

# **Topock Compressor Station Soil Investigation Project Archaeological and Historical Resource Monitoring Report**

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## MANAGEMENT SUMMARY

As part of the Topock Remediation Project, the California Department of Toxic Substances Control (DTSC) directed Pacific Gas and Electric Company (PG&E) to conduct additional soil investigation to characterize the nature and extent of chemicals of potential concern that may be present in and around the Topock Compressor Station. For a detailed discussion of the soil investigation, please refer to *Soil RCRA Facility Investigation/Remedial Investigation Work Plan, PG&E Topock Compressor Station, Needles, California* (the Work Plan; CH2M Hill 2013).

In compliance with the PG&E Topock Compressor Station Soil Investigation Project Final Environmental Impact Report (Soil FEIR; DTSC 2015) Mitigation Measure (MM) CR-1d (*Cultural Resources Monitoring Program*), DTSC required PG&E to conduct archaeological field monitoring of all Project-related round-disturbing activities and their associated work areas to ensure archaeological and historical sites were avoided. The mitigation measure also specifies that interested Tribes be invited to participate in the monitoring. In addition to satisfying MM CR-1d, this effort also complied with MM CR-3 (*Inadvertent Discovery of Paleontological Resources*) in the event paleontological resources are discovered.

The soil investigation began on November 3, 2015, and continued sporadically until April 28, 2017. During this 18-month period, some 300 activity locations were monitored by archaeologists and representatives of several Tribes. During the monitoring, four previously unknown archaeological sites (Æ-Topock-204/H, -213, -216/H, and -217) were identified and recorded, the site record was updated for another site (CA-SBR-11908), and two new isolates (Æ-Topock-62 and -63) were recorded. The new and updated site records are available in Appendix C. All previously known and newly discovered resources were avoided by the soil investigation work.

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# 1

## INTRODUCTION

The Topock Compressor Station (TCS) is located on the west side of the Colorado River, approximately 12 miles southeast of Needles in San Bernardino County, California, and 0.5 mile west-southwest of Topock, Mohave County, Arizona. The station, constructed in the 1950s, is one of eight natural gas compressor stations found along Pacific Gas and Electric Company's (PG&E) vast transport and distribution pipeline system that spans California between Arizona and Oregon. Prior to the mid-1980s, an additive containing hexavalent chromium (Cr[VI]) was used to prevent rust in the cooling towers that prepared the gas for transportation through PG&E's pipeline to northern and central California. Consistent with industry practices of the time, from 1951 through 1964, untreated wastewater from these towers was discharged into Bat Cave Wash, a rocky arroyo on the west side of the station. Hexavalent chromium has since percolated into the groundwater, where it has been detected at levels exceeding the limits set by federal and state law. Investigative and remedial activities at the TCS are being carried out under the Resource Conservation and Recovery Act Corrective Action process, as well as the Comprehensive Environmental Response, Compensation, and Liability Act.

As part of its response, PG&E has implemented the Topock Compressor Station Soil Investigation Project (hereinafter, Project) under the direction of the U.S. Department of Interior (DOI) and the California Department of Toxic Substances Control (DTSC). The study area for the soil investigation encompassed approximately 200 acres in and around the TCS. For a detailed discussion of the soil investigation, please refer to the *Project Remedial Investigation Work Plan* (Work Plan; CH2M Hill 2013). The Work Plan specified an initial round of soil sampling, followed by a technical analysis which included identification of any soil data gaps. Because several sets of data gaps subsequently were identified, three additional rounds of sampling occurred.

The 2015 *PG&E Topock Compressor Station Soil Investigation Project Final Environmental Impact Report* (Soil FEIR; California Department of Toxic Substance Control [DTSC] 2015) contains mitigation measures designed to reduce the impacts of the Project by avoiding archaeological, historical, and paleontological resources. Mitigation Measure (MM) CR-3 directs the assessment and protection of paleontological resources inadvertently discovered during Project activities. MM CR-1d directs PG&E to conduct archaeological monitoring "during all Project-related ground-disturbing activities for the purpose of identifying and avoiding impacts to archaeological resources that could potentially qualify as historical resources under CEQA (California Environmental Quality Act)." Regarding Tribal notification of scheduled monitoring events, the measure directs PG&E to notify interested Tribes no less than one week prior to the commencement of Project-related ground-disturbing activities, provide weekly work forecasts to facilitate scheduling of monitors, notify Tribes of any scheduling changes as soon as possible, and inform Tribal monitors at the end of each work day whether work activities will be taking place the following day. The measure further stipulates:

Upon completion of investigation activities, a Soil Investigation Monitoring Report shall ... document dates of monitoring and monitoring participants, activities observed, soil types observed, and any archaeological resources encountered. PG&E shall provide Interested Tribes an opportunity to contribute their observations to the monitoring report. To be included in the monitoring report, the Tribal section must be provided to PG&E within 8 weeks after completion of monitoring activities. ... The report shall be provided to the Tribes for review and comment consistent with CR-1a-1. The report shall be provided to DTSC and the Tribes for review and comment within 16 weeks of Project completion.

The work area designated for monitoring included all soil sampling locations and equipment and material staging areas, plus a 50-foot buffer surrounding sampling areas where topography allowed. These various kinds of work areas, some including buffers, were collectively referred to as the Work Zone Maximum Footprint (WZMF). During the course of the soil investigation, some additional sampling locations were identified outside the WZMF (Figure 1).

Successful monitoring of the Project involved a two-step process. First, pre-investigation field verification was conducted not less than four weeks prior to the scheduled soil investigation to ensure that known archaeological and historical sites within the WZMF were avoided. Thereafter, archaeologists and Tribal representatives monitored all ground-disturbing work for the soil investigation. Both steps required advanced notifications to Tribes and other parties of pending verification and monitoring events. Following the sample collection and analysis, identified data gaps triggered additional rounds of pre-investigation field verification and soil investigation monitoring.

Some 18 months after initiation of the soil investigation fieldwork on November 3, 2015, PG&E announced that all field work had been completed on April 27, 2017. Tribes were notified by PG&E of their opportunity to contribute sections to the monitoring report on May 13, 2017, and again on June 22, 2017.

## **1.1 CULTURAL BACKGROUND**

Numerous cultural resource studies have been carried out in and around the Project area since the early 1970s. As of June 2017, 242 archaeological and historical sites and isolates had been identified in the immediate Project vicinity. The 150 prehistoric archaeological sites, 27 historic sites, 12 sites containing both historical and prehistoric elements, 51 prehistoric isolates, and 2 historic-era isolates reflect as much as 130 centuries of human occupation and use of the region. Eight sites are in Arizona, while the rest are in California. The prehistoric isolates consist primarily of lithic artifacts but also include ground stone, ceramics, rock cairns, and hearths. Related to the historic period are remaining segments of U.S. Highway 66 (Route 66), a part of the first nationally designated highway system and one of 13 original U.S. Highways designated in California. Associated with Route 66 are the National Old Trails Arch Bridge, erected in 1916, and archaeological remains of El Rancho Colorado Roadhouse, which served travelers on the historic highway. The roadhouse represents an example of a regionally significant type of cultural property, the desert highway oasis roadside business serving long-distance travelers.

As part of the federal compliance with Section 106 of the National Historic Preservation Act, the Bureau of Land Management (BLM) recognized the cultural sensitivity of the Project area by

identifying the Topock Traditional Cultural Property (TCP) in a programmatic agreement (PA) among the various parties involved in the Project (Bureau of Land Management [BLM] 2010). The DTSC similarly recognized the Topock Cultural Area (TCA) in the 2011 *Final Environmental Impact Report for the Topock Compressor Station Groundwater Remediation Project* (Groundwater FEIR; DTSC 2011). A key element of the culturally sensitive area is the Topock Maze (CA-SBR-219) archaeological site, a dominant landscape feature defined by an expansive series of geoglyphs, or human-made windrows of stone, arranged in a formal geometric pattern and concentrated in three loci identified as Locus A, B, and C on top of plateaus to the north and west of the TCS. The Maze is an important cultural resource for the local Native American community. Several worn trail segments in proximity to the Maze have also been recorded as archaeological features (Earle 2005; Hanes 2017).

The various studies and documented sites are described in the Groundwater FEIR, the Cultural and Historic Properties Management Plan (CHPMP; BLM 2012), and other documents produced for the Project. The reader is referred to these documents for additional details on the cultural history of the Project area.

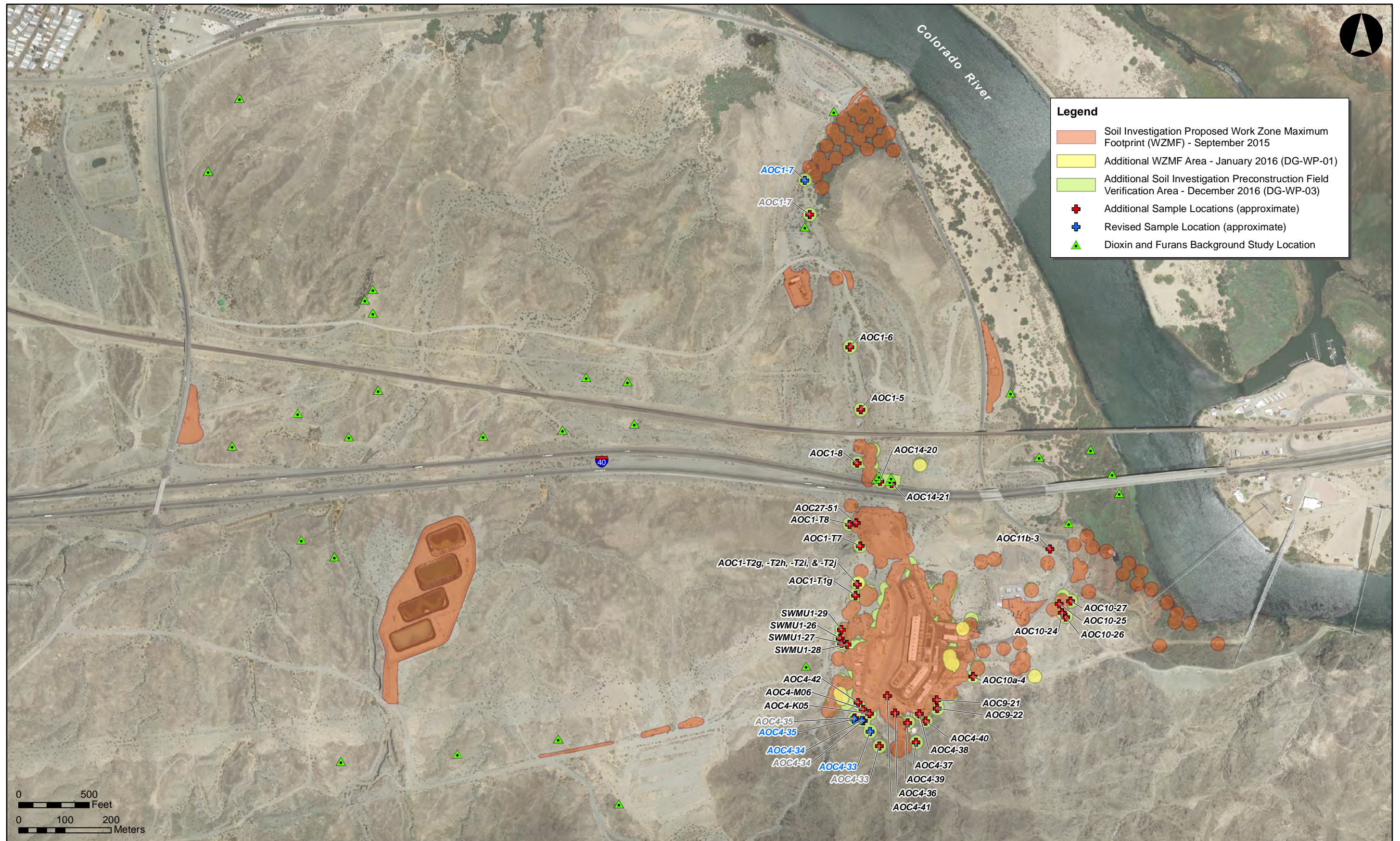


Figure 1 Soil investigation proposed Work Zone Maximum Footprint (WZMF) and additional soil investigation sampling locations.



## 2 METHODS

With DTSC’s approval, in conformance with Soil FEIR MM CR-1c-1, PG&E retained Applied EarthWorks, Inc. (Æ) to carry out the required soil investigation monitoring. Tribes and agencies participating in the monitoring fieldwork are identified in Appendix A. Field monitoring occurred on an intermittent basis from November 3, 2015, to April 27, 2017 (see monthly summaries in Appendix B). Consistent with the November 2014 draft *Archaeological and Historical Field Procedures and Protocols for Site Monitoring and/or Verification Activities* and the procedures in MM CR-1d, on October 21, 2015, PG&E invited the Tribes to the monitoring project initiation meeting on October 29, 2015 at the TCS facility. PG&E also invited Tribes to all subsequent re-initiation meetings for the Project, and transmitted weekly project updates to the Tribes that included forthcoming soil investigation work.

### 2.1 PRE-INVESTIGATION HISTORICAL RESOURCES FIELD VERIFICATION

In compliance with Soil FEIR MM CR-1c-2 (*Pre-Investigation Historical Resources Field Verification*), four field verifications were conducted prior to each phase of soil sampling:

- The original Pre-Investigation Field Verification (September 22–25, 2015)
- Data Gap-Work Plan-1 (DG-WP-1) verification (January 29, 2016)
- Data Gap-Work Plan-2 (DG-WP-2) verification (January 29, 2016)
- Data Gap-Work Plan-3 (DG-WP-3) (December 5, 2016)

The purpose of the verifications was to confirm the locations of known archaeological and historical sites within the WZMF, verify their avoidance, verify that additional resources were not present within the soil investigative areas, and verify that existing mitigation measures were appropriate to manage all such resources (Moloney and Price 2015; Price 2016).

Figure 2 shows all archaeological and historical sites previously recorded within the WZMF, in addition to the new sites discovered during the monitoring fieldwork. As part of the verification efforts, interested Tribes were provided the opportunity to identify, “for the purposes of avoidance, any physical features of Tribal significance within the field verification area, including but not limited to trails, rock features, desert pavement areas, and cleared circles that might be considered contributors to the TCP.” The Tribes did not identify any such areas.

With one exception, the field verification efforts did not identify any conflicts between known archaeological and historical sites and the proposed soil investigation. The exception is the TCS itself, which has been identified as an historic-era resource; several soil sampling locations were located within the TCS compound. In response to a recently completed historical evaluation of the TCS complex (Smallwood and Smith 2016), the California State Historic Preservation

**Figure 2** Archaeological sites in or adjacent to soil investigation proposed Work Zone Maximum Footprint (WZMF) and additional soil investigation sampling locations.  
(Figure deliberately excluded from nonconfidential version)

Officer determined that the TCS facility was not eligible for listing in the National Register of Historic Places as a historic district, and therefore is not considered a significant historic property (Polanco 2016). As a result, Æ found that no historic properties would be affected by the Project.

## **2.2 SOIL INVESTIGATION MONITORING**

In preparation for the initial field verification in late September 2015, Æ produced maps depicting the proposed soil investigation WZMF and recorded archaeological and historical sites within and near the footprint. These maps, with minor updates, also aided the subsequent soil investigation monitoring.

Monitoring fieldwork began on November 3, 2015. Each day began with a tailgate safety meeting and daily logistics discussion. At these daily morning meetings, PG&E also asked Tribal monitors for any questions or comments. Æ archaeological monitors also routinely solicited comments from Tribal monitors as the monitoring progressed. Tribal comments were recorded in the observations section of the Daily Monitoring Report (DMR). The DMR forms also recorded who participated in the monitoring, the location monitored, the scope of construction work monitored, previous disturbances at the location, and observations of the archaeological and Tribal monitors. A tabular monthly summary of monitoring activities and observations is provided in Appendix B.

Monitors observed activity at almost 300 specific locations (Figure 2), including areas where:

- dense stands of salt cedar, tamarisk, and other vegetation in Bat Cave Wash were cleared using hand power tools and other mechanical equipment;
- soil boring and trenching occurred using hand tools, rubber-tired backhoes, rubber-tired vacuum trucks, and track-mounted rotosonic drill rigs, depending on the sampling objective, nature of terrain, and access issues at specific soil sampling locations;
- geophysical surveys such as ground penetrating radar and electromagnetic induction were performed to determine the precise locations of potential subsurface features such as buried utility infrastructure;
- equipment (e.g., vehicles, sampling rigs, etc.) and associated materials were stored; and
- investigation-derived waste was managed.

The specific areas monitored each day are identified in the monthly summary tables (Appendix B). Locations of the newly discovered sites are also shown in Figure 2, and the new site records along with updated site records are included in Appendix C.

## **2.3 SAFETY AND WORK SHUTDOWNS**

Work shut downs were limited to four short periods throughout the 18-month-long project. These were:

- January 7, 2016—work temporarily halted (30 minutes) due to lightning.
- January 9, 2016—work temporarily halted (15 minutes) due to tarantula encroachment.
- February 23, 2016—work halted in afternoon due to extreme high winds.
- March 3, 2016—work temporarily halted (30 minutes) due to presence of big-horn sheep within 250 feet of work site.

No safety issues were documented during the 18-month monitoring period; however, Nick Zeyouma, representing the Colorado River Indian Tribes, reported an incident on February 9, 2016. While driving his vehicle southbound along the Eastern Access Road, he was forced off the road and into the ditch by the aggressive driving of the Burlington Northern Santa Fe Railway representative who was monitoring the hoisting of a sonic drill rig by crane mobilization from Bat Cave Wash to AOC1-6d. This event was confirmed by Howard Magill when he called Patrick Moloney to tow Zeyouma's truck out of the ditch.

## 3 FINDINGS

### 3.1 PRE-INVESTIGATION FIELD VERIFICATION

During the September 2015 field verification three previously unidentified prehistoric archaeological sites and one isolate were discovered (Moloney and Price 2015). All three sites are in a limited area near sampling locations AOC11-5 and AOC1-c4 and -c5. Site CA-SBR-29935 (Æ-Topock-201) is a sparse lithic scatter on a 30-degree east-facing scree-covered slope 2 meters outside the 50-foot buffer zone for AOC11-5. Site CA-SBR-29936 (Æ-Topock-202) is a discrete lithic scatter on the crest of a narrow ridge; the site extends across the northern boundary of AOC1-c4 by 1.5 meters. Site CA-SBR-29937 (Æ-Topock-203) is a diffuse lithic scatter on a scree-covered slope and overlaps AOC1-c5 by 3.1 meters. Due to their positioning beyond the perimeters of the soil sampling areas and on inaccessible slopes above the soil sampling locations, these sites were easily avoided and no impacts occurred.

Isolate Æ-Topock-ISO-61, a unidirectional, unifacial cobble core was discovered 5.6 meters inside the northeast perimeter of AOC1-c4. The isolate was monitored closely and successfully avoided during the soil investigation work. Cultural resource records for all sites and isolates identified during the pre-investigation field verification are included in Appendix C.

### 3.2 SOIL INVESTIGATION MONITORING: NOVEMBER 3, 2015 TO JANUARY 28, 2016

Two previously unidentified sites and two archaeological isolates were discovered during the initial monitoring period. Five pottery sherds were discovered outside the Bat Cave Wash soil investigation monitoring boundaries. This initial finding was subsequently recorded by Æ archaeologists as Æ-Topock-204/H. The site consists of ceramic sherds, lithic artifacts, and some historic period items. As both the initial discovery and the final site boundary were outside the WZMF, a work halt notification was not required.

A diffuse scatter of historic period debris was found within the buffer zone around AOC14-18, likely representing the toss zone from the nearby CA-SBR-2910H historic roadway. The scatter was noted but was not close enough to conflict with proposed work activities. This location also served as a modern dumping area, referred to as the Railroad Debris Site by PG&E, and also used by PG&E as a disposal site prior to its subsequent cleanup. As a result, it was determined an updated site record was not warranted for these new observations.

Two ceramic sherds were discovered and recorded as separate isolates: Æ-Topock-ISO-62 and -63. Upon closer inspection and consultation with Tribal monitors, it was agreed soil sampling work could continue within the 50-meter buffer of the artifacts but under close scrutiny of the monitors. The records for these sites and isolates have been submitted to the South Central Coastal Information Center of the California Historical Resource Information System, and are included in Appendix C; trinomial designations are pending.

### **3.3 DATA GAP WORK PLAN 1 (DG-WP-1): JANUARY 29 TO MARCH 10, 2016**

A possible paleontological resource was found in January 2016 during the field monitoring for DG-WP-1. Although outside the buffer zone of AOC14-18, it is in an area potentially slated for other work, including accessing the AOC14-18 work site. Subsequent evaluation by Æ paleontologists indicated the item is most probably a highly re-mineralized and/or internal mold of an invertebrate fossil in an alluvial clast. The fossil represents a very common taxon and was not discovered in situ within its source rock; thus, it does not meet the 2008 BLM or the 2010 Society for Vertebrate Paleontology (SVP) criteria of significance. No further treatment or mitigation of the discovery was recommended though it was avoided during the soil investigation (Clifford 2016).

### **3.4 DATA GAP WORK PLAN 2 (DG-WP-2): MARCH 15-20, 2016**

No archaeological and historical sites were noted within, or appeared in conflict with, the work zone footprint investigated during the DG-WP-2 monitoring.

### **3.5 DATA GAP WORK PLAN 3 (DG-WP-3): JANUARY 3 TO APRIL 28, 2017**

In consultation with DTSC and DOI, PG&E evaluated the soil investigation data collected through March 2016 and identified additional data gaps. As a result, a final round of soil investigation (DG-WP-03) was carried out between January 3 and April 27, 2017. During this period, as an adjunct to DG-WP-03, DOI directed PG&E to conduct a Dioxins and Furans Background Study. No conflicts with previously recorded sites were identified during the pre-investigation field verifications for either DG-WP-3 or the Dioxins and Furans Background Study.

Three previously unrecorded archaeological sites were identified during DG-WP-3 monitoring. All three sites were discovered outside the active work areas, thus were readily avoided. The sites were subsequently recorded by Æ archaeologists as Æ-Topock-213, -216/H, and -217. The site records have been submitted to the South Central Coastal Information Center of the California Historical Resource Information System, and trinomial designations are pending. In addition, monitors discovered a small lithic reduction locus considered a new addition to CA-SBR-11908. The sites are briefly described below, and site records are included in Appendix C.

- **Æ-Topock-213:** A lithic reduction site with two distinct concentrations, 50 meters northeast of Dioxin and Furan Background Study location #BKG-38.
- **Æ-Topock-216/H:** A site consisting of both prehistoric lithic reduction stations and historic features relating to both the small-scale damming of a narrow, shallow arroyo and former telegraph transmission lines. The site surrounds Dioxin and Furan Background Study location #BKG-29.
- **Æ-Topock-217:** A diffuse scatter of lithic debris straddling a toe ridge 10 meters south of the same Dioxin and Furan Background Study location as Æ-Topock-213, #BKG-38.

- **CA-SBR-11908-Update:** A previously recorded as a lithic assay site with two discrete concentrations, the site record was updated to include another discrete lithic reduction station (Locus 3) plus a quartzite core and flake approximately 4.4 meters east of Locus 3. CA-SBR-11908 is 80 meters northwest of Dioxin and Furan Background Study location #BKG-20 and 50 meters northeast of location #BKG-21.

### **3.6 FINDINGS OF DAILY DEBRIEFINGS**

Following each day's work, questions, observations, and suggestions of monitoring participants were solicited and noted in the daily logs and monitoring records. The overall feedback from both Tribes and agencies regarding actual field activities was positive and encouraging. Several Tribal monitors expressed satisfaction that the overall remediation process (including the soil investigation) is being handled correctly, given that it is unavoidable.

## 4 SUMMARY

To comply with Soil Investigation FEIR Mitigation Measures CR-1d and CR-3, PG&E implemented an archaeological monitoring program between November 3, 2015 and April 27, 2017. Participants in the monitoring events are identified in a table provided in Appendix A. Other observations resulting from the monitoring are also noted in the Appendix A tables, including recommendations and comments of Tribal monitors. The results of the daily monitoring are described in this report and summarized in Appendix B, while new and updated site records are provided in Appendix C.

No conflicts between the soil investigation work and archaeological or historical sites or paleontological resources were identified. Four previously unidentified sites (Æ-Topock-204/H, -213, -216/H, and -217) and two isolates (Æ-Topock-62 and -63) were recorded outside the active work zone, and the record for one previously recorded site (CA-SBR-11908) was updated. A summary of the sites observed, dates of fieldwork, and actual number of days spent in the field during each phase of monitoring is provided below (Table 1).

**Table 1**  
**Summary of Soil Investigation Monitoring Phases**

Monitoring Phase	Dates	Sites and Objects Observed	Field Days Monitoring
Initial Monitoring	11/3/2015–1/28/2016	Æ-Topock-204/H CA-SBR-2910H (record not updated) Æ-Topock-ISO-62, -63	52
DG-WP-1	1/29/2016–3/10/2016	Paleontological isolate	21
DG-WP-2	3/15/2016–3/20/2016	None	6
DG-WP-3	1/3/2017–4/27/2017	Æ-Topock-213, -216/H, -217 CA-SBR-11908 (Updated record)	41



## 5 REFERENCES

### Bureau of Land Management (BLM)

- 2010 *Programmatic Agreement among the Bureau of Land Management, Arizona State Historic Preservation Officer, California State Historic Preservation Officer, and the Advisory Council on Historic Preservation for the Topock Remediation Project in San Bernardino County, California, and Mohave County, Arizona.* Executed 4 October 2010.
- 2012 *Cultural and Historic Properties Management Plan (CHPMP), Topock Remediation Project.* U.S. Department of the Interior, Bureau of Land Management, Lake Havasu, Arizona.

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## **APPENDIX A**

### **Topock Soil Investigation Monitoring Participants**

TOPOCK SOIL INVESTIGATION MONITORING PARTICIPANTS (November 3, 2015, to April 27, 2017)

DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W
3-Nov-15	CB PM					MC		HM NZ			JH JH1 MH	EL				CR CS	BM MS1			
4-Nov-15	CB PM					MC		HM NZ			JH1 DH MH	EL JG			AB	RB	BM MS1			
5-Nov-15	CB PM					MC		HM NZ	PI	CG1 JM	JH JH1 DH MH	EL JG			AB	RB	BM			
6-Nov-15	CB PM							HM NZ			JH1 AH DH MH	EL JG			AB	RB CR CS	BM			
7-Nov-15	PM					BC					FB JH1 AH DH	EL JG CV			AB	JA				
8-Nov-15	PM					BC					FB AH DH	EL JG			AB					
9-Nov-15	CB PM							HM			JH1 AH DH MH	EL JG			AB	JA CR				
10-Nov-15	CB PM	JF KW CREW						HM NZ			JH1 AH DH MH	EL JG			AB	JA CR				

DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W
11-Nov-15	CB PM	JF KW CREW						HM NZ			JH1 AH DH MH	EL JG			AB	JA CR				
12-Nov-15	CB PM	JF KW CREW	RK					HM NZ			JH DH MH	EL JG		DO JW (Geovision)	AB	CR	BM			CM BM1
13-Nov-15	CB	JF KW CREW	RK					HM NZ			DH MH	EL JG	LH DH1	DO JW (Geovision)	AB	CR	BM			CM BM1
16-Nov-15	CB PM	JF KW CREW						HM			JH DH MH	EL JG				CR	BM			CM BM1
17-Nov-15	CB RH PM	JF KW CREW						HM NZ	PI		AH DH MH	EL JG				CR	BM			CM BM1
18-Nov-15	CB RH PM	JF KW CREW						HM NZ	PI		AH DH MH	EL JG	LH BJ			CR	BM			
19-Nov-15	CB PM	JF KW CREW						HM	PI		AH DH MH	EL JG	LH BJ			CR	BM			
30-Nov-15	CB	JF KW CREW						HM NZ			AH DH MH	EL JG				CR	BM			
1-Dec-15	CB PM	JF KW CREW			CG DR	MC BC KS		HM NZ	PI	CG1 JM	AH MH	EL JG		DM (util-loc)	AB	RB CR CS	BM		JB	

DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W
2-Dec-15	CB PM	JF KW CREW			CG DR	MC BC		HM NZ			DH MH	EL JG		DM (util- loc)	AB	RB CR CS	HB BM		JB	
3-Dec-15	CB PM	JF KW CREW			CG DR	BC	RM	HM NZ			AH MH	EL JG		DM (util- loc)	AB	RB CR CS	HB			
4-Dec-15	CB PM	JF KW CREW			CG DR	BC		HM NZ			JH DH MH	EL JG			AB	RB CR CS	HB			
5-Dec-15	KJ PM				CG DR							JG			AB	RB				
6-Dec-15	CB KJ PM				CG DR							JG			AB	RB				
7-Dec-15	CB KJ PM	JF KW CREW			CG DR			HM				JG			AB	RB CR	HB			
8-Dec-15	CB KJ PM	JF KW CREW			CG DR		RM	HM NZ		CG1		JG	CC LH		AB	RB CR	HB			
9-Dec-15	CB PM	JF KW CREW			CG DR			HM NZ		CG1		JG	LH		AB	RB CR CS	HB			
10-Dec-15	CB PM	JF KW CREW					RM	HM NZ					CC LH			RB CR CS	HB			
11-Dec-15	CB PM	JF KW CREW						HM NZ								RB CR CS	HB			
14-Dec-15	CB KJ PM				CG DR		RM	HM				JG EL	LH			RB CR CS				

DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W
15-Dec-15	CB KJ PM		RK		CG DR		RM	HM				JG EL	LH			GC CR CS	BM			
16-Dec-15	CB KJ PM				CG DR							JG EL				RB CR				
17-Dec-15	CB KJ PM				CG DR							JG EL				RB CR				
18-Dec-15	CB KJ PM				CG DR							JG EL				RB CR				
4-Jan-16	CB PM																BM			
5-Jan-16	CB PM			S/V/P	CG JB2	BC	JB1 DF AS	HM NZ	PI		DH MH	JG EL			AB	RB CR CS	BM			
6-Jan-16	CB PM			S/V/P	CG JB2	BC	JB1 DF	HM NZ	PI		DH MH	JG EL			AB	JA CR CS	BM			
7-Jan-16	CB PM			S/V/P	CG JB2	BC	JB1 DF	NZ	PI		DH MH	JG EL			AB	RB CR CS	BM			
8-Jan-16	CB PM			S/V/P	CG JB2	BC	JB1 DF	NZ	PI		DH MH	JG EL			AB	RB CS	BM			
9-Jan-16	CB PM			S/V/P	CG JB2	BC					DH	JG EL			AB	RB	BM			
10-Jan-16	CB PM			S/V/P	CG JB2	BC					DH	JG EL			AB	RB	BM			CM
11-Jan-16	CB PM			S/V/P	CG JB2	BC	JB1 DF	HM NZ			DH	JG EL	LH		AB	RB CR	BM			CM

DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W	
12-Jan-16	CB PM			S/V/P	CG JB2	BC	JB1 DF	HM NZ	AS (TLI)		DH MH	JG EL	LH		AB	RB CS					CM
13-Jan-16	CB PM			S/V/P	CG JB2	BC	JB1 DF	HM NZ	AS (TLI)		DH MH	JG EL	LH		AB	JA CS	BM				CM
14-Jan-16	CB PM			S/V/P	CG JB2	BC	JB1 DF	HM NZ	AS (TLI)		MH	JG EL			AB	CR CS	BM				
18-Jan-16	CB				CG JB2												BM				
19-Jan-16	CB PM			S/M/P	CG JB2	BC	JB1 DF					GF JG				CS					
20-Jan-16	CB PM			S/M/P	CG JB2	BC	JB1 DF					GF JG	LH			CS					
21-Jan-16	CB PM			S/M/P	CG JB2	BC	JB1					GF JG	LH			CS				JB	
22-Jan-16	CB PM			S/M/P	CG JB2	BC	JB1 DF	NZ				GF JG EL				CS				JB	
23-Jan-16	CB			S/M/P	CG JB2	BC	DF					GF JG EL				JA					
24-Jan-16	CB PM			S/M/P	CG JB2	BC	DF					GF JG				JA					
25-Jan-16	PM			S/M/P	CG JB2	BC	JB1	HM NZ				GF JG				JA					
26-Jan-16	CB PM			S/M/P	CG JB2	BC	JB1 DF	HM NZ		CG1	DH	GF JG EL	LH			JA CS					
27-Jan-16	CB PM			S/M/P	CG JB2	BC	JB1 DF	HM NZ		CG1	DH	GF JG EL CV	LH			JA CR CS	BM				



DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W
28-Jan-16	CB PM			S/M/P	CG JB2	BC	JB1 DF	HM NZ		CG1	DH	GF JG EL CV	LH			JA JH CR CS	BM			
29-Jan-16	CB PM							HM NZ		CG1	JH DH	GF JG EL CV	DH1			GC CR	BM		JB	
2-Feb-16	PM	MB		S/M/P			JB1 DF	HM NZ			DH	JG	LH		AB		BM		JB	
3-Feb-16	PM	MB		S/M/A			JB1 DF	HM NZ			DH	JG	LH		AB		BM			
4-Feb-16	CB PM	MB	CW	S/M/A			JB1 DF	NZ			DH	JG	LH		AB		BM			CM
5-Feb-16	CB PM	MB	CW	S/M/A			JB1 DF	HM NZ			DH	JG	LH		AB					CM
6-Feb-16	CB	MB	CW	S/M/A			JB1 DF	HM NZ			DH	JG	LH		AB		BM			
9-Feb-16	PM			S/M/M			JB1 DF	HM NZ			DH	JG	LH	SHCC		JA	BM			
22-Feb-16	PM			S/M/M				NZ			DH	JG EL				JA	BM			
23-Feb-16	PM			S/M/M			JB1 DF			JM	DH	GF JG EL CV	LH			JA CR	BM			
24-Feb-16	PM						JB1 DF	NZ		CG1	DH	GF JG EL CV	CC LH			JA CR	BM			

DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W	
25-Feb-16	PM						JB1 DF	HM NZ		CG1	DH	JG EL CV	CC LH			JA CR	BM				
29-Feb-16	PM			H/P/P/ L		MC		HM NZ		CG1	DH	GF EL CV		RF of GBC		CR					
1-Mar-16	CB PM			H/P/P/ A/L		MC	JB1 DF	HM NZ		CG1	DH	GF JG EL CV	LH	RF of GBC		JA CR					
2-Mar-16	CB PM			H/P/P/ A/L		MC	JB1 DF	HM NZ	AS (TLI)	CG1	DH	GF JG EL CV		RF of GBC		JA CR					
3-Mar-16	CB PM			H/P/P/ A/L			DF		AS (TLI)		DH	GF JG EL	LH			CR					
4-Mar-16	CB PM			H/P/P/ A/L			JB1 DF		AS (TLI)		DH	JG EL									
5-Mar-16	CB			H/P/P/ A/L			JB1 DF				DH	JG EL									
6-Mar-16	CB										DH	JG EL									
7-Mar-16	CB			H/P/P/ A/L				NZ			DH	JG EL									
8-Mar-16	CB			H/P/P/ A/L			JB1 DF	HM NZ			DH	JG EL	LH								
9-Mar-16	CB						JB1 DF	HM NZ			DH	JG EL	LH				BM				
10-Mar-16	CB						JB1 DF	HM NZ			DH1	JG EL	LH				BM				

DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W	
16-Mar-16	PM											JG EL								JB	
17-Mar-16	PM				CG DR			HM NZ		CG1 AY	DH	GF EL CV	LH	RF of GBC		CR				JB	
18-Mar-16	PM				CG DR		JB1 DF			CG1	DH	GF EL CV		RF of GBC						JB	
19-Mar-16	PM						JB1 DF	NZ			DH	GF EL					BM MS1				
20-Mar-16	PM											EL				RB	BM MS1				
5-Dec-16	PM CB					MC	RE	NZ	PI	CG1 JM	CH DH MS	EL	DH1			GC JD CR	BM				
3-Jan-17	PM					MC						JG EL				GC JD	BM				
4-Jan-17	PM CB WB1	MB				MC	RE	TC NZ	PI	CG1 JM	CH DH MH NM MS	JG EL				RB GC JD CR CS	BM				
5-Jan-17	PM CB WB1						RE	NZ	PI		DH1 MS	GG JG EL				CR	BM				
6-Jan-17	PM CB WB1			BG JG1 DL			RE	NZ			DH	GG JG EL				CS	BM				
7-Jan-17	WB1			BG JG1 DL							DH	GG JG EL					BM				

DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W
8-Jan-17	WB1			BG JG1 DL							DH	GG JG EL					BM			
9-Jan-17	PM WB1			BG JG1 DL			RE	NZ			DH	JG EL					BM			
10-Jan-17	PM WB1			BG JG1 DL			RE				DH	JG EL								
11-Jan-17	PM WB1				CG JH2		RE	VO NZ			DH	JG EL				JA				
12-Jan-17	PM				CG JH2		RE	VO			DH	JG				JA CR				
17-Jan-17	CB				CG JH2			VO NZ			MH	JG EL				JA CR				
18-Jan-17	CB				CG JH2			VO NZ			MH	JG EL				JA CR				
19-Jan-17	CB				CG JH2			VO NZ			MH	JG EL				JA				
20-Jan-17	CB				CG JH2			VO NZ			MH	JG EL				JA				
21-Jan-17	CB				CG JH2			VO NZ			MH	JG EL				JA				
22-Jan-17	CB				CG JH2			VO			MH	JG EL				JA				
23-Jan-17	CB				CG JH2			NZ			MH	JG EL	LH			JA			JB	
24-Jan-17	CB				CG JH2			NZ			MH	JG EL	LH			JA	BM	ER	JB	
25-Jan-17	CB				CG JH2		RE	VO NZ			MH	JG EL	LH			JA	BM			

DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W
26-Jan-17	CB				CG JH2		RE	VO NZ			MH	JG EL	LH			JA	BM			
31-Jan-17	PM				CG JH2		RE WE	VO NZ			MH	JG EL				JA CR CS				
1-Feb-17	PM				CG JH2	KS	RE WE	VO NZ			DH	JG EL	LH			JA CR CS	BM			
2-Feb-17	PM		RK		CG JH2	KS	RE WE	VO NZ	PI		DH NM	JG EL	DH1			JA CR CS	ER		JB	
3-Feb-17	PM				CG JH2	KS	WE	VO NZ			DH	JG EL				JA CR CS			JB	
4-Feb-17	PM				CG JH2		WE	VO			DH	GG JG EL								
5-Feb-17	PM				CG JH2		WE	VO			DH	GG JG EL								
6-Feb-17	PM				CG JH2	EH	WE	VO NZ			DH	GG JG EL				JD				
7-Feb-17	PM				CG JH2	EH	WE	VO NZ			DH	GG JG EL				JD				
14-Feb-17	PM						WE	VO NZ			MH	GG JG EL				JP CR CS	BM			
15-Feb-17	PM						WE	VO			MH	JG EL				JP CR	BM			



DATE	AE	A/Pvx	BLM	CA.D	CA.HV	CH2	CIT	CRIT	DOI	DTSC	FMIT	GWP	HIT	Other	N*	PG&E	TC	TRC	TWS	USF&W	
<b>Agencie and Contractors</b>							<b>Personnel</b>														
AE	Applied earthworks						JA	John Andretti					BG	Brett Gresham			CM	Carrie Marr			
A/Pvx	Arcadis/Pivox						JB	Jim Baker					CG	Chris Guarado			RM	Raymond Mejia			
BLM	Bureau of Land Management						WB	William Blodgett					CG1	Chris Guerre			BM1	Bob Melton			
CA.D	Cascade Drilling						MB	Marty Bloes					JG	Jamie Gustafson			PM	Pat Moloney			
CA.HV	Cascade Hydro-vac						CB	Chuck Bouscaren					CH	Chris Harper			DM	Dave Montes			
CH2	CH2MHill						RB	Ross Bradshaw					JH	Janice Hinkley			DO	David Ortiz			
CIT	Chenehuevi Indian Tribe						HB	Heather Breakrun					JH1	Jessie Hinkman			JP	John Parrish			
CRIT	Colorado River Indian Tribe						AB	Arlin Brewster					JH2	Justin Hoepner			DR	Darrel Roget			
DOI	Department of Interior						FB	Felton Bricker					AH	Anthony Holmes			ER	Eric Rosenblaum			
DTSC	Dept. of Toxic Substances Control						JB1	Jerrod Brooks					DH	Delbert Holmes			CR	Curt Russell			
FMIT	Fort Mojave Indian Tribe						JB2	Jason Brown					MH	Melvin Holmes			AS	Andy Sagen			
GBC Services	Asbestos Removal						GC	Glenn Caruso					LH	Lindee Hornell			BS	Barry Sharp			
GWP	Ground Water Partners						CC	Carrie Cannon					DH	Dawn Hubbs			KS	Keith Sheets			
HIT	Hualapai Indian Tribe						MC	Mike Cavaliere					PI	Pam Innes			MS1	Mike Shrum			
Other	Other contractors, agencies etc.						BC	Barry Collum					BJ	B. Jackson			CS	Chris Smith			
N*	Northstar						RE	Ron Escobar					WJ	Weldon Johnson			MS1	Michael Sullivan			
PG&E	Pacific Gas and Electric						WE	Winston Escobar					RK	Renee Kolvet			CV	Chad Villimer			
SHCC	Sky High Crane Services						DF	Darren Fisher					DL	Dakota Leedum			JW	J. Weiss			
TC	Transcon Environmental						RF	Ron Franklin					BL	Bob Litchenstein			CW	Cat White			
TRC	Technical Review Committee						GF	Garrett Frey					EL	Eli Ludwig			KW	Keith Williams			
TWS	TWS Environmental, LLC						JF	Joe Flores					HM	Howard Magill			AY	Aaron Yue			
USF&WS	US Fish and Wildlife Service						GG	George Glorio					BM	Brany McWain			NZ	Nick Zeyouma			
Util-Loc	Util-Locate						JG1	Justin Grebin					JM	Jose Marcos							

## **APPENDIX B**

### **Monthly Summary Tables of Monitoring Activities**

November 2015
December 2015
January 2016
February 2016
March 2016
January 2017
February 2017
March 2017
April 2017



**NOVEMBER 2015**

DAY	DATE	PERSONELL	CONTRACTORS	AGENCIES PRESENT	ACTIVITIES	OBSERVATIONS
Mon.	2	PM/CB	GWP/TRANSCON		Travel	
Tues.	3	PM/CB	GWP/TRANSCON		Soil sampling initiation meeting. TCS (inside fence-line); AOC-10; AOC-27	
Wed.	4	PM/CB	GWP/TRANSCON		XRF sample collection outside and inside TCS fence-line; UA-1, AOC-14 and AOC-27 asbestos survey	
Thur.	5	PM/CB	GWP/TRANSCON	FMIT; CRIT; DTSC;DOI	AOC10 & AOC-14. TCS - XRFs- AOC6-1 thru 7; AOC8-1; AOC15-1 thru 7; AOC19-6 thru 10; AOC22-1 & 2; AOC23-2 & 3	
Fri.	6	PM/CB	GWP/TRANSCON	CRIT; FMIT	XRFs; Storm drain assessment and bio-survey	
Sat.	7	PM	GWP/TRANSCON	FMIT	TCS - XRFs- soil sampling collection. Storm drain sampling	
Sun.	8	PM	GWP/TRANSCON	FMIT	TCS - XRFs- soil sampling in AOC-10; AOC-14 and AOC-27. GPS data collection at UA-1 and AOC-14	
Mon.	9	PM/CB	GWP/TRANSCON	CRIT; FMIT	Soil sample collections at PA-01 thru PA-08. Storm drain soil sampling.Preparation of Bat Cave Wash access road.	
Tues.	10	PM/CB	GWP/TRANSCON/PIVOX	CRIT; FMIT	Sensitivity training conducted by PM for Pivox crew. Bat Cave Wash hand and hand tool clearance of vegetation. Storm Drain outflow soil sampling AOC-10 and AOC-11	
Wed.	11	PM/CB	GWP/TRANSCON/PIVOX	CRIT; FMIT	Bat Cave Wash hand and hand tool clearance of vegetation. Storm Drain outflow soil sampling AOC-10 and AOC-11	
Thur.	12	PM/CB	GWP/TRANSCON/PIVOX/GEOVISION	FMIT; CRIT; Hualapai; USFWS; BLM	Bat Cave Wash hand and power tool vegetation clearance. Storm Drain outflow soil sampling AOC-10 and AOC-11. Conducted agencies visit to BCW.	
Fri.	13	CB	GWP/TRANSCON/PIVOX/GEOVISION	FMIT; CRIT; Hualapai; USFWS; BLM	Bat Cave Wash hand and power tool vegetation clearance.	
Mon.	16	PM/CB	GWP/TRANSCON/PIVOX/NORCAL	CRIT; FMIT	Bat Cave Wash hand and power tool vegetation clearance. UA-1 geomagnetic survey	
Tues.	17	PM/CB	GWP/TRANSCON/PIVOX/NORCAL	CRIT; FMIT; DOI	Bat Cave Wash hand and power tool vegetation clearance. Geomagnetic survey AOC-27.	No cultural materials noted within Soil Sampling construction area. However, 2 previously unrecorded ceramic sherds noted by D. Holmes outside the work area. Further investigation revealed several more unrecorded ceramic fragments, lithic and mill stone materails and historic items in this location. Ongoing remediation activities not effected.
Wed.	18	PM/CB	GWP/TRANSCON/PIVOX/NORCAL	CRIT; FMIT; DOI	Bat Cave Wash hand and power tool vegetation clearance. Geomagnetic survey AOC-27.	
Thur.	19	PM/CB	GWP/TRANSCON/PIVOX/NORCAL	CRIT; FMIT; DOI; Hualapai	Bat Cave Wash hand and power tool vegetation clearance. Geomagnetic survey AOC-27.	
Sun.	29	CB			Travel	
Mon.	30	CB	GWP/TRANSCON/PIVOX	CRIT; FMIT	Bat Cave Wash hand and power tool vegetation clearance.	

**DECEMBER 2015**

DAY	DATE	PERSONELL	CONTRACTORS	AGENCIES PRESENT	ACTIVITIES	OBSERVATIONS
Tues.	1	PM/CB	Northstar/Util-locate/ GWP/ Pivox/ Cascade/ Transcon/ CH2MHill/ Vironex US	DTSC/DOI/CRIT/FMIT	Hydrovac soils collection at AOC-4 (TCS) #17 (4'8") & #18 (3'6") Pivox Bat Cave Wash hand and power tool clearance of vegetation	
Wed.	2	PM/CB	Northstar/Util-locate/ GWP/ Pivox/ Cascade/ Transcon/ CH2MHill/ Vironex US	CRIT; FMIT.	Hydrovac soils collection at AOC-4 (TCS) #31 (6') & # 32 (6') Pivox Bat Cave Wash hand and power tool clearance of vegetation	
Thur.	3	PM/CB	Northstar/Util-locate/ GWP/ Pivox/ Cascade/ Transcon/ CH2MHill	FMIT/Chemehuevi/CRIT	Hydrovac soils collection at AOC-4 TD-3 Trench #s 30 (6') & 29 Pivox Bat Cave Wash hand and power tool clearance of vegetation	
Fri.	4	PM/CB	Northstar/GWP/ Pivox/ Cascade/ Transcon/ CH2MHill/	CRIT; FMIT.	Hydrovac soils collection at AOC-18 #s 4;5;6 & 12 (BCW) Pivox Bat Cave Wash hand and power tool clearance of vegetation	
Sat.	5	PM/KJ (TRV)	Northstar/GWP/ Cascade		Hydrovac soils collection at AOC-4(completion); AOC-13 #s 1;2;8 & 12	Fort Mojave Indian Tribe notified PM that they would be absent form project until further notice due to non project related circumstances.
Sun.	6	PM/KJ	Northstar/GWP/ Cascade		Hydrovac soils collection at AOC-17 and AOC-19 Hand soil sampling at AOC-4; AOC-9; AOC-10; AOC-11 and SD-11.	
Mon.	7	PM/CB/KJ	Northstar/GWP/ Cascade/ Transcon/ Pivox	CRIT	Hydrovac soils collection at AOC-18-9; Unit 4.3-1,2. SWMU6-1 & 5-1 Hand Sampling AOC10-9 (10') Pivox Bat Cave Wash clearance of vegetation	
Tues.	8	PM/CB	Northstar/GWP/ Cascade/ Transcon/ Pivox	DTSC/ CRIT/ Hualapai/ Chemehuevi	Hydrovac soils collection:AOC18-7 (3' refusal); AOC18-8 (3' refusal); SWMU5-1 (3') AO13-17 (3') AOC-5-2 (3') Pivox Bat Cave Wash clearance of vegetation. Mapping and recording ofAE-Topock-204	
Wed.	9	PM/CB/KJ	Northstar/GWP/ Cascade/ Transcon/ Pivox	DTSC/ CRIT/ Hualapai	AOC8-2 (3'); AOC7-3 (3'); AOC7-4 (3'); SWMU8-1 (3') Pivox marking out of AOC11 drill access route, continuing BCW removal of vegetation.	KJ could not return to project due to family emergency.
Thur.	10	PM/CB/KJ	Transcon/ Pivox	CRIT/ Hualapai/ Chemehuevi	Pivox Bat Cave Wash clearance of vegetation, AOC9 grading for K-rail and grading of AOC-11 for drill access.	
Fri.	11	CB	Transcon/ Pivox		Pivox Bat Cave Wash clearance of vegetation. AOC9 grading for K-rail	
Sat	12					
Sun	13	CB/KJ (TRV)				
Mon.	14	CB/KJ	GWP	CRIT/ Hualapai/ Chemehuevi	Hydrovac AOC13-3; 4; 7; 14 & 10 all to 3' and AOC13-15 to 5'5".	
Tues.	15	PM/CB/KJ	GWP/Transcon	CRIT/ Hualapai/ Chemehuevi/ BLM	Backhoe excavation AOC10-15; AOC10d-9 and AOC10-16 (10') Hydrovac AOC20-4 & 5 (1' & 3'); 5 (1') AOC26-1 (10'). Photographing various MRP sites for R. Kolvet	PM meeting with G. Caruso and R. Kolvett.
Wed.	16	PM/CB/KJ	GWP	CRIT/ Hualapai/ Chemehuevi	Hydrovac Various and handsample varous. PM completed paperwork for various reports.	
Thurs	17	PM/CB/KJ	GWP		Hydrovac - AOC28a-01; AOC28b-01 ,AOC28c-01 (1' & 3') SWMU1-22, 1-23, 1-24. AOC1-T2F. Storm drains - 18, 21, 22, 23 & 24	
Fri.	18	CB	GWP		Hydrovac - SD7 (10'); AOC20-2 (10'); AOC20-7 (5'6"); AOC20-3 (8')	

JANUARY 2016						
DAY	DATE	PERSONELL	CONTRACTORS	AGENCIES PRESENT	ACTIVITIES	OBSERVATIONS
Tues.	5	PM/CB	GWP/CH2MHill/Northstar/Cascade	CRIT/FMIT/ Hualapai/ Chemehuevi	Hydrovac soils sample collection at AOC13-5,6,11 & 13 (3') Sonic Drill rig soils sample collection at AOC11-1,2,3 & 4 (10')	A. Sansouci introduced Chemehuevi tribal monitors F. Brooks and D. Fisher.
Wed.	6	PM/CB	GWP/ CH2MHill/ Northstar/ Cascade/ Transcon/ Vironex US	CRIT/ FMIT/ Hualapai/ Chemehuevi/ DOI	Hydrovac soils sampling at AOC13-18 & AOC7-12 & 5 (3'). Sonic Drill rig soilsampling at AOC11-6 & 7 & AOC1 (BCW) 1,2,3,4,5 & 6 (all to 10')	
Thur.	7	PM/CB	GWP/CH2MHill/Cascade	CRIT/FMIT/ Hualapai/ Chemehuevi/DOI	Hydrovac at AOC8-1: AOC13-30 & 31; AOC23 - 2 & 3.(all to 3'). Sonic Drill rig at AOC4 (BCW) SWMU1-18 0 to 45 feet	Bio training for PM & CB. Two ceramic fragments found in Bat Cave Wash by Melvin and Delbert Holmes. Following consultation with FMIT monitors D & M Holmes (Other monitors no longer present) work was allowed to continue within a 50 meter buffer of the artifacts, under close scrutiny, as no adverse effects anticipated. P. Moloney recorded artifacts as AE-Topock-Iso62 & 63. Lightning halted work for 30 minutes.
Fri.	8	PM/CB	GWP/ CH2MHill/ Cascade/Transcon /Northstar	CRIT/ FMIT/ Hualapai/ Chemehuevi/ DOI	Hydrovac excavations at AOC13-22 & 24 Sonic Drill rig at AOC1 (BCW) SWMU1-18 (45 to 80 feet).	N. Zeyouma disclosed that H. Magill's absence was due to CRIT management staffing issues at Topock.
Sat.	9	PM/CB	GWP/ CH2MHill/ Cascade/ Northstar	FMIT	Hydrovac soils sample collection at AOC13 (TCS) -9,13, 25, 26, 27, 28 & 29 (all to 3') Sonic Drill rig at AOC1 (BCW) SWMU1-19 (0 to 70 feet)	Drill hole collapse at 25' delayed production for approximately one hour at 10AM. Tarantula encroachment on drill area delayed.
Sun.	10	PMCB	GWP/ CH2MHill/ Cascade/ Northstar	FMIT	Hydrovac excavations at AOC11-E-3 (13'); AOC24-1 (to 3') AOC9-18 (10');-17 (5' [10' by hand]) Sonic Drill rig at AOC1 (BCW) SWMU1-19 (70 to 80 feet) AOC26 (TCS)-18 0 to 65'.	
Mon.	11	PM/CB	GWP/CH2MHill/Cascade/Northstar	CRIT/FMIT/ Hualapai/ Chemehuevi	Hydrovac soils sample collection at AOC24-2 (6'4"); AOC18-11 (6'); AOC16- 1, 2 & 3 (all to 3').AOC16-4 (6") Sonic Drill rig at AOC26-1 (TCS) 65 to 75 feet. Sonic Drill rig at AOC1- Storm Drain 14 (BCW) 0 to 10 feet. Sonic Drill rig at AOC1-t5e (BCW) 0 to 20 feet	PM met with G. Caruso to discuss reorganizing clay sediments collected during FWIP and also Data Gap survey.
Tues.	12	PM/CB	GWP/CH2MHill/Cascade/Northstar/ TLIsolutions (DOI)/Transcon	CRIT/FMIT/ Hualapai/ Chemehuevi/TLI solutions (DOI)	Hydrovac soil sampling at AOC21-1 (to 6'- White substance noted between 2'6" & 3'6"). AOC18-1,2 & 3 (all to 6') Sonic Drill rig at AOC1-t1f, t5d, SD 15 & 16 and AOC (BCW) 0 to 20 feet.pre-construction inspection of AOC10, 11, 12 and BCW access route to AOC14.	
Wed.	13	PM/CB	GWP/CH2MHill/Cascade/Northstar/ TLIsolutions (DOI)/Transcon	CRIT/FMIT/ Hualapai/ Chemehuevi/TLI solutions (DOI)	Hydrovac soil sampling at AOC26-3 (7'), 4 (10') & 5 (9'). Sonic Drill rig AOC9-16 & 20.AOC-10a-2 & 3 (all 10') SWMU1-20 (to 35') Back Hoe excavations: AOC10a (Drill prep.) AOC9-19 & SD-19 (10')	PM attended informal survey of soil water probe locations near river with C. Russell, E. Ludwid, and B. Smith.
Thur.	14	PM/CB	GWP/CH2MHill/Cascade/Northstar/ TLIsolutions (DOI)/Transcon	CRIT/FMIT/ Hualapai/ Chemehuevi/TLI solutions (DOI)	Hydrovac sampling at AOC26-2 (6'6") AOC5-5 (10') AOC9-17 (14'6") Sonic Drill rig SWMU1-20 (35 to 80') Back Hoe excavations; rock repositioning at Bat Cave Wash BNSF bridge for crane prep	C. Russell conducted meeting with Archs and tribes regarding workplans. Satisfaction with progress and protocolsd expressed by tribal reps.

**JANUARY 2016**

DAY	DATE	PERSONELL	CONTRACTORS	AGENCIES PRESENT	ACTIVITIES	OBSERVATIONS
Mon.	18	CB			Travel	
Tues.	19	PM/CB	GWP/CH2MHill/Cascade/Northstar/ /Transcon	Chemehuevi/ USF&W	Hydrovac AOC5-1 & 6 (10' & 3'); SWMU11-1 & 3 (3') & AOC6-5 & 7 (3') Sonic drill rig AOC11e-5 (0-40')	
Wed.	20	PM/CB	GWP/CH2MHill/Cascade/Northstar/ /Transcon	Chemehuevi/ USF&W	Hydrovac AOC6-1,2,3 & 4; SWMU11-15. Drill rig AOC11e-5 (40 to 50')	Drill rig break down. PM re-packaged clay sediments.
Thurs	21	PM/CB	GWP/CH2MHill/Cascade/Northstar/ /Transcon	Chemehuevi/ USF&W	Hydrovac - non-operative due to operator illness. Sonic drill rig AOC112-5 (40 to 50'); AOC11e-4 (16') & AOC10c-6 (0 to 19')	
Fri.	22	PM/CB	GWP/CH2MHill/Cascade	Chemehuevi/ CRIT	Hydrovac AOC5-3 & 4; AOC19-6 & 7 (3'). Sonic drill rig AOC11-1 (15'), 2 & 4 (30')	
Sat.	23	CB	GWP/CH2MHill/Cascade/	Chemehuevi	Hydrovac AOC15-1,2,3,4,5,6 & 7 (3'). Sonic drill rig AOC10c-6 (19 to 58"; AOC10-10,11 & 12 (10')	
Sun.	24	PM/CB	GWP/CH2MHill/Cascade/	Chemehuevi	Sonic drill rig AOC1-1 (15 to 30') Pore water hand sampling	
Mon.	25	PM/CB	GWP/CH2MHill/Cascade	Chemehuevi/ CRIT	Hydrovac AOC6-8 & SWMU11-4 Sonic drill rig AOC1-3 & SWMU1-21 (prep) Pore water hand sampling	
Tues.	26	PM/CB	GWP/CH2MHill/Cascade/	Chemehuevi/ CRIT	Hydrovac AOC20-1 & SWMU11-2 Sonic drill rig AOC1-3 (80') SWMU1-25 (10')-21 (to 20') Backhoe SWMU1-25 . Pore water hand sampling	
Wed.	27	PM/CB	GWP/CH2MHill/Cascade/	Chemehuevi/ CRIT/Hualapai/ DTSC	Hydrovac SWMU11-2. Sonic drill rig SWMU1-21 (20 to 80') . Pore water hand sampling	
Thurs.	28	PM/CB	GWP/CH2MHill/Cascade/Vironex US	Chemehuevi/ CRIT	Hydrovac demobilized. Sonic drill rig SWMU1-21 & AOC11c-4 (15' breakdown) Pore water hand sampling Front loader removal of contaminants from SWMU1-25	Hydrovac demobilization. Sonic drill breakdown.
Fri.	29	PM/CB	PG&E	CRIT/FMIT/Hualapai	Data Gap Work Plan field investigation	Fossil located.

**FEBRUARY 2016**

DAY	DATE	PERSONELL	CONTRACTORS	AGENCIES PRESENT	ACTIVITIES	OBSERVATIONS
Mon.	1	PM			Travel	No ground disturbing work conducted
Tues.	2	PM	GWP/ Northstar/ Pivox/ Cascade/ Transcon	CRIT/ FMIT/ Hualapai/ Chemehuevi	Sonic Drill Rig - breakdown halts work	
Wed.	3	PM	GWP/ Northstar/ Pivox/ Cascade/ Transcon	CRIT/ FMIT/ Hualapai/ Chemehuevi	Sonic Drill Rig - repaired AOC11c-4 casing pulled AOC11c-3 (groundwater @ 35' Bore cont. to 45") AOC11c-5 completed 20'	
Thur.	4	PM/ CB	GWP/ Northstar/ Pivox/ Cascade/ Transcon	CRIT/ FMIT/ Hualapai/ Chemehuevi/ BLM	Sonic drilling at: AOC1-8,9,10,11,12,13,14,15,16,17,26,29 & 30 (10')	
Fri.	5	PM/ CB	GWP/ Northstar/ Pivox/ Cascade/ Transcon	CRIT/ FMIT/ Hualapai/ Chemehuevi/ BLM	Sonic drilling at: AOC1-7,18,19,20,21,22,23,24,25,27 & 28 (10')	
Sat.	6	CB	GWP/ Northstar/ Cascade/ Transcon	CRIT/ FMIT/ Hualapai/ Chemehuevi		No ground disturbing work conducted
Mon.	8	PM			Travel	No ground disturbing work conducted
Tues.	9	PM	GWP/ Vironex US/ Cascade/ Sky High Crane/ BNSF/ Transcon	CRIT/ Chemehuevi	Crane mobilization in BCW to hoist Sonic rig into position to drill AOC1-6d (20')	Assisted N. Zeyouma in towing his truck out of ditch on EAR where he claimed (H. Magill confirmed) he had been run off the road by a pick up driven by BNSF monitor. Reported incident to C. Russell and E. Ludwig.
Wed.	10	PM			Travel	
Sun	21	PM			Travel	
Mon.	22	PM	GWP/ Cascade/ Vironex US	CRIT	Backhoe trenching AOC14-16 (10') Halted to await DTSC	
Tues.	23	PM	GWP/ Cascade/ Vironex US	Chemehuevi/ FMIT/ Hualapai/ DTSC	Backhoe trenching AOC14-16 (10') resumed and completed.	Extreme high winds halted work
Wed.	24	PM	GWP/ Transcon	Chemehuevi/ FMIT/ Hualapai/ CRIT/ DTSC/ USFW	Backhoe trenching AOC14-17 (10') Hand sampling AOC10-19 (5')	
Thurs	25	PM	GWP/ Transcon	Chemehuevi/ FMIT/ Hualapai/ CRIT/ DTSC/ USFW	Backhoe removal of materials around abandoned well TCS-4 Hand sampling AOC10-20,21 & 23	During morning tailgate meeting H. Magill brought up safety issues related to the previous near collision between N. Zeyouma and BNSF vehicles. General safety discussion followed.
Fri.	26	PM			Travel	
Mon.	29	PM	GWP/ CH2MHill/ Cascade/ Transcon/ GBC Services	CRIT/ DTSC	Backhoe trenching AOC27-6 Drill rig mobilization TCS-4	

MARCH 2016

DAY	DATE	PERSONELL	CONTRACTORS	AGENCIES PRESENT	ACTIVITIES	OBSERVATIONS
Tues.	1	PM/ CB	GWP/ Cascade/ Transcon/ GBC/ CH2MHill	DTSC/ CRIT/ FMIT/ Chemehuevi/ Hualapa	TCS-4 drilling for well decommissioning Backhoe soil sample collection at AOC27-7, 8 & 10	Small herd of big horn sheep (3 ewes and 2 lambs) noted on western slopes of Bat Cave Wash.
Wed.	2	PM/ CB	GWP/ Cascade/ Transcon/ GBC/ CH2MHill/ TLI Solutions (DOI)	DOI/ CRIT/ FMIT/ Chemehuevi	TCS-4 drilling for well decommissioning Backhoe soil sample collection at AOC27-27 & 50	
Thur.	3	PM/ CB	GWP/ Cascade/ TLI Solutions (DOI)	FMIT/ Hualapai/ Chemehuevi	TCS-4 drilling for well decommissioning	Work halted between 10:15 and 10:45 due to presence of Big Horn herd (3ewes and 2 lambs) within 250' of work site
Fri.	4	PM/ CB	GWP/ Cascade/ TLI Solutions (DOI)	FMIT/ Chemehuevi	Hand sampling AOC1-T2H	
Sat.	5	CB	GWP/ Cascade	FMIT/ Chemehuevi/	Hand sampling AOC1-T2I and T2J	
Sun	6	CB	GWP	FMIT	Video storm drain surveying of Catch basin 8- storm drain 6 and catch basin 7 storm drain 5.	
Mon.	7	CB	GWP/ Cascade	CRIT/ FMIT	AOC11	D. Homes discovered a "fossilized tooth" when leaving AOC-11. reported to CB. Later examination by AE paleontologist J. DeBusk concluded it is a concretion clast. Work not halted
Tues.	8	CB	GWP/ Cascade	CRIT/ FMIT/ Chemehuevi/ Hulapai	TCS4 and AOC27-9	
Wed.	9	CB	GWP	CRIT/ FMIT/ Chemehuevi/ Hulapai	Backhoe removal of gabion dam rocks from AOC27 and backfilling over mushroom cap at TCS4. Hand soil sampling at Storm Drains 22, 23 & 24 (3')	
Thurs	10	CB	GWP	CRIT/ FMIT/ Chemehuevi/ Hulapai	Hand sampling AOC 19-11 (3'); SD-21 (3') & SD- 25 & 26 surface sampling only	
Tues.	15		GWP		Video surveying only	No ground disturbance
Wed.	16	PM (TRV)	GWP		Video surveying only	No ground disturbance
Thurs	17	PM	GWP/ Cascade/ Transcon/ GBC	DTSC/ CRIT/ FMIT/ Chemehuevi/ Hualapa	Backhoe trenching at AOC27-18 & 5. Hydrovac potholing at AOC27-26a & 26b	
Fri.	18	PM	GWP/ Cascade/ Transcon/ GBC	DTSC/ FMIT/ Chemehuevi/ Hualapa	Backhoe trenching at AOC27- 1, 2 & 24 Hydrovac potholing at AOC27-4, 5, 18 & 36	
Sat.	19	PM	GWP	CRIT/ FMIT/ Chemehuevi	AOC27 general area restoration Industrial lines video inspection TCS-1	
Sun.	20	PM (TRV)	GWP	None	Video surveying only	No ground disturbance

**JANUARY 2017**

DAY	DATE	PERSONELL	HOURS	TOTAL HOURS	CONTRACTORS	AGENCIES PRESENT	ACTIVITIES	OBSERVATIONS
Tues.	3	PM	8	8	GWP / CH2MHill / Cascade / Transcon	None	Data Gap Work Plan No. 3 pre-initiation meetings with Ground Water Partners (GWP), Transcon, TWS & CH2MHill & PG&E r	
Wed.	4	Pat Moloney Chuck Bouscaren Will Blodgett	10 10 11.5	31.5	CH2MHill / GWP / TWS / PVX / Transcon / PG&E	Chemehuevi / CRIT / DOI / DTSC / FMIT	Data Gap Work Plan #3 Initiation Meeting. Teams 2 & 3 monitored East Ravine sampling. Team 1 meeting with Caruso & D'arcangelo RE future monitoring and Caruso, Cavaiere, Ludwig Russell RE days work. OK	
Thur.	5	Pat Moloney Chuck Bouscaren Will Blodgett	9 9 9	27	GWP / TWS / Transcon / PG&E / Cascade	Chemehuevi / CRIT / DOI / FMIT	Team 1 took team 3 on introductory familiarization tour of several sites in APE. Team 2 monitored AOC1-8. Teams 2 & 3 monitored AOC4-36 & 39 & AOC16-grit. All attended Data Gap Work Plan #3 Sub-contractors Initiation Meeting.	
Fri.	6	Pat Moloney Chuck Bouscaren Will Blodgett	9 9 10	28	GWP / Transcon / PG&E / Cascade	Chemehuevi / CRIT / FMIT	Drill rig mobilization to BCW. Soil sampling of SWMU1-26 & 27	
Sat	7	Will Blodgett	9	9	GWP / Transcon / PG&E / Cascade	Chemehuevi / CRIT / FMIT	Drill rig soil sampling of SWMU1-27	
Sun.	8	Will Blodgett	10	10	GWP / Transcon / PG&E / Cascade	FMIT	Drill rig soil sampling of SWMU1-26	P. Moloney contacted regarding D. Holmes find of ceramics.
Mon.	9	Pat Moloney Will Blodgett	9 8	17	GWP / Transcon / PG&E / Cascade	Chemehuevi / CRIT / FMIT	Drill rig soil sampling of AOC1-5; -6 & -7	
Tues.	10	Pat Moloney Will Blodgett	9 8	17	GWP / Transcon / PG&E / Cascade	Chemehuevi / CRIT / FMIT	Drill rig mobilization to AOC10-26. Soil too wet for drill rig to enter. Grouting of bore holes for remainder of day.	
Wed.	11	Pat Moloney Will Blodgett	8 6	14	GWP / Cascade / PG&E	Chemehuevi / CRIT / FMIT	Hydro-vac truck mobilization to and soil sampling of AOC21-1 Target depth of 15' unattainable. Hole sampled at 12.5'	
Thur.	12	P.Moloney	10	10	GWP / Cascade / PG&E	Chemehuevi / CRIT / FMIT	Vacuum truck mobilized to SWMU5-1. First 6 feet previously bored by vacuum truck during Data Gap1. Target depth of 10' reached and shift completed	
Tues.	17	Chuck Bouscaren	9	9	GWP / Cascade / PG&E	CRIT / FMIT	Hydro-vac mobilized to AOC22. Soil sampling of AOC22-3 to target depth 10' ; AOC22-2 to target depth 10'; and AOC23-4 to target depth 3'.	
Wed.	18	Chuck Bouscaren	9	9	GWP / Cascade / PG&E	CRIT / FMIT	Hydro-vac AOC5-2; AOC5-4 and SWMU11-3	
Thur.	19	Chuck Bouscaren	8	8	GWP / Cascade / PG&E	CRIT / FMIT	Hydro-vac AOC5-4 to 7 feet and AOC15-1 to 6 of 15 feet	
Fri.	20	Chuck Bouscaren	8	8	GWP / Cascade / PG&E	CRIT / FMIT	Hydro-vac AOC15-1 to 15 feet	
Sat	21	Chuck Bouscaren	8	8	GWP / Cascade / PG&E	CRIT / FMIT	Hydro-vac AOC13-34; AOC19-15; AOC19-12 and AOC 19-14.	
Sun.	22	Chuck Bouscaren	8	8	GWP / Cascade / PG&E	CRIT / FMIT	Hydro-vac AOC 19-10 to 7-feet AOC 19-13 to 6-feet	
Mon.	23	Chuck Bouscaren	8	8	GWP / Cascade / PG&E	CRIT / FMIT / Hualapai	Hydro-vac AOC AOC 19-11 to 10 feet.	
Tues.	24	Chuck Bouscaren	8	8	GWP / Cascade / PG&E	CRIT / FMIT / Hualapai	Hydro-vac AOC 6-5 & AOC 6-7 both to 10' target depth.	
Wed.	25	Chuck Bouscaren	8	8	GWP / Cascade / PG&E	Chemehuevi / CRIT / FMIT	Hydro-vac PA-11 and PA-12 both to 6' target depth.	
Thur.	26	Chuck Bouscaren	8	8	GWP / Cascade / PG&E	Chemehuevi / CRIT / FMIT	Hydro-vac PA-10 and PA-18 both to 6' target depth.	
Mon.	30	Pat Moloney	4	4			Travel	
Tues.	31	Pat Moloney	8.5	8.5	None	None	Hydro-vac PA-19 , 20 & 21 to 6' target depth.	





MARCH 2017

DAY	DATE	PERSONELL	HOURS	TOTAL HOURS	CONTRACTORS	AGENCIES PRESENT	ACTIVITIES	OBSERVATIONS
Tues.	7	Pat Moloney Will Borkan	4.5 4.0	8.5	None	None	Travel	
Wed.	8	Pat Moloney Will Borkan	8 8	16	PG&E	None	Annual Monitoring Reassessment	
Thurs.	9	Pat Moloney Will Borkan	8 8	16	PG&E	None	Annual Monitoring Reassessment	
Thurs.	16	Pat Moloney	4.5	4.5	None	None	Travel	No cultural resource observations.
Fri.	17	Pat Moloney	8	8	CH2MHill / GWP / Transcom	Chemehuevi, CRIT,DTSC, FMIT & PG&E	Data Gap Work Plan #3 Dioxin & Furan soil Investigation sampling at BKG-24 through BKG-37 and BKG-47	No cultural resource observations.
Sat	18	Pat Moloney	8	8	CH2MHill / GWP / Transcom	Chemehuevi, ,DTSC, FMIT & PG&E	Data Gap Work Plan #3 Dioxin & Furan soil Investigation sampling at BKG-18 through BKG-23, and at BKG-38 through BKG-46	No cultural resource observations.
Sun.	19	Pat Moloney	4.5	4.5	None	None	Travel	No cultural resource observations.

**APRIL 2017**

DAY	DATE	PERSONELL	HOURS	TOTAL HOURS	CONTRACTORS	AGENCIES PRESENT	ACTIVITIES	OBSERVATIONS
Tues.	25	Pat Moloney	5.5	5.5	GWP	None	Data Gap Work Plan #3 Soil Investigation AOC14	No cultural resource observations.
Wed.	26	Pat Moloney	8	8	GWP; TRANSCOM	CRIT,DTSC,FMIT,HUALAPIA	Data Gap Work Plan #3 Soil Investigation AOC14	No cultural resource observations. Possibility of gusting winds in PM and following day expedited excavation and backfilling to avoid need for extra dust control measures
Thurs.	27	Pat Moloney	8	8	GWP; TRANSCOM	CRIT,DTSC,FMIT,HUALAPIA	Data Gap Work Plan #3 Soil Investigation AOC14	No cultural resource observations. Work confined to dressing disturbed surface and GPS data collection.
Fri.	28	Pat Moloney	5	5	GWP	None	Data Gap Work Plan #3 Soil Investigation AOC14	No cultural resource observations.

## **APPENDIX C**

### **New and Updated DPR 523 Site Records (Appendix deliberately excluded from nonconfidential version)**

<u>Æ-Topock-201</u>
<u>Æ-Topock-202</u>
<u>Æ-Topock-203</u>
<u>Æ-Topock-204/H</u>
<u>Æ -Topock-213</u>
<u>Æ-Topock-216/H</u>
<u>Æ-Topock-217</u>
<u>Æ-Topock-11908 Update</u>
<u>Æ-Topock-ISO-61</u>
<u>Æ-Topock-ISO-62</u>
<u>Æ-Topock-ISO-63</u>