Topock Project Executive Abstract

Document Title:

Assessment of Potential Impacts to Four Special-Status Species for Soil Environmental Impact Report Investigation and Final Groundwater Remedy Areas, Topock Compressor Station, California

Final Document? ☒ Yes ☐ No

Date of Document: February 11, 2015

Who Created this Document?: (i.e. PG&E, DTSC, DOI, other)

PG&E

Priority Status: ☒ **HIGH** ☐ **MED** ☐ **LOW**

Is this time critical? ☒ Yes ☐ No

Action Required:

☒ Information Only ☐ Review & Comment

Return to:_____

By Date: _____

☐ Other / Explain:

Type of Document:

☐ Draft ☐ Report ☐ Letter ☒ Memo

☐ Other / Explain:

What does this information pertain to?

☐ Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA)/Preliminary Assessment (PA)

☐ RCRA Facility Investigation (RFI)/Remedial Investigation (RI) (including Risk Assessment)

☐ Corrective Measures Study (CMS)/Feasibility Study (FS)

☐ Corrective Measures Implementation (CMI)/Remedial Action

☒ California Environmental Quality Act (CEQA)/Environmental Impact Report (EIR)

☐ Interim Measures

☒ Other / Explain: Biological Reports

Is this a Regulatory Requirement?

☒ Yes

☐ No

If no, why is the document needed?

What is the consequence of NOT doing this item?
What is the consequence of DOING this item?

This memo supplements information in the Soil Investigation EIR and the Final Groundwater Remedy EIR in that it provides information for four additional species. Not providing this information would constitute non-compliance with the mitigation measures.

Other Justification/s:

☐ Permit ☐ Other / Explain:

Brief Summary of attached document:

Recent discussions between the State of California Department of Toxic Substances Control (DTSC) and their contractor for development of the Soil EIR, ESA, revealed that there were three special-status species that were addressed in the Draft Soil EIR (DTSC 2014) but had not been represented in the Final Groundwater Remedy EIR (DTSC, 2011) for the Topock Compressor Station (TCS) in San Bernardino County, California. The species include two mammals: ring-tailed cat (*Bassaricus astutus*) and Nelson's bighorn sheep (*Ovid canadensis nelsonii*); and one plant species, mouse-tail suncup (*Chylisima arenaria*). In addition, one species of bat, Townsends big-eared bat (*Corynorhinus townsendii*), that is currently a candidate for State listing, was not considered in either the Draft Soil EIR (DTSC, 2011) or in the Final Groundwater Remedy EIR (DTSC, 2011). Because none of these species are federally listed, none of these species are discussed in the Programmatic Biological Assessment (PBA) for Final Groundwater Remedy (CH2M HILL, 2014).

This technical memorandum has been prepared to provide further information for the California Environmental Quality Act (CEQA) analysis of potential biological impacts associated with Soil EIR and the Final Groundwater EIR. This memorandum incorporates information derived from a recent bat habitat assessment survey that was conducted within the Soil EIR and Final Groundwater Remedy project area on January 29 and 30, 2015, as described below. After discussing the results of the habitat assessment with DTSC and ESA on February 3, 2015, a set of mitigation measures to avoid inadvertent or incidental impacts to Townsend's big-eared bat was developed and are included in this memorandum. A brief summary of the bat habitat survey information is also provided in Appendix C. Other recommendations for measures to avoid impacts to the remaining species are also provided in this memorandum.

Written by: PG&E

Recommendations:

This report is for information only.

How is this information related to the Final Remedy or Regulatory Requirements:

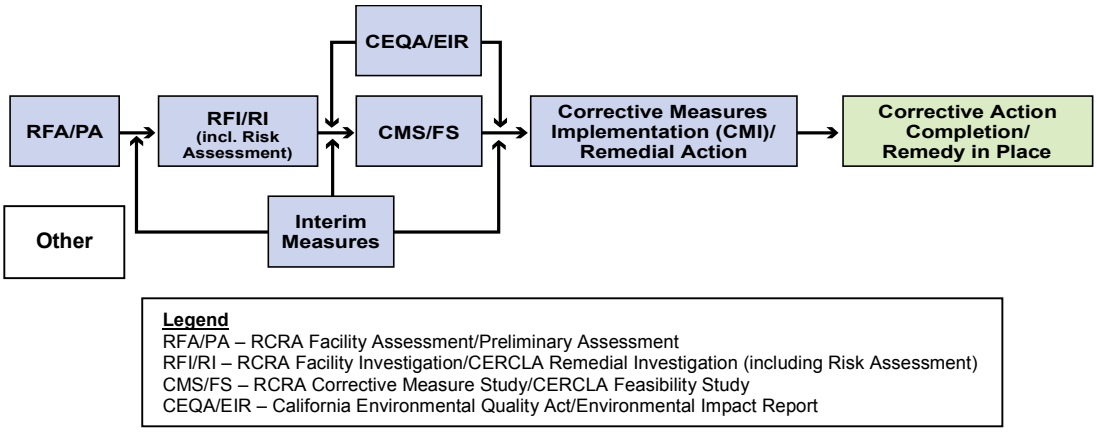
This technical memorandum provides mitigation measures to avoid potential impacts to these four species from proposed activities associated with the Soil Investigation EIR and the Final Groundwater Remedy.

Other requirements of this information?

None.

Related Reports and Documents:

Click any boxes in the Regulatory Road Map (below) to be linked to the Documents Library on the DTSC Topock Web Site (www.dtsc-topock.com).



Version 10

Assessment of Potential Impacts to Four Special-Status Species for Soil Environmental Impact Report Investigation and Final Groundwater Remedy Areas, Topock Compressor Station, California

PREPARED FOR: Curt Russell/PG&E

PREPARED BY: Steve Long/CH2M HILL

COPIES: Marjorie Eisert/CH2M HILL

DATE: February 11, 2015

PROJECT NUMBER: 657421.TM.10

Introduction

Recent discussions between the State of California Department of Toxic Substances Control (DTSC) and ESA, the State's contractor for development of the Soil Environmental Impact Report (EIR), revealed that there were three special-status species that were addressed in the Draft Soil EIR (DTSC, 2014) but had not been represented in the Final Groundwater Remedy EIR (DTSC, 2011) for the Topock Compressor Station (TCS) in San Bernardino County, California. The species include two mammals: ring-tailed cat (*Bassaricus astutus*) and Nelson's bighorn sheep (*Ovid canadensis nelsonii*); and one plant species, mouse-tail suncup (*Chylisima arenaria*). In addition, one species of bat, Townsend's big-eared bat (*Corynorhinus [=Plecotus] townsendii*), that is currently a candidate for State listing, was not considered in either the Draft Soil EIR (DTSC, 2014) or in the Final Groundwater Remedy EIR (DTSC, 2011). Because none of these species are federally listed, none of these species are discussed in the Programmatic Biological Assessment (PBA) for Final Groundwater Remedy (CH2M HILL, 2014) or the PBA for the PG&E TCS Remedial and Investigative Actions (CH2M HILL, 2007), as reinitiated in 2012.

This technical memorandum has been prepared to provide further information on the California Environmental Quality Act (CEQA) analysis of potential biological impacts in addition to the discussions in the Soil EIR and the Final Groundwater EIR. The proposed soil investigation areas were identified in figures from the Soil EIR and Final Groundwater Remedy (DTSC, 2014 and 2011) that are included in this memorandum (see Appendix A, Figures 3-1 through 3-8), and the proposed Final Groundwater Remedy areas were identified in a figure from the 2014 PBA (see Appendix B, Figure 1).This memorandum provides a summary of general habitat and life-cycle information for these four species together with what is known about their status in the project area. This information is used to assess the potential for adverse impacts as they pertain to the proposed Soil EIR investigation activities and the future activities associated with the Final Groundwater Remedy.

This memorandum incorporates information derived from a recent bat habitat assessment survey that was conducted within the Soil EIR and Final Groundwater Remedy project area on January 29 and 30, 2015, as described below. After discussing the results of the habitat assessment with DTSC and ESA on February 3, 2015, a set of mitigation measures to avoid inadvertent or incidental impacts to Townsend's big-eared bat was developed and is included in this memorandum. A brief summary of the bat habitat survey information is provided in Appendic C.

Other recommendations for measures to avoid impacts to the remaining species are also provided in this memorandum.

Special-Status Species Information

The following subsections are intended to provide basic information on the four special-status species described in this memorandum. The information includes basic habitat requirements; life-cycle information; regulatory status; and status in the project area. Figure 1 provides the location of documented occurrences for the four species addressed in this memorandum that are within 5 miles of the TCS Final Groundwater Remedy Project Area of Potential Concern and that are in the California Natural Diversity Database (CNDDB).

Townsend's Big-eared Bat (*Corynorhinus [=Plecotus] townsendii*)

Townsend's big-eared bats are a Candidate species for State listing (California Department of Fish and Wildlife [CDFW], 2015). The California Fish and Game Commission passed a motion to designate the Townsend's big-eared bat as a candidate for Threatened or Endangered species status at their meeting on June 26, 2013, although a formal Notice of Finding has not yet been posted. Except where noted, information for the natural history of the Townsend's big-eared bat provided below is from Kunz and Martin (1982).

Townsend's big-eared bats are a nocturnal species that principally feeds (> 90 percent of the diet) on small (3- to 10-millimeter) moths but also may take other insects, which they feed on mostly while in flight (Pierson and Fellers, 1998). They forage over a variety of habitats including forests, sagebrush steppe, pastures, agricultural fields, along canyon walls and cliff faces (Pierson and Fellers 1998), and edge habitats along streams (Bonham, 2013). They are found throughout California and are considered non-migratory, with the longest known movement being 32.2 kilometers (km) (20 miles) in California. Big-eared bats may occur in higher densities in some areas of California, which seems to be mostly a function of suitable roosting habitat (Bonham, 2013).

In winter, most Townsend's big-eared bats roost singly, but some roost in clusters of a few to several dozen. Although the sexes of small clusters of hibernating big-eared bats appears to be random, large clusters tend to have equal numbers of males and females. Hibernating bats prefer relatively cold areas such as near cave or mine entrances and well-ventilated areas. The body temperature of torpid bats is highly correlated to ambient temperatures and the temperature of the substrate.

In the spring and summer, females form maternity colonies, rarely exceeding 100 individuals, in warmer parts of caves, mines, and buildings. When roost temperatures are low, they may become torpid. Males are solitary during this time. Maternity colonies break up in August when females and young leave the roost.

Copulation takes place during winter (November through February), and the female stores the sperm until spring. Gestation of the single embryo varies from 56 to 100 days, depending on temperatures and the amount of torpor of the individual. Young are born in late spring, typically over a 3- to 5-week period beginning in May in California, and early summer. Young bats grow rapidly and are capable of flight at 2.5 to 3 weeks and are fully weaned by 6 weeks. Year-to-year survivorship, in the absence of disturbance, is about 50 percent for the young and 80 percent for the adults (Pierson and Fellers, 1998).

Human disturbance in caves and mines is the most widely cited reason for the abandonment of historical Townsend's big-eared bat roosting sites. Other potential threats include loss of native vegetation, environmental contamination of water and prey through the application of pesticides and chemicals for mineral processing, wind energy developments, artificial lighting, pest control activities, small population size, and climate change (Bonham, 2013).

No Townsend's big-eared bats have been directly observed at the TCS. The preliminary habitat assessment assessed the locations of potential Townsend's big-eared bat roosting areas. Some limited recording of bat vocalizations have occurred in six different locations that included the southwest corner of TCS, lower East Ravine, cliffs along the Colorado River, and the lower portion of Bat Cave Wash. Walking surveys of upper Bat Cave Wash were conducted to plan good locations for future mist net placements. The habitat survey also included visits to upland habitats in the western portion of the Groundwater Remedy area. The Evaporation Pond area and Potential Pipe Burial Area were also viewed, as well as the freshwater supply system along the Oatman-Topock Highway and the Sacramento Wash area.

Detailed bat surveys to be conducted in the spring of 2015 will provide information on the potential occurrence of big-eared and other species of bat occurrence at the site. The results of the detailed bat surveys will be used to adapt mitigation measures for avoidance as discussed below.

Nelson's Bighorn Sheep (*Ovid canadensis nelsonii)*

The following information was taken from the technical memorandum "Analysis of Bighorn Sheep at the Topock Compressor Station" (CH2M HILL, 2013). The TCS is located at the northern terminus of the Chemehuevi Mountains within the known range of Nelson's bighorn sheep. Although bighorn sheep in this area are Fully Protected in the State of California according to California Fish and Game (CFG) Code Section 4900, the site is outside the range of the federally endangered Peninsular Range Bighorn Sheep (U.S. Fish and Wildlife Service [USFWS], 2011). Fully protected species may not be taken or possessed at any time, and no licenses may be issued for their take, except for collection for necessary scientific research and, in the case of Nelson's bighorn sheep, the CDFW may authorize sport hunting of mature rams under the provisions of subsection 4902b.

Nelson's bighorn sheep are ruminant herbivores that live in mountainous terrain and forage on a broad variety of plant species. Multiple studies have shown that this species forages upon at least 34 to 121 different plant species (Weaver et al., 1968; Jones et al., 1957; Turner, 1973; Miller and Gaud, 1989), and that diet composition changes throughout the year as different plants emerge, produce new shoots, bud, and flower. Nelson's bighorn selectively forage upon the most nutritious and digestible forage available. During spring and fall months, they selectively forage upon forbs and new shoots from shrubs and trees; during winter and summer months, their diet appears to shift more towards grasses, shrubs, and barrel cactus (Cunningham and Ohmart, 1986; Scott, 1986; Wehausen, 1980). Nelson's bighorn obtain much of their water from forage plants and tinajas within mountainous terrain (Hansen, 1980). Tinajas are depressions formed in the bedrock of intermittent streams or arroyos that are caused by the scouring effects of sand and gravel. Water that pools in these depressions provides an important water source in arid environments. However, these water sources are limited during summer and drought months. During drier periods, bighorn sheep tend to congregate within a 2- to 3-mile radius of perennial water sources, as these areas provide water and more nutritious forage (Jones et al., 1957; Blong and Pollard, 1968; Leslie and Douglas, 1979; Cunningham and Ohmart, 1986). Perennial water sources include rivers, streams, and washes.

Bighorn sheep have large home ranges that vary in size according to forage quantity and quality, season, sex, and age of the animal. A lower quantity and quality of forage can result in a larger home range (Leslie, 1977; McQuivey, 1978), although water is a limiting factor. Many populations of bighorn sheep have smaller home ranges in summer and this is likely due to limited movements away from permanent water sources and higher quality forage near permanent water sources (McQuivey, 1978; Elenowitz, 1983). In contrast, bighorn sheep often have expanded home ranges during the cooler or wetter months of the year when they can range farther from permanent water sources (Simmons, 1980; Elenowitz, 1983). Rams (males) typically have a larger home range than ewes (females), which are gregarious and philopatric or faithful to their natal (birth) home range. For example, bighorn rams within the San Jacinto Mountains were found to have a home range size that averaged 9.65 square miles (mi^2), and ewes had an average home range size of 7.72 mi^2 (DeForge et al., 1997).

Habitat requirements for bighorn sheep include mountainous terrain with areas of gentle terrain such as valley floors and alluvial fans that provide important linkages between adjacent mountainous regions. These gentle terrain areas also provide temporary access to resources such as forage and water, particularly in the drier summer months (Andrew, 1994). Steep, rugged terrain, also called escape terrain, is an important component of bighorn sheep habitat because bighorn sheep use running speed coupled with their climbing abilities to evade predators (McQuivey, 1978). Ewes near delivery select secluded sites with shelter, unobstructed views, and escape terrain (Turner and Hansen, 1980; Etchberger and Krausman, 1999).

Bighorn sheep's principal predator evasion tactic is the use of steep, rugged slopes (Hansen, 1980; Cunningham, 1989). Escape terrain is important because bighorn sheep normally do not depend upon speed alone to outrun their predators, but use their climbing abilities to evade predators on steep, rocky outcrops and talus slopes (McQuivey, 1978). The presence of steep terrain for predator evasion and lambing is a crucial component of bighorn sheep habitat.

Valley floors and alluvial fans are important linkage areas that provide bighorn sheep temporary access to resources (e.g., forage, water, and lambing habitat) in neighboring areas and that allow interactions and gene flow between subpopulations (Krausman and Leopold, 1986; Schwartz et al., 1986; Bleich et al., 1990; Bleich et al., 1997). Bighorn sheep are known to move quickly when crossing gentle terrain and often use the shortest route possible to cross wide valleys. They occasionally cross highways to make inter-mountain movements (Simmons, 1980).

Alluvial fans and washes also provide nutritious forage during summer months, droughts, gestation, lactation, and other challenging periods (Leslie and Douglas, 1979; Hansen, 1980; Wehausen, 1980; Schwartz et al., 1986; Berger, 1991). The Borrego Palm Canyon alluvial fan is used for forage during cooler months, and for water from May to November (USFWS, 2011). Alluvial fans and washes may be the only areas with nutritious forage and water during summer months (Andrew, 1994).

Variations in slope and aspect help bighorn sheep survive in a harsh environment. During hot weather, desert bighorn sheep seek shade under boulders, hanging rocks, and cliffs, or they may move to north-facing slopes where temperatures are moderate, while on cold days they may move to sunny south-facing slopes (Merritt, 1974; Andrew, 1994). During inclement weather, bighorn sheep may seek caves, overhangs, or slopes that are protected from strong winds (Andrew, 1994).

Bighorn sheep have been observed in the rocky terrain around TCS. On January 29, 2015, potential skeletal remains were observed within a wash adjacent to Interstate 40 just northeast of the Evaporation Ponds. The scattered nature of the animal remains indicated that the animal(s) may have been killed by predators within the wash or by a vehicle on the highway and subsequently moved by scavengers.

Ring-tailed Cat (*Bassariscus astutus*)

Ring-tailed cats are a Fully Protected species in California. In the 1960s, the State created the classification of Fully Protected to identify and provide additional protection to those animals that were thought to be rare or facing possible extinction. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research (CDFW website accessed on January 21, 2015). Except where noted, information for the natural history of the ring-tailed cat is from Poglayen-Neuwall and Toweill (1988).

Ring-tailed cats are nocturnal and primarily carnivorous, and forage on ground, among rocks, and in trees. They feed on rodents (woodrats and mice) and rabbits, as well as birds and their eggs, reptiles, invertebrates, fruits, nuts, and some carrion. The main predators of ring-tailed cats are great horned owls. They are also killed by mammalian predators including coyotes and bobcats, but often are not fed upon possibly because of the strong flavor of their flesh.

Ring-tailed cats are widely distributed as year-long residents throughout California (Zeiner et al. [1988-1990], revised by Gould 1998). They primarily occur in riparian habitats, brush stands, and shrub and forest habitats at elevations from sea level to about 1,400 meters, although they have been observed up to 2,900 meters. While scarce, they are known to occur in the Mojave Desert and use features such as hollow logs, rock piles, large boulder outcroppings, talus slopes, rock crevices, and canyons for refuge and nesting. They rarely use the same shelter for more than three consecutive days and females have been known to move their young from den-to-den 10 days after giving birth. They are usually found within 1 km (0.6 mile) of permanent water.

The breeding season for ring-tailed cats is February through May and is at its highest during the months of March and April. Females give birth after a 40- to 50-day gestation period to one to four (rarely five) young. Most young are born during May and June. Young walk well at 6 weeks, climb at 8 weeks, and are weaned by 10 weeks. Population densities in the Central Valley of California range from 7 to 20 individuals/km^2 mostly in the vicinity of ponds and sloughs. Home ranges vary with sex, season, and habitat and home range sizes in the Mojave Desert are not known. Home range estimates ranged from 5.0 to 13.8 hectares (ha) in riparian areas; 35 to 51.7 ha for males and 15.7 to 27.7 ha for females in oak woodlands; and 49 to 233 ha for females in the Canyonlands of Zion National Park, Utah.

There have been two observations of ring-tailed cats within the TCS. A ringtail was observed on October 25, 2007, and another sighting was made a few years later at the TCS.

Mouse-tail Suncup

The special-status plant mouse-tail suncup was discovered in the California portion of the project area (Appendix D, Figure 1). Mouse-tail suncup (*Chylismia arenaria*) has a California Rare Plant Rating (CRPR) 2B.2, indicating that this plant is rare, threatened, or endangered in California and elsewhere and is fairly threatened in California. This plant was mapped in Survey Segments C, D, and H (Appendix D, Figure 1). This plant is known to flower between January and May (Appendix D, Plate 1). It occurs within Mojavean desert scrub and along rocky slopes and canyon walls, but may also be found in washes (GANDA and CH2M HILL, 2013).

The largest population of these plants (with approximately nine individuals) is located on a vertical conglomerate wall above Bat Cave Wash in Survey Segment D (Appendix D, Plate 1). Single individuals also occur on a conglomerate wall above the wash in segment H and on a granitic rock face at the end of the wash just east of the project area. It also occurs on a bank next to the BNSF Railway tracks in Segment C (Appendix D, Figure 1) (GANDA and CH2M HILL, 2013). These populations represent a significant range extension for the species as they are over 90 miles northeast of previously recorded populations in California (Jepson Online Interchange, 2011).

Mitigation Measures for the Four Special-Status Species

The following subsections discuss measures that would prevent inadvertent impacts to the four special-status species described in this memorandum. The information includes basic habitat requirements, life-cycle information, regulatory status, and status in the project area.

In general, the soil investigation activities, especially those where drill rigs are proposed for sampling, are expected to be similar in intensity (but of much smaller magnitude and shorter duration) to the groundwater remedy construction activities. The primary differences between the two activities are related to the duration and degree of soil disturbance. With respect to the area of disturbance, the groundwater remedy will affect a much larger footprint than the soil investigation, and the amount of soil disturbance for the pipeline installation will also be greater due to different equipment that will be used. Especially in locations where pipeline construction is proposed, the groundwater remedy construction activities would be expected to last longer in a given location than soil sampling in the same areas. While the degree of ground disturbance may be greater during the final groundwater remedy construction, this effect has been minimized in the design process by making use of previously disturbed and developed areas and by avoiding or minimizing impacts to the walls of the ravines.

After construction of the final groundwater remedy is completed, operation and eventual decommissioning, removal, and restoration activities will occur. Overall, these activities are expected to be less intensive or extensive than the initial final groundwater remedy construction activities.

It is expected that incorporation of the biological mitigation measure to minimize impacts to biological resources (mitigation measures BR-1 through BR-6) that were included in the Draft Soil EIR (DTSC, 2011) on a program-wide basis throughout the duration of the groundwater remedy through restoration would

reduce the potential effect on these species to a "less than significant" level. In the same manner, this memorandum will also incorporate the mitigation measures for Townsend's bat that have been developed by ESA in response to the findings of the preliminary bat habitat survey in January 2015.

Townsend's Big-eared Bat

Surveys in the vicinity of the TCS indicate that suitable habitat for bats is available onsite in Bat Cave Wash, within the East Ravine, and in caves along the Colorado River beneath the pipe crossing. A detailed bat survey will be conducted in spring 2015 to identify the species of bats that may occur at Topock and potentially identify locations where winter and maternity roosts may occur onsite. Although site use by bats cannot be excluded, it is likely limited by the following factors:

- Existing human activity at the TCS and near Interstate 40 to the north likely limits bat use.
- Relatively poor habitat with few forest edges or ponds and sloughs for foraging does not attract bats.
- Townsend's big-eared bats would be likely to either not move in to an active work area or, during warmer times of the year, would move away when activities began.
- Work activities will generally be in the flat, sandy areas and will not disturb areas with caves or structures that bat may use for roosts.

For these reasons, particularly the location of work activities for the soils investigation in flat sandy areas that will not disturb possible roosting sites, the soils investigation is not anticipated to result in any significant impacts to Townsend's big-eared bats.

Mitigation Measures. It is expected that implementation of the following measures on a program-wide basis would ensure that any potential project impacts to Townsend's big-eared bats would remain at a less than significant level:

1. Because of the potential for Townsend's bat maternity roosts to occur within the portion of Bat Cave Wash to the south of Interstate 40 and within the East Ravine, mechanized soil sampling and/or construction activities should be avoided from April to mid-August within Bat Cave Wash south of I-40 and within the East Ravine to avoid any possibility of adversely affecting a maternity roost. These timing restrictions may be modified based on the results of the detailed bat survey in spring 2015.

2. Preconstruction surveys for bats will be conducted by a qualified biologist prior to the start of construction activities. For the purpose of the upcoming soil investigation and groundwater remedy construction activities, this will be satisfied by the detailed bat survey in the spring of 2015. No activities that will result in disturbance to bat roosts will proceed prior to completion of the surveys. If no active roosts are found, Mitigation Measure No. 1 will still be implemented unless the survey results indicate that timing restrictions may be altered. CDFW will also be notified of any active roosts within the proposed disturbance zones.

3. Townsend's big-eared bats are a Candidate for listing, as described above. If an active bat roost is found, the project will be redesigned to avoid the loss of the site where the roost is found, if feasible. If the project cannot be redesigned to avoid the removal of the roost, the CDFW will be contacted for their input. If approved by the CDFW, demolition of the roosting site will commence outside of the hibernation period (hibernacula form in October and may be used through February) or breeding season (maternity colonies begin to form in March and young leave around mid-August), depending on the type of roost. If a non-breeding roost is found in a tree (or site) scheduled to be removed, the CDFW will be notified prior to disturbance to review and approve proposed procedures to ensure that no take occurs as a result of the action. Trees with roosts that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow bats to escape during the darker hours.

Nelson's Bighorn Sheep

Surveys in the vicinity of the TCS indicate that potentially suitable habitats for bighorn sheep are available onsite in areas within California to the south of Interstate 40 including Bat Cave Wash, the East Ravine, surrounding uplands, and the floodplain. Although site use by bighorn sheep cannot be excluded, it is likely limited by the following factors:

- Existing human activity at the TCS and near Interstate 40 to the north likely limits use.
- The site has relatively poor historical floodplain habitat that is dominated by large thickets of tamarisk that are generally dense, mono-specific stands, with little herbaceous vegetation.
- Because the project area foothills, uplands, and floodplain habitats are only expected to be used for foraging or transit, the sheep would not be likely to move into an active work area or would likely move away when activities began.
- Work activities will generally be in the flat, sandy or previously disturbed areas and will not disturb lambing habitats that would occur outside of the project area to the south in the steeper terrain of the Chemuhuevi Mountains.

Mitigation Measures. It is expected that implementation of the following measures on a program-wide basis would ensure that any potential project impacts to Nelson bighorn sheep to remain at a less than significant level:

1. Preconstruction surveys for bighorn sheep will be conducted by a qualified biologist prior to the start of construction activities and/or the soil investigation. No activities that will result in disturbance to bighorn sheep will proceed prior to completion of the surveys. If no sheep are found, no further action is needed.
2. Nelsons bighorn sheep are fully protected under Fish and Game Code Section 4700, as described above. If an active bighorn sheep is found in the project area, construction activities will be temporarily halted until the animal moves away on its own.
3. Existing mitigation measures concerning driving speeds will be observed when using roadways within the project area to avoid striking a bighorn sheep during project activities (General Project Management No. 20 (CH2M HILL, 2014).
4. Existing prohibitions for firearms on site at any time will be observed, except for security employees. Under no circumstances will bighorn sheep be harassed or threatened by project staff (General Project Management No. 11 (CH2M HILL, 2014).

Ring-tailed Cat

Surveys in the vicinity of the TCS indicate that potentially suitable habitats for ring-tailed cats are available onsite in Bat Cave Wash and at the mouth of the East Ravine. Although site use by ring-tailed cats cannot be excluded, it is likely limited by the following factors:

- Existing human activity at the TCS and near Interstate 40 to the north likely limits use.
- The site has relatively poor habitat dominated by large thickets of tamarisk that are generally dense, mono-specific stands, with little herbaceous vegetation.
- Ring-tail cats move their dens frequently (i.e., usually every 3 days or less), so they would be likely to either not move in to an active work area or would move away when activities began.
- Work activities will generally be in the flat, sandy or previously disturbed areas and will not disturb rock piles, large boulder outcroppings, and other suitable denning sites.

Mitigation Measures. It is expected that implementation of the following measure, Mitigation Measure BR-6 in the Soils Investigation DEIR, on a program-wide basis would reduce the potential project impacts to ring-tailed cats to a less than significant level:

1. Preconstruction/investigation surveys for ring-tailed cats will be conducted by a qualified biologist prior to the start of construction activities and/or the soil investigation. No activities that will result in disturbance to dens of ring-tailed cats will proceed prior to completion of the surveys. If no active dens are found, no further action is needed. If a ringtail den is present, Mitigation Measure No. 2 will be implemented. CDFW will also be notified of any active dens within the proposed disturbance zones.

2. Ring-tailed cats are fully protected under Fish and Game Code Section 4700, as described above. If an active ringtail nest is found, the project will be redesigned to avoid the loss of the tree (or site) occupied by the nest, if feasible. If the project cannot be redesigned to avoid the removal of the nest, the CDFW will be contacted for their input. If approved by the CDFW, demolition of the nesting site will commence outside of the breeding season (February 1 to August 30). If a non-breeding nest is found in a tree (or site) scheduled to be removed, prior to disturbance, the CDFW will be notified to review and approve proposed procedures to ensure that no take occurs as a result of the action. Trees with nests that need to be removed will first be disturbed at dusk, just prior to removal that same evening, to allow ring-tailed cats to escape during the darker hours.

Mouse-tail Suncup

Surveys in the vicinity of the TCS have determined that mouse-tail suncup does occur onsite in proposed work areas within Bat Cave Wash because they occur on the ravine slope. For the following reasons, the potential for inadvertent impacts to this plant is considered to be limited:

- Rare plant surveys have identified the locations where the plant is found (Appendix D, Figure 1) and these areas are outside of proposed work areas associated with the soil investigations and the final groundwater remedy.
- This plant is not expected to occur in other proposed work areas because they were not seen during the multiple site visits conducted for the rare plant surveys.

Mitigation Measures. The Soils Investigation DEIR concluded that the soils investigation project would have a less than significant impact on mousetail suncup, and therefore no mitigation is required during the soils investigation activities. (DEIR at 4.3-57–4.3-58.) Several of the existing General Project Management Measures that are included in Section 3.4 of the Final Groundwater Remedy PBA (CH2M HILL, 2014) are expected to provide adequate protection for the mouse-tail suncup during the groundwater remediation activities. Excerpted relevant mitigation measures from that document are provided below, revised for the mouse-tail suncup; for these reasons, no additional measures are proposed:

1. PG&E shall have a qualified biologist responsible for assisting crews in compliance with the mitigation measures, performing surveys in front of the crew as needed to locate and avoid listed species, and monitoring compliance. Preconstruction surveys by a biologist shall be implemented for special-status wildlife species in work areas immediately prior to initiation of ground-disturbing activities. The survey shall provide 100 percent coverage of the designated work area, to the extent practicable. Any suncups outside of, but near, the work area footprint shall be flagged at that time so that they may be avoided during work activities. At conclusion of work activities, all flagging shall be removed.

2. To the maximum extent possible, facilities (treatment facility, pipelines, injection wells, and access routes) shall be sited within existing designated access routes and previously disturbed or barren areas to limit new surface disturbance.

3. Existing routes of travel to and from the proposed project site shall be used. Cross-country vehicle and equipment use shall be prohibited.
4. The area of disturbance shall be confined to the smallest practical area, considering topography and location of plants and other limiting factors. Designated work areas will be determined based on Remedy Design documents, as approved by the Bureau of Land Management (BLM), USFWS, and CDFW.
5. Activities shall be restricted to the designated work areas that are determined by the latest Remedy Design documents as approved by BLM, USFWS, and CDFW. If unforeseen circumstances require project expansion outside of the designated work area, the potential expanded work areas shall be surveyed for listed species prior to use of the area. All appropriate mitigation measures shall be implemented within the expanded work areas based on the judgment of the agencies and the project biologist. Work outside of the original designated work area shall proceed only after receiving written approval from the BLM, USFWS, and CDFW describing the exact location of the expansion.

Conclusions

Based on the information summarized in this memorandum, it is expected that implementation of the measures described herein together with the General Project Management Measures that are described in Section 3.4 of the Final Groundwater Remedy PBA are sufficient to reduce potential impacts of the proposed soil investigation and groundwater remedy activities to a "less than significant" level.

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Figure

LEGEND

- 2007 PBA Area of Potential Effect (APE)
- 2012 PBA Re-Initiation Action Area
- PBA Update Action Area
- 5-Mile Buffer
- mouse-tail suncup (Chylismia arenaria)
- desert bighorn sheep (Ovis canadensis nelsoni)

N

0 4,400 8,800 17,600 Feet

Note:
A query of the California Natural Diversity Database was made for a 5-mile buffer around the Groundwater Remedy Project Area of Potential Concern (blue cross-hatched area). There were no CNDDB-recorded occurrences of Townsend's bat or ring-tailed cat. Habitat for Nelson's bighorn sheep is shown as blue shading and mouse-tail suncup occurrences are shown as purple dots.

CNDDB. February 2015.

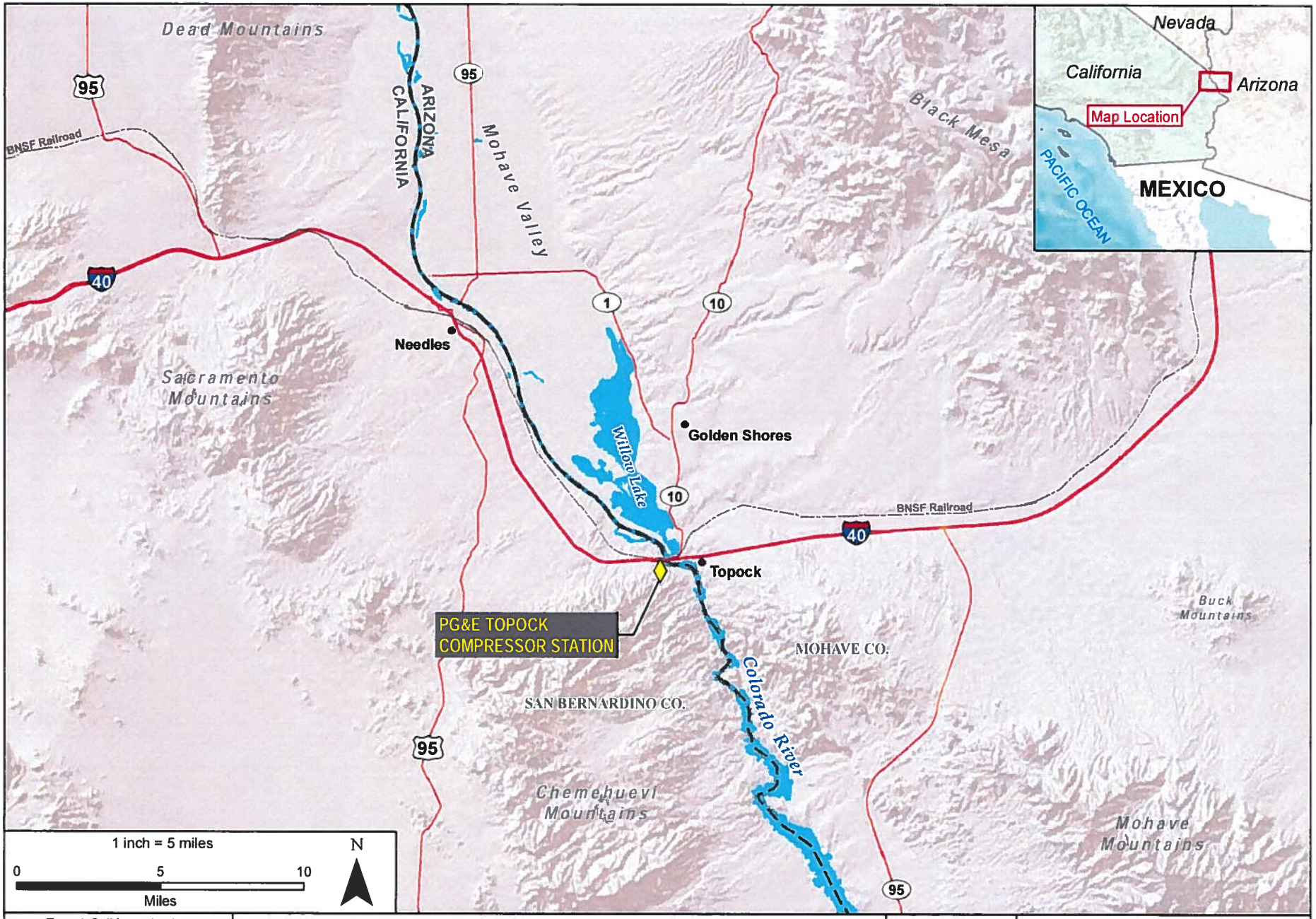
FIGURE 1
CNDDB OCCURRENCES AROUND FINAL GROUNDWATER REMEDY PROJECT AREA OF POTENTIAL CONCERN

FINAL GROUNDWATER REMEDY
PROGRAMMATIC BIOLOGICAL ASSESSMENT
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

Path: \\Zinfandel\proj\PacificGasElectricCo\TopockProgram\GIS\MapFiles\2014\EC_Working\FIG1_APE5miBuff_CNDDB.mxd Date Saved: 2/5/2015 3:35:24 PM

Appendix A
Draft Soil EIR Investigation Areas



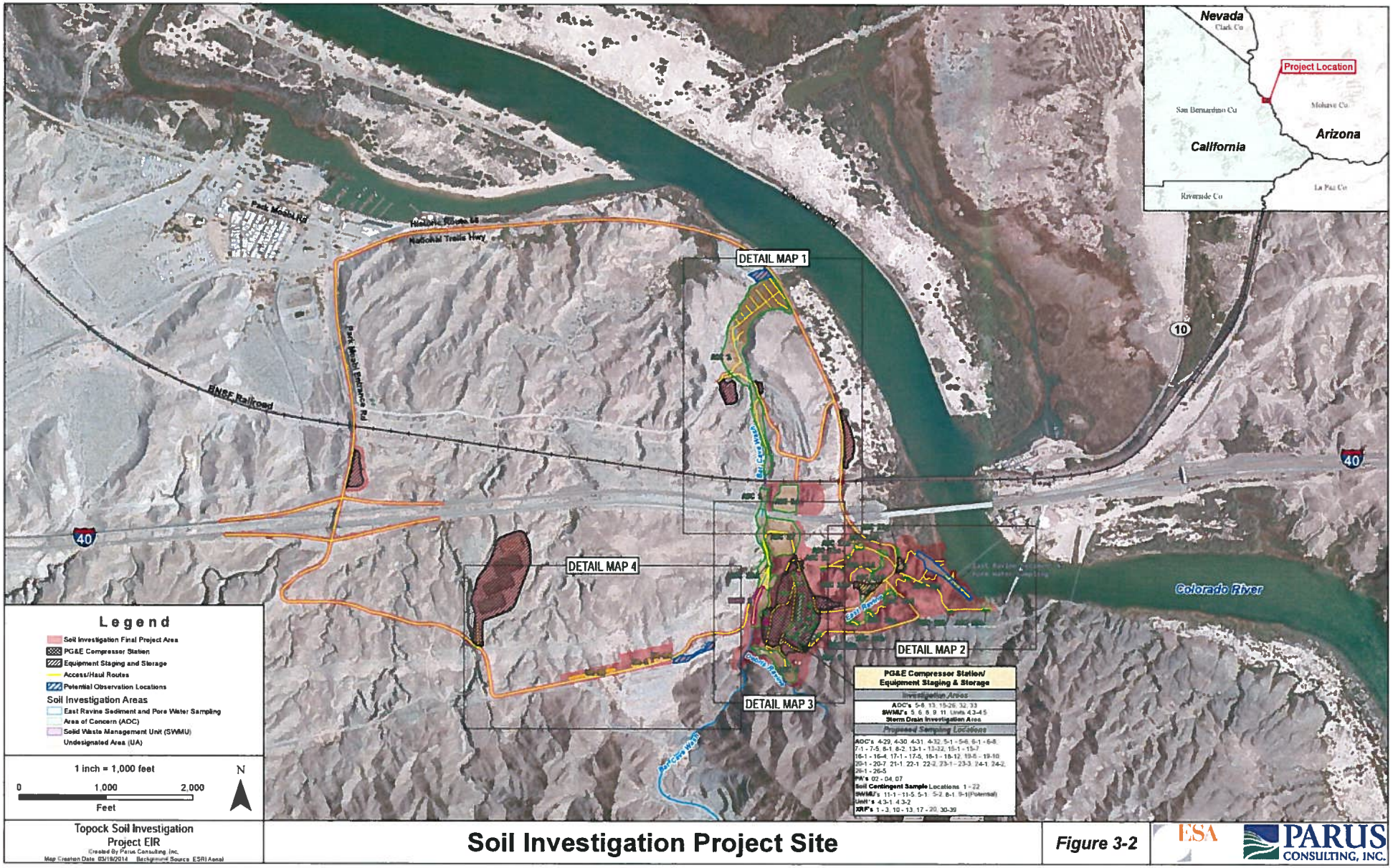
Topock Soil Investigation Project EIR
Created By Parus Consulting, Inc.
Map Creation Date: 02/27/2014
Background Source: ESRI Topographic

Regional Location Map

Figure 3-1

ESA

PARUS CONSULTING, INC.



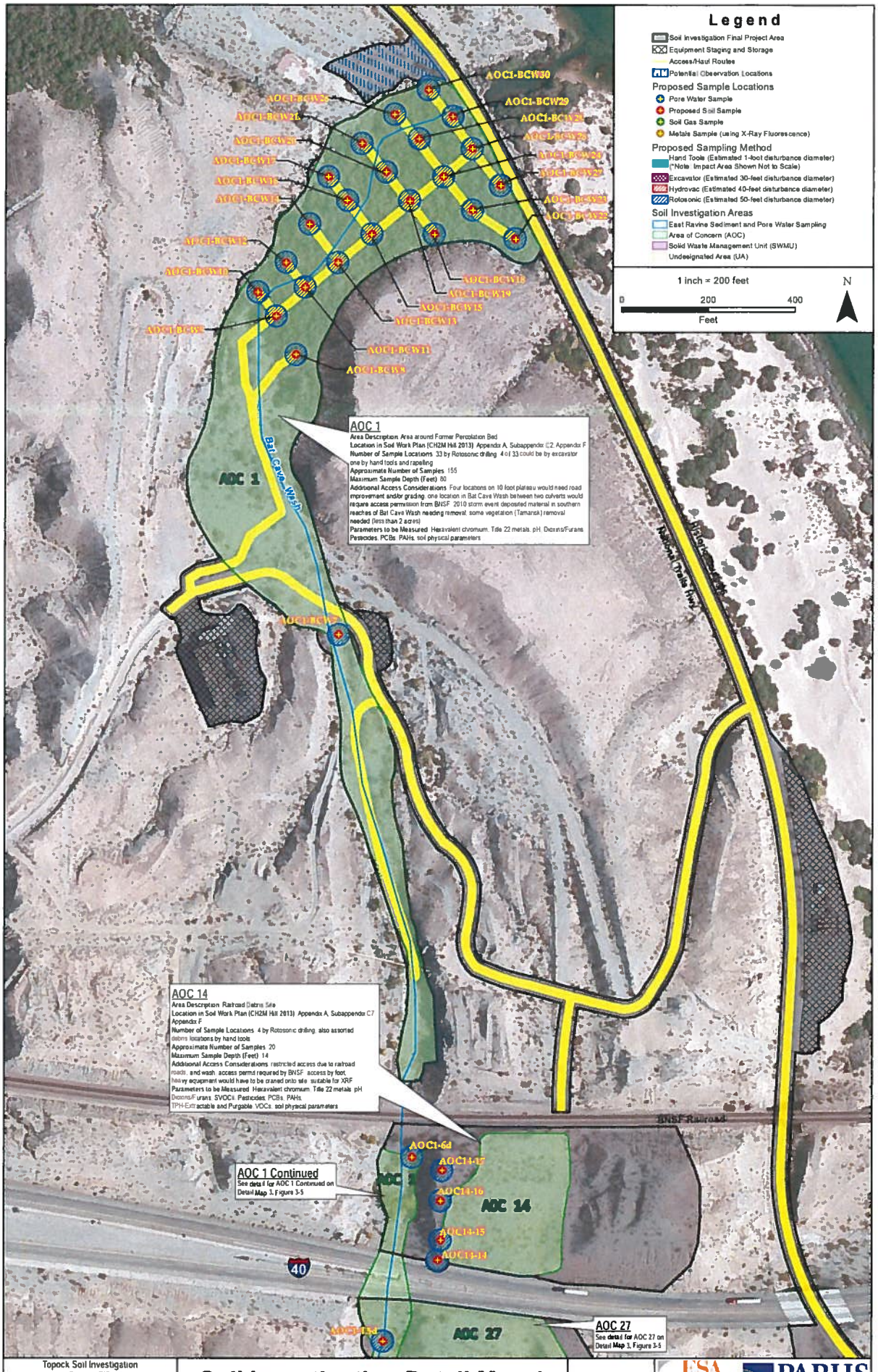
Topock Soil Investigation
Project EIR
Created By Parus Consulting, Inc.
Map Creation Date: 03/18/2014 Background Source: ESRI Aerial

Soil Investigation Project Site

Figure 3-2

ESA

PARUS CONSULTING, INC.



Topock Soil Investigation Project EIR
Created by: Parus Consulting, Inc
Map Creation Date: 02/24/2014
Background Source: ESRI Aerial

Soil Investigation Detail Map 1

Figure 3-3

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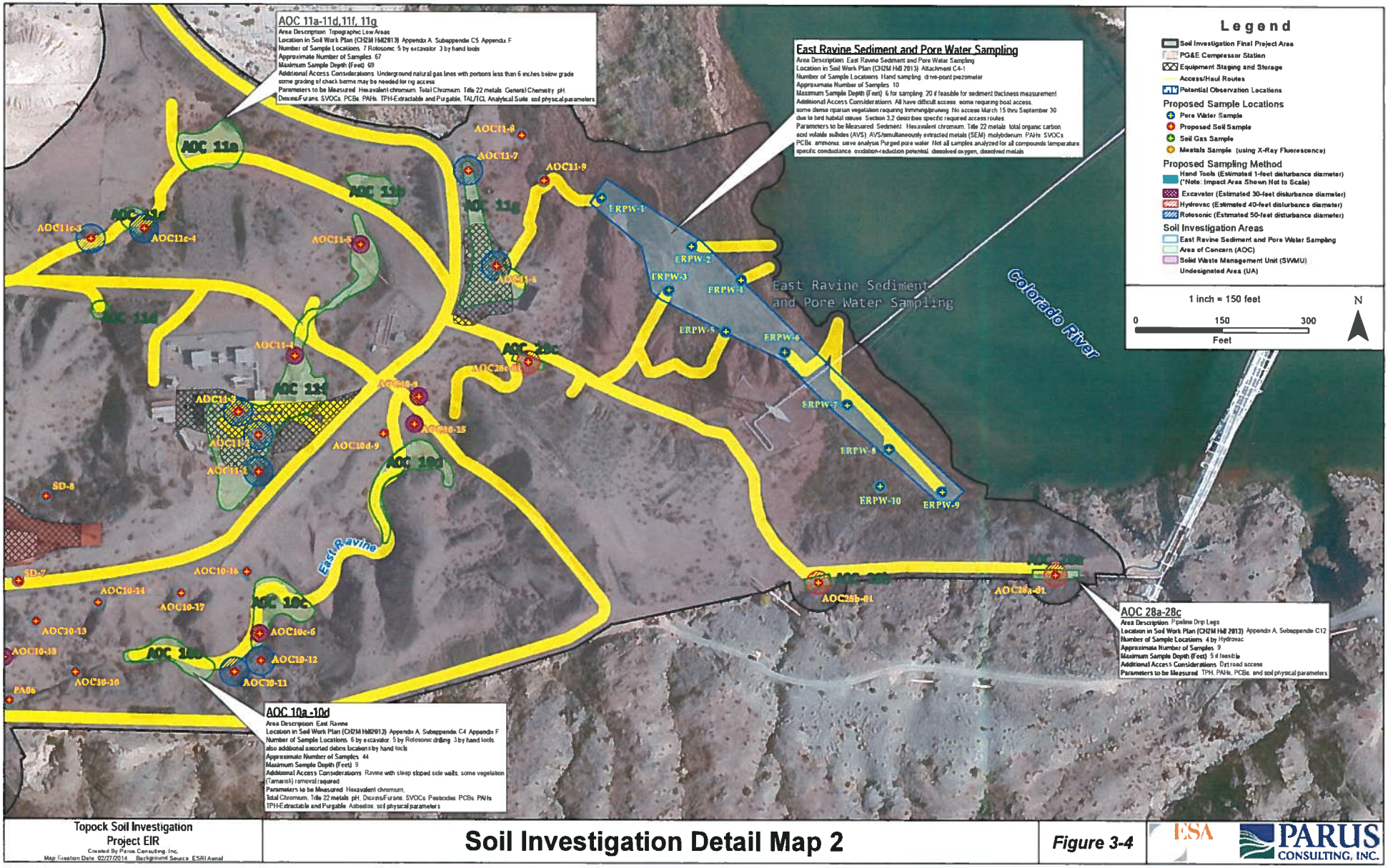

Topock Soil Investigation Project EIR
Created By: Parus Consulting, Inc.
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Soil Investigation Detail Map 2

Figure 3-4

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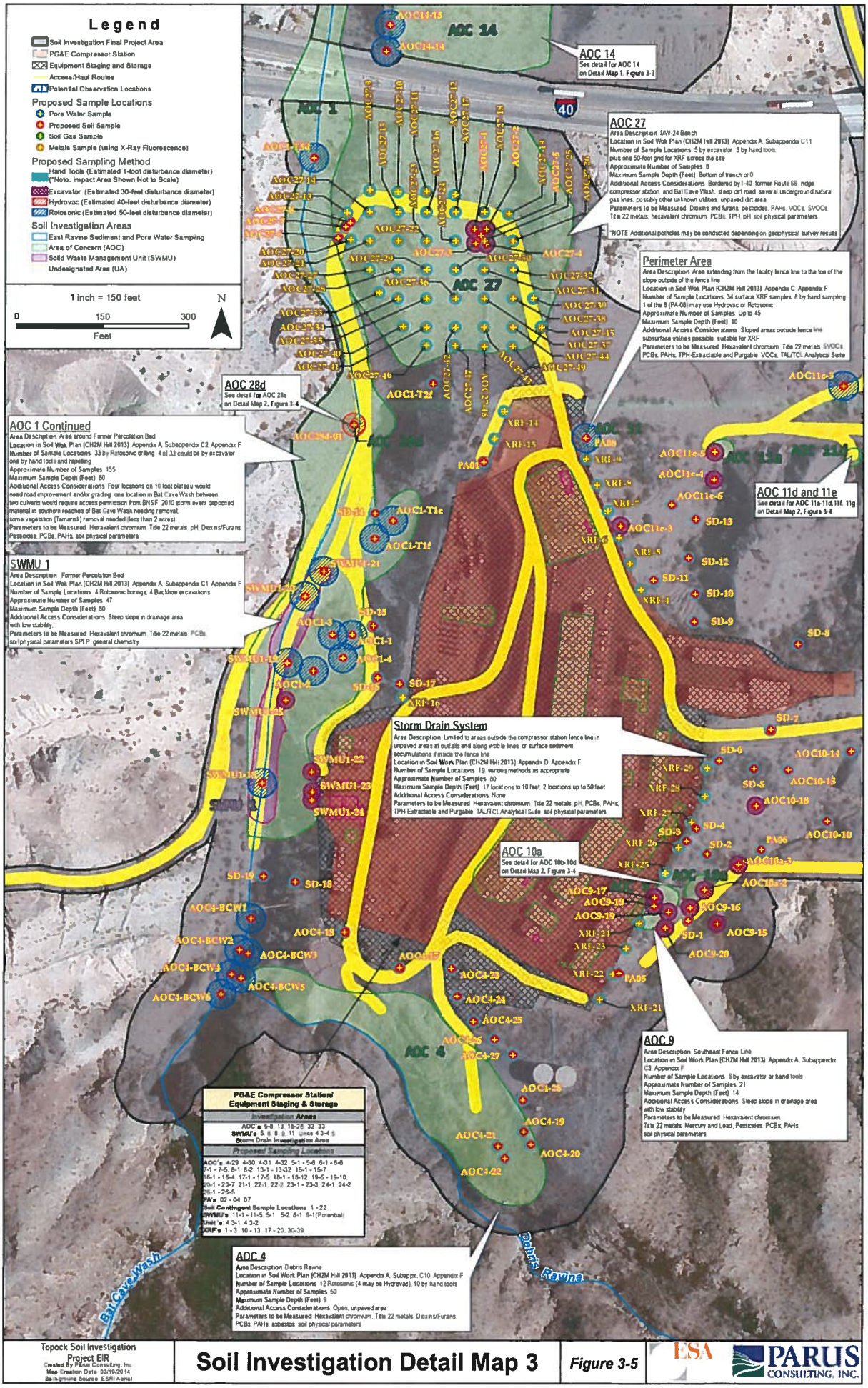


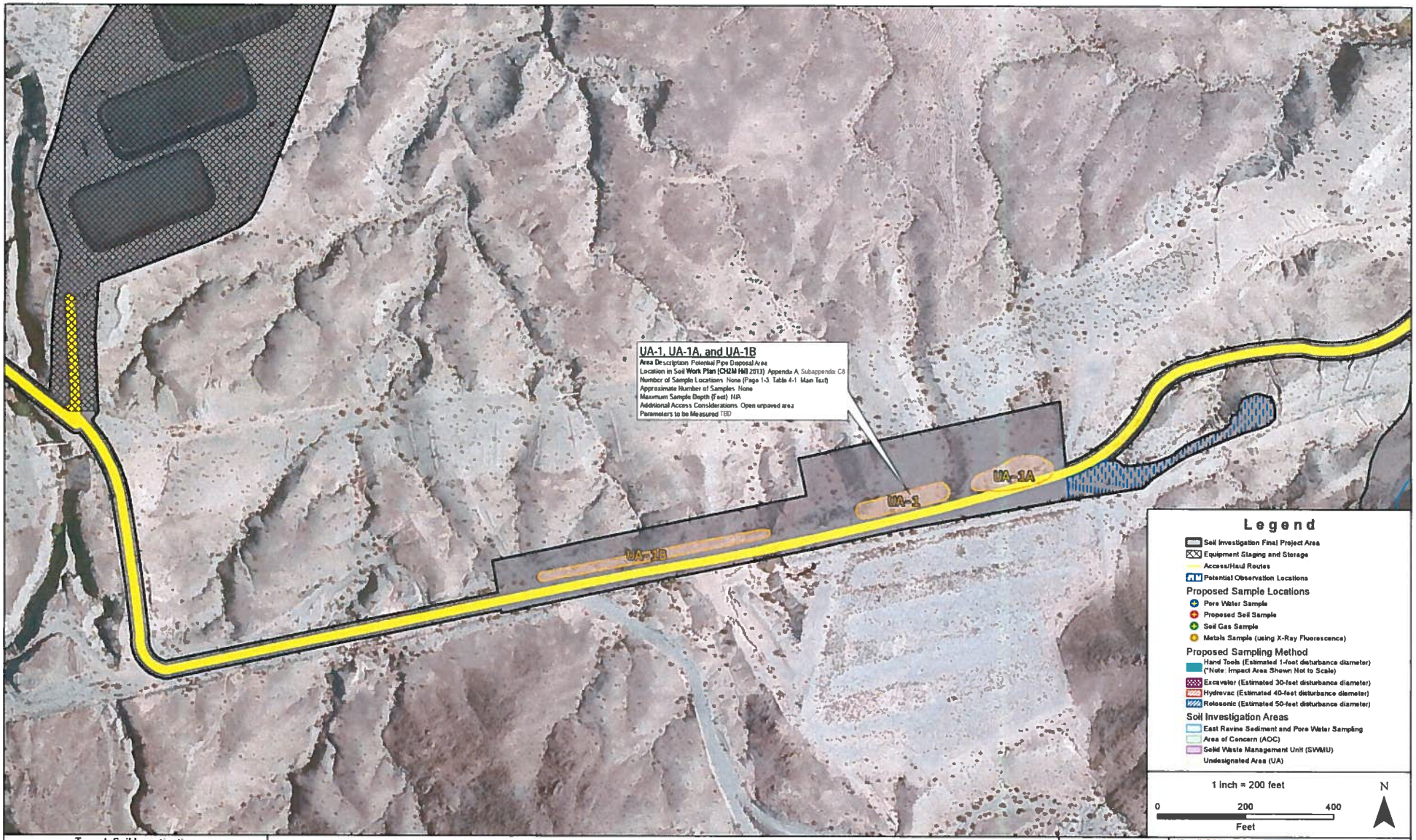
Topock Soil Investigation
Project EIR
Created By PArus Consulting, Inc
Map Creation Date 03/19/2014
Background Source ESRI Aerial

Soil Investigation Detail Map 3

Figure 3-5

ESA

PARUS CONSULTING, INC.

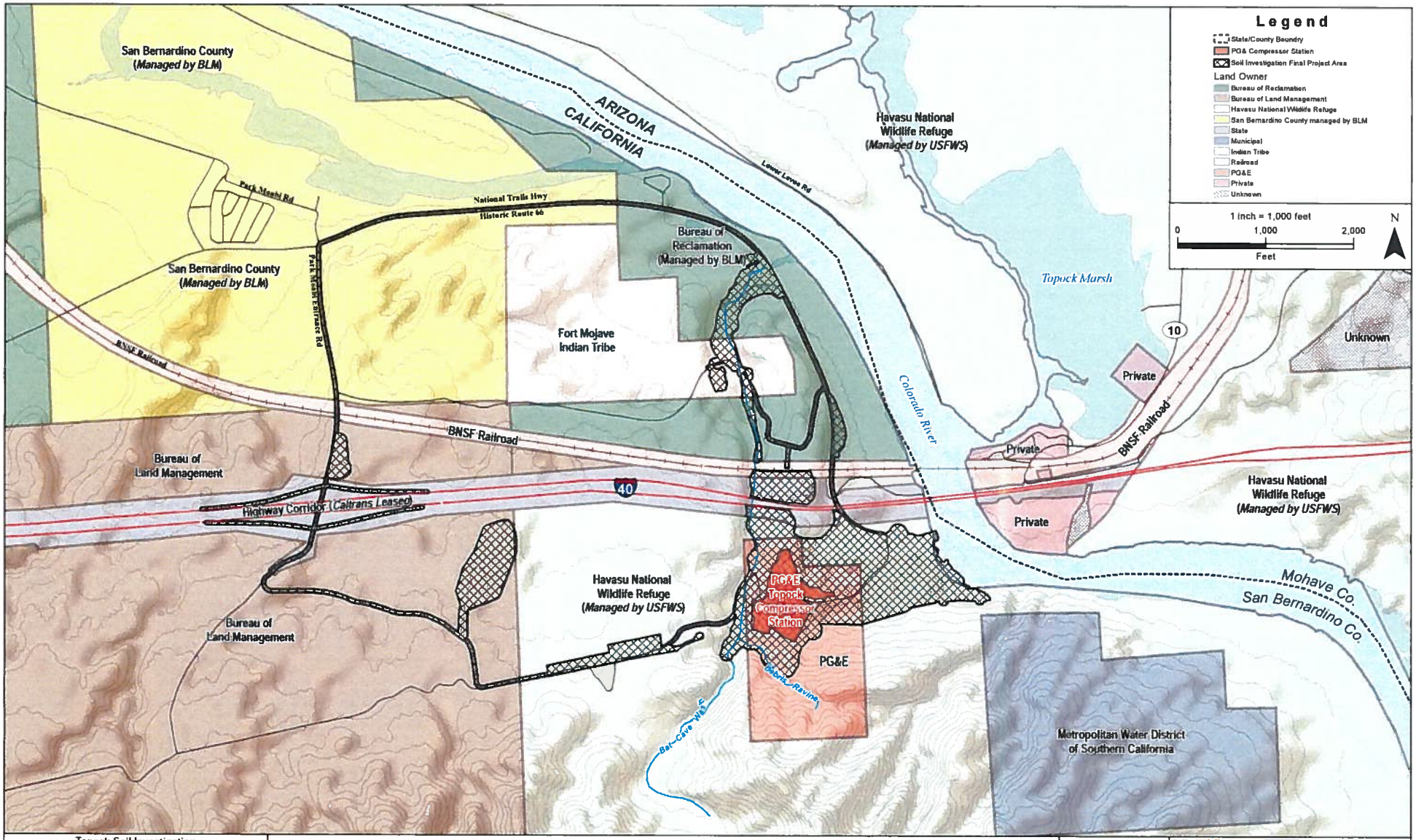


Topock Soil Investigation
Project EIR
Created By Parus Consulting, Inc.
Map Creation Date 02/24/2014 Background Source ESRI Aerial

Soil Investigation Detail Map 4

Figure 3-6

ESA PARUS CONSULTING, INC.



Topock Soil Investigation Project EIR

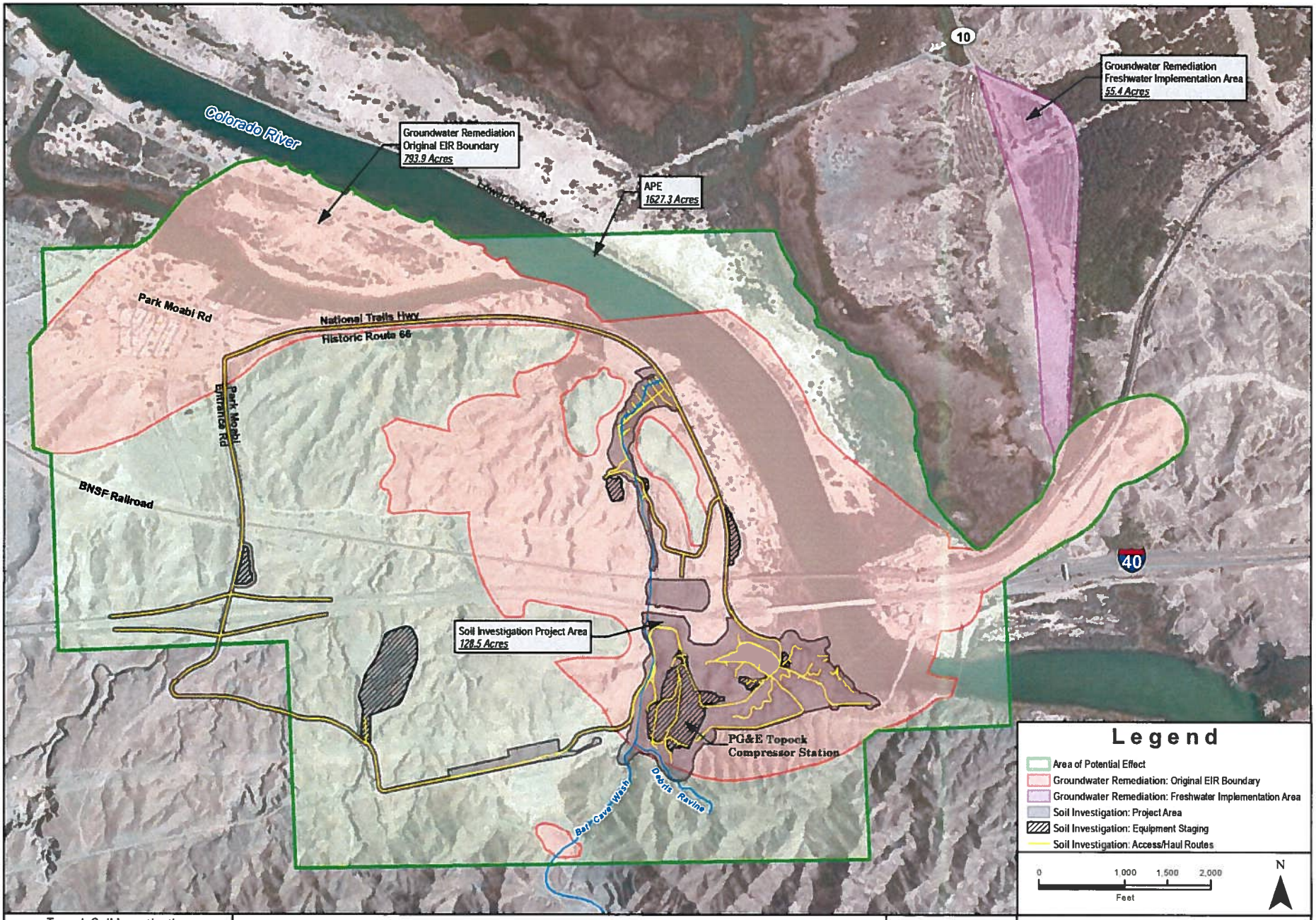
Created By Parus Consulting Inc. Map Creation Date 03/27/2014
Sources: ESRI Terrain. Ownership data provided by CH2M Hill

Land Ownership

Figure 3-7

ESA

PARUS CONSULTING, INC.



Topock Soil Investigation Project EIR
Created By Parus Consulting, Inc.
Map Creation Date: 10/10/2013
Background Source: ESRI Bing Maps Aerial

Topock Remediation Study Areas

Figure 3-8

ESA

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Appendix B
Groundwater Remedy Layout

Site B

COLORADO RIVER

Fort Mojave Indian Tribe
650-151-06

PG&E
650-161-08

Interstate 40

Southern Aerial Crossing

Radio Communication Panel/Antenna

Radio Communication Panel/Antenna

Radio Communication Panel/Antenna

Topock-2

Topock-3

HNWR-1A

HNWR-1

MW-Z
MW-A
MW-B
MW-C
MW-D
MW-E
MW-F
MW-G
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MW-I
MW-J
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MW-N
MW-O
MW-P
MW-Q
MW-R
MW-S
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MW-U
MW-V
MW-W
MW-X
MW-Y
MW-AA
MW-BB
MW-CC
MW-DD
MW-EE
MW-FF
MW-GG
MW-HH
MW-II
MW-10D
MW-11D
MW-70BR-D
IRZ-1
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IRZ-03
IRZ-04
IRZ-5
IRZ-06
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RB-1
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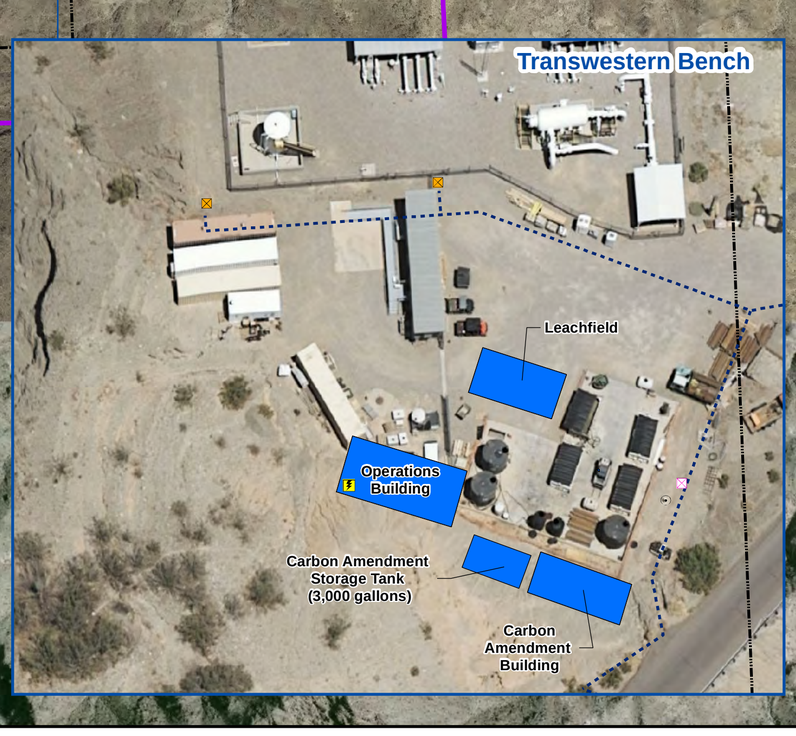
RB-5
IRL-1
IRL-2
IRL-3
IRL-4
IRL-5
IRL-6
IRL-7
TWB-1
TWB-2
TWB-3
TWB-4
TCS-1
TCS-2
ER-1
ER-2
ER-3
ER-4
ER-5
ER-6
FW-1
FW-2
CW-2S

Compressor Station

Transwestern Bench



MW-20 Bench

LEGEND

- Property Boundaries
- Area of Potential Effects (APE)
- EIR Project Area
- Planned Transformer
- Future Provisional Transformer

Existing Wells:

- Extraction Well
- Injection Well
- Monitoring Well
- Water Supply Well

Provisional Wells:
(Items in Pink are Provisional)

- Extraction Well
- Injection Well
- Monitoring Well
- Area for East Ravine (ER) Wells and MW-T
- Area for Potential Slant Well Screens
- Area for Inner Recirculation Loop (IRL) Wells
- Area for River Bank Extraction Wells
- Area for Monitoring Well

Planned Wells:

- Extraction, East Ravine
- Extraction, National Trails Highway (NTH) In-situ Reactive Zone (IRZ)
- Extraction, Riverbank
- Extraction, Transwestern Bench
- Injection, Freshwater
- Injection, Inner Recirculation Loop
- Injection, NTH IRZ
- Injection, Topock Compressor Station
- Remedy Monitoring Well
- Recirculation Well
- Area for Monitoring Well

Pipeline Corridor for Remedy

- Aboveground Pipe
- Underground Pipe/Conduit
- Future Provisional/Contingent Fresh Water Pipe

Remedy Facilities

- Proposed Remedy Structure
- Contingent Freshwater Pre-injection Treatment System
- Approximate extent of hexavalent chromium [Cr(VI)] concentrations exceeding 32 micrograms per liter (µg/L) at any depth ingroundwater based on fourth quarter 2013 sampling events. Dashed where based on limited data.

Note:

1. Note that in compliance with EIR mitigation measure CUL-1a-9, as well as PA and CHPMP mitigation measures, the pipeline along the dirt road west of National Trails Hwy is located in an existing, previously disturbed, access road. In addition, the location of the road and pipeline was field verified and does not create any direct physical impact or effect on the Topock Maze, as it is manifested archaeologically, in compliance with EIR mitigation measure CUL-1a-10, PA, and CHPMP mitigation measures.
2. All well and structure locations are approximate.

N

0 300 600 1,200 Feet

FIGURE 1
GENERAL REMEDY SYSTEM LAYOUT

FINAL GROUNDWATER REMEDY
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

CH2MHILL

Path: \\Zinfandel\proj\PacificGasElectricCo\TopockProgram\GIS\MapFiles\2014\EC_Working\FIG1_AppB_GeneralRemedyLayout.mxd

Appendix C
January 2015 Bat Habitat Survey

Recent Site Survey for Bat Habitat

An assessment of bat habitat in the soil EIR project area was conducted on January 29 and 30, 2015. Definitive bat surveys were not possible at this time of year because only a few species of bats may be present at this time, in contrast to a larger variety of bat species that would be expected by the end of April/beginning of May 2015. For this reason, a more detailed bat survey has been planned for this area in late April 2015. Therefore, the current survey was used to gather basic information on the potentially important habitat areas in order to guide the more detailed spring survey.

The bat habitat assessment was conducted by bat specialists, Dr. Pat Brown and Dr. William Rainey. Other entities that were represented during the bat habitat surveys included ESA senior wildlife biologist, Tom Moolio and CH2M HILL project biologist, Steve Long, as well as tribal monitors from the Hualapai Tribe, Fort Mohave Indian Tribe, and the Colorado River Indian Tribe. PG&E Site Representative Chris Smith was also present. The proposed soil investigation areas were identified in figures from the Soil EIR and Final Groundwater Remedy that are included in this memorandum (Appendix A Figures 3-1 through 3-8). Steve Long provided additional verbal information to the group for activities related to proposed Final Groundwater Remedy construction activities that were co-located with the Soil EIR investigation areas (Appendix B Figure 1).

The bat habitat assessment was initiated around 3PM on Thursday, January 29. After viewing the locations of general site operations, the group continued to the southwest portion of the TCS. This portion of the TCS is located to the north of Area of Concern 4 (AOC 4), where remediation was completed in December 2010, but where additional sampling will occur including proposed downgradient soil sampling within Bat Cave Wash (BCW; c AOC 4 BCW-1 through 6 as shown on Figure 3-5 in Appendix A). Relative to the Final Groundwater Remedy, this location is also near the proposed pipeline and pipe bridge across Bat Cave Wash that will supply the freshwater to injection well, FW-2. After observing the general project area from this location, an Anabat™ recording device (used to record bat sounds and identify bat species) was placed by Dr. Rainey on the eastern bank of Bat Cave Wash at the approximate location of the proposed pipe bridge footing (Location 1).

The group left the TCS and proceeded to assess the potential bat habitat in the vicinity of the Transwestern Bench and lower portion of the East Ravine. The next Anabat location was chosen in the lower (eastern) portion of the East Ravine near a large palo verde tree (Location 2). The recording location was chosen near the tree because of its potential as foraging habitat for bats that might feed on insects on the tree (gleaning) or would otherwise be funneled by the nearly vertical walls of the ravine. This bat monitoring location is near proposed soil sampling associated with AOC 10 (see Figure 3-4 in Appendix A)

To assess potential bat habitat along the steep to vertical slopes facing the Colorado River, the next Anabat locations were placed on the slopes below the access roadway. The first location (Location 3) was near the western end of the former Route 66 bridge (i.e., the current PG&E pipe bridge) and proposed soil sample location AOC28a-01 (see Figure 3-4 in Appendix A). The second location (Location 4) was just south of the exposed red rock formations near proposed soil. The eastern face of the red rock formation has large cavities that represent potential Townsend bat roosting habitat. The proposed soil sampling activities in these areas include soil vapor samples that will be completed with a drill rig and proposed pore water sampling in the adjacent marsh areas that will be collected by hand from a boat along the Colorado River.

The last two Anabat detectors were placed on the north (Location 5) and south (Location 6) banks of the Bat Cave Wash just west of National Trail Highway. At least two bats were directly observed at this time flying above the dense tamarisk at this location and bat vocalizations were also detected by the detectors. Due to light rains beginning about 8PM and lack of protective shelters for the Anabat instruments, Dr. Brown and Dr. Rainey, accompanied by Steve, return to the site between 10:30 and 11PM to retrieve

the detectors from Locations 2 through 6 just as the rainfall became steady. The final detector was retrieved from Location 1 on the TCS by Steve first thing the following morning.

The group assembled the following day on January 30 at 10:30AM to continue the bat habitat assessment. Due to the ongoing threat of rainfall, the decision was made to not place any additional Anabat detectors, but rather, to view proposed sampling areas with the intent of assessing habitat and planning future placement for Anabat detectors and mist nets for the detailed spring survey. This assessment included a walk between IM-3 and the upper portion of Bat Cave Wash to the west of the TCS. After this walk, the group travelled together to view of the upper mesa areas around the proposed freshwater injection well, FW-1; and then to the proposed soil investigation areas along Park Moabi Road (see Figure 3-2 of Appendix A); around the Evaporation Ponds and Potential Pipe Disposal Area (see Figure 3-6 of Appendix A); and finally the proposed freshwater supply pipeline and wells along the west side of the Oatman-Topock Highway and within Sacramento Wash in Arizona that will be potentially included as part of the Final Groundwater Remedy.

Subsequent analysis of the Anabat data from all locations over the two-day period indicated at least 130 “call-minutes” worth of data was collected. A “call-minute” is the number of minutes in which a bat vocalization is detected. These vocalizations were attributed by Dr. Brown and Dr. Rainey to correspond to three different bat species: Yuma myotis (*Myotis yumanensis*) and/or California myotis (*Myotis californicus*) (which are sonographically similar); Mexican free-tailed bat (*Tadarida brasiliensis*), and a few pallid bats (*Antrozous pallidus*). As previously mentioned, a short discussion of the finding of the initial bat survey was given by Dr. Brown in a conference call to participants from DTSC, ESA, PG&E and CH2M HILL. A short letter report documenting these findings is expected from Dr. Brown and Dr. Rainey before the end of February 2015.

Areas where potential Townsend’s bat roosting habitat may occur are shown on the following Figures C1a and C-1b.

Photo for Figure C-1a: Photograph of potential roosting habitat within the project area in Bat Cave Wash

Figure C-1a. Location of ravine side wall with potential roosting habitat shown by red arrow (Source: GoogleEarth Pro).

Photo for Figure C-2a: Potential roosting habitat near Colorado River (see red arrows). Note that proposed pore water sampling in this area by boat was not considered likely to disturb these potential roosts.

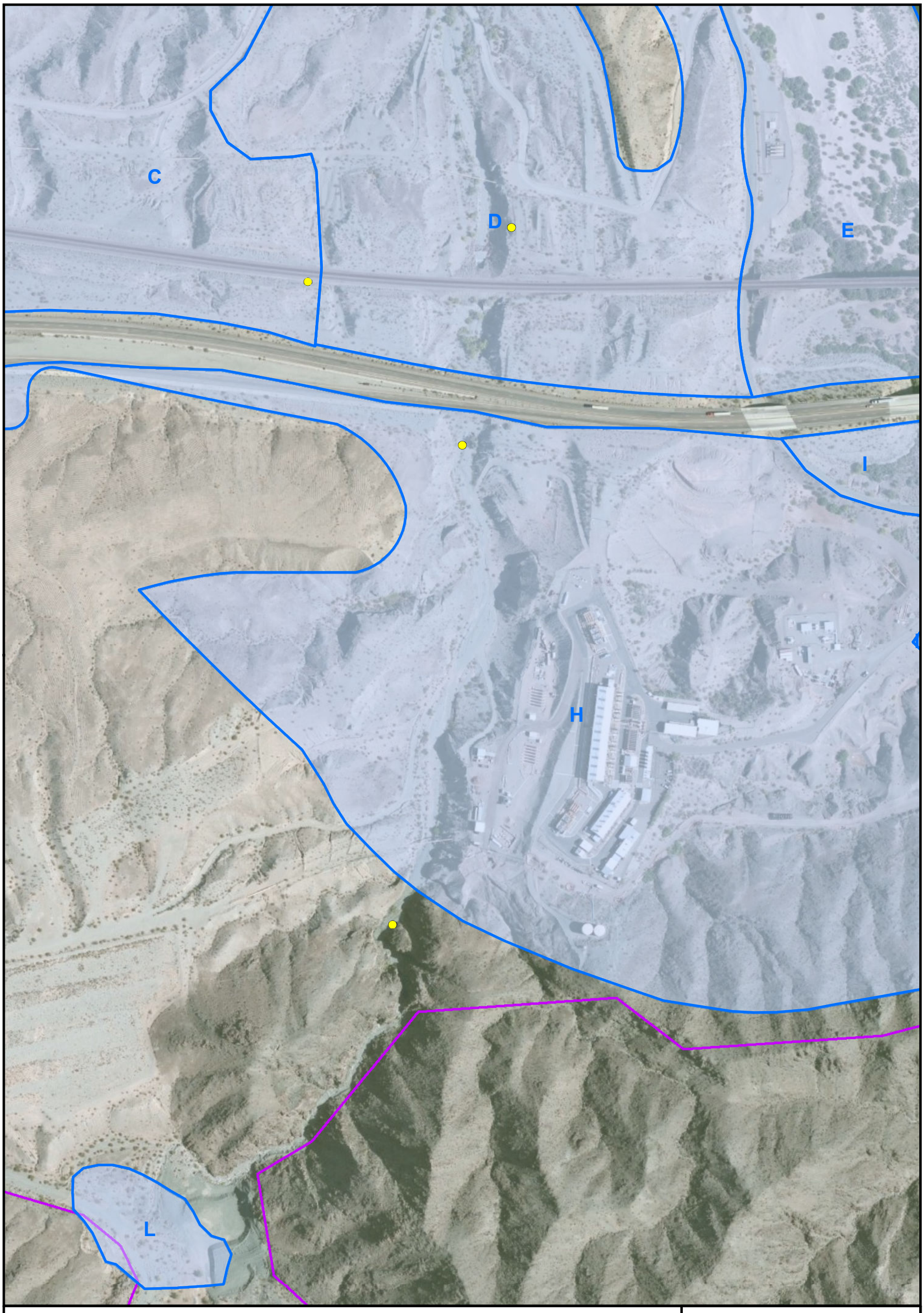
Figure C-1b. Potential roosting habitat along Colorado River at mouth of East Ravine (Source: GoogleEarth Pro).

Appendix D
Mouse-tail Suncup Information

Photographs of Mouse-tail Suncup Plants Found in the Project Area

Plate 1. Mouse-tail suncup (*Chylismia arenaria*); California Rare Plant Rating = 2B.2: (1) Habitat on hard-packed vertical walls of conglomerate above Bat Cave Wash in Survey Section D. (2) Close-up of habitat with four plants visible. (3) Close-up of flower (front view). (4) Close-up of flower (side view) showing elongated hypanthium with white arrow.

SOURCE: Topock Compressor Station Groundwater Remediation Project Floristic Survey Report. GANDA and CH2M HILL. 2013. Final revised version dated, December 30.



LEGEND

- PBA Update Action Area
- Vegetation Survey Segment
- Mousetail suncup

Note: The rare/ranked plant mapping was limited to the EIR Project Area and additional areas in Arizona that were evaluated as part of the Freshwater Implementation Plan

N

0 150 300 600 Feet

FIGURE 1
MOUSE-TAIL SUNCUP OCCURRENCES IN THE PROJECT AREA
Final Groundwater Remedy
PG&E Topock Compressor Station
Needles, California

CH2MHILL

Path: \\Zinfandel\proj\PacificGasElectricCo\TopockProgram\GIS\MapFiles\2014\EC_Working\FIG1_MousetailSuncup.mxd Date Saved: 2/5/2015 1:27:21 PM