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

CONTENTS

1.0 INTRODUCTION 1
2.0 PROJECT LOCATION 1
3.0 BACKGROUND INFORMATION 4
4.0 EXISTING SITE CONDITIONS 5
4.1 SOILS 5
4.2 HYDROLOGY 5
4.3 VEGETATION COMMUNITIES 8
4.3.1 Creosote Bush Scrub Series 8
4.3.2 Rubber Rabbitbrush Series 8
4.3.3 Disturbed/Unvegetated 8
5.0 REGULATORY BACKGROUND INFORMATION 10
5.1 U.S. ARMY CORPS OF ENGINEERS (USACE) 10
5.2 REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) 11
5.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (CDFW) 12
6.0 METHODOLOGY 13
6.1 PRE-SURVEY INVESTIGATIONS 13
6.2 FIELD SURVEY 13
6.3 POST-PROCESSING OF FIELD DATA 14
6.4 LIMITATIONS 14
7.0 RESULTS 15
7.1.1 Inactive Channels 15
7.1.2 UPRR Culverts 17
7.1.3 State Route 138 Flow Patterns 20
8.0 DISCUSSION 21
8.1 DRAINAGE CONCEPT STUDY 21
8.2 CDFW JURISDICTION ON THE LEBATA SITE 22
9.0 CONCLUSION 22
10.0 REFERENCES 23

LIST OF FIGURES

Figure 1 - Project Vicinity 2
Figure 2 - Project Location 3
Figure 3 - Natural Resource Conservation Service Soil Types 6
Figure 4 - HUC 12 Watersheds 7
Figure 5 – Representative Habitat Photograph (2008) 9
Figure 6 – Representative Habitat Photograph (2014) 9
Figure 7 - Jurisdictional Delineation 16
Figure 8 – Culvert 2 Showing Barrier to Flow 18
Figure 9 – Culvert 3 Showing Barrier to Flow 19
Figure 10 – Culvert 6 Showing an Active Channel 19
Figure 11 – Swale Along North Side of State Route 138 20

LIST OF TABLES

Table 1 Survey Conditions 15
Table 2 UPRR Culvert Description 17

LIST OF APPENDICES

Appendix A: Photo Point Reference Map and Photos
Appendix B: Hydrology Past and Current

1.0 INTRODUCTION

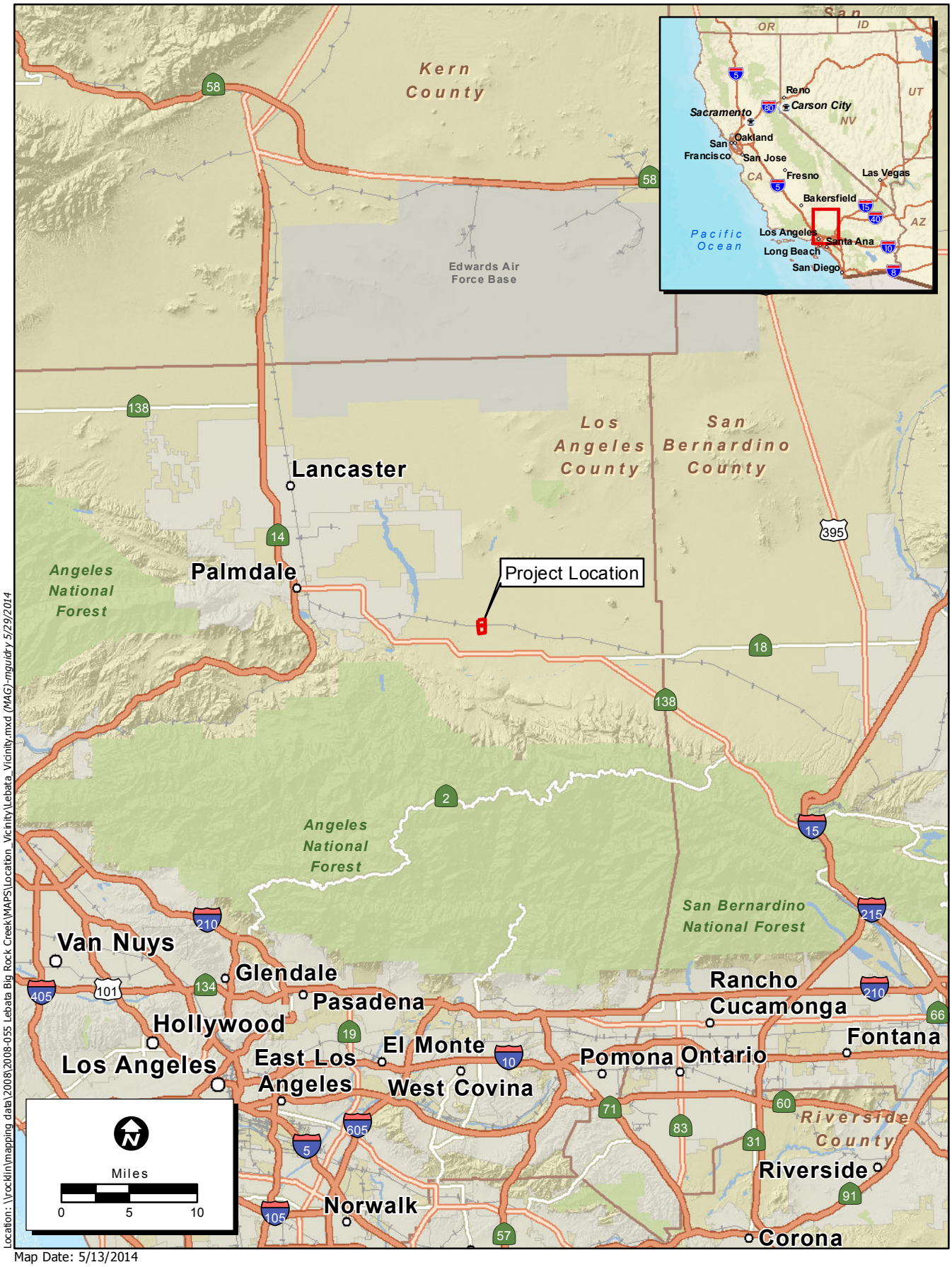
The following report documents the results of a federal and State of California jurisdictional delineation of a proposed surface mining operation (Project) that was conducted by ECORP Consulting, Inc. (ECORP).. The Project, proposed by Lebata, Inc. (Lebata) is situated over approximately 310 acres (125 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

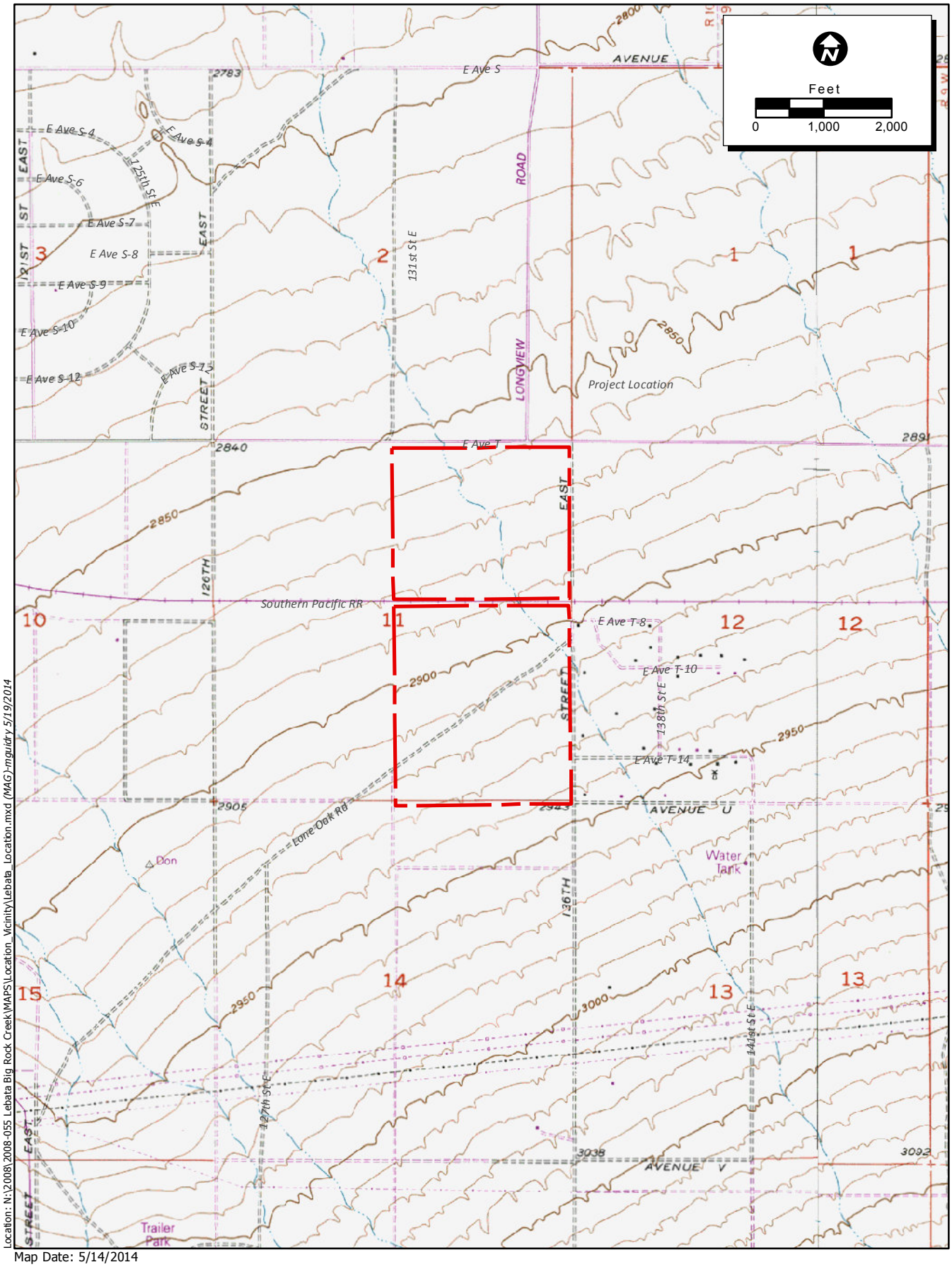
Map Date: 5/13/2014

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

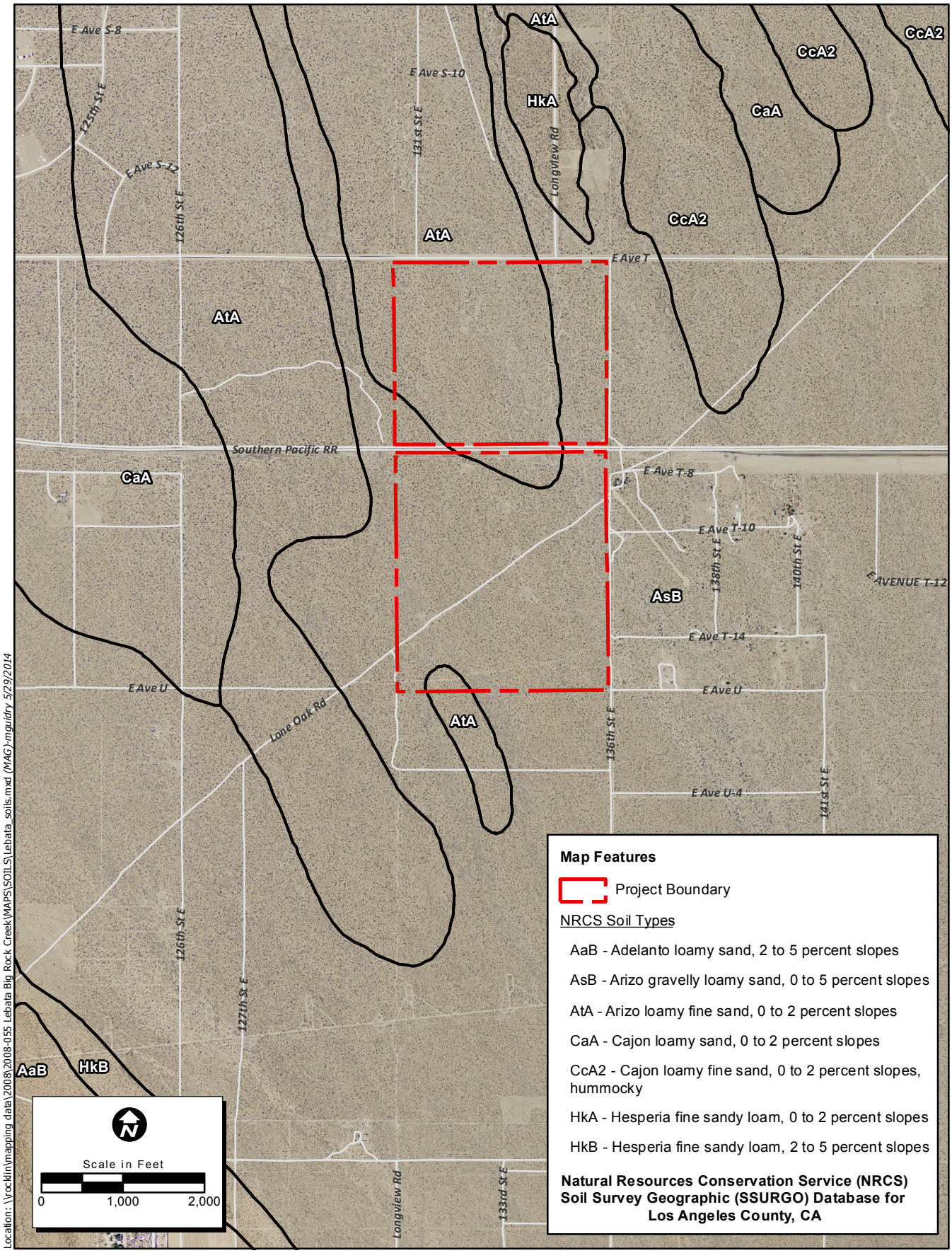
4.1 Soils

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.



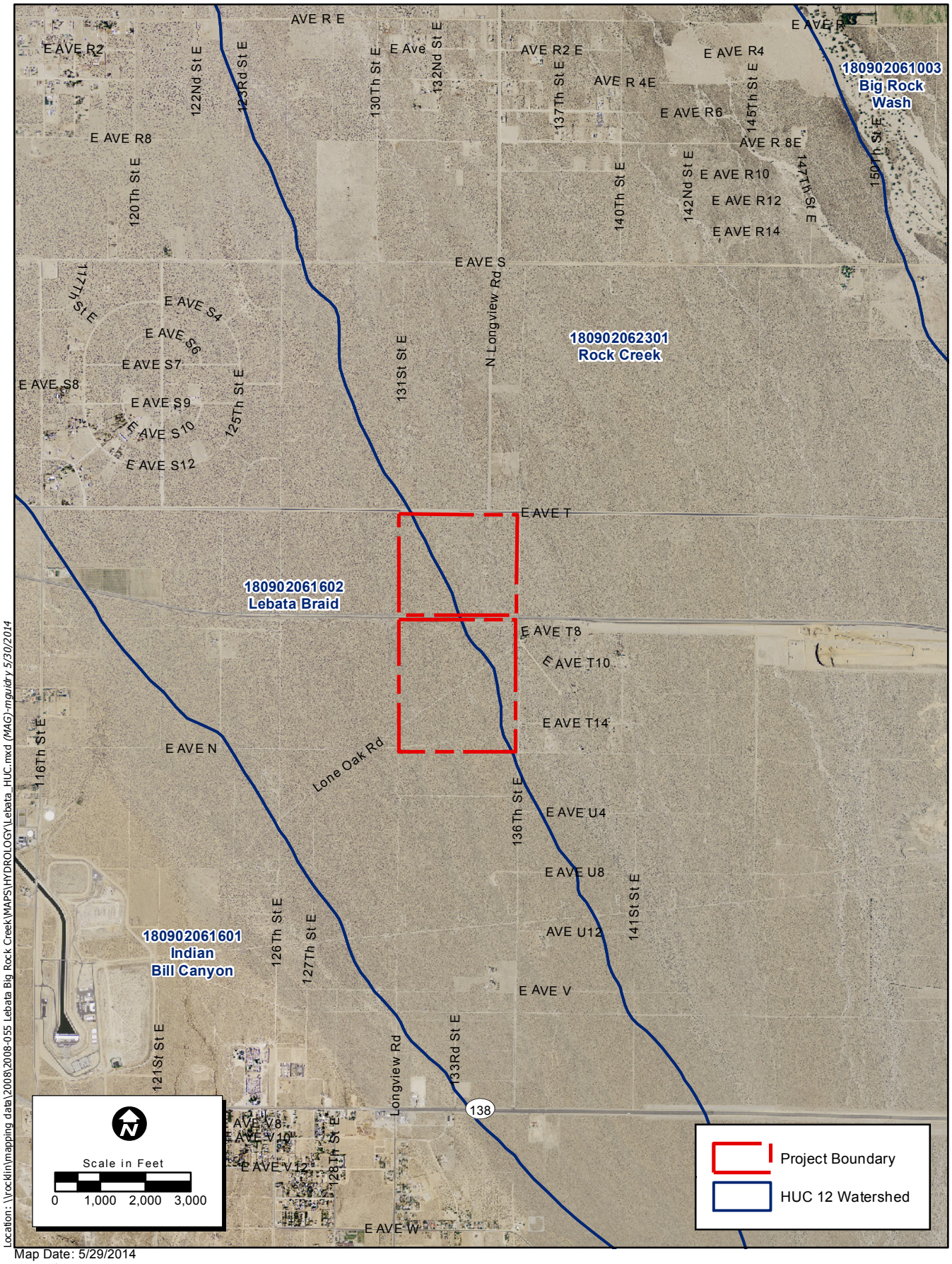
Location: \\rocklin\mapping data\2008\2008-055 Lebata Big Rock Creek\MAPS\SOILS\Lebata_soils.mxd (MAG)-mguidry 5/29/2014

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

Figure 3. Natural Resource Conservation Service Soil Types

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

2014-054 Lebata Big Rock Creek



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

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

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 4. HUC 12 Watersheds

2014-054 Lebata Big Rock Creek

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

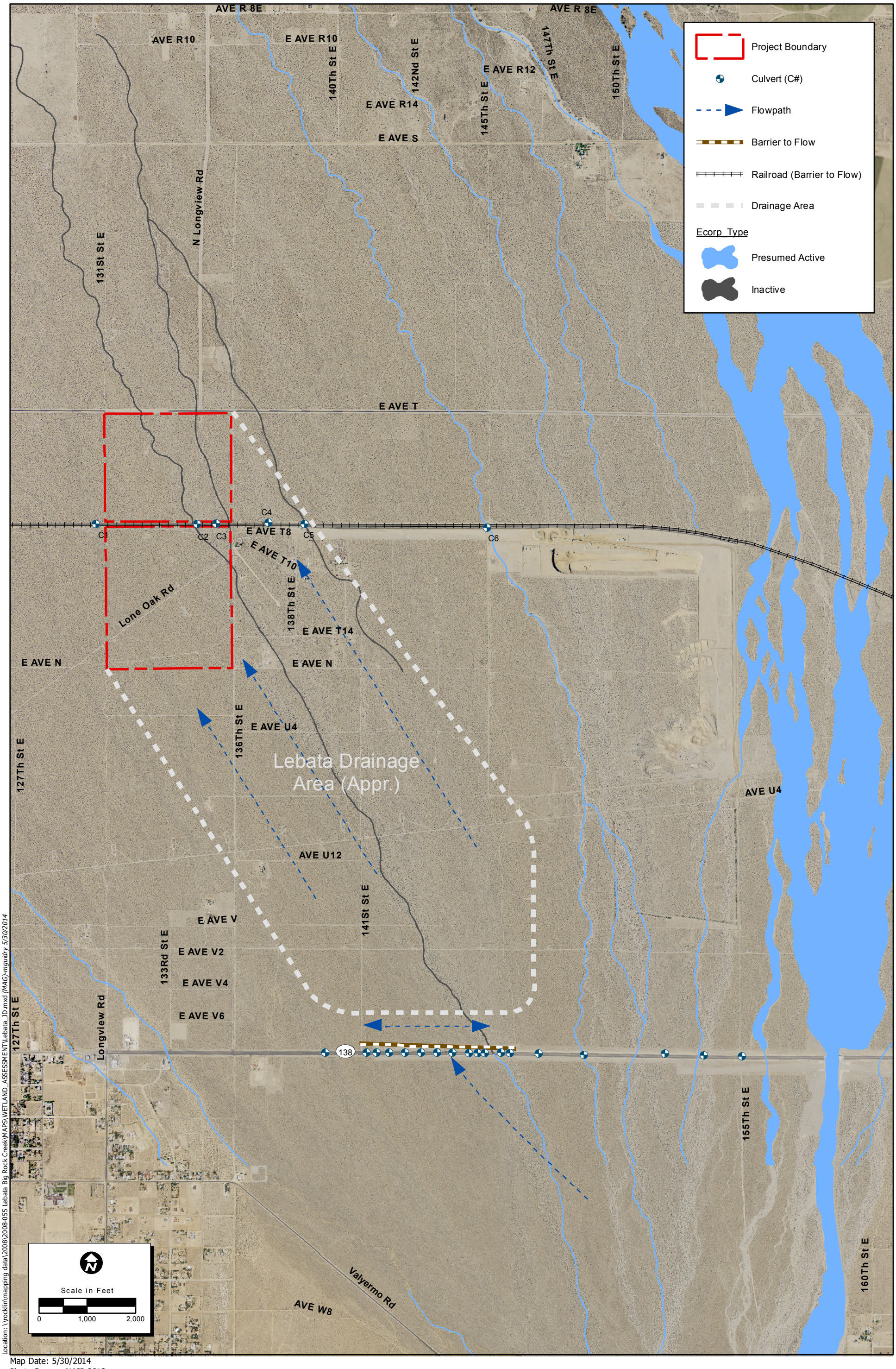
No active jurisdictional features or riparian habitat areas were identified on the Project site during the study. A description of the results is below. The jurisdictional delineation map is located on the following page (Figure 7). A photo reference map for all photos taken that characterize the features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

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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.

10.0 REFERENCES

[CDFG 1994] California Department of Fish and Game. Environmental Services Division (ESD), 1994. *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607*, California Fish and Game Code.

[ECORP] Preliminary Jurisdictional Delineation Letter Report For Lebata XXXXX

[Environmental Laboratory 1987] Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U. S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi.

[Google Earth 2014] "SR-138 Study Limits." UTM WGS84 11 North 363876.16 mE, 3847762.14 mN. Google Earth. December 10, 2013. April 16, 2014.

[LACDPW] Los Angeles County Department of Public Works. 2014. Santa Clarita Watershed Santa Clara River Enhancement Management Plan Report. May 2005. Available on line at http://ladpw.org/wmd/watershed/sc/ accessed on [3/13/2014].

[NRCS 2013] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/.

[RAWS 2014] RAWS US Climate Archive. Station Monthly Summary Time Series, Station: Poppy Park California. Accessed online at http://www.raws.dri.edu/cgi-bin/rawMAIN.pl?caCPOP

[South Coast Wildlands] 2006. Wildlands of the Santa Clara River Watershed: Restoring and Maintaining the Integrity and Health of the River and its Watershed. South Coast Wildlands.

U.S. Army Corps of Engineers and USACE letter of 06-01-06

[USACE 1986a] November 13, 1986. 33 CFR 328.3(a), 51 FR 41250.

[USACE 1986b] November 13, 1986. 33 CFR 328.3(b), 51 FR 41250.

[USACE 1986c] November 13, 1986. 33 CFR 328.3(e), 51 FR 41250.

[USACE 2008a] A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. August 2008. Robert W. Lichvar and Shawn M. McColley, US Army Engineer Research and Development Center, Vicksburg, MS.

[USACE 2008b] Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0. September 2008. J.S. Wakely, R.W. Lichvar, and C.V. Noble, eds., US Army Engineer Research and Development Center, Vicksburg, MS.

[USACE 2010] Updated Datasheet for the Identificaions of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. July 2010. Katherine E. Curtix and Robert W. Lichvar, US Army Engineer Research and Development Center, Vicksburg, MS.

[US Climate Data 2014] Temperature-Precipitation-Sunshine-Snowfall Climate Data for the U.S. Accessed at http://www.usclimatedata.com/climate/pearblossom/california/united-states/usca0847. May 15, 2014.

U.S. Geological Survey
[USGS 2010] Los Angeles County Aerial Imagery.
[USGS 2011] San Bernardino County Aerial Imagery.

[WSS] Soil Survey Staff 2014, Web Soil Survey. Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. Available online. Accessed [3/13/2014].

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

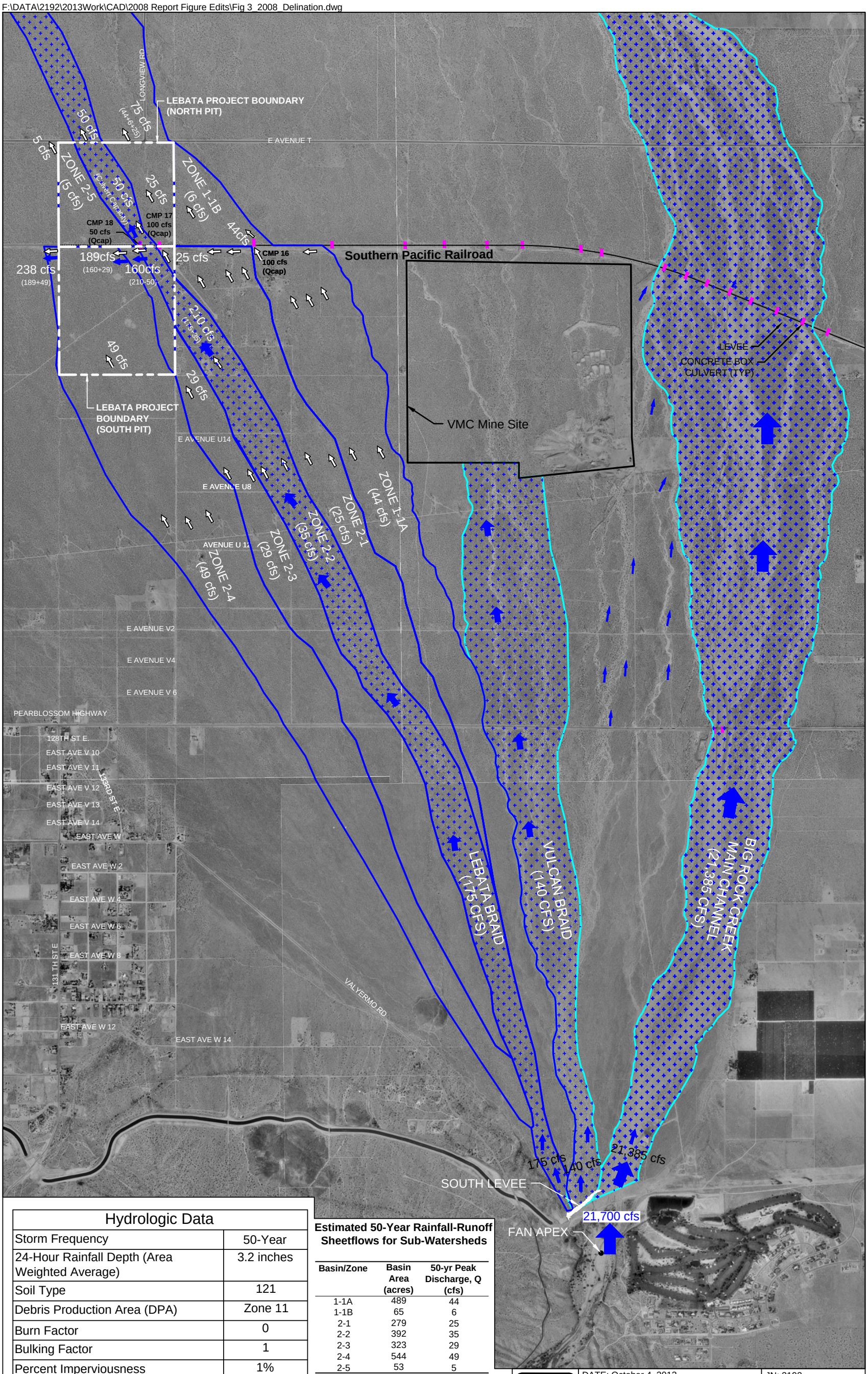
C13 – Culvert 13 Looking North

C14 – Culvert 14 Looking East

APPENDIX B

Hydrology Past and Current

F:\DATA\2192\2013Work\CAD\2008 Report Figure Edits\Fig 3_2008_Delination.dwg



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

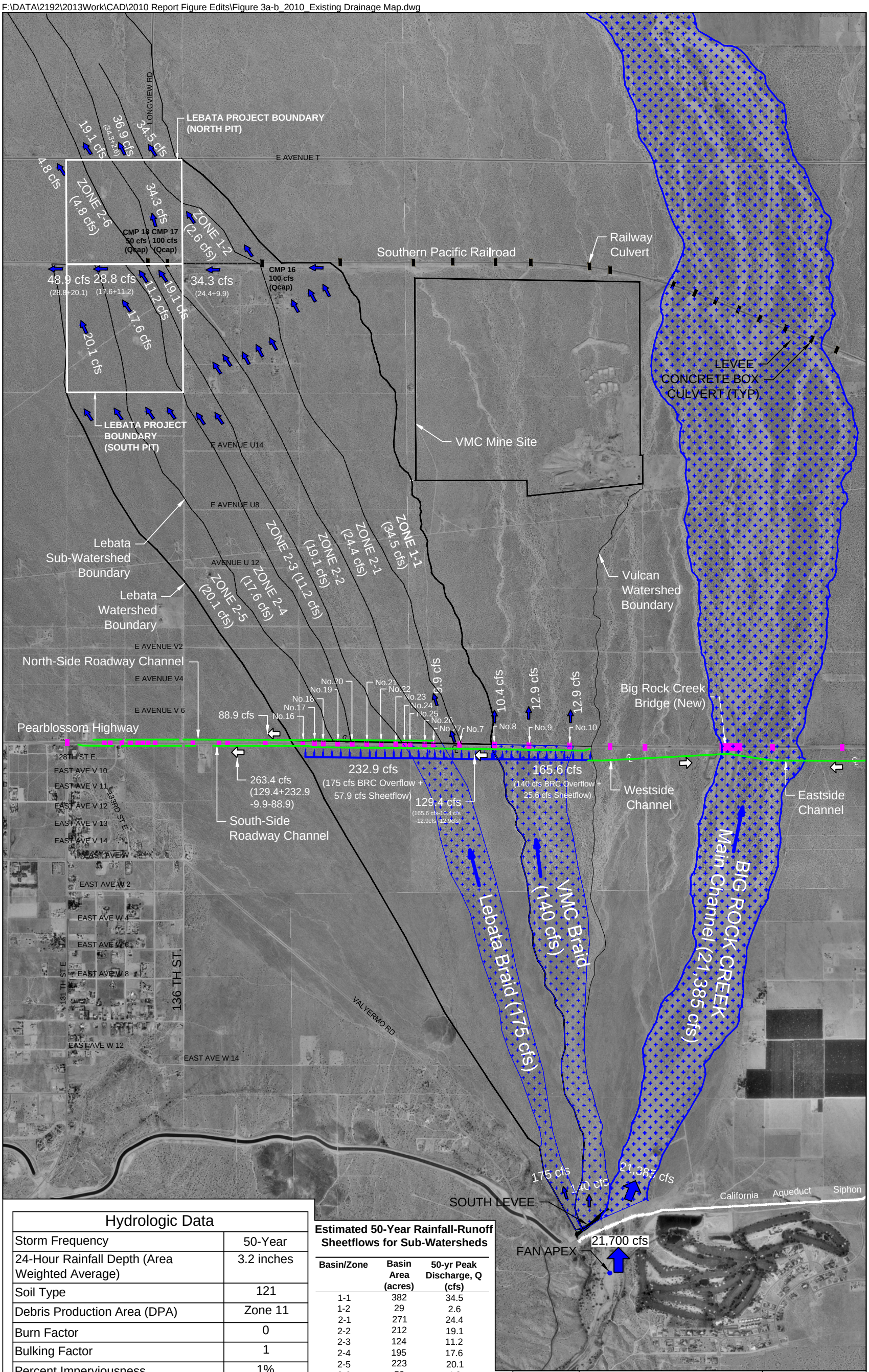
Existing Offsite and Onsite Drainage

(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

F:\DATA\2192\2013Work\CAD\2010 Report Figure Edits\Figure 3a-b_2010_Existing Drainage Map.dwg



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