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Ms. Dilan Roe
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

RECEIVED

By Alameda County Environmental Health 9:12 am, Feb 21, 2017

Re: 1233 Bockman Road – Acknowledgement Statement
San Lorenzo, California
ACEH Case No. 3217

Dear Ms. Roe:

PaulsCorp, LLC, has retained the environmental consultant referenced on the attached report for the project referenced above. The attached report is being submitted on PaulsCorp's, LLC, behalf.

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the State Water Resources Control Board's GeoTracker website.

Sincerely,

Scott Schoeman
Development Associate



February 17, 2017

Scott Schoeman
PaulsCorp, LLC
100 Saint Paul Street
Denver, Colorado 80206

Re: **Pilot Study Report**
Bockman Road Property
1233 Bockman Road
San Leandro, California 94577
ACEH Case # RO00003217

Dear Mr. Schoeman:

On behalf of PaulsCorp, LLC, PANGEA Environmental Services, Inc. (PANGEA) prepared this *Pilot Study Report* for the subject property. This report documents implementation of the *Pilot Study Workplan* dated October 7, 2016. The Workplan was approved by the Alameda County Department of Environmental Health (ACDEH) email dated October 12, 2016, which required submittal of this pilot study report. The pilot study was performed to evaluate the effectiveness of the excavation approach presented in PANGEA's *Draft Corrective Action Plan* dated October 7, 2016 prior to full CAP implementation.

If you have any questions or comments, please call me at (510) 435-8664 or email briddell@pangeaenv.com.

Sincerely,
PANGEA Environmental Services, Inc.

A handwritten signature in blue ink, appearing to read "Bob Clark-Riddell".

Bob Clark-Riddell, P.E.
Principal Engineer

Attachment: *Pilot Study Report*

PANGEA Environmental Services, Inc.



PILOT STUDY REPORT

1233 Bockman Road
San Lorenzo, CA 94577
ACEH Case # RO00003217

February 17, 2017

Prepared for:

PAULS Corporation, LLC
100 Saint Paul Street
Denver, Colorado 80206

Prepared by:

PANGEA Environmental Services, Inc.
1710 Franklin Street, Suite 200
Oakland, California 94612

Written by:



Ron Scheele, P.G.
Principal Geologist

Bob Clark-Riddell, P.E.
Principal Engineer

PANGEA Environmental Services, Inc.

PILOT STUDY REPORT

1233 Bockman Road
San Lorenzo, CA 94577

TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
2.0 SITE BACKGROUND	1
2.1 SITE DESCRIPTION AND HISTORY	1
2.2 CHEMICALS OF POTENTIAL CONCERN.....	1
2.3 SUMMARY OF PREVIOUS SITE INVESTIGATIONS.....	2
2.4 POTENTIAL OFFSITE SOURCES OF VOCs	5
2.5 SITE GEOLOGY AND HYDROGEOLOGY	5
2.6 SITE DEVELOPMENT PHASES AND A NEW AGENCY CASE FOR EASTERN SITE AREA	6
2.7 AGENCY DIRECTION.....	6
3.0 EXCAVATION PILOT STUDY.....	6
3.1 PILOT STUDY AREA.....	6
3.2 PILOT STUDY OVERVIEW	7
3.3 EXCAVATION PREPARATION, PERMITTING AND NOTIFICATION	7
3.4 SOIL PROFILING FOR OFFSITE DISPOSAL	8
3.5 EXPLORATORY EXCAVATION TEST PITS.....	9
3.6 NORTH EXCAVATION PILOT STUDY FOR PCE IMPACT.....	10
3.7 SOUTH EXCAVATION PILOT STUDY FOR ETHYLBENZENE IMPACT.....	11
3.8 VAPOR BARRIER INSTALLATION.....	11
3.9 SOIL REUSE AND BACKFILLING.....	12
3.10 POST-EXCAVATION SOIL GAS SAMPLING.....	13
4.0 CONCLUSIONS AND RECOMMENDATIONS	15
5.0 REFERENCES.....	17

ATTACHMENTS

Figure 1	Vicinity Map
Figure 2	Site Map
Figure 3	West and East Site Legal Areas
Figure 4	Proposed Pilot Study Excavation Areas
Figure 5	VOCs in Soil
Figure 6	VOCs in Groundwater
Figure 7	Cross Section B-B' Pilot Test North Excavation and Conditions
Figure 8	PCE in Soil Gas after Pilot Study Excavation
Figure 9	PCE Concentration Trends in Soil Gas – Pilot Test North Study Area
Figure 10	Ethylbenzene in Soil Gas after Pilot Study Excavation

Table 1	Soil Analytical Data
Table 2	Groundwater Analytical Data
Table 3	Soil Gas Analytical Data
Appendix A	Agency Correspondence
Appendix B	Pilot Study Photos
Appendix C	Import Fill Documentation
Appendix D	Standard Operating Procedures
Appendix E	Soil Gas Probe Permit
Appendix F	Soil Gas Probe Construction Detail
Appendix G	Soil Gas Sampling Forms
Appendix H	Laboratory Analytical Reports

1.0 INTRODUCTION

On behalf of PaulsCorp, LLC, PANGEA Environmental Services, Inc. (PANGEA) prepared this *Pilot Study Report* for the subject property. This report documents implementation of the *Pilot Study Workplan* dated October 7, 2016. The Workplan was approved by the Alameda County Department of Environmental Health (ACDEH) email dated October 12, 2016, which required submittal of this pilot study report (Appendix A). The pilot study was performed to evaluate the effectiveness of the excavation approach presented in PANGEA's *Draft Corrective Action Plan* dated October 7, 2016 prior to full CAP implementation.

2.0 SITE BACKGROUND

The Site is located in a commercial and residential area along Bockman Road in San Lorenzo, California (Figure 1). The Site is currently under construction for redevelopment into residential housing. Prior Site assessment activities have identified volatile organic compounds (VOCs) in the subsurface. The VOC impact is apparently due a historic dry cleaner at 1269 Bockman Road (eastern portion of Site), a former auto shop at 1415 Bockman Road (western portion of the Site), and potential offsite sources of petroleum hydrocarbons from 1210 Bockman (former Impulse Motors fueling station/auto repair facility) and 17093 Via Chiquita (commercial street sweeping business).

2.1 Site Description and History

The Site consists of an approximately 3.87-acre lot along Bockman road in San Lorenzo, California (Figure 2). The property is owned and being redeveloped by PaulsCorp, LLC into 53 two-story residential units. The assessor parcel number (APN) for the Site is 411-63-17. The subject property is relatively flat and lies at an elevation of about 20 feet above mean sea level. There are currently no buildings on Site but historically the Site consisted of a strip mall and an associated parking lot. The Site is surrounded in all directions by single and multi-family residences.

According to a Phase I Environmental Site Assessment Update (ESA) dated June 3, 2016 prepared by ENGEO Incorporated (ENGEO), the Site was used a strip mall until the buildings were demolished in 2007. Two former tenants of note were identified: a dry cleaner that operated between approximately 1960 and 1979 at 1269 Bockman Road (in the eastern portion of the Site); and an automotive repair shop that operated hydraulic lifts (in the western portion of the Site). The ESA also noted that a gasoline service station previously existed on the adjacent parcel located south of the Site across Bockman Road at 1210 Bockman Road.

2.2 Chemicals of Potential Concern

The chemicals of potential concern at this Site primarily include petroleum hydrocarbons as well as tetrachloroethene (PCE) and its potential breakdown products. The following chemicals have been detected in

shallow *soil gas* in excess of conservative residential soil vapor environmental screening levels (ESLs) established by the San Francisco Bay Region Water Quality Control Board (RWQCB) and were identified as chemicals of concern (COCs): PCE, benzene, and ethylbenzene. The following additional VOCs have been detected at the Site below ESLs: acetone; chloroform; 1,2-dichloroethane; naphthalene; 1,1,1-trichloroethylene (TCE); toluene; xylenes; and gas-range, diesel-range, and motor oil-range total petroleum hydrocarbons. No significant VOC impact has been detected in soil or groundwater based on data comparison to ESLs.

2.3 Summary of Previous Site Investigations

The following provides a general overview of previous environmental investigations at the Site. All available historical Site assessment data is summarized on Tables 1 through 3.

- **November 18, 2004, Phase I Environmental Site Assessment, Secor International Inc. (Secor):** A Phase 1 ESA revealed that the auto repair shop located on the western portion of the Site may have formerly had a fuel dispenser island and that an oil/water separator existed within the building. The possibility of a dry cleaner was noted but it was not determined if operations were onsite or if the business was just a drop-off location. A former gasoline station/automotive repair facility located at 1210 Bockman Road (adjacent to the Site to the south) was also indicated as an environmental concern due to the elevated levels of petroleum hydrocarbons detected in confirmation samples during tank removal activities in 2004.
- **December 21, 2004, Phase II Environmental Site Assessment, Secor:** A total of eight soil borings were advanced onsite to a depth of 10 to 15 feet below ground surface (bgs) but sample data was not reported.
- **June 30, 2015, Phase I Environmental Site Assessment, ENGEO:** A Phase 1 ESA revealed the same three environmental concerns as the Phase 1 ESA completed in 2004: possible historical dry cleaner operations, the gas station adjacent and south of the Site, and the former automotive repair facility located on the western portion of the Site. Based on these findings and the lack of data from the Phase II ESA completed in 2004, ENGEO recommended completion of a new Phase II ESA.
- **July 2, 2015, Phase II Environmental Site Assessment, ENGEO:** Soil, groundwater, and soil gas were sampled to identify potential concerns related to the aforementioned historic operations. Three soil borings were advanced (S-1 through S-3) to a depth of 10 feet bgs in the vicinity of the former dry cleaner (S-1) and the former automotive repair facility (S-2 and S-3). Soil samples were collected at depths of 1, 5, and 10 feet bgs from each boring. Grab groundwater samples (GW-1 through GW-3) were also collected from three separate borings at depths ranging from 15 to 25 feet bgs depending on where groundwater was first observed. Soil and groundwater samples were analyzed for VOCs, CAM-17 metals, and total petroleum hydrocarbons as gasoline (TPHg), diesel (TPHd), and motor oil (TPHmo). While VOCs, TPHg, and metals were detected in groundwater samples, all analytes were

below screening levels except arsenic (which likely represents background conditions). For the two analyzed soil gas samples (SG-1 and SG-2), no VOCs were reported above environmental screening levels.

- **October 1, 2015, Geotechnical Investigation (Langan Treadwell Rollo):** A geotechnical investigation was conducted for the Site. The report concluded that from a geotechnical standpoint, the Site can be developed as planned, provided the recommendations presented in this section of the report are incorporated into the design and contract documents. Criteria for foundation design, together with recommendations for Site preparation, floor slabs, fill placement and seismic design were presented the report.
- **June 3, 2016, Phase I Environmental Site Assessment Update, ENGEO:** The Phase 1 ESA completed in 2015 was updated to include the results of an environmental record search. No new environmental concerns were recognized.
- **August 2, 2016, Revised Phase II Environmental Site Assessment, ENGEO:** Additional Site assessment activities including installing and sampling six new temporary soil gas wells (SG-5 through SG-10) and collecting four grab groundwater samples (GW-1 through GW-4). The soil gas wells were installed to depths of 7 feet bgs (SG-6, SG-8, and SG-9) and 10 feet bgs (SG-5, SG-7, and SG-10) and sampled for TPHg and VOCs. PCE was detected in SG-6 and SG-9 at an identical concentration of 256 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Grab groundwater borings GW-1 through GW-3 were advanced in close proximity to the borings by the same identity in 2015. All four borings were advanced to a depth of 16 to 17 feet bgs depending on where first encountered groundwater was observed. A sample was collected from each boring and analyzed for VOCs, TPHg, TPHd, TPHmo, and CAM-17 metals. VOCs, TPHg, and metals were detected below screening levels except for arsenic.
- **August 17, 2016, Site Management Plan Supplement, PANGEA:** A Site Management Plan Supplement was prepared to facilitate grading work at the western portion of the Site.
- **August 26, 2016, Site Assessment Report, PANGEA:** A dynamic site assessment was conducted involving the sampling of soil, groundwater, and shallow soil gas. PANGEA employed MiHPT, a high resolution site characterization technique, to help delineate the extent of contaminants in the subsurface and to evaluate hydrogeologic conditions, primarily in the vicinity of the former drycleaners. No significant VOC impact was detected in soil and groundwater, but shallow soil gas in the eastern portion of the Site is impacted with concentrations of PCE, benzene, and ethylbenzene that exceed their respective residential shallow soil gas ESLs.

- **October 7, 2016, Pilot Study Workplan, PANGEA:** A Pilot Study Workplan was prepared to outline procedures to test the effectiveness of a proposed soil excavation approach, prior to full implementation. The pilot study area targeted VOC impact near planned Buildings 5 and 8.
- **October 14, 2016, Draft Corrective Action Plan, PANGEA:** A Draft Corrective Action Plan (CAP) was prepared to provide an approach to remediate VOC impact and help mitigate potential vapor intrusion issues in conjunction with development at the Site. The CAP proposed soil excavation, an excavation pilot study, and additional site assessment in conjunction with remediation and mitigation efforts for the eastern Site area (Buildings 5 through 10).
- **October 17, 2016, Data Gap Field Investigation Workplan, PANGEA:** A *Data Gap Field Investigation Workplan* was prepared to address data gaps across the Site pertaining to potential remediation and vapor intrusion mitigation, as required by ACDEH letter dated October 14, 2016. The proposed work scope included onsite soil gas sampling within the footprint of future Buildings 1, 2, 3, 4 and 10. The work scope also involved soil sampling from three soil borings (SB-14 through SB-16) to further evaluate potential VOC impact in soil near elevated soil gas impact within the eastern portion of the Site. Soil gas sampling procedures and results from Buildings 1 & 2 area are presented in PANGEA's *Interim Remediation Report – Former Auto Repair Area* dated October 26, 2016. Sampling procedures and results from Buildings 3 and 4 are presented in PANGEA's *Data Gap Investigation Report - Buildings 3 & 4* dated November 1, 2016. Soil gas sampling procedures near Building 10 will be presented in the future *Remedial Action Implementation Plan*.
- **October 26, 2016 Interim Remediation Report – Former Auto Repair Area, PANGEA:** The report documents soil excavation activities in the area of the former auto repair facility (Buildings 1 and 2 of the Site development). Approximately 690 cubic yards of impacted soil was excavated from the vicinity of the former auto repair facility. Confirmation soil sampling data indicated that remaining residual impact was well below regulatory screening levels.
- **November 16, 2016, Data Gap Investigation Report - Buildings 3 & 4, PANGEA:** Site assessment activities involved the installation and sampling of four soil gas probes (SV-51 through SV-54) to assess VOC levels within the footprint of proposed Buildings 3 and 4. No PCE or benzene were detected above their respective residential shallow soil gas ESLs. Based on the soil gas sampling data, ACDEH tentatively concurred that no remediation was required near Buildings 3 and 4 and vapor mitigation could involve subslab ventilation and a contingent post-slab engineered vapor barrier.

- **November 29, 2016, Vapor Intrusion Mitigation System (VIMS) Basis of Design Report for Buildings 1 through 4, PANGEA:** The report described construction of a proposed vapor intrusion mitigation system (VIMS) and related Operations & Maintenance Plan for Buildings 1 through 4. The proposed VIMS consisted of SSV piping and a contingent post-slab construction engineered vapor barrier.

2.4 Potential Offsite Sources of VOCs

1210 Bockman: A fueling station/auto repair facility (Impulse Motors, B.P.) was formerly located across the street from the Site and operated from the 1950s until 2004. In 2004, three fuel USTs, and two dispensers with associated piping were removed. Elevated levels of TPHg, TPHd and BTEX were detected in soil, groundwater and soil gas. The environmental case was granted closure by ACDEH in 2013. The case closure summary with historical maps and data is included in Appendix A. The 1210 Bockman property is located directly upgradient of the Site and may be the source or contributing source of select petroleum hydrocarbon compounds at the eastern boundary of the Site, where ethylbenzene concentrations in soil gas exceed ESLs. In 2013, dissolved-phased TPHd concentrations were reported in an irrigation well at a residential property (17109 Via Chiquita) located 155 feet north of the 1210 Bockman property.

17093 Via Chiquita: This property, immediately adjacent to the Site's eastern property boundary, is currently occupied by a street sweeping business (Midnight Sweepers) with several commercial vehicles parked periodically at the property. PANGEA understands that historically numerous automotive vehicles are stored at this property. This property may be the source or contributing source of select petroleum hydrocarbon compounds at the eastern boundary of the Site, where ethylbenzene concentrations in soil gas exceed the ESL.

2.5 Site Geology and Hydrogeology

The Site property is located within the East Bay Plain subbasin, which is part of the larger Santa Clara Valley Groundwater Basin. The East Bay Plain subbasin is a northwest trending alluvial plain bounded to the north by San Pablo bay, to the east by the contact with Franciscan Basement rock, and to the south by the Niles Cone Groundwater basin. The basin extends beneath San Francisco Bay to the west. Groundwater is generally found very near the surface throughout the basin.

The East Bay Plain subbasin aquifer system consists of unconsolidated sediments of Quaternary age. The Early Holocene Temescal Formation is the most recently deposited and consists of primarily silts and clays with some gravel layers.

The relatively flat Site lies at an elevation of approximately 20 feet above mean sea level to the east of San Francisco Bay (Figure 1). Soil beneath the Site consists of sandy gravel fill (likely baserock material) to approximately 1 ft bgs underlain by 2 to 3 feet of moderately plastic clay. The clay layer is underlain by silt and

a discontinuous, one-foot thick sand lens observed intermittently between 6 and 10 feet bgs. PANGEA observed groundwater between 7 and 9 feet bgs, while others reported first encountered groundwater deeper. Based on data from neighboring sites, static groundwater was approximately 8 ft bgs (1201 Bockman) and groundwater flows to the northwest.

2.6 Site Development Phases and a New Agency Case for Eastern Site Area

Development of the Site is expected to be completed in three main phases, moving from west to east across the Site. Construction began with Buildings 1 through 4 in the west portion of the Site, which is planned for surveying for a new legal description (Figure 3). Construction would then proceed to Building 5 and 8 in the center of the Site, and then commence to Buildings 6, 7, 9 and 10 in the east portion of the Site; the eastern area of Buildings 5 through 10 is planned for surveying for a new legal description (Figure 3). This splitting of the Site was described during a February 2, 2017 meeting with ACDEH. A new agency case is planned for the western portion of the Site, with the current case applying to the eastern portion of the Site. The Site would remain as one parcel for sale to one homeowner's association in the future.

2.7 Agency Direction

Within the October 12, 2016 email and January 9, 2017 meeting, ACDEH requested a *Pilot Study Report* to help coordinate appropriate remediation and mitigation measures for Buildings 5 & 8. ACDEH also requested a *Data Gap Field Investigation Workplan* to further delineate contamination in the east portion of the Site located east of Buildings 5 & 8. As required by ACDEH, results of the pilot study and data gap investigation will be used to help refine the corrective action approach of the *Draft CAP* dated October 14, 2016, and will be documented in a *Remedial Action Implementation Report* for the eastern portion of the Site. During a subsequent meeting on February 2, 2017, ACDEH indicated that any necessary delineation within the PCE soil gas plume can be proposed within the *Remedial Action Implementation Report*.

3.0 EXCAVATION PILOT STUDY

This section documents implementation of the approved *Pilot Study Workplan* dated October 7, 2016. The purpose of the pilot study was to confirm the effectiveness of the excavation and soil reuse approach presented in PANGEA's *Draft Corrective Action Plan (CAP)* dated October 7, 2016 prior to full CAP implementation. The completed scope of work for the pilot study was consistent with the excavation and post-excavation procedures of the CAP. Photos documenting the pilot study excavation and post-excavation soil vapor probe installation are included in Appendix B.

3.1 Pilot Study Area

The pilot study area targeted select *PCE* and *ethylbenzene* impact that exceeds Environmental Screening Levels (ESLs) established by the San Francisco Bay Regional Water Quality Control Board (RWQCB) for

residential site use. The PCE and ethylbenzene impact in soil gas before the pilot study excavation is shown on Figure 4. A discussion of the VOC impact is presented within the draft CAP.

The pilot study consisted of two excavation areas near planned Buildings 5 & 8, as shown on Figure 4. The pilot test north (PTN) excavation encompassed the west portion of the PCE soil gas plume. The pilot test south (PTS) excavation encompassed the west portion of the ethylbenzene soil gas plume. Due to the lack of VOCs in soil based on lab data and PID field screening, PANGEA also collected shallow groundwater samples for VOC analysis to better understand the distribution of PCE in the Site subsurface.

3.2 Pilot Study Overview

The pilot study involved the following tasks and general task sequence:

- Excavation preparation, permitting and notification;
- Soil profiling for offsite disposal;
- Exploratory excavation test pits;
- North excavation pilot study for PCE impact;
- South excavation pilot study for Ethylbenzene impact;
- Temporary vapor barrier installation;
- Backfilling and soil reuse; and
- Post-excavation soil gas sampling, a critical task for evaluating the pilot excavation effectiveness.

3.3 Excavation Preparation, Permitting and Notification

Soil excavation was performed by DCI Construction Inc. (DCI) of Walnut Creek, California. The following tasks were conducted for excavation preparation and site work:

- Obtained authorization from ACDEH and permits from the City of San Lorenzo, as necessary.
- Pre-marked the excavation area with white paint and notify Underground Service Alert (USA) of the excavation activities;
- Prepared a Site-specific *Health and Safety Plan* to educate personnel and minimize their exposure to potential hazards related to Site activities; and
- Coordinated with excavation and laboratory contractors and notified involved parties.
- Prepared a *Site and Perimeter Air Monitoring, and Dust Mitigation Plan* dated November 16, 2016.

- Followed procedures in the Storm Water Pollution Prevention Plan (SWPPP) approved for the Site grading operations. Perimeter barriers were installed and maintained throughout excavation and backfilling activities. DCI continues to implement the SWPPP with respect to stockpiled soil from the pilot study excavation and related Site development work.

3.4 Soil Profiling for Offsite Disposal

On September 16 and October 3, 2016, PANGEA coordinated soil sampling to facilitate future offsite disposal of excavated soil as needed. Soil profiling in advance of excavation was conducted to facilitate direct loading of VOC-impacted material for minimizing soil handling and disposal costs. Most importantly, advance soil profiling was conducted to help accelerate disposal at the nearby cost-effective Chuck Corsica Golf Complex, which was scheduled to discontinue soil acceptance in the very near future due to the upcoming wet season. Soil profiling would also help determine soil disposal costs for cost evaluation for planned future excavation in the CAP area. This advance soil profiling was an extra task not specified in the Workplan. Section 3.3 of the Workplan anticipated composite soil sampling of *stockpiled* soil for profiling for offsite disposal and/or soil reuse. Some composite and discrete sampling of stockpiled soil was also performed as detailed below.

Soil samples were collected from seven borings (TP-1 through TP-7) within the proposed PTN and PTS excavations. Samples were collected using a hand auger and hand tools at locations shown on Figure 5. Soil sample collection depth ranged from 1 and 6 ft bgs and samples were submitted for laboratory analysis.

For the PTN excavation area, three discrete soil samples were collected from borings TP-5, TP-6 and TP-7 at depths of 2, 4 and 6 ft bgs, respectively. The soil samples were analyzed for VOCs by EPA Method 8260 (with collection EPA Method 5035 [TerraCore]), TPHd/g/mo by EPA Method 8015, SVOCs by EPA Method 8270, PCBs by EPA Method 8082, CAM17 metals by EPA 6010B and EPA 7471A, organochlorine pesticides by EPA Method 8081A, and asbestos by ARB Method 435. No compounds were detected in soil, except for very low concentrations of two SVOCs below their respective ESLs. Laboratory analytical data for soil is summarized on Table 1 and laboratory analytical reports are provided in Appendix H.

For the PTS excavation area, discrete and composite samples were collected from borings TP-1 through TP-4 to profile soil at depths of 1, 3 and 6 ft bgs. Initially, three *discrete* soil samples were collected from soil boring TP-1 at depths of 1, 3 and 6 ft bgs using EPA Method 5035 (e.g., TerraCore) and analyzed for VOCs by EPA Method 8260. Next, discrete soil samples were collected in 6-inch brass tubes from 1, 3 and 6 ft depth in each of borings TP-1 through TP-4. The laboratory composited samples from each depth into one depth-specific composite sample. For example, COMPA(TP1-TP4) was composited from 1 ft depth soil samples, COMPB from 3 ft depth, and COMPC from 6 ft depth. These composite samples were analyzed for TPHg/d/mo by EPA Method 8015, SVOCs by EPA Method 8270, PCBs by EPA Method 8082, CAM17 metals, pesticides by EPA Method 8081A, and asbestos by ARB Method 435. No compounds were detected in any of the soil samples,

except for very low concentrations of TPHd/TPHmo in each of the three of the composite soil samples. Laboratory analytical data for soil is summarized on Table 1. Analytical reports are provided in Appendix H.

Following profiling, the soil was accepted for disposal at Chuck Corica Golf Complex of Alameda, California (via Greenway Golf Management) and at Baylands Soil Processing in Brisbane, California.

3.5 Exploratory Excavation Test Pits

On October 19, 2016, two test pits were excavated within the proposed pilot test north (PTN) excavation area to confirm the appropriateness of excavation screening methods proposed in the Workplan. The two test pits were completed to a depth of approximately 9.25 ft bgs. Photograph 1 shows one test pit (Appendix B). Soil was screened for VOCs at 1 ft intervals to the total test depth using a portable RAE Systems MiniRAE 3000 Photo-Ionization Detector (PID) consistent with Workplan procedures. To screen soil with the PID, PANGEA technicians and project staff screened soil placed within new, 1-gallon, plastic bags, screened soil within the excavator bucket, and screened soil insitu immediately after excavation of select 1 ft layers. No VOC-impacted soil was encountered based on PID readings, as all readings from screened soil were 0.0 parts per million per volume (ppmv).

Groundwater was encountered at approximately 7.5 ft bgs within test pits in the PTN excavation. Due to the lack of VOCs in Site soil, Pangea collected grab groundwater samples (PTN-w1 and PTN-w2) from the bottom of each of the two pits using a disposal bailer for VOC analysis by EPA Method 8260. The test pit locations are shown on Figure 6 (plan view) and Figure 7 (cross section). As shown on Figures 6 and 7, PCE was detected in groundwater at concentrations of 0.5 µg/L and 0.6 µg/L within the test pit groundwater. The higher of these two PCE concentrations (0.6 µg/L) was detected closer to the former dry cleaner building, where a slightly higher PCE concentration (0.8 µg/L) was previously detected in the grab groundwater sample from MIP-2. Note that these PCE concentrations are all below the 2016 Tier 1 ESLs. No other VOCs (including benzene or ethylbenzene) were detected in the groundwater samples. Groundwater analytical results are summarized on Table 2.

On November 1, 2016, two test pits were excavated to a depth of 8.0 ft bgs within the proposed pilot test south (PTS) excavation area targeting ethylbenzene impact. Soil was screened for VOCs at 1 ft intervals with a PID using the methods described above. No VOC-impacted soil was encountered based on PID readings. Groundwater was encountered at approximately 7 to 8 ft bgs. Grab groundwater samples (PTS-w1 and PTS-w2) were collected from the bottom of each pit using a disposal bailer and analyzed for VOCs by EPA Method 8260. The sample locations and analytical results are summarized on Figure 6. No VOCs (including ethylbenzene) were detected in the groundwater samples. Groundwater analytical results are also summarized on Table 2.

During test pit excavation, PANGEA observed the following soil conditions: a gravelly top soil at 0-1 ft bgs and silty clay down to the maximum depth of 9.25 ft bgs, with moist capillary fringe area encountered approximately 7 ft bgs.

In summary, no VOCs were detected in soil either during PID screening or lab analysis from advance soil profiling samples. However, low PCE concentrations were detected in grab groundwater from test pits in the PTN excavation area. The VOC data and soil conditions observed during the test pits were used to slightly modify the pilot study excavation procedures as detailed below.

3.6 North Excavation Pilot Study for PCE Impact

From October 20 to October 31, 2016, soil excavation and backfilling was conducted in the northern pilot study area to target the PCE soil gas impact near Buildings 5 & 8. The PTN excavation was completed to a total depth of 6.5 ft bgs with horizontal dimensions of approximately 45 ft long by 47.5 ft wide. The lateral excavation extent is shown on Figure 6. The vertical extent of the excavation is shown on Figure 7. Photograph 2 shows the completed PTN excavation prior to backfilling (Appendix B).

The Workplan anticipated first segregating the top 3 ft of soil as ‘overburden’ soil for screening. After removal of overburden soil, the Workplan indicated that deeper soil (3 to 7 ft bgs) would be screened and segregated into ‘clean’ and ‘impacted’ soil stockpiles.

Test pit VOC data and soil conditions observed were used to slightly modify the pilot study excavation procedures. Based on the lack of identified soil impact, PCE impact in shallow groundwater, and wet/capillary fringe conditions at approximately 7 ft depth, pilot test excavation was modified to expedite excavation while maintaining appropriate soil segregation to screen for potential VOC impact and facilitate soil disposal and/or reuse. The modified pilot test excavation approach involved the following excavation and screening sequence:

- Segregating the upper gravelly top soil found at 0-1 ft depth,
- Segregating the clayey silt soil from 1-4 ft depth as ‘overburden’ soil,
- Segregating a 12” lift from 4 – 5 ft depth, and
- Segregating an 18” lift from 5 to 6.5 ft depth just above the underlying wet soil.

Groundwater “pumping” was observed when excavation equipment tested the soil at the 6.5 ft depth, so deeper excavation was not pursued.

Excavated soil was segregated into 3 ft high stockpiles for each approximate 100 cubic yards of excavated soil. Several photographs of stockpiled soil are included in Appendix B. Excavated soil was periodically screened with a PID prior to stockpiling, and no VOCs were detected during PID screening of this soil.

At the conclusion of each work day, each soil stockpile was covered with plastic sheeting. The next day, the stockpiled soil was screened for VOCs by inserting the PID tip into a small hole cut into the plastic sheeting every 5 ft along the top ridge of each soil stockpile. No VOCs were detected in any of the soil stockpiles by PID field screening.

On October 19 through 25, 2016, PANGEA collected discrete and composite soil samples for VOCs by EPA Method 8260. Composite samples were also analyzed for TPHg/d/mo by EPA Method 8015. Samples PTN-Comp1, PTN-Comp2, PTN-Discrete1, and PTN-Discrete3 were collected from each of the soil stockpiles. Insitu soil sample PTN-Discrete2 was collected from PTN excavation at 4.5 ft bgs immediately prior to stockpiling. As summarized on Table 1, no TPH or VOCs were detected in the soil samples, except for very low concentrations of TPHd/TPHmo in three of the composite soil samples.

Installation of the temporary vertical vapor barrier is described in Section 3.8. Backfilling and soil reuse are described in Section 3.9.

3.7 South Excavation Pilot Study for Ethylbenzene Impact

On November 1, 2016, soil excavation commenced in the southern pilot study area to target the ethylbenzene soil gas impact near Building 5. The pilot test south (PTS) excavation was subsequently excavated to a depth of 6.5 ft bgs with horizontal dimensions of approximately 45 ft long by 37.5 ft wide, as shown on Figure 5. The completed excavation before backfilling is shown on Photo 5 (Appendix B).

For the south excavation pilot study, PANGEA followed the sample segregation sequenced used for the north pilot test excavation. The sequence involved segregation of the upper gravelly top soil (0-1 ft depth), overburden soil (1-4 ft depth), 12" lift from 4 – 5 ft depth, 18" lift from 5 to 6.5 ft depth just above the underlying wet soil. Excavated soil was segregated into 3 ft high stockpiles for each approximate 100 cubic yards of excavated soil. Excavated soil was periodically screened with a PID prior to stockpiling and no VOCs were detected during PID screening of this soil. At the conclusion of each work day, each soil stockpile was covered with plastic sheeting. The next day, the stockpiled soil was screened for VOCs by inserting the PID tip into a small hole cut into the plastic sheeting every 5 ft along the top ridge of each soil stockpile. No VOCs were detected in any of the soil stockpiles by PID field screening.

On November 3, 2016, four soil samples (PTS-Discrete1 through 4) were collected from each of the soil stockpiles. All soil samples were analyzed for VOCs by EPA Method 8260. As summarized on Table 1, no VOCs were detected in the soil samples.

3.8 Vapor Barrier Installation

Prior to backfilling, plastic sheeting was installed along the eastern sidewall of each excavation as shown on Figure 6. The plastic sheeting was installed to minimize potential subsurface vapor migration from elevated

soil gas concentrations located further east of the pilot study area. Plastic sheeting of 6 mil thickness was doubled over and placed on sidewall prior to backfilling. Plastic sheeting installed along the eastern sidewall of the PTN and PTS excavations is shown on Photos 4 and 6, respectively (Appendix B).

3.9 Soil Reuse and Backfilling

The following soil reuse criteria was specified in the Workplan. For the PCE impact area, any stockpiled soil with final PID readings at or above 0.1 ppmv would not be reused. For the ethylbenzene impact area, any stockpiled soil with final PID readings at or above 0.2 ppmv would not be reused. Lastly, any discrete soil samples with VOC data exceeding Tier 1 ESL criteria would not be reused at the Site.

To evaluate soil for potential reuse, PANGEA used soil analytical data from pre-excavation soil profiling, analytical data from stockpiled soil samples, and stockpile screening with a PID. Based on the lack of VOCs in soil analyses and during stockpile PID screening, all excavated soil from the pilot study met reuse criteria and was deemed eligible for use as backfill material.

Additional ‘trenching’ spoils from the western portion of the Site were also evaluated for potential reuse. PANGEA collected the following discrete and composite soil samples from this non-pilot study soil: Comp6 (offsite utility soil near buildings 1&2), Comp7 (offsite utility soil near buildings 1&2), B1&2-Discrete1 (trench soil from buildings 1 & 2), and B3&4-Discrete1 (trench soil from buildings 3 & 4). All samples were analyzed for VOCs analysis by EPA Method 8260 and select samples were analyzed for TPHg/d/mo, SVOCs, PCBs and CAM17 metals. Based analytical data, this non-pilot study soil was deemed eligible for reuse. Soil analytical data from the reuse screening is summarized on Table 1.

To start backfilling, PTN and PTS excavations were first lined with a geotextile filter fabric and then partially backfilled with 3- to 5-inch diameter, imported crushed gravel. In the PTN excavation, the imported gravel was placed from 5.5 to 6.5 ft bgs. In PTS excavation, the imported gravel was placed from 5.0 to 6.5 ft bgs. Photographs 3, 6 and 7 show initial backfilling operations (Appendix B). The crushed gravel was used to meet compaction requirements established by a third party geotechnical engineer and to reduce the potential for water infiltration (“pumping”) during backfilling. Crushed gravel was provided by Syar Industries of Vallejo, California, Argent Materials of Oakland, California and Cemex of Clayton, California. A certification letter from Syar Industries indicates that the crushed virgin quarried rock was produced at the Lake Herman Quarry in Vallejo, California (Appendix C). Additional documentation was provided by Argent Materials and Cemex (Appendix C).

After backfilling with gravel, the excavation was backfilled with 1) stockpiled soil sourcing from 0 to 5 ft depth of the pilot test excavation, and 2) trenching spoils from the western portion of the Site. Other than the gravel, no other imported material was used for backfill. Backfilling of PTN excavation is shown on Photo 4, and graded pilot study areas are shown on Photo 8 (Appendix B).

At the completion of soil reuse and backfilling, four soil stockpiles remained east of the pilot study area. This stockpiled soil was from 5 to 6.5 ft depth of the pilot test excavations. The estimated volume of the residual stockpiled soil is 315 cubic yards. This soil has been accepted for disposal at Chuck Corica Golf Complex in Alameda, and at Baylands Soil Processing in Brisbane. Offsite soil disposal is planned after further evaluation of potential reuse within the CAP area, or after the Chuck Corica Golf Complex resumes accepting soil following a dry period.

3.10 Post-excavation Soil Gas Sampling

Post-excavation Soil Gas Sampling Procedures

On November 16, 2016, six soil gas probes were installed within or immediately adjacent the pilot test excavations by Penecore Drilling of Woodland, California. As shown on Figure 6, five soil gas probes (SV-57 through SV-61) were installed inside the pilot test excavations, and soil gas probe SV-62 was installed just west of pilot test north excavation. Standard operation procedures for drilling and soil gas probe installation are included in Appendix D. Soil gas well installation permits obtained from Alameda County Public Works Agency are included in Appendix E.

All probes were constructed by setting a vapor implant attached to ¼-inch Teflon™ tubing at approximately 5 ft bgs and directly above the imported gravel backfill within the pilot test excavations. The vapor implant was placed within the center of a 1-foot-thick layer of Monterey #3 sand. A ½-foot of dry bentonite crumbles was poured on top of the sand and the remaining annular space was backfilled with hydrated bentonite. The Teflon™ tubing was set in a 2-inch PVC monument casing and capped to prevent moisture from entering. The soil gas probes within the completed excavations are shown in Photo 8 (Appendix B). Boring logs with soil gas probe construction details are provided in Appendix F.

On December 1, 2016 and January 16, 2017, two rounds of post-excavation soil gas sampling were conducted from soil gas probes (SV-57 through SV-62, and SV-21) located within and near the two pilot test excavations (Figures 8 and 9). Samples were collected using laboratory-supplied manifolds and certified-clean 1-liter Summa™ canisters supplied with a vacuum of approximately 30 inches of mercury. Prior to sample collection from the probes, a shut in test was conducted on the Summa™ canisters and manifolds. Approximately three casing volumes was purged from each probe at a flow rate between 100-200 milliliters per minute. Upon completion of purging, the sampling Summa™ canister was opened for sample collection. The pre-set valve regulated the vapor flow to approximately 150 milliliters of soil gas per minute. After approximately 5 or more minutes, the vacuum within the Summa™ canisters decreased to approximately 5 inches of mercury and the Summa™ canister valve was closed. To further evaluate potential leakage within the sampling system, a leak-check enclosure/shroud was placed over the sample train and isopropyl alcohol was introduced into the shroud. A PID was used to monitor the concentration of isopropyl alcohol within the shroud during sample collection. Soil gas samples were transported for laboratory analysis following chain-of-custody protocol. Samples were

analyzed for VOCs by EPA Method TO-15. Field forms for soil gas purging and sampling are included in Appendix G. Laboratory reports are provided in Appendix H.

PCE Concentrations in Post-excavation Soil Gas

VOCs including PCE, benzene, toluene, ethylbenzene, and xylenes were detected in various soil gas samples, although none of the constituents were detected above their respective residential ESLs for soil gas. Soil gas analytical results are summarized on Table 3.

PCE was detected in all soil gas samples at concentrations ranging from 7.5 $\mu\text{g}/\text{m}^3$ (SV-57) to 220 $\mu\text{g}/\text{m}^3$ (SV-60). The horizontal extent of PCE in soil gas is depicted on Figure 8.

PCE concentration data for soil gas probes within the pilot test north study area is graphed on Figure 9. Data from probes SV-5 and SV-6 indicated PCE concentrations of 710 $\mu\text{g}/\text{m}^3$ and 430 $\mu\text{g}/\text{m}^3$, respectively, *before* the pilot study excavation. Data from new probes SV-59, SV-60, SV-61, installed *after* the pilot study excavation, indicates that the pilot study excavation has reduced PCE in soil gas to below the screening level of 240 $\mu\text{g}/\text{m}^3$ for residential site use (2016 Tier 1 ESL).

Based on the December 1, 2016 sampling event performed approximately 4 weeks after backfilling and compaction, the PCE concentrations in the pilot test north probes ranged from 130 to 170 $\mu\text{g}/\text{m}^3$, with an average concentration of 150 $\mu\text{g}/\text{m}^3$. By the second sampling event on January 16, 2017 (about 6 weeks after the first event), PCE concentrations in these soil gas probes ranged from 200 to 220 $\mu\text{g}/\text{m}^3$, with an average concentration of 210 $\mu\text{g}/\text{m}^3$. The similar PCE concentrations within each probe for a given sampling event may be due to the rock backfill located immediately below each probe, allowing significant equilibration at this depth just above the encountered groundwater with low PCE impact. While all concentrations are below the residential ESL of 240 $\mu\text{g}/\text{m}^3$, data from these two events indicates an increasing trend. The planned third sampling event will further evaluate PCE concentration trends.

For probe SV-21 located north and *outside* the PTN excavation area, PCE concentrations in soil gas have fluctuated and appear stable. In August and September 2016 before the test excavation, PCE concentrations in SV-21 were 160 and 220 $\mu\text{g}/\text{m}^3$, respectively. On December 1, 2016, about 4 weeks after the excavation, the PCE concentration had decreased slightly to 200 $\mu\text{g}/\text{m}^3$.

Ethylbenzene Concentrations in Post-excavation Soil Gas

Ethylbenzene was detected at a maximum concentration of 5.4 $\mu\text{g}/\text{m}^3$ in the pilot test south excavation area. This is well below the residential ESL of 560 $\mu\text{g}/\text{m}^3$ for ethylbenzene. The extent of ethylbenzene in soil gas is depicted on Figure 10. This figure illustrates that the pilot study excavation initially reduced ethylbenzene in soil gas, where a maximum concentration of 4,300 $\mu\text{g}/\text{m}^3$ had been detected within probe SV-20.

Ethylbenzene concentrations in soil gas increased slightly between the first and second sampling events. During the first sampling event, ethylbenzene concentrations in the PTS soil gas probes SV-57 and SV-58 were <4.1 and <4.8 $\mu\text{g}/\text{m}^3$, respectively. During the second sampling event, ethylbenzene concentrations in the PTS soil gas probes SV-57 and SV-58 were 5.4 $\mu\text{g}/\text{m}^3$ and 5.1 $\mu\text{g}/\text{m}^3$, respectively. This represents a slight increasing trend.

PANGEA notes that no ethylbenzene was detected in grab groundwater sampling from test pits in the pilot study excavation.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the above information, PANGEA offers the following conclusions and recommendations with respect to the Site area near Buildings 5 & 8:

- The available pilot study data suggests that the excavation reduced PCE concentrations in soil gas to below residential ESLs. The data also indicated that no VOC soil source was identified west of the former dry cleaner. The presence of PCE in shallow groundwater in the pilot study area suggests that PCE migrated from the former dry cleaner location and may contribute to the soil gas plume at the Site. Although shallow groundwater impact has been detected, all concentrations are below the 2016 Tier 1 ESL of 3.0 $\mu\text{g}/\text{L}$.
- PANGEA concludes that the pilot study activities have sufficiently remediated soil gas impact near Buildings 5 & 8. Consistent with agency discussions on January 9, 2017, PANGEA recommends installation of an agency-approved vapor mitigation system (VMS) to mitigation potential vapor intrusion into Buildings 5 & 8.
- As required by ACDEH for Site development to proceed, PANGEA will provide a *VMS Basis of Design (BOD) Report* for these buildings. Consistent with prior discussion, the BOD Report will specify a subslab engineered chemical vapor barrier and a subslab ventilation system that complies with DTSC VIMA guidance. The report will also include a monitoring plan to evaluate soil gas conditions over time to help document that soil gas (and subslab gas within the VMS) are below applicable ESLs. If soil gas within the VMS riser pipes remains below the 2016 Tier 1 ESL, no additional remediation or contingent vapor mitigation measures would be necessary to safeguard human health. An operation and maintenance plan and record of construction completion report have been required by ACDEH to further safeguard human health and protect the integrity of the VMS system.

- PANGEA recommends conducting a third soil gas monitoring event of pilot test probes to further evaluate soil gas plume stability with respect to the effectiveness of the completed shallow excavation approach. This monitoring event is scheduled for mid February (weather permitting), consistent with agency direction from the January 9, 2017 meeting. This data will help facilitate selection of the final remedial approach within the eastern most Site area (Buildings 6, 7, 9 & 10).
- In a January 4, 2017 email, ACDEH required creation of an ‘exit strategy’ pertaining to objectives for case closure and avoidance or removal of a deed restriction at this Site. If desired as component of an ‘exit strategy’, PANGEA recommends consideration of monitoring of select soil gas probes to evaluate conditions with soil gas about 5 ft bgs. Future soil gas data could confirm that VOCs in soil gas are below Tier 1 ESLs and that a deed restriction is not required.

Based on the above information, PANGEA offers the following conclusions and recommendations with respect to the “corrective action plan (CAP)” area at the Site (easternmost area of Buildings 6, 7, 9 & 10):

- PANGEA recommends preparation of a *Data Gap Investigation Workplan* to address ACDEH requirements for delineation of *benzene* in soil gas near Building 10.
- PANGEA recommends discussing next steps for the CAP during our early March 2017 with ACDEH. Next steps may involve additional delineation of PCE in groundwater or PCE source investigation (exploratory excavation near historic sanitary sewer locations) to enhance our understanding of the site conceptual model with respect to corrective action for the CAP area. Eventually, results of the pilot study and any additional investigation will be used to refine the corrective action approach of the *Draft CAP* dated October 14, 2016, and will be documented in a *Remedial Action Implementation Report* for the eastern portion of the Site.

5.0 PANGEA REFERENCES

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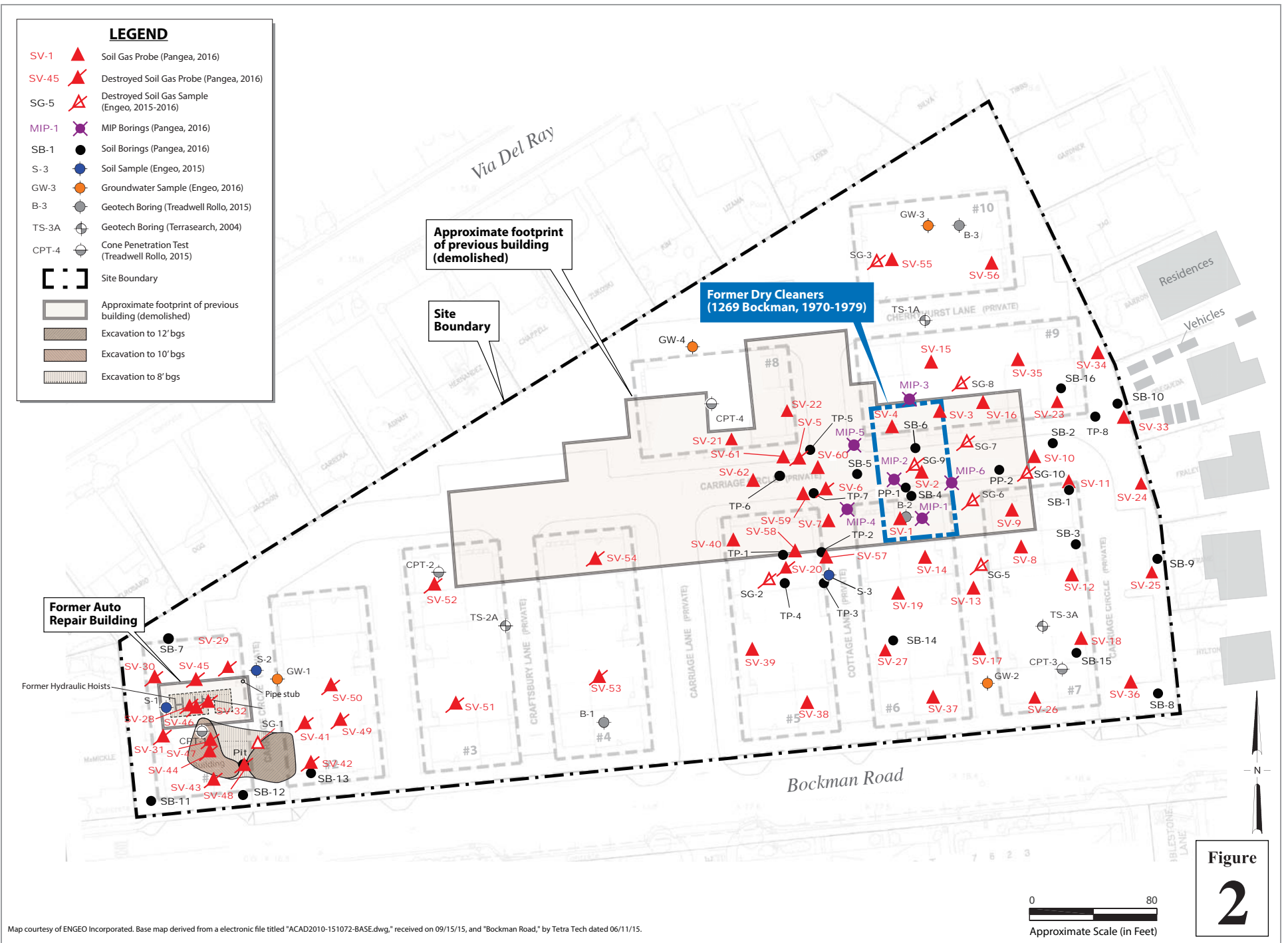
Secor, 2004, *Phase II Environmental Site Assessment*, December 2004.



1233 Bockman Road
San Lorenzo, California



Vicinity Map



1233 Bockman Road
San Lorenzo, California

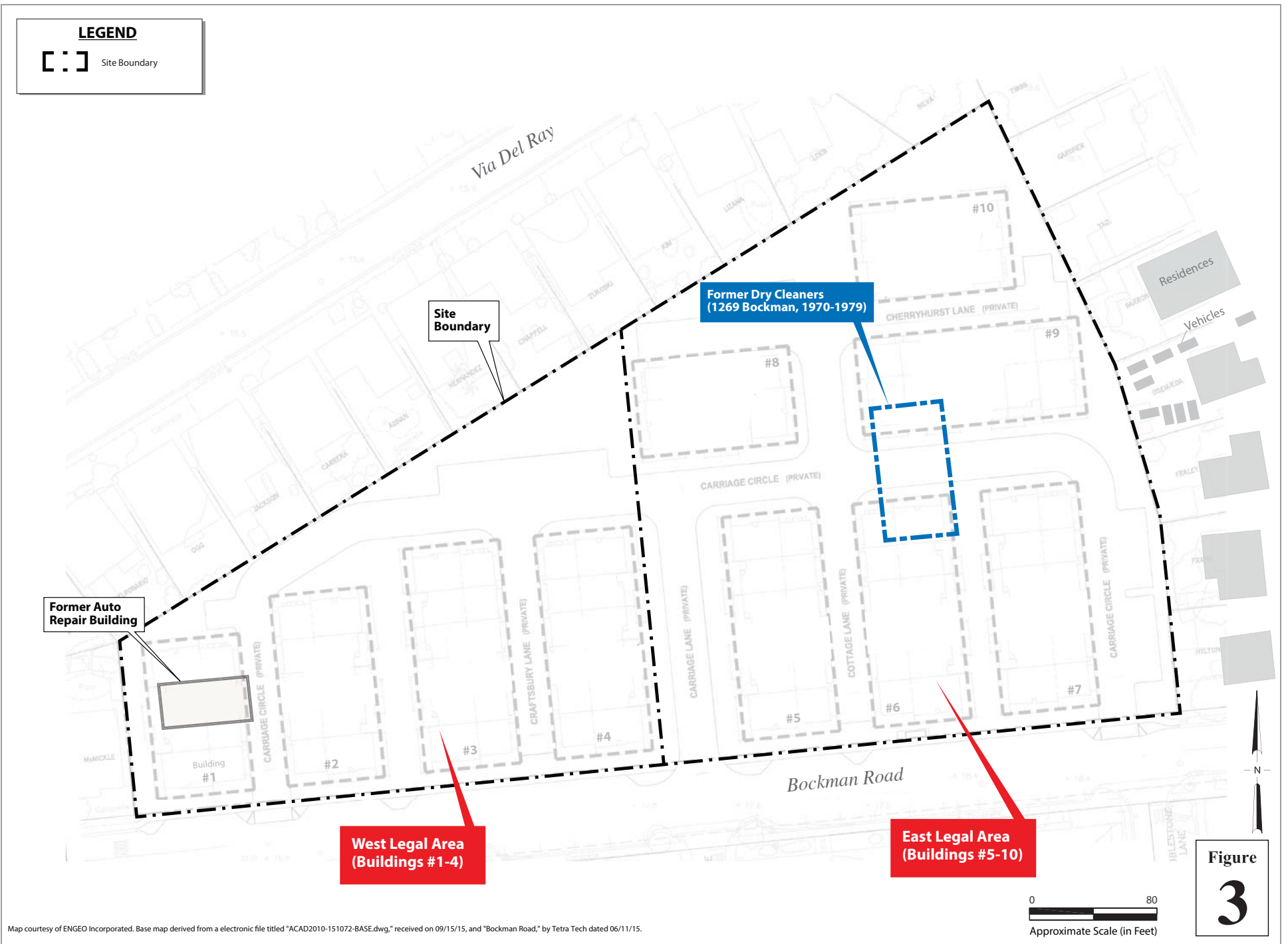


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Site Map

LEGEND

 Site Boundary



Map courtesy of ENGEO Incorporated. Base map derived from an electronic file titled "ACAD2010-151072-BASE.dwg," received on 09/15/15, and "Bockman Road," by Tetra Tech dated 06/11/15.

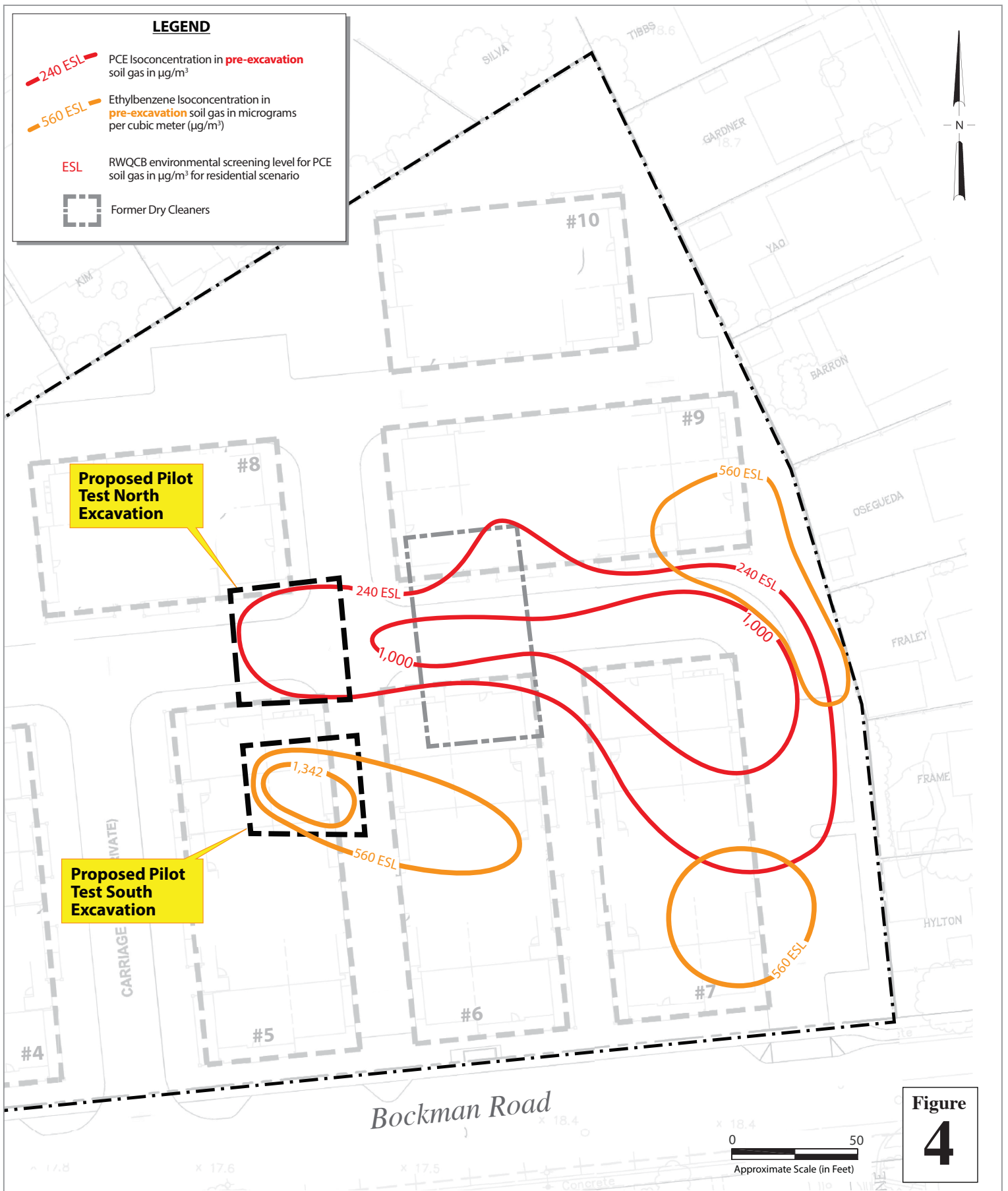
1233 Bockman Road
San Lorenzo, California



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West and East Site Legal Areas

Figure
3

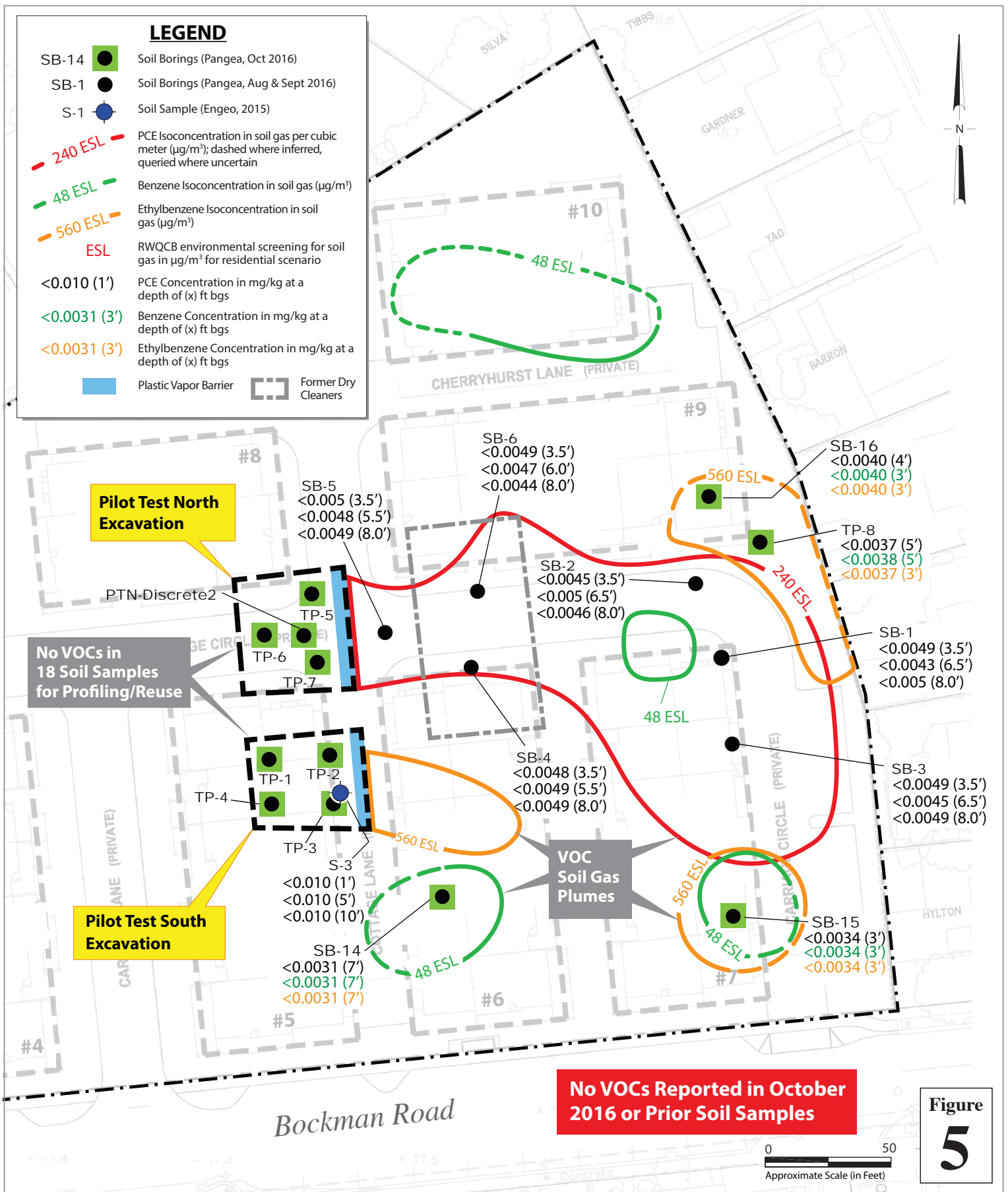


1233 Bockman Road
San Lorenzo, California



Proposed Pilot Study
Excavation Areas

Figure
4



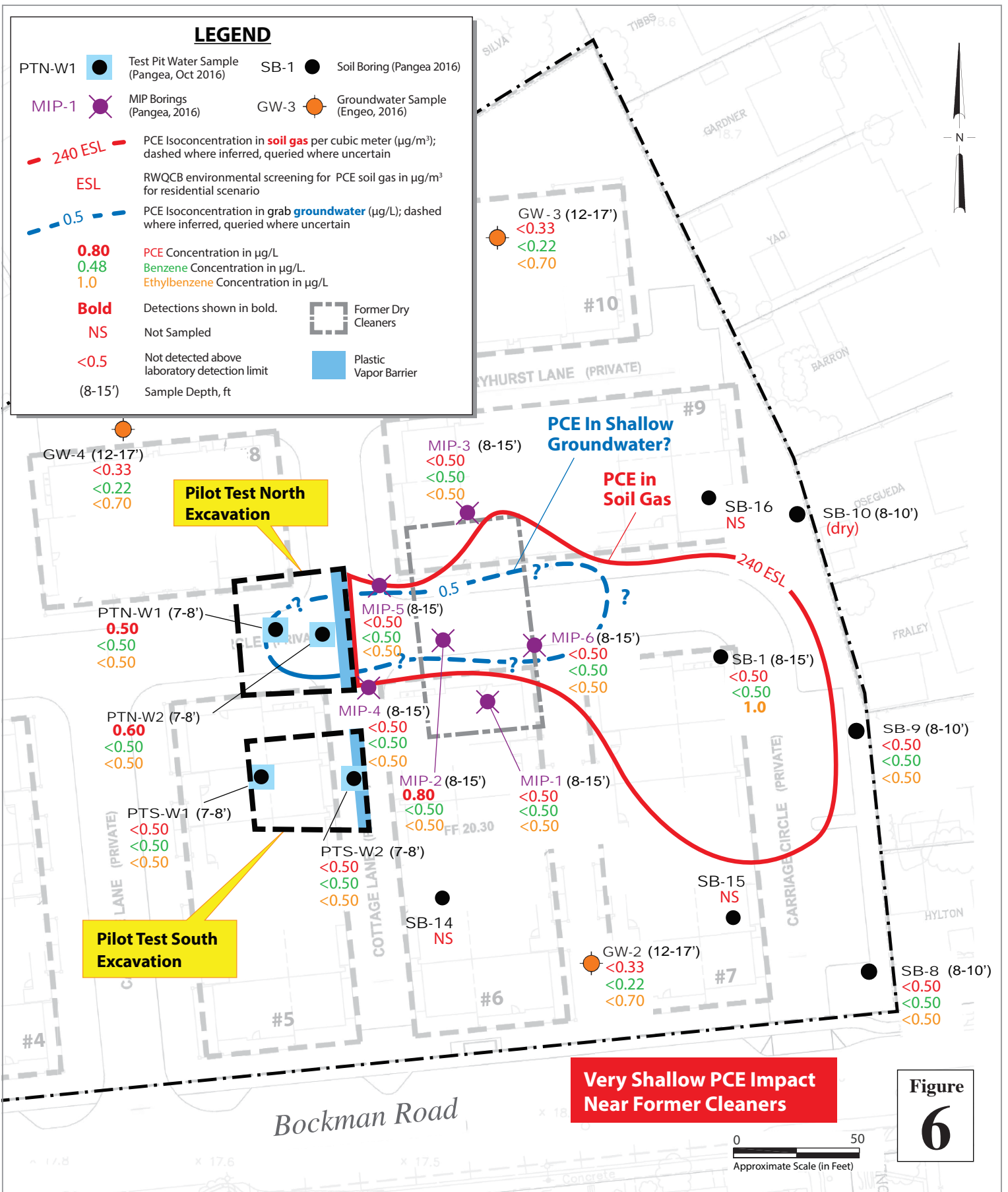
1233 Bockman Road
San Lorenzo, California

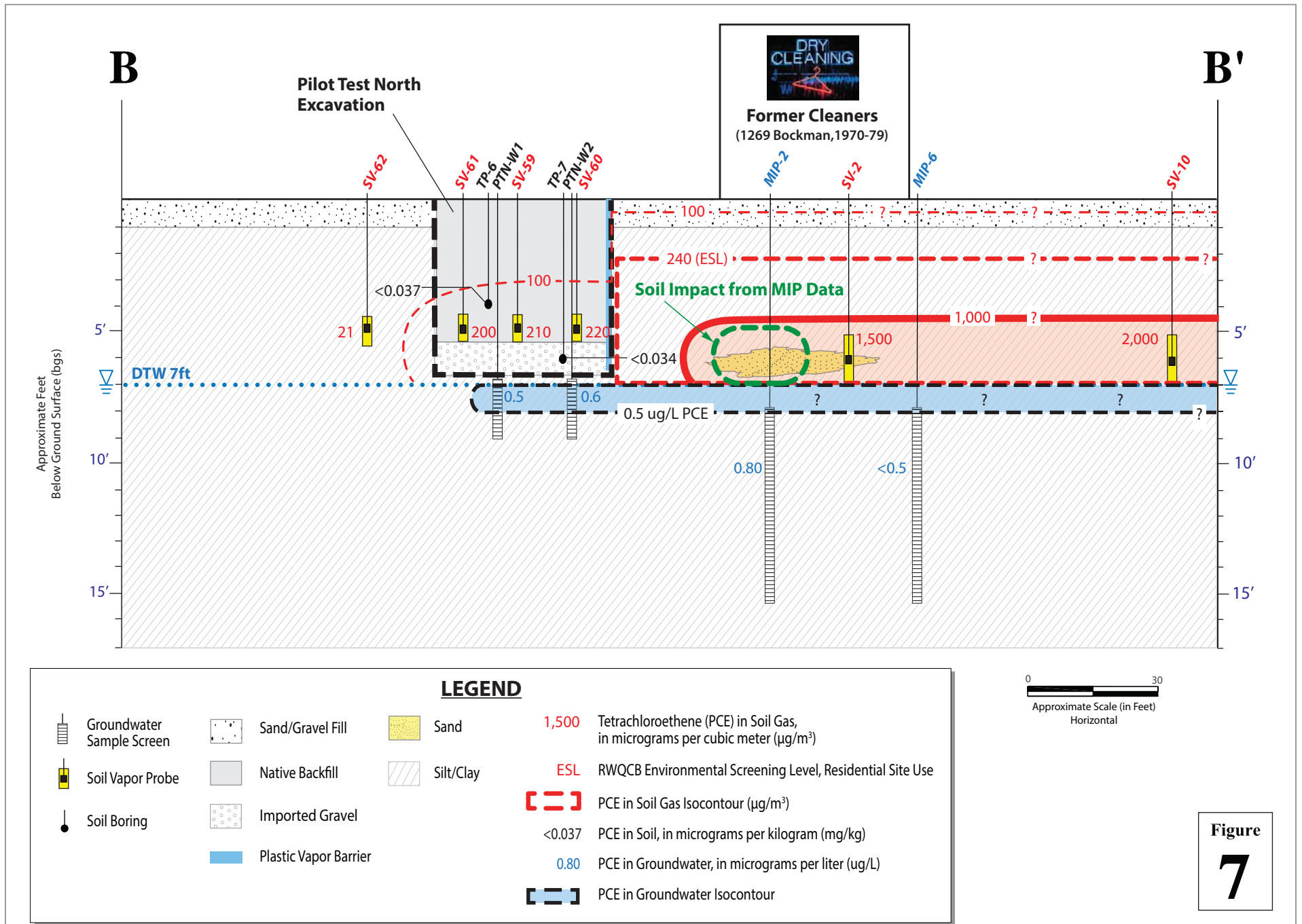


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VOCs in Soil

Figure
5



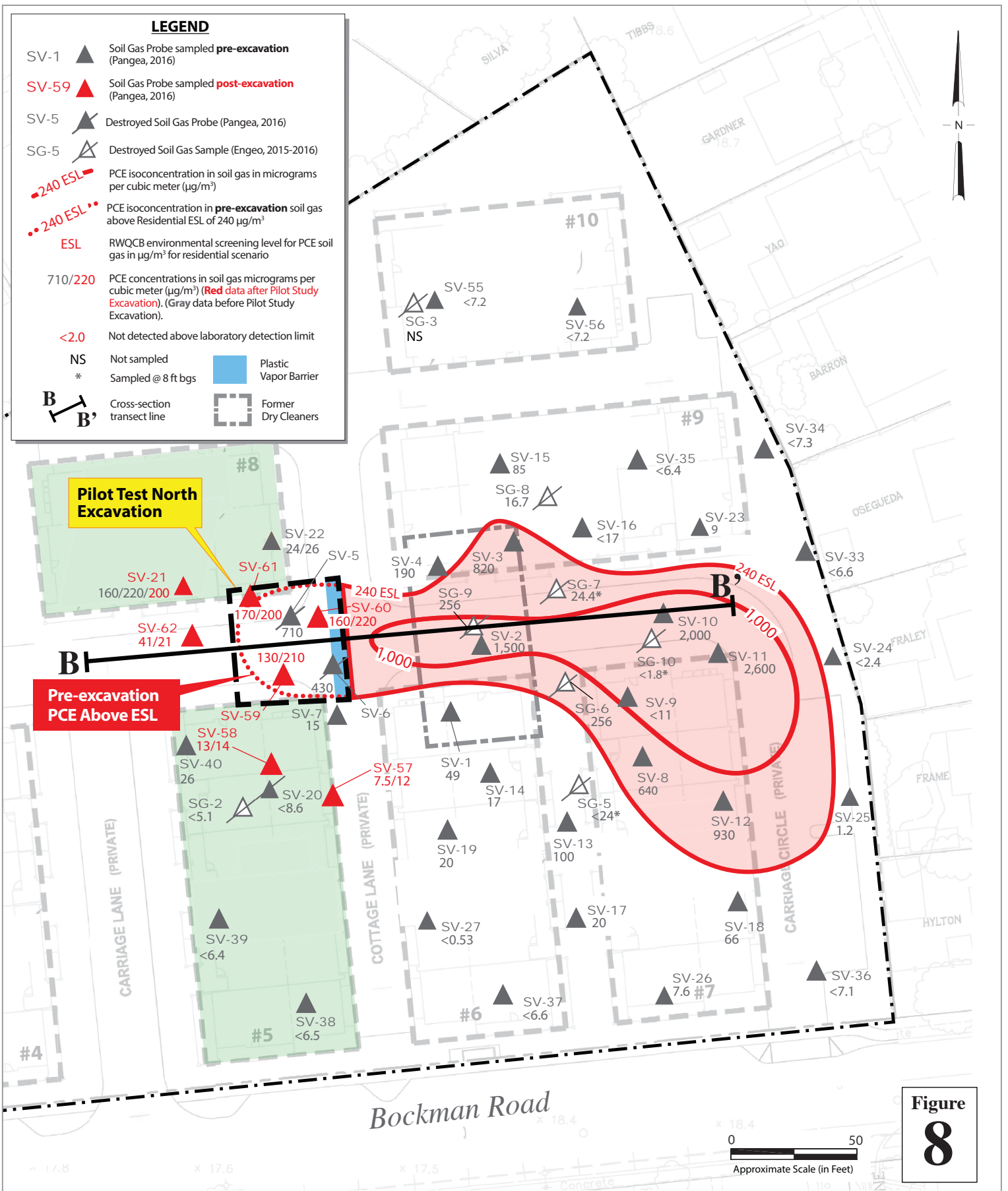


1233 Bockman Road
San Lorenzo, California



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Cross Section B-B' Pilot Test
North Excavation and Conditions



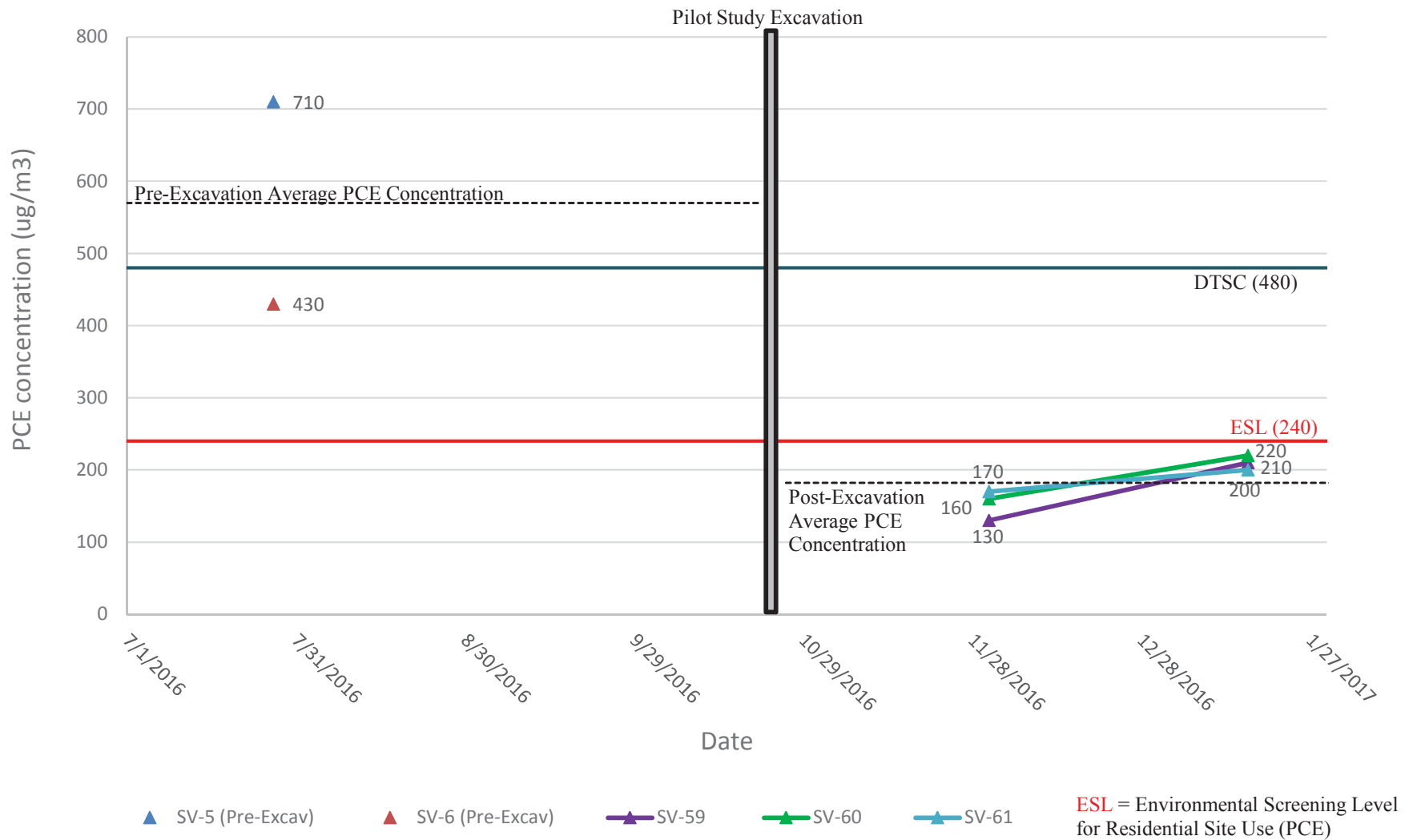
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San Lorenzo, California

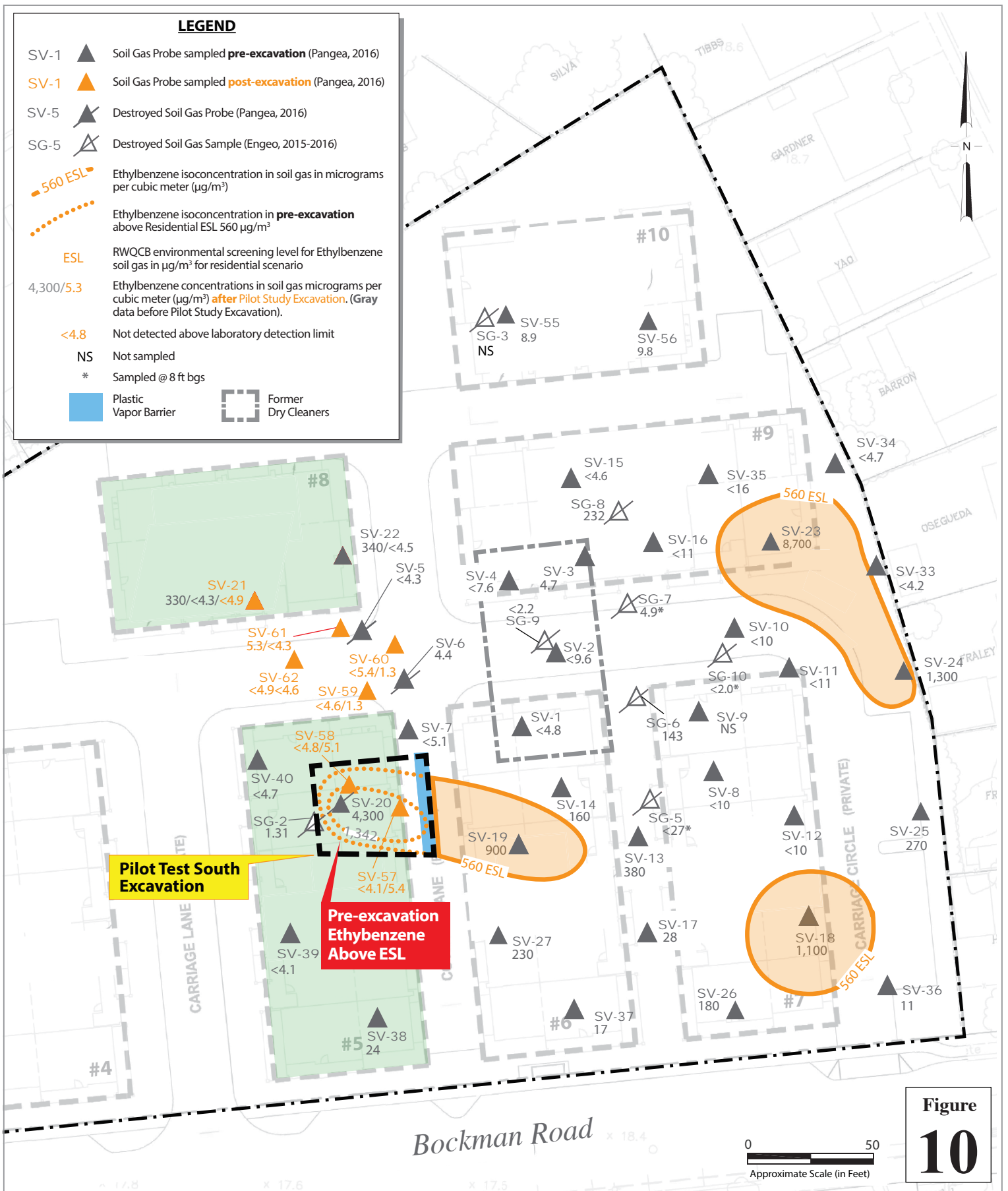


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PCE in Soil Gas After
Pilot Study Excavation

Figure 9 - PCE Concentration Trends in Soil Gas, Pilot Test North Study Area





1233 Bockman Road
San Lorenzo, California



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**Ethylbenzene in Soil Gas After
Pilot Study Excavation**

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Table 1. Soil Analytical Data - 1233 Bockman Road, San Lorenzo California

Boring / Sample ID	Date Sampled	Sample Depth (ft bgs)	TPH/g	TPH/d	TPH/mo	Lead	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	PCE	TCE	Bis-1,2-DCE	Trans-1,2-DCE	Vinyl Chloride	Chloroform	Acetone	Other VOC's	SVOC's	PCBs	Notes	
			740	230	11,000	80	0.23	970	5.1	560	42	3.3	0.37	0.6	1.2	19	160	0.0082	0.30	59,000	varies	varies	varies		
Direct Exposure ESL - residential, shallow soil:			mg/Kg																						
ENGEO Site Assessment 2015																									
S-1	6/25/2015	1	<0.1	3.6	32	13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	<0.021	---	---	former auto repair area	
	6/25/2015	5	<0.1	<2.0	<10	5.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	<0.021	---	---	former auto repair area	
	6/25/2015	10	<0.1	<2.0	<10	5.6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	<0.021	---	---	former auto repair area	
S-2	6/25/2015	1	<0.1	<2.0	<10	7.6	<0.01	<0.01	<0.01	22.6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	<0.021	---	---	former auto repair area	
	6/25/2015	5	<0.1	<2.0	<10	8.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	<0.021	---	---	former auto repair area	
	6/25/2015	10	<0.1	<2.0	<10	4.9	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	<0.021	---	---	former auto repair area	
S-3	6/25/2015	1	<0.1	14	230	1.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	<0.021	---	---		
	6/25/2015	5	<0.1	<2.0	17	6.3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	<0.021	---	---		
	6/25/2015	10	<0.1	<2.0	<10	5.6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	---	<0.021	---	---		
PANGEA Site Assessment 2016 - Dry Cleaner Area																									
SB-1	8/3/2016	3.5	---	---	---	---	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.02	<0.049	---	---		
		6.5	<0.96	---	---	---	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0087	<0.0043	<0.017	<0.043	---	---		
		8	---	---	---	---	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0099	<0.005	<0.02	<0.050	---	---		
SB-2	8/3/2016	1	---	---	---	3.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
		3	---	---	---	8.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
		3.5	---	---	---	---	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0091	<0.0045	<0.018	<0.045	---	---		
		6	---	---	---	6.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
		6.5	<1.1	---	---	---	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.02	<0.050	---	---	
		8	---	---	---	---	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0093	<0.0046	<0.019	<0.046	---	---		
SB-3	8/3/2016	3.5	---	---	---	---	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	0.027	<0.049	---	---		
		6.5	<0.99	---	---	---	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0091	<0.0045	<0.018	<0.045	---	---		
		8	---	---	---	---	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.02	<0.049	---	---		
SB-4	8/3/2016	3.5	---	---	---	---	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0097	<0.0048	<0.019	<0.048	---	---		
		5.5	<0.99	---	---	---	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0097	<0.0049	<0.019	<0.049	---	---		
		8	---	---	---	---	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.02	<0.049	---	---		
SB-5	8/3/2016	3.5	---	---	---	---	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.0099	<0.005	<0.02	<0.050	---	---		
		5.5	<1.1	---	---	---	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0097	<0.0048	<0.019	<0.048	---	---		
		8	---	---	---	---	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.02	<0.049	---	---		
SB-6	8/3/2016	1	---	---	---	7.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
		3	---	---	---	5.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
		3.5	---	---	---	---	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0097	<0.0049	<0.019	<0.049	---	---		
		6	<0.98	---	---	---	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0093	<0.0047	<0.019	<0.047	---	---		
		8	---	---	---	---	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0089	<0.0044	<0.018	<0.044	---	---		
SB-7	9/8/2016	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	no samples taken from boring	
SB-8	9/8/2016	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	no samples taken from boring	
SB-9	9/8/2016	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	no samples taken from boring	

Pangea

Table 1. Soil Analytical Data - 1233 Bockman Road, San Lorenzo California

Boring / Sample ID	Date Sampled	Sample Depth (ft bgs)	TPH/g	TPH/d	TPH/mo	Lead	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene	1,2-DCA	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Chloroform	Acetone	Other VOC's	SVOC's	PCE's	Notes		
			740	230	11,000	80	0.23	970	5.1	560	42	3.3	0.37	0.6	1.2	19	160	0.0082	0.30	59,000	varies	varies	varies			
Direct Exposure ESL - residential, shallow soil:																										
mg/Kg																										
SB-10	9/8/2016	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	no samples taken from boring	
SB-11	9/8/2016	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	no samples taken from boring	
SB-12	9/8/2016	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	no samples taken from boring	
SB-13	9/8/2016	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	no samples taken from boring	
SB-14	10/20/2016	7	---	---	---	---	<0.0031	<0.0031	<0.0031	<0.0062	<0.0031	<0.0031	<0.0031	<0.0031	<0.0031	<0.0031	<0.0031	<0.0062	<0.0031	<0.012	<0.031	---	---	---	no samples taken from boring	
SB-15	10/20/2016	3	---	---	---	---	<0.0034	<0.0034	<0.0034	<0.0068	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0068	<0.0034	<0.014	<0.034	---	---	---	no samples taken from boring	
SB-16	10/20/2016	4	---	---	---	---	<0.0040	<0.0040	<0.0040	<0.0080	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0079	<0.0040	<0.016	<0.0040	---	---	---	no samples taken from boring	
Site Assessment - Auto Repair Area																										
SV-28	8/22/2016	7.5	5.2	1,400	2,800	---	<0.0048	<0.0048	<0.0048	<0.0096	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0095	<0.0048	<0.019	<0.048	---	---	---	Excavated to 8'	
SS-1	9/2/2016	2.5	---	---	---	---	<0.0047	<0.0047	<0.0047	<0.0094	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0094	<0.0047	<0.019	<0.047	---	---	---	no samples taken from boring	
SS-2	9/2/2016	2.5	<1.0	43	300	---	<0.0046	<0.0046	<0.0046	<0.0092	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0093	<0.0046	<0.019	<0.046	---	---	---	Excavated to 8'	
SS-3	9/2/2016	2.5	---	---	---	---	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.020	<0.050	---	---	---	no samples taken from boring	
SS-4	9/2/2016	2.5	---	---	---	---	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	0.059	<0.049	---	---	---	no samples taken from boring	
SS-5	9/2/2016	2.5	---	---	---	---	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	0.050	<0.050	---	---	---	no samples taken from boring	
SS-6	9/2/2016	8	---	---	---	---	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	0.0084	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.020	<0.050	---	---	---	Excavated to 12'	
	9/2/2016	10	---	---	---	---	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0097	<0.0049	<0.019	<0.049	---	---	---	no samples taken from boring	
SS-7	9/2/2016	8	---	---	---	---	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0097	<0.0049	<0.019	<0.049	---	---	---	no samples taken from boring	
SS-8	9/2/2016	8	---	---	---	---	<0.0045	<0.0045	<0.0045	<0.0090	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0090	<0.0045	<0.018	<0.045	---	---	---	no samples taken from boring	
SS-9	9/2/2016	8	4.0	650	3,100	---	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	0.030	<0.049	---	---	---	Excavated to 10'	
	9/2/2016	10	<0.96	<1.0	<5.0	---	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0099	<0.0049	<0.020	<0.049	<0.660 a	---	---	no samples taken from boring	
Confirmation Samples - Auto Repair Area																										
H-1	8/30/2016	8	---	110	310	---	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0095	<0.0048	<0.019	<0.048	<0.660 a	<0.024	---	bottom of excavation sample	
H-2	8/30/2016	8	---	<1.0	<5.0	---	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0095	<0.0048	<0.019	<0.048	---	<0.024	---	bottom of excavation sample	
H-3	8/30/2016	8	---	1.5	16	---	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0092	<0.0046	<0.018	<0.048	---	<0.024	---	bottom of excavation sample	
BS-1-12	9/7/2016	12	<1.1	<1.0	<5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	bottom of excavation sample	
BS-2-12	9/7/2016	12	<1.1	<0.99	<5.0	---	<0.0048	<0.0048	<0.0048	<0.0096	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0097	<0.0048	<0.019	<0.048	---	---	---	bottom of excavation sample	
BS-3-12	9/7/2016	12	<1.0	<1.0	<5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	bottom of excavation sample	

Pangea

Table 1. Soil Analytical Data - 1233 Bockman Road, San Lorenzo California

Boring / Sample ID	Date Sampled	Sample Depth (ft bgs)	TPH/g	TPH/d	TPH/mo	Lead	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Araphthalene	1,2-DCA	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Chloroform	Acetone	Other VOC's	SVOC's	PCB's	Notes																					
			740	230	11,000	80	0.23	970	5.1	560	42	3.3	0.37	0.6	1.2	19	160	0.0082	0.30	59,000	varies	varies	varies																						
Direct Exposure ESL - residential, shallow soil:																							mg/Kg																						
BS-4-8	9/7/2016	8	<1.1	<1.0	<5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	bottom of excavation sample																					
BS-5-10	9/7/2016	10	<0.97	<0.99	<5.0	---	<0.0048	<0.0048	<0.0048	<0.0096	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0097	<0.0048	<0.019	<0.048	---	---	bottom of excavation sample																					
BS-6-10	9/7/2016	10	<0.94	<1.0	<5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	bottom of excavation sample																					
BS-7-10	9/7/2016	10	<0.97	<0.99	<5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	bottom of excavation sample																					
SW-1-10	9/7/2016	10	<1.0	<1.0	<5.0	---	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0099	<0.0049	<0.020	<0.049	---	---	excavation sidewall sample																					
SW-2-10	9/7/2016	10	<1.0	<0.99	<5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	excavation sidewall sample																					
SW-3-10	9/8/2016	10	<0.97	1.1	<5.0	---	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0099	<0.0049	<0.020	<0.050	---	---	excavation sidewall sample																					
SW-4-8	9/7/2016	8	<0.97	<1.0	<5.0	---	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0099	<0.0050	<0.020	<0.050	---	---	excavation sidewall sample																					
SW-5-8	9/7/2016	8	<0.95	<1.0	<5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	excavation sidewall sample																					
SW-6-8	9/7/2016	8	<1.0	<1.0	<5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	excavation sidewall sample																					
Pilot Study Excavation Samples																																													
COMPA (TP1-TP4)	9/16/2016	1.0	<0.96	11	68	0.94	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<0.050	<0.019	TP-1 thru TP-4 composite																					
COMPB (TP1-TP4)	9/16/2016	3.0	<1.0	4.3	<5.0	7.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<0.0051	<0.019	TP-1 thru TP-4 composite																					
COMP C (TP1-TP4)	9/16/2016	6.0	<1.0	3.1	<5.0	5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	<0.0050	<0.019	TP-1 thru TP-4 composite																					
TP-1	9/16/2016	1.0	---	---	---	---	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0090	<0.0045	<0.180	<0.045	---	---	PTS																					
TP-1	9/16/2016	3.0	---	---	---	---	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0045	<0.0089	<0.0045	<0.180	<0.045	---	---	PTS																					
TP-1	9/16/2016	6.0	---	---	---	---	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0041	<0.0081	<0.0041	<0.160	<0.041	---	---	PTS																				
TP-5	10/3/2016	2.0	<0.14	<1.0	<5.0	6.0	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0074	<0.0037	<0.150	<0.037	b	<0.019	PTN																					
TP-6	10/3/2016	4.0	<0.16	<1.0	<5.0	5.2	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0074	<0.0037	<0.150	<0.037	<0.005	<0.019	PTN																					
TP-7	10/3/2016	6.0	<0.14	<0.99	<5.0	5.6	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0074	<0.0034	<0.140	<0.034	<0.005	<0.019	PTN																					
TP-8	10/3/2016	5.0	<0.15	<1.0	<5.0	7.4	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0068	<0.0037	<0.150	<0.037	<0.005	<0.019	East property line																					
PTN-Comp1 (A-D)	10/19/2016	0-1	<1.0	1.4	16	3.2	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0093	<0.0047	<0.190	<0.047	---	---	soil stockpile from PTN 0-1 ft bgs																					
PTN-Comp2 (A-D)	10/19/2016	1-4	<0.99	<1.0	<5.0	6.2	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.200	<0.049	---	---	soil stockpile from PTN 1-4 ft bgs																					
PTN-Discrete1	10/20/2016	1-4	---	---	---	---	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0043	<0.0086	<0.0043	<0.170	<0.043	---	---	soil stockpile from PTN 1-4 ft bgs																					
PTN-Discrete2	10/20/2016	4.5	---	---	---	---	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0073	<0.0036	<0.150	<0.036	---	---	insitu PTN																					
PTN-Discrete3	10/25/2016	5-6.5	---	---	---	---	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0046	<0.0092	<0.0046	<0.180	<0.046	---	---	soil stockpile from PTN 5-6.5 ft bgs																					
PTS-Discrete1	11/3/2016	0-1	---	---	---	---	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0071	<0.0035	<0.140	<0.035	---	---	soil stockpile from PTS 0-1 ft bgs																					
PTS-Discrete2	11/3/2016	1-4	---	---	---	---	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080	<0.0040	<0.160	<0.040	---	---	soil stockpile from PTS 1-5 ft bgs																					
PTS-Discrete3	11/3/2016	1-4	---	---	---	---	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0072	<0.0036	<0.140	<0.036	---	---	soil stockpile from PTS 1-5 ft bgs																					
PTS-Discrete4	11/3/2016	5-6.5	---	---	---	---	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0038	<0.0076	<0.0038	<0.150	<0.038	---	---	soil stockpile from PTS 5-6.5 ft bgs																					
COMP6 (1-4)	10/18/2016	stockpile	<0.93	13	200	7.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.050	<0.020	<0.050	<33	<0.0095	Offsite utility trenching near Building 1&2																					
COMP7 (1-4)	10/24/2016	stockpile	<1.1	24	300	9.5	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0099	<0.0049	<0.020	<0.049	---	---	Onsite utility trenching near Building 1&2																					
B1&2 - Discrete1	11/10/2016	stockpile	---	---	---	---	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0075	<0.0037	<0.015	<0.037	---	---	Buildings 1&2 trenching stockpile																					
B3&4 - Discrete1	11/10/2016	stockpile	---	---	---	---	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0068	<0.0034	<0.014	<0.034	---	---	Buildings 3&4 trenching stockpile																					

Pangea

Table 1. Soil Analytical Data - 1233 Bockman Road, San Lorenzo California

Boring / Sample ID	Date Sampled	Sample Depth (ft bgs)	TPHhg	TPHd	TPHmo	Lead	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Asphaltene	1,2-DCA	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	Chloroform	Acetone	Other VOC's	SVOC's	PCCBs	Notes
			mg/Kg																					
Direct Exposure ESL - residential, shallow soil:			740	230	11,000	80	0.23	970	5.1	560	42	3.3	0.37	0.6	1.2	19	160	0.0082	0.30	59,000	varies	varies	varies	

Explanation:

TPHd and TPHmo analyzed by EPA Method 8015, TPHg and VOC's analyzed by EPA Method 8260

Benzene, Toluene, Ethylbenzene and Xylenes by EPA Method 8021.

TPHd = Total Petroleum Hydrocarbons as diesel

TPHmo = Total Petroleum Hydrocarbons as motor oil

MTBE = Methyl tert-butyl ether

1,2-DCA = 1,2-Dichloroethane

PCE = Tetrachloroethene

TCE = Trichloroethene

cis-1,2-DCE = cis-1,2-Dichloroethene

VOCs = Volatile organic compounds by EPA Method 8260.

SVOCs = Semi-volatile organic compounds by EPA Method 8270.

PCB = Total polychlorinated biphenyls including Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260

mg/Kg = Milligrams per kilogram

ft bgs = Depth below ground surface (bgs) in feet.

ft bgs = Depth below ground surface (bgs) in feet.

ESL = Environmental Screening Level, from California Regional Water Quality Control Board - San Francisco Bay Region, Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim Revised February 2016 (Revision 3).

< n = Chemical not present at a concentration in excess of detection limit shown.

--- = Not analyzed

a = All chemicals below shown reporting limit (except benzoic acid with a reporting level of 1.7 mg/kg). See laboratory report for lower reporting limits for other chemicals.

b = Fluoranthene detected at 0.0056 mg/kg, pyrene detected at 0.0089 mg/kg, both are below ESLs

ND = not detected

contaminant detections highlighted in gray

PTN = pilot test north excavation area

PTS = pilot test south excavation area

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Table 2. Groundwater Analytical Data - 1233 Bockman Road, San Lorenzo, California

Boring / Sample ID	Date Sampled	Depth to Water (ft bgs)	µg/L												Notes	
			TPH _{lg}	TPH _{hd}	TPH _{hno}	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	1,2-DCA	PCE	TCE	Chloroform		Other VOCs
Tier 1 ESL - Groundwater:			100	100	n/a	1.0	40	13	20	0.12	0.5	3.0	5.0	50	varies	
Vapor Intrusion ESL - shallow groundwater, residential:			100	100	n/a	1.1	3,600	13	1,300	20	6.1	3.0	5.6	2.3	varies	
Vapor Intrusion ESL - shallow groundwater, commercial:			5,000	5,000	n/a	9.7	30,000	110	11,000	170	53	26	49	20	varies	
ENGEO Site Assessment 2015 - 2016																
GW-1	6/25/2015	15-25 ^a	51	--	--	0.48	0.42	<0.59	0.26	0.28	<0.17	<0.59	<0.59	<0.59	ND	
	7/15/2016	12-17 ^b	<41	--	--	0.41	<0.20	<0.70	<0.55	<1.7	0.15	0.62	<0.70	<0.70	ND	
GW-2	6/25/2015	15-25 ^a	<50	--	--	<0.50	<0.50	<0.50	<1.0	<0.16	<0.17	<0.50	<0.50	<0.50	ND	
	7/15/2016	12-17 ^b	<41	--	--	<0.22	<0.20	<0.70	<0.55	<1.7	<0.15	<0.33	<0.70	<0.70	ND	
GW-3	6/25/2015	15-25 ^a	<50	--	--	<0.50	<0.50	<0.50	<1.0	<0.16	<0.17	<0.50	<0.50	<0.50	ND	
	7/15/2016	12-17 ^b	53.2	--	--	<0.22	<0.20	<0.70	<0.55	<1.7	<0.13	<0.33	<0.70	<0.70	ND	
GW-4	7/15/2016	12-17 ^b	<41	--	--	<0.22	<0.20	<0.70	<0.55	<1.7	<0.15	<0.33	<0.70	<0.70	ND	
PANGEA Site Assessment																
MIP-1	7/25/2016	8-15	<50	--	--	<0.5	0.70	<0.5	<1.0	<2.0	<0.5	<0.5	<0.5	2.3	<10	
MIP-2	7/25/2016	8-15	<50	--	--	<0.5	<0.5	<0.5	<1.0	<2.0	<0.5	0.80	<0.5	3.6	<10	
MIP-3	7/25/2016	8-15	<50	--	--	<0.5	3.3	<0.5	<1.0	<2.0	<0.5	<0.5	<0.5	8.1	<10	
MIP-4	7/25/2016	8-15	<50	--	--	<0.5	1.5	<0.5	0.6	<2.0	<0.5	<0.5	<0.5	13	<10	
MIP-5	7/25/2016	8-15	<50	--	--	<0.5	<0.5	<0.5	<1.0	<2.0	<0.5	<0.5	<0.5	<0.5	<10	
MIP-6	7/25/2016	8-15	<50	--	--	<0.5	<0.5	<0.5	<1.0	<2.0	<0.5	<0.5	<0.5	2.6	<10	
SB-1	8/3/2016	8-15	<50	--	--	<0.5	<0.5	1.0	6.2	<2.0	<0.5	<0.5	<0.5	<0.5	<10	
SB-7	8/22/2016	8-10	--	--	--	<0.5	<0.5	<0.5	<1.0	<2.0	<0.5	<0.5	<0.5	<0.5	<10	
SB-8	9/7/2016	8-10	<50	590	17,000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	
SB-9	9/7/2016	8-10	<50	380	4,300	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	
SB-10	9/8/2016	dry	--	--	--	--	--	--	--	--	--	--	--	--	--	
SB-11	9/8/2016	dry	--	--	--	--	--	--	--	--	--	--	--	--	--	Auto repair area
SB-12	9/8/2016	dry	--	--	--	--	--	--	--	--	--	--	--	--	--	Auto repair area
SB-13	9/8/2016	8-10	<50	<50	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	Auto repair area
Pit	9/7/2016	8	64	73	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<10 ^c	Auto repair area excavation

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Table 2. Groundwater Analytical Data - 1233 Bockman Road, San Lorenzo, California

Boring / Sample ID	Date Sampled	Depth to Water (ft bgs)	TPH _g	TPH _d	TPH _{mo}	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	1,2-DCA	PCE	TCE	Chloroform	Other VOCs	Notes
			µg/L													
Tier 1 ESL - Groundwater:			100	100	n/a	1.0	40	13	20	0.12	0.5	3.0	5.0	50	varies	
Vapor Intrusion ESL - shallow groundwater, residential:			100	100	n/a	1.1	3,600	13	1,300	20	6.1	3.0	5.6	2.3	varies	
Vapor Intrusion ESL - shallow groundwater, commercial:			5,000	5,000	n/a	9.7	30,000	110	11,000	170	53	26	49	20	varies	
PANGEA Pilot Test Assessment																
PTN-w1	10/19/2016	8	--	--	--	<0.5	<0.5	<0.5	<1.0	<2.0	<0.5	0.5	<0.5	<0.5	<10	
PTN-w2	10/19/2016	8	--	--	--	<0.5	<0.5	<0.5	<1.0	<2.0	<0.5	0.6	<0.5	<0.5	<10	
PTS-w1	11/1/2016	8	--	--	--	<0.5	<0.5	<0.5	<1.0	<2.0	<0.5	<0.5	<0.5	<0.5	<10	
PTS-w2	11/1/2016	8	--	--	--	<0.5	<0.5	<0.5	<1.0	<2.0	<0.5	<0.5	<0.5	<0.5	<10	

Explanation:

TPH_g = Gasoline range Total Petroleum Hydrocarbons by EPA Method SW8021B/8015Bm.

TPH_d = Diesel Range Total Petroleum Hydrocarbons by EPA Method SW8015B.

TPH_{mo} = Motor Oil Range Total Petroleum Hydrocarbons by EPA Method SW8015B.

VOCs = Volatile Organic Compounds by EPA Method 8260B.

1,2-DCA = 1,2-Dichloroethane

PCE = Tetrachloroethene

TCE = Trichloroethene

µg/L = micrograms per Liter

ft bgs = feet below grade surface.

ESL = Environmental screening level established by the SFB-RWQCB, Interim Final - November 2007 and amended in February 2016, (Rev. 3)

--- = Not analyzed or not available.

a = ENGEO report dated 07/02/2015 states samples were taken at first encountered groundwater which ranged between 15-25 ft bgs

b = ENGEO report dated 08/02/2016 states samples were taken at first encountered groundwater which ranged between 12-17 ft bgs

c = N-butylbenzene (0.64 ug/L) and 1,2,4-trimethylbenzene (1.6 ug/L)

d7 = strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram

e2 = diesel range compounds are significant; no recognizable pattern

e7 = oil range compounds are significant

e4/e11 = gasoline range compounds are significant; and/or stoddard solvent/mineral spirit?

Bold indicates concentration meets or exceeds Residential Vapor Intrusion ESL

< n = Chemical not present at a concentration in excess of laboratory detection limit shown.

Constituent detections highlighted in gray

PTN = pilot test north excavation area

PTS = pilot test south excavation area

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Table 3. Soil Gas Analytical Data - 1233 Bockman Road, San Lorenzo, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	1,2-DCA	PCE	TCE	Other VOCs	Isopropyl Alcohol (Leak Check Compound)	Notes
			ug/m ³										
Residential ESL - Soil/Subslab Gas:			48	160,000	560	52,000	41	54	240	240	Varies	NA	
ENGEO Site Assessment 2015-2016													
SG-1	06/25/15	5.0	1.34	6.33	<3.2	<6.5	<7.8	<3.1	<5.1	<8.1	--	<30	
SG-2	06/25/15	5.0	2.45	18.3	1.81	14.83	<7.8	<3.1	<5.1	<8.1	--	<30	
SG-5	06/24/16	8.0	<19	<26	<27	<44	<140	<55	<24	<150	--	--	
SG-6	06/24/16	6.0	<1.6	4.1	143	260	<5.2	<2.1	256	<5.4	--	--	
SG-7	06/24/16	8.0	21.9	20.9	<4.9	<9.9	<12	<4.7	24.4	<12	--	--	
SG-8	06/24/16	6.0	9.18	19.1	232	1,172	<5.2	<2.1	16.7	<5.4	--	--	
SG-9	06/24/16	6.0	3.84	9.96	<2.2	4.69	<5.2	<2.1	256	<5.4	--	--	
SG-10	06/24/16	8.0	61.8	76.2	<2.0	6.97	<10	<4.1	<1.8	<11	--	--	
PANGEA Site Assessment													
SV-1	07/27/16	6.0	<3.5	<4.2	<4.8	<4.8	<23	<4.5	49	<5.9	#	<11	
SV-2	07/27/16	6.0	<7.1	<8.3	<9.6	<9.6	<46	<8.9	1,500	<12	#	<22	
SV-3	07/27/16	6.0	14	14	4.7	7.7	<22	<4.2	820	<5.6	#	140	
SV-4	07/27/16	6.0	18	7.5	<7.6	<7.6	<36	<7.0	150	<9.4	#	<17	
	09/01/16	6.0	<6.2	<7.3	<8.4	<16.8	<40	<7.8	190	<10	#	<19	
SV-5	07/27/16	6.0	3.8	<3.7	<4.3	<4.3	<21	<4.0	710	<5.3	#	<9.6	
SV-6	07/27/16	6.0	12	<3.8	<4.4	<4.4	<21	<4.1	430	<5.4	#	<9.9	
SV-7	07/27/16	6.0	18	27	<5.1	<5.1	<25	<4.7	15	<6.3	#	<12	
SV-8	07/28/16	6.0	<4.9*	<11*	<10*	<15*	--	<14*	640	<8.7*	#	<22*	
Shroud (SV-8)	07/28/16	--	--	--	--	--	--	--	--	--	--	130,000	Shroud sample
SV-9	09/01/16	6.0	<5.2	<6.1	<7.1	<14.2	<34	<6.6	<11	<8.8	#	62	
SV-10	07/28/16	6.0	<4.9*	<11*	<10*	<15*	--	<14*	2,000	170*	#	<22*	
SV-11	07/28/16	6.0	<4.9*	<11*	<10*	<15*	--	<14*	2,600	150*	#	<22*	
SV-12	07/28/16	6.0	<4.9*	<11*	<10*	110*	--	<14*	930	76*	#	<22*	
SV-13	07/28/16	6.0	<4.9*	<11*	380	1,470	--	<14*	100*	<8.7*	#	<22*	
SV-14	07/27/16	6.0	3.4	3.6	160	980	<20	<3.8	17	<5.1	#	64	
SV-15	07/27/16	6.0	25	9.2	<4.6	8.6	<22	<4.3	85	6.1	#	<10	
SV-16	07/27/16	6.0	35	13	<11	<11	<52	<10	<17	<13	#	<24	

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Table 3. Soil Gas Analytical Data - 1233 Bockman Road, San Lorenzo, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	ug/m ³									Notes	
			Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	1,2-DCA	PCE	TCE	Other VOCs		Isopropyl Alcohol (Leak Check Compound)
Residential ESL - Soil/Subslab Gas:			48	160,000	560	52,000	41	54	240	240	Varies	NA	
SV-17	07/28/16	6.0	34	13	28	191	--	<4.1	20	9.7	#	150	
SV-18	07/28/16	6.0	54	59	1,100	3,190	--	<4.1	66	<5.5	#	7.9*	
SV-19	07/28/16	6.0	15	40	900	2,490	--	<4.1	20	11	#	8.7*	
SV-20	08/05/16	6.0	66*	160	4,300	18,400	17*	<130	<8.6*	<170	#	<310	
SV-21	08/05/16	6.0	5.6*	<11	330	3,090	3.2*	<12	160	<16	#	<29	
	09/01/16	6.0	<3.2	<3.8	<4.3	9.7	<21	<4.0	220	<5.4	#	<9.8	
SV-22	08/05/16	6.0	21*	<82	340	18,100	10*	<88	24*	<120	#	<210	
	09/01/16	6.0	<3.3	<3.9	<4.5	30.7	<21	<4.1	46	<5.5	#	<10	
SV-23	08/05/16	6.0	24*	150	8,700	34,000	19*	<130	9.0*	<170	#	<310	
SV-24	08/05/16	6.0	42	45	1,300	5,500	13*	<35	<2.4*	<47	#	<86	
Shroud (SV-24)	08/05/16	--	--	--	--	--	--	--	--	--	--	180,000	Shroud sample
SV-25	08/05/16	6.0	39	47	270	1,440	<1.2*	<11	1.2*	<14	#	<26	
SV-26	08/05/16	6.0	23	28	180	920	2.6*	<4.4	7.6	<5.8	#	<11	
SV-27	08/05/16	6.0	73	48	230	1,250	3.9*	<7.9	<0.53*	<11	#	<19	
SV-28	08/23/16	6.0	<3.3	<3.9	<4.5	<9.0	<22	<4.2	200	9.6	#	1,800	Building 1
SV-29	08/23/16	6.0	7.5	<3.9	<4.5	17.1	<21	<4.1	7.0	<5.5	#	83	Building 1
SV-30	09/01/16	6.0	31	42	6.3	33.3	<21	<4.0	<6.7	<5.3	#	<9.7	Building 1
SV-31	09/01/16	6.0	16	34	6.4	40	<19	<3.7	<6.2	<4.9	#	<9.0	Building 1
SV-32	09/01/16	6.0	6.4	3.9	<4.5	<9.0	<21	<4.1	14	<5.5	#	<10	Building 1
SV-33	09/01/16	6.0	20	27	<4.2	8.8	<20	<3.9	<6.6	<5.2	#	<9.5	
SV-34	09/01/16	6.0	17	33	4.7	24.3	<22	<4.3	<7.3	<5.7	#	<11	
SV-35	09/01/16	6.0	36	100	16	79	<20	<3.8	<6.4	<5.1	#	<9.3	
SV-36	09/01/16	6.0	33	72	11	53	<22	<4.2	<7.1	<5.6	#	<10	
SV-37	09/01/16	6.0	43	110	17	85	<21	<4.0	<6.6	<5.3	#	<9.6	
SV-38	09/01/16	6.0	48	120	24	120	<20	<3.9	<6.5	<5.2	#	<9.4	
SV-39	09/01/16	6.0	19	30	<4.1	12	<20	<3.8	<6.4	<5.1	#	<9.3	
SV-40	09/01/16	6.0	29	51	<4.7	22.2	<23	<4.4	26	<5.9	#	<11	
SV-41	09/19/16	6.0	49	31	<6.1	7.6	<30	<5.7	<9.6	<7.6	#	<14	Building 2
SV-42	09/19/16	6.0	<20	<24	<27	<54	<130	<25	<43	<34	#	<62	Building 2
SV-43	09/19/16	6.5	7.2	23	6.9	32.2	<20	<3.9	<6.5	<5.2	#	<9.5	Building 1

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Table 3. Soil Gas Analytical Data - 1233 Bockman Road, San Lorenzo, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	1,2-DCA	PCE	TCE	Other VOCs	Isopropyl Alcohol (Leak Check Compound)	Notes
			ug/m ³										
Residential ESL - Soil/Subslab Gas:			48	160,000	560	52,000	41	54	240	240	Varies	NA	
SV-44	09/19/16	6.0	--	--	--	--	--	--	--	--	--	--	Building 1
SV-45	09/19/16	6.0	8.7	33	9.4	43.3	<23	<4.4	20	<5.8	#	<11	Building 1
SV-46	10/20/16	5.0	16	17	6.3	30.3	<22	<4.2	9.4	<5.6	#	<10	Building 1
SV-47	10/20/16	5.0	15	19	6.4	38	<20	<3.9	9.4	13	#	32	Building 1
SV-48	10/20/16	5.0	10	15	7.1	67	<23	<4.4	8.0	<5.9	#	14	Building 1
SV-49	10/20/16	5.0	22	26	<4.8	12	<23	<4.5	<7.5	<5.9	#	<11	Building 2
SV-50	10/20/16	5.0	37	36	<4.8	13	<23	<4.5	<7.5	<5.9	#	14	Building 2
SV-51	10/20/16	5.0	7.4	8.8	<4.5	7.0	<21	<4.1	<7.0	<5.5	#	12	Building 3
SV-52	10/20/16	5.0	4.7	4.6	<4.4	<8.8	<21	<4.1	23	<5.5	#	13	Building 3
SV-53	10/20/16	5.0	9.3	9.6	<4.6	8.3	<22	<4.3	19	5.7	#	15	Building 4
SV-54	10/20/16	5.0	5.6	6.0	<4.3	4.7	<21	<4.0	41	<5.3	#	32	Building 4
SV-55	10/20/16	5.0	81	98	8.9	48	<22	<4.3	<7.2	<5.7	#	<10	Building 10
SV-56	10/20/16	5.0	78	85	9.8	55	<22	<4.3	<7.2	<5.7	#	<10	Building 10
Shroud (SV-56)	08/05/16	--	--	--	--	--	--	--	--	--	--	39,000	Shroud sample
PANGEA Pilot Test Assessment													
SV-21	08/05/16	6.0	5.6*	<11	330	3,090	3.2*	<12	160	<16	#	<29	
	09/01/16	6.0	<3.2	<3.8	<4.3	9.7	<21	<4.0	220	<5.4	#	<9.8	
	12/01/16	6.0	<3.6	<4.3	<4.9	<4.9	<24	<4.6	200	<6.1	--	<11	Northwest of PTN
SV-57	12/01/16	5.0	4.8	3.7	<4.1	8.9	<20	<3.8	7.5	<5.1	#	<9.2	PTS
	01/16/17	5.0	11	8.9	5.4	26.1	<21	<4.1	12	<5.4	#	49	PTS
SV-58	12/01/16	4.6	4.7	15	<4.8	6.7	<23	<4.5	13	<6.0	#	<11	PTS
	01/16/17	4.6	11	12	5.1	25.7	<21	<4.0	14	<5.3	#	<9.7	PTS
SV-59	12/01/16	5.3	8.0	7.6	<4.6	<9.2	<22	<4.3	130	<5.7	#	<10	PTN
	01/16/17	5.3	<9.5	<11	<13	<26	<63	<12	210	<16	#	<29	PTN
SV-60	12/01/16	5.2	8.4	32	<5.4	6.3	<26	<5.1	160	<6.7	#	15	PTN
	01/16/17	5.2	<9.4	<11	<13	<26	<62	<12	220	<16	#	65	PTN
SV-61	12/01/16	5.6	5.6	19	<5.3	<10.6	<26	<4.9	170	<6.6	#	<12	PTN
	01/16/17	5.6	<3.1	<3.7	<4.3	<8.6	<21	<4.0	200	<5.3	#	<9.7	PTN

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Table 3. Soil Gas Analytical Data - 1233 Bockman Road, San Lorenzo, California

Boring/ Sample ID	Date Sampled	Sample Depth (ft bgs)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	1,2-DCA	PCE	TCE	Other VOCs	Isopropyl Alcohol (Leak Check Compound)	Notes
			ug/m³										
Residential ESL - Soil/Subslab Gas:			48	160,000	560	52,000	41	54	240	240	Varies	NA	
SV-62	12/01/16	5.0	<3.6	<4.3	<4.9	<9.8	<24	<4.6	41	<6.1	#	<11	West of PTN
	01/16/17	5.0	<3.4	<4.0	<4.6	<9.2	<22	<4.3	21	<5.7	#	<10	West of PTN
Shroud (SV-61)	12/01/16	--	<1,600	<1,900	<2,200	<4,400	<11,000	<2,000	<3,400	<2,700	--	140,000	Shroud sample
Shroud (SV-62)	01/16/17	--	--	--	--	--	--	--	--	--	--	190,000	Shroud sample

Abbreviations:

DCA = 1,2-dichloroethane

PCE = Tetrachloroethene

TCE = Trichloroethene

VOCs = volatile organic compounds

VOCs by EPA Method TO-15.

ug/m³ = Micrograms per cubic meter.

ft bgs = Feet below ground surface

ESL = Environmental Screening Level for Shallow Soil Gas for Evaluation of Potential Vapor Intrusion (Table E-2). Established by the SFBRWQCB, Interim Final - November 2007; Feb 2016 (Rev.

-- = Not analyzed

Bold concentrations exceed residential ESL.

* = Represents an estimated concentration (j-flag value) below the reporting limit, or indicates that there was no detection above the method detection limit.

= other VOCs detected below screening level thresholds. See lab report for details.

contaminant detections highlighted in gray

PTN = pilot test north excavation

PTS = pilot test south excavation

APPENDIX A
Agency Correspondence

Bob Clark-Riddell

From: Soo, Kit, Env. Health <Kit.Soo@acgov.org>
Sent: Wednesday, October 12, 2016 10:38 AM
To: 'Andrew Lavaux'
Cc: Bob Clark-Riddell; Roe, Dilan, Env. Health
Subject: RO0003217 - Bockman Redevelopment, 1233 Bockman Road, San Lorenzo, CA - Approval of Pilot Study Work Plan
Attachments: FTP Upload Instructions_2014-05-15.pdf

Dear Mr. Lavaux,

Alameda County Department Environmental Health (ACDEH) staff has reviewed the case files for the above referenced site including the *Pilot Study Workplan, Bockman Road Property, 1233 Bockman Road, San Leandro, California 94577* (the Work Plan), dated October 7, 2016. A site assessment was performed in July and August 2016 to investigate subsurface conditions relating to the onsite historical use of tetrachloroethylene (PCE) in the eastern portion, and petroleum hydrocarbons in the western portion of the site. The Work Plan presents a proposed scope of work to perform a pilot study to assess the effectiveness of the excavation approach prior to the implementation of the Corrective Action Plan (CAP).

The scope of work proposes to excavate soil associated with PCE and ethylbenzene impacts exceeding Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs) for soil vapor in an area located in the west-central portion of the site, with an area of approximately 5,250 square feet. ACDEH is in concurrence with the proposed scope of work. Please implement the proposed work and present the results in a Pilot Study Report as requested below.

TECHNICAL REPORT REQUEST

Please upload the Pilot Study Report to the ACDEH ftp site (Attention: Kit Soo), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- **December 30, 2016** – Pilot Study Report
File to be named: IR_R_yyyy-mm-dd RO3217

If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at kit.soo@acgov.org. Case files can be reviewed online at the following website: <http://www.acgov.org/aceh/index.htm>

Kit Soo, PG

Senior Hazardous Materials Specialist

Alameda County Department of Environmental Health (ACDEH)

1131 Harbor Bay Pkwy

Alameda, CA 94502

Direct - 510-567-6791

kit.soo@acgov.org

APPENDIX B
Pilot Study Photos



Photo 1. Test pit within Pilot Study Excavation area



Photo 2. PTN excavation area with plastic vapor barrier along east sidewall and covered stockpiles



Photo 3. Placement of imported gravel in bottom of PTN excavation



Photo 4. Backfilling and compaction of PTN excavation



Photo 5. PTS excavation area



Photo 6. Bottom geotextile fabric and plastic vapor barrier in PTS excavation



Photo 7. Placement of imported gravel in bottom of PTS excavation



Photo 8. Completed excavations and soil gas probes with protective monument casings

APPENDIX C
Import Fill Documentation



SYAR INDUSTRIES, INC.

2301 NAPA-VALLEJO HWY. • P.O. BOX 2540 • NAPA, CA 94558-0524
PHONE: 707/252-8711 • FAX: 707/224-5932

Letter of Transmittal

Date: January 31, 2017
Attention: Jeremy Pray
Contract No.: _____
Project: 1233 Bockman Road
San Lorenzo, California

To: DIABLO GENERAL ENGINEERING
2179 KIRKER PASS ROAD
CONCORD CA 94521

THE FOLLOWING ITEMS ARE BEING TRANSMITTED VIA: EMAIL FAX

WE ARE SENDING YOU SUBMITTAL(S) ADDITIONAL SUBMITTAL(S) REVISED/REPLACEMENT SUBMITTAL(S)

SUBMITTAL NO.	PLANT	DESCRIPTION
170181	Lake Herman	3" Drain Rock

THESE ARE TRANSMITTED as checked below:

For approval As requested Corrected as noted

REMARKS:

Debby Pannell
Quality Control Coordinator

Copies To:
File Folder



SYAR INDUSTRIES, INC.

2301 NAPA-VALLEJO HWY. • P.O. BOX 2540 • NAPA, CA 94558-0524

PHONE: 707/252-8711 • FAX: 707/224-5932

January 31, 2017

DIABLO GENERAL ENGINEERING
2179 KIRKER PASS ROAD
CONCORD CA 94521

Syar Submittal No. 170181

Re: Typical Gradation
Syar Product Code: 1700 - 3" Drain Rock

Project: 1233 Bockman Road
San Lorenzo, California

To whom it may concern:

This letter will certify that the 3" Drain Rock, to be supplied to the above mentioned project from our Lake Herman Plant, has the following typical gradation. *This material is 100% crushed virgin quarried rock produced at the Lake Herman Quarry in Vallejo, California.*

3" Drain Rock

<u>English Sieve Size</u>	<u>Percent Passing</u>
4"	100
3"	97
2 1/2"	97
2"	77
1 1/2"	33
1"	5
3/4"	3
1/2"	2
3/8"	1

If we may be of any further assistance please contact us.

Sincerely,

Mike Herlax
Quality Control Manager

MH:dp

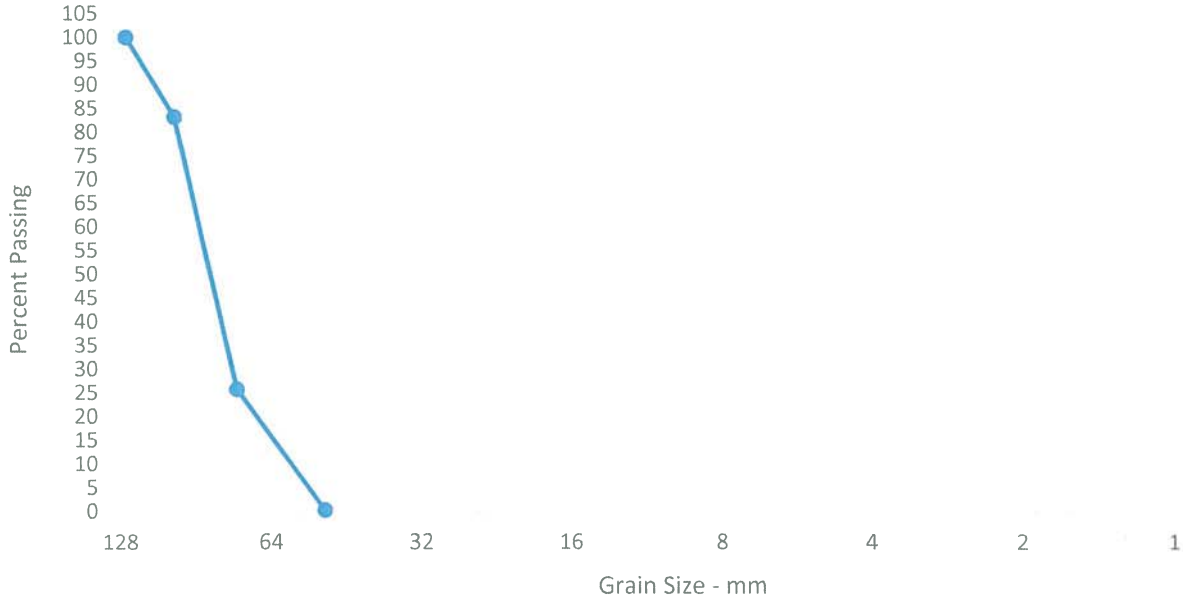
cc: Lake Herman SH & Lab; File No. nq



Sieve Analysis of Coarse and Fine Aggregates

CTM 202

Project Name:	Argent Materials	Sample Date:	1/8/2016
Project Number:	15-0083	Test Date:	1/11/2016
Sample Location:	Yard	Report Date:	1/11/2016
Client Project :	Argent Materials	Sampled By:	Client
Project Location :	8300 Baldwin St., Oakland, CA	Lab Number:	001
Material:	5" x 3" Crushed Aggregate		



Sieve Size (in.)	Opening (mm)	% Passing	Spec.	Pass/ Fail
5"	125	100	--	--
4"	100	83	--	--
3"	75	26	--	--
2"	50	0	--	--

Benjamin Reeves
Laboratory Supervisor



AGGREGATE TECHNICAL SERVICES

515 Mitchell Canyon Road
Clayton, CA 94517

Telephone: (925) 580-2792 Fax: (925) 665-1593

September 8, 2016

Diablo General Engineering
Fax / Email: Jeremy@diablogeneral.com
Attn: Jeremy Pray

Project reference: 1233 Bockman Rd. – San Lorenzo

We submit the typical test data below for your approval and as certification of the following product:

Source: Clayton #4402
Product: 4" x 2" Drain Rock

This product contains stone that is primarily in the sieve size range of 5" to 1-1/2". It typically has 100% passing the 5" sieve and 0-10% passing the 1" sieve. The Engineer should inspect the stockpile to determine project suitability.

If you have any questions, please feel free to contact:

Antonio C. Fuentes, Manager, Quality Control at (925) 426-2293 or

Ron Novak, Quality Control Representative at (925) 303-5021

NOTICE: This message and any attachments are for the sole use of the intended recipient(s) and contain confidential and/or privileged information. Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply email and destroy all copies of the original message and any attachments. Thank you

cc: Ramon Nielson, Chris Mathias

APPENDIX D
Standard Operating Procedures

STANDARD FIELD PROCEDURES FOR HAND-AUGER SOIL BORINGS

This document describes Pangea Environmental Services' standard field methods for drilling and sampling soil borings using a hand-auger. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality, and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG), Certified Engineering Geologist (CEG), or Professional Engineer. The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Hand-auger borings are typically drilled using a hand-held bucket auger to remove soil to the desired sampling depth. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the augered hole. The vertical location of each soil sample is determined using a tape measure. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Augering and sampling equipment is steam-cleaned or washed prior to drilling, between samples and between borings to prevent cross-contamination withalconox/liquinox or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

One of the remaining tubes is partially emptied into a re-sealable plastic bag. The bag of soil is placed in the sun to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the bag headspace, extracting the vapor through a slit in the bag. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are collected from screened PVC casing installed in the hole or from the open borehole using bailers. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in re-sealable plastic bags, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks can be used to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank sample may also be analyzed if non-dedicated sampling equipment is used.

Grouting

The borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55-gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Pangea Environmental Services' standard field methods for drilling and sampling soil borings. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality, and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist, scientist or engineer working under the supervision of a California Registered Engineer, California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or hydraulic-push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples are collected near the water table and at lithologic changes. With hollow-stem drilling, samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the borehole. With hydraulic-push drilling, samples are typically collected using acetate liners. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler or the acetate tube. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes or cut acetate liners chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

Soil samples collected during drilling will be analyzed in the field for ionizable organic compounds using a photo-ionization detector (PID) with a 10.2 eV lamp. The screening procedure will involve placing an undisturbed soil sample in a sealed container (either a zip-lock bag, glass jar, or a capped soil tube). The container will be set aside, preferably in the sun or warm location. After approximately fifteen minutes, the head space within the container will be tested for total organic vapor, measured in parts per million on a volume to volume basis (ppmv) by the PID. The PID instrument will be calibrated prior to boring using hexane or isobutylene. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples collected from borings are either collected from the open borehole, from within screened PVC inserted into the borehole, or from a driven Hydropunch-type sampler. Groundwater is typically extracted using a bailer, check valve and/or a peristaltic pump. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Pangea often performs electrical conductivity (EC) logging and/or continuous coring to identify potential water-bearing zones. Hydropunch-type sampling is then performed to provide discrete-depth grab groundwater sampling within potential water-bearing zones for vertical contaminant delineation. Hydropunch-type sampling typically involves driving a cylindrical sheath of hardened steel with an expendable drive point to the desired depth within undisturbed soil. The sheath is retracted to expose a stainless steel or PVC screen that is sealed inside the sheath with Neoprene O-rings to prevent infiltration of formation fluids until the desired depth is attained. The groundwater is extracted using tubing inserted down the center of the rods into the screened sampler.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

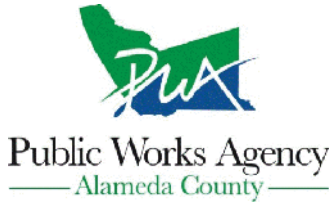
Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55 gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

APPENDIX E
Soil Gas Probe Permit

Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 11/15/2016 By jamesy

Permit Numbers: W2016-0806
Permits Valid from 11/16/2016 to 11/16/2016

Application Id: 1478815974902
Site Location: 1233 Bockman Road, San Lorenzo
Project Start Date: 11/16/2016
Assigned Inspector: Contact Marcelino Vialpando at (510) 670-5760 or Marcelino@acpwa.org

City of Project Site:San Lorenzo
Completion Date:11/16/2016

Applicant: Pangea Environmental Services, Inc. - Patrick Groff
1710 Franklin ST #200, Oakland, CA 94612
Phone: 925-818-0010

Property Owner: Andrew Lavaux
100 St. Paul Street, #300, Denver, CA 80206
Phone: --

Client: Andrew Lavaux
100 St. Paul Street, #300, Denver, CA 80206
Phone: --

	Total Due:	\$265.00
Receipt Number: WR2016-0561	Total Amount Paid:	\$265.00
Payer Name : Robert Clark-Riddell	Paid By: VISA	PAID IN FULL

Works Requesting Permits:

Well Construction-Vapor monitoring well-Vapor monitoring well - 6 Wells
Driller: Penecore Drilling - Lic #: 906899 - Method: Hand

Work Total: \$265.00

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2016-0806	11/15/2016	02/14/2017	SV-57	3.25 in.	0.25 in.	5.50 ft	7.00 ft
W2016-0806	11/15/2016	02/14/2017	SV-58	3.25 in.	0.25 in.	5.50 ft	7.00 ft
W2016-0806	11/15/2016	02/14/2017	SV-59	3.25 in.	0.25 in.	5.50 ft	7.00 ft
W2016-0806	11/15/2016	02/14/2017	SV-60	3.25 in.	0.25 in.	5.50 ft	7.00 ft
W2016-0806	11/15/2016	02/14/2017	SV-61	3.25 in.	0.25 in.	5.50 ft	7.00 ft
W2016-0806	11/15/2016	02/14/2017	SV-62	3.25 in.	0.25 in.	5.50 ft	7.00 ft

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Compliance with the above well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate state reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 30 days, including permit number and site map.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and

Alameda County Public Works Agency - Water Resources Well Permit

all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

5. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

6. No changes in construction procedures or well type shall change, as described on this permit application. This permit may be voided if it contains incorrect information.

7. Applicant shall submit the copies of the approved encroachment permit to this office within 10 days.

8. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

9. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.

10. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.

11. Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 & Division 3 of Title 27, CCR) require electronic submission of any report or data required by a regulatory agency from a cleanup site. Submission dates are set by a Regional Water Board or by a regulatory agency. Once a report/data is successfully uploaded, as required, you have met the reporting requirement (i.e. the compliance measure for electronic submittals is the actual upload itself). The upload date should be on or prior to the regulatory due date.

12. Vapor monitoring wells above water level constructed with tubing maybe be backfilled with pancake-batter consistency bentonite. Minimum surface seal thickness is two inches of cement grout around well box.

Vapor monitoring wells above water level constructed with pvc pipe shall have a minimum seal depth (Neat Cement Seal) of 2 feet below ground surface (BGS). Minimum surface seal thickness is two inches of cement grout around well box. All other conditions for monitoring well construction shall apply.

APPENDIX F

Soil Gas Probe Construction Detail



BORING AND WELL LOG LEGEND

LITHOLOGY	WATER LEVEL	WELL/BORING COMPLETION	SAMPLE TYPE	DESCRIPTION
-----------	-------------	------------------------	-------------	-------------

				ASPHALT
				CONCRETE
				FILL
				TOPSOIL
				COBBLES
				IGNEOUS Rock
				METAMORPHIC Rock
				SEDIMENTARY Rock
				Well-graded GRAVEL (GW)
				Poorly graded GRAVEL (GP)
				Silty GRAVEL (GM)
				Clayey GRAVEL (GC)
				Well-graded GRAVEL with silt (GW-GM)
				Poorly graded GRAVEL with silt (GP-GM)
				Well-graded GRAVEL with clay (GW-GC)
				Poorly graded GRAVEL with clay (GP-GC)
				Well-graded SAND (SW)
				Poorly graded SAND (SP)
				Silty SAND (SM)
				Clayey SAND (SC)
				Well-graded SAND with silt (SW-SM)
				Poorly graded SAND with silt (SP-SM)
				Well-graded SAND with clay (SW-SC)
				Poorly graded SAND with clay (SP-SC)
				SILT (ML)
				Lean CLAY (CL)
				Organic SOIL (OL)
				Elastic SILT (MH)
				Fat CLAY (CH)
				Organic SOIL (OH)
			PEAT (PT)	
			Volume Descriptors: Trace = <5% Few = 5-10% Little = 15-25% Some = 30-45% Mostly = >=50%	
	▽			Water Level During Drilling
	▼			Water Level at End of Drilling/in Completed Well
				Cap
				Riser
				Screen
				Cement
				Bentonite Grout
				Bentonite Seal
				Filter Pack
				Backfill
		GR		Grab
		EN		Encore
		SS		Split Spoon
		SH		Shelby Tube
		CO		Core Barrel
		DP		Direct Push
		ID		Lab Sample and ID

NOTES:



Client: Pauls Corporation, LLC
 Project: Bockman
 Address: 1233 Bockman Road, San Lorenzo, CA

WELL LOG
 Well No. SV-57
 Page: 1 of 1

Drilling Start Date: 11/16/2016	Boring Depth (ft): 5.5	Well Depth (ft): 5.5
Drilling End Date: 11/16/2016	Boring Diameter (in): 3	Well Diameter (in):
Drilling Company: Penecore	Sampling Method(s):	Screen Slot (in): N/A
Drilling Method: Hand Auger	DTW During Drilling (ft): N/A	Riser Material: Teflon Tubing
Drilling Equipment:	DTW After Drilling (ft): N/A	Screen Material: Vapor Implant
Driller:	Top of Casing Elev. (ft):	Seal Material(s): Hydrated Bentonite
Logged By: Albert Simmons	Location (X,Y):	Filter Pack: #3 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								(0') Fine grained FILL.			0
5								(5.5') Gravel FILL. Boring terminated at 5.5' bgs.			5
10											10

NOTES: Hydrated bentonite 0-4.0'
 Dry bentonite 4-4.5'



Client: Pauls Corporation, LLC
 Project: Bockman
 Address: 1233 Bockman Road, San Lorenzo, CA

WELL LOG
 Well No. SV-58
 Page: 1 of 1

Drilling Start Date: 11/16/2016	Boring Depth (ft): 5.1	Well Depth (ft): 5.1
Drilling End Date: 11/16/2016	Boring Diameter (in): 3	Well Diameter (in):
Drilling Company: Penecore	Sampling Method(s):	Screen Slot (in): N/A
Drilling Method: Hand Auger	DTW During Drilling (ft): N/A	Riser Material: Teflon Tubing
Drilling Equipment:	DTW After Drilling (ft): N/A	Screen Material: Vapor Implant
Driller:	Top of Casing Elev. (ft):	Seal Material(s): Hydrated Bentonite
Logged By: Albert Simmons	Location (X,Y):	Filter Pack: #3 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								(0') Fine grained FILL.			0
5								(5.1') Gravel FILL. Boring terminated at 5.1' bgs.			5
10											10

NOTES: Hydrated bentonite 0-3.5'
 Dry bentonite 3.5-4.0'



Client: Pauls Corporation, LLC
 Project: Bockman
 Address: 1233 Bockman Road, San Lorenzo, CA

WELL LOG
 Well No. SV-59
 Page: 1 of 1

Drilling Start Date: 11/16/2016	Boring Depth (ft): 5.8	Well Depth (ft): 5.8
Drilling End Date: 11/16/2016	Boring Diameter (in): 3	Well Diameter (in):
Drilling Company: Penecore	Sampling Method(s):	Screen Slot (in): N/A
Drilling Method: Hand Auger	DTW During Drilling (ft): N/A	Riser Material: Teflon Tubing
Drilling Equipment:	DTW After Drilling (ft): N/A	Screen Material: Vapor Implant
Driller:	Top of Casing Elev. (ft):	Seal Material(s): Hydrated Bentonite
Logged By: Albert Simmons	Location (X,Y):	Filter Pack: #3 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								(0') Fine grained FILL.			0
5								(5.8') Gravel FILL. Boring terminated at 5.8' bgs.			5
10											10

NOTES: Hydrated bentonite 0-4.25'
 Dry bentonite 4.25-4.75'



Client: Pauls Corporation, LLC
 Project: Bockman
 Address: 1233 Bockman Road, San Lorenzo, CA

WELL LOG
 Well No. SV-60
 Page: 1 of 1

Drilling Start Date: 11/16/2016	Boring Depth (ft): 5.7	Well Depth (ft): 5.7
Drilling End Date: 11/16/2016	Boring Diameter (in): 3	Well Diameter (in):
Drilling Company: Penecore	Sampling Method(s):	Screen Slot (in): N/A
Drilling Method: Hand Auger	DTW During Drilling (ft): N/A	Riser Material: Teflon Tubing
Drilling Equipment:	DTW After Drilling (ft): N/A	Screen Material: Vapor Implant
Driller:	Top of Casing Elev. (ft):	Seal Material(s): Hydrated Bentonite
Logged By: Albert Simmons	Location (X,Y):	Filter Pack: #3 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								(0') Fine grained FILL.			0
5								(5.7') Gravel FILL. Boring terminated at 5.7' bgs.			5
10											10

NOTES: Hydrated bentonite 0-4.25'
 Dry bentonite 4.25-4.75'



Client: Pauls Corporation, LLC
 Project: Bockman
 Address: 1233 Bockman Road, San Lorenzo, CA

WELL LOG
 Well No. SV-61
 Page: 1 of 1

Drilling Start Date: 11/16/2016	Boring Depth (ft): 6.1	Well Depth (ft): 6.1
Drilling End Date: 11/16/2016	Boring Diameter (in): 3	Well Diameter (in):
Drilling Company: Penecore	Sampling Method(s):	Screen Slot (in): N/A
Drilling Method: Hand Auger	DTW During Drilling (ft): N/A	Riser Material: Teflon Tubing
Drilling Equipment:	DTW After Drilling (ft): N/A	Screen Material: Vapor Implant
Driller:	Top of Casing Elev. (ft):	Seal Material(s): Hydrated Bentonite
Logged By: Albert Simmons	Location (X,Y):	Filter Pack: #3 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								(0') Fine grained FILL.			0
5											5
6.1								(6.1') Gravel FILL. Boring terminated at 6.1' bgs.			6.1
10											10


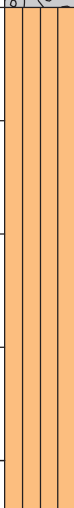
NOTES: Hydrated bentonite 0-4.5'
 Dry bentonite 4.5-5.0'



Client: Pauls Corporation, LLC
 Project: Bockman
 Address: 1233 Bockman Road, San Lorenzo, CA

WELL LOG
 Well No. SV-62
 Page: 1 of 1

Drilling Start Date: 11/16/2016	Boring Depth (ft): 5.5	Well Depth (ft): 5.5
Drilling End Date: 11/16/2016	Boring Diameter (in): 2	Well Diameter (in):
Drilling Company: Penecore	Sampling Method(s):	Screen Slot (in): N/A
Drilling Method: Hand Auger	DTW During Drilling (ft): N/A	Riser Material: Teflon Tubing
Drilling Equipment:	DTW After Drilling (ft): N/A	Screen Material: Vapor Implant
Driller:	Top of Casing Elev. (ft):	Seal Material(s): Hydrated Bentonite
Logged By: Albert Simmons	Location (X,Y):	Filter Pack: #3 Sand

DEPTH (ft)	LITHOLOGY	WATER LEVEL	WELL COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE		DEPTH (ft)
				Sample Type	Date & Time	Blow Counts	Recovery (ft)		PID (ppm)	Lab Sample	
0								(0') FILL: Sandy GRAVEL.			0
								(1') SILT (ML); dark gray, dry, very stiff, 30% clay, 70% silt, low plasticity, low permeability.			
5								Boring terminated at 5.5' bgs.			5
10											10

NOTES: Hydrated bentonite 0-4.0'
 Dry bentonite 4-4.5'

APPENDIX G
Soil Gas Sampling Forms

Bookman

12/1/16

$$9.5' \quad \underline{\text{tube}} \quad 3.14 \left(\frac{0.17}{2} \right)^2 \cdot 114 = 2.586$$

$$2.586 \times 16.4 = 42.414$$

$$12'' \quad \underline{\text{Sand}} \quad 3.14 \left(\frac{2.25}{2} \right)^2 \cdot 12 (0.375) = 17.883$$

$$17.883 \times 16.4 = 293.285$$

$$12'' \quad \underline{\text{bead.}} \quad \text{Same as sand} = 293.285$$

$$604.45 \text{ ml} / (150 \text{ ml/min}) = 4.029 \text{ min}$$

604.45

(4)

$$\times 3 = 12$$

12:05 Sec

SOIL GAS PURGING / SAMPLING LOG

Project Name: 1233 Bockman St, San Lorenzo
 Job Number: 2030.001
 Date: 01.16.17
 Sampler(s): E. Lervaag
 Sample ID / Time: SV-60/1236



Probe / Well ID: SV-60
 Canister Serial #: 00304
 Flow Controller #: A00303
 Initial Vacuum: 30
 Final Vacuum: 5

Notes: _____

SPECIFICATIONS

Tubing Length: _____ inches
 Tubing Diameter: _____ inches
 Boring Diameter: _____ inches
 Dry Bentonite Height: _____ inches
 Sandpack height: _____ inches
 Probe Length: _____ inches
 Probe Diameter: _____ inches
 Summa Flow Rate: _____ mL/min
 Purge Flow Rate: _____ mL/min

*See
Purge
Calcs*

PURGE VOLUME CALCULATION

Purge Volume = tubing + sandpack
 Tubing = $\pi \times (\text{tubing diameter}/2)^2 \times \text{length}$
 Tubing = _____ inches³
 Sandpack = $\pi \times (\text{boring diameter}/2)^2 \times \text{sandpack height} \times \text{porosity}$
 Sandpack = _____ inches³
 Single Purge Volume = _____ inches³
 Three Total Purge Volumes = _____
 Start Time = 0
 Total Purge Time = 12:05

$\pi = 3.1416$

1 inch³ = 16.4 mL

Estimated Max Porosity = 0.375

Probe Side Vac ("H₂O)

TIME	PURGE TIME (min./sec.)	He/ IPA IN SHROUD (% / PPM)	CANISTER PRESSURE ("Hg)	VOCs (ppm)	COMMENTS
1224	0	1.3		2.0	Start Purge
1227	3	17.9		2.0	
1230	6	21.3		2.0	
1233	9	15.6		2.0	
1236	12:05	14.7		2.0	Stop Purge
1236		14.5	30	2.0	Start Sample
1240		15.5	25	↓	
1243		13.9	20		
1247		12.1	15		
1251		12.5	10		
1255		11.0	5		Stop Sample
PID = 1.3 ppm after sampling					
Shut-in test					
1213	@ 94.5 "H ₂ O				
1214	@ 94.5 "H ₂ O				

SOIL GAS PURGING / SAMPLING LOG

Project Name: 1233 Bockman St, San Lorenzo
 Job Number: 2030.001
 Date: 01.16.17
 Sampler(s): E. Lervaag
 Sample ID / Time: SV-61 / 1321



Probe / Well ID: SV-61
 Canister Serial #: 00087
 Flow Controller #: A00 ~~202~~ 202
 Initial Vacuum: 30
 Final Vacuum: 4

Notes: _____

SPECIFICATIONS

Tubing Length: _____ inches
 Tubing Diameter: _____ inches
 Boring Diameter: _____ inches
 Dry Bentonite Height: _____ inches
 Sandpack height: _____ inches
 Probe Length: _____ inches
 Probe Diameter: _____ inches
 Summa Flow Rate: _____ mL/min
 Purge Flow Rate: _____ mL/min

*See
Purge
Cales*

PURGE VOLUME CALCULATION

Purge Volume = tubing + sandpack
 Tubing = $\pi \times (\text{tubing diameter}/2)^2 \times \text{length}$
 Tubing = _____ inches³
 Sandpack = $\pi \times (\text{boring diameter}/2)^2 \times \text{sandpack height} \times \text{porosity}$
 Sandpack = _____ inches³
 Single Purge Volume = _____ inches³
 Three Total Purge Volumes = _____
 Start Time = 0
 Total Purge Time = 12:05

$\pi = 3.1416$ 1 inch³ = 16.4 mL Estimated Max Porosity = 0.375
Probe Side Vac ("H₂O)

TIME	PURGE TIME (min./sec.)	He/IPA IN SHROUD (%/PPM)	CANISTER PRESSURE ("Hg)	VOCs (ppm)	COMMENTS
1309	0	4.7		9.0	Start Purge
1312	3	11.6		9.0	
1315	6	10.9		9.0	
1318	9	9.3		9.0	
1321	12:05	9.9		9.0	Stop Purge
1321		10.0	30	9.0	start sample
1323		9.1	25	9.0	
1324		11.3	20	9.0	
1326		12.2	15	9.0	
1327		11.7	10	9.0	
1329		8.4	5	9.0	stop sample
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> PID = 0.2 ppm after sampling </div>					
Shut-in test					
1254	@ 93.5	"H ₂ O			
1255	@ 93.5	"H ₂ O			

APPENDIX H
Laboratory Analytical Reports

**SOIL
LABORATORY ANALYTICAL REPORTS**



Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 281073
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 2030.001
Location : 1233 Bockman
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
TP-1-1'	281073-001
TP-1-3'	281073-002
TP-1-6'	281073-003
COMP A (1-4)	281073-004
COMP B (1-4)	281073-005
COMP C (1-4)	281073-006

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 10/20/2016

Will Rice
Project Manager
will.rice@ctberk.com

CASE NARRATIVE

Laboratory number: 281073
Client: Pangea Environmental
Project: 2030.001
Location: 1233 Bockman
Request Date: 09/16/16
Samples Received: 09/16/16

This data package contains sample and QC results for three soil samples and three four-point soil composites, requested for the above referenced project on 09/16/16. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):

No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):

Diesel C10-C24 was detected above the RL in the method blank for batch 239202. COMP A (1-4) (lab # 281073-004) was diluted due to the dark and viscous nature of the sample extract. No other analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):

Low surrogate recoveries were observed for bromofluorobenzene in the MS/MSD for batch 239225; the parent sample was not a project sample. No other analytical problems were encountered.

Semivolatile Organics by GC/MS SIM (EPA 8270C-SIM):

COMP A (1-4) (lab # 281073-004) was diluted due to the dark and viscous nature of the sample extract. No other analytical problems were encountered.

Pesticides (EPA 8081A):

All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. All samples underwent florisol cleanup using EPA Method 3620C. Matrix spikes QC852090, QC852091 (batch 239240) were not reported because the parent sample required a dilution that would have diluted out the spikes. COMP A (1-4) (lab # 281073-004) was diluted due to the color of the sample extract. No other analytical problems were encountered.

PCBs (EPA 8082):

All samples underwent sulfuric acid cleanup using EPA Method 3665A. All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. Matrix spikes QC852090, QC852091 (batch 239240) were not reported because the parent sample required a dilution that would have diluted out the spikes. No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A) Soil:

No analytical problems were encountered.

CASE NARRATIVE

Laboratory number: 281073
Client: Pangea Environmental
Project: 2030.001
Location: 1233 Bockman
Request Date: 09/16/16
Samples Received: 09/16/16

Metals (EPA 6020) WET Leachate:

No analytical problems were encountered.

CARB 435 Asbestos (CARB 435):

Forensic Analytical in Hayward, CA performed the analysis (not NELAP certified). Please see the Forensic Analytical case narrative.

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 281073 Date Received 9/16/16 Number of coolers 1
 Client Pangea Env. Project R33 Bockman
 Date Opened 9/16 By (print) sc (sign) [Signature]
 Date Logged in ↓ By (print) ↓ (sign) ↓
 Date Labeled ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? _____ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? _____ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) _____ YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 7°

Temperature blank(s) included? Thermometer# 4 IR Gun# _____

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO
 If YES, what time were they transferred to freezer? 9/16/16 @ 1330

9. Did all bottles arrive unbroken/unopened? _____ YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? (pH strip lot# _____) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO

If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Client Sample ID : COMP B (1-4)

Laboratory Sample ID :

281073-005

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	4.3	Y,b	0.99	mg/Kg	As Recd	1.000	EPA 8015B	EPA 3550B
Arsenic	4.7		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Barium	190		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Beryllium	0.57		0.099	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cadmium	0.42		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Chromium	37		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cobalt	8.8		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Copper	16		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Lead	7.5		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Mercury	0.020		0.018	mg/Kg	As Recd	1.000	EPA 7471A	METHOD
Nickel	37		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Vanadium	31		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Zinc	38		0.99	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : COMP C (1-4)

Laboratory Sample ID :

281073-006

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	3.1	Y,b	1.0	mg/Kg	As Recd	1.000	EPA 8015B	EPA 3550B
Antimony	2.4		1.8	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Arsenic	5.9		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Barium	160		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Beryllium	0.51		0.091	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cadmium	0.52		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Chromium	46		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cobalt	8.5		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Copper	13		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Lead	5.0		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Mercury	0.043		0.016	mg/Kg	As Recd	1.000	EPA 7471A	METHOD
Nickel	40		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Thallium	1.1		0.45	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Vanadium	43		0.23	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Zinc	40		0.91	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Y = Sample exhibits chromatographic pattern which does not resemble standard

b = See narrative

Total Volatile Hydrocarbons			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	239173
Units:	mg/Kg	Sampled:	09/16/16
Basis:	as received	Received:	09/16/16
Diln Fac:	1.000		

Field ID: COMP A (1-4) Lab ID: 281073-004
 Type: SAMPLE Analyzed: 09/16/16

Analyte	Result	RL
Gasoline C7-C12	ND	0.96

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	78-138

Field ID: COMP B (1-4) Lab ID: 281073-005
 Type: SAMPLE Analyzed: 09/17/16

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	78-138

Field ID: COMP C (1-4) Lab ID: 281073-006
 Type: SAMPLE Analyzed: 09/17/16

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	100	78-138

Type: BLANK Analyzed: 09/16/16
 Lab ID: QC851822

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	95	78-138

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC851817	Batch#:	239173
Matrix:	Soil	Analyzed:	09/16/16
Units:	mg/Kg		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	1.095	109	80-121

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	99	78-138

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	281062-001	Batch#:	239173
Matrix:	Soil	Sampled:	09/16/16
Units:	mg/Kg	Received:	09/16/16
Basis:	as received	Analyzed:	09/16/16

Type: MS Lab ID: QC851820

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	3.128	10.20	9.051	58	50-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	111	78-138

Type: MSD Lab ID: QC851821

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	9.901	10.25	72	50-120	15	31

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	108	78-138

RPD= Relative Percent Difference

Total Extractable Hydrocarbons			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	09/16/16
Units:	mg/Kg	Received:	09/16/16
Basis:	as received	Prepared:	09/16/16
Batch#:	239202		

Field ID: COMP A (1-4) Diln Fac: 2.000
 Type: SAMPLE Analyzed: 09/20/16
 Lab ID: 281073-004

Analyte	Result	RL
Diesel C10-C24	11 Y b	2.0
Motor Oil C24-C36	68	10

Surrogate	%REC	Limits
o-Terphenyl	88	59-140

Field ID: COMP B (1-4) Diln Fac: 1.000
 Type: SAMPLE Analyzed: 09/20/16
 Lab ID: 281073-005

Analyte	Result	RL
Diesel C10-C24	4.3 Y b	0.99
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	90	59-140

Field ID: COMP C (1-4) Diln Fac: 1.000
 Type: SAMPLE Analyzed: 09/20/16
 Lab ID: 281073-006

Analyte	Result	RL
Diesel C10-C24	3.1 Y b	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	84	59-140

Type: BLANK Diln Fac: 1.000
 Lab ID: QC851936 Analyzed: 09/19/16

Analyte	Result	RL
Diesel C10-C24	1.9 b	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	82	59-140

Y= Sample exhibits chromatographic pattern which does not resemble standard
 b= See narrative
 ND= Not Detected
 RL= Reporting Limit

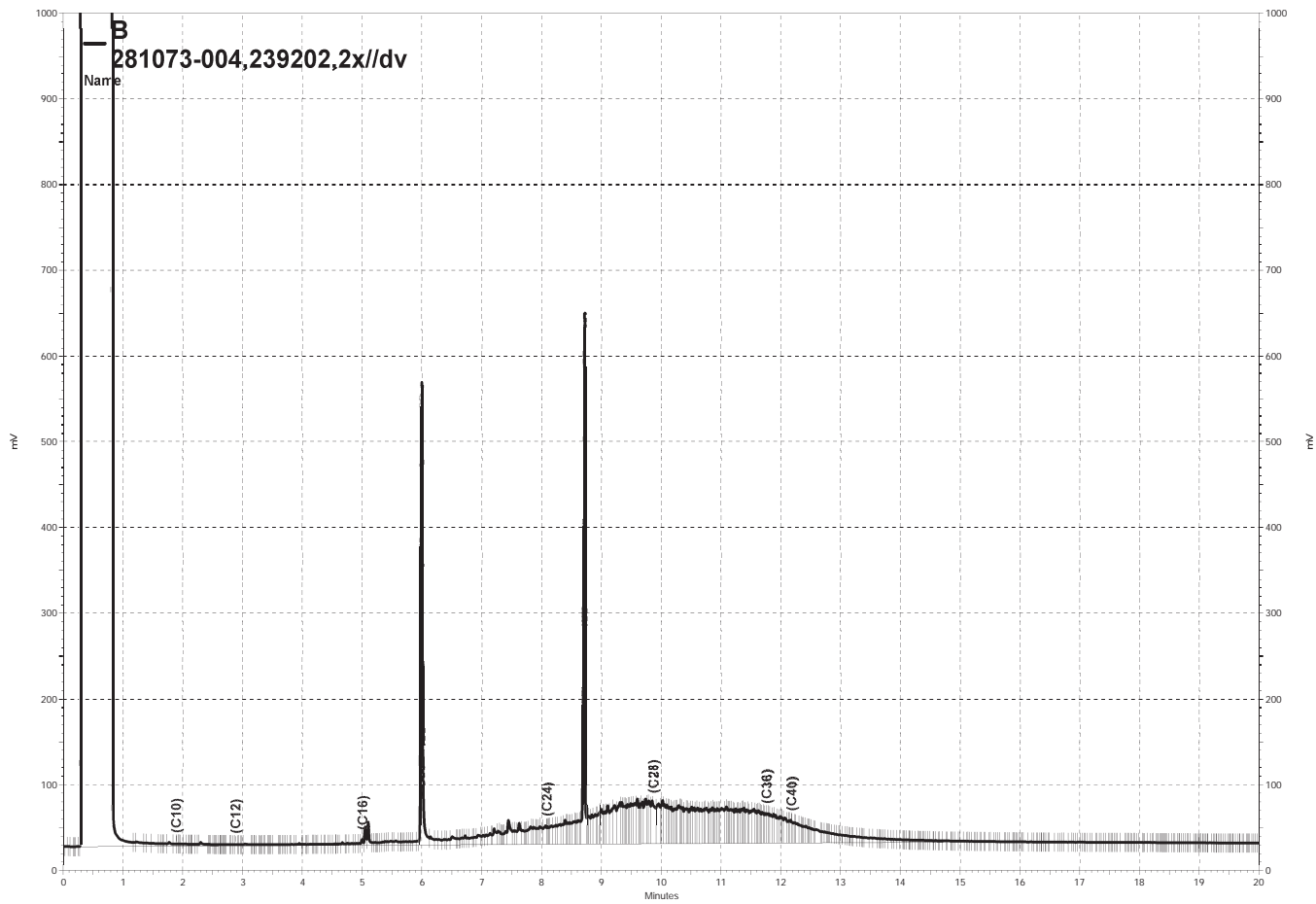
Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC851937	Batch#:	239202
Matrix:	Soil	Prepared:	09/16/16
Units:	mg/Kg	Analyzed:	09/19/16

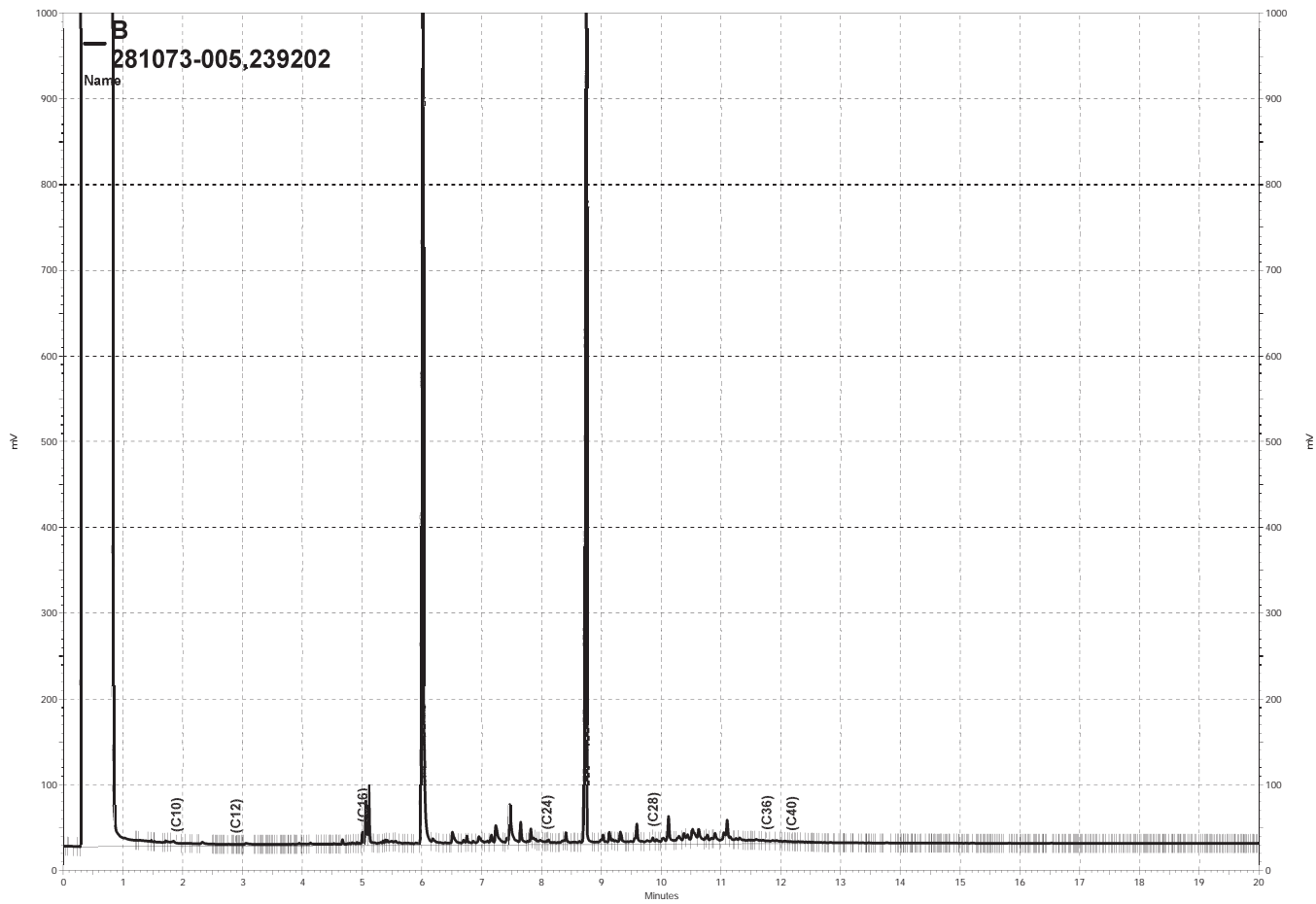
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	50.27	37.90	75	58-137

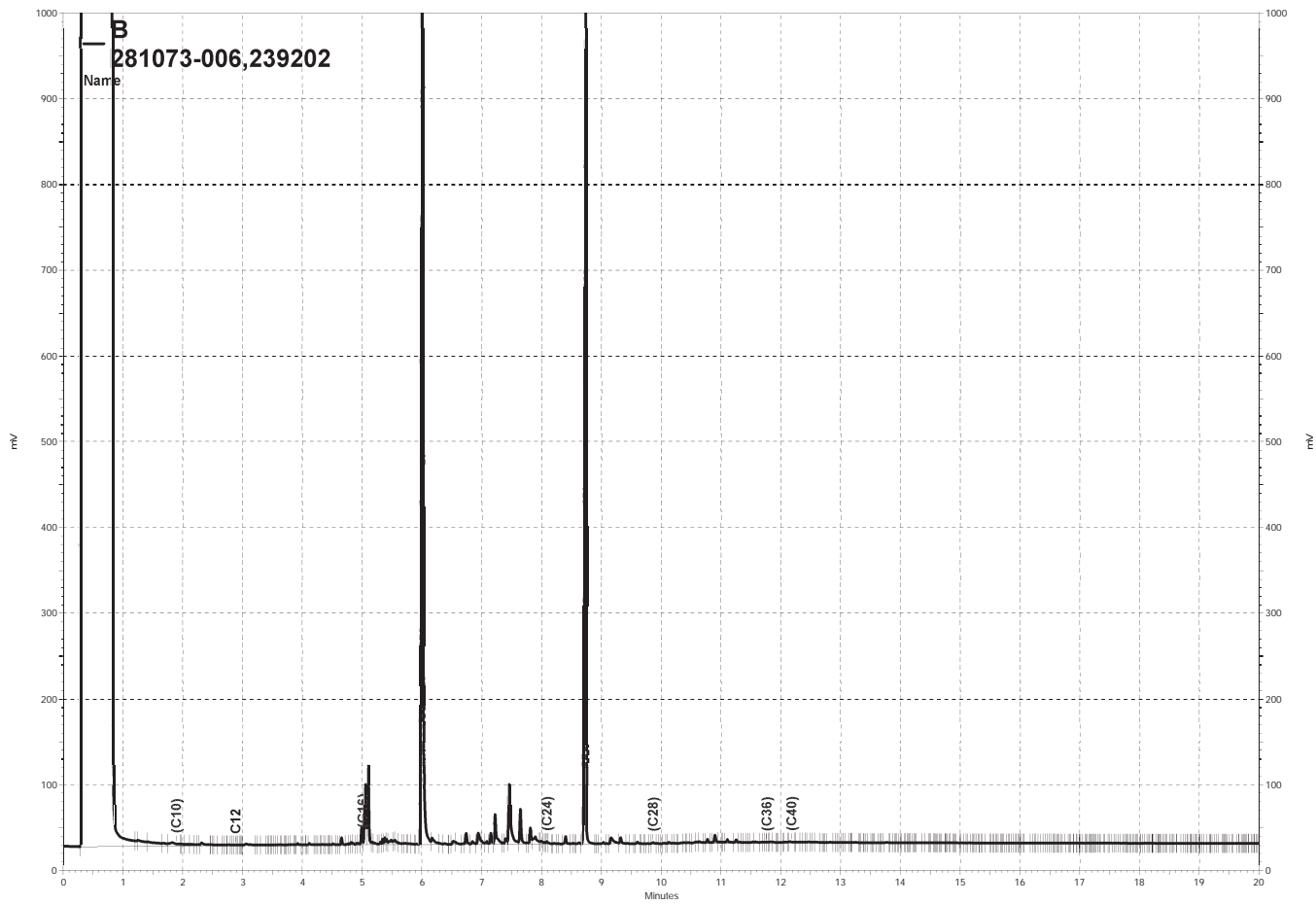
Surrogate	%REC	Limits
o-Terphenyl	74	59-140



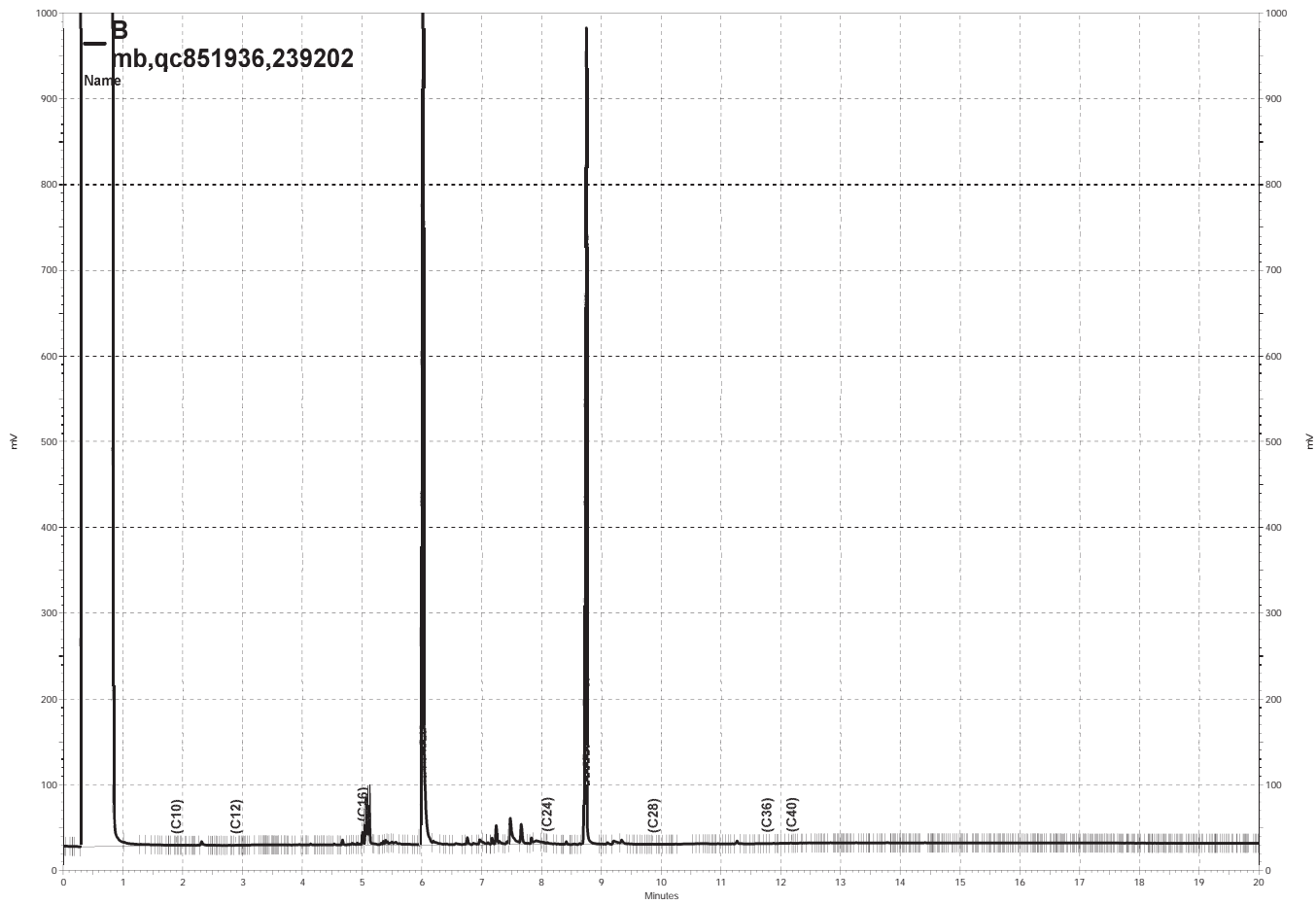
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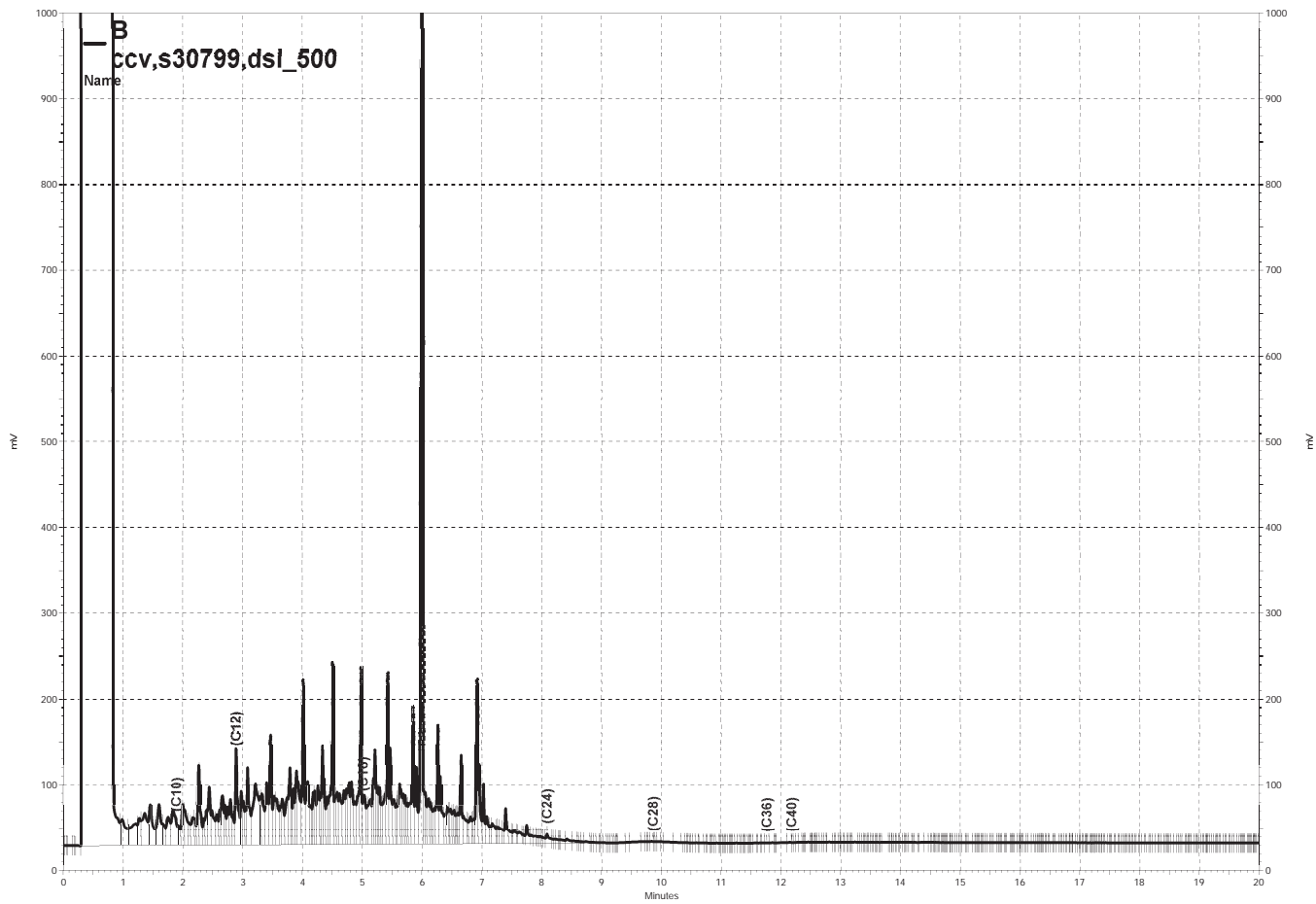
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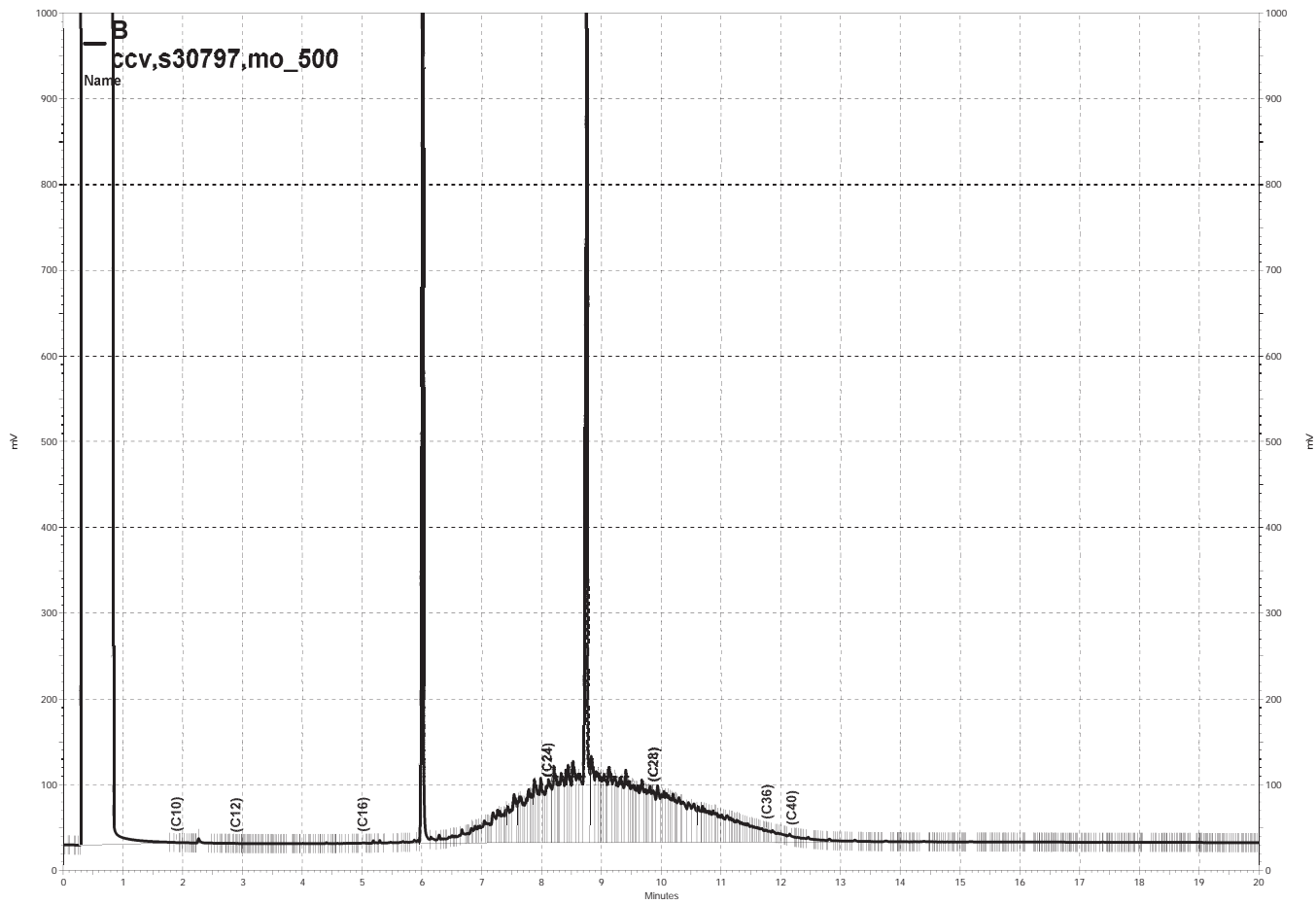
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\\kraken\gdrive\ezchrom\Projects\GC14B\Data\263B003, B

Purgeable Organics by GC/MS

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-1-1'	Diln Fac:	0.8961
Lab ID:	281073-001	Batch#:	239225
Matrix:	Soil	Sampled:	09/16/16
Units:	ug/Kg	Received:	09/16/16
Basis:	as received	Analyzed:	09/19/16

Analyte	Result	RL
Freon 12	ND	9.0
Chloromethane	ND	9.0
Vinyl Chloride	ND	9.0
Bromomethane	ND	9.0
Chloroethane	ND	9.0
Trichlorofluoromethane	ND	4.5
Acetone	ND	18
Freon 113	ND	4.5
1,1-Dichloroethene	ND	4.5
Methylene Chloride	ND	18
Carbon Disulfide	ND	4.5
MTBE	ND	4.5
trans-1,2-Dichloroethene	ND	4.5
Vinyl Acetate	ND	45
1,1-Dichloroethane	ND	4.5
2-Butanone	ND	9.0
cis-1,2-Dichloroethene	ND	4.5
2,2-Dichloropropane	ND	4.5
Chloroform	ND	4.5
Bromochloromethane	ND	4.5
1,1,1-Trichloroethane	ND	4.5
1,1-Dichloropropene	ND	4.5
Carbon Tetrachloride	ND	4.5
1,2-Dichloroethane	ND	4.5
Benzene	ND	4.5
Trichloroethene	ND	4.5
1,2-Dichloropropane	ND	4.5
Bromodichloromethane	ND	4.5
Dibromomethane	ND	4.5
4-Methyl-2-Pentanone	ND	9.0
cis-1,3-Dichloropropene	ND	4.5
Toluene	ND	4.5
trans-1,3-Dichloropropene	ND	4.5
1,1,2-Trichloroethane	ND	4.5
2-Hexanone	ND	9.0
1,3-Dichloropropane	ND	4.5
Tetrachloroethene	ND	4.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-1-1'	Diln Fac:	0.8961
Lab ID:	281073-001	Batch#:	239225
Matrix:	Soil	Sampled:	09/16/16
Units:	ug/Kg	Received:	09/16/16
Basis:	as received	Analyzed:	09/19/16

Analyte	Result	RL
Dibromochloromethane	ND	4.5
1,2-Dibromoethane	ND	4.5
Chlorobenzene	ND	4.5
1,1,1,2-Tetrachloroethane	ND	4.5
Ethylbenzene	ND	4.5
m,p-Xylenes	ND	4.5
o-Xylene	ND	4.5
Styrene	ND	4.5
Bromoform	ND	4.5
Isopropylbenzene	ND	4.5
1,1,2,2-Tetrachloroethane	ND	4.5
1,2,3-Trichloropropane	ND	4.5
Propylbenzene	ND	4.5
Bromobenzene	ND	4.5
1,3,5-Trimethylbenzene	ND	4.5
2-Chlorotoluene	ND	4.5
4-Chlorotoluene	ND	4.5
tert-Butylbenzene	ND	4.5
1,2,4-Trimethylbenzene	ND	4.5
sec-Butylbenzene	ND	4.5
para-Isopropyl Toluene	ND	4.5
1,3-Dichlorobenzene	ND	4.5
1,4-Dichlorobenzene	ND	4.5
n-Butylbenzene	ND	4.5
1,2-Dichlorobenzene	ND	4.5
1,2-Dibromo-3-Chloropropane	ND	4.5
1,2,4-Trichlorobenzene	ND	4.5
Hexachlorobutadiene	ND	4.5
Naphthalene	ND	4.5
1,2,3-Trichlorobenzene	ND	4.5

Surrogate	%REC	Limits
Dibromofluoromethane	108	78-134
1,2-Dichloroethane-d4	108	80-138
Toluene-d8	100	80-120
Bromofluorobenzene	110	78-123

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-1-3'	Diln Fac:	0.8929
Lab ID:	281073-002	Batch#:	239225
Matrix:	Soil	Sampled:	09/16/16
Units:	ug/Kg	Received:	09/16/16
Basis:	as received	Analyzed:	09/19/16

Analyte	Result	RL
Freon 12	ND	8.9
Chloromethane	ND	8.9
Vinyl Chloride	ND	8.9
Bromomethane	ND	8.9
Chloroethane	ND	8.9
Trichlorofluoromethane	ND	4.5
Acetone	ND	18
Freon 113	ND	4.5
1,1-Dichloroethene	ND	4.5
Methylene Chloride	ND	18
Carbon Disulfide	ND	4.5
MTBE	ND	4.5
trans-1,2-Dichloroethene	ND	4.5
Vinyl Acetate	ND	45
1,1-Dichloroethane	ND	4.5
2-Butanone	ND	8.9
cis-1,2-Dichloroethene	ND	4.5
2,2-Dichloropropane	ND	4.5
Chloroform	ND	4.5
Bromochloromethane	ND	4.5
1,1,1-Trichloroethane	ND	4.5
1,1-Dichloropropene	ND	4.5
Carbon Tetrachloride	ND	4.5
1,2-Dichloroethane	ND	4.5
Benzene	ND	4.5
Trichloroethene	ND	4.5
1,2-Dichloropropane	ND	4.5
Bromodichloromethane	ND	4.5
Dibromomethane	ND	4.5
4-Methyl-2-Pentanone	ND	8.9
cis-1,3-Dichloropropene	ND	4.5
Toluene	ND	4.5
trans-1,3-Dichloropropene	ND	4.5
1,1,2-Trichloroethane	ND	4.5
2-Hexanone	ND	8.9
1,3-Dichloropropane	ND	4.5
Tetrachloroethene	ND	4.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-1-3'	Diln Fac:	0.8929
Lab ID:	281073-002	Batch#:	239225
Matrix:	Soil	Sampled:	09/16/16
Units:	ug/Kg	Received:	09/16/16
Basis:	as received	Analyzed:	09/19/16

Analyte	Result	RL
Dibromochloromethane	ND	4.5
1,2-Dibromoethane	ND	4.5
Chlorobenzene	ND	4.5
1,1,1,2-Tetrachloroethane	ND	4.5
Ethylbenzene	ND	4.5
m,p-Xylenes	ND	4.5
o-Xylene	ND	4.5
Styrene	ND	4.5
Bromoform	ND	4.5
Isopropylbenzene	ND	4.5
1,1,2,2-Tetrachloroethane	ND	4.5
1,2,3-Trichloropropane	ND	4.5
Propylbenzene	ND	4.5
Bromobenzene	ND	4.5
1,3,5-Trimethylbenzene	ND	4.5
2-Chlorotoluene	ND	4.5
4-Chlorotoluene	ND	4.5
tert-Butylbenzene	ND	4.5
1,2,4-Trimethylbenzene	ND	4.5
sec-Butylbenzene	ND	4.5
para-Isopropyl Toluene	ND	4.5
1,3-Dichlorobenzene	ND	4.5
1,4-Dichlorobenzene	ND	4.5
n-Butylbenzene	ND	4.5
1,2-Dichlorobenzene	ND	4.5
1,2-Dibromo-3-Chloropropane	ND	4.5
1,2,4-Trichlorobenzene	ND	4.5
Hexachlorobutadiene	ND	4.5
Naphthalene	ND	4.5
1,2,3-Trichlorobenzene	ND	4.5

Surrogate	%REC	Limits
Dibromofluoromethane	110	78-134
1,2-Dichloroethane-d4	112	80-138
Toluene-d8	99	80-120
Bromofluorobenzene	112	78-123

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-1-6'	Diln Fac:	0.8104
Lab ID:	281073-003	Batch#:	239225
Matrix:	Soil	Sampled:	09/16/16
Units:	ug/Kg	Received:	09/16/16
Basis:	as received	Analyzed:	09/19/16

Analyte	Result	RL
Freon 12	ND	8.1
Chloromethane	ND	8.1
Vinyl Chloride	ND	8.1
Bromomethane	ND	8.1
Chloroethane	ND	8.1
Trichlorofluoromethane	ND	4.1
Acetone	ND	16
Freon 113	ND	4.1
1,1-Dichloroethene	ND	4.1
Methylene Chloride	ND	16
Carbon Disulfide	ND	4.1
MTBE	ND	4.1
trans-1,2-Dichloroethene	ND	4.1
Vinyl Acetate	ND	41
1,1-Dichloroethane	ND	4.1
2-Butanone	ND	8.1
cis-1,2-Dichloroethene	ND	4.1
2,2-Dichloropropane	ND	4.1
Chloroform	ND	4.1
Bromochloromethane	ND	4.1
1,1,1-Trichloroethane	ND	4.1
1,1-Dichloropropene	ND	4.1
Carbon Tetrachloride	ND	4.1
1,2-Dichloroethane	ND	4.1
Benzene	ND	4.1
Trichloroethene	ND	4.1
1,2-Dichloropropane	ND	4.1
Bromodichloromethane	ND	4.1
Dibromomethane	ND	4.1
4-Methyl-2-Pentanone	ND	8.1
cis-1,3-Dichloropropene	ND	4.1
Toluene	ND	4.1
trans-1,3-Dichloropropene	ND	4.1
1,1,2-Trichloroethane	ND	4.1
2-Hexanone	ND	8.1
1,3-Dichloropropane	ND	4.1
Tetrachloroethene	ND	4.1

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-1-6'	Diln Fac:	0.8104
Lab ID:	281073-003	Batch#:	239225
Matrix:	Soil	Sampled:	09/16/16
Units:	ug/Kg	Received:	09/16/16
Basis:	as received	Analyzed:	09/19/16

Analyte	Result	RL
Dibromochloromethane	ND	4.1
1,2-Dibromoethane	ND	4.1
Chlorobenzene	ND	4.1
1,1,1,2-Tetrachloroethane	ND	4.1
Ethylbenzene	ND	4.1
m,p-Xylenes	ND	4.1
o-Xylene	ND	4.1
Styrene	ND	4.1
Bromoform	ND	4.1
Isopropylbenzene	ND	4.1
1,1,2,2-Tetrachloroethane	ND	4.1
1,2,3-Trichloropropane	ND	4.1
Propylbenzene	ND	4.1
Bromobenzene	ND	4.1
1,3,5-Trimethylbenzene	ND	4.1
2-Chlorotoluene	ND	4.1
4-Chlorotoluene	ND	4.1
tert-Butylbenzene	ND	4.1
1,2,4-Trimethylbenzene	ND	4.1
sec-Butylbenzene	ND	4.1
para-Isopropyl Toluene	ND	4.1
1,3-Dichlorobenzene	ND	4.1
1,4-Dichlorobenzene	ND	4.1
n-Butylbenzene	ND	4.1
1,2-Dichlorobenzene	ND	4.1
1,2-Dibromo-3-Chloropropane	ND	4.1
1,2,4-Trichlorobenzene	ND	4.1
Hexachlorobutadiene	ND	4.1
Naphthalene	ND	4.1
1,2,3-Trichlorobenzene	ND	4.1

Surrogate	%REC	Limits
Dibromofluoromethane	107	78-134
1,2-Dichloroethane-d4	109	80-138
Toluene-d8	100	80-120
Bromofluorobenzene	112	78-123

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	239225
Units:	ug/Kg	Analyzed:	09/19/16
Diln Fac:	1.000		

Type: BS Lab ID: QC852037

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	23.94	96	70-134
Benzene	25.00	25.48	102	80-123
Trichloroethene	25.00	25.23	101	80-128
Toluene	25.00	24.64	99	80-120
Chlorobenzene	25.00	23.66	95	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	106	78-134
1,2-Dichloroethane-d4	105	80-138
Toluene-d8	99	80-120
Bromofluorobenzene	100	78-123

Type: BSD Lab ID: QC852038

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	22.03	88	70-134	8	22
Benzene	25.00	23.59	94	80-123	8	21
Trichloroethene	25.00	23.13	93	80-128	9	23
Toluene	25.00	22.76	91	80-120	8	20
Chlorobenzene	25.00	22.73	91	80-123	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	105	78-134
1,2-Dichloroethane-d4	103	80-138
Toluene-d8	98	80-120
Bromofluorobenzene	100	78-123

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC852039	Batch#:	239225
Matrix:	Soil	Analyzed:	09/19/16
Units:	ug/Kg		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC852039	Batch#:	239225
Matrix:	Soil	Analyzed:	09/19/16
Units:	ug/Kg		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	111	78-134
1,2-Dichloroethane-d4	115	80-138
Toluene-d8	99	80-120
Bromofluorobenzene	112	78-123

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	239225
MSS Lab ID:	281095-001	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	ug/Kg	Analyzed:	09/19/16
Basis:	as received		

Type: MS Diln Fac: 1.027
 Lab ID: QC852135

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.6197	51.35	55.36	108	56-133
Benzene	<0.7220	51.35	55.00	107	57-120
Trichloroethene	<0.7520	51.35	53.73	105	49-145
Toluene	<0.7909	51.35	51.82	101	51-120
Chlorobenzene	<0.6484	51.35	47.66	93	47-120

Surrogate	%REC	Limits
Dibromofluoromethane	107	78-134
1,2-Dichloroethane-d4	99	80-138
Toluene-d8	100	80-120
Bromofluorobenzene	65 *	78-123

Type: MSD Diln Fac: 1.397
 Lab ID: QC852136

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	69.85	75.71	108	56-133	1	46
Benzene	69.85	72.66	104	57-120	3	44
Trichloroethene	69.85	71.34	102	49-145	2	46
Toluene	69.85	69.85	100	51-120	1	47
Chlorobenzene	69.85	64.70	93	47-120	0	50

Surrogate	%REC	Limits
Dibromofluoromethane	107	78-134
1,2-Dichloroethane-d4	95	80-138
Toluene-d8	102	80-120
Bromofluorobenzene	64 *	78-123

*= Value outside of QC limits; see narrative
 RPD= Relative Percent Difference

Semivolatile Organics by GC/MS SIM

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Field ID:	COMP A (1-4)	Batch#:	239252
Lab ID:	281073-004	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	ug/Kg	Prepared:	09/19/16
Basis:	as received	Analyzed:	09/19/16
Diln Fac:	10.00		

Analyte	Result	RL	MDL
Naphthalene	ND	50	9.9
Acenaphthylene	ND	50	9.9
Acenaphthene	ND	50	9.9
Fluorene	ND	50	9.9
Phenanthrene	ND	50	9.9
Anthracene	ND	50	9.9
Fluoranthene	ND	50	9.9
Pyrene	ND	50	9.9
Benzo(a)anthracene	ND	50	9.9
Chrysene	ND	50	9.9
Benzo(b)fluoranthene	ND	50	9.9
Benzo(k)fluoranthene	ND	50	9.9
Benzo(a)pyrene	ND	50	9.9
Indeno(1,2,3-cd)pyrene	ND	50	9.9
Dibenz(a,h)anthracene	ND	50	9.9
Benzo(g,h,i)perylene	ND	50	9.9

Surrogate	%REC	Limits
Nitrobenzene-d5	DO	40-120
2-Fluorobiphenyl	DO	46-120
Terphenyl-d14	DO	43-120

DO= Diluted Out

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Field ID:	COMP B (1-4)	Batch#:	239252
Lab ID:	281073-005	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	ug/Kg	Prepared:	09/19/16
Basis:	as received	Analyzed:	09/20/16
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Naphthalene	ND	5.1	1.2
Acenaphthylene	ND	5.1	1.0
Acenaphthene	ND	5.1	1.0
Fluorene	ND	5.1	1.0
Phenanthrene	ND	5.1	1.0
Anthracene	ND	5.1	1.0
Fluoranthene	ND	5.1	1.0
Pyrene	ND	5.1	1.0
Benzo(a)anthracene	ND	5.1	1.0
Chrysene	ND	5.1	1.0
Benzo(b)fluoranthene	ND	5.1	1.0
Benzo(k)fluoranthene	ND	5.1	1.0
Benzo(a)pyrene	ND	5.1	1.0
Indeno(1,2,3-cd)pyrene	ND	5.1	1.0
Dibenz(a,h)anthracene	ND	5.1	1.0
Benzo(g,h,i)perylene	ND	5.1	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	62	40-120
2-Fluorobiphenyl	61	46-120
Terphenyl-d14	77	43-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Field ID:	COMP C (1-4)	Batch#:	239252
Lab ID:	281073-006	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	ug/Kg	Prepared:	09/19/16
Basis:	as received	Analyzed:	09/19/16
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	1.0
Acenaphthylene	ND	5.0	1.0
Acenaphthene	ND	5.0	1.0
Fluorene	ND	5.0	1.0
Phenanthrene	ND	5.0	1.0
Anthracene	ND	5.0	1.0
Fluoranthene	ND	5.0	1.0
Pyrene	ND	5.0	1.0
Benzo(a)anthracene	ND	5.0	1.0
Chrysene	ND	5.0	1.0
Benzo(b)fluoranthene	ND	5.0	1.0
Benzo(k)fluoranthene	ND	5.0	1.0
Benzo(a)pyrene	ND	5.0	1.0
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0
Dibenz(a,h)anthracene	ND	5.0	1.0
Benzo(g,h,i)perylene	ND	5.0	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	64	40-120
2-Fluorobiphenyl	50	46-120
Terphenyl-d14	60	43-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC852137	Batch#:	239252
Matrix:	Soil	Prepared:	09/19/16
Units:	ug/Kg	Analyzed:	09/19/16

Analyte	Result	RL	MDL
Naphthalene	ND	4.9	0.99
Acenaphthylene	ND	4.9	0.99
Acenaphthene	ND	4.9	0.99
Fluorene	ND	4.9	0.99
Phenanthrene	ND	4.9	0.99
Anthracene	ND	4.9	0.99
Fluoranthene	ND	4.9	0.99
Pyrene	ND	4.9	0.99
Benzo(a)anthracene	ND	4.9	0.99
Chrysene	ND	4.9	0.99
Benzo(b)fluoranthene	ND	4.9	0.99
Benzo(k)fluoranthene	ND	4.9	0.99
Benzo(a)pyrene	ND	4.9	0.99
Indeno(1,2,3-cd)pyrene	ND	4.9	0.99
Dibenz(a,h)anthracene	ND	4.9	0.99
Benzo(g,h,i)perylene	ND	4.9	0.99

Surrogate	%REC	Limits
Nitrobenzene-d5	79	40-120
2-Fluorobiphenyl	64	46-120
Terphenyl-d14	78	43-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC852138	Batch#:	239252
Matrix:	Soil	Prepared:	09/19/16
Units:	ug/Kg	Analyzed:	09/20/16

Analyte	Spiked	Result	%REC	Limits
Acenaphthene	33.73	29.97	89	49-120
Pyrene	33.73	33.96	101	48-120

Surrogate	%REC	Limits
Nitrobenzene-d5	77	40-120
2-Fluorobiphenyl	59	46-120
Terphenyl-d14	63	43-120

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Field ID:	ZZZZZZZZZZ	Batch#:	239252
MSS Lab ID:	281082-001	Sampled:	09/15/16
Matrix:	Soil	Received:	09/16/16
Units:	ug/Kg	Prepared:	09/19/16
Basis:	as received	Analyzed:	09/19/16
Diln Fac:	1.000		

Type: MS Lab ID: QC852139

Analyte	MSS Result	Spiked	Result	%REC	Limits
Acenaphthene	<1.007	33.57	24.72	74	43-120
Pyrene	<1.007	33.57	30.73	92	18-144

Surrogate	%REC	Limits
Nitrobenzene-d5	64	40-120
2-Fluorobiphenyl	48	46-120
Terphenyl-d14	56	43-120

Type: MSD Lab ID: QC852140

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Acenaphthene	33.67	23.35	69	43-120	6	45
Pyrene	33.67	28.05	83	18-144	9	72

Surrogate	%REC	Limits
Nitrobenzene-d5	59	40-120
2-Fluorobiphenyl	46	46-120
Terphenyl-d14	54	43-120

RPD= Relative Percent Difference

Organochlorine Pesticides			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Field ID:	COMP A (1-4)	Batch#:	239240
Lab ID:	281073-004	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	ug/Kg	Prepared:	09/19/16
Basis:	as received	Analyzed:	09/20/16
Diln Fac:	20.00		

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	34	4.0
beta-BHC	ND	34	8.2
gamma-BHC	ND	34	4.3
delta-BHC	ND	34	5.5
Heptachlor	ND	34	3.8
Aldrin	ND	34	4.1
Heptachlor epoxide	ND	34	4.4
Endosulfan I	ND	34	3.5
Dieldrin	ND	34	7.9
4,4'-DDE	ND	66	12
Endrin	ND	66	11
Endosulfan II	ND	66	10
Endosulfan sulfate	ND	66	10
4,4'-DDD	ND	66	15
Endrin aldehyde	ND	66	6.7
4,4'-DDT	ND	66	9.4
alpha-Chlordane	ND	34	4.1
gamma-Chlordane	ND	34	4.9
Methoxychlor	ND	340	63
Toxaphene	ND	1,200	180

Surrogate	%REC	Limits
TCMX	DO	44-125
Decachlorobiphenyl	DO	39-121

DO= Diluted Out

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Organochlorine Pesticides			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Field ID:	COMP B (1-4)	Batch#:	239240
Lab ID:	281073-005	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	ug/Kg	Prepared:	09/19/16
Basis:	as received	Analyzed:	09/20/16
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.20
beta-BHC	ND	1.7	0.42
gamma-BHC	ND	1.7	0.22
delta-BHC	ND	1.7	0.28
Heptachlor	ND	1.7	0.19
Aldrin	ND	1.7	0.21
Heptachlor epoxide	ND	1.7	0.22
Endosulfan I	ND	1.7	0.18
Dieldrin	ND	1.7	0.40
4,4'-DDE	ND	3.3	0.59
Endrin	ND	3.3	0.56
Endosulfan II	ND	3.3	0.51
Endosulfan sulfate	ND	3.3	0.52
4,4'-DDD	ND	3.3	0.73
Endrin aldehyde	ND	3.3	0.34
4,4'-DDT	ND	3.3	0.48
alpha-Chlordane	ND	1.7	0.21
gamma-Chlordane	ND	1.7	0.25
Methoxychlor	ND	17	3.2
Toxaphene	ND	61	9.2

Surrogate	%REC	Limits
TCMX	66	44-125
Decachlorobiphenyl	62	39-121

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Organochlorine Pesticides			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Field ID:	COMP C (1-4)	Batch#:	239240
Lab ID:	281073-006	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	ug/Kg	Prepared:	09/19/16
Basis:	as received	Analyzed:	09/20/16
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.20
beta-BHC	ND	1.7	0.41
gamma-BHC	ND	1.7	0.21
delta-BHC	ND	1.7	0.28
Heptachlor	ND	1.7	0.19
Aldrin	ND	1.7	0.20
Heptachlor epoxide	ND	1.7	0.22
Endosulfan I	ND	1.7	0.17
Dieldrin	ND	1.7	0.39
4,4'-DDE	ND	3.3	0.58
Endrin	ND	3.3	0.55
Endosulfan II	ND	3.3	0.50
Endosulfan sulfate	ND	3.3	0.51
4,4'-DDD	ND	3.3	0.72
Endrin aldehyde	ND	3.3	0.33
4,4'-DDT	ND	3.3	0.47
alpha-Chlordane	ND	1.7	0.20
gamma-Chlordane	ND	1.7	0.24
Methoxychlor	ND	17	3.1
Toxaphene	ND	60	9.1

Surrogate	%REC	Limits
TCMX	68	44-125
Decachlorobiphenyl	64	39-121

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Organochlorine Pesticides			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC852088	Batch#:	239240
Matrix:	Soil	Prepared:	09/19/16
Units:	ug/Kg	Analyzed:	09/20/16

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.45
beta-BHC	ND	1.7	0.44
gamma-BHC	ND	1.7	0.46
delta-BHC	ND	1.7	0.40
Heptachlor	ND	1.7	0.50
Aldrin	ND	1.7	0.50
Heptachlor epoxide	ND	1.7	0.39
Endosulfan I	ND	1.7	0.44
Dieldrin	ND	1.7	0.29
4,4'-DDE	ND	3.3	0.73
Endrin	ND	3.3	0.93
Endosulfan II	ND	3.3	0.80
Endosulfan sulfate	ND	3.3	0.97
4,4'-DDD	ND	3.3	0.74
Endrin aldehyde	ND	3.3	0.74
4,4'-DDT	ND	3.3	0.85
alpha-Chlordane	ND	1.7	0.40
gamma-Chlordane	ND	1.7	0.53
Methoxychlor	ND	17	5.0
Toxaphene	ND	60	17

Surrogate	%REC	Limits
TCMX	77	44-125
Decachlorobiphenyl	39	39-121

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Organochlorine Pesticides			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC852092	Batch#:	239240
Matrix:	Soil	Prepared:	09/19/16
Units:	ug/Kg	Analyzed:	09/20/16

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.16	10.07 #	76	44-121
Heptachlor	13.16	10.06	76	45-129
Aldrin	13.16	9.906	75	45-120
Dieldrin	13.16	9.894	75	49-131
Endrin	13.16	9.798	74	43-135
4,4'-DDT	13.16	7.170	54	37-141

Surrogate	%REC	Limits
TCMX	78	44-125
Decachlorobiphenyl	62	39-121

#= CCV drift outside limits; average CCV drift within limits per method requirements

Polychlorinated Biphenyls (PCBs)

Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8082
Matrix:	Soil	Sampled:	09/16/16
Units:	ug/Kg	Received:	09/16/16
Basis:	as received	Prepared:	09/19/16
Diln Fac:	1.000	Analyzed:	09/20/16
Batch#:	239240		

Field ID: COMP C (1-4) Lab ID: 281073-006
 Type: SAMPLE Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.5	2.3
Aroclor-1221	ND	19	6.3
Aroclor-1232	ND	9.5	3.1
Aroclor-1242	ND	9.5	2.8
Aroclor-1248	ND	9.5	3.0
Aroclor-1254	ND	9.5	2.4
Aroclor-1260	ND	9.5	1.5

Surrogate	%REC	Limits
Decachlorobiphenyl	96	25-135

Type: BLANK Cleanup Method: EPA 3620B
 Lab ID: QC852088

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.6	2.4
Aroclor-1221	ND	19	6.3
Aroclor-1232	ND	9.6	3.1
Aroclor-1242	ND	9.6	2.9
Aroclor-1248	ND	9.6	3.0
Aroclor-1254	ND	9.6	2.4
Aroclor-1260	ND	9.6	1.5

Surrogate	%REC	Limits
Decachlorobiphenyl	118	25-135

ND= Not Detected at or above MDL
 RL= Reporting Limit
 MDL= Method Detection Limit

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC852089	Batch#:	239240
Matrix:	Soil	Prepared:	09/19/16
Units:	ug/Kg	Analyzed:	09/20/16

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	167.2	172.3	103	64-140
Aroclor-1260	167.2	190.1	114	65-146

Surrogate	%REC	Limits
Decachlorobiphenyl	97	25-135

California Title 22 Metals

Lab #:	281073	Project#:	2030.001
Client:	Pangea Environmental	Location:	1233 Bockman
Field ID:	COMP A (1-4)	Diln Fac:	1.000
Lab ID:	281073-004	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	mg/Kg	Prepared:	09/19/16
Basis:	as received		

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	2.3	1.9	239246	09/20/16	EPA 3050B	EPA 6010B
Arsenic	5.2	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Barium	22	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Beryllium	0.10	0.093	239246	09/20/16	EPA 3050B	EPA 6010B
Cadmium	0.66	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Chromium	110	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Cobalt	26	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Copper	83	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Lead	0.94	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Mercury	0.48	0.016	239259	09/19/16	METHOD	EPA 7471A
Molybdenum	ND	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Nickel	71	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Selenium	ND	1.9	239246	09/20/16	EPA 3050B	EPA 6010B
Silver	ND	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Thallium	0.86	0.47	239246	09/20/16	EPA 3050B	EPA 6010B
Vanadium	49	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Zinc	23	0.93	239246	09/20/16	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

California Title 22 Metals

Lab #:	281073	Project#:	2030.001
Client:	Pangea Environmental	Location:	1233 Bockman
Field ID:	COMP B (1-4)	Diln Fac:	1.000
Lab ID:	281073-005	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	mg/Kg	Prepared:	09/19/16
Basis:	as received		

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	ND	2.0	239246	09/20/16	EPA 3050B	EPA 6010B
Arsenic	4.7	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Barium	190	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Beryllium	0.57	0.099	239246	09/20/16	EPA 3050B	EPA 6010B
Cadmium	0.42	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Chromium	37	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Cobalt	8.8	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Copper	16	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Lead	7.5	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Mercury	0.020	0.018	239259	09/19/16	METHOD	EPA 7471A
Molybdenum	ND	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Nickel	37	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Selenium	ND	2.0	239246	09/20/16	EPA 3050B	EPA 6010B
Silver	ND	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Thallium	ND	0.50	239246	09/20/16	EPA 3050B	EPA 6010B
Vanadium	31	0.25	239246	09/20/16	EPA 3050B	EPA 6010B
Zinc	38	0.99	239246	09/20/16	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

California Title 22 Metals

Lab #:	281073	Project#:	2030.001
Client:	Pangea Environmental	Location:	1233 Bockman
Field ID:	COMP C (1-4)	Diln Fac:	1.000
Lab ID:	281073-006	Sampled:	09/16/16
Matrix:	Soil	Received:	09/16/16
Units:	mg/Kg	Prepared:	09/19/16
Basis:	as received		

Analyte	Result	RL	Batch#	Analyzed	Prep	Analysis
Antimony	2.4	1.8	239246	09/20/16	EPA 3050B	EPA 6010B
Arsenic	5.9	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Barium	160	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Beryllium	0.51	0.091	239246	09/20/16	EPA 3050B	EPA 6010B
Cadmium	0.52	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Chromium	46	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Cobalt	8.5	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Copper	13	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Lead	5.0	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Mercury	0.043	0.016	239259	09/19/16	METHOD	EPA 7471A
Molybdenum	ND	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Nickel	40	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Selenium	ND	1.8	239246	09/20/16	EPA 3050B	EPA 6010B
Silver	ND	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Thallium	1.1	0.45	239246	09/20/16	EPA 3050B	EPA 6010B
Vanadium	43	0.23	239246	09/20/16	EPA 3050B	EPA 6010B
Zinc	40	0.91	239246	09/20/16	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

California Title 22 Metals			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3050B
Project#:	2030.001	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC852109	Batch#:	239246
Matrix:	Soil	Prepared:	09/19/16
Units:	mg/Kg	Analyzed:	09/20/16

Analyte	Result	RL
Antimony	ND	1.9
Arsenic	ND	0.24
Barium	ND	0.24
Beryllium	ND	0.096
Cadmium	ND	0.24
Chromium	ND	0.24
Cobalt	ND	0.24
Copper	ND	0.24
Lead	ND	0.24
Molybdenum	ND	0.24
Nickel	ND	0.24
Selenium	ND	1.9
Silver	ND	0.24
Thallium	ND	0.48
Vanadium	ND	0.24
Zinc	ND	0.96

ND= Not Detected

RL= Reporting Limit

Batch QC Report

California Title 22 Metals			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3050B
Project#:	2030.001	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	239246
Units:	mg/Kg	Prepared:	09/19/16
Diln Fac:	1.000	Analyzed:	09/20/16

Type: BS Lab ID: QC852110

Analyte	Spiked	Result	%REC	Limits
Antimony	45.87	45.81	100	80-120
Arsenic	45.87	46.01	100	80-120
Barium	45.87	45.80	100	80-120
Beryllium	22.94	22.68	99	80-120
Cadmium	45.87	46.39	101	80-120
Chromium	45.87	47.18	103	80-120
Cobalt	45.87	45.48	99	80-120
Copper	45.87	44.90	98	80-120
Lead	45.87	45.07	98	80-120
Molybdenum	45.87	41.43	90	80-120
Nickel	45.87	45.88	100	80-120
Selenium	45.87	44.05	96	80-120
Silver	4.587	4.952	108	80-120
Thallium	45.87	42.53	93	80-120
Vanadium	45.87	45.95	100	80-120
Zinc	45.87	45.42	99	80-120

Type: BSD Lab ID: QC852111

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	51.55	52.84	103	80-120	3	20
Arsenic	51.55	52.66	102	80-120	2	20
Barium	51.55	52.33	102	80-120	2	20
Beryllium	25.77	25.72	100	80-120	1	20
Cadmium	51.55	52.86	103	80-120	1	20
Chromium	51.55	53.70	104	80-120	1	20
Cobalt	51.55	52.77	102	80-120	3	20
Copper	51.55	51.20	99	80-120	1	20
Lead	51.55	52.30	101	80-120	3	20
Molybdenum	51.55	48.00	93	80-120	3	20
Nickel	51.55	52.30	101	80-120	1	20
Selenium	51.55	52.34	102	80-120	6	20
Silver	5.155	5.679	110	80-120	2	20
Thallium	51.55	49.64	96	80-120	4	20
Vanadium	51.55	52.44	102	80-120	2	20
Zinc	51.55	51.63	100	80-120	1	20

RPD= Relative Percent Difference

Batch QC Report

California Title 22 Metals			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3050B
Project#:	2030.001	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	239246
MSS Lab ID:	281043-033	Sampled:	09/14/16
Matrix:	Soil	Received:	09/15/16
Units:	mg/Kg	Prepared:	09/19/16
Basis:	as received	Analyzed:	09/20/16
Diln Fac:	1.000		

Type: MS Lab ID: QC852112

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	0.8864	50.00	20.19	39	15-120
Arsenic	1.063	50.00	50.75	99	69-120
Barium	43.22	50.00	90.48	95	35-154
Beryllium	0.1644	25.00	25.13	100	75-120
Cadmium	0.1439	50.00	48.90	98	71-120
Chromium	10.55	50.00	61.29	101	57-133
Cobalt	2.537	50.00	50.96	97	56-125
Copper	1.801	50.00	49.59	96	54-144
Lead	6.517	50.00	54.93	97	53-125
Molybdenum	0.2350	50.00	43.39	86	66-120
Nickel	5.347	50.00	54.83	99	44-141
Selenium	<0.1493	50.00	47.72	95	61-120
Silver	<0.03726	5.000	5.081	102	69-120
Thallium	<0.1312	50.00	44.72	89	59-120
Vanadium	12.32	50.00	60.87	97	52-144
Zinc	15.38	50.00	63.69	97	45-145

Type: MSD Lab ID: QC852113

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	47.62	19.25	39	15-120	0	41
Arsenic	47.62	47.83	98	69-120	1	35
Barium	47.62	87.53	93	35-154	1	36
Beryllium	23.81	23.33	97	75-120	3	20
Cadmium	47.62	45.99	96	71-120	1	25
Chromium	47.62	57.99	100	57-133	2	33
Cobalt	47.62	48.60	97	56-125	0	36
Copper	47.62	46.12	93	54-144	3	38
Lead	47.62	52.71	97	53-125	0	42
Molybdenum	47.62	41.40	86	66-120	0	20
Nickel	47.62	52.05	98	44-141	1	39
Selenium	47.62	44.89	94	61-120	1	33
Silver	4.762	4.777	100	69-120	1	22
Thallium	47.62	41.90	88	59-120	2	27
Vanadium	47.62	58.28	96	52-144	0	29
Zinc	47.62	60.63	95	45-145	1	39

RPD= Relative Percent Difference

Batch QC Report

California Title 22 Metals			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	2030.001	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	239259
Lab ID:	QC852167	Prepared:	09/19/16
Matrix:	Soil	Analyzed:	09/19/16
Units:	mg/Kg		

Result	RL
ND	0.016

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

California Title 22 Metals			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	2030.001	Analysis:	EPA 7471A
Analyte:	Mercury	Batch#:	239259
Matrix:	Soil	Prepared:	09/19/16
Units:	mg/Kg	Analyzed:	09/19/16
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC852168	0.1984	0.2389	120	80-120		
BSD	QC852169	0.2083	0.2509	120	80-120	0	20

RPD= Relative Percent Difference

Batch QC Report

California Title 22 Metals			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	2030.001	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	239259
MSS Lab ID:	281082-001	Sampled:	09/15/16
Matrix:	Soil	Received:	09/16/16
Units:	mg/Kg	Prepared:	09/19/16
Basis:	as received	Analyzed:	09/19/16

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC852170	0.1044	0.2049	0.3494	120	69-142		
MSD	QC852171		0.1923	0.3503	128	69-142	4	36

RPD= Relative Percent Difference

Chromium			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	2030.001	Analysis:	EPA 6020
Analyte:	Chromium	Batch#:	239618
Field ID:	COMP A (1-4)	Sampled:	09/16/16
Matrix:	WET Leachate	Received:	09/16/16
Units:	mg/L	Prepared:	09/29/16
Diln Fac:	50.00		

Type	Lab ID	Result	RL	Analyzed
SAMPLE	281073-004	0.17	0.050	10/04/16
BLANK	QC853558	ND	0.050	09/30/16

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Chromium			
Lab #:	281073	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	2030.001	Analysis:	EPA 6020
Analyte:	Chromium	Batch#:	239618
Field ID:	ZZZZZZZZZZ	Sampled:	09/16/16
MSS Lab ID:	281409-001	Received:	09/16/16
Matrix:	WET Leachate	Prepared:	09/29/16
Units:	mg/L	Analyzed:	09/30/16
Diln Fac:	10.00		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC853559	0.1000	0.09370	94	80-121		
BSD	QC853560	0.1000	0.1131	113	80-121	19	20
MS	QC853561		NA				
MSD	QC853562		NA				

NA= Not Analyzed

RPD= Relative Percent Difference

Laboratory Job Number 281073

Subcontracted Products

Forensic Analytical



Bulk Asbestos Material Analysis

(Air Resources Board Method 435, June 6, 1991)

Curtis & Tompkins Ltd
Will Rice
2323 Fifth St.

Berkeley, CA 94710

Client ID: 1137
Report Number: N008632
Date Received: 09/19/16
Date Analyzed: 09/21/16
Date Printed: 09/21/16

Job ID/Site: 281073 - 1233 Bockman

FALI Job ID: 1137
Total Samples Submitted: 3
Total Samples Analyzed: 3

PLM Report Number: N/A

Sample Preparation and Analysis:

Samples were analyzed by the Air Resources Board's Method 435, Determination of Asbestos Content of Serpentine Aggregate. Samples were ground to 200 particle size in the laboratory. Approximately 1 pint was retained for analysis. Samples were prepared for observation according to the guidelines of Exception I and Exception II as defined by the 435 Method. Samples which contained less than 10% asbestos were prepared for observation according to the point count technique as defined by the 435 Method. This analysis was performed with a standard cross-hair reticle.

Sample ID	Lab Number	Layer Description
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COMP A (1-4)	11810247	Grey Soil
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Visual Estimation Results:

Matrix percentage of entire 100

Visual estimation percentage: None Detected

Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

COMP B (1-4)	11810248	Black Soil
---------------------	----------	-------------------

Visual Estimation Results:

Matrix percentage of entire 100

Visual estimation percentage: None Detected

Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

COMP C (1-4)	11810249	Grey Soil
---------------------	----------	------------------

Visual Estimation Results:

Matrix percentage of entire 100

Visual estimation percentage: None Detected

Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification (LOQ) = 0.25%. Trace denotes the presence of asbestos below the LOQ. ND = None Detected.

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Analytical Laboratories, Since 1878



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 281725
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 2030.001
Location : 1233 Bockman
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
TP-5-2'	281725-001
TP-6-4'	281725-002
TP-7-6'	281725-003
TP-8-5'	281725-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 10/20/2016

Will Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 281725
Client: Pangea Environmental
Project: 2030.001
Location: 1233 Bockman
Request Date: 10/03/16
Samples Received: 10/03/16

This data package contains sample and QC results for four soil samples, requested for the above referenced project on 10/03/16. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):

Matrix spikes were not performed for this analysis in batch 239815 due to insufficient sample amount. No other analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):

No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):

Low surrogate recoveries were observed for bromofluorobenzene in the MS/MSD for batch 239769; the parent sample was not a project sample. No other analytical problems were encountered.

Semivolatile Organics by GC/MS SIM (EPA 8270C-SIM):

High recovery was observed for pyrene in the LCS for batch 239831; this analyte was not detected at or above the RL in the associated samples. High recovery was observed for pyrene in the MS for batch 239831; the parent sample was not a project sample, the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated samples. High surrogate recoveries were observed for terphenyl-d14 in a number of samples; no target analytes were detected in these samples. No other analytical problems were encountered.

Pesticides (EPA 8081A):

All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. All samples underwent florisil cleanup using EPA Method 3620C. High surrogate recovery was observed for TCMX in the MS of TP-7-6' (lab # 281725-003); the corresponding decachlorobiphenyl surrogate recovery was within limits. No other analytical problems were encountered.

PCBs (EPA 8082):

All samples underwent sulfuric acid cleanup using EPA Method 3665A. All samples underwent sulfur cleanup using the copper option in EPA Method 3660B. High surrogate recovery was observed for decachlorobiphenyl in the MSD of TP-7-6' (lab # 281725-003). No other analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A):

No analytical problems were encountered.

CASE NARRATIVE

Laboratory number: 281725
Client: Pangea Environmental
Project: 2030.001
Location: 1233 Bockman
Request Date: 10/03/16
Samples Received: 10/03/16

CARB 435 Asbestos (CARB 435):

Forensic Analytical in Hayward, CA performed the analysis (not NELAP certified). Please see the Forensic Analytical case narrative.

CHAIN OF CUSTODY



Curtis & Tompkins Laboratories
ENVIRONMENTAL ANALYTICAL TESTING LABORATORY
 In Business Since 1878

2323 Fifth Street
 Berkeley, CA 94710
 Phone (510) 486-0900
 Fax (510) 486-0532

Project No: 2030.001
 Project Name: 1233 Backman
 Project P. O. No.:
 Sampler: E. Leuvaag
 Report To: Ron Scheele
 Company: Punger Env. SVS
 Telephone: 510.836.3700
 Email: rscheele@pungerenv.com

C&T LOGIN # 281725

Page 1 of 1
 Chain of Custody # _____

ANALYTICAL REQUEST	
VOCs by 8260	X
TOH guidelines 8015	X
VOCs w/ SIM 8270	X
Pesticides 8081A	X
PCBs 8082	X
Cam 17 800.7	X
Asbestos 808435	X
HOLD	X

Lab No.	Sample ID.	SAMPLING		MATRIX		CHEMICAL PRESERVATIVE					# of Containers
		Date Collected	Time Collected	Water	Solid	HCl	H2SO4	HNO3	NaOH	None	
	TP-5-2'	10.3.16	1630	X	X					X	7
	TP-6-4'		1710	X	X					X	7
	TP-7-6'		1740	X	X					X	7
	TP-8-5'	10.3.16	1810	X	X					X	7
	stockpile	10.3.16	1600	X	X					X	1

Notes:

SAMPLE RECEIPT
 Intact
 Cold
 On Ice
 Ambient

RELINQUISHED BY: [Signature] DATE: 10.3.16 TIME: 1905

RECEIVED BY: Ma DATE: 10/11/16 TIME: 1601

COOLER RECEIPT CHECKLIST



Login # 281725 Date Received 10/3/16 Number of coolers 1
 Client Pangea Env. Services Project 1233 Bockman
 Date Opened 10/3 By (print) CB (sign) [Signature]
 Date Logged in ↓ By (print) DTN (sign) [Signature]
 Date Labeled ↓ By (print) CB (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO

Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? _____ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? _____ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) _____ YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 4.3

Temperature blank(s) included? Thermometer# _____ IR Gun# B

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO
 If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? _____ YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? (pH strip lot# _____) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO
 If YES, Who was called? _____ By _____ Date: _____

COMMENTS
10. missing sample 005 "stockpile"

Detections Summary for 281725

Results for any subcontracted analyses are not included in this summary.

Client : Pangea Environmental
 Project : 2030.001
 Location : 1233 Bockman

Client Sample ID : TP-5-2'

Laboratory Sample ID :

281725-001

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Phenanthrene	2.9	J	5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B
Fluoranthene	5.6		5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B
Pyrene	8.9		5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B
Benzo(a)anthracene	2.3	J	5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B
Chrysene	2.9	J	5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B
Benzo(b)fluoranthene	3.9	J	5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B
Benzo(a)pyrene	3.3	J	5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B
Indeno(1,2,3-cd)pyrene	2.6	J	5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B
Benzo(g,h,i)perylene	3.6	J	5.0	1.0	ug/Kg	As Recd	1.000	EPA 8270C-SIM	EPA 3550B
Antimony	2.0		1.9		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Arsenic	2.8		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Barium	200		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Beryllium	0.68		0.094		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cadmium	0.49		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Chromium	41		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cobalt	8.9		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Copper	18		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Lead	6.0		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Nickel	44		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Thallium	0.64		0.47		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Vanadium	29		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Zinc	41		0.94		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : TP-6-4'

Laboratory Sample ID :

281725-002

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Arsenic	6.5		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Barium	200		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Beryllium	0.54		0.097		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cadmium	0.55		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Chromium	39		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cobalt	9.1		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Copper	13		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Lead	5.2		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Nickel	40		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Thallium	0.91		0.49		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Vanadium	39		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Zinc	38		0.97		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : TP-7-6'

Laboratory Sample ID :

281725-003

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Antimony	1.9		1.9		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Arsenic	14		0.23		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Barium	87		0.23		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Beryllium	0.37		0.093		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cadmium	0.45		0.23		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Chromium	29		0.23		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cobalt	8.7		0.23		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Copper	9.4		0.23		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Lead	5.6		0.23		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Mercury	0.039		0.017		mg/Kg	As Recd	1.000	EPA 7471A	METHOD
Nickel	35		0.23		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Thallium	1.0		0.47		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Vanadium	51		0.23		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Zinc	35		0.93		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : TP-8-5'

Laboratory Sample ID :

281725-004

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Antimony	3.0		1.9		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Arsenic	12		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Barium	180		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Beryllium	0.62		0.096		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cadmium	0.51		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Chromium	42		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cobalt	11		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Copper	16		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Lead	7.4		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Mercury	0.031		0.017		mg/Kg	As Recd	1.000	EPA 7471A	METHOD
Molybdenum	0.27		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Nickel	50		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Vanadium	49		0.24		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Zinc	45		0.96		mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

J = Estimated value

Batch QC Report

Gasoline by GC/FID (5035 Prep)			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	239815
Units:	mg/Kg	Analyzed:	10/05/16
Diln Fac:	1.000		

Type: BS Lab ID: QC854322

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	1.007	101	80-121

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	78-138

Type: BSD Lab ID: QC854323

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2.000	1.936	97	80-121	4	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	100	78-138

RPD= Relative Percent Difference

Batch QC Report

Gasoline by GC/FID (5035 Prep)			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
MSS Lab ID:	281762-005	Batch#:	239815
Matrix:	Soil	Sampled:	10/04/16
Units:	mg/Kg	Received:	10/04/16
Basis:	as received	Analyzed:	10/05/16

Type: MS Lab ID: QC854409

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.3432	9.709	5.537	53	50-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	78-138

Type: MSD Lab ID: QC854410

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.00	5.529	52	50-120	3	31

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	97	78-138

RPD= Relative Percent Difference

Total Extractable Hydrocarbons			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	239824
Units:	mg/Kg	Sampled:	10/03/16
Basis:	as received	Received:	10/03/16
Diln Fac:	1.000	Prepared:	10/05/16

Field ID: TP-8-5' Lab ID: 281725-004
 Type: SAMPLE Analyzed: 10/07/16

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	85	59-140

Type: BLANK Analyzed: 10/06/16
 Lab ID: QC854357

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	100	59-140

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC854358	Batch#:	239824
Matrix:	Soil	Prepared:	10/05/16
Units:	mg/Kg	Analyzed:	10/06/16

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.85	34.05	68	58-137

Surrogate	%REC	Limits
o-Terphenyl	74	59-140

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	239824
MSS Lab ID:	281713-001	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	mg/Kg	Prepared:	10/05/16
Basis:	as received	Analyzed:	10/06/16
Diln Fac:	1.000		

Type: MS Lab ID: QC854359

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	9.205	49.83	55.14	92	46-154

Surrogate	%REC	Limits
o-Terphenyl	105	59-140

Type: MSD Lab ID: QC854360

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.12	50.73	83	46-154	9	50

Surrogate	%REC	Limits
o-Terphenyl	92	59-140

RPD= Relative Percent Difference

Purgeable Organics by GC/MS

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-5-2'	Diln Fac:	0.7418
Lab ID:	281725-001	Batch#:	239769
Matrix:	Soil	Sampled:	10/03/16
Units:	ug/Kg	Received:	10/03/16
Basis:	as received	Analyzed:	10/04/16

Analyte	Result	RL
Freon 12	ND	7.4
Chloromethane	ND	7.4
Vinyl Chloride	ND	7.4
Bromomethane	ND	7.4
Chloroethane	ND	7.4
Trichlorofluoromethane	ND	3.7
Acetone	ND	15
Freon 113	ND	3.7
1,1-Dichloroethene	ND	3.7
Methylene Chloride	ND	15
Carbon Disulfide	ND	3.7
MTBE	ND	3.7
trans-1,2-Dichloroethene	ND	3.7
Vinyl Acetate	ND	37
1,1-Dichloroethane	ND	3.7
2-Butanone	ND	7.4
cis-1,2-Dichloroethene	ND	3.7
2,2-Dichloropropane	ND	3.7
Chloroform	ND	3.7
Bromochloromethane	ND	3.7
1,1,1-Trichloroethane	ND	3.7
1,1-Dichloropropene	ND	3.7
Carbon Tetrachloride	ND	3.7
1,2-Dichloroethane	ND	3.7
Benzene	ND	3.7
Trichloroethene	ND	3.7
1,2-Dichloropropane	ND	3.7
Bromodichloromethane	ND	3.7
Dibromomethane	ND	3.7
4-Methyl-2-Pentanone	ND	7.4
cis-1,3-Dichloropropene	ND	3.7
Toluene	ND	3.7
trans-1,3-Dichloropropene	ND	3.7
1,1,2-Trichloroethane	ND	3.7
2-Hexanone	ND	7.4
1,3-Dichloropropane	ND	3.7
Tetrachloroethene	ND	3.7

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-5-2'	Diln Fac:	0.7418
Lab ID:	281725-001	Batch#:	239769
Matrix:	Soil	Sampled:	10/03/16
Units:	ug/Kg	Received:	10/03/16
Basis:	as received	Analyzed:	10/04/16

Analyte	Result	RL
Dibromochloromethane	ND	3.7
1,2-Dibromoethane	ND	3.7
Chlorobenzene	ND	3.7
1,1,1,2-Tetrachloroethane	ND	3.7
Ethylbenzene	ND	3.7
m,p-Xylenes	ND	3.7
o-Xylene	ND	3.7
Styrene	ND	3.7
Bromoform	ND	3.7
Isopropylbenzene	ND	3.7
1,1,2,2-Tetrachloroethane	ND	3.7
1,2,3-Trichloropropane	ND	3.7
Propylbenzene	ND	3.7
Bromobenzene	ND	3.7
1,3,5-Trimethylbenzene	ND	3.7
2-Chlorotoluene	ND	3.7
4-Chlorotoluene	ND	3.7
tert-Butylbenzene	ND	3.7
1,2,4-Trimethylbenzene	ND	3.7
sec-Butylbenzene	ND	3.7
para-Isopropyl Toluene	ND	3.7
1,3-Dichlorobenzene	ND	3.7
1,4-Dichlorobenzene	ND	3.7
n-Butylbenzene	ND	3.7
1,2-Dichlorobenzene	ND	3.7
1,2-Dibromo-3-Chloropropane	ND	3.7
1,2,4-Trichlorobenzene	ND	3.7
Hexachlorobutadiene	ND	3.7
Naphthalene	ND	3.7
1,2,3-Trichlorobenzene	ND	3.7

Surrogate	%REC	Limits
Dibromofluoromethane	101	78-134
1,2-Dichloroethane-d4	113	80-138
Toluene-d8	103	80-120
Bromofluorobenzene	108	78-123

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-6-4'	Diln Fac:	0.7353
Lab ID:	281725-002	Batch#:	239769
Matrix:	Soil	Sampled:	10/03/16
Units:	ug/Kg	Received:	10/03/16
Basis:	as received	Analyzed:	10/04/16

Analyte	Result	RL
Freon 12	ND	7.4
Chloromethane	ND	7.4
Vinyl Chloride	ND	7.4
Bromomethane	ND	7.4
Chloroethane	ND	7.4
Trichlorofluoromethane	ND	3.7
Acetone	ND	15
Freon 113	ND	3.7
1,1-Dichloroethene	ND	3.7
Methylene Chloride	ND	15
Carbon Disulfide	ND	3.7
MTBE	ND	3.7
trans-1,2-Dichloroethene	ND	3.7
Vinyl Acetate	ND	37
1,1-Dichloroethane	ND	3.7
2-Butanone	ND	7.4
cis-1,2-Dichloroethene	ND	3.7
2,2-Dichloropropane	ND	3.7
Chloroform	ND	3.7
Bromochloromethane	ND	3.7
1,1,1-Trichloroethane	ND	3.7
1,1-Dichloropropene	ND	3.7
Carbon Tetrachloride	ND	3.7
1,2-Dichloroethane	ND	3.7
Benzene	ND	3.7
Trichloroethene	ND	3.7
1,2-Dichloropropane	ND	3.7
Bromodichloromethane	ND	3.7
Dibromomethane	ND	3.7
4-Methyl-2-Pentanone	ND	7.4
cis-1,3-Dichloropropene	ND	3.7
Toluene	ND	3.7
trans-1,3-Dichloropropene	ND	3.7
1,1,2-Trichloroethane	ND	3.7
2-Hexanone	ND	7.4
1,3-Dichloropropane	ND	3.7
Tetrachloroethene	ND	3.7

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-6-4'	Diln Fac:	0.7353
Lab ID:	281725-002	Batch#:	239769
Matrix:	Soil	Sampled:	10/03/16
Units:	ug/Kg	Received:	10/03/16
Basis:	as received	Analyzed:	10/04/16

Analyte	Result	RL
Dibromochloromethane	ND	3.7
1,2-Dibromoethane	ND	3.7
Chlorobenzene	ND	3.7
1,1,1,2-Tetrachloroethane	ND	3.7
Ethylbenzene	ND	3.7
m,p-Xylenes	ND	3.7
o-Xylene	ND	3.7
Styrene	ND	3.7
Bromoform	ND	3.7
Isopropylbenzene	ND	3.7
1,1,2,2-Tetrachloroethane	ND	3.7
1,2,3-Trichloropropane	ND	3.7
Propylbenzene	ND	3.7
Bromobenzene	ND	3.7
1,3,5-Trimethylbenzene	ND	3.7
2-Chlorotoluene	ND	3.7
4-Chlorotoluene	ND	3.7
tert-Butylbenzene	ND	3.7
1,2,4-Trimethylbenzene	ND	3.7
sec-Butylbenzene	ND	3.7
para-Isopropyl Toluene	ND	3.7
1,3-Dichlorobenzene	ND	3.7
1,4-Dichlorobenzene	ND	3.7
n-Butylbenzene	ND	3.7
1,2-Dichlorobenzene	ND	3.7
1,2-Dibromo-3-Chloropropane	ND	3.7
1,2,4-Trichlorobenzene	ND	3.7
Hexachlorobutadiene	ND	3.7
Naphthalene	ND	3.7
1,2,3-Trichlorobenzene	ND	3.7

Surrogate	%REC	Limits
Dibromofluoromethane	102	78-134
1,2-Dichloroethane-d4	112	80-138
Toluene-d8	101	80-120
Bromofluorobenzene	104	78-123

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-7-6'	Diln Fac:	0.6784
Lab ID:	281725-003	Batch#:	239769
Matrix:	Soil	Sampled:	10/03/16
Units:	ug/Kg	Received:	10/03/16
Basis:	as received	Analyzed:	10/04/16

Analyte	Result	RL
Freon 12	ND	6.8
Chloromethane	ND	6.8
Vinyl Chloride	ND	6.8
Bromomethane	ND	6.8
Chloroethane	ND	6.8
Trichlorofluoromethane	ND	3.4
Acetone	ND	14
Freon 113	ND	3.4
1,1-Dichloroethene	ND	3.4
Methylene Chloride	ND	14
Carbon Disulfide	ND	3.4
MTBE	ND	3.4
trans-1,2-Dichloroethene	ND	3.4
Vinyl Acetate	ND	34
1,1-Dichloroethane	ND	3.4
2-Butanone	ND	6.8
cis-1,2-Dichloroethene	ND	3.4
2,2-Dichloropropane	ND	3.4
Chloroform	ND	3.4
Bromochloromethane	ND	3.4
1,1,1-Trichloroethane	ND	3.4
1,1-Dichloropropene	ND	3.4
Carbon Tetrachloride	ND	3.4
1,2-Dichloroethane	ND	3.4
Benzene	ND	3.4
Trichloroethene	ND	3.4
1,2-Dichloropropane	ND	3.4
Bromodichloromethane	ND	3.4
Dibromomethane	ND	3.4
4-Methyl-2-Pentanone	ND	6.8
cis-1,3-Dichloropropene	ND	3.4
Toluene	ND	3.4
trans-1,3-Dichloropropene	ND	3.4
1,1,2-Trichloroethane	ND	3.4
2-Hexanone	ND	6.8
1,3-Dichloropropane	ND	3.4
Tetrachloroethene	ND	3.4

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-7-6'	Diln Fac:	0.6784
Lab ID:	281725-003	Batch#:	239769
Matrix:	Soil	Sampled:	10/03/16
Units:	ug/Kg	Received:	10/03/16
Basis:	as received	Analyzed:	10/04/16

Analyte	Result	RL
Dibromochloromethane	ND	3.4
1,2-Dibromoethane	ND	3.4
Chlorobenzene	ND	3.4
1,1,1,2-Tetrachloroethane	ND	3.4
Ethylbenzene	ND	3.4
m,p-Xylenes	ND	3.4
o-Xylene	ND	3.4
Styrene	ND	3.4
Bromoform	ND	3.4
Isopropylbenzene	ND	3.4
1,1,2,2-Tetrachloroethane	ND	3.4
1,2,3-Trichloropropane	ND	3.4
Propylbenzene	ND	3.4
Bromobenzene	ND	3.4
1,3,5-Trimethylbenzene	ND	3.4
2-Chlorotoluene	ND	3.4
4-Chlorotoluene	ND	3.4
tert-Butylbenzene	ND	3.4
1,2,4-Trimethylbenzene	ND	3.4
sec-Butylbenzene	ND	3.4
para-Isopropyl Toluene	ND	3.4
1,3-Dichlorobenzene	ND	3.4
1,4-Dichlorobenzene	ND	3.4
n-Butylbenzene	ND	3.4
1,2-Dichlorobenzene	ND	3.4
1,2-Dibromo-3-Chloropropane	ND	3.4
1,2,4-Trichlorobenzene	ND	3.4
Hexachlorobutadiene	ND	3.4
Naphthalene	ND	3.4
1,2,3-Trichlorobenzene	ND	3.4

Surrogate	%REC	Limits
Dibromofluoromethane	103	78-134
1,2-Dichloroethane-d4	111	80-138
Toluene-d8	102	80-120
Bromofluorobenzene	107	78-123

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-8-5'	Diln Fac:	0.7396
Lab ID:	281725-004	Batch#:	239769
Matrix:	Soil	Sampled:	10/03/16
Units:	ug/Kg	Received:	10/03/16
Basis:	as received	Analyzed:	10/04/16

Analyte	Result	RL
Freon 12	ND	7.4
Chloromethane	ND	7.4
Vinyl Chloride	ND	7.4
Bromomethane	ND	7.4
Chloroethane	ND	7.4
Trichlorofluoromethane	ND	3.7
Acetone	ND	15
Freon 113	ND	3.7
1,1-Dichloroethene	ND	3.7
Methylene Chloride	ND	15
Carbon Disulfide	ND	3.7
MTBE	ND	3.7
trans-1,2-Dichloroethene	ND	3.7
Vinyl Acetate	ND	37
1,1-Dichloroethane	ND	3.7
2-Butanone	ND	7.4
cis-1,2-Dichloroethene	ND	3.7
2,2-Dichloropropane	ND	3.7
Chloroform	ND	3.7
Bromochloromethane	ND	3.7
1,1,1-Trichloroethane	ND	3.7
1,1-Dichloropropene	ND	3.7
Carbon Tetrachloride	ND	3.7
1,2-Dichloroethane	ND	3.7
Benzene	ND	3.7
Trichloroethene	ND	3.7
1,2-Dichloropropane	ND	3.7
Bromodichloromethane	ND	3.7
Dibromomethane	ND	3.7
4-Methyl-2-Pentanone	ND	7.4
cis-1,3-Dichloropropene	ND	3.7
Toluene	ND	3.7
trans-1,3-Dichloropropene	ND	3.7
1,1,2-Trichloroethane	ND	3.7
2-Hexanone	ND	7.4
1,3-Dichloropropane	ND	3.7
Tetrachloroethene	ND	3.7

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	TP-8-5'	Diln Fac:	0.7396
Lab ID:	281725-004	Batch#:	239769
Matrix:	Soil	Sampled:	10/03/16
Units:	ug/Kg	Received:	10/03/16
Basis:	as received	Analyzed:	10/04/16

Analyte	Result	RL
Dibromochloromethane	ND	3.7
1,2-Dibromoethane	ND	3.7
Chlorobenzene	ND	3.7
1,1,1,2-Tetrachloroethane	ND	3.7
Ethylbenzene	ND	3.7
m,p-Xylenes	ND	3.7
o-Xylene	ND	3.7
Styrene	ND	3.7
Bromoform	ND	3.7
Isopropylbenzene	ND	3.7
1,1,2,2-Tetrachloroethane	ND	3.7
1,2,3-Trichloropropane	ND	3.7
Propylbenzene	ND	3.7
Bromobenzene	ND	3.7
1,3,5-Trimethylbenzene	ND	3.7
2-Chlorotoluene	ND	3.7
4-Chlorotoluene	ND	3.7
tert-Butylbenzene	ND	3.7
1,2,4-Trimethylbenzene	ND	3.7
sec-Butylbenzene	ND	3.7
para-Isopropyl Toluene	ND	3.7
1,3-Dichlorobenzene	ND	3.7
1,4-Dichlorobenzene	ND	3.7
n-Butylbenzene	ND	3.7
1,2-Dichlorobenzene	ND	3.7
1,2-Dibromo-3-Chloropropane	ND	3.7
1,2,4-Trichlorobenzene	ND	3.7
Hexachlorobutadiene	ND	3.7
Naphthalene	ND	3.7
1,2,3-Trichlorobenzene	ND	3.7

Surrogate	%REC	Limits
Dibromofluoromethane	103	78-134
1,2-Dichloroethane-d4	112	80-138
Toluene-d8	102	80-120
Bromofluorobenzene	107	78-123

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	239769
Units:	ug/Kg	Analyzed:	10/04/16
Diln Fac:	1.000		

Type: BS Lab ID: QC854151

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	22.61	90	70-134
Benzene	25.00	23.81	95	80-123
Trichloroethene	25.00	23.22	93	80-128
Toluene	25.00	23.38	94	80-120
Chlorobenzene	25.00	23.23	93	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	98	78-134
1,2-Dichloroethane-d4	103	80-138
Toluene-d8	100	80-120
Bromofluorobenzene	88	78-123

Type: BSD Lab ID: QC854152

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	21.11	84	70-134	7	22
Benzene	25.00	22.20	89	80-123	7	21
Trichloroethene	25.00	21.98	88	80-128	5	23
Toluene	25.00	21.91	88	80-120	6	20
Chlorobenzene	25.00	21.82	87	80-123	6	20

Surrogate	%REC	Limits
Dibromofluoromethane	97	78-134
1,2-Dichloroethane-d4	101	80-138
Toluene-d8	99	80-120
Bromofluorobenzene	85	78-123

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC854153	Batch#:	239769
Matrix:	Soil	Analyzed:	10/04/16
Units:	ug/Kg		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC854153	Batch#:	239769
Matrix:	Soil	Analyzed:	10/04/16
Units:	ug/Kg		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	97	78-134
1,2-Dichloroethane-d4	102	80-138
Toluene-d8	101	80-120
Bromofluorobenzene	105	78-123

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Diln Fac:	0.9881
MSS Lab ID:	281716-001	Batch#:	239769
Matrix:	Soil	Sampled:	10/03/16
Units:	ug/Kg	Received:	10/03/16
Basis:	as received	Analyzed:	10/04/16

Type: MS Lab ID: QC854220

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.5846	49.41	41.89	85	56-133
Benzene	<0.6811	49.41	45.19	91	57-120
Trichloroethene	<0.7094	49.41	42.69	86	49-145
Toluene	<0.7461	49.41	43.68	88	51-120
Chlorobenzene	<0.6116	49.41	41.35	84	47-120

Surrogate	%REC	Limits
Dibromofluoromethane	100	78-134
1,2-Dichloroethane-d4	111	80-138
Toluene-d8	101	80-120
Bromofluorobenzene	49 *	78-123

Type: MSD Lab ID: QC854221

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	49.41	38.30	78	56-133	9	46
Benzene	49.41	42.25	86	57-120	7	44
Trichloroethene	49.41	38.85	79	49-145	9	46
Toluene	49.41	40.17	81	51-120	8	47
Chlorobenzene	49.41	36.73	74	47-120	12	50

Surrogate	%REC	Limits
Dibromofluoromethane	98	78-134
1,2-Dichloroethane-d4	109	80-138
Toluene-d8	101	80-120
Bromofluorobenzene	55 *	78-123

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Semivolatile Organics by GC/MS SIM

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Field ID:	TP-5-2'	Batch#:	239812
Lab ID:	281725-001	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/05/16
Basis:	as received	Analyzed:	10/06/16
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	1.2
Acenaphthylene	ND	5.0	1.0
Acenaphthene	ND	5.0	1.0
Fluorene	ND	5.0	1.0
Phenanthrene	2.9 J	5.0	1.0
Anthracene	ND	5.0	1.0
Fluoranthene	5.6	5.0	1.0
Pyrene	8.9	5.0	1.0
Benzo(a)anthracene	2.3 J	5.0	1.0
Chrysene	2.9 J	5.0	1.0
Benzo(b)fluoranthene	3.9 J	5.0	1.0
Benzo(k)fluoranthene	ND	5.0	1.0
Benzo(a)pyrene	3.3 J	5.0	1.0
Indeno(1,2,3-cd)pyrene	2.6 J	5.0	1.0
Dibenz(a,h)anthracene	ND	5.0	1.0
Benzo(g,h,i)perylene	3.6 J	5.0	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	68	40-120
2-Fluorobiphenyl	71	46-120
Terphenyl-d14	107	43-120

J= Estimated value
 ND= Not Detected at or above MDL
 RL= Reporting Limit
 MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Field ID:	TP-6-4'	Batch#:	239831
Lab ID:	281725-002	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/05/16
Basis:	as received	Analyzed:	10/06/16
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	1.2
Acenaphthylene	ND	5.0	1.0
Acenaphthene	ND	5.0	1.0
Fluorene	ND	5.0	1.0
Phenanthrene	ND	5.0	1.0
Anthracene	ND	5.0	1.0
Fluoranthene	ND	5.0	1.0
Pyrene	ND	5.0	1.0
Benzo(a)anthracene	ND	5.0	1.0
Chrysene	ND	5.0	1.0
Benzo(b)fluoranthene	ND	5.0	1.0
Benzo(k)fluoranthene	ND	5.0	1.0
Benzo(a)pyrene	ND	5.0	1.0
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0
Dibenz(a,h)anthracene	ND	5.0	1.0
Benzo(g,h,i)perylene	ND	5.0	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	86	40-120
2-Fluorobiphenyl	79	46-120
Terphenyl-d14	132 *	43-120

*= Value outside of QC limits; see narrative

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Field ID:	TP-7-6'	Batch#:	239831
Lab ID:	281725-003	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/05/16
Basis:	as received	Analyzed:	10/06/16
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	1.2
Acenaphthylene	ND	5.0	0.99
Acenaphthene	ND	5.0	0.99
Fluorene	ND	5.0	0.99
Phenanthrene	ND	5.0	0.99
Anthracene	ND	5.0	0.99
Fluoranthene	ND	5.0	0.99
Pyrene	ND	5.0	0.99
Benzo(a)anthracene	ND	5.0	0.99
Chrysene	ND	5.0	0.99
Benzo(b)fluoranthene	ND	5.0	0.99
Benzo(k)fluoranthene	ND	5.0	0.99
Benzo(a)pyrene	ND	5.0	0.99
Indeno(1,2,3-cd)pyrene	ND	5.0	0.99
Dibenz(a,h)anthracene	ND	5.0	0.99
Benzo(g,h,i)perylene	ND	5.0	0.99

Surrogate	%REC	Limits
Nitrobenzene-d5	88	40-120
2-Fluorobiphenyl	78	46-120
Terphenyl-d14	137 *	43-120

*= Value outside of QC limits; see narrative

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Semivolatile Organics by GC/MS SIM

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Field ID:	TP-8-5'	Batch#:	239831
Lab ID:	281725-004	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/05/16
Basis:	as received	Analyzed:	10/06/16
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	1.2
Acenaphthylene	ND	5.0	1.0
Acenaphthene	ND	5.0	1.0
Fluorene	ND	5.0	1.0
Phenanthrene	ND	5.0	1.0
Anthracene	ND	5.0	1.0
Fluoranthene	ND	5.0	1.0
Pyrene	ND	5.0	1.0
Benzo(a)anthracene	ND	5.0	1.0
Chrysene	ND	5.0	1.0
Benzo(b)fluoranthene	ND	5.0	1.0
Benzo(k)fluoranthene	ND	5.0	1.0
Benzo(a)pyrene	ND	5.0	1.0
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0
Dibenz(a,h)anthracene	ND	5.0	1.0
Benzo(g,h,i)perylene	ND	5.0	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	81	40-120
2-Fluorobiphenyl	75	46-120
Terphenyl-d14	134 *	43-120

*= Value outside of QC limits; see narrative

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC854311	Batch#:	239812
Matrix:	Soil	Prepared:	10/05/16
Units:	ug/Kg	Analyzed:	10/05/16

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	0.99
Acenaphthylene	ND	5.0	0.99
Acenaphthene	ND	5.0	0.99
Fluorene	ND	5.0	0.99
Phenanthrene	ND	5.0	0.99
Anthracene	ND	5.0	0.99
Fluoranthene	ND	5.0	0.99
Pyrene	ND	5.0	0.99
Benzo(a)anthracene	ND	5.0	0.99
Chrysene	ND	5.0	0.99
Benzo(b)fluoranthene	ND	5.0	0.99
Benzo(k)fluoranthene	ND	5.0	0.99
Benzo(a)pyrene	ND	5.0	0.99
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0
Dibenz(a,h)anthracene	ND	5.0	1.0
Benzo(g,h,i)perylene	ND	5.0	1.2

Surrogate	%REC	Limits
Nitrobenzene-d5	77	40-120
2-Fluorobiphenyl	80	46-120
Terphenyl-d14	105	43-120

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC854312	Batch#:	239812
Matrix:	Soil	Prepared:	10/05/16
Units:	ug/Kg	Analyzed:	10/05/16

Analyte	Spiked	Result	%REC	Limits
Acenaphthene	32.94	32.94	100	49-120
Pyrene	32.94	33.56	102	48-120

Surrogate	%REC	Limits
Nitrobenzene-d5	87	40-120
2-Fluorobiphenyl	82	46-120
Terphenyl-d14	92	43-120

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC854387	Batch#:	239831
Matrix:	Soil	Prepared:	10/05/16
Units:	ug/Kg	Analyzed:	10/06/16

Analyte	Result	RL	MDL
Naphthalene	ND	5.0	1.2
Acenaphthylene	ND	5.0	1.0
Acenaphthene	ND	5.0	1.0
Fluorene	ND	5.0	1.0
Phenanthrene	ND	5.0	1.0
Anthracene	ND	5.0	1.0
Fluoranthene	ND	5.0	1.0
Pyrene	ND	5.0	1.0
Benzo(a)anthracene	ND	5.0	1.0
Chrysene	ND	5.0	1.0
Benzo(b)fluoranthene	ND	5.0	1.0
Benzo(k)fluoranthene	ND	5.0	1.0
Benzo(a)pyrene	ND	5.0	1.0
Indeno(1,2,3-cd)pyrene	ND	5.0	1.0
Dibenz(a,h)anthracene	ND	5.0	1.0
Benzo(g,h,i)perylene	ND	5.0	1.0

Surrogate	%REC	Limits
Nitrobenzene-d5	67	40-120
2-Fluorobiphenyl	74	46-120
Terphenyl-d14	124 *	43-120

*= Value outside of QC limits; see narrative

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC854388	Batch#:	239831
Matrix:	Soil	Prepared:	10/05/16
Units:	ug/Kg	Analyzed:	10/06/16

Analyte	Spiked	Result	%REC	Limits
Acenaphthene	33.38	34.24	103	49-120
Pyrene	33.38	46.63	140 *	48-120

Surrogate	%REC	Limits
Nitrobenzene-d5	90	40-120
2-Fluorobiphenyl	86	46-120
Terphenyl-d14	110	43-120

*= Value outside of QC limits; see narrative

Batch QC Report

Semivolatile Organics by GC/MS SIM

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8270C-SIM
Field ID:	ZZZZZZZZZZ	Batch#:	239831
MSS Lab ID:	281776-002	Sampled:	09/30/16
Matrix:	Soil	Received:	10/04/16
Units:	ug/Kg	Prepared:	10/05/16
Basis:	as received	Analyzed:	10/06/16
Diln Fac:	1.000		

Type: MS Lab ID: QC854389

Analyte	MSS Result	Spiked	Result	%REC	Limits
Acenaphthene	<0.9973	33.68	36.76	109	43-120
Pyrene	<0.9973	33.68	49.99	148 *	18-144

Surrogate	%REC	Limits
Nitrobenzene-d5	101	40-120
2-Fluorobiphenyl	92	46-120
Terphenyl-d14	115	43-120

Type: MSD Lab ID: QC854390

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Acenaphthene	33.86	33.55	99	43-120	10	45
Pyrene	33.86	47.40	140	18-144	6	72

Surrogate	%REC	Limits
Nitrobenzene-d5	90	40-120
2-Fluorobiphenyl	86	46-120
Terphenyl-d14	108	43-120

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Organochlorine Pesticides

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Field ID:	TP-5-2'	Batch#:	239749
Lab ID:	281725-001	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/03/16
Basis:	as received	Analyzed:	10/05/16
Diln Fac:	1.000		

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.24
beta-BHC	ND	1.7	0.39
gamma-BHC	ND	1.7	0.39
delta-BHC	ND	1.7	0.20
Heptachlor	ND	1.7	0.36
Aldrin	ND	1.7	0.41
Heptachlor epoxide	ND	1.7	0.24
Endosulfan I	ND	1.7	0.31
Dieldrin	ND	1.7	0.46
4,4'-DDE	ND	3.3	0.44
Endrin	ND	3.3	0.57
Endosulfan II	ND	3.3	0.48
Endosulfan sulfate	ND	3.3	0.48
4,4'-DDD	ND	3.3	0.46
Endrin aldehyde	ND	3.3	0.39
4,4'-DDT	ND	3.3	0.43
alpha-Chlordane	ND	1.7	0.25
gamma-Chlordane	ND	1.7	0.36
Methoxychlor	ND	17	2.6
Toxaphene	ND	59	14

Surrogate	%REC	Limits
TCMX	64	44-125
Decachlorobiphenyl	81	39-121

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Organochlorine Pesticides

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Field ID:	TP-6-4'	Batch#:	239749
Lab ID:	281725-002	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/03/16
Basis:	as received	Analyzed:	10/05/16
Diln Fac:	1.000		

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.24
beta-BHC	ND	1.7	0.40
gamma-BHC	ND	1.7	0.39
delta-BHC	ND	1.7	0.20
Heptachlor	ND	1.7	0.37
Aldrin	ND	1.7	0.42
Heptachlor epoxide	ND	1.7	0.25
Endosulfan I	ND	1.7	0.32
Dieldrin	ND	1.7	0.46
4,4'-DDE	ND	3.3	0.44
Endrin	ND	3.3	0.58
Endosulfan II	ND	3.3	0.48
Endosulfan sulfate	ND	3.3	0.48
4,4'-DDD	ND	3.3	0.47
Endrin aldehyde	ND	3.3	0.39
4,4'-DDT	ND	3.3	0.43
alpha-Chlordane	ND	1.7	0.25
gamma-Chlordane	ND	1.7	0.36
Methoxychlor	ND	17	2.6
Toxaphene	ND	60	14

Surrogate	%REC	Limits
TCMX	85	44-125
Decachlorobiphenyl	66	39-121

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Organochlorine Pesticides			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Field ID:	TP-7-6'	Batch#:	239798
Lab ID:	281725-003	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/04/16
Basis:	as received	Analyzed:	10/05/16
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.19
beta-BHC	ND	1.7	0.30
gamma-BHC	ND	1.7	0.18
delta-BHC	ND	1.7	0.21
Heptachlor	ND	1.7	0.21
Aldrin	ND	1.7	0.18
Heptachlor epoxide	ND	1.7	0.19
Endosulfan I	ND	1.7	0.14
Dieldrin	ND	1.7	0.32
4,4'-DDE	ND	3.3	0.30
Endrin	ND	3.3	0.52
Endosulfan II	ND	3.3	0.61
Endosulfan sulfate	ND	3.3	0.53
4,4'-DDD	ND	3.3	0.67
Endrin aldehyde	ND	3.3	0.85
4,4'-DDT	ND	3.3	0.71
alpha-Chlordane	ND #	1.7	0.21
gamma-Chlordane	ND	1.7	0.15
Methoxychlor	ND	17	2.6
Toxaphene	ND	60	9.8

Surrogate	%REC	Limits
TCMX	63	44-125
Decachlorobiphenyl	93	39-121

#= CCV drift outside limits; average CCV drift within limits per method requirements

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Organochlorine Pesticides			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Field ID:	TP-8-5'	Batch#:	239798
Lab ID:	281725-004	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/04/16
Basis:	as received	Analyzed:	10/05/16
Diln Fac:	1.000		

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.25
beta-BHC	ND	1.7	0.40
gamma-BHC	ND	1.7	0.39
delta-BHC	ND	1.7	0.20
Heptachlor	ND	1.7	0.37
Aldrin	ND	1.7	0.42
Heptachlor epoxide	ND	1.7	0.25
Endosulfan I	ND	1.7	0.32
Dieldrin	ND	1.7	0.47
4,4'-DDE	ND	3.3	0.44
Endrin	ND	3.3	0.58
Endosulfan II	ND	3.3	0.49
Endosulfan sulfate	ND	3.3	0.48
4,4'-DDD	ND	3.3	0.47
Endrin aldehyde	ND	3.3	0.39
4,4'-DDT	ND	3.3	0.44
alpha-Chlordane	ND	1.7	0.26
gamma-Chlordane	ND	1.7	0.36
Methoxychlor	ND	17	2.7
Toxaphene	ND	60	14

Surrogate	%REC	Limits
TCMX	80	44-125
Decachlorobiphenyl	112	39-121

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Organochlorine Pesticides			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC854080	Batch#:	239749
Matrix:	Soil	Prepared:	10/03/16
Units:	ug/Kg	Analyzed:	10/05/16

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.19
beta-BHC	ND	1.7	0.30
gamma-BHC	ND	1.7	0.18
delta-BHC	ND	1.7	0.21
Heptachlor	ND	1.7	0.21
Aldrin	ND	1.7	0.18
Heptachlor epoxide	ND	1.7	0.19
Endosulfan I	ND	1.7	0.14
Dieldrin	ND	1.7	0.32
4,4'-DDE	ND	3.3	0.30
Endrin	ND	3.3	0.51
Endosulfan II	ND	3.3	0.61
Endosulfan sulfate	ND	3.3	0.53
4,4'-DDD	ND	3.3	0.67
Endrin aldehyde	ND	3.3	0.85
4,4'-DDT	ND	3.3	0.70
alpha-Chlordane	ND #	1.7	0.21
gamma-Chlordane	ND	1.7	0.15
Methoxychlor	ND	17	2.6
Toxaphene	ND	60	9.8

Surrogate	%REC	Limits
TCMX	44	44-125
Decachlorobiphenyl	54	39-121

#= CCV drift outside limits; average CCV drift within limits per method requirements

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Organochlorine Pesticides			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC854081	Batch#:	239749
Matrix:	Soil	Prepared:	10/03/16
Units:	ug/Kg	Analyzed:	10/05/16

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.21	8.009	61	44-121
Heptachlor	13.21	8.135	62	45-129
Aldrin	13.21	7.605	58	45-120
Dieldrin	13.21	9.034 #	68	49-131
Endrin	13.21	9.559 #	72	43-135
4,4'-DDT	13.21	8.080	61	37-141

Surrogate	%REC	Limits
TCMX	45	44-125
Decachlorobiphenyl	50	39-121

#= CCV drift outside limits; average CCV drift within limits per method requirements

Batch QC Report

Organochlorine Pesticides			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Field ID:	ZZZZZZZZZZ	Batch#:	239749
MSS Lab ID:	281655-001	Sampled:	09/30/16
Matrix:	Soil	Received:	09/30/16
Units:	ug/Kg	Prepared:	10/03/16
Basis:	as received	Analyzed:	10/05/16
Diln Fac:	2.000		

Type: MS Lab ID: QC854082

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	<0.3577	13.31	8.124	61	51-126
Heptachlor	<0.4282	13.31	7.367	55	53-135
Aldrin	<0.3569	13.31	7.337	55	52-121
Dieldrin	<0.6342	13.31	9.271 #	70	50-138
Endrin	<1.034	13.31	10.49 #	79	41-156
4,4'-DDT	<1.415	13.31	9.571	72	30-156

Surrogate	%REC	Limits
TCMX	51	44-125
Decachlorobiphenyl	64	39-121

Type: MSD Lab ID: QC854083

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	13.33	9.730	73	51-126	18	40
Heptachlor	13.33	9.066	68	53-135	21	34
Aldrin	13.33	8.885	67	52-121	19	44
Dieldrin	13.33	11.55 #	87	50-138	22	38
Endrin	13.33	12.91 #	97	41-156	21	38
4,4'-DDT	13.33	12.13	91	30-156	23	58

Surrogate	%REC	Limits
TCMX	56	44-125
Decachlorobiphenyl	79	39-121

#= CCV drift outside limits; average CCV drift within limits per method requirements
 RPD= Relative Percent Difference

Batch QC Report

Organochlorine Pesticides			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC854258	Batch#:	239798
Matrix:	Soil	Prepared:	10/04/16
Units:	ug/Kg	Analyzed:	10/05/16

Cleanup Method: EPA 3620B

Analyte	Result	RL	MDL
alpha-BHC	ND	1.7	0.20
beta-BHC	ND	1.7	0.42
gamma-BHC	ND	1.7	0.22
delta-BHC	ND	1.7	0.28
Heptachlor	ND	1.7	0.19
Aldrin	ND	1.7	0.21
Heptachlor epoxide	ND	1.7	0.22
Endosulfan I	ND	1.7	0.18
Dieldrin	ND	1.7	0.40
4,4'-DDE	ND	3.3	0.59
Endrin	ND	3.3	0.57
Endosulfan II	ND #	3.3	0.51
Endosulfan sulfate	ND #	3.3	0.52
4,4'-DDD	ND #	3.3	0.74
Endrin aldehyde	ND #	3.3	0.34
4,4'-DDT	ND #	3.3	0.48
alpha-Chlordane	ND	1.7	0.21
gamma-Chlordane	ND	1.7	0.25
Methoxychlor	ND #	17	3.2
Toxaphene	ND	61	9.3

Surrogate	%REC	Limits
TCMX	83	44-125
Decachlorobiphenyl	56	39-121

#= CCV drift outside limits; average CCV drift within limits per method requirements

ND= Not Detected at or above MDL

RL= Reporting Limit

MDL= Method Detection Limit

Batch QC Report

Organochlorine Pesticides			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC854262	Batch#:	239798
Matrix:	Soil	Prepared:	10/04/16
Units:	ug/Kg	Analyzed:	10/05/16

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits
gamma-BHC	13.51	13.28	98	44-121
Heptachlor	13.51	13.30	98	45-129
Aldrin	13.51	13.04	96	45-120
Dieldrin	13.51	12.62	93	49-131
Endrin	13.51	13.65	101	43-135
4,4'-DDT	13.51	11.01 #	82	37-141

Surrogate	%REC	Limits
TCMX	106	44-125
Decachlorobiphenyl	64	39-121

#= CCV drift outside limits; average CCV drift within limits per method requirements

Batch QC Report

Organochlorine Pesticides			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8081A
Field ID:	TP-7-6'	Batch#:	239798
MSS Lab ID:	281725-003	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/04/16
Basis:	as received	Analyzed:	10/05/16
Diln Fac:	1.000		

Type: MS
Lab ID: QC854263

Cleanup Method: EPA 3620B

Analyte	MSS Result	Spiked	Result	%REC	Limits
gamma-BHC	<0.1782	13.28	11.38	86	51-126
Heptachlor	<0.2133	13.28	11.34	85	53-135
Aldrin	<0.1778	13.28	11.35	85	52-121
Dieldrin	<0.3159	13.28	11.14	84	50-138
Endrin	<0.5150	13.28	11.89	90	41-156
4,4'-DDT	<0.7051	13.28	10.43 #	79	30-156

Surrogate	%REC	Limits
TCMX	144 *	44-125
Decachlorobiphenyl	108	39-121

Type: MSD
Lab ID: QC854264

Cleanup Method: EPA 3620B

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
gamma-BHC	13.43	8.198	61	51-126	34	40
Heptachlor	13.43	9.442	70	53-135	19	34
Aldrin	13.43	8.995	67	52-121	24	44
Dieldrin	13.43	9.057	67	50-138	22	38
Endrin	13.43	9.769	73	41-156	21	38
4,4'-DDT	13.43	7.918 #	59	30-156	29	58

Surrogate	%REC	Limits
TCMX	58	44-125
Decachlorobiphenyl	50	39-121

#= CCV drift outside limits; average CCV drift within limits per method requirements

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Polychlorinated Biphenyls (PCBs)

Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8082
Matrix:	Soil	Diln Fac:	1.000
Units:	ug/Kg	Sampled:	10/03/16
Basis:	as received	Received:	10/03/16

Field ID:	TP-5-2'	Batch#:	239749
Type:	SAMPLE	Prepared:	10/03/16
Lab ID:	281725-001	Analyzed:	10/06/16

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.5	2.3
Aroclor-1221	ND	19	6.3
Aroclor-1232	ND	9.5	3.1
Aroclor-1242	ND	9.5	2.8
Aroclor-1248	ND	9.5	3.0
Aroclor-1254	ND	9.5	2.4
Aroclor-1260	ND	9.5	1.5

Surrogate	%REC	Limits
Decachlorobiphenyl	103	25-135

Field ID:	TP-6-4'	Batch#:	239749
Type:	SAMPLE	Prepared:	10/03/16
Lab ID:	281725-002	Analyzed:	10/06/16

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.6	2.4
Aroclor-1221	ND	19	6.3
Aroclor-1232	ND	9.6	3.1
Aroclor-1242	ND	9.6	2.9
Aroclor-1248	ND	9.6	3.0
Aroclor-1254	ND	9.6	2.4
Aroclor-1260	ND	9.6	1.5

Surrogate	%REC	Limits
Decachlorobiphenyl	88	25-135

Field ID:	TP-7-6'	Prepared:	10/04/16
Type:	SAMPLE	Analyzed:	10/05/16
Lab ID:	281725-003	Cleanup Method:	EPA 3620B
Batch#:	239798		

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.6	2.4
Aroclor-1221	ND	19	6.4
Aroclor-1232	ND	9.6	3.1
Aroclor-1242	ND	9.6	2.9
Aroclor-1248	ND	9.6	3.0
Aroclor-1254	ND	9.6	2.4
Aroclor-1260	ND	9.6	1.5

Surrogate	%REC	Limits
Decachlorobiphenyl	129	25-135

ND= Not Detected at or above MDL
 RL= Reporting Limit
 MDL= Method Detection Limit

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC854084	Batch#:	239749
Matrix:	Soil	Prepared:	10/03/16
Units:	ug/Kg	Analyzed:	10/05/16

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	164.6	158.0	96	64-140
Aroclor-1260	164.6	161.7	98	65-146

Surrogate	%REC	Limits
Decachlorobiphenyl	94	25-135

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8082
Field ID:	ZZZZZZZZZZ	Batch#:	239749
MSS Lab ID:	281646-001	Sampled:	09/30/16
Matrix:	Soil	Received:	09/30/16
Units:	ug/Kg	Prepared:	10/03/16
Basis:	as received	Analyzed:	10/05/16
Diln Fac:	1.000		

Type: MS Lab ID: QC854085

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.398	166.2	161.3	97	60-161
Aroclor-1260	<1.568	166.2	171.7	103	42-166

Surrogate	%REC	Limits
Decachlorobiphenyl	101	25-135

Type: MSD Lab ID: QC854086

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	167.1	155.1	93	60-161	4	43
Aroclor-1260	167.1	163.2	98	42-166	6	51

Surrogate	%REC	Limits
Decachlorobiphenyl	97	25-135

RPD= Relative Percent Difference

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8082
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC854259	Batch#:	239798
Matrix:	Soil	Prepared:	10/04/16
Units:	ug/Kg	Analyzed:	10/05/16

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	165.0	154.7	94	64-140
Aroclor-1260	165.0	181.8	110	65-146

Surrogate	%REC	Limits
Decachlorobiphenyl	102	25-135

Batch QC Report

Polychlorinated Biphenyls (PCBs)			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	2030.001	Analysis:	EPA 8082
Field ID:	TP-7-6'	Batch#:	239798
MSS Lab ID:	281725-003	Sampled:	10/03/16
Matrix:	Soil	Received:	10/03/16
Units:	ug/Kg	Prepared:	10/04/16
Basis:	as received	Analyzed:	10/05/16
Diln Fac:	1.000		

Type: MS Lab ID: QC854260

Analyte	MSS Result	Spiked	Result	%REC	Limits
Aroclor-1016	<2.358	165.4	156.9	95	60-161
Aroclor-1260	<1.542	165.4	203.2	123	42-166

Surrogate	%REC	Limits
Decachlorobiphenyl	124	25-135

Type: MSD Lab ID: QC854261

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	169.1	169.5	100	60-161	5	43
Aroclor-1260	169.1	229.4	136	42-166	10	51

Surrogate	%REC	Limits
Decachlorobiphenyl	139 *	25-135

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

California Title 22 Metals			
Lab #:	281725	Project#:	2030.001
Client:	Pangea Environmental	Location:	1233 Bockman
Field ID:	TP-5-2'	Basis:	as received
Lab ID:	281725-001	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/03/16
Units:	mg/Kg	Received:	10/03/16

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	2.0	1.9	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Arsenic	2.8	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Barium	200	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Beryllium	0.68	0.094	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Cadmium	0.49	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Chromium	41	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Cobalt	8.9	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Copper	18	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Lead	6.0	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Mercury	ND	0.016	239877	10/06/16	10/06/16	METHOD	EPA 7471A
Molybdenum	ND	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Nickel	44	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Selenium	ND	1.9	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Silver	ND	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Thallium	0.64	0.47	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Vanadium	29	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Zinc	41	0.94	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

California Title 22 Metals			
Lab #:	281725	Project#:	2030.001
Client:	Pangea Environmental	Location:	1233 Bockman
Field ID:	TP-6-4'	Basis:	as received
Lab ID:	281725-002	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/03/16
Units:	mg/Kg	Received:	10/03/16

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	ND	1.9	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Arsenic	6.5	0.24	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Barium	200	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Beryllium	0.54	0.097	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Cadmium	0.55	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Chromium	39	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Cobalt	9.1	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Copper	13	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Lead	5.2	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Mercury	ND	0.018	239877	10/06/16	10/06/16	METHOD	EPA 7471A
Molybdenum	ND	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Nickel	40	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Selenium	ND	1.9	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Silver	ND	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Thallium	0.91	0.49	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Vanadium	39	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Zinc	38	0.97	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

California Title 22 Metals

Lab #:	281725	Project#:	2030.001
Client:	Pangea Environmental	Location:	1233 Bockman
Field ID:	TP-7-6'	Basis:	as received
Lab ID:	281725-003	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/03/16
Units:	mg/Kg	Received:	10/03/16

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	1.9	1.9	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Arsenic	14	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Barium	87	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Beryllium	0.37	0.093	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Cadmium	0.45	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Chromium	29	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Cobalt	8.7	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Copper	9.4	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Lead	5.6	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Mercury	0.039	0.017	239877	10/06/16	10/06/16	METHOD	EPA 7471A
Molybdenum	ND	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Nickel	35	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Selenium	ND	1.9	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Silver	ND	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Thallium	1.0	0.47	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Vanadium	51	0.23	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Zinc	35	0.93	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

California Title 22 Metals

Lab #:	281725	Project#:	2030.001
Client:	Pangea Environmental	Location:	1233 Bockman
Field ID:	TP-8-5'	Basis:	as received
Lab ID:	281725-004	Diln Fac:	1.000
Matrix:	Soil	Sampled:	10/03/16
Units:	mg/Kg	Received:	10/03/16

Analyte	Result	RL	Batch#	Prepared	Analyzed	Prep	Analysis
Antimony	3.0	1.9	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Arsenic	12	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Barium	180	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Beryllium	0.62	0.096	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Cadmium	0.51	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Chromium	42	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Cobalt	11	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Copper	16	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Lead	7.4	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Mercury	0.031	0.017	239877	10/06/16	10/06/16	METHOD	EPA 7471A
Molybdenum	0.27	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Nickel	50	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Selenium	ND	1.9	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Silver	ND	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Thallium	ND	0.48	239937	10/07/16	10/10/16	EPA 3050B	EPA 6010B
Vanadium	49	0.24	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B
Zinc	45	0.96	239937	10/07/16	10/07/16	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

California Title 22 Metals			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	2030.001	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	239877
Lab ID:	QC854564	Prepared:	10/06/16
Matrix:	Soil	Analyzed:	10/06/16
Units:	mg/Kg		

Result	RL
ND	0.016

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

California Title 22 Metals			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	2030.001	Analysis:	EPA 7471A
Analyte:	Mercury	Batch#:	239877
Matrix:	Soil	Prepared:	10/06/16
Units:	mg/Kg	Analyzed:	10/06/16
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC854565	0.2083	0.2098	101	80-120		
BSD	QC854566	0.2232	0.2464	110	80-120	9	20

RPD= Relative Percent Difference

Batch QC Report

California Title 22 Metals			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	2030.001	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	239877
MSS Lab ID:	281810-001	Sampled:	10/05/16
Matrix:	Soil	Received:	10/05/16
Units:	mg/Kg	Prepared:	10/06/16
Basis:	as received	Analyzed:	10/06/16

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC854567	0.04392	0.2119	0.2693	106	69-142		
MSD	QC854568		0.2155	0.2259	84	69-142	19	36

RPD= Relative Percent Difference

Batch QC Report

California Title 22 Metals			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3050B
Project#:	2030.001	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC854816	Batch#:	239937
Matrix:	Soil	Prepared:	10/07/16
Units:	mg/Kg	Analyzed:	10/07/16

Analyte	Result	RL
Antimony	ND	2.0
Arsenic	ND	0.25
Barium	ND	0.25
Beryllium	ND	0.10
Cadmium	ND	0.25
Chromium	ND	0.25
Cobalt	ND	0.25
Copper	ND	0.25
Lead	ND	0.25
Molybdenum	ND	0.25
Nickel	ND	0.25
Selenium	ND	2.0
Silver	ND	0.25
Thallium	ND	0.51
Vanadium	ND	0.25
Zinc	ND	1.0

ND= Not Detected

RL= Reporting Limit

Batch QC Report

California Title 22 Metals			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3050B
Project#:	2030.001	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	239937
Units:	mg/Kg	Prepared:	10/07/16
Diln Fac:	1.000	Analyzed:	10/07/16

Type: BS Lab ID: QC854817

Analyte	Spiked	Result	%REC	Limits
Antimony	49.50	45.80	93	80-120
Arsenic	49.50	47.20	95	80-120
Barium	49.50	51.59	104	80-120
Beryllium	24.75	26.99	109	80-120
Cadmium	49.50	51.18	103	80-120
Chromium	49.50	51.56	104	80-120
Cobalt	49.50	49.75	100	80-120
Copper	49.50	51.06	103	80-120
Lead	49.50	47.91	97	80-120
Molybdenum	49.50	46.78	94	80-120
Nickel	49.50	51.34	104	80-120
Selenium	49.50	46.56	94	80-120
Silver	4.950	4.757	96	80-120
Thallium	49.50	47.23	95	80-120
Vanadium	49.50	50.77	103	80-120
Zinc	49.50	50.19	101	80-120

Type: BSD Lab ID: QC854818

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	53.19	47.88	90	80-120	3	20
Arsenic	53.19	48.24	91	80-120	5	20
Barium	53.19	53.42	100	80-120	4	20
Beryllium	26.60	27.57	104	80-120	5	20
Cadmium	53.19	52.95	100	80-120	4	20
Chromium	53.19	53.45	100	80-120	4	20
Cobalt	53.19	51.20	96	80-120	4	20
Copper	53.19	52.80	99	80-120	4	20
Lead	53.19	49.30	93	80-120	4	20
Molybdenum	53.19	48.17	91	80-120	4	20
Nickel	53.19	53.29	100	80-120	3	20
Selenium	53.19	47.29	89	80-120	6	20
Silver	5.319	4.934	93	80-120	4	20
Thallium	53.19	48.55	91	80-120	4	20
Vanadium	53.19	52.74	99	80-120	3	20
Zinc	53.19	51.68	97	80-120	4	20

RPD= Relative Percent Difference

Batch QC Report

California Title 22 Metals			
Lab #:	281725	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3050B
Project#:	2030.001	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	239937
MSS Lab ID:	281646-001	Sampled:	09/30/16
Matrix:	Soil	Received:	09/30/16
Units:	mg/Kg	Prepared:	10/07/16
Basis:	as received	Analyzed:	10/07/16
Diln Fac:	1.000		

Type: MS Lab ID: QC854819

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	3.786	52.08	17.22	26	15-120
Arsenic	9.603	52.08	59.47	96	69-120
Barium	309.0	52.08	334.6	49 NM	35-154
Beryllium	0.5542	26.04	27.66	104	75-120
Cadmium	0.7330	52.08	50.52	96	71-120
Chromium	32.33	52.08	86.87	105	57-133
Cobalt	15.45	52.08	65.31	96	56-125
Copper	37.56	52.08	90.64	102	54-144
Lead	11.78	52.08	57.63	88	53-125
Molybdenum	0.5944	52.08	43.59	83	66-120
Nickel	40.14	52.08	91.44	99	44-141
Selenium	<0.1566	52.08	44.17	85	61-120
Silver	<0.03909	5.208	4.768	92	69-120
Thallium	<0.1377	52.08	44.61	86	59-120
Vanadium	56.70	52.08	115.2	112	52-144
Zinc	66.86	52.08	116.8	96	45-145

Type: MSD Lab ID: QC854820

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	51.55	16.72	25	15-120	2	41
Arsenic	51.55	56.24	90	69-120	5	35
Barium	51.55	313.8	9 NM	35-154	6	36
Beryllium	25.77	26.88	102	75-120	2	20
Cadmium	51.55	49.37	94	71-120	1	25
Chromium	51.55	85.94	104	57-133	0	33
Cobalt	51.55	62.57	91	56-125	3	36
Copper	51.55	87.32	97	54-144	3	38
Lead	51.55	56.72	87	53-125	1	42
Molybdenum	51.55	42.52	81	66-120	1	20
Nickel	51.55	89.21	95	44-141	2	39
Selenium	51.55	42.30	82	61-120	3	33
Silver	5.155	4.763	92	69-120	1	22
Thallium	51.55	43.42	84	59-120	2	27
Vanadium	51.55	111.2	106	52-144	3	29
Zinc	51.55	114.9	93	45-145	1	39

NM= Not Meaningful: Sample concentration > 4X spike concentration
 RPD= Relative Percent Difference

Laboratory Job Number 281725

Subcontracted Products

Forensic Analytical



Bulk Asbestos Material Analysis

(Air Resources Board Method 435, June 6, 1991)

Curtis & Tompkins Ltd
Project Manager
2323 Fifth St.

Berkeley, CA 94710

Client ID: 1137
Report Number: N008700
Date Received: 10/04/16
Date Analyzed: 10/11/16
Date Printed: 10/11/16

Job ID/Site: 281725 - 1233 Bockman

FALI Job ID: 1137
Total Samples Submitted: 4
Total Samples Analyzed: 4

PLM Report Number: N/A

Sample Preparation and Analysis:

Samples were analyzed by the Air Resources Board's Method 435, Determination of Asbestos Content of Serpentine Aggregate. Samples were ground to 200 particle size in the laboratory. Approximately 1 pint was retained for analysis. Samples were prepared for observation according to the guidelines of Exception I and Exception II as defined by the 435 Method. Samples which contained less than 10% asbestos were prepared for observation according to the point count technique as defined by the 435 Method. This analysis was performed with a standard cross-hair reticle.

Sample ID	Lab Number	Layer Description
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TP-5-2	11816652	Black Soil
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Visual Estimation Results:

Matrix percentage of entire 100

Visual estimation percentage: **None Detected**

Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

TP-6-4	11816653	Grey Soil
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Visual Estimation Results:

Matrix percentage of entire 100

Visual estimation percentage: **None Detected**

Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

TP-7-6	11816654	Brown Soil
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Visual Estimation Results:

Matrix percentage of entire 100

Visual estimation percentage: **None Detected**

Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.

TP-8-5	11816655	Brown Soil
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Visual Estimation Results:

Matrix percentage of entire 100

Visual estimation percentage: **None Detected**

Asbestos type(s) detected: None Detected

Comment: This result meets the requirements of Exception I as defined by the 435 Method.



Bulk Asbestos Material Analysis

(Air Resources Board Method 435, June 6, 1991)

Curtis & Tompkins Ltd
Project Manager
2323 Fifth St.

Berkeley, CA 94710

Client ID: 1137
Report Number: N008700
Date Received: 10/04/16
Date Analyzed: 10/11/16
Date Printed: 10/11/16

Job ID/Site: 281725 - 1233 Bockman

FALI Job ID: 1137
Total Samples Submitted: 4
Total Samples Analyzed: 4

PLM Report Number: N/A

Sample Preparation and Analysis:

Samples were analyzed by the Air Resources Board's Method 435, Determination of Asbestos Content of Serpentine Aggregate. Samples were ground to 200 particle size in the laboratory. Approximately 1 pint was retained for analysis. Samples were prepared for observation according to the guidelines of Exception I and Exception II as defined by the 435 Method. Samples which contained less than 10% asbestos were prepared for observation according to the point count technique as defined by the 435 Method. This analysis was performed with a standard cross-hair reticle.

Sample ID	Lab Number	Layer Description
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Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification (LOQ) = 0.25%. Trace denotes the presence of asbestos below the LOQ. ND = None Detected. Analytical results and reports are generated by Forensic Analytical Laboratories Inc. (FALI) at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by FALI to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by FALI. The client is solely responsible for the use and interpretation of test results and reports requested from FALI. Forensic Analytical Laboratories Inc. is not able to assess the degree of hazard resulting from materials analyzed. FALI reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. All samples were received in acceptable condition unless otherwise noted.



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 282302
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 2030.001
Location : 1233 Bockman
Level : II

Sample ID
COMP A (1-4)

Lab ID
282302-001

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 10/20/2016

Will Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 282302
Client: Pangea Environmental
Project: 2030.001
Location: 1233 Bockman
Request Date: 10/18/16
Samples Received: 09/16/16

This data package contains sample and QC results for one soil sample, requested for the above referenced project on 10/18/16. The sample was received cold and intact.

Metals (EPA 6010B):

No analytical problems were encountered.

Detections Summary for 282302

Results for any subcontracted analyses are not included in this summary.

Client : Pangea Environmental
Project : 2030.001
Location : 1233 Bockman

Client Sample ID : COMP A (1-4)

Laboratory Sample ID :

282302-001

No Detections

Chromium			
Lab #:	282302	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3010A
Project#:	2030.001	Analysis:	EPA 6010B
Analyte:	Chromium	Diln Fac:	10.00
Field ID:	COMP A (1-4)	Batch#:	240299
Matrix:	TCLP Leachate	Sampled:	09/16/16
Units:	mg/L	Received:	09/16/16

Type	Lab ID	Result	RL	Prepared	Analyzed
SAMPLE	282302-001	ND	0.050	10/19/16	10/20/16
BLANK	QC856258	ND	0.050	10/18/16	10/19/16
BLANK	QC856259	ND	0.050	10/18/16	10/19/16

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Chromium			
Lab #:	282302	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3010A
Project#:	2030.001	Analysis:	EPA 6010B
Analyte:	Chromium	Batch#:	240299
Field ID:	ZZZZZZZZZZ	Sampled:	10/12/16
MSS Lab ID:	282135-001	Received:	10/13/16
Matrix:	TCLP Leachate	Prepared:	10/18/16
Units:	mg/L	Analyzed:	10/19/16

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln	Fac
BS	QC856260		0.1000	0.1005	101	80-120			1.000	
BSD	QC856261		0.1000	0.1022	102	80-120	2	20	1.000	
MS	QC856262	0.02161	0.1000	0.1273	106	80-120			10.00	
MSD	QC856263		0.1000	0.1308	109	80-120	3	20	10.00	

RPD= Relative Percent Difference



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 282362
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 1233 BOCKMAN
Location : 1233 Bockman
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
PTN-COMP1 (A-D)	282362-001
PTN-COMP2 (A-D)	282362-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 10/21/2016

Will Rice
Project Manager
will.rice@ctberk.com

CASE NARRATIVE

Laboratory number: 282362
Client: Pangea Environmental
Project: 1233 BOCKMAN
Location: 1233 Bockman
Request Date: 10/20/16
Samples Received: 10/19/16

This data package contains sample and QC results for two four-point soil composites, requested for the above referenced project on 10/20/16. The samples were received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):

No analytical problems were encountered.

TPH-Extractables by GC (EPA 8015B):

No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

Metals (EPA 6010B and EPA 7471A):

High recoveries were observed for barium in the MS/MSD for batch 240385; the parent sample was not a project sample, the BS/BSD were within limits, and the associated RPD was within limits. No other analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Login # 282362 Date Received 10/19/16 Number of coolers 1
 Client Pangea Project 1233 Bockman
 Date Opened 10/19 By (print) SC (sign) [Signature]
 Date Logged in ↓ By (print) ↓ (sign) ↓
 Date Labeled ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) NO YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? YES YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 3.3

Temperature blank(s) included? Thermometer# _____ IR Gun# A

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO

If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? YES YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES YES NO

12. Are sample labels present, in good condition and complete? _____ YES YES NO

13. Do the sample labels agree with custody papers? _____ YES YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? (pH strip lot# _____) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO

If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Detections Summary for 282362

Results for any subcontracted analyses are not included in this summary.

Client : Pangea Environmental
 Project : 1233 BOCKMAN
 Location : 1233 Bockman

Client Sample ID : PTN-COMP1 (A-D) Laboratory Sample ID : 282362-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Diesel C10-C24	1.4	Y	1.0	mg/Kg	As Recd	1.000	EPA 8015B	EPA 3550B
Motor Oil C24-C36	16		5.0	mg/Kg	As Recd	1.000	EPA 8015B	EPA 3550B
Antimony	6.9		2.0	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Arsenic	4.8		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Barium	100		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Beryllium	0.35		0.10	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cadmium	0.86		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Chromium	16		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cobalt	18		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Copper	34		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Lead	3.2		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Mercury	0.45		0.017	mg/Kg	As Recd	1.000	EPA 7471A	METHOD
Nickel	16		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Vanadium	120		0.25	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Zinc	71		1.0	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Client Sample ID : PTN-COMP2 (A-D) Laboratory Sample ID : 282362-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Antimony	5.0		2.0	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Arsenic	4.6		0.27	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Barium	160		0.27	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Beryllium	0.49		0.11	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cadmium	0.67		0.27	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Chromium	28		0.27	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Cobalt	14		0.27	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Copper	25		0.27	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Lead	6.2		0.27	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Mercury	0.33		0.017	mg/Kg	As Recd	1.000	EPA 7471A	METHOD
Nickel	30		0.27	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Vanadium	68		0.27	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B
Zinc	60		1.1	mg/Kg	As Recd	1.000	EPA 6010B	EPA 3050B

Y = Sample exhibits chromatographic pattern which does not resemble standard

Total Volatile Hydrocarbons			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8015B
Matrix:	Soil	Batch#:	240364
Units:	mg/Kg	Sampled:	10/19/16
Basis:	as received	Received:	10/19/16
Diln Fac:	1.000	Analyzed:	10/20/16

Field ID: PTN-COMP1 (A-D) Lab ID: 282362-001
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	1.0

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	104	78-138

Field ID: PTN-COMP2 (A-D) Lab ID: 282362-002
 Type: SAMPLE

Analyte	Result	RL
Gasoline C7-C12	ND	0.99

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	107	78-138

Type: BLANK Lab ID: QC856523

Analyte	Result	RL
Gasoline C7-C12	ND	0.20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	103	78-138

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC856520	Batch#:	240364
Matrix:	Soil	Analyzed:	10/20/16
Units:	mg/Kg		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1.000	1.089	109	80-121

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	113	78-138

Batch QC Report

Total Volatile Hydrocarbons			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8015B
Field ID:	PTN-COMP1 (A-D)	Diln Fac:	1.000
MSS Lab ID:	282362-001	Batch#:	240364
Matrix:	Soil	Sampled:	10/19/16
Units:	mg/Kg	Received:	10/19/16
Basis:	as received	Analyzed:	10/20/16

Type: MS Lab ID: QC856521

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	0.5189	9.804	9.220	89	50-120

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	117	78-138

Type: MSD Lab ID: QC856522

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	10.00	9.025	85	50-120	4	31

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	111	78-138

RPD= Relative Percent Difference

Total Extractable Hydrocarbons			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	1233 BOCKMAN	Analysis:	EPA 8015B
Matrix:	Soil	Sampled:	10/19/16
Units:	mg/Kg	Received:	10/19/16
Basis:	as received	Prepared:	10/20/16
Diln Fac:	1.000	Analyzed:	10/20/16
Batch#:	240382		

Field ID: PTN-COMP1 (A-D) Lab ID: 282362-001
 Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	1.4 Y	1.0
Motor Oil C24-C36	16	5.0

Surrogate	%REC	Limits
o-Terphenyl	102	59-140

Field ID: PTN-COMP2 (A-D) Lab ID: 282362-002
 Type: SAMPLE

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	100	59-140

Type: BLANK Lab ID: QC856585

Analyte	Result	RL
Diesel C10-C24	ND	1.0
Motor Oil C24-C36	ND	5.0

Surrogate	%REC	Limits
o-Terphenyl	92	59-140

Y= Sample exhibits chromatographic pattern which does not resemble standard
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	1233 BOCKMAN	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC856586	Batch#:	240382
Matrix:	Soil	Prepared:	10/20/16
Units:	mg/Kg	Analyzed:	10/20/16

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	49.77	47.87	96	58-137

Surrogate	%REC	Limits
o-Terphenyl	97	59-140

Batch QC Report

Total Extractable Hydrocarbons			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3550B
Project#:	1233 BOCKMAN	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	240382
MSS Lab ID:	282349-011	Sampled:	10/18/16
Matrix:	Soil	Received:	10/18/16
Units:	mg/Kg	Prepared:	10/20/16
Basis:	as received	Analyzed:	10/20/16
Diln Fac:	1.000		

Type: MS Lab ID: QC856587

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	3.618	50.38	49.50	91	46-154

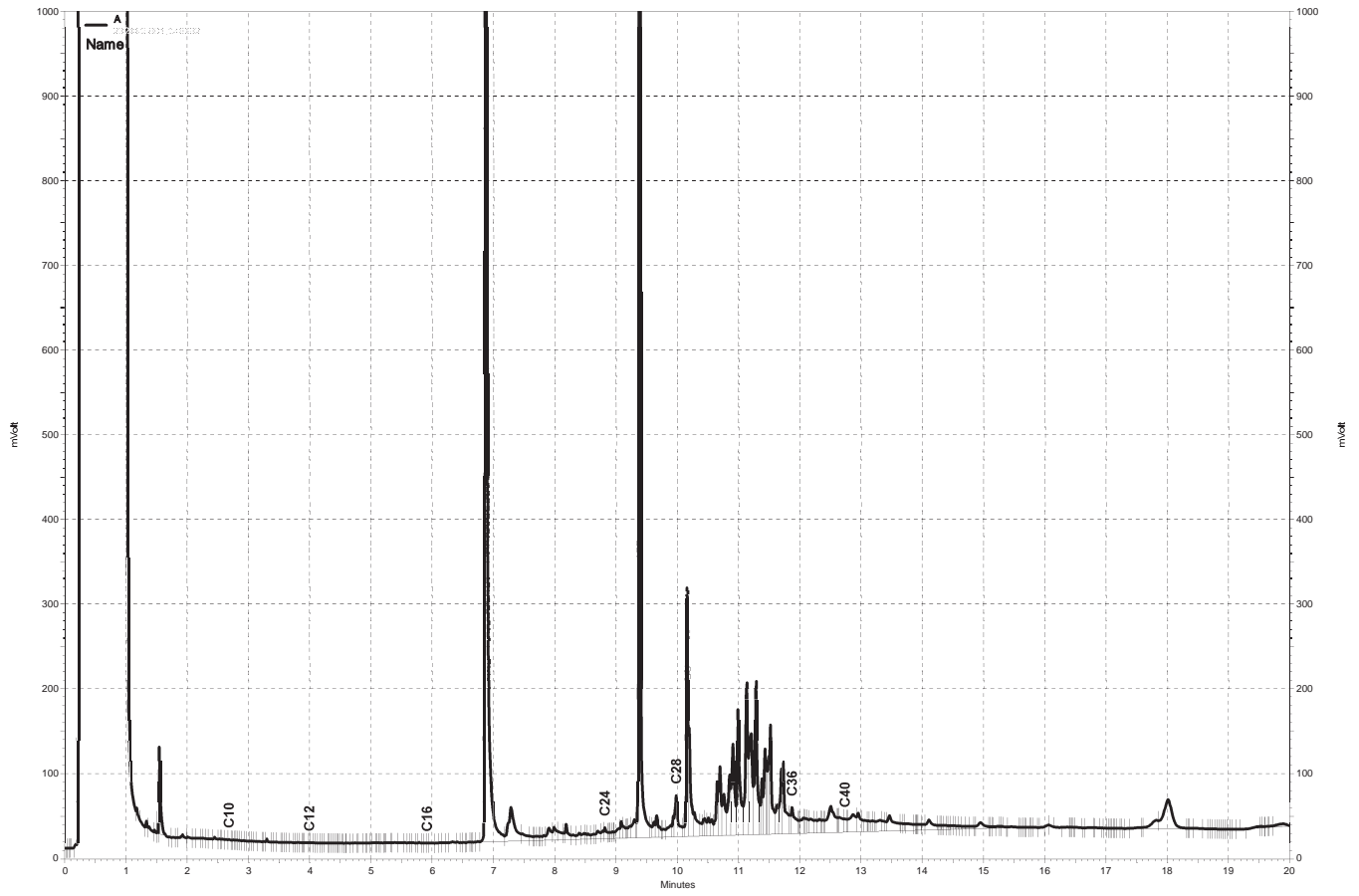
Surrogate	%REC	Limits
o-Terphenyl	95	59-140

Type: MSD Lab ID: QC856588

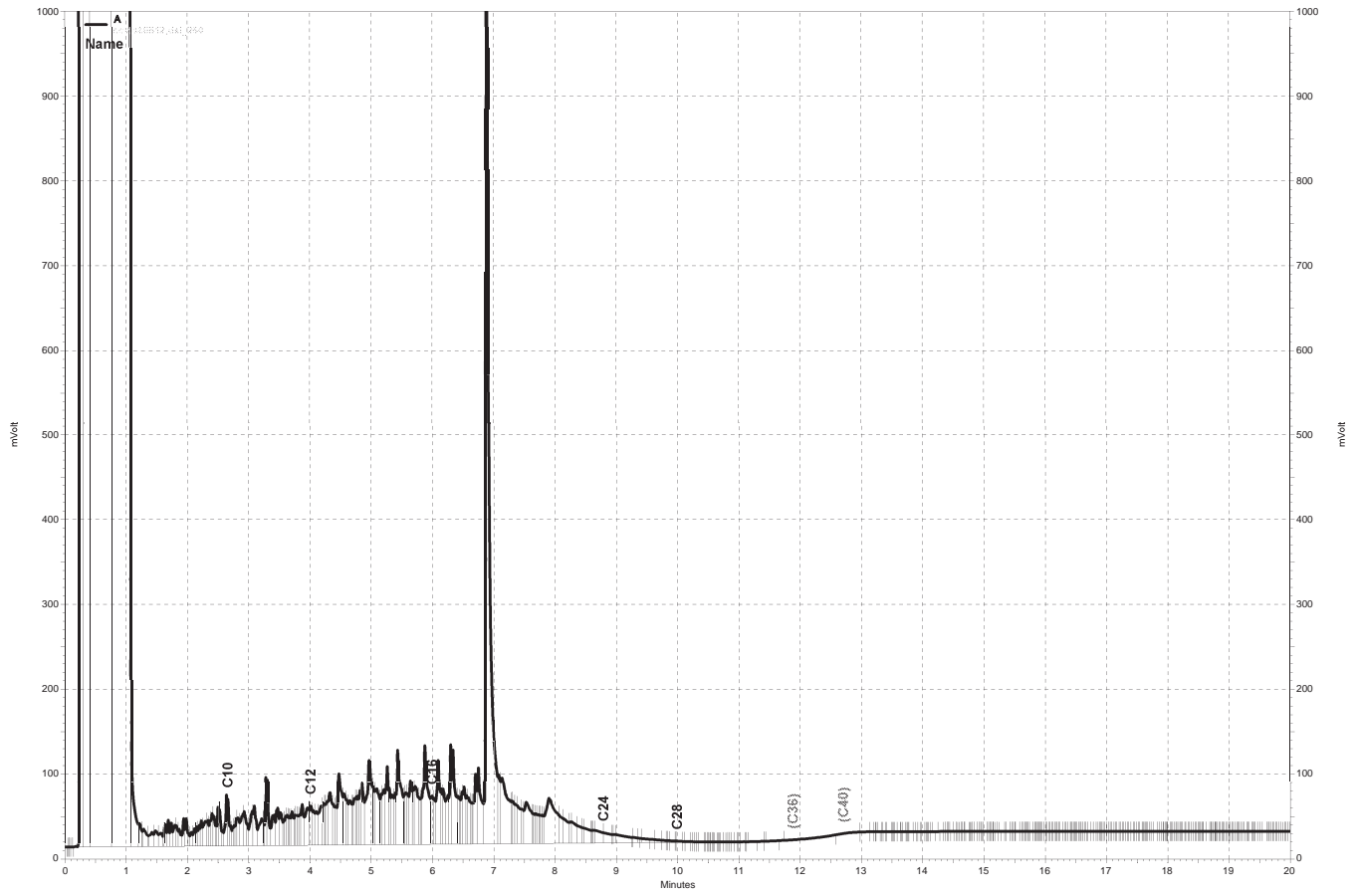
Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	50.14	53.02	99	46-154	7	50

Surrogate	%REC	Limits
o-Terphenyl	89	59-140

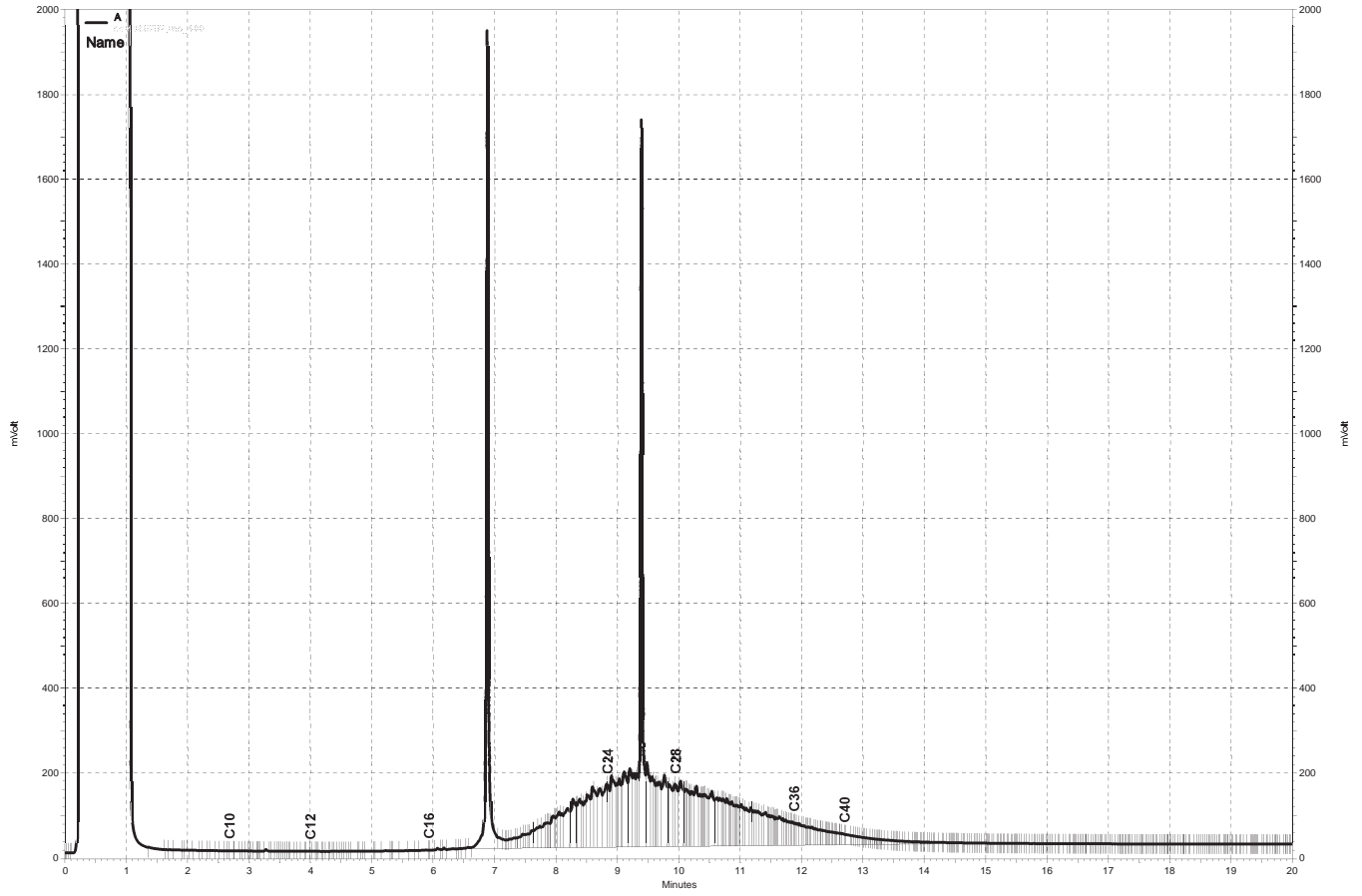
RPD= Relative Percent Difference



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Purgeable Organics by GC/MS

Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-COMP1 (A-D)	Diln Fac:	0.9311
Lab ID:	282362-001	Batch#:	240409
Matrix:	Soil	Sampled:	10/19/16
Units:	ug/Kg	Received:	10/19/16
Basis:	as received	Analyzed:	10/21/16

Analyte	Result	RL
Freon 12	ND	9.3
Chloromethane	ND	9.3
Vinyl Chloride	ND	9.3
Bromomethane	ND	9.3
Chloroethane	ND	9.3
Trichlorofluoromethane	ND	4.7
Acetone	ND	19
Freon 113	ND	4.7
1,1-Dichloroethene	ND	4.7
Methylene Chloride	ND	19
Carbon Disulfide	ND	4.7
MTBE	ND	4.7
trans-1,2-Dichloroethene	ND	4.7
Vinyl Acetate	ND	47
1,1-Dichloroethane	ND	4.7
2-Butanone	ND	9.3
cis-1,2-Dichloroethene	ND	4.7
2,2-Dichloropropane	ND	4.7
Chloroform	ND	4.7
Bromochloromethane	ND	4.7
1,1,1-Trichloroethane	ND	4.7
1,1-Dichloropropene	ND	4.7
Carbon Tetrachloride	ND	4.7
1,2-Dichloroethane	ND	4.7
Benzene	ND	4.7
Trichloroethene	ND	4.7
1,2-Dichloropropane	ND	4.7
Bromodichloromethane	ND	4.7
Dibromomethane	ND	4.7
4-Methyl-2-Pentanone	ND	9.3
cis-1,3-Dichloropropene	ND	4.7
Toluene	ND	4.7
trans-1,3-Dichloropropene	ND	4.7
1,1,2-Trichloroethane	ND	4.7
2-Hexanone	ND	9.3
1,3-Dichloropropane	ND	4.7
Tetrachloroethene	ND	4.7

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-COMP1 (A-D)	Diln Fac:	0.9311
Lab ID:	282362-001	Batch#:	240409
Matrix:	Soil	Sampled:	10/19/16
Units:	ug/Kg	Received:	10/19/16
Basis:	as received	Analyzed:	10/21/16

Analyte	Result	RL
Dibromochloromethane	ND	4.7
1,2-Dibromoethane	ND	4.7
Chlorobenzene	ND	4.7
1,1,1,2-Tetrachloroethane	ND	4.7
Ethylbenzene	ND	4.7
m,p-Xylenes	ND	4.7
o-Xylene	ND	4.7
Styrene	ND	4.7
Bromoform	ND	4.7
Isopropylbenzene	ND	4.7
1,1,2,2-Tetrachloroethane	ND	4.7
1,2,3-Trichloropropane	ND	4.7
Propylbenzene	ND	4.7
Bromobenzene	ND	4.7
1,3,5-Trimethylbenzene	ND	4.7
2-Chlorotoluene	ND	4.7
4-Chlorotoluene	ND	4.7
tert-Butylbenzene	ND	4.7
1,2,4-Trimethylbenzene	ND	4.7
sec-Butylbenzene	ND	4.7
para-Isopropyl Toluene	ND	4.7
1,3-Dichlorobenzene	ND	4.7
1,4-Dichlorobenzene	ND	4.7
n-Butylbenzene	ND	4.7
1,2-Dichlorobenzene	ND	4.7
1,2-Dibromo-3-Chloropropane	ND	4.7
1,2,4-Trichlorobenzene	ND	4.7
Hexachlorobutadiene	ND	4.7
Naphthalene	ND	4.7
1,2,3-Trichlorobenzene	ND	4.7

Surrogate	%REC	Limits
Dibromofluoromethane	102	78-134
1,2-Dichloroethane-d4	112	80-138
Toluene-d8	102	80-120
Bromofluorobenzene	111	78-123

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-COMP2 (A-D)	Diln Fac:	0.9804
Lab ID:	282362-002	Batch#:	240409
Matrix:	Soil	Sampled:	10/19/16
Units:	ug/Kg	Received:	10/19/16
Basis:	as received	Analyzed:	10/21/16

Analyte	Result	RL
Freon 12	ND	9.8
Chloromethane	ND	9.8
Vinyl Chloride	ND	9.8
Bromomethane	ND	9.8
Chloroethane	ND	9.8
Trichlorofluoromethane	ND	4.9
Acetone	ND	20
Freon 113	ND	4.9
1,1-Dichloroethene	ND	4.9
Methylene Chloride	ND	20
Carbon Disulfide	ND	4.9
MTBE	ND	4.9
trans-1,2-Dichloroethene	ND	4.9
Vinyl Acetate	ND	49
1,1-Dichloroethane	ND	4.9
2-Butanone	ND	9.8
cis-1,2-Dichloroethene	ND	4.9
2,2-Dichloropropane	ND	4.9
Chloroform	ND	4.9
Bromochloromethane	ND	4.9
1,1,1-Trichloroethane	ND	4.9
1,1-Dichloropropene	ND	4.9
Carbon Tetrachloride	ND	4.9
1,2-Dichloroethane	ND	4.9
Benzene	ND	4.9
Trichloroethene	ND	4.9
1,2-Dichloropropane	ND	4.9
Bromodichloromethane	ND	4.9
Dibromomethane	ND	4.9
4-Methyl-2-Pentanone	ND	9.8
cis-1,3-Dichloropropene	ND	4.9
Toluene	ND	4.9
trans-1,3-Dichloropropene	ND	4.9
1,1,2-Trichloroethane	ND	4.9
2-Hexanone	ND	9.8
1,3-Dichloropropane	ND	4.9
Tetrachloroethene	ND	4.9

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-COMP2 (A-D)	Diln Fac:	0.9804
Lab ID:	282362-002	Batch#:	240409
Matrix:	Soil	Sampled:	10/19/16
Units:	ug/Kg	Received:	10/19/16
Basis:	as received	Analyzed:	10/21/16

Analyte	Result	RL
Dibromochloromethane	ND	4.9
1,2-Dibromoethane	ND	4.9
Chlorobenzene	ND	4.9
1,1,1,2-Tetrachloroethane	ND	4.9
Ethylbenzene	ND	4.9
m,p-Xylenes	ND	4.9
o-Xylene	ND	4.9
Styrene	ND	4.9
Bromoform	ND	4.9
Isopropylbenzene	ND	4.9
1,1,2,2-Tetrachloroethane	ND	4.9
1,2,3-Trichloropropane	ND	4.9
Propylbenzene	ND	4.9
Bromobenzene	ND	4.9
1,3,5-Trimethylbenzene	ND	4.9
2-Chlorotoluene	ND	4.9
4-Chlorotoluene	ND	4.9
tert-Butylbenzene	ND	4.9
1,2,4-Trimethylbenzene	ND	4.9
sec-Butylbenzene	ND	4.9
para-Isopropyl Toluene	ND	4.9
1,3-Dichlorobenzene	ND	4.9
1,4-Dichlorobenzene	ND	4.9
n-Butylbenzene	ND	4.9
1,2-Dichlorobenzene	ND	4.9
1,2-Dibromo-3-Chloropropane	ND	4.9
1,2,4-Trichlorobenzene	ND	4.9
Hexachlorobutadiene	ND	4.9
Naphthalene	ND	4.9
1,2,3-Trichlorobenzene	ND	4.9

Surrogate	%REC	Limits
Dibromofluoromethane	105	78-134
1,2-Dichloroethane-d4	115	80-138
Toluene-d8	103	80-120
Bromofluorobenzene	110	78-123

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	240409
Units:	ug/Kg	Analyzed:	10/21/16
Diln Fac:	1.000		

Type: BS Lab ID: QC856684

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	22.38	90	70-134
Benzene	25.00	24.97	100	80-123
Trichloroethene	25.00	23.57	94	80-128
Toluene	25.00	23.19	93	80-120
Chlorobenzene	25.00	22.16	89	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	103	78-134
1,2-Dichloroethane-d4	115	80-138
Toluene-d8	101	80-120
Bromofluorobenzene	104	78-123

Type: BSD Lab ID: QC856685

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	21.14	85	70-134	6	22
Benzene	25.00	23.92	96	80-123	4	21
Trichloroethene	25.00	22.45	90	80-128	5	23
Toluene	25.00	22.55	90	80-120	3	20
Chlorobenzene	25.00	21.62	86	80-123	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	103	78-134
1,2-Dichloroethane-d4	113	80-138
Toluene-d8	100	80-120
Bromofluorobenzene	107	78-123

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC856686	Batch#:	240409
Matrix:	Soil	Analyzed:	10/21/16
Units:	ug/Kg		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC856686	Batch#:	240409
Matrix:	Soil	Analyzed:	10/21/16
Units:	ug/Kg		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	103	78-134
1,2-Dichloroethane-d4	113	80-138
Toluene-d8	103	80-120
Bromofluorobenzene	109	78-123

ND= Not Detected

RL= Reporting Limit

California Title 22 Metals

Lab #:	282362	Project#:	1233 BOCKMAN
Client:	Pangea Environmental	Location:	1233 Bockman
Field ID:	PTN-COMP1 (A-D)	Diln Fac:	1.000
Lab ID:	282362-001	Sampled:	10/19/16
Matrix:	Soil	Received:	10/19/16
Units:	mg/Kg	Analyzed:	10/21/16
Basis:	as received		

Analyte	Result	RL	Batch#	Prepared	Prep	Analysis
Antimony	6.9	2.0	240385	10/20/16	EPA 3050B	EPA 6010B
Arsenic	4.8	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Barium	100	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Beryllium	0.35	0.10	240385	10/20/16	EPA 3050B	EPA 6010B
Cadmium	0.86	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Chromium	16	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Cobalt	18	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Copper	34	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Lead	3.2	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Mercury	0.45	0.017	240418	10/21/16	METHOD	EPA 7471A
Molybdenum	ND	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Nickel	16	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Selenium	ND	2.0	240385	10/20/16	EPA 3050B	EPA 6010B
Silver	ND	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Thallium	ND	0.50	240385	10/20/16	EPA 3050B	EPA 6010B
Vanadium	120	0.25	240385	10/20/16	EPA 3050B	EPA 6010B
Zinc	71	1.0	240385	10/20/16	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

California Title 22 Metals

Lab #:	282362	Project#:	1233 BOCKMAN
Client:	Pangea Environmental	Location:	1233 Bockman
Field ID:	PTN-COMP2 (A-D)	Diln Fac:	1.000
Lab ID:	282362-002	Sampled:	10/19/16
Matrix:	Soil	Received:	10/19/16
Units:	mg/Kg	Analyzed:	10/21/16
Basis:	as received		

Analyte	Result	RL	Batch#	Prepared	Prep	Analysis
Antimony	5.0	2.0	240385	10/20/16	EPA 3050B	EPA 6010B
Arsenic	4.6	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Barium	160	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Beryllium	0.49	0.11	240385	10/20/16	EPA 3050B	EPA 6010B
Cadmium	0.67	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Chromium	28	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Cobalt	14	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Copper	25	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Lead	6.2	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Mercury	0.33	0.017	240418	10/21/16	METHOD	EPA 7471A
Molybdenum	ND	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Nickel	30	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Selenium	ND	2.0	240385	10/20/16	EPA 3050B	EPA 6010B
Silver	ND	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Thallium	ND	0.54	240385	10/20/16	EPA 3050B	EPA 6010B
Vanadium	68	0.27	240385	10/20/16	EPA 3050B	EPA 6010B
Zinc	60	1.1	240385	10/20/16	EPA 3050B	EPA 6010B

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

California Title 22 Metals			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3050B
Project#:	1233 BOCKMAN	Analysis:	EPA 6010B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC856593	Batch#:	240385
Matrix:	Soil	Prepared:	10/20/16
Units:	mg/Kg	Analyzed:	10/20/16

Analyte	Result	RL
Antimony	ND	2.0
Arsenic	ND	0.27
Barium	ND	0.27
Beryllium	ND	0.11
Cadmium	ND	0.27
Chromium	ND	0.27
Cobalt	ND	0.27
Copper	ND	0.27
Lead	ND	0.27
Molybdenum	ND	0.27
Nickel	ND	0.27
Selenium	ND	2.0
Silver	ND	0.27
Thallium	ND	0.54
Vanadium	ND	0.27
Zinc	ND	1.1

ND= Not Detected

RL= Reporting Limit

Batch QC Report

California Title 22 Metals			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3050B
Project#:	1233 BOCKMAN	Analysis:	EPA 6010B
Matrix:	Soil	Batch#:	240385
Units:	mg/Kg	Prepared:	10/20/16
Diln Fac:	1.000		

Type: BS Analyzed: 10/20/16
 Lab ID: QC856594

Analyte	Spiked	Result	%REC	Limits
Antimony	54.35	53.02	98	80-120
Arsenic	54.35	53.36	98	80-120
Barium	54.35	53.40	98	80-120
Beryllium	27.17	27.21	100	80-120
Cadmium	54.35	54.39	100	80-120
Chromium	54.35	53.45	98	80-120
Cobalt	54.35	52.65	97	80-120
Copper	54.35	53.05	98	80-120
Lead	54.35	51.84	95	80-120
Molybdenum	54.35	52.51	97	80-120
Nickel	54.35	52.81	97	80-120
Selenium	54.35	53.35	98	80-120
Silver	5.435	4.745	87	80-120
Thallium	54.35	53.39	98	80-120
Vanadium	54.35	52.53	97	80-120
Zinc	54.35	53.97	99	80-120

Type: BSD Analyzed: 10/21/16
 Lab ID: QC856595

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	53.19	52.94	100	80-120	2	20
Arsenic	53.19	52.94	100	80-120	1	20
Barium	53.19	53.54	101	80-120	2	20
Beryllium	26.60	27.15	102	80-120	2	20
Cadmium	53.19	54.54	103	80-120	2	20
Chromium	53.19	53.39	100	80-120	2	20
Cobalt	53.19	52.58	99	80-120	2	20
Copper	53.19	53.29	100	80-120	3	20
Lead	53.19	51.58	97	80-120	2	20
Molybdenum	53.19	52.25	98	80-120	2	20
Nickel	53.19	52.91	99	80-120	2	20
Selenium	53.19	53.46	100	80-120	2	20
Silver	5.319	4.761	89	80-120	2	20
Thallium	53.19	53.15	100	80-120	2	20
Vanadium	53.19	52.56	99	80-120	2	20
Zinc	53.19	54.19	102	80-120	3	20

Batch QC Report

California Title 22 Metals			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 3050B
Project#:	1233 BOCKMAN	Analysis:	EPA 6010B
Field ID:	ZZZZZZZZZZ	Batch#:	240385
MSS Lab ID:	282110-001	Sampled:	10/12/16
Matrix:	Soil	Received:	10/13/16
Units:	mg/Kg	Prepared:	10/20/16
Basis:	as received	Analyzed:	10/21/16
Diln Fac:	1.000		

Type: MS Lab ID: QC856596

Analyte	MSS Result	Spiked	Result	%REC	Limits
Antimony	<14.24	47.62	23.74	50	15-120
Arsenic	3.549	47.62	54.24	106	69-120
Barium	88.15	47.62	230.9	300 *	35-154
Beryllium	0.1650	23.81	24.73	103	75-120
Cadmium	0.6334	47.62	49.17	102	71-120
Chromium	37.16	47.62	93.56	118	57-133
Cobalt	6.172	47.62	52.97	98	56-125
Copper	30.01	47.62	74.34	93	54-144
Lead	722.3	47.62	1,027 >LR	640 NM	53-125
Molybdenum	<0.04652	47.62	46.12	97	66-120
Nickel	38.63	47.62	88.23	104	44-141
Selenium	<0.1521	47.62	46.69	98	61-120
Silver	<0.03797	4.762	4.345	91	69-120
Thallium	0.3679	47.62	46.40	97	59-120
Vanadium	30.09	47.62	78.91	103	52-144
Zinc	375.6	47.62	421.6	97 NM	45-145

Type: MSD Lab ID: QC856597

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Antimony	49.02	24.30	50	15-120	1	41
Arsenic	49.02	51.67	98	69-120	8	35
Barium	49.02	271.2	373 *	35-154	15	36
Beryllium	24.51	24.95	101	75-120	2	20
Cadmium	49.02	49.73	100	71-120	2	25
Chromium	49.02	91.85	112	57-133	3	33
Cobalt	49.02	51.82	93	56-125	5	36
Copper	49.02	77.08	96	54-144	2	38
Lead	49.02	2,816 >LR	4271 NM	53-125	NC	42
Molybdenum	49.02	45.83	93	66-120	4	20
Nickel	49.02	89.10	103	44-141	1	39
Selenium	49.02	46.37	95	61-120	4	33
Silver	4.902	4.391	90	69-120	2	22
Thallium	49.02	46.08	93	59-120	4	27
Vanadium	49.02	80.69	103	52-144	0	29
Zinc	49.02	460.9	174 NM	45-145	9	39

*= Value outside of QC limits; see narrative
 NC= Not Calculated
 NM= Not Meaningful: Sample concentration > 4X spike concentration
 >LR= Response exceeds instrument's linear range
 RPD= Relative Percent Difference

Batch QC Report

California Title 22 Metals			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Type:	BLANK	Batch#:	240418
Lab ID:	QC856717	Prepared:	10/21/16
Matrix:	Soil	Analyzed:	10/21/16
Units:	mg/Kg		

Result	RL
ND	0.016

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

California Title 22 Metals			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA 7471A
Analyte:	Mercury	Batch#:	240418
Matrix:	Soil	Prepared:	10/21/16
Units:	mg/Kg	Analyzed:	10/21/16
Diln Fac:	1.000		

Type	Lab ID	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC856718	0.1953	0.1862	95	80-120		
BSD	QC856719	0.1984	0.1917	97	80-120	1	20

RPD= Relative Percent Difference

Batch QC Report

California Title 22 Metals			
Lab #:	282362	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA 7471A
Analyte:	Mercury	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	240418
MSS Lab ID:	282262-030	Sampled:	10/17/16
Matrix:	Soil	Received:	10/17/16
Units:	mg/Kg	Prepared:	10/21/16
Basis:	as received	Analyzed:	10/21/16

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
MS	QC856720	0.06750	0.2083	0.2861	105	69-142		
MSD	QC856721		0.2049	0.2849	106	69-142	1	36

RPD= Relative Percent Difference



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Laboratory Job Number 282363
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 1233 BOCKMAN
Location : 1233 Bockman
Level : II

Sample ID

Lab ID

PTN-W1

282363-001

PTN-W2

282363-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 10/20/2016

Will Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 282363
Client: Pangea Environmental
Project: 1233 BOCKMAN
Location: 1233 Bockman
Request Date: 10/20/16
Samples Received: 10/19/16

This data package contains sample and QC results for two water samples, requested for the above referenced project on 10/20/16. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Login # 282362 Date Received 10/19/16 Number of coolers 1
 Client Pangea Project 1233 Bockman
 Date Opened 10/19 By (print) SC (sign) [Signature]
 Date Logged in ↓ By (print) ↓ (sign) ↓
 Date Labeled ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? _____ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? _____ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) _____ YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 3.3

Temperature blank(s) included? Thermometer# _____ IR Gun# A

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO
 If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? _____ YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? (pH strip lot# _____) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO

If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Detections Summary for 282363

Results for any subcontracted analyses are not included in this summary.

Client : Pangea Environmental
 Project : 1233 BOCKMAN
 Location : 1233 Bockman

Client Sample ID : PTN-W1 Laboratory Sample ID : 282363-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Tetrachloroethene	0.5		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B

Client Sample ID : PTN-W2 Laboratory Sample ID : 282363-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Tetrachloroethene	0.6		0.5	ug/L	As Recd	1.000	EPA 8260B	EPA 5030B

Purgeable Organics by GC/MS

Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-W1	Batch#:	240357
Lab ID:	282363-001	Sampled:	10/19/16
Matrix:	Water	Received:	10/19/16
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	0.5	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-W1	Batch#:	240357
Lab ID:	282363-001	Sampled:	10/19/16
Matrix:	Water	Received:	10/19/16
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-128
1,2-Dichloroethane-d4	125	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-W2	Batch#:	240357
Lab ID:	282363-002	Sampled:	10/19/16
Matrix:	Water	Received:	10/19/16
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	0.6	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-W2	Batch#:	240357
Lab ID:	282363-002	Sampled:	10/19/16
Matrix:	Water	Received:	10/19/16
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-128
1,2-Dichloroethane-d4	125	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	240357
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Type: BS Lab ID: QC856497

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	10.02	80	66-135
Benzene	12.50	11.74	94	80-123
Trichloroethene	12.50	12.28	98	80-123
Toluene	12.50	11.72	94	80-121
Chlorobenzene	12.50	12.10	97	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-128
1,2-Dichloroethane-d4	123	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	91	80-120

Type: BSD Lab ID: QC856498

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	10.64	85	66-135	6	24
Benzene	12.50	11.72	94	80-123	0	20
Trichloroethene	12.50	12.04	96	80-123	2	20
Toluene	12.50	11.80	94	80-121	1	20
Chlorobenzene	12.50	12.38	99	80-123	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-128
1,2-Dichloroethane-d4	121	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	91	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC856499	Batch#:	240357
Matrix:	Water	Analyzed:	10/20/16
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC856499	Batch#:	240357
Matrix:	Water	Analyzed:	10/20/16
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-128
1,2-Dichloroethane-d4	123	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected

RL= Reporting Limit



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Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 282467
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 2030.001
Location : Bockman
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
PTN - DISCRETE 1	282467-001
PTN - DISCRETE 2	282467-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 10/21/2016

Will Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 282467
Client: Pangea Environmental
Project: 2030.001
Location: Bockman
Request Date: 10/21/16
Samples Received: 10/20/16

This data package contains sample and QC results for two soil samples, requested for the above referenced project on 10/21/16. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

CHAIN OF CUSTODY

ct Curtis & Tompkins Laboratories
 ENVIRONMENTAL ANALYTICAL TESTING LABORATORY
 In Business Since 1878

2323 Fifth Street
 Berkeley, CA 94710
 Phone (510) 486-0900
 Fax (510) 486-0532

Project No: 2030.001
 Project Name: Bockman
 Project P. O. No:
 EDD Format: Report Level I II III IV
 Turnaround Time: PUSH 24 hr Standard
 Sampler: Patrick Giff
 Report To: II
 Company: Parsons
 Telephone: (925) 818-0010
 Email: pg.giff@parsons.com

Page 28467 of
 Chain of Custody #

ANALYTICAL REQUEST

Please leave the soil
 tube for PN-Proct 1
 and PN-Discrite 2
 on hand

VOC's
 TPH
 8260
 PA
 10/20/16
 10/20/16
 10/20/16

Lab No.	Sample ID.	SAMPLING		MATRIX		CHEMICAL PRESERVATIVE														
		Date Collected	Time Collected	Water	Solid	HCl	H2SO4	HNO3	NaOH	None										
	10-20-16	10-20-16	1215	X	X															
	10-20-16	10-20-16	1530	X	X															
	10-20-16	10-20-16	1605	X	X															
	PN - Discrite 1			X	X															
	PN - Discrite 2			X	X															

Notes: EDF Request

SAMPLE RECEIPT
 Intact
 Cold
 On Ice
 Ambient

REINQUISHED BY: Pat Giff DATE: 10/20/16 TIME: 19:30

RECEIVED BY: [Signature] DATE: 10/20/16 TIME: 19:30

COOLER RECEIPT CHECKLIST



282467
Login # 282432 Date Received 10/20/16 Number of coolers 1
Client Pangea Project Backman

Date Opened 10/20 By (print) SL (sign) [Signature]
Date Logged in [Signature] By (print) [Signature] (sign) [Signature]
Date Labeled [Signature] By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)
Bubble Wrap Foam blocks Bags None
Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 5.4

Temperature blank(s) included? Thermometer# IR Gun#

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO
If YES, what time were they transferred to freezer? 10/20/16 @ 1955

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? (pH strip lot#) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES NO
If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Detections Summary for 282467

Results for any subcontracted analyses are not included in this summary.

Client : Pangea Environmental
Project : 2030.001
Location : Bockman

Client Sample ID : PTN - DISCRETE 1 Laboratory Sample ID : 282467-001

No Detections

Client Sample ID : PTN - DISCRETE 2 Laboratory Sample ID : 282467-002

No Detections

Purgeable Organics by GC/MS

Lab #:	282467	Location:	Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	PTN - DISCRETE 1	Diln Fac:	0.8606
Lab ID:	282467-001	Batch#:	240414
Matrix:	Soil	Sampled:	10/20/16
Units:	ug/Kg	Received:	10/20/16
Basis:	as received	Analyzed:	10/21/16

Analyte	Result	RL
Freon 12	ND	8.6
Chloromethane	ND	8.6
Vinyl Chloride	ND	8.6
Bromomethane	ND	8.6
Chloroethane	ND	8.6
Trichlorofluoromethane	ND	4.3
Acetone	ND	17
Freon 113	ND	4.3
1,1-Dichloroethene	ND	4.3
Methylene Chloride	ND	17
Carbon Disulfide	ND	4.3
MTBE	ND	4.3
trans-1,2-Dichloroethene	ND	4.3
Vinyl Acetate	ND	43
1,1-Dichloroethane	ND	4.3
2-Butanone	ND	8.6
cis-1,2-Dichloroethene	ND	4.3
2,2-Dichloropropane	ND	4.3
Chloroform	ND	4.3
Bromochloromethane	ND	4.3
1,1,1-Trichloroethane	ND	4.3
1,1-Dichloropropene	ND	4.3
Carbon Tetrachloride	ND	4.3
1,2-Dichloroethane	ND	4.3
Benzene	ND	4.3
Trichloroethene	ND	4.3
1,2-Dichloropropane	ND	4.3
Bromodichloromethane	ND	4.3
Dibromomethane	ND	4.3
4-Methyl-2-Pentanone	ND	8.6
cis-1,3-Dichloropropene	ND	4.3
Toluene	ND	4.3
trans-1,3-Dichloropropene	ND	4.3
1,1,2-Trichloroethane	ND	4.3
2-Hexanone	ND	8.6
1,3-Dichloropropane	ND	4.3
Tetrachloroethene	ND	4.3

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282467	Location:	Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	PTN - DISCRETE 1	Diln Fac:	0.8606
Lab ID:	282467-001	Batch#:	240414
Matrix:	Soil	Sampled:	10/20/16
Units:	ug/Kg	Received:	10/20/16
Basis:	as received	Analyzed:	10/21/16

Analyte	Result	RL
Dibromochloromethane	ND	4.3
1,2-Dibromoethane	ND	4.3
Chlorobenzene	ND	4.3
1,1,1,2-Tetrachloroethane	ND	4.3
Ethylbenzene	ND	4.3
m,p-Xylenes	ND	4.3
o-Xylene	ND	4.3
Styrene	ND	4.3
Bromoform	ND	4.3
Isopropylbenzene	ND	4.3
1,1,2,2-Tetrachloroethane	ND	4.3
1,2,3-Trichloropropane	ND	4.3
Propylbenzene	ND	4.3
Bromobenzene	ND	4.3
1,3,5-Trimethylbenzene	ND	4.3
2-Chlorotoluene	ND	4.3
4-Chlorotoluene	ND	4.3
tert-Butylbenzene	ND	4.3
1,2,4-Trimethylbenzene	ND	4.3
sec-Butylbenzene	ND	4.3
para-Isopropyl Toluene	ND	4.3
1,3-Dichlorobenzene	ND	4.3
1,4-Dichlorobenzene	ND	4.3
n-Butylbenzene	ND	4.3
1,2-Dichlorobenzene	ND	4.3
1,2-Dibromo-3-Chloropropane	ND	4.3
1,2,4-Trichlorobenzene	ND	4.3
Hexachlorobutadiene	ND	4.3
Naphthalene	ND	4.3
1,2,3-Trichlorobenzene	ND	4.3

Surrogate	%REC	Limits
Dibromofluoromethane	97	78-134
1,2-Dichloroethane-d4	91	80-138
Toluene-d8	113	80-120
Bromofluorobenzene	123	78-123

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282467	Location:	Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	PTN - DISCRETE 2	Diln Fac:	0.7278
Lab ID:	282467-002	Batch#:	240414
Matrix:	Soil	Sampled:	10/20/16
Units:	ug/Kg	Received:	10/20/16
Basis:	as received	Analyzed:	10/21/16

Analyte	Result	RL
Freon 12	ND	7.3
Chloromethane	ND	7.3
Vinyl Chloride	ND	7.3
Bromomethane	ND	7.3
Chloroethane	ND	7.3
Trichlorofluoromethane	ND	3.6
Acetone	ND	15
Freon 113	ND	3.6
1,1-Dichloroethene	ND	3.6
Methylene Chloride	ND	15
Carbon Disulfide	ND	3.6
MTBE	ND	3.6
trans-1,2-Dichloroethene	ND	3.6
Vinyl Acetate	ND	36
1,1-Dichloroethane	ND	3.6
2-Butanone	ND	7.3
cis-1,2-Dichloroethene	ND	3.6
2,2-Dichloropropane	ND	3.6
Chloroform	ND	3.6
Bromochloromethane	ND	3.6
1,1,1-Trichloroethane	ND	3.6
1,1-Dichloropropene	ND	3.6
Carbon Tetrachloride	ND	3.6
1,2-Dichloroethane	ND	3.6
Benzene	ND	3.6
Trichloroethene	ND	3.6
1,2-Dichloropropane	ND	3.6
Bromodichloromethane	ND	3.6
Dibromomethane	ND	3.6
4-Methyl-2-Pentanone	ND	7.3
cis-1,3-Dichloropropene	ND	3.6
Toluene	ND	3.6
trans-1,3-Dichloropropene	ND	3.6
1,1,2-Trichloroethane	ND	3.6
2-Hexanone	ND	7.3
1,3-Dichloropropane	ND	3.6
Tetrachloroethene	ND	3.6

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282467	Location:	Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Field ID:	PTN - DISCRETE 2	Diln Fac:	0.7278
Lab ID:	282467-002	Batch#:	240414
Matrix:	Soil	Sampled:	10/20/16
Units:	ug/Kg	Received:	10/20/16
Basis:	as received	Analyzed:	10/21/16

Analyte	Result	RL
Dibromochloromethane	ND	3.6
1,2-Dibromoethane	ND	3.6
Chlorobenzene	ND	3.6
1,1,1,2-Tetrachloroethane	ND	3.6
Ethylbenzene	ND	3.6
m,p-Xylenes	ND	3.6
o-Xylene	ND	3.6
Styrene	ND	3.6
Bromoform	ND	3.6
Isopropylbenzene	ND	3.6
1,1,2,2-Tetrachloroethane	ND	3.6
1,2,3-Trichloropropane	ND	3.6
Propylbenzene	ND	3.6
Bromobenzene	ND	3.6
1,3,5-Trimethylbenzene	ND	3.6
2-Chlorotoluene	ND	3.6
4-Chlorotoluene	ND	3.6
tert-Butylbenzene	ND	3.6
1,2,4-Trimethylbenzene	ND	3.6
sec-Butylbenzene	ND	3.6
para-Isopropyl Toluene	ND	3.6
1,3-Dichlorobenzene	ND	3.6
1,4-Dichlorobenzene	ND	3.6
n-Butylbenzene	ND	3.6
1,2-Dichlorobenzene	ND	3.6
1,2-Dibromo-3-Chloropropane	ND	3.6
1,2,4-Trichlorobenzene	ND	3.6
Hexachlorobutadiene	ND	3.6
Naphthalene	ND	3.6
1,2,3-Trichlorobenzene	ND	3.6

Surrogate	%REC	Limits
Dibromofluoromethane	96	78-134
1,2-Dichloroethane-d4	97	80-138
Toluene-d8	94	80-120
Bromofluorobenzene	102	78-123

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282467	Location:	Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	240414
Units:	ug/Kg	Analyzed:	10/21/16
Diln Fac:	1.000		

Type: BS Lab ID: QC856704

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	21.80	87	70-134
Benzene	25.00	23.54	94	80-123
Trichloroethene	25.00	23.22	93	80-128
Toluene	25.00	22.62	90	80-120
Chlorobenzene	25.00	22.72	91	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	96	78-134
1,2-Dichloroethane-d4	92	80-138
Toluene-d8	94	80-120
Bromofluorobenzene	99	78-123

Type: BSD Lab ID: QC856705

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	25.00	21.51	86	70-134	1	22
Benzene	25.00	23.39	94	80-123	1	21
Trichloroethene	25.00	23.25	93	80-128	0	23
Toluene	25.00	22.37	89	80-120	1	20
Chlorobenzene	25.00	22.32	89	80-123	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	78-134
1,2-Dichloroethane-d4	93	80-138
Toluene-d8	93	80-120
Bromofluorobenzene	99	78-123

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282467	Location:	Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC856706	Batch#:	240414
Matrix:	Soil	Analyzed:	10/21/16
Units:	ug/Kg		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282467	Location:	Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	2030.001	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC856706	Batch#:	240414
Matrix:	Soil	Analyzed:	10/21/16
Units:	ug/Kg		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	92	78-134
1,2-Dichloroethane-d4	96	80-138
Toluene-d8	94	80-120
Bromofluorobenzene	100	78-123

ND= Not Detected

RL= Reporting Limit



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 282663
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 2030.001.003
Location : 1233 Brockman
Level : II

Sample ID
PTN-DISCRETE 3

Lab ID
282663-001

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 10/28/2016

Will Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 282663
Client: Pangea Environmental
Project: 2030.001.003
Location: 1233 Brockman
Request Date: 10/26/16
Samples Received: 10/26/16

This data package contains sample and QC results for one soil sample, requested for the above referenced project on 10/26/16. The sample was received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

High response was observed for acetone in the CCV analyzed 10/27/16 08:40; affected data was qualified with "b". Acetone was detected above the RL in the method blank for batch 240651; this analyte was not detected in the sample at or above the RL. No other analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 282663 Date Received 10/26/16 Number of coolers 0
 Client Pangea Env Project 1233 Brodeman
 Date Opened 10/26 By (print) CM (sign) [Signature]
 Date Logged in ↓ By (print) DTW (sign) [Signature]
 Date Labeled ↓ By (print) ↓ (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? _____ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? _____ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) _____ YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) _____

Temperature blank(s) included? Thermometer# _____ IR Gun# _____

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO

If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? _____ YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? (pH strip lot# _____) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO

If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Detections Summary for 282663

Results for any subcontracted analyses are not included in this summary.

Client : Pangea Environmental
Project : 2030.001.003
Location : 1233 Brockman

Client Sample ID : PTN-DISCRETE 3

Laboratory Sample ID : 282663-001

No Detections

Purgeable Organics by GC/MS

Lab #:	282663	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Field ID:	PTN-DISCRETE 3	Diln Fac:	0.9225
Lab ID:	282663-001	Batch#:	240651
Matrix:	Soil	Sampled:	10/26/16
Units:	ug/Kg	Received:	10/26/16
Basis:	as received	Analyzed:	10/27/16

Analyte	Result	RL
Freon 12	ND	9.2
Chloromethane	ND	9.2
Vinyl Chloride	ND	9.2
Bromomethane	ND	9.2
Chloroethane	ND	9.2
Trichlorofluoromethane	ND	4.6
Acetone	ND	18
Freon 113	ND	4.6
1,1-Dichloroethene	ND	4.6
Methylene Chloride	ND	18
Carbon Disulfide	ND	4.6
MTBE	ND	4.6
trans-1,2-Dichloroethene	ND	4.6
Vinyl Acetate	ND	46
1,1-Dichloroethane	ND	4.6
2-Butanone	ND	9.2
cis-1,2-Dichloroethene	ND	4.6
2,2-Dichloropropane	ND	4.6
Chloroform	ND	4.6
Bromochloromethane	ND	4.6
1,1,1-Trichloroethane	ND	4.6
1,1-Dichloropropene	ND	4.6
Carbon Tetrachloride	ND	4.6
1,2-Dichloroethane	ND	4.6
Benzene	ND	4.6
Trichloroethene	ND	4.6
1,2-Dichloropropane	ND	4.6
Bromodichloromethane	ND	4.6
Dibromomethane	ND	4.6
4-Methyl-2-Pentanone	ND	9.2
cis-1,3-Dichloropropene	ND	4.6
Toluene	ND	4.6
trans-1,3-Dichloropropene	ND	4.6
1,1,2-Trichloroethane	ND	4.6
2-Hexanone	ND	9.2
1,3-Dichloropropane	ND	4.6
Tetrachloroethene	ND	4.6

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282663	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Field ID:	PTN-DISCRETE 3	Diln Fac:	0.9225
Lab ID:	282663-001	Batch#:	240651
Matrix:	Soil	Sampled:	10/26/16
Units:	ug/Kg	Received:	10/26/16
Basis:	as received	Analyzed:	10/27/16

Analyte	Result	RL
Dibromochloromethane	ND	4.6
1,2-Dibromoethane	ND	4.6
Chlorobenzene	ND	4.6
1,1,1,2-Tetrachloroethane	ND	4.6
Ethylbenzene	ND	4.6
m,p-Xylenes	ND	4.6
o-Xylene	ND	4.6
Styrene	ND	4.6
Bromoform	ND	4.6
Isopropylbenzene	ND	4.6
1,1,2,2-Tetrachloroethane	ND	4.6
1,2,3-Trichloropropane	ND	4.6
Propylbenzene	ND	4.6
Bromobenzene	ND	4.6
1,3,5-Trimethylbenzene	ND	4.6
2-Chlorotoluene	ND	4.6
4-Chlorotoluene	ND	4.6
tert-Butylbenzene	ND	4.6
1,2,4-Trimethylbenzene	ND	4.6
sec-Butylbenzene	ND	4.6
para-Isopropyl Toluene	ND	4.6
1,3-Dichlorobenzene	ND	4.6
1,4-Dichlorobenzene	ND	4.6
n-Butylbenzene	ND	4.6
1,2-Dichlorobenzene	ND	4.6
1,2-Dibromo-3-Chloropropane	ND	4.6
1,2,4-Trichlorobenzene	ND	4.6
Hexachlorobutadiene	ND	4.6
Naphthalene	ND	4.6
1,2,3-Trichlorobenzene	ND	4.6

Surrogate	%REC	Limits
Dibromofluoromethane	98	78-134
1,2-Dichloroethane-d4	96	80-138
Toluene-d8	90	80-120
Bromofluorobenzene	99	78-123

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282663	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Matrix:	Soil	Batch#:	240651
Units:	ug/Kg	Analyzed:	10/27/16
Diln Fac:	1.000		

Type: BS Lab ID: QC857660

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	11.35	91	70-134
Benzene	12.50	11.82	95	80-123
Trichloroethene	12.50	11.57	93	80-128
Toluene	12.50	11.01	88	80-120
Chlorobenzene	12.50	11.21	90	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	94	78-134
1,2-Dichloroethane-d4	89	80-138
Toluene-d8	89	80-120
Bromofluorobenzene	95	78-123

Type: BSD Lab ID: QC857661

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	11.94	96	70-134	5	22
Benzene	12.50	12.62	101	80-123	7	21
Trichloroethene	12.50	12.35	99	80-128	7	23
Toluene	12.50	11.58	93	80-120	5	20
Chlorobenzene	12.50	11.92	95	80-123	6	20

Surrogate	%REC	Limits
Dibromofluoromethane	94	78-134
1,2-Dichloroethane-d4	90	80-138
Toluene-d8	90	80-120
Bromofluorobenzene	94	78-123

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282663	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC857662	Batch#:	240651
Matrix:	Soil	Analyzed:	10/27/16
Units:	ug/Kg		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	23 b	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0

b= See narrative
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282663	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC857662	Batch#:	240651
Matrix:	Soil	Analyzed:	10/27/16
Units:	ug/Kg		

Analyte	Result	RL
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	93	78-134
1,2-Dichloroethane-d4	90	80-138
Toluene-d8	88	80-120
Bromofluorobenzene	94	78-123

b= See narrative
 ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282663	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Field ID:	PTN-DISCRETE 3	Batch#:	240651
MSS Lab ID:	282663-001	Sampled:	10/26/16
Matrix:	Soil	Received:	10/26/16
Units:	ug/Kg	Analyzed:	10/27/16
Basis:	as received		

Type: MS Diln Fac: 0.9862
 Lab ID: QC857687

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.4255	49.31	49.81	101	56-133
Benzene	<0.4735	49.31	45.92	93	57-120
Trichloroethene	<0.4713	49.31	48.26	98	49-145
Toluene	<0.3897	49.31	41.78	85	51-120
Chlorobenzene	<0.6701	49.31	40.89	83	47-120

Surrogate	%REC	Limits
Dibromofluoromethane	100	78-134
1,2-Dichloroethane-d4	92	80-138
Toluene-d8	90	80-120
Bromofluorobenzene	95	78-123

Type: MSD Diln Fac: 0.9542
 Lab ID: QC857688

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	47.71	46.56	98	56-133	3	46
Benzene	47.71	42.62	89	57-120	4	44
Trichloroethene	47.71	44.93	94	49-145	4	46
Toluene	47.71	39.00	82	51-120	4	47
Chlorobenzene	47.71	38.95	82	47-120	2	50

Surrogate	%REC	Limits
Dibromofluoromethane	99	78-134
1,2-Dichloroethane-d4	91	80-138
Toluene-d8	90	80-120
Bromofluorobenzene	95	78-123

RPD= Relative Percent Difference



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900


Laboratory Job Number 282996
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 1233 BOCKMAN
Location : 1233 Bockman
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
PTS-DISCRETE 1	282996-001
PTS-DISCRETE 2	282996-002
PTS-DISCRETE 3	282996-003
PTS-DISCRETE 4	282996-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: 
Mike Dahlquist
Project Manager
mike.dahlquist@ctberk.com

Date: 11/07/2016

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 282996
Client: Pangea Environmental
Project: 1233 BOCKMAN
Location: 1233 Bockman
Request Date: 11/03/16
Samples Received: 11/03/16

This data package contains sample and QC results for four soil samples, requested for the above referenced project on 11/03/16. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 282996 Date Received 11/3/16 Number of coolers 1
Client Pangea Project 1233 Backman
Date Opened 11/3 By (print) DTN (sign) [signature]
Date Logged in [arrow] By (print) [arrow] (sign) [arrow]
Date Labeled [arrow] By (print) [arrow] (sign) [arrow]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Bubble Wrap, Cloth material, Foam blocks, Cardboard, Bags, Styrofoam, None, Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 4.8

Temperature blank(s) included? Thermometer# IR Gun# 4

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO

If YES, what time were they transferred to freezer? 11/3/16 @ 15:00

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? (pH strip lot#) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES NO

If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Detections Summary for 282996

Results for any subcontracted analyses are not included in this summary.

Client : Pangea Environmental
Project : 1233 BOCKMAN
Location : 1233 Bockman

Client Sample ID : PTS-DISCRETE 1 Laboratory Sample ID : 282996-001

No Detections

Client Sample ID : PTS-DISCRETE 2 Laboratory Sample ID : 282996-002

No Detections

Client Sample ID : PTS-DISCRETE 3 Laboratory Sample ID : 282996-003

No Detections

Client Sample ID : PTS-DISCRETE 4 Laboratory Sample ID : 282996-004

No Detections

Purgeable Organics by GC/MS

Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTS-DISCRETE 1	Diln Fac:	0.7082
Lab ID:	282996-001	Batch#:	240968
Matrix:	Soil	Sampled:	11/03/16
Units:	ug/Kg	Received:	11/03/16
Basis:	as received	Analyzed:	11/04/16

Analyte	Result	RL
Freon 12	ND	7.1
Chloromethane	ND	7.1
Vinyl Chloride	ND	7.1
Bromomethane	ND	7.1
Chloroethane	ND	7.1
Trichlorofluoromethane	ND	3.5
Acetone	ND	14
Freon 113	ND	3.5
1,1-Dichloroethene	ND	3.5
Methylene Chloride	ND	14
Carbon Disulfide	ND	3.5
MTBE	ND	3.5
trans-1,2-Dichloroethene	ND	3.5
Vinyl Acetate	ND	35
1,1-Dichloroethane	ND	3.5
2-Butanone	ND	7.1
cis-1,2-Dichloroethene	ND	3.5
2,2-Dichloropropane	ND	3.5
Chloroform	ND	3.5
Bromochloromethane	ND	3.5
1,1,1-Trichloroethane	ND	3.5
1,1-Dichloropropene	ND	3.5
Carbon Tetrachloride	ND	3.5
1,2-Dichloroethane	ND	3.5
Benzene	ND	3.5
Trichloroethene	ND	3.5
1,2-Dichloropropane	ND	3.5
Bromodichloromethane	ND	3.5
Dibromomethane	ND	3.5
4-Methyl-2-Pentanone	ND	7.1
cis-1,3-Dichloropropene	ND	3.5
Toluene	ND	3.5
trans-1,3-Dichloropropene	ND	3.5
1,1,2-Trichloroethane	ND	3.5
2-Hexanone	ND	7.1
1,3-Dichloropropane	ND	3.5
Tetrachloroethene	ND	3.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTS-DISCRETE 1	Diln Fac:	0.7082
Lab ID:	282996-001	Batch#:	240968
Matrix:	Soil	Sampled:	11/03/16
Units:	ug/Kg	Received:	11/03/16
Basis:	as received	Analyzed:	11/04/16

Analyte	Result	RL
Dibromochloromethane	ND	3.5
1,2-Dibromoethane	ND	3.5
Chlorobenzene	ND	3.5
1,1,1,2-Tetrachloroethane	ND	3.5
Ethylbenzene	ND	3.5
m,p-Xylenes	ND	3.5
o-Xylene	ND	3.5
Styrene	ND	3.5
Bromoform	ND	3.5
Isopropylbenzene	ND	3.5
1,1,2,2-Tetrachloroethane	ND	3.5
1,2,3-Trichloropropane	ND	3.5
Propylbenzene	ND	3.5
Bromobenzene	ND	3.5
1,3,5-Trimethylbenzene	ND	3.5
2-Chlorotoluene	ND	3.5
4-Chlorotoluene	ND	3.5
tert-Butylbenzene	ND	3.5
1,2,4-Trimethylbenzene	ND	3.5
sec-Butylbenzene	ND	3.5
para-Isopropyl Toluene	ND	3.5
1,3-Dichlorobenzene	ND	3.5
1,4-Dichlorobenzene	ND	3.5
n-Butylbenzene	ND	3.5
1,2-Dichlorobenzene	ND	3.5
1,2-Dibromo-3-Chloropropane	ND	3.5
1,2,4-Trichlorobenzene	ND	3.5
Hexachlorobutadiene	ND	3.5
Naphthalene	ND	3.5
1,2,3-Trichlorobenzene	ND	3.5

Surrogate	%REC	Limits
Dibromofluoromethane	111	78-134
1,2-Dichloroethane-d4	112	80-138
Toluene-d8	111	80-120
Bromofluorobenzene	119	78-123

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTS-DISCRETE 2	Diln Fac:	0.7962
Lab ID:	282996-002	Batch#:	240968
Matrix:	Soil	Sampled:	11/03/16
Units:	ug/Kg	Received:	11/03/16
Basis:	as received	Analyzed:	11/04/16

Analyte	Result	RL
Freon 12	ND	8.0
Chloromethane	ND	8.0
Vinyl Chloride	ND	8.0
Bromomethane	ND	8.0
Chloroethane	ND	8.0
Trichlorofluoromethane	ND	4.0
Acetone	ND	16
Freon 113	ND	4.0
1,1-Dichloroethene	ND	4.0
Methylene Chloride	ND	16
Carbon Disulfide	ND	4.0
MTBE	ND	4.0
trans-1,2-Dichloroethene	ND	4.0
Vinyl Acetate	ND	40
1,1-Dichloroethane	ND	4.0
2-Butanone	ND	8.0
cis-1,2-Dichloroethene	ND	4.0
2,2-Dichloropropane	ND	4.0
Chloroform	ND	4.0
Bromochloromethane	ND	4.0
1,1,1-Trichloroethane	ND	4.0
1,1-Dichloropropene	ND	4.0
Carbon Tetrachloride	ND	4.0
1,2-Dichloroethane	ND	4.0
Benzene	ND	4.0
Trichloroethene	ND	4.0
1,2-Dichloropropane	ND	4.0
Bromodichloromethane	ND	4.0
Dibromomethane	ND	4.0
4-Methyl-2-Pentanone	ND	8.0
cis-1,3-Dichloropropene	ND	4.0
Toluene	ND	4.0
trans-1,3-Dichloropropene	ND	4.0
1,1,2-Trichloroethane	ND	4.0
2-Hexanone	ND	8.0
1,3-Dichloropropane	ND	4.0
Tetrachloroethene	ND	4.0

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTS-DISCRETE 2	Diln Fac:	0.7962
Lab ID:	282996-002	Batch#:	240968
Matrix:	Soil	Sampled:	11/03/16
Units:	ug/Kg	Received:	11/03/16
Basis:	as received	Analyzed:	11/04/16

Analyte	Result	RL
Dibromochloromethane	ND	4.0
1,2-Dibromoethane	ND	4.0
Chlorobenzene	ND	4.0
1,1,1,2-Tetrachloroethane	ND	4.0
Ethylbenzene	ND	4.0
m,p-Xylenes	ND	4.0
o-Xylene	ND	4.0
Styrene	ND	4.0
Bromoform	ND	4.0
Isopropylbenzene	ND	4.0
1,1,2,2-Tetrachloroethane	ND	4.0
1,2,3-Trichloropropane	ND	4.0
Propylbenzene	ND	4.0
Bromobenzene	ND	4.0
1,3,5-Trimethylbenzene	ND	4.0
2-Chlorotoluene	ND	4.0
4-Chlorotoluene	ND	4.0
tert-Butylbenzene	ND	4.0
1,2,4-Trimethylbenzene	ND	4.0
sec-Butylbenzene	ND	4.0
para-Isopropyl Toluene	ND	4.0
1,3-Dichlorobenzene	ND	4.0
1,4-Dichlorobenzene	ND	4.0
n-Butylbenzene	ND	4.0
1,2-Dichlorobenzene	ND	4.0
1,2-Dibromo-3-Chloropropane	ND	4.0
1,2,4-Trichlorobenzene	ND	4.0
Hexachlorobutadiene	ND	4.0
Naphthalene	ND	4.0
1,2,3-Trichlorobenzene	ND	4.0

Surrogate	%REC	Limits
Dibromofluoromethane	116	78-134
1,2-Dichloroethane-d4	117	80-138
Toluene-d8	110	80-120
Bromofluorobenzene	119	78-123

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTS-DISCRETE 3	Diln Fac:	0.7153
Lab ID:	282996-003	Batch#:	240968
Matrix:	Soil	Sampled:	11/03/16
Units:	ug/Kg	Received:	11/03/16
Basis:	as received	Analyzed:	11/04/16

Analyte	Result	RL
Freon 12	ND	7.2
Chloromethane	ND	7.2
Vinyl Chloride	ND	7.2
Bromomethane	ND	7.2
Chloroethane	ND	7.2
Trichlorofluoromethane	ND	3.6
Acetone	ND	14
Freon 113	ND	3.6
1,1-Dichloroethene	ND	3.6
Methylene Chloride	ND	14
Carbon Disulfide	ND	3.6
MTBE	ND	3.6
trans-1,2-Dichloroethene	ND	3.6
Vinyl Acetate	ND	36
1,1-Dichloroethane	ND	3.6
2-Butanone	ND	7.2
cis-1,2-Dichloroethene	ND	3.6
2,2-Dichloropropane	ND	3.6
Chloroform	ND	3.6
Bromochloromethane	ND	3.6
1,1,1-Trichloroethane	ND	3.6
1,1-Dichloropropene	ND	3.6
Carbon Tetrachloride	ND	3.6
1,2-Dichloroethane	ND	3.6
Benzene	ND	3.6
Trichloroethene	ND	3.6
1,2-Dichloropropane	ND	3.6
Bromodichloromethane	ND	3.6
Dibromomethane	ND	3.6
4-Methyl-2-Pentanone	ND	7.2
cis-1,3-Dichloropropene	ND	3.6
Toluene	ND	3.6
trans-1,3-Dichloropropene	ND	3.6
1,1,2-Trichloroethane	ND	3.6
2-Hexanone	ND	7.2
1,3-Dichloropropane	ND	3.6
Tetrachloroethene	ND	3.6

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTS-DISCRETE 3	Diln Fac:	0.7153
Lab ID:	282996-003	Batch#:	240968
Matrix:	Soil	Sampled:	11/03/16
Units:	ug/Kg	Received:	11/03/16
Basis:	as received	Analyzed:	11/04/16

Analyte	Result	RL
Dibromochloromethane	ND	3.6
1,2-Dibromoethane	ND	3.6
Chlorobenzene	ND	3.6
1,1,1,2-Tetrachloroethane	ND	3.6
Ethylbenzene	ND	3.6
m,p-Xylenes	ND	3.6
o-Xylene	ND	3.6
Styrene	ND	3.6
Bromoform	ND	3.6
Isopropylbenzene	ND	3.6
1,1,2,2-Tetrachloroethane	ND	3.6
1,2,3-Trichloropropane	ND	3.6
Propylbenzene	ND	3.6
Bromobenzene	ND	3.6
1,3,5-Trimethylbenzene	ND	3.6
2-Chlorotoluene	ND	3.6
4-Chlorotoluene	ND	3.6
tert-Butylbenzene	ND	3.6
1,2,4-Trimethylbenzene	ND	3.6
sec-Butylbenzene	ND	3.6
para-Isopropyl Toluene	ND	3.6
1,3-Dichlorobenzene	ND	3.6
1,4-Dichlorobenzene	ND	3.6
n-Butylbenzene	ND	3.6
1,2-Dichlorobenzene	ND	3.6
1,2-Dibromo-3-Chloropropane	ND	3.6
1,2,4-Trichlorobenzene	ND	3.6
Hexachlorobutadiene	ND	3.6
Naphthalene	ND	3.6
1,2,3-Trichlorobenzene	ND	3.6

Surrogate	%REC	Limits
Dibromofluoromethane	117	78-134
1,2-Dichloroethane-d4	117	80-138
Toluene-d8	109	80-120
Bromofluorobenzene	119	78-123

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTS-DISCRETE 4	Diln Fac:	0.7553
Lab ID:	282996-004	Batch#:	240968
Matrix:	Soil	Sampled:	11/03/16
Units:	ug/Kg	Received:	11/03/16
Basis:	as received	Analyzed:	11/04/16

Analyte	Result	RL
Freon 12	ND	7.6
Chloromethane	ND	7.6
Vinyl Chloride	ND	7.6
Bromomethane	ND	7.6
Chloroethane	ND	7.6
Trichlorofluoromethane	ND	3.8
Acetone	ND	15
Freon 113	ND	3.8
1,1-Dichloroethene	ND	3.8
Methylene Chloride	ND	15
Carbon Disulfide	ND	3.8
MTBE	ND	3.8
trans-1,2-Dichloroethene	ND	3.8
Vinyl Acetate	ND	38
1,1-Dichloroethane	ND	3.8
2-Butanone	ND	7.6
cis-1,2-Dichloroethene	ND	3.8
2,2-Dichloropropane	ND	3.8
Chloroform	ND	3.8
Bromochloromethane	ND	3.8
1,1,1-Trichloroethane	ND	3.8
1,1-Dichloropropene	ND	3.8
Carbon Tetrachloride	ND	3.8
1,2-Dichloroethane	ND	3.8
Benzene	ND	3.8
Trichloroethene	ND	3.8
1,2-Dichloropropane	ND	3.8
Bromodichloromethane	ND	3.8
Dibromomethane	ND	3.8
4-Methyl-2-Pentanone	ND	7.6
cis-1,3-Dichloropropene	ND	3.8
Toluene	ND	3.8
trans-1,3-Dichloropropene	ND	3.8
1,1,2-Trichloroethane	ND	3.8
2-Hexanone	ND	7.6
1,3-Dichloropropane	ND	3.8
Tetrachloroethene	ND	3.8

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTS-DISCRETE 4	Diln Fac:	0.7553
Lab ID:	282996-004	Batch#:	240968
Matrix:	Soil	Sampled:	11/03/16
Units:	ug/Kg	Received:	11/03/16
Basis:	as received	Analyzed:	11/04/16

Analyte	Result	RL
Dibromochloromethane	ND	3.8
1,2-Dibromoethane	ND	3.8
Chlorobenzene	ND	3.8
1,1,1,2-Tetrachloroethane	ND	3.8
Ethylbenzene	ND	3.8
m,p-Xylenes	ND	3.8
o-Xylene	ND	3.8
Styrene	ND	3.8
Bromoform	ND	3.8
Isopropylbenzene	ND	3.8
1,1,2,2-Tetrachloroethane	ND	3.8
1,2,3-Trichloropropane	ND	3.8
Propylbenzene	ND	3.8
Bromobenzene	ND	3.8
1,3,5-Trimethylbenzene	ND	3.8
2-Chlorotoluene	ND	3.8
4-Chlorotoluene	ND	3.8
tert-Butylbenzene	ND	3.8
1,2,4-Trimethylbenzene	ND	3.8
sec-Butylbenzene	ND	3.8
para-Isopropyl Toluene	ND	3.8
1,3-Dichlorobenzene	ND	3.8
1,4-Dichlorobenzene	ND	3.8
n-Butylbenzene	ND	3.8
1,2-Dichlorobenzene	ND	3.8
1,2-Dibromo-3-Chloropropane	ND	3.8
1,2,4-Trichlorobenzene	ND	3.8
Hexachlorobutadiene	ND	3.8
Naphthalene	ND	3.8
1,2,3-Trichlorobenzene	ND	3.8

Surrogate	%REC	Limits
Dibromofluoromethane	116	78-134
1,2-Dichloroethane-d4	115	80-138
Toluene-d8	108	80-120
Bromofluorobenzene	119	78-123

ND= Not Detected
 RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC858909	Batch#:	240968
Matrix:	Soil	Analyzed:	11/04/16
Units:	ug/Kg		

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	25.00	20.14	81	70-134
Benzene	25.00	22.32	89	80-123
Trichloroethene	25.00	21.28	85	80-128
Toluene	25.00	22.60	90	80-120
Chlorobenzene	25.00	22.26	89	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	112	78-134
1,2-Dichloroethane-d4	109	80-138
Toluene-d8	110	80-120
Bromofluorobenzene	116	78-123

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC858910	Batch#:	240968
Matrix:	Soil	Analyzed:	11/04/16
Units:	ug/Kg		

Analyte	Result	RL
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
MTBE	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5035
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC858910	Batch#:	240968
Matrix:	Soil	Analyzed:	11/04/16
Units:	ug/Kg		

Analyte	Result	RL
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	109	78-134
1,2-Dichloroethane-d4	107	80-138
Toluene-d8	112	80-120
Bromofluorobenzene	120	78-123

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282996	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	240968
MSS Lab ID:	282981-001	Sampled:	11/03/16
Matrix:	Soil	Received:	11/03/16
Units:	ug/Kg	Analyzed:	11/04/16
Basis:	as received		

Type: MS Diln Fac: 0.9804
 Lab ID: QC858942

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,1-Dichloroethene	<0.5664	49.02	34.54	70	56-133
Benzene	<0.5054	49.02	37.01	76	57-120
Trichloroethene	<0.6108	49.02	38.99	80	49-145
Toluene	<0.5432	49.02	39.19	80	51-120
Chlorobenzene	<0.3408	49.02	39.91	81	47-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	78-134
1,2-Dichloroethane-d4	91	80-138
Toluene-d8	105	80-120
Bromofluorobenzene	100	78-123

Type: MSD Diln Fac: 0.9524
 Lab ID: QC858943

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	47.62	35.18	74	56-133	5	46
Benzene	47.62	37.58	79	57-120	4	44
Trichloroethene	47.62	39.33	83	49-145	4	46
Toluene	47.62	39.60	83	51-120	4	47
Chlorobenzene	47.62	40.08	84	47-120	3	50

Surrogate	%REC	Limits
Dibromofluoromethane	98	78-134
1,2-Dichloroethane-d4	90	80-138
Toluene-d8	105	80-120
Bromofluorobenzene	102	78-123

RPD= Relative Percent Difference

**GROUNDWATER
LABORATORY ANALYTICAL REPORTS**



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**Laboratory Job Number 282363
ANALYTICAL REPORT**

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 1233 BOCKMAN
Location : 1233 Bockman
Level : II

Sample ID

PTN-W1
PTN-W2

Lab ID

282363-001
282363-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Will Rice
Project Manager
will.rice@ctberk.com

Date: 10/20/2016

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 282363
Client: Pangea Environmental
Project: 1233 BOCKMAN
Location: 1233 Bockman
Request Date: 10/20/16
Samples Received: 10/19/16

This data package contains sample and QC results for two water samples, requested for the above referenced project on 10/20/16. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Login # 282362 Date Received 10/19/16 Number of coolers 1
Client Pangea Project 1233 Bockman

Date Opened 10/19 By (print) SC (sign) [Signature]
Date Logged in [Signature] By (print) [Signature] (sign) [Signature]
Date Labeled [Signature] By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)

- Bubble Wrap, Foam blocks, Bags, None, Cloth material, Cardboard, Styrofoam, Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) 3.3

Temperature blank(s) included? Thermometer# IR Gun# A

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? (pH strip lot#) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES NO

If YES, Who was called? By Date:

COMMENTS

Blank lines for handwritten comments.

Purgeable Organics by GC/MS

Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-W1	Batch#:	240357
Lab ID:	282363-001	Sampled:	10/19/16
Matrix:	Water	Received:	10/19/16
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	0.5	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-W1	Batch#:	240357
Lab ID:	282363-001	Sampled:	10/19/16
Matrix:	Water	Received:	10/19/16
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-128
1,2-Dichloroethane-d4	125	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-W2	Batch#:	240357
Lab ID:	282363-002	Sampled:	10/19/16
Matrix:	Water	Received:	10/19/16
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	0.6	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Field ID:	PTN-W2	Batch#:	240357
Lab ID:	282363-002	Sampled:	10/19/16
Matrix:	Water	Received:	10/19/16
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-128
1,2-Dichloroethane-d4	125	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	240357
Units:	ug/L	Analyzed:	10/20/16
Diln Fac:	1.000		

Type: BS Lab ID: QC856497

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	10.02	80	66-135
Benzene	12.50	11.74	94	80-123
Trichloroethene	12.50	12.28	98	80-123
Toluene	12.50	11.72	94	80-121
Chlorobenzene	12.50	12.10	97	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-128
1,2-Dichloroethane-d4	123	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	91	80-120

Type: BSD Lab ID: QC856498

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	10.64	85	66-135	6	24
Benzene	12.50	11.72	94	80-123	0	20
Trichloroethene	12.50	12.04	96	80-123	2	20
Toluene	12.50	11.80	94	80-121	1	20
Chlorobenzene	12.50	12.38	99	80-123	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-128
1,2-Dichloroethane-d4	121	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	91	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC856499	Batch#:	240357
Matrix:	Water	Analyzed:	10/20/16
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282363	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	1233 BOCKMAN	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC856499	Batch#:	240357
Matrix:	Water	Analyzed:	10/20/16
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-128
1,2-Dichloroethane-d4	123	75-139
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

ND= Not Detected

RL= Reporting Limit



Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878





Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 282892
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 2030.001.003
Location : 1233 Brockman
Level : II

Sample ID

Lab ID

PTS-W1

282892-001

PTS-W2

282892-002

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 11/03/2016

Will Rice
Project Manager
will.rice@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

CASE NARRATIVE

Laboratory number: 282892
Client: Pangea Environmental
Project: 2030.001.003
Location: 1233 Brockman
Request Date: 11/01/16
Samples Received: 11/01/16

This data package contains sample and QC results for two water samples, requested for the above referenced project on 11/01/16. The samples were received cold and intact.

Volatile Organics by GC/MS (EPA 8260B):

No analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 282892 Date Received 11/1/16 Number of coolers 1
 Client Pangea Project 1233 Brockman
 Date Opened 11/1 By (print) DTN (sign) [Signature]
 Date Logged in ↓ By (print) ↓ (sign) ↓
 Date Labeled ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? _____ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? _____ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) _____ YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) _____

Temperature blank(s) included? Thermometer# _____ IR Gun# _____

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO

If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? _____ YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? (pH strip lot# _____) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO

If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Detections Summary for 282892

Results for any subcontracted analyses are not included in this summary.

Client : Pangea Environmental
Project : 2030.001.003
Location : 1233 Brockman

Client Sample ID : PTS-W1 Laboratory Sample ID : 282892-001

No Detections

Client Sample ID : PTS-W2 Laboratory Sample ID : 282892-002

No Detections

Purgeable Organics by GC/MS

Lab #:	282892	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Field ID:	PTS-W1	Batch#:	240858
Lab ID:	282892-001	Sampled:	11/01/16
Matrix:	Water	Received:	11/01/16
Units:	ug/L	Analyzed:	11/02/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282892	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Field ID:	PTS-W1	Batch#:	240858
Lab ID:	282892-001	Sampled:	11/01/16
Matrix:	Water	Received:	11/01/16
Units:	ug/L	Analyzed:	11/02/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-128
1,2-Dichloroethane-d4	100	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
 RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282892	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Field ID:	PTS-W2	Batch#:	240858
Lab ID:	282892-002	Sampled:	11/01/16
Matrix:	Water	Received:	11/01/16
Units:	ug/L	Analyzed:	11/02/16
Diln Fac:	1.000		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Purgeable Organics by GC/MS

Lab #:	282892	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Field ID:	PTS-W2	Batch#:	240858
Lab ID:	282892-002	Sampled:	11/01/16
Matrix:	Water	Received:	11/01/16
Units:	ug/L	Analyzed:	11/02/16
Diln Fac:	1.000		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-128
1,2-Dichloroethane-d4	102	75-139
Toluene-d8	104	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282892	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	240858
Units:	ug/L	Analyzed:	11/02/16
Diln Fac:	1.000		

Type: BS Lab ID: QC858466

Analyte	Spiked	Result	%REC	Limits
1,1-Dichloroethene	12.50	13.44	108	66-135
Benzene	12.50	12.68	101	80-123
Trichloroethene	12.50	12.19	98	80-123
Toluene	12.50	12.42	99	80-121
Chlorobenzene	12.50	11.98	96	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-128
1,2-Dichloroethane-d4	100	75-139
Toluene-d8	98	80-120
Bromofluorobenzene	102	80-120

Type: BSD Lab ID: QC858467

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,1-Dichloroethene	12.50	14.00	112	66-135	4	24
Benzene	12.50	12.69	102	80-123	0	20
Trichloroethene	12.50	12.52	100	80-123	3	20
Toluene	12.50	12.29	98	80-121	1	20
Chlorobenzene	12.50	12.13	97	80-123	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	108	80-128
1,2-Dichloroethane-d4	99	75-139
Toluene-d8	97	80-120
Bromofluorobenzene	101	80-120

RPD= Relative Percent Difference

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282892	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC858468	Batch#:	240858
Matrix:	Water	Analyzed:	11/02/16
Units:	ug/L		

Analyte	Result	RL
Freon 12	ND	1.0
Chloromethane	ND	1.0
Vinyl Chloride	ND	0.5
Bromomethane	ND	1.0
Chloroethane	ND	1.0
Trichlorofluoromethane	ND	1.0
Acetone	ND	10
Freon 113	ND	2.0
1,1-Dichloroethene	ND	0.5
Methylene Chloride	ND	10
Carbon Disulfide	ND	0.5
MTBE	ND	0.5
trans-1,2-Dichloroethene	ND	0.5
Vinyl Acetate	ND	10
1,1-Dichloroethane	ND	0.5
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	0.5
2,2-Dichloropropane	ND	0.5
Chloroform	ND	0.5
Bromochloromethane	ND	0.5
1,1,1-Trichloroethane	ND	0.5
1,1-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5
1,2-Dichloroethane	ND	0.5
Benzene	ND	0.5
Trichloroethene	ND	0.5
1,2-Dichloropropane	ND	0.5
Bromodichloromethane	ND	0.5
Dibromomethane	ND	0.5
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	0.5
Toluene	ND	0.5
trans-1,3-Dichloropropene	ND	0.5
1,1,2-Trichloroethane	ND	0.5
2-Hexanone	ND	10
1,3-Dichloropropane	ND	0.5
Tetrachloroethene	ND	0.5

ND= Not Detected

RL= Reporting Limit

Batch QC Report

Purgeable Organics by GC/MS			
Lab #:	282892	Location:	1233 Brockman
Client:	Pangea Environmental	Prep:	EPA 5030B
Project#:	2030.001.003	Analysis:	EPA 8260B
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC858468	Batch#:	240858
Matrix:	Water	Analyzed:	11/02/16
Units:	ug/L		

Analyte	Result	RL
Dibromochloromethane	ND	0.5
1,2-Dibromoethane	ND	0.5
Chlorobenzene	ND	0.5
1,1,1,2-Tetrachloroethane	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Styrene	ND	0.5
Bromoform	ND	1.0
Isopropylbenzene	ND	0.5
1,1,2,2-Tetrachloroethane	ND	0.5
1,2,3-Trichloropropane	ND	0.5
Propylbenzene	ND	0.5
Bromobenzene	ND	0.5
1,3,5-Trimethylbenzene	ND	0.5
2-Chlorotoluene	ND	0.5
4-Chlorotoluene	ND	0.5
tert-Butylbenzene	ND	0.5
1,2,4-Trimethylbenzene	ND	0.5
sec-Butylbenzene	ND	0.5
para-Isopropyl Toluene	ND	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
n-Butylbenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
1,2-Dibromo-3-Chloropropane	ND	2.0
1,2,4-Trichlorobenzene	ND	0.5
Hexachlorobutadiene	ND	2.0
Naphthalene	ND	2.0
1,2,3-Trichlorobenzene	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-128
1,2-Dichloroethane-d4	101	75-139
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-120

ND= Not Detected

RL= Reporting Limit

**SOIL GAS
LABORATORY ANALYTICAL REPORTS**



ct Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 283854
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 1233 BOCKMAN
Location : 1233 Bockman
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
SV-21	283854-001
SV-57	283854-002
SV-58	283854-003
SV-59	283854-004
SV-60	283854-005
SV-61	283854-006
SV-62	283854-007
SHROUD	283854-008

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 12/09/2016

Will Rice
Project Manager
will.rice@ctberk.com

CASE NARRATIVE

Laboratory number: 283854
Client: Pangea Environmental
Project: 1233 BOCKMAN
Location: 1233 Bockman
Request Date: 12/01/16
Samples Received: 12/01/16

This data package contains sample and QC results for eight air samples, requested for the above referenced project on 12/01/16. The samples were received cold and intact.

Volatile Organics in Air by MS (EPA TO-15):

Low recovery was observed for carbon tetrachloride in the BSD for batch 241961; the associated RPD was within limits. No other analytical problems were encountered.

Volatile Organics in Air GC (ASTM D1946):

No analytical problems were encountered.

Curtis & Tompkins, Ltd.
 Analytical Laboratory Since 1878
 2323 Fifth Street
 Berkeley, CA 94710
 (510)486-0900 Phone
 (510)486-0532 Fax

Project No: 1233 Boxman
 Project Name: _____
 EDD Format: II III IV
 Turnaround Time: RUSH Standard

AIR TESTING CHAIN OF CUSTODY & PURCHASE ORDER

Page 1 of 1
 Chain of Custody # : _____

C&T LOGIN # 283854

Sampler: E. Lervaaag
 Report To: Ron Scheele
 Company: Panga Env. Svcs
 Telephone: 510-836-3700
 Email: r.scheele@pangaenv.com

TESTING REQUESTED	
TO-15	IPA
	Fixed Gases

Lab No.	Sample ID.	Sampling Information			Sample Volume (Gauge Reading)
		Date Collected	Time Collected	Canister ID (Bar Code #)	
1	SV-21	12.01.16	1409	00054	28.5/6.6
2	SV-57		1008	A00271	27.5/3
3	SV-58		1131	00344	28/6.5
4	SV-59		1201	00067	29/4
5	SV-60		1233	00383	29/8.5
6	SV-61		1300	00282	28/8
7	SV-62	12.01.16	1342	00307	28/6
8	Shroud	12.01.16	1300	00396	29/15

Notes: _____

RELINQUISHED BY: [Signature] 12.01.16 1531 DATE/TIME

RECEIVED BY: [Signature] 12/1/16 1532 DATE/TIME

COOLER RECEIPT CHECKLIST



Login # 283854 Date Received 12/1/16 Number of coolers 8
 Client Pangea Project 1233 Bockman

Date Opened 12/1/16 By (print) FWA (sign) [Signature]
 Date Logged in ↓ By (print) ↓ (sign) ↓
 Date Labeled ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES NO
 Shipping info _____

2A. Were custody seals present? YES (circle) on cooler on samples NO
 How many _____ Name _____ Date _____

2B. Were custody seals intact upon arrival? _____ YES NO N/A

3. Were custody papers dry and intact when received? _____ YES NO

4. Were custody papers filled out properly (ink, signed, etc)? _____ YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) _____ YES NO

6. Indicate the packing in cooler: (if other, describe) _____

- Bubble Wrap Foam blocks Bags None
- Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C) _____

Temperature blank(s) included? Thermometer# _____ IR Gun# _____

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES NO

If YES, what time were they transferred to freezer? _____

9. Did all bottles arrive unbroken/unopened? _____ YES NO

10. Are there any missing / extra samples? _____ YES NO

11. Are samples in the appropriate containers for indicated tests? _____ YES NO

12. Are sample labels present, in good condition and complete? _____ YES NO

13. Do the sample labels agree with custody papers? _____ YES NO

14. Was sufficient amount of sample sent for tests requested? _____ YES NO

15. Are the samples appropriately preserved? _____ YES NO N/A

16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A

17. Did you document your preservative check? (pH strip lot# _____) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A

21. Was the client contacted concerning this sample delivery? _____ YES NO

If YES, Who was called? _____ By _____ Date: _____

COMMENTS

Canister label for Canister ID 383 is not marked on sample ID section. The COC states that the
Sample ID should be SV-60 (lab # 5)

Client Sample ID : SV-59

Laboratory Sample ID :

283854-004

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Freon 12	1.9		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
Acetone	24		4.2	ppbv	As Recd	2.110	EPA TO-15	METHOD
Carbon Disulfide	29		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
Methylene Chloride	1.1		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
n-Hexane	39		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
2-Butanone	3.0		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
Chloroform	1.4		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
Cyclohexane	2.5		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
Benzene	2.5		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
n-Heptane	12		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
Toluene	2.0		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD
Tetrachloroethene	20		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD

Client Sample ID : SV-60

Laboratory Sample ID :

283854-005

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Carbon Disulfide	35		1.3	ppbv	As Recd	2.500	EPA TO-15	METHOD
Isopropanol	6.0		5.0	ppbv	As Recd	2.500	EPA TO-15	METHOD
n-Hexane	43		1.3	ppbv	As Recd	2.500	EPA TO-15	METHOD
Cyclohexane	2.8		1.3	ppbv	As Recd	2.500	EPA TO-15	METHOD
Benzene	2.6		1.3	ppbv	As Recd	2.500	EPA TO-15	METHOD
n-Heptane	11		1.3	ppbv	As Recd	2.500	EPA TO-15	METHOD
Toluene	8.5		1.3	ppbv	As Recd	2.500	EPA TO-15	METHOD
Tetrachloroethene	23		1.3	ppbv	As Recd	2.500	EPA TO-15	METHOD
m,p-Xylenes	1.5		1.3	ppbv	As Recd	2.500	EPA TO-15	METHOD
Carbon Dioxide	13,000		2,500	ppmv	As Recd	2.500	ASTM D1946	METHOD
Oxygen	13,000		2,500	ppmv	As Recd	2.500	ASTM D1946	METHOD

Client Sample ID : SV-61

Laboratory Sample ID :

283854-006

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Acetone	14		4.9	ppbv	As Recd	2.440	EPA TO-15	METHOD
Carbon Disulfide	8.4		1.2	ppbv	As Recd	2.440	EPA TO-15	METHOD
n-Hexane	5.9		1.2	ppbv	As Recd	2.440	EPA TO-15	METHOD
Benzene	1.7		1.2	ppbv	As Recd	2.440	EPA TO-15	METHOD
n-Heptane	2.9		1.2	ppbv	As Recd	2.440	EPA TO-15	METHOD
Toluene	4.9		1.2	ppbv	As Recd	2.440	EPA TO-15	METHOD
Tetrachloroethene	25		1.2	ppbv	As Recd	2.440	EPA TO-15	METHOD

Client Sample ID : SV-62

Laboratory Sample ID :

283854-007

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Carbon Disulfide	2.6		1.1	ppbv	As Recd	2.270	EPA TO-15	METHOD
Tetrachloroethene	6.0		1.1	ppbv	As Recd	2.270	EPA TO-15	METHOD

Client Sample ID : SHROUD

Laboratory Sample ID :

283854-008

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Isopropanol	56,000		2,000	ppbv	As Recd	1005	EPA TO-15	METHOD

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-21	Diln Fac:	2.270
Lab ID:	283854-001	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	1.1	ND	5.6
Freon 114	ND	1.1	ND	7.9
Chloromethane	ND	1.1	ND	2.3
Vinyl Chloride	ND	1.1	ND	2.9
1,3-Butadiene	ND	1.1	ND	2.5
Bromomethane	ND	1.1	ND	4.4
Chloroethane	ND	1.1	ND	3.0
Trichlorofluoromethane	ND	1.1	ND	6.4
Acrolein	ND	4.5	ND	10
1,1-Dichloroethene	ND	1.1	ND	4.5
Freon 113	ND	1.1	ND	8.7
Acetone	ND	4.5	ND	11
Carbon Disulfide	ND	1.1	ND	3.5
Isopropanol	ND	4.5	ND	11
Methylene Chloride	ND	1.1	ND	3.9
trans-1,2-Dichloroethene	ND	1.1	ND	4.5
MTBE	ND	1.1	ND	4.1
n-Hexane	ND	1.1	ND	4.0
1,1-Dichloroethane	ND	1.1	ND	4.6
Vinyl Acetate	ND	1.1	ND	4.0
cis-1,2-Dichloroethene	ND	1.1	ND	4.5
2-Butanone	ND	1.1	ND	3.3
Ethyl Acetate	ND	1.1	ND	4.1
Tetrahydrofuran	ND	1.1	ND	3.3
Chloroform	ND	1.1	ND	5.5
1,1,1-Trichloroethane	ND	1.1	ND	6.2
Cyclohexane	ND	1.1	ND	3.9
Carbon Tetrachloride	ND	1.1	ND	7.1
Benzene	ND	1.1	ND	3.6
1,2-Dichloroethane	ND	1.1	ND	4.6
n-Heptane	ND	1.1	ND	4.7
Trichloroethene	ND	1.1	ND	6.1
1,2-Dichloropropane	ND	1.1	ND	5.2
Bromodichloromethane	ND	1.1	ND	7.6
cis-1,3-Dichloropropene	ND	1.1	ND	5.2

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-21	Diln Fac:	2.270
Lab ID:	283854-001	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.1	ND	4.6
Toluene	ND	1.1	ND	4.3
trans-1,3-Dichloropropene	ND	1.1	ND	5.2
1,1,2-Trichloroethane	ND	1.1	ND	6.2
Tetrachloroethene	30	1.1	200	7.7
2-Hexanone	ND	1.1	ND	4.6
Dibromochloromethane	ND	1.1	ND	9.7
1,2-Dibromoethane	ND	1.1	ND	8.7
Chlorobenzene	ND	1.1	ND	5.2
Ethylbenzene	ND	1.1	ND	4.9
m,p-Xylenes	ND	1.1	ND	4.9
o-Xylene	ND	1.1	ND	4.9
Styrene	ND	1.1	ND	4.8
Bromoform	ND	1.1	ND	12
1,1,2,2-Tetrachloroethane	ND	1.1	ND	7.8
4-Ethyltoluene	ND	1.1	ND	5.6
1,3,5-Trimethylbenzene	ND	1.1	ND	5.6
1,2,4-Trimethylbenzene	ND	1.1	ND	5.6
1,3-Dichlorobenzene	ND	1.1	ND	6.8
1,4-Dichlorobenzene	ND	1.1	ND	6.8
Benzyl chloride	ND	1.1	ND	5.9
1,2-Dichlorobenzene	ND	1.1	ND	6.8
1,2,4-Trichlorobenzene	ND	1.1	ND	8.4
Hexachlorobutadiene	ND	1.1	ND	12
Naphthalene	ND	4.5	ND	24

Surrogate	%REC	Limits
Bromofluorobenzene	103	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-57	Diln Fac:	1.880
Lab ID:	283854-002	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	9.0	0.94	44	4.6
Freon 114	ND	0.94	ND	6.6
Chloromethane	ND	0.94	ND	1.9
Vinyl Chloride	ND	0.94	ND	2.4
1,3-Butadiene	ND	0.94	ND	2.1
Bromomethane	ND	0.94	ND	3.6
Chloroethane	ND	0.94	ND	2.5
Trichlorofluoromethane	5.9	0.94	33	5.3
Acrolein	ND	3.8	ND	8.6
1,1-Dichloroethene	ND	0.94	ND	3.7
Freon 113	ND	0.94	ND	7.2
Acetone	ND	3.8	ND	8.9
Carbon Disulfide	6.7	0.94	21	2.9
Isopropanol	ND	3.8	ND	9.2
Methylene Chloride	ND	0.94	ND	3.3
trans-1,2-Dichloroethene	ND	0.94	ND	3.7
MTBE	ND	0.94	ND	3.4
n-Hexane	3.9	0.94	14	3.3
1,1-Dichloroethane	ND	0.94	ND	3.8
Vinyl Acetate	ND	0.94	ND	3.3
cis-1,2-Dichloroethene	ND	0.94	ND	3.7
2-Butanone	ND	0.94	ND	2.8
Ethyl Acetate	ND	0.94	ND	3.4
Tetrahydrofuran	ND	0.94	ND	2.8
Chloroform	ND	0.94	ND	4.6
1,1,1-Trichloroethane	ND	0.94	ND	5.1
Cyclohexane	2.0	0.94	6.9	3.2
Carbon Tetrachloride	ND	0.94	ND	5.9
Benzene	1.5	0.94	4.8	3.0
1,2-Dichloroethane	ND	0.94	ND	3.8
n-Heptane	1.6	0.94	6.5	3.9
Trichloroethene	ND	0.94	ND	5.1
1,2-Dichloropropane	ND	0.94	ND	4.3
Bromodichloromethane	ND	0.94	ND	6.3
cis-1,3-Dichloropropene	ND	0.94	ND	4.3

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-57	Diln Fac:	1.880
Lab ID:	283854-002	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	0.94	ND	3.9
Toluene	0.98	0.94	3.7	3.5
trans-1,3-Dichloropropene	ND	0.94	ND	4.3
1,1,2-Trichloroethane	ND	0.94	ND	5.1
Tetrachloroethene	1.1	0.94	7.5	6.4
2-Hexanone	ND	0.94	ND	3.9
Dibromochloromethane	ND	0.94	ND	8.0
1,2-Dibromoethane	ND	0.94	ND	7.2
Chlorobenzene	ND	0.94	ND	4.3
Ethylbenzene	ND	0.94	ND	4.1
m,p-Xylenes	2.0	0.94	8.9	4.1
o-Xylene	ND	0.94	ND	4.1
Styrene	ND	0.94	ND	4.0
Bromoform	ND	0.94	ND	9.7
1,1,2,2-Tetrachloroethane	ND	0.94	ND	6.5
4-Ethyltoluene	ND	0.94	ND	4.6
1,3,5-Trimethylbenzene	ND	0.94	ND	4.6
1,2,4-Trimethylbenzene	ND	0.94	ND	4.6
1,3-Dichlorobenzene	ND	0.94	ND	5.7
1,4-Dichlorobenzene	ND	0.94	ND	5.7
Benzyl chloride	ND	0.94	ND	4.9
1,2-Dichlorobenzene	ND	0.94	ND	5.7
1,2,4-Trichlorobenzene	ND	0.94	ND	7.0
Hexachlorobutadiene	ND	0.94	ND	10
Naphthalene	ND	3.8	ND	20

Surrogate	%REC	Limits
Bromofluorobenzene	99	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-58	Diln Fac:	2.220
Lab ID:	283854-003	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	25	1.1	120	5.5
Freon 114	ND	1.1	ND	7.8
Chloromethane	ND	1.1	ND	2.3
Vinyl Chloride	ND	1.1	ND	2.8
1,3-Butadiene	ND	1.1	ND	2.5
Bromomethane	ND	1.1	ND	4.3
Chloroethane	ND	1.1	ND	2.9
Trichlorofluoromethane	5.0	1.1	28	6.2
Acrolein	ND	4.4	ND	10
1,1-Dichloroethene	ND	1.1	ND	4.4
Freon 113	ND	1.1	ND	8.5
Acetone	ND	4.4	ND	11
Carbon Disulfide	6.5	1.1	20	3.5
Isopropanol	ND	4.4	ND	11
Methylene Chloride	ND	1.1	ND	3.9
trans-1,2-Dichloroethene	ND	1.1	ND	4.4
MTBE	ND	1.1	ND	4.0
n-Hexane	2.7	1.1	9.4	3.9
1,1-Dichloroethane	ND	1.1	ND	4.5
Vinyl Acetate	ND	1.1	ND	3.9
cis-1,2-Dichloroethene	ND	1.1	ND	4.4
2-Butanone	ND	1.1	ND	3.3
Ethyl Acetate	ND	1.1	ND	4.0
Tetrahydrofuran	ND	1.1	ND	3.3
Chloroform	ND	1.1	ND	5.4
1,1,1-Trichloroethane	ND	1.1	ND	6.1
Cyclohexane	1.3	1.1	4.4	3.8
Carbon Tetrachloride	ND	1.1	ND	7.0
Benzene	1.5	1.1	4.7	3.5
1,2-Dichloroethane	ND	1.1	ND	4.5
n-Heptane	ND	1.1	ND	4.5
Trichloroethene	ND	1.1	ND	6.0
1,2-Dichloropropane	ND	1.1	ND	5.1
Bromodichloromethane	ND	1.1	ND	7.4
cis-1,3-Dichloropropene	ND	1.1	ND	5.0

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-58	Diln Fac:	2.220
Lab ID:	283854-003	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.1	ND	4.5
Toluene	4.1	1.1	15	4.2
trans-1,3-Dichloropropene	ND	1.1	ND	5.0
1,1,2-Trichloroethane	ND	1.1	ND	6.1
Tetrachloroethene	1.9	1.1	13	7.5
2-Hexanone	ND	1.1	ND	4.5
Dibromochloromethane	ND	1.1	ND	9.5
1,2-Dibromoethane	ND	1.1	ND	8.5
Chlorobenzene	ND	1.1	ND	5.1
Ethylbenzene	ND	1.1	ND	4.8
m,p-Xylenes	1.6	1.1	6.7	4.8
o-Xylene	ND	1.1	ND	4.8
Styrene	ND	1.1	ND	4.7
Bromoform	ND	1.1	ND	11
1,1,2,2-Tetrachloroethane	ND	1.1	ND	7.6
4-Ethyltoluene	ND	1.1	ND	5.5
1,3,5-Trimethylbenzene	ND	1.1	ND	5.5
1,2,4-Trimethylbenzene	ND	1.1	ND	5.5
1,3-Dichlorobenzene	ND	1.1	ND	6.7
1,4-Dichlorobenzene	ND	1.1	ND	6.7
Benzyl chloride	ND	1.1	ND	5.7
1,2-Dichlorobenzene	ND	1.1	ND	6.7
1,2,4-Trichlorobenzene	ND	1.1	ND	8.2
Hexachlorobutadiene	ND	1.1	ND	12
Naphthalene	ND	4.4	ND	23

Surrogate	%REC	Limits
Bromofluorobenzene	101	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-59	Diln Fac:	2.110
Lab ID:	283854-004	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	1.9	1.1	9.2	5.2
Freon 114	ND	1.1	ND	7.4
Chloromethane	ND	1.1	ND	2.2
Vinyl Chloride	ND	1.1	ND	2.7
1,3-Butadiene	ND	1.1	ND	2.3
Bromomethane	ND	1.1	ND	4.1
Chloroethane	ND	1.1	ND	2.8
Trichlorofluoromethane	ND	1.1	ND	5.9
Acrolein	ND	4.2	ND	9.7
1,1-Dichloroethene	ND	1.1	ND	4.2
Freon 113	ND	1.1	ND	8.1
Acetone	24	4.2	57	10
Carbon Disulfide	29	1.1	91	3.3
Isopropanol	ND	4.2	ND	10
Methylene Chloride	1.1	1.1	3.7	3.7
trans-1,2-Dichloroethene	ND	1.1	ND	4.2
MTBE	ND	1.1	ND	3.8
n-Hexane	39	1.1	140	3.7
1,1-Dichloroethane	ND	1.1	ND	4.3
Vinyl Acetate	ND	1.1	ND	3.7
cis-1,2-Dichloroethene	ND	1.1	ND	4.2
2-Butanone	3.0	1.1	8.8	3.1
Ethyl Acetate	ND	1.1	ND	3.8
Tetrahydrofuran	ND	1.1	ND	3.1
Chloroform	1.4	1.1	6.9	5.2
1,1,1-Trichloroethane	ND	1.1	ND	5.8
Cyclohexane	2.5	1.1	8.7	3.6
Carbon Tetrachloride	ND	1.1	ND	6.6
Benzene	2.5	1.1	8.0	3.4
1,2-Dichloroethane	ND	1.1	ND	4.3
n-Heptane	12	1.1	48	4.3
Trichloroethene	ND	1.1	ND	5.7
1,2-Dichloropropane	ND	1.1	ND	4.9
Bromodichloromethane	ND	1.1	ND	7.1
cis-1,3-Dichloropropene	ND	1.1	ND	4.8

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-59	Diln Fac:	2.110
Lab ID:	283854-004	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.1	ND	4.3
Toluene	2.0	1.1	7.6	4.0
trans-1,3-Dichloropropene	ND	1.1	ND	4.8
1,1,2-Trichloroethane	ND	1.1	ND	5.8
Tetrachloroethene	20	1.1	130	7.2
2-Hexanone	ND	1.1	ND	4.3
Dibromochloromethane	ND	1.1	ND	9.0
1,2-Dibromoethane	ND	1.1	ND	8.1
Chlorobenzene	ND	1.1	ND	4.9
Ethylbenzene	ND	1.1	ND	4.6
m,p-Xylenes	ND	1.1	ND	4.6
o-Xylene	ND	1.1	ND	4.6
Styrene	ND	1.1	ND	4.5
Bromoform	ND	1.1	ND	11
1,1,2,2-Tetrachloroethane	ND	1.1	ND	7.2
4-Ethyltoluene	ND	1.1	ND	5.2
1,3,5-Trimethylbenzene	ND	1.1	ND	5.2
1,2,4-Trimethylbenzene	ND	1.1	ND	5.2
1,3-Dichlorobenzene	ND	1.1	ND	6.3
1,4-Dichlorobenzene	ND	1.1	ND	6.3
Benzyl chloride	ND	1.1	ND	5.5
1,2-Dichlorobenzene	ND	1.1	ND	6.3
1,2,4-Trichlorobenzene	ND	1.1	ND	7.8
Hexachlorobutadiene	ND	1.1	ND	11
Naphthalene	ND	4.2	ND	22

Surrogate	%REC	Limits
Bromofluorobenzene	104	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-60	Diln Fac:	2.500
Lab ID:	283854-005	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	1.3	ND	6.2
Freon 114	ND	1.3	ND	8.7
Chloromethane	ND	1.3	ND	2.6
Vinyl Chloride	ND	1.3	ND	3.2
1,3-Butadiene	ND	1.3	ND	2.8
Bromomethane	ND	1.3	ND	4.9
Chloroethane	ND	1.3	ND	3.3
Trichlorofluoromethane	ND	1.3	ND	7.0
Acrolein	ND	5.0	ND	11
1,1-Dichloroethene	ND	1.3	ND	5.0
Freon 113	ND	1.3	ND	9.6
Acetone	ND	5.0	ND	12
Carbon Disulfide	35	1.3	110	3.9
Isopropanol	6.0	5.0	15	12
Methylene Chloride	ND	1.3	ND	4.3
trans-1,2-Dichloroethene	ND	1.3	ND	5.0
MTBE	ND	1.3	ND	4.5
n-Hexane	43	1.3	150	4.4
1,1-Dichloroethane	ND	1.3	ND	5.1
Vinyl Acetate	ND	1.3	ND	4.4
cis-1,2-Dichloroethene	ND	1.3	ND	5.0
2-Butanone	ND	1.3	ND	3.7
Ethyl Acetate	ND	1.3	ND	4.5
Tetrahydrofuran	ND	1.3	ND	3.7
Chloroform	ND	1.3	ND	6.1
1,1,1-Trichloroethane	ND	1.3	ND	6.8
Cyclohexane	2.8	1.3	9.7	4.3
Carbon Tetrachloride	ND	1.3	ND	7.9
Benzene	2.6	1.3	8.4	4.0
1,2-Dichloroethane	ND	1.3	ND	5.1
n-Heptane	11	1.3	46	5.1
Trichloroethene	ND	1.3	ND	6.7
1,2-Dichloropropane	ND	1.3	ND	5.8
Bromodichloromethane	ND	1.3	ND	8.4
cis-1,3-Dichloropropene	ND	1.3	ND	5.7

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-60	Diln Fac:	2.500
Lab ID:	283854-005	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.3	ND	5.1
Toluene	8.5	1.3	32	4.7
trans-1,3-Dichloropropene	ND	1.3	ND	5.7
1,1,2-Trichloroethane	ND	1.3	ND	6.8
Tetrachloroethene	23	1.3	160	8.5
2-Hexanone	ND	1.3	ND	5.1
Dibromochloromethane	ND	1.3	ND	11
1,2-Dibromoethane	ND	1.3	ND	9.6
Chlorobenzene	ND	1.3	ND	5.8
Ethylbenzene	ND	1.3	ND	5.4
m,p-Xylenes	1.5	1.3	6.3	5.4
o-Xylene	ND	1.3	ND	5.4
Styrene	ND	1.3	ND	5.3
Bromoform	ND	1.3	ND	13
1,1,2,2-Tetrachloroethane	ND	1.3	ND	8.6
4-Ethyltoluene	ND	1.3	ND	6.1
1,3,5-Trimethylbenzene	ND	1.3	ND	6.1
1,2,4-Trimethylbenzene	ND	1.3	ND	6.1
1,3-Dichlorobenzene	ND	1.3	ND	7.5
1,4-Dichlorobenzene	ND	1.3	ND	7.5
Benzyl chloride	ND	1.3	ND	6.5
1,2-Dichlorobenzene	ND	1.3	ND	7.5
1,2,4-Trichlorobenzene	ND	1.3	ND	9.3
Hexachlorobutadiene	ND	1.3	ND	13
Naphthalene	ND	5.0	ND	26

Surrogate	%REC	Limits
Bromofluorobenzene	104	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-61	Diln Fac:	2.440
Lab ID:	283854-006	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/03/16

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	1.2	ND	6.0
Freon 114	ND	1.2	ND	8.5
Chloromethane	ND	1.2	ND	2.5
Vinyl Chloride	ND	1.2	ND	3.1
1,3-Butadiene	ND	1.2	ND	2.7
Bromomethane	ND	1.2	ND	4.7
Chloroethane	ND	1.2	ND	3.2
Trichlorofluoromethane	ND	1.2	ND	6.9
Acrolein	ND	4.9	ND	11
1,1-Dichloroethene	ND	1.2	ND	4.8
Freon 113	ND	1.2	ND	9.3
Acetone	14	4.9	32	12
Carbon Disulfide	8.4	1.2	26	3.8
Isopropanol	ND	4.9	ND	12
Methylene Chloride	ND	1.2	ND	4.2
trans-1,2-Dichloroethene	ND	1.2	ND	4.8
MTBE	ND	1.2	ND	4.4
n-Hexane	5.9	1.2	21	4.3
1,1-Dichloroethane	ND	1.2	ND	4.9
Vinyl Acetate	ND	1.2	ND	4.3
cis-1,2-Dichloroethene	ND	1.2	ND	4.8
2-Butanone	ND	1.2	ND	3.6
Ethyl Acetate	ND	1.2	ND	4.4
Tetrahydrofuran	ND	1.2	ND	3.6
Chloroform	ND	1.2	ND	6.0
1,1,1-Trichloroethane	ND	1.2	ND	6.7
Cyclohexane	ND	1.2	ND	4.2
Carbon Tetrachloride	ND	1.2	ND	7.7
Benzene	1.7	1.2	5.6	3.9
1,2-Dichloroethane	ND	1.2	ND	4.9
n-Heptane	2.9	1.2	12	5.0
Trichloroethene	ND	1.2	ND	6.6
1,2-Dichloropropane	ND	1.2	ND	5.6
Bromodichloromethane	ND	1.2	ND	8.2
cis-1,3-Dichloropropene	ND	1.2	ND	5.5

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-61	Diln Fac:	2.440
Lab ID:	283854-006	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/03/16

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.2	ND	5.0
Toluene	4.9	1.2	19	4.6
trans-1,3-Dichloropropene	ND	1.2	ND	5.5
1,1,2-Trichloroethane	ND	1.2	ND	6.7
Tetrachloroethene	25	1.2	170	8.3
2-Hexanone	ND	1.2	ND	5.0
Dibromochloromethane	ND	1.2	ND	10
1,2-Dibromoethane	ND	1.2	ND	9.4
Chlorobenzene	ND	1.2	ND	5.6
Ethylbenzene	ND	1.2	ND	5.3
m,p-Xylenes	ND	1.2	ND	5.3
o-Xylene	ND	1.2	ND	5.3
Styrene	ND	1.2	ND	5.2
Bromoform	ND	1.2	ND	13
1,1,2,2-Tetrachloroethane	ND	1.2	ND	8.4
4-Ethyltoluene	ND	1.2	ND	6.0
1,3,5-Trimethylbenzene	ND	1.2	ND	6.0
1,2,4-Trimethylbenzene	ND	1.2	ND	6.0
1,3-Dichlorobenzene	ND	1.2	ND	7.3
1,4-Dichlorobenzene	ND	1.2	ND	7.3
Benzyl chloride	ND	1.2	ND	6.3
1,2-Dichlorobenzene	ND	1.2	ND	7.3
1,2,4-Trichlorobenzene	ND	1.2	ND	9.1
Hexachlorobutadiene	ND	1.2	ND	13
Naphthalene	ND	4.9	ND	26

Surrogate	%REC	Limits
Bromofluorobenzene	100	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-62	Diln Fac:	2.270
Lab ID:	283854-007	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/03/16

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	1.1	ND	5.6
Freon 114	ND	1.1	ND	7.9
Chloromethane	ND	1.1	ND	2.3
Vinyl Chloride	ND	1.1	ND	2.9
1,3-Butadiene	ND	1.1	ND	2.5
Bromomethane	ND	1.1	ND	4.4
Chloroethane	ND	1.1	ND	3.0
Trichlorofluoromethane	ND	1.1	ND	6.4
Acrolein	ND	4.5	ND	10
1,1-Dichloroethene	ND	1.1	ND	4.5
Freon 113	ND	1.1	ND	8.7
Acetone	ND	4.5	ND	11
Carbon Disulfide	2.6	1.1	8.2	3.5
Isopropanol	ND	4.5	ND	11
Methylene Chloride	ND	1.1	ND	3.9
trans-1,2-Dichloroethene	ND	1.1	ND	4.5
MTBE	ND	1.1	ND	4.1
n-Hexane	ND	1.1	ND	4.0
1,1-Dichloroethane	ND	1.1	ND	4.6
Vinyl Acetate	ND	1.1	ND	4.0
cis-1,2-Dichloroethene	ND	1.1	ND	4.5
2-Butanone	ND	1.1	ND	3.3
Ethyl Acetate	ND	1.1	ND	4.1
Tetrahydrofuran	ND	1.1	ND	3.3
Chloroform	ND	1.1	ND	5.5
1,1,1-Trichloroethane	ND	1.1	ND	6.2
Cyclohexane	ND	1.1	ND	3.9
Carbon Tetrachloride	ND	1.1	ND	7.1
Benzene	ND	1.1	ND	3.6
1,2-Dichloroethane	ND	1.1	ND	4.6
n-Heptane	ND	1.1	ND	4.7
Trichloroethene	ND	1.1	ND	6.1
1,2-Dichloropropane	ND	1.1	ND	5.2
Bromodichloromethane	ND	1.1	ND	7.6
cis-1,3-Dichloropropene	ND	1.1	ND	5.2

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air			
Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-62	Diln Fac:	2.270
Lab ID:	283854-007	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/03/16

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.1	ND	4.6
Toluene	ND	1.1	ND	4.3
trans-1,3-Dichloropropene	ND	1.1	ND	5.2
1,1,2-Trichloroethane	ND	1.1	ND	6.2
Tetrachloroethene	6.0	1.1	41	7.7
2-Hexanone	ND	1.1	ND	4.6
Dibromochloromethane	ND	1.1	ND	9.7
1,2-Dibromoethane	ND	1.1	ND	8.7
Chlorobenzene	ND	1.1	ND	5.2
Ethylbenzene	ND	1.1	ND	4.9
m,p-Xylenes	ND	1.1	ND	4.9
o-Xylene	ND	1.1	ND	4.9
Styrene	ND	1.1	ND	4.8
Bromoform	ND	1.1	ND	12
1,1,2,2-Tetrachloroethane	ND	1.1	ND	7.8
4-Ethyltoluene	ND	1.1	ND	5.6
1,3,5-Trimethylbenzene	ND	1.1	ND	5.6
1,2,4-Trimethylbenzene	ND	1.1	ND	5.6
1,3-Dichlorobenzene	ND	1.1	ND	6.8
1,4-Dichlorobenzene	ND	1.1	ND	6.8
Benzyl chloride	ND	1.1	ND	5.9
1,2-Dichlorobenzene	ND	1.1	ND	6.8
1,2,4-Trichlorobenzene	ND	1.1	ND	8.4
Hexachlorobutadiene	ND	1.1	ND	12
Naphthalene	ND	4.5	ND	24

Surrogate	%REC	Limits
Bromofluorobenzene	103	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SHROUD	Diln Fac:	1,005
Lab ID:	283854-008	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/03/16

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	500	ND	2,500
Freon 114	ND	500	ND	3,500
Chloromethane	ND	500	ND	1,000
Vinyl Chloride	ND	500	ND	1,300
1,3-Butadiene	ND	500	ND	1,100
Bromomethane	ND	500	ND	2,000
Chloroethane	ND	500	ND	1,300
Trichlorofluoromethane	ND	500	ND	2,800
Acrolein	ND	2,000	ND	4,600
1,1-Dichloroethene	ND	500	ND	2,000
Freon 113	ND	500	ND	3,900
Acetone	ND	2,000	ND	4,800
Carbon Disulfide	ND	500	ND	1,600
Isopropanol	56,000	2,000	140,000	4,900
Methylene Chloride	ND	500	ND	1,700
trans-1,2-Dichloroethene	ND	500	ND	2,000
MTBE	ND	500	ND	1,800
n-Hexane	ND	500	ND	1,800
1,1-Dichloroethane	ND	500	ND	2,000
Vinyl Acetate	ND	500	ND	1,800
cis-1,2-Dichloroethene	ND	500	ND	2,000
2-Butanone	ND	500	ND	1,500
Ethyl Acetate	ND	500	ND	1,800
Tetrahydrofuran	ND	500	ND	1,500
Chloroform	ND	500	ND	2,500
1,1,1-Trichloroethane	ND	500	ND	2,700
Cyclohexane	ND	500	ND	1,700
Carbon Tetrachloride	ND	500	ND	3,200
Benzene	ND	500	ND	1,600
1,2-Dichloroethane	ND	500	ND	2,000
n-Heptane	ND	500	ND	2,100
Trichloroethene	ND	500	ND	2,700
1,2-Dichloropropane	ND	500	ND	2,300
Bromodichloromethane	ND	500	ND	3,400
cis-1,3-Dichloropropene	ND	500	ND	2,300

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SHROUD	Diln Fac:	1,005
Lab ID:	283854-008	Batch#:	241961
Matrix:	Air	Sampled:	12/01/16
Units (V):	ppbv	Received:	12/01/16
Units (M):	ug/m3	Analyzed:	12/03/16

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	500	ND	2,100
Toluene	ND	500	ND	1,900
trans-1,3-Dichloropropene	ND	500	ND	2,300
1,1,2-Trichloroethane	ND	500	ND	2,700
Tetrachloroethene	ND	500	ND	3,400
2-Hexanone	ND	500	ND	2,100
Dibromochloromethane	ND	500	ND	4,300
1,2-Dibromoethane	ND	500	ND	3,900
Chlorobenzene	ND	500	ND	2,300
Ethylbenzene	ND	500	ND	2,200
m,p-Xylenes	ND	500	ND	2,200
o-Xylene	ND	500	ND	2,200
Styrene	ND	500	ND	2,100
Bromoform	ND	500	ND	5,200
1,1,2,2-Tetrachloroethane	ND	500	ND	3,400
4-Ethyltoluene	ND	500	ND	2,500
1,3,5-Trimethylbenzene	ND	500	ND	2,500
1,2,4-Trimethylbenzene	ND	500	ND	2,500
1,3-Dichlorobenzene	ND	500	ND	3,000
1,4-Dichlorobenzene	ND	500	ND	3,000
Benzyl chloride	ND	500	ND	2,600
1,2-Dichlorobenzene	ND	500	ND	3,000
1,2,4-Trichlorobenzene	ND	500	ND	3,700
Hexachlorobutadiene	ND	500	ND	5,400
Naphthalene	ND	2,000	ND	11,000

Surrogate	%REC	Limits
Bromofluorobenzene	103	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	241961
Units (V):	ppbv	Analyzed:	12/02/16
Diln Fac:	1.000		

Type: BS Lab ID: QC862900

Analyte	Spiked	Result (V)	%REC	Limits
Freon 12	5.000	4.174	83	70-130
Freon 114	5.000	4.205	84	70-130
Chloromethane	5.000	4.119	82	70-130
Vinyl Chloride	5.000	4.301	86	70-130
1,3-Butadiene	5.000	4.114	82	70-130
Bromomethane	5.000	4.156	83	70-130
Chloroethane	5.000	4.254	85	70-130
Trichlorofluoromethane	5.000	4.474	89	70-130
Acrolein	5.000	4.471	89	70-130
1,1-Dichloroethene	5.000	4.151	83	70-130
Freon 113	5.000	4.401	88	70-130
Acetone	5.000	3.590	72	70-130
Carbon Disulfide	5.000	4.205	84	70-130
Isopropanol	5.000	3.650	73	70-130
Methylene Chloride	5.000	4.238	85	70-130
trans-1,2-Dichloroethene	5.000	5.037	101	70-130
MTBE	5.000	4.433	89	70-130
n-Hexane	5.000	4.393	88	70-130
1,1-Dichloroethane	5.000	4.487	90	70-130
Vinyl Acetate	5.000	5.632	113	70-130
cis-1,2-Dichloroethene	5.000	4.924	98	70-130
2-Butanone	5.000	4.139	83	70-130
Ethyl Acetate	5.000	3.980	80	70-130
Tetrahydrofuran	5.000	5.201	104	70-130
Chloroform	5.000	4.195	84	70-130
1,1,1-Trichloroethane	5.000	5.062	101	70-130
Cyclohexane	5.000	5.496	110	70-130
Carbon Tetrachloride	5.000	3.547	71	70-130
Benzene	5.000	5.118	102	70-130
1,2-Dichloroethane	5.000	5.256	105	70-130
n-Heptane	5.000	5.301	106	70-130
Trichloroethene	5.000	5.132	103	70-130
1,2-Dichloropropane	5.000	5.269	105	70-130

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	241961
Units (V):	ppbv	Analyzed:	12/02/16
Diln Fac:	1.000		

Analyte	Spiked	Result (V)	%REC	Limits
Bromodichloromethane	5.000	5.022	100	70-130
cis-1,3-Dichloropropene	5.000	5.233	105	70-130
4-Methyl-2-Pentanone	5.000	4.998	100	70-130
Toluene	5.000	4.930	99	70-130
trans-1,3-Dichloropropene	5.000	5.250	105	70-130
1,1,2-Trichloroethane	5.000	5.130	103	70-130
Tetrachloroethene	5.000	5.249	105	70-130
2-Hexanone	5.000	5.015	100	70-130
Dibromochloromethane	5.000	4.677	94	70-130
1,2-Dibromoethane	5.000	5.072	101	70-130
Chlorobenzene	5.000	4.776	96	70-130
Ethylbenzene	5.000	5.116	102	70-130
m,p-Xylenes	10.000	10.19	102	70-130
o-Xylene	5.000	4.901	98	70-130
Styrene	5.000	4.227	85	70-130
Bromoform	5.000	4.483	90	70-130
1,1,2,2-Tetrachloroethane	5.000	4.820	96	70-130
4-Ethyltoluene	5.000	4.642	93	70-130
1,3,5-Trimethylbenzene	5.000	4.557	91	70-130
1,2,4-Trimethylbenzene	5.000	4.552	91	70-130
1,3-Dichlorobenzene	5.000	4.572	91	70-130
1,4-Dichlorobenzene	5.000	4.597	92	70-130
Benzyl chloride	5.000	3.880	78	70-130
1,2-Dichlorobenzene	5.000	4.450	89	70-130
1,2,4-Trichlorobenzene	5.000	4.289	86	70-130
Hexachlorobutadiene	5.000	4.345	87	70-130
Naphthalene	5.000	4.008	80	70-130

Surrogate	%REC	Limits
Bromofluorobenzene	102	70-130

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	241961
Units (V):	ppbv	Analyzed:	12/02/16
Diln Fac:	1.000		

Analyte	Spiked	Result (V)	%REC	Limits	RPD	Lim
Bromodichloromethane	5.000	4.987	100	70-130	1	25
cis-1,3-Dichloropropene	5.000	5.259	105	70-130	0	25
4-Methyl-2-Pentanone	5.000	4.982	100	70-130	0	25
Toluene	5.000	4.997	100	70-130	1	25
trans-1,3-Dichloropropene	5.000	5.161	103	70-130	2	25
1,1,2-Trichloroethane	5.000	5.245	105	70-130	2	25
Tetrachloroethene	5.000	5.239	105	70-130	0	25
2-Hexanone	5.000	4.998	100	70-130	0	25
Dibromochloromethane	5.000	4.832	97	70-130	3	25
1,2-Dibromoethane	5.000	4.968	99	70-130	2	25
Chlorobenzene	5.000	4.840	97	70-130	1	25
Ethylbenzene	5.000	5.047	101	70-130	1	25
m,p-Xylenes	10.000	10.70	107	70-130	5	25
o-Xylene	5.000	5.120	102	70-130	4	25
Styrene	5.000	4.422	88	70-130	5	25
Bromoform	5.000	4.511	90	70-130	1	25
1,1,2,2-Tetrachloroethane	5.000	5.168	103	70-130	7	25
4-Ethyltoluene	5.000	4.940	99	70-130	6	25
1,3,5-Trimethylbenzene	5.000	4.850	97	70-130	6	25
1,2,4-Trimethylbenzene	5.000	4.719	94	70-130	4	25
1,3-Dichlorobenzene	5.000	4.782	96	70-130	4	25
1,4-Dichlorobenzene	5.000	4.937	99	70-130	7	25
Benzyl chloride	5.000	4.045	81	70-130	4	25
1,2-Dichlorobenzene	5.000	4.724	94	70-130	6	25
1,2,4-Trichlorobenzene	5.000	4.471	89	70-130	4	25
Hexachlorobutadiene	5.000	4.711	94	70-130	8	25
Naphthalene	5.000	4.366	87	70-130	9	25

Surrogate	%REC	Limits
Bromofluorobenzene	103	70-130

*= Value outside of QC limits; see narrative

RPD= Relative Percent Difference

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Type:	BLANK	Units (M):	ug/m3
Lab ID:	QC862902	Diln Fac:	1.000
Matrix:	Air	Batch#:	241961
Units (V):	ppbv	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	0.50	ND	2.5
Freon 114	ND	0.50	ND	3.5
Chloromethane	ND	0.50	ND	1.0
Vinyl Chloride	ND	0.50	ND	1.3
1,3-Butadiene	ND	0.50	ND	1.1
Bromomethane	ND	0.50	ND	1.9
Chloroethane	ND	0.50	ND	1.3
Trichlorofluoromethane	ND	0.50	ND	2.8
Acrolein	ND	2.0	ND	4.6
1,1-Dichloroethene	ND	0.50	ND	2.0
Freon 113	ND	0.50	ND	3.8
Acetone	ND	2.0	ND	4.8
Carbon Disulfide	ND	0.50	ND	1.6
Isopropanol	ND	2.0	ND	4.9
Methylene Chloride	ND	0.50	ND	1.7
trans-1,2-Dichloroethene	ND	0.50	ND	2.0
MTBE	ND	0.50	ND	1.8
n-Hexane	ND	0.50	ND	1.8
1,1-Dichloroethane	ND	0.50	ND	2.0
Vinyl Acetate	ND	0.50	ND	1.8
cis-1,2-Dichloroethene	ND	0.50	ND	2.0
2-Butanone	ND	0.50	ND	1.5
Ethyl Acetate	ND	0.50	ND	1.8
Tetrahydrofuran	ND	0.50	ND	1.5
Chloroform	ND	0.50	ND	2.4
1,1,1-Trichloroethane	ND	0.50	ND	2.7
Cyclohexane	ND	0.50	ND	1.7
Carbon Tetrachloride	ND	0.50	ND	3.1
Benzene	ND	0.50	ND	1.6
1,2-Dichloroethane	ND	0.50	ND	2.0
n-Heptane	ND	0.50	ND	2.0
Trichloroethene	ND	0.50	ND	2.7
1,2-Dichloropropane	ND	0.50	ND	2.3
Bromodichloromethane	ND	0.50	ND	3.4
cis-1,3-Dichloropropene	ND	0.50	ND	2.3

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Type:	BLANK	Units (M):	ug/m3
Lab ID:	QC862902	Diln Fac:	1.000
Matrix:	Air	Batch#:	241961
Units (V):	ppbv	Analyzed:	12/02/16

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	0.50	ND	2.0
Toluene	ND	0.50	ND	1.9
trans-1,3-Dichloropropene	ND	0.50	ND	2.3
1,1,2-Trichloroethane	ND	0.50	ND	2.7
Tetrachloroethene	ND	0.50	ND	3.4
2-Hexanone	ND	0.50	ND	2.0
Dibromochloromethane	ND	0.50	ND	4.3
1,2-Dibromoethane	ND	0.50	ND	3.8
Chlorobenzene	ND	0.50	ND	2.3
Ethylbenzene	ND	0.50	ND	2.2
m,p-Xylenes	ND	0.50	ND	2.2
o-Xylene	ND	0.50	ND	2.2
Styrene	ND	0.50	ND	2.1
Bromoform	ND	0.50	ND	5.2
1,1,2,2-Tetrachloroethane	ND	0.50	ND	3.4
4-Ethyltoluene	ND	0.50	ND	2.5
1,3,5-Trimethylbenzene	ND	0.50	ND	2.5
1,2,4-Trimethylbenzene	ND	0.50	ND	2.5
1,3-Dichlorobenzene	ND	0.50	ND	3.0
1,4-Dichlorobenzene	ND	0.50	ND	3.0
Benzyl chloride	ND	0.50	ND	2.6
1,2-Dichlorobenzene	ND	0.50	ND	3.0
1,2,4-Trichlorobenzene	ND	0.50	ND	3.7
Hexachlorobutadiene	ND	0.50	ND	5.3
Naphthalene	ND	2.0	ND	10

Surrogate	%REC	Limits
Bromofluorobenzene	100	70-130

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Fixed Gas Analysis			
Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	ASTM D1946
Matrix:	Air	Sampled:	12/01/16
Units:	ppmv	Received:	12/01/16
Units (Mol %):	MOL %	Analyzed:	12/01/16
Batch#:	241945		

Field ID: SV-58 Lab ID: 283854-003
 Type: SAMPLE Diln Fac: 2.220

Analyte	Result	RL	Result (Mol %)	RL
Carbon Dioxide	2,400	2,200	0.24	0.22
Oxygen	17,000	2,200	1.7	0.22
Methane	ND	2,200	ND	0.22

Field ID: SV-60 Lab ID: 283854-005
 Type: SAMPLE Diln Fac: 2.500

Analyte	Result	RL	Result (Mol %)	RL
Carbon Dioxide	13,000	2,500	1.3	0.25
Oxygen	13,000	2,500	1.3	0.25
Methane	ND	2,500	ND	0.25

Type: BLANK Diln Fac: 1.000
 Lab ID: QC862826

Analyte	Result	RL	Result (Mol %)	RL
Carbon Dioxide	ND	1,000	ND	0.10
Oxygen	ND	1,000	ND	0.10
Methane	ND	1,000	ND	0.10

ND= Not Detected
 RL= Reporting Limit

Result Mol %= Result in Mole Percent

Batch QC Report

Fixed Gas Analysis			
Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	ASTM D1946
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC862825	Batch#:	241945
Matrix:	Air	Analyzed:	12/01/16
Units:	ppmv		

Analyte	Spiked	Result	%REC	Limits
Carbon Dioxide	2,000	1,829	91	70-130
Oxygen	2,000	1,771	89	70-130
Methane	2,000	1,865	93	70-130

Batch QC Report

Fixed Gas Analysis			
Lab #:	283854	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	ASTM D1946
Field ID:	SV-58	Units (Mol %):	MOL %
Type:	SDUP	Diln Fac:	2.220
MSS Lab ID:	283854-003	Batch#:	241945
Lab ID:	QC862830	Sampled:	12/01/16
Matrix:	Air	Received:	12/01/16
Units:	ppmv	Analyzed:	12/01/16

Analyte	MSS Result	Result	RL	Result (Mol %)	RL	RPD	Lim
Carbon Dioxide	2,443	2,433	2,220	0.2433	0.2220	0	30
Oxygen	16,960	16,940	2,220	1.694	0.2220	0	30
Methane	<2,220	ND	2,220	ND	0.2220	NC	30

NC= Not Calculated

ND= Not Detected

RL= Reporting Limit

RPD= Relative Percent Difference

Result Mol %= Result in Mole Percent



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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 285105
ANALYTICAL REPORT

Pangea Environmental
1710 Franklin Street
Oakland, CA 94612

Project : 1233 BOCKMAN
Location : 1233 Bockman
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
SV-57	285105-001
SV-58	285105-002
SV-59	285105-003
SV-60	285105-004
SV-61	285105-005
SV-62	285105-006
SHROUD	285105-007

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____

Date: 01/23/2017

Will Rice
Project Manager
will.rice@ctberk.com
(510) 204-2221 Ext 13102

CASE NARRATIVE

Laboratory number: 285105
Client: Pangea Environmental
Project: 1233 BOCKMAN
Location: 1233 Bockman
Request Date: 01/16/17
Samples Received: 01/16/17

This data package contains sample and QC results for seven air samples, requested for the above referenced project on 01/16/17. The samples were received cold and intact.

Volatile Organics in Air by MS (EPA TO-15):

High response was observed for vinyl acetate in the CCV analyzed 01/18/17 20:05; affected data was qualified with "b". High response was observed for vinyl acetate in the CCV analyzed 01/17/17 13:56; affected data was qualified with "b". High recovery was observed for vinyl acetate in the BS for batch 243443; the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated sample. High recoveries were observed for vinyl acetate in the BS/BSD for batch 243484; the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated samples. SV-59 (lab # 285105-003) and SV-60 (lab # 285105-004) were diluted due to high non-target analytes. No other analytical problems were encountered.

COOLER RECEIPT CHECKLIST



Curtis & Tompkins, Ltd.

Login # 285105 Date Received 1/16/17 Number of coolers 2
Client PANSEA Project 1233 Beckman

Date Opened 1/16/17 By (print) EWA (sign) [Signature]
Date Logged in [Signature] By (print) [Signature] (sign) [Signature]
Date Labeled [Signature] By (print) [Signature] (sign) [Signature]

1. Did cooler come with a shipping slip (airbill, etc) YES NO
Shipping info

2A. Were custody seals present? ... YES (circle) on cooler on samples NO
How many Name Date

2B. Were custody seals intact upon arrival? YES NO N/A

3. Were custody papers dry and intact when received? YES NO

4. Were custody papers filled out properly (ink, signed, etc)? YES NO

5. Is the project identifiable from custody papers? (If so fill out top of form) YES NO

6. Indicate the packing in cooler: (if other, describe)
Bubble Wrap Foam blocks Bags None
Cloth material Cardboard Styrofoam Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: Wet Blue/Gel None Temp(°C)

Temperature blank(s) included? Thermometer# IR Gun#

Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES NO
If YES, what time were they transferred to freezer?

9. Did all bottles arrive unbroken/unopened? YES NO

10. Are there any missing / extra samples? YES NO

11. Are samples in the appropriate containers for indicated tests? YES NO

12. Are sample labels present, in good condition and complete? YES NO

13. Do the sample labels agree with custody papers? YES NO

14. Was sufficient amount of sample sent for tests requested? YES NO

15. Are the samples appropriately preserved? YES NO N/A

16. Did you check preservatives for all bottles for each sample? YES NO N/A

17. Did you document your preservative check? (pH strip lot#) YES NO N/A

18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A

19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A

20. Are bubbles > 6mm absent in VOA samples? YES NO N/A

21. Was the client contacted concerning this sample delivery? YES NO
If YES, Who was called? By Date:

COMMENTS

Detections Summary for 285105

Results for any subcontracted analyses are not included in this summary.

Client : Pangea Environmental
 Project : 1233 BOCKMAN
 Location : 1233 Bockman

Client Sample ID : SV-57

Laboratory Sample ID :

285105-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Freon 12	11		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
Trichlorofluoromethane	4.6		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
Carbon Disulfide	5.4		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
Isopropanol	20		4.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
n-Hexane	14		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
Cyclohexane	2.7		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
Benzene	3.4		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
n-Heptane	6.0		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
Toluene	2.4		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
Tetrachloroethene	1.8		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
Ethylbenzene	1.2		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
m,p-Xylenes	4.5		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD
o-Xylene	1.6		1.0	ppbv	As Recd	2.020	EPA TO-15	METHOD

Client Sample ID : SV-58

Laboratory Sample ID :

285105-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Freon 12	24		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
Trichlorofluoromethane	4.1		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
Carbon Disulfide	4.6		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
n-Hexane	12		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
Cyclohexane	2.3		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
Benzene	3.5		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
n-Heptane	4.9		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
Toluene	3.3		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
Tetrachloroethene	2.1		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
Ethylbenzene	1.2		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
m,p-Xylenes	4.3		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD
o-Xylene	1.6		0.99	ppbv	As Recd	1.980	EPA TO-15	METHOD

Client Sample ID : SV-59

Laboratory Sample ID :

285105-003

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Carbon Disulfide	51		3.0	ppbv	As Recd	5.970	EPA TO-15	METHOD
n-Hexane	54		3.0	ppbv	As Recd	5.970	EPA TO-15	METHOD
n-Heptane	11		3.0	ppbv	As Recd	5.970	EPA TO-15	METHOD
Tetrachloroethene	31		3.0	ppbv	As Recd	5.970	EPA TO-15	METHOD

Client Sample ID : SV-60

Laboratory Sample ID :

285105-004

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Carbon Disulfide	34		3.0	ppbv	As Recd	5.910	EPA TO-15	METHOD
Isopropanol	27		12	ppbv	As Recd	5.910	EPA TO-15	METHOD
n-Hexane	58		3.0	ppbv	As Recd	5.910	EPA TO-15	METHOD
n-Heptane	12		3.0	ppbv	As Recd	5.910	EPA TO-15	METHOD
Tetrachloroethene	33		3.0	ppbv	As Recd	5.910	EPA TO-15	METHOD

Client Sample ID : SV-61

Laboratory Sample ID :

285105-005

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Carbon Disulfide	1.0		0.99	ppbv	As Recd	1.970	EPA TO-15	METHOD
n-Hexane	5.5		0.99	ppbv	As Recd	1.970	EPA TO-15	METHOD
n-Heptane	1.4		0.99	ppbv	As Recd	1.970	EPA TO-15	METHOD
Tetrachloroethene	30		0.99	ppbv	As Recd	1.970	EPA TO-15	METHOD

Client Sample ID : SV-62

Laboratory Sample ID :

285105-006

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Tetrachloroethene	3.1		1.1	ppbv	As Recd	2.110	EPA TO-15	METHOD

Client Sample ID : SHROUD

Laboratory Sample ID :

285105-007

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Isopropanol	77,000		2,300	ppbv	As Recd	1158	EPA TO-15	METHOD

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-57	Diln Fac:	2.020
Lab ID:	285105-001	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	11	1.0	54	5.0
Freon 114	ND	1.0	ND	7.1
Chloromethane	ND	1.0	ND	2.1
Vinyl Chloride	ND	1.0	ND	2.6
1,3-Butadiene	ND	1.0	ND	2.2
Bromomethane	ND	1.0	ND	3.9
Chloroethane	ND	1.0	ND	2.7
Trichlorofluoromethane	4.6	1.0	26	5.7
Acrolein	ND	4.0	ND	9.3
1,1-Dichloroethene	ND	1.0	ND	4.0
Freon 113	ND	1.0	ND	7.7
Acetone	ND	4.0	ND	9.6
Carbon Disulfide	5.4	1.0	17	3.1
Isopropanol	20	4.0	49	9.9
Methylene Chloride	ND	1.0	ND	3.5
trans-1,2-Dichloroethene	ND	1.0	ND	4.0
MTBE	ND	1.0	ND	3.6
n-Hexane	14	1.0	48	3.6
1,1-Dichloroethane	ND	1.0	ND	4.1
Vinyl Acetate	ND	1.0	ND	3.6
cis-1,2-Dichloroethene	ND	1.0	ND	4.0
2-Butanone	ND	1.0	ND	3.0
Ethyl Acetate	ND	1.0	ND	3.6
Tetrahydrofuran	ND	1.0	ND	3.0
Chloroform	ND	1.0	ND	4.9
1,1,1-Trichloroethane	ND	1.0	ND	5.5
Cyclohexane	2.7	1.0	9.4	3.5
Carbon Tetrachloride	ND	1.0	ND	6.4
Benzene	3.4	1.0	11	3.2
1,2-Dichloroethane	ND	1.0	ND	4.1
n-Heptane	6.0	1.0	24	4.1
Trichloroethene	ND	1.0	ND	5.4
1,2-Dichloropropane	ND	1.0	ND	4.7
Bromodichloromethane	ND	1.0	ND	6.8
cis-1,3-Dichloropropene	ND	1.0	ND	4.6

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-57	Diln Fac:	2.020
Lab ID:	285105-001	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.0	ND	4.1
Toluene	2.4	1.0	8.9	3.8
trans-1,3-Dichloropropene	ND	1.0	ND	4.6
1,1,2-Trichloroethane	ND	1.0	ND	5.5
Tetrachloroethene	1.8	1.0	12	6.9
2-Hexanone	ND	1.0	ND	4.1
Dibromochloromethane	ND	1.0	ND	8.6
1,2-Dibromoethane	ND	1.0	ND	7.8
Chlorobenzene	ND	1.0	ND	4.6
Ethylbenzene	1.2	1.0	5.4	4.4
m,p-Xylenes	4.5	1.0	19	4.4
o-Xylene	1.6	1.0	7.1	4.4
Styrene	ND	1.0	ND	4.3
Bromoform	ND	1.0	ND	10
1,1,2,2-Tetrachloroethane	ND	1.0	ND	6.9
4-Ethyltoluene	ND	1.0	ND	5.0
1,3,5-Trimethylbenzene	ND	1.0	ND	5.0
1,2,4-Trimethylbenzene	ND	1.0	ND	5.0
1,3-Dichlorobenzene	ND	1.0	ND	6.1
1,4-Dichlorobenzene	ND	1.0	ND	6.1
Benzyl chloride	ND	1.0	ND	5.2
1,2-Dichlorobenzene	ND	1.0	ND	6.1
1,2,4-Trichlorobenzene	ND	1.0	ND	7.5
Hexachlorobutadiene	ND	1.0	ND	11
Naphthalene	ND	4.0	ND	21

Surrogate	%REC	Limits
Bromofluorobenzene	99	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-58	Diln Fac:	1.980
Lab ID:	285105-002	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	24	0.99	120	4.9
Freon 114	ND	0.99	ND	6.9
Chloromethane	ND	0.99	ND	2.0
Vinyl Chloride	ND	0.99	ND	2.5
1,3-Butadiene	ND	0.99	ND	2.2
Bromomethane	ND	0.99	ND	3.8
Chloroethane	ND	0.99	ND	2.6
Trichlorofluoromethane	4.1	0.99	23	5.6
Acrolein	ND	4.0	ND	9.1
1,1-Dichloroethene	ND	0.99	ND	3.9
Freon 113	ND	0.99	ND	7.6
Acetone	ND	4.0	ND	9.4
Carbon Disulfide	4.6	0.99	14	3.1
Isopropanol	ND	4.0	ND	9.7
Methylene Chloride	ND	0.99	ND	3.4
trans-1,2-Dichloroethene	ND	0.99	ND	3.9
MTBE	ND	0.99	ND	3.6
n-Hexane	12	0.99	41	3.5
1,1-Dichloroethane	ND	0.99	ND	4.0
Vinyl Acetate	ND	0.99	ND	3.5
cis-1,2-Dichloroethene	ND	0.99	ND	3.9
2-Butanone	ND	0.99	ND	2.9
Ethyl Acetate	ND	0.99	ND	3.6
Tetrahydrofuran	ND	0.99	ND	2.9
Chloroform	ND	0.99	ND	4.8
1,1,1-Trichloroethane	ND	0.99	ND	5.4
Cyclohexane	2.3	0.99	7.8	3.4
Carbon Tetrachloride	ND	0.99	ND	6.2
Benzene	3.5	0.99	11	3.2
1,2-Dichloroethane	ND	0.99	ND	4.0
n-Heptane	4.9	0.99	20	4.1
Trichloroethene	ND	0.99	ND	5.3
1,2-Dichloropropane	ND	0.99	ND	4.6
Bromodichloromethane	ND	0.99	ND	6.6
cis-1,3-Dichloropropene	ND	0.99	ND	4.5

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-58	Diln Fac:	1.980
Lab ID:	285105-002	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	0.99	ND	4.1
Toluene	3.3	0.99	12	3.7
trans-1,3-Dichloropropene	ND	0.99	ND	4.5
1,1,2-Trichloroethane	ND	0.99	ND	5.4
Tetrachloroethene	2.1	0.99	14	6.7
2-Hexanone	ND	0.99	ND	4.1
Dibromochloromethane	ND	0.99	ND	8.4
1,2-Dibromoethane	ND	0.99	ND	7.6
Chlorobenzene	ND	0.99	ND	4.6
Ethylbenzene	1.2	0.99	5.1	4.3
m,p-Xylenes	4.3	0.99	19	4.3
o-Xylene	1.6	0.99	6.7	4.3
Styrene	ND	0.99	ND	4.2
Bromoform	ND	0.99	ND	10
1,1,2,2-Tetrachloroethane	ND	0.99	ND	6.8
4-Ethyltoluene	ND	0.99	ND	4.9
1,3,5-Trimethylbenzene	ND	0.99	ND	4.9
1,2,4-Trimethylbenzene	ND	0.99	ND	4.9
1,3-Dichlorobenzene	ND	0.99	ND	6.0
1,4-Dichlorobenzene	ND	0.99	ND	6.0
Benzyl chloride	ND	0.99	ND	5.1
1,2-Dichlorobenzene	ND	0.99	ND	6.0
1,2,4-Trichlorobenzene	ND	0.99	ND	7.3
Hexachlorobutadiene	ND	0.99	ND	11
Naphthalene	ND	4.0	ND	21

Surrogate	%REC	Limits
Bromofluorobenzene	99	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-59	Diln Fac:	5.970
Lab ID:	285105-003	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	3.0	ND	15
Freon 114	ND	3.0	ND	21
Chloromethane	ND	3.0	ND	6.2
Vinyl Chloride	ND	3.0	ND	7.6
1,3-Butadiene	ND	3.0	ND	6.6
Bromomethane	ND	3.0	ND	12
Chloroethane	ND	3.0	ND	7.9
Trichlorofluoromethane	ND	3.0	ND	17
Acrolein	ND	12	ND	27
1,1-Dichloroethene	ND	3.0	ND	12
Freon 113	ND	3.0	ND	23
Acetone	ND	12	ND	28
Carbon Disulfide	51	3.0	160	9.3
Isopropanol	ND	12	ND	29
Methylene Chloride	ND	3.0	ND	10
trans-1,2-Dichloroethene	ND	3.0	ND	12
MTBE	ND	3.0	ND	11
n-Hexane	54	3.0	190	11
1,1-Dichloroethane	ND	3.0	ND	12
Vinyl Acetate	ND	3.0	ND	11
cis-1,2-Dichloroethene	ND	3.0	ND	12
2-Butanone	ND	3.0	ND	8.8
Ethyl Acetate	ND	3.0	ND	11
Tetrahydrofuran	ND	3.0	ND	8.8
Chloroform	ND	3.0	ND	15
1,1,1-Trichloroethane	ND	3.0	ND	16
Cyclohexane	ND	3.0	ND	10
Carbon Tetrachloride	ND	3.0	ND	19
Benzene	ND	3.0	ND	9.5
1,2-Dichloroethane	ND	3.0	ND	12
n-Heptane	11	3.0	45	12
Trichloroethene	ND	3.0	ND	16
1,2-Dichloropropane	ND	3.0	ND	14
Bromodichloromethane	ND	3.0	ND	20
cis-1,3-Dichloropropene	ND	3.0	ND	14

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-59	Diln Fac:	5.970
Lab ID:	285105-003	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	3.0	ND	12
Toluene	ND	3.0	ND	11
trans-1,3-Dichloropropene	ND	3.0	ND	14
1,1,2-Trichloroethane	ND	3.0	ND	16
Tetrachloroethene	31	3.0	210	20
2-Hexanone	ND	3.0	ND	12
Dibromochloromethane	ND	3.0	ND	25
1,2-Dibromoethane	ND	3.0	ND	23
Chlorobenzene	ND	3.0	ND	14
Ethylbenzene	ND	3.0	ND	13
m,p-Xylenes	ND	3.0	ND	13
o-Xylene	ND	3.0	ND	13
Styrene	ND	3.0	ND	13
Bromoform	ND	3.0	ND	31
1,1,2,2-Tetrachloroethane	ND	3.0	ND	20
4-Ethyltoluene	ND	3.0	ND	15
1,3,5-Trimethylbenzene	ND	3.0	ND	15
1,2,4-Trimethylbenzene	ND	3.0	ND	15
1,3-Dichlorobenzene	ND	3.0	ND	18
1,4-Dichlorobenzene	ND	3.0	ND	18
Benzyl chloride	ND	3.0	ND	15
1,2-Dichlorobenzene	ND	3.0	ND	18
1,2,4-Trichlorobenzene	ND	3.0	ND	22
Hexachlorobutadiene	ND	3.0	ND	32
Naphthalene	ND	12	ND	63

Surrogate	%REC	Limits
Bromofluorobenzene	100	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-60	Diln Fac:	5.910
Lab ID:	285105-004	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	3.0	ND	15
Freon 114	ND	3.0	ND	21
Chloromethane	ND	3.0	ND	6.1
Vinyl Chloride	ND	3.0	ND	7.6
1,3-Butadiene	ND	3.0	ND	6.5
Bromomethane	ND	3.0	ND	11
Chloroethane	ND	3.0	ND	7.8
Trichlorofluoromethane	ND	3.0	ND	17
Acrolein	ND	12	ND	27
1,1-Dichloroethene	ND	3.0	ND	12
Freon 113	ND	3.0	ND	23
Acetone	ND	12	ND	28
Carbon Disulfide	34	3.0	110	9.2
Isopropanol	27	12	65	29
Methylene Chloride	ND	3.0	ND	10
trans-1,2-Dichloroethene	ND	3.0	ND	12
MTBE	ND	3.0	ND	11
n-Hexane	58	3.0	210	10
1,1-Dichloroethane	ND	3.0	ND	12
Vinyl Acetate	ND	3.0	ND	10
cis-1,2-Dichloroethene	ND	3.0	ND	12
2-Butanone	ND	3.0	ND	8.7
Ethyl Acetate	ND	3.0	ND	11
Tetrahydrofuran	ND	3.0	ND	8.7
Chloroform	ND	3.0	ND	14
1,1,1-Trichloroethane	ND	3.0	ND	16
Cyclohexane	ND	3.0	ND	10
Carbon Tetrachloride	ND	3.0	ND	19
Benzene	ND	3.0	ND	9.4
1,2-Dichloroethane	ND	3.0	ND	12
n-Heptane	12	3.0	49	12
Trichloroethene	ND	3.0	ND	16
1,2-Dichloropropane	ND	3.0	ND	14
Bromodichloromethane	ND	3.0	ND	20
cis-1,3-Dichloropropene	ND	3.0	ND	13

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-60	Diln Fac:	5.910
Lab ID:	285105-004	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	3.0	ND	12
Toluene	ND	3.0	ND	11
trans-1,3-Dichloropropene	ND	3.0	ND	13
1,1,2-Trichloroethane	ND	3.0	ND	16
Tetrachloroethene	33	3.0	220	20
2-Hexanone	ND	3.0	ND	12
Dibromochloromethane	ND	3.0	ND	25
1,2-Dibromoethane	ND	3.0	ND	23
Chlorobenzene	ND	3.0	ND	14
Ethylbenzene	ND	3.0	ND	13
m,p-Xylenes	ND	3.0	ND	13
o-Xylene	ND	3.0	ND	13
Styrene	ND	3.0	ND	13
Bromoform	ND	3.0	ND	31
1,1,2,2-Tetrachloroethane	ND	3.0	ND	20
4-Ethyltoluene	ND	3.0	ND	15
1,3,5-Trimethylbenzene	ND	3.0	ND	15
1,2,4-Trimethylbenzene	ND	3.0	ND	15
1,3-Dichlorobenzene	ND	3.0	ND	18
1,4-Dichlorobenzene	ND	3.0	ND	18
Benzyl chloride	ND	3.0	ND	15
1,2-Dichlorobenzene	ND	3.0	ND	18
1,2,4-Trichlorobenzene	ND	3.0	ND	22
Hexachlorobutadiene	ND	3.0	ND	32
Naphthalene	ND	12	ND	62

Surrogate	%REC	Limits
Bromofluorobenzene	100	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-61	Diln Fac:	1.970
Lab ID:	285105-005	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	0.99	ND	4.9
Freon 114	ND	0.99	ND	6.9
Chloromethane	ND	0.99	ND	2.0
Vinyl Chloride	ND	0.99	ND	2.5
1,3-Butadiene	ND	0.99	ND	2.2
Bromomethane	ND	0.99	ND	3.8
Chloroethane	ND	0.99	ND	2.6
Trichlorofluoromethane	ND	0.99	ND	5.5
Acrolein	ND	3.9	ND	9.0
1,1-Dichloroethene	ND	0.99	ND	3.9
Freon 113	ND	0.99	ND	7.5
Acetone	ND	3.9	ND	9.4
Carbon Disulfide	1.0	0.99	3.2	3.1
Isopropanol	ND	3.9	ND	9.7
Methylene Chloride	ND	0.99	ND	3.4
trans-1,2-Dichloroethene	ND	0.99	ND	3.9
MTBE	ND	0.99	ND	3.6
n-Hexane	5.5	0.99	19	3.5
1,1-Dichloroethane	ND	0.99	ND	4.0
Vinyl Acetate	ND	0.99	ND	3.5
cis-1,2-Dichloroethene	ND	0.99	ND	3.9
2-Butanone	ND	0.99	ND	2.9
Ethyl Acetate	ND	0.99	ND	3.5
Tetrahydrofuran	ND	0.99	ND	2.9
Chloroform	ND	0.99	ND	4.8
1,1,1-Trichloroethane	ND	0.99	ND	5.4
Cyclohexane	ND	0.99	ND	3.4
Carbon Tetrachloride	ND	0.99	ND	6.2
Benzene	ND	0.99	ND	3.1
1,2-Dichloroethane	ND	0.99	ND	4.0
n-Heptane	1.4	0.99	5.8	4.0
Trichloroethene	ND	0.99	ND	5.3
1,2-Dichloropropane	ND	0.99	ND	4.6
Bromodichloromethane	ND	0.99	ND	6.6
cis-1,3-Dichloropropene	ND	0.99	ND	4.5

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-61	Diln Fac:	1.970
Lab ID:	285105-005	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	0.99	ND	4.0
Toluene	ND	0.99	ND	3.7
trans-1,3-Dichloropropene	ND	0.99	ND	4.5
1,1,2-Trichloroethane	ND	0.99	ND	5.4
Tetrachloroethene	30	0.99	200	6.7
2-Hexanone	ND	0.99	ND	4.0
Dibromochloromethane	ND	0.99	ND	8.4
1,2-Dibromoethane	ND	0.99	ND	7.6
Chlorobenzene	ND	0.99	ND	4.5
Ethylbenzene	ND	0.99	ND	4.3
m,p-Xylenes	ND	0.99	ND	4.3
o-Xylene	ND	0.99	ND	4.3
Styrene	ND	0.99	ND	4.2
Bromoform	ND	0.99	ND	10
1,1,2,2-Tetrachloroethane	ND	0.99	ND	6.8
4-Ethyltoluene	ND	0.99	ND	4.8
1,3,5-Trimethylbenzene	ND	0.99	ND	4.8
1,2,4-Trimethylbenzene	ND	0.99	ND	4.8
1,3-Dichlorobenzene	ND	0.99	ND	5.9
1,4-Dichlorobenzene	ND	0.99	ND	5.9
Benzyl chloride	ND	0.99	ND	5.1
1,2-Dichlorobenzene	ND	0.99	ND	5.9
1,2,4-Trichlorobenzene	ND	0.99	ND	7.3
Hexachlorobutadiene	ND	0.99	ND	11
Naphthalene	ND	3.9	ND	21

Surrogate	%REC	Limits
Bromofluorobenzene	100	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-62	Diln Fac:	2.110
Lab ID:	285105-006	Batch#:	243443
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/17/17

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	1.1	ND	5.2
Freon 114	ND	1.1	ND	7.4
Chloromethane	ND	1.1	ND	2.2
Vinyl Chloride	ND	1.1	ND	2.7
1,3-Butadiene	ND	1.1	ND	2.3
Bromomethane	ND	1.1	ND	4.1
Chloroethane	ND	1.1	ND	2.8
Trichlorofluoromethane	ND	1.1	ND	5.9
Acrolein	ND	4.2	ND	9.7
1,1-Dichloroethene	ND	1.1	ND	4.2
Freon 113	ND	1.1	ND	8.1
Acetone	ND	4.2	ND	10
Carbon Disulfide	ND	1.1	ND	3.3
Isopropanol	ND	4.2	ND	10
Methylene Chloride	ND	1.1	ND	3.7
trans-1,2-Dichloroethene	ND	1.1	ND	4.2
MTBE	ND	1.1	ND	3.8
n-Hexane	ND	1.1	ND	3.7
1,1-Dichloroethane	ND	1.1	ND	4.3
Vinyl Acetate	ND	1.1	ND	3.7
cis-1,2-Dichloroethene	ND	1.1	ND	4.2
2-Butanone	ND	1.1	ND	3.1
Ethyl Acetate	ND	1.1	ND	3.8
Tetrahydrofuran	ND	1.1	ND	3.1
Chloroform	ND	1.1	ND	5.2
1,1,1-Trichloroethane	ND	1.1	ND	5.8
Cyclohexane	ND	1.1	ND	3.6
Carbon Tetrachloride	ND	1.1	ND	6.6
Benzene	ND	1.1	ND	3.4
1,2-Dichloroethane	ND	1.1	ND	4.3
n-Heptane	ND	1.1	ND	4.3
Trichloroethene	ND	1.1	ND	5.7
1,2-Dichloropropane	ND	1.1	ND	4.9
Bromodichloromethane	ND	1.1	ND	7.1
cis-1,3-Dichloropropene	ND	1.1	ND	4.8

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air

Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SV-62	Diln Fac:	2.110
Lab ID:	285105-006	Batch#:	243443
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/17/17

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	1.1	ND	4.3
Toluene	ND	1.1	ND	4.0
trans-1,3-Dichloropropene	ND	1.1	ND	4.8
1,1,2-Trichloroethane	ND	1.1	ND	5.8
Tetrachloroethene	3.1	1.1	21	7.2
2-Hexanone	ND	1.1	ND	4.3
Dibromochloromethane	ND	1.1	ND	9.0
1,2-Dibromoethane	ND	1.1	ND	8.1
Chlorobenzene	ND	1.1	ND	4.9
Ethylbenzene	ND	1.1	ND	4.6
m,p-Xylenes	ND	1.1	ND	4.6
o-Xylene	ND	1.1	ND	4.6
Styrene	ND	1.1	ND	4.5
Bromoform	ND	1.1	ND	11
1,1,2,2-Tetrachloroethane	ND	1.1	ND	7.2
4-Ethyltoluene	ND	1.1	ND	5.2
1,3,5-Trimethylbenzene	ND	1.1	ND	5.2
1,2,4-Trimethylbenzene	ND	1.1	ND	5.2
1,3-Dichlorobenzene	ND	1.1	ND	6.3
1,4-Dichlorobenzene	ND	1.1	ND	6.3
Benzyl chloride	ND	1.1	ND	5.5
1,2-Dichlorobenzene	ND	1.1	ND	6.3
1,2,4-Trichlorobenzene	ND	1.1	ND	7.8
Hexachlorobutadiene	ND	1.1	ND	11
Naphthalene	ND	4.2	ND	22

Surrogate	%REC	Limits
Bromofluorobenzene	100	80-121

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SHROUD	Diln Fac:	1,158
Lab ID:	285105-007	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	NA			
Freon 114	NA			
Chloromethane	NA			
Vinyl Chloride	NA			
1,3-Butadiene	NA			
Bromomethane	NA			
Chloroethane	NA			
Trichlorofluoromethane	NA			
Acrolein	NA			
1,1-Dichloroethene	NA			
Freon 113	NA			
Acetone	NA			
Carbon Disulfide	NA			
Isopropanol	77,000	2,300	190,000	5,700
Methylene Chloride	NA			
trans-1,2-Dichloroethene	NA			
MTBE	NA			
n-Hexane	NA			
1,1-Dichloroethane	NA			
Vinyl Acetate	NA			
cis-1,2-Dichloroethene	NA			
2-Butanone	NA			
Ethyl Acetate	NA			
Tetrahydrofuran	NA			
Chloroform	NA			
1,1,1-Trichloroethane	NA			
Cyclohexane	NA			
Carbon Tetrachloride	NA			
Benzene	NA			
1,2-Dichloroethane	NA			
n-Heptane	NA			
Trichloroethene	NA			
1,2-Dichloropropane	NA			
Bromodichloromethane	NA			
cis-1,3-Dichloropropene	NA			

NA= Not Analyzed

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Field ID:	SHROUD	Diln Fac:	1,158
Lab ID:	285105-007	Batch#:	243484
Matrix:	Air	Sampled:	01/16/17
Units (V):	ppbv	Received:	01/16/17
Units (M):	ug/m3	Analyzed:	01/19/17

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	NA			
Toluene	NA			
trans-1,3-Dichloropropene	NA			
1,1,2-Trichloroethane	NA			
Tetrachloroethene	NA			
2-Hexanone	NA			
Dibromochloromethane	NA			
1,2-Dibromoethane	NA			
Chlorobenzene	NA			
Ethylbenzene	NA			
m,p-Xylenes	NA			
o-Xylene	NA			
Styrene	NA			
Bromoform	NA			
1,1,2,2-Tetrachloroethane	NA			
4-Ethyltoluene	NA			
1,3,5-Trimethylbenzene	NA			
1,2,4-Trimethylbenzene	NA			
1,3-Dichlorobenzene	NA			
1,4-Dichlorobenzene	NA			
Benzyl chloride	NA			
1,2-Dichlorobenzene	NA			
1,2,4-Trichlorobenzene	NA			
Hexachlorobutadiene	NA			
Naphthalene	NA			

Surrogate	%REC	Limits
Bromofluorobenzene	97	80-121

NA= Not Analyzed

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	243443
Units (V):	ppbv	Analyzed:	01/17/17
Diln Fac:	1.000		

Analyte	Spiked	Result (V)	%REC	Limits
1,2-Dichloropropane	5.000	5.099	102	70-130
Bromodichloromethane	5.000	5.123	102	70-130
cis-1,3-Dichloropropene	5.000	5.293	106	70-130
4-Methyl-2-Pentanone	5.000	4.688	94	70-130
Toluene	5.000	4.809	96	70-130
trans-1,3-Dichloropropene	5.000	5.209	104	70-130
1,1,2-Trichloroethane	5.000	5.179	104	70-130
Tetrachloroethene	5.000	5.041	101	70-130
2-Hexanone	5.000	4.490	90	70-130
Dibromochloromethane	5.000	4.752	95	70-130
1,2-Dibromoethane	5.000	4.822	96	70-130
Chlorobenzene	5.000	4.678	94	70-130
Ethylbenzene	5.000	4.817	96	70-130
m,p-Xylenes	10.000	10.15	101	70-130
o-Xylene	5.000	4.910	98	70-130
Styrene	5.000	4.191	84	70-130
Bromoform	5.000	4.221	84	70-130
1,1,2,2-Tetrachloroethane	5.000	4.749	95	70-130
4-Ethyltoluene	5.000	4.777	96	70-130
1,3,5-Trimethylbenzene	5.000	5.058	101	70-130
1,2,4-Trimethylbenzene	5.000	4.950	99	70-130
1,3-Dichlorobenzene	5.000	4.399	88	70-130
1,4-Dichlorobenzene	5.000	4.333	87	70-130
Benzyl chloride	5.000	3.545	71	70-130
1,2-Dichlorobenzene	5.000	4.287	86	70-130
1,2,4-Trichlorobenzene	5.000	4.357	87	70-130
Hexachlorobutadiene	5.000	4.009	80	70-130
Naphthalene	5.000	4.328	87	70-130

Surrogate	%REC	Limits
Bromofluorobenzene	99	70-130

*= Value outside of QC limits; see narrative

b= See narrative

RPD= Relative Percent Difference

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	243443
Units (V):	ppbv	Analyzed:	01/17/17
Diln Fac:	1.000		

Analyte	Spiked	Result (V)	%REC	Limits	RPD	Lim
1,2-Dichloropropane	5.000	5.087	102	70-130	0	25
Bromodichloromethane	5.000	5.081	102	70-130	1	25
cis-1,3-Dichloropropene	5.000	5.085	102	70-130	4	25
4-Methyl-2-Pentanone	5.000	4.914	98	70-130	5	25
Toluene	5.000	4.888	98	70-130	2	25
trans-1,3-Dichloropropene	5.000	5.035	101	70-130	3	25
1,1,2-Trichloroethane	5.000	5.171	103	70-130	0	25
Tetrachloroethene	5.000	5.152	103	70-130	2	25
2-Hexanone	5.000	4.845	97	70-130	8	25
Dibromochloromethane	5.000	4.678	94	70-130	2	25
1,2-Dibromoethane	5.000	4.799	96	70-130	0	25
Chlorobenzene	5.000	4.873	97	70-130	4	25
Ethylbenzene	5.000	4.995	100	70-130	4	25
m,p-Xylenes	10.000	10.24	102	70-130	1	25
o-Xylene	5.000	4.881	98	70-130	1	25
Styrene	5.000	4.326	87	70-130	3	25
Bromoform	5.000	4.189	84	70-130	1	25
1,1,2,2-Tetrachloroethane	5.000	4.860	97	70-130	2	25
4-Ethyltoluene	5.000	4.406	88	70-130	8	25
1,3,5-Trimethylbenzene	5.000	4.821	96	70-130	5	25
1,2,4-Trimethylbenzene	5.000	4.704	94	70-130	5	25
1,3-Dichlorobenzene	5.000	4.256	85	70-130	3	25
1,4-Dichlorobenzene	5.000	4.303	86	70-130	1	25
Benzyl chloride	5.000	3.717	74	70-130	5	25
1,2-Dichlorobenzene	5.000	4.127	83	70-130	4	25
1,2,4-Trichlorobenzene	5.000	4.291	86	70-130	2	25
Hexachlorobutadiene	5.000	3.674	73	70-130	9	25
Naphthalene	5.000	4.279	86	70-130	1	25

Surrogate	%REC	Limits
Bromofluorobenzene	101	70-130

*= Value outside of QC limits; see narrative

b= See narrative

RPD= Relative Percent Difference

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Type:	BLANK	Units (M):	ug/m3
Lab ID:	QC868747	Diln Fac:	1.000
Matrix:	Air	Batch#:	243443
Units (V):	ppbv	Analyzed:	01/17/17

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	0.50	ND	2.5
Freon 114	ND	0.50	ND	3.5
Chloromethane	ND	0.50	ND	1.0
Vinyl Chloride	ND	0.50	ND	1.3
1,3-Butadiene	ND	0.50	ND	1.1
Bromomethane	ND	0.50	ND	1.9
Chloroethane	ND	0.50	ND	1.3
Trichlorofluoromethane	ND	0.50	ND	2.8
Acrolein	ND	2.0	ND	4.6
1,1-Dichloroethene	ND	0.50	ND	2.0
Freon 113	ND	0.50	ND	3.8
Acetone	ND	2.0	ND	4.8
Carbon Disulfide	ND	0.50	ND	1.6
Isopropanol	ND	2.0	ND	4.9
Methylene Chloride	ND	0.50	ND	1.7
trans-1,2-Dichloroethene	ND	0.50	ND	2.0
MTBE	ND	0.50	ND	1.8
n-Hexane	ND	0.50	ND	1.8
1,1-Dichloroethane	ND	0.50	ND	2.0
Vinyl Acetate	ND	0.50	ND	1.8
cis-1,2-Dichloroethene	ND	0.50	ND	2.0
2-Butanone	ND	0.50	ND	1.5
Ethyl Acetate	ND	0.50	ND	1.8
Tetrahydrofuran	ND	0.50	ND	1.5
Chloroform	ND	0.50	ND	2.4
1,1,1-Trichloroethane	ND	0.50	ND	2.7
Cyclohexane	ND	0.50	ND	1.7
Carbon Tetrachloride	ND	0.50	ND	3.1
Benzene	ND	0.50	ND	1.6
1,2-Dichloroethane	ND	0.50	ND	2.0
n-Heptane	ND	0.50	ND	2.0
Trichloroethene	ND	0.50	ND	2.7
1,2-Dichloropropane	ND	0.50	ND	2.3
Bromodichloromethane	ND	0.50	ND	3.4
cis-1,3-Dichloropropene	ND	0.50	ND	2.3

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Type:	BLANK	Units (M):	ug/m3
Lab ID:	QC868747	Diln Fac:	1.000
Matrix:	Air	Batch#:	243443
Units (V):	ppbv	Analyzed:	01/17/17

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	0.50	ND	2.0
Toluene	ND	0.50	ND	1.9
trans-1,3-Dichloropropene	ND	0.50	ND	2.3
1,1,2-Trichloroethane	ND	0.50	ND	2.7
Tetrachloroethene	ND	0.50	ND	3.4
2-Hexanone	ND	0.50	ND	2.0
Dibromochloromethane	ND	0.50	ND	4.3
1,2-Dibromoethane	ND	0.50	ND	3.8
Chlorobenzene	ND	0.50	ND	2.3
Ethylbenzene	ND	0.50	ND	2.2
m,p-Xylenes	ND	0.50	ND	2.2
o-Xylene	ND	0.50	ND	2.2
Styrene	ND	0.50	ND	2.1
Bromoform	ND	0.50	ND	5.2
1,1,2,2-Tetrachloroethane	ND	0.50	ND	3.4
4-Ethyltoluene	ND	0.50	ND	2.5
1,3,5-Trimethylbenzene	ND	0.50	ND	2.5
1,2,4-Trimethylbenzene	ND	0.50	ND	2.5
1,3-Dichlorobenzene	ND	0.50	ND	3.0
1,4-Dichlorobenzene	ND	0.50	ND	3.0
Benzyl chloride	ND	0.50	ND	2.6
1,2-Dichlorobenzene	ND	0.50	ND	3.0
1,2,4-Trichlorobenzene	ND	0.50	ND	3.7
Hexachlorobutadiene	ND	0.50	ND	5.3
Naphthalene	ND	2.0	ND	10

Surrogate	%REC	Limits
Bromofluorobenzene	99	70-130

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	243484
Units (V):	ppbv	Analyzed:	01/18/17
Diln Fac:	1.000		

Analyte	Spiked	Result (V)	%REC	Limits
1,2-Dichloropropane	5.000	5.208	104	70-130
Bromodichloromethane	5.000	5.110	102	70-130
cis-1,3-Dichloropropene	5.000	5.123	102	70-130
4-Methyl-2-Pentanone	5.000	5.035	101	70-130
Toluene	5.000	5.009	100	70-130
trans-1,3-Dichloropropene	5.000	5.107	102	70-130
1,1,2-Trichloroethane	5.000	5.161	103	70-130
Tetrachloroethene	5.000	5.319	106	70-130
2-Hexanone	5.000	4.903	98	70-130
Dibromochloromethane	5.000	4.775	96	70-130
1,2-Dibromoethane	5.000	4.934	99	70-130
Chlorobenzene	5.000	5.158	103	70-130
Ethylbenzene	5.000	5.200	104	70-130
m,p-Xylenes	10.00	10.65	106	70-130
o-Xylene	5.000	4.951	99	70-130
Styrene	5.000	4.326	87	70-130
Bromoform	5.000	4.259	85	70-130
1,1,2,2-Tetrachloroethane	5.000	4.898	98	70-130
4-Ethyltoluene	5.000	4.420	88	70-130
1,3,5-Trimethylbenzene	5.000	4.588	92	70-130
1,2,4-Trimethylbenzene	5.000	4.499	90	70-130
1,3-Dichlorobenzene	5.000	4.440	89	70-130
1,4-Dichlorobenzene	5.000	4.229	85	70-130
Benzyl chloride	5.000	3.797	76	70-130
1,2-Dichlorobenzene	5.000	4.295	86	70-130
1,2,4-Trichlorobenzene	5.000	4.123	82	70-130
Hexachlorobutadiene	5.000	4.151	83	70-130
Naphthalene	5.000	4.170	83	70-130

Surrogate	%REC	Limits
Bromofluorobenzene	100	70-130

*= Value outside of QC limits; see narrative

b= See narrative

RPD= Relative Percent Difference

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Matrix:	Air	Batch#:	243484
Units (V):	ppbv	Analyzed:	01/18/17
Diln Fac:	1.000		

Analyte	Spiked	Result (V)	%REC	Limits	RPD	Lim
1,2-Dichloropropane	5.000	5.051	101	70-130	3	25
Bromodichloromethane	5.000	4.972	99	70-130	3	25
cis-1,3-Dichloropropene	5.000	4.928	99	70-130	4	25
4-Methyl-2-Pentanone	5.000	4.917	98	70-130	2	25
Toluene	5.000	5.018	100	70-130	0	25
trans-1,3-Dichloropropene	5.000	4.979	100	70-130	3	25
1,1,2-Trichloroethane	5.000	5.133	103	70-130	1	25
Tetrachloroethene	5.000	5.130	103	70-130	4	25
2-Hexanone	5.000	4.993	100	70-130	2	25
Dibromochloromethane	5.000	4.645	93	70-130	3	25
1,2-Dibromoethane	5.000	4.829	97	70-130	2	25
Chlorobenzene	5.000	5.031	101	70-130	2	25
Ethylbenzene	5.000	5.197	104	70-130	0	25
m,p-Xylenes	10.000	10.45	104	70-130	2	25
o-Xylene	5.000	5.071	101	70-130	2	25
Styrene	5.000	4.552	91	70-130	5	25
Bromoform	5.000	4.230	85	70-130	1	25
1,1,2,2-Tetrachloroethane	5.000	4.863	97	70-130	1	25
4-Ethyltoluene	5.000	4.663	93	70-130	5	25
1,3,5-Trimethylbenzene	5.000	4.725	95	70-130	3	25
1,2,4-Trimethylbenzene	5.000	4.692	94	70-130	4	25
1,3-Dichlorobenzene	5.000	4.372	87	70-130	2	25
1,4-Dichlorobenzene	5.000	4.461	89	70-130	5	25
Benzyl chloride	5.000	3.790	76	70-130	0	25
1,2-Dichlorobenzene	5.000	4.216	84	70-130	2	25
1,2,4-Trichlorobenzene	5.000	4.149	83	70-130	1	25
Hexachlorobutadiene	5.000	4.294	86	70-130	3	25
Naphthalene	5.000	4.180	84	70-130	0	25

Surrogate	%REC	Limits
Bromofluorobenzene	102	70-130

*= Value outside of QC limits; see narrative

b= See narrative

RPD= Relative Percent Difference

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Type:	BLANK	Units (M):	ug/m3
Lab ID:	QC868906	Diln Fac:	1.000
Matrix:	Air	Batch#:	243484
Units (V):	ppbv	Analyzed:	01/18/17

Analyte	Result (V)	RL	Result (M)	RL
Freon 12	ND	0.50	ND	2.5
Freon 114	ND	0.50	ND	3.5
Chloromethane	ND	0.50	ND	1.0
Vinyl Chloride	ND	0.50	ND	1.3
1,3-Butadiene	ND	0.50	ND	1.1
Bromomethane	ND	0.50	ND	1.9
Chloroethane	ND	0.50	ND	1.3
Trichlorofluoromethane	ND	0.50	ND	2.8
Acrolein	ND	2.0	ND	4.6
1,1-Dichloroethene	ND	0.50	ND	2.0
Freon 113	ND	0.50	ND	3.8
Acetone	ND	2.0	ND	4.8
Carbon Disulfide	ND	0.50	ND	1.6
Isopropanol	ND	2.0	ND	4.9
Methylene Chloride	ND	0.50	ND	1.7
trans-1,2-Dichloroethene	ND	0.50	ND	2.0
MTBE	ND	0.50	ND	1.8
n-Hexane	ND	0.50	ND	1.8
1,1-Dichloroethane	ND	0.50	ND	2.0
Vinyl Acetate	ND	0.50	ND	1.8
cis-1,2-Dichloroethene	ND	0.50	ND	2.0
2-Butanone	ND	0.50	ND	1.5
Ethyl Acetate	ND	0.50	ND	1.8
Tetrahydrofuran	ND	0.50	ND	1.5
Chloroform	ND	0.50	ND	2.4
1,1,1-Trichloroethane	ND	0.50	ND	2.7
Cyclohexane	ND	0.50	ND	1.7
Carbon Tetrachloride	ND	0.50	ND	3.1
Benzene	ND	0.50	ND	1.6
1,2-Dichloroethane	ND	0.50	ND	2.0
n-Heptane	ND	0.50	ND	2.0
Trichloroethene	ND	0.50	ND	2.7
1,2-Dichloropropane	ND	0.50	ND	2.3
Bromodichloromethane	ND	0.50	ND	3.4
cis-1,3-Dichloropropene	ND	0.50	ND	2.3

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units

Batch QC Report

Volatile Organics in Air			
Lab #:	285105	Location:	1233 Bockman
Client:	Pangea Environmental	Prep:	METHOD
Project#:	1233 BOCKMAN	Analysis:	EPA TO-15
Type:	BLANK	Units (M):	ug/m3
Lab ID:	QC868906	Diln Fac:	1.000
Matrix:	Air	Batch#:	243484
Units (V):	ppbv	Analyzed:	01/18/17

Analyte	Result (V)	RL	Result (M)	RL
4-Methyl-2-Pentanone	ND	0.50	ND	2.0
Toluene	ND	0.50	ND	1.9
trans-1,3-Dichloropropene	ND	0.50	ND	2.3
1,1,2-Trichloroethane	ND	0.50	ND	2.7
Tetrachloroethene	ND	0.50	ND	3.4
2-Hexanone	ND	0.50	ND	2.0
Dibromochloromethane	ND	0.50	ND	4.3
1,2-Dibromoethane	ND	0.50	ND	3.8
Chlorobenzene	ND	0.50	ND	2.3
Ethylbenzene	ND	0.50	ND	2.2
m,p-Xylenes	ND	0.50	ND	2.2
o-Xylene	ND	0.50	ND	2.2
Styrene	ND	0.50	ND	2.1
Bromoform	ND	0.50	ND	5.2
1,1,2,2-Tetrachloroethane	ND	0.50	ND	3.4
4-Ethyltoluene	ND	0.50	ND	2.5
1,3,5-Trimethylbenzene	ND	0.50	ND	2.5
1,2,4-Trimethylbenzene	ND	0.50	ND	2.5
1,3-Dichlorobenzene	ND	0.50	ND	3.0
1,4-Dichlorobenzene	ND	0.50	ND	3.0
Benzyl chloride	ND	0.50	ND	2.6
1,2-Dichlorobenzene	ND	0.50	ND	3.0
1,2,4-Trichlorobenzene	ND	0.50	ND	3.7
Hexachlorobutadiene	ND	0.50	ND	5.3
Naphthalene	ND	2.0	ND	10

Surrogate	%REC	Limits
Bromofluorobenzene	95	70-130

ND= Not Detected

RL= Reporting Limit

Result M= Result in mass units

Result V= Result in volume units