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August 29, 2016

Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Attention: Mr. Mark Detterman, PG, CEG, Senior Hazardous Materials Specialist

TRANSMITTAL LETTER
RESULTS OF PILOT STUDY FOR SOIL VAPOR EXTRACTION
6701, 6705, and 6707 SHELLMOUND STREET
EMERYVILLE, CALIFORNIA
Fuel Leak Case No. RO0000548
Geotracker Global ID T0600100894

Dear Mr. Detterman:

Submitted herewith for your review is the *Results of Pilot Study for Soil Vapor Extraction, 6701, 6705, and 6707 Shellmound Street, Emeryville, California* dated August 29, 2016, prepared by PES Environmental, Inc.

I declare, under penalty of perjury, that the information and/or recommendations contained in the above-referenced document for the subject property are true and correct to the best of my knowledge.

Very truly yours,

ANTON EMERYVILLE, LLC

Rachel Green
Development Manager

PES Environmental, Inc.
Engineering & Environmental Services

A Report Prepared For:

Anton Emeryville, LLC
950 Tower Lane, Suite 1225
Foster City, California 94404

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6701, 6705, and 6707 SHELLMOUND STREET
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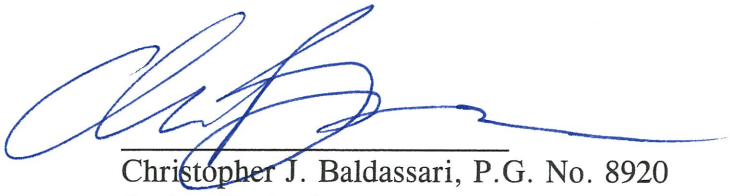
AUGUST 29, 2016

By:



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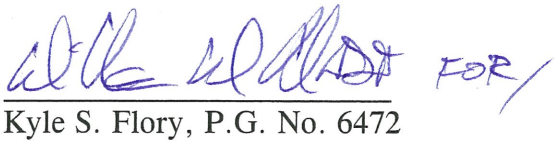

Kyle S. Flory, P.G. No. 6472
Principal Geologist

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1.0 INTRODUCTION

This report has been prepared by PES Environmental, Inc. (PES), on behalf of Anton Emeryville, LLC (Anton), for the property located at 6701, 6705, and 6707 Shellmound Street in Emeryville, California ("Site", as shown on Plates 1 and 2). The Site consists of a single legal parcel identified by Alameda County Assessor's Parcel Number (APN) 049-14906-02, covering approximately 2.27 acres. The Site location and a Site plan are shown on Plates 1 and 2, respectively. The subject property is currently listed as an open Spills, Leaks, Investigation and Cleanup (SLIC) case[1] with Alameda County Environmental Health (ACEH) as the lead environmental regulatory agency. PES understands Anton is seeking to acquire the Site for redevelopment purposes and the development plans include: demolition of existing buildings; grading and soil excavation for utilities and building foundations; and construction of a new multi-story multi-use building and associated parking, driveway, and landscaped areas.

The activities described herein were conducted in accordance with PES' *Work Plan for Soil Vapor Extraction* (Work Plan; PES, 2016c), which was approved by ACEH in a letter entitled *Conditional Interim Remedial Work Plan Approval and Work Plan Request* (ACEH, 2016). The objective of the Work Plan was to describe procedures evaluation of soil vapor extraction (SVE) technology through performance of an SVE pilot study.

1.1 Scope of Report

The following sections in this report include:

- **Section 2.0, Site Background** – presents a description of the Site and Site history, previous environmental investigations, and an overview of pertinent local geology and hydrogeology;
- **Section 3.0, Pilot Test Program –** presents a description and methodologies of the SVE pilot test;
- **Section 4.0, Summary of SVE Pilot Study Results** – discusses the results of the SVE pilot study;
- **Section 5.0, Conclusions and Recommendations** – provides a summary of the SVE pilot test results and discusses recommendations for future Site activities; and
- **Section 6.0, References** – presents references utilized in this report.

[1] The case is identified as Mike Roberts Color Production (6707 Bay Street), ACEH Case No. RO0000548; California State Water Resource Control Board Geotracker Global ID T0600100894.

2.0 SITE BACKGROUND

Summary descriptions of the Site location, physical setting, Site history and operations, geologic and hydrogeologic settings are presented below. Additional details were presented in the Conceptual Site Model (CSM) and Site Management Plan (SMP) documents (PES, 2015a and 2015b).

2.1 Current Site and Vicinity Characteristics

The Site is located at 6701, 6705, and 6707 Shellmound Street (previously known as Bay Street), in a mixed industrial, commercial, and residential area of Emeryville, Alameda County, California. The Site consists of a single legal parcel covering approximately 2.27 acres and identified by Alameda County APN 049-1490-002. The current Site buildings consist of a two-story office building and a warehouse building (Plate 2). A second story mezzanine-level is located in the northern portion of the warehouse. The warehouse and office building are connected by a 1-story lobby/receptionist area. The footprints of the office and warehouse buildings occupy approximately 7,470 and 43,850 square feet, respectively (see Plate 2), and both buildings have concrete slab-on grade floors. The exterior of the subject property consists of landscaped areas and asphalt paved parking and driving areas.

The Site is bounded to the west and north by the Ashby Avenue off-ramp from Interstate 80, to the south by a commercial building, and to the east by Shellmound Street and a railroad right-of-way. The Site buildings and adjacent areas are shown on Plate 2.

According to the United States Geological Survey (USGS) Oakland West, California Quadrangle 7.5 minute series topographic map dated 1993, the Site is situated at an elevation of approximately 18 feet above mean sea level. The Site is relatively flat, but the vicinity slopes gently to the west/southwest. The nearest surface water body is San Francisco Bay, located approximately 1,000 feet west of the subject property.

2.2 Historical Site Use

An extensive discussion of historical Site use was presented in the SMP dated May 19, 2015. A brief summary of Site historical use is presented below.

The Site land historically consisted of San Francisco Bay tidal mud flats and was below sea level until the mid- to late-1930s, when a levee was built west of the subject property and a highway (Eastshore Highway, now Interstate 80) was constructed on the levee. From that time until the early to mid-1950s the area between the highway and the former shoreline, including the subject property and vicinity, were intermittently filled using non-native materials to create buildable land. The existing Site buildings were constructed over the fill materials in approximately 1963.

A label tape manufacturer (Dymo) operated at the Site from approximately 1963 to 1979, and reportedly used chemicals including methyl isobutyl ketone (MIBK, which is also known as 4-methyl-2-pentanone) and methyl ethyl ketone (MEK, also known as 2-butanone) stored in

three underground storage tanks (USTs), previously located in the eastern portion of the Site. The USTs were removed in 1989. Mike Roberts Color Production (MRCP) operated at the Site from 1979 to 1989, and initially manufactured and printed colored postcards before later incorporating color printing, lithography, and off-set printing operations. Nady Systems, Inc. (Nady) purchased the property from MRCP in 1990 and utilizes the Site for office use and for storage of electronic sound equipment, product shipping and receiving, and minor equipment repair. Nady relocated its warehouse operations in July 2016. Nady reportedly used only limited amounts (e.g., bench scale) of chemicals in its operations.

2.3 Site Geology and Hydrogeology

Based on the results of investigations performed on the subject property and in the vicinity, the Site is underlain by fill material overlying deposits of native silts and clays known locally as Old Bay Mud. The fill material ranges in thickness from approximately 10 to 19 feet and consists primarily of coarse-grained sands and gravels that contain varying amounts of fines, and fine-grained silts and clays. The fill material has been encountered throughout the Site and is generally most abundant on the western half of the Site and at depths below approximately 8 to 10 feet below ground surface (bgs). The fill material often contains abundant debris (e.g., brick, concrete, metal, asphalt, glass, wood, fabric, and rubber). Fine-grained soils are present directly below the fill material. These soils generally consist of dark-colored clays and occasional silts with organic material that represent Old Bay Mud deposits.

Depth to groundwater varies locally across the Site but is generally shallow. Shallow groundwater at the Site has been encountered at the Site at depths ranging from approximately 8 to 12 feet bgs. Based on topography and the results of historical groundwater investigations, the predominant groundwater flow direction beneath the Site is to the south-southwest toward the San Francisco Bay, with localized flow towards the west-northwest in the area of the former USTs located in the eastern portion of the Site.

Previous investigations have shown that the fill materials at the Site and other similarly filled properties in the vicinity contain residual contamination. Contamination found and attributed to the non-native fill materials originally used to create the land along the bay-shore area of Emeryville, including the Site and immediate vicinity, includes impacts related to total petroleum hydrocarbons (TPH), volatile organics compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and metals.

3.0 PILOT TEST PROGRAM

The activities associated with the SVE pilot test are summarized below, and the results are presented in Section 4.0. SVE is a remediation technology that uses vacuum blowers and extraction wells for the purpose of creating pressure (vacuum) gradients in the vadose zone to induce airflow to extraction wells. SVE pilot tests are intended to provide data for the evaluation of the pressure (vacuum) field developed by vacuum applied to SVE wells, and to assess the variation of vacuum gradients around the operating SVE wells by observing the responses to extraction in vapor monitoring probes. As described in the approved Work Plan,

the vacuum data collected during a SVE pilot test are used to estimate the radius of effective vacuum influence (ROI) for each SVE well or set of SVE wells (U.S. ACE, 2002; USEPA 1991a; USEPA 1991b). In addition, SVE testing provides an assessment of the quantity and concentration of extracted VOCs for use in designing a SVE treatment system.

In order to test the feasibility of implementing SVE at the Site and to develop an appropriate Site-specific design for a full-scale SVE system, the investigative pilot study was performed to assess key SVE system design parameters including: (1) optimum vacuum and air-flow rates from the SVE well configuration; (2) the ROI measured during the constant rate test; and (3) a quantitative estimate of the VOC emissions over time. Determination of these design parameters was conducted using field and laboratory data, and were utilized for confirmation and optimization of the design parameters for the full-scale SVE system.

3.1 Field Planning Activities and Subcontractor Services

Prior to initiating field activities at the Site, PES updated the Site-specific Health and Safety Plan (HSP). Prior to installation of the SVE well and probes, Underground Service Alert was contacted to schedule visits by public and private utility companies to locate their underground utilities. Pilot study SVE system services were provided by Environmental Engineering Consulting & Remediation, Inc. (E2CR) of Roseville, California; a general engineering contractor licensed by the State of California.

The pilot study SVE equipment is owned and operated by E2CR. In accordance with BAAQMD Regulation 8 for Organic Compounds, Rules 8-47-109, 8-47-113 and 8-47-402, as well as E2CR consultation with BAAQMD staff, due to the following: (1) the pilot study duration was less than five days; (2) less than 1 pound of VOC per day was emitted; and (3) emissions of benzene were less than 0.05 pounds per day, emissions of vinyl chloride were less than 0.2 pounds per day, and TCE and PCE emissions were less than 0.5 pounds per day, the pilot study was exempt from BAAQMD permitting requirements. Additionally, as cited in BAAQMD Regulation 2-1-106 and Table 2-5-1, based on the estimated emissions the full-scale SVE plant will be eligible for expedited permitting from BAAQMD. A schematic drawing of the SVE system is provided in Appendix A.

3.2 Installation of Soil Vapor Extraction Well and Soil Vapor Monitoring Probes

The SVE pilot study well (SVE-1) and soil vapor monitoring probes were installed on June 8, 2016 under permit from Alameda County Public Works Agency (ACPWA) (Appendix B). A summary of well and probe construction details is provided in Tables 1 and 2, and locations are shown on Plate 2.

3.2.1 Installation of Pilot Study Well SVE-1

Well SVE-1 was installed using a track-mounted, limited access, hollow-stem auger drilling rig. The boring was advanced using a 10-inch outside diameter hollow-stem auger. Lithologic conditions were based on previous soil borings drilled in relatively close proximity to SVE-1 (e.g., SVP-22) and therefore no soil samples were collected. A PES geologist supervised the

drilling activities and prepared a well completion log, presented in Appendix B. As shown on the well completion log, SVE-1 was constructed with 2-inch diameter Schedule 40 polyvinyl chloride (PVC) casing and screened from approximately 5 to 10 feet bgs, with blank PVC casing from 5 feet bgs to approximately 2 feet above ground surface (ags). The filter pack consisted of No. 3 sand extending 6 inches above the top of the screened interval. Uncoated bentonite chip seals were placed between the filter pack interval and subsequently hydrated using potable tap water. A bentonite seal was placed from the top of the hydrated bentonite seal (approximately 2.5 feet bgs) extending to the surface.

3.2.2 Installation of Soil Vapor Monitoring Probes

Twelve (12) soil vapor monitoring probes (SVPs) were installed at six locations (SVP-1 through SVP-6, as shown on Plate 2) in an array around well SVE-1 for use in the pilot study. Installation procedures are summarized below. Soil vapor monitoring probe lithologic logs and construction details are presented in Table 2 and Appendix B.

Two probes were nested within each boring. The borings were continuously cored using a track-mounted, direct-push drill rig by driving a 4-foot long by 2-inch outside-diameter sampler into undisturbed soil. A PES geologist supervised the drilling activities and prepared a lithologic and well completion log.

A total of six (6) shallow vapor monitoring probes were placed at approximately 3.5 bgs (SVP-1-3.5 through SVP-6-3.5). A total of six (6) deeper vapor monitoring probes were screened at 7.5 feet bgs (SVP-1-7.5 through SVP-6-7.5), the approximate midpoint of the screened interval of well SVE-1.

The monitoring probes were constructed of Geoprobe AT86 vapor sampling implants with a 6-inch screen length (placed from approximately 3.25 to 3.75 feet bgs in the shallow probes, and 7.25 to 7.75 feet bgs in the deeper probes), fitted with 0.25-inch outside-diameter nylon tubing. The filter pack consisted of No. 3 sand extending 3 inches below to 6 inches above the top of each screened probe interval. Uncoated bentonite chip seals were placed between each filter pack interval and subsequently hydrated. A bentonite-cement seal was placed from the top of the shallow probe filter pack to the surface. Each monitoring probe was labeled and fitted with a compression fitting.

It is anticipated that the vapor monitoring probes installed for the pilot study will allow for future monitoring of VOC concentrations and vacuum pressure at various locations and depths.

3.2.3 Equipment Decontamination

Equipment that contacted chemical-affected soil was decontaminated before and after use to reduce the potential for cross-contamination, in accordance with the Work Plan. Decontamination procedures were implemented and downhole equipment was steam-cleaned or washed with a Liquinox/deionized water solution and double-rinsed with distilled water prior to use at the Site, before each boring, and before demobilization from the work area.

3.2.4 Handling, Storage, and Disposal of Investigation-Derived Wastes

Decontamination rinsate and soil cuttings generated during the investigation was contained in secured and labeled Department of Transportation (DOT)-approved 55-gallon steel drums and temporarily stored on-Site until proper off-Site management in accordance with applicable State and Federal laws can be arranged. The decontamination rinsate and soil were characterized by analyzing representative samples of the materials for VOCs and TPH quantified as gasoline (TPHg) by EPA Test Method 8260B, TPH quantified as diesel (TPHd) and TPH quantified as motor oil (TPHmo) by EPA Test Method 8015M, and the Title 22 California Code of Regulations list of seventeen metals (Title 22 metals) by USEPA Method 6010B and 7471A.

Arrangements for the removal, transportation, and off-Site recycling or disposal of the decontamination fluids and soil will be made following the completion of waste characterization and profiling.

3.3 Description of the Pilot-Scale Soil Vapor Extraction System

Well SVE-1 was connected by above ground piping and directed through a moisture entrainment separator and particulate air filter to remove entrained water or particulates from the air stream. The skid-mounted system blower was rated for flow rates up to 900 standard cubic feet per minute (scfm), and was connected to a variable frequency drive and control panel. The system blower draws the vapor through granular activated carbon (GAC) to remove VOCs contained in the extracted vapors. The activated carbon contained within two 2,000-pound vessels connected in series. After treatment by GAC, the extracted airstream is conveyed through the vacuum blower to an exhaust stack. A schematic drawing of the SVE system is presented in Appendix A.

3.4 SVE Pilot Test Sequence

The SVE pilot test was conducted on July 13 and 14, 2016. The SVE pilot test sequence consisted of collecting passive baseline monitoring samples, followed by step and constant rate tests. The passive monitoring baseline sampling was performed on July 12 and 13 to provide a reference for VOC concentrations in the subsurface areas represented by SVE-1 and the soil vapor monitoring probes prior to initiating SVE at the Site. Additionally, a soil vapor sample was collected from SVE-1 at the conclusion of the pilot study test sequences on July 14, 2016.

3.4.1 Passive Baseline Monitoring

Prior to the SVE step and constant rate test, passive baseline monitoring of well SVE-1 and soil vapor monitoring probes was conducted on July 12 and 13, 2016. Prior to sampling, the SVE system was briefly operated to evacuate the SVE well casing of at approximately three purge volumes. Samples were collected using batch-certified 1-liter Summa canisters and flow regulators and submitted to TestAmerica of Sacramento, California for analysis of VOCs using U.S. EPA Test Method TO-15.

3.4.2 Vacuum Step Tests

Vacuum step tests are designed to test the range of vacuum that can be imposed on the vadose zone through an individual SVE well and to observe the resulting vapor flow rates and vacuum response in soil vapor monitoring probes and the SVE system. The purpose of the step tests is to collect data for use in selecting appropriate vacuum for the constant rate test. On July 13 four SVE step tests (under vacuums of approximately 20, 40, 80, and 120 inches of water) were performed on SVE-1.

Field VOC monitoring using Tedlar bags and a photionization detector (PID) using a 10.6 electrovolt (eV) lamp was conducted periodically during the vacuum step tests. Vacuum responses were periodically recorded at the SVE influent and soil vapor monitoring probes.

3.4.3 Constant Rate Test

The constant rate test was performed after the step tests were completed and flow/vacuum combinations were evaluated. The constant rate test was performed for approximately 6.4 hours on July 14, 2016.

Field VOC monitoring of the combined soil vapor (measured at the influent sample location with Tedlar bags and a PID) and vacuum responses at each soil vapor monitoring probe were periodically collected throughout the test.

On July 14, 2016, a soil vapor sample was collected from the SVE influent at the end of the constant rate test and submitted for laboratory analysis of VOCs.

3.4.4 Instrumentation and Monitoring

Parameters that were monitored during the pilot test included: air pressure (vacuum), air flow rate, extracted air temperature, oxygen, carbon dioxide, and methane levels, and VOC concentrations. Vacuum pressure measurements were obtained at the soil vapor monitoring probes to evaluate the subsurface pressure response to vapor extraction. A digital manometer was used to measure the applied vacuum and vacuum pressure responses at SVE-1 and the vapor monitoring probes. The vapor flow rate of the extraction system (total SVE flow) and near the wellhead of SVE-1 was monitored with a hand-held anemometer that provided flow rates in actual cubic feet per minute (acfm).

3.4.5 Field Monitoring

Field monitoring samples were collected from SVE-1 and the vapor probes during and at the end of each SVE test sequence. These samples were collected in 1-liter Tedlar bags using a vacuum pump connected to a vacuum chamber housing the Tedlar bag. The Tedlar bag was connected to the SVE well sampling port using inert Teflon tubing that passed through the wall of the vacuum chamber. Once filled, the Tedlar bag was connected to a calibrated PID using a 10.6 electron volt (eV) lamp and a total VOC measurement was made.

Oxygen, carbon dioxide, and methane levels were measured in samples collected in Tedlar bags from the SVE wells during each testing sequence using a Gastech meter. The purpose of the oxygen/carbon dioxide/methane monitoring was to monitor for potential changes in biogenic gas composition during SVE pilot testing and to assess the movement of atmospheric air in the subsurface. Barometric pressure data from Oakland International Airport[2] collected during the SVE pilot test are presented in Appendix C.

4.0 SUMMARY OF PILOT STUDY RESULTS

4.1 Soil Vapor Extraction Pilot Tests

The results of the SVE pilot tests are summarized below. Field data collected during the SVE pilot tests, laboratory analytical reports, and an ROI evaluation graph, are presented in Appendices C, D, and E, respectively.

4.1.1 Passive Baseline Monitoring

Baseline VOC data (i.e., soil vapor samples prior to application of vacuum associated with pilot study activities) was obtained from SVE-1 and select soil vapor monitoring probes. A summary of the laboratory analytical results are presented in Table 3. Primary VOCs detected in the soil vapor samples above laboratory reporting limits included: trichloroethene (TCE); cis-1,2-dichloroethene (cis-1,2-DCE); trans-1,2-dichloroethene (trans-1,2- DCE), vinyl chloride, 1,1,1-trichloroethane (TCA); 1,1,2,2-tetrachloroethane (PCA); MEK; MIBK; acetone; BTEX compounds; 1,2,4-trimethylbenzene (TMB); 1,3,5-TMB; 1,3-dichlorobenzene (1,3-DCB), 4-ethyltoluene; carbon disulfide; and chloroform.

Comparison of the results with California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) risk-based Environmental Screening Levels (ESLs) indicate the presence vinyl chloride, cis-1,2-DCE, benzene, and carbon disulfide at concentrations above soil gas ESLs for evaluation of potential vapor intrusion in residential and commercial land uses.

The soil vapor sample laboratory analytical report and chain-of-custody forms are presented in Appendix D.

4.1.2 Vacuum Step Tests

The results of the vacuum step tests are summarized below. A summary of field measurements obtained during the step test sequences are presented in Appendix C. A graphical plot showing the effect of increased wellhead vacuum on the vapor extraction flow rate for well SVE-1 during the step test sequences is also presented in Appendix C (Chart C-1).

[2] Station ID: KOAK; located approximately 9 miles southeast of the Site.

- Flow rates in SVE-1 ranged from approximately 9.55 acfm to 36.5 acfm (the maximum flow achievable with the pilot study SVE equipment), with sustained applied vacuums ranging from approximately 21.4 to 119.8 inches of water;

- The step tests indicated a maximum final probe vacuum response of 9.64 inches of water (at probe location SVP-2-7.5, located 15 feet from well SVE-1) during operation of the SVE system at a vacuum of 120.6 inches of water;

- The vacuum response in all six deeper probes at the 7.5 foot bgs depth during the maximum vacuum step test (SVE system operated at approximately 120 inches of water) ranged from 0.14 to 9.64 inches of water. The average vacuum response observed in the deeper probes located within 15 feet of SVE-1 (probes SVP-2-7.5, SVP-3-7.5, and SVP-6-7.5) was 5.09 inches of water during the maximum vacuum step test; and the average vacuum response observed in the deeper probes located approximately 30 feet from SVE-1 (probes SVP-2-7.5, SVP-3-7.5, and SVP-6-7.5) was 2.29 inches of water. The variation in observed vacuum appears to be attributable to distance from well SVE-1; and

- The vacuum response in probes at the 3.5 foot bgs depth during the maximum vacuum step test (SVE system operated at approximately 120 inches of water) ranged from 0.76[3] to 5.39 inches of water. The measured range in vacuum is attributed to the relatively shallow depth of the probes and possible soil heterogeneities.

Based on the vacuum step test results, the maximum stable blower vacuum for the constant rate test, approximately 120 inches of water vacuum, was selected.

4.1.3 Constant Rate Test

The constant rate test was performed on well SVE-1 on July 14, 2016 for approximately 6.4 hours. A summary of field measurements obtained during the constant rate test sequence is presented in Appendix C. Results of the constant rate test indicate the following:

- A sustained average vacuum flow rate of approximately 26.0 scfm (ranging from 25.3 to 26.97 scfm) was achieved at SVE-1 with vacuum ranging from 110.5 to 118.3 inches of water; and

- Observed vacuum responses in probes during the constant rate test was similar to those observed during Step Test 4 during which vacuum was also applied at approximately 120 inches of water (see Appendix C). The variations in observed vacuum in the individual probes is attributed to distance from well SVE-1 and soil heterogeneities.

[3] Due to apparent blockage within probe SVP-4-3.5, no measurable vacuum readings were obtained.

4.1.4 Radius of Influence Evaluation

Graphical techniques were used to assess the estimated radius of influence (ROI) of SVE based on the constant rate test results. The ROI was conservatively evaluated using a log-plot of normalized vacuum (measured vacuum/wellhead vacuum) versus distance from SVE-1, and a best fit trend line was fitted to the plot. The ROI is defined as the distance at which a target response of 0.01 inches of water occurs (indicative of vacuum influence), as indicated by the best-fit line drawn through the plotted data (U.S. ACE, 2002). A plot indicating the estimated ROI, based on measurements collected during the constant rate test sequence, is presented in Appendix E.

The estimated ROI (approximately 28.6 feet) is shown on Plates 3 and 4 (for all SVE wells). The ROI evaluation further indicates: (1) the conservative design ROI for SVE wells of 20 feet was appropriate; and (2) SVE technology is a viable option for remediation of the vadose zone at the Site.

4.1.5 Vinyl Chloride Mass Removal

The mass of vinyl chloride (the predominant VOC) removed during the pilot test was estimated based on: (1) laboratory reported vinyl chloride concentration of 40,000 micrograms per cubic meter of air ($\mu g/m^3$) in the vapor sample collected from SVE-1 on July 14, 2016 (Table 3) at the end of the constant rate test; (2) SVE-1 vapor flow rates; and (3) duration of pilot study operation.

As summarized in Table 4, based on the final influent concentration, cumulative mass removed during the 2-day pilot test is estimated to be approximately 0.033 pounds of vinyl chloride were removed, inclusive of approximately 9.5 total hours of SVE system operation.

4.2 Installation of the Full-Scale Soil Vapor Extraction/Air Inlet Wells

Based on the results of the pilot study and estimated ROI, the full-scale SVE/air inlet wells (SVE-2 through SVE-19, and AI-1 through AI-10) to be utilized during full-scale application of SVE were installed under ACPWA permit between July 26 and 29, 2016. A summary of well construction details is provided in Table 1, well locations are shown on Plate 2, and a copy of the ACPWA permit and well construction diagrams are presented in Appendix B. The SVE/air inlet wells were each constructed with 5 feet of screen within the vadose zone. As indicated in Table 1, wells AI-7, SVE-3, and SVE-17 were constructed with slightly shallower screen intervals due to refusal encountered during drilling.

The wells were installed using a track-mounted, limited access, hollow-stem auger drilling rig. The borings were advanced using a 10-inch outside diameter hollow-stem auger. Lithologic conditions were based on previous soil borings drilled in relatively close proximity to the wells and therefore no soil samples were collected. A PES geologist or engineer supervised the drilling activities and prepared well completion logs. Well completion diagrams are presented in Appendix B. The wells were constructed with 2-inch diameter Schedule 40 PVC casing and screened from approximately 5 to 10 feet bgs, with blank PVC casing from 5 feet bgs to

approximately 2 feet above ground surface (ags). The filter pack consisted of No. 3 sand extending 6 inches above the top of the screened intervals. Uncoated bentonite chip seals were placed between the filter pack interval and subsequently hydrated. A bentonite seal was placed from the top of the hydrated bentonite seal (approximately 2.5 feet bgs) extending to the surface.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this SVE pilot study, PES concludes the following:

- The induced vacuum response measured during the constant rate test indicates an estimated ROI of approximately 28.6 feet;

- Pilot study field measurements and vapor concentrations detected in baseline and post-pilot study vapor samples indicate that soil vapor extraction technology is a viable technology for vadose zone remediation of VOCs (primarily vinyl chloride) at the Site; and

- As shown on Plates 3 and 4, the estimated ROI indicates that the SVE well network has sufficient coverage within the target area.

On the basis of the findings of this and previous investigations, PES recommends the following:

- Update the Site-specific human health risk assessment (HHRA). The results of the revised HHRA will be used in the development of Site-specific risk-based interim remedial measure performance criteria; and

- In accordance with the approved Work Plan, and following ACEH approval, complete construction of the full-scale SVE system and commence application of SVE as an approved IRM.

6.0 REFERENCES

Alameda County Environmental Health Services (ACEH), 2016. PES, 2016b. *Conditional Interim Remedial Work Plan Approval and Work Plan Request; SCP Case RO000548 and Geotracker Global ID T0600100894, Mike Roberts Color Production, 6707 Bay Street, Emeryville, CA 94608.* April 26.

California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), 2010. *San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan).* December 31.

California RWQCB, 2016. *San Francisco Bay Region, Update to Environmental Screening Levels*. February 22.

Department of Toxic Substances Control (DTSC), 2011. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air – Final*. California Environmental Protection Agency. October.

DTSC, 2015. *Advisory - Active Soil Gas Investigations*. Jointly developed by the California Environmental Protection Agency Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board – Los Angeles Region (LARWQCB) and RWQCB - San Francisco Region (RWQCB). July.

ENVIRON International Corporation (ENVIRON), 2013a. *Summary of Environmental Findings, Nady Systems, Inc., 6701 Shellmound Street or 6707 Bay Street, Emeryville, California*. May 29.

Graymer, R.W., 2000. *Geologic map and map database of the Oakland metropolitan area, Alameda, Contra Costa, and san Francisco Counties, California*, USGS Miscellaneous Field Studies MF-2342.

Nichols, D.R. and Wright, N.A., 1971. *Preliminary map of historic margins of marshland, San Francisco Bay, California,* U.S. Geological Survey Open-File Report.

PES Environmental, Inc. (PES), 2014a. *Supplemental Subsurface Investigation Report, 6701, 6705, and 6707 Shellmound Street, Emeryville, California*. January 13.

PES, 2015a. *Conceptual Site Model, 6701 - 6707 Shellmound Street, Emeryville, California*. February 6.

PES, 2015b. *Site Management and Contingency Plan for Redevelopment Construction, 6701-6707 Shellmound Street, Emeryville, California*. May 19.

PES, 2015c. *Revised Work Plan for Pre-Construction Subsurface Investigation, 6701, 6705, and 6707 Shellmound Street, Emeryville, California, Fuel Leak Case No. RO0000548, GeoTracker Global ID T0600100894*. August 28.

PES, 2016a. *Work Plan for Supplemental Pre-Construction Subsurface Investigation, 6701, 6705, and 6707 Shellmound Street, Emeryville, California, Fuel Leak Case No. RO0000548, GeoTracker Global ID T0600100894*. January 21.

PES, 2016b. *Pre-Construction Subsurface Investigation Report, 6701, 6705, and 6707 Shellmound Street, Emeryville, California, Fuel Leak Case No. RO0000548, GeoTracker Global ID T0600100894*. April 8.

PES, 2016c. *Work Plan for Soil Vapor Extraction, 6701, 6705, and 6707 Shellmound Street, Emeryville, California, Fuel Leak Case No. RO0000548, GeoTracker Global ID T0600100894*. April 8.

SLR International Corporation (SLR), 2015. *Human Health Risk Assessment Report, 6701-6707 Shellmound Street, Emeryville, California*. May.

U.S. Army Corps of Engineers (U.S. ACE), 2002. *Soil Vapor Extraction and Bioventing, Engineer Manual, EM1110-1-4001*. June 3.

United States Environmental Protection Agency (U.S. EPA), 1989. *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final*. Office of Emergency and Remedial Response, Washington D.C., EPA/540/1-89/002. July.

United States Environmental Protection Agency (USEPA), 1991a. *Soil Vapor Extraction Technology: Reference Handbook. EPA/540/2-91/003*. September.

United States Environmental Protection Agency (USEPA), 1991b. *Guide for Conducting Treatability Studies Under CERCLA: Soil Vapor Extraction. EPA/540/2-91/019A*. September.

United States Environmental Protection Agency (USEPA), 1992. *Guidance for Data Usability in Risk Assessment, Publication 9285.7-09A, PB92-963356*. April.

TABLES

Table 1
Summary of SVE and Air Inlet Well Construction Details
Results of SVE Pilot Study
6701 - 6707 Shellmound Street
Emeryville, California

Well Identification	Date Installed	Borehole Depth (feet bgs)	Borehole Diameter (inches)	Well Screen Interval (feet bgs)	Sand Pack Interval (feet bgs)	Well Screen Diameter (inches)	Well Screen Slot Size (inches)
AI-1	7/27/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020
AI-2	7/27/16	10.8	10.0	5 to 10	4.5 to 10.75	2.0	0.020
AI-3	7/27/16	10.5	10.0	5 to 10	4.5 to 10.5	2.0	0.020
AI-4	7/28/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020
AI-5	7/27/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020
AI-6	7/28/16	10.6	10.0	5 to 10	4.5 to 10.625	2.0	0.020
AI-7	7/25/16	10.4	10.0	4.79 to 9.79	4.25 to 10.42	2.0	0.020
AI-8	7/25/16	10.5	10.0	5 to 10	4.5 to 10.5	2.0	0.020
AI-9	7/26/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020
AI-10	7/28/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020
SVE-1	7/8/16	10.0	10.0	5 to 10	4.5 to 10.66	2.0	0.020
SVE-2	7/26/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020
SVE-3	7/27/16	9.4	10.0	3.96 to 8.96	3.42 to 9.42	2.0	0.020
SVE-4	7/27/16	10.6	10.0	5 to 10	4.5 to 10.625	2.0	0.020
SVE-5	7/27/16	10.6	10.0	5 to 10	4.5 to 10.625	2.0	0.020
SVE-6	7/28/16	10.8	10.0	5 to 10	4.5 to 10.75	2.0	0.020
SVE-7	7/28/16	10.8	10.0	5 to 10	4.5 to 10.75	2.0	0.020
SVE-8	7/28/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020
SVE-9	7/27/16	10.6	10.0	5 to 10	4.5 to 10.58	2.0	0.020
SVE-10	7/27/16	10.6	10.0	5 to 10	4.5 to 10.58	2.0	0.020
SVE-11	7/26/16	10.6	10.0	5 to 10	4.5 to 10.46	2.0	0.020
SVE-12	7/26/16	11.2	10.0	5 to 10	4.5 to 11.17	2.0	0.020
SVE-13	7/26/16	10.6	10.0	5 to 10	4.5 to 10.58	2.0	0.020
SVE-14	7/25/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020
SVE-15	7/25/16	10.7	10.0	5 to 10	4.5 to 10.58	2.0	0.020
SVE-16	7/25/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020
SVE-17	7/25/16	10.4	10.0	4.79 to 9.79	4.25 to 10.42	2.0	0.020
SVE-18	7/26/16	11.1	10.0	5 to 10	4.5 to 11.08	2.0	0.020
SVE-19	7/26/16	10.7	10.0	5 to 10	4.5 to 10.66	2.0	0.020

Notes:
feet bgs = feet below ground surface.

Table 2
Summary of Soil Vapor Monitoring Probe Construction Details
Results of SVE Pilot Study
6701 - 6707 Shellmound Street
Emeryville, California

Well Identification	Date Installed	Borehole Depth (feet bgs)	Borehole Diameter (inches)	Well Screen Interval (feet bgs)	Sand Pack Interval (feet bgs)	Well Screen Diameter (inches)
SVP-1-3.5	7/8/16	8.00	2.0	3.25 to 3.75	3 to 4	0.375
SVP-1-7.5	7/8/16	8.00	2.0	7.25 to 7.75	7 to 8	0.375
SVP-2-3.5	7/8/16	8.00	2.0	3.25 to 3.75	3 to 4	0.375
SVP-2-7.5	7/8/16	8.00	2.0	7.25 to 7.75	7 to 8	0.375
SVP-3-3.5	7/8/16	8.00	2.0	3.25 to 3.75	3 to 4	0.375
SVP-3-7.5	7/8/16	8.00	2.0	7.25 to 7.75	7 to 8	0.375
SVP-4-3.5	7/8/16	8.00	2.0	3.25 to 3.75	3 to 4	0.375
SVP-4-7.5	7/8/16	8.00	2.0	7.25 to 7.75	7 to 8	0.375
SVP-5-3.5	7/8/16	8.00	2.0	3.25 to 3.75	3 to 4	0.375
SVP-5-7.5	7/8/16	8.00	2.0	7.25 to 7.75	7 to 8	0.375
SVP-6-3.5	7/8/16	8.00	2.0	3.25 to 3.75	3 to 4	0.375
SVP-6-7.5	7/8/16	8.00	2.0	7.25 to 7.75	7 to 8	0.375

Notes:
feet bgs = feet below ground surface.

Table 3
Summary of Soil Vapor Analytical Results
Results of SVE Pilot Study
6701, 6705, and 6707 Shellmound Street, Emeryville, California

Sample Location	Sample ID	Date	Sample Depth (feet bgs)	TCE ($\mu g/m^3$)	cis-1,2-DCE ($\mu g/m^3$)	trans-1,2-DCE ($\mu g/m^3$)	Vinyl chloride ($\mu g/m^3$)	1,1,1-TCA ($\mu g/m^3$)	1,1,2,2-PCA ($\mu g/m^3$)	MEK ($\mu g/m^3$)	MIBK ($\mu g/m^3$)	Acetone ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethylbenzene ($\mu g/m^3$)	m,p-Xylene ($\mu g/m^3$)	o-Xylene ($\mu g/m^3$)	1,2,4-TMB ($\mu g/m^3$)	1,3,5-TMB ($\mu g/m^3$)	1,3-DCB ($\mu g/m^3$)	4-Ethyltoluene ($\mu g/m^3$)	Carbon disulfide ($\mu g/m^3$)	Chloroform ($\mu g/m^3$)	Other VOCs ($\mu g/m^3$)
SVE-1	SVE-1	7/13/2016	5 to 10	< 140	< 110	< 110	**3,400**	< 110	< 180	< 160	< 110	< 790	< 85	< 100	< 120	< 230	< 120	< 260	< 130	< 160	< 130	< 170	< 98	
SVE-1	SVE-1	7/14/2016	5 to 10	< 1600	**3,500**	**1,900**	**40,000**	< 1200	< 2000	< 1700	< 1200	< 8600	< 930	< 1100	< 1300	< 2500	< 1300	< 2900	< 1400	< 1800	< 1400	< 1800	< 1100	
SVP-1-7.5	SVP-1-7.5	7/12/2016	7.5	< 250	**250**	< 180	**13,000**	< 190	< 310	< 270	< 190	< 1400	**250**	< 170	< 200	< 400	< 200	< 450	< 220	< 270	< 220	< 280	< 170	
SVP-2-3.5	SVP-2-3.5	7/12/2016	3.5	< 17	< 12	< 12	**920**	< 13	< 21	< 18	< 13	< 92	**28**	**31**	**14**	**55**	**23**	< 31	< 15	< 19	< 15	**83**	**78**	
SVP-2-7.5	SVP-2-7.5	7/12/2016	7.5	< 1300	< 990	< 990	**75,000**	< 1000	< 1700	< 1500	< 1000	< 7400	< 800	< 950	< 1100	< 2200	< 1100	< 2500	< 1200	< 1500	< 1200	< 1600	< 920	
SVP-3-7.5	SVP-3-7.5	7/12/2016	7.5	< 38	< 28	< 28	**2,400**	< 29	< 49	**57**	< 29	**260**	**310**	**170**	< 31	< 61	< 31	< 70	< 35	< 43	< 35	**130**	< 26	
SVP-4-3.5	SVP-4-3.5	7/12/2016	3.5	**6.9**	< 1.6	< 1.6	< 1	**9.5**	**4.8**	**19**	**11**	**44**	**19**	**18**	**23**	**120**	**54**	**17**	**8.7**	< 2.4	**3.9**	**3.1**	**57**	**2.0 (BDCM), 2.4 (Freon 12), 1.5 (MC), 2.6 (Freon 11)**
SVP-4-7.5	SVP-4-7.5	7/12/2016	7.5	**19**	**57**	**9.1**	**180**	< 4.5	< 7.6	**23**	< 4.5	**84**	**230**	**59**	**21**	**210**	**24**	**20**	**10**	**59**	< 5.4	**20**	< 4.1	**72 (1,4-DCB), 23 (NAPH)**
SVP-5-7.5	SVP-5-7.5	7/12/2016	7.5	< 510	< 370	< 370	**22,000**	< 390	< 650	< 560	< 390	< 2800	**490**	< 360	< 410	< 820	< 410	< 930	< 460	< 570	< 460	< 590	< 350	
SVP-6-3.5	SVP-6-3.5	7/12/2016	3.5	< 1700	**14,000**	**6,100**	**100,000**	< 1300	< 2200	< 1900	< 1300	< 9600	< 1000	< 1200	< 1400	< 2800	< 1400	< 3200	< 1600	< 2000	< 1600	< 2000	< 1200	
SVP-6-7.5	SVP-6-7.5	7/12/2016	7.5	< 1800	**16,000**	**6,300**	**98,000**	< 1400	< 2300	< 2000	< 1400	< 10000	< 1100	< 1300	< 1500	< 3000	< 1500	< 3400	< 1700	< 2000	< 1700	< 2100	< 1200	
Residential Land Use ESL [1]				*240*	*4,200*	*31,000*	*4.7*	*520,000*	*24*	*2,600,000*	*1,600,000*	*16,000,000*	*48*	*160,000*	*560*	*52,000*	*52,000*	*NE*	*NE*	*NE*	*NE*	*61*	*NE*	*NE*
Commercial/Industrial Land Use ESL [2]				*3,000*	*35,000*	*260,000*	*160*	*4,400,000*	*210*	*22,000,000*	*13,000,000*	*140,000,000*	*420*	*1,300,000*	*4,900*	*440,000*	*440,000*	*NE*	*NE*	*NE*	*NE*	*530*	*NE*	*NE*

Notes:

Detections are shown in bold. Results equal to or exceeding applicable regulatory screening levels are shaded.

Only detected analytes are summarized on table. Refer to Appendix D for laboratory report to access entire list of compounds analyzed.

SVE = Soil vapor extraction

BDCM = Bromodichloromethane

DCB = Dichlorobenzene

DCE = Dichloroethene.

Freon 11 = Trichlorofluoromethane

Freon 12 = Dichlorodifluoromethane

MC = Methylene Chloride

MEK = Methyl Ethyl Ketone

MIBK = Methyl Isobutyl Ketone

NAPH = Naphthalene

PCA = Tetrachloroethane

TCA = Trichloroethane.

TCE = Trichloroethene.

TMB = Trimethylbenzene.

VOCs = Volatile organic compounds.

bgs = Below ground surface.

$\mu g/m^3$ = Micrograms per cubic meter.

< 2.9 = Not detected at or above the indicated laboratory method reporting limit.

NE = Not established.

-- = Not applicable/not analyzed.

1. February 2016 Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) Environmental Screening Levels (ESLs), Table SG-1 Subslab/Soil Gas Vapor Intrusion: Human Health Risk Levels. Residential.
2. February 2016 Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) Environmental Screening Levels (ESLs), Table SG-1 Subslab/Soil Gas Vapor Intrusion: Human Health Risk Levels. Commercial/Industrial.

Table 4
Summary of Pilot Study Mass Removal Estimate
Results of SVE Pilot Study
6701 - 6707 Shellmound Street
Emeryville, California

Date and Time	Test Phase	Runtime Since Previous Date/Time Recording (hours)	Cumulative Runtime (hours)	Sample Date	Sample ID	SVE Sytem Influent VC Concentration (µg/m3)	Average Flow Rate from SVE-1 (SCFM)	Mass of Vinyl Chloride Removed Since Previous Date/Time Recording (lbs)	Cumulative Mass of Vinyl Chloride Removed Since Previous Date/Time (lbs)	Estimated Vinyl Chloride Mass Removal Rate (lbs/day)
7/13/16 11:00 AM	Step Test 1	0.5	--	--	--	40,000	9.7	0.0007	0.0007	--
7/13/2016 14:20:00 PM	Step Test 2	1.5	2.0	--	--	40,000	16.2	0.0036	0.0044	--
7/13/2016 15:20:00 PM	Step Test 3	0.5	2.5	--	--	40,000	21.0	0.0016	0.0059	--
7/13/2016 16:15:00 PM	Step Test 4	0.6	3.1	--	--	40,000	24.4	0.0021	0.0081	--
7/14/2016 14:55:00 PM	Constant	6.4	9.5	7/14/2016	SVE-1	40,000	25.5	0.0244	0.0325	0.0916

Notes:
µg/m3 - micrograms per cubic meter of air
lbs/day - pounds per day
SCFM - Standard cubic feet per minute
VC - Vinyl Chloride
-- - Not applicable/not analyzed

ILLUSTRATIONS

U.S.G.S. Topo Map - Oakland West, California, 7.5-minute quadrangle.1997

PES Environmental, Inc.
Engineering & Environmental Services

Site Location Map
Results of Pilot Study for Soil Vapor Extraction
6701, 6705, and 6707 Shellmound Street
Emeryville, California

PLATE
1

1448.001.02.004	144800102004_PS_1	CJB	8/16
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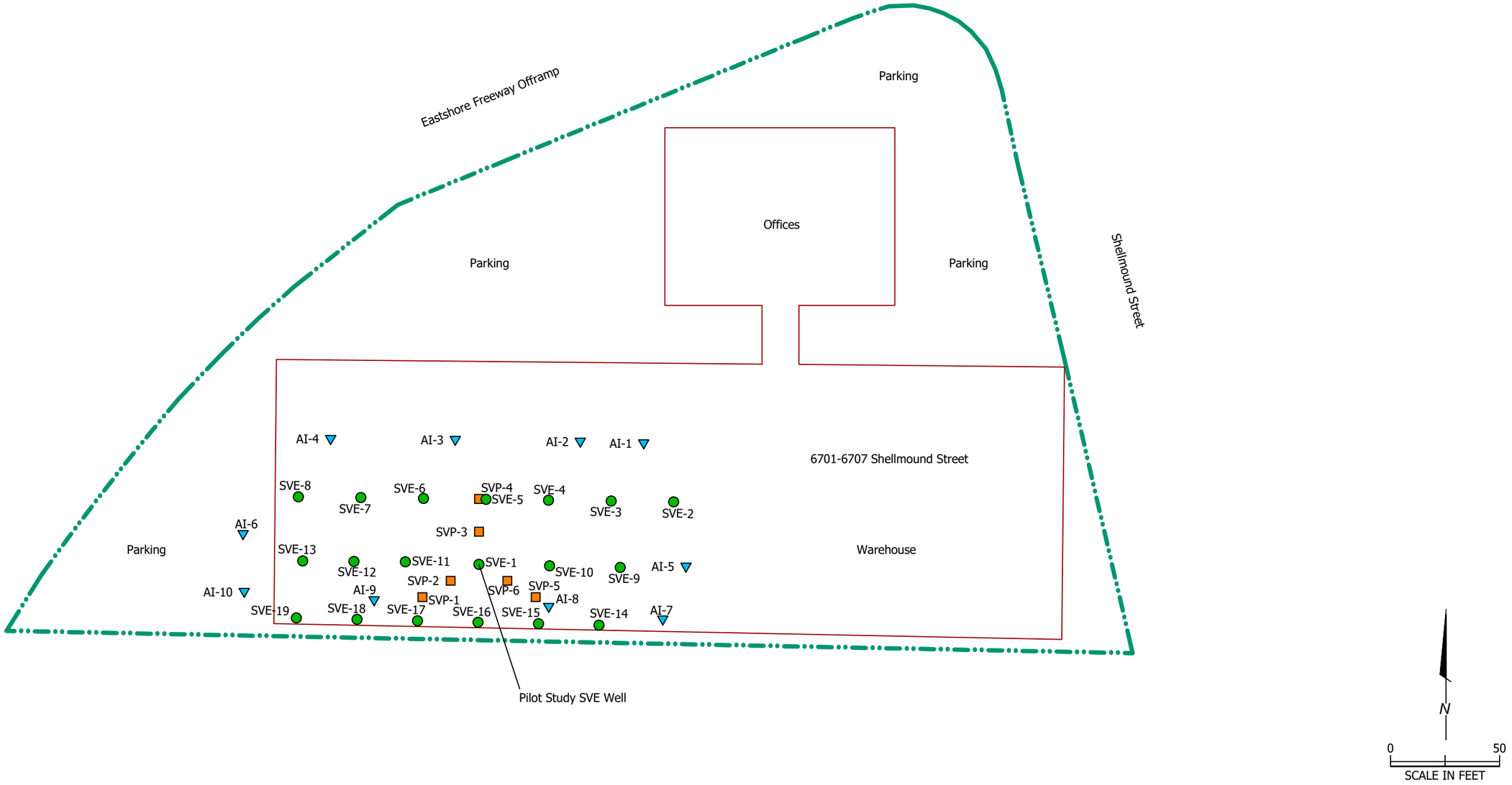

PES Environmental, Inc.
Engineering & Environmental Services

Site Plan and SVE/Air Inlet Well and Probe Locations
Results of Pilot Study for Soil Vapor Extraction
6701, 6705, and 6707 Shellmound Street
Emeryville, California

PLATE
2

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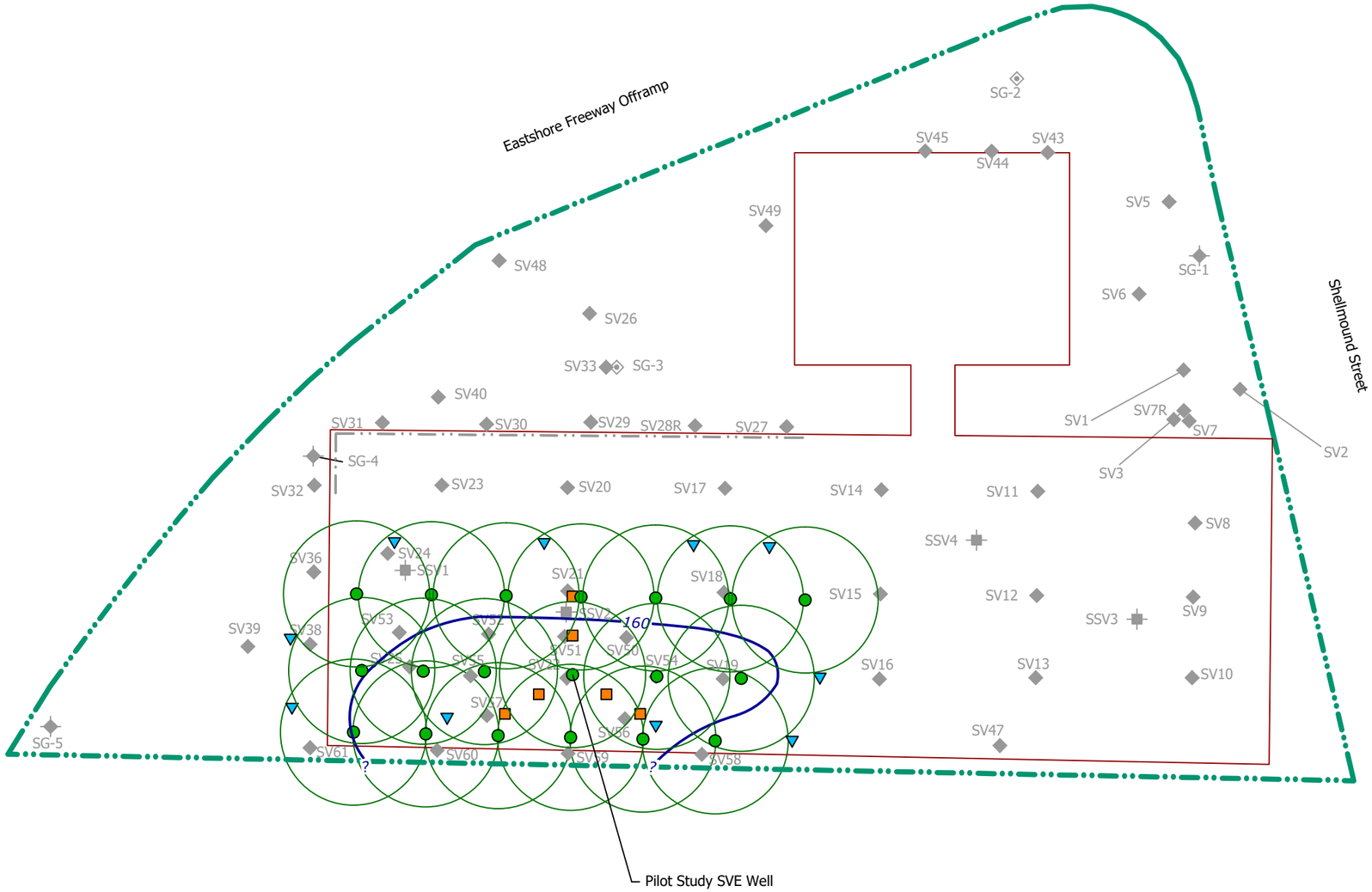

Explanation

Approximate Property Boundary

Existing Building Outline

Prior Soil Gas Sample Locations

SG-5 — Soil, Soil Gas and Groundwater Sampling Location - Destroyed (Environ)

SG-3 — Soil Gas and Soil Sampling Location - Destroyed (Environ)

SV1 — Soil Vapor Sampling Location (PES)

SSV1 — Sub-Slab Vapor Sampling Location (PES)

Soil Vapor Sampling Location (PES)

SVE/Air Inlet Wells and Probes

SVE Well Location with Estimated 28-ft Radius of Influence

Soil Vapor Monitoring Probe Location

Air Inlet Well Location

SVE - Soil Vapor Extraction
ROI - Radius of Influence
ft bgs. - Feet Below Ground Surface

160 — Vinyl Chloride isoconcentration contour for soil vapor exceeding February 2016 commercial Environmental Screening Level (ESL)in micrograms per cubic meter ($\mu g/m^3$) at 5 ft bgs in $\mu g/m^3$ (dashed where inferred)

N

0 50

SCALE IN FEET

PES Environmental, Inc.
Engineering & Environmental Services

Estimated Vapor Extraction ROI for SVE Wells, with Isoconcentration Contours - Vinyl Chloride at 5 ft bgs
Results of Pilot Study for Soil Vapor Extraction
6701, 6705, and 6707 Shellmound Street
Emeryville, California

PLATE 3

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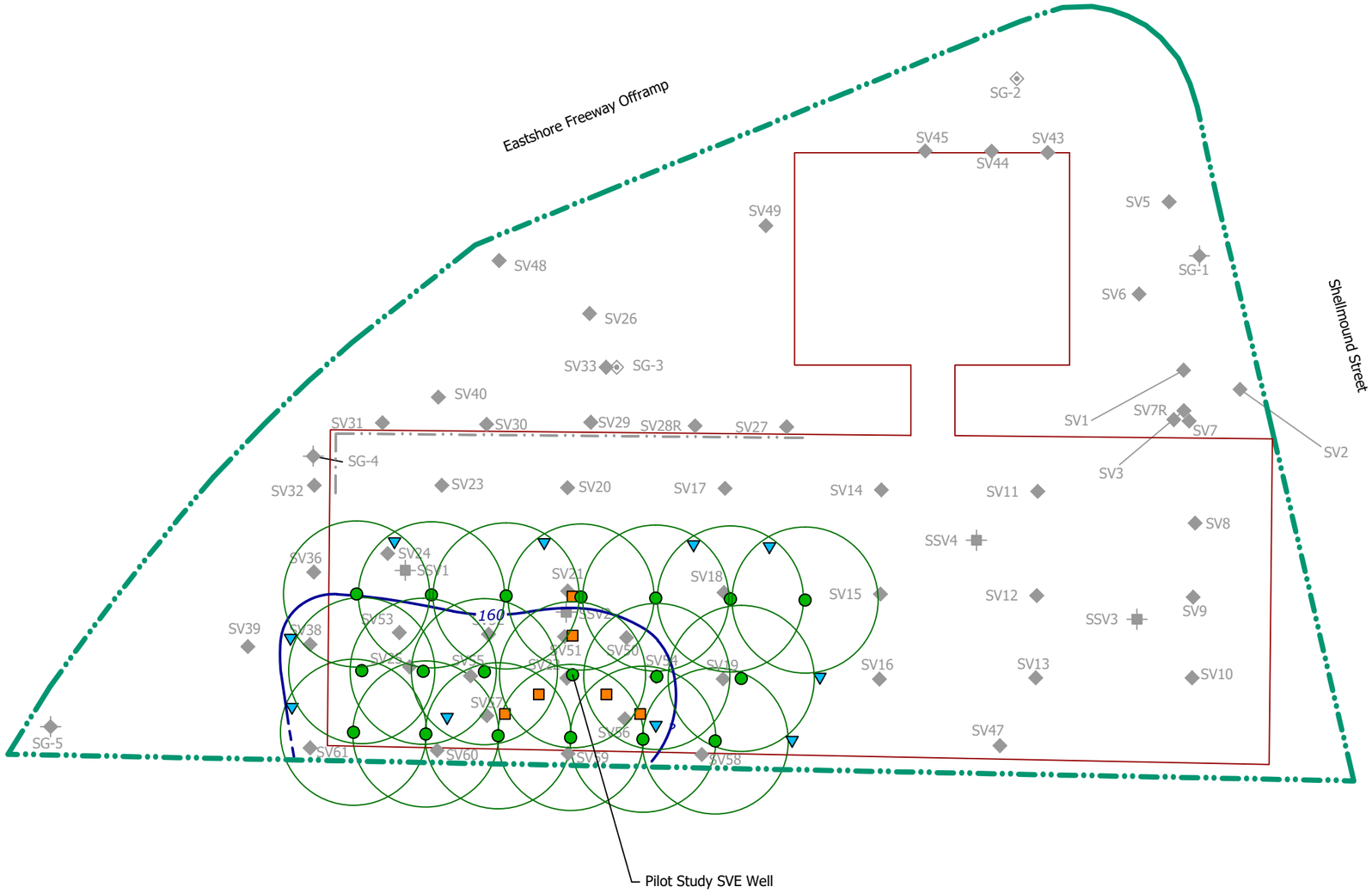
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE



Explanation

- Approximate Property Boundary
- Approximate Location of Existing Sewer Line (queried where uncertain)
- Existing Building Outline

Prior Soil Gas Sample Locations

- SG-5 — Soil, Soil Gas and Groundwater Sampling Location - Destroyed (Environ)
- SG-3 — Soil Gas and Soil Sampling Location - Destroyed (Environ)
- SV1 — Soil Vapor Sampling Location (PES)
- SSV1 — Sub-Slab Vapor Sampling Location (PES)
- Soil Vapor Sampling Location (PES)

SVE/Air Inlet Wells and Probes

- SVE Well Location with Estimated 28-ft Radius of Influence
- Soil Vapor Monitoring Probe Location
- Air Inlet Well Location

SVE - Soil Vapor Extraction
ROI - Radius of Influence
ft bgs. - Feet Below Ground Surface

160 — Vinyl Chloride isoconcentration contour for soil vapor exceeding February 2016 commercial Environmental Screening Level (ESL)in micrograms per cubic meter ($\mu g/m^3$) at 5 ft bgs in $\mu g/m^3$ (dashed where inferred)

Notes:
1. SV7 and SV7R sampled only at 10-ft bgs.
2. SV47 sampled only at 5-ft bgs.
3. Sample depths for SV-15 are 5-ft and 8-ft bgs.

N

0 50

SCALE IN FEET

PES Environmental, Inc.
Engineering & Environmental Services

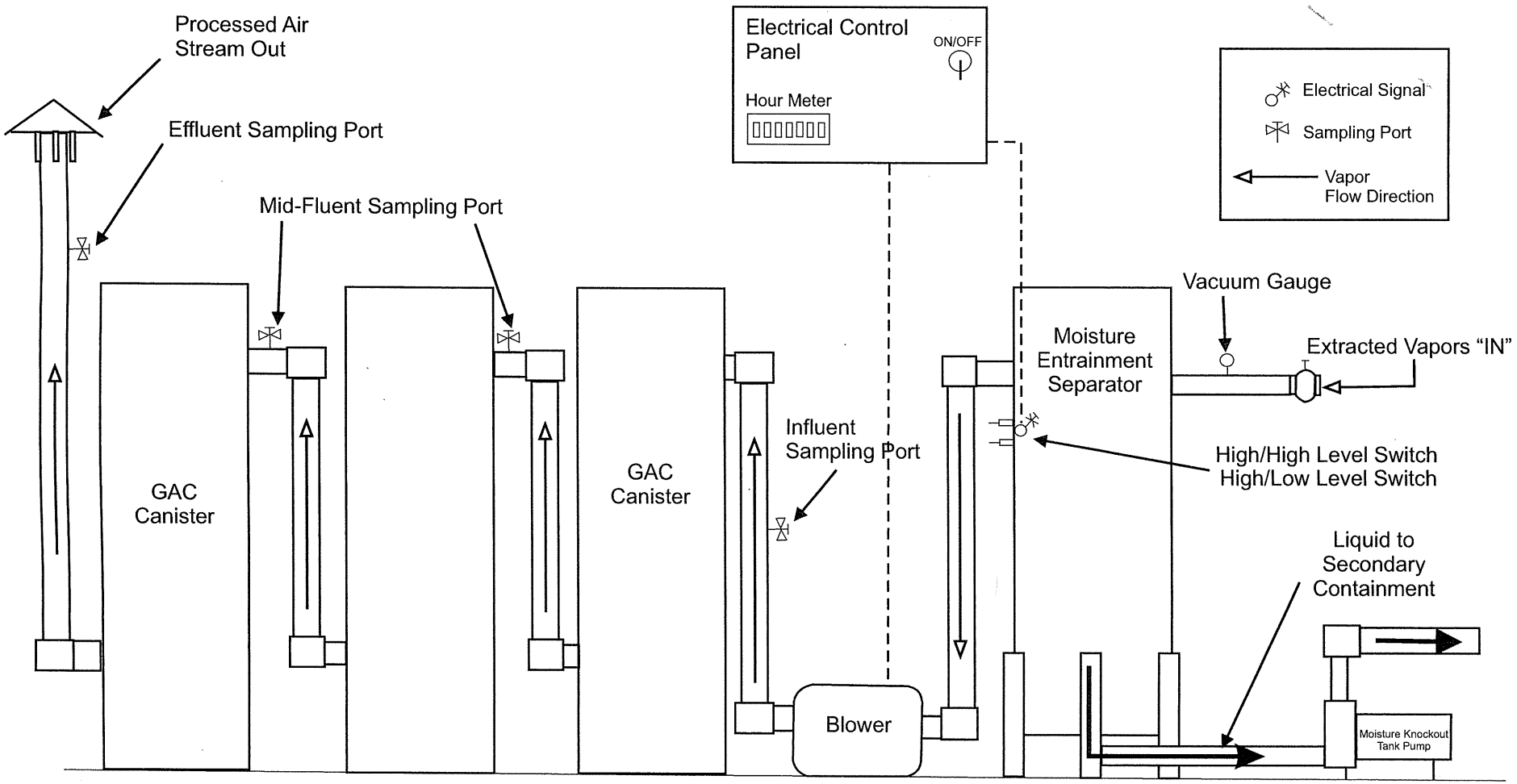
Estimated Vapor Extraction ROI for SVE Wells, with Isoconcentration Contours - Vinyl Chloride at 10 ft bgs
Results of Pilot Study for Soil Vapor Extraction
6701, 6705, and 6707 Shellmound Street
Emeryville, California

PLATE 4

1448.001.02.004	144800102004_PS_3-4	CJB	8/16
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

APPENDIX A

SCHEMATIC DRAWING OF SVE SYSTEM



6701 - 6707 SHELLMOUND STREET

EMERYVILLE, CALIFORNIA

PROCESS AND INSTRUMENTATION FLOW DIAGRAM

APPENDIX B

COMPLETION LOGS FOR SVE/AIR INLET WELLS AND SOIL VAPOR MONITORING PROBES

Alameda County Public Works Agency - Water Resources Well Permit

Public Works Agency
Alameda County

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

Application Approved on: 06/29/2016 By jamesy

Permit Numbers: W2016-0467 to W2016-0468
Permits Valid from 06/30/2016 to 07/29/2016

Application Id: 1466527861561 **City of Project Site:** Emeryville
Site Location: 6701-6707 Shellmound Street, Emeryville
Project Start Date: 06/30/2016 **Completion Date:** 07/29/2016
Assigned Inspector: Contact Marcelino Valpando at (510) 670-5760 or Marcelino@acpwa.org

Applicant: PES Environmental, Inc - Chris Baldassari **Phone:** 415-899-1600
1682 Novato Blvd.,STE 100, Novato, CA 94947
Property Owner: John Nady **Phone:** 510-652-2411
6701 Shellmound Street, Emeryville, CA 94608
Client: Rachel Green **Phone:** 916-715-4785
1415 L Street, Ste 450, Sacramento, CA 95814

Total Due: $530.00
Receipt Number: WR2016-0326 **Total Amount Paid:** $530.00
Payer Name : PES Environmental Paid By: CHECK **PAID IN FULL**

Works Requesting Permits:

Remediation Well Construction-Extraction - 25 Wells
Driller: Cascade Drilling - Lic #: 938110 - Method: hstem **Work Total: $265.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2016-0467	06/29/2016	09/28/2016	SVE-1	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-10	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-11	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-12	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-13	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-14	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-15	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-16	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-17	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-18	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-19	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-2	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-3	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-4	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-	06/29/2016	09/28/2016	SVE-5	10.00 in.	2.00 in.	4.50 ft	10.25 ft

0467							
W2016-0467	06/29/2016	09/28/2016	SVE-6	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-7	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-8	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVE-9	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0467	06/29/2016	09/28/2016	SVP-1	2.00 in.	0.25 in.	6.50 ft	8.50 ft
W2016-0467	06/29/2016	09/28/2016	SVP-2	2.00 in.	0.25 in.	6.50 ft	8.50 ft
W2016-0467	06/29/2016	09/28/2016	SVP-3	2.00 in.	0.25 in.	6.50 ft	8.50 ft
W2016-0467	06/29/2016	09/28/2016	SVP-4	2.00 in.	0.25 in.	6.50 ft	8.50 ft
W2016-0467	06/29/2016	09/28/2016	SVP-5	2.00 in.	0.25 in.	6.50 ft	8.50 ft
W2016-0467	06/29/2016	09/28/2016	SVP-6	2.00 in.	0.25 in.	6.50 ft	8.50 ft

Specific Work Permit Conditions

1. 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 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.

2. 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.

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or 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 60 days. Include permit number and site map.

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

5. 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.

6. 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.

7. Minimum seal depth (Neat Cement Seal) is 2 feet below ground surface (BGS).

8. Minimum surface seal thickness is two inches of cement grout placed by tremie.

Alameda County Public Works Agency - Water Resources Well Permit

9. 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.

10. 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.

11. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a 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.

Remediation Well Construction-Injection - 10 Wells
Driller: Cascade Drilling - Lic #: 938110 - Method: hstem **Work Total: $265.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2016-0468	06/29/2016	09/28/2016	AIW-1	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0468	06/29/2016	09/28/2016	AIW-10	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0468	06/29/2016	09/28/2016	AIW-2	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0468	06/29/2016	09/28/2016	AIW-3	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0468	06/29/2016	09/28/2016	AIW-4	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0468	06/29/2016	09/28/2016	AIW-5	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0468	06/29/2016	09/28/2016	AIW-6	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0468	06/29/2016	09/28/2016	AIW-7	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0468	06/29/2016	09/28/2016	AIW-8	10.00 in.	2.00 in.	4.50 ft	10.25 ft
W2016-0468	06/29/2016	09/28/2016	AIW-9	10.00 in.	2.00 in.	4.50 ft	10.25 ft

Specific Work Permit Conditions

1. 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 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.

2. 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.

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or 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 60 days. Include permit number and site map.

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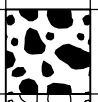
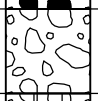
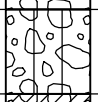
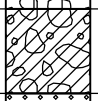
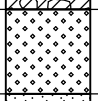
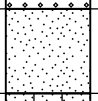
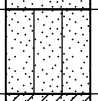
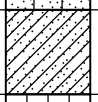
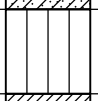
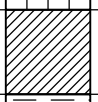
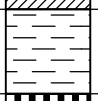
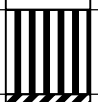
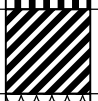
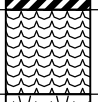
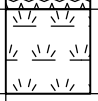
7. Minimum seal depth (Neat Cement Seal) is 2 feet below ground surface (BGS).

8. Minimum surface seal thickness is two inches of cement grout placed by tremie.

9. 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.

10. 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.

11. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a 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.

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LESS THAN 15% FINES	GW		WELL-GRADED GRAVELS WITH OR WITHOUT SAND
			GP		POORLY-GRADED GRAVELS WITH OR WITHOUT SAND
		GRAVELS WITH 15% OR MORE FINES	GM		SILTY GRAVELS WITH OR WITHOUT SAND
			GC		CLAYEY GRAVELS WITH OR WITHOUT SAND
	SANDS MORE THAN HALF COARSE FRACTION IS FINER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LESS THAN 15% FINES	SW		WELL-GRADED SANDS WITH OR WITHOUT GRAVEL
			SP		POORLY-GRADED SANDS WITH OR WITHOUT GRAVEL
		SANDS WITH 15% OR MORE FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OL		ORGANIC SILTS OR CLAYS OF LOW TO MEDIUM PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			CH		INORGANIC CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
			OH		ORGANIC SILTS OR CLAYS OF HIGH PLASTICITY WITH OR WITHOUT SAND OR GRAVEL
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

ABBREVIATION KEY

PID (PPM)	- Photo Ionization Detector readings in parts per million from field headspace sample screening.
BLOWS/6IN	- Blows required to drive sampler 6 inches as indicated on the logs using sample drive hammer weight of 140 pounds falling 30 inches.
(10,60,30)	- Percent gravel, percent sand, percent silt/clay
2.5YR 6/2	- Soil Color according to Munsell Soil Color Charts (1994 Revised Edition)
feet MSL	- feet above Mean Seal Level
feet BGS	- feet below ground surface

SYMBOLS KEY

- ☐ - No Soil Sample Recovered
- ⧄ - Partial Soil Sample Recovered
- ☒ - Undisturbed Soil Sample Recovered
- ■ - Soil Sample Submitted for Laboratory Analysis
- ⊞ - Hydropunch Sample
- ▽ - First Encountered Groundwater Level
- ▼ - Piezometric Groundwater level

USCS CHART 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

Unified Soil Classification System Chart
Anton Evolve
6701 Shellmound St

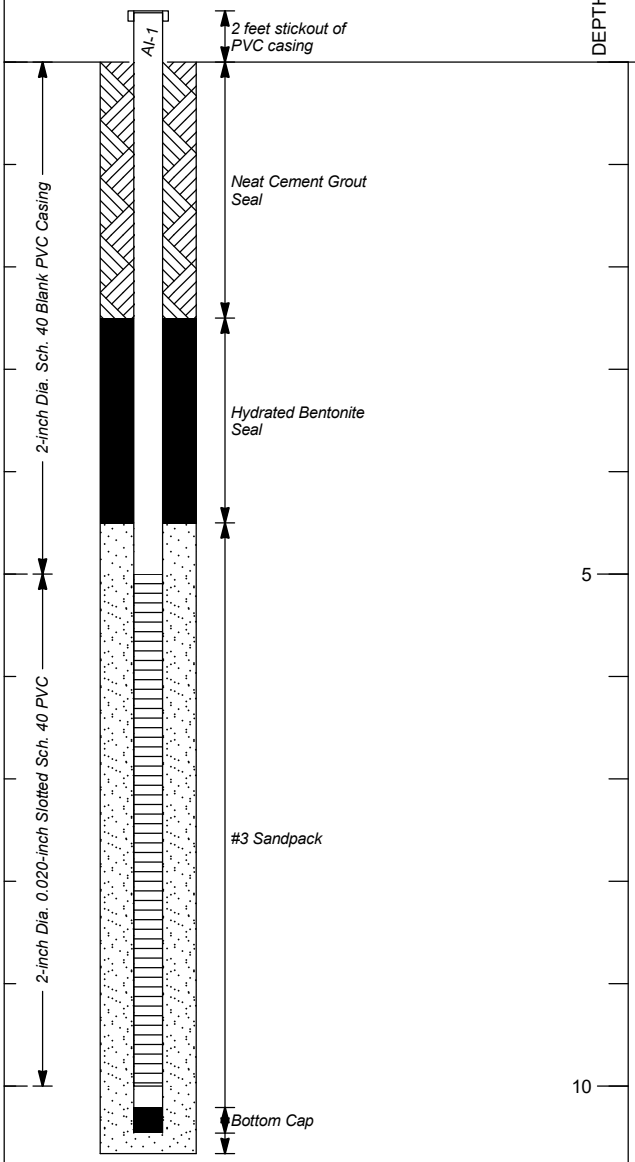
PLATE
B-0

1448.001.02	USCS CHART	CJB	8/24/16
JOB NUMBER	DRAWING NUMBER	REVIEWED BY	DATE

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-1

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

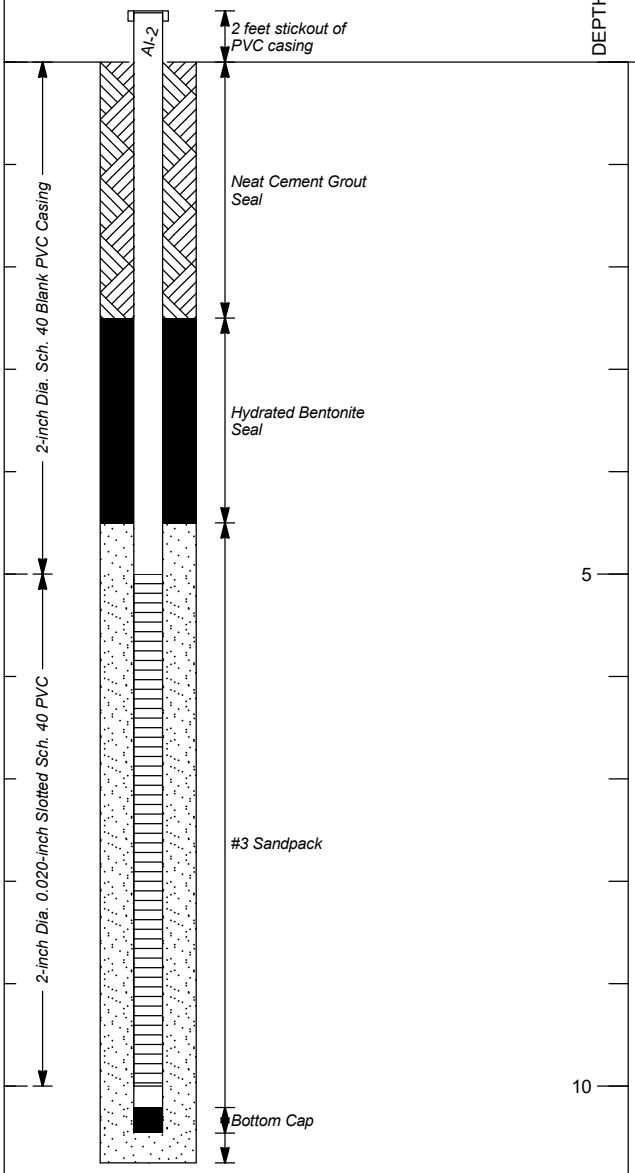
B-1

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-2

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.75 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.8 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

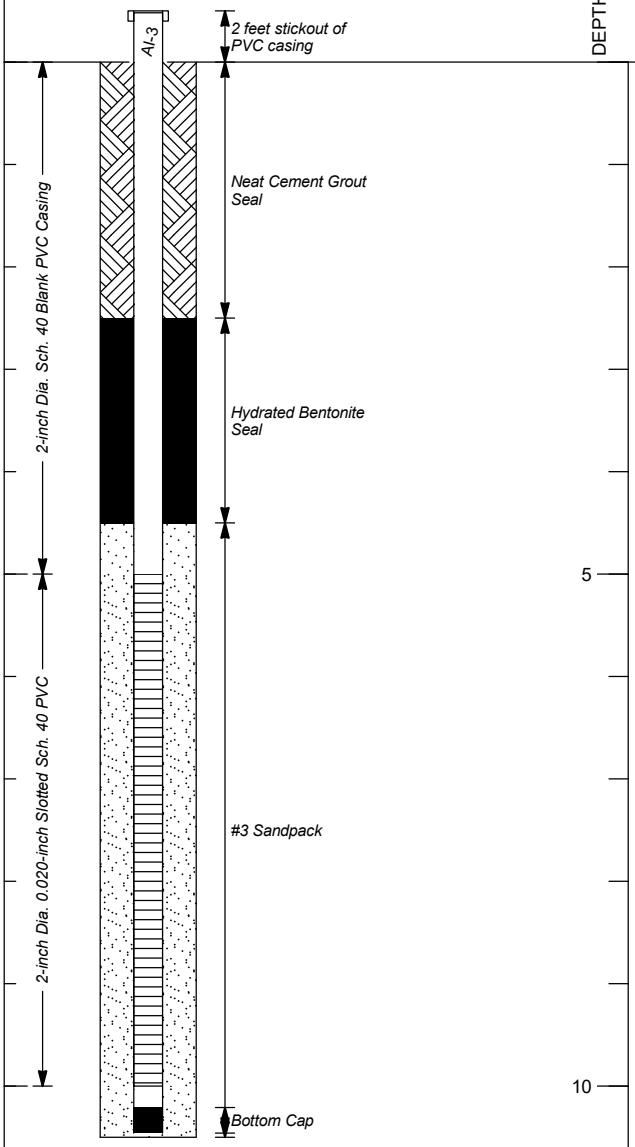
B-2

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-3

WELL CONSTRUCTION DETAIL



DEPTH (FT)	MATERIALS DESCRIPTION
	No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.
5	
10	Boring terminated at 10.5 ft
15	

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.5 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

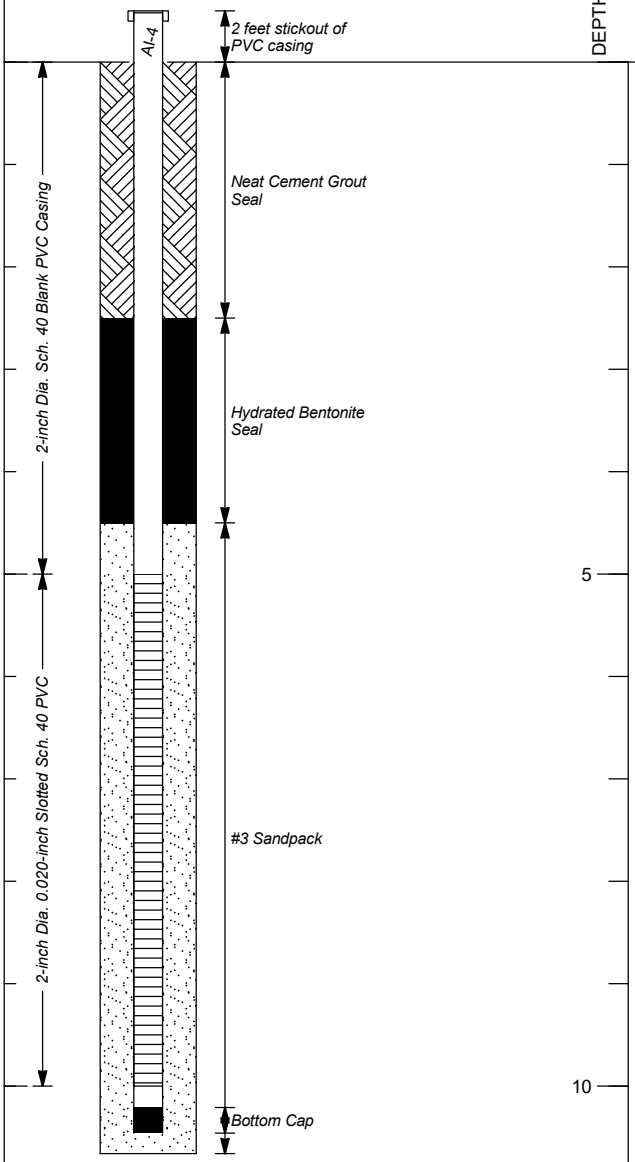
B-3

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-4

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/28/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/28/16

PLATE

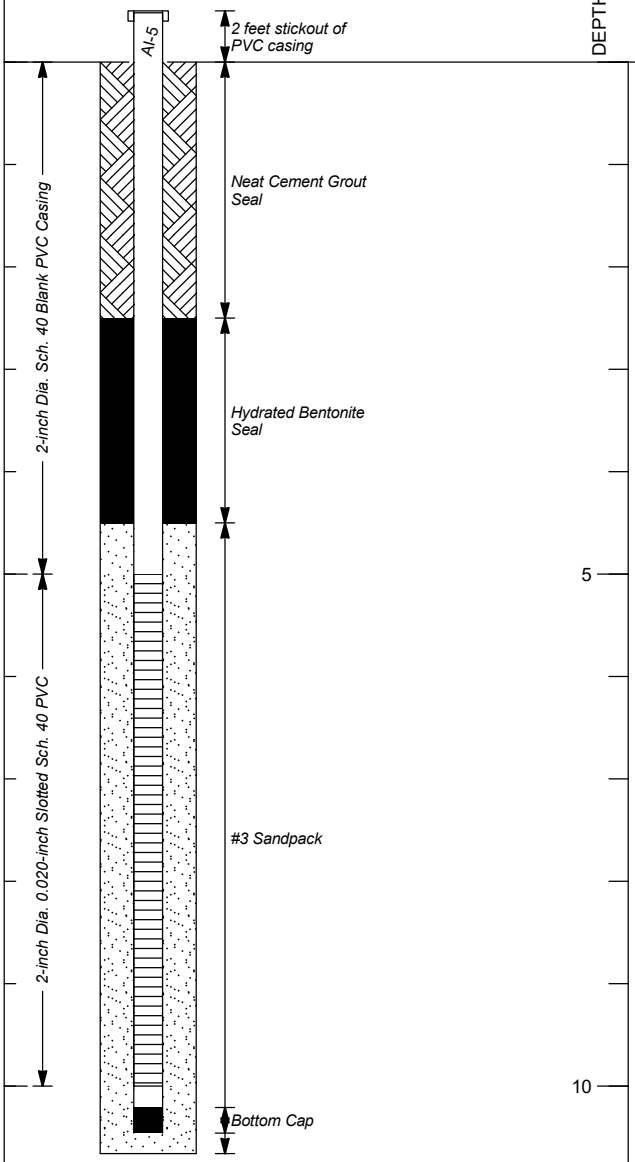
B-4

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-5

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

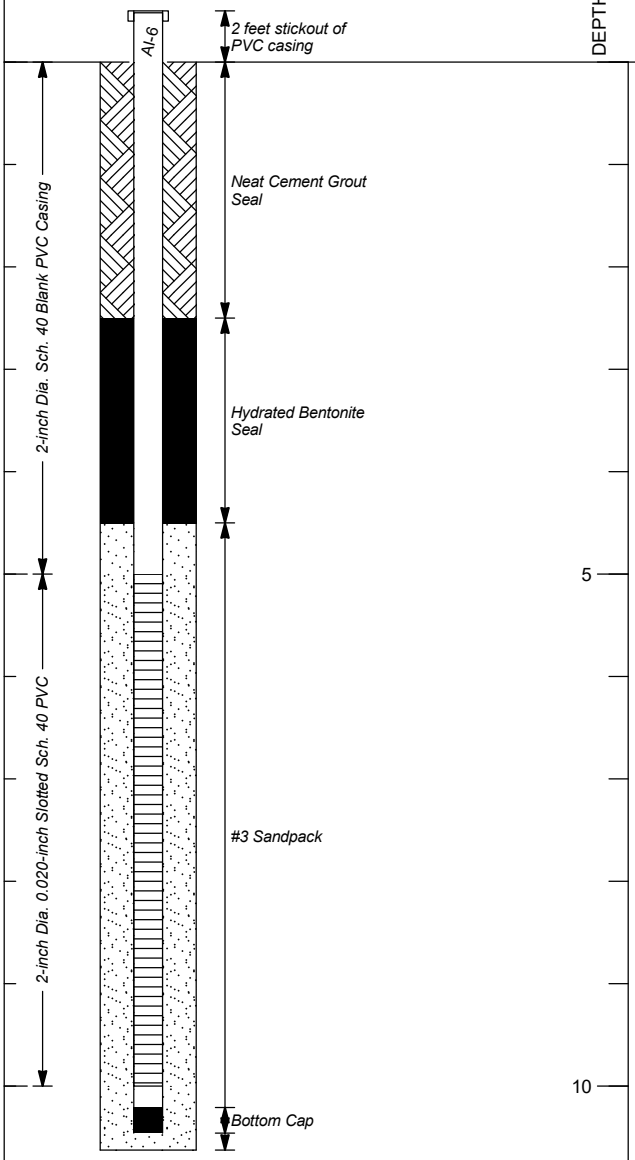
B-5

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-6

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.625 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.6 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/28/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/28/16

PLATE

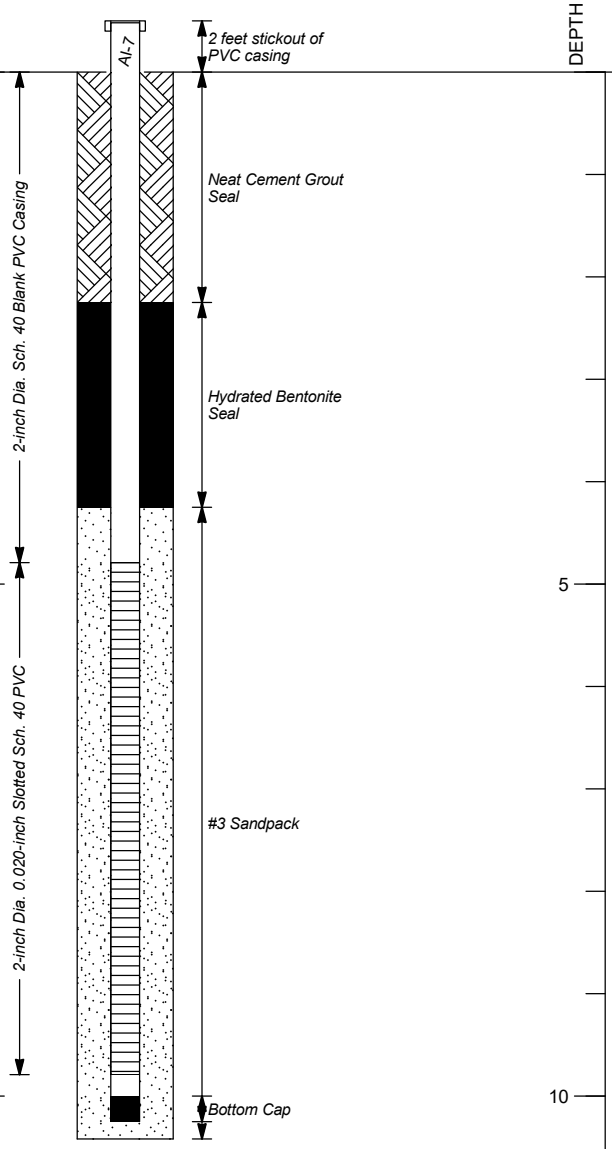
B-6

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-7

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.42 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.4 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/25/16
DRILL RIG	Geoprobe 7720DT	DATE COMPLETED	7/25/16

PLATE

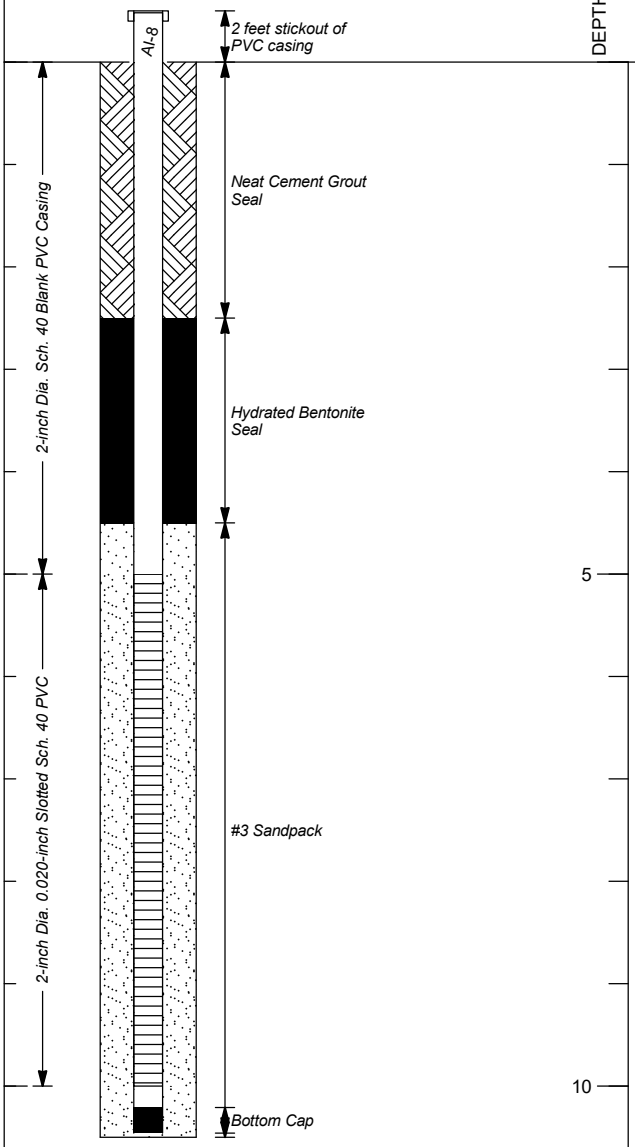
B-7

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-8

WELL CONSTRUCTION DETAIL



DEPTH (FT)	MATERIALS DESCRIPTION
	No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.
5	
10	Boring terminated at 10.5 ft
15	

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.5 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/25/16
DRILL RIG	Geoprobe 7720DT	DATE COMPLETED	7/25/16

PLATE

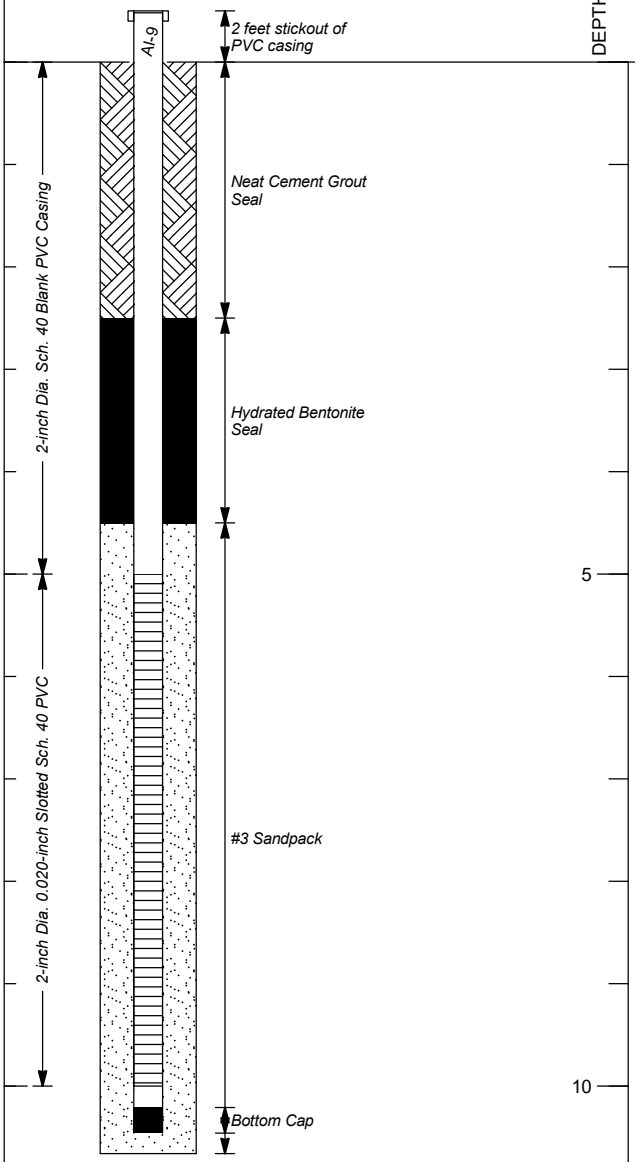
B-8

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-9

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/26/16
DRILL RIG	Geoprobe 7720DT	DATE COMPLETED	7/26/16

PLATE

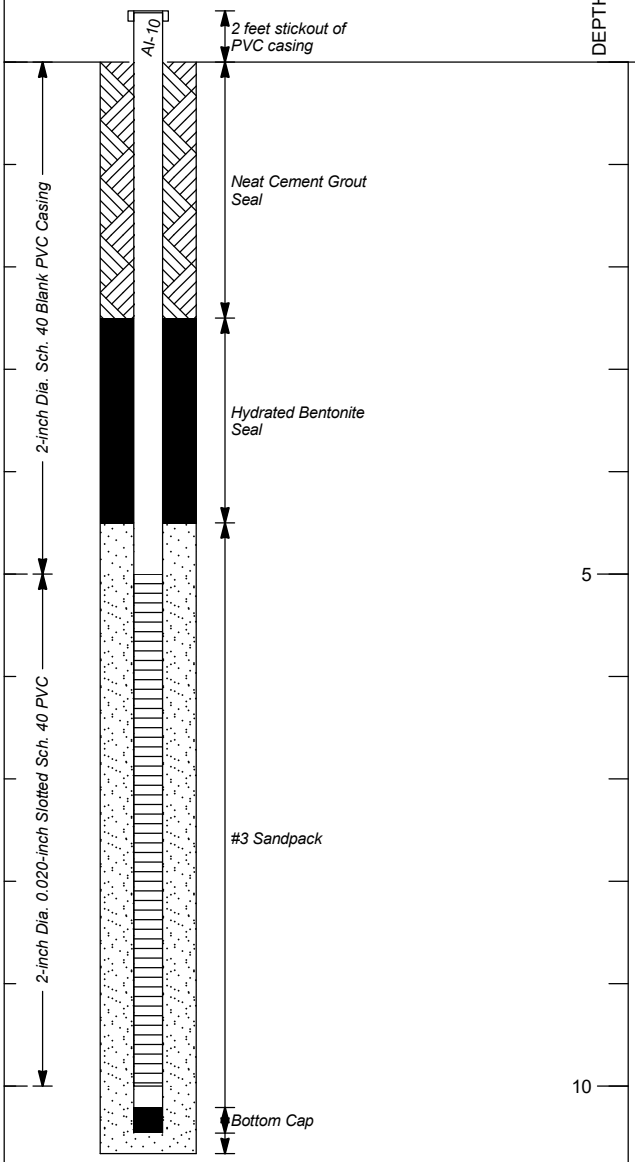
B-9

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF AI-10

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/28/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/28/16

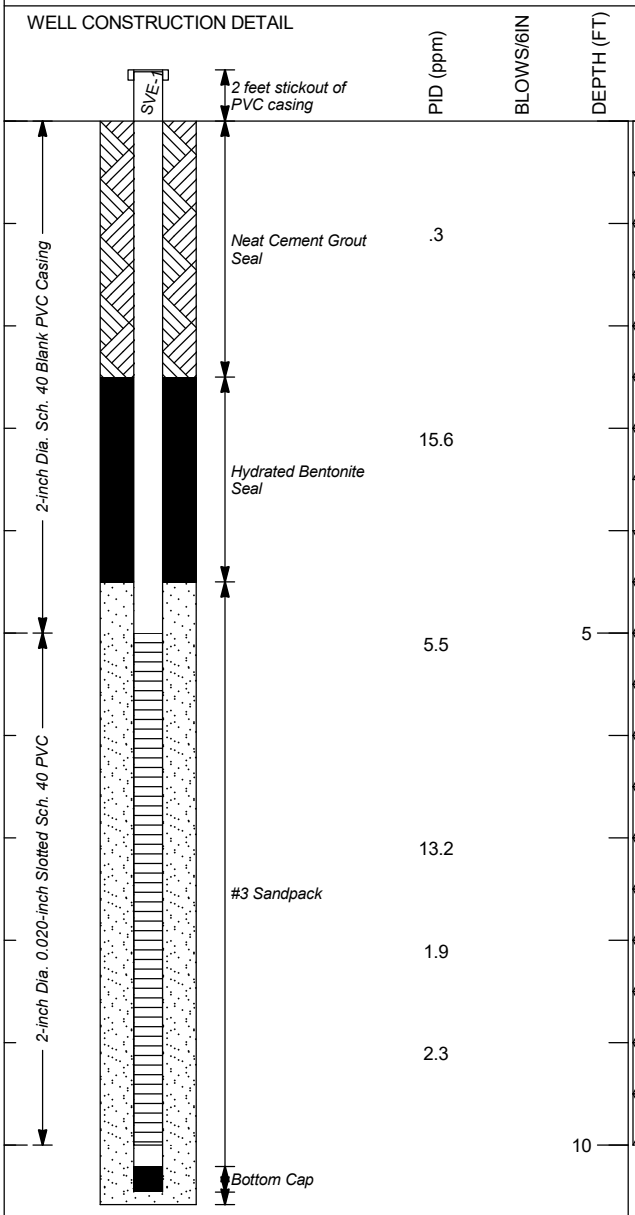
PLATE

B-10

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM & LITHOLOGIC LOG OF SVE-1



PID (ppm)	BLOWS/6IN	DEPTH (FT)	GRAPHICS	MATERIALS DESCRIPTION
				CONCRETE
.3				DARK OLIVE BROWN CLAY WITH SAND (CL) 2.5Y 3/3, medium stiff, very fine- to fine-grained sand, subangular to subrounded gravel up to 1.0 inch in diameter, (10% gravel, 15% sand, 75% fines)
				CONCRETE DEBRIS (100%)
15.6				VERY DARK GRAY CLAYEY SAND (SC) 2.5Y 3/1, moist, very fine- to fine-grained sand, (0% gravel, 60% sand, 40% fines), strong odor present
				BLACK SANDY CLAY (CL) 2.5Y 2.5/1, moist, medium stiff, very fine- to fine-grained sand, (0% gravel, 35% sand, 65% fines), odor present
5.5		5		
13.2				
				BLACK CLAY WITH SAND (CL) 2.5Y 2.5/1, moist, stiff, very fine-grained sand, (0% gravel, 20% sand, 80% fines), odor present
1.9				
2.3				DARK OLIVE GRAY CLAYEY GRAVEL WITH SAND (GC) 5Y 3/2, moist, very fine- to medium-grained sand, subangular to subrounded gravel up to 1 inch in diameter, (25% gravel, 20% sand, 55% fines)
		10		Bottom of bore at 10 feet bgs
		15		

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	2 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10 feet
GEOLOGIST/ENGINEER	J. Phillips	DATE STARTED	7/8/16
DRILL RIG	Geoprobe 6620DT	DATE COMPLETED	7/8/16

PLATE

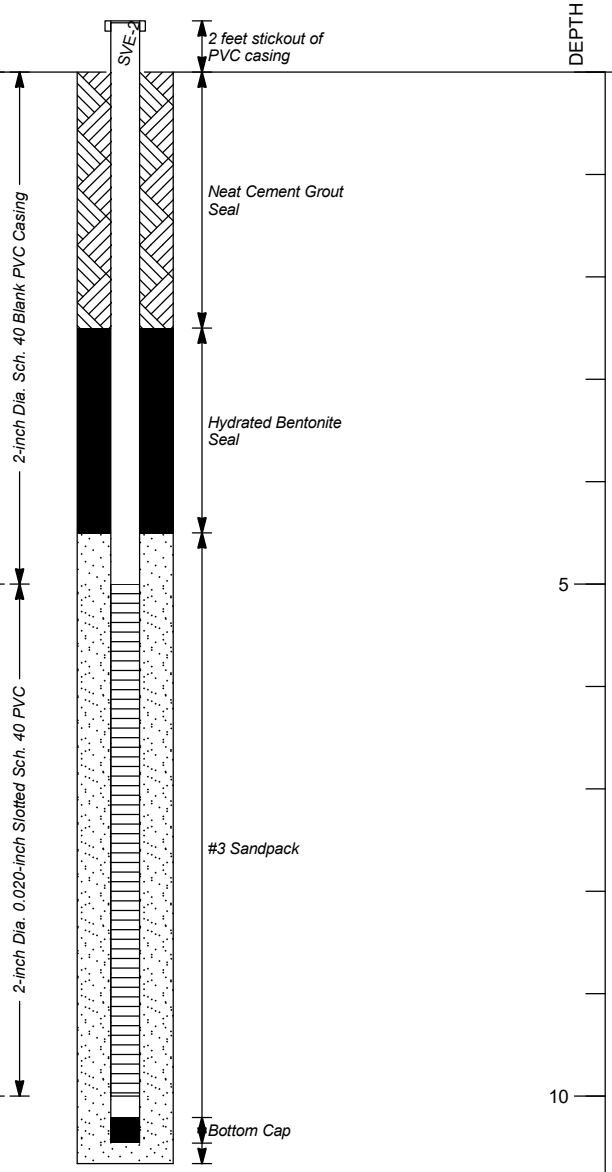
B-11

SOIL VAPOR PROBES 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-2

WELL CONSTRUCTION DETAIL



DEPTH (FT)	MATERIALS DESCRIPTION
	No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.
5	
10	Boring terminated at 10.66 ft
15	

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

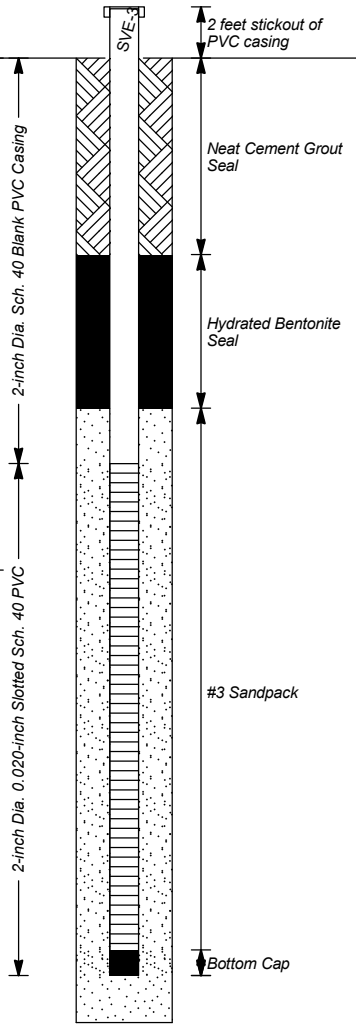
B-12

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-3

WELL CONSTRUCTION DETAIL



DEPTH (FT)

5

10

15

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

Boring terminated at 9.42 ft

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	9.4 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

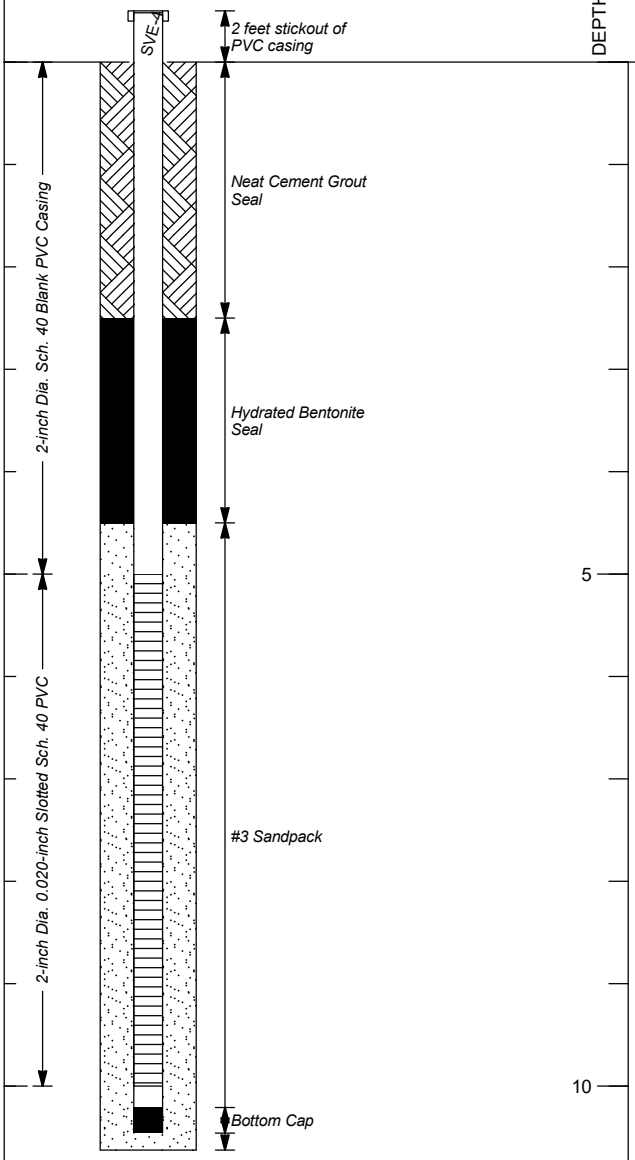
B-13

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-4

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.625 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.6 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

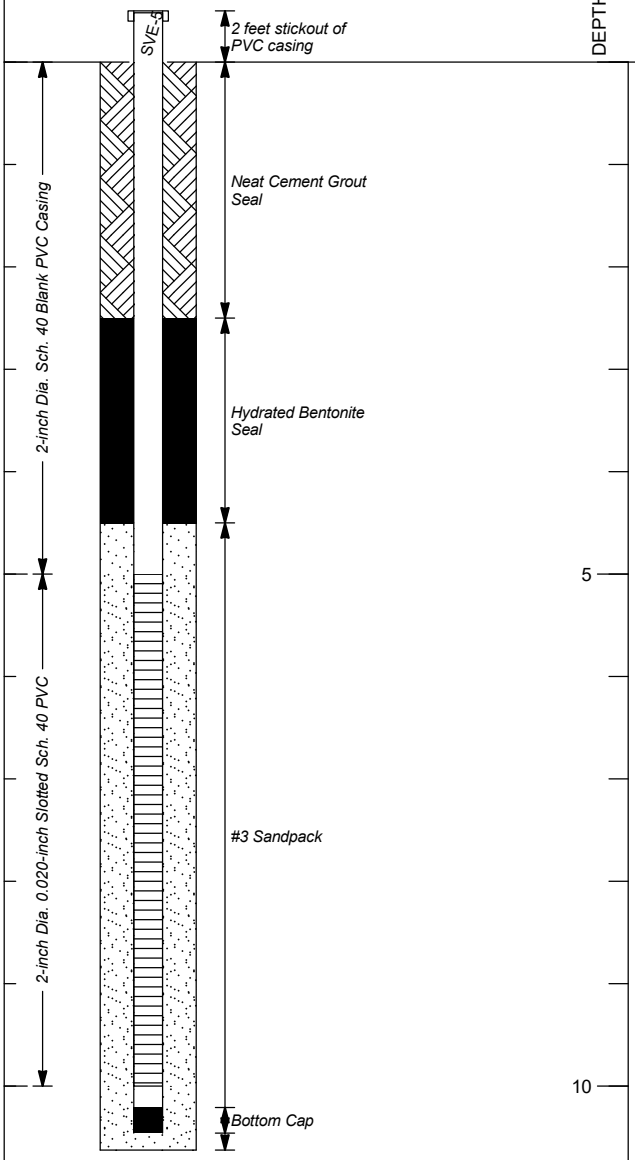
B-14

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-5

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.625 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.6 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

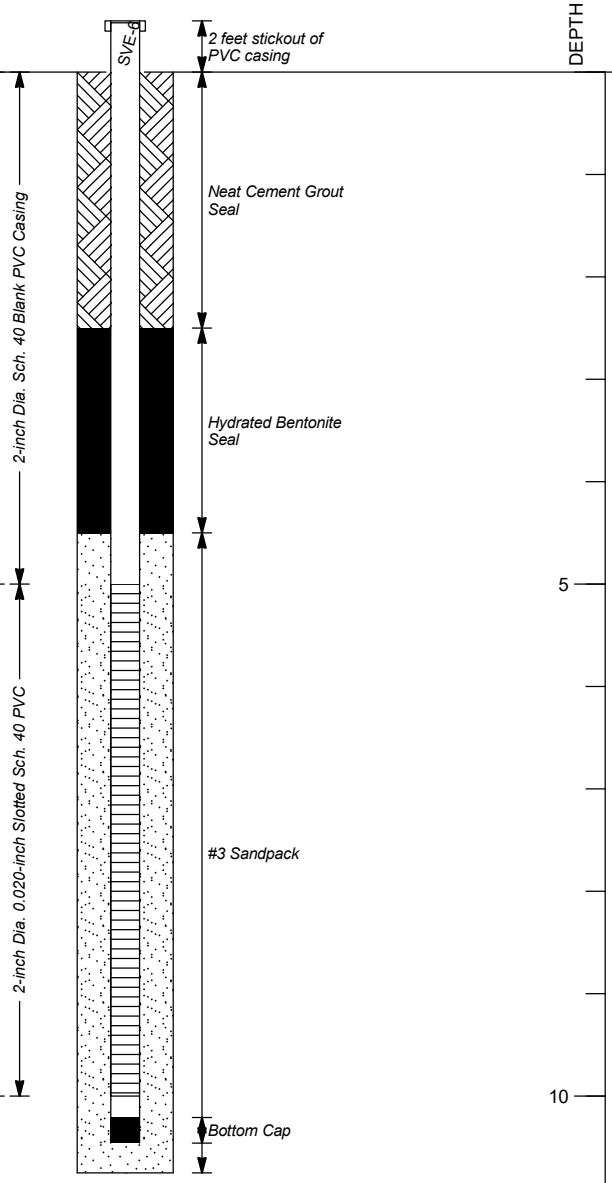
B-15

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-6

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.75 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.8 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/28/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/28/16

PLATE

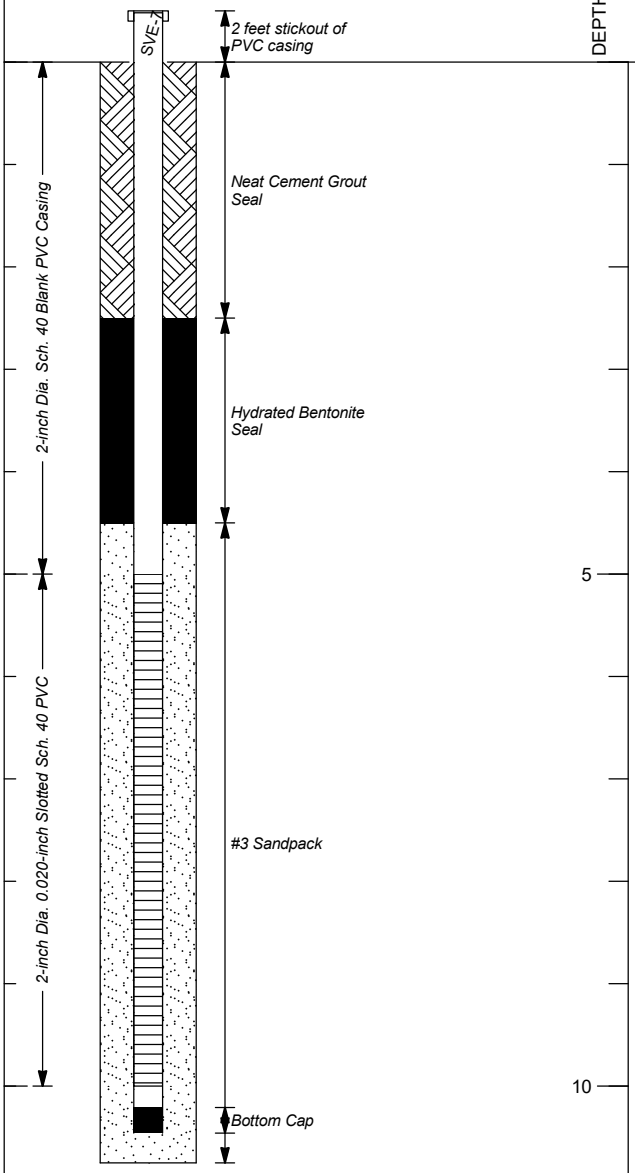
B-16

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-7

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.75 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.8 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/28/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/28/16

PLATE

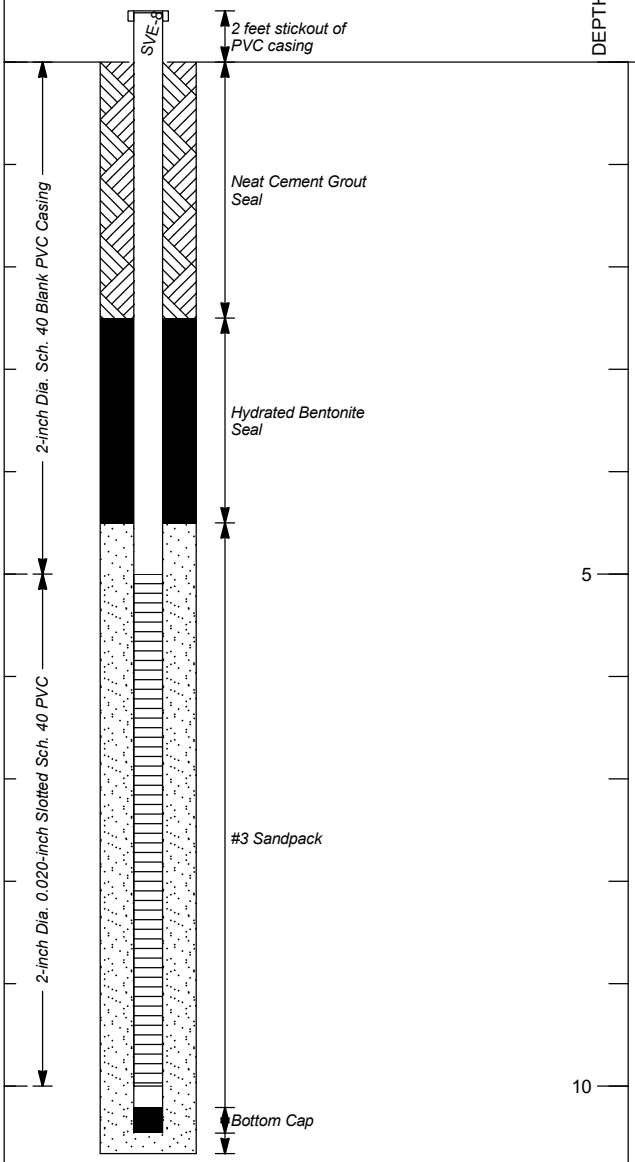
B-17

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-8

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/28/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/28/16

PLATE

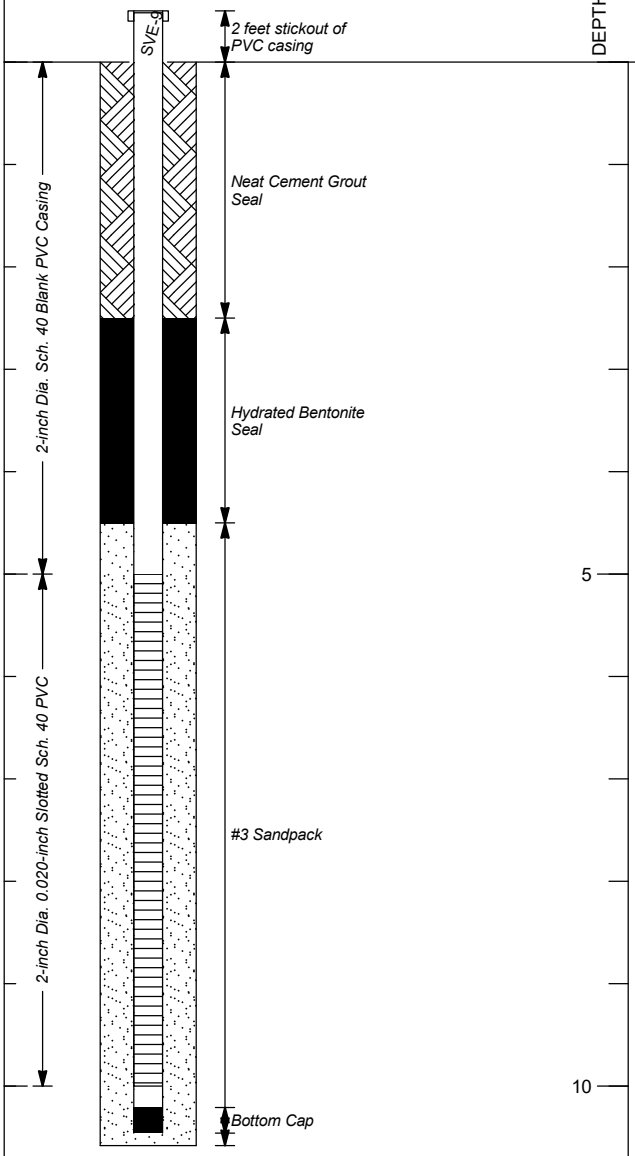
B-18

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-9

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.58 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.6 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

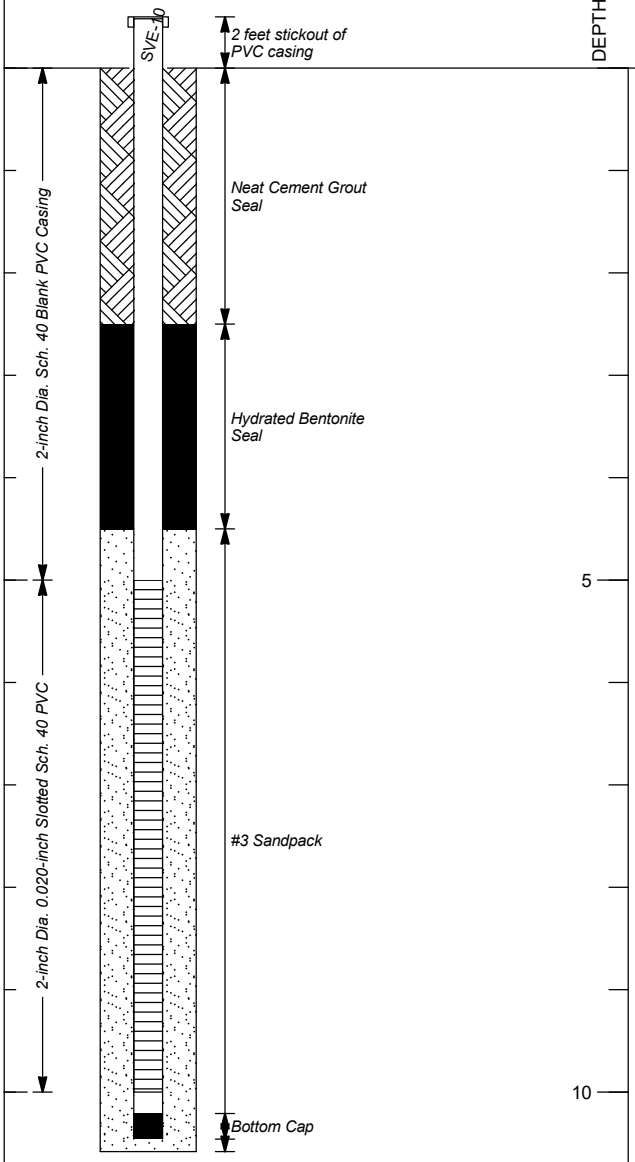
B-19

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-10

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.58 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.6 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/27/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/27/16

PLATE

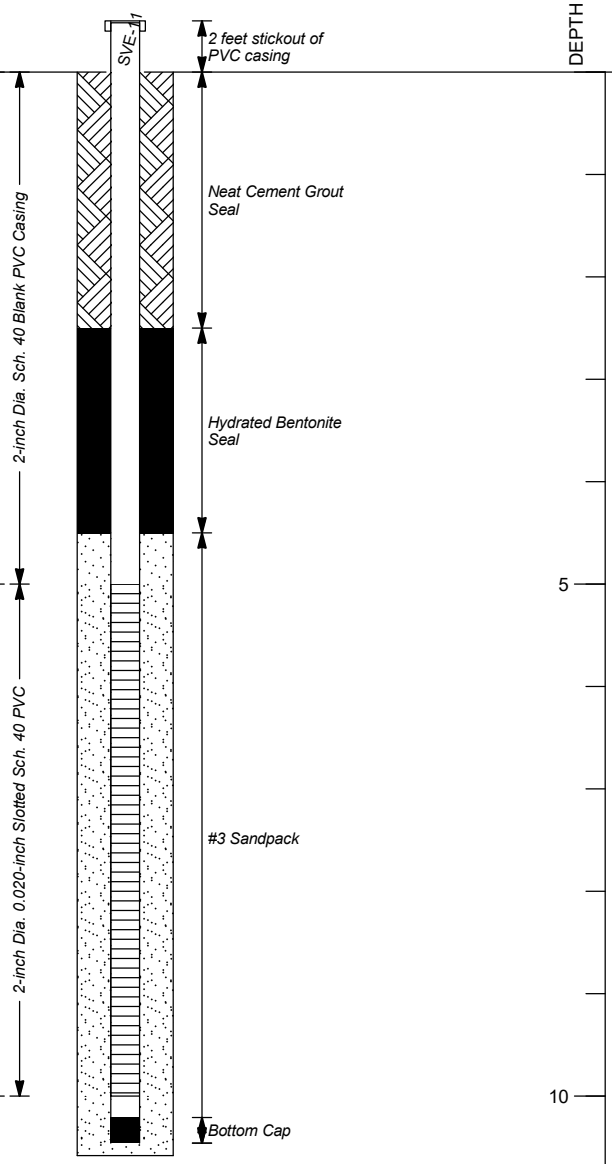
B-20

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-11

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.58 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.6 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/26/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/26/16

PLATE

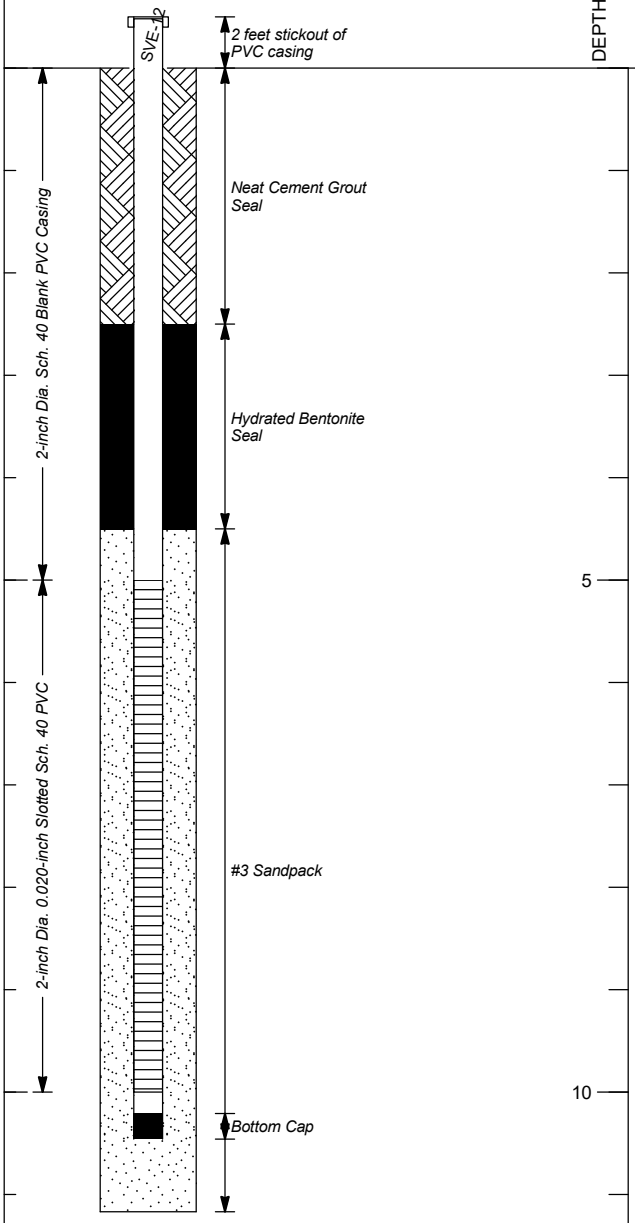
B-21

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-12

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 11.17 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	11.2 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/26/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/26/16

PLATE

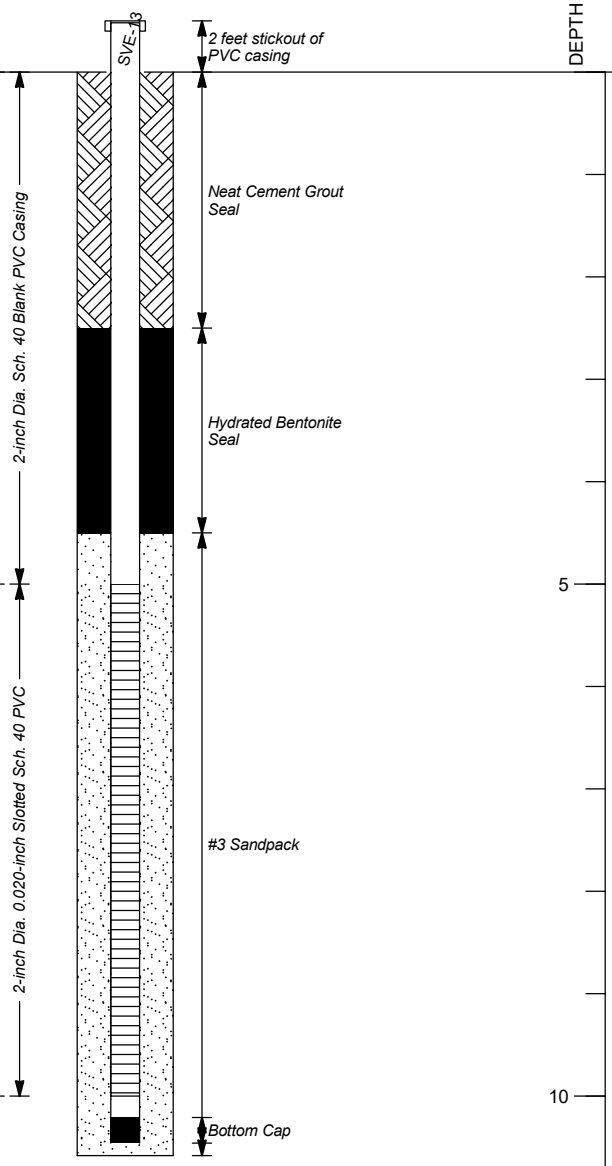
B-22

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-13

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.58 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.6 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/26/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/26/16

PLATE

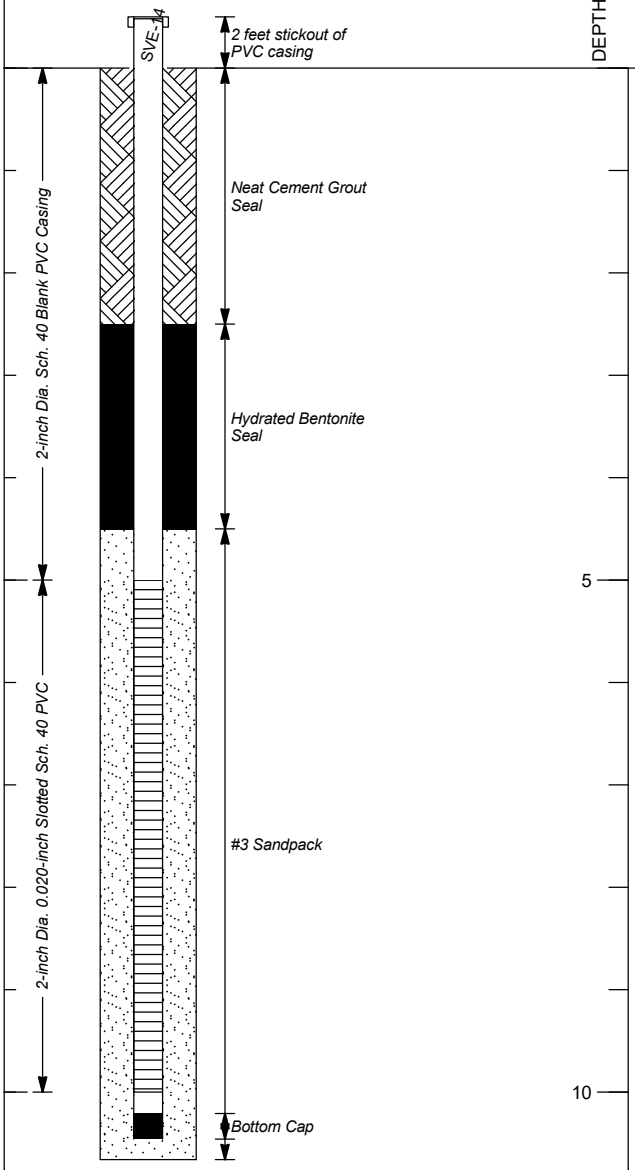
B-23

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-14

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/25/16
DRILL RIG	Geoprobe 7720DT	DATE COMPLETED	7/25/16

PLATE

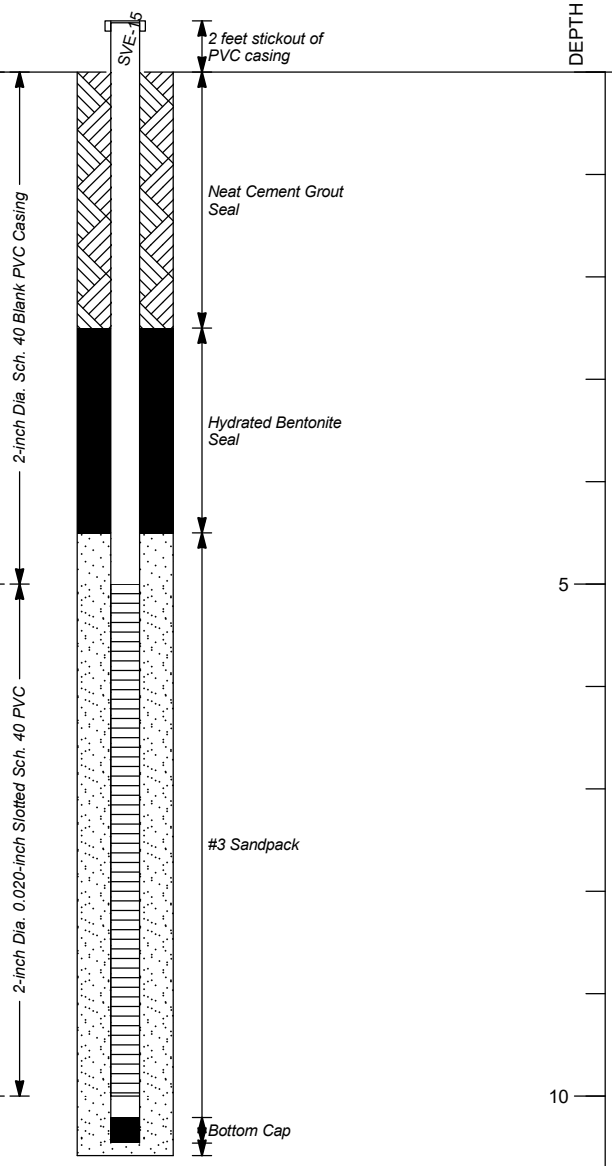
B-24

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-15

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/25/16
DRILL RIG	Geoprobe 7720DT	DATE COMPLETED	7/25/16

PLATE

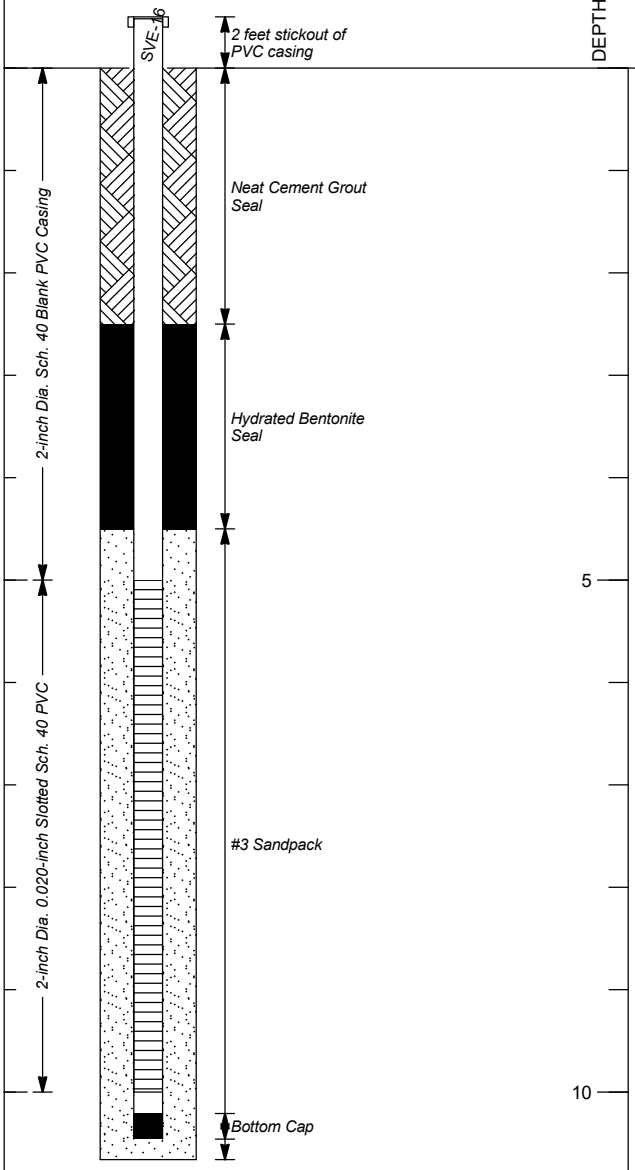
B-25

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-16

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/25/16
DRILL RIG	Geoprobe 7720DT	DATE COMPLETED	7/25/16

PLATE

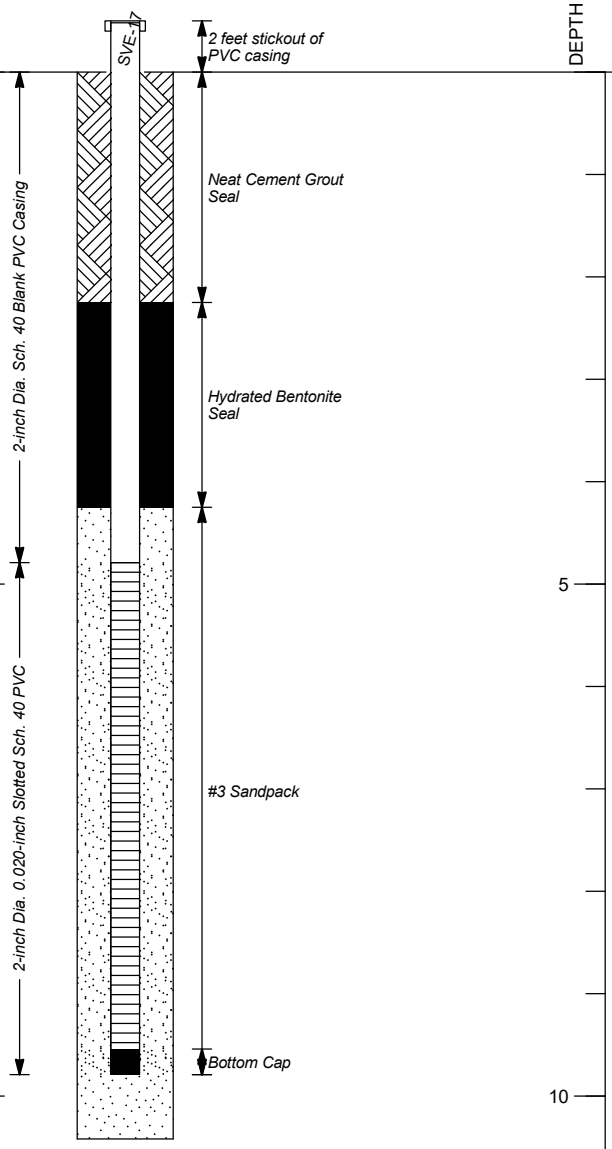
B-26

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-17

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.42 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.4 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/25/16
DRILL RIG	Geoprobe 7720DT	DATE COMPLETED	7/25/16

PLATE

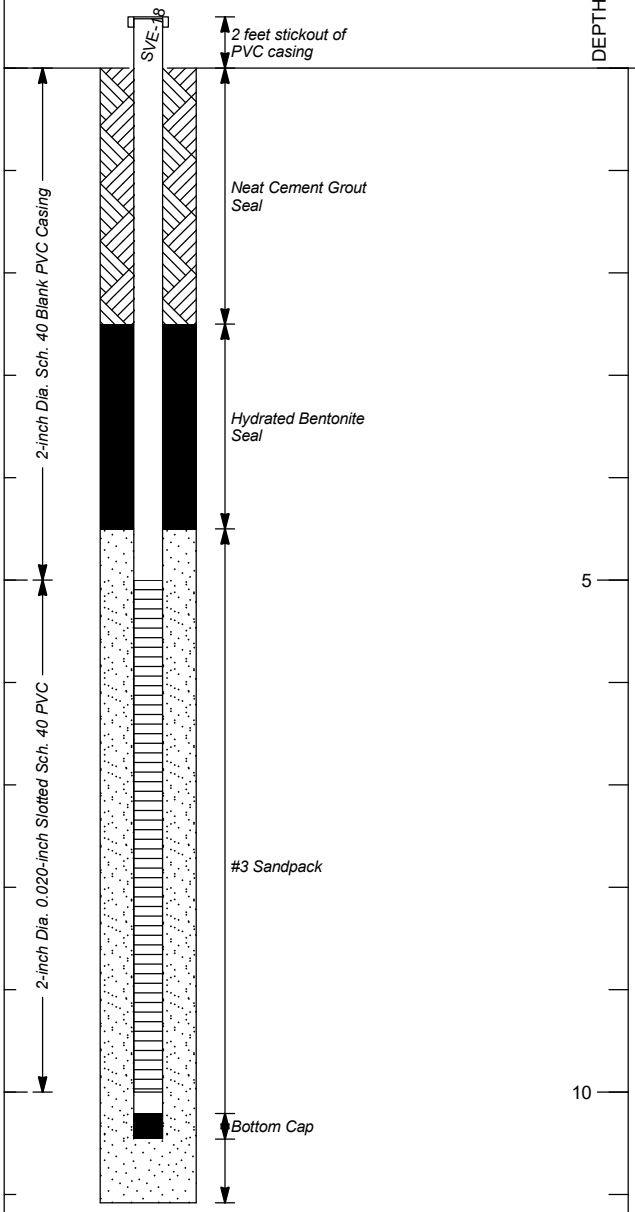
B-27

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-18

WELL CONSTRUCTION DETAIL



DEPTH (FT)

5

10

15

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

Boring terminated at 11.08 ft

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	11.1 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/26/16
DRILL RIG	Geoprobe 8040DT	DATE COMPLETED	7/26/16

PLATE

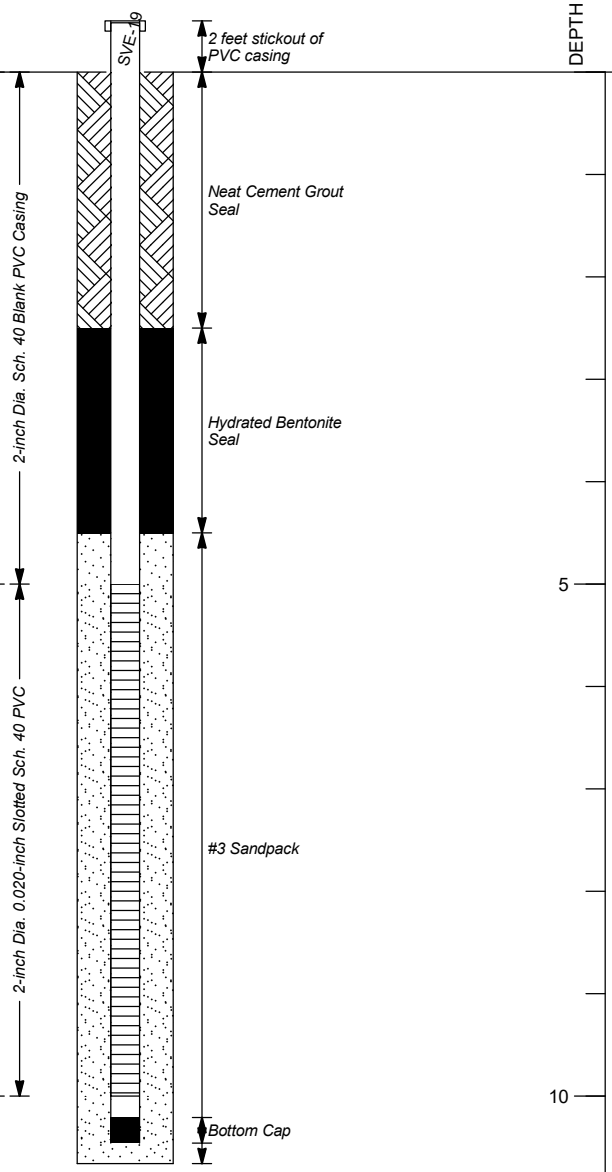
B-28

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM OF SVE-19

WELL CONSTRUCTION DETAIL



DEPTH (FT)

MATERIALS DESCRIPTION

No lithologic sampling conducted. Blank PVC casing extends 2 feet above ground surface and is enclosed with a temporary slipcap.

5

10

Boring terminated at 10.66 ft

15

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	10 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	10.7 feet
GEOLOGIST/ENGINEER	N. Davis	DATE STARTED	7/26/16
DRILL RIG	Geoprobe 7720DT	DATE COMPLETED	7/26/16

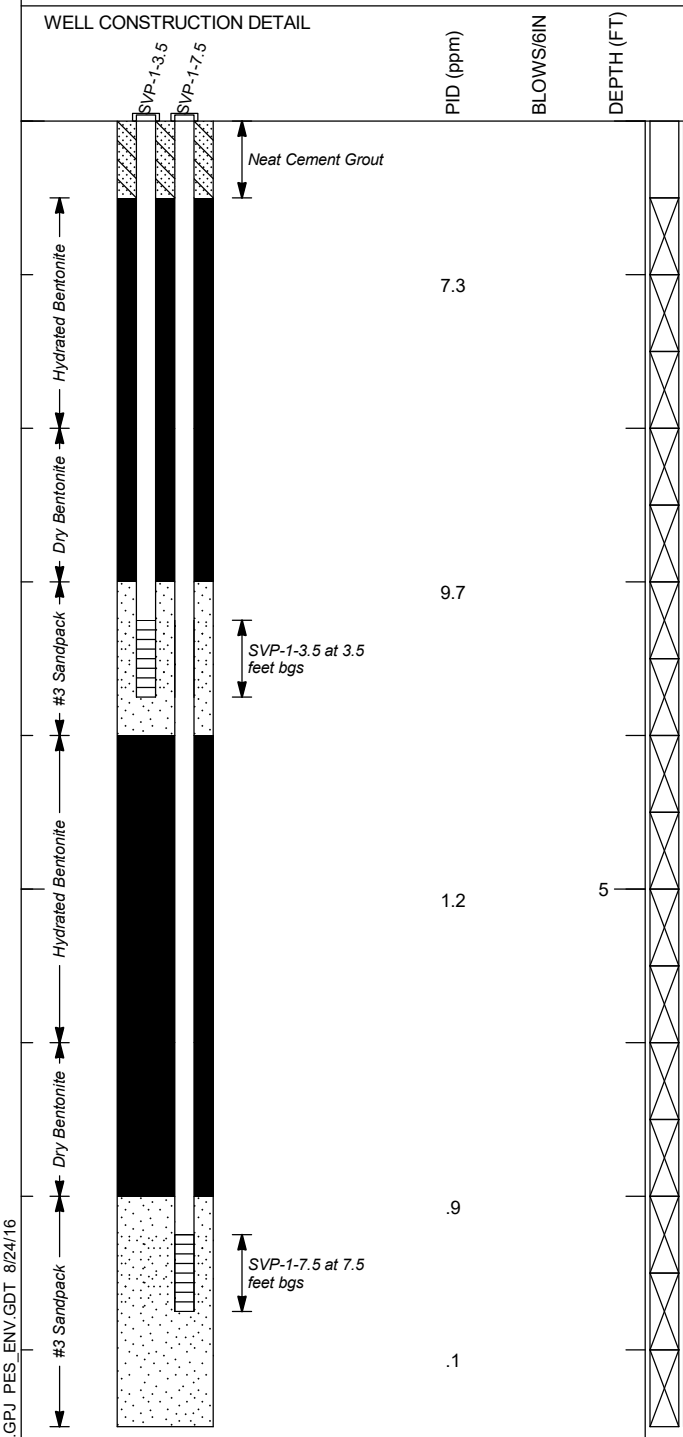
PLATE

B-29

WELL COMPLETION DIAGRAM 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM & LITHOLOGIC LOG OF SVP-1



PID (ppm)	BLOWS/6IN	DEPTH (FT)	GRAPHICS	MATERIALS DESCRIPTION
				CONCRETE
7.3				DARK OLIVE BROWN CLAY (CL) 2.5Y 3/3, moist, medium stiff, very fine- to fine-grained sand, (0% gravel, 10% sand, 90% fines)
9.7				VERY DARK GRAY CLAY WITH SAND (CL) 2.5Y 3/1, moist, medium stiff, very fine- to coarse-grained sand, trace subangular to subrounded gravel up to 0.5 inches in diameter, (Trace gravel, 20% sand, 80% fines)
1.2		5		LIGHT OLIVE BROWN POORLY-GRADED SAND (SP) 2.5Y 5/6, moist, very fine- to medium-grained sand, subangular to subrounded gravel up to 0.5 inches in diameter, (10% gravel, 90% sand, 0% fines)
				BLACK SANDY CLAY (CL) 2.5Y 2.5/1, moist, medium stiff, very fine- to fine-grained sand, (0% gravel, 35% sand, 65% fines), odor present
.9				
.1				Increase in gravel to (5% gravel, 35% sand, 60% fines) at 8 feet bgs, subangular to subrounded gravel up to 0.5 inches in diameter
				Bottom of borehole at 8.5 feet bgs. Constructed SVP-1-3.5 and SVP-1-7.5 from 0.25-inch I.D. Teflon Tube Casings
		10		

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	2 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	8.5 feet
GEOLOGIST/ENGINEER	J. Phillips	DATE STARTED	7/8/16
DRILL RIG	Geoprobe 6620DT	DATE COMPLETED	7/8/16

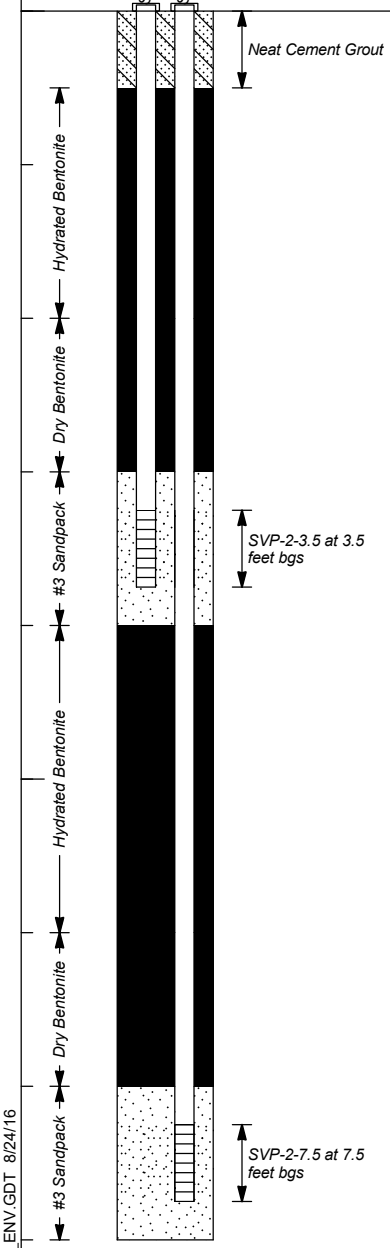
PLATE

B-30

SOIL VAPOR PROBES 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM & LITHOLOGIC LOG OF SVP-2



PID (ppm)	BLOWS/6IN	DEPTH (FT)	GRAPHICS	MATERIALS DESCRIPTION
				CONCRETE
				VERY DARK GRAY CLAY WITH SAND (CL) 2.5Y 3/3, moist, medium stiff, very fine- to fine-grained sand, (0% gravel, 10% sand, 90% fines)
.2				
.3				Concrete debris, metal debris, (5% concrete, 5% metal) present from 2 to 2.5 feet bgs
.5				
		5		
				BLACK SANDY CLAY (CL) 2.5Y 2.5/1, moist, medium stiff, very fine- to fine-grained sand, subangular to subrounded gravel up to 0.5 inches in diameter, (5% gravel, 35% sand, 60% fines), odor present
.6				
				Bottom of borehole at 8 feet bgs. Constructed SVP-2-3.5 and SVP-2-7.5 from 0.25-inch I.D. Teflon Tube Casings
		10		

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	2 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	8 feet
GEOLOGIST/ENGINEER	J. Phillips	DATE STARTED	7/8/16
DRILL RIG	Geoprobe 6620DT	DATE COMPLETED	7/8/16

PLATE
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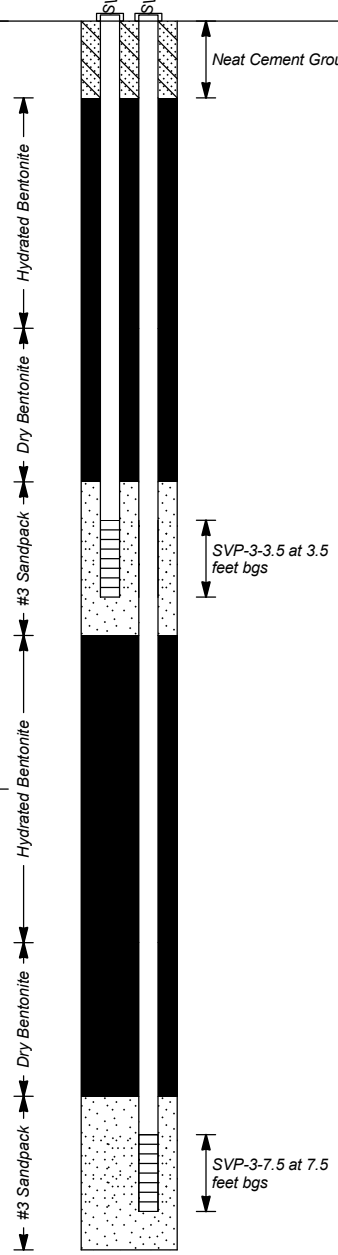
SOIL VAPOR PROBES 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM & LITHOLOGIC LOG OF SVP-3



PID (ppm)	BLOWS/6IN	DEPTH (FT)	GRAPHICS	MATERIALS DESCRIPTION
				CONCRETE
.6				DARK OLIVE BROWN CLAY (CL) 2.5Y 3/3, medium stiff, very fine- to fine-grained sand, subangular to subrounded gravel up to 1.0 inch in diameter, (10% gravel, 15% sand, 75% fines)
.8				BLACK CLAY WITH SAND (CL) 2.5Y 2.5/1, moist, very fine-grained sand, subangular to subrounded gravel up to 0.75 inches in diameter, (5% gravel, 15% sand, 80% fines)
				Concrete and brick debris up to 1 inch in diameter (75% gravel, 0% sand, 25% fines) present at 4 feet
.5				BLACK SANDY CLAY (CL) 2.5Y 2.5/1, moist, medium stiff, very fine- to fine-grained sand, (0% gravel, 30% sand, 70% fines), odor present
		5		
.8				
				Bottom of borehole at 8 feet bgs. Constructed SVP-3-3.5 and SVP-3-7.5 from 0.25-inch I.D. Teflon Tube Casings
		10		

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	2 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	8 feet
GEOLOGIST/ENGINEER	J. Phillips	DATE STARTED	7/8/16
DRILL RIG	Geoprobe 6620DT	DATE COMPLETED	7/8/16

PLATE

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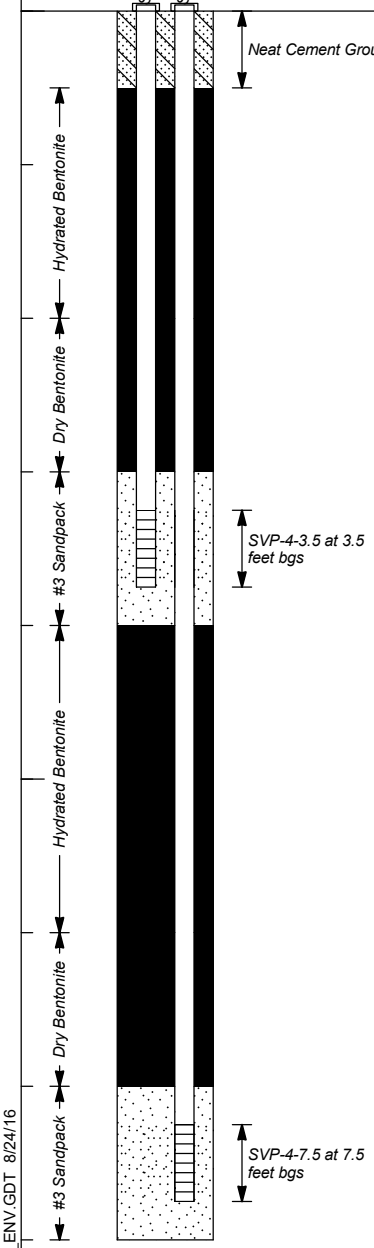
SOIL VAPOR PROBES 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM & LITHOLOGIC LOG OF SVP-4



DEPTH (FT)	PID (ppm)	BLOWS/6IN	GRAPHICS	MATERIALS DESCRIPTION
				CONCRETE
	.4			DARK OLIVE BROWN CLAY WITH SAND (CL) 2.5Y 3/3, medium stiff, very fine- to fine-grained sand, subangular to subrounded gravel up to 1.0 inch in diameter, (10% gravel, 15% sand, 75% fines)
	.4			
	.1			BLACK SANDY CLAY (CL) 2.5Y 2.5/1, moist, medium stiff, very fine- to fine-grained sand, (0% gravel, 30% sand, 70% fines), odor present
5	.2			
				Bottom of borehole at 8 feet bgs. Constructed SVP-4-3.5 and SVP-4-7.5 from 0.25-inch I.D. Teflon Tube Casings
10				

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	2 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	8 feet
GEOLOGIST/ENGINEER	J. Phillips	DATE STARTED	7/8/16
DRILL RIG	Geoprobe 6620DT	DATE COMPLETED	7/8/16

PLATE

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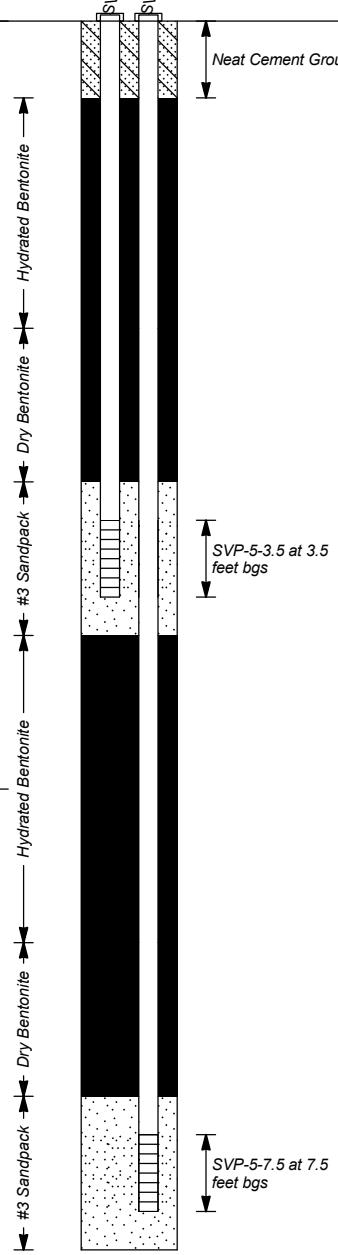
SOIL VAPOR PROBES 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM & LITHOLOGIC LOG OF SVP-5



PID (ppm)	BLOWS/6IN	DEPTH (FT)	GRAPHICS	MATERIALS DESCRIPTION
				CONCRETE
.7				DARK OLIVE BROWN CLAY WITH SAND (CL) 2.5Y 3/3, medium stiff, very fine- to fine-grained sand, subangular to subrounded gravel up to 1.0 inch in diameter, (10% gravel, 15% sand, 75% fines)
.1				
.7		5		BLACK SANDY CLAY (CL) 2.5Y 2.5/1, moist, medium stiff, very fine- to fine-grained sand, subangular to subrounded gravel up to 1.0 inch in diameter, (5% gravel, 30% sand, 65% fines), odor present
.5				Asphaltic concrete debris (10-15%) present from 7 to 8 feet bgs
		10		Bottom of borehole at 8 feet bgs. Constructed SVP-5-3.5 and SVP-5-7.5 from 0.25-inch I.D. Teflon Tube Casings

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	2 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	8 feet
GEOLOGIST/ENGINEER	J. Phillips	DATE STARTED	7/8/16
DRILL RIG	Geoprobe 6620DT	DATE COMPLETED	7/8/16

PLATE

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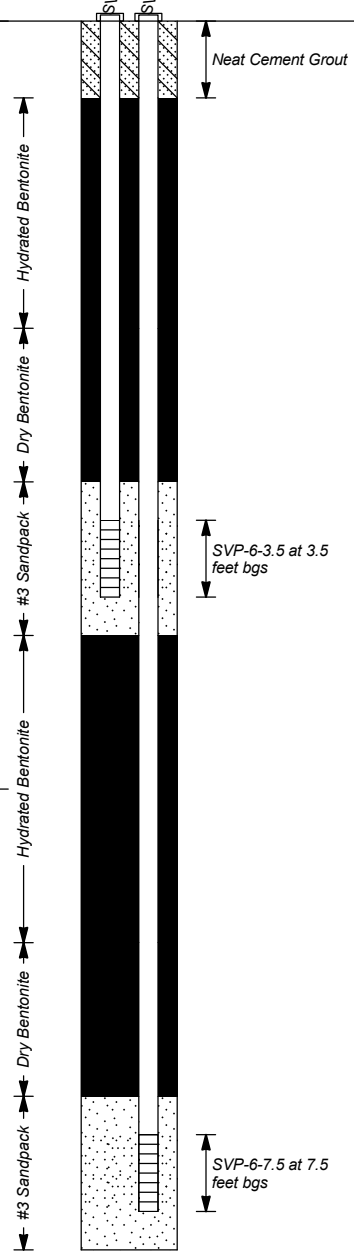
SOIL VAPOR PROBES 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

PES Environmental, Inc.
Engineering & Environmental Services

WELL COMPLETION DIAGRAM & LITHOLOGIC LOG OF SVP-6



PID (ppm)	BLOWS/6IN	DEPTH (FT)	GRAPHICS	MATERIALS DESCRIPTION
				CONCRETE
.4				DARK OLIVE BROWN CLAY (CL) 2.5Y 3/3, medium stiff, very fine- to fine-grained sand, subangular to subrounded gravel up to 1.0 inch in diameter, (10% gravel, 15% sand, 75% fines)
.7				BLACK SANDY CLAY (CL) 2.5Y 2.5/1, moist, medium stiff, very fine- to fine-grained sand, (0% gravel, 30% sand, 70% fines), odor present
				Increase in sand to (0% gravel, 35% sand, 65% fines)
10		5		
				Decrease in sand to (0% gravel, 30% sand, 70% fines), trace subangular to subrounded gravel up to 0.5 inches in diameter present from 6 feet bgs to 8 feet bgs
.2				
		10		Bottom of borehole at 8 feet bgs. Constructed SVP-6-3.5 and SVP-6-7.5 from 0.25-inch I.D. Teflon Tube Casings

PROJECT	Anton Evolve	REVIEWED BY	CJB
LOCATION	6701 Shellmound St	DIAMETER OF HOLE	2 inches
JOB NUMBER	1448.001.02	TOTAL DEPTH OF HOLE	8 feet
GEOLOGIST/ENGINEER	J. Phillips	DATE STARTED	7/8/16
DRILL RIG	Geoprobe 6620DT	DATE COMPLETED	7/8/16

PLATE

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SOIL VAPOR PROBES 1448.001.02 SHELLMOUND DM.GPJ PES_ENV.GDT 8/24/16

APPENDIX C

FIELD MEASUREMENTS COLLECTED DURING STEP AND CONSTANT RATE TESTS

Table C-1
Summary of Field Measurements
Step Test Data - Well SVE-1 and Soil Vapor Monitoring Probes on July 13, 2016
Results of SVE Pilot Study
6701-6707 Shellmound Street
Emeryville, California

Test Phase	Date	Time	Temperature (deg F)	SVE-1 Vacuum (in. H_2O)	Flow Rate at SVE-1 (ACFM)	Flow Rate at SVE-1 (SCFM)	SVE System Vacuum (before knockout) (in. H_2O)	PID (ppmv)		Biogenic Gases (Influent)			Soil Vapor Monitoring Probe Vacuum (in. H_2O)											
								Before First Vessel (Influent)	Mid Point (V1 to V2)	Carbon Dioxide (%)	Oxygen (%)	Methane (%/%)	SVP-1-3.5	SVP-1-7.5	SVP-2-3.5	SVP-2-7.5	SVP-3-3.5	SVP-3-7.5	SVP-4-3.5	SVP-4-7.5	SVP-5-3.5	SVP-5-7.5	SVP-6-3.5	SVP-6-7.5
Step Test 1	7/13/2016	11:03	72.5	21.4	10.5	9.7	21.4	--	--	--	--	--	-0.80	-0.20	-0.06	-1.28	0.00	-0.05	0.00	-0.13	-0.39	-0.37	-0.76	-0.78
		11:20	--	--	--	--	21.4	--	--	--	--	--	-1.39	-0.28	-0.08	-1.50	-0.02	0.00	0.00	-0.18	-0.55	-0.32	-0.93	-0.50
		11:26	--	--	--	--	21.4	--	--	--	--	--	-1.35	-0.35	-0.09	-1.63	0.00	0.00	0.00	-0.18	-0.53	-0.32	-0.61	-0.49
		11:35	--	--	--	--	21.4	7.2	1.0	--	--	--	-0.23	-0.34	-0.11	-1.69	0.00	0.00	0.00	-0.23	-0.58	-0.34	-0.63	-0.51
		12:43	70.5	20.95	9.55	8.9	21.4	7.8	--	8.7	2.7	35.5	--	--	--	--	--	--	--	--	--	--	--	--
Step Test 2	7/13/2016	12:49	72.5	40.15	18.4	16.2	40.8	--	--	--	--	--	-0.91	-0.57	-0.20	-2.74	0.00	-0.03	0.00	-0.35	-1.13	-1.02	-1.81	-1.80
		13:20	--	40.15	--	--	40.8	--	--	--	--	--	-1.13	-0.62	-0.20	-3.01	-0.20	-0.05	0.00	-0.36	-1.20	-1.04	-1.85	-1.86
		13:40	--	40.15	--	--	40.8	--	--	--	--	--	-0.57	-0.64	-0.21	-3.07	-0.64	-0.06	0.00	-0.40	-1.24	-1.21	-1.90	-1.91
		14:20	71.8	39.82	19.28	17.0	40.6	42.8	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Step Test 3	7/13/2016	14:25	72.9	74.82	26.35	21.0	80.3	--	--	--	--	--	-0.87	-1.23	-0.38	-4.94	-0.38	-0.08	0.00	-0.74	-2.15	-2.10	-3.36	-3.41
		14:55	--	74.82	--	--	80.3	--	--	--	--	--	-1.41	-1.27	-0.38	-5.63	-0.37	-0.08	0.00	-0.79	-2.34	-2.34	-3.60	-3.82
		15:10	--	74.82	--	--	80.3	--	--	--	--	--	-0.57	-1.29	-0.38	-6.29	-3.72	-0.11	0.00	-0.80	-2.37	-2.35	-3.59	-3.64
		15:20	72	73.76	26.73	21.4	80.3	8.5	0.5	--	--	--	-1.00	-1.30	-0.38	-6.44	-0.47	-0.12	0.00	-0.81	-2.35	-2.36	-3.58	-3.65
		15:45	--	--	--	--	--	9.2	--	10.4	1.8	32.9	--	--	--	--	--	--	--	--	--	--	--	--
Step Test 4	7/13/2016	15:50	75	119.8	35.6	24.4	120.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		16:00	76.7	--	36.5	--	145	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		16:15	76	119.8	34.7	23.8	120.6	--	--	--	--	--	-1.20	-2.13	-0.65	-9.76	-0.49	-0.13	0.00	-1.22	-3.65	-3.59	-5.47	-5.55
		16:27	--	119.8	--	--	120.6	--	--	--	--	--	-0.79	-2.04	-0.60	-9.62	-0.52	-0.12	-0.02	-1.28	-3.61	-3.57	-5.40	-5.51
		16:40	72.8	116.4	35.5	24.7	120.6	10.4	0.7	1.5	16.9	4.3	-0.76	-2.03	-0.60	-9.64	-0.54	-0.14	0.00	-1.26	-3.61	-3.58	-5.39	-5.49

Notes:
ACFM - Actual cubic feet per minute
SCFM - Standard cubic feet per minute
deg. F - degrees Fahrenheit
in. H2O - inches of water
ppmv - parts per million by volume
** - Maximum Flow rate of pilot study SVE system

Chart C-1
Observed Flow Rates Vs. Vacuum at SVE-1
Pilot Study Step Tests
July 13, 2016

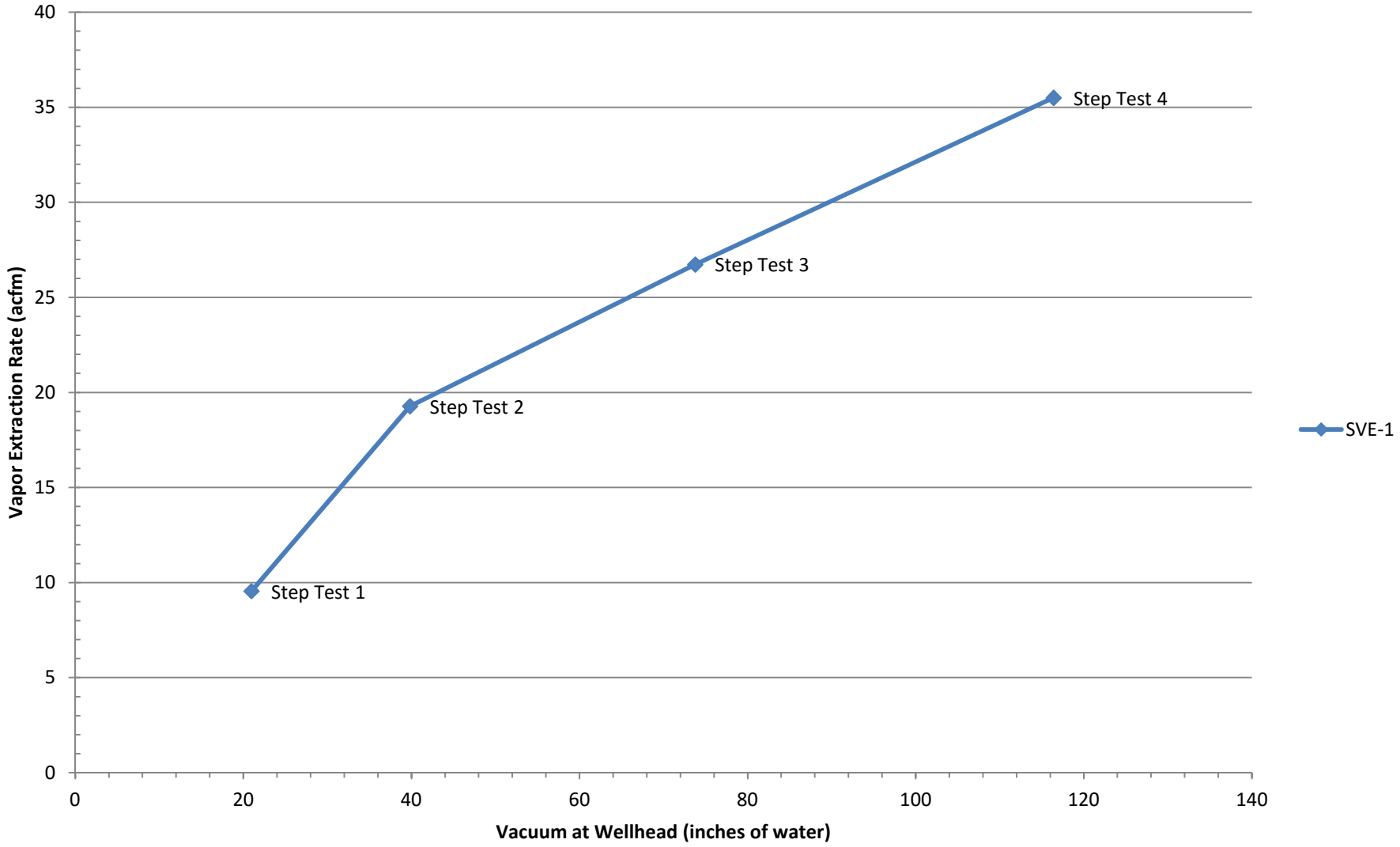


Table C-2
Summary of Field Measurements - Biogenic Gases
Step Test Data - Soil Vapor Monitoring Probes on July 13, 2016
Results of SVE Pilot Study
6701-6707 Shellmound Street
Emeryville, California

Probe	Step	Time	Vacuum (in WC)	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	PID (ppmv)
SVP-1-7.5	Baseline	10:00 - 10:30	0.00	1.0	0.3	20.5	0.0
	Step Test 1	11:00 - 12:30	--	19.1	0.2	1.2	0.0
	Step Test 2	14:20 - 14:50	--	8.2	0.7	11.7	0.9
	Step Test 3	15:20 - 16:00	--	7.1	1.6	13.1	1.1
	Step Test 4	16:15 - 16:50	--	7.8	2.2	13.3	1.1
SVP-1-3.5	Baseline	10:00 - 10:30	0.00	19.5	0.1	0.4	0.0
	Step Test 1	11:00 - 12:30	--	18.9	0.2	1.4	0.0
	Step Test 2	14:20 - 14:50	--	NM	NM	NM	NM
	Step Test 3	15:20 - 16:00	--	NM	NM	NM	NM
	Step Test 4	16:15 - 16:50	--	NM	NM	NM	NM
SVP-2-7.5	Baseline	10:00 - 10:30	-0.06	0.1	4.7	30.6	0.5
	Step Test 1	11:00 - 12:30	--	0.5	4.9	28.4	0.0
	Step Test 2	14:20 - 14:50	--	3.9	2.9	21.3	3.1
	Step Test 3	15:20 - 16:00	--	8.2	2.2	18	2.9
	Step Test 4	16:15 - 16:50	--	4.5	2.5	19.3	3.0
SVP-2-3.5	Baseline	10:00 - 10:30	0.00	18.2	0.1	0.9	0.0
	Step Test 1	11:00 - 12:30	--	17.6	0.0	1.3	0.0
	Step Test 2	14:20 - 14:50	--	19.3	0.1	0.1	1.5
	Step Test 3	15:20 - 16:00	--	19.7	0.1	0	2.5
	Step Test 4	16:15 - 16:50	--	19.8	0.0	0.0	2.1
SVP-3-7.5	Baseline	10:00 - 10:30	0.00	1.3	4.2	11.9	0.0
	Step Test 1	11:00 - 12:30	--	4.1	3.3	9.0	0.0
	Step Test 2	14:20 - 14:50	--	11.3	2.5	4.5	1.7
	Step Test 3	15:20 - 16:00	--	8.3	3.2	11.4	0.3
	Step Test 4	16:15 - 16:50	--	18.6	0.1	0.6	3.9
SVP-3-3.5	Baseline	10:00 - 10:30	0.00	16.3	0.0	1.4	0.0
	Step Test 1	11:00 - 12:30	--	7.9	0.0	6.0	1.7
	Step Test 2	14:20 - 14:50	--	12.1	0.0	3.7	3.1
	Step Test 3	15:20 - 16:00	--	16.8	0	1.1	5.5
	Step Test 4	16:15 - 16:50	--	18.4	0.0	0.7	4.1
SVP-4-7.5	Baseline	10:00 - 10:30	-0.06	0.8	6.8	36.9	0.0
	Step Test 1	11:00 - 12:30	--	1.4	8.3	27.6	0.1
	Step Test 2	14:20 - 14:50	--	1.5	7.7	30.2	0.2
	Step Test 3	15:20 - 16:00	--	14.2	7.6	29.8	0.0
	Step Test 4	16:15 - 16:50	--	3.2	8.3	32.0	0.0
SVP-4-3.5	Baseline	10:00 - 10:30	0.00	15.2	1.3	0.1	0.0
	Step Test 1	11:00 - 12:30	--	11.2	2.7	1.7	4.2
	Step Test 2	14:20 - 14:50	--	15.1	0.9	0.2	6.2
	Step Test 3	15:20 - 16:00	--	16	0.8	0.1	6.0
	Step Test 4	16:15 - 16:50	--	15.1	1.8	0.1	5.6
SVP-5-7.5	Baseline	10:00 - 10:30	-0.02	0.4	6.7	41.0	1.8
	Step Test 1	11:00 - 12:30	--	6.8	3.3	26.4	0.4
	Step Test 2	14:20 - 14:50	--	7.8	2.9	21.7	0.4
	Step Test 3	15:20 - 16:00	--	6.1	3.3	27.8	0.0
	Step Test 4	16:15 - 16:50	--	5.0	3.8	30.6	0.0
SVP-5-3.5	Baseline	10:00 - 10:30	-0.04	8.9	2.1	31.8	0.2
	Step Test 1	11:00 - 12:30	--	7.8	1.7	14.5	0.2
	Step Test 2	14:20 - 14:50	--	11.0	2.2	18.6	0.1
	Step Test 3	15:20 - 16:00	--	5.5	4.8	31.8	0.0
	Step Test 4	16:15 - 16:50	--	4.5	6.2	35.2	0.0
SVP-6-7.5	Baseline	10:00 - 10:30	-0.02	0.4	3.6	47.3	0.0
	Step Test 1	11:00 - 12:30	--	12.8	1.2	7.4	4.8
	Step Test 2	14:20 - 14:50	--	9.6	1.9	14.2	3.6
	Step Test 3	15:20 - 16:00	--	7.6	4	23.4	2.2
	Step Test 4	16:15 - 16:50	--	9.0	3.3	18.5	2.8
SVP-6-3.5	Baseline	10:00 - 10:30	0.00	6.0	2.1	34.2	0.2
	Step Test 1	11:00 - 12:30	--	10.0	2.2	16.2	2.8
	Step Test 2	14:20 - 14:50	--	11.3	2.5	13.7	3.0
	Step Test 3	15:20 - 16:00	--	10.8	3.3	17.3	1.8
	Step Test 4	16:15 - 16:50	--	12.8	2.5	12.6	1.4

Notes:
in WC = inches of water
ppmv = parts per million by volume

Table C-2
Summary of Field Measurements - Biogenic Gases
Step Test Data - Soil Vapor Monitoring Probes on July 13, 2016
Results of SVE Pilot Study
6701-6707 Shellmound Street
Emeryville, California

Probe	Step	Time	Vacuum (in WC)	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	PID (ppmv)
SVP-1-7.5	Baseline	10:00 - 10:30	0.00	1.0	0.3	20.5	0.0
	Step Test 1	11:00 - 12:30	--	19.1	0.2	1.2	0.0
	Step Test 2	14:20 - 14:50	--	8.2	0.7	11.7	0.9
	Step Test 3	15:20 - 16:00	--	7.1	1.6	13.1	1.1
	Step Test 4	16:15 - 16:50	--	7.8	2.2	13.3	1.1
SVP-1-3.5	Baseline	10:00 - 10:30	0.00	19.5	0.1	0.4	0.0
	Step Test 1	11:00 - 12:30	--	18.9	0.2	1.4	0.0
	Step Test 2	14:20 - 14:50	--	NM	NM	NM	NM
	Step Test 3	15:20 - 16:00	--	NM	NM	NM	NM
	Step Test 4	16:15 - 16:50	--	NM	NM	NM	NM
SVP-2-7.5	Baseline	10:00 - 10:30	-0.06	0.1	4.7	30.6	0.5
	Step Test 1	11:00 - 12:30	--	0.5	4.9	28.4	0.0
	Step Test 2	14:20 - 14:50	--	3.9	2.9	21.3	3.1
	Step Test 3	15:20 - 16:00	--	8.2	2.2	18	2.9
	Step Test 4	16:15 - 16:50	--	4.5	2.5	19.3	3.0
SVP-2-3.5	Baseline	10:00 - 10:30	0.00	18.2	0.1	0.9	0.0
	Step Test 1	11:00 - 12:30	--	17.6	0.0	1.3	0.0
	Step Test 2	14:20 - 14:50	--	19.3	0.1	0.1	1.5
	Step Test 3	15:20 - 16:00	--	19.7	0.1	0	2.5
	Step Test 4	16:15 - 16:50	--	19.8	0.0	0.0	2.1
SVP-3-7.5	Baseline	10:00 - 10:30	0.00	1.3	4.2	11.9	0.0
	Step Test 1	11:00 - 12:30	--	4.1	3.3	9.0	0.0
	Step Test 2	14:20 - 14:50	--	11.3	2.5	4.5	1.7
	Step Test 3	15:20 - 16:00	--	8.3	3.2	11.4	0.3
	Step Test 4	16:15 - 16:50	--	18.6	0.1	0.6	3.9
SVP-3-3.5	Baseline	10:00 - 10:30	0.00	16.3	0.0	1.4	0.0
	Step Test 1	11:00 - 12:30	--	7.9	0.0	6.0	1.7
	Step Test 2	14:20 - 14:50	--	12.1	0.0	3.7	3.1
	Step Test 3	15:20 - 16:00	--	16.8	0	1.1	5.5
	Step Test 4	16:15 - 16:50	--	18.4	0.0	0.7	4.1
SVP-4-7.5	Baseline	10:00 - 10:30	-0.06	0.8	6.8	36.9	0.0
	Step Test 1	11:00 - 12:30	--	1.4	8.3	27.6	0.1
	Step Test 2	14:20 - 14:50	--	1.5	7.7	30.2	0.2
	Step Test 3	15:20 - 16:00	--	14.2	7.6	29.8	0.0
	Step Test 4	16:15 - 16:50	--	3.2	8.3	32.0	0.0
SVP-4-3.5	Baseline	10:00 - 10:30	0.00	15.2	1.3	0.1	0.0
	Step Test 1	11:00 - 12:30	--	11.2	2.7	1.7	4.2
	Step Test 2	14:20 - 14:50	--	15.1	0.9	0.2	6.2
	Step Test 3	15:20 - 16:00	--	16	0.8	0.1	6.0
	Step Test 4	16:15 - 16:50	--	15.1	1.8	0.1	5.6
SVP-5-7.5	Baseline	10:00 - 10:30	-0.02	0.4	6.7	41.0	1.8
	Step Test 1	11:00 - 12:30	--	6.8	3.3	26.4	0.4
	Step Test 2	14:20 - 14:50	--	7.8	2.9	21.7	0.4
	Step Test 3	15:20 - 16:00	--	6.1	3.3	27.8	0.0
	Step Test 4	16:15 - 16:50	--	5.0	3.8	30.6	0.0
SVP-5-3.5	Baseline	10:00 - 10:30	-0.04	8.9	2.1	31.8	0.2
	Step Test 1	11:00 - 12:30	--	7.8	1.7	14.5	0.2
	Step Test 2	14:20 - 14:50	--	11.0	2.2	18.6	0.1
	Step Test 3	15:20 - 16:00	--	5.5	4.8	31.8	0.0
	Step Test 4	16:15 - 16:50	--	4.5	6.2	35.2	0.0
SVP-6-7.5	Baseline	10:00 - 10:30	-0.02	0.4	3.6	47.3	0.0
	Step Test 1	11:00 - 12:30	--	12.8	1.2	7.4	4.8
	Step Test 2	14:20 - 14:50	--	9.6	1.9	14.2	3.6
	Step Test 3	15:20 - 16:00	--	7.6	4	23.4	2.2
	Step Test 4	16:15 - 16:50	--	9.0	3.3	18.5	2.8
SVP-6-3.5	Baseline	10:00 - 10:30	0.00	6.0	2.1	34.2	0.2
	Step Test 1	11:00 - 12:30	--	10.0	2.2	16.2	2.8
	Step Test 2	14:20 - 14:50	--	11.3	2.5	13.7	3.0
	Step Test 3	15:20 - 16:00	--	10.8	3.3	17.3	1.8
	Step Test 4	16:15 - 16:50	--	12.8	2.5	12.6	1.4

Notes:
in WC = inches of water
ppmv = parts per million by volume

Table C-4
Barometric Pressure Data, July 13 and 14, 2016
Oakland, Metro Oakland International Airport, CA
Station: KOAK
Location: 37.7178N 122.23294W

Time (UTC)	Barometric Pressure (inH2O)	Pressure Change (inH2O)	Temperature (degrees F)
7/13/2016 7:53	407.309	0.000	57.2
7/13/2016 8:53	407.172	0.136	60.8
7/13/2016 9:53	407.309	-0.136	59
7/13/2016 10:53	407.309	0.000	60.8
7/13/2016 11:53	407.445	-0.136	60.8
7/13/2016 12:53	407.582	-0.136	59
7/13/2016 13:53	407.855	-0.273	60.8
7/13/2016 14:53	407.855	0.000	62.6
7/13/2016 15:53	407.991	-0.136	62.6
7/13/2016 16:53	407.991	0.000	64.4
7/13/2016 17:53	407.991	0.000	68
7/14/2016 7:53	407.309	0.000	60.8
7/14/2016 8:53	407.172	0.136	60.8
7/14/2016 9:53	407.172	0.000	60.8
7/14/2016 10:53	407.172	0.000	60.8
7/14/2016 11:53	407.172	0.000	59
7/14/2016 12:53	407.309	-0.136	57.2
7/14/2016 13:53	407.445	-0.136	59
7/14/2016 14:53	407.582	-0.136	60.8
7/14/2016 15:51	407.718	-0.136	64.4

APPENDIX D

SOIL VAPOR SAMPLE LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION (ON CD ROM)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-73399-1
Client Project/Site: 6701 Shellmound St, Emeryville Air
Revision: 1

For:
PES Environmental, Inc.
7665 Redwood Blvd
Suite #200
Novato, California 94945

Attn: Mr. Kyle Flory

Linda C. Laver

Authorized for release by:
8/10/2016 10:39:35 AM
Linda C. Laver, Project Manager II
(916)374-4362
linda.laver@testamericainc.com

Designee for

Beth Riley, Project Manager II
(714)258-8610
beth.riley@testamericainc.com

Table of Contents

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 720-73399-1

Laboratory: TestAmerica Pleasanton

Narrative

Job Narrative
720-73399-1 Rev(1)

Revision 1:
Client provided a revised Chain-of-Custody (COC) via email on August 8, 2016 with corrected collection date. This revised report includes the corrected date and both copies of the COC are included. No analytical data have changed as a result of this revision.

Receipt
The sample was received on 7/15/2016 4:50 PM; the sample arrived in good condition.

Air - GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: PES Environmental, Inc.
Project/Site: 6701 Shellmound St, Emeryville Air

TestAmerica Job ID: 720-73399-1

Client Sample ID: SVE-1

Lab Sample ID: 720-73399-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	880		290		ppb v/v	728		TO-15	Total/NA
trans-1,2-Dichloroethene	480		290		ppb v/v	728		TO-15	Total/NA
Vinyl chloride	16000		290		ppb v/v	728		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3500		1200		ug/m3	728		TO-15	Total/NA
trans-1,2-Dichloroethene	1900		1200		ug/m3	728		TO-15	Total/NA
Vinyl chloride	40000		740		ug/m3	728		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Client: PES Environmental, Inc.
Project/Site: 6701 Shellmound St, Emeryville Air

TestAmerica Job ID: 720-73399-1

Client Sample ID: SVE-1
Date Collected: 07/14/16 15:05
Date Received: 07/15/16 16:50
Sample Container: Summa Canister 1L

Lab Sample ID: 720-73399-1
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		3600		ppb v/v			07/21/16 02:01	728
Benzene	ND		290		ppb v/v			07/21/16 02:01	728
Benzyl chloride	ND		580		ppb v/v			07/21/16 02:01	728
Bromodichloromethane	ND		220		ppb v/v			07/21/16 02:01	728
Bromoform	ND		290		ppb v/v			07/21/16 02:01	728
Bromomethane	ND		580		ppb v/v			07/21/16 02:01	728
2-Butanone (MEK)	ND		580		ppb v/v			07/21/16 02:01	728
Carbon disulfide	ND		580		ppb v/v			07/21/16 02:01	728
Carbon tetrachloride	ND		580		ppb v/v			07/21/16 02:01	728
Chlorobenzene	ND		220		ppb v/v			07/21/16 02:01	728
Dibromochloromethane	ND		290		ppb v/v			07/21/16 02:01	728
Chloroethane	ND		580		ppb v/v			07/21/16 02:01	728
Chloroform	ND		220		ppb v/v			07/21/16 02:01	728
Chloromethane	ND		580		ppb v/v			07/21/16 02:01	728
1,2-Dibromoethane (EDB)	ND		580		ppb v/v			07/21/16 02:01	728
1,2-Dichlorobenzene	ND		290		ppb v/v			07/21/16 02:01	728
1,3-Dichlorobenzene	ND		290		ppb v/v			07/21/16 02:01	728
1,4-Dichlorobenzene	ND		290		ppb v/v			07/21/16 02:01	728
Dichlorodifluoromethane	ND		290		ppb v/v			07/21/16 02:01	728
1,1-Dichloroethane	ND		220		ppb v/v			07/21/16 02:01	728
1,2-Dichloroethane	ND		580		ppb v/v			07/21/16 02:01	728
1,1-Dichloroethene	ND		580		ppb v/v			07/21/16 02:01	728
cis-1,2-Dichloroethene	**880**		290		ppb v/v			07/21/16 02:01	728
trans-1,2-Dichloroethene	**480**		290		ppb v/v			07/21/16 02:01	728
1,2-Dichloropropane	ND		290		ppb v/v			07/21/16 02:01	728
cis-1,3-Dichloropropene	ND		290		ppb v/v			07/21/16 02:01	728
trans-1,3-Dichloropropene	ND		290		ppb v/v			07/21/16 02:01	728
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		290		ppb v/v			07/21/16 02:01	728
Ethylbenzene	ND		290		ppb v/v			07/21/16 02:01	728
4-Ethyltoluene	ND		290		ppb v/v			07/21/16 02:01	728
Hexachlorobutadiene	ND		1500		ppb v/v			07/21/16 02:01	728
2-Hexanone	ND		290		ppb v/v			07/21/16 02:01	728
Methylene Chloride	ND		290		ppb v/v			07/21/16 02:01	728
4-Methyl-2-pentanone (MIBK)	ND		290		ppb v/v			07/21/16 02:01	728
Styrene	ND		290		ppb v/v			07/21/16 02:01	728
1,1,2,2-Tetrachloroethane	ND		290		ppb v/v			07/21/16 02:01	728
Tetrachloroethene	ND		290		ppb v/v			07/21/16 02:01	728
Toluene	ND		290		ppb v/v			07/21/16 02:01	728
1,2,4-Trichlorobenzene	ND		1500		ppb v/v			07/21/16 02:01	728
1,1,1-Trichloroethane	ND		220		ppb v/v			07/21/16 02:01	728
1,1,2-Trichloroethane	ND		290		ppb v/v			07/21/16 02:01	728
Trichloroethene	ND		290		ppb v/v			07/21/16 02:01	728
1,4-Dioxane	ND		580		ppb v/v			07/21/16 02:01	728
Trichlorofluoromethane	ND		290		ppb v/v			07/21/16 02:01	728
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		290		ppb v/v			07/21/16 02:01	728
1,2,4-Trimethylbenzene	ND		580		ppb v/v			07/21/16 02:01	728
1,3,5-Trimethylbenzene	ND		290		ppb v/v			07/21/16 02:01	728
Vinyl acetate	ND		580		ppb v/v			07/21/16 02:01	728

Client Sample ID: SVE-1
Date Collected: 07/14/16 15:05
Date Received: 07/15/16 16:50
Sample Container: Summa Canister 1L

Lab Sample ID: 720-73399-1
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**16000**		290		ppb v/v			07/21/16 02:01	728
m,p-Xylene	ND		580		ppb v/v			07/21/16 02:01	728
o-Xylene	ND		290		ppb v/v			07/21/16 02:01	728
Naphthalene	ND		580		ppb v/v			07/21/16 02:01	728

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		8600		ug/m3			07/21/16 02:01	728
Benzene	ND		930		ug/m3			07/21/16 02:01	728
Benzyl chloride	ND		3000		ug/m3			07/21/16 02:01	728
Bromodichloromethane	ND		1500		ug/m3			07/21/16 02:01	728
Bromoform	ND		3000		ug/m3			07/21/16 02:01	728
Bromomethane	ND		2300		ug/m3			07/21/16 02:01	728
2-Butanone (MEK)	ND		1700		ug/m3			07/21/16 02:01	728
Carbon disulfide	ND		1800		ug/m3			07/21/16 02:01	728
Carbon tetrachloride	ND		3700		ug/m3			07/21/16 02:01	728
Chlorobenzene	ND		1000		ug/m3			07/21/16 02:01	728
Dibromochloromethane	ND		2500		ug/m3			07/21/16 02:01	728
Chloroethane	ND		1500		ug/m3			07/21/16 02:01	728
Chloroform	ND		1100		ug/m3			07/21/16 02:01	728
Chloromethane	ND		1200		ug/m3			07/21/16 02:01	728
1,2-Dibromoethane (EDB)	ND		4500		ug/m3			07/21/16 02:01	728
1,2-Dichlorobenzene	ND		1800		ug/m3			07/21/16 02:01	728
1,3-Dichlorobenzene	ND		1800		ug/m3			07/21/16 02:01	728
1,4-Dichlorobenzene	ND		1800		ug/m3			07/21/16 02:01	728
Dichlorodifluoromethane	ND		1400		ug/m3			07/21/16 02:01	728
1,1-Dichloroethane	ND		880		ug/m3			07/21/16 02:01	728
1,2-Dichloroethane	ND		2400		ug/m3			07/21/16 02:01	728
1,1-Dichloroethene	ND		2300		ug/m3			07/21/16 02:01	728
cis-1,2-Dichloroethene	**3500**		1200		ug/m3			07/21/16 02:01	728
trans-1,2-Dichloroethene	**1900**		1200		ug/m3			07/21/16 02:01	728
1,2-Dichloropropane	ND		1300		ug/m3			07/21/16 02:01	728
cis-1,3-Dichloropropene	ND		1300		ug/m3			07/21/16 02:01	728
trans-1,3-Dichloropropene	ND		1300		ug/m3			07/21/16 02:01	728
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2000		ug/m3			07/21/16 02:01	728
Ethylbenzene	ND		1300		ug/m3			07/21/16 02:01	728
4-Ethyltoluene	ND		1400		ug/m3			07/21/16 02:01	728
Hexachlorobutadiene	ND		16000		ug/m3			07/21/16 02:01	728
2-Hexanone	ND		1200		ug/m3			07/21/16 02:01	728
Methylene Chloride	ND		1000		ug/m3			07/21/16 02:01	728
4-Methyl-2-pentanone (MIBK)	ND		1200		ug/m3			07/21/16 02:01	728
Styrene	ND		1200		ug/m3			07/21/16 02:01	728
1,1,2,2-Tetrachloroethane	ND		2000		ug/m3			07/21/16 02:01	728
Tetrachloroethene	ND		2000		ug/m3			07/21/16 02:01	728
Toluene	ND		1100		ug/m3			07/21/16 02:01	728
1,2,4-Trichlorobenzene	ND		11000		ug/m3			07/21/16 02:01	728
1,1,1-Trichloroethane	ND		1200		ug/m3			07/21/16 02:01	728
1,1,2-Trichloroethane	ND		1600		ug/m3			07/21/16 02:01	728
Trichloroethene	ND		1600		ug/m3			07/21/16 02:01	728
1,4-Dioxane	ND		2100		ug/m3			07/21/16 02:01	728

Client Sample ID: SVE-1
Date Collected: 07/14/16 15:05
Date Received: 07/15/16 16:50
Sample Container: Summa Canister 1L

Lab Sample ID: 720-73399-1
Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND		1600		ug/m3			07/21/16 02:01	728
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2200		ug/m3			07/21/16 02:01	728
1,2,4-Trimethylbenzene	ND		2900		ug/m3			07/21/16 02:01	728
1,3,5-Trimethylbenzene	ND		1400		ug/m3			07/21/16 02:01	728
Vinyl acetate	ND		2100		ug/m3			07/21/16 02:01	728
Vinyl chloride	**40000**		740		ug/m3			07/21/16 02:01	728
m,p-Xylene	ND		2500		ug/m3			07/21/16 02:01	728
o-Xylene	ND		1300		ug/m3			07/21/16 02:01	728
Naphthalene	ND		3100		ug/m3			07/21/16 02:01	728

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*70 - 130*		*07/21/16 02:01*	*728*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 130*		*07/21/16 02:01*	*728*
Toluene-d8 (Surr)	*99*		*70 - 130*		*07/21/16 02:01*	*728*

Surrogate Summary

Client: PES Environmental, Inc.
Project/Site: 6701 Shellmound St, Emeryville Air

TestAmerica Job ID: 720-73399-1

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Matrix: Air **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	12DCE	TOL
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)
720-73399-1	SVE-1	90	112	99
LCS 320-118674/3	Lab Control Sample	103	112	104
LCSD 320-118674/4	Lab Control Sample Dup	103	111	104
MB 320-118674/6	Method Blank	93	109	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
12DCE = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Client: PES Environmental, Inc.
Project/Site: 6701 Shellmound St, Emeryville Air

TestAmerica Job ID: 720-73399-1

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 320-118674/6
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		5.0		ppb v/v			07/20/16 16:04	1
Benzene	ND		0.40		ppb v/v			07/20/16 16:04	1
Benzyl chloride	ND		0.80		ppb v/v			07/20/16 16:04	1
Bromodichloromethane	ND		0.30		ppb v/v			07/20/16 16:04	1
Bromoform	ND		0.40		ppb v/v			07/20/16 16:04	1
Bromomethane	ND		0.80		ppb v/v			07/20/16 16:04	1
2-Butanone (MEK)	ND		0.80		ppb v/v			07/20/16 16:04	1
Carbon disulfide	ND		0.80		ppb v/v			07/20/16 16:04	1
Carbon tetrachloride	ND		0.80		ppb v/v			07/20/16 16:04	1
Chlorobenzene	ND		0.30		ppb v/v			07/20/16 16:04	1
Dibromochloromethane	ND		0.40		ppb v/v			07/20/16 16:04	1
Chloroethane	ND		0.80		ppb v/v			07/20/16 16:04	1
Chloroform	ND		0.30		ppb v/v			07/20/16 16:04	1
Chloromethane	ND		0.80		ppb v/v			07/20/16 16:04	1
1,2-Dibromoethane (EDB)	ND		0.80		ppb v/v			07/20/16 16:04	1
1,2-Dichlorobenzene	ND		0.40		ppb v/v			07/20/16 16:04	1
1,3-Dichlorobenzene	ND		0.40		ppb v/v			07/20/16 16:04	1
1,4-Dichlorobenzene	ND		0.40		ppb v/v			07/20/16 16:04	1
Dichlorodifluoromethane	ND		0.40		ppb v/v			07/20/16 16:04	1
1,1-Dichloroethane	ND		0.30		ppb v/v			07/20/16 16:04	1
1,2-Dichloroethane	ND		0.80		ppb v/v			07/20/16 16:04	1
1,1-Dichloroethene	ND		0.80		ppb v/v			07/20/16 16:04	1
cis-1,2-Dichloroethene	ND		0.40		ppb v/v			07/20/16 16:04	1
trans-1,2-Dichloroethene	ND		0.40		ppb v/v			07/20/16 16:04	1
1,2-Dichloropropane	ND		0.40		ppb v/v			07/20/16 16:04	1
cis-1,3-Dichloropropene	ND		0.40		ppb v/v			07/20/16 16:04	1
trans-1,3-Dichloropropene	ND		0.40		ppb v/v			07/20/16 16:04	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40		ppb v/v			07/20/16 16:04	1
Ethylbenzene	ND		0.40		ppb v/v			07/20/16 16:04	1
4-Ethyltoluene	ND		0.40		ppb v/v			07/20/16 16:04	1
Hexachlorobutadiene	ND		2.0		ppb v/v			07/20/16 16:04	1
2-Hexanone	ND		0.40		ppb v/v			07/20/16 16:04	1
Methylene Chloride	ND		0.40		ppb v/v			07/20/16 16:04	1
4-Methyl-2-pentanone (MIBK)	ND		0.40		ppb v/v			07/20/16 16:04	1
Styrene	ND		0.40		ppb v/v			07/20/16 16:04	1
1,1,2,2-Tetrachloroethane	ND		0.40		ppb v/v			07/20/16 16:04	1
Tetrachloroethene	ND		0.40		ppb v/v			07/20/16 16:04	1
Toluene	ND		0.40		ppb v/v			07/20/16 16:04	1
1,2,4-Trichlorobenzene	ND		2.0		ppb v/v			07/20/16 16:04	1
1,1,1-Trichloroethane	ND		0.30		ppb v/v			07/20/16 16:04	1
1,1,2-Trichloroethane	ND		0.40		ppb v/v			07/20/16 16:04	1
Trichloroethene	ND		0.40		ppb v/v			07/20/16 16:04	1
1,4-Dioxane	ND		0.80		ppb v/v			07/20/16 16:04	1
Trichlorofluoromethane	ND		0.40		ppb v/v			07/20/16 16:04	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40		ppb v/v			07/20/16 16:04	1
1,2,4-Trimethylbenzene	ND		0.80		ppb v/v			07/20/16 16:04	1
1,3,5-Trimethylbenzene	ND		0.40		ppb v/v			07/20/16 16:04	1
Vinyl acetate	ND		0.80		ppb v/v			07/20/16 16:04	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 320-118674/6
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.40		ppb v/v			07/20/16 16:04	1
m,p-Xylene	ND		0.80		ppb v/v			07/20/16 16:04	1
o-Xylene	ND		0.40		ppb v/v			07/20/16 16:04	1
Naphthalene	ND		0.80		ppb v/v			07/20/16 16:04	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		12		ug/m3			07/20/16 16:04	1
Benzene	ND		1.3		ug/m3			07/20/16 16:04	1
Benzyl chloride	ND		4.1		ug/m3			07/20/16 16:04	1
Bromodichloromethane	ND		2.0		ug/m3			07/20/16 16:04	1
Bromoform	ND		4.1		ug/m3			07/20/16 16:04	1
Bromomethane	ND		3.1		ug/m3			07/20/16 16:04	1
2-Butanone (MEK)	ND		2.4		ug/m3			07/20/16 16:04	1
Carbon disulfide	ND		2.5		ug/m3			07/20/16 16:04	1
Carbon tetrachloride	ND		5.0		ug/m3			07/20/16 16:04	1
Chlorobenzene	ND		1.4		ug/m3			07/20/16 16:04	1
Dibromochloromethane	ND		3.4		ug/m3			07/20/16 16:04	1
Chloroethane	ND		2.1		ug/m3			07/20/16 16:04	1
Chloroform	ND		1.5		ug/m3			07/20/16 16:04	1
Chloromethane	ND		1.7		ug/m3			07/20/16 16:04	1
1,2-Dibromoethane (EDB)	ND		6.1		ug/m3			07/20/16 16:04	1
1,2-Dichlorobenzene	ND		2.4		ug/m3			07/20/16 16:04	1
1,3-Dichlorobenzene	ND		2.4		ug/m3			07/20/16 16:04	1
1,4-Dichlorobenzene	ND		2.4		ug/m3			07/20/16 16:04	1
Dichlorodifluoromethane	ND		2.0		ug/m3			07/20/16 16:04	1
1,1-Dichloroethane	ND		1.2		ug/m3			07/20/16 16:04	1
1,2-Dichloroethane	ND		3.2		ug/m3			07/20/16 16:04	1
1,1-Dichloroethene	ND		3.2		ug/m3			07/20/16 16:04	1
cis-1,2-Dichloroethene	ND		1.6		ug/m3			07/20/16 16:04	1
trans-1,2-Dichloroethene	ND		1.6		ug/m3			07/20/16 16:04	1
1,2-Dichloropropane	ND		1.8		ug/m3			07/20/16 16:04	1
cis-1,3-Dichloropropene	ND		1.8		ug/m3			07/20/16 16:04	1
trans-1,3-Dichloropropene	ND		1.8		ug/m3			07/20/16 16:04	1
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		2.8		ug/m3			07/20/16 16:04	1
Ethylbenzene	ND		1.7		ug/m3			07/20/16 16:04	1
4-Ethyltoluene	ND		2.0		ug/m3			07/20/16 16:04	1
Hexachlorobutadiene	ND		21		ug/m3			07/20/16 16:04	1
2-Hexanone	ND		1.6		ug/m3			07/20/16 16:04	1
Methylene Chloride	ND		1.4		ug/m3			07/20/16 16:04	1
4-Methyl-2-pentanone (MIBK)	ND		1.6		ug/m3			07/20/16 16:04	1
Styrene	ND		1.7		ug/m3			07/20/16 16:04	1
1,1,2,2-Tetrachloroethane	ND		2.7		ug/m3			07/20/16 16:04	1
Tetrachloroethene	ND		2.7		ug/m3			07/20/16 16:04	1
Toluene	ND		1.5		ug/m3			07/20/16 16:04	1
1,2,4-Trichlorobenzene	ND		15		ug/m3			07/20/16 16:04	1
1,1,1-Trichloroethane	ND		1.6		ug/m3			07/20/16 16:04	1
1,1,2-Trichloroethane	ND		2.2		ug/m3			07/20/16 16:04	1
Trichloroethene	ND		2.1		ug/m3			07/20/16 16:04	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 320-118674/6
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		2.9		ug/m3			07/20/16 16:04	1
Trichlorofluoromethane	ND		2.2		ug/m3			07/20/16 16:04	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		3.1		ug/m3			07/20/16 16:04	1
1,2,4-Trimethylbenzene	ND		3.9		ug/m3			07/20/16 16:04	1
1,3,5-Trimethylbenzene	ND		2.0		ug/m3			07/20/16 16:04	1
Vinyl acetate	ND		2.8		ug/m3			07/20/16 16:04	1
Vinyl chloride	ND		1.0		ug/m3			07/20/16 16:04	1
m,p-Xylene	ND		3.5		ug/m3			07/20/16 16:04	1
o-Xylene	ND		1.7		ug/m3			07/20/16 16:04	1
Naphthalene	ND		4.2		ug/m3			07/20/16 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*70 - 130*		*07/20/16 16:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*70 - 130*		*07/20/16 16:04*	*1*
Toluene-d8 (Surr)	*97*		*70 - 130*		*07/20/16 16:04*	*1*

Lab Sample ID: LCS 320-118674/3
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	20.4		ppb v/v		102	71 - 131
Benzene	20.0	19.0		ppb v/v		95	68 - 128
Benzyl chloride	20.0	19.1		ppb v/v		95	58 - 120
Bromodichloromethane	20.0	19.8		ppb v/v		99	65 - 130
Bromoform	20.0	19.3		ppb v/v		97	64 - 144
Bromomethane	20.0	20.9		ppb v/v		104	70 - 131
2-Butanone (MEK)	20.0	18.7		ppb v/v		93	71 - 131
Carbon disulfide	20.0	18.8		ppb v/v		94	63 - 123
Carbon tetrachloride	20.0	20.0		ppb v/v		100	67 - 127
Chlorobenzene	20.0	19.7		ppb v/v		99	70 - 132
Dibromochloromethane	20.0	18.6		ppb v/v		93	68 - 128
Chloroethane	20.0	21.5		ppb v/v		108	70 - 131
Chloroform	20.0	19.5		ppb v/v		97	69 - 129
Chloromethane	20.0	21.2		ppb v/v		106	67 - 127
1,2-Dibromoethane (EDB)	20.0	19.6		ppb v/v		98	68 - 131
1,2-Dichlorobenzene	20.0	21.9		ppb v/v		109	73 - 143
1,3-Dichlorobenzene	20.0	21.8		ppb v/v		109	77 - 136
1,4-Dichlorobenzene	20.0	22.2		ppb v/v		111	73 - 143
Dichlorodifluoromethane	20.0	20.1		ppb v/v		100	69 - 129
1,1-Dichloroethane	20.0	19.6		ppb v/v		98	65 - 125
1,2-Dichloroethane	20.0	20.6		ppb v/v		103	71 - 131
1,1-Dichloroethene	20.0	18.4		ppb v/v		92	53 - 128
cis-1,2-Dichloroethene	20.0	18.7		ppb v/v		93	68 - 128
trans-1,2-Dichloroethene	20.0	19.9		ppb v/v		100	70 - 130
1,2-Dichloropropane	20.0	20.7		ppb v/v		103	74 - 128
cis-1,3-Dichloropropene	20.0	21.6		ppb v/v		108	78 - 132
trans-1,3-Dichloropropene	20.0	18.4		ppb v/v		92	56 - 136

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-118674/3
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	18.5		ppb v/v		92	64 - 124
Ethylbenzene	20.0	19.6		ppb v/v		98	76 - 136
4-Ethyltoluene	20.0	19.3		ppb v/v		96	62 - 136
Hexachlorobutadiene	20.0	18.5		ppb v/v		93	42 - 150
2-Hexanone	20.0	20.8		ppb v/v		104	70 - 128
Methylene Chloride	20.0	19.0		ppb v/v		95	65 - 125
4-Methyl-2-pentanone (MIBK)	20.0	21.5		ppb v/v		108	73 - 133
Styrene	20.0	21.6		ppb v/v		108	76 - 144
1,1,2,2-Tetrachloroethane	20.0	21.1		ppb v/v		106	75 - 135
Tetrachloroethene	20.0	17.6		ppb v/v		88	56 - 138
Toluene	20.0	18.3		ppb v/v		91	71 - 132
1,2,4-Trichlorobenzene	20.0	23.2		ppb v/v		116	59 - 150
1,1,1-Trichloroethane	20.0	19.3		ppb v/v		96	65 - 124
1,1,2-Trichloroethane	20.0	19.3		ppb v/v		96	71 - 131
Trichloroethene	20.0	18.3		ppb v/v		92	64 - 127
1,4-Dioxane	20.0	19.3		ppb v/v		96	55 - 141
Trichlorofluoromethane	20.0	20.3		ppb v/v		102	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.6		ppb v/v		88	50 - 132
1,2,4-Trimethylbenzene	20.0	21.1		ppb v/v		105	61 - 145
1,3,5-Trimethylbenzene	20.0	20.1		ppb v/v		100	65 - 136
Vinyl acetate	20.0	23.0		ppb v/v		115	77 - 134
Vinyl chloride	20.0	20.5		ppb v/v		103	69 - 129
m,p-Xylene	40.0	41.4		ppb v/v		103	75 - 138
o-Xylene	20.0	20.8		ppb v/v		104	77 - 132
Naphthalene	20.0	21.3		ppb v/v		106	58 - 150

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	48	48.3		ug/m3		102	71 - 131
Benzene	64	60.8		ug/m3		95	68 - 128
Benzyl chloride	100	98.8		ug/m3		95	58 - 120
Bromodichloromethane	130	133		ug/m3		99	65 - 130
Bromoform	210	200		ug/m3		97	64 - 144
Bromomethane	78	81.0		ug/m3		104	70 - 131
2-Butanone (MEK)	59	55.1		ug/m3		93	71 - 131
Carbon disulfide	62	58.4		ug/m3		94	63 - 123
Carbon tetrachloride	130	126		ug/m3		100	67 - 127
Chlorobenzene	92	90.9		ug/m3		99	70 - 132
Dibromochloromethane	170	158		ug/m3		93	68 - 128
Chloroethane	53	56.8		ug/m3		108	70 - 131
Chloroform	98	95.0		ug/m3		97	69 - 129
Chloromethane	41	43.8		ug/m3		106	67 - 127
1,2-Dibromoethane (EDB)	150	150		ug/m3		98	68 - 131
1,2-Dichlorobenzene	120	131		ug/m3		109	73 - 143
1,3-Dichlorobenzene	120	131		ug/m3		109	77 - 136
1,4-Dichlorobenzene	120	134		ug/m3		111	73 - 143
Dichlorodifluoromethane	99	99.3		ug/m3		100	69 - 129
1,1-Dichloroethane	81	79.5		ug/m3		98	65 - 125

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 320-118674/3
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloroethane	81	83.2		ug/m3		103	71 - 131
1,1-Dichloroethene	79	73.0		ug/m3		92	53 - 128
cis-1,2-Dichloroethene	79	74.1		ug/m3		93	68 - 128
trans-1,2-Dichloroethene	79	78.9		ug/m3		100	70 - 130
1,2-Dichloropropane	92	95.6		ug/m3		103	74 - 128
cis-1,3-Dichloropropene	91	98.2		ug/m3		108	78 - 132
trans-1,3-Dichloropropene	91	83.6		ug/m3		92	56 - 136
1,2-Dichloro-1,1,2,2-tetrafluoroethane	140	129		ug/m3		92	64 - 124
Ethylbenzene	87	85.3		ug/m3		98	76 - 136
4-Ethyltoluene	98	94.8		ug/m3		96	62 - 136
Hexachlorobutadiene	210	197		ug/m3		93	42 - 150
2-Hexanone	82	85.2		ug/m3		104	70 - 128
Methylene Chloride	69	65.9		ug/m3		95	65 - 125
4-Methyl-2-pentanone (MIBK)	82	88.1		ug/m3		108	73 - 133
Styrene	85	91.8		ug/m3		108	76 - 144
1,1,2,2-Tetrachloroethane	140	145		ug/m3		106	75 - 135
Tetrachloroethene	140	119		ug/m3		88	56 - 138
Toluene	75	68.9		ug/m3		91	71 - 132
1,2,4-Trichlorobenzene	150	172		ug/m3		116	59 - 150
1,1,1-Trichloroethane	110	105		ug/m3		96	65 - 124
1,1,2-Trichloroethane	110	105		ug/m3		96	71 - 131
Trichloroethene	110	98.3		ug/m3		92	64 - 127
1,4-Dioxane	72	69.5		ug/m3		96	55 - 141
Trichlorofluoromethane	110	114		ug/m3		102	68 - 128
1,1,2-Trichloro-1,2,2-trifluoroethane	150	135		ug/m3		88	50 - 132
1,2,4-Trimethylbenzene	98	104		ug/m3		105	61 - 145
1,3,5-Trimethylbenzene	98	98.7		ug/m3		100	65 - 136
Vinyl acetate	70	80.9		ug/m3		115	77 - 134
Vinyl chloride	51	52.4		ug/m3		103	69 - 129
m,p-Xylene	170	180		ug/m3		103	75 - 138
o-Xylene	87	90.2		ug/m3		104	77 - 132
Naphthalene	100	112		ug/m3		106	58 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*112*		*70 - 130*
Toluene-d8 (Surr)	*104*		*70 - 130*

Lab Sample ID: LCSD 320-118674/4
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	20.0	21.1		ppb v/v		105	71 - 131	3	25
Benzene	20.0	19.1		ppb v/v		95	68 - 128	0	25
Benzyl chloride	20.0	19.1		ppb v/v		95	58 - 120	0	25

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-118674/4
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bromodichloromethane	20.0	19.8		ppb v/v		99	65 - 130	0	25
Bromoform	20.0	19.7		ppb v/v		99	64 - 144	2	25
Bromomethane	20.0	20.8		ppb v/v		104	70 - 131	0	25
2-Butanone (MEK)	20.0	19.6		ppb v/v		98	71 - 131	5	25
Carbon disulfide	20.0	18.8		ppb v/v		94	63 - 123	0	25
Carbon tetrachloride	20.0	20.1		ppb v/v		100	67 - 127	0	25
Chlorobenzene	20.0	20.0		ppb v/v		100	70 - 132	1	25
Dibromochloromethane	20.0	19.1		ppb v/v		95	68 - 128	3	25
Chloroethane	20.0	21.5		ppb v/v		107	70 - 131	0	25
Chloroform	20.0	19.5		ppb v/v		97	69 - 129	0	25
Chloromethane	20.0	20.7		ppb v/v		103	67 - 127	3	25
1,2-Dibromoethane (EDB)	20.0	19.9		ppb v/v		99	68 - 131	1	25
1,2-Dichlorobenzene	20.0	21.9		ppb v/v		109	73 - 143	0	25
1,3-Dichlorobenzene	20.0	22.0		ppb v/v		110	77 - 136	1	25
1,4-Dichlorobenzene	20.0	22.5		ppb v/v		113	73 - 143	1	25
Dichlorodifluoromethane	20.0	20.3		ppb v/v		101	69 - 129	1	25
1,1-Dichloroethane	20.0	19.7		ppb v/v		98	65 - 125	0	25
1,2-Dichloroethane	20.0	20.5		ppb v/v		103	71 - 131	0	25
1,1-Dichloroethene	20.0	18.4		ppb v/v		92	53 - 128	0	25
cis-1,2-Dichloroethene	20.0	18.7		ppb v/v		93	68 - 128	0	25
trans-1,2-Dichloroethene	20.0	19.8		ppb v/v		99	70 - 130	0	25
1,2-Dichloropropane	20.0	20.9		ppb v/v		105	74 - 128	1	25
cis-1,3-Dichloropropene	20.0	21.8		ppb v/v		109	78 - 132	1	25
trans-1,3-Dichloropropene	20.0	18.7		ppb v/v		94	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane	20.0	19.0		ppb v/v		95	64 - 124	3	25
Ethylbenzene	20.0	19.8		ppb v/v		99	76 - 136	1	25
4-Ethyltoluene	20.0	19.4		ppb v/v		97	62 - 136	0	25
Hexachlorobutadiene	20.0	19.2		ppb v/v		96	42 - 150	4	25
2-Hexanone	20.0	21.1		ppb v/v		105	70 - 128	1	25
Methylene Chloride	20.0	18.9		ppb v/v		94	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)	20.0	21.5		ppb v/v		108	73 - 133	0	25
Styrene	20.0	21.8		ppb v/v		109	76 - 144	1	25
1,1,2,2-Tetrachloroethane	20.0	21.3		ppb v/v		106	75 - 135	1	25
Tetrachloroethene	20.0	18.1		ppb v/v		91	56 - 138	3	25
Toluene	20.0	18.6		ppb v/v		93	71 - 132	2	25
1,2,4-Trichlorobenzene	20.0	24.0		ppb v/v		120	59 - 150	3	25
1,1,1-Trichloroethane	20.0	19.4		ppb v/v		97	65 - 124	1	25
1,1,2-Trichloroethane	20.0	19.8		ppb v/v		99	71 - 131	3	25
Trichloroethene	20.0	18.5		ppb v/v		92	64 - 127	1	25
1,4-Dioxane	20.0	19.7		ppb v/v		99	55 - 141	2	25
Trichlorofluoromethane	20.0	20.3		ppb v/v		102	68 - 128	0	25
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.6		ppb v/v		88	50 - 132	0	25
1,2,4-Trimethylbenzene	20.0	21.2		ppb v/v		106	61 - 145	1	25
1,3,5-Trimethylbenzene	20.0	20.2		ppb v/v		101	65 - 136	1	25
Vinyl acetate	20.0	23.3		ppb v/v		116	77 - 134	1	25
Vinyl chloride	20.0	19.9		ppb v/v		100	69 - 129	3	25
m,p-Xylene	40.0	41.4		ppb v/v		104	75 - 138	0	25

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-118674/4
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
o-Xylene			20.0	20.9		ppb v/v		104	77 - 132	0	25
Naphthalene			20.0	21.7		ppb v/v		109	58 - 150	2	25
Analyte			**Spike Added**	**LCSD Result**	**LCSD Qualifier**	**Unit**	**D**	**%Rec**	**%Rec. Limits**	**RPD**	**RPD Limit**
Acetone			48	50.1		ug/m3		105	71 - 131	3	25
Benzene			64	61.0		ug/m3		95	68 - 128	0	25
Benzyl chloride			100	98.8		ug/m3		95	58 - 120	0	25
Bromodichloromethane			130	133		ug/m3		99	65 - 130	0	25
Bromoform			210	204		ug/m3		99	64 - 144	2	25
Bromomethane			78	80.9		ug/m3		104	70 - 131	0	25
2-Butanone (MEK)			59	57.7		ug/m3		98	71 - 131	5	25
Carbon disulfide			62	58.6		ug/m3		94	63 - 123	0	25
Carbon tetrachloride			130	126		ug/m3		100	67 - 127	0	25
Chlorobenzene			92	91.9		ug/m3		100	70 - 132	1	25
Dibromochloromethane			170	163		ug/m3		95	68 - 128	3	25
Chloroethane			53	56.7		ug/m3		107	70 - 131	0	25
Chloroform			98	95.2		ug/m3		97	69 - 129	0	25
Chloromethane			41	42.7		ug/m3		103	67 - 127	3	25
1,2-Dibromoethane (EDB)			150	153		ug/m3		99	68 - 131	1	25
1,2-Dichlorobenzene			120	132		ug/m3		109	73 - 143	0	25
1,3-Dichlorobenzene			120	133		ug/m3		110	77 - 136	1	25
1,4-Dichlorobenzene			120	136		ug/m3		113	73 - 143	1	25
Dichlorodifluoromethane			99	100		ug/m3		101	69 - 129	1	25
1,1-Dichloroethane			81	79.7		ug/m3		98	65 - 125	0	25
1,2-Dichloroethane			81	83.0		ug/m3		103	71 - 131	0	25
1,1-Dichloroethene			79	72.9		ug/m3		92	53 - 128	0	25
cis-1,2-Dichloroethene			79	74.1		ug/m3		93	68 - 128	0	25
trans-1,2-Dichloroethene			79	78.6		ug/m3		99	70 - 130	0	25
1,2-Dichloropropane			92	96.7		ug/m3		105	74 - 128	1	25
cis-1,3-Dichloropropene			91	99.1		ug/m3		109	78 - 132	1	25
trans-1,3-Dichloropropene			91	85.0		ug/m3		94	56 - 136	2	25
1,2-Dichloro-1,1,2,2-tetrafluoroethane			140	133		ug/m3		95	64 - 124	3	25
Ethylbenzene			87	86.0		ug/m3		99	76 - 136	1	25
4-Ethyltoluene			98	95.3		ug/m3		97	62 - 136	0	25
Hexachlorobutadiene			210	205		ug/m3		96	42 - 150	4	25
2-Hexanone			82	86.3		ug/m3		105	70 - 128	1	25
Methylene Chloride			69	65.6		ug/m3		94	65 - 125	1	25
4-Methyl-2-pentanone (MIBK)			82	88.2		ug/m3		108	73 - 133	0	25
Styrene			85	92.7		ug/m3		109	76 - 144	1	25
1,1,2,2-Tetrachloroethane			140	146		ug/m3		106	75 - 135	1	25
Tetrachloroethene			140	123		ug/m3		91	56 - 138	3	25
Toluene			75	70.2		ug/m3		93	71 - 132	2	25
1,2,4-Trichlorobenzene			150	178		ug/m3		120	59 - 150	3	25
1,1,1-Trichloroethane			110	106		ug/m3		97	65 - 124	1	25
1,1,2-Trichloroethane			110	108		ug/m3		99	71 - 131	3	25
Trichloroethene			110	99.3		ug/m3		92	64 - 127	1	25
1,4-Dioxane			72	71.0		ug/m3		99	55 - 141	2	25

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCSD 320-118674/4
Matrix: Air
Analysis Batch: 118674

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Trichlorofluoromethane			110	114		ug/m3		102	68 - 128	0	25
1,1,2-Trichloro-1,2,2-trifluoroethane			150	135		ug/m3		88	50 - 132	0	25
1,2,4-Trimethylbenzene			98	104		ug/m3		106	61 - 145	1	25
1,3,5-Trimethylbenzene			98	99.3		ug/m3		101	65 - 136	1	25
Vinyl acetate			70	81.9		ug/m3		116	77 - 134	1	25
Vinyl chloride			51	50.9		ug/m3		100	69 - 129	3	25
m,p-Xylene			170	180		ug/m3		104	75 - 138	0	25
o-Xylene			87	90.6		ug/m3		104	77 - 132	0	25
Naphthalene			100	114		ug/m3		109	58 - 150	2	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 130*
Toluene-d8 (Surr)	*104*		*70 - 130*

QC Association Summary

Client: PES Environmental, Inc.
Project/Site: 6701 Shellmound St, Emeryville Air

TestAmerica Job ID: 720-73399-1

Air - GC/MS VOA

Analysis Batch: 118674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-73399-1	SVE-1	Total/NA	Air	TO-15	
MB 320-118674/6	Method Blank	Total/NA	Air	TO-15	
LCS 320-118674/3	Lab Control Sample	Total/NA	Air	TO-15	
LCSD 320-118674/4	Lab Control Sample Dup	Total/NA	Air	TO-15	

Lab Chronicle

Client: PES Environmental, Inc.
Project/Site: 6701 Shellmound St, Emeryville Air

TestAmerica Job ID: 720-73399-1

Client Sample ID: SVE-1
Date Collected: 07/14/16 15:05
Date Received: 07/15/16 16:50

Lab Sample ID: 720-73399-1
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		728	118674	07/21/16 02:01	AP1	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: PES Environmental, Inc.
Project/Site: 6701 Shellmound St, Emeryville Air

TestAmerica Job ID: 720-73399-1

Laboratory: TestAmerica Pleasanton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	2496	01-31-18

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	4040	01-29-17

Method Summary

Client: PES Environmental, Inc.
Project/Site: 6701 Shellmound St, Emeryville Air

TestAmerica Job ID: 720-73399-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: PES Environmental, Inc.
Project/Site: 6701 Shellmound St, Emeryville Air

TestAmerica Job ID: 720-73399-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-73399-1	SVE-1	Air	07/14/16 15:05	07/15/16 16:50

PES Environmental, Inc.
Engineering & Environmental Services

CHAIN OF CUSTODY RECORD

1682 NOVATO BOULEVARD, SUITE 100
NOVATO, CALIFORNIA 94947
(415) 899-1600 FAX (415) 899-1601

169868

LABORATORY: Test America
JOB NUMBER: 1448.001.02.002
NAME / LOCATION: Anton Emeryville
PROJECT MANAGER: K. Flory / C. Baldassari

SAMPLERS: J. Phillips
720-73399
RECORDER: J. Phillips

DATE YR	MO	DY	TIME	SAMPLE NUMBER / DESIGNATION	MATRIX: Vapor	Water	Soil	Sedim't	# of Containers & Preservatives: Unpres.	EnCore	H_2SO_4	HNO_3	HCl	Summa	DEPTH IN FEET	ANALYSIS REQUESTED: EPA 5035/8010	EPA 5035/8021	EPA 5035/8260B	TPHg by 5035/8015M	TPHd by 8015M	TPHmo by 8015M	EPA 8270C	MNA Parameters (see notes)	VOCs (TO-15)
16	07	~~15~~ 14	1505	SVE-11	X									1	1218								X	

720-73399 Chain of Custody

NOTES	CHAIN OF CUSTODY RECORD			
Turn Around Time: Standard TAT	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE 7/15/16	TIME 1635
	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE 7/15/16	TIME 1650
	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
	RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
	DISPATCHED BY: (Signature) DATE TIME	RECEIVED FOR LAB BY: (Signature)	DATE	TIME
	METHOD OF SHIPMENT: Picked up from 5th by lab courier			

Page 1 of 1

WHITE-Laboratory COPY YELLOW-Project Office Copy PINK-Field or Office Copy

7/21/2016 8/10/2016

PES Environmental, Inc.
Engineering & Environmental Services

CHAIN OF CUSTODY RECORD

1682 NOVATO BOULEVARD, SUITE 100
NOVATO, CALIFORNIA 94947
(415) 899-1600 FAX (415) 899-1601

169868

8/10/2016

LABORATORY: Test America

JOB NUMBER: 1498.001.02.002

NAME / LOCATION: Anton Emeryville

PROJECT MANAGER: K. Flory / C. Baldassari

SAMPLERS: J. Phillips

720-73399

RECORDER: J. Phillips

DATE YR	MO	DY	TIME	SAMPLE NUMBER / DESIGNATION	MATRIX: Vapor	Water	Soil	Sedim't	# of Containers & Preservatives: Unpres.	EnCore	H_2SO_4	HNO_3	HCl	Summa	DEPTH IN FEET	ANALYSIS REQUESTED: EPA 5035/8010	EPA 5035/8021	EPA 5035/8260B	TPHg by 5035/8015M	TPHd by 8015M	TPHmo by 8015M	EPA 8270C	MNA Parameters (see notes)	VOCs (TO-15)
16	07	15	1505	SVE-1	X									1	12.18								X

720-73399 Chain of Custody

Page 24 of 44

NOTES

Turn Around Time: Standard TAT

Page 1 of 1

CHAIN OF CUSTODY RECORD

		DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	7/15/16	1635
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	7/15/16	1650
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE	TIME
DISPATCHED BY: (Signature) DATE TIME	RECEIVED FOR LAB BY: (Signature)	DATE	TIME

METHOD OF SHIPMENT: Picked up from 5th by lab courier

WHITE-Laboratory COPY YELLOW-Project Office Copy PINK-Field or Office Copy

TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone (925) 484-1919 Fax (925) 600-3002

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Riley, Beth	Carrier Tracking No(s):	COC No: 720-29641.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: beth.riley@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 720-73399-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 7/20/2016			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: 6701 Shellmound St, Emeryville Air	Project #: 32007055			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	TO15/Air_Pass_Can TO-15 Standard List + Naphthalene	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SVE-1 (720-73399-1)	7/15/16	15:05 Pacific		Air			X	1	High level samples may require reruns. Client will review prelims first. See Project

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	7-15-16 1600	Dlcus	[signature]	7-16-16 910	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

8/10/2016

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

CANISTER FIELD DATA RECORD

Sacramento

JOB # 720-73399
Sample # 1

Client/Project:		VFR ID:		
Canister Serial #:	34001218	Duration:		☐ Hrs ☐ Min
Cleaning Job:		Flow:		mL/min
Client ID:		Initials:		
Site Location:				

FIELD				
READING	TIME	PRESS.	DATE	INITIALS
INITIAL FIELD VACUUM				
FINAL FIELD READING				

LABORATORY			
READING	PRESS.	DATE	INITIALS
INITIAL VACUUM CHECK (INCHES Hg)	29.8		JMT
☐ Helium Pre-dilution - Final Pressure (INCHES Hg)			
INITIAL PRESSURE (PSIA)	12.69	07/18/16	SV
FINAL PRESSURE (PSIA)	24.38	07/18/16	SV
Pressurization Gas: ☐ N2 ☐ He	☐	SCRN DIL. VS 250mLs:	
Initial Canister Dilution Factor = 1.92			

CANISTER REPRESSURIZATION

Date	Pi (PSIA)	Pf (PSIA)	Initial DF	Initials	NEW DF
			1.92		#DIV/0!
			#DIV/0!		#DIV/0!
			#DIV/0!		#DIV/0!

Analytical Dilution Factors

Date	Instr.	File #
7/20/2016	MS9	

Canister DF = 1.92 X Load DF = 7.5757576 (LVf (mLs) 250, LVi (mLs) 33) X Bag DF = 50 (BVf (mLs) 50, Bvi (mLs) 1) = FINAL DF 727.7264369

Date	Instr.	File #

Canister DF = 1.92 X Load DF = #DIV/0! X Bag DF = 1 = FINAL DF #DIV/0!

Date	Instr.	File #

Canister DF = 1.92 X Load DF = #DIV/0! X Bag DF = 1 = FINAL DF #DIV/0!

Login Sample Receipt Checklist

Client: PES Environmental, Inc.

Job Number: 720-73399-1

Login Number: 73399
List Number: 1
Creator: Mullen, Joan

List Source: TestAmerica Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: PES Environmental, Inc.

Job Number: 720-73399-1

Login Number: 73399
List Number: 2
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento
List Creation: 07/16/16 10:18 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CANISTER QC CERTIFICATION

320-20001 Chain of Custody

Certification Type: TO15 Scan

Date Cleaned/Batch ID: 7/1/16 320-20001

Date of QC: 7/5/16

Data File Number: 160705O8.D

CANISTER ID NUMBERS

34900325*	3480 1543	
3480 1629	3480 1646	
3480 1800	3400 1967	
3480 0654	34008646	
34800237	3480 1070	
3400 8324	3480 1218	
3400 1792	3400 0330	
3480 8812	3400 0683	

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "*Certification Type*" indicated above.

"*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

1st level Reviewed By: _____ Date: 7/7/16

2nd level Reviewed By: _____ Date: 7/14/16

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Canister QC Certification
Batch Certification

Certification Type	TO-15 SIM
Date Cleaned/Batch ID	6/21/16 320-19732
Date of QC	6/22/16
Data File Number	MS5062219

114946

CANISTER ID NUMBERS

34000001	7796	
7797	34000351	
8132		
8115		
7791		
7907		
8118		
9151		

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "*Certification Type*" indicated above.

"*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

1st level Reviewed By: _____ Date: 6/23/16

2nd level Reviewed By: _____ Date: 7/14/16

Q:\FORMS\QA-814 BATCH CAN QC 20130729.DOC
QA-814

ERS 7/29/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Canister QC Certification
Batch Certification

Certification Type: TO15 SCAN

Date Cleaned/Batch ID: A071416 320-20253

Date of QC: 7/15/16

Data File Number: MS907141Z

320-20253 Chain of Custody

CANISTER ID NUMBERS

34001322	34001957	
34000749	34001888	
34000804	34001872	
8441	34001715	
34000059	3511	
34001224	34001906	
34001859	34001883	
34001758	34001729	

The above canisters were cleaned as a batch. This certifies this batch contains no target analyte concentration greater than or equal to the method criteria for the "*Certification Type*" indicated above.

"*" INDICATES THE CAN OR CANS WHICH WERE SCREENED.

SG for AS — 1st level Reviewed By:
8/1/16 — Date:

SG — 2nd level Reviewed By:
8/1/16 — Date:

Q:\FORMS\QA-814 BATCH CAN QC 20130729.DOC
QA-814

ERS 7/29/2013

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20001-1

SDG No.:

Client Sample ID: 34000325 Lab Sample ID: 320-20001-1

Matrix: Air Lab File ID: 16070508.D

Analysis Method: TO-15 Date Collected: 07/01/2016 00:00

Sample wt/vol: 250(mL) Date Analyzed: 07/05/2016 18:20

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 116551 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	0.29	J	5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20001-1

SDG No.:

Client Sample ID: 34000325 Lab Sample ID: 320-20001-1

Matrix: Air Lab File ID: 16070508.D

Analysis Method: TO-15 Date Collected: 07/01/2016 00:00

Sample wt/vol: 250(mL) Date Analyzed: 07/05/2016 18:20

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 116551 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	ND		0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20001-1

SDG No.:

Client Sample ID: 34000325 Lab Sample ID: 320-20001-1

Matrix: Air Lab File ID: 16070508.D

Analysis Method: TO-15 Date Collected: 07/01/2016 00:00

Sample wt/vol: 250(mL) Date Analyzed: 07/05/2016 18:20

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 116551 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	98		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	107		70-130
2037-26-5	Toluene-d8 (Surr)	99		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File:	\\ChromNA\Sacramento\ChromData\ATMS11\20160705-32237.b\16070508.D				
Lims ID:	320-20001-A-1				
Client ID:	34000325				
Sample Type:	Client				
Inject. Date:	05-Jul-2016 18:20:30	ALS Bottle#:	7	Worklist Smp#:	8
Purge Vol:	500.000 mL	Dil. Factor:	1.0000		
Sample Info:	320-20001-A-1				
Misc. Info.:	500mL				
Operator ID:	KY	Instrument ID:	ATMS11		
Method:	\\ChromNA\Sacramento\ChromData\ATMS11\20160705-32237.b\TO15_ATMS11.m				
Limit Group:	MSA - TO15 - ICAL				
Last Update:	06-Jul-2016 09:21:28	Calib Date:	05-Jul-2016 13:22:30		
Integrator:	RTE	ID Type:	Deconvolution ID		
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Sacramento\ChromData\ATMS11\20160705-32237.b\16070503.D				
Column 1 :	RTX Volatiles (0.32 mm)		Det: MS SCAN		
Process Host:	XAWRK032				
First Level Reviewer: phanthasena		Date:	06-Jul-2016 09:21:28		

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	11.450	11.451	-0.001	91	37100	4.00	
* 2 1,4-Difluorobenzene	114	13.566	13.562	0.004	97	145445	4.00	
* 3 Chlorobenzene-d5 (IS)	117	19.678	19.679	-0.001	93	126107	4.00	
$ 4 1,2-Dichloroethane-d4 (Sur	65	12.630	12.625	0.005	97	66209	4.27	
$ 5 Toluene-d8 (Surr)	100	16.820	16.821	-0.001	97	90500	3.95	
$ 6 4-Bromofluorobenzene (Surr	174	21.697	21.698	-0.001	87	65378	3.92	
31 Acetone	43	6.871	6.872	-0.001	96	5453	0.2881	
47 Methylene Chloride	49	8.044	8.046	-0.002	77	835	0.0414	
85 Toluene	91	16.978	16.979	-0.001	87	847	0.0364	

Reagents:

VASUISIM_00307 Amount Added: 50.00 Units: mL Run Reagent

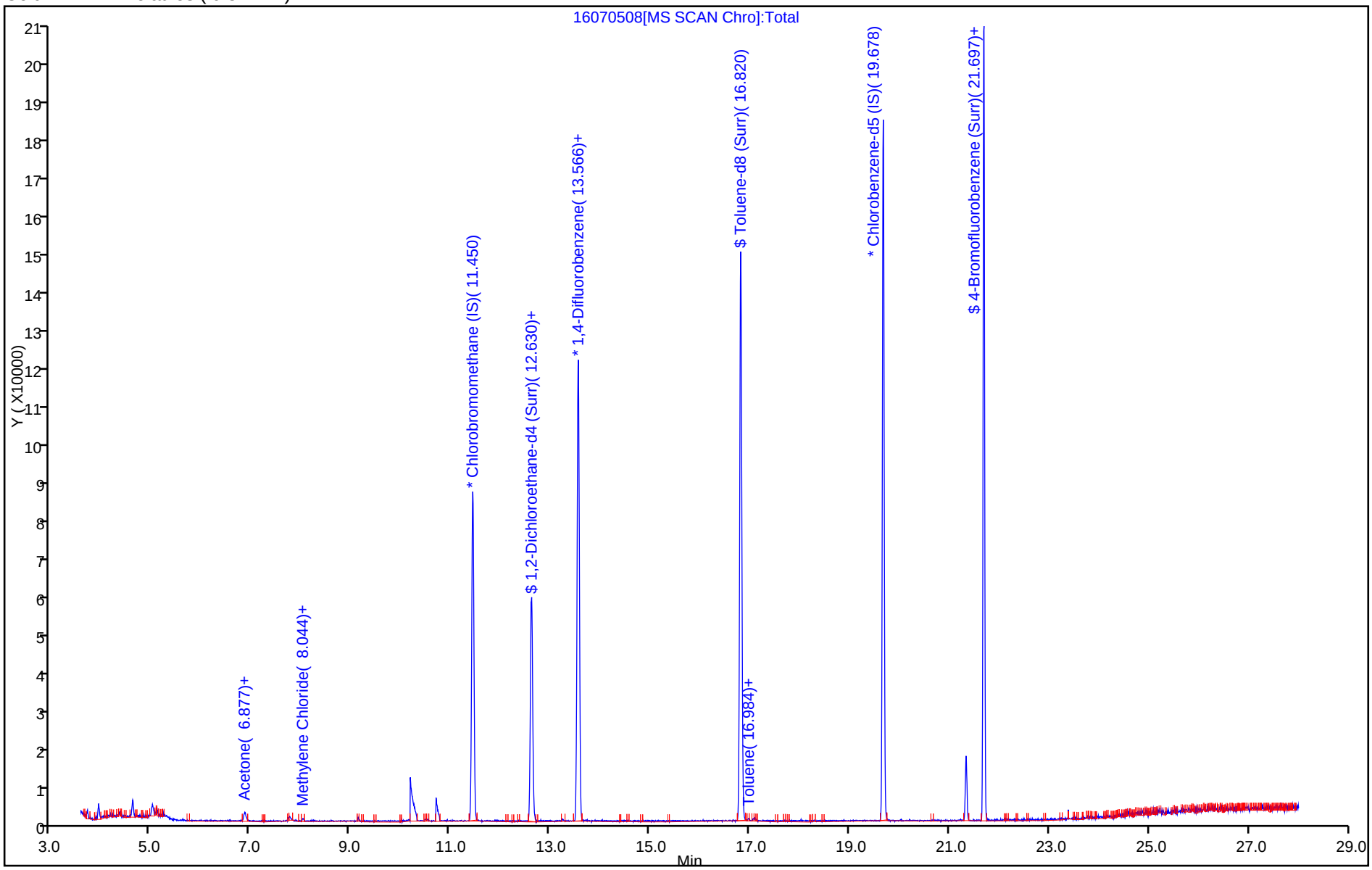
Report Date: 06-Jul-2016 09:21:30 Chrom Revision: 2.2 15-Jun-2016 12:36:22

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS11\20160705-32237.b\16070508.D

Injection Date:	05-Jul-2016 18:20:30	Instrument ID:	ATMS11	Operator ID:	KY
Lims ID:	320-20001-A-1	Lab Sample ID:	320-20001-1	Worklist Smp#:	8
Client ID:	34000325				
Purge Vol:	500.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	7
Method:	TO15_ATMS11	Limit Group:	MSA - TO15 - ICAL		

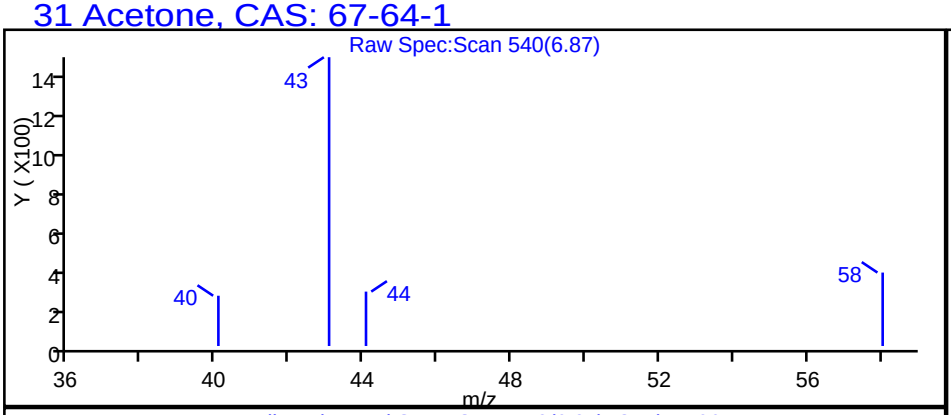
Column: RTX Volatiles (0.32 mm)

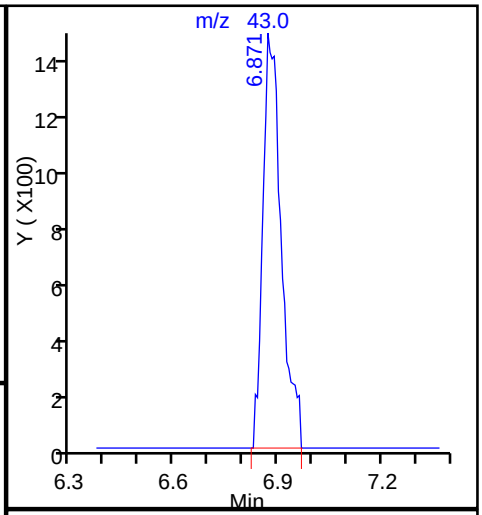


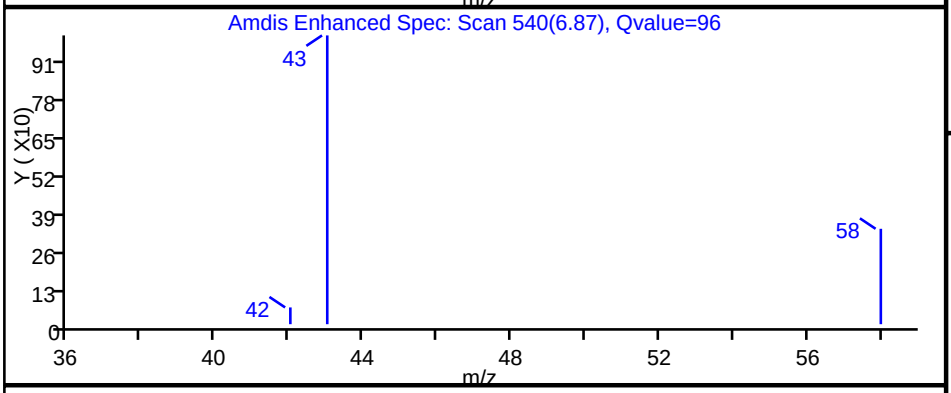
TestAmerica Sacramento

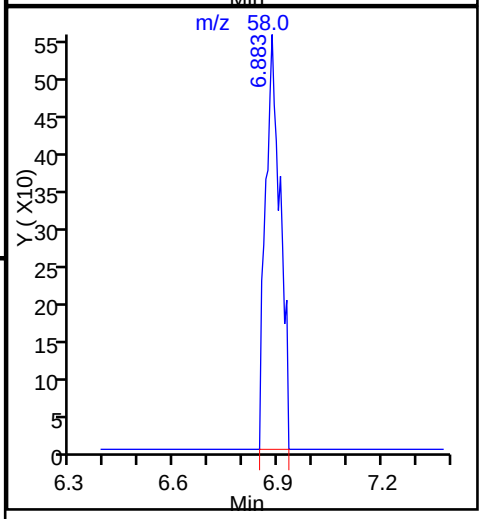
Data File:	\\ChromNA\Sacramento\ChromData\ATMS11\20160705-32237.b\16070508.D				
Injection Date:	05-Jul-2016 18:20:30	Instrument ID:	ATMS11		
Lims ID:	320-20001-A-1	Lab Sample ID:	320-20001-1		
Client ID:	34000325				
Operator ID:	KY	ALS Bottle#:	7	Worklist Smp#:	8
Purge Vol:	500.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS11	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

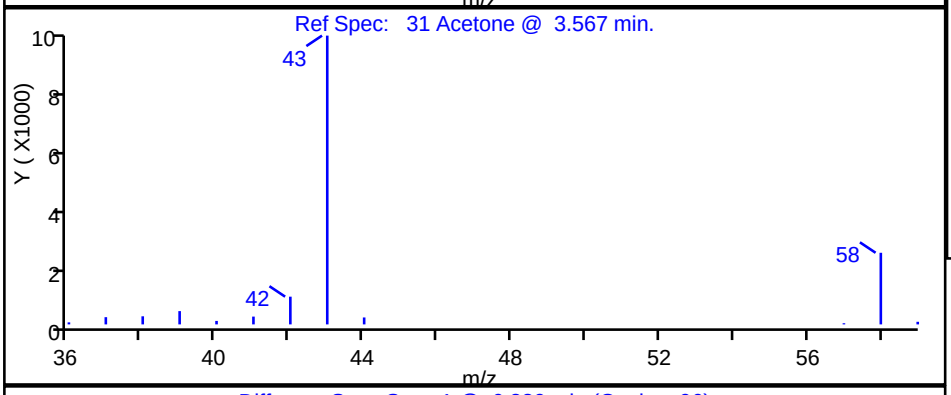
31 Acetone, CAS: 67-64-1

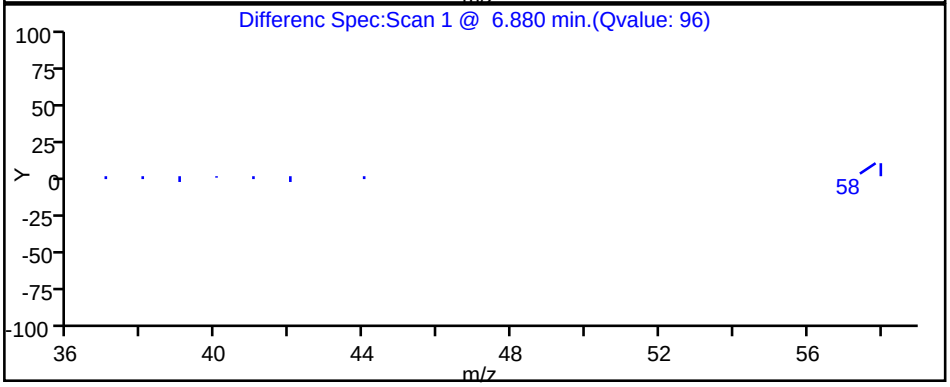












FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20253-1

SDG No.:

Client Sample ID: 34001822 Lab Sample ID: 320-20253-1

Matrix: Air Lab File ID: MS9071412.D

Analysis Method: TO-15 Date Collected: 07/14/2016 00:00

Sample wt/vol: 500(mL) Date Analyzed: 07/15/2016 20:10

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 118039 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
67-64-1	Acetone	ND		5.0	0.18
107-02-8	Acrolein	ND		2.0	0.22
107-13-1	Acrylonitrile	ND		2.0	0.19
107-05-1	Allyl chloride	ND		0.80	0.11
71-43-2	Benzene	ND		0.40	0.079
100-44-7	Benzyl chloride	ND		0.80	0.16
75-27-4	Bromodichloromethane	ND		0.30	0.066
75-25-2	Bromoform	ND		0.40	0.070
74-83-9	Bromomethane	ND		0.80	0.34
106-99-0	1,3-Butadiene	ND		0.80	0.15
106-97-8	n-Butane	ND		0.40	0.15
78-93-3	2-Butanone (MEK)	ND		0.80	0.20
75-65-0	tert-Butyl alcohol (TBA)	ND		2.0	0.11
104-51-8	n-Butylbenzene	ND		0.40	0.18
135-98-8	sec-Butylbenzene	ND		0.40	0.070
98-06-6	tert-Butylbenzene	ND		0.80	0.068
75-15-0	Carbon disulfide	ND		0.80	0.078
56-23-5	Carbon tetrachloride	ND		0.80	0.064
108-90-7	Chlorobenzene	ND		0.30	0.064
75-45-6	Chlorodifluoromethane	ND		0.80	0.11
75-00-3	Chloroethane	ND		0.80	0.31
67-66-3	Chloroform	ND		0.30	0.095
74-87-3	Chloromethane	ND		0.80	0.20
95-49-8	2-Chlorotoluene	ND		0.40	0.080
110-82-7	Cyclohexane	ND		0.40	0.084
124-48-1	Dibromochloromethane	ND		0.40	0.079
106-93-4	1,2-Dibromoethane (EDB)	ND		0.80	0.075
74-95-3	Dibromomethane	ND		0.40	0.057
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.40	0.16
95-50-1	1,2-Dichlorobenzene	ND		0.40	0.13
541-73-1	1,3-Dichlorobenzene	ND		0.40	0.11
106-46-7	1,4-Dichlorobenzene	ND		0.40	0.15
75-71-8	Dichlorodifluoromethane	ND		0.40	0.15
75-34-3	1,1-Dichloroethane	ND		0.30	0.072
107-06-2	1,2-Dichloroethane	ND		0.80	0.088

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20253-1

SDG No.:

Client Sample ID: 34001822 Lab Sample ID: 320-20253-1

Matrix: Air Lab File ID: MS9071412.D

Analysis Method: TO-15 Date Collected: 07/14/2016 00:00

Sample wt/vol: 500(mL) Date Analyzed: 07/15/2016 20:10

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 118039 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-35-4	1,1-Dichloroethene	ND		0.80	0.13
156-59-2	cis-1,2-Dichloroethene	ND		0.40	0.089
156-60-5	trans-1,2-Dichloroethene	ND		0.40	0.10
78-87-5	1,2-Dichloropropane	ND		0.40	0.24
10061-01-5	cis-1,3-Dichloropropene	ND		0.40	0.10
10061-02-6	trans-1,3-Dichloropropene	ND		0.40	0.088
123-91-1	1,4-Dioxane	ND		0.80	0.10
141-78-6	Ethyl acetate	ND		0.30	0.18
100-41-4	Ethylbenzene	ND		0.40	0.063
622-96-8	4-Ethyltoluene	ND		0.40	0.19
142-82-5	n-Heptane	ND		0.80	0.063
87-68-3	Hexachlorobutadiene	ND		2.0	0.43
110-54-3	n-Hexane	ND		0.80	0.075
591-78-6	2-Hexanone	ND		0.40	0.087
98-82-8	Isopropylbenzene	ND		0.80	0.10
99-87-6	4-Isopropyltoluene	ND		0.80	0.12
1634-04-4	Methyl-t-Butyl Ether (MTBE)	ND		0.80	0.050
80-62-6	Methyl methacrylate	ND		0.80	0.16
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		0.40	0.14
75-09-2	Methylene Chloride	0.085	J	0.40	0.072
98-83-9	alpha-Methylstyrene	ND		0.40	0.065
91-20-3	Naphthalene	ND		0.80	0.56
111-65-9	n-Octane	ND		0.40	0.055
109-66-0	n-Pentane	ND		0.80	0.26
115-07-1	Propylene	ND		0.40	0.099
103-65-1	N-Propylbenzene	ND		0.40	0.059
100-42-5	Styrene	ND		0.40	0.059
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.40	0.069
127-18-4	Tetrachloroethene	ND		0.40	0.051
109-99-9	Tetrahydrofuran	ND		0.80	0.079
108-88-3	Toluene	ND		0.40	0.051
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.40	0.16
120-82-1	1,2,4-Trichlorobenzene	ND		2.0	0.43
71-55-6	1,1,1-Trichloroethane	ND		0.30	0.065
79-00-5	1,1,2-Trichloroethane	ND		0.40	0.067

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-20253-1

SDG No.:

Client Sample ID: 34001822 Lab Sample ID: 320-20253-1

Matrix: Air Lab File ID: MS9071412.D

Analysis Method: TO-15 Date Collected: 07/14/2016 00:00

Sample wt/vol: 500(mL) Date Analyzed: 07/15/2016 20:10

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-Volatiles ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 118039 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-01-6	Trichloroethene	ND		0.40	0.11
75-69-4	Trichlorofluoromethane	ND		0.40	0.20
96-18-4	1,2,3-Trichloropropane	ND		0.40	0.17
95-63-6	1,2,4-Trimethylbenzene	ND		0.80	0.16
108-67-8	1,3,5-Trimethylbenzene	ND		0.40	0.13
540-84-1	2,2,4-Trimethylpentane	ND		0.40	0.071
108-05-4	Vinyl acetate	ND		0.80	0.15
593-60-2	Vinyl bromide	ND		0.80	0.26
75-01-4	Vinyl chloride	ND		0.40	0.12
179601-23-1	m,p-Xylene	ND		0.80	0.10
95-47-6	o-Xylene	ND		0.40	0.054

CAS NO.	SURROGATE	%REC	Q	LIMITS
460-00-4	4-Bromofluorobenzene (Surr)	95		70-130
17060-07-0	1,2-Dichloroethane-d4 (Surr)	109		70-130
2037-26-5	Toluene-d8 (Surr)	99		70-130

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160715-32553.b\MS9071412.D
Lims ID: 320-20253-A-1
Client ID: 34001822
Sample Type: Client
Inject. Date: 15-Jul-2016 20:10:30 ALS Bottle#: 10 Worklist Smp#: 12
Purge Vol: 5.000 mL Dil. Factor: 1.0000
Sample Info: 320-20253-A-1
Misc. Info.: 500
Operator ID: SV Instrument ID: ATMS9

Method: \\ChromNA\Sacramento\ChromData\ATMS9\20160715-32553.b\TO15_ATMS9N.m
Limit Group: MSA - TO15 - ICAL
Last Update: 18-Jul-2016 10:03:16 Calib Date: 28-Jun-2016 01:59:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\ATMS9\20160627-32031.b\MS9062712.D

Column 1 : RTX Volatiles (0.32 mm) Det: MS SCAN
Process Host: XAWRK029

First Level Reviewer: phanthasena Date: 18-Jul-2016 09:57:46

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
* 1 Chlorobromomethane (IS)	130	12.425	12.437	-0.012	97	39305	4.00	
* 2 1,4-Difluorobenzene	114	14.530	14.536	-0.006	96	177959	4.00	
* 3 Chlorobenzene-d5 (IS)	117	20.450	20.456	-0.006	91	150435	4.00	
$ 4 1,2-Dichloroethane-d4 (Sur	65	13.599	13.612	-0.013	97	67488	4.38	
$ 5 Toluene-d8 (Surr)	100	17.694	17.700	-0.006	97	114627	3.97	
$ 6 4-Bromofluorobenzene (Surr	174	22.366	22.372	-0.006	83	86163	3.80	
31 Acetone	43	7.723	7.637	0.086	86	2256	0.1509	
47 Methylene Chloride	49	8.958	8.958	0.000	76	985	0.0845	
88 n-Octane	43	17.688	17.700	-0.012	42	1238	0.0428	
85 Toluene	91	17.858	17.852	0.006	68	1008	0.0205	
97 Ethylbenzene	91	20.632	20.644	-0.012	90	1232	0.0196	
98 m-Xylene & p-Xylene	91	20.784	20.784	0.000	3	1882	0.0381	
101 o-Xylene	91	21.472	21.478	-0.006	89	1086	0.0218	
103 1,1,2,2-Tetrachloroethane	83	22.202	22.202	0.000	87	868	0.0261	
107 N-Propylbenzene	91	22.646	22.646	0.000	94	1996	0.0239	
111 1,3,5-Trimethylbenzene	120	22.871	22.877	-0.006	82	606	0.0217	
114 tert-Butylbenzene	91	23.376	23.382	-0.006	80	1081	0.0239	
115 1,2,4-Trimethylbenzene	120	23.424	23.424	0.000	90	610	0.0205	
116 sec-Butylbenzene	105	23.680	23.680	0.000	95	2297	0.0273	
121 4-Isopropyltoluene	119	23.862	23.856	0.006	93	2227	0.0316	
117 1,3-Dichlorobenzene	146	23.966	23.960	0.006	91	928	0.0279	
120 1,4-Dichlorobenzene	146	24.088	24.094	-0.006	86	1021	0.0314	
123 n-Butylbenzene	92	24.398	24.398	0.000	95	1328	0.0366	
122 1,2-Dichlorobenzene	146	24.574	24.574	0.000	81	1093	0.0343	
126 1,2,4-Trichlorobenzene	180	26.831	26.819	0.012	91	2466	0.0969	
128 Hexachlorobutadiene	225	27.093	27.062	0.031	92	4121	0.1348	
127 Naphthalene	128	27.214	27.190	0.024	97	4960	0.0737	

Reagents:

VASUISIM_00310 Amount Added: 50.00 Units: mL Run Reagent

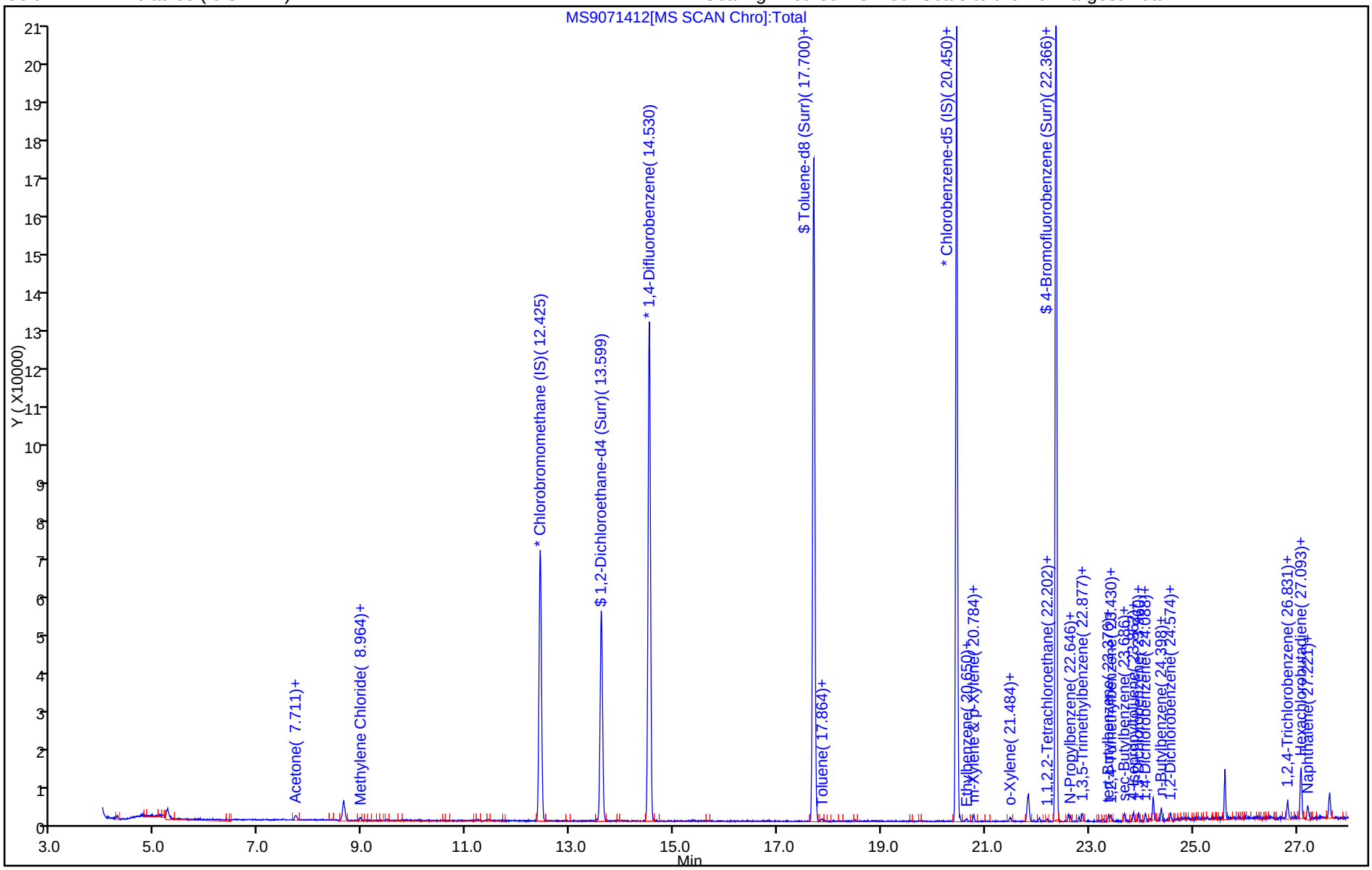
Report Date: 18-Jul-2016 10:03:18 Chrom Revision: 2.2 15-Jun-2016 12:36:22

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\ATMS9\20160715-32553.b\MS9071412.D

Injection Date:	15-Jul-2016 20:10:30	Instrument ID:	ATMS9	Operator ID:	SV
Lims ID:	320-20253-A-1	Lab Sample ID:	320-20253-1	Worklist Smp#:	12
Client ID:	34001822				
Purge Vol:	5.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	10
Method:	TO15_ATMS9N	Limit Group:	MSA - TO15 - ICAL		

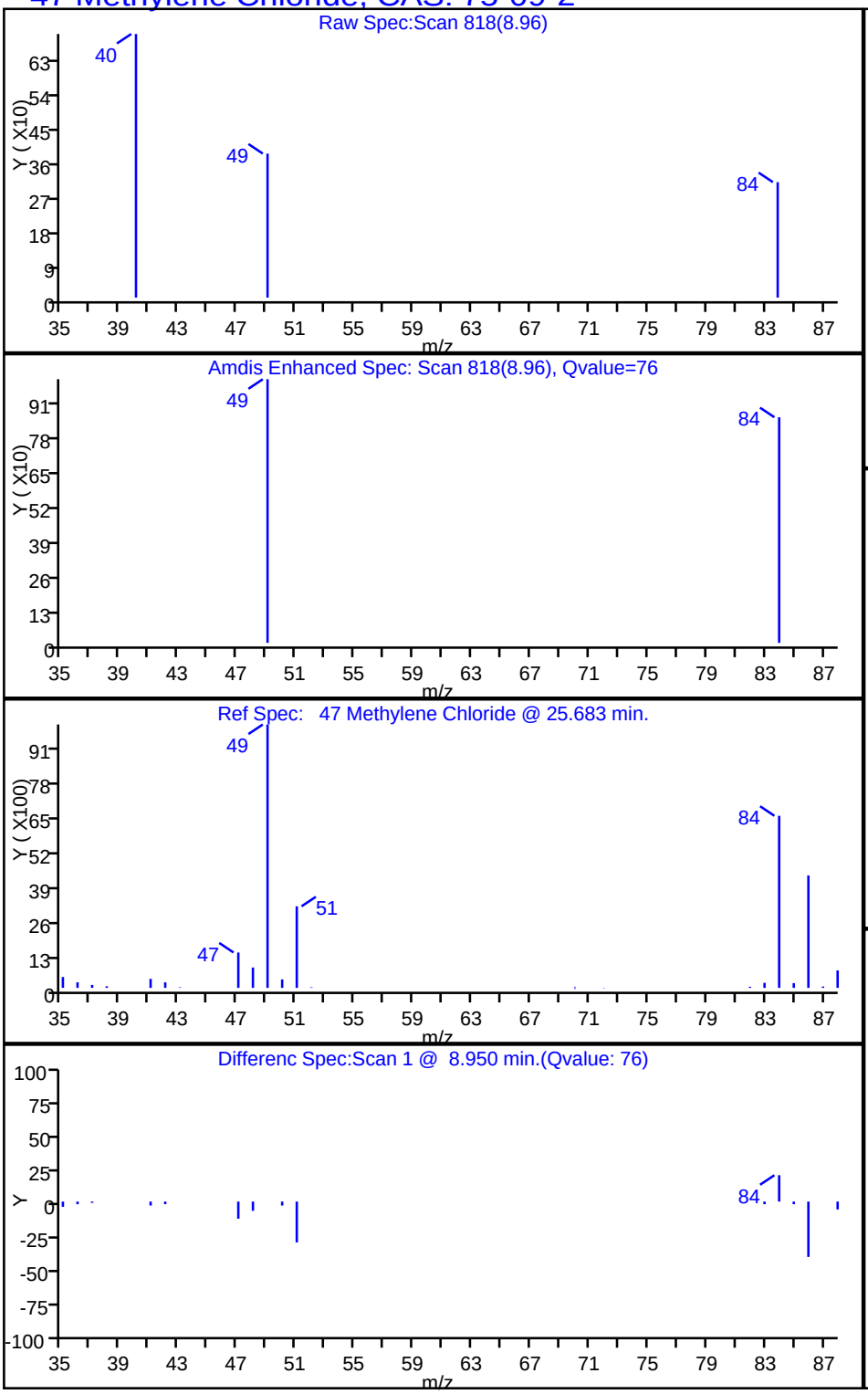
Column: RTX Volatiles (0.32 mm) Y Scaling: Method Defined: Scale to the Nth Largest Peak: 2

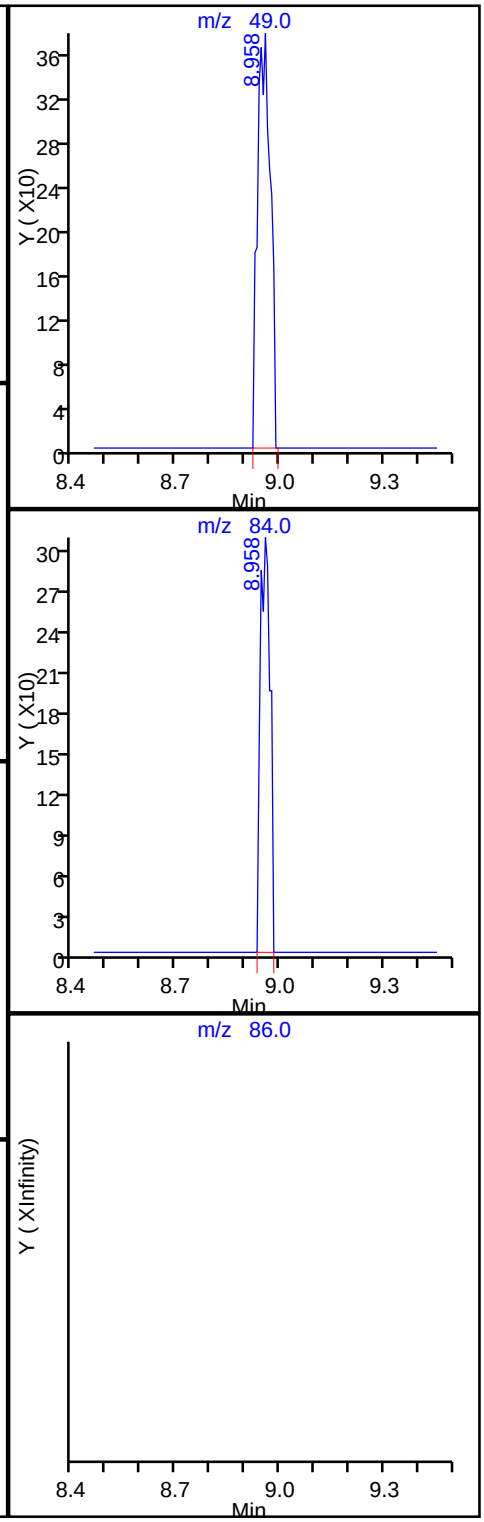


TestAmerica Sacramento

Data File:	\\ChromNA\Sacramento\ChromData\ATMS9\20160715-32553.b\MS9071412.D				
Injection Date:	15-Jul-2016 20:10:30	Instrument ID:	ATMS9		
Lims ID:	320-20253-A-1	Lab Sample ID:	320-20253-1		
Client ID:	34001822				
Operator ID:	SV	ALS Bottle#:	10	Worklist Smp#:	12
Purge Vol:	5.000 mL	Dil. Factor:	1.0000		
Method:	TO15_ATMS9N	Limit Group:	MSA - TO15 - ICAL		
Column:	RTX Volatiles (0.32 mm)	Detector	MS SCAN		

47 Methylene Chloride, CAS: 75-09-2



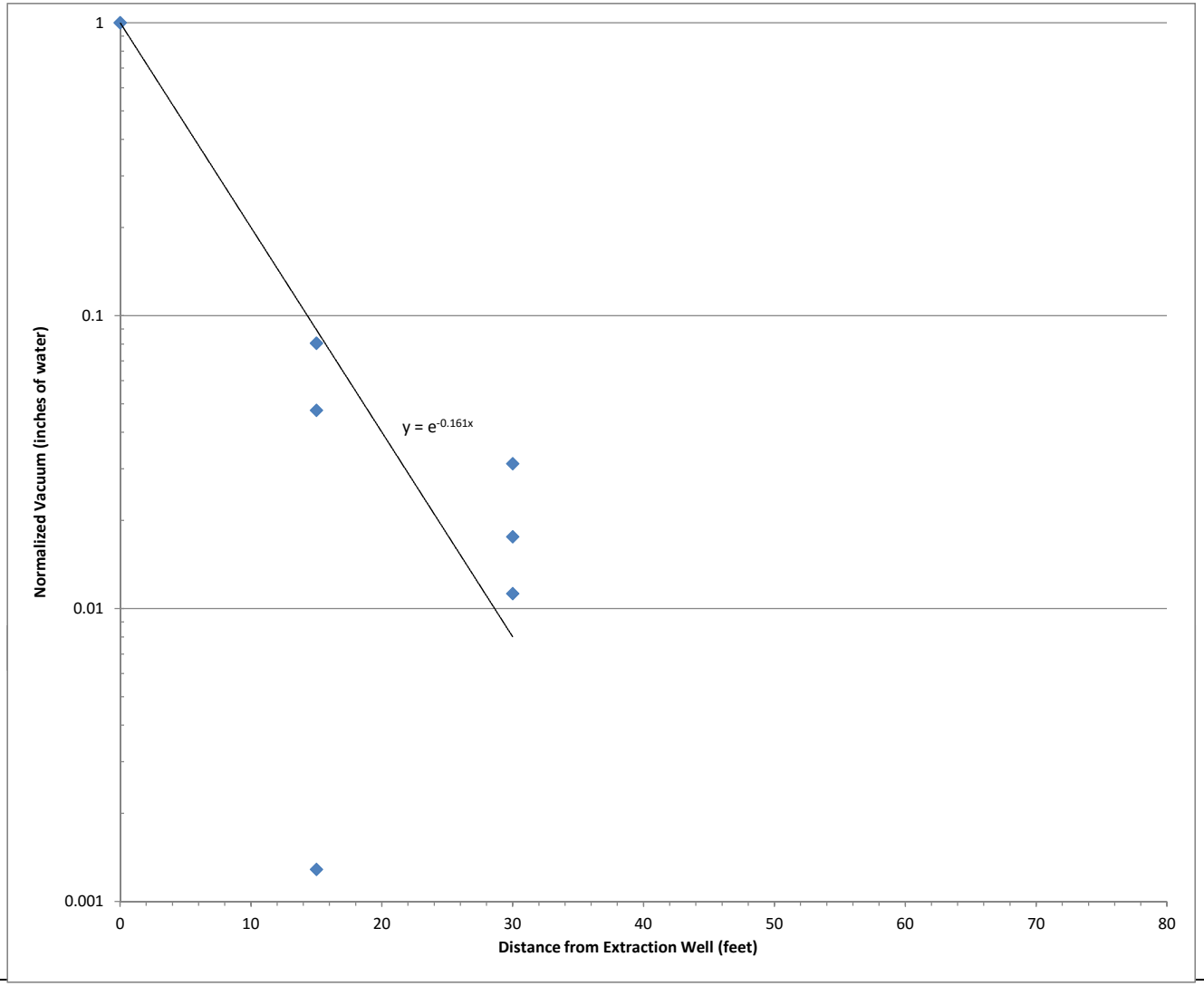


APPENDIX E

SVE WELL RADIUS OF INFLUENCE GRAPH

Table E-1
SVE-1 Constant Rate Test Results
Results of SVE Pilot Study
6701-6707 Shellmound Street
Emeryville, California

Vapor Extraction Location	Date	Distance from Extraction Well (feet)	Measured Vacuum (inches water)	Vacuum Normalized to SVE-1 (inches water)
SVE-1	7/14/2016	0.0	116.4	1
SVP-1-7.5	7/14/2016	30	2.05	0.0176
SVP-2-7.5	7/14/2016	15	9.38	0.0806
SVP-3-7.5	7/14/2016	15	0.15	0.0013
SVP-4-7.5	7/14/2016	30	1.31	0.0113
SVP-5-7.5	7/14/2016	30	3.64	0.0313
SVP-6-7.5	7/14/2016	15	5.54	0.0476



ROI Calculation (for y=a*e^(b*x))	
y	0.01
ln(y)	-4.60517
b	-0.161
ROI [x=(ln(y)/b]	**28.604**

Data Collected: 7/14/2016; 14:55

PES Environmental, Inc.
Engineering & Environmental Services

Normalized Vacuum vs. Distance - Constant Rate ROI Estimate
Operation of SVE-1
6701-6707 Shellmound Street
Emeryville, California

CHART
E-1

1448.001.02.004	**8/16**
JOB NUMBER	DATE

DISTRIBUTION

RESULTS OF SVE PILOT STUDY
6701, 6705, and 6707 SHELLMOUND STREET
EMERYVILLE, CALIFORNIA
FUEL LEAK CASE NO. RO0000548
GEOTRACKER GLOBAL ID T0600100894

AUGUST 29, 2016

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