusion in the updated Reclamation Plan.

Project Location and Description

The Lebata Big Rock Creek Surface Mining Project (Project) is an approximately 310-acre (125-ha) site located south of Avenue T between 131st and 136th Streets East in the unincorporated community of Pearblossom, Los Angeles County (Figure 1). The Project site is bisected by the Union Pacific Railroad (UPRR), located approximately 0.5 mile (mi) (1 kilometer [km]) south of Avenue T. Mining activities may be initiated in the northern portion of the Project site (approximately 135 acres (55 ha)), which is bordered by the UPRR on the south (Figure 2). The northern portion of the Project site will be mined under Phases 1 and 3 of the proposed work plan. The southern portion of the Project site, approximately 175 acres (71 ha) bounded by the UPRR to the north, is also proposed for surface mining activities. The southern portion of the Project site will be mined under Phase 2 of the proposed work plan. Elevations on the site range from approximately 2,850 to 2,940 feet (ft) (870 to 896 meters [m]) above mean sea level (msl).

The Project site is currently dominated by creosote bush-white burr sage scrub (*Larrea tridentata-Ambrosia dumosa* Shrubland Alliance). Cheesebush scrub (*Ambrosia salsola* Shrubland Alliance) covers a very small portion of the site and is limited to the remnant washes. The site is predominately flat with several dirt roads and paths traversing the area. Illegal dumping has occurred in some locations with the dump sites ranging from concentrated piles to scattered rubbish.



Location: \\rocklin\mapping data\2008\2008-055 Lebata Big Rock Creek\MAPS\Location_Vicinity\Lebata_Vicinity.mxd (MAG)-mguidry 5/29/2014

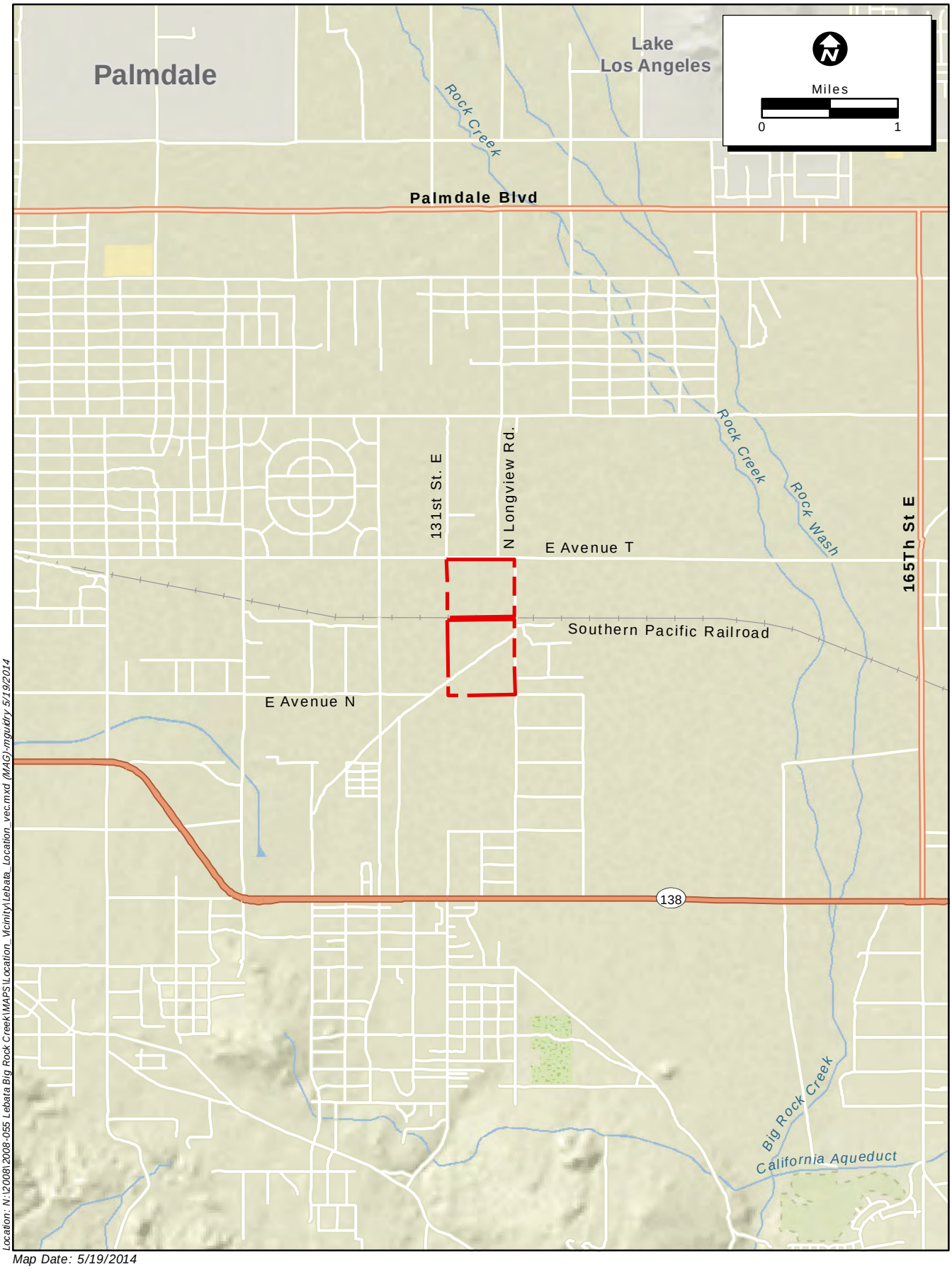
Map Date: 5/13/2014

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

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 1. Project Vicinity

2014-054 Lebata Big Rock Creek



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Map Date: 5/19/2014
Source: ESRI

Figure 2. Project Location

2014-054 Lebata Big Rock Creek

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Methods

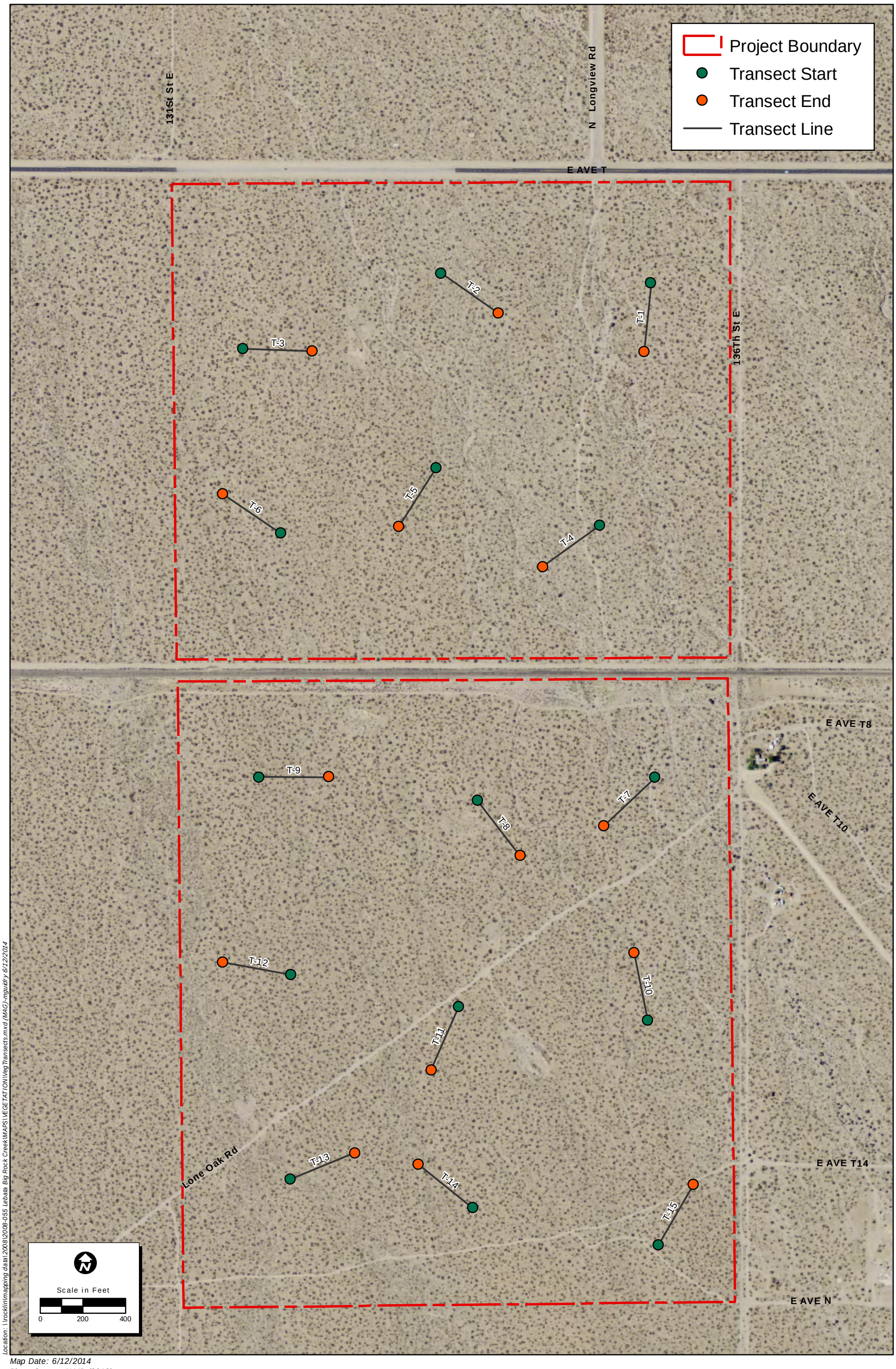
Vegetation sampling was achieved within the proposed Project site through collection of data along transects. The site was split into quadrants with the northern parcel having six equal sections and the southern parcel having nine equal sections. Within each of the sections, one transect was randomly established. In order to obtain an 80 percent confidence level, as required by the Surface Mining and Reclamation Act (SMARA) and the Lebata Reclamation Plan prepared by SESPE Consulting, Inc., a total of 15 100-m transects were established. ECORP installed 3/8-inch x 3-foot rebar that was fitted with dome-shaped orange safety caps at the start and end of each transect. A Trimble Global Positioning System (GPS) device (Geo XT) was used to record the start and end of each transect and the points collected during the field work were post-processed to achieve submeter accuracy.

Along each transect, the line-intercept method was used to collect cover data for native perennials, native annuals, nonnative annuals, and bare ground. Specifically, the outline of the canopy of each plant species was independently measured along transect tape. In cases where multiple plants were growing as a group, best judgment was used to determine the start and end of each species in order to account for overlap. In collecting cover data in this manner, total cover was determined rather than absolute cover (which takes into account multiple strata of cover and can result in cover values that exceed 100 percent). The method used during vegetation sampling resulted in each transect having a cover value that always totaled 100 percent and included native perennial and annual species, nonnative annual species, and bare ground.

In addition to collecting vegetation cover data, native shrub/tree heights and plant species density were determined for a 2-m belt centered along each transect. Only those species that were rooted within the belt were measured. Perennial grass species were also measured since they are an important component to the vegetation community being sampled. Perennial native species richness (total number of different species) was also determined for each transect. All transect data was recorded on standardized field datasheets. Photographic documentation of the start and end of each transect were recorded with a digital camera and are included as Attachment 1 and are shown in Figure 3.

Following the field effort, ECORP calculated mean and variance values for the following variables using Microsoft Excel 2010:

- Relative cover of perennial native species
- Total vegetation cover (all native species combined)
- Total non-native annual weed cover
- Perennial native species density
- Perennial native species richness
- Average (average) height of trees and shrubs



Location: \\rocklin\mapping data\2008\2008-055 Lebata Big Rock Creek\MAPS\VEGETATION\VegTransects.mxd (MAG)-mguidry 6/12/2014

Map Date: 6/12/2014
Photo Source: NAIP (2012)

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 3. Vegetation Transect Locations

2014-054.003 / 001 / 001 Baseline Vegetation Sampling

Results

The relative cover of perennial native species averaged 17 percent for all 15 transects, with 27 percent being the highest and eight percent being the lowest relative cover. With regard to total native vegetation cover (i.e., perennials and annuals), the average was determined to be 26 percent. The highest and lowest total native cover values were determined to be 40 percent and 19 percent, respectively. The mode for total native cover was 19 percent. Total nonnative plant cover was determined to average 24 percent. The highest and lowest total nonnative cover values were determined to be 36 percent and 15 percent, respectively. Nonnative perennial species were not encountered during vegetation sampling. Total bare ground was determined to average 50 percent. The highest and lowest bare ground values were determined to be 60 percent and 41 percent, respectively. Table 1 lists native, nonnative, and bare ground cover results for the 15 transects as well as statistical data for the 15 transects (samples).

Table 1. Plant Cover Results per Transect

Transect	Relative Native Perennial Cover	Total Native Vegetation Cover	Total Nonnative Vegetation Cover	Total Bare Ground
1	17	34	16	49
2	21	29	15	57
3	18	29	21	51
4	8	19	36	45
5	16	24	34	41
6	11	20	33	47
7	21	27	30	43
8	18	25	30	45
9	17	23	17	60
10	27	40	16	44
11	14	20	24	56
12	16	22	23	56
13	19	29	23	48
14	18	26	23	51
15	21	29	17	54
Mean	**17**	**26**	**24**	**50**
Variance	**18.31**	**29.57**	**47.34**	**31.02**
Standard Deviation	**4.4**	**5.6**	**7.1**	**5.8**
Confidence Interval (80%)	**1.47**	**1.86**	**2.36**	**1.91**

The native perennial species density averaged 46.5 plants per 200 meter^2, which was extrapolated to a 1-acre area resulting in a total of 940 plants per acre, on average. The highest and lowest native perennial plant species densities per transect were determined to be 104 and 17, respectively. A total of 53 percent of the density values for the 15 transects were between 38 and 46 plants per 200 m^2.

Native species richness (total number of species per transect) averaged 7 species. The highest and lowest native species richness values per transect were determined to be 11 and five, respectively. The mode for native species richness was eight native species. A total of 15 different native plant species were observed during vegetation sampling. A complete list of plant species observed during vegetation sampling (at sampling locations and incidentally observed while walking between sampling locations) is included as Attachment 2.

Table 2 lists native perennial plant density and native perennial species richness results for 15 transects as well as statistical data for the 15 transects (samples).

Table 2. Native Perennial Plant Density and Native Plant Species Richness Results per Transect

Transect	Native Perennial Density per Transect (200 m^2)	Density per Acre	Native Species Richness per Transect
1	17	344	6
2	38	769	9
3	26	526	5
4	46	931	8
5	31	627	5
6	38	769	11
7	42	850	6
8	61	1234	8
9	44	890	6
10	40	809	5
11	43	870	8
12	42	850	6
13	104	2104	9
14	51	1032	8
15	74	1497	8
Mean	**46.5**	**940.2**	**7.2**
Variance	**404.6**	**165673.8**	**2.96**
Standard Deviation	**20.8**	**421.3**	**1.8**
Confidence Interval (80%)	**6.89**	**139.41**	**0.59**

A total of 14 native shrubs and one native tree (*Yucca brevifolia*) were recorded along the transects. The tallest species recorded was *Y. brevifolia*, which was determined to have a mean height of 3.4 meters for the five individuals that were measured. The shortest shrub measured was *Ambrosia dumosa*, which was determined to have a mean height of 0.35 meter for the 52 individuals measured. The two dominant shrubs included *Larrea tridentata* and *Ephedra viridis*, which were determined to have mean heights of 1.57 meters and 0.48 meter, respectively. Table 3 lists native shrub and tree height results for 15 transects as well as, statistical data for the 15 transects (samples).

Table 3. Native Shrub and Tree Height Results

Species	Total Number Recorded (15 Transects)	Mean Height (meters)	Variance	Standard Deviation	Confidence Interval (80%)
Acamptopappus sphaerocephalus	60	0.44	0.165	0.41	0.068
Ambrosia dumosa	52	0.35	0.018	0.14	0.024
Ambrosia salsola	41	0.79	0.470	0.69	0.139
Ephedra viridis	314	0.48	0.042	0.20	0.014
Eriogonum fasciculatum var. *polifolium*	5	0.48	0.021	1.64	0.937
Grayia spinosa	3	0.60	0.027	0.16	0.119
Krasheninnikovia lanata	7	0.48	0.021	0.16	0.076
Larrea tridentata	162	1.57	0.196	0.20	0.020
Lepidium fremontii	1	0.90	-	-	-
Poa secunda	18	0.21	0.005	0.07	0.021
Salazaria mexicana	17	0.45	0.036	0.69	0.216
Acnatherum hymenoides	1	0.40	-	-	-
Stipa speciosa	1	0.35	-	-	-
Tetradymia cf. stenolepis	17	0.74	0.026	0.44	0.138
Yucca brevifolia	5	3.40	2.140	0.21	0.118

Data sheets used during transect vegetation sampling are included in this report as Attachment 3.

Discussion

Data collected for native plant species cover, density, richness, and heights were reviewed for accuracy and statistical analyses were performed to determine the variance, standard deviation and confidence intervals for a confidence level of 80 percent (Tables 1 through 3). A review of the data indicated that density values for *L. tridentata* and *E. viridis* needed to be clarified. In some cases during data collection, it was difficult to distinguish between exactly how many individuals were distinct plants and how many were just an extension of a parent plant. A distance rule was implemented to create consistency during data collection. If plant trunks were concentrated at distances that exceeded one foot apart for *L. tridentata* and 0.5 feet apart for *E. viridis,* then they were counted as distinct plants.

Proposed Performance Standards

The Lebata, Inc. Big Rock Creek Reclamation Plan currently includes Performance Standards for Revegetation that are expressed as percentages of baseline conditions (SESPE 2014). The Office of Mine Reclamation (OMR) is requiring actual target values assigned to the Performance Standards prior to approval of the Reclamation Plan. ECORP has used statistics obtained from analyzing the baseline data and the current Reclamation Plan Performance Criteria (Attachment 4) to calculate target values for revegetation cover, density, and species richness (Table 4).

Table 4. Proposed Performance Standards

Performance Standard Class	Current Reclamation Plan	Baseline Data Results	Proposed Performance Standard
Shrubs and Forbs			
Overall Cover	60% of baseline data.	Average of 26% native cover (including perennials and annuals) for 15 transects.	15.6% cover by native plant species, overall (includes perennial and annual species).
Density	80% of baseline data.	Average of 46 perennial plant species for 15 transects, or, 940 plants per acre.	752 perennial plants per acre.
Species Richness	80% of baseline data.	Average of seven native perennial species per transect.	Minimum of 5.6 native perennial species in revegetation areas.
Joshua Trees			
Density	Two per acre.	Five Joshua trees encountered (across 15 transects).	Two per acre where soil conditions are appropriate (e.g., undisturbed or similar to native soil), or, total of 50% of baseline data (i.e., 50% of 200).[1] Minimum of 100 Joshua Trees must become established and self-sufficient.
Nonnative Plant Species			
Cover	Remove if more than 25% of any 20 square foot area is occupied by weeds greater than six inches in height.	Average of 24% nonnative cover for 15 transects.	Cover of annual nonnative plant species shall not exceed 10%, as verified through ocular estimates and annual performance monitoring. If it is determined that annual nonnative cover is hindering the growth or establishment of planted species then cover of annual nonnative species shall not exceed 5%. All perennial nonnative plant species shall be eradicated.

[1] Site is 310 acres. Environmental Impact Report states that the total population of Joshua trees is estimated at 200.

If you have any questions regarding the results of the baseline vegetation survey and/or the performance standards, please call me at (714) 648-0630.

Sincerely,

ECORP Consulting, Inc.

Mari Quillman
Principal Biological Resources Program Manager

Attachments

1 – Transect Photodocumentation
2 – Plant Species Compendium
3 – Field Data Sheets
4 – Table 7: Revegetation Performance Criteria (From. *Lebata Inc. Big Rock Creek Reclamation Plan,* Sespe 2013)

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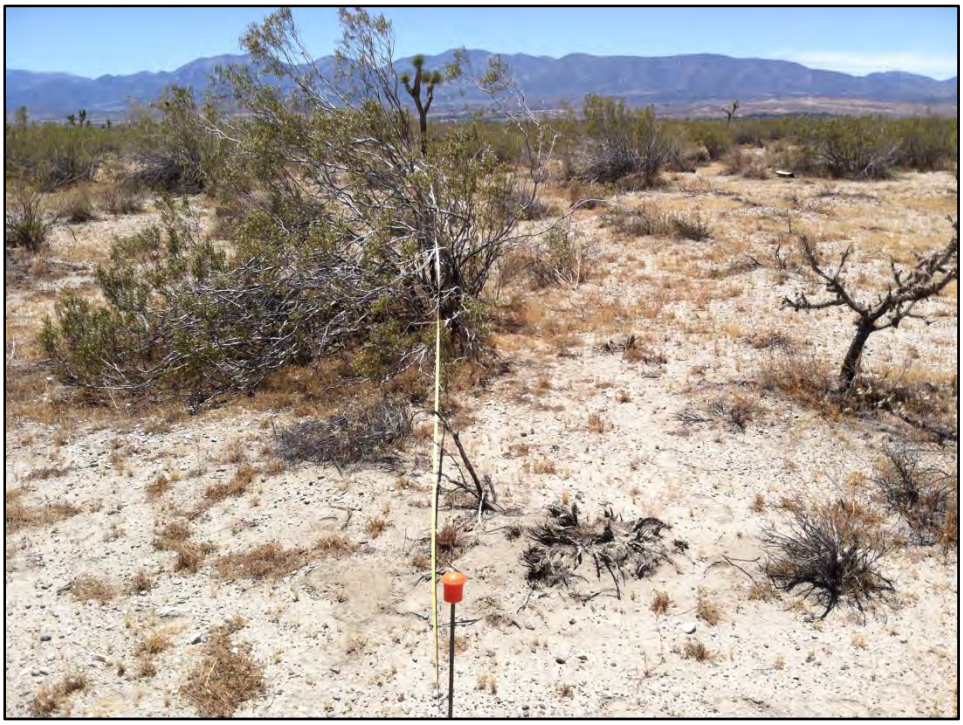
Attachment 1

Transect Photodocumentation

Lebata Mine Site Baseline Vegetation Sampling Transect Photodocumentation
May 2014 (ECORP Consulting, Inc.)



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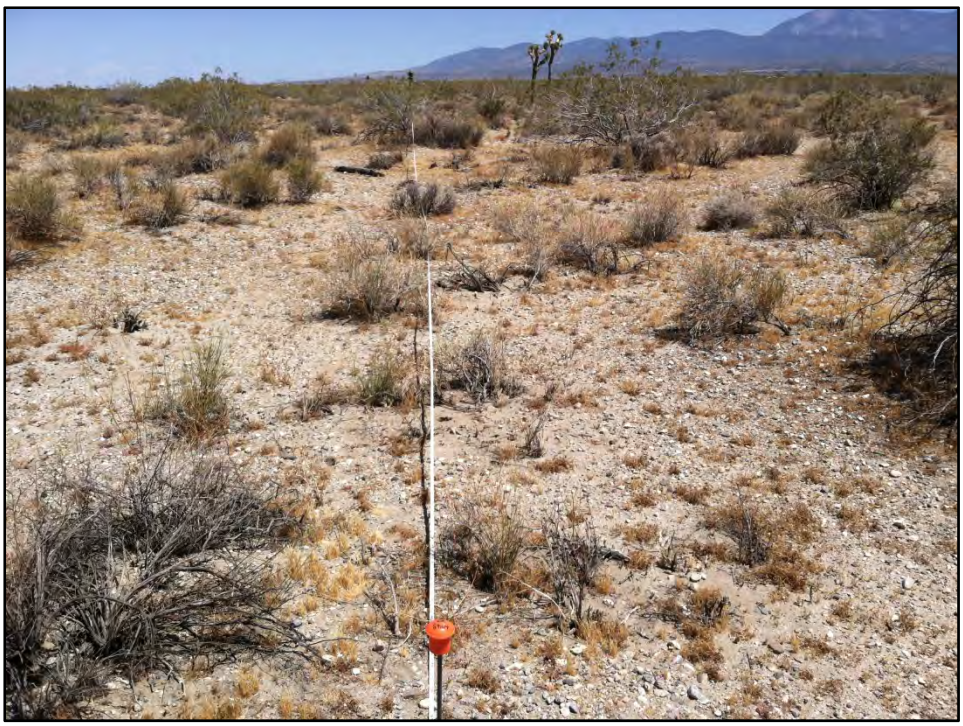
Transect 1 End



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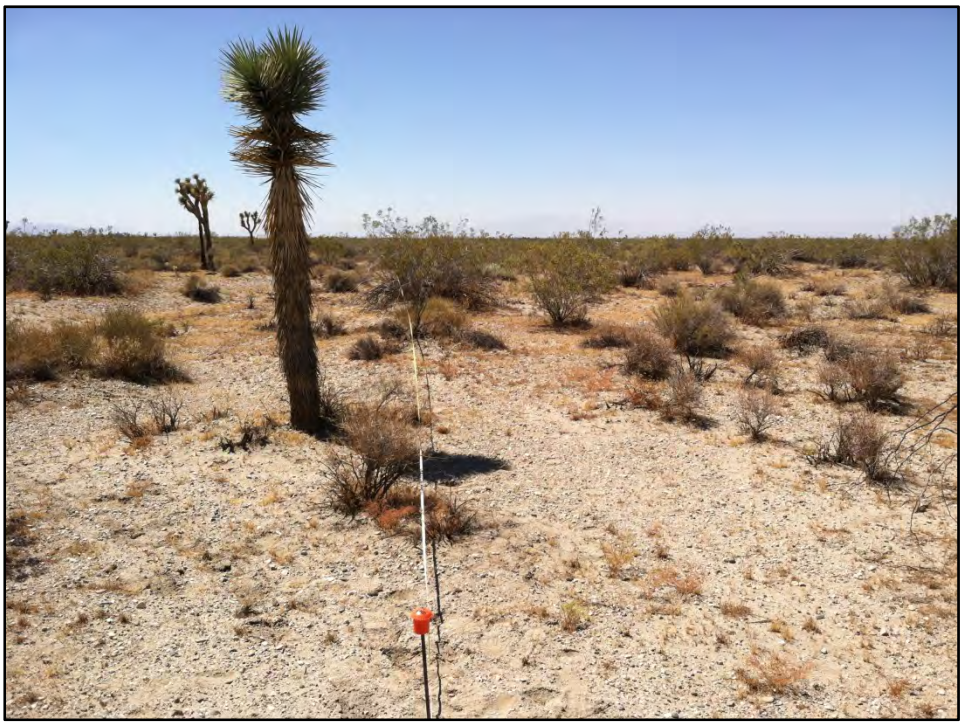

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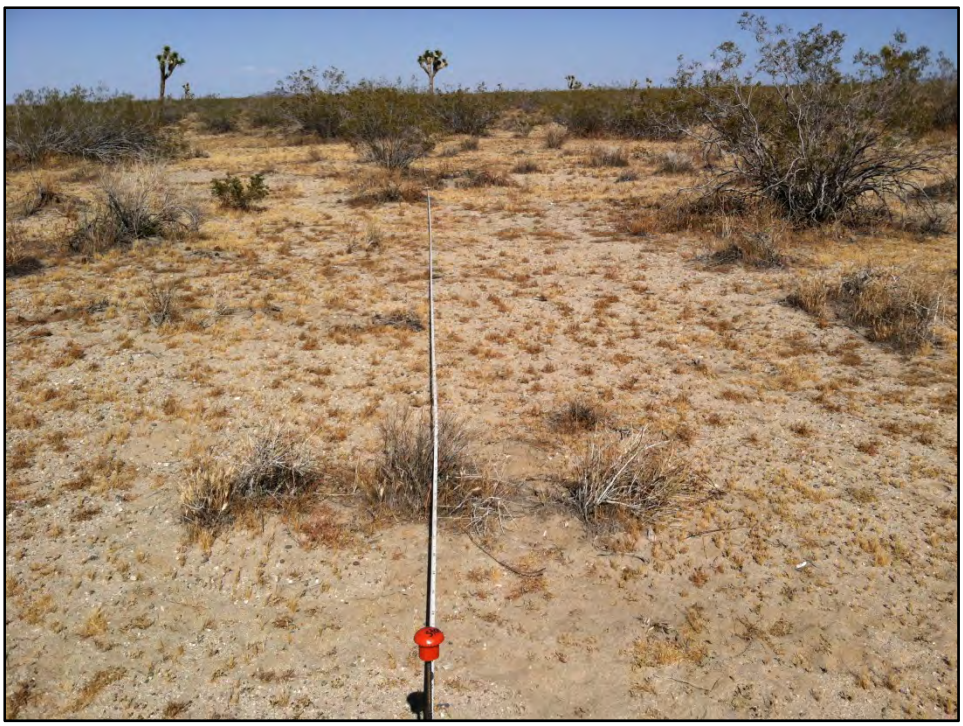

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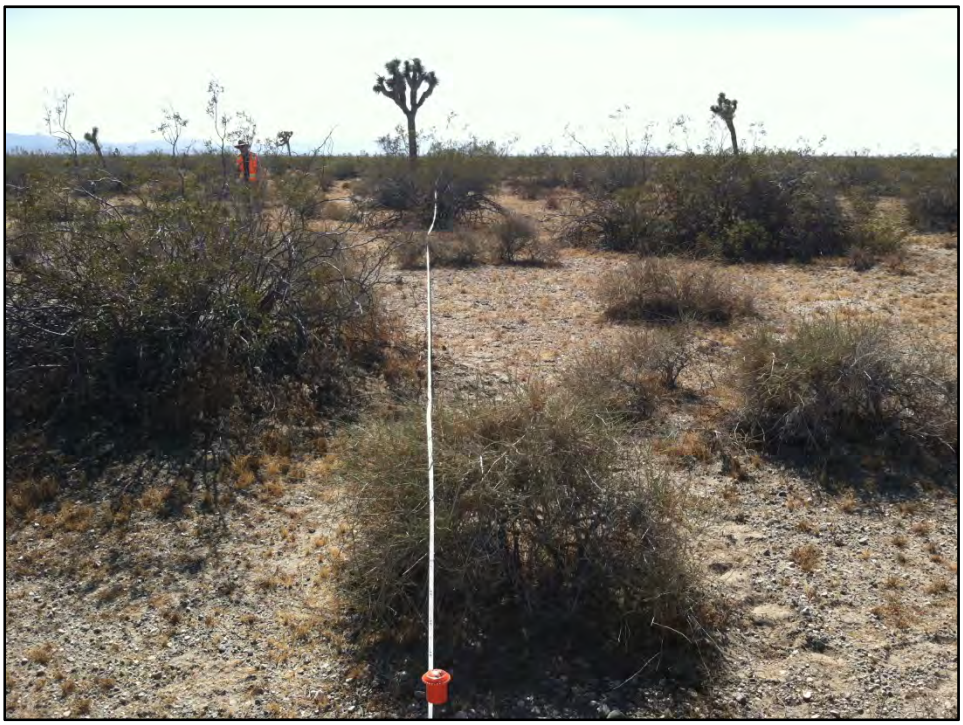


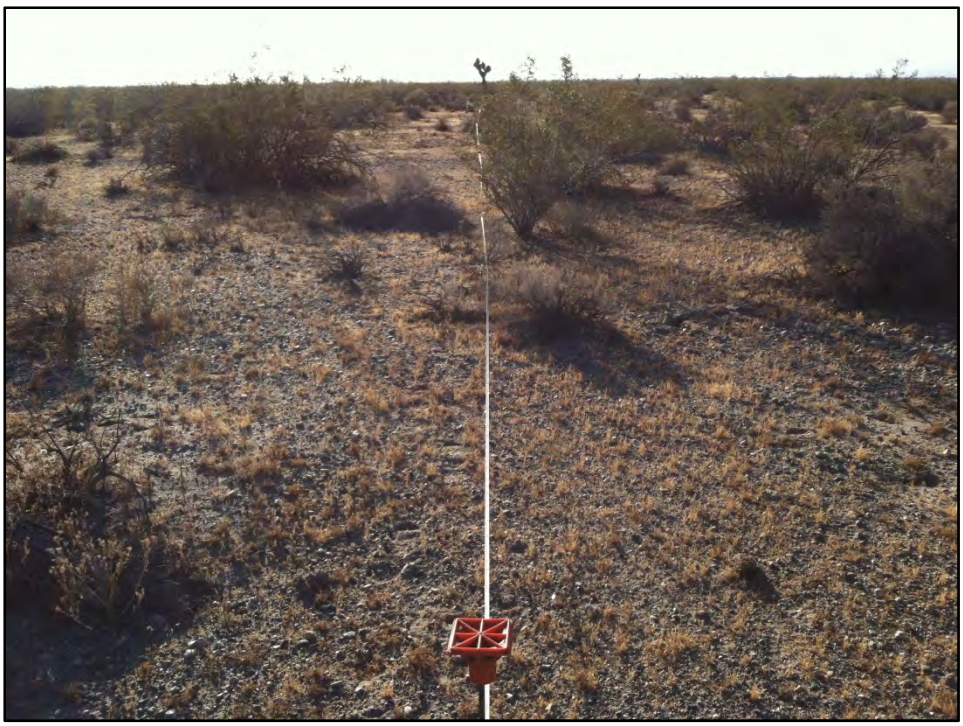
Transect 3 End

Transect 4 Start

Transect 4 End

Transect 5 Start

Transect 5 End



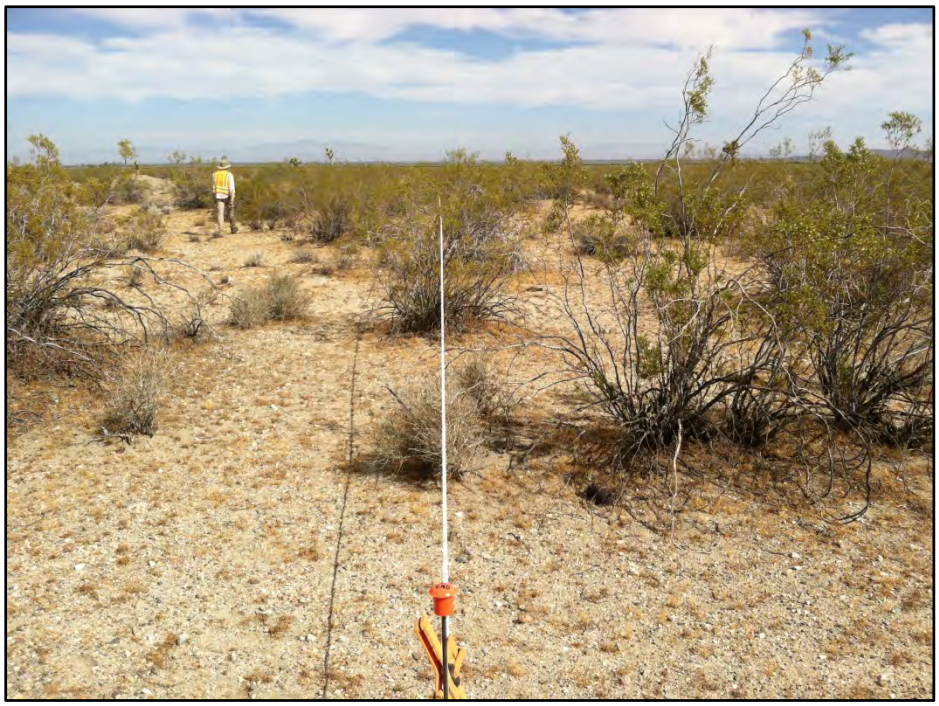
Transect 6 Start

Transect 6 End

Transect 7 Start

Transect 7 End

Transect 8 Start



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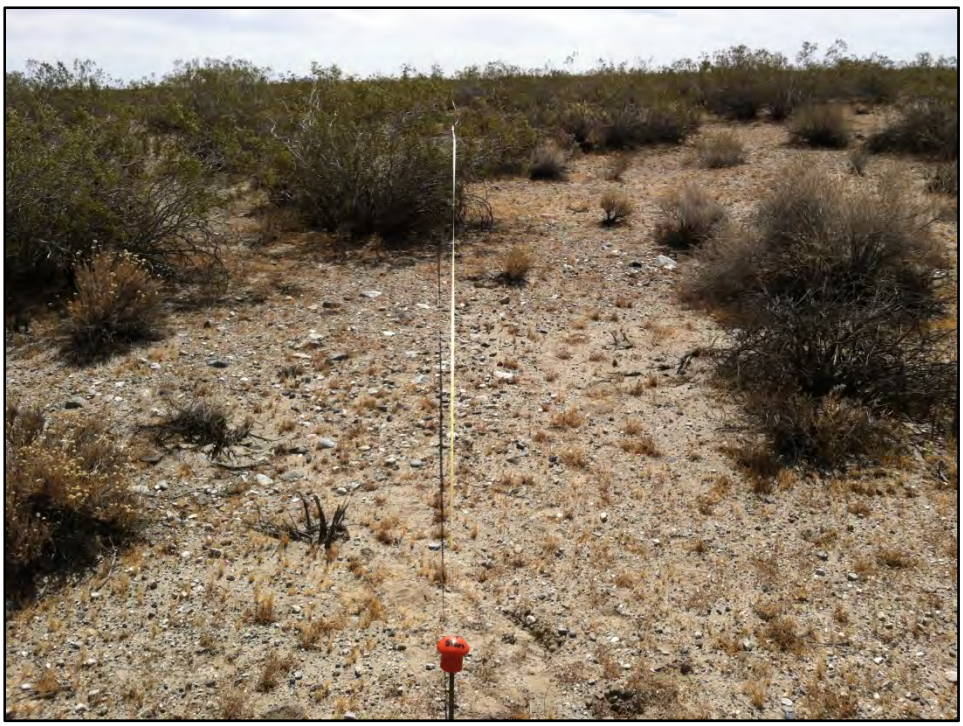


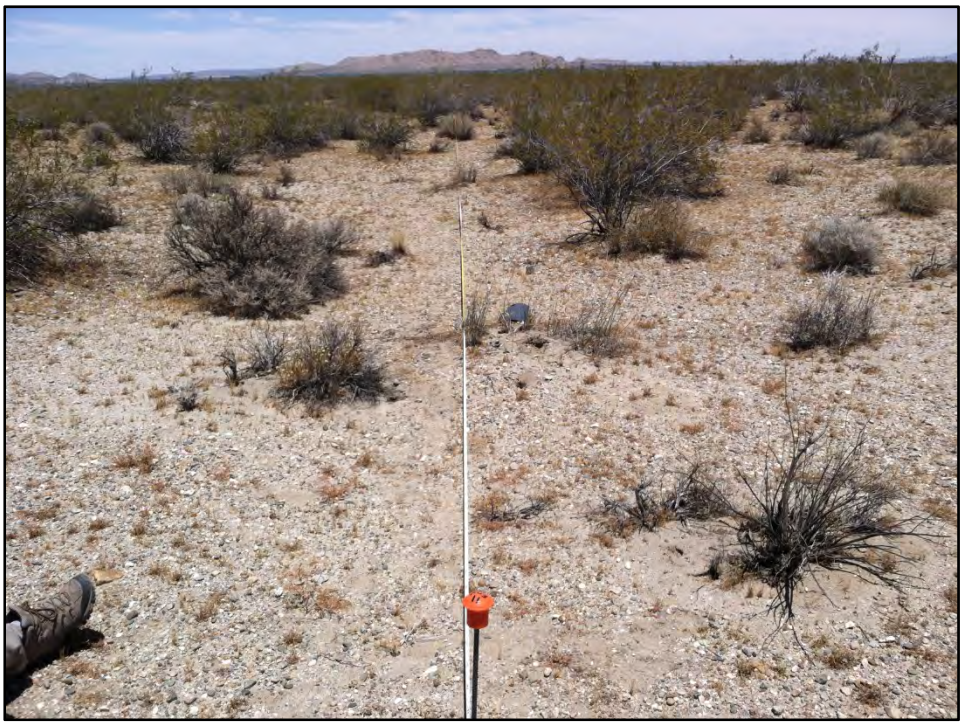
Transect 9 Start

Transect 9 End

Transect 10 Start

Transect 10 End

Transect 11 Start



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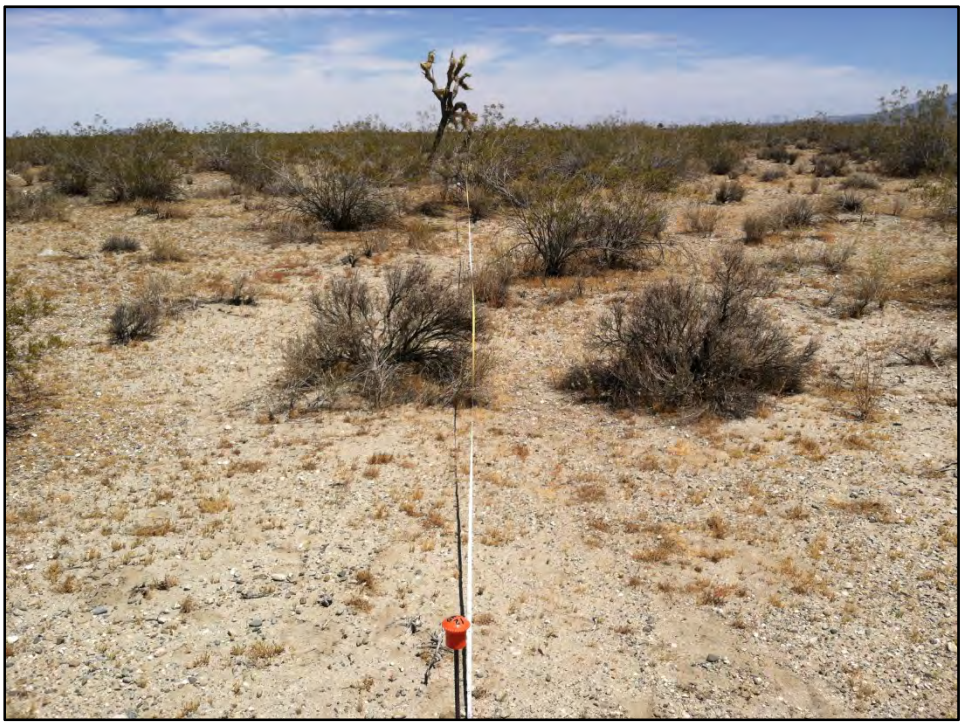
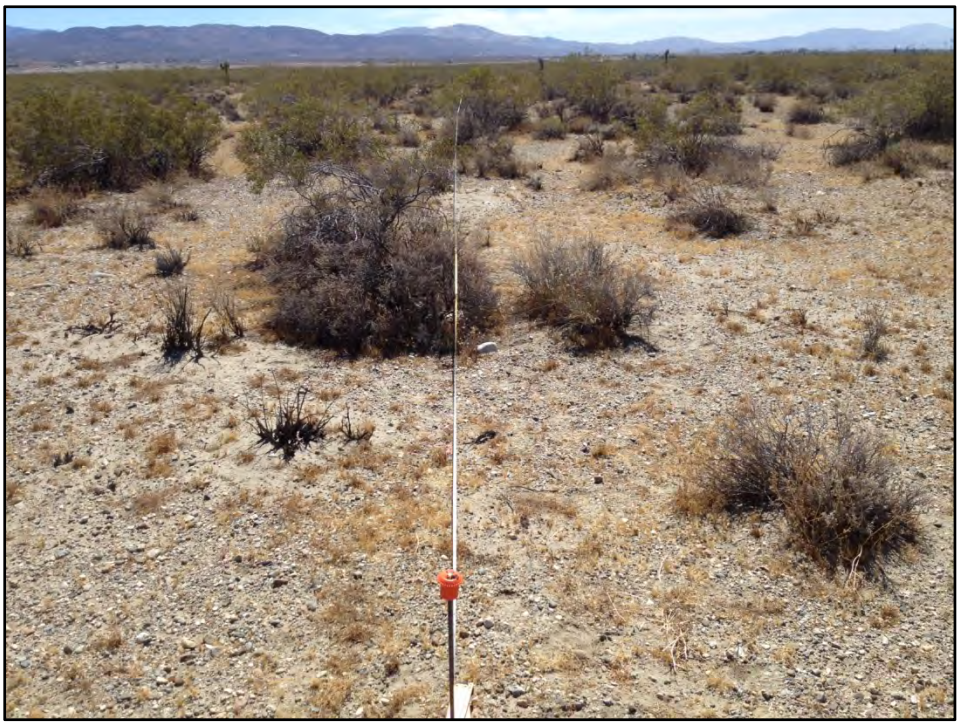
Transect 12 Start



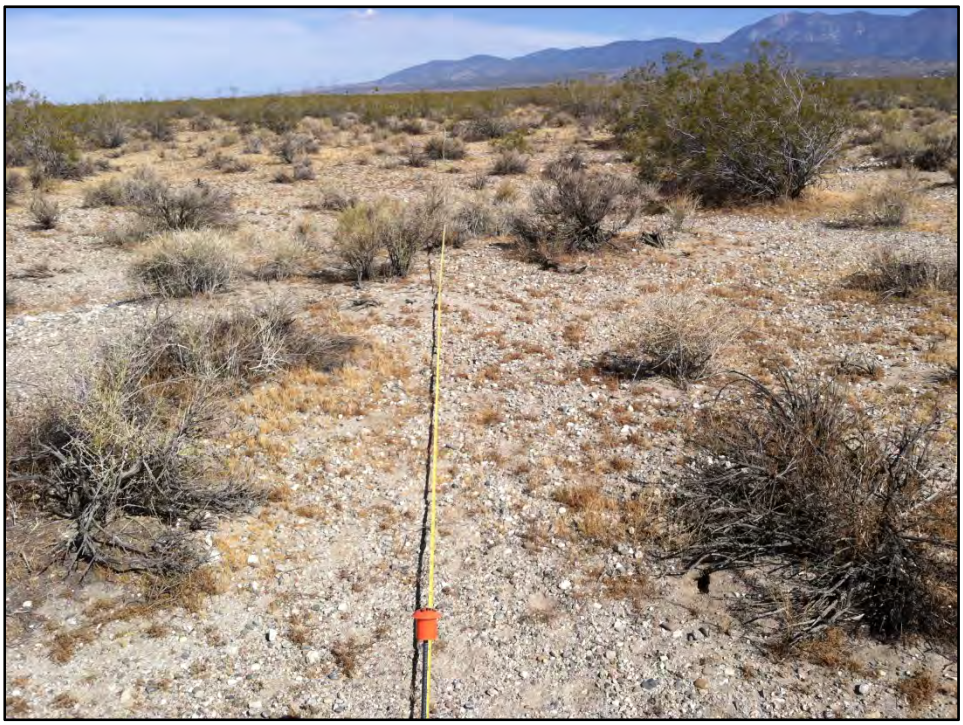
Transect 12 End

Transect 13 Start



Transect 13 End

Transect 14 Start



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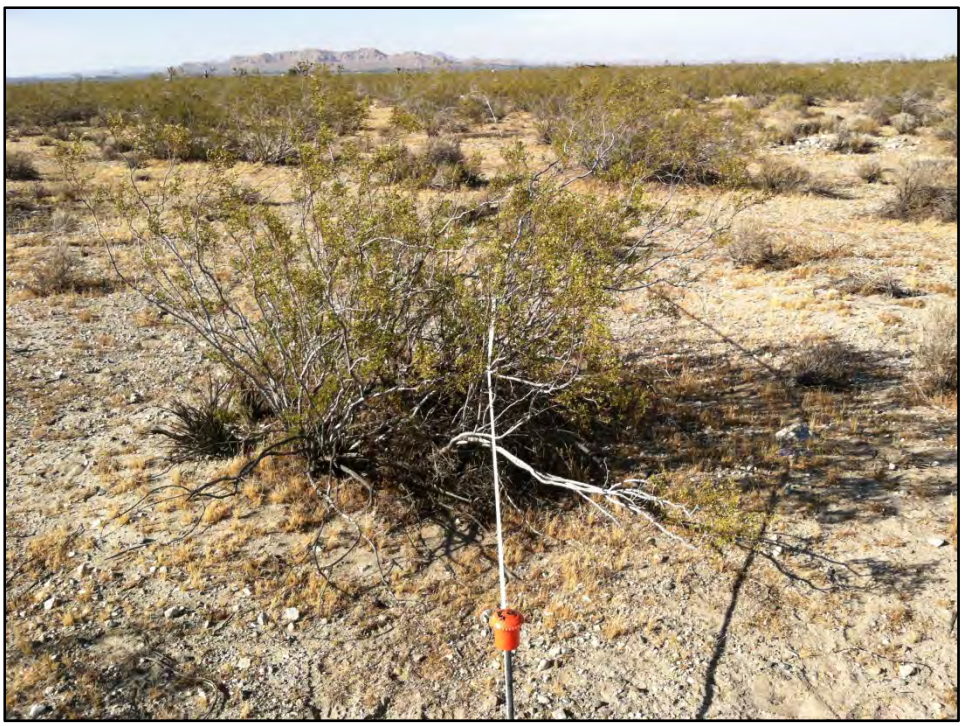

Transect 15 Start

Transect 15 End

Attachment 2

Plant Species Compendium

Lebata Big Rock Creek Mine Project
2014 PLANT SPECIES COMPENDIUM

Scientific Name	Common Name
VASCULAR PLANTS	
GYNOSPERMS (GNETALES)	
EPHEDRACEAE	**EPHEDRA FAMILY**
Ephedra viridis	green ephedra
ANGIOSPERMS (EUDICOTS)	
ASTERACEAE	**SUNFLOWER FAMILY**
Acamptopappus sphaerocephalus	rayless goldenhead
Ambrosia ancanthicarpa	annual bur-sage
Ambrosia dumosa	burrobush
Ambrosia salsola	cheesebush
Lasthenia californica	California goldfields
Lepidospartum squamatum	scale broom
Logfia depressa	dwarf cottonrose
Malacothrix californica	desert dandelion
Stephanomeria pauciflora	wire lettuce
Tetradymia stenolepis	Mojave cottonthorn
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia tessellata	bristly fiddleneck
Phacelia ciliata	Great Valley phacelia
Phacelia distans	commom phacelia
BRASSICACEAE	**MUSTARD FAMILY**
Lepidium cf. nitidum	yellow pepperweed
CACTACEAE	**CACTUS FAMILY**
Opuntia basilaris var. basilaris	beavertail cactus
Cylindropuntia echinocarpa	golden cholla
CARYOPHYLLACEAE	**PINK FAMILY**
Loeflingia squarrosa	spreading pygmyleaf
CHENOPOPDIACEAE	**GOOSEFOOT FAMILY**
Grayia spinosa	hopsage
Krasheninnikovia lanata	winter fat
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	redstem stork's bill
LAMIACEAE	**MINT FAMILY**
Salazaria mexicana	bladder sage
LOASACEAE	**LOASA FAMILY**
Mentzelia albicaulis	whitestem blazingstar
Petalyonyx thurberi	Thurbers sandpaper plant
MALVACEAE	**MALLOW FAMILY**
Eremalche exilis	white mallow
MONTIACEAE	**MINER'S LETTUCE FAMILY**
Calyptridium monandrum	pussy paws
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Eulobus californicus	California primrose
Camissonia campestris	Mojave sun cups
Eremothera boothii ssp. *desertorum*	Booth's desert suncup
POLEMONIACEAE	**PHLOX FAMILY**
Eriastrum diffusum	miniature woollstar
Gilia malior	scrub gilia

Scientific Name	Common Name
POLYGONACEAE	**BUCKWHEAT FAMILY**
Centrostegia thurberi	Thurbers' spineflower
Chorizanthe brevicornu	brittle spineflower
Chorizanthe watsonii	Watson's spineflower
Eriogonum fasciculatum var. polifolium	California buckwheat
ROSACEAE	**ROSE FAMILY**
Purshia tridentata	antelope bitterbrush
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	sacred thorn-apple
Lycium andersonii	water jacket
Lycium cooperi	Cooper's box thorn
ZYGOPHYLLACEAE	**CALTROP FAMILY**
Larrea tridentata	creosote bush
ANGIOSPERMS (MONOCOTS)	
AGAVACEAE	**CENTURY PLANT FAMILY**
Yucca brevifolia	Joshua tree
POACEAE	**GRASS FAMILY**
Acnatherum hymenoides	indian ricegrass
Bromus madritensis ssp. *rubens**	red brome
*Bromus tectorum**	cheatgrass
Poa cf. secunda	Pine Bluegrass
*Schismus cf. arabicus**	split grass
Stipa speciosa	desert needlegrass
* - Nonnative species.	
cf. - From the latin *confer,* imperative of *conferre* , to compare. Indicates a species was not identified via dichotomous key (e.g., Jepson Manual), but that appeared to be a particular species.	

Attachment 3

Field Data Sheets

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona Bennett, Greg Hampton | **Compass Orientatation:** S **degrees** 185°

Transect No.: 1 | **Date:** 5/27/14 | **Transect Length - 100 m**

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
Bare Ground (BG)	0	2.5		
Native Annuals (NA)	2.5	3.0		
Non Native Annuals (NNA)	3	3.2		
Lar. tri.	3.2	7.4		
BG	7.4	10		
NA	10	11.5		
NNA	11.5	12.1		
Amb. dum.	12.1	12.5		
BG	12.5	13.2		
NNA	13.2	13.3		
Amb. sal.	13.3	14		
BG	14	21		
NNA	21	22		
NA	22	22.5		
Aca. sph.	22.5	22.9		
BG	22.9	28.5		
NA	28.5	29		
NNA	29	29.7		
Lar tri	29.7	33.7		
BG	33.7	34.5		
NNA	34.5	35		
NA	35	35.2		
Yuc bre	35.2	35.9		
NNA	35.9	40.9		
BG	40.9	49.2		
NA	49.2	53.9		
Amb sal.	53.9	54.1		
NA	54.1	54.4		
BG	54.4	54.7		
Eph vir	54.7	55		
BG	55	56.1		
NA	56.1	56.4		
Amb. sal	56.4	57.6		
BG	57.6	57.9		
Amb. sal	57.9	58		

BG	58	69		
NA	69	71		
NNA	71	73.3		
Lar tri	73.3	75		
BG	75	80		
NA	80	85		
NNA	85	90		
Lar tri	90	91		
BG	91	93.3		
NNA	93.3	94.3		
Lar tri	94.3	95.6		
BG	95.6	97.5		
NA	97.5	99.3		
Lar tri	99.3	100		
Total:				

Other Notes: Native Perennials

2m Belt Density:

Lar tri: ~~IIII~~
Amb sal: ~~IIII~~
Eph vir: IIII
Yuc bre: I
Aca sph: II
Amb dum: I

Species Richness:

Shrub/Tree Height:

Lar tri: 1.3, 2, 1.7, 1.4, 2.5,
Amb sal: .5, .9, .9, .95, .4,
Eph vir: .6, .4, .4
Yuc bre: 3.5,
Aca sph: .6, .3,
Amb dum: .4,

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton

Compass Orientatation: SE degrees 135°

Transect No.: 2

Date: 5/27/14

Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	.7		
NNA (Non-Native Annuals)	.7	.8		
NA (Native Annuals)	.8	1		
Eph. vir.	1	1.2		
BG	1.2	2.5		
NNA	2.5	2.7		
NA	2.7	2.9		
Aca sph	2.9	3.3		
BG	3.3	4.3		
NA	4.3	4.4		
NNA	4.4	4.5		
Eph vir	4.5	5.1		
BG	5.1	6.3		
NA	6.3	6.5		
NNA	6.5	6.6		
Eph vir	6.6	7.4		
BG	7.4	16		
NNA	16	20		
NA	20	22		
BG	22	22.3		
Gra spi	22.3	22.7		
Sal mex	22.7	22.9		
NA	22.9	23.3		
Lar tri	23.3	25.3		
BG	25.3	28.5		
NNA	28.5	31		
NA	31	32.2		
Eph vir	32.2	33.3		
BG	33.3	38.5		
NNA	38.5	39		
NA	39	39.7		
Kra lan	39.7	40.2		
BG	40.2	40.9		
NNA	40.9	41.3		
NA	41.3	41.5		

Eph vir	41.5	41.9		
BG	41.9	43.1		
NNA	43.1	43.3		
Eph vir	43.3	44.3		
BG	44.3	47.5		
NNA	47.5	48		
NA	48	48.7		
Lar tri	48.7	52.6		
BG	52.6	58		
NNA	58	58.5		
NA	58.5	58.9		
Lar tri	58.9	60.7		
BG	60.7	63.5		
NNA	63.5	64.5		
NA	64.5	64.8		
Eri fas ssp. pol	64.8	65.5		
BG	65.5	68.3		
NNA	68.3	68.6		
NA	68.6	68.8		
Eph vir	68.8	69.2		
BG	69.2	77.5		
NNA	77.5	79		
NA	79	79.9		
Lar tri	79.9	83.8		
BG	83.8	86		
NNA	86	87		
Eph vir	87	87.9		
Kar lan	87.9	88.2		
Total:				

Native Perennials

Other Notes:

2m Belt Density:

Eph vir: ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ IIII

Lar tri: IIII

Yucc bra: I

Eri pol: I

Kar lan: II

Amb sal: I

Sal mex: II

Gra Spi: I

Aca Sph: I

Species Richness:

Eph vir: .4, .45, .6, .5, .5, .4, .2, .6, .6, .6, .7, .5, .5

Shrub/Tree Heights:

Eph vir: .7, .5, .8, .75, .6, .55, .4, .5, .6, .4, .4, .35

Lar tri: 2, 2.3, 2.5, 1.8,

Yucc bra: 3,

Kra lan: .25, .45

Amb sal: .7,

Eri pol: .5,

Sal mex: .6, .7,

Gra Spi: .8,

Aca Sph: .6

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton | Compass Orientatation: SE degrees 135°

Transect No.: 2 (cont.) | Date: 5/27/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	88.2	93		
NNA (Non-native Annuals)	93	94		
NA (Native Annuals)	94	94.3		
Eph vir	94.3	94.7		
BG	94.7	96.5		
NNA	96.5	96.9		
Eph vir	96.9	97.4		
NNA	97.4	97.7		
NA	97.7	97.9		
BG	97.9	100		

Total:				

Other Notes: Native Perrenials

2m Belt Density:

Species Richness:

Shrub/Tree Heights:

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett | Compass Orientatation: E degrees 95°

Transect No.: 3 | Date: 5/27/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	8		
NNA (Non-native Annuals)	8	13		
NA (Native Annuals)	13	16.2		
Lar tri	16.2	17.7		
BG	17.7	20.5		
NNA	20.5	23.0		
NA	23	23.3		
Kra lan	23.3	23.5		
BG	23.5	29		
NNA	29	30		
NA	30	30.6		
Eph vir	30.6	30.8		
BG	30.8	32		
NNA	32	32.4		
NA	32.4	32.5		
Lar tri	32.5	34.5		
NNA	34.5	35.5		
Lar tri	35.5	36		
BG	36	44		
NNA	44	45.5		
NA	45.5	46.7		
Eph vir.	46.7	47.1		
BG	47.1	50		
NNA	50	50.4		
NA	50.4	50.9		
Lar tri	50.9	53		
BG	53	56		
NNA	56	57		
NA	57	57.9		
Lar tri	57.9	58.3		
BG	58.3	60.5		
NNA	60.5	61.5		
NA	61.5	62.6		
Lar tri	62.6	63.1		
BG	63.1	64.5		

NNA	64.5	65.5		
Lar tri	65.5	66.4		
BG	66.4	67.7		
NNA	67.7	68.3		
Yuc bre	68.3	69		
BG	69	70.5		
NNA	70.5	71.2		
NA	71.2	71.5		
Lar tri	71.5	74.2		
BG	74.2	78		
NNA	78	79.5		
NA	79.5	80.5		
Lar tri	80.5	83.5		
BG	83.5	86.5		
NNA	86.5	87.5		
NA	87.5	88.5		
Eph vir	88.5	89.7		
BG	89.7	94		
NNA	94	94.8		
NA	94.8	95.2		
Lar tri	95.2	95.6		
BG	95.6	96.6		
NNA	96.6	97.6		
NA	97.6	98		
Eph vir	98	99		
NNA	99	99.4		
BG	99.4	100		
Total:				

Other Notes: Native Perennials

2m Belt Density

Lar tri: 𝍸 ||

Eph vir: 𝍸 𝍸 𝍸 |

Yuc bre: |

Kra lan: |||

Gra spi: |

Species Richness:

Eph: .5, .4

Shrub/Tree Height:

Lar tri: 1.3, 2.4, 1.8, 1.25, 1.8, .8, 1.7

Eph vir: .8, .5, .7, .8, .6, .6, .4, .5, .6, .6, .4, .6, .7, .4, .3

Yuc bre: 5.5,

Kra lan: .5, .5, .4,

Gra spi: .4,

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton | Compass Orientatation: SW degrees 230°

Transect No.: 4 | Date: 5/27/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	3.5		
NNA (Non-Native Annuals)	3.5	5.5		
NA (Native Annuals)	5.5	7.5		
Amb sal	7.5	8		
BG	8	12		
NNA	12	14		
NA	14	16		
Amb sal	16	17		
BG	17	19.4		
NNA	19.4	20.3		
Lar tri	20.3	20.7		
BG	20.7	23		
NNA	23	23.7		
NA	23.7	24.1		
Lar tri	24.1	24.2		
NA	24.2	25.3		
NNA	25.3	25.7		
Eph vir	25.7	26.3		
BG	26.3	32.5		
NNA	32.5	33.1		
NA	33.1	33.5		
Amb dum	33.5	34		
BG	34	40		
NNA	40	57.6		
NA	57.6	58.4		
Lar tri	58.4	58.6		
NNA	58.6	60.6		
Lar tri	60.6	60.8		
BG	60.8	63.2		
NNA	63.2	64.1		
NA	64.1	64.4		
Eph vir	64.4	65		
BG	65.5	67.5		
NNA	67.5	68.3		
NA	68.3	68.5		

Purtri (left off of transect)

Eph vir	68.5	69.1		
BG	69.1	74.8		
NNA	74.8	75.8		
NA	75.8	76.7		
Lar tri	76.7	78.1		
BG	78.1	79.5		
NNA	79.5	80.4		
NA	80.4	80.8		
Eph vir	80.8	81.4		
BG	81.4	86.1		
NNA	86.1	86.3		
NA	86.3	86.4		
Eph vir	86.4	87		
NNA	87	87.9		
NA	87.9	88.2		
BG	88.2	88.4		
Eph vir	88.4	89.6		
BG	89.6	93		
NNA	93	98		
NA	98	100		
Total:				

Other Notes: Native Perennials

2m Belt Density:
Eph vir: ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ IIII
Aca sph: IIII
Lep fre: I
Lar tri: ~~IIII~~ I
Amb dum: I
Amb sal: III
~~[illegible]~~
Kra lan: I

Species Richness:

Shrub/Tree Height: Kra lan: .6
Eph vir: .7, .8, .6, .9, .5, .6, .6, .5, .6, .6, .5, .7, .8, .5, .5, .7, .6, .6, .8, .4, .6, .5, .3, .2, .2, .5, .4, .4, .3, .25,
Lar tri: 2, 1.1, 1.8, .95, .9, 1.7
Aca sph: .3, .4, .4, .4
Lep fre: .9,
Amb dum: .2,
Amb sal: .5, .9, .85,
~~[illegible]~~

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton | Compass Orientatation: SW degrees 220°

Transect No.: 5 | Date: 5/27/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Base Ground)	0	1.4		
NNA (Non-Native Annuals)	1.4	1.7		
Aca sph	1.7	1.8		
BG	1.8	6		
NNA	6	7.3		
NA (Native Annuals)	7.3	7.7		
Amb sal	7.7	8.5		
BG	8.5	10.4		
NNA	10.4	10.9		
NA	10.9	11.1		
Aca sph	11.1	11.4		
Eph vir	11.4	11.5		
BG	11.5	12.1		
NNA	12.1	12.5		
NA	12.5	12.8		
Lar tri	12.8	12.9		
BG	12.9	13.1		
NA	13.1	13.5		
NNA	13.5	13.9		
Lar tri	13.9	14.5		
BG	14.5	21		
NNA	21	29		
NA	29	32		
NNA	32	39		
NA	39	40.5		
BG	40.5	46.2		
Lar tri	46.2	49		
BG	49	49.6		
NNA	49.6	50.3		
Amb dum	50.3	50.6		
BG	50.6	51.2		
NNA	51.2	51.5		
Amb dum	51.5	51.7		
NNA	51.7	60		
BG	60	67		

NA	67	67.3		
Lar tri	67.3	70.4		
BG	70.4	71.4		
NNA	71.4	72		
NA	72	72.3		
Lar tri	72.3	72.8		
BG	72.8	74.5		
NNA	74.5	76.5		
NA	76.5	77.3		
Amb dum	77.3	77.6		
BG	77.6	81		
NNA	81	81.8		
NA	81.8	82.2		
Lar tri	82.2	84.7		
NNA	84.7	85.1		
NA	85.1	85.2		
Lar tri	85.2	87.5		
BG	87.5	90.1		
NNA	90.1	91.2		
NA	91.2	91.4		
Eph vir	91.4	92.4		
BG	92.4	95		
NNA	95	95.9		
NA	95.9	96.2		
Eph vir	96.2	97.1		
BG	97.1	98.5		
NNA	98.5	99.7		
NA	99.7	100		
Total:				

Other Notes: Native Perennials

2m Belt Density:

Eph vir: ~~IIII~~ ~~IIII~~

Lar tri: ~~IIII~~ ~~IIII~~ II

Amb dum: ~~IIII~~

Aca sph: III

Amb sal: I

Species Richness:

Shrub / Tree Height:

Eph vir: .5, .5, .45, .7, .7, .6, .7, .2, .6, .2

Lar tri: 1.5, 1.5, 1.5, 1.2, 1.6, 1.8, 1.4, 1.6, 1, 1.8, 1.6, 1.9

Amb dum: .5, .3, .25, .4, .4,

Aca sph: .45, .4, .3

Amb sal: .6,

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton

Compass Orientatation: NW degrees 315°

Transect No.: 6

Date: 5/28/14

Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	2.5		
NNA (Non-Native Annuals)	2.5	4		
NA (Native Annuals)	4	4.6		
Amb dum	4.6	4.9		
BG	4.9	5.5		
NA	5.5	6.2		
NNA	6.2	6.5		
Eph vir	6.5	7.1		
BG	7.1	7.3		
Eph vir	7.3	7.5		
BG	7.5	7.7		
NNA	7.7	7.9		
Lar tri	7.9	9		
NNA	9	9.2		
Eph vir	9.2	9.6		
BG	9.6	10.4		
NNA	10.4	11.2		
NA	11.2	11.5		
Lar tri	11.5	12.6		
BG	12.6	20		
NNA	20	22.5		
NA	22.5	23.1		
Lar tri	23.1	24.7		
BG	24.7	28		
NNA	28	29.8		
NA	29.8	30.2		
Amb dum	30.2	30.8		
BG	30.8	33.5		
NNA	33.5	35.5		
NA	35.5	36.5		
Lar tri	36.5	38.8		
BG	38.8	48		
NNA	48	56		
NA	56	58		
Sal mex	58	58.1		

BG	58.1	67		
NNA	67	73		
NA	73	75		
Eph vir	75	75.2		
BG	75.2	76.2		
NNA	76.2	76.7		
Yuc bre	76.7	77.9		
BG	77.9	80.5		
NNA	80.5	82.3		
NA	82.3	82.6		
Tet ste	82.6	83.1		
BG	83.1	90		
NNA	90	96.5		
NA	96.5	97.7		
Lar tri	97.7	98		
BG	98	99		
NNA	99	99.8		
NA	99.8	100		
Total:				

Other Notes: Native Perennials

2 meter belt density

Lar tri: ~~IIII~~ IIII

Poa scc: II

Sti hym: I

Tet ste: I

Aca sph: I

Yuc brev: I

Eph vir: ~~IIII~~ ~~IIII~~ ~~IIII~~

Amb sal: II

Kra lan: I

Sal mex: II

Amb dum: III

Species Richness:

Shrub/Tree Heights: Kra lan: .45,

Lar tri: 1.4, 1.3, 1.5, 1.3, 1.5, 1.4, 1.5, 1.3, 1.9

Poa scc: .1, .2, .1

Sti hym: .4,

Amb dum: .4, .2, .4

Tet ste: .5,

Aca sph: .4,

Yuc brev: .4,

Eph vir: .4, .7, .2, .5, .4, .5, .5, .5, .7, .4, .7, .25, .2, .45, .55

Amb sal: .8, .7,

Sal mex: .4, .45

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton | Compass Orientatation: SW degrees 225°

Transect No.: 7 | Date: 5/28/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	1.7		
NNA (Non-Native Annuals)	1.7	2.7		
NA (Native Annuals)	2.7	3		
BG	3	5.5		
NNA	5.5	5.8		
NA	5.8	6		
Lar tri	6	7.2		
BG	7.2	8.6		
NNA	8.6	9.1		
Eph vir	9.1	9.9		
BG	9.9	14.5		
NNA	14.5	16		
NA	16	16.4		
Eph vir	16.4	16.9		
BG	16.9	20		
NNA	20	20.6		
NA	20.6	20.8		
Eph vir	20.8	21.2		
BG	21.2	31		
NNA	31	33		
NA	33	33.5		
Lar tri	33.5	34.8		
BG	34.8	39		
NNA	39	40.5		
NA	40.5	41.1		
Lar tri	41.1	43.5		
BG	43.5	48		
NNA	48	49.5		
NA	49.5	50		
Lar tri	50	51.4		
BG	51.4	58		
NNA	58	73		
NA	73	76.1		
Amb sal	76.1	76.3		
BG	76.3	79.7		

NNA	79.7	80.4		
NA	80.4	80.6		
Lar tri	80.6	85.1		
BG	85.1	86.7		
NNA	86.7	87.6		
Lar tri	87.6	88.8		
BG	88.8	96		
NNA	96	100		
Total:				

Other Notes: Native Perennials

2m Belt Density:

Lar tri: ~~||||~~ |||

Eph vir: ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ |

Amb sal: |

Aca sph: |||

Eri pol: |

Amb dum: |||

Species Richness:

~~Species Heigh~~ Shrub / Tree Heights:

Lar tri: 1.8, 2.2, 1.3, 1.4, 1, 1.5, 1.4, .9

Eph vir: .5, .5, .2, .2, .55, .65, .6, .4, .3, .5, .6, .65, .6, .3 → .4, .6, .4, .5, .25, .4, .55, .5, .75, .7, .75, .7

Amb Sal: .55,

Aca sph: .4, .3, .25

Amb dum: .3, .2, .5

Eri fas ssp. pol: 0.7

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton | Compass Orientatation: SE degrees 140°

Transect No.: 8 | Date: 5/28/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	3.5		
NNA (Non-Native Annuals)	3.5	4.5		
NA (Native Annuals)	4.5	4.7		
Lar tri	4.7	6.7		
NNA	6.7	7.6		
Lar tri	7.6	8.4		
BG	8.4	15		
NNA	15	20		
NA	20	20.9		
Tet ste	20.9	21.1		
BG	21.1	22.8		
NNA	22.8	24.4		
NA	24.4	24.8		
Eph vir	24.8	25.2		
BG	25.2	29		
NNA	29	31.8		
NA	31.8	32.4		
Tet ste	32.4	33.4		
BG	33.4	37.4		
NNA	37.4	40.9		
NA	40.9	41.4		
Eph vir	41.4	42.3		
BG	42.3	45		
NNA	45	47		
NA	47	47.5		
Lar tri	47.5	49.2		
BG	49.2	49.7		
NNA	49.7	50.8		
Eph vir	50.8	51.8		
BG	51.8	55.4		
NNA	55.4	56.6		
NA	56.6	56.9		
Eph vir	56.9	58.1		
BG	58.1	60.2		
NNA	60.2	61.1		

BG	97.1	98.5
NNA	98.5	100
Total		

NA	61.1	61.3		
Lar tri	61.3	62.2		
BG	62.2	68		
NNA	68	70.5		
NA	70.5	70.8		
Lar tri	70.8	72.9		
BG	72.9	74		
NNA	74	75.3		
NA	75.3	75.7		
Lar tri	75.7	75.9		
BG	75.9	78.5		
NNA	78.5	80		
NA	80	80.4		
Lar tri	80.4	81.4		
BG	81.4	83.5		
NNA	83.5	84.7		
NA	84.7	85		
Lar tri	85	88		
BG	88	89.5		
NNA	89.5	91		
NA	91	91.3		
Lar tri	91.3	93		
BG	93	94.5		
NNA	94.5	95.3		
NA	95.3	95.5		
Eph vir	95.5	96		
BG	96	96.1		
NA	96.1	96.3		
~~Total:~~ Eph vir	96.3	97.1		

Other Notes: Native Perennials

2m Belt Density:

Eph vir: ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ||||

Lar tri: ~~||||~~ ~~||||~~ ~~||||~~ |

Poa sec: ||||

Amb dum: |||

Aca sph: ~~||||~~ ||

Amb sal: |||

Tet ste: ||

Sal mex: |

Species Richness:

Shrub/Tree Heights:

Eph vir: .5, .55, .5, .5, .5, .7, .5, .5, .7, .7, .7, .75, .75 → .6, .6, .5, .4, .4, .35, .5, .5, .5, .5, .4,

Lar tri: 1.73, 1.85, 1.6, 1.6, 1.35, 1.3, 1.6, 1.5, 1.6, 2, 1.4, 1.4, 1.7, 1.7, 1.5, 1.1

Poa sec: .2, .3, .15, .15

Amb dum: .25, .25, .5

Aca sph: .4, .4, .25, .45, .3, .25, .35, .25

Amb sal: .8, .8, 1.2

Tet ste: .75, .7,

Sal mex: .5,

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton | Compass Orientatation: E degrees 90°

Transect No.: 9 | Date: 5/28/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	5		
NNA (Non-Native Annuals)	5	5.9		
NA (Native Annuals)	5.9	6.4		
Lar tri	6.4	8.7		
NNA	8.7	9.4		
BG	9.4	9.9		
Eph vir	9.9	10.5		
BG	10.5	12.5		
NNA	12.5	12.8		
NA	12.8	13		
BG	13	18.5		
NNA	18.5	19.8		
NA	19.8	20.3		
Lar tri	20.3	21.5		
BG	21.5	27		
NNA	27	29		
NA	29	29.5		
Eph vir	29.5	29.7		
BG	29.7	36		
NNA	36	37.5		
NA	37.5	38		
Lar tri	38	38.8		
BG	38.8	43		
NNA	43	44		
NA	44	44.4		
Lar tri	44.4	46		
BG	46	47.5		
NNA	47.5	49		
NA	49	49.2		
Lar tri	49.2	51.9		
BG	51.9	56.3		
NNA	56.3	57.2		
NA	57.2	57.5		
Lar tri	57.5	60.5		
BG	60.5	65		

NNA	65	66.3		
NA	66.3	68.8		
Eph vir	66.8	67.2		
BG	67.2	72.5		
NNA	72.5	74.5		
NA	74.5	75.4		
Lar tri	75.4	77.2		
BG	77.2	91		
NNA	91	94		
NA	94	95.4		
Lar tri	95.4	97.3		
BG	97.3	99		
NNA	99	99.8		
NA	99.8	100		
Total:				

Other Notes: Native Perennials

2m Belt Density:

Lar tri: 𝍸 𝍸 𝍸 |||

Eph vir: 𝍸 𝍸 ||||

Sal mex: 𝍸 ||

Amb sal: |

Aca sph: ||

Tet ste: |

Species Richness:

Shrub/Tree Heights:

Eph vir: .25, .55, .4, .65, .2, .5, .5, .25, .5, .5, .25, .6, .4 → .4, .3, .3, .5, .5,

Lar tri: 1.4, 1.3, .8, .9, 1.4, 1.9, 1.7, 1.5, 1.7, 1.7, 1.6, → 1.3, 1.3, 1.4

Sal mex: .1, .2, .5, .4, .5, .3, .5,

Amb sal: .8, .5

Aca sph: .45, .2

Tet ste: .9,

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hempton | Compass Orientatation: N degrees 330°

Transect No.: 10 | Date: 5/28/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	5		
NNA (Non-Native Annuals)	5	9.5		
NA (Native Annuals	9.5	10.1		
Eph vir	10.1	10.8		
BG	10.8	12		
NNA	12	12.8		
NA	12.8	13		
Amb dum	13	13.2		
BG	13.2	14		
NNA	14	14.4		
Lar tri	14.4	18.4		
NNA	18.4	18.8		
Lar tri	18.8	22.1		
BG	22.1	24.6		
NNA	24.6	25.5		
NA	25.5	25.8		
Eph ver	25.8	26.1		
BG	26.1	36		
NNA	36	40		
NA	40	40.3		
Eph vir	40.3	40.7		
Lar tri	40.7	41.2		
Eph vir	41.2	41.5		
NA	41.5	41.7		
Lar tri	41.7	44.7		
BG	44.7	46		
NNA	46	46.7		
NA	46.7	46.9		
Lar tri	46.9	49.8		
NA	49.8	50.6		
BG	50.6	52		
NNA	52	52.6		
NA	52.6	52.9		
Lar tri	52.9	55.5		
NA	55.5	56.6		

BG	56.6	61		
NA	61	65.5		
NNA	65.5	66.5		
Lar tri	66.5	69.3		
BG	69.3	74		
NA	74	75.5		
NNA	75.5	76.5		
Lar tri	76.5	77.9		
BG	77.9	86.5		
NA	86.5	88		
NNA	88	88.9		
Lar tri	88.9	92.5		
BG	92.5	96.5		
NA	96.5	98		
NNA	98	99		
Lar tri	99	100		
Total:				

Other Notes: Native Perennials

2m Belt Density:

Lar tri: ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~

Eph vir: ~~IIII~~ ~~IIII~~ IIII

Amb dum: II

Aca sph: II

Tet ste: I

Species Richness:

Shrub/Tree Heights:

Lar tri: ~~.25~~, 1.4, 2.5, 1.7, 2, 1.9, 1.7, 2, 2, 2.1, 2.2, ~~2~~, 2.2, 1.9, 1.7, 1.7, 1.8, 2, 1.6, 1.65,

Eph vir: .45, .6, .3, .4, .5, .5, .5, .4, .4, .5, .5, .4, .4, .45, .35

Amb dum: .4, .2,

Aca sph: .3, .45

Tet ste: 1,

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona Bennett, Greg Hampton

Compass Orientatation: SE degrees 195°

Transect No.: 11

Date: 5/28/14

Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
Eph vir	0	.7		
BG (Bare Ground)	.7	2.9		
Amb dum	2.9	3.1		
BG	3.1	14		
NNA (Non-Native Annuals)	14	18.5		
NA (Native Annuals)	18.5	19.4		
Amb sal	19.4	20.1		
BG	20.1	27		
NNA	27	31		
NA	31	31.4		
Eph vir	31.4	32		
BG	32	46		
NNA	46	53		
NA	53	55.2		
Lar tri	55.2	59.5		
BG	59.5	61		
NNA	61	62		
NA	62	62.3		
Lar tri	62.3	66.8		
Amb dum	66.8	66.9		
BG	66.9	69.5		
NNA	69.5	70.3		
NA	70.3	70.6		
Amb dum	70.6	70.9		
BG	70.9	72.5		
NNA	72.5	72.7		
NA	72.7	72.9		
Amb sal	72.9	73.7		
NNA	73.7	74.2		
Amb sal	74.2	74.5		
BG	74.5	77.5		
NNA	77.5	78.5		
Amb dum	78.5	78.6		
BG	78.6	82		
NNA	82	84.5		

NA	84.5	85.1		
Eph vir	85.1	85.7		
BG	85.7	92.5		
NA	92.5	93.8		
NA	93.8	94.2		
Eph vir	94.2	95		
BG	95	98.5		
NA	98.5	99.5		
NA	99.5	100		
Total:				

Other Notes: Native Perennials

2m Belt Density:

Eph vir: ~~IIII~~ ~~IIII~~ ~~IIII~~

Amb sal: ~~IIII~~

Lar tri: IIII

Amb dum: ~~IIII~~ II

Aca sph: ~~IIII~~ II

Sti spe: I

Poa sec: III

Kra lan: I

Species Richness

Shrub/Tree Heights:

Eph vir: .3, .5, .5, .2, .5, .5, .4, .25, .2, .2, .2, .4, .4, .3 & .3

Lar tri: 2.1, 1.7, 1.6, 1.6

Kra lan: .2,

Amb sal: .5, .7, .6, .7, .6

Amb dum: .4, .4, .35, .4, .4, .4, .25,

Aca sph: .3, .2, .3, .5, .2, .3, .35,

Sti Spe: .35

Poa sec: .3, .2, .2

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton | Compass Orientatation: W degrees 275°

Transect No.: 12 | Date: 5/28/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	1.5		
NNA (Non-Native Annuals)	1.5	2.2		
Lar tri	2.2	3.3		
BG	3.3	4		
NNA	4	4.6		
Eph vir	4.6	5		
BG	5	8.5		
NNA	8.5	9.7		
NA (Native Annuals)	9.7	10		
Lar tri	10	10.2		
BG	10.2	18		
NNA	18	22		
NA	22	22.7		
Lar tri	22.7	23.2		
Eph vir	23.2	23.4		
BG	23.4	37		
NNA	37	44		
NA	44	45.5		
Lar tri	45.5	48.5		
BG	48.5	57		
NNA	57	58.5		
NA	58.5	59		
Amb dum	59	59.6		
BG	59.6	60.1		
NNA	60.1	60.4		
Amb dum	60.4	60.8		
BG	60.8	64.3		
NNA	64.3	65.1		
NA	65.1	65.3		
Yuc bre	65.3	67.5		
BG	67.5	68.5		
NNA	68.5	69.5		
NA	69.5	70		
Lar tri	70	71.7		
NNA	71.7	73.1		

Lar tri	73.1	73.8		
BG	73.8	79.5		
NNA	79.5	81		
NA	81	81.5		
Lar tri	81.5	83.2		
NNA	83.2	83.9		
Amb sal	83.9	84.6		
BG	84.6	88.5		
NNA	88.5	90		
NA	90	90.5		
Lar tri	90.5	90.5		
NA	91.5	91.8		
Eph vir	91.8	92.2		
BG	92.2	94.2		
NA	94.2	94.7		
NNA	94.7	94.8		
Tet ste	94.8	95.5		
Eph vir	95.5	95.9		
BG	95.9	99		
NNA	99	99.5		
NA	99.5	100		
Total:				

Other Notes: Native Perennials

2m Belt Density

Eph vir: ~~IIII~~ ~~IIII~~ ~~IIII~~

Lar tri: ~~IIII~~ ~~IIII~~ ~~IIII~~ I

Tet ste: I

Amb sal: I

Amb dum: ~~IIII~~ II

Aca sph: II

Species Richness:

Shrub/Tree Heights

Lar tri: 1.6, 2.2, 1.6, 1.2, 1.5, 1.45, 1.5, 1.4, 1.8, 1.6, 1.8, 1.6, 1.4, 1.5, 1.3, 1.4,

Eph vir: .5, .5, .5, .7, .5, .5, .3, .5, .5, .3, .5, .7, .5, .6, .4

Tet ste: .8,

Amb sal: .6

Amb dum: .25, .4, .2, .35, .3, .5, .25

Aca sph: .45, .4

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton | Compass Orientatation: NE degrees 67°

Transect No.: 13 | Date: 5/28/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	.6		
NNA (Non-Native Annuals)	.6	.7		
Eph vir	.7	1.1		
NA (Native Annuals)	1.1	1.3		
Amb sal	1.3	2.7		
BG	2.7	3.8		
NNA	3.8	4.0		
NA	4	4.3		
Aca sph	4.3	4.8		
BG	4.8	5.1		
Eph vir	5.1	5.5		
BG	5.5	9		
NA	9	9.5		
NNA	9.5	9.8		
Lar tri	9.8	11.2		
Eph vir	11.2	11.4		
NNA	11.4	12.2		
Gra spi	12.2	12.8		
Eph vir	12.8	13.3		
Lar tri	13.3	13.7		
BG	13.7	18		
NA	18	18.5		
NNA	18.5	18.7		
Eph vir	18.7	19		
BG	19	26		
NNA	26	32		
NA	32	33.9		
Lar tri	33.9	34.1		
BG	34.1	41		
NNA	41	46		
NA	46	46.5		
Eph vir	46.5	46.7		
Lar tri	46.7	47.3		
BG	47.3	49.5		
NNA	49.5	49.9		

NA	49.9	50.1		
Eph vir	50.1	50.3		
BG	50.3	50.7		
Eph vir	50.7	50.9		
BG	50.9	53.5		
NNA	53.5	54		
NA	54	54.3		
Aca sph	54.3	55.1		
BG	55.1	58.5		
NNA	58.5	59.5		
NA	59.5	59.9		
Eph vir	59.9	60.3		
NNA	60.3	61.7		
Tet ste	61.7	62.9		
BG	62.9	64.7		
NNA	64.7	65.3		
NA	65.3	65.6		
Eph vir	65.6	66.1		
BG	66.1	67.1		
NNA	67.1	67.6		
Aca sph	67.6	68		
BG	68	68.3		
Eph vir	68.3	68.9		
NNA	68.9	69.8		
Lar tri	69.9	72.8		
BG	72.8	74		
NNA	74	75.5		
NA	75.5	76		
Total:				

Other Notes: Native Perennials

2meter belt density

Eph vir:

Lar tri:

Aca sph:

Tet ste:

Amb sal:

Sal mex:

Amb dum:

Poa Sec:

Gra spi:

Species Richness:

Shrub/Tree Heights:

Eph vir: .4, .6, .5, .5, .4, .4, .4, .5, .5, .5, .4, .2, .4, .6, .4, .3, .5, .3, .4, .5, .3, .5, .5, .4, .4, .4, .45, .45, .5, .3, .4, .3, .4, .3, .25, .25, .2, .2, .6, .5, .3, .6, .3, .6, .6, .4, .7, .5, .3, .2, .5, .3, .6, .5, .5, .5, .4, .4, .6, .3, .6, .4

Lar tri: 1.4, 1.9, 1.4, 1.5, 1.6, 1.3, 1, 1.7, 0.7

Aca sph: .2, .5, .5, .5, .25, .4, .5, .5

Tet ste: .75, .7, 1, .6, .6, .6, .5, 1

Amb sal: .6, .5, .6, .8, .7, .6, .8

Sal mex: .3, .4, .8

Amb dum: .1, .3, .3, .45, .3, .4

~~Amb ste~~ .8 Poa Sec: .4 Gra spi: .6

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, | Compass Orientatation: NE degrees 67°

Transect No.: 13 (cont.) | Date: 5/28/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
Eph vir	76	76.4		
BG (Bare Ground)	76.4	77.4		
NNA (Non-Native Annuals)	77.4	77.6		
NA (Native Annuals)	77.6	77.8		
Tet ste	77.8	78.7		
Amb sal	78.7	78.9		
NA	78.9	79.4		
Eph vir	79.4	79.7		
BG	79.7	83.5		
NA	83.5	85.2		
NNA	85.2	85.8		
Eph vir	85.8	86.5		
BG	86.5	87.8		
NA	87.8	88.1		
NNA	88.1	88.5		
Eph vir	88.5	88.9		
BG	88.9	92		
NNA	92	93.5		
NA	93.5	94.1		
Lar tri	94.1	94.8		
NA	94.8	95.5		
Tet ste	95.5	96.2		
BG	96.2	98.5		
NNA	98.5	99.5		
NA	99.5	100		

Total:				

Other Notes:

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc. ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton

Compass Orientatation: NE degrees 315°

Transect No.: 14

Date: 5/28/14

Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	10		
NNA (Non-Native Annuals)	10	16		
NA (Native Annuals)	16	17.1		
Lar tri	17.1	18.6		
BG	18.6	20.8		
NNA	20.8	21.3		
NA	21.3	21.7		
Eph vis	21.7	21.9		
BG	21.9	22.9		
NNA	22.9	23.5		
Eph vis	23.5	23.8		
BG	23.8	26.5		
NNA	26.5	27.3		
NA	27.3	27.6		
Lar tri	27.6	30.8		
BG	30.8	35		
NNA	35	36.5		
NA	36.5	36.9		
Lar tri	36.9	38.5		
BG	38.5	39		
NNA	39	39.5		
NA	39.5	39.9		
Lar tri	39.9	40.8		
BG	40.8	42.3		
NA	42.3	43		
NNA	43	44		
Amb sal	44	44.4		
BG	44.4	45.2		
NA	45.2	45.8		
Lar tri	45.8	48		
BG	48	52		
NNA	52	55.5		
NA	55.5	56.5		
Aca sph	56.5	56.7		
BG	56.7	58.5		

NNA	58.5	59.2		
NA	59.2	59.7		
Eph vir	59.7	59.8		
Amb sal	59.8	60.6		
BG	60.6	63		
NA	63	63.5		
NNA	63.5	64.5		
Amb sal	64.5	65		
BG	65	66.5		
NNA	66.5	67.5		
NA	67.5	67.8		
Lar tri	67.8	68.5		
BG	68.5	72.5		
NNA	72.5	74		
NA	74	74.5		
Aca sph	74.5	75.1		
Eri fas ssp. pol	75.1	75.6		
BG	75.6	83.5		
NNA	83.5	85		
NA	85	85.7		
Eph vir	85.7	86.6		
BG	86.6	87.8		
Poa sec	87.8	87.9		
BG	87.9	88.4		
NNA	88.4	88.8		
NA	88.8	88.9		
Eph vir	88.9	89.9		
NNA	89.9	90.2		
Total:				

Other Notes: Native Perennials:

2 meter belt density

Amb sal: ~~IIII~~ I

Sal mex: II

Amb dum: ~~IIII~~

Eph vir: ~~IIII~~ ~~IIII~~ ~~IIII~~ II

Poa sec: I

Lar tri: ~~IIII~~ ~~IIII~~ I

Eri pol: I

Aca sph: ~~IIII~~ II

Species Richness:

Shrub/Tree Height:

Eph vir: .5, .6, .6, .65, .6, .2, .3, .5, .4, .4, .5, .45, .4, .3, .4, .5, .25, .3

Lar tri: 1.6, 1.4, 1.4, 1.4, 1.5, 1.6, 1.4, 1.1, 1, 1.4, 1.6

Amb sal: .8, .6, .85, .5, .8, .5

Eri pol: .5

Poa sec: .2,

Sal mex: .8, .25,

Amb dum: .25, .4, .3, .25, .4

Aca sph: .5, .3, .3, .25, .25, .15, .5,

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton | Compass Orientatation: NE degrees 315°

Transect No.: 14 (cont.) | Date: 8/28/14 | Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
Eph vir	90.2	90.8		
BG (Bare Ground)	90.8	91.1		
NA (Native Annuals)	91.1	91.4		
Amb dum	91.4	91.8		
BG	91.8	92.5		
Sal mex	92.5	93.4		
BG	93.4	97		
NNA (Non-Native Annuals)	97	99.3		
NA	99.3	100		

Total:				

Other Notes: Native Perennials

2m Belt Density:

Species Richness:

Shrub/Tree Height:

LINE INTERCEPT - TRANSECT DATA SHEET

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Lebata Mine Site Vegetation Sampling

Project No.: 2014-054.003

Surveyor(s): Josh Corona-Bennett, Greg Hampton

Compass Orientatation: NE degrees 30°

Transect No.: 15

Date: 5/28/14

Transect Length - 100 m

Species	Begin (meters)	End (meters)	Total Cover (meters)	Percent Cover
BG (Bare Ground)	0	.8		
NNA (Non-Native Annuals)	.8	1.1		
Lar tri	1.1	3.7		
BG	3.7	5.7		
NNA	5.7	8.5		
NA (Native Annuals)	8.5	9.1		
Amb dum	9.1	9.5		
BG	9.5	9.9		
NNA	9.9	10		
Aca sph	10	10.6		
BG	10.6	12.5		
NNA	12.5	13.2		
Eph vir	13.2	13.4		
BG	13.4	21.5		
NNA	21.5	23.5		
NA	23.5	24.8		
Lar tri	24.8	26.6		
BG	26.6	31		
NNA	31	32.5		
NA	32.5	33		
Eph vir	33	33.2		
Aca sph	33.2	33.5		
BG	33.5	34.1		
NNA	34.1	34.5		
Lar tri	34.5	36.8		
NA	36.8	37.1		
NNA	37.1	37.4		
Amb scal	37.4	38.3		
BG	38.3	47		
NNA	47	49.2		
NA	49.2	50.2		
Amb dum	50.2	50.7		
BG	50.7	57		
NNA	57	59		
	59	59.8		

Lar tri	59.8	64		
BG	64	69.5		
NNA	69.5	70.5		
NA	70.5	71.2		
Lar tri	71.2	71.5		
NA	71.5	72.5		
BG	72.5	78.5		
NNA	78.5	79.5		
NA	79.5	79.5		
Lar tri	79.5	82.3		
BG	82.3	83.1		
NA	83.1	83.3		
NNA	83.3	83.5		
Lar tri	83.5	84.3		
BG	84.3	87		
NNA	87	88.3		
NA	88.3	88.7		
Lar tri	88.7	90.6		
BG	90.6	96.5		
NNA	96.5	97.5		
NA	97.5	98.2		
Lar tri	98.2	99.6		
BG	99.6	99.8		
NNA	99.8	100		
Total:				

Other Notes: Native Perennials

2m Belt Density:

Lar tri: ~~IIII~~ ~~IIII~~ ~~IIII~~ IIII

Eph vir: ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ II

Aca sph: ~~IIII~~ III

Amb dum: ~~IIII~~ III

Poa sec: ~~IIII~~ I

Tet ste: III

Amb sal: II

Eri fas ssp. pol: I

Species Richness:

Shrub/Tree Height:

Lar tri: 1.2, 1.3, 1.5, 1.4, 1.6, 2.1, 1, 1.1, 1.3, 1.8, 1.5, 1.4, 1.2, 1.3, 1.5, 1.1, 1.3, 1.7, 1.4, 1.5,

Eph vir: .4, .3, .4, .25, .3, .5, .5, .3, .5, .25, .4, .3, .3, .3, .5, .5, .5, .25, .3

Aca sph: .4, .4, .4, .3, .4, .4, .5, .3, .5, .2, .4, .4, .4

Amb dum: .5, .5, .3, .5, .3, .2, .4, .25

Poa sec: .2, .2, .2, .2, .2, .2

Amb sal: .5, .8, .6

Tet ste: .85, .6, .8

Eri fas ssp. pol: .5

 ~~Atr dem~~

Attachment 4

Revegetation Performance Criteria

(From *Lebata Inc. Big Rock Creek Reclamation Plan,* Sespe 2014)

Lebata Inc. Big Rock Creek Reclamation Plan - Revegetation Performance Criteria

Shrub and Forbs	
Goal	Reestablish native vegetation exhibiting cover, density and species richness comparable to that of the undisturbed condition.
Baseline	Average of 26% native cover (including perennials and annuals).
Performance Criteria	Overall cover: 60 percent of baseline; 15.6% cover by native plant species, overall (includes perennial and annual species). Density: 80 percent of baseline; 752 perennial plants per acre. Species Richness: 80 percent of baseline; Minimum of 5.6 native perennial species in revegetation areas. (Refer to Attachment E, Exhibit 2 - *Results of Baseline Vegetation Study and Development of Performance Standards*, prepared by ECORP Consulting, Inc., July 24, 2014.)
Contingency Action	Hand weed if weeds interfere with native plant establishment and reseed if density and/or diversity of native plants are low.
Joshua Trees	
Goal	Reestablish over the entire Project site at a density 50 percent of the undisturbed condition.
Baseline	Where Joshua trees are present, there are 3 to 5 trees per acre, with an estimated total population of 200.
Performance Criteria	Density of two (2) trees per acre overall, where soil conditions are appropriate (e.g., undisturbed or similar to native soil), or, total of 50% of baseline data (i.e., 50% of 200). Minimum of 100 Joshua trees must become established and self-sufficient.
Contingency Action	Alter transplanting technique or increase number of relocated trees.
Erosion	
Goal	Erosion does not interfere with native plant establishment. Loss of topsoil from wind erosion is minimal.
Performance Criteria	Erosion control measures employed onsite are designed to capture and accommodate the Capital Flood flows described in the *Drainage Concept* (EIR Appendix 3 and its Addendum), which are considerably greater than the those of a 20-year, 1-hour intensity storm event. Evaluation of the effectiveness of erosion control measures and a check on slope stability will be conducted and recorded yearly as part of the SMARA annual inspection.
Contingency Action	Backfilling activities, if needed, will be conducted in accordance with the *Drainage Concept*.
Resistance to Invasion by Non-Natives	
Goal	Less than 10 percent of any 20 square foot area.
Baseline	Average of 24% non-native cover.
Performance Criteria	Cover of annual nonnative plant species shall not exceed 10 percent, as verified through ocular estimates and annual performance monitoring. If it is determined that annual nonnative cover is hindering the growth or establishment of planted species then cover of annual nonnative species shall not exceed 5 percent. All perennial nonnative plant species shall be eradicated.
Contingency Action	Remove manually or mechanically. No herbicide treatment will be permitted without specific, written authorization from the Project Biologist/Revegetation Specialist.

ATTACHMENT E

Exhibit 3 - ***Mohave Ground Squirrel Trapping Report,*** **prepared by ECORP Consulting, Inc., August 24, 2014**

Mohave Ground Squirrel Trapping Report
for the
Lebata, Inc. Big Rock Creek Surface Mining Project
Los Angeles County, California

Submitted to:
SESPE Consulting, Inc.
468 Poli Street, Suite 2E
Ventura, CA 93001
(530) 477-9507

Submitted by:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
1801 Park Court Place
Building B103
Santa Ana, CA 92701
(714) 721-3793

July 2014

MOHAVE GROUND SQUIRREL TRAPPING REPORT

LEBATA, INC.

BIG ROCK CREEK SURFACE MINING PROJECT
LOS ANGELES COUNTY, CALIFORNIA

JULY 2014

Prepared by:
ECORP Consulting

In Coordination With:
SESPE Consulting, Inc./McGee & Associates
468 Poli Street, Suite 2E
Ventura, California 93001

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Appendix D Weather Data

1.0 INTRODUCTION

ECORP Consulting, Inc. (ECORP) was contracted by SESPE Consulting, Inc./McGee & Associates (Client), to perform Mohave ground squirrel (*Xerospermophilus mohavensis*) trapping for the Lebata, Inc. (Lebata) Big Rock Creek Surface Mining Project in Pearblossom, Los Angeles County, California (project site). Focused protocol live-trapping surveys for the state-listed (threatened) Mohave ground squirrel was conducted on one (1) trapping grid covering 80 acres that are proposed to be the first portion mined within the approximately 135-acre northern parcel that Lebata plans to use for mining operations. To clarify, the actual Mohave ground squirrel trapping grid was not 80 acres in size but was sufficient in size to sample 80 acres of the project area, as outlined in the current trapping protocol (California Department of Fish and Wildlife [CDFW] 2010). These focused surveys were conducted in order to determine if this species was present on the site since it is listed as threatened under the California Endangered Species Act (CESA).

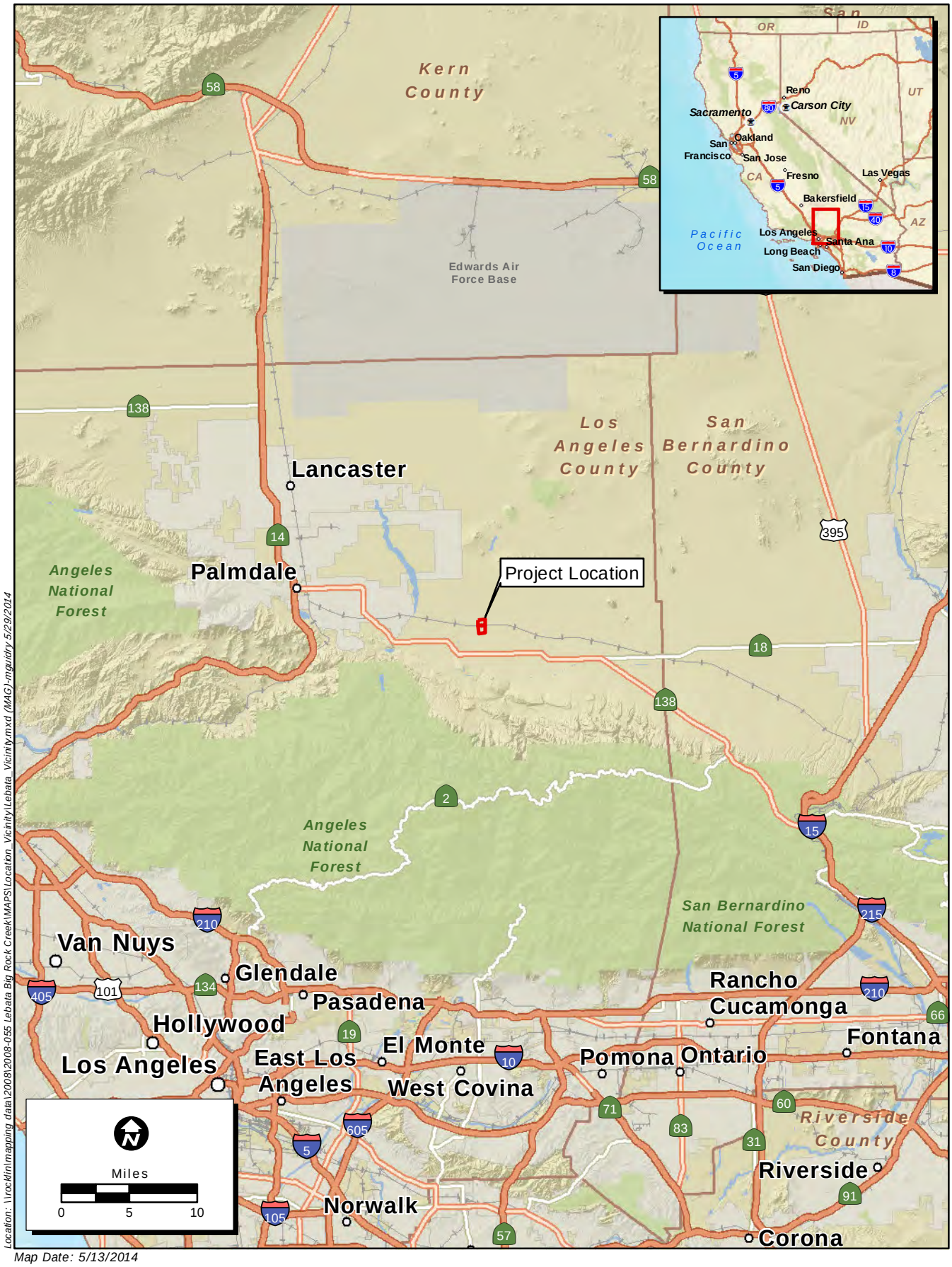
1.1 Project Location

The approximately 310-acre project site is located south of Avenue T between 131st and 136th Streets East in the unincorporated community of Pearblossom, Los Angeles County, (Figure 1) approximately 5.5 miles (mi) northeast of the town of Littlerock, and approximately 13 mi southeast of the city of Palmdale. The project site is bisected by the Union Pacific Railroad (UPRR), located approximately 0.5 mi south of Avenue T. The project site is located on the United States Geological Survey (USGS) Littlerock 7.5-minute topographic quadrangle, Section 11 of Township 5 North, Range 10 West (USGS 2014).

1.2 Project Description

The project site is comprised of two parcels of land, which are bisected by the Union Pacific Railroad (UPRR). The northern parcel encompasses approximately 135 acres and the southern parcel encompasses approximately 175 acres (Figure 2). Surface mining activities may be initiated in the northern portion of the project site in early 2015. The northern 80 acres of the project site the the Mohave ground squirrel trapping study covered will be mined under Phase 1 of the proposed work plan. The southern portion of the project site is also proposed for surface mining activities; however, the activities in this portion of the project site are not proposed to break ground until a later date. The southern portion of the project site will be mined under Phase 2 of the proposed work plan.

Due to the fact that a portion of Phase 1 is proposed for ground breaking activities in early 2015, the trapping survey was only conducted in the northern 80-acre portion of the northern parcel of the project site during the 2014 study (Figure 2). For the purposes of this report, the northern 80-acre portion of the northern parcel will be referred to as the study area.



Location: \\rocklin\mapping data\2008\2008-055 Lebata Big Rock Creek\MAPS\Location_Vicinity\Lebata_Vicinity.mxd (MAG)-mguidry 5/29/2014

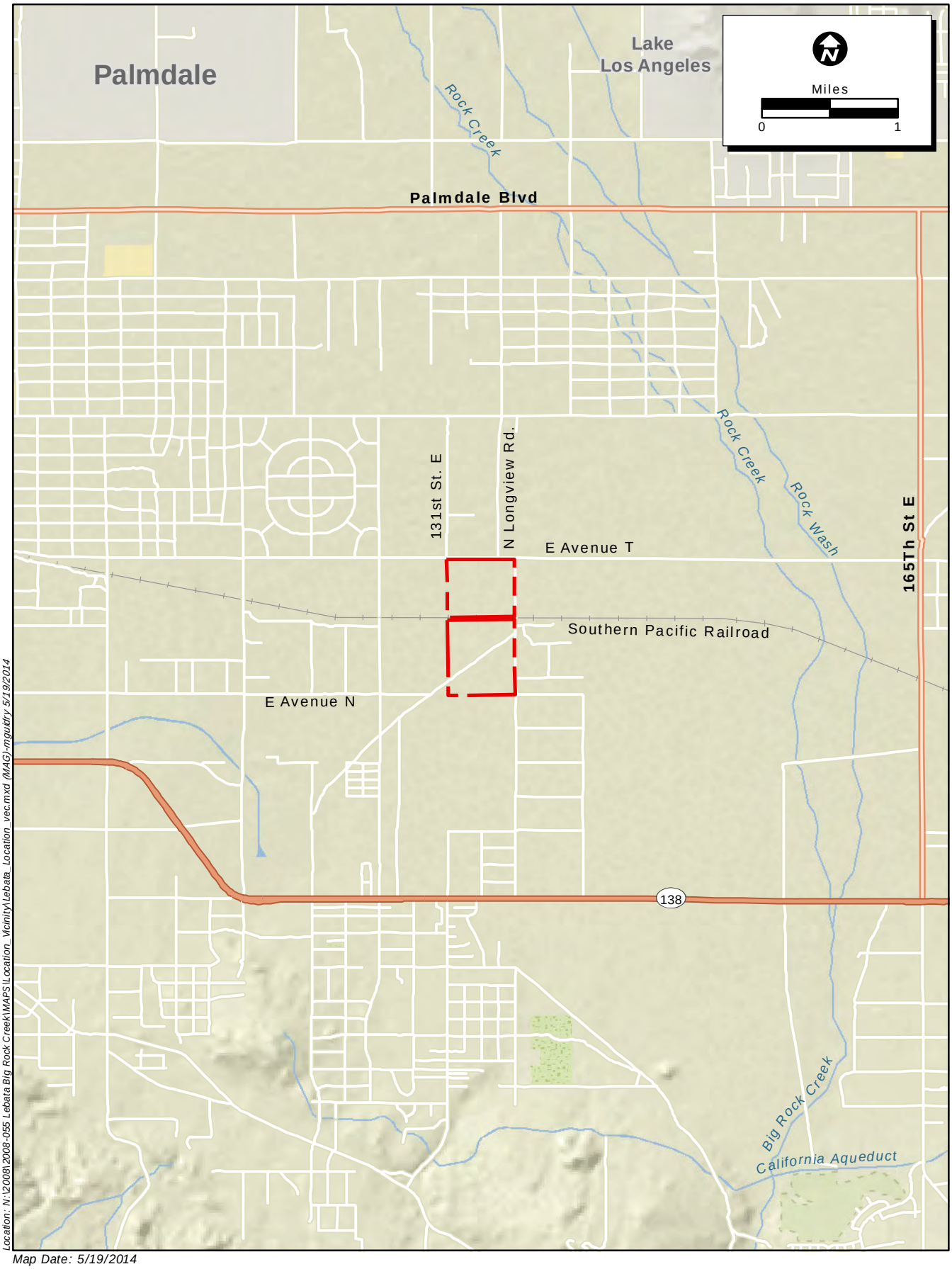
Map Date: 5/13/2014

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

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 1. Project Vicinity

2014-054 Lebata Big Rock Creek



Location: N:\2008\2008-055 Lebata Big Rock Creek\MAPS\Location_Vicinity\Lebata_Location_vec.mxd (MAG)-mgudry 5/19/2014

Map Date: 5/19/2014
Source: ESRI

Figure 2. Project Location

2014-054 Lebata Big Rock Creek

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

1.3 Mohave Ground Squirrel Natural History

The Mohave ground squirrel is listed as threatened under CESA (CDFW 2011). In 2009, the Mohave ground squirrel underwent a taxonomic revision to its genus. Squirrels classified under the genus *Spermophilus* (under which the Mohave ground squirrel has been classified since the mid-20th century) were split into two groups based on genetic and morphological features: *Spermophilus* and *Xerospermophilus* (Helgen et al. 2009). The Mohave ground squirrel is now classified under the genus *Xerospermophilus*.

The Mohave ground squirrel is a rodent species endemic to California, which is limited to a geographic range in the western Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo Counties. Studies have shown that the optimal habitat types typically include plant communities that support spiny hopsage (*Grayia spinosa*) and winterfat (*Kraschenninikovia lanata*), including creosote bush scrub, saltbush scrub, and Joshua tree woodland communities (Scarry et al. 1996; Leitner and Leitner 1998). Mohave ground squirrels have been found at elevations ranging from 1,800 to 5,000 feet (549 to 1,524 meters) above msl (Brooks and Matchett 2002; U.S. Department of the Interior [USDI] Bureau of Land Management [BLM] 2005).

The natural history and habitat requirements for the Mohave ground squirrel are very dependent on elevation, climate, topography, and weather. This diurnal squirrel is only active in the early spring through early summer (approximately mid-February through mid-August) when they feed on native shrubs and annual plants. Adults begin to emerge from their burrows in February to begin reproduction, males emerging approximately two weeks before females. By the end of March, litters of four to ten young (average of six) are born and by late May the young begin to disperse (USDI BLM 2005). As summer approaches and vegetation begins to dry out, Mohave ground squirrels prepare for a long period of winter dormancy (hibernation) by consuming as many nutrients and fats as they can in their diet. By midsummer (July to mid-August), the squirrels return to the underground nests and by this time body temperature, heart rate, and metabolism have fallen drastically to prepare for hibernation. This species is able to survive in this physiological state on their stored body fats until the winter rains come and restore the vegetation. If sufficient rains (more than 3 inches [7 centimeters]) do not occur during the winter, Mohave ground squirrels will likely not reproduce due to lack of sufficient vegetation to support the young (Harris and Leitner 2004). When a drought year occurs, the squirrels will convert all available forage to body fat and enter hibernation as early as April. These biological and physiological adaptations allow them to survive the harsh conditions which occur in the Mojave Desert.

Threats to Mohave ground squirrel populations include agricultural development, grazing, off-road vehicle use, and other human disturbances (USDI BLM 2005). Overall, about 10 percent of the habitat for Mohave ground squirrel has deteriorated due to development (agricultural, residential, industrial, and commercial), with more of that habitat being lost as development spreads rapidly in the southern part of their range (Laabs 1998).

2.0 METHODOLOGY

2.1 Literature Review

A review of the CDFW California Natural Diversity Database (CNDDB) was conducted prior to the start of trapping to determine whether Mohave ground squirrels have been previously reported in the areas covered by the Littlerock USGS 7.5-minute topographic quadrangle (CDFW 2014). Documented Mohave ground squirrel observations in surrounding topographic quadrangles (Alpine Butte, Hi Vista, Juniper Hills, Lancaster East, Lovejoy Buttes, Pacifico Mountain, Palmdale, and Valyermo) were also reviewed.

2.2 Site Characterization

Prior to establishing the trapping grid, suitable Mohave ground squirrel habitat was characterized in the study area by an authorized Field Investigator under a Memorandum of Understanding (MOU) with CDFW. The trapping grid was placed in suitable habitat based on the results of this habitat assessment (described below).

Once the grid was established, Field Investigators documented all dominant perennial and annual plant species present within the grid to create a more detailed vegetation community description of the grid. In addition, land use surrounding the grid, disturbances present, and all wildlife species observed were documented throughout the course of trapping.

2.3 Mohave Ground Squirrel Trapping

Protocol Mohave ground squirrel trapping was conducted within the study area according to the CDFW Mohave Ground Squirrel Survey Guidelines (2010; Appendix A). Trapping was conducted under a MOU with CDFW, issued to ECORP Consulting, Inc. (ECORP; Donald Mitchell as Principal Investigator). Trapping for the project was conducted by Field Investigators Kristen (Mobraaten) Wasz and Phillip Wasz. Field Assistants Amy Trost and Wendy Turner assisted Field Investigators in setting up and taking down grids, opening and baiting the traps, processing animals captured, closing the traps, and recording data during the inventory.

During the initial grid set-up in the first trapping session, the Field Investigator conducted an initial visual survey according to CDFW trapping protocol (CDFW 2010) to detect Mohave ground squirrels prior to live-trapping.

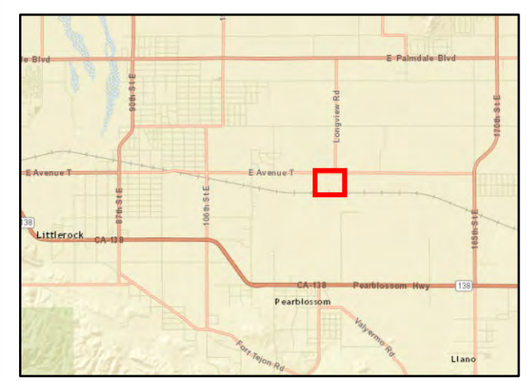
The timeframe for conducting live-trapping inventories for Mohave ground squirrel is divided into three sessions: Session 1 occurs between March 15 and April 30; Session 2 occurs between May 1 to May 31; and Session 3 occurs between June 15 and July 15 (CDFW 2010).

Figure 3. Lebata Big Rock Creek Mohave Ground Squirrel Trapping Grid

Map Features

- Study Area
- Grid Corner
- Grid

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom,



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Location: N:\2008\2008-055 Lebata Big Rock Creek\MAPS\MGS\Lebata_MGS_Grid_20140626.mxd (JDS) dwagron 7/1/2014

2014-054 Lebata Big Rock Creek

Scale in Feet
0 300

Photo Source: USGS 2010

Map Date: 7/1/2014

One grid was trapped in suitable habitat within the study area. The grid was established in such a way as to maximize trapping in suitable habitat within the northernmost 80 acres in the study area (Figure 3). The grid consisted of 100 traps arranged in five lines of 20 traps each and spaced 115 feet apart, covering a rectangular area of approximately 22.5 acres. The Mohave ground squirrel grid was 2,125 feet long by 475 feet wide. Trap lines were labeled A through E and traps were numbered 1 through 20. The grid location was recorded using a global positioning system (GPS) unit in Universal Transverse Mercator (UTM) coordinates, North American Datum 1983 (NAD 83), Zone 11.

The grid location was maintained for five consecutive days during each of the three trapping sessions, for a total of 1,500 trap-days per grid. Traps used were standard Sherman™ 12-inch aluminum folding traps. Each trap was shaded with a cardboard box frame oriented north-south to keep temperatures moderate inside the shade and trap. Traps were opened within one hour of sunrise in the morning and checked at least every 4 hours. Traps were closed within one hour of sunset or when the air temperature at 6 inches above the ground exceeded 90 degrees Fahrenheit (°F). Trapping was conducted during appropriate weather conditions with periods of extremely high winds, precipitation and/or snowfall, and low temperatures (less than 50°F) being avoided during all three sessions of trapping.

When individual squirrels were captured, the species, age class (adult, subadult, or juvenile), sex, reproductive condition, and any notes of unusual or abnormal circumstances (including a general health assessment) were recorded. Additional data collected at each trapping grid included vegetation (dominant perennial and annual species, and other species), land forms, soil description, invasive or exotic species presence, and disturbances. Weather data were recorded throughout the day during trapping. Digital photographs were taken from the center of both ends of the grid.

2.4 Incidental Sensitive Species Observations

Throughout the trapping survey, incidental sightings of sensitive species were recorded within the study area with particular attention being paid to Mohave ground squirrel, desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*), and sensitive plant species. If individuals were observed, they were mapped and coordinates of their location(s) were documented with pertinent information such as date, breeding status (if determined), notes on location, and etc.

3.0 RESULTS

3.1 Literature Review

A review of the CDFW's CNDDB resulted in many documented Mohave ground squirrel observations in the vicinity of the proposed mining area. The results of the CNDDB search indicated that there were a total of 15 documented records of Mohave ground squirrels within 10 mi of the study area. All of these occurrences are considered

historical records and date back more than 20 years (CDFW 2014). The closest and most recent CNDDB recorded occurrences are described in detail below.

The most recent documented occurrence was at Saddleback Butte State Park in 1992 where an unknown number of squirrels were observed. The park is located approximately 2 mi north of Lake Los Angeles and approximately 10 mi north of the study area (CNDDB Element Occurrence Record 227). The record states that Mohave ground squirrels were observed throughout the park in many types of habitats, except in the rocky areas.

The closest documented occurrence was northwest of East Avenue S at 140th Street East in 1989. The occurrence is approximately 1 mi from the study area (CNDDB Element Occurrence Record 453). One Mohave ground squirrel was observed during surveys for an underground pipeline.

The remaining 13 CNDDB recorded occurrences were observed between 1930 and 1991. The observations were approximately 1.75 to 10 mi from the study area (CNDDB Element Occurrence Records 23, 25, 54, 134, 135, 226, 229, 230, 255, 256, 268, 279, 280).

3.2 General Site Information

The Mojave Desert Province is a geologically defined region in which the City of Palmdale and the surrounding areas are located. Topography within the study area was mostly flat with hummocks and old gravel piles. Soils were sandy and gravelly. Elevation in the study area began at approximately 2,860 feet above mean sea level (msl) in the north and gradually increased to 2,900 feet above msl in the south. Predominant land use in the vicinity of the study area was sparsely developed with rural residential communities, mining operations, and agricultural areas, with large areas of relatively undisturbed desert habitat. One small remnant desert wash was present in the study area. The remnant wash, which runs south to north, bisected the eastern half of the trapping grid running south to north and no flowing water was observed during the trapping study. Trash dumping and off highway vehicle (OHV) use are prevalent in the study area, particularly along Longview Road.

3.2.1 Vegetation

The trapping grid consisted of suitable habitat for Mohave ground squirrel. The vegetation community present within the study area consisted of creosote bush scrub. The creosote bush scrub habitat on site was mostly undisturbed but some portions of the habitat, especially those close to roads, were disturbed and showed evidence of trash dumping and off highway vehicle use. Although some areas showed signs of disturbance, the level of disturbance was not great enough to make these areas unsuitable for Mohave ground squirrel. Creosote bush scrub occurs throughout much of the Mojave Desert on well-drained soils. This community is characterized primarily by creosote bushes (*Larrea tridentata*) that are of medium-height and widely-spaced with bare ground between shrubs. This vegetation community occurs at elevations ranging

from 246 feet (75 meters) below msl to 3,937 feet (1,200 meters) above msl. Other species that make up this community in the study area included white bursage (*Ambrosia dumosa*), ephedras (*Ephedra* sp.), cheesebush (*Hymenoclea salsola*), cholla (*Cylindropuntia echinocarpa*), horsebush (*Tetradymia* sp.), and Joshua tree (*Yucca brevifolia*). In addition, two plant species typically associated with Mohave ground squirrel, winterfat and spiny hopsage, were present in the study area. Representative photographs of the site are found in Appendix B.

3.2.2 Wildlife

Wildlife species observed or detected on the study area are characteristic of those typically associated with Mojave scrub communities in the region. A total of eight reptile, 16 bird, and five mammal species were observed during the trapping study. Common wildlife species observed included long-nosed leopard lizard (*Gambelia wislizenii*), house finch (*Carpodacus mexicanus*), horned lark (*Eremophila alpestris*), red-tailed hawk (*Buteo jamaicensis*), and black-tailed jackrabbit (*Lepus californicus*). All wildlife species observed or detected during the trapping sessions are listed in the wildlife compendium presented in Appendix C.

3.3 Mohave Ground Squirrel

The initial visual survey for the study area was conducted during grid setup by Ms. Wasz on April 19, 2014. Mohave ground squirrels were neither observed nor detected on or in the vicinity of the grid during the initial visual surveys. The grid was trapped according to CDFW protocol (2010) following the negative visual survey results. Table 1 lists the dates of each trapping session and the Field Investigator responsible for each session.

Table 1. Mohave Ground Squirrel Trapping Dates and Surveyors

Session	Field Investigator (Field Assistant)	2014 Trapping Dates
1	Kristen Wasz (Amy Trost)	April 19 - 23
2	Phillip Wasz (Wendy Turner)	May 19 - 23
3	Kristen Wasz (Amy Trost)	June 17 - 21

Mohave ground squirrels were neither captured nor detected on the trapping grid during the focused protocol live-trapping studies conducted in 2014. One squirrel species was captured during the trapping effort, the white-tailed antelope ground squirrel (*Ammospermophilus leucurus*). A total of 64 individual white-tailed antelope ground squirrels were captured during the 2014 trapping effort. Of the antelope ground squirrels captured, 32 were males, 32 were females, and there were 24 recaptures (Table 2).

Table 2. Trapping Results Summary†

	AMLE*										Non-target Species*		
	Female				Male								
Grid #	**Adult**	**Sub-adult**	**Juvenile**	***Total # Repro***	**Adult**	**Sub-adult**	**Juvenile**	***Total # Repro***	**Recap-tures**	**Total AMLE Captures**	**ASTI**	**SCMA**	**Total Captures**
1	18	7	7	*3*	24	5	3	*6*	24	**88**	5	1	**94**
Gender Subtotal	**32**			*3*	**32**			*6*					
TOTAL	**64**								**24**	**88**	**5**	**1**	**94**
*Amount Reproductive from **TOTAL***	*9*												

† Mohave ground squirrels were not captured

* AMLE - white-tailed antelope ground squirrel (*Ammospermophilus leucurus*)

ASTI - western whiptail (*Aspidoscelis tigris*)

SCMA - desert spiny lizard (*Sceloporus magister*)

Approximately 17 percent of adult females (n=3) exhibited signs of reproductive readiness or evidence of recent reproduction (i.e., swollen genitals, lactation, pregnancy, post-lactation), while approximately 25 percent of adult males (n=6) exhibited signs of reproductive readiness (i.e., scrotal or post-scrotal). General information, representative site photographs, and trapping data for the trapping grid are found in Appendix B.

Two non-target species were captured during the trapping effort, western whiptail (*Aspidoscelis tigris*) and desert spiny lizard (*Sceloporus magister*). Age, sex, and reproductive data were not collected for non-target species. Although no Mohave ground squirrels were captured, the trapping results for the incidental species captured during the study are included in Table 2.

3.3.1 Weather Conditions during Trapping

Weather during the study was typical of the Mojave Desert ecosystem; high temperatures and wind events. The average high temperature during the first session was 83°F, 80°F during the second session, and 93°F during the third session. It is important to note that the averaged temperature readings were taken from the highest recorded temperature during each trapping day, not the average temperature at which biologists began closing traps. High average weather temperatures (above 90°F) during the third trapping session are typical. The rate at which temperatures rise can be unpredictable at this time of the year (June/July timeframe) and can result in temperatures climbing at an alarmingly high rate in a short amount of time, oftentimes increasing by several degrees within a matter of minutes. Even though the biologists began closing the grid at or just before 90°F on the warm trapping days, temperatures usually rose well above 90°F once the grid was completely closed, approximately 45 minutes to 1.5 hours after the biologists began closing traps. In these instances, biologists paid close attention to the health and safety of the animals captured in the traps. There were no signs of heat stress due to high ambient temperatures in any of the animals captured in the traps (including the non-target species) during any portion of the trapping effort.

Inclement weather occurred during Session 2 on May 20 (rain) and May 22 (thunder/lightning storm), which resulted in the early closure of the grid on those dates. Additional days of trapping were not conducted to make up for lost trapping time because the grid closures occurred at 1645 and 1700 on those days, respectively, which was only approximately two hours prior to the normal grid closing time (sunset ranged from 1950 to 1953 during Session 2, which would put grid closure times between 1850 and 1853 [one hour prior to sunset]). The total trapping time lost between the two days was only approximately four hours and, therefore, did not warrant another day of trapping to make up for lost time. Weather data recorded during the trapping survey are provided in Appendix D.

3.4 Incidental Sensitive Species Observations

One Vaux's swift (*Chaetura vauxi*) was observed flying over the grid on May 21, 2014. This species is not listed under CESA or FESA, but is considered a CDFW Species of

Special Concern (SSC). The individual was likely observed during its migration period because Vaux's swifts are generally not year-round or breeding residents in the Mojave Desert.

4.0 DISCUSSION

One protocol Mohave ground squirrel trapping grid was placed in suitable habitat within the study area at the Lebata Big Rock Creek Project site and was trapped for a total of 15 days each over three trapping sessions between March 15 and July 15, 2014. Mohave ground squirrels were neither detected by observation or vocalization nor captured on the grid during the trapping study. A total of 64 white-tailed antelope ground squirrels and two non-target wildlife species (western whiptail and desert spiny lizard) were captured during the trapping study. Mohave ground squirrels were neither captured nor detected on the trapping grid during the focused protocol live-trapping studies conducted in 2014.

Creosote bush scrub was the dominant vegetation community present on the site. Small areas of disturbances in the form of trash dumping and off highway vehicle use were found associated with the dirt roads that bisected the site. However, the level of disturbances in these areas was not so great to make these areas unsuitable as Mohave ground squirrel habitat. Winterfat and spiny hopsage were present throughout the study area.
The CNDDB literature search resulted in 15 records of Mohave ground squirrel observations or detections within 10 mi of the study area. All of these occurrences were documented more than 20 years ago and are now considered historic observations. The most recent observation of Mohave ground squirrel in the area occurred in 1992 in Saddleback Butte State Park in 1991 where an unknown number of squirrels were detected (CDFW 2014). The closest record was one Mohave ground squirrel observed in 1989 northwest of the intersection of East Avenue S and 140th Street East, approximately one mile northeast of the study area (CDFW 2014). There have not been any recent (within the last 15 years) detections, observations, or captures of Mohave ground squirrels within 10 mi of the study area.

The Lebata Big Rock Creek project site is located within the extreme southwestern portion of the historic range of the Mohave ground squirrel and, although suitable desert scrub habitat is present on the site, Mohave ground squirrels are not expected to occur.

5.0 REFERENCES CITED

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APPENDIX A

Mohave Ground Squirrel Trapping Protocol

CALIFORNIA DEPARTMENT OF FISH AND GAME

MOHAVE GROUND SQUIRREL SURVEY GUIDELINES

(January 2003; minor process and contact changes in July 2010)

Unless a certain circumstance[1] applies, the Department of Fish and Game (Department) requires a survey to be undertaken for the Mohave ground squirrel (*Xerospermophilus mohavensis*) on a project site if the proposed site has potential habitat of this species and the presence of the species on the project site is unknown. Potential habitat is land supporting desert shrub vegetation[2] within or adjacent to the geographic range[3] of the species. A project is an action that results in temporary or permanent removal or degradation of potential habitat. The Department considers a project site to be an area of land controlled by the project proponent, including but not limited to the portion proposed for removal or degradation of potential habitat. The Department considers a project site to be occupied by the Mohave ground squirrel, if an individual of this species is observed, or is captured on any sampling grid, on the project site.

The Department intends for these survey guidelines to apply to projects that would negatively affect ≤180 acres or to linear projects ≤ 5 miles in length. For projects of larger scale, the Department requires special survey protocol(s) to be developed through its consultation with either the project proponent or the local lead agency (if appropriate) or both entities.

For projects of the appropriate scale, each survey shall adhere to the following conditions:

1. Studies that include trapping for the Mohave ground squirrel shall be authorized by a Memorandum of Understanding (MOU) or Letter Permit issued by the Wildlife Branch of the Department, or by other permit as determined by the Department, and shall be undertaken only by a qualified biologist. A qualified biologist is a biologist who has demonstrated pertinent field experience in capturing and handling ground squirrels or other small mammals in desert/arid communities and who has been permitted by the Department to work without supervision. Each biologist setting traps, opening traps containing captured animals, or handling captured animals must be named in the MOU or Letter Permit as an authorized person, whether qualified or not to work without supervision.

2. Visual surveys to determine Mohave ground squirrel activity and habitat quality shall be undertaken during the period of 15 March through 15 April. All potential habitat

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1 A survey is not necessary in the circumstance that the project proponent prefers to assume that the Mohave ground squirrel is present on the project site and applies for a California Endangered Species Act incidental-take permit (Fish and Game Code Section 2081b) requiring mitigation and compensation.

2 Examples of desert shrub vegetation that is known to provide habitat for the Mohave ground squirrel include (but are not limited to) Mojave Creosote Bush Scrub, Mojave Mixed Woody Scrub, and Desert Saltbush Scrub as described in Holland 1986.

3 Because the limits of the geographic range are not known precisely, surveys may be required in areas up to five miles from currently-documented boundaries.

on a project site shall be visually surveyed during daylight hours by a biologist who can readily identify the Mohave ground squirrel and the white-tailed antelope squirrel (*Ammospermophilus leucurus*).

3. If visual surveys do not reveal presence of the Mohave ground squirrel on the project site, standard small-mammal trapping grids shall be established in potential Mohave ground squirrel habitat. The number of grids will depend on the amount of potential habitat on the project site, as determined by the guidelines presented in paragraphs 4 and 5 of these guidelines.

4. For linear projects (for example, highways, pipelines, or electric transmission lines), each sampling grid shall consist of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) arranged in a rectangular pattern, 4 traps wide by 25 traps long, with traps spaced 35 meters apart along each of the four trap lines. At a minimum, one sampling grid of this type shall be established in each linear mile, or fraction thereof, of potential Mohave ground squirrel habitat along the project corridor.

5. For all other types of projects, one sampling grid consisting of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) shall be established for each 80 acres, or fraction thereof, of potential Mohave ground squirrel habitat on the project site. The traps shall be arranged in a 10 x 10 grid, with 35-meter spacing between traps.

6. Each sampling grid shall be trapped for a minimum five consecutive days, unless a Mohave ground squirrel is captured before the end of the five-day term on the grid or on another grid on the project site. If no Mohave ground squirrel is captured on a sampling grid on the project site in the first five-consecutive-day term, each sampling grid shall be sampled for a SECOND five-consecutive-day term. Trapping may be stopped before the end of the second term if a Mohave ground squirrel is captured on any sampling grid on the project site. If no Mohave ground squirrel is captured during the second five-consecutive-day term, each sampling grid shall be sampled for a THIRD five-consecutive-day term. The FIRST trapping term shall begin and be completed in the period of 15 March through 30 April. If a SECOND term is required, it shall begin at least two weeks after the end of the first term, but shall begin no earlier than 01 May, and shall be completed by 31 May. If a THIRD term is required, it shall begin at least two weeks after the end of the second term, but shall begin no earlier than 15 June, and shall be completed by 15 July. All trapping shall be conducted during appropriate weather conditions, avoiding periods of high wind, precipitation, and low temperatures ($<50^{o}$F or 10°C).

7. For projects requiring two or more sampling grids, capture of a Mohave ground squirrel on any grid will establish presence of the species on the project site. Trapping may be stopped on all grids on the project site at that time. For linear projects, very large project sites, project sites characterized by fragmented or highly-heterogeneous habitats, or in other special circumstances, continued

trapping may be necessary.

8. A maximum 100 traps shall be operated by each qualified biologist. Each trap shall be covered with a cardboard A-frame or equivalent non-metal shelter to provide shade. Trap and shelter orientation shall be on a north-south axis. All traps shall be opened within one hour of sunrise and may be closed beginning one hour before sunset. Traps shall be checked at least once every four hours to minimize heat stress to captured animals. When traps are open, temperature shall be measured at a location within the sampling grid, in the shade, and one foot (approx. 0.3 meters) above the ground at least once every hour. Traps shall be closed when the ambient air temperature at one foot above the ground in the shade exceeds 90°F (32°C). Trapping shall resume on the same day after the ambient temperature at one foot (approx. 0.3 meters) above the ground in the shade falls to 90°F (32°C) and shall continue until one hour before sunset. Suggested baits are mixed grains, rolled oats, or bird seed, with a small amount of peanut butter.

9. A qualified biologist shall complete the Survey and Trapping Form, which is found on the last page of these guidelines. This biologist, or the lead agency for the project, shall submit the completed form to the appropriate Department office (see page 4) with the biological report on the project site.

10. The Department may allow variation on these guidelines, with the advance written approval of the appropriate regional habitat conservation planning office (see page 4). Such variations could include biologically-appropriate modification of the trapping dates or changes in grid configuration that would enhance the probability of detecting Mohave ground squirrels. Any variation which concerns trapping or marking methods must be incorporated into the MOU or permit that authorizes the work.

11. If a survey conducted according to these guidelines results in no capture or observation of the Mohave ground squirrel on a project site, this is not necessarily evidence that the Mohave ground squirrel does not exist on the site or that the site is not actual or potential habitat of the species. However, in the circumstance of such a negative result, the Department will stipulate that the project site harbors no Mohave ground squirrels. This stipulation will expire one year from the ending date of the last trapping on the project site conducted according to these guidelines.

Literature Cited

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Nongame Heritage Program report. California Department of Fish and Game (Sacramento), 156 pages.

CONTACTS

A. For information on obtaining an MOU or on the type of experience that a qualified biologist must have, contact the following:

Scott D. Osborn
Wildlife Branch, Nongame Wildlife Program
Department of Fish and Game
1812 Ninth Street
Sacramento, CA 95811

voice: (916) 324-3564
fax: (916) 445--4048
e-mail: sosborn@dfg.ca.gov

B. For information on project review and conservation planning by the Department, as these activities regard the Mohave ground squirrel, contact the following:

(for Kern County)
Habitat Conservation Planning
San Joaquin Valley and Southern Sierra Region
Department of Fish and Game
1234 E. Shaw Avenue
Fresno, California 93710
telephone: (559) 243-4005

(for Los Angeles County)
Habitat Conservation Planning
South Coast Region
Department of Fish and Game
4949 View Ridge Avenue
San Diego, California 92123
telephone: (858) 467-4201

(for Inyo and San Bernardino counties)
Habitat Conservation Planning
Eastern Sierra and Inland Deserts Region
Department of Fish and Game
407 West Line Street
Bishop, California 93514
telephone: (760) 872-1171

Mohave Ground Squirrel (MGS) Survey and Trapping Form (photocopy as needed)

PART I - PROJECT INFORMATION (use a separate form for each sampling grid)

Project name: _____ Property owner:_____

Location: Township _____; Range _____; Section _____ ; ¼ Section _____

Quad map/series: _____ UTM coordinates: _____
GPS coordinates of trapping-grid corners

Acreage of Project Site: _____ Acreage of potential MGS habitat on site: _____

Total acreage visually surveyed on project site: _____ Date(s): _____
visual surveys

Visual surveys conducted by: _____
names of all persons by date (use back of form, if needed)

Total acres trapped: _____ Number of sampling grids: _____

Trapping conducted by: _____
names of all persons by sampling term and sampling grid (use back of form, if needed)

Dates of sampling term(s): FIRST_____ SECOND _____ THIRD _____
if required if required

PART II - GENERAL HABITAT DESCRIPTION (use back of form, if needed)
Vegetation: dominant perennials: _____
other perennials: _____
dominant annuals: _____
_____
other annuals: _____
_____

Land forms (mesa, bajada, wash): _____

Soils description: _____

Elevation: _____ Slope: _____

PART III - WEATHER (report measurements in the following categories for each day of visual survey and each day of trapping; using 24-hour clock, indicate time of day that each measurement was made; use a separate blank sheet for each day)

Temperature: AIR minimum and maximum; SOIL minimum and maximum; Cloud Cover: % in AM and % in PM; Wind Speed: in AM and in PM

APPENDIX B

Grid Information, Representative Site Photographs, and Trapping Data

Mohave Ground Squirrel (MGS) Survey and Trapping Form

Part I - Project Information

ECORP Consulting, Inc.
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Grid #				
1	**Project Name:**	Lebata Big Rock Creek	**Township:**	5N
	Property Owner:	Lebata, Inc.	**Range:**	10W
	Quad Map/ Series:	Littlerock	**Section (1/4):**	11

UTM Coordinates of grid corners (NAD 83, error <6m)

NW Corner (A1)		NE Corner (A20)		SE Corner (E20)		SW Corner (E1)	
Easting	Northing	Easting	Northing	Easting	Northing	Easting	Northing
417823	3822506	418469	3822542	418456	3822403	417810	3822364

PICTURES (from each end of grid) 2 photos Camera #02 4/20/14

Acreage of Project Site (or linear distance) 80 (Northern Portion)

Acreage of potential MGS habitat on site (or linear distance) 80

All areas of potential MGS habitat were visually surveyed on April 19, 2014

These visual surveys were conducted by Kristen (Mobraaten) Wasz

Total # of grids 1

Session	Start Date	End Date
1	4/19/2014	4/23/2014
2	5/19/2014	5/23/2014
3	6/17/2014	6/21/2014

Trapping conducted by:
Kristen Wasz
Phillip Wasz
Kristen Wasz

Part II - General Habitat Description

Vegetation

dominant perennials	creosote bush, saltbush
other perennials	winterfat, rubber rabbitbrush, ephedra, beavertail cactus, cholla, indigo bush, matchweed, California buckwheat, Joshua tree
dominant annuals	desert dandelion, phacelia, fiddleneck, erodium, mentzelia
other annuals	desert calico, mojave linanthus, fiddleneck, slender buckwheat, gilia, desert primrose, sand-verbena, fremont pincushion, suncups

Land Forms (i.e. bajadas, washes) mostly flat with hummocks; old gravel piles

Soils Description sandy, gravelly

Elevation 2871 **Slope** 0-2% slopes

Representative Site Photographs

Photo 1. Trapping Grid, facing west from trap C20.

Photo 2. Trapping grid, facing east from trap C1.

Grid 1 Raw Data

DATE	TIME	TRAP #	SPECIES	RECAP	SEX	AGE	REPRO	COMMENTS
04/19/14	10:41	A12	AMLE	N	F	A	No	
04/20/14	10:56	B3	ASTI					
04/20/14	11:14	A13	AMLE	N	M	A	No	
04/20/14	11:16	A12	AMLE	N	M	A	No	
04/20/14	14:32	E9	AMLE	N	M	A	No	
04/20/14	14:47	B12	ASTI					
04/21/14	10:42	E8	AMLE	N	M	A	No	
04/21/14	10:57	B15	SCMA					
04/22/14	10:48	E8	AMLE	N	F	J	No	
04/22/14	14:40	E7	AMLE	N	F	A	Yes	lactating; old tail injury
04/22/14	18:48	C12	AMLE	N	F	A	No	
04/22/14	19:01	A13	AMLE	N	F	A	No	
04/23/14	12:10	A20	AMLE	N	M	A	No	fleas
04/23/14	15:28	A20	AMLE	N	F	A	Yes	lactating
04/23/14	15:12	E8	AMLE	N	M	SA	No	
04/23/14	15:30	A19	AMLE	N	F	J	No	
04/23/14	18:45	A20	AMLE	N	M	SA	No	
05/19/14	9:53	A17	AMLE	N	F	SA	No	
05/19/14	10:00	A8	AMLE	N	M	A	No	
05/19/14	10:14	B13	AMLE	N	M	SA	No	
05/19/14	10:55	E3	AMLE	N	M	A	No	missing half of tail, old injury
05/19/14	13:02	A11	AMLE	N	M	SA	No	
05/19/14	13:06	A6	AMLE	N	F	A	No	
05/19/14	13:10	A3	AMLE	N	M	A	No	
05/19/14	13:20	B16	AMLE	N	F	A	No	
05/19/14	13:46	E11	AMLE	N	F	A	No	
05/19/14	16:00	A10	AMLE	N	F	J	No	
05/19/14	16:03	A8	AMLE	Y				
05/19/14	16:24	C4	AMLE	N	F	SA	No	
05/19/14	16:44	E18	ASTI					
05/20/14	10:38	A6	AMLE	N	M	J	No	
05/20/14	10:41	A1	ASTI					
05/20/14	10:52	B16	AMLE	N	M	A	Yes	post-scrotal
05/20/14	11:20	E19	AMLE	N	F	SA	No	
05/20/14	13:40	A12	AMLE	N	F	A	No	
05/20/14	13:55	B13	AMLE	N	M	A	No	
05/20/14	13:57	B14	AMLE	Y				
05/20/14	17:05	A7	AMLE	N	F	J	No	
05/20/14	17:07	A4	AMLE	Y				
05/20/14	17:30	C8	AMLE	Y				
05/21/14	10:30	A3	AMLE	N	F	A	Yes	lactating
05/21/14	10:32	A2	AMLE	N	M	A	No	

DATE	TIME	TRAP #	SPECIES	RECAP	SEX	AGE	REPRO	COMMENTS
05/21/14	10:55	E3	AMLE	N	M	A	No	
05/21/14	11:03	E10	AMLE	N	F	A	No	
05/21/14	11:09	D15	AMLE	Y				
05/21/14	13:40	A14	AMLE	Y				
05/21/14	13:49	B1	AMLE	N	M	A	No	
05/21/14	13:52	B5	AMLE	Y				
05/21/14	14:31	E20	AMLE	Y				
05/21/14	16:25	A6	AMLE	Y				
05/21/14	17:07	E19	AMLE	N	M	A	No	
05/22/14	10:17	A17	AMLE	Y				
05/22/14	10:27	A4	AMLE	Y				
05/22/14	10:31	B2	AMLE	Y				
05/22/14	10:43	C17	AMLE	Y				
05/22/14	15:40	A11	AMLE	Y				
05/22/14	17:25	D12	AMLE	Y				
05/23/14	10:41	E12	AMLE	N	F	A	No	
05/23/14	13:19	D12	AMLE	N	M	A	No	
05/23/14	13:23	E9	ASTI					
05/23/14	13:30	E1	AMLE	N	F	A	No	
05/23/14	13:36	B6	AMLE	Y				
05/23/14	16:27	D17	AMLE	N	F	A	No	
05/23/14	16:45	C16	AMLE	N	F	A	No	
05/23/14	16:55	A5	AMLE	Y				
05/23/14	16:59	A2	AMLE	N	M	J	No	
06/17/14	9:55	E15	AMLE	N	M	A	No	
06/17/14	10:02	B3	AMLE	N	F	J	No	bloody front paw
06/17/14	10:10	B10	AMLE	N	M	A	No	
06/17/14	10:25	A19	AMLE	N	F	SA	No	
06/17/14	13:29	E12	AMLE	N	M	SA	No	
06/18/14	9:56	D7	AMLE	N	F	SA	No	
06/18/14	10:03	E1	AMLE	N	M	A	Yes	post-scrotal
06/18/14	12:38	C16	AMLE	N	M	A	Yes	post-scrotal
06/18/14	12:40	C17	AMLE	N	M	A	Yes	post-scrotal
06/19/14	9:31	E20	AMLE	N	M	A	No	not marked - escaped
06/19/14	9:44	E9	AMLE	N	F	A	No	
06/19/14	9:54	B4	AMLE	N	F	SA	No	
06/19/14	10:06	C19	AMLE	N	F	SA	No	
06/19/14	10:11	A18	AMLE	Y				
06/19/14	10:18	A9	AMLE	N	F	A	No	
06/19/14	11:27	D9	AMLE	N	F	A	No	
06/20/14	9:24	B19	AMLE	Y				
06/20/14	9:43	A3	AMLE	N	F	J	No	
06/20/14	10:57	A3	AMLE	N	M	A	Yes	post-scrotal

DATE	TIME	TRAP #	SPECIES	RECAP	SEX	AGE	REPRO	COMMENTS
06/21/14	9:33	E9	AMLE	Y				
06/21/14	9:42	E3	AMLE	Y				
06/21/14	9:52	B1	AMLE	N	M	J	No	
06/21/14	9:53	C1	AMLE	Y				
06/21/14	9:57	C4	AMLE	N	M	A	No	
06/21/14	10:04	C10	AMLE	Y				
06/21/14	10:11	C14	AMLE	N	M	A	Yes	post-scrotal
06/21/14	10:22	B9	AMLE	N	F	J	No	
06/21/14	10:49	A5	AMLE	Y				

A – Adult
J – Juvenile
SA – Subadult
AMLE – white-tailed antelope ground squirrel (*Ammospermophilus leucurus*)
ASTI – western whiptail (*Aspidoscelis tigris*)
SCMA – desert spiny lizard (*Sceloporus magister*)

APPENDIX C

Wildlife Compendium

Scientific Name	**Common Name**
REPTILES	
Phrynosomatidae (North American Spiny Lizards)	
Phrynosoma platyrhinos	desert horned lizard
Sceloporus magister	desert spiny lizard
Sceloporus occidentalis	western fence lizard
Uta stansburiana	side-blotched lizard
Crotophytidae (Collard Lizards, Leopard Lizards)	
Gambelia wislizenii	long-nosed leopard lizard
Teiidae (Ground Lizards, Racerunners, and Whiptails)	
Aspidoscelis tigris	western whiptail
Iguanidae (American Arboreal Lizards, Chuckwallas, Iguanas)	
Dipsosaurus dorsalis	desert iguana
Colubridae (Typical Snakes)	
Masticophus flagellum	coachwhip
Pituophis catenifer	gopher snake
BIRDS	
Troglodytidae (Wrens)	
Campylorhynchus brunneicapillus	cactus wren
Corvidae (Crows, Jays, and Magpies)	
Corvus corax	common raven
Tyrannidae (Tyrant Flycatchers)	
Myiarchus cinerascens	ash-throated flycatcher
Tyrannus vociferans Swainson	Cassin's kingbird
Emberizidae (Buntings, Finches, Sparrows, and Towhees)	
Carpodacus mexicanus	house finch
Amphispiza nevadensis	sagebrush sparrow
Zonotrichia leucophrys	white-crowned sparrow
Alaudidae (Larks)	
Eremophilia alpestris	horned lark
Accipitridae (Eagles, Hawks, and Kites)	
Buteo jamaicensis	red-tailed hawk
Mimidae (Mockingbirds and Thrashers)	
Mimus polyglottos	northern mockingbird
Apodinae (Swifts)	
*Chaetura vauxi**	Vaux's Swift
Hirundinidae (Swallows)	
Hirundo rustica	barn swallow
Caprimulgidae (Nightjars)	
Chordeiles acutipennis	lesser nighthawk
Aegithalidae (Bushtits)	
Psaltriparus minimus	bushtit
Columbidae (Doves and Pigeons)	
Zenaida maroura	mourning dove
Picidae (Woodpeckers)	
Picoides scalaris	ladder-backed woodpecker

Scientific Name	**Common Name**
MAMMALS	
Sciuridae (Chipmunks, Marmots, and Squirrels)	
Ammospermophilus leucurus	white-tailed antelope ground squirrel
Heteromyidae (Kangaroo Mice, Kangaroo Rats, and Pocket Mice)	
Dipodomys sp.	unidentified kangaroo rat tracks and burrows
Muridae (Mice, Rats, and Voles)	
Noetoma lepida	desert woodrat
Leporidae (Hares and Rabbits)	
Sylvilagus audubonii	desert cottontail
Lepus californicus	black-tailed jackrabbit
Canidae (Dogs and Their Allies)	
Canis latrans	coyote (scat)

*California Department of Fish and Wildlife (CDFW) Species of Special Concern (SSC)

APPENDIX D

Weather Data

Weather Data during 2014 Trapping

Session	Day	Date	Air Temperature (°F)				Cloud Cover (%)				Wind Speed (mph)			
			Maximum	Time	Minimum	Time	Maximum	Time	Minimum	Time	Maximum	Time	Minimum	Time
1	1	04/19/14	85	14:30	50	6:30	35%	15:10	0%	6:30	5-12	19:30	0-1	6:30
	2	04/20/14	90	14:30	50	6:30	0%	6:30	0%	19:05	7-12	18:30	0-2	7:10
	3	04/21/14	91	12:25	50	6:30	10%	10:30	0%	6:30	0-1	6:30	0-2	11:15
	4	04/22/14	72	11:10	54	6:35	75%	6:35	5%	15:10	7-15	10:30	0-2	7:12
	5	04/23/14	76	15:00	50	7:45	75%	7:45	50%	19:00	5-8	19:00	0-1	15:00
2	1	05/19/14	83	15:50	54	5:54	30%	13:51	0%	5:54	10-12	16:55	1-3	5:54
	2	05/20/14	73	13:30	50	6:30	90%	17:55	15%	6:30	15-20	17:55	1-3	6:30
	3	05/21/14	78	13:35	50	6:16	80%	16:15	5%	6:16	7-10	14:30	2-5	6:16
	4	05/22/14	81	13:00	50	6:15	100%	15:30	30%	7:26	5-10	15:30	1-3	6:15
	5	05/23/14	87	13:40	50	6:00	60%	17:00	0%	6:00	7-12	17:00	1-3	6:00
3	1	06/17/14	91	14:00	55	5:45	0%	5:45	0%	14:00	8-12	13:20	0-2	5:45
	2	06/18/14	91	13:00	50	5:35	0%	5:35	0%	13:00	3-6	10:35	0-1	5:35
	3	06/19/14	91	12:00	54	5:40	0%	5:40	0%	12:00	3-5	11:16	0-1	9:30
	4	06/20/14	95	11:01	63	5:30	25%	11:01	0%	5:30	3-5	9:47	0-1	5:30
	5	06/21/14	95	11:00	61	5:35	15%	6:15	5%	5:35	2-5	9:20	0-2	5:35

ATTACHMENT E

Exhibit 4 - ***Jurisdictional Delineation Lebata Big Rock Creek Project,***
prepared by ECORP Consulting, Inc., August 23, 2014

Jurisdictional Delineation
Lebata Big Rock Creek Project

Submitted to:
SESPE Consulting, Inc.
468 Poli Street, Suite 2E
Ventura, CA 93001

Submitted by:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
215 North 5th Street
Redlands, CA 92374

July 23, 2014

Jurisdictional Delineation

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1.0 INTRODUCTION

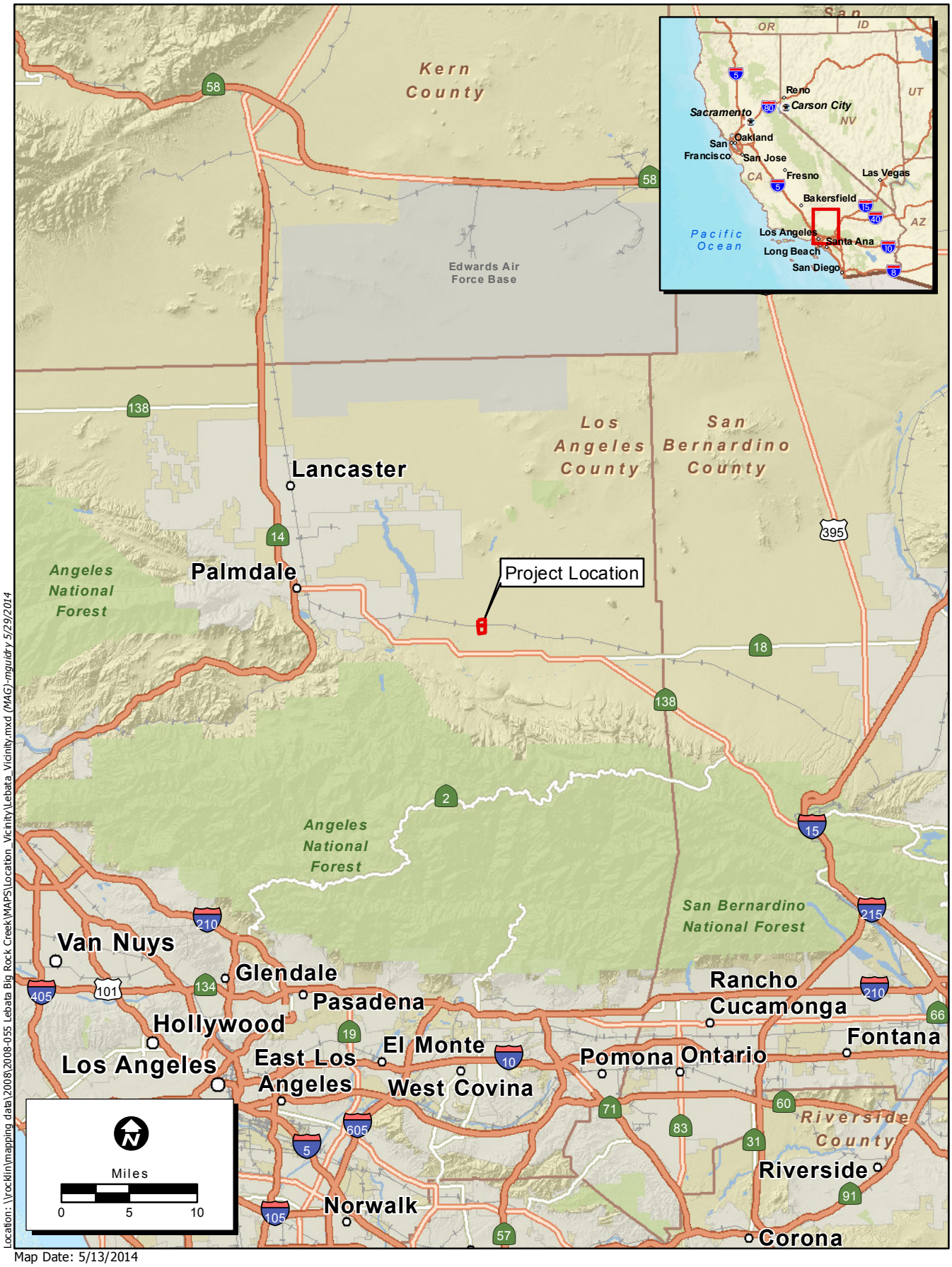
The following report documents the results of a federal and State of California jurisdictional delineation of a proposed surface mining operation (Project) that was conducted by ECORP Consulting, Inc. (ECORP).. The Project, proposed by Lebata, Inc. (Lebata) is situated over approximately 310 acres (125 hectares [ha]) near Big Rock Creek, near the community of Pearblossom, Los Angeles County, California. ECORP was contracted to conduct a jurisdictional delineation of the Project site for the presence or absence of features jurisdictional to federal or state agencies. ECORP conducted other surveys, with results being provided under separate cover: rare plant survey, general wildlife survey, and focused Mohave Ground Squirrel trapping study.

The Project will occur over three phases. Phases 1 and 3 of the Project will include surface mining activities in the northern portion of the Project site (approximately 135 acres (55 ha)), which is bordered by the Union Pacific Railroad (UPRR) on the south (Figure 2). During Phase 2 of the Project, surface mining activities will occur over approximately 175 acres (71 ha) in the southern portion of the Project site, bounded by the UPRR to the north. The Phase 2 mining activities will occur at a later date (10 years or longer). Elevations on the site range from approximately 2,850 to 2,940 feet (ft) (870 to 896 meters [m]) above mean sea level (msl).

The jurisdictional delineation performed by ECORP conformed to the unified federal method, as defined by the Army *Corps of Engineers*, using methodology outlined in the *Corps of Engineers Wetlands Delineation Manual* [USACE 1987] and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Region Supplement Version 2.0) [USACE 2008]. This method consists of conducting field work using paired sample point analysis, made in conjunction with aerial photograph interpretation, and mapping of jurisdictional resources based on the location of Ordinary High Water Mark (OHWM) for Waters of the US and limits of floodplain for Waters of the State, also known as California Department of Fish and Wildlife Streambeds [USACE 2008].

2.0 PROJECT LOCATION

The approximately 310-acre (125-ha) Project site is located south of Avenue T between 131st and 136th Streets East in the unincorporated community of Pearblossom, Los Angeles County (Figure 1). The Project site is bisected by the UPRR, located approximately 0.5 mile (mi) (1 kilometer [km]) south of Avenue T. The property can be found within Section 11, in Township 5 north, Range 10 West, San Bernardino Base Meridian, of the US Geological Survey Littlerock California 7.5-minute topographic quadrangle (Figure 2). It is located north of State Route (SR) 138. The Project is made up of three land parcels (Assessor's Parcel Numbers (APN) 3039021009, 3039036002, and 3039036001). The approximate center of the Project area is 418145E 3821853N Universal Transverse Mercator (UTM), Datum NAD 83, and Zone 11 north.



Location: \\rocklin\mapping data\2008\2008-055 Lebata Big Rock Creek\MAPS\Location_Vicinity\Lebata_Vicinity.mxd (MAG)-mguidry 5/29/2014

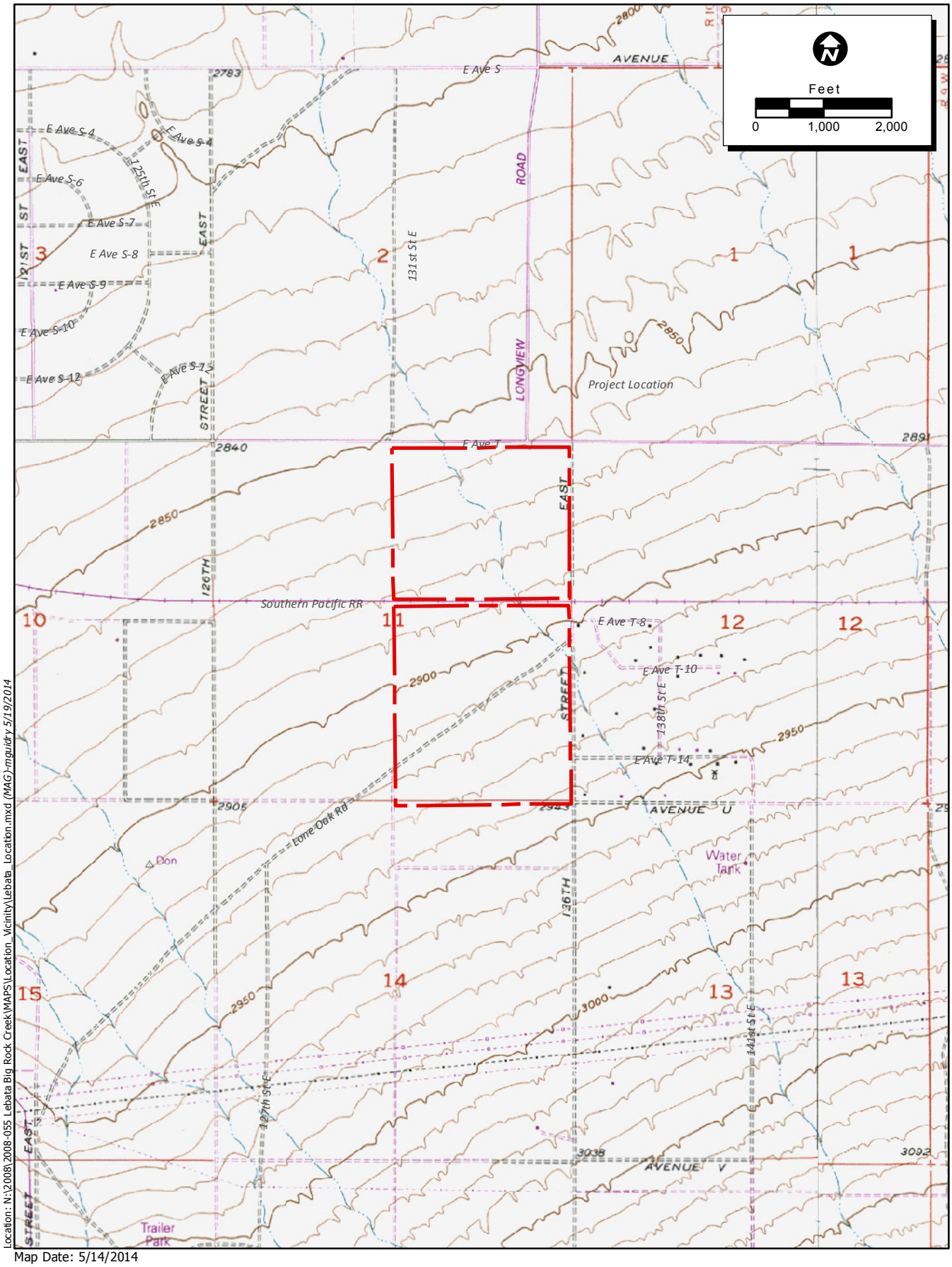
Map Date: 5/13/2014

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

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 1. Project Vicinity

2014-054 Lebata Big Rock Creek



Location: N:\2008\2008-055 Lebata Big Rock Creek\MAPS\Location_Vicinity\Lebata_Location.mxd (MAG)-mguidry 5/19/2014

Map Date: 5/14/2014
USGS Topographic Quadrangle: Littlerock (1991)

Figure 2. Project Location

2014-054 Lebata Big Rock Creek

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

3.0 BACKGROUND INFORMATION

The Project area and surrounding vicinity are within the alluvial fan of Big Rock Creek. Big Rock Creek is an intermittent to perennial stream that originates in the San Gabriel Mountains and historically flowed north, fanning out between Pearblossom and Llano to the east in an alluvial fan covering an area of several square miles. The Project site is located within the Lebata Braid and Big Rock subwatersheds of the fan (Hydrologic Unit Code (HUC) 180902061602 and 180902062301). The source point of the Big Rock alluvial fan is at the foot of the San Gabriel Mountains several miles south of the Project site. Flows originating at that point mostly enter Big Rock Creek to flow from south to north, while flows within the associated alluvial braids of the main channel trend towards the northwest and northeast.

According to the National Wetland Indicator (NWI) data, two blue-line streams have been recorded within the Project site. They both originate from the Lebata braid of the Big Rock alluvial fan. Other blue line streams located in the area are Rock Creek to the east of the Project site, Big Rock Creek itself, and other unnamed tributaries closer to Big Rock Creek.

High flooding has been a present happenstance within the Big Rock Creek area, and its associated streams, throughout recorded history. But as development has encroached on the region, changes have been made to the historic flow patterns. State Route 138 (Pearblossom Highway) bisects both Big Rock Wash and the majority of its historic alluvial fan. The highway was originally constructed in the 1940s, as a single-lane arterial to connect the Inland Empire, High Desert, and Antelope Valley areas. During the construction, flows in Big Rock Creek were partially channelized, resulting in dewatering several formerly active channel braids of the historic Big Rock fan. A levee was later constructed at the point where Big Rock Creek historically split into its major component braids, near the northern foot of the San Gabriel Mountains, the result of which was to further confine flows to the main channel braid only. Other disturbances to the alluvial fan have included continuing road improvements along State Route 138 (discussed below), construction, agricultural uses, and other development.

Recently (2011), State Route 138 was widened from approximately one mile east of Big Rock Wash west to Pearblossom. Drainage improvements and construction of stormwater control features were incorporated into the State Route 138 widening to improve safe vehicle passage and further minimize and eliminate flooding in the area. Drainage control features consisted primarily of a system of detention basins, culverts, bridges, and drainage swales. Near Big Rock Wash, improvements included channelization and a bridge over Big Rock Wash, construction of several swales to collect drainage flows entering the Right-of-Way from the south, and culverts to direct some of the larger washes near Big Rock Creek under the highway. One drainage swale, constructed on both north and south sides of State Route 138, was constructed within the Lebata Braid and Rock Creek subwatersheds. Each roadside swale is approximately 100 feet wide and about 3,000 feet long. The many culverts along swale crossing under the highway serve to distribute higher flows between the two swales. The berm along the southern swale boundary is approximately 6 feet high.

In a letter dated 06-01-06, the US Army Corps determined there is no federal jurisdiction over drainage courses within the Project site. The letter concludes that features located on the Project site are isolated in nature and do not support substantial interstate commerce. ECORP concurs with this finding, since the watershed is known to drain into the interior of the Mojave

Desert and drainage features within the watershed terminate into one of several different isolated desert playas.

During a field meeting with California Department of Fish and Wildlife (CDFW), CDFW personnel suggested that the client should pursue a 1605 Streambed Alteration Agreement (Long-term) if there are Waters of the State that could be impacted by the proposed Project. In addition, potential methods for mitigation of the impacts on-site were discussed.

4.0 EXISTING SITE CONDITIONS

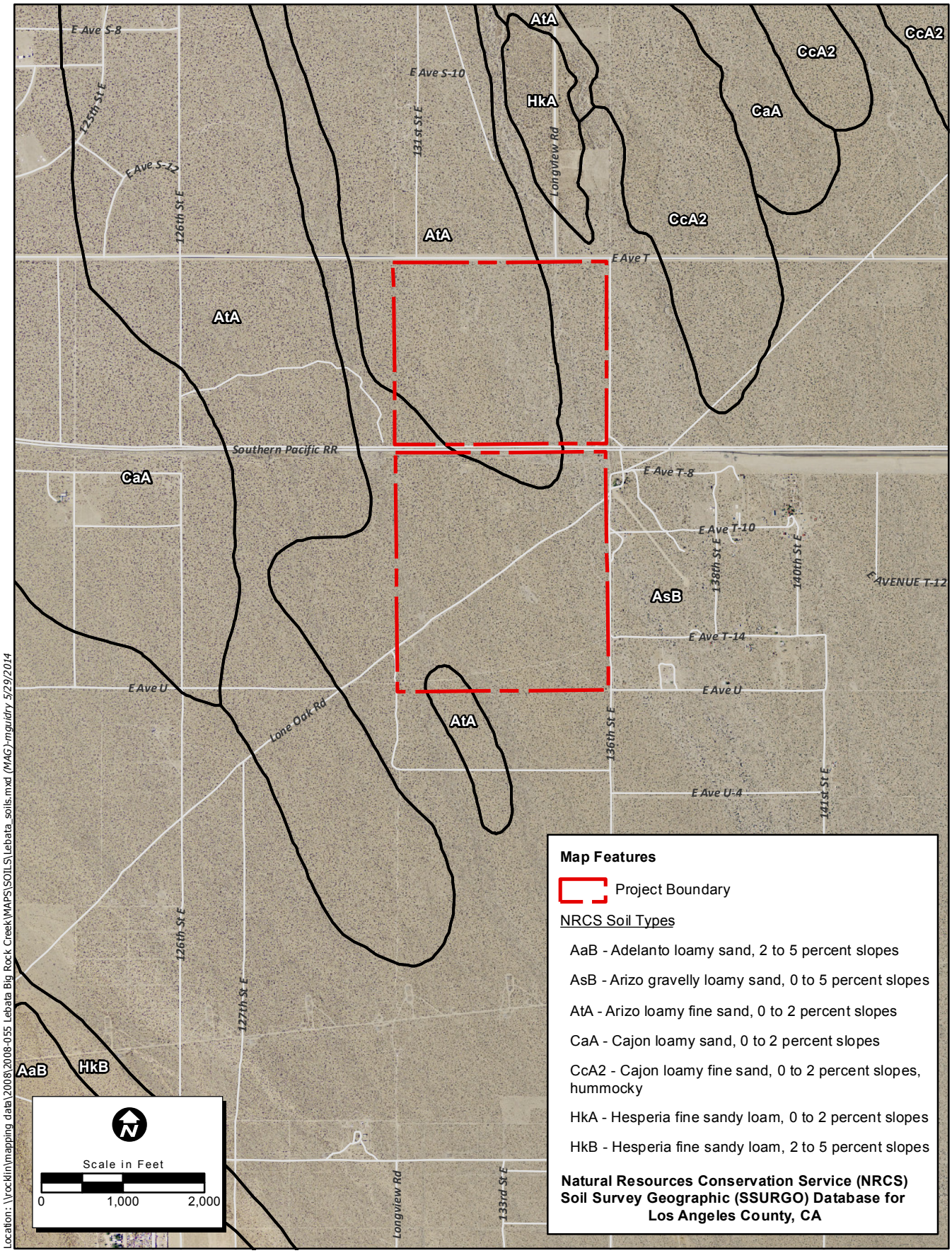
4.1 Soils

Within the Project area, much of the desert floor is composed of alluvial deposits. These areas contain coarse-textured, well-drained soils developed from alluvium that is derived primarily from granite and other related rock sources. The following soil series occur within the Project area: Adelanto loamy sand, 2 to 5 percent slopes (AaB), Arizo gravelly loamy sand, 0 to 5 percent slopes (AsB), Arizo loamy fine sand, 0 to 2 percent slopes (AtA), Cajon loamy sand, 0 to 2 percent slopes (CaA), Cajon loamy fine sand, 0 to 2 percent slopes, Hummocky (CcA2) , Hesperia fine sandy loam, 0 to 2 percent slopes (HkA), Hesperia fine sandy loam, 2 to 5 percent slopes (HkB), (Figure 3) (NRCS 2014).

4.2 Hydrology

The Project is within an arid region, and therefore there is little natural perennial surface water. As a result of the variability of rainfall, surface hydrology is dominated by ephemeral washes, flowing only during storm events and remaining dry for most of the year. The hydrologic regime for the area follows the general Mediterranean climate, with cool, wet winters and warm, dry summers. The average annual rainfall within the Project is 6.69 (in) (U.S. Climate Data 2014). Most of the rain falls between the months of December and March. A storm event passed through the Project area between 2/28/14 and 3/1/14. The storm event resulted in 0.99 inches of rainfall, which is typical of this area at this time of year (US Climate Data 2014). The majority of the Project site is located within the Antelope-Fremont Valley Watershed (HUC 180902061602) and the Rock Creek Subwatershed (Figure 4).

The Antelope-Fremont Valleys Watershed (2,160,629 acres) is predominantly within Kern and Los Angeles counties and extends from the community of Boron west to the community of Mojave and south to the Lancaster-Palmdale area. The most hydrologically significant streams in the Antelope Valley region begin in the San Gabriel Mountains on the southwestern edge of the Antelope Valley Region and include, from east to west, Big Rock Creek, Little Rock Creek, Amargosa Creek, and Oak Creek from the Tehachapi Mountains. All of the drainages recorded within the Antelope-Fremont Valleys Watershed within the Project site are thought to be isolated and flow toward the three dry lakes on Edwards Air Force Base. Except during the largest rainfall events of a season, surface water flows quickly percolate into stream beds and recharge the groundwater basin before reaching the Project site (refer to section 8.1 below). Surface water flows that reach the dry lakes are generally lost to evaporation. The Antelope-Fremont Valley Watershed enters the project and extends approximately from E Avenue T south to the end of the Project boundary E Avenue north.



Location: \\rocklin\mapping data\2008\2008-055 Lebata Big Rock Creek\MAPS\SOILS\Lebata_soils.mxd (MAG)-mguidry 5/29/2014

Map Date: 5/14/2014
Photo Source: NAIP 2012

Figure 3. Natural Resource Conservation Service Soil Types

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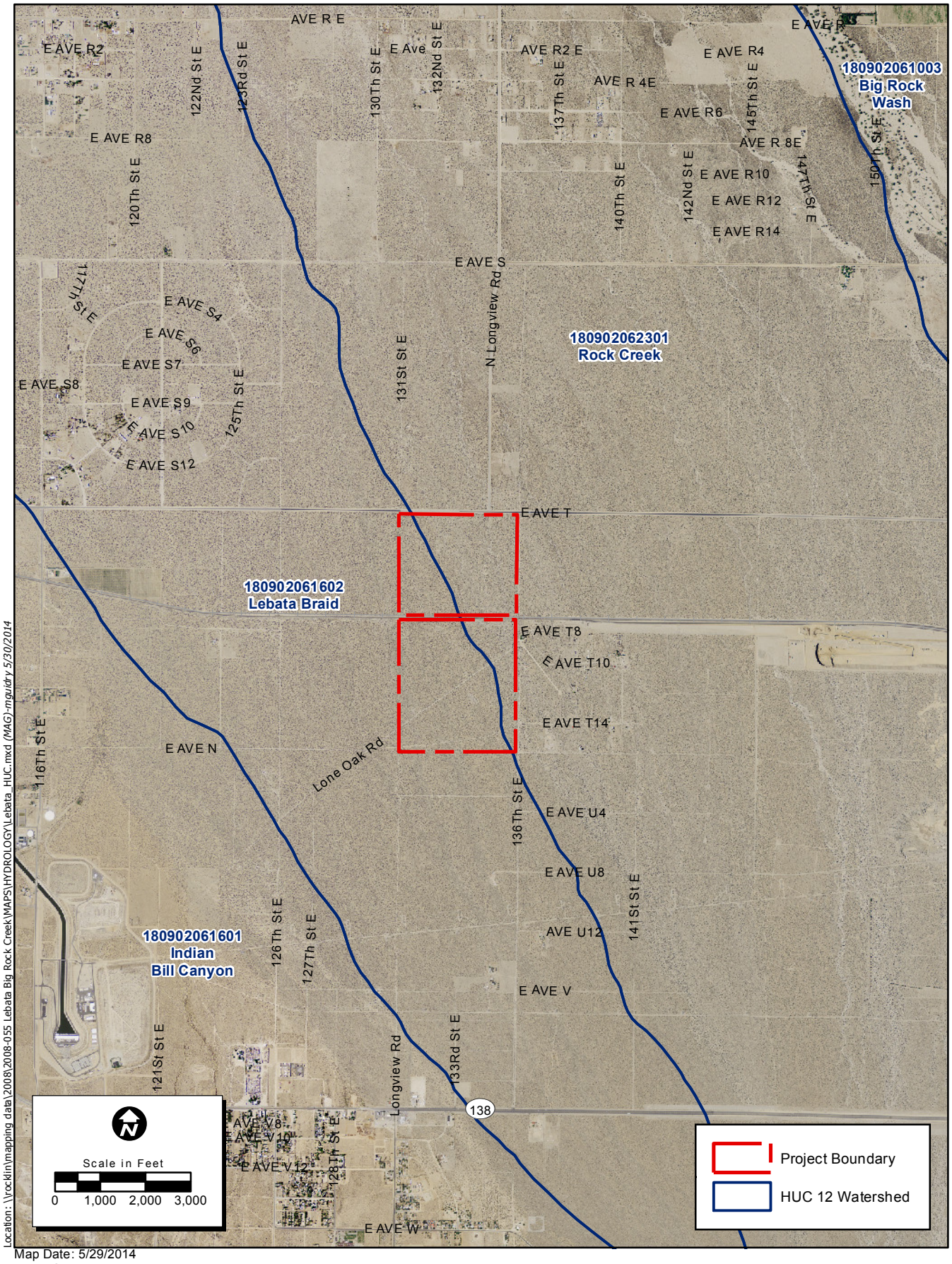

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Map Date: 5/29/2014
Photo Source: NAIP 2012

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Figure 4. HUC 12 Watersheds

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4.3 Vegetation Communities

The Project site supports creosote bush scrub series vegetation (Sawyer & Keeler-Wolf 1995) that is relatively undisturbed with the exception of moderate disturbance around the UPRR track that approximately bisects the site, as well as narrow dirt roads and OHV tracks on the property. Representative photographs of the habitat on Project site are shown in Figures 5 and 6, from the years 2008 and 2010, respectively.

4.3.1 Creosote Bush Scrub Series

Creosote bush scrub series vegetation is found throughout the Project site. This community is characterized by fairly open stands of the dominant shrub creosote bush (*Larrea tridentata*) with white bur-sage (*Ambrosia dumosa*). Typically it occurs on well-drained sandy soils at elevations below 1,219 m (4,000 ft) amsl. Associated species within this community on site include cheesebush (*Hymenoclea salsola*), antelope bush (*Purshia tridentata*), big sagebrush (*Artemisia tridentata*), and California buckwheat (*Eriogonum fasciculatum*) with annual species including brown-eyed evening primrose (*Camissonia claviformis*), desert dandelion (*Malacothrix glabrata*), and sapphire eriastrum (*Eriastrum sapphirinum*). Small amounts of non-native annual grasses were observed in the understory.

4.3.2 Rubber Rabbitbrush Series

Rubber rabbitbrush series vegetation is a disturbance-maintained shrub community dominated by rabbitbrush (*Ericameria nauseosus*). Rubber rabbitbrush is an additional dominant shrub species found along drainage channels and associated with disturbance on the Project site. This community intergrades with the creosote bush scrub on the site. Associated species observed in this community include: four-wing saltbush (*Atriplex canescens),* antelope bush*,* and mormon tea (*Ephedra nevadensis*).

4.3.3 Disturbed/Unvegetated

Portions of the Project site consist of weedy, disturbed areas, which are mainly located along existing dirt access roads and the UPRR line. Much of the ground within disturbed areas is bare, with little to no vegetation. But where there is vegetation present, a higher density of non-native grasses occurs in these areas.

Figure 5 – Representative Habitat Photograph (2008)

Figure 6 – Representative Habitat Photograph (2014)

5.0 REGULATORY BACKGROUND INFORMATION

5.1 U.S. Army Corps of Engineers (USACE)

This report describes potential "Waters of the United States" ("Waters") that may be regulated by the USACE under Section 404 of the Clean Water Act (CWA). USACE-regulated activities under Section 404 involve a discharge of dredged or fill material including, but not limited to, grading, placing of riprap for erosion control, pouring concrete, laying sod, and stockpiling excavated material into Waters of the United States. Activities that generally do not involve a regulated discharge (if performed specifically in a manner to avoid discharges) include driving pilings, some drainage channel maintenance activities, constructing temporary mining and farm/forest roads, and excavating without stockpiling.

Non-wetland "Waters" are non-tidal, perennial, and intermittent watercourses and tributaries to such watercourses (USACE 1986a). The limit of USACE jurisdiction for non-tidal watercourses (without adjacent wetlands) is defined in 33 CFR 328.4(c)(1) as the ordinary high water mark (OHWM). The OHWM is defined as the *"line on the shore established by the fluctuations of water and indicated by physical characteristics including clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas"* (USACE 1986c). The bank-to-bank extent of the channel that contains the water-flow during a normal rainfall year generally serves as a good first approximation of the lateral limit of USACE jurisdiction. The upstream limits of other Waters are defined as the point where the OHWM is no longer perceptible.

Wetlands are *"those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions*" (USACE 1986b). Wetlands can be perennial or intermittent, and isolated or adjacent to other waters. To be determined a wetland, the following three criteria should be met:

- A majority (greater than 50 percent) of dominant vegetation species are wetland associated species;
- hydrologic conditions exist that result in periods of flooding, ponding, or saturation for at least 5 percent of the growing season; and,
- soils saturate, flood, or pond long enough during the growing season to develop anaerobic conditions in the upper part and should exhibit hydric soil characteristics indicative of permanent or periodic inundation.

Wetland vegetation is normally characterized by vegetation in which more than 50 percent of the cover of dominant plant species is composed of obligate wetland, facultative wetland, or facultative species that occur in wetlands.

The aforementioned characteristics may not apply to isolated, non-navigable waters (including vernal pools) pursuant to the January 9, 2001 Supreme Court decision in the case of *Solid Waste Agency of Northern Cook County versus U.S. Army Corps of Engineers* (SWANCC). The SWANCC decision eliminated jurisdiction over isolated, intrastate, non-navigable Waters where the sole basis of jurisdiction is founded on the presence of migratory bird habitat.

A guidance memorandum, dated June 5, 2007 (revised 2008), was issued by the USACE to address a pair of court cases: *Rapanos versus United States* and *Carabell versus United States*. The guidance identifies those waters over which the agencies (USACE and Environmental Protection Agency [EPA]) will assert jurisdiction categorically and on a case-by-case basis, based on the reasoning of the justices hearing the Rapanos case. In summary of the guidance, the USACE will continue to assert jurisdiction over:

1) Traditional navigable waters (TNWs) and their adjacent wetlands;
2) Nonnavigable tributaries of TNWs that are relatively permanent waters (RPWs) (e.g., tributaries that typically flow year-round or have a continuous flow at least seasonally) and wetlands that directly abut such tributaries (e.g., not separated by uplands, berm, dike, or similar feature); and,
3) Non-RPWs if determined (on a fact-specific analysis) to have a significant nexus with a TNW, including nonnavigable tributaries that do not typically flow year round or have continuous flow at least seasonally, wetlands adjacent to such tributaries, and wetlands adjacent to but that do not directly abut a relatively permanent, nonnavigable tributary. Absent a significant nexus, jurisdiction is lacking.

Of particular note is that RPWs do not include ephemeral tributaries, which flow only in response to precipitation, and intermittent streams, which do not typically flow year round or have continuous flow at least seasonally (e.g., typically three months). Determination of a significant nexus involves a functional analysis, and consideration of both hydrological and ecological factors for each tributary.

5.2 Regional Water Quality Control Board (RWQCB)

The RWQCB regulates activities within state and federal Waters under Section 401 of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Section 401 of the CWA requires that "any applicant for a Federal permit for activities that involve a discharge to Waters of the United States, shall provide the Federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the Federal Clean Water Act." Therefore, in California, before the USACE will issue a Section 404 permit, applicants must apply for and receive a Section 401 Water Quality Certification or waiver from the RWQCB. Although the Water Quality Certification must be sought for the same effects to Waters of the United States as indicated in a Section 404 permit, certification can also cover effects to water bodies that are not USACE jurisdictional (i.e., isolated wetlands).

The RWQCB regulates actions that would involve "*discharging waste, or proposing to discharge waste, within any region that could affect the water of the state*" (Water Code 13260(a)), pursuant to provisions of the state Porter-Cologne Act. The RWQCB takes jurisdiction of surface waters that are outside of the jurisdiction of USACE as "Waters of the State", which generally includes all surface water features. Under this Act, the RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by the USACE due to a lack of connectivity with a navigable water body or lack of an OHWM. Waters of the State are defined as "*any surface water or groundwater, including saline waters, within the boundaries of the state*" (Water Code 13050 (e)).

5.3 California Department of Fish and Wildlife

Under current California Fish and Game Code Sections 1600–1616, the CDFW regulates projects that propose to (1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit, (2) use material from the streambeds designated by the CDFW, or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the CDFW. If an existing fish or wildlife resource may be substantially adversely affected by that construction, the CDFW shall notify the government agency or public utility of the existence of the fish or wildlife resource together with a description thereof and shall propose reasonable modifications in the proposed construction that will allow for the protection and continuance of the fish or wildlife resource, including procedures to review the operation of those protective, measures. This regulation takes the form of a requirement for a Lake or Streambed Alteration Agreement and is applicable to all projects involving state or local government discretionary approvals.

In accordance with Sections 1601/3 of Fish and Game Code, the indicators for a river or stream are:

- Definable bed, bank, or channel
- Periodic or intermittent surface flows
- Perennial surface flows
- Subsurface flows
- Supports fish or other aquatic life
- Supports riparian or hydrophytic vegetation
- Watercourse having a source and/or terminus

CDFW generally considers all natural lakes, streams, and man-made reservoirs to be jurisdictional. Artificial waterways like ditches and canals also may be considered jurisdictional. Generally, jurisdictional areas include all areas that have “acquired the physical attributes of natural stream courses and which have been viewed by the community as natural streamcourses.” This can include isolated or intrastate drainage features that have no federal jurisdiction.

The state has no published methodology for determining jurisdictional status of a waterbody. State jurisdictional limits are normally considered to include the stream, bed, and bank and continue to the outside limits of any riparian (that is, stream associate) vegetation within a channel corridor. Generally, the presence of the OHWM and/or the 3-parameter wetland methodology utilized by the USACE is considered valid methodology for identification of streambeds and wetlands (excluding Rapanos and other case considerations).

Generally the CDFW jurisdictional boundaries are broader than USACE jurisdictional boundaries and include rivers/streams, lakes, entire floodplains, and artificial drainage ditches under some circumstances. CDFW jurisdiction includes the definable bed, bank, or channel, areas that support periodic or intermittent flows, perennial flows, subsurface flows, support fish or other aquatic life, support riparian or hydrophilic vegetation in association with a streambed, or simply have a hydrologic source and/or terminus.

6.0 METHODOLOGY

6.1 Pre-Survey Investigations

Prior to conducting the field delineations, the following resources were reviewed to identify potentially jurisdictional areas within the Project site: aerial imagery (USGS 2010 and 2011), 7.5' USGS quadrangle (Little Rock), the National Wetlands Database, the on-line web soil survey (NRCS 2014), and hydric soils list for the area. The aerial imagery from 2010 for Los Angeles County was 1-meter resolution and used at a scale from 1:500 to 1:800 to examine potential jurisdictional features scale using ArcGIS™. The imagery was analyzed during a preliminary desktop delineation effort to identify differences in vegetative cover, the presence of breaks in a slope, and other areas of potential water disturbance (USACE 2008a). The aerial imagery, combined with these other resources, was used to create a map with potentially jurisdictional features within the Project site. Field maps were produced at a scale of 1:1000.

References from past studies at and around the Project site were also consulted in preparation of this report. References consulted include: Drainage Concept for the Lebata, Inc. Surface Mine (Stetson Engineers, Inc. 2008), 2010 Drainage Concept for Lebata, Inc. Surface Mine – Lowered Facilities Alternative (Stetson Engineers, Inc. 2010), Environmental Impact Report for the State Route 138 Widening Project (Caltrans and FHWA 2001), and notes from a site visit with CDFW (2008).

6.2 Field Survey

The field survey was conducted by ECORP wetland delineation biologists who have conducted delineations in both the Antelope Valley area and in the vicinity of Big Rock Wash previously. The entire Project site was visually surveyed, and walked on foot to examine potential features identified during the pre-survey investigations. Where jurisdictional features were present, the extent of CDFW jurisdiction were determined in accordance with agency requirements and guidelines, including *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008a), *Arid West Delineation Manual* (USACE 2008b), the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United* States (USACE 2010), and *A Field Guide to Lake and Streambed Alteration Agreements Sections 1600-1607* (CDFG 1994).

The perimeter and/or stream center of the majority of features was mapped using a post-processing capable global positioning system (GPS) unit with sub-meter accuracy (e.g., Trimble™ GeoXT). Streambed widths were based on evidence of OHWM as observed during the field survey. In addition, each of the drainages was evaluated for the presence or absence of sediment deposits, litter/debris, water stains, soil shelving, and/or exposed roots indicating active hydrology within the channel. Streambed widths and other lateral limits of jurisdiction were measured with a tape measure and recorded in the GPS units or occasionally on a map for later digitization. The extent of associated riparian habitat was based on the extent of the canopy of the riparian community within or directly adjacent to the feature. Bank-to-bank width measures were also taken and used as a measure of CDFW jurisdictional boundary where features lacked riparian vegetation. Feature characteristics and measurements were recorded

directly into the data dictionary in the GPS unit. Characteristics of the majority of drainage features were also documented in photographs.

Delineation of wetlands was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Region Supplement, Version 2.0) (USACE 2008b). At suspected wetland locations, two paired data point locations were sampled as to their vegetation, hydrology, and soils. At each paired location, one point was located within the estimated wetland area, and the other point was situated outside the limits of the estimated wetland area. These data were used to support a determination of wetland or non-wetland status. All wetland data were recorded on Arid West Region - Wetland Determination Data Forms. A soil pit was excavated to a depth of 18 inches each data point. The soil was then examined for hydric soil indicators or the absence of such indicators. The matrix color and mottle color (if present) of the soil was determined using the Munsell Soil Color Charts. Features with no evidence of wetland hydrology, and which supported only upland vegetation, were evaluated for upward limits of jurisdiction only and not for wetland parameters.

6.3 Post-Processing of Field Data

The data collected in the field were transferred from the GPS to a personal computer, and differential correction post-processing was performed. The data were then viewed and analyzed for verification, edited, and converted to a Geographic Information System (GIS) format at the time of download. ArcGIS™ software was used to develop the geodatabase and the shapefiles depicted on the attached maps.

6.4 Limitations

There were few limitations that affected the results of the survey. Rainfall within the past year is considered to be lower than normal, which may have some bearing on the conditions observed in the field. The rainfall limitation is expected to be minor, however, as to its influence on conditions on the property. Most desert wash areas exhibit very slow change over time and year to year fluctuations in rainfall are normal. Features indicative of water flow would be presumed to still be present from past years, had flow occurred on a regular basis. The entire Project site was accessible during the field survey and there were no limitations due to access to the property.

7.0 RESULTS

ECORP biologists and regulatory specialists Scott Taylor and Katherine Vienne conducted the jurisdictional delineation on May 15, 2014. Weather conditions and other survey information are provided in Table 1.

Table 1. Survey Conditions

Date	Surveyors*	Time		Temperature (˚F)		Cloud Cover (%)		Wind Speed (m.p.h)	
		start	end	min	max	min	max	min	max
05/15/14	ST, KV	0950	1430	78	93	0	0	0	3

* ST = Scott Taylor, KV = Katherine Vienne

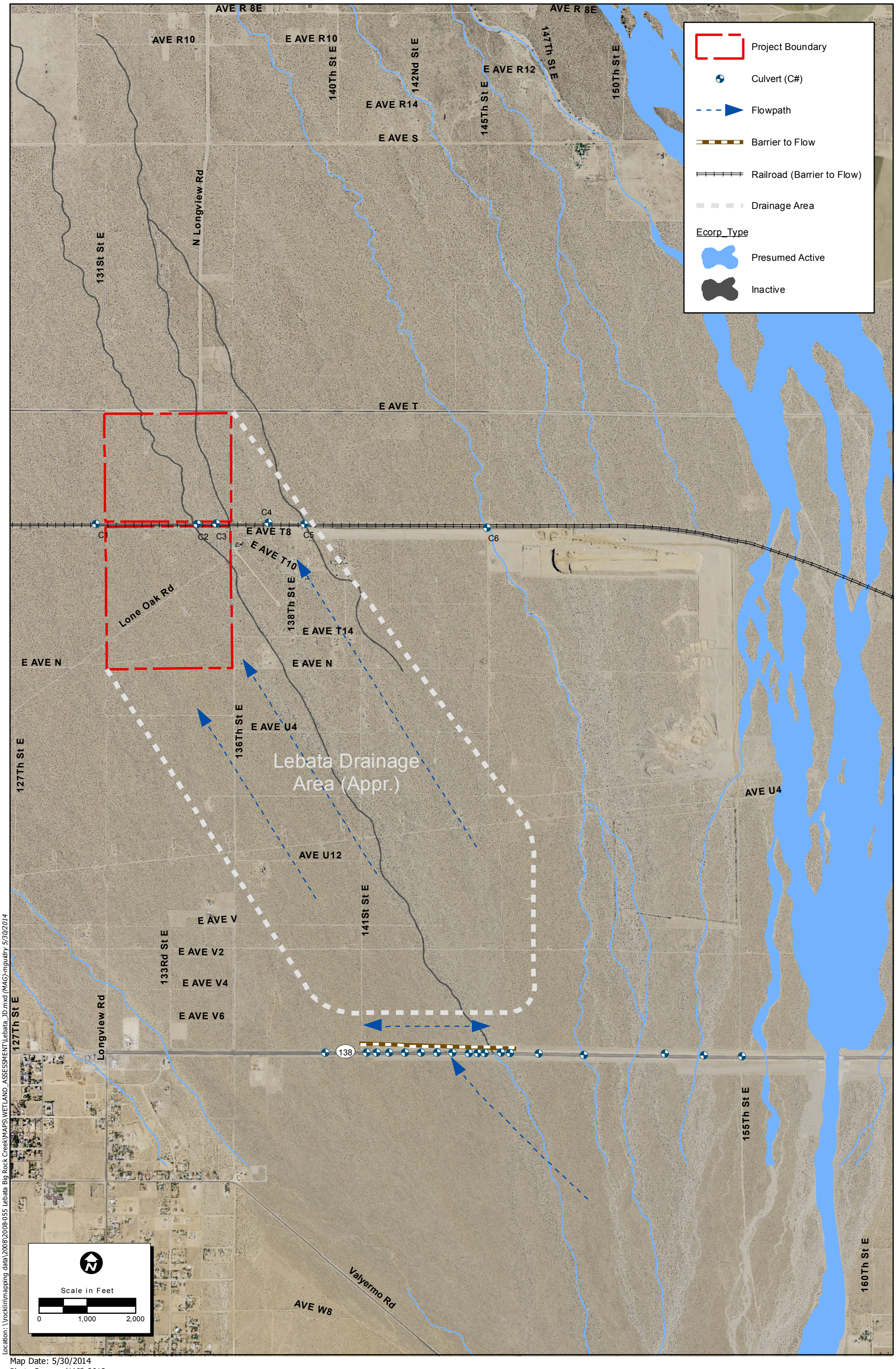
No active jurisdictional features or riparian habitat areas were identified on the Project site during the study. A description of the results is below. The jurisdictional delineation map is located on the following page (Figure 7). A photo reference map for all photos taken that characterize the features observed in the study area are in Appendix A.

7.1.1 Inactive Channels

Within Section 3, there is a discussion of the various changes over time in the flow path of water through the Big Rock alluvial fan. Due to those changes, the most recent being the widening of State Route 138, the current flow path within the Lebata and Rock Creek subwatersheds is highly restricted. Flows are partially curtailed at a levee well to the south of the Project site and south of State Route 138. Any waters that come past the levee or around it, or that originate locally, are then directed northwest where they are collected within drainage swales on either side of State Route 138. From that point, the flows spread out to the east and west along the swales. The ECORP biologists saw no evidence of water flows leaving these swales to the north. Within the swale, there was evidence of sediment deposition and weak drainage features associated with waters moving to the bottom portion of the swales. Figure 7 depicts the suspected flow pattern within the Lebata braid.

The historic drainage area for the Project site consisted of most of the western half of the Big Rock fan. The approximate current drainage area has been depicted on Figure 7, based on the flow evidence found in the field. The change in drainage area is due to the lack of flows from the south of State Route 138. As a result the only flows which are presumed to be capable of reaching the Project site are those which fall due to rain events between the site and State Route 138. However, as is explained below, no evidence of surface flow from such rain events reaching the site was observed.

Various channels were observed within the Project site, consistent with what is expected within an alluvial fan. Active alluvial fans for larger stream channels support channels based on the flow patterns during any given year. A low rainfall year results in some side channels being inactive, whereas a high rainfall year can result in most channels being active and the opening of new channels. High rainfall or violent flood events also will re-direct channels away from previous flow paths, due to the force of the flowing water. Therefore a typical alluvial fan that has existed for thousands of years, such as the Big Rock Creek fan, can have a mixture of inactive and active channels.



Location: \\rocklin\mapping data\2008\2008-055 Lebata Big Rock Creek\MAPS\WETLAND_ASSESSMENT\Lebata_JD.mxd (MAG)-mguidry 5/30/2014

Map Date: 5/30/2014
Photo Source: NAIP 2012

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Figure 7. Jurisdictional Delineation

2014-054 Lebata Big Rock Creek

The ECORP biologists walked the entire Project site, with particular attention paid to every channel found. Evidence of active flows was absent from any of the channels found on the site. Normal flow patterns are indicated by deposition of sediment, scouring of vegetation, shelving along the drainage sides, and sorting of sediment layers. Although there were gullies in several locations that could have supported historic flows, prior to the Caltrans widening of State Route 138, none of these indicators were present in any of the gullies. Loose debris was observed in several of the gullies, which would also not have been present in the midst of flowing waters. Upland vegetation was observed growing in the bottom of these gullies as well. While the presence of upland vegetation is not unusual within channel features in a desert region, the vegetation in this case was often highly developed and rooted within the bottom of the historic channels consistent with the time frame of the widening of State Route 138. Grasses were also present within the gullies, in approximately the same observed density as that found in surrounding habitat areas.

The following paragraphs describe further evidence for this result. Evidence examined in the field to support the delineation included UPRR culvert evidence and examinations of flow patterns along State Route 138.

7.1.2 UPRR Culverts

One of the most convenient methods to ascertain flows of a drainage course is through examination of culverts or undercrossings at barriers or pinch points. All of the streams located within the Big Rock alluvial fan cross both State Route 138 and the UPRR, both of which are effective barriers to flows. Several culverts have been placed along both of these barriers, mostly coinciding with historical flowpaths of main drainages in the fan. Along the UPRR, there were six culverts examined for evidence of flows, with two occurring on the Project site. Culverts both on and offsite were examined for comparison purposes. Biologists examined all of the culverts located within an approximate two-mile stretch of the UPRR. Table 2 describes the culverts and their characteristics.

Table 2. UPRR Culvert Descriptions

Culvert No.	Composition	Width	Evidence of flows	Photo
C1	CSP	4 ft.	None; Barrier present downstream	App. A
C2	CSP	4 ft.	None; Barrier present downstream	Figure 8
C3	CSP	4 ft.	None; Barrier present downstream	Figure 9
C4	CSP	4 ft.	None; Barrier present downstream	App. A
C5	Twin CSP	4 ft. each	Weak evidence, some sand deposits; Barrier present downstream	App. A
C6	Twin CSP	4 ft. each	Active channel evident by sand deposits and shelving/banks.	Figure 10

Culverts 2 and 3 were positioned approximately where historic blue-line streams had been mapped. Evidence of through-flows in and near these two culverts would be expected if the Lebata Braid were still active. North of the UPRR, the approach to each of these culverts was bisected by a dirt access road raised higher than the culverts and running parallel to the railroad alignment. The road had no culverts or undercrossings or overcrossings incorporated. Historic channels of the blue-line streams were observed in the expected areas, but neither

appeared to cross over or under the dirt access road. The approach towards each of the culverts from the north, between the dirt road and the culverts, appeared to also lack a clear flow path. On the north side of each of these culverts, another dirt access road was also present parallel to the railroad. Gravel and cobbles had been piled up to the north of this road near each of the culverts, and there was no evidence of water flow in or around these piles. Figures 8 and 9 depict views of each of these culverts from the north, showing the apparent barriers present to flows. There was also no evidence that waters flowed down the northern dirt access road to find another path northwards.

The same situation was observed at Culvert 1, Culvert 4, and Culvert 5. Each of these culverts would have previously collected flows associated with three blue-line streams recorded within the historic Lebata and Rock Creek braids of the Big Rock alluvial fan. All three of these blue-line streams are presumed to be curtailed due to flow pattern changes along State Route 138.

Culvert 6, located approximately 5,000 feet to the east of the Project area along the railroad tracks, exhibited signs of active flows through the culvert. Only the northern side of the culvert was examined, but it showed signs of sediment deposits, shelving, defined banks and water patterns within the stream path. There were no barriers to flow in evidence, and there was a defined flow path observed through a gully of approximately three feet in depth. The downstream portion of this culvert is depicted in Figure 10. This culvert is associated with a larger stream channel which crosses State Route 138 and for which no barriers to flows have been constructed south of the highway. This channel exhibits the expected features of an active stream channel within this region of Pearblossom.

Figure 8 – Culvert 2 Showing Barrier to Flow

Figure 9 – Culvert 3 Showing Barrier to Flow

Figure 10 – Culvert 6 Showing an Active Channel

Information pertaining to the remaining culverts, as well as further photographic evidence for them, is presented in Appendix A.

7.1.3 State Route 138 Flow Patterns

As described in an earlier section, the flow patterns south and north of State Route 138 were investigated. There is a barrier to flows along the primary blue-line stream that crosses the Project site. Flows are collected and distributed with swales on both the north and south sides of the highway, and contained by an approximate six foot differential between the bottom of the swale and the top of a berm along its northern boundary (Figure 11). The swale system acts as a percolation basin for any flows that come from the north into the historic channels. The swales, parallel to each other, are about 3,000 feet in length and 100 feet in width. Twelve culverts occur along the length of the swale, acting to distribute flows between the north and south sides of the highway. Photos of seven of the culverts within the swale are provided (Appendix A; Culverts C8 to C14).Each of these culverts is four feet in diameter and is comprised of corrugated steel piping.

An additional five culverts are situated underneath the highway to the east of this swale system, as well as additional swales on the south side of the highway, but not on the north side of the highway. Thus flows that go under the highway can enter into the historic alluvial fan to the west of the Lebata swale system. Due to the natural topography, these flows were observed to be consolidated within the historic blue-line stream to the east of the Project site's blue-line streams. Evidence of the flows remaining active within this stream was described above for Culvert 6 along the UPRR.

Within the eastern 2,000 feet west of Big Rock Creek's main channel, an armored channel has been constructed to catch and direct flows into the mainstem. The channel is approximately 200 feet wide and is approximately 10 feet in depth. The channel likely effectively prevents stormwater that might break free of the Big Rock Creek mainstem upstream from creating new channels to the west, since it would be collected before it could reach State Route 138.

Figure 11 – Swale Along North Side of State Route 138

8.0 DISCUSSION

8.1 Drainage Concept Study

The 2008 Drainage Concept Study was reviewed for its details on the current hydrology within the Big Rock Wash watershed. The study provides a basis for analysis of the storm flows reaching the Lebata site. It draws a conclusion that flows would not normally reach the Lebata site unless there was a worst-case scenario of catastrophic failure of the levee upstream, combined with a 50-year rainfall event. These circumstances are not generally considered to be applicable to the jurisdictional nature of a drainage course, as they present exceptional rather than ordinary circumstances. A summary of the conclusion of the Drainage Concept is depicted graphically in Appendix B, showing previous and current hydrologic conditions.

According to the 2008 and 2010 Drainage Concept studies for the Lebata site, there are thirteen reinforced concrete pipe culverts located within the watershed for Lebata that pass under State Route 138, four of which are located directly within the Lebata Braid. Results of the study conclude that, due to the presence of the two swales on the north and south side of the highway, only one of the culverts contains flows that could conceivably reach the Lebata site during a Capital Flood event. The only conceivable circumstances under which that would occur involve overlapping catastrophic failure of existing flood control measures. The culvert is a 4-foot diameter circular culvert with a capacity for 70 cubic feet per second (cfs) of flows and is located just east of where the Lebata Braid historically crossed the highway location.

The 2008 Drainage Concept Study describes the circumstances on which flows would be expected to the Lebata site:

> *However, there is a possibility that the mountain front flood levee could catastrophically fail during the Capital Flood. This represents a worst case scenario of the levee being absent. As mentioned in Section 2.1.1 of the Stetson 2003 report (Stetson Engineers, 2003), catastrophic channel avulsion and diversion of all or the majority of the total flow into the remnant secondary braids is prevented by the California Aqueduct Siphon buried concrete encasement structure. Therefore, there is no potential for the flows in the secondary braids to be increased during the Capital Flood in excess of the complete levee failure scenario (Stetson Engineers, 2003).*
>
> *The Lebata Braids were estimated using a split flow analysis assuming complete erosion of the mountain front flood levee and downstream transport of all eroded materials. Historic aerial photography and observations taken during a site inspection on October 25, 2006 indicate that the Lebata Braid is an overflow of the main channel and not of the VMC Braid, and that the channel split is approximately in the same location as the VMC Braid – main channel split, at a location approximately 5,000 ft downstream of the mountain front. Hence, during the levee-failure scenario, the Capital Flood flow would split into three channels at the junction of the main channel and the secondary VMC and Lebata Braids.*

A 2010 Drainage Concept Study analyzes the Caltrans improvements that were made since the original Drainage Concept was prepared in 2010. It concludes these additional improvements have served to further reduce the Capital Flood flows into the Lebata site.

> *The vertical infiltration rate of gravel material (1,134 feet per day) is much higher than the average maximum rainfall intensity (2.8 inches per day) at the mine site during the 50-year design storm.*

This means that local rainfall-runoff will not generate sheetflow within the Project site, nor will water gather in pools. Therefore, we conclude that there is even less likelihood of Capital Flood volumes entering the Lebata site from upstream unless a catastrophic failure of the mountain front levee were to occur during a 50-year rainfall event.

8.2 CDFW Jurisdiction on the Lebata Site

Due to historic changes noted in the Big Rock Wash, its watershed and alluvial fan, the Lebata site is not expected to contain flows except under extreme conditions, such as the failure of the mountain front levee during a 50-year storm. In spite of these documented changes, it is likely that there are apparent drainage features within the Lebata site due to its position within the historic alluvial fan. Based on the evidence, it is likely that any drainages present are non-functional relicts and would not convey flows as they did historically. It is common for drainage features in desert areas to remain physiographically similar to their historic conditions even if they have been dewatered for many years.

The presence of bed and bank and the existence of a source (presumably Big Rock Creek) alone do not conclusively indicate the presence of Waters of the State if there is reason to believe that a feature may be a relict drainage. In the desert regions of California, landscape features can change very little over time. Within alluvial fan situations, large portions can be inactive for decades and yet still exhibit bed and bank. Periodic subsurface flows (at depth) may occur rarely in one or more of the drainage features due to very localized sheet flows, but the area exhibits a very high rate of percolation and has been effectively cut off from its historic sources in Big Rock Wash. Surface flows are not expected to occur, even during Capital Floods.

9.0 CONCLUSION

Based on the evidence collected in the field, information collected in the Drainage Concept study and other sources, and documented changes in flows due to highway construction, it is our opinion the drainage features within the Project area do not meet CDFW jurisdictional criteria. Drainage features are unlikely to contain consistent enough, discrete surface or subsurface flows to qualify as perennial, intermittent or ephemeral.

Through the years, the many highway improvements along State Route 138 have resulted in progressively less potential for stormwater flows to reach the Lebata site. Currently Caltrans improvements along State Route 138 have likely excluded alluvial flows from the south from reaching their historic channels to the north of the highway. Any waters that collect and flow toward the Project site would be the result of local runoff over a drainage area that is much smaller than that which existed historically.

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APPENDIX A

Photo Point Reference Map and Photos

GENERAL PHOTOS

Photo 1 View of Historic Blue-Line

Photo 2 – Berm along East Avenue T Road

Photo 3 – Historic Blue-Line Stream

Photo 4 – Relictual Alluvial Fan Gully

Photo 5 Historic Blue-Line Stream

Photo 6 Historic Blue-Line Stream (Cross View)

Photo 7 – Historic Blue-Line Stream

Photo 8 – Historic Blue-Line Stream Confluence

Photo 9 – Relictual Alluvial Fan Stream

Photo 10 – Former Alluvial Channel, now reclaimed

Photo 11 - Former Alluvial Channel, Reclaimed

Photo 12 – Former Alluvial Channel, Reclaimed

CULVERTS

C4 – Culvert 4

C5 – Culvert 5

C7 – Culvert 7 (Looking North)

C8 – Culvert 8 Looking North

C9 – Culvert 9 Looking North

C10 – Culvert 9 Looking West

C11 – Culvert 11 Typical Culvert Design

C12 – Culvert 12 Looking North

C13 – Culvert 13 Looking North

C14 – Culvert 14 Looking East

APPENDIX B

Hydrology Past and Current

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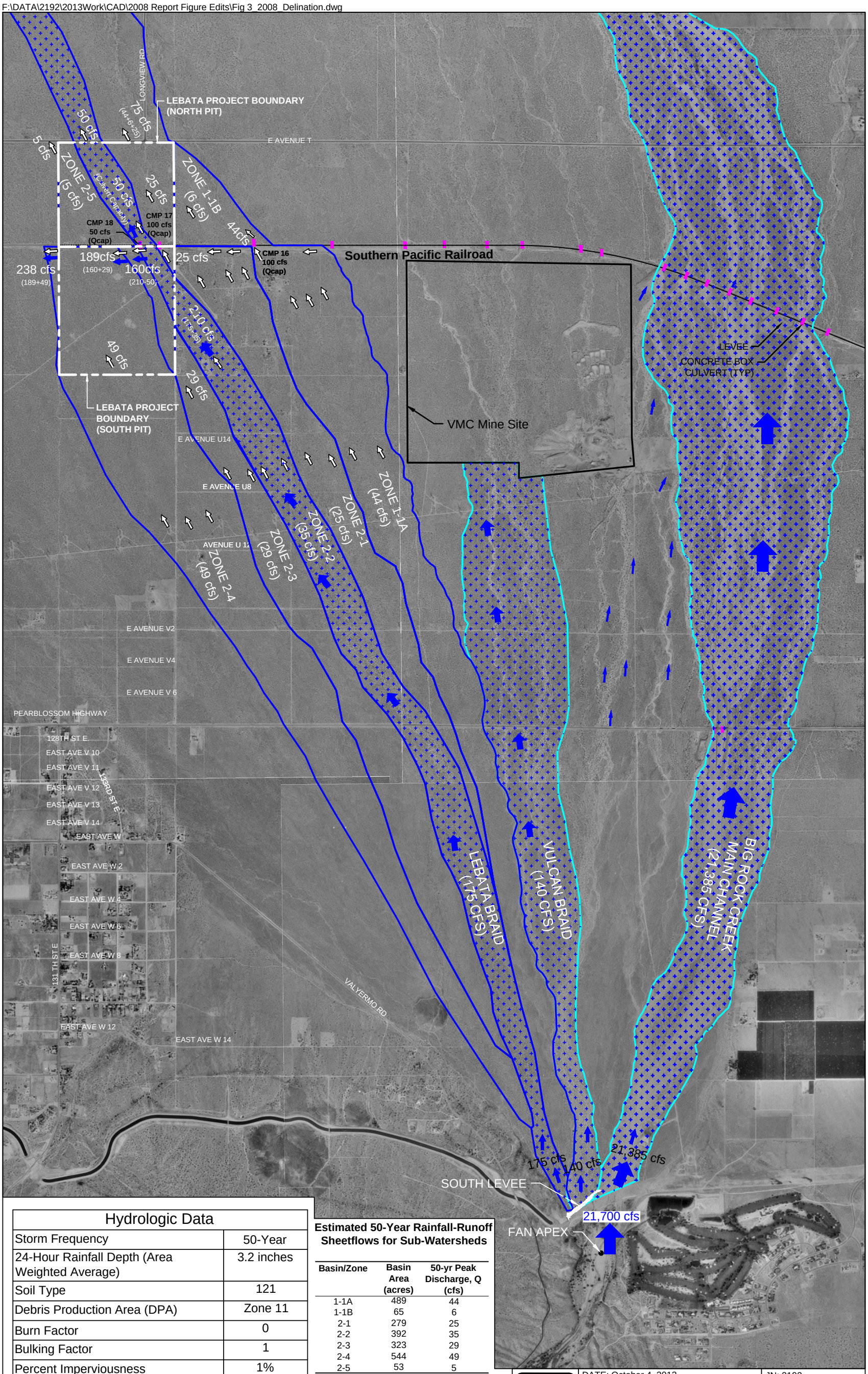

Hydrologic Data	
Storm Frequency	50-Year
24-Hour Rainfall Depth (Area Weighted Average)	3.2 inches
Soil Type	121
Debris Production Area (DPA)	Zone 11
Burn Factor	0
Bulking Factor	1
Percent Imperviousness	1%

Estimated 50-Year Rainfall-Runoff Sheetflows for Sub-Watersheds

Basin/Zone	Basin Area (acres)	50-yr Peak Discharge, Q (cfs)
1-1A	489	44
1-1B	65	6
2-1	279	25
2-2	392	35
2-3	323	29
2-4	544	49
2-5	53	5
Total	2,132	194

Legend

- Main channel / VMC braid flow area
- Local rainfall - runoff drainage area
- Channel/braid flow
- Runoff flow direction
- Existing culvert

N W E S

SCALE (FEET) 0 1000 2000

STETSON ENGINEERS INC.

DATE: October 4, 2013 | JN: 2192

Project Alternative and Alternative 1

Existing Offsite and Onsite Drainage

(Same as Figure 3a Except Different Background Map)

FIGURE 3b

Location: \\rocklin\mapping data\2008\2008-055 Lebata Big Rock Creek\MAPS\HYDROLOGY\Lebata_Hydro_Past.mxd (MAG)-mgulidry 5/30/2014

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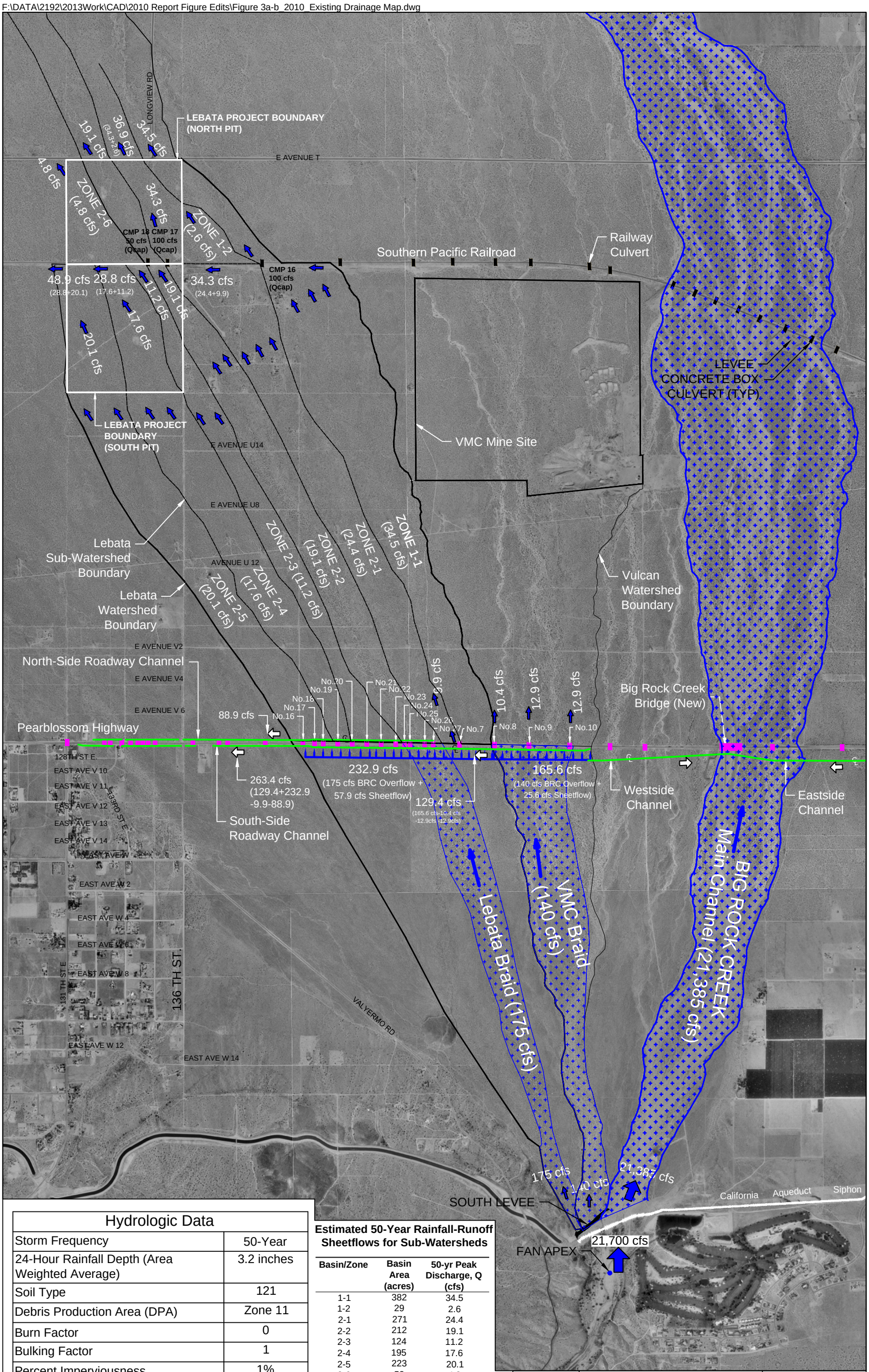

Hydrologic Data	
Storm Frequency	50-Year
24-Hour Rainfall Depth (Area Weighted Average)	3.2 inches
Soil Type	121
Debris Production Area (DPA)	Zone 11
Burn Factor	0
Bulking Factor	1
Percent Imperviousness	1%

Estimated 50-Year Rainfall-Runoff Sheetflows for Sub-Watersheds

Basin/Zone	Basin Area (acres)	50-yr Peak Discharge, Q (cfs)
1-1	382	34.5
1-2	29	2.6
2-1	271	24.4
2-2	212	19.1
2-3	124	11.2
2-4	195	17.6
2-5	223	20.1
2-6	53	4.8
Total	1,489	134.4

Legend

- Roadside Channel Flow/Center Line
- Pearblossom Highway Culvert
- Flow Direction
- Runoff flow direction
- Roadside Channel Flow

N W E S

SCALE (Feet) 0 1000 2000

STETSON ENGINEERS INC.

DATE: October 4, 2013 | JN: 2192

Lowered Facilities Alternative

Existing Offsite and Onsite Drainage

(Same as Figure 3a Except Different Background Map)

FIGURE 3b

Location: \\rocklin\mapping data\2008\2008-055 Lebata Big Rock Creek\MAPS\HYDROLOGY\Lebata_Hydro_Current.mxd (MAG)-mguidry 5/30/2014

ATTACHMENT E

Exhibit 5 - ***Lebata Big Rock Creek Mine Short-joint Beavertail Cactus Protection Plan*****, prepared by ECORP Consulting, Inc., August, 2014**

Lebata Big Rock Creek Mine
Short-joint Beavertail Cactus
Protection Plan

Prepared For:

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August 2014

CONTENTS

Lebata Big Rock Creek Mine Short-joint Beavertail Cactus Protection Plan

1.0 Introduction 1
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1.0 INTRODUCTION

Lebata, Inc. (Lebata) has proposed surface mining activities on approximately 310 acres (125 hectares [ha]) near Big Rock Creek, near the community of Pearblossom, Los Angeles County, California. During focused surveys conducted for the presence or absence of listed and/or sensitive plant species, 37 intermediate beavertail cactus individuals, hybrids between short-joint beavertail (*Opuntia basilaris* var. *brachyclada*) and the common variety (*O. basilaris* var. *basilaris*), were identified on the project site (ECORP Consulting, Inc. [ECORP] 2008, 2014). ECORP was contracted to design and submit a short-joint beavertail cactus protection plan for inclusion in the Lebata Environmental Impact Report (EIR).

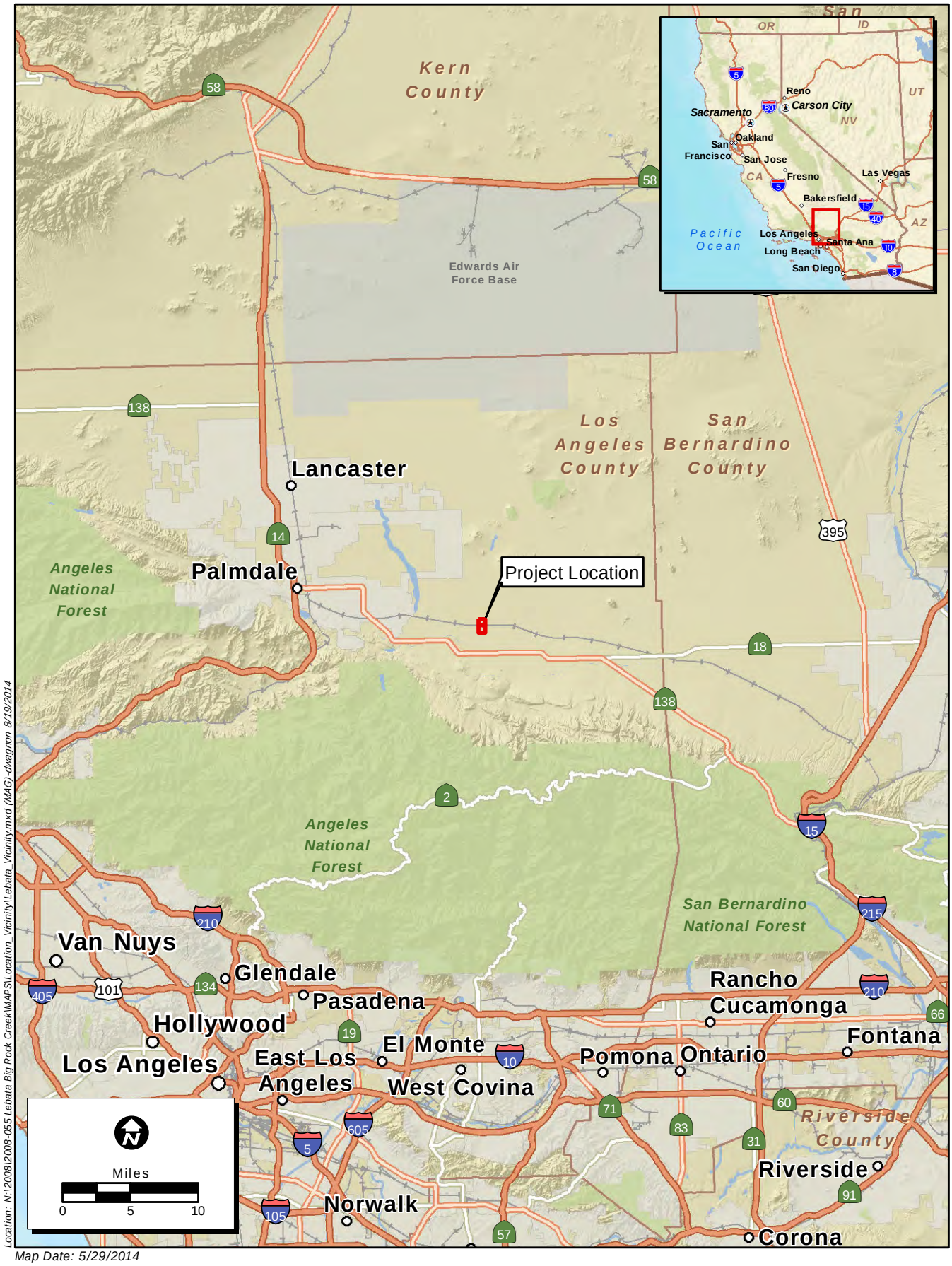
1.1 Project Location and Description

The project site is located on Assessor's Parcel Numbers (APNs) 3039-021-009, 3039-036-001, and 3039-036-002 near the unincorporated community of Pearblossom, Los Angeles County, California (Figure 1). The project site is located on the U.S. Geological Survey (USGS) Littlerock 7.5 minute topographic quadrangle and is bounded by Avenue T on the north, by 131st Street East on the west, and by 136th Street East on the east. The project site is bisected by the Union Pacific Railroad (UPRR), located approximately 0.5 mile (mi) (1 kilometer [km]) south of Avenue T. (Figure 2). Elevations on the site range from 870 to 896 meters (m) [2,850 to 2,940 feet (ft)] above mean sea level (amsl).

Lebata proposes surface mining activities, which involves both on-site mining and processing of material, on the project site. Per the proposed work plan, the project is divided into three phases, with Phases 1 and 3 located north of the UPRR tracks and Phase 2 located south of the tracks. The Phase 1 mining area consists of the majority of the parcel north of the UPRR tracks. The Phase 3 area, located in the northwestern portion of the northern parcel, is the proposed location for processing facilities, as well as the point of transfer and distribution of materials via rail. Phases 1 and 3, consisting of approximately 135 acres (55 ha) are expected to break ground in early 2015. Mining activities on Phase 2, the southern parcel, are proposed to break ground at a later date.

1.2 Purpose of the Cactus Protection Plan

Twenty-five individuals of beavertail cactus (*Opuntia basilaris* var. *basilaris*) with some characteristics of the sensitive variety (*O. basilaris* var. *brachyclada*) were recorded at numerous locations on the project site in 2008 (ECORP 2008). A taxonomic study including collection and comparative propagation through Rancho Santa Ana Botanic Garden was conducted of similar beavertail specimens on a nearby property in Big Rock Wash (Chambers Group 2002). The individuals of the study were determined to be intermediates expressing some genes of the sensitive variety (*O. basilaris* var. *brachyclada*) along with the common variety (*O. basilaris* var. *basilaris*). Botanist Pamela DeVries, who was involved with the prior study, was consulted regarding the individuals observed on the Lebata project site. She confirmed that these individuals are most likely intermediates containing physical characteristics of both the common and the sensitive varieties and that they are not likely the pure *brachyclada* varietal (personal communication 2008). A second survey was conducted for the



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Map Date: 5/29/2014

Service Layer Credits: Sources: Esri, USGS, NOAA

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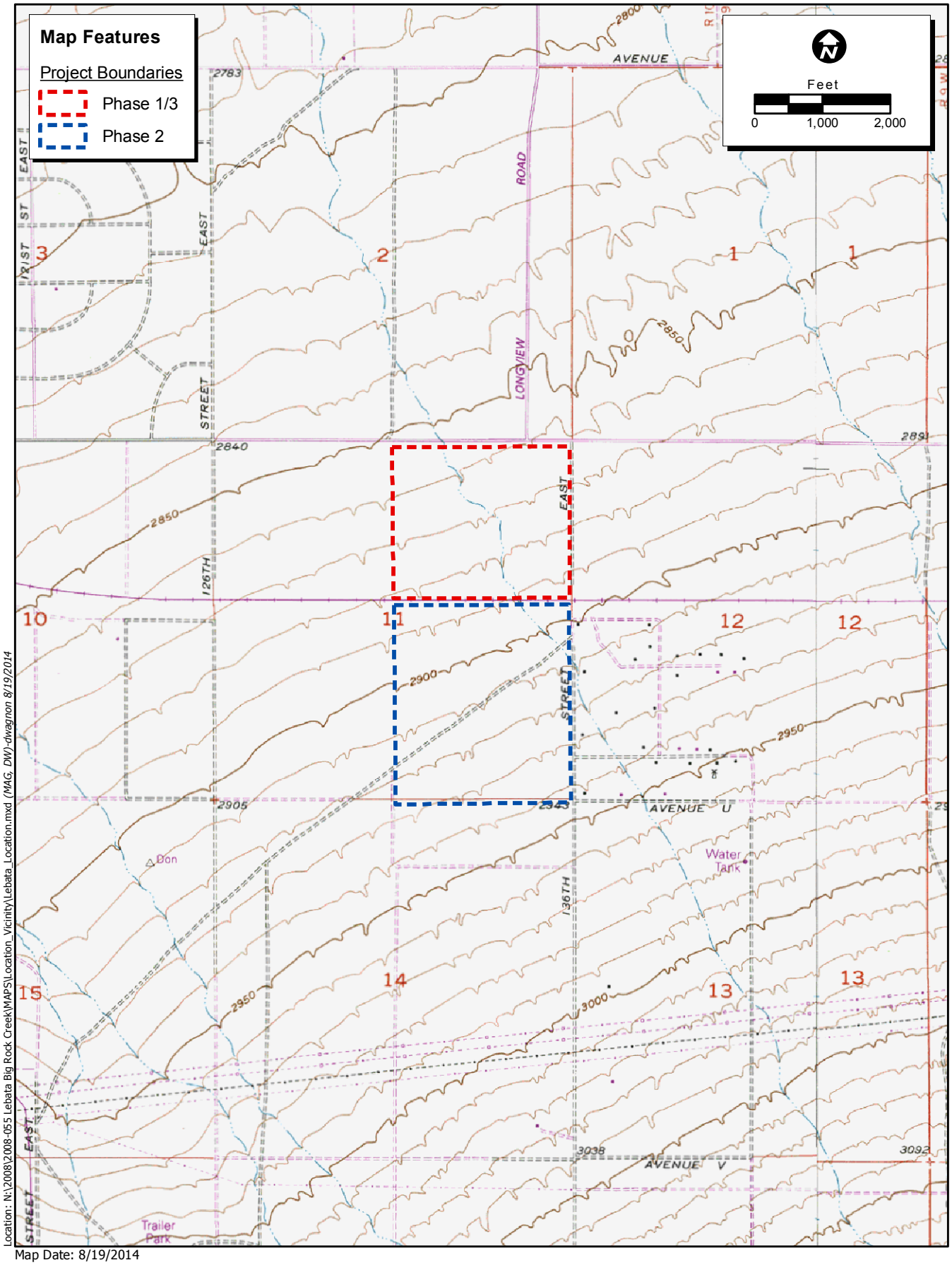
ENVIRONMENTAL CONSULTANTS

Figure 1. Project Vicinity

2013-122 Lebata Big Rock Creek Mine EIR Revision



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Map Date: 8/19/2014
USGS Topographic Quadrangle: Littlerock (1991)

Figure 2. Project Location

2013-122 Lebata Big Rock Creek Mine EIR Revision

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

northern parcel (Phase 1 and 3) in 2014; twelve additional individuals exhibiting characteristics of both species were identified. Currently, there are 37 intermediates present in the project site (Figure 3).

The intermediate between the two beavertail cactus species does not have any legal protection under state or federal legislation. However, California Department of Fish and Wildlife (CDFW), Los Angeles County, and the Office of Mine Reclamation (OMR) have requested that a plan be developed for the protection of the intermediate beavertail cactus individuals currently present on the project site as part of the EIR Mitigation Measure (MM) BIO-4, which addresses the protection of sensitive native plants.

2.0 CACTUS PROTECTION METHODOLOGY

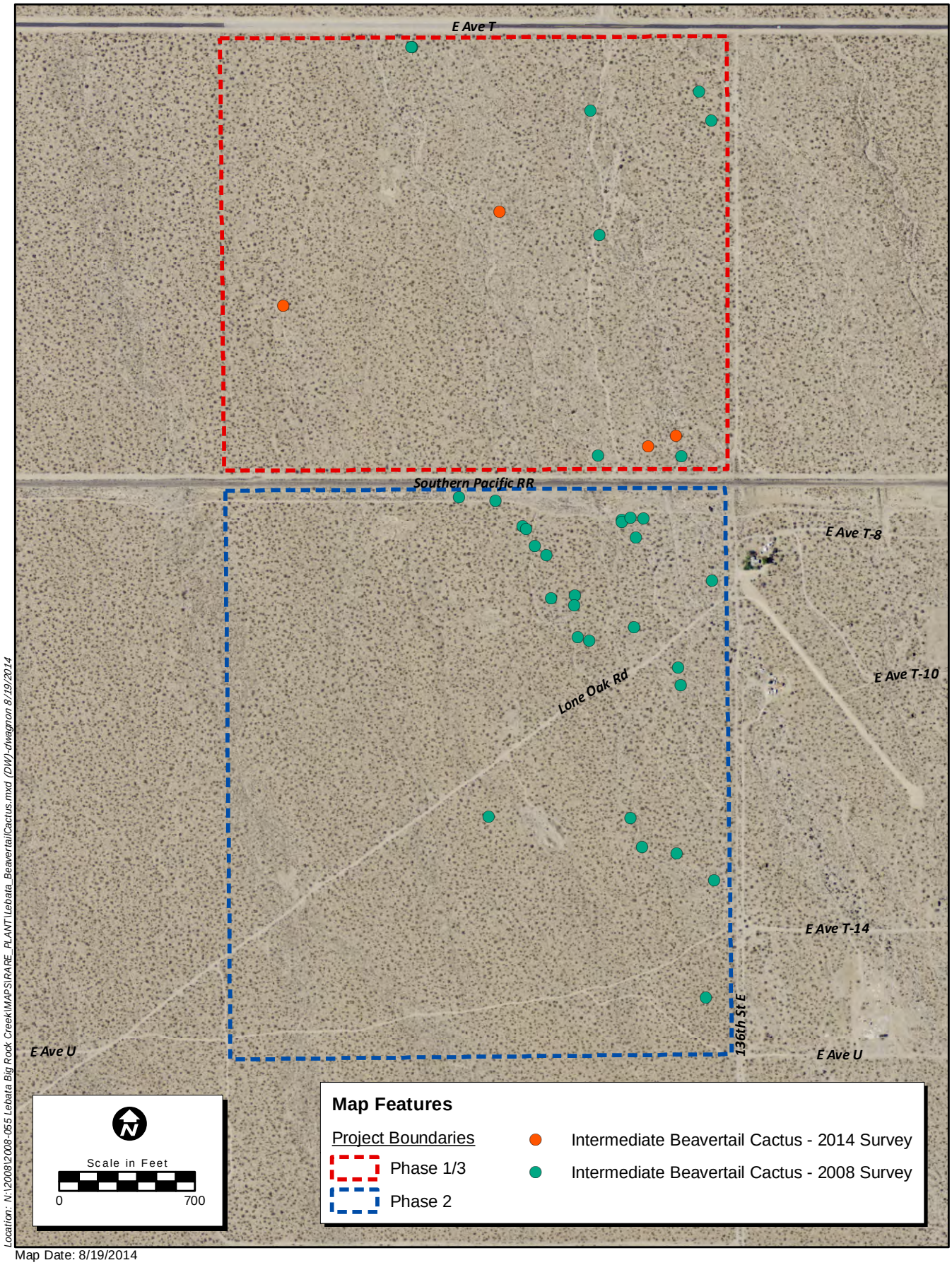
In order to provide protection for the intermediate beavertail cactus as requested, individuals deemed suitable for salvage will be transplanted and later incorporated into final reclamation efforts. Mining on the project site is scheduled to occur in phases; salvage activities will be completed accordingly. Prior to vegetation clearing and soil disturbance on Phase 1, suitable individuals present in this area will be salvaged and transplanted in setback areas located around the perimeter of the project site (see Reclamation Plan Figures 13 and 14). The only disturbance planned for the setback areas is initial perimeter berm construction, which will be completed prior to transplantation. Suitable individuals present on subsequent phases will be salvaged and transplanted in reclaimed areas as mining moves forward and suitable reclaimed areas have been finished. If mining of subsequent phases is not initiated within two years of the latest botanical surveys (i.e., April 2016), a new survey to identify intermediate beavertail cactus present is required per MM BIO-4. Transplanted cactus will be monitored over a period of five years to determine successfulness of the effort and contingency measures will be incorporated in the event that revegetation goals are not met.

2.1 Cactus Salvage and Transplantation

Prior to clearing of vegetation in each phase, a botanist will determine which of the intermediates are suitable for salvage. Factors that might inhibit the salvage of the species include access issues (individuals should only be salvaged if it can be done safely), soil conditions (often individuals growing in rocky soils cannot be extracted without destroying much of the root system), and unacceptable general condition of the species (i.e., less than 40% live branches or live tissue). If an individual is determined to be suitable for salvage upon inspection, the botanist will mark the north side of the plant to aid in correct reorientation during transplanting.

Equipment needed during salvage and transplantation may include shovels, mattocks, buckets, rope/straps, pruning snips, wood pallets, pitch forks, brown paper bags, and a standard 4x4 truck.

Successful extraction and salvage requires the safe removal of the aboveground individual with as-large-as-possible root ball incorporating intact soil. The salvageable individual will be dug up with shovels. The rooting distance of beavertail cactus is typically three to five times the width



Location: N:\2008\2008-055 Lebata Big Rock Creek\MAPS\RARE_PLANT\Lebata_BeavertailCactus.mxd (DW)-dwagnon 8/19/2014

Map Date: 8/19/2014
Photo Source: NAIP (2012)

Figure 3. Intermediate Beavertail Cactus Locations

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of the plant. Therefore, excavation will begin no less than six inches and an average of four times the width of the above-ground pad segments from the base of the individual to avoid damaging the roots. As this species is very shallowly rooted, all individuals will be excavated with a shovel just below the root ball, typically four to eight inches below the soil surface.

Transplant holes can be prepared within the setback areas prior to transplantation. When the holes are prepared, several shovel-loads of surface soil from around the each target plant base will be carefully extracted and mixed into the planting hole to promote native mycorrhizal soil symbionts to be in close proximity to the root structure. Each hole will be two to three times the width of the target individual, but only as deep as the root ball (3 feet by 18 inches). These holes will then be filled with water and allowed to drain.

Transplanting of the salvaged individuals will take place immediately into the freshly wetted receiving hole. The salvaged individuals will be transplanted with the original north-facing orientation and the soil will be lightly tamped by hand or with the handle of a shovel around the individual so that there are no air pockets around the roots. A depression around each individual will be formed to hold water. Each individual will be watered 2 to 3 times during the week immediately following transplantation.

As mining progress into subsequent phases, intermediates present will be salvaged using the methods outlined above. However, transplant holes will be prepared within reclaimed areas of the project site.

3.0 MONITORING AND PERFORMANCE CRITERIA

All transplanted intermediate beavertail cactus will be monitored for a period of five years to determine the successfulness of the revegetation effort. Transplants are expected to have a 75 percent survival rate in Year 1 and a 50 percent survival rate in Years 2 through 5. Native volunteers may be used to meet these goals and replace dead transplants. The annual survival rate of each transplant and cutting species will be calculated according to the following formula:

$$\text{Annual Survival Rate } \% = \frac{\text{Total \# plants alive during survey}}{\text{Total \# plants alive in previous season}} * 100$$

Each phase of transplants will be visited once per year during the growing season. All individuals for each target phase will be relocated within their respective transplant areas and visually assessed. Additionally, the status of each will be recorded as dead or alive. New individuals that may have become established as volunteers (natural recruitment), if observed, will be included in the transplant counts. Field data will be entered into a spreadsheet for analysis. Separate annual monitoring reports will be submitted documenting the results of the field monitoring visit and the survival rate of each transplant phase. Additionally, the reports will discuss the performance trends of each transplant phase and provide recommendations as needed.

3.1 Contingency Measures

As mining is scheduled to be completed in phases over a long period of time, it is presumed that the first transplant effort (for Phase 1) will be monitored for long enough to evaluate the successfulness of the transplant effort and to identify performance trends. If it is determined that the transplanted individuals are faring poorly or not surviving, the salvage and transplant methodology will be modified for subsequent phases. Alternate techniques, such as transplanting segment pads from the target intermediates, may be considered. If implemented, the alternate techniques will also be evaluated during monitoring. It is also possible that new, highly successful techniques will be developed in the future; these would be incorporated to potentially improve survival and ensure protection of the intermediate beavertail cactus.

Currently, no maintenance of the transplanted individuals is scheduled beyond the first week of watering. However, if it is determined from the monitoring visits that the transplanted individuals are showing signs of water stress, a supplemental watering regime will be considered, after which it must be demonstrated that the vegetation has been self-sustaining without irrigation for a minimum of two years.

4.0 REFERENCES

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