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March 30, 2016

Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **76 Service Station No. 1156 (351645)**
4276 MacArthur Boulevard, Oakland, California

ACEH Case No. RO0000409
RWQCB Case No. 01-2474
GeoTracker Global ID T0600102279

I have reviewed the attached *Pilot Testing Workplan* dated March 30, 2016.

I agree with the conclusions and recommendations presented in the referenced work plan. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by AECOM, upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13257(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Nicole Arceneaux
Project Manager

Attachment: *Pilot Testing Workplan*

Prepared for:
EMC
San Ramon, CA

Prepared by:
AECOM
Camarillo, CA
60490608-25.22
March 30, 2016

Pilot Testing Workplan

76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

ACEH Case No. RO409
RWQCB Case No. 01-2474

AECOM

Prepared for:
EMC
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Pilot Testing Workplan
76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

ACEH Case No. RO409
RWQCB Case No. 01-2474

This document was prepared consistent with currently and generally accepted environmental consulting principles and practices. The material and data in this report were prepared under the supervision and direction of the undersigned.

Richard A. Jones

Richard Jones, PE
Project Engineer

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Contents

List of Figures

List of Tables

List of Appendices

1.0 Introduction

On behalf of Chevron Environmental Management Company's (EMC's) affiliate, Union Oil Company of California ("Union Oil"), AECOM is pleased to submit this Pilot Testing Workplan for 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California (Alameda County Health Care Services Agency, Environmental Health Services, Environmental Protection [ACEH] Case Number [No.] RO409, San Francisco Regional Water Quality Control Board [RWQCB] Case No. 01-2474) (**Figure 1**) (site). This workplan has been prepared in response to the ACEH letter dated January 7, 2016 (**Appendix A**).

The following sections summarize the site background and test procedures for evaluating the potential effectiveness of multiphase extraction (MPE) to remediate hydrocarbon impacts at the site. None of the existing site wells are appropriate for MPE, so this workplan details the replacement of some existing site wells with longer-screened wells for MPE pilot testing and observation.

The objective of site remediation is to reduce the concentrations of hydrocarbon impacts in soil and groundwater to below their low-threat closure criteria (California State Water Resources Control Board 2012). The pilot test results will help determine if MPE is a feasible remedial approach.

Per the ACEH letter, this workplan also addresses a vapor intrusion mitigation plan in coordination with the onsite convenience store expansion. Additionally, this workplan describes the abandonment of several soil vapor monitoring wells located in the footprint of the planned expansion.

2.0 Site Background

2.1 Site Description

The site is a 76-branded service station located at the northern corner of the intersection of MacArthur Boulevard and High Street within the city of Oakland, California (**Figure 1**). The station building is situated in the northern portion of the site. An automotive service bay is present in the northern portion of the building, and a mini-mart/cashier area is located in the southern portion. Two dispenser islands are located on the southern portion of the site, one parallel to MacArthur Boulevard and one parallel to High Street. Previously prepared environmental documents (e.g., Delta 2010a and 2010b) indicate that two 10,000-gallon gasoline underground storage tanks (USTs) are located in the southwestern portion of the site (**Figure 2**).

2.2 Surrounding Land Use

The site area consists of mixed commercial and residential development, with the following adjacent property uses (**Figure 2**):

- Northwest – The Oakland Veterinary Hospital (4258 MacArthur Boulevard) abuts the site to the northwest, beyond which is a pharmacy/drug store.
- Northeast – Single-family dwelling (3627 High Street) abuts the site.
- Southeast – High Street borders the site to the southeast, beyond which are a post office, apartment building (3618 to 3622 High Street), and commercial businesses (4300 to 4312 MacArthur Boulevard). Based on a review of the State Water Resources Control Board's GeoTracker database, a leaking underground storage tank (LUST) site was formerly located at 4300 MacArthur Boulevard – Chevron gasoline service station #93676 (Case No. 01-0371 which was closed in 1999).
- South – A vacant lot is located south of the site, beyond the intersection of MacArthur Boulevard and High Street. The GeoTracker database indicates that an open LUST case is located in this area; the former Robert's Tires facility, 4311-4333 MacArthur Boulevard (Case No. 01-3601).
- Southwest and west – MacArthur Boulevard borders the site to the southwest, beyond which are a vacant lot and commercial businesses to the southwest and west. The GeoTracker database indicates that Shell gasoline service station #13-5701 (4255 MacArthur Boulevard) was formerly located at the vacant lot. There is an open LUST case (Case No. 01-1366) associated with the former Shell station.

Site and neighboring property uses are not expected to change significantly in the near future. The vacant lots are not expected to be redeveloped without resolution of the open LUST cases.

2.3 Topography, and Site Elevation

The site is located in a highly urbanized area of Oakland at the base of the San Leandro Hills. Based on site survey data, surface elevations at the site range from 179.42 feet above mean sea level (amsl) at MW-4B to 173.99 feet amsl at MW-2B (Morrow Surveying 2013). The elevation at the northeastern boundary of the site is noticeably higher than at MW-4B. Additionally, the elevation at MW-5 is 169.67 feet amsl. MW-5 is located in the street in front of the Oakland Veterinary Hospital (adjacent to the northwest portion of the site). To summarize, the southwestern portion of the site is at least 8 feet

lower in elevation than the northeastern portion, and the western corner is approximately 4 feet lower in elevation than the southern corner.

2.4 Site Geology

Based on a review of boring logs prepared by previous consultants (Delta 2007, 2009, 2010a, 2010b), the site geology consists of unconsolidated deposits of sand and silt in a clay matrix, with some intermixed fine-to-medium-grained gravel. Clay is predominant in the upper lithology with sandy/silty clay and clayey sand units, between approximately 1 to 15 feet below grade surface (bgs). The clay is underlain by clay interbedded with sandy clay, clayey sand, silty sands, and some gravelly sandy clay observed to the maximum depth explored (50.5 feet bgs). Soil borings advanced on-site since 2010 have indicated the presence of high-plasticity, fatty clays from 1 to 20 feet bgs (AECOM 2013a). Available boring logs are provided as **Appendix B**.

2.5 Site Hydrogeology

Well construction details are presented in **Table 1**. Historical site assessments indicated the presence of a confined aquifer under hydrostatic pressure based on the initial depth to water during well installations. Soil observed during installation of monitoring wells MW-9A/B, MW-10A/B, and MW-11A/B was interpreted to be dry from approximately 11.5 to 16 feet bgs, at which point the soil appeared to be moist.

High-plasticity clays were observed for most soil borings from grade to total depth (15 to 20 feet bgs), which suggests a misinterpretation of static water during drilling activities. Following a review of historical boring logs, shallow depth to water was verified at several locations (SB-1, SB-4, SB-5, and SB-15), and almost all boring logs indicate high moisture content from approximately 5 feet bgs and deeper. Based on historical soil boring logs, and well installation in March 2013, AECOM concluded that the lithology beneath the site is relatively fine-grained; however, the aquifer is generally unconfined (AECOM 2013a).

Groundwater analytical data for MW-9A/B, MW-10A/B/S, and MW-11A/B/S indicate a non-uniform vertical distribution of groundwater impacts, likely due to the fine-grained nature of the subsurface soil. Although concentrations for the wells screened 10 to 15 feet bgs are the highest, horizontal migration appears to be impeded by the soil type, and the plume appears to be largely contained to the site boundaries. Off-site, downgradient wells (MW-5 and MW-7) are screened from 5 to 25 feet bgs. Both wells have exhibited a declining trend for total petroleum hydrocarbons-gasoline range organics (TPH-GRO), benzene, and methyl t-butyl ether (MTBE) since installation in 2001. In addition, the vertical migration of hydrocarbons appears to be limited. Impacts for deep-screened wells (20 to 25 feet bgs) are as much as four orders of magnitude less than those observed for the shallow-screened wells (10 to 15 feet bgs) (AECOM 2015a).

Groundwater samples have been analyzed for monitored natural attenuation (MNA) parameters including methane, nitrate, sulfate, ferrous iron, and dissolved manganese, to evaluate if natural attenuation by anaerobic biodegradation is occurring beneath the site. Based on the analytical results for MNA parameters, depleted concentrations of nitrate and sulfate (electron donors for anaerobic reduction) were observed for wells within the dissolved-phase hydrocarbon plume. Additionally, ferrous iron and dissolved manganese concentrations (byproducts of anaerobic reduction) are generally elevated for wells within the dissolved-phase hydrocarbon plume. Within the source area, methane (product of anaerobic hydrocarbon digestion) is also found to be elevated (AECOM 2015a). These geochemical trends are indicative of anaerobic biodegradation occurring within the dissolved-phase hydrocarbon plume.

2.6 Extent of Petroleum Hydrocarbon Impacts to Soil

Soil boring samples collected from 1997 to date indicate that soil contamination from benzene, toluene, ethylbenzene, total xylenes (BTEX) is largely confined to the upper 15 feet of the unsaturated zone. Maximum historical concentrations of benzene (7.8 milligrams per kilogram [mg/kg]) and toluene (51 mg/kg) were detected at location SB-2 at 8.5 feet bgs. Maximum concentrations of ethylbenzene and total xylenes were at location B1/MW-1 in 1999 (110 and 470 mg/kg, respectively) (Delta 2009). The maximum MTBE concentration detected in soil was 7.9 mg/kg at MW-11B at 19 feet bgs (2013) (AECOM 2013a). These concentrations comply with low-threat closure criteria for soils with commercial/industrial land uses.

2.7 Extent of Petroleum Hydrocarbon Impacts to Groundwater

Groundwater monitoring from 1999 to 2010 included monitoring of MW-1, MW-2, MW-3, and MW-4. These wells were screened from 5 to 25 feet bgs. In 2010, these wells were destroyed and replaced with monitoring wells screened from 20 to 25 feet bgs, located near the former well locations. Differences in groundwater concentrations at the same well locations (but different screen intervals) indicate significant impediments to vertical contaminant transport (AECOM 2015a). A summary of current groundwater data is provided in **Tables 2** and **3**.

2.8 History of Remediation

Approximately 1,350 tons of soil was excavated and removed during the gasoline UST removal activities in 1998 (Delta 2007). In addition, approximately 4.6 tons of soil was overexcavated and removed during the underground waste-oil storage tank removal (Delta 2009).

Overpurging events were conducted at as many as three wells from 2001 to 2004 (MW-1, TP-1, and MW-7). Approximately 476,015 gallons of water was removed during that period. From available historical data, 1,590 gallons was extracted from MW-7 with the remainder being extracted from TP-1 and MW-1 (Delta 2009).

3.0 Pre-Field Activities

3.1 Health and Safety Plan

AECOM has prepared a site-specific Health and Safety Plan (HASP) which will be updated to address potential physical and chemical hazards associated with MPE pilot testing at the site and other health and safety considerations. Additionally, Job Safety Analyses (JSAs) will be prepared detailing mitigation of specifically identified hazards within the proposed scope of work. The HASP and JSAs will be reviewed and approved by AECOM Health and Safety Management and EMC. Site activities conducted by AECOM and subcontractors will be conducted in accordance and compliance with the approved HASP and JSAs.

3.2 Permits

Air emissions would need to be permitted by Bay Area Air Quality Management District (BAAQMD). The pilot testing can be conducted by a subcontractor with a various locations permit from BAAQMD or a new permit can be obtained for portable equipment. The proposed remediation system location is within 1,000 feet of St. Lawrence O'Toole Catholic School (approximately 450 feet northeast) and would be subject to a public notice requirement.

Extracted water would need to be treated and discharged. A discharge permit could be obtained from East Bay Municipal Utilities District (EBMUD) for the purposes of dewatering during MPE pilot testing, and a sewer cleanout is available for a temporary connection to the publically owned treatment works. The current location of the sewer cleanout is accessible, but may be affected by expansion of the convenience store at the site. This workplan has assumed that the cleanout will be accessible for the temporary permitted discharge of liquids generated during pilot testing.

No other permits are required for the planned work.

3.3 Well Replacement

Generally, remediation is conducted using wells 4 inches in diameter or greater. Monitoring wells MW-10S and MW-11S are of sufficient size to be considered potential remedial wells (**Table 1**). However, both these wells are screened across a relatively short interval of 6.5 to 10 feet bgs. This interval contacts very little of the presumed smear zone at the site. As more of the smear zone is contacted and de-watered, the expected mass recovery increases.

The proposed MPE pilot test will be conducted in the area of elevated dissolved-phase benzene concentrations in the vicinity of wells MW-10A and MW-10B. To give the pilot test the greatest opportunity to succeed, a new proposed MPE extraction well, MW-12, will be installed so that the screen interval spans the entire smear zone. The proposed location for MW-12 is shown on **Figure 2**. The proposed screen interval for MW-12 will be 5 to 20 feet bgs with a 3-foot-long blank casing from 20 to 23 feet bgs. The blank casing section will be used to position a submersible pump during MPE pilot testing. An additional 1-inch-diameter casing will be installed in MW-12 and screened from 18 to 20 feet bgs. This additional casing will be used to verify complete dewatering of MW-12 during MPE pilot testing.

The installation of MPE extraction well MW-12 is proposed to replace 2-inch-diameter wells MW-10A and MW-10B as well as 4-inch-diameter well MW-10S. With agency approval, these wells will be

destroyed in accordance with California Well Standards 74-81 and 74-90 and under the conditions of permits to be obtained from the local oversight agency.

Wells used to observe MPE are most effective when they are screened across the same depths as the extraction well. To achieve this, three 2-inch-diameter piezometer wells (PZ-1 through PZ-3) with screen intervals from approximately 5 to 20 feet bgs (with some variation based on compensating for the grade at the site), matching MPE pilot test extraction well MW-12, will be installed and will be located 5, 10, and 20 feet from MW-12. The proposed locations for these wells are shown on **Figure 2**. The three 2-inch-diameter piezometer wells will be abandoned following completion of the MPE pilot test.

4.0 Pilot Test Activities

AECOM's "Remedial Technology Screening and Work Plan for Site Assessment" (AECOM 2014), stated that "Based on the heterogeneity and fine-grained nature of the soil encountered at the depths of highest petroleum impacts MPE is likely not a feasible technology." Fine-grained, low-permeability soils are expected to limit the effectiveness of any remedial approach based on the extraction of soil vapor or groundwater from the site. In their letter dated October 24, 2014, ACEH disagreed with the conclusion that MPE was infeasible at the site and requested a pilot workplan for remediation. Following aquifer testing (AECOM 2015b) and an additional feasibility study (AECOM 2015c), ACEH reiterated their request for pilot testing and specified MPE in their letter dated January 7, 2016 (**Appendix A**).

The MPE pilot test will be conducted to evaluate MPE feasibility. Feasibility will be based upon determining the degree of dewatering possible, acquisition of drawdown data to determine radius of influence (ROI), air/water yields necessary to achieve needed drawdown, and volatile organic compound (VOC) mass removal rates. The goal of remedial activities is to achieve groundwater hydrocarbon concentrations consistent with Low Threat Case Closure.

4.1 Baseline Data Collection

A manual water level meter will be used to collect baseline depth to water measurements prior to starting the MPE system. In addition, VOC concentrations will be measured using a portable lower explosive limit (LEL) meter such as a RKI® Eagle. Vapor samples for LEL measurements will be collected using a portable vapor sample pump and Tedlar® bags. Extraction well VOC concentrations will be collected on the pressure side of the extraction blower. LEL measurements will be collected at the extraction well manifold and on the system influent/effluent.

Initial well vapor samples will also be collected from the extraction well for laboratory analysis. Samples will be collected in Tedlar® bags using an air-tight vacuum sample box or using Summa® canisters to eliminate sample contact with ambient air and/or sampling equipment. Samples will be analyzed for BTEX and MTBE using Environmental Protection Agency (EPA) Method TO-15. Samples will also be analyzed for TPH-GRO using EPA Method TO-3-modified (TO-3M).

Groundwater from on-site wells is also planned to be sampled prior to conducting the MPE pilot test. The groundwater samples will be analyzed in accordance with current semiannual monitoring at the site which requires analysis by a State of California-certified laboratory for the following constituents:

- TPH-GRO by leaking underground fuel tank-gas chromatography/mass spectrometry (GC/MS) method;
- BTEX by EPA Method 8260B; and
- Fuel oxygenate compounds; MTBE, t-amyl methyl ether (TAME),tertiary butyl alcohol, diisopropyl ether (DIPE), ethyl t-butyl ether (ETBE), 1,2-dibromoethane (EDB), and 1,2-dichloroethane (EDC) using EPA Method 8260B.

4.2 Test Setup

Proposed monitoring well MW-12 will be utilized as the extraction well for the MPE pilot test. The extraction well will be equipped to measure vacuum at the wellhead. A submersible pump will be located at the bottom of MW-12 for dewatering. A transducer will be located in the vadose zone of the extraction well to measure vacuum. The additional 1-inch-diameter casing will be used to measure water levels periodically during the test to verify complete dewatering of the 4-inch-diameter extraction well. Three 2-inch-diameter piezometer wells located 5, 10, and 20 feet from MW-12 will be used as observation wells to measure subsurface vacuum and drawdown. Pressure transducers will be installed in each observation piezometer well to record drawdown. Pressure transducers will also be located in the vadose zone of each observation well to record casing vacuum during the test. As vacuum increases in the piezometer wells, the reduction in pressure measured by the submerged transducers will be interpreted as water table drawdown. Casing vacuum measurement is necessary as a reference to correct the water level. In addition, the observation wellheads will be configured with magnehelic gauges to measure vacuum.

The extraction well flow rate and VOC concentrations will be measured at the MPE system inlet. Vacuums will be measured using portable magnehelic gauges. Well flow will be measured using a hot-wire anemometer, such as TSI® Velocicalc. Extraction well VOC concentrations and oxygen content will be monitored using a LEL meter, calibrated to hexane, and a portable vapor analyzer provided by the subcontractor. All equipment will be field-calibrated each day of use.

4.3 Multiphase Extraction Test Equipment

Mobile MPE pilot test equipment will be brought to the site capable of extracting and treating both soil vapor and groundwater. Discharges to both the air and the sanitary sewer will be permitted by the appropriate agencies (BAAQMD and EBMUD respectively). The MPE pilot test will be conducted using a vapor extraction blower capable of generating a vacuum of at least 18 inches of mercury and with a volume capacity of at least 300 standard cubic feet per minute. The maximum available vacuum will be measured prior to commencing the MPE pilot test.

Groundwater extraction capacity should be in excess of 10 gallons per minute, although less is expected at this site. Groundwater extraction will be achieved by both a downwell pump in the extraction well, and any condensate or other water extracted via vacuum.

4.4 Pilot Test Duration and Data Collection Frequency

The MPE pilot test will continue long enough to define steady-state dewatering, but not to exceed a period of 72 hours. The rate of change of observation well water levels will be used as a criterion to determine test shutdown.

During the first few hours of the pilot test, extraction well vacuum, extraction well drawdown, observation well vacuum, extraction well flow rate, system vacuum, extraction well VOC concentrations, and groundwater production rate will be monitored every 15 minutes. Following this initial period, hourly monitoring will be conducted. Less frequent monitoring will be conducted during overnight operation.

Pressure transducers located in each of the observation wells to record pressures above and below groundwater will record data continuously throughout the duration of the pilot test. The transducer data will be used to evaluate drawdown during the test. Additional wells may be monitored during testing either using transducers or manual groundwater elevation measurements.

4.5 Waste Generation

Any liquid waste generated by groundwater extraction and/or knockout water will be treated and sampled prior to discharge in a manner compliant with the discharge permit. The groundwater production rate will be measured using a flow totalizer.

4.6 Result Criteria

Several performance objectives determined from pilot testing are imperative for successful implementation of MPE technology going forward. Final evaluation of the feasibility of any technology for remediation at an EMC site rests with their Remedial System Review Team (RSRT). However, the following criteria are general guidelines for discontinued testing, and a failing result on any of these criteria will be reported to the RSRT as a failed test:

1. Feasible groundwater extraction rates to achieve smear zone drawdown
    a. Groundwater extraction rates needed to maintain the open screen interval in MW-12 will determine water treatment and disposal costs. Treatment approaches will be compared on the basis of their cost/benefit and excessive treatment and disposal costs for MPE may lead to the selection of another approach.
2. Feasible vacuum ROI
    a. The vacuum ROI will be measured in nearby wells. The ROI is defined as the distance at which 1 percent of the applied vacuum is observed.
    b. If the vacuum ROI is less than 5 feet, then MPE will be considered infeasible and may lead to the selection of another approach.
3. Favorable mass recovery rates, casing vacuums, and air flow rates
    a. Mass recovery in the MPE system should be greater than 25 pounds per day.
    b. Casing vacuum should reach at least 8 to 12 inches of mercury.
    c. Air flow rates are a function of the lithology from which the soil vapor is drawn. If these rates are too low, not only will the mass removed be limited, but it indicates that the lithology has too little pore space for effective mass removal.

5.0 Pilot Testing Report and Future Operation

Upon completion of field activities, a report will be submitted to ACEH documenting the findings of the MPE pilot testing. The report will include field observations, laboratory results, conclusions, and recommendations for further action. The report will be prepared under the supervision of and signed by a California Professional Geologist or Engineer.

The MPE pilot test described in this workplan is intended to collect data to help determine if MPE is feasible for the remediation of this site and to close the data gaps identified in the feasibility study (AECOM 2015c). Vacuum ROI is considered a data gap at the site. Due to the clay soils, the vacuum ROI is expected to be limited, but testing should be able to determine if the ROI is greater than the minimum 5 feet considered necessary for MPE feasibility. Hydrocarbon mass removal rates using MPE are considered a data gap. High hydrocarbon concentrations and low vapor flow rates are expected which would result in a low mass removal rate. Pilot testing should determine if the mass removal rates are greater or less than the minimum 25 pounds per day for MPE feasibility.

The feasibility study indicated that mobile MPE events alone were not considered likely to be sufficient to remediate the site and that longer term operation of a fixed MPE system would likely be necessary. As such, it is considered unlikely that any long-term changes will result from pilot testing. The goal of remedial activities is to achieve groundwater hydrocarbon concentrations consistent with low -threat case closure criteria. Pilot testing will provide data for the evaluation of the cost versus benefit of a fixed MPE system at the site.

6.0 Vapor Intrusion Mitigation Planning

The property owner at this site has informed AECOM of his intention to expand his convenience store. Per discussions with the owner, the expansion includes eliminating the service bays and waste-oil aboveground storage tank and expanding the footprint of the building to approximately 5 feet from the property boundary shared with the Oakland Veterinary Hospital (Goswamy, pers. comm., 2015). Soil vapor investigations in the area of the proposed expansion indicated that soil vapor hydrocarbon concentrations were above soil vapor screening levels (AECOM 2013b). As a precautionary measure, based on screening criteria in California Department of Toxic Substances Control (DTSC) 2011 Vapor Intrusion Mitigation Guidance, a passive sub-slab venting (SSV) system and sub-slab liner are recommended for this location. A SSV system is designed to function by venting sub-slab soil vapor or providing a pathway to allow soil vapor to migrate to the exterior of the building rather than entering a building (DTSC 2011).

Additionally, the footprint of the expanded convenience store would render several existing soil vapor monitoring wells inaccessible. On this basis, SVW-1, SVW-2, SV-5, SVW-5, and SV-6 will be destroyed. These soil vapor monitoring wells consist of quarter-inch Teflon tubing connecting to a screen with a maximum depth of 6 feet bgs. These wells will be destroyed via the following steps per DTSC guidance.

7.0 References

AECOM. 2013a (April 22). Report on Limited Site Assessment, 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California.

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California Department of Toxic Substances Control (DTSC). 2011. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air. October.

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California State Water Resources Control Board. 2012. Leaking Underground Fuel Tank Guidance Manual. September.

Delta. 2007 (December 28). Site Investigation Report, 76 Service Station No. 1156, 4276 MacArthur Boulevard, Oakland, California, dated December 28.

———. 2009 (January 26). Initial Site Conceptual Model for 4276 MacArthur Boulevard, Oakland, California.

———. 2010a (March 1). Work Plan for Additional Assessment, 76 Service Station No. 1156, 4276 MacArthur Boulevard, Oakland, California.

———. 2010b (October 21). Additional Assessment Report, 76 Service Station No. 1156, 4276 MacArthur Boulevard, Oakland, California.

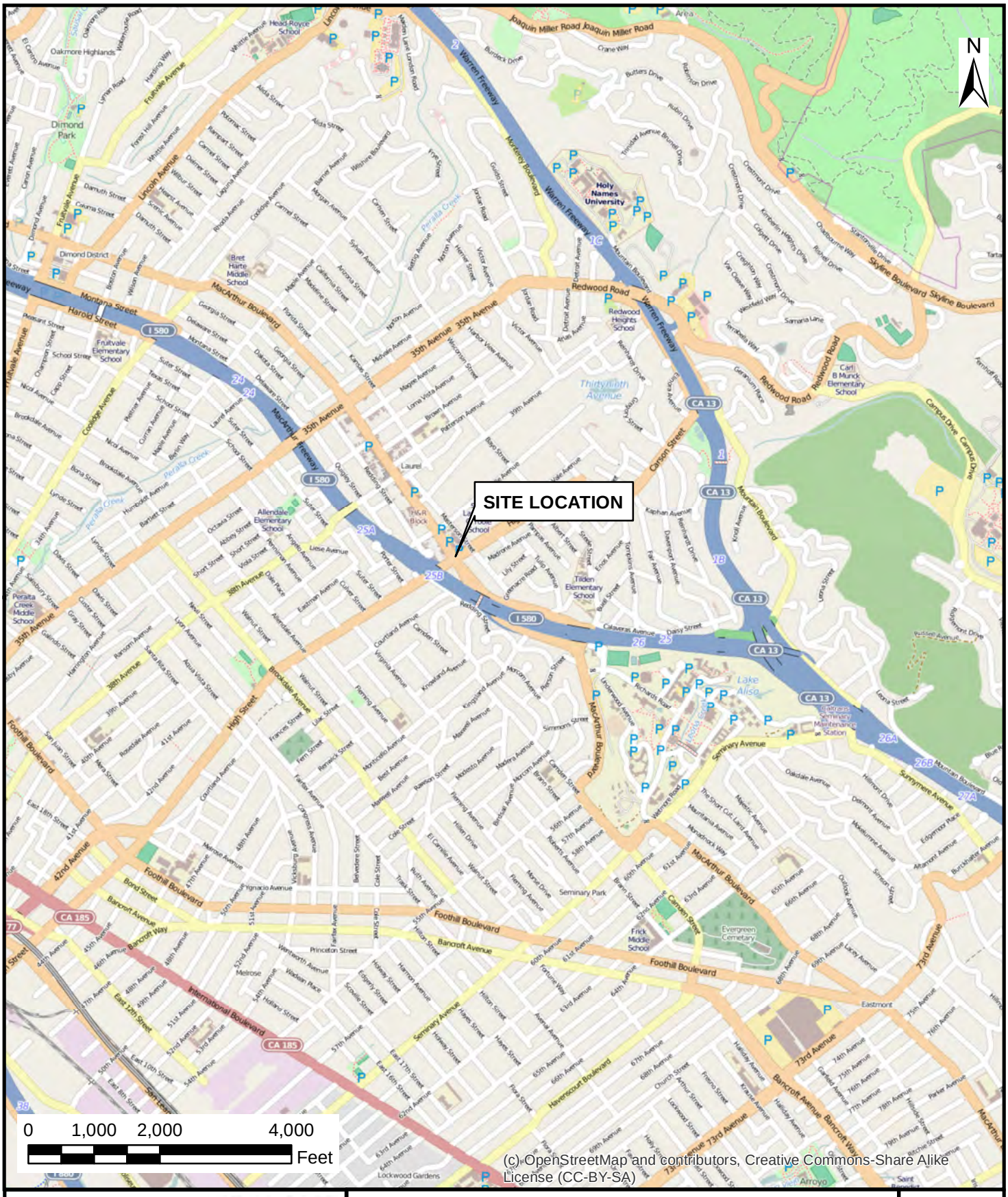
Goswamy, Rajan. Property owner 4276 MacArthur Boulevard, Oakland, CA. October 15, 2015. Email to Chad Roper regarding construction plans at the site

Morrow Surveying. 2013 (April 8). Monitoring well survey maps prepared by Morrow Surveying, 1255 Starboard Drive, West Sacramento, California 95691. Prepared for AECOM.

8.0 Limitations

This report has been prepared for ACEH on behalf of EMC and pertains to 76 Service Station No. 1156 (351645), 4276 MacArthur Boulevard, Oakland, California. In performing professional services, AECOM has applied present engineering and scientific judgment and used a level of effort consistent with the standard of practice measured on the date of the work and in the locale of the site for similar type studies. AECOM does not guarantee the accuracy or completeness of data collected by previous consultants. AECOM makes no warranty, express or implied, concerning any of the materials or services furnished. The analyses and interpretations in this report have been developed based on review of existing information pertaining to the site and review of analytical results.

Figures



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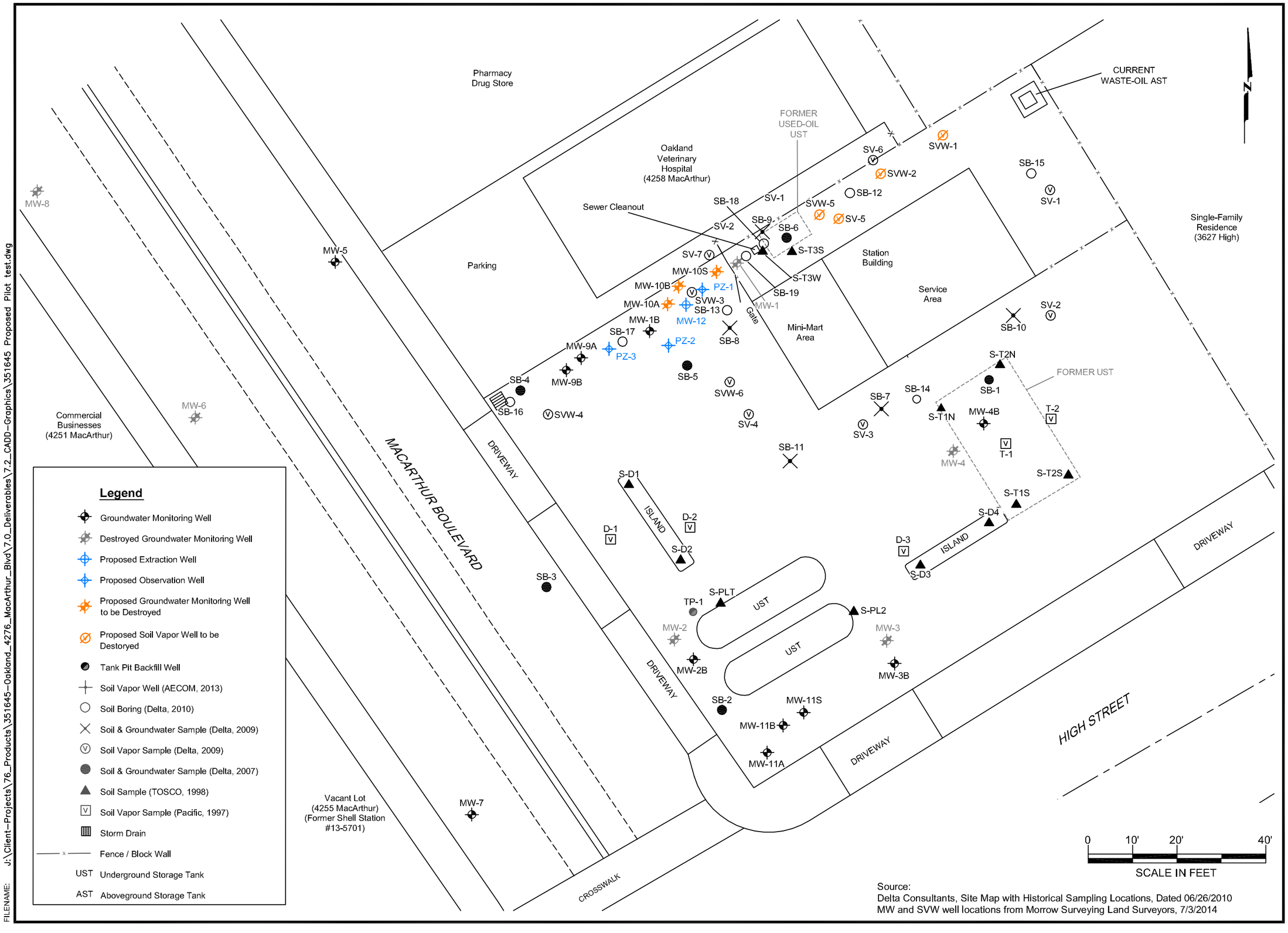
SITE LOCATION MAP

76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

FIGURE NUMBER:
1

DRAWN BY:	DATE:	PROJECT NUMBER:	SHEET NUMBER:
M. Scop	08/06/2014	60313673	1 of 1



Legend

- Groundwater Monitoring Well
- Destroyed Groundwater Monitoring Well
- Proposed Extraction Well
- Proposed Observation Well
- Proposed Groundwater Monitoring Well to be Destroyed
- Proposed Soil Vapor Well to be Destoryed
- Tank Pit Backfill Well
- Soil Vapor Well (AECOM, 2013)
- Soil Boring (Delta, 2010)
- Soil & Groundwater Sample (Delta, 2009)
- Soil Vapor Sample (Delta, 2009)
- Soil & Groundwater Sample (Delta, 2007)
- Soil Sample (TOSCO, 1998)
- Soil Vapor Sample (Pacific, 1997)
- Storm Drain
- Fence / Block Wall
- UST Underground Storage Tank
- AST Aboveground Storage Tank

Source:
Delta Consultants, Site Map with Historical Sampling Locations, Dated 06/26/2010
MW and SVW well locations from Morrow Surveying Land Surveyors, 7/3/2014

REVISIONS			
NO.:	DESCRIPTION:	DATE:	BY:

DESIGNED BY: C. Roper
DRAWN BY: M. Scop
CHECKED BY: B. Evans
APPROVED BY: B. Evans

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Site Plan
76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

PROJECT NUMBER: 60490608
DATE: 3/23/2016
SCALE: 1" = 20'

FIGURE NUMBER: **2**

SHEET NUMBER: 1 of 1

FILENAME: J:\Client-Projects\76_Products\351645-Oakland_4276_MacArthur_Blvd\7.0_Deliverables\7.2_CADD-Graphics\351645 Proposed Pilot test.dwg

Tables

Table 1
Well Construction Details
76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

Well ID	Well Installation Date	Casing Diameter (in.)	Boring Depth (ft. bgs)	Screen Interval (ft. bgs)	Screen Size (in.)	Filter Pack (ft. bgs)	Bentonite Seal (ft. bgs)	Grout Interval (ft. bgs)
MW-1*	7/16/1999	2	26.5	5-25	0.01	4-26.5	3-4	0-3
MW-1B	8/17/2010	2	25	20-25	0.02	19-25	18-19	0.5-18
MW-2*	7/16/1999	2	26.5	5-25	0.01	4-26.5	3-4	0-3
MW-2B	8/16/2010	2	25	20-25	0.02	19-25	18-19	0.5-18
MW-3*	7/16/1999	2	31.5	5-25	0.01	4-27	3-4; 27-31.5	0-3
MW-3B	8/16/2010	2	25	20-25	0.02	19-25	18-19	0.5-18
MW-4*	7/16/1999	2	26.5	5-25	0.01	4-26.5	3-4	0-3
MW-4B	8/13/2010	2	25	20-25	0.02	19-25	18-19	0.5-18
MW-5	8/29/2001	2	25	5-25	0.02	4-25	3-4	0.5-3
MW-6	8/29/2001	2	25	5-25	0.02	4-25	3-4	0.5-3
MW-7	8/29/2001	2	25	5-25	0.02	4-25	3-4	0.5-3
MW-8	10/30/2007	2	25	15-25	0.01	13-25	11-13	1-11
MW-9A	3/18/2013	2	15	10-15	0.02	8-15	1.5-8	1-1.5
MW-9B	3/18/2013	2	20	15-20	0.02	13-20	1.5-13	1-1.5
MW-10A	3/18/2013	2	15	10-15	0.02	8-15	1.5-8	1-1.5
MW-10B	3/18/2013	2	20	15-20	0.02	13-20	1.5-13	1-1.5
MW-10S	6/12/2014	4	10	6.5-10	0.02	3.5-10	1-3.5	n/a
MW-11A	3/19/2013	2	15	10-15	0.02	8-15	1.5-8	1-1.5
MW-11B	3/19/2013	2	20	15-20	0.02	13-20	1.5-13	1-1.5
MW-11S	6/11/2014	4	10	6.5-10	0.02	3.5-10	1-3.5	n/a

Notes:
* = Destroyed and replaced with "B" well in 2010
ft. bgs = Feet below ground surface
ID = Identification
in. = Inches
n/a = Not available

Table 2
Current Groundwater Monitoring Data and Analytical Results
76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

WELL ID	DATE SAMPLED	TOC* (ft)	DTW (ft)	LNAPL THICKNESS (ft)	GWE* (ft)	OIL AND GREASE (µg/L)	TPH-DRO W/SGC (µg/L)	TPH-GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	COMMENTS
MW-1B	1/20/2016	174.06	5.86	0	168.20	--	ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-2B	1/20/2016	173.55	4.91	0	168.64	--	ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-3B	1/20/2016	177.77	5.18	0	172.59	--	240	4,700	160	52	230	80	
MW-4B	1/20/2016	179.07	5.14	0	173.93	--	ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-5	1/20/2016	169.18	1.42	0	167.76	--	ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-7	1/20/2016	172.11	6.48	0	165.63	--	ND<40	130	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-9A	1/20/2016	173.01	8.47	0	164.54	--	360	7,700	2,400	17	53	14	
MW-9B	1/20/2016	172.78	4.72	0	168.06	--	ND<40	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	
MW-10A	1/20/2016	174.48	8.63	0	165.85	--	990	30,000	9,100	200	960	1,000	
MW-10B	1/20/2016	174.62	6.43	0	168.19	--	300	7,800	1,600	60	240	270	
MW-10S	1/20/2016	175.57	6.13	0	169.44	ND<5,000	ND<40	200	5.6	ND<0.30	15	ND<0.60	
MW-11A	1/20/2016	175.37	4.28	0	171.09	--	930	68,000	10,000	5,500	1,500	11,000	
MW-11B	1/20/2016	174.65	7.71	0	166.94	--	780	35,000	9,400	1,600	880	2,300	
MW-11S	1/20/2016	176.09	3.23	0	172.86	--	ND<40	270	2.6	0.47	1.4	0.86	
QA	1/20/2016	--	--	--	--	--	--	ND<50	ND<0.30	ND<0.30	ND<0.30	ND<0.60	

NOTES:
* TOC and GWE are in feet above mean sea level
Oil and grease analyzed by Environmental Protection Agency (EPA) Method 1664A HEM
TPH-DRO with SGC analyzed by EPA Method 8015B/TPHd
TPH-GRO analyzed by EPA Method 8015B
BTEX analyzed by EPA Method 8020
µg/L = Micrograms per liter
-- = Not available/not sampled
B = Benzene
DTW = Depth to water below TOC
E = Ethylbenzene
ft = Feet
GWE = Groundwater elevation
ID = Identification
LNAPL = Light non-aqueous phase liquid
ND<# = Analyte not detected at or above indicated practical quantitation limit
Q1 = 1st quarter
QA = Trip blank
T = Toluene
TOC = Top of casing
TPH-DRO W/SGC = Total petroleum hydrocarbons-diesel range organics with silica gel cleanup
TPH-GRO = Total petroleum hydrocarbons-gasoline range organics
X = Total xylenes

Table 3
Current Groundwater Analytical Results - Oxygenate Compounds
76 Service Station No. 1156 (351645)
4276 MacArthur Boulevard
Oakland, California

WELL ID	DATE	MTBE (µg/L)	TBA (µg/L)	ETHANOL (µg/L)	EDB (µg/L)	EDC (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
MW-1B	1/20/2016	14	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-2B	1/20/2016	3.8	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-3B	1/20/2016	8.9	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-4B	1/20/2016	1.7	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-5	1/20/2016	2.2	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-7	1/20/2016	120	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-9A	1/20/2016	16	1,300	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-9B	1/20/2016	4.1	ND<10	ND<250	ND<0.50	1.1	ND<0.50	ND<0.50	ND<0.50
MW-10A	1/20/2016	320	ND<50	ND<1,200	ND<2.5	ND<2.5	ND<2.5	ND<2.5	ND<2.5
MW-10B	1/20/2016	51	ND<10	ND<250	ND<0.50	36	ND<0.50	ND<0.50	ND<0.50
MW-10S	1/20/2016	4.4	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
MW-11A	1/20/2016	2,400	ND<500	ND<12,000	ND<25	ND<25	ND<25	ND<25	ND<25
MW-11B	1/20/2016	1,900	ND<250	ND<6,200	ND<12	ND<12	ND<12	ND<12	ND<12
MW-11S	1/20/2016	2.5	ND<10	ND<250	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
QA	1/20/2016	ND<0.50	--	--	--	--	--	--	--

NOTES:

Oxygenate compounds analyzed by Environmental Protection Agency Method 8260B
µg/L = Micrograms per liter
-- = Not sampled
DIPE = Diisopropyl ether
EDB = 1,2-dibromoethane
EDC = 1,2-dichloroethane
ETBE = Ethyl t-butyl ether
ID = Identification
MTBE = Methyl t-butyl ether
ND<# = Analyte not detected at or above indicated practical quantitation limit
QA = Trip blank
TAME = t-amyl methyl ether
TBA = t-butyl alcohol

Appendix A

Agency Correspondence

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

January 7, 2016

Nicole Arceneaux
Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, CA 94583
(*Sent via E-mail to:* *nicole.arceneaux@Chevron.com*)

Ed Ralston
Phillips 66 Company
76 Broadway
Sacramento, CA 95818
(*Sent via E-mail to: Ed.C.Ralston@p66.com*)

Rajan Goswamy
4276 MacArthur Boulevard
Oakland, CA 94619
(Sent via E-mail to: rajgoswamy@sbcglobal.net)

Carole Quick and Lorraine Mudget
10214 SW Stuart Court
Portland, OR 97224-4304

Subject: Feasibility Study Review for Fuel Leak Case No. RO0000409 and GeoTracker Global ID T0600102279, Unocal #1156, 4276 MacArthur Boulevard, Oakland, CA 94619

Dear Ms. Arceneaux, Mr. Ralston, Ms. Quick, Ms. Mudget, and Mr. Goswamy:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site, including the documents entitled, "*Feasibility Study, 76 Service Station No. 1156, 4276 MacArthur Boulevard, Oakland, California*," dated November 10, 2015 (Feasibility Study Report). Based on our review of the Feasibility Study Report, we have the following technical comments. We request that you address the technical comments and submit the reports requested below.

TECHNICAL COMMENTS

1. **Feasibility Study Report Conclusions and Recommendations.** The Feasibility Study Report concludes that multi-phase extraction (MPE) may be a feasible remedial technology; however, the general feasibility of MPE could not be evaluated due to several data gaps. The use of a fixed MPE system was considered unfavorable due to several operational limitations for the site. The operation and monitoring of a mobile MPE system could be used to close data gaps but was not considered because it was assumed that mobile MPE would not produce lasting changes to groundwater concentrations. As a result, monitored natural attenuation was recommended for the site. In order to address data gaps regarding the use of MPE and to evaluate MPE as a remedial alternative for the site, we request that you submit a Work Plan for an MPE pilot test along the northwest property boundary.

2. **Convenience Store Expansion.** Appendix B of the FS Report provides proposed plans to expand the convenience store approximately 10 feet to the northwest. The expansion will cover the area where soil vapor samples SVW-2 and SVW-5 were collected. Total petroleum hydrocarbons as gasoline were detected in soil gas from SVW-2 and SVW-5 at concentrations of 37,000,000 and 240,000,000 micrograms per cubic meter (µg/m^3), respectively. Benzene was detected in soil gas from SVW-2 and SVW-5 at concentrations of 59,000 and 870,000 micrograms per cubic meter (µg/m^3). The concentrations of TPHg and benzene detected in SVW-2 and SVW-5 exceed Environmental Screening Levels for commercial land use by several orders of magnitude. In the Work Plan requested below,

please describe the mitigation measures that will be used to prevent potential vapor intrusion for the convenience store expansion.

3. **Groundwater Sampling.** Groundwater monitoring is to be continued on a semiannual basis. Please present the results in the reports requested below.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACEH ftp site (Attention: Jerry Wickham), and to the State Water Resources Control Board's GeoTracker website according to the following schedule and file-naming convention:

- **March 31, 2016** – Pilot Test Work Plan
  File to be named: WP_R_yyyy-mm-dd RO409

- **April 12, 2016** – Semi-Annual Groundwater Monitoring Report
  File to be named: GWM_R_yyyy-mm-dd RO409

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at jerry.wickham@acgov.org. Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm. If your email address does not appear on the cover page of this notification, ACEH is requesting you provide your email address so that we can correspond with you quickly and efficiently regarding your case.

Sincerely,

Jerry Wickham, California PG 3766, CEG 1177, and CHG 297
Senior Hazardous Materials Specialist

Attachment: Responsible Party(ies) Legal Requirements/Obligations

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Maureen Dorsey, Oakland Veterinary Clinic, 4258 MacArthur Boulevard, Oakland, CA 94619

Chad Roper, AECOM, 1220 Avenida Acaso, Camarillo, CA 93012 (*Sent via E-mail to: chad.roper@aecom.com*)

Jerry Wickham, ACEH (*Sent via E-mail to: jerry.wickham@acgov.org*)
GeoTracker, e-File

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**REVISION DATE:** May 15, 2014
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

Appendix B

Boring Logs

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: P1 /MW1 Plate: APPENDIX

Site: Tosco 76 Service Station 11. Date: 7/16/99

Drill Contractor: Woodward Drlling

Sample Method: Split Spoon Geologist: MARK S. DOCKUM

Drill Rig: B57 Bore Hole Diameter: 6" Signature:

Location: 10 Feet North of Northwestern Corner of Station Registration: R.G. 4412

Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						2 1/2" asphalt	
					CH	Clay, grayish green, very moist, high plasticity	
					SP	Sand, fine-grained, grayish green, moist, no plasticity, black staining	
5	39	253					
					CH	Clay, grayish green, very moist, high plasticity	
10	27	87					
					ML	Silty sand, fine-grained sand, black, very moist, no plasticity, (65% silt, 35% sand)	
						Clay, with some sand, medium-grained, light olive brown, medium plasticity, wet	
15	36	222					
					CL		
20	37	22				sandy clay, strong brown, (40% sand, 60% clay)	
						yellow orange, high plasticity, very moist	
25	33	9					
						Total depth at 26.5 feet. Groundwater encountered at 23'7".	

Casing Diameter: 2" Slot Size: 010 , Sand Size: 2/12 , Grout: Portland I,II

FN: 2235B001

Delta
Consultants

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/17/2010
Drilling Method:	HAS	Hole Diameter:	8"
Sampling Method:	Split Spoon	Hole Depth:	25'
Casing Type:	Sch 40	Well Diameter:	2"
Slot Size:	0.02	Well Depth:	25'
Gravel Pack:	2/12	First Water Depth:	
		Static Water Depth:	
Elevation:		Northing:	Easting:

Boring/Well No: **MW-1B**
Page 1 of 2

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					0				Airknife to 5'
					1				Brown and grayish-sgrren clay
					2				
					3				
					4				
					5				
			299	MW-1B -5	6			CL	Greenish-gray sandy lean clay with gravel, 15% sand, 15%, gravel, strong odor, damp
					7				
					8				
					9				
			173	MW-1B -10	10			CL	Black lean clay with sand, mottled with granular black organic material, 20% sand, strong odor, moist
					11				
					12				
					13				
					14				
			952	MW-1B -15	15			CL	Brown sandy clay, fine-course sand, 35% sand, strong odor, damp
					16				
					17				
					18				
					19				
			19	MW-1B -20	20			CL	Black sandy lean clay with gravel, 30% sand, 10% gravel, strong odor, wet
					21			CL	Brn lean clay with sand, 25% sand, some odor, damp
					22				

Delta
Environmental Consultants, Inc.

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/17/2010
Drilling Method:	HAS	Hole Diameter:	8"
Sampling Method:	Split Spoon	Hole Depth:	25'
Casing Type:	Sch 40	Well Diameter:	2"
Slot Size:	0.02	Well Depth:	25'
Gravel Pack:	2/12	First Water Depth:	23.5'
		Static Water Depth:	
Elevation:		Northing:	Easting:

Boring/Well No: **MW-1B**
Page 2 of 2

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
	▼				23			CL	Brown sandy gravely clay, 25% sand, 10% gravel, saturated, mild odor
					24			CL	Brown sandy clay, 15% samp, mild odor, damp
			44	MW-1B -25	25				Total Depth = 25'
					26				
					27				
					28				
					29				
					30				
					31				
					32				
					33				
					34				
					35				
					36				
					37				
					38				
					39				
					40				
					41				
					42				
					43				
					44				

ERI ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: B2/MW2 Plate: APPENDIX
Site: Tosco 76 Service Station 1156 Date: 7/16/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: 2 Feet EAst of Southernmost Driveway Registration: R.G. 4412
Along MacArthur Boulevard Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						4" asphalt	
						Clay, dark greenish gray, mottled redish orange, some coarse-grained sand, slightly damp, high plasticity, (35% sand, 65% clay)	
5	11	20			CH		
10	18	0				15% fine gravels up to 0.5", 20% sand, medium-grained, damp	
						Silty clay, orange brown, mottled green gray, (35% silt, 65% clay), moist, medium plasticity	
15	21	130			CL		
20	29	20				gravelly clay, light yellowish brown, (40% fine gravel, 60% clay), medium plasticity, very moist, black staining	
		▼					
25	45	18			ML	Sandy clay, trace of silt, yellowish brown, wet, medium plasticity, (35% sand, 15% silt, 50% clay)	
						Total depth at 26.5 feet. Groundwater encountered at 23' 6".	

Casing Diameter: 2" Slot Size: .010 , Sand Size: 2/12 , Grout: Portland I/II

FN: 2235B002

Delta
Consultants

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/16/2010
Drilling Method:	HAS	Hole Diameter:	8"
Sampling Method:	Split Spoon	Hole Depth:	25'
Casing Type:	Sch 40	Well Diameter:	2"
Slot Size:	0.02	Well Depth:	25'
Gravel Pack:	2/12	▼ First Water Depth:	
		▽ Static Water Depth:	

Boring/Well No: **MW-2B**
Page 1 of 2

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					0				Airknife to 5'
					1			CL	Brown and greenish lean clay with sand
					2				
					3				
					4				
					5				
			181	MW-2B -5	6			CL	Light brown/green mottled lean clay with sand, 15% sand, strong odor, damp
					7				
					8				
					9				
					10				
			0	MW-2B -10	11			CH	Greenish fat clay, dense, damp, odor
					12				
					13				
					14				
					15				
			120	MW-2B -15	16			CL	Green lean clay with sand, 15% med-course sand, damp, odor
					17				
					18				
					19				
					20				
			8	MW-2B -20	21			CL	Dark borwn lean clay with sand, 15% sand, fine-med sand, damp, odor
					22				

Delta
Environmental Consultants, Inc.

Project No: C101156	Client: COP	Boring/Well No: **MW-2B**
Logged By: Alan Buehler	Location: Oakland	Page 2 of 2
Driller: Gregg Drilling	Date Drilled: 8/16/2010	
Drilling Method: HAS	Hole Diameter: 8"	
Sampling Method: Split Spoon	Hole Depth: 25'	
Casing Type: Sch 40	Well Diameter: 2"	
Slot Size: 0.02	Well Depth: 25'	
Gravel Pack: 2/12	▼ First Water Depth: 23.5'	
	▽ Static Water Depth:	
Elevation:	Northing:	Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					23				
								CL	Brown lean clay with sand, 25% sand, some gravel, mild odor
					24			CL	Black/brown mottled clay, damp, mild odor
			190	MW-2B -25	25				Total Depth = 25'
					26				
					27				
					28				
					29				
					30				
					31				
					32				
					33				
					34				
					35				
					36				
					37				
					38				
					39				
					40				
					41				
					42				
					43				
					44				

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: B3/MW3 Plate: APPENDIX
Site: Tosco 76 Service Station 1156 Date: 7/16/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: Approximately 15' South West of Southern-most Dispenser Island Parallel to High Street Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft.)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						4 1/2" asphalt	
						Clay, dark yellowish brown, mottled, trace of medium-grained sand, slightly damp, high plasticity, (15% sand, 85% clay)	
5	18	235			CH	brown, mottled gray, dry	
10	33	265				staining, trace of coarse gravel and rootlets (15% gravel, 85% clay), slightly damp	
		▽					
						Sandy clay, greenish gray, mottled, orange, some medium-grained sand, slight plasticity, caliche present, (35% sand, 65% clay)	
15	25	81			CL		
						Clay, strong brown, slight mottling, trace of medium-grained sand, 20% sand, high plasticity, black staining, 80% clay	
20	36	9			CH		
		▼				Gravel, yellowish brown, wet	
					GW		
25	25	0			CH	Clay, trace of medium-grained sand, yellowish brown, very moist, high plasticity, (15% sand)	
					GW	Gravel, orange, slight plasticity, wet	
						Clay, yellowish brown, moist, high plasticity	
30	22	0			CH		
						Total depth at 31.5 feet. Groundwater encountered at 23.3 feet. Static groundwater at 12 feet.	

Casing Diameter: 2" Slot Size: 010 , Sand Size: 2/12 , Grout: Portland I,II

FN: 2235B003

Delta Consultants

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/16/2010
Drilling Method:	HAS	Hole Diameter:	8"
Sampling Method:	Split Spoon	Hole Depth:	25'
Casing Type:	Sch 40	Well Diameter:	2"
Slot Size:	0.02	Well Depth:	25'
Gravel Pack:	2/12	▼ First Water Depth:	
		▽ Static Water Depth:	

Boring/Well No: **MW-3B**

Page 1 of 2

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					0				Airknife to 5'
					1			CL	Brown lean clay with sand, some gravel, no odor
					2				
					3				
					4				
			6	MW-3B -5	5			CL	Light brown/greenish mottled clay, moist, slight odor
					6				
					7				
					8				
					9				
			36	MW-3B -10	10			CH	Light brown/green/black mottled lean clay with sand, 15% fine sand, damp, mild odor
					11				
					12				
					13				
					14				
			790	MW-3B -15	15			CL	Light brown/green mottled lean clay with sand, 20% fine-med sand, damp, strong odor
					16				
					17				
					18				
					19				
			9	MW-3B -20	20			CH	Light brown fat clay, damp, mild odor
					21			CL	Dark brown lean clay with sand, 15% fine sand, damp, mild odor
					22				

Delta
Environmental Consultants, Inc.

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/16/2010
Drilling Meth	HAS	Hole Diameter:	8"
Sampling Method:	Split Spoon	Hole Depth:	25'
Casing Type:	Sch 40	Well Diameter:	2"
Slot Size:	0.02	Well Depth:	25'
Gravel Pack:	2/12	First Water Depth:	23.5'
		Static Water Depth:	

Boring/Well No: **MW-3B**

Elevation: Northing: Easting:

Well Completion: Backfill / Casing	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
			15	MW-3B -25	23–25			CL	Light brown lean clay with sand, 30% fine-med sand, moist, very slight odor Total Depth = 25'

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: B4/MW4 Plate: APPENDIX
Site: Tosco 76 Service Station 1156 Date: 7/16/99
Drill Contractor: Woodward Drilling
Sample Method: Split Spoon Geologist: MARK S. DOCKUM
Drill Rig: B57 Bore Hole Diameter: 8" Signature:
Location: 18 Feet North of Southernmost Dispenser Island Parallel High Street Registration: R.G. 4412
Logged by: Dylan Crouse

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						4 1/2" asphalt	
						Clay, greenish gray, mottled, orange slightly damp, high plasticity	
5	17	309					
10	22	253			CH	trace of medium-grained sand, slightly moist	
15	19	4				moist	
20	28	4				brownish yellow, black staining, 20% gravel, 20% medium-grained sand, moist	
						brown, mottled, olive yellow, moist, black staining	
25	36	0					
						Total depth at 26.5 feet. Groundwater encountered at 23.6 feet.	

Casing Diameter: 2" Slot Size: 010 , Sand Size: 2/12 , Grout: Portland I,II

FN: 2235D004

Delta Consultants

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/13/2010
Drilling Method:	HAS	Hole Diameter:	8"
Sampling Method:	Split Spoon	Hole Depth:	25'
Casing Type:	Sch 40	Well Diameter:	2"
Slot Size:	0.02	Well Depth:	25'
Gravel Pack:	2/12	First Water Depth:	
		Static Water Depth:	
Elevation:		Northing:	Easting:

Boring/Well No: **MW-4B**

Page 1 of 2

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
					1			GC	Airknife to 5' Brown clayey gravel with sand,
					2				
					3				
					4			GW	Well graded gravel with sand, cobbles up to 4"
			2.1	MW-4B -5	5			SW-SM	Greenish gray well graded sand with silt and gravel, 60% sand, 20% gravel, no odor
					6				
					7				
					8				
					9				
			1401	MW-4B -10	10			SW-SM	Black well graded sand with silt, 60% fine sand, strong odor
					11				
					12				
					13				
					14				
			19.5	MW-4B -15	15			CL	Brown/green mottled lean clay with sand, 15% fine sand, some odor
					16				
					17				
					18				
					19				
				MW-4B -20	20			CL	Brown/black mottled sandy lean clay, 30% fine-med sand, some odor
					21				
					22				

Delta
Environmental Consultants, Inc.

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/16/2010
Drilling Meth	HAS	Hole Diameter:	8"
Sampling Method:	Split Spoon	Hole Depth:	25'
Casing Type:	Sch 40	Well Diameter:	2"
Slot Size:	0.02	Well Depth:	25'
Gravel Pack:	2/12	▼ First Water Depth:	23.5'
		▽ Static Water Depth:	

Boring/Well No: **MW-4B**

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
			19	MW-4B -25	25			CL	Brown lean clay, 10% fine-med sand, some odor
									Total Depth = 25'

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: MW5 Plate: Attachment
Site: Tosco 76 Service Station 1156 Date: 8/29/01
Drill Contractor: Woodward Drilling Company, Inc.
Sample Method: Split Spoon Geologist: JOHN B. BOBBITT
Drill Rig: BK-81 Bore Hole Diameter: 8" Signature: JBBobbitt
Location: Eastern side of MacArthur Boulevard Registration: R.G. 4313
approximately 40 feet north of site Logged by: Rob Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" Concrete	
5	23	8.3 ▽			CL	CLAY WITH SAND AND TRACE OF GRAVEL: greenish gray, moist, high plasticity, fine-grained sand, fine-grained poorly-sorted subangular gravel.	
10	27	7.7				SANDY CLAY: orange brown, moist, low plasticity, fine-grained sand.	
15	57	11.2			ML	SANDY SILT: orange brown, moist, low plasticity, fine-grained sand.	
20	30						
25	38	7.7				light brown, wet.	
						Boring Terminated at 25 feet. Boring converted to groundwater monitoring well. Groundwater encountered at 6 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland Cement

FN: 02358005

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: MW6 Plate: Attachment
Site: Tosco 76 Service Station 1156 Date: 8/29/01
Drill Contractor: Woodward Drilling Company, Inc.
Sample Method: Split Spoon Geologist: JOHN B. ROBBITT
Drill Rig: BK-81 Bore Hole Diameter: 8" Signature:
Location: Western side of MacArthur Boulevard Registration: R.G. 4313
approx. 30 feet north of Shell station Logged by: Rob Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" Concrete	
5	24	10.6			ML	CLAYEY SILT: greenish gray, very moist, medium plasticity.	
10	19	10.0				light brown, trace of fine-grained sub-angular sand (approx. 5%).	
15	24	6.0				CLAYEY SILT WITH SAND: light brown, fine-grained sub-angular sand (approx. 15%).	
20	48	7.7			SM	SAND WITH SILT: orange brown, wet, medium-grained well-sorted well-rounded sand.	
25	50/5"					Boring terminated at 25 feet. Boring converted to groundwater monitoring well. Groundwater encountered at 5.5 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland Cement

JN: 2235B008

ENVIRONMENTAL RESOLUTIONS, INC.

Project No.: 2235 Boring: MW7 Plate: Attachment
Site: Tosco 76 Service Station 1156 Date: 8/29/01
Drill Contractor: Woodward Drilling Company, Inc.
Sample Method: Split Spoon Geologist: JOHN B. BOBBITT
Drill Rig: BK-81 Bore Hole Diameter: 8" Signature:
Location: Western side of MacArthur Boulevard Registration: R.G. 4313
approx. 40 feet north of High Street Logged by: Rob Saur

DEPTH (ft)	BLOW COUNTS	PID/OVM (ppm)	SAMPLE	COLUMN	USCS	GEOLOGIC DESCRIPTION	WELL DESIGN
						6" Concrete	
5	50/5"	25				SANDY SILT: brown with bluish green mottling, moist, low plasticity, 40% fine-grained sand.	
10	36	236					
15	35	8.9	▽		ML	light brown, wet.	
20	25	57					
25	50/5"	19.3				reddish brown, 30% medium-grained sand.	
						Boring terminated at 25 feet. Boring converted to groundwater monitoring well. Groundwater encountered at 15 feet.	

Casing Diameter: 2" Slot Size: 0.020 , Sand Size: #3 , Grout: Portland Cement

FN: 2235B007

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Well No: **MW-8**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Boulevard** | Date Drilled: **10/30/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **1** of **2**
Drilling Method: **HSA** | Hole Diameter: **8"**
Sampling Method: **Split Spoon** | Hole Depth: **25'**
Casing Type: **Schedule 40 PVC** | Well Diameter: **2"**
Slot Size: **0.010"** | Well Depth: **25'**
Gravel Pack: **#2/12** | First Water Depth: **23'**

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Elevation | Northing | Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Well Box; Neat Cement	▼			Air-Knife				**Concrete = 6"**
					1–4			**CL** **Silty clay;** black and brown; medium soft; medium to high plasticity; low toughness; trace orange mottling; moist; (0,0,100)
		moist	0.1	@ 5 9:46	5–7			**CL** **Lean clay;** black; medium stiff; medium plasticity and toughness; some fine sand; some fine to medium sub round gravel; moist; no odor; (15,20,65)
		moist	0.2	@ 10* 9:51	8–12			Tan; some orange mottling; trace roots; some black staining; slight odor; (5,15,80)
		moist	0.2	@ 15* 9:56	13–17			**CL** **Sandy clay;** tan; orange mottling; trace roots; trace black staining; medium stiff; medium plasticity and toughness; sand fine grain; moist; no odor; (0,40,60)
		moist	0.2	@ 20* 10:P37	18–20			Soft; medium to high plasticity; low toughness; (0,30,70)
					21–22			**SC**

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Well No: **MW-8**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Boulevard** | Date Drilled: **10/30/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **2** of **2**
Drilling Method: **HSA** | Hole Diameter: **8"**
Sampling Method: **Split Spoon** | Hole Depth: **25'**
Casing Type: **Schdule 40 PVC** | Well Diameter: **2"**
Slot Size: **0.010"** | Well Depth: **25'**
Gravel Pack: **#2/12** | First Water Depth: **23'**

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Elevation | Northing | Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
	▽				23				
					24				SC **Clayey sand;** tan; orange mottling; medium grain; poorly graded; loose; wet; no odor (0,65,35)
					25				
					26				**Total Depth = 25 feet bgs**
					27				
					28				
					29				
					30				
					31				
					32				
					33				
					34				
					35				
					36				
					37				
					38				
					39				
					40				
					41				
					42				
					43				
					44				

Delta Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-1**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **11/6/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **1** of **2**
Drilling Method: **HSA** | Hole Diameter: 4"
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **4'**
Elevation | Northing | Easting

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement	▽			Air-Knife	1			**Asphalt - 6"**
								Fill; tan, with medium gravel; surrounded; no plasticity; high toughness; soft; moist; (45,5,50)
					2			
					3			**Fill;** some clay; brown; gravel medium to coarse; sub rounded; some fine sand; moist
					4			
								@ 4' large rocks; subround; wet; trace fine sand and clay; (90,5,5)
		wet	6.2		5			
					6			CL **Lean clay;** olive green; some fine to medium sand;
		wet	326	@ 7* 8:39	7			some orange mottling; medium stiff; medium plasticity and toughness; wet; strong odor (0,30,70)
		wet	165	@ 8.5 8.42	8			
					9			Some black specs
		wet	221	@ 10 8:45	10			
					11			Some black and red staining
		wet	140	@ 12* 8:48	12			Sand fine to medium grain (0,40,60)
					13			SC **Poorly graded sand with clay;** brown; some olive green mottling and gray staining; sand fine to medium grain; soft; loose; wet; strong odor (0,70,30)
		wet	118	@ 13.5 8:50	14			
		wet	133	@ 15 8:52	15			
					16			Red brown with orange and olive green mottling; medium stiff; (0,50,50)
		wet	419	@ 17 8:56	17			CL **Lean clay;** some fine to medium sand; red brown with orange mottling and black specs; medium plasticity and toughness; medium stiff; wet; strong odor; (0,35,65)
		wet	1056	@ 18.5* 8:58	18			
					19			
		wet	148	@ 20 9:02	20			Stiff; trace medium gravel; sand medium grain; (5,35,60)
					21			
		wet	152	@ 22 9:04	22			Some black staining

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-1**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **11/6/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **2** of **2**
Drilling Method: **HSA** | Hole Diameter: 4"
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **4'**
Elevation | Northing | Easting

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement						23				(5,40,55)
			wet	61.1		24				A lot of black specs, very stiff; sand medium to coarse; low plasticity; high toughness; odor; (5,40,55)
			wet	78.1	@ 25 9:13	25				
						26				Tan; some black specs; trace orange mottling; coarse sand; trace fine gravel; sub angular; very stiff; (5,35,60)
			wet	41.2	@ 27 9:15	27				Red brown with orange mottling; soft; no plasticity; sand fine to medium; crumbles easily; (5,40,55)
			wet	53.9		28				No orange mottling; medium stiff; low plasticity; (0,40,60)
			wet	76.8		29				Stiff; red brown; some tan mottling; a lot of black specs; sand fine grain; trace coarse sand; (0,35,65)
						30				
			wet	38.3		31				Medium stiff; red brown with black specs; medium plasticity and toughness
						32				
			wet	65.8	@ 33.5* 9:32	33				**SC** **Poorly graded sand with clay**; trace fine gravel; sand medium to coarse; red brown and orange; dark red staining; hard but crumbles easily; some black specs; gravel sub angular; wet; odor; (5,65,30)
						34				
						35				**TD = 35 feet bgs**
						36				
						37				
						38				
						39				
						40				
						41				
						42				
						43				
						44				

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-2**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **11/5/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **1** of **2**
Drilling Method: **HSA** | Hole Diameter: **4"**
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **22'**

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Elevation | Northing | Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
								Asphalt - 2"
Neat Cement				Air-Knife	1			**CL** **Lean clay with gravel;** tan; low to medium plasticity; high toughness; stiff; moist; gravel fine to medium; (30,0,70)
					2			
					3			
					4			
		moist	932.0	@ 5 8:43	5			Tan with olive green mottling; medium plasticity and toughness; some silt; trace fine sand; moist; strong odor; (0,10,90)
		moist	1599	@ 7 8:45	6			
					7			Red brown specs; some roots; medium stiff; trace fine gravel; (5,25,70)
		moist	1307	@ 8.5* 8:47	8			
					9			(5,40,55)
		moist	1528	@ 10 8:49	10			**SC** **Clayey sand;** tan and olive green; some red brown mottling; red specs; sand fine to medium medium stiff; crumbles easily; no plasticity; gravel fine grain; moist; strong odor; (15,50,35)
					11			Loose; some black specs; red brown and tan
		moist	1335	@ 12* 8:51	12			**CL** **Lean clay;** red brown; some olive green mottling; stiff; silty; some fine sand; some black specs; low plasticity; high toughness; moist; strong odor; (0,35,65)
		moist	1227	@ 13.5 8:53	13			
					14			Sand fine to medium; trace fine gravel; red brown and tan; some olive green; (5,25,70)
		moist	762	@ 15 8:55	15			
					16			Medium stiff; medium plasticity and toughness; red brown; some olive green; some black specs; (0,35,65)
		moist	308	@ 17 8:57	17			
					18			Red brown; some pink staining; olive green mottling; crumbles easily; some fine gravel; (10,35,55)
		moist	182	@ 18.5 8:59	19			
					20			Red brown; doesn't crumble easily; some fine sand; odor; (0,40,60)
		moist	124	@ 20* 9:04	21			
	▽	wet	228	@ 22 9:06	22			Medium soft; medium sand; trace fine gravel; some black specs; low plasticity; high toughness; (10,40,50)
								SC **Clayey sand;** red brown with orange mottling;

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-2**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **11/5/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **2** of **2**
Drilling Method: **HSA** | Hole Diameter: **4"**
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **22'**
Elevation | Northing | Easting

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement		wet	55.1		23			black specs; silty; sand fine to medium; fine gravel loose; slightly cemented; wet; odor; (15,50,35)
					24			
		wet	51.2	@ 25* 9:30	25			Cemented; very stiff; sand medium grain; red brown; some orange mottling; (5,55,40)
					26			CL **Lean clay;** red brown and tan with orange mottling; some black specs; medium stiff; medium plasticity and toughness; sand fine grain; wet; odor; (0,40,60)
		wet	14.6		27			
					28			
		wet	21.1		29			Red brown with tan mottling
		wet	13.7		30			Black specs; stiff; trace fine gravel; low plasticity; high toughness; (5,35,60)
					31			
		wet	2.3		32			Some pink staining Medium soft; (5,40,55)
					33			
		wet	11.1		34			Red brown with black specs; very stiff; some fine sand; slight odor; (0,30,70)
					35			Medium stiff; (0,20,80)
					36			**TD = 35 feet bgs**
					37			
					38			
					39			
					40			
					41			
					42			
					43			
					44			

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-3**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **11/2/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **1** of **2**
Drilling Method: **HSA** | Hole Diameter: **4"**
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **21'**
Elevation | Northing | Easting

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
								Concrete - 6"
Neat Cement				Air-Knife	1			**CL** **Silty clay;** tannish brown; medium plasticity; medium soft; low to medium toughness; moist; (0,0,100)
					2			
					3			@ 3' lean clay; stiff; medium plasticity; high toughness; moist; (0,0,100)
					4			
		moist	1.1	@ 5 8:54	5			Some black streaks; tan; some red brown specs; some medium sand; no odor; (0,15,85)
		moist	0.7	@ 7* 8:57	6			Some gray streaks; (0,20,80)
		moist	0.4	@ 8.5 9:00	7			Some black specs; some white caliche; trace fine gravel; sand medium to coarse; (5,25,70)
		moist	0.6	@ 10 9:02	8			Tan with red brown mottling
		miost	0.8	@ 12 9:04	9			Red brown with tan; black specs; trace fine gravel; (10,25,65)
		moist	0.6	@ 13.5 9:07	10			A lot of black specs; crumbles easily
		moist	0.6	@ 15* 9:09	11			Very stiff; low plasticity
					12			More sand; some silt; (5,35,60)
		moist	0.8	@ 17 9:11	13			**Silty lean clay;** red brown with tan mottling; soft; some black specs; (0,35,65)
		moist	2.6	@ 18.5 9:15	14			Trace fine gravel; meidum soft; medium palsticity; crumbles easily; silty; (5,40,565)
		wet	36.1	@ 20* 9:21	15			
	▽				16			
		wet	8.8		17			**SC** **Clayey sand;** poorly graded with fine gravel; sand fine to medium; red brown with tan mottling; soft; loose; trace black specs; wet; slight odor; (5,55,40)
					18			
					19			
					20			
					21			
					22			

Delta
Consultants

Project No: **C101156151**
Logged By: **Tabbitha Croy**
Driller: **Gregg Drilling & Testing**
Drilling Method: **HSA**
Sampling Method: **Continuous**
Casing Type: NA
Slot Size: NA
Gravel Pack: NA

Client: **ConocoPhillips**
Location: **4276 MacArthur Blvd**
Oakland, CA
Hole Diameter: **4"**
Hole Depth: **35'**
Well Diameter: NA
Well Depth: NA
First Water Depth: **21'**

Boring No: **SB-3**
Date Drilled: **11/2/07**
Page **2** of **2**

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Elevation | Northing | Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement					23			Breaks easily
		wet	3.7		24			Sand mostly medium grain; trace fine sand; red brown
		wet	1.8	@ 25* 9:48	25			CL **Lean clay with sand;** fine to medium; red brown and tan with orange mottling; some red specs; stiff; low plasticity; high toughness; wet; no odor; (0,35,65)
		wet	1.7		26			
					27			Some black specs; red brown and some tan; medium stiff; trace fine gravel; (5,40,55)
		wet	0.7		28			
					29			Stiff; sand fine grain; tan with red brown mottling; (0,30,70)
		wet	0.5		30			
					31			Tan; some red brown mottling; trace medium sand; very stiff; wet; (0,30,70)
		wet	1.1		32			
					33			Trace gravel; sand medium to fine grain; wet; (5,30,65)
		wet	1.8		34			
					35			A lot of black specs; red brown with tan mottling; sand fine grain; some medium grain; (0,25,75)
					36			
					37			**TD = 35 feet bgs**
					38			
					39			
					40			
					41			
					42			
					43			
					44			

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-4**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **10/30/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **1** of **2**
Drilling Method: **HSA** | Hole Diameter: **4"**
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **17.5'**
Elevation | Northing | Easting

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement /				Air-Knife				**Asphalt - 6"**
					1			**CL** **Lean clay;** tan to olive green; medium plasticity; medium toughness; stiff; moist; some black staining; (0,0,100)
					2			
					3			
					4			
		moist	7.5	@ 5 3:30	5			Very stiff; high toughness; some red specs; trace medium sand; odor; (0,5,95)
		moist	27.5	@ 8* 3:32	6			
		moist	25.3	@ 9 3:35	7			Orange mottling
		moist	11.5	@ 11 3:37	8			Tan some gray staining; stiff
		miost	6.5	@ 13.5* 3:39	9			Tan and red brown; some medium sand; slight odor; (0,25,75)
		moist	5.5	@ 14 3:40	10			Trace fine gravel; (5,30,65)
		moist	0.8	@ 16* 3:43	11			**SC** **Clayey sand;** red brown and tan; slightly cemented but crumbles easily; soft; no plasticity; high toughness; sand medium grain; moist; slight odor; (5,60,30)
	▽	wet	0.7		12			Low plasticity; sand fine to medium; wet; (0,60,40)
		wet	1		13			Trace gray staining
		wet	1.1		14			No plasticity; (0,65,35)
		wet	0.3		15			
					16			
					17			
					18			
					19			
					20			
					21			
					22			

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-4**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **10/30/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **2** of **2**
Drilling Method: **HSA** | Hole Diameter: **4"**
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **17.5'**

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Elevation | Northing | Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement		wet	0.6		23			CL	**Lean clay;** tan to red brown; medium soft; medium plasticity and toughness; some fine sand; moist; no odor; (0,15,85)
		wet	0.6		24–25				With fine to medium sand; some black specs; (0,25,75)
		moist	0.4	@ 27* 4:15	26–27				Olive green and tan; stiff; (0,0,100)
		moist	0.4		28–29				
					30–31				No Recovery
		moist	0.5		32–33				Very stiff; trace fine gravel; some medium sand; low plasticity; high toughness; tan to red brown; (5,20,70)
		moist	0.4		34				(10,30,60)
					35				**TD = 35 feet bgs**
					36–44				

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-5**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **11/1/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **1** of **2**
Drilling Method: **HSA** | Hole Diameter: **4"**
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **18'**
Elevation | Northing | Easting

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery Interval	Soil Type	LITHOLOGY / DESCRIPTION
								Asphalt - 5"
Neat Cement /				Air-Knife	1			**CL** **Lean clay;** olive green; medium stiff; medium plasticity and toughness; some medium sand and trace fine gravel; some gray staining; moist; strong odor; (10,25,65)
					2			
					3			
					4			
		moist	468	@ 5 11:11	5			Trace white caliche; very stiff; low plasticity; high touchness; with medium to coarse sand; trace fine gravel; (10,30,60)
		moist	688	@ 7* 11:19	7			Tan and olive green; some red brown mottling; some medium sand; (0,20,80)
		moist	638	@ 8.5 11:20	8			Low to medium plasticity
		moist	573	@ 10 11:22	9			
					10			
					11			
		miost	623	@ 12* 11:25	12			(0.25,75) Trace fine gravel; low plasticity; meidum soft; (5,25,70)
		moist	570	@ 13.5 11:27	13			Crumbles easily; (5,35,60)
		moist	532	@ 15 11:30	14			Red brown with olive green mottling; stiff; (0,35,65)
					15			
					16			
	▽	moist	157	@ 17* 11:32	17			
					18			
		wet	100		19			**SC** **Clayey sand;** red brown and olive; trace gravel; green; poorly graded; loose; soft; crumbles easily; medium sand; fine gravel; wet; odor; (10,50,40)
		wet	53.6	@ 20 11:41	20			Red brown; soft; sand fine grain; trace fine gravel; black specs; medium plasticity and toughness; wet; odor; (5,50,45)
		wet	57	@ 22* 11:44	21			
					22			

Delta Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-5**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **11/1/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **2** of **2**
Drilling Method: **HSA** | Hole Diameter: **4"**
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **18'**
Elevation | Northing | Easting

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement		wet	51.8		23–24			**CL** **Lean clay;** tan with red brown mottling; black specs; fine sand; medium soft; medium plasticity and toughness; wet; odor; (0,30,70)
		moist	7.3		25			Some fine to medium sand; moist; slight odor
		moist	8.6		26–27			Stiff; (0,15,85) Tan and red brown with some olive green mottling
		moist	11.4		28–29			Medium stiff; (0,35,65)
		wet	16.8	@ 30* 12:07	30			**SC** **Clayey sand;** red brown; some black specs; trace fine gravel; sand medium grain; soft; loose; no plasticity; wet; slight odor; (10,50,40)
		wet	14.1		31–32			Some olive green mottling; medium stiff
		moist	13.5		33–34			**CL** **Lean clay;** light tan to olive green; stiff; some coarse sand; trace black specs; low to medium plasticity; high toughness; moist; odor; (0,15,85)
					35			**TD = 35 feet bgs**
					36–44			

Delta
Consultants

Project No: **C101156151** | Client: **ConocoPhillips** | Boring No: **SB-6**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd** | Date Drilled: **10/31/07**
Driller: **Gregg Drilling & Testing** | **Oakland, CA** | Page **1** of **2**
Drilling Method: **HSA** | Hole Diameter: **4"**
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **17'**

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Elevation | Northing | Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement								**Asphalt - 3"**
				Air-Knife	1			**CL** **Lean clay;** olive green; medium stiff; medium plasticity and toughness; some tan coloring; some medium sand; medium to coarse gravel; moist; slight odor; (15,25,60)
					2			
					3			
					4			
		moist	253	@ 5* 1:02	5			Strong odor
					6			
		moist	47.4	@ 7 1:05	7			Stiff; sand fine to medium grain; (0,20,80)
					8			
		moist	96.9	@ 8.5* 1:07	9			Tan with olive green mottling; (0,25,75)
		moist	33.8	@ 10 1:09	10			Red brown and tan with olive green mottling; (0,30,70)
					11			
		moist	12.7	@ 12* 1:11	12			Low plasticity; high toughness; medium stiff; odor; (0,40,60)
		moist	20.6	@ 13.5 1:14	13			**SC** **Clayey sand;** red brown and tan; black specs; medium soft; slightly cemented but crumbles easily; poorly graded; no plasticity; high toughness; sand fine to medium; moist; odor; (0,55,45)
		moist	21	@ 15* 1:16	14			
					15			Red brown with black specs; (0,70,35)
	▽				16			
		wet	4.1	@ 17* 1:19	17			Olive green and tan; some gray staining; loose; sand medium to coarse; wet; (0,65,35)
					18			**CL** **Lean clay with sand;** red brown with black specs; sand fine grain; medium stiff; medium plasticity and toughness; wet; odor; (0,40,60)
		wet	15		19			
					20			
		wet	3.4		21			Moist; slight odor; (0,30,70)
		moist	1.8		22			With fine to medium gravel; coarse sand; low

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Project No: **C101156151** | Client: **ConocoPhillips**
Logged By: **Tabbitha Croy** | Location: **4276 MacArthur Blvd**
Driller: **Gregg Drilling & Testing** | **Oakland, CA**
Drilling Method: **HSA** | Hole Diameter: **4"**
Sampling Method: **Continuous** | Hole Depth: **35'**
Casing Type: NA | Well Diameter: NA
Slot Size: NA | Well Depth: NA
Gravel Pack: NA | First Water Depth: **17'**

Boring No: **SB-6**
Date Drilled: **10/31/07**
Page **2** of **2**

▽ = First Water
▼ = Static Groundwater
* = Selected for lab analysis

Elevation | Northing | Easting

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement					23			plasticity; high toughness; moist; (15,35,50)
		moist	1.8	@ 24.5 1:30	24			
		moist	1.4		25			Red brown to tan; ;some medium sand; trace fine gravel; stiff; low plasticity; high toughness; moist; no odor; (5,30,65)
		moist	1.1		26			
		moist	0.8		27			Tan; some red brown speca; medium plasticity; (0,10,90)
		moist	0.6	@ 30.5* 1:43	28			Some black specs; medium soft; no plasticity; fine to medium red brown sand; high toughness; (0,25,75)
		moist	0.5		29			
		moist	0.9		30			Dark brown and tan; stiff; some black staining; no odor; (0,40,60)
					31			
					32			Olive green and tan; fine to medium sand; trace fine gravel; very stiff; some black specs but no staining; (5,25,70)
					33			
					34			(0,20,80)
					35			
					36			**TD = 35 feet bgs**
					37			
					38			
					39			
					40			
					41			
					42			
					43			
					44			

Delta Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-7
Logged By: S. Meninger/ C. Morgan	Location: **4276 MacArthur Blvd.** Oakland, California	Date Drilled: 07/09/09
Driller: **Gregg Drilling**		Page **1** of **2**
Drilling Method: Macrocore	Hole Diameter: 3"	▽ = First Water
Sampling Method: Continuous	Hole Depth: 30'	▼ = Static Groundwater
Casing Type: N/A	First Water Depth: 23.5	
Slot Size: N/A	Static Water Depth: 6.21	
Gravel Pack: N/A	Well Depth: N/A	
Elevation	Northing	Easting

Boring Completion: Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement	▼	Moist	3.9 ppm	Air-Knife	1–5			CL	**Lean Clay with Sand;** light olive green to dark brown, stiff, medium plastic, hydrocarbon odor present.
					5–8			CL	**Lean Clay with Sand;** olive green-brown, moist, medium stiff, fine to medium grained sand, strong hydrocarbon odor, visible contamination, low to medium plastic.
			405 ppm		8–9		☒		
					9–12			CL	**Lean Clay with Sand;** same as above
		Moist	6.5 ppm		12–16			CL	**Lean Clay with Sand;** same as above, with increased stiffness; visible contamination, and strong petroleum hydrocarbon odor.
			64.1 ppm		16–17		☒		
					17–20			CL	**Lean Clay with Sand;** brown to red brown, fine to coarse grained sand, low plasticity increased sand content, increasing moisture, slight hydrocarbon odor, stiff.
			6.7 ppm		20–22			CL	**Lean Clay with Sand**; same as above with increasing sand content; very stiff to hard.

Delta
Consultants

Project No: C101156 Client: **ConocoPhillips** Boring No: SB-7
Logged By: S. Meninger/ C. Morgai Location: **4276 MacArthur Blvd.** Date Drilled: 07/09/09
Driller: **Gregg Drilling** Page **2** of 2
Drilling Method: Macrocore Hole Diameter: 3"
Sampling Method: Continuous Hole Depth: 30.0'
Casing Type: N/A First Water Depth: 23.5
Slot Size: N/A Static Water Depth: 6.5'
Gravel Pack: N/A Well Depth: N/A
Elevation Northing Easting

▽ = First Water
▼ = Static Groundwater

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement	▽	Moist / Wet / Moist	0.5 ppm		23		X	CL	**Lean Clay with Sand;** same as above; very strong hydrocarbon odor.
					24			SC	**Clayey Sand;** brown, medium to coarse grained sand with clay, medium dense to dense, moist to wet, some olive green smearing.
					25				
					26			SM	**Silty Sand;** brown, wet, medium to coarse grained, strong hydrocarbon odor.
					27			CL	**Lean Clay with Sand;** brown, low to medium plastic, stiff, hydrocarbon odor.
					28				
					29			SP	**Poorly Graded Sand;** light brown.
					30				**Total Depth of Boring = 30' bgs.**
					31				Soil Sample SB-7@ 7.5-8' collected at 15:05 7/9/2009.
					32				Soil Sample SB-7@ 15.5-16' collected at 15:10 7/9/2009.
					33				Soil Sample SB-7 @ 23-23.5' collected at 15:15 7/9/2009.
					34				
					35				
					36				
					37				
					38				
					39				
					40				
					41				
					42				
					43				
					44				

Delta
Consultants

Project No:	C101156	Client: **ConocoPhillips**	Boring No: SB-8
Logged By:	S. Meninger/ C. Morgan	Location: **4276 MacArthur Blvd.** Oakland, California	Date Drilled: 07/10/09
Driller: **Gregg Drilling**			Page **1** of **1**
Drilling Method:	Macrocore	Hole Diameter: 3"	
Sampling Method:	Continuous	Hole Depth: 8.5'	▽ = First Water
Casing Type:	N/A	First Water Depth: N/A	▼ = Static Groundwater
Slot Size:	N/A	Static Water Depth: N/A	
Gravel Pack:	N/A	Well Depth: N/A	
Elevation		Northing	Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement		Moist		Air-Knife & Hand Augered	1			CL	**Lean Clay with Sand;** thumb to fist sized gravel, with non-native pumice fill and black fines; high petroleum hydrocarbon odor.
					2				
					3				
					4				
					5			GP	**Gravel with Sand;** gray, fine to medium grained with presence of possible compressed asphalt; visible black product; very moist.
		Very Moist	1453 ppm		6				
					7		☒		
					8				
					9				**Total Depth of Boring = 8.5' bgs.** *Note that boring was terminated at 8.5' bgs due to drilling conditions. At 7'bgs drillers indicated a slight resistance was felt on the rig. A sudden push through and drop was then recorded while advancing from 8.0-8.5' bgs, at which point a vibrating feel in the rod was felt.*
					10				
					11				
					12				
					13				Soil sample SB-8 @ 7-7.5' collected at 13:21 7/10/2009.
					14				
					15				
					16				
					17				
					18				
					19				
					20				
					21				
					22				

Delta
Consultants

Project No:	C101156	Client: **ConocoPhillips**	Boring No: SB-9
Logged By:	S. Meninger/ C. Morgan	Location: **4276 MacArthur Blvd.** Oakland, California	Date Drilled: 07/08/09
Driller: **Gregg Drilling**			Page **1** of **2**
Drilling Method:	Macrocore	Hole Diameter: 3"	
Sampling Method:	Continuous	Hole Depth: 26.5'	
Casing Type:	N/A	First Water Depth: 26'	
Slot Size:	N/A	Static Water Depth: 24	
Gravel Pack:	N/A	Well Depth: N/A	
Elevation		Northing	Easting

▽ = First Water

▼ = Static Groundwater

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Air-Knife & Hand Augered	1–5			CL	**Lean clay with sand;** light olive green to bronw, medium plastidty, thick.
			3.6 ppm		6–11			CL	**Lean clay with sand;** same as above with gravel; visible contamination, and mild petroleum hydrocarbon odors.
			2.5 ppm		12–15			CL	**Lean clay with sand;** brown to orange brown, dry, medium plasticity, firm.
					16–19			CL	**Same as above.**
					20–22			CL	**Same as above.**

Delta
Consultants

Project No: C101156
Logged By: S. Meninger/ C. Morgan
Driller: **Gregg Drilling**
Drilling Method: Macrocore
Sampling Method: Continuous
Casing Type: N/A
Slot Size: N/A
Gravel Pack: N/A

Client: **ConocoPhillips**
Location: 4276 MacArthur Blvd.
Oakland, CA
Hole Diameter: 3"
Hole Depth: 26'
First Water Depth: 26'
Static Water Depth: 24'
Well Depth: 26'

Boring No: SB-9
Date Drilled: 07/08/09
Page **2** of 2

▽ = First Water
▼ = Static Groundwater

Elevation | Northing | Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement	▼ ▽				23			CL	**Same as above**, with increased sands.
					24				
					25				
					26		X		
					27				**Total Depth of Boring = 26' bgs.**
					28				Soil Sample SB-9@26' collected @ 18:40 07/08/09.
					29				
					30				
					31				
					32				
					33				
					34				
					35				
					36				
					37				
					38				
					39				
					40				
					41				
					42				
					43				
					44				

Delta Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-10
Logged By: S. Meninger/ C. Morgan	Location: **4276 MacArthur Blvd.** Oakland, California	Date Drilled: 07/08/09
Driller: **Gregg Drilling**		Page **1** of **2**
Drilling Method: Macrocore	Hole Diameter: 3"	
Sampling Method: Continuous	Hole Depth: 23'	▽ = First Water
Casing Type: N/A	First Water Depth: 16	▼ = Static Groundwater
Slot Size: N/A	Static Water Depth: 6.21	
Gravel Pack: N/A	Well Depth: N/A	
Elevation	Northing	Easting

Boring Completion	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Backfill / Neat Cement		Moisture Content		Air-Knife & Hand Augered					
		Moist			1			CL	**Lean clay with sand;** oilve green to brown, medium plastic, medium stiff, mild hydrocarbon odor; possible fill material.
					2				
					3				
					4				
					5			GP	**Gravel with Sand;** gray, fine to medium gravel with fine to medium grained sand, loose, wet, fill material from former UST pit, no odor.
		Wet- Perched water in former UST pit.	1.8 ppm		6				
					7				
					8				
					9				
					10			SP	**Poorly Graded Sand with Gravel;** gray to dark gray, fine to medium grained sand, loose, wet, very strong hydrocarbon odor.
					11				
			899 ppm		12		☒	CL	**Lean Clay with Sand;** Olive green to brown, medium stiff, low to medium plastic, moist, slight hydrocarbon odor, visible contamination, ...
		Moist			13				
					14				
					15				
	▽		7.6 ppm		16				
					17			SC	**Clayey Sand;** Dark gray, loose, wet, fine to medium grained sand, very strong hydrocarbon odor, visible contamination, trace fine gravel.
			545 ppm		18		☒		
		Moist			19				
			6.6 ppm		20			CL	**Lean Clay with Sand;** brown with olive green mottling, stiff, low to medium plastic, fine to coarse grained sand, slight odor, trace fine gravel.
					21				
					22				

Delta
Consultants

Project No: C101156
Logged By: S. Meninger/ C. Morgan
Driller: **Gregg Drilling**
Drilling Method: Macrocore
Sampling Method: Continuous
Casing Type: N/A
Slot Size: N/A
Gravel Pack: N/A

Client: **ConocoPhillips**
Location: 4276 MacArthur Blvd.
Oakland, California
Hole Diameter: 3"
Hole Depth: 28'
First Water Depth: 16'
Static Water Depth: 28'
Well Depth: N/A

Boring No: SB-10
Date Drilled:
Page **2** of 2

▽ = First Water
▼ = Static Groundwater

Elevation | Northing | Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement	▼	moist	1.1 ppm		23		☒	CL	**Same as above**, with increased sands.
					24				
					25				
					26				
					27				**Total Depth of Boring =**
					28				Soil Sample SB-10@ 12-12.5' collected at 7:55 07/10/09.
					29				Soil Sample SB-10@ 18-18.5' collected at 8:00 07/10/09.
					30				Soil Sample SB-10@ 22.5-23' collected at 8:05 07/10/09.
					31				
					32				
					33				
					34				
					35				
					36				
					37				
					38				
					39				
					40				
					41				
					42				
					43				
					44				

Delta Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-11
Logged By: S. Meninger/ C. Morgan	Location: **4276 MacArthur Blvd.** Oakland, California	Date Drilled: 07/10/09
Driller: **Gregg Drilling**		Page **1** of **2**
Drilling Method: Macrocore	Hole Diameter: 3"	
Sampling Method: Continuous	Hole Depth: 44'	▽ = First Water
Casing Type: N/A	First Water Depth: 42'	▼ = Static Groundwater
Slot Size: N/A	Static Water Depth:N/A	
Gravel Pack: N/A	Well Depth: N/A	
Elevation	Northing	Easting

Boring Completion: Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Air-Knife & Hand Augered	0			CL	**Lean clay with sand;** light olive green to brown, medium stiff to stiff, low to medium plasticity.
					1				
					2				
					3				
					4				
					5				
					6			CL	**Lean clay with sand;** olive green, gray, brown; fine to medium coarse grained sand; trace fine to medium grained gravel; low plasticity; moist; strong hydrocarbon odor.
					7				
			405 ppm		8		X		
					9			CL	**Lean clay with sand;** entirely green in color, very stiff to hard.
			6.8 ppm		10				
					11				
			16.7 ppm		12			CL	**Lean clay with sand;** brown and olive green, moist, very stiff to hard, very strong hydrocarbon odor, low to medium plastic.
					13				
					14				
					15				
			108 ppm		16		X	CL	**Lean clay with sand;** decreasing sand content, medium to high plasticity, increasing moisture, slight hydrocarbon odor, very stiff to hard, trace fine gravel, visible contamination. *Driller reports very hard direct pushing.
					17				
					18				
					19				
			12.1 ppm		20			CL	**Lean clay with sand;** brown with green mottling, medium plastic, trace fine gravel, slight odor, increasing mositure.
					21				
					22				

Delta Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-11
Logged By: S. Meninger/ C. Morgan	Location: **4276 MacArthur Blvd.**	Date Drilled: 07/10/09
Driller: **Gregg Drilling**	**Oakland, CA**	Page **2** of 2
Drilling Method: Macrocore	Hole Diameter: 3"	
Sampling Method: Continuous	Hole Depth: 44'	▽ = First Water
Casing Type: N/A	First Water Depth: 42'	▼ = Static Groundwater
Slot Size: N/A	Static Water Depth: N/A	
Gravel Pack: N/A	Well Depth: N/A	
Elevation	Northing	Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement		Wet	5.8 ppm		23			CL	**Poorly graded sand;** brown, wet, no odor. Wetness in small portion-Not first water.
					24				
					25			CL	**Same as above;** less visible contamination, increasing sand content.
					26				
					27				
			6.7 ppm		28			CL	**Lean clay with sand;** brownand olive green, increasing moisture, less visible contamination.
					29				
					30				
					31				
			6.8 ppm		32			CL	**Same as above;** increasing sand content, visible contamination, red brown.
					33				
					34				
					35				
			5.7 ppm		36			CL	**Same as above;** increasing moisture conent.
					37				
					38				
					39				
			7.5 ppm		40				
		▽			41		☒	CL	**Same as above;** wet.
					42				
					43				
					44				**Total Depth of Boring = 44' bgs.** SB-11 samples collected at 10:50, 10:55 & 11:00

Delta
Consultants

Project No: C101156
Logged By: A.Buehler
Driller: **Gregg Drilling**
Drilling Method: Sonic
Sampling Method:
Casing Type:
Slot Size:
Gravel Pack:

Client: **ConocoPhillips**
Location: **4276 MacArthur Blvd.**
Oakland, CA
Hole Diameter:
Hole Depth:
First Water Depth:
Static Water Depth:
Well Depth:

Boring No: SB-12
Date Drilled: 06/14/10
Page **1** of **3**

▽ = First Water
▼ = Static Groundwater

Elevation | Northing | Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Hand Augered	1–5				
			5.2	SB-12 @ 12 9:44	6–9			CL	Sandy lean clay with gravel; brown with visible green contamination; moist.
			30.1	SB-12 @ 10 9:58	10–14			CL	Sandy lean clay clay; light brown; wet.
			NA	SB-12 @ 15 10:25	15–19			CL	Same as above. Saturated.
			64.7	SB-12 @ 20 10:36	20–22			CL	Sandy lean clay; brown; moist.

Delta
Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-12
Logged By: A. Buehler	Location: **4276 MacArthur Blvd.**	Date Drilled:
Driller: **Gregg Drilling**	Oakland, CA	Page **2** of 3
Drilling Method: Sonic	Hole Diameter:	
Sampling Method:	Hole Depth:	
Casing Type:	First Water Depth:	
Slot Size:	Static Water Depth:	
Gravel Pack:	Well Depth:	
Elevation	Northing	Easting

▽ = First Water

▼ = Static Groundwater

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement					23				
					24				
					25				
			10.2	SB-12 @ 26 10:45	26			CL	Same as above, very stiff with large gravel
					27				
					28				
					29				
			NA	SB-12 @ 30 10:47	30			CL	Same as above; damp.
					31				
					32				
					33				
					34				
			3.5	SB-12 @ 35 10:58	35			CL	Same as above.
					36				
					37				
					38				
					39				
					40				No recovery.
			5.6	SB-12 @ 41 11:42	41			CL	Sandy clay; <10% sands; brown; moist; slight odor.
					42				
					43				
					44				

Delta
Consultants

Project No: C101156
Logged By: A. Buehler
Driller: **Gregg Drilling**
Drilling Method: Sonic
Sampling Method:
Casing Type:
Slot Size:
Gravel Pack:

Client: **ConocoPhillips**
Location: **4276 MacArthur Blvd.**
Oakland, CA
Hole Diameter:
Hole Depth:
First Water Depth:
Static Water Depth:
Well Depth:

Boring No: SB-12
Date Drilled:

▽ = First Water
▼ = Static Groundwater

Elevation	Northing	Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement			NA	SB-12 @ 45 11:45	45			CL	Same as above with 20% gravel; 10% sand; damp.
					46				Sandy clay; light brown; 20% sand, no odor.
					47				
					48				
					49				
					50			CL	Same as above, with 15% gravel and 15% sand.
			3.3	SB-12 @ 50 11:54					**Boring terminated at 50 feet bgs.**
					51				
					52				
					53				
					54				
					55				
					56				
					57				
					58				
					59				
					60				
					61				
					62				
					63				
					64				
					65				
					66				

Delta
Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-13
Logged By: A.Buehler	Location: **4276 MacArthur Blvd.** Oakland, CA	Date Drilled: 06/18/10
Driller: **Gregg Drilling**		Page **1** of **1**
Drilling Method: Sonic	Hole Diameter:	
Sampling Method:	Hole Depth:	▽ = First Water
Casing Type:	First Water Depth:	▼ = Static Groundwater
Slot Size:	Static Water Depth:	
Gravel Pack:	Well Depth:	
Elevation	Northing	Easting

Boring Completion (Backfill)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Hand Augered SB-13 @ 6 8:45	1–22				Black, sandy, granular, tar-like material, very strong odor **Boring terminated at 6 feet bgs due to refusal.**

Delta
Consultants

Project No: C101156
Logged By: C. Morgan
Driller: **Gregg Drilling**
Drilling Method: Sonic
Sampling Method:
Casing Type:
Slot Size:
Gravel Pack:

Client: **ConocoPhillips**
Location: **4276 MacArthur Blvd.**
Oakland, CA
Hole Diameter: 3"
Hole Depth:
First Water Depth:
Static Water Depth:
Well Depth:

Boring No: SB-14
Date Drilled: 06/17/10
Page **1** of **3**

▽ = First Water
▼ = Static Groundwater

Elevation	Northing	Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Hand Augered	1			CL	Clay; green, visible contamination; with some tan, black and white gravel.
					2				
					3				
					4				
					5				
					6				
					7				
			3335	SB-14 @ 8 11:50	8			CL	Lean Clay with sand; gray with visible green contamination, strong odor; moist.
					9				
			5553	SB-14 @ 10 11:50	10				
					11				
					12				
					13				
					14				
			107.5	SB-14 @15 11:54	15			CL	Same as above, with small coarse grained white and tan gravel at 16.5 to 18 feet bgs; moist.
					16				
					17				
					18				
					19				
	▽		11.2	SB-14 @ 20 12:01	20			CL	Same as above, with increased fines at 21 feet bgs.
					21				Same as above, with continued increased fines; gravel also present.
					22			GC	Clayey Gravel with sand, thumb-sized white

Delta
Consultants

Project No: C101156
Logged By: C.Morgan
Driller: **Gregg Drilling**
Drilling Method:
Sampling Method:
Casing Type:
Slot Size:
Gravel Pack:

Client: **ConocoPhillips**
Location: **4276 MacArthur Blvd.**
Oakland, CA
Hole Diameter:
Hole Depth:
First Water Depth:
Static Water Depth:
Well Depth:

Boring No: SB-14
Date Drilled: 06/17/10
Page **2** of 3

▽ = First Water
▼ = Static Groundwater

Elevation | Northing | Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement					23				rock present; less odor then at previous depths.
					24				
					25				
			11.9	SB-14 @ 26 12:07	26			CH	Sandy fat clay with gravel; gray, tan, moist.
					27				
					28				
					29				
			NA	SB-14 @ 30 12:07	30			CH	Same as above.
					31				
					32				
					33				
					34				
			10.5	SB-14 @ 35 12:16	35			CL	Lean clay; light brown to tan; some small grained gravel; firm; slight odor; moist.
					36				
					37				
					38				
					39				
			18.5	SB-14 @ 40 12:22	40			CL	Same as above, with increased moisture and softness.
					41				
					42				
					43				
					44				

Delta
Consultants

Project No: C101156
Logged By: C.Morgan
Driller: **Gregg Drilling**
Drilling Method:
Sampling Method:
Casing Type:
Slot Size:
Gravel Pack:

Client: **ConocoPhillips**
Location: **4276 MacArthur Blvd.**
Oakland, CA
Hole Diameter:
Hole Depth:
First Water Depth:
Static Water Depth:
Well Depth:

Boring No: SB-14
Date Drilled: 06/17/10

▽ = First Water
▼ = Static Groundwater

Elevation | Northing | Easting

Boring Completion	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Backfill: Neat Cement	▽		14.5	SB-14 @45 12:28	45			CL	*Possible second water bearing zone.* Sandy lean clay with silt to 48 feet bgs, then clay with sand and gravel to bottom of boring.
					46				
					47				
					48				
					49				
			10.6	SB-14 @ 50 12:28	50				**Boring terminated at 50.5 feet bgs.**
					51				
					52				
					53				
					54				
					55				
					56				
					57				
					58				
					59				
					60				
					61				
					62				
					63				
					64				
					65				
					66				

Delta
Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-15
Logged By: C. Morgan	Location: 4276 MacArthur Blvd.	Date Drilled: 06/17/10
Driller: **Gregg Drilling**	Oakland, CA	Page **1** of **2**
Drilling Method: Sonic	Hole Diameter: 3"	
Sampling Method:	Hole Depth:	▽ = First Water
Casing Type:	First Water Depth:	▼ = Static Groundwater
Slot Size:	Static Water Depth:	
Gravel Pack:	Well Depth:	
Elevation	Northing	Easting

Boring Completion (Backfill)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Hand Augered	1				Sandy gravel; brown.
					2				
					3				
					4				
			14.8	SB-15 @ 5 2:01	5			CH	Tight fat clay, with fine grained sand; at approx 8 feet bgs, color had orange mottling, otherwise constant lithology to 11.5 feet.
					6				
					7				
					8				
					9				
			24.4	SB-15 @ 10 2:01	10				
					11				
					12				
					13				
					14				
			6.3	SB-15 @ 15 2:04	15			CH	Same as above to 16 feet bgs.
					16			CL	Sandy lean clay; fine grained; increased moisture.
	▽				17				
					18			GC	Sandy gravel with clay from 17.5 to 18 feet; moist-saturated.
					19				
					20				
			12.3	SB-15 @ 21 2:10	21			GC	Same as above, with thumb-sized, angular to subangular gravel.
					22				

Delta
Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-15
Logged By: C.Morgan	Location: **4276 MacArthur Blvd.**	Date Drilled: 06/17/10
Driller: **Gregg Drilling**	**Oakland, CA**	Page **2** of 2
Drilling Method:	Hole Diameter:	
Sampling Method:	Hole Depth:	
Casing Type:	First Water Depth:	
Slot Size:	Static Water Depth:	
Gravel Pack:	Well Depth:	
Elevation	Northing	Easting

▽ = First Water

▼ = Static Groundwater

Boring Completion (Backfill)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement					23				
					24				
					25				
					26				
			10.9	SB-15 @ 26.5 2:18	27			GC	Same as above.
					28			CL	Sandy lean clay with with gravel, fine grained sands and gravel, more saturated (saturation due to sluff during drilling)
			5.2	SB-15 @ 30 2:18	30				
					31				
					32				
					33				
					34				
			10.7	SB-15 @ 35 2:24	35			CL	Same as above, moist.
					36				
					37				
					38				
					39				
			2.6	SB-15 @ 40 2:40	40			CL	Same as above.
					41				**Boring teminated at 41 ft due to refusal.**
					42				
					43				
					44				

Delta
Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-16
Logged By: A. Buehler	Location: **4276 Mac Arthur Blvd.**	Date Drilled: 6/17/10
Driller: **Gregg Drilling**	**Oakland, CA**	Page **1** of
Drilling Method: Sonic	Hole Diameter: 3"	
Sampling Method: Direct Push	Hole Depth: 5.5'	▽ = First Water
Casing Type:	First Water Depth:	▼ = Static Groundwater
Slot Size:	Static Water Depth:	
Gravel Pack:	Well Depth:	
Elevation	Northing	Easting

Boring Completion: Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample: Recovery	Sample: Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Air-Knife	1				
					2				
					3				
					4				
			53.4		5				
					6				
					7				
		moist		SB-16 @ 8' 12:46	8			CL	Lean clay; brown with green mottling, 5% sand, moist, strong odor.
		moist	90.1	SB-16 @ 10'	9				
					10				
		moist		10:49	11				
					12			CL	Lean clay; light brown, <5% fine grained sand, very dense/firm, moist, strong odor.
					13				
					14				
			13.7	SB-16 @ 15' 12:55	15			CL	Same as above, with light brown and orange mottling to 16 feet bgs.
					16				
					17				
					18			CL	Same as above to 21 feet bgs.
					19				
					20				
			12.0	SB-16 @ 20' 1:00	21			GC	Clayey gravel with sand, bown, wet
					22				

Delta
Consultants

Project No: C101156
Logged By: A. Buehler
Driller: **Gregg Drilling**
Drilling Method: Sonic
Sampling Method: Direct Push
Casing Type:
Slot Size:
Gravel Pack:

Client: **ConocoPhillips**
Location: **4276 Mac Arthur Blvd.**
Oakland, CA
Hole Diameter: 3"
Hole Depth: 5.5'
First Water Depth:
Static Water Depth:
Well Depth:

Boring No: SB-16
Date Drilled: 6/17/10
Page 2 of **3**

▽ = First Water
▼ = Static Groundwater

Elevation | Northing | Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement					23			CL	Sandy Lean clay, brown, 15% sand, damp
					24				
					25			CL	Sandy lean clay; brown, wet. At 25' bgs, clay contains more gravels, and is more firm, damp.
			9.3	SB-16 @ 25' 1:10	26				
					27				
					28				
					29				
			12.3	SB-16 @ 30' 1:10	30				
					31				
					32				
					33				
					34			CL	Sandy lean clay with gravel; brown and some orange mottling; <5% gravel and <15% sand, damp.
			7.7	SB-16 @ 34' 1:25	35				
					36				
					37				
					38				
					39			CL	Same as above.
			12.2	B-16 @ 40' 1:37	40				
					41				
					42				
					43				
					44				

Delta
Consultants

Project No: C101156
Logged By: A. Buehler
Driller: **Gregg Drilling**
Drilling Method: Sonic
Sampling Method: Direct Push
Casing Type:
Slot Size:
Gravel Pack:

Client: **ConocoPhillips**
Location: **4276 Mac Arthur Blvd.**
Oakland, CA
Hole Diameter: 3"
Hole Depth: 5.5'
First Water Depth:
Static Water Depth:
Well Depth:

Boring No: SB-16
Date Drilled: 6/17/10
Page 3 of **3**

▽ = First Water
▼ = Static Groundwater

Elevation | Northing | Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement			11.5	SB-16 @ 46' 1:46	45–46			CL	Clay; brown with <5% coarse grained sand very dense; moist.
					47–48			CL	Clay; tan with orange mottling <10% sand with some gravel; moist; very dense/firm.
			8.3	SB-16 @ 50' 1:48	49–50				Boring Terminated @ 50' bgs.
					51–66				

Delta
Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-17
Logged By: C. Morgan	Location: **4276 Mac Arthur Blvd.**	Date Drilled: 06/16/10
Driller: **Gregg Drilling**	**Oakland, California**	Page **1** of **3**
Drilling Method: Sonic	Hole Diameter: 3"	
Sampling Method: Direct Push	Hole Depth:	▽ = First Water
Casing Type:	First Water Depth:	▼ = Static Groundwater
Slot Size:	Static Water Depth:	
Gravel Pack:	Well Depth:	
Elevation	Northing	Easting

Boring Completion (Backfill)	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Hand Augered	1–4				
			259.0	SB-17 @ 5 10:25	5–7			CL	Sandy lean clay; gray with visible green contamination; trace ammount of wood chips and coarse grained sand, pea to thumb sized gravel from 6-8 feet bgs.
					8–9			CL	Same as above, however sand becomes fine grained. Clay has more tan and orange coloring with hints of green contamination. Strong petroleum hydrocarbon odor.
			239.0	SB-17 @ 10 10:28	10–12				
					13–14			CL	Sandy lean clay with gravel, pea to thumb sized gravel, green and gray, moist, strong hydrocarbon odor.
			19.4	SB-17 @ 15 10:30	15–17			CL	Lean Clay with sand; tan, orange and some white and red mottling; more firm, and more coarse grained sand; moist.
					18–19			CL	Sandy lean clay with gravel, green, and white trace roots; rounded to subrounded, thumb sized gravel, very moist.
	▽		79.4	SB-17 @ 20 10:11	20–22			CL	Same as above, however sandy clay becomes orange to tan; still very moist.

Delta
Consultants

Project No: C101156
Logged By: C. Morgan
Driller: **Gregg Drilling**
Drilling Method: Sonic
Sampling Method: Direct Push
Casing Type:
Slot Size:
Gravel Pack:

Client: **ConocoPhillips**
Location: **4276 Mac Arthur Blvd.**
Oakland, California
Hole Diameter: 3"
Hole Depth:
First Water Depth:
Static Water Depth:
Well Depth:

Boring No: SB-17
Date Drilled: 06/16/10

▽ = First Water
▼ = Static Groundwater

Elevation | Northing | Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement					23			CL	Same as above, with increased firmness.
					24				
					25				
			NA	SB-17 @ 25 10:17	26				
					27				
					28				
					29				
					30			CL	Same as above.
			12.5	SB-17 @ 30 10:20	31				
					32				
					33				
					34				
					35			CL	Same as above.
			3.8	SB-17 @ 35 10:24	36				
					37				
					38				
					39				
					40			CL	Same as above.
			10.5	SB-17 @ 40 10:44	41				
					42				
					43				
					44				

Delta
Consultants

Project No: C101156
Logged By: C. Morgan
Driller: **Gregg Drilling**
Drilling Method: Sonic
Sampling Method: Direct Push
Casing Type:
Slot Size:
Gravel Pack:

Client: **ConocoPhillips**
Location: **4276 Mac Arthur Blvd.**
Oakland, California
Hole Diameter: 3"
Hole Depth:
First Water Depth:
Static Water Depth:
Well Depth:

Boring No: SB-17
Date Drilled: 06/16/10
Page 3 of **3**

▽ = First Water
▼ = Static Groundwater

Elevation | Northing | Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement					45				
					46				
			36	SB-17 @ 47 11:02	47			CL	same as above.
					48				
					49				
			9.2	SB-17 @ 50 11:03	50				
									Boring terminated at 50.5 feet bgs.
					51				
					52				
					53				
					54				
					55				
					56				
					57				
					58				
					59				
					60				
					61				
					62				
					63				
					64				
					65				
					66				

Delta
Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-18
Logged By: C. Morgan	Location: **4276 MacArthur Blvd.**	Date Drilled: 06/14/10
Driller: **Gregg Drilling**	**Oakland, California**	Page **1** of **1**
Drilling Method: Sonic	Hole Diameter:	
Sampling Method:	Hole Depth:	▽ = First Water
Casing Type:	First Water Depth:	▼ = Static Groundwater
Slot Size:	Static Water Depth:	
Gravel Pack:	Well Depth:	
Elevation	Northing	Easting

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Hand Augered	1–5				
			12.5	SB-18 @ 7.5 3:05	8			CL	Fat clay, gray and green, some thumb sized white gravel/rock, moist.
			25.1	SB-18 @ 10 3:13	10				
			476.0	SB-18 @ 15 3:19	15			SM	Fine grained silty sand; black, saturated, very strong odor
					16			CH	Fat clay with sand, tan and gray, visible contamination.
					18				Clay with silt and sand; tan to gray; increased moisture; fine grained sand more abundant in bottom of sample with tan and
			11.1	SB-18 @ 20 3:26	20			CL	orange coloring.
									Boring terminated at 20 feet bgs.

Delta
Consultants

Project No: C101156	Client: **ConocoPhillips**	Boring No: SB-19
Logged By: C. Morgan	Location: **4276 MacArthur Blvd.**	Date Drilled: 06/15/10
Driller: **Gregg Drilling**	**Oakland, California**	Page **1** of **1**
Drilling Method: Sonic	Hole Diameter: 3"	
Sampling Method:	Hole Depth: 20'	
Casing Type:	First Water Depth:	
Slot Size:	Static Water Depth:	
Gravel Pack:	Well Depth:	
Elevation	Northing	Easting

▽ = First Water

▼ = Static Groundwater

Boring Completion / Backfill	Static Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Analyzed	Soil Type	LITHOLOGY / DESCRIPTION
Neat Cement				Hand Augered	1–5				
			33.7	SB-19 @ 7.5 2:30	8			CL	Lean clay; gray with visible green contamination, some gravel.
			26.9	SB-19 @ 10 2:30	10			CL	Same as above.
			55.3	SB-19 @15 2:30	15			CL	Sandy lean clay; light brown to tan; some green contamination present; very firm; moist.
			58.4	SB-19 @20 2:52	19–20			CH	Fat clay with gravel; gray and some orange increased moisture; slight odor.
					20				**Boring terminated at 20 feet bgs.**

Delta Consultants

Project No: **C101156203**	Client: **ConocoPhillips**	**Boring: SV-1**
Logged By: **S. Meninger/C. Morgan**	Location: **Oakland, CA**	Page 1 of 1
Driller: **Gregg**	Date Drilled: **7/7/2009**	Location Map
Drilling Method: **Hand Auger**	Hole Diameter: **3.5"**	
Sampling Method: **Hand Drive**	Hole Depth: **5'**	
Casing Type: **N/A**	Well Diameter: **N/A**	
Slot Size: **N/A**	Well Depth: **N/A**	
Gravel Pack: **3.5' - 5'**	First Water Depth: **N/A**	
	Static Water Depth: **N/A**	

Well Completion (Backfill)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Asphalt / Bent. Grout		Moist			1			SM	**Sand with Gravel (SM)** - Possible fill material, brown to red brown, moist, medium dense to dense, medium to coarse sand
					2				
Bent. Chips					3			SM	**Silty Sand (SM)** - Light brown, moist, medium dense, fine to coarse grained sand
#2/12 Sand		Moist		SV-1-S	4				
					5				Boring Terminated at 5' bgs.
					6				Groundwater Not Enountered
					7				Soil Sample SV-1-S collected at 10:15 7/7/2009
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				
					21				
					22				

Delta
Consultants

Project No: **C101156203**
Logged By: **S. Meninger/C. Morgan**
Driller: **Gregg**
Drilling Method: **Hand Auger**
Sampling Method: **Hand Drive**
Casing Type: **N/A**
Slot Size: **N/A**
Gravel Pack: **3' - 4'**

Client: **ConocoPhillips**
Location: **Oakland, CA**
Date Drilled: **7/7/2009**
Hole Diameter: **3.5"**
Hole Depth: **5'**
Well Diameter: **N/A**
Well Depth: **N/A**
First Water Depth: **N/A**
Static Water Depth: **N/A**

Boring: SV-2
Page 1 of 1

Location Map

Well Completion (Backfill)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Asphalt / Bent. Grout / Bent. Chips / #2/12 Sand		Moist / Moist		SV-2-S	1–4			SM	**Silty Sand with Gravel (SM)** - Brown, moist, medium dense, no odor, fine to coarse sand, well graded fine to medium grained gravel
					4				Boring Terminated at 4' bgs.
					5				Groundwater Not Enountered
					6				Soil Sample SV-2-S collected at 14:05 7/7/2009
					7–22				

Delta
Consultants

Project No: **C101156203**
Logged By: **S. Meninger/C. Morgan**
Driller: **Gregg**
Drilling Method: **Hand Auger**
Sampling Method: **Hand Drive**
Casing Type: **N/A**
Slot Size: **N/A**
Gravel Pack: **3.5' - 5'**

Client: **ConocoPhillips**
Location: **Oakland, CA**
Date Drilled: **7/7/2009**
Hole Diameter: **3.5"**
Hole Depth: **5'**
Well Diameter: **N/A**
Well Depth: **N/A**
First Water Depth: **N/A**
Static Water Depth: **N/A**

Boring: SV-3
Page 1 of 1

Location Map

Well Completion (Backfill)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Asphalt / Bent. Grout		Moist	17.2		1			SM	**Silty Sand with Gravel (SM)** - Dark brown, medium dense, moist, no odor, fine to medium grained sand, possible fill material
					2				
Bent. Chips					3			CL	**Lean Clay with Sand (CL)** - Dark brown, moist, medium plastic, stiff, hydrocarbon odor, lenses of olive green
#2/12 Sand		Moist	78.9	SV-3-S	4				
					5				Boring Terminated at 5' bgs.
					6				Groundwater Not Enountered
					7				Soil Sample SV-3-S collected at 13:25 7/7/2009
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				
					21				
					22				

Delta
Consultants

Project No: **C101156203**
Logged By: **S. Meninger/C. Morgan**
Driller: **Gregg**
Drilling Method: **Hand Auger**
Sampling Method: **Hand Drive**
Casing Type: **N/A**
Slot Size: **N/A**
Gravel Pack: **3.5' - 5'**

Client: **ConocoPhillips**
Location: **Oakland, CA**
Date Drilled: **7/7/2009**
Hole Diameter: **3.5"**
Hole Depth: **5'**
Well Diameter: **N/A**
Well Depth: **N/A**
First Water Depth: **N/A**
Static Water Depth: **N/A**

Boring: SV-4
Page 1 of 1

Location Map

Well Completion (Backfill)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Asphalt / Bent. Grout		Moist	14.8		1			CL	**Lean Clay (CL)** - Dark brown with black mottling, moist, stiff, medium plastic
					2				
Bent. Chips / #2/12 Sand		Moist	21.6		3			CL	**Sandy Lean Clay (CL)** - Dark olive green to black, moist, medium stiff, medium plastic, slight hydrocarbon odor
					4				
				SV-4-S	5			ML	**Clayey Silt (ML)** - light brown with black mottling, moist, very dense, non-plastic
					6				Boring Terminated at 5' bgs.
					7				Groundwater Not Enountered
					8				Soil Sample SV-4-S collected at 12:40 7/7/2009
					9				
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				
					21				
					22				

Delta
Consultants

Project No: **C101156203**
Logged By: **S. Meninger/C. Morgan**
Driller: **Gregg**
Drilling Method: **Hand Auger**
Sampling Method: **Hand Drive**
Casing Type: **N/A**
Slot Size: **N/A**
Gravel Pack: **3.5' - 5'**

Client: **ConocoPhillips**
Location: **Oakland, CA**
Date Drilled: **7/7/2009**
Hole Diameter: **3.5"**
Hole Depth: **5'**
Well Diameter: **N/A**
Well Depth: **N/A**
First Water Depth: **N/A**
Static Water Depth: **N/A**

Boring: SV-5
Page 1 of 1

Location Map

Well Completion (Backfill)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Asphalt / Bent. Grout		Moist	27.3		1			GW	**Well-Graded Gravel with Sand (GW)** - light brown, dense, medium grained, moist, possible fill material
					2				
Bent. Chips / #2/12 Sand		Moist	237	SV-5-S	3			CL	**Lean Clay (CL)** - Gray/black to olive green, moist, medium stiff, medium, plastic, hydrocarbon odor
					4				
					5				Boring Terminated at 5' bgs.
					6				Groundwater Not Enountered
					7				Soil Sample SV-5-S collected at 11:00 7/7/2009
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				
					21				
					22				

Delta
Consultants

Project No: **C101156203** | Client: **ConocoPhillips** | **Boring: SV-6**
Logged By: **S. Meninger/C. Morgan** | Location: **Oakland, CA** | Page 1 of 1
Driller: **Gregg** | Date Drilled: **7/7/2009**
Drilling Method: **Hand Auger** | Hole Diameter: **3.5"**
Sampling Method: **Hand Drive** | Hole Depth: **5'**
Casing Type: **N/A** | Well Diameter: **N/A**
Slot Size: **N/A** | Well Depth: **N/A**
Gravel Pack: **3.5' - 5'** | First Water Depth: **N/A**
Static Water Depth: **N/A**

Location Map

Well Completion (Backfill)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Asphalt									
Bent. Grout		Moist			1			GW	**Well-Graded Gravel with Sand (GW)** - light brown, dense, medium grained, dry to moist, possible fill material
					2				
Bent. Chips					3			CL	**Lean Clay with Sand (CL)** - light olive green, moist, soft to stiff, low plastic, strong hydrocarbon odor
#2/12 Sand		Moist			4				
				SV-6-S	5				Boring Terminated at 5' bgs.
					6				Groundwater Not Enountered
					7				Soil Sample SV-6-S collected at 9:45 7/7/2009
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				
					21				
					22				

Delta
Consultants

Project No: **C101156203**
Logged By: **S. Meninger/C. Morgan**
Driller: **Gregg**
Drilling Method: **Hand Auger**
Sampling Method: **Hand Drive**
Casing Type: **N/A**
Slot Size: **N/A**
Gravel Pack: **3.5' - 5'**

Client: **ConocoPhillips**
Location: **Oakland, CA**
Date Drilled: **7/7/2009**
Hole Diameter: **3.5"**
Hole Depth: **5'**
Well Diameter: **N/A**
Well Depth: **N/A**
First Water Depth: **N/A**
Static Water Depth: **N/A**

Boring: SV-7
Page 1 of 1

Location Map

Well Completion (Backfill)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Asphalt / Bent. Grout		Moist	25.9		1–2			SM	**Gravelly Sand with Clay (SM)** - Brown to black, moist, medium dense to dense, medium grained gravel, possible fill material
Bent. Chips / #2/12 Sand		Moist	54.5	SV-7-S	3–5			CL	**Lean Clay (CL)** - Blue-gray to light olive green, moist, stiff, medium plastic, slight hydrocarbon odor
					5				Boring Terminated at 5' bgs.
					6				Groundwater Not Enountered
					7				Soil Sample SV-7-S collected at 11:30 7/7/2009
					8–22				

Delta
Consultants

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/9/2010
Drilling Method:	Hand Auger	Hole Diameter:	36"
Sampling Method:		Hole Depth:	5'
Casing Type:	1/4" Tubing	Well Diameter:	1/4"
Slot Size:		Well Depth:	5'
Gravel Pack:	#30	▼ First Water Depth:	
		▽ Static Water Depth:	

Boring/Well No: **SVW-1**
Page 1 of 2

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
See Construction Detail					1–5			CL	Brown lean clay with sand and gravel, moist
								CH	Green/gray fat clay
									Total Depth = 5'

Delta
Consultants

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/9/2010
Drilling Method:	Hand Auger	Hole Diameter:	36"
Sampling Method:		Hole Depth:	5'
Casing Type:	1/4" Tubing	Well Diameter:	1/4"
Slot Size:		Well Depth:	5'
Gravel Pack:	#30	▼ First Water Depth:	
		▽ Static Water Depth:	
Elevation:		Northing:	Easting:

Boring/Well No: **SVW-2**

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
See Construction Detail					1–5			CL	Brown/green lean clay with sand and gravel, 20% sand, some gravel, cobbles, moist
					4–5			CH	Green/gray clay
					5				Total Depth = 5'
					6–22				

Delta
Consultants

Project No:	C101156	Client:	COP	Boring/Well No: **SVW-3**	
Logged By:	Alan Buehler	Location:	Oakland	Page 1 of 2	
Driller:	Gregg Drilling	Date Drilled:	8/9/2010		
Drilling Method:	Hand Auger	Hole Diameter:	36"		
Sampling Method:		Hole Depth:	5'		
Casing Type:	1/4" Tubing	Well Diameter:	1/4"		
Slot Size:		Well Depth:	5'		
Gravel Pack:	#30	▼ First Water Depth:			
		▽ Static Water Depth:			
Elevation:		Northing:		Easting:	

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
See Construction Detail					1–2			CL	Brown/green lean clay with sand and gravel, strong odor
					3–4			CH	Gray/green clay, strong odor
					5				Total Depth = 5'
					6				
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				
					21				
					22				

Delta
Consultants

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/10/2010
Drilling Method:	Hand Auger	Hole Diameter:	36"
Sampling Method:		Hole Depth:	5'
Casing Type:	1/4" Tubing	Well Diameter:	1/4"
Slot Size:		Well Depth:	5'
Gravel Pack:	#30	▼ First Water Depth:	
		▽ Static Water Depth:	

Boring/Well No: **SVW-4**

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
See Construction Detail					1–3			CL	Dark brown/greenish lean clay with sand, strong odor
					3–5			CH	Green/brown clay, stong odor
					5				Total Depth = 5'
					6–22				

Delta
Consultants

Project No:	C101156	Client:	COP	Boring/Well No:	**SVW-5**
Logged By:	Alan Buehler	Location:	Oakland	Page 1 of	2
Driller:	Gregg Drilling	Date Drilled:	8/9/2010		
Drilling Method:	Hand Auger	Hole Diameter:	36"		
Sampling Method:		Hole Depth:	5'		
Casing Type:	1/4" Tubing	Well Diameter:	1/4"		
Slot Size:		Well Depth:	5'		
Gravel Pack:	#30	▼ First Water Depth:			
		▽ Static Water Depth:			
Elevation:		Northing:		Easting:	

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
See Construction Detail					1–2			CL	Green/gray/black lean clay with sand, some gravel, wood debris, strong odor
					3–4			CH	Greenish gray clay, strong odor
					5				Total Depth = 5'
					6–22				

Delta
Consultants

Project No:	C101156	Client:	COP
Logged By:	Alan Buehler	Location:	Oakland
Driller:	Gregg Drilling	Date Drilled:	8/9/2010
Drilling Method:	Hand Auger	Hole Diameter:	36"
Sampling Method:		Hole Depth:	5'
Casing Type:	1/4" Tubing	Well Diameter:	1/4"
Slot Size:		Well Depth:	5'
Gravel Pack:	#30	▼ First Water Depth:	
		▽ Static Water Depth:	

Boring/Well No: **SVW-6**

Elevation: Northing: Easting:

Well Completion (Backfill / Casing)	Water Level	Moisture Content	PID Reading (ppm)	Sample Identification	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
See Construction Detail					1–3			CL	Green/gray lean clay with sand, some gravel, some odor, asphault debris
					4–5			CH	Green/brown clay, strong odor
									Total Depth = 5'
					6–22				

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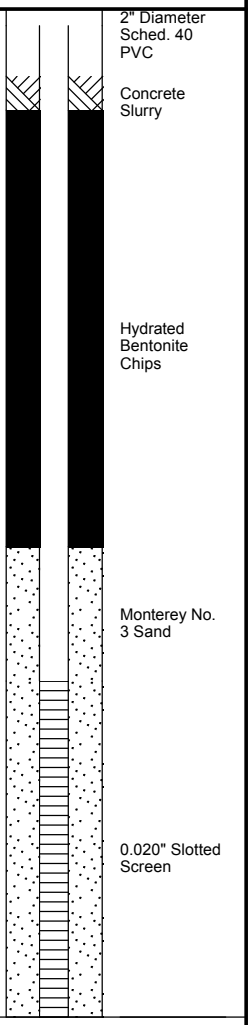
Client: Chevron Enviornmental Management Company		**Boring No. MW-9A**
Project Number: 60287515		
Site Description/Location: 351645 Oakland, Oakland, California		*Ambient PID Reading:* 0.0
Coordinates: Not Surveyed	*Elevation:* *Datum:*	*Sheet:* 1 *of* 1
Drilling Equipment/Method: /Hollow Stem Auger	*Weather:* 60* Clear	*Monitoring Well Installed:* Yes
Sample Type(s): Split Spoon	*Boring Diameter:* 8 IN.	*Screened Interval:* 10-15 ft.
Approved By:	*Logged By:* J.Harms / *Date/Time Started:* 03-18-13 / 13:05	*Depth of Boring:* 15 FT BGS
Drilling Contractor: ABC	*Backfill:* grout / *Date/Time Finished:* 03-18-13 / 13:20	*Water Level:* Not Encountered

DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	USCS	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogical features, density or stiffness, moisture content, odors or staining.
								(0-5") ASPHALT
						CL		(5"- 2.5') LEAN CLAY, Dark Gray (5Y 3/1), medium-plastic, 90% clay, 5% silt, 5% fine-grained gravel, stiff, dry, Hydrocarbon odor
					242	CH		(2.5-6') FAT CLAY, Olive Gray (5Y4/2), high-plastic, 90% clay, 5% silt, 5% fine-grained gravel, very stiff, dry, Hydrocarbon odor
5	5.0, 5.0Dup				3770			
						CL		(6-9') LEAN CLAY, Olive Gray (5Y4/2), medium-plastic, 80% clay, 10% silt, 10% fine-grained gravel, very stiff, dry, Hydrocarbon odor
	8.5		8 9 11, 11	2	1005			
10			9 12 13	1.5		CH		(9-12.5') FAT CLAY, Olive Gray (5Y4/2), high-plastic, 80% clay, 10% silt, 10% fine-grained gravel, very stiff, dry, Hydrocarbon odor
			13 14 15	1.5				, Dark Reddish Gray (4/2) / Olive Yellow (5Y 6/6), mottled
					1347	CL		(12.5- 15') LEAN CLAY, Dark Reddish Gray (4/2) / Olive Yellow (5Y 6/6) mottled, medium-plastic, 70% clay, 10% silt, 15% fine-grained gravel, 5% fine to coarse-grained sand, very stiff, dry, Iron staining starts at 13 Feet
	14		8 10 12, 14	1	237			
15								

Well Diagram



Notes: Continuous Split Spoon from 8 Feet

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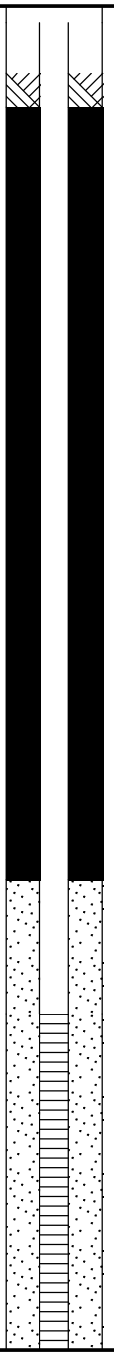
Client: Chevron Enviornmental Management Company		**Boring No. MW-9B**
Project Number: 60287515		
Site Description/Location: 351645 Oakland, Oakland, California		*Ambient PID Reading:* 0.0
Coordinates: Not Surveyed	*Elevation:* *Datum:*	*Sheet:* 1 *of* 1
Drilling Equipment/Method: /Hollow Stem Auger	*Weather:* 60* Clear	*Monitoring Well Installed:* Yes
Sample Type(s): Split Spoon	*Boring Diameter:* 8 IN.	*Screened Interval:* 15-20 ft.
Approved By:	*Logged By:* J.Harms / *Date/Time Started:* 03-15-13 / 13:20	*Depth of Boring:* 20 FT BGS
Drilling Contractor: ABC	*Backfill:* grout / *Date/Time Finished:* 03-15-13 / 14:00	*Water Level:* Not Encountered

DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	USCS	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogical features, density or stiffness, moisture content, odors or staining.
								(0-6") ASPHALT
						CL		(6"-2.5') LEAN CLAY, very dark gray (5Y 3/1), medium-plastic, 90% clay, 5% silt, 5% gravel, medium dense, dry, Hydrocarbon odor (stronger at 4')
					3247	CH		(2.5-7.0') FAT CLAY, olive gray (5Y 4/2), high-plastic, 90% clay, 5% silt, 5% gravel, stiff, dry, Hydrocarbon odor
5	5.0				2416			
			6 8 9, 11			CL		(7.0-12') LEAN CLAY WITH SILT, SAND, AND LITTLE GRAVEL, olive gray (5Y 4/2), medium-plastic, 80% clay, 10% silt, 10% fine-grained gravel, very stiff, dry, Mn nodules, fine sand laminations
	9.0			2	41.2			
10				1.5	573			
			6 8 12					
						CL		(12-13.5') LEAN CLAY, Dark Reddish Gray (4/2) / Olive Yellow (5Y 6/6) mottled, medium-plastic , 80% clay, 10% silt, 10% fine to coarse-grained gravel, very stiff, dry, Iron staining at 12 feet, odor decreasing at 13 feet
			6 8 9, 11					, brownish yellow (10YR 6/6)
	14.0			1.5 2	7.9 128	ML		(13.5-15') SILT WITH SAND, olive (5Y 5/3) mottled, low-plastic, 60% silt, 30% fine-grained sand, 10% clay, dense, dry
15			6 8 9			SM		(15-18') SILTY SAND WITH GRAVEL, light brown (7.5YR 6/4), 40% fine to medium-grained sand, 40% silt, 20% fine to coarse-grained gravel (max size 0.5 inches), medium dense, moist
				1.5				
			6 9 9			ML		(18-20') SILT WITH SAND AND GRAVEL, red brown (5YR 4/4), low-plastic, 50% silt, 20% fine to medium-grained sand, 20% fine-coarse grained gravel (max size 0.5 inches), 10% clay, medium dense, moist, slight odor at 18.5-18.8 feet in layer of coarse gravel
	19.0		6 8 10,12	2	0.7			
20								

Well Diagram



Notes: Continuous Split Spoon from 8 Feet

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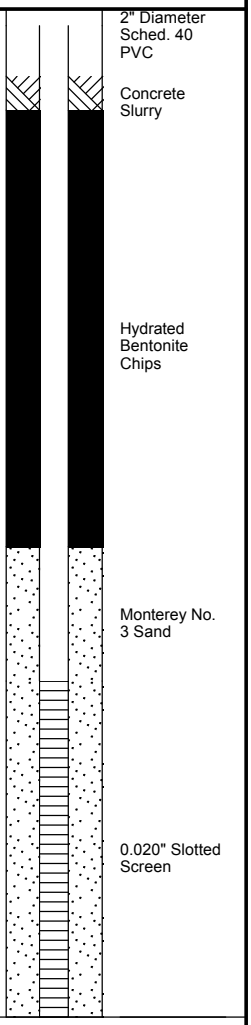
Client: Chevron Enviornmental Management Company
Project Number: 60287515
Site Description/Location: 351645 Oakland, Oakland, California
Coordinates: Not Surveyed *Elevation:* *Datum:*
Drilling Equipment/Method: /Hollow Stem Auger *Weather:* 60* Clear
Sample Type(s): Split Spoon *Boring Diameter:* 8 IN.
Approved By:
Logged By: J.Harms *Date/Time Started:* 03-18-13 / 10:40
Drilling Contractor: ABC
Backfill: grout *Date/Time Finished:* 03-18-13 / 11:00

Boring No. MW-10A

Ambient PID Reading: 0.0
Sheet: 1 *of* 1
Monitoring Well Installed: Yes
Screened Interval: 10-15 ft.
Depth of Boring: 15 FT BGS
Water Level: Not Encountered

DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	USCS	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogical features, density or stiffness, moisture content, odors or staining.
						ML		(0-2")ASPHALT (2"-2.0')SILT WITH CLAY AND GRAVEL, red brown (5YR 5/4), 70% silt, 20% fine-grained gravel (max sixe 0.25 inches), 10% clay, medium dense, dry, Hydrocarbon odor
					346	CL		(2-3') CLAY WITH LITTLE GRAVEL, black (7.5 YR 2.5/1), medium-plastic, 80% clay, 10% silt, 10% fine-grained gravel, subangular, medium dense, dry
						CH		(3-8.5') FAT CLAY WITH TRACE OF SAND AND SILT, gray (2.5Y 5/1), high-plastic, 90% clay, 5% fine-grained sand, 5% silt, stiff, dry
5	5.0			1	657			-(increasing silt and sand @ 4')
			6 8 9, 10					, medium-plastic, 80% clay, 10% fine-grained sand, 10% silt @ 7.5'
	9.0			2	325	CL		(8.5-13') LEAN CLAY WITH SAND, olive (5 Y 5/3), medium-plastic, 70% clay, 20% fine-grained sand, 10% silt, stiff, dry, Iron staining from 12 to 15 feet
10			9 11 12	1.5				
			8 11 13	1.5	1011			
						ML		(13-14') SILT WITH SAND AND GRAVEL, olive (5 Y 5/3), 70% silt, 20% fine to medium-grained sand, 5% clay, 5% gravel, stiff, dry-(13.8 - 14 feet decreased silt increase from fine to medium grained sand) -(moist at 14')
	14.0		9 10 11, 12	2	3222			
15								

Well Diagram



Notes: Continuous Split Spoon from 8 Feet

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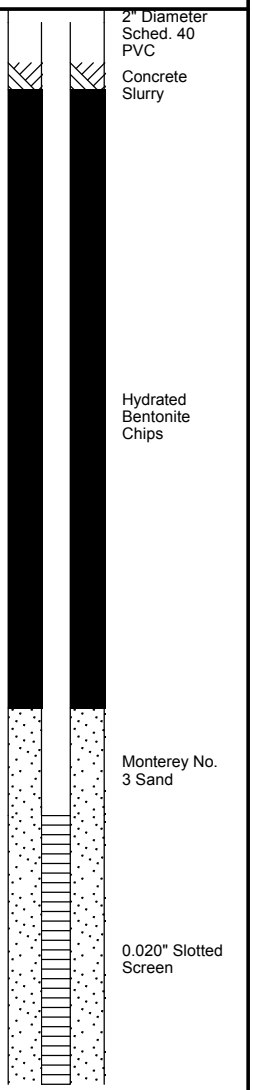
Client: Chevron Enviornmental Management Company
Project Number: 60287515
Site Description/Location: 351645 Oakland, Oakland, California
Coordinates: Not Surveyed *Elevation:* *Datum:*
Drilling Equipment/Method: /Hollow Stem Auger *Weather:* 60* Clear
Sample Type(s): Split Spoon *Boring Diameter:* 8 IN.
Approved By:
Logged By: J.Harms *Date/Time Started:* 03-18-13 / 08:50
Drilling Contractor: ABC
Backfill: grout *Date/Time Finished:* 03-18-13 / 09:45

Boring No. MW-10B

Ambient PID Reading: 0.0
Sheet: 1 *of* 1
Monitoring Well Installed: Yes
Screened Interval: 15-20 ft.
Depth of Boring: 22 FT BGS
Water Level: 19 FT BGS

DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	USCS	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogical features, density or stiffness, moisture content, odors or staining.
						ML		(0-2") ASPHALT (2"-2') LEAN CLAY WITH SAND AND GRAVEL, reddish brown (5 YR 5/4), low plastic, 70% clay, 20% fine to medium-grained sand, 10% fine-grained gravel (max size 0.25 inches), medium dense, dry
						CL		(2-5') LEAN CLAY, olive gray (5Y 5/2), medium-plastic, 90% clay, 10% silt, stiff, dry, hydrocarbon odor at 4 feet
5	5.0				593	CH		(5-11.5') FAT CLAY, olive gray (5Y 5/2), medium-plastic, 90% clay, 10% silt, stiff, dry, hydrocarbon odor
	9.0		6 8 9, 11	2	255			
10			9 12 14	1.5				, increase in silt, odor decreased at 10 feet to 12 feet
			9 12 14	1.5		CL		(11.5-13') LEAN CLAY WITH SILT, light yellowish brown (10YR 6/4), mottled at 7 feet, low-plastic, 80% clay, 20% silt, very stiff, dry
			9 11 12, 14	1.5		CL		(13-16') LEAN CLAY WITH SAND, light yellowish brown (10YR 6/4), low plastic, 70% clay, 20% fine to coarse-grained sand, 10% fine-grained gravel, very stiff, dry
15	15.0		9 11 15	2				, (Iron staining and deposits at 15 to 20 feet)
			8 9 13	1.5		ML SM SW CL		(16-16.5') SILT WITH CLAY, brown (10YR 4/3), 80% silt, 15% sand, 5% clay, medium dense, moist (16.5-16.8') SILTY SAND, brown (10YR 4/3), 75% fine-grained sand, 20% silt, 5% clay, medium dense, moist (16.8-17') WELL GRADED SAND, brownish yellow (10YR 6/6), 80% fine to medium-grained sand, 10% silt, 10% fine-grained gravel (max size 0.25 inches), medium dense, moist, odor decreases
			10 11 13,17			SM		(17-18.8') LEAN CLAY WITH SILT AND GRAVEL, brownish yellow (10YR 6/6), low-plastic, 70% clay, 10% silt, 10% fine to medium-grained sand, 10% fine-grained gravel, very stiff, dry-(clay, odor decreases 18.5 - 18.8 feet)
20	20.0			2	7.7			(18.8-20')SILTY SAND WITH GRAVEL, dark gray (10YR 4/1), 50%fine to coarse-grained sand, 40% silt, 10% fine-grained gravel (max size 0.25 inches), medium dense, wet-(coarse gravel 19 -20 feet)

Well Diagram



Notes: GW at 19Ft, Cont. SS after 8 Ft

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Client: Chevron Enviornmental Management Company

Boring No. MW-11A

Project Number: 60287515

Site Description/Location: 351645 Oakland, Oakland, California

Ambient PID Reading: 0.0

Coordinates: Not Surveyed *Elevation:* *Datum:*

Sheet: 1 *of* 1

Drilling Equipment/Method: /Hollow Stem Auger *Weather:* 60* Clear

Monitoring Well Installed: Yes

Sample Type(s): Split Spoon *Boring Diameter:* 8 IN.

Screened Interval: 10-15 ft.

Approved By:

Logged By: J.Harms *Date/Time Started:* 03-19-13 / 10:15

Depth of Boring: 15 FT BGS

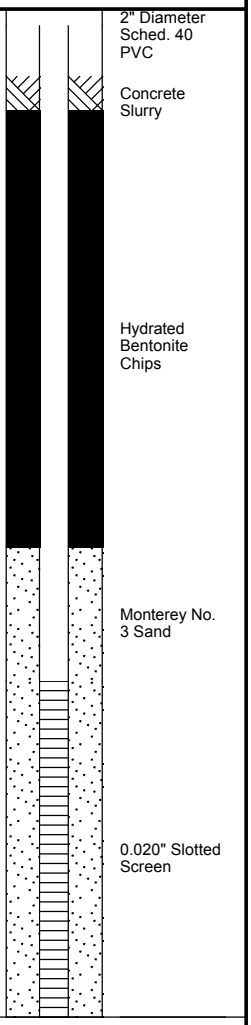
Drilling Contractor: ABC / Kenny

Backfill: grout *Date/Time Finished:* 03-19-13 / 10:35

Water Level: Not Encountered

DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	USCS	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogical features, density or stiffness, moisture content, odors or staining.
								(0-10") ASPHALT AND BASE
					4.3	ML		(10"-10')SILT WITH SAND AND GRAVEL, dark yellowish brown (10YR 4/6), low-plastic, 60% silt, 20% fine to medium-grained sand, 10% clay, 10% fine to coarse-grained gravel (max size 3 inches), medium dense, dry, Hydrocarbon odor-(large cobbles at 2-2.5 feet)
5	5.0				1380			-(gray staining at 4.5 feet)
			6 8 10, 14					
	9.0			2	4557			
10			6 8 10	1.5		CL		(10-11.5') LEAN CLAY, dark yellowish brown (10YR 4/6), medium-plastic, 70% clay, 15% silt, 10% fine-grained sand, 5% fine-grained subangular gravel, very stiff, dry
						SM		(11.5-12.5') SILTY SAND, olive (5Y 5/3), 60% fine to coarse-grained sand, 30% silt, 10% fine-grained gravel, medium dense, wet, Hydrocarbon odor
			4 6 13	1.5	2530	CH		(12.5-15')FAT CLAY, dark reddish gray (5YR 4/2)/ olive yellow (5Y 6/6), mottled, high-plastic, 80% clay, 20% silt, 20% fine-grained sand, very stiff, dry, odor decreases, (Fe and Mn staining and nodules)
	14		6 8 8, 13	2	116			
15								

Well Diagram



Notes: Continuous Split Spoon from 8 Feet

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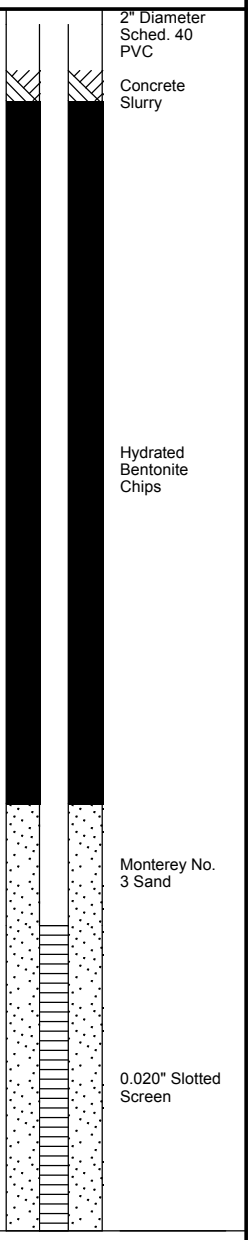
Client: Chevron Enviornmental Management Company		**Boring No. MW-11B**
Project Number: 60287515		
Site Description/Location: 351645 Oakland, Oakland, California		*Ambient PID Reading:* 0.0
Coordinates: Not Surveyed	*Elevation:* *Datum:*	*Sheet:* 1 *of* 1
Drilling Equipment/Method: /Hollow Stem Auger	*Weather:* 60* Clear	*Monitoring Well Installed:* Yes
Sample Type(s): Split Spoon	*Boring Diameter:* 8 IN.	*Screened Interval:* 15-20 ft.
Approved By:	*Logged By:* J.Harms / *Date/Time Started:* 03-19-13 / 08:05	*Depth of Boring:* 20 FT BGS
Drilling Contractor: ABC / Kenny	*Backfill:* grout / *Date/Time Finished:* 03-19-13 / 09:00	*Water Level:* Not Encountered

DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	USCS	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogical features, density or stiffness, moisture content, odors or staining.
								(0-9") ASPHALT AND BASE
					5.1	ML		(0.9"-7.5') SILT WITH SAND AND GRAVEL, dark yellowish brown (10YR 4/6), low-plastic, 60% silt, 20% fine to medium grained sand, 10% clay, 10% fine-grained gravel (max size .25 inches), medium dense, dry, no odor
	5.0				2.6			-(decreased gravel, fine-grained sand at 3 feet)
5								
					0.0			
			6		202	CL		(7.5-8.5') LEAN CLAY WITH SILT, brown (10YR 5/3), medium-plastic, 70% clay, 20% silt, 10% fine-grained sand, medium dense, dry, no odor
			8 10, 12			ML		(8.5-10.5')SILT WITH SAND, brown (10YR 5/3), 60% silt, 25% fine to medium-grained sand, 10% clay, 5% fine-grained gravel, medium dense, dry, odor/gray hydrocarbon staining
10	10, Dup			2	1047			
			6	1.5	3519	CH		(10.5-11') FAT CLAY, brown (7.5YR 5/4), high-plastic, 70% clay,10% silt, 10% fine to medium-grained sand, 10% fine to coarse-grained gravel (max size 0.5 inches), stiff, dry, hydrocarbon odor
			6 8			SM		
			6	1.5	3991	CH		(11-12') SILTY SAND, olive gray (5Y 5/2), 60% fine to medium-grained sand, 20% silt, 20% fine to coarse-grained gravel (max size 0.5 inches), medium dense, dry, hydrocarbon odor
			8 10					(12-16.5') FAT CLAY, brownish yellow (10YR 6/6), high-plastic, 80% clay, 10% fine-grained sand, 10% silt, very stiff, dry, hydrocarbon odor, iron staining
	14.0		8, 8 10 12	2	842			
15								-(odor decreases at 14.5 feet)
			8	1.5	32.2			
			10 10					, (70% clay, 10% silt, 20% fine to medium-grained sand) at 16 Feet
			8	1.5		CL		(16.5-18') LEAN CLAY WITH SAND, brownish yellow (10YR 6/6), medium-plastic, 70% clay, 20% fine to medium-grained sand, 5% silt, 5% fine-grained gravel (max size 0.25 inches), stiff, dry
			8 8					
						SM		(18-18.5') SILTY SAND, brownish yellow (10YR 6/6), 60% fine to coarse-grained sand, 20% silt, 10% fine-grained subangular gravel (max size 0.25 inches), medium dense, moist, hydrocarbon odor
	19.0		6	2	5.1	CL		(18.5-20') LEAN CLAY WITH SAND, brownish yellow (10YR 6/6), low-plastic, 70% clay, 20% fine to medium-grained sand, 5% silt, 5% fine-grained gravel (max size 0.25 inches), stiff, moist, decreased hydrocarbon odor
20			8 10, 11					

Well Diagram



Notes: Continuous Split Spoon from 8 Feet

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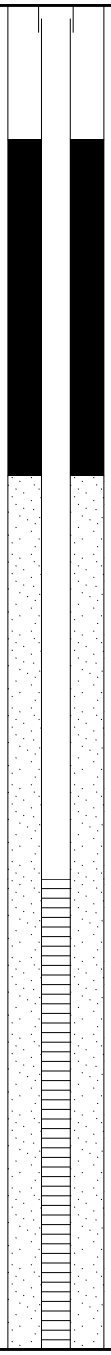
Client: Chevron EMC		**Boring No. MW-10S**
Project Number: 60314377		
Site Description/Location: 4276 MacArthur Blvd, Oakland, California		*Ambient PID Reading:* NS
Coordinates: See Survey	*Elevation:* *Datum:*	*Sheet:* 1 *of* 1
Drilling Equipment/Method: DPT Combo Rig/HSA	*Weather:*	*Monitoring Well Installed:* Yes
Sample Type(s): Direct Push	*Boring Diameter:* 10 IN.	*Screened Interval:* 6.5-10 ft.
Approved By:	*Logged By:* J. Harms / *Date/Time Started:* 06-12-14 / 10:15	*Depth of Boring:* 10 FT BGS
Drilling Contractor: Penecore	*Backfill:* NA / *Date/Time Finished:* 06-12-14 / 10:45	*Water Level:* dry FT BGS

DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	USCS	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogical features, density or stiffness, moisture content, odors or staining.
								3 INCH ASPHALT
					0.4	ML		LEAN CLAY WITH SAND AND GRAVEL, brown (5YR 5/4), 70% low-plastic clay, 20% fine-to medium-grained sand, 10% fine-grained gravel (max size 0.25"), subangular, medium dense, dry, HC odor
	MW-10S-2			1	2.6	CH		FAT CLAY, olive gray (5Y5/2) with orange mottling, 90% medium-plastic clay, 10% silt, stiff, dry, HC odor
					0.7			
					4.1	CL		LEAN CLAY, olive gray (5Y5/2), 80% low-plastic clay, 10% fine-to medium-grained sand, 10% silt, stiff, dry, HC odor
5	MW-10S-5			1	8.1			
					0.4	ML		SILT WITH SAND, olive gray and brown mottled (5Y 5/2 and 5YR 5/4), 60% silt, 20% low-plastic clay, 20% fine-to coarse-grained sand, dense, dry, odor decreases, gravel at 5.5' to 5.7'
	MW-10S-7			1	28.1	CH		FAT CLAY, brown (10 YR 6/4) with grey staining, 90% medium-plastic clay, 10% silt, stiff, dry, HC odor and staining
	MW-10S-8			1	2.9			
					24			
10	MW-10S-10			1	3.5			, 85% medium-plastic clay, 10% silt, 5% gravel

Well Diagram



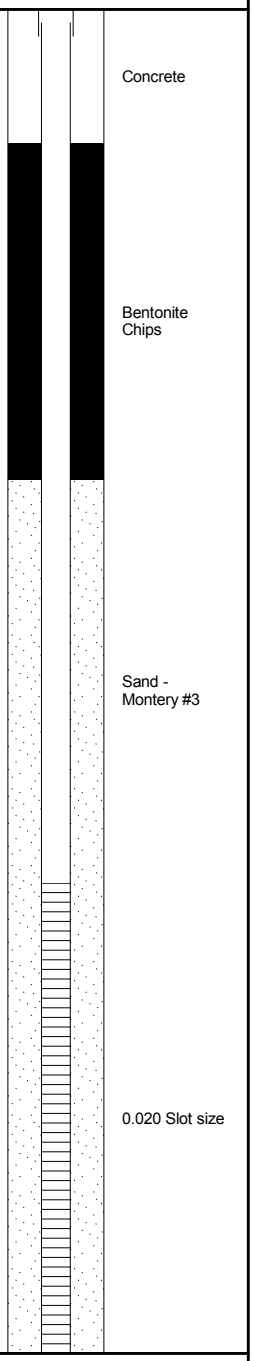
Notes:

AECOM Environment
1220 Avenida Acaso
Camarillo, CA 93012
(805) 388-3775
www.aecom.com

Client: Chevron EMC		**Boring No. MW-11S**
Project Number: 60314377		
Site Description/Location: 4276 MacArthur Blvd, Oakland, California		*Ambient PID Reading:* NS
Coordinates: See Survey	*Elevation:* *Datum:*	*Sheet:* 1 *of* 1
Drilling Equipment/Method: DPT Combo Rig/HSA	*Weather:*	*Monitoring Well Installed:* Yes
Sample Type(s): Direct Push	*Boring Diameter:* 10 IN.	*Screened Interval:* 6.5-10 ft.
Approved By:	*Logged By:* J. Harms	*Date/Time Started:* 06-11-14 / 13:40
Drilling Contractor: Penecore	*Backfill:* NA	*Date/Time Finished:* 06-11-14 / 13:40
		Depth of Boring: 10 FT BGS
		Water Level: 8.68 FT BGS

DEPTH (ft)	Sample ID	Sample Depth (ft)	Blows per 6"/RQD	Recovery (ft)	PID Reading (ppm)	USCS	Graphic Log	MATERIAL IDENTIFICATION, color, description of fine grained material (silt and clay), description of coarse grained material (sand and gravel), structural or mineralogical features, density or stiffness, moisture content, odors or staining.
								6 INCH ASPHALT
					0.0	SM		FILL, SILTY GRAVEL, brownish yellow (10YR 6/6), 60% fine-to coarse-grained gravel (max size 2"), 30% silt, 10% fine-grained sand, subangular, dry, no odor
	MW-11S-2			1	0.0			, 60% fine-to coarse-grained gravel (max size 1.5"), 20% silt, 10% fine-grained sand, 10% clay
					0.0	ML		LEAN CLAY WITH SILT, brown (10YR 5/3), 70% low-plastic clay, 20% silt, 10% fine-grained sand, medium dense, dry
	MW-11S-4			1	0.4			, slight HC odor
5					4.6			, moist at 5'-5.5'
	MW-11S-6			1	16.0	CL		LEAN CLAY WITH SILT AND TRACE GRAVEL, gray HC stained, 60% low-plastic clay, 25% fine-to medium-grained sand,10% silt, 5% fine-grained gravel (max size 0.25"), medium dense, dry, HC odor
					15.8	ML		LEAN CLAY WITH SILT, gray HC stained, 55% low-plastic clay, 35% fine-to medium-grained sand,10% silt, medium dense, dry, HC odor
	MW-11S-8			1	47.5	ML		SILT WITH SAND, brown (7.5YR 5/4), 60% silt, 30% fine-to medium-grained sand, 5% non-plastic clay, 5% fine-grained gravel (max size 0.25"), medium dense, dry, HC odor
					325			
10	MW-11S-10			1	361			

Well Diagram



Notes: