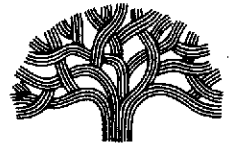




CITY OF OAKLAND



DALZIEL BUILDING • 250 FRANK H. OGAWA PLAZA, SUITE 5301 • OAKLAND, CALIFORNIA 94612

Public Works Agency
Environmental Services

(510) 238-6688
FAX (510) 238-7286
TDD (510) 238-7644

July 28, 1999

Mr. Barney Chan
Alameda County Environmental Health Services
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Subject: Fuel Pipeline Removal Sampling Report – City of Oakland Municipal Service Center (94407)

Dear Mr. Chan:

Enclosed is one copy of the subject report, prepared by our consultant, Cambria Environmental Technology, Inc., for the City of Oakland's Municipal Service Center at 7101 Edgewater Drive.

As we have discussed, and as further described in the report, there were several difficulties with the U.S. Environmental Protection Agency's (EPA) contract laboratory that was used for much of the soil sample analyses. Despite these problems, we believe the data provide valuable information on the extent and magnitude of subsurface contamination that will allow us to develop an effective remediation strategy.

We are finalizing a Work Plan for installation of four additional monitoring wells and a remediation well for feasibility testing of dual-phase extraction. We anticipate sending you the Work Plan by August 13, 1999.

Please call me at (510) 238-7695 to discuss any questions or concerns you may have regarding the report or the project.

Sincerely,

Mark B. Hersh
Environmental Program Specialist

cc w/o encl: Andrew Clark-Clough, PWA/ESD
David Elias, Cambria Environmental Technology
cc w encl: Dianne Heinz, Port of Oakland

99 JUL 30 PM 3: 23
ENVIRONMENTAL PROTECTION

C A M B R I A



**FUEL PIPELINE REMOVAL
SAMPLING REPORT**

**City of Oakland
Municipal Services Center
7101 Edgewater Drive
Oakland, California
Cambria Project No. 153-1247-4**

July 23, 1999

Prepared for:

City of Oakland, Public Works Agency
Environmental Services Division
250 Frank H. Ogawa Plaza, Ste. 5301
Oakland, California 94612-2034

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C A M B R I A

FUEL PIPELINE REMOVAL SAMPLING REPORT

City of Oakland
Municipal Services Center
7101 Edgewater Drive
Oakland, California
Cambria Project No. 153-1247-4

July 23, 1999

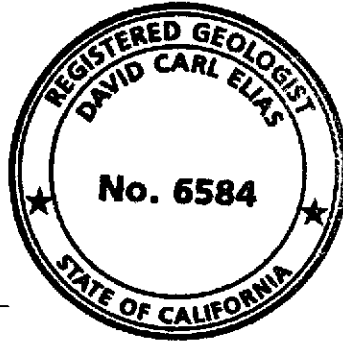
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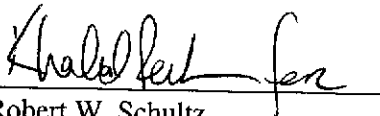
City of Oakland, Public Works Agency
Environmental Services Division
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Oakland, California 94612-2034

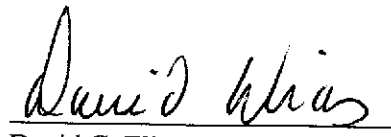
Prepared by:

Cambria Environmental Technology, Inc.
1144 65th Street, Suite B
Oakland, California 94608

To the best of our knowledge, the data contained herein are true and accurate and satisfy the scope of work prescribed by the client for this project. The data, findings, recommendations, specifications or professional opinions presented herein were prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either express or implied.




Robert W. Schultz
Senior Staff Geologist


David C. Elias, R.G.
Senior Geologist

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INTRODUCTION

This report presents the results of soil and groundwater sampling performed by Cambria Environmental Technology, Inc. (Cambria) in conjunction with the fuel piping removal that was completed by Turnkey Construction Services of San Francisco, California (Turnkey) at 7101 Edgewater Drive, Oakland, California, the City of Oakland Municipal Service Center. Presented below are a site summary; the piping removal, a description of excavation, and sampling activities; a summary of the backfill well installation; analytical results; and conclusions and recommendations.




SITE SUMMARY

Site and Area Use: The site is an approximately 17 acre corporation yard consisting of offices, shops, warehouse structures, and a vehicle maintenance and repair facility. Bordering the site to the west and to the north is the Martin Luther King Regional Shoreline park. Beyond the narrow strip of park lands lie San Leandro Bay to the west and Damon Slough to the north. Area use to the east and south is primarily light industrial.

Former Fuel Dispensing System Description: The approximately 2,650 lineal foot piping system consisted of two parallel 2-inch diameter steel pipes transporting diesel and gasoline to fuel stations across the site. The fuel dispensing system was installed in the 1970's shortly after development of the site. Based on field observations, modifications to the system occurred from time to time and included the addition of an approximately 135 foot fiberglass line and the abandonment of several fueling stations.

Environmental Investigations: In 1989, an environmental site assessment was performed, and monitoring wells MW-1 through MW-4 were installed (Figure 1). In 1992, additional investigation was performed and monitoring wells MW-5 through MW-7 were installed. In 1993, thirty-four soil borings were advanced across the site, and groundwater samples were collected. In 1995, three shallow borings were advanced as part of a geotechnical investigation and soil samples were analyzed for petroleum hydrocarbons. In 1996, ten soil borings were advanced and temporary wells were installed outside the western and northern perimeters of the site along San Leandro Bay and Damon Slough. Three of the temporary well locations were converted to monitoring wells: MW-8 through MW-10 (Figure 1). Since installation, monitoring wells MW-1 through MW-10 have been regularly gauged and sampled. In addition, eight underground storage tanks (USTs) and associated piping have been removed from the site.

Site Hydrogeology: The site is underlain by artificial fill that was emplaced during several phases since 1945. The fill material varies significantly in character across the site. The fill is underlain by clayey silt deposits, known as Bay Mud. Based on measured groundwater elevations, groundwater generally appears to flow towards Damon Slough in the northern part of the site, and toward San Leandro Bay in the southern part of the site. The heterogeneity of the artificial fill material, the presence of underground utilities with high permeability backfill material, and the low permeability of the Bay Mud used as fill at various site locations influence local groundwater flow.



Contaminant Distribution: Petroleum hydrocarbons have been detected in soil and groundwater at multiple locations across the site. The distribution of contamination appears to be related to the former USTs and fuel dispensing systems. The former USTs near TBW-1 and TBW-2, the former USTs east of MW-6, and the recently upgraded active USTs near MW-5 are likely to have been sources of contamination (Figure 1). Low concentrations of petroleum hydrocarbons have been detected in off-site wells MW-8, MW-9, and MW-10 in each of the past three quarters. No petroleum hydrocarbons have ever been detected in off-site wells MW-3 and MW-4. The release and distribution of petroleum hydrocarbons by the former fuel piping system is the subject of the current investigation.

PIPING REMOVAL, EXCAVATION, AND SAMPLING ACTIVITIES

The activities performed as part of this pipeline removal project included:

- Removing, transporting, and properly disposing of any remaining liquids encountered in the fuel dispensing pipes (performed by Turnkey);
- Removing, transporting, and properly disposing of all piping (performed by Turnkey);
- Overexcavating soil beneath the former fuel piping to remove obviously hydrocarbon-impacted soils (performed by Turnkey, overseen by Cambria);
- Collecting soil samples from beneath the pipe joints and fueling station locations, and collecting water samples when groundwater was encountered;
- Field screening for hydrocarbons and logging the lithology of all collected soil samples;
- Submitting the soil samples to a California state-certified lab for analyses;

- Installing two new conduit lines in the trench for possible future remediation piping and backfilling the trench (performed by Turnkey); and
- Preparing this report.

Soil sample lithology logs are included as Attachment A. Cambria's standard piping and dispenser removal sampling procedures are included as Attachment B. The laboratory analytical reports are included as Attachment C. The United States Environmental Protection Agency (USEPA) review of the USEPA contract laboratory analytical results are included as Attachment D.

Piping Soil Overburden Pre-Characterization: Prior to removing the soil overburden from above the fuel piping, the soil overburden was characterized to: (1) protect site workers during piping removal, and (2) allow the City of Oakland to plan ahead for soil disposal. **Based on the pre-classification sampling results, approximately 50 cubic yds of soil overburden contained hydrocarbon concentrations too high to allow the soil to be returned to the trench; the remainder of the overburden was determined to be suitable for use as backfill¹.**

Piping Removal: Between September 23, 1998, and December 10, 1998, Turnkey removed approximately 2,650 lineal feet of fuel piping and thirty-five fuel hydrants from the site. To remove the piping, Turnkey first removed the soil overburden, stockpiling the soil adjacent to the open trench. The piping was then cut, the ends were capped, and flushed with compressed air to remove any remnant liquid fuel. Remnant fuels were captured and contained on site. After flushing, the piping was removed from the trench, then cut to transportable lengths.

Condition of Piping: The piping was generally in sound condition; however, many of the joints between the approximately 23 foot-long sections of pipe appeared to be loose. There was visible staining and hydrocarbon odor beneath both the fueling stations and the piping in some areas.

Overexcavation of Contaminated Soil: Overexcavation of contaminated soil from beneath the piping was performed along parts of the pipe run where the site lithology consisted primarily of low permeability Bay Mud. Overexcavation of what consisted primarily of bedding sands surrounding the fuel piping appeared to successfully remove the bulk of hydrocarbon contamination in these areas. In other parts of the site, because of higher permeability soils underlying the former piping, limited overexcavation would not effectively remove the majority of the contaminated soil.

¹ "Soil Pre-classification Sampling Results," Cambria Environmental Technology, Inc., August 11, 1998 letter to the City of Oakland.

Approximately 338 cubic yards of soil was overexcavated from the sidewalls and bottom of the pipe trench and disposed at Altamont Landfill of Livermore, California (Altamon).

Table A below presents the excavation locations, depth, and volume of soil removed at each excavation.




Table A			
Excavation Location (between samples listed)	Excavation Width (feet)	Excavation Depth (feet, measured from beneath pipe)	Volume Excavated and Offhauled (cubic yards)
FDP 20 - FDP 22	2.5	4.2	40
FDP 23 - FDP 43	2.5	1.2	50
FDP 1 - FDP 8	2.5	3.7	60
FDP 9 - FDP - 17	2.5	0.9	20
FDP 135	7.0	0.7	5
FDP 54	8.0	4.2	25
FDP 55 - FDP 66	2.5	2.5	40
FDP 71 - FDP 72	8.0	4.2	25
FDP 77 - FDP 86	2.5	1.7	30
FDP 76 - FDP 124	2.5	3.6	40
FDP 115	2.5	3.5	3
Total offhauled			338

Soil and Groundwater Sampling: Cambria sampled soil and groundwater from beneath the former piping following the protocol detailed in the site Sampling and Analysis Plan². Soil samples were collected approximately every 20 feet and beneath every piping joint and fueling station. Cambria collected the soil samples by driving clean brass tubes into undisturbed soil beneath the former

² "Sampling and Analysis Plan (SAP) - City of Oakland, Municipal Service Center." City of Oakland, Public Works Agency, Environmental Services Division. Oakland, CA. July 24, 1998.

piping or into soil collected by the backhoe. Water samples were collected whenever groundwater was encountered. Sample locations and sample depths are presented in Figures 1 - 5.

Piping Removal Inspection and Oversight: Mr. Barney Chan of the Alameda County Health Care Services Agency (ACHCSA), Mr. Peter Kozelka of USEPA, and Mr. Mario Castillo of USEPA were onsite on October 6, 1998, to observe that day's piping removal. Mr. Robert Schultz of Cambria observed piping removal over the entire period and inspected the piping upon removal.




Field Screening and Sample Logging: Soil samples were screened with a photo-ionization detector (PID) and were logged by Cambria geologist Robert Schultz, working under the supervision of Cambria geologist David Elias, California State Registered Geologist #6584. Soil sample lithology logs are included as Attachment A. Cambria's Standard Piping and Dispenser Removal Sampling Procedures are included as Attachment B.

Sample Analyses: Samples collected from adjacent locations were composited by the laboratory and analyzed for total petroleum hydrocarbons (TPH) as diesel (TPHd), TPH as gasoline (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tert butyl ether (MTBE) by EPA Methods 8015 modified and 8020. Four-point composites of samples collected from adjacent locations were analyzed for organic lead (tetra ethyl lead) by CA Title 22, Chapter 11, Appendix XI Methods. Groundwater, when encountered, was analyzed for TPHg, TPHd, BTEX, and MTBE by EPA Methods 8015 modified and 8020. The laboratory analytical reports are included as Attachment C.

Seventy nine out of 95 of the collected composite soil and discrete groundwater samples, that were submitted for petroleum hydrocarbon analyses, were analyzed by a USEPA Region IX contract laboratory. The USEPA commented on the quality of the analytical data produced by their contract laboratory, Agricultural Priority Pollutants Laboratories of Fresno, California (APPL,) and stated that a number of the analytical results may be suspect due to problems with exceeded holding times (Attachment D). However, given the objectives of the sampling program to identify the more highly contaminated areas of the site, the analytical results still allow for a qualitative assessment of hydrocarbon concentrations at each sample location and an adequate assessment of contaminant distribution.

Additionally, several samples submitted to the USEPA contract laboratory were not analyzed as requested on chain-of-custody forms (COCs). Cambria has not received explanation from the USEPA for these inconsistencies. The specific deviations from the COC requests are as follows:

- Sample FDP-17-4.5' was not analyzed for BTEX or MTBE.

- 
- Samples FDP-19-3.5' through FDP-43-5.5' were not analyzed for MTBE.
 - Samples FDP-36H-4.5' and FDP-39H-7.5' were not composited. Instead, the samples were run separately.
 - Sample FDP-57-W was not analyzed for TPHg, BTEX, or MTBE.
 - Sample FDP-64-6.0' was not analyzed for TPHg, TPHd, BTEX, or MTBE. Sample FDP-65-5.5' was run separately instead of being composited with FDP-64-6.0'.
 - Samples FDP-95-5.5' and FDP-96-4.0' were not analyzed for TPHg, BTEX, or MTBE.
 - Sample FDP-102-4.0' was not composited with sample FDP-101-4.5'. Instead, sample FDP-102-4.0' was composited with sample FDP-115-5.5'. Composited samples FDP-115-5.5' and FDP-102-4.5' were analyzed for TPHd only. Sample FDP-101-4.5' was analyzed individually.
 - Sample FDP-115-5.5' was not analyzed for TPHd.

These missed analytes represent only a fraction of the total analyses completed and did not significantly effect Cambria's ability to assess the hydrocarbon concentrations beneath the former piping, and will not effect our ability to make effective decisions regarding site remediation in the future. If the EPA provides these analytic results at a future date, Cambria will submit the results in a report addendum.


All of the samples analyzed for organic lead were analyzed by McCampbell Analytical, a state-certified laboratory in Pacheco, California (McCampbell). McCampbell also analyzed samples FDP-125 through FDP-141 for TPHd, TPHg, BTEX, and MTBE.

Trench Backfilling and Conduit Installation: The soil identified during the overburden pre-characterization as not-suitable for re-use on site was segregated and stockpiled with the over-excavated hydrocarbon-impacted soil. The remainder of the overburden was used to backfill the trench. Prior to backfilling, two PVC schedule 40 conduits with pull lines were installed in the piping trench. The conduits consisted of one two-inch diameter sealed pipe and one four-inch diameter sealed pipe in an imported clean sand bed. The trench was then backfilled with acceptably clean stockpiled soil and compacted. Where necessary, clean imported fill material was also used to backfill the trench. The trench was repaired to match the existing surface by placing and compacting 1 foot of road base covered by 3 inches of asphalt.

Waste Disposal: After flushing the piping and cutting it to transportable lengths, Turnkey removed the piping from the site and transported it to Ecology Control Industries, Inc., of Richmond, California, for disposal. Cambria sampled the stockpiled, overexcavated soil and submitted the

samples to McCampbell for analysis. Cambria then furnished Turnkey with the analytical results who then transported approximately 388 cubic yds of overexcavated soil and piping overburden that was not suitable for re-use as trench backfill to Altamont landfill for disposal. Liquid waste was stored onsite in a Baker tank pending appropriate disposal by Turnkey. *Status ?*

BACKFILL WELL INSTALLATION



During piping removal and sampling, Cambria installed two backfill wells for the purpose of future free-product collection. Backfill well TBW-5 was installed at location FDP-54 on October 21, 1999. Cambria installed TBW-5 to a total depth of 14.8 feet below ground surface (bgs) with the following construction specifications: 6-inch well diameter, schedule 40 PVC blank from 0 feet bgs to 4.7 feet bgs, 0.020-inch well screen from 4.7 feet bgs to 13.5 feet bgs, end cap from 13.5 feet bgs to 14.8 feet bgs. Backfill well TBW-6 was installed at location FDP-72 on October 21, 1999. Cambria installed TBW-6 to a total depth of 12.9 feet bgs with the following construction specifications: 6-inch well diameter, schedule 40 PVC blank from 0 feet bgs to 2.8 feet bgs, 0.020-inch well screen from 2.8 feet bgs to 11.6 feet bgs, end cap from 11.6 to 12.9 feet bgs.

ANALYTICAL RESULTS AND DISCUSSION

SFO Risk Management Standards

As a preliminary risk-based interpretation of hydrocarbon concentrations at the site, Cambria compared the analytical results for TPHd and TPHg in soil and groundwater to the San Francisco International Airport (SFO) Tier 1 cleanup levels, March 1999 proposed amendments. These standards were presented by Stephen Morse of the San Francisco Regional Water Quality Control Board to attendees of the Groundwater Resources Association's San Francisco Bay Branch January 1999 meeting. Mr. Morse also stated that these thresholds are likely to increase. BTEX were compared to 1995 SFO Management Standards. Although the SFO environment is very similar to that of the Municipal Service Center, these standards are not considered final risk-based cleanup goals. The City of Oakland intends to propose risk-based concentration goals when the site is adequately characterized. Cambria presents these values solely to allow for a preliminary assessment of hydrocarbon impacted soil and groundwater in the vicinity of the former fuel piping system. The standards used are as follows:

SFO Management Standards				
Analyte	5/99	Soil (mg/kg)	Groundwater (µg/l)	
TPHg	629	614	3700	3,700
TPHd	518	360	640	314
Benzene	2.7	2.7*	71	--

* 1995 standard
 — new standard not available
 mg/kg = milligrams per kilogram
 µg/l = micrograms per liter



Fuel Hydrocarbons in Soil

To facilitate presentation of the extensive amount of data collected across a large portion of the site, the site has been divided into sections as presented on Figure 1. Figures 2 through 5 are larger scale close ups of these sections. The analytical results are presented in Tables 1,2, and 3.

Analytical Results for Soil - Figure 2: TPHd concentrations in soil are presented in Figure 2a. TPHg concentrations in soil are presented in Figure 2b. Benzene concentrations in soil are presented in Figure 2c.

TPHd - TPHd concentrations on Figure 2a are below the SFO management standard of 360 mg/kg in all but three of the composite results from the easternmost and central piping runs. Conversely, approximately 64% of the TPHd concentrations in composite samples from the westernmost piping run exceed 360 mg/kg.

TPHg - TPHg concentrations in Figure 2b exceed 614 mg/kg in samples from the western and central piping runs in a north-south oriented zone extending approximately from FDP-86 to FDP-53. Outside of this area in Figure 2, TPHg concentrations decrease significantly and in many samples are less than 10 mg/kg.

Benzene - Detected benzene concentrations in Figure 2c are less than 2.7 mg/kg in all but two composite samples: FDP-91/92 and FDP-53/54. Although benzene detection limits for composite samples in Figure 2 exceed 2.7 mg/kg for approximately 27% of the samples, most of the detection limits are less than 3 mg/kg.

Organic Lead - An organic lead concentration of 2.4 mg/kg was detected in sample FDP-53/54. Organic lead was not detected in any of the other samples collected from the site.

Analytical Results for Soil - Figure 3: TPHd concentrations in soil are presented in Figure 3a. TPHg concentrations in soil are presented in Figure 3b. Benzene concentrations in soil are presented in Figure 3c.

TPHd - TPHd concentrations in Figure 3a are below the 360 mg/kg threshold concentration in all but two of the sample results. Composite sample FDP-118/119 contained 840 mg/kg, and sample FDP-120 contained 1300 mg/kg. However, these samples were collected from beneath a short, 40 foot-long section of former piping, and represent a relatively small aerial extent of contamination.

TPHg - TPHg concentrations in Figure 3b were less than 614 mg/kg in all analyzed composite samples from the easternmost piping run. Fifty percent of the samples analyzed from the center and westernmost piping runs exceed 614 mg/kg.

Benzene - Benzene concentrations in Figure 3c are below 2.7 mg/kg in all but two of the results presented in this figure. Composite sample FDP-118/119 contained 5.5 mg/kg, and sample FDP-120 contained 35 mg/kg. As noted above, these samples were collected from beneath a short, 40 foot-long section of former piping, and represent a relatively small aerial extent of contamination. The benzene detection limit for composite sample FDP-123/124 exceeds 2.7 mg/kg.

Organic Lead - Organic lead was not detected in any of the samples collected from this part of the site.

Analytical Results for Soil - Figure 4: TPHd concentrations in soil are presented in Figure 4a. TPHg concentrations in soil are presented in Figure 4b. Benzene concentrations in soil are presented in Figure 4c. In cases where the shallow sample was excavated, the deeper sample concentration was used in the assessment discussed below.

TPHd - Approximately 23% of the samples collected from the piping run shown in Figure 4a contained TPHd concentrations greater than 360 mg/kg.

TPHg - Approximately 56% of the samples collected from the piping run shown in Figure 4b contained TPHg concentrations greater than 614 mg/kg.

Benzene - Benzene was not detected in any of the Figure 4c samples analyzed; however, detection limits for several samples in Figure 4c slightly exceed the 2.7 mg/kg SFO management threshold for approximately 67% of the samples. The analytical laboratory did not provide a benzene result for sample FDP-17-4.5'.

Organic Lead - Organic lead was not detected in any of the samples collected from this part of the site.

Analytical Results for Soil - Figure 5: TPHd concentrations in soil are presented in Figure 5a. TPHg concentrations in soil are presented in Figure 5b. Benzene concentrations in soil are presented in Figure 5c.

TPHd - No TPHd concentrations greater than 360 mg/kg were detected in samples collected from locations in Figure 5a.

TPHg - TPHg concentrations in Figure 5b are above 614 mg/kg in six of the 14 composite results from the main (approximately north-south oriented) piping run. The composite sample FDP-40/41 contained 1,900 mg/kg and five composite sample results showed TPHg detection limits of 10,000 mg/kg. Although it is not clear exactly why the detection limits were so high, it was likely due to matrix interference, or laboratory error. On this basis, we are assuming that these samples have moderate to high TPHg concentrations. All but one of the samples collected from beneath the former fuel piping that ran approximately east-west, and connected to the main piping run in Figure 5b, contained less than 614 mg/kg TPHg. FDP-50-5.2' contained 800 mg/kg TPHg. The east-west oriented line was constructed of fiberglass.

Benzene - Approximately 21% of the analyzed samples from beneath the main piping run in Figure 5c had benzene concentrations greater than 2.7 mg/l. In addition, approximately 29% of the analyzed samples from beneath the main piping run in Figure 5c had benzene detection limits greater than 2.7 mg/kg. Similar to the TPHg results discussed above, six of the samples had benzene detection limits of 25 mg/kg, and these samples are assumed to contain moderate to high benzene concentrations.

Organic Lead - Organic lead was not detected in any of the samples collected from this part of the site.

Fuel Hydrocarbons in Groundwater

Groundwater samples were collected whenever groundwater was encountered in the excavation. Groundwater was encountered in locations FDP-54, FDP-57, FDP-66, and FDP-72 (Figures 2a, 2b, 2c). Sample FDP-54-W contained separate phase hydrocarbons, so it was not submitted to the laboratory for analysis. No TPHg, BTEX, or MTBE was detected in sample FDP-66-W or FDP-72-W. The analytical laboratory detected TPHd concentrations of 13,000 µg/l, 39,000 µg/l and 49,000 µg/l in FDP-57-W, FDP-66-W and FDP-72-W, respectively. All three of the detected TPHd

concentrations exceed the 314 $\mu\text{g/l}$ SFO standard. The analytical laboratory also reported 32 $\mu\text{g/l}$ TPHg, 8,600 $\mu\text{g/l}$ benzene, 400 $\mu\text{g/l}$, toluene, 510 $\mu\text{g/l}$ ethylbenzene, and 2000 $\mu\text{g/l}$ xylenes. The detected TPHg concentration does not exceed the SFO standard of 3,700 $\mu\text{g/l}$. Cambria notes that the USEPA contract laboratory report of a greater benzene concentration than TPHg concentration in sample FDP-57-W is not an expected pattern.



CONCLUSIONS AND RECOMMENDATIONS

Hydrocarbon concentrations in soil and groundwater exceed the SFO management standards in some site locations, however, most of the analytical results are near or below the SFO thresholds. Although a final assessment of these results will need to be completed once target risk concentrations have been accepted by the ACHCSA and the Regional Water Quality Control Board, at this time, the analytical results for many of the piping samples appear to be within likely acceptable risk-based thresholds. On this basis, and on the indication that natural attenuation processes are occurring at the site, we recommend targeted remediation of hot-spot areas consisting of removal of separate-phase hydrocarbons.



Can't make out piping #s

EXPLANATION

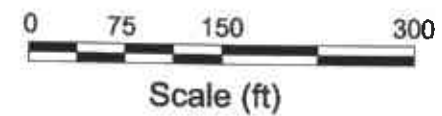
- B40 ⊕ Temporary Monitoring Well
- MW-1 ● Monitoring Well Location
- B-11 ● Soil Boring Location
- TBW-6 ⊕ Tank Backfill Well Location
- ▲ BAT / Hydropunch Locations
- △ No Sample Collected
- Fueling Stations and Pipeline
- - - Fence
- ☐ Pipeline Soil Sample Location
- FIGURE 2 Subsequent Figure Zoomed Area



DAMON SLOUGH

EDGEWATER DRIVE

SAN LEANDRO BAY



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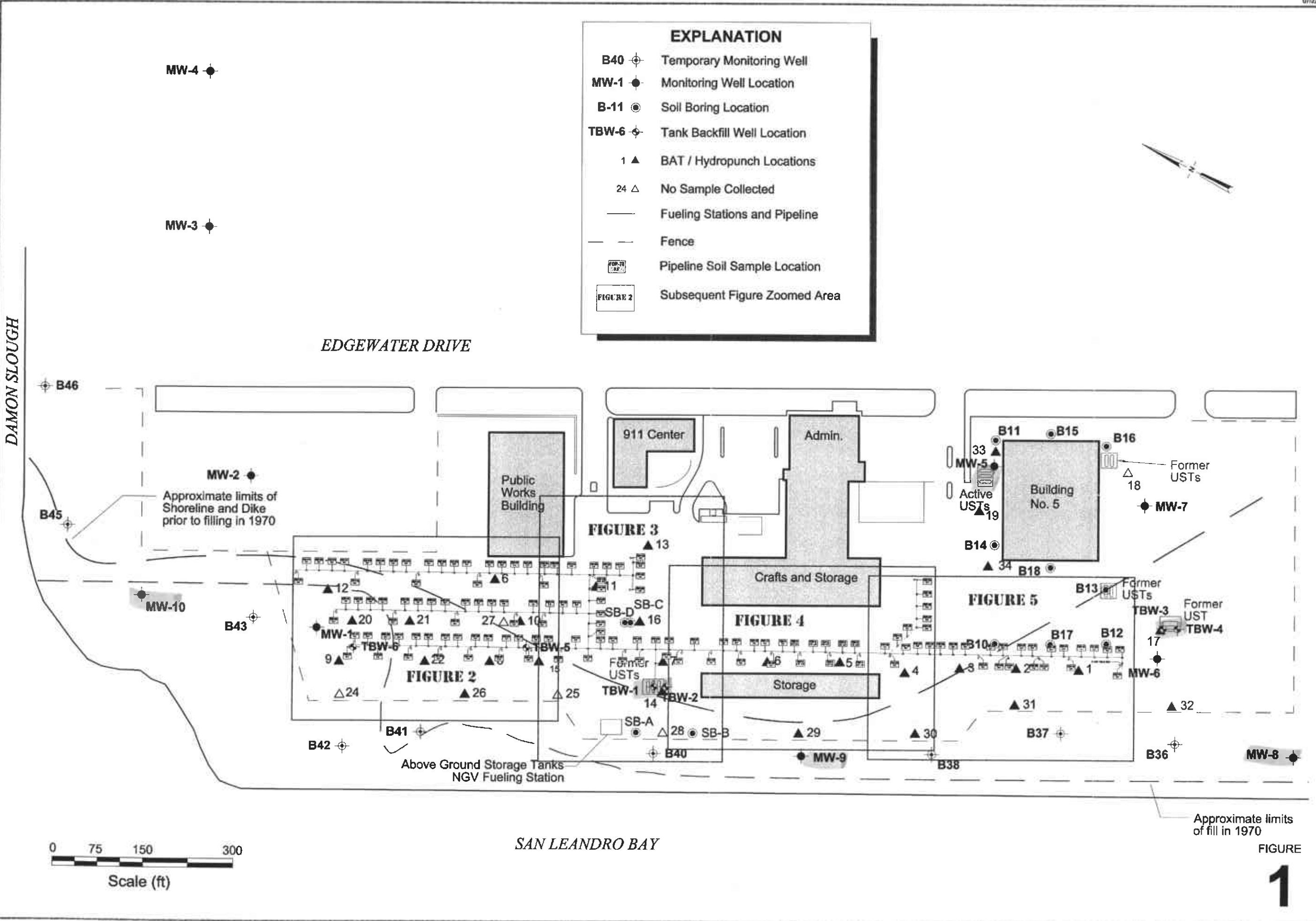
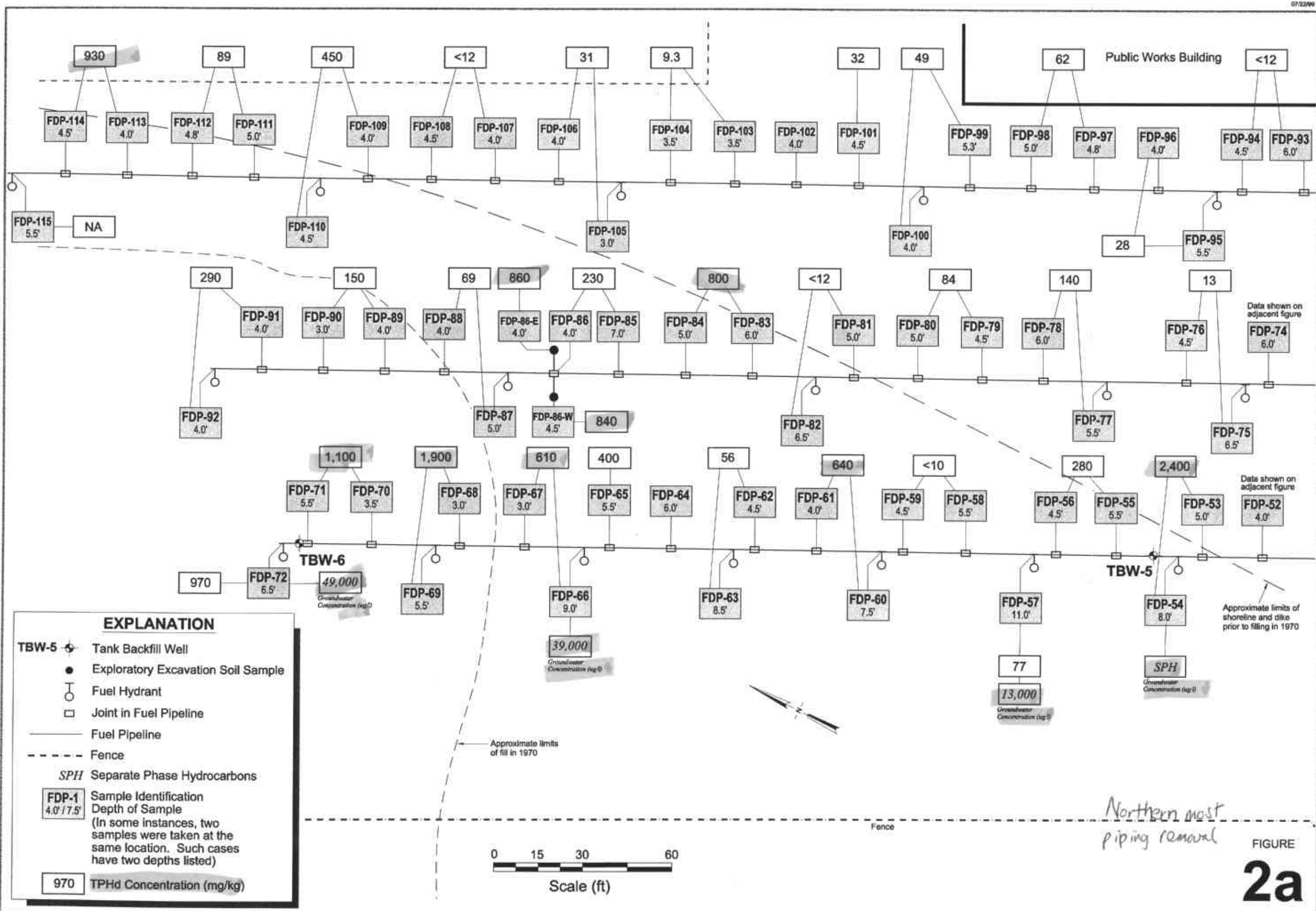
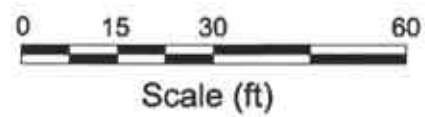


FIGURE 1



EXPLANATION

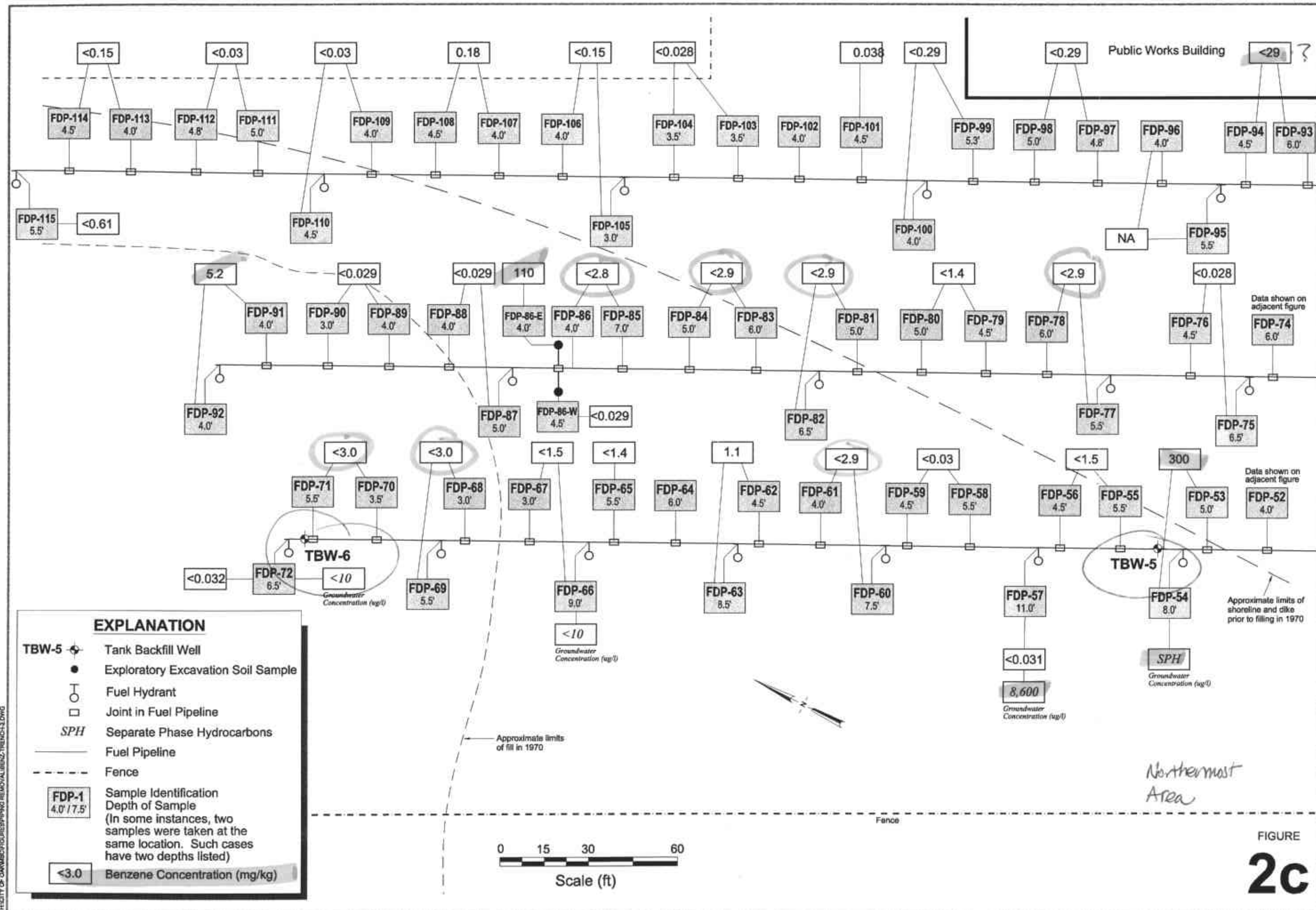
- TBW-5 Tank Backfill Well
- Exploratory Excavation Soil Sample
- Fuel Hydrant
- Joint in Fuel Pipeline
- Fuel Pipeline
- Fence
- SPH Separate Phase Hydrocarbons
- FDP-1 Sample Identification
Depth of Sample
(In some instances, two samples were taken at the same location. Such cases have two depths listed)
- 970 TPHd Concentration (mg/kg)



Northern most piping removal

FIGURE
2a

H:\CITY OF OAKLAND\RESOURCES\REMOVAL\TPHD\TRENCH-2.DWG



CITY OF OAKLAND/DEPARTMENT OF ENVIRONMENTAL HEALTH AND SAFETY

EXPLANATION

- TBW-5 Tank Backfill Well
- Exploratory Excavation Soil Sample
- Fuel Hydrant
- Joint in Fuel Pipeline
- SPH Separate Phase Hydrocarbons
- Fuel Pipeline
- Fence
- FDP-1 Sample Identification
4.0' / 7.5'
Depth of Sample
(In some instances, two samples were taken at the same location. Such cases have two depths listed)
- <math><3.0</math> Benzene Concentration (mg/kg)

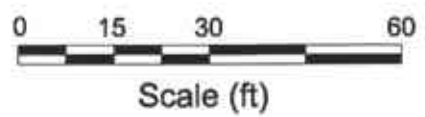


FIGURE
2c

Sample Locations and Benzene Concentrations
September 23, 1998 - December 10, 1998

C A M B R I A

Municipal Service Center
7101 East Edgewater Drive
Oakland, California

Northernmost Area

Approximate limits of shoreline and dike prior to filling in 1970

Data shown on adjacent figure

Data shown on adjacent figure

Public Works Building

NA

TBW-5

TBW-6

Approximate limits of fill in 1970



H:\CITY OF OAKMISC\FIGURES\PIPING REMOVAL\TPHD-TRENCH-3a.DWG

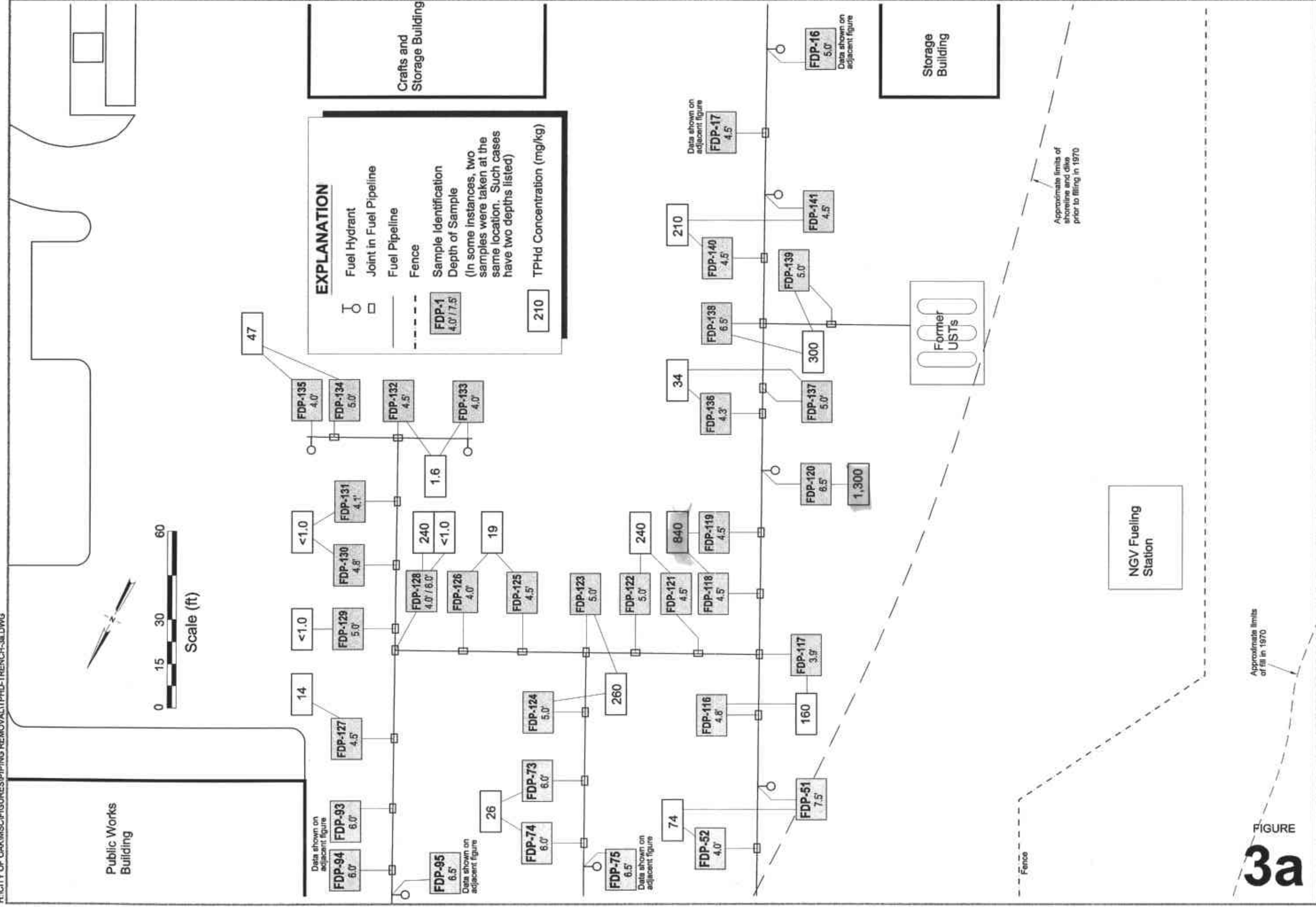


FIGURE 3a

Municipal Service Center
7101 Edgewater Drive
Oakland, California



Northern Central area

Sample Locations and TPHd Concentrations
September 23, 1998 - December 10, 1998

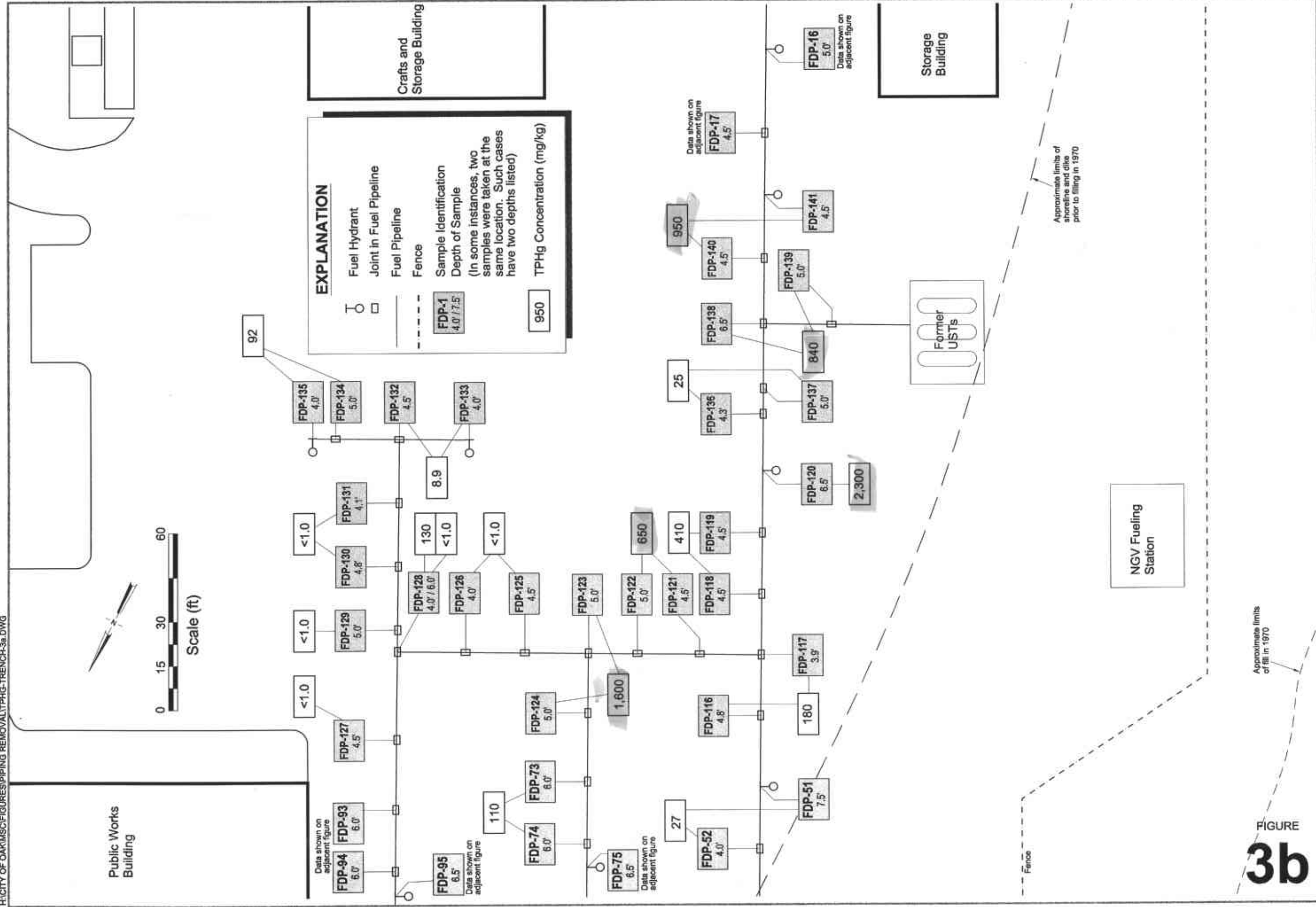


FIGURE 3b

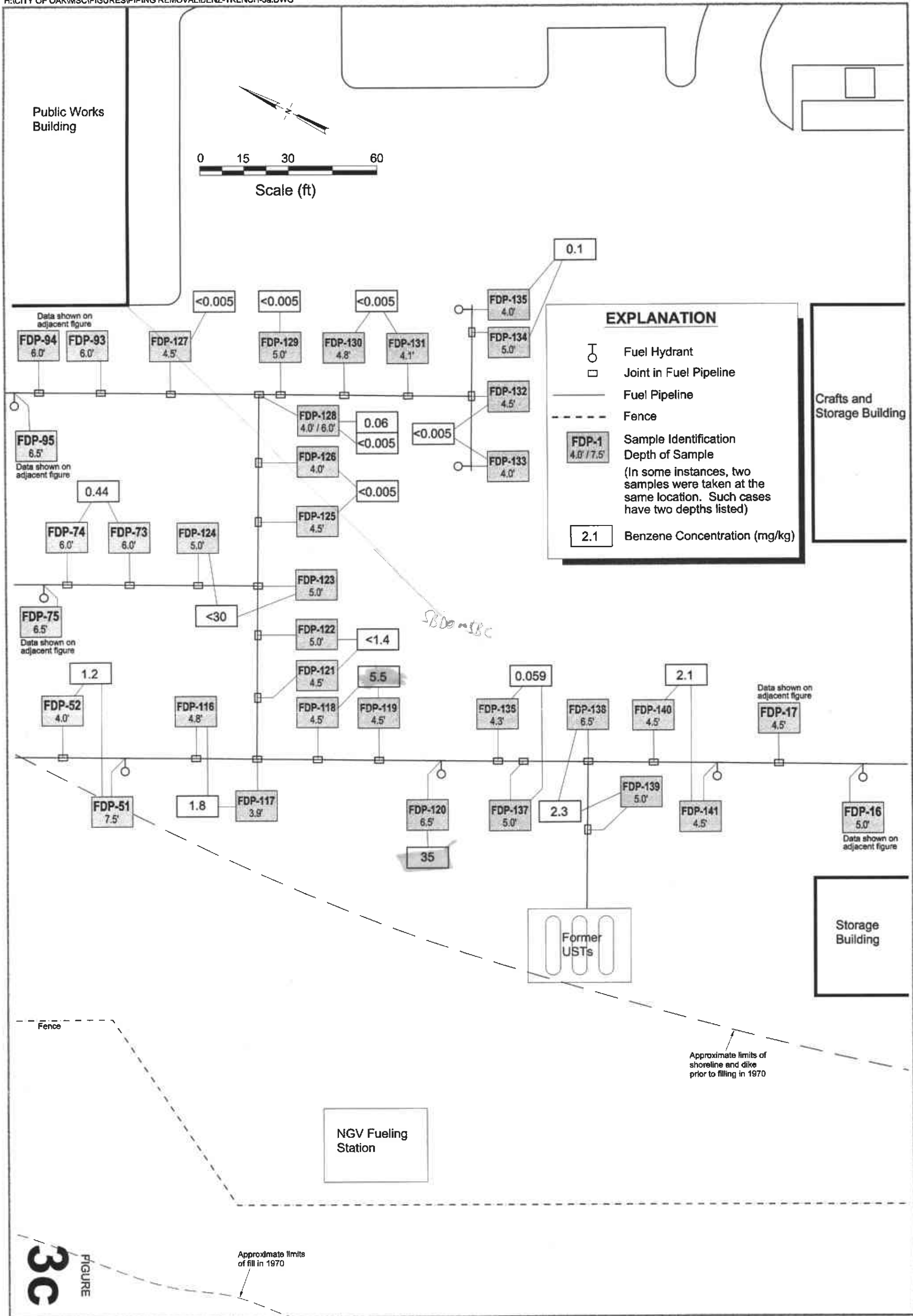
North/Central



Municipal Service Center
 7101 Edgewater Drive
 Oakland, California

C A M B R I A

Sample Locations and TPHg Concentrations
 September 23, 1998 - December 10, 1998



Municipal Service Center

7101 Edgewater Drive
Oakland, California



C A M B R I A

Sample Locations and Benzene Concentrations

September 23, 1998 - December 10, 1998







3C
FIGURE

07/22/98



Crafts and Storage

EXPLANATION

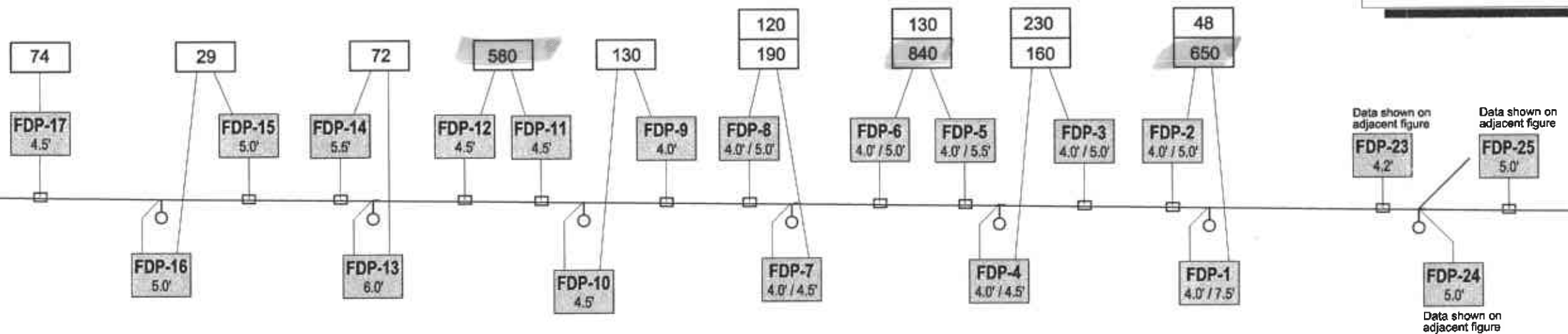
-  Fuel Hydrant
-  Joint In Fuel Pipeline
-  Fuel Pipeline
-  Fence
-  Sample Identification
Depth of Sample
(In some instances, two samples were taken at the same location. Such cases have two depths listed)
-  TPHd Concentration (mg/kg)

Sample Locations and
TPHd Concentrations
September 23, 1998 - December 10, 1998

*Central
Southern
area*


C A M B R I A

Municipal Service Center
7101 Edgewater Drive
Oakland, California



Approximate limits of shoreline and dike prior to filling in 1970

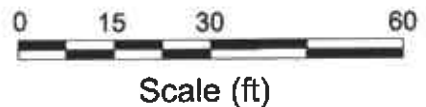


FIGURE
4a



Crafts and Storage

EXPLANATION

- Fuel Hydrant
- Joint in Fuel Pipeline
- Fuel Pipeline
- Fence
- FDP-1**
4.0' / 7.5'
Sample Identification
Depth of Sample
(In some instances, two samples were taken at the same location. Such cases have two depths listed)
- 140**
TPHg Concentration (mg/kg)

Sample Locations and
TPHg Concentrations
September 23, 1998 - December 10, 1998

*central
southern
area*

CAMBRIA

Municipal Service Center
7101 Edgewater Drive
Oakland, California

180

FDP-17
4.5'

21

FDP-15
5.0'

<12

FDP-14
5.5'

2,400

FDP-12
4.5'

FDP-11
4.5'

140

FDP-9
4.0'

1,200
640

FDP-8
4.0' / 5.0'

FDP-7
4.0' / 4.5'

1,400
3,000

FDP-6
4.0' / 5.0'

FDP-5
4.0' / 5.5'

FDP-4
4.0' / 4.5'

2,000
1,300

FDP-3
4.0' / 5.0'

240
2,300

FDP-2
4.0' / 5.0'

FDP-1
4.0' / 7.5'

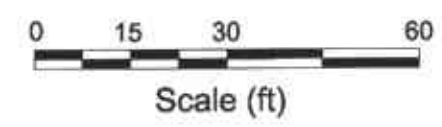
Data shown on adjacent figure
FDP-23
4.2'

Data shown on adjacent figure
FDP-25
5.0'

Data shown on adjacent figure
FDP-24
5.0'

Storage

Approximate limits of shoreline and dike prior to filling in 1970



Fence

FIGURE
4b



Crafts and Storage

EXPLANATION

- Fuel Hydrant
- Joint in Fuel Pipeline
- Fuel Pipeline
- Fence

FDP-1
4.0' / 7.5'

Sample Identification
Depth of Sample
(In some instances, two samples were taken at the same location. Such cases have two depths listed)

<0.29 Benzene Concentration (mg/kg)

Sample Locations and Benzene Concentrations
September 23, 1998 - December 10, 1998

Central Southern area

C A M B R I A



Municipal Service Center
7101 Edgewater Drive
Oakland, California

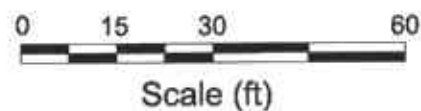
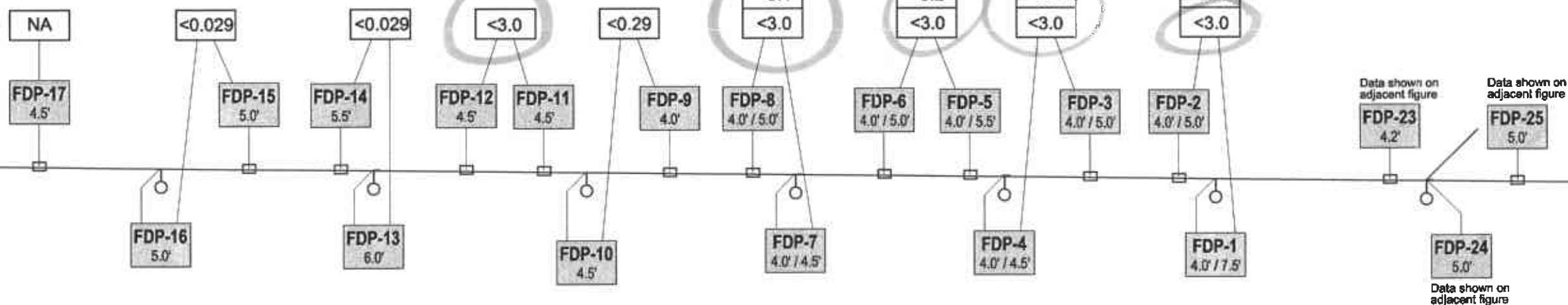
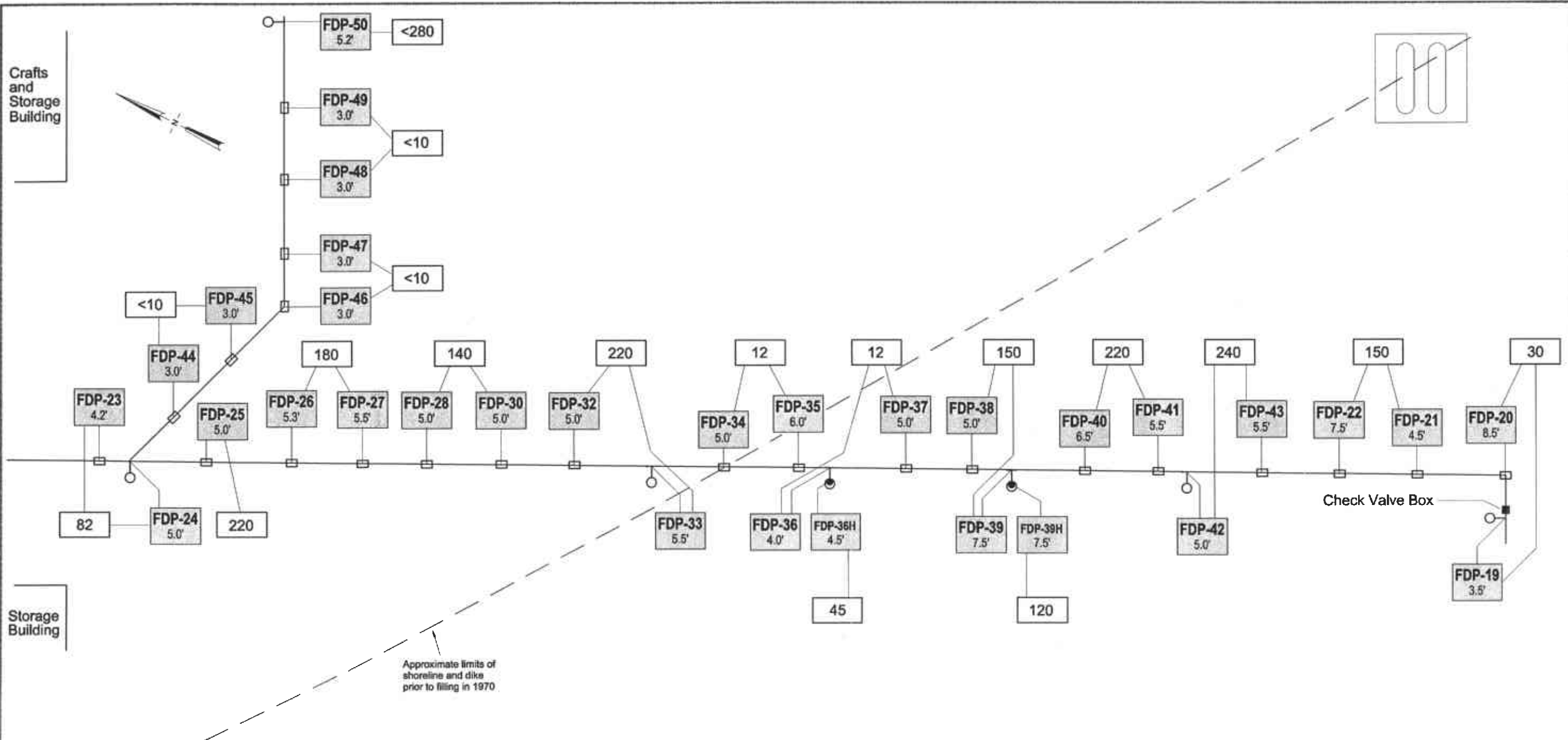


FIGURE
4c



CITY OF OAKLAND:RESPINING REMOVAL:TPHD-TRENCH:DWG

EXPLANATION

- Fuel Hydrant
- Joint in Fuel Pipeline
- Fuel Pipeline
- Fence
- Sample Identification
Depth of Sample
(In some instances, two samples were taken at the same location. Such cases have two depths listed)
- TPHd Concentration (mg/kg)

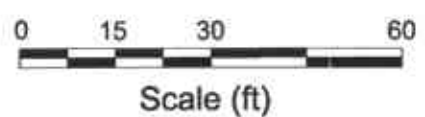


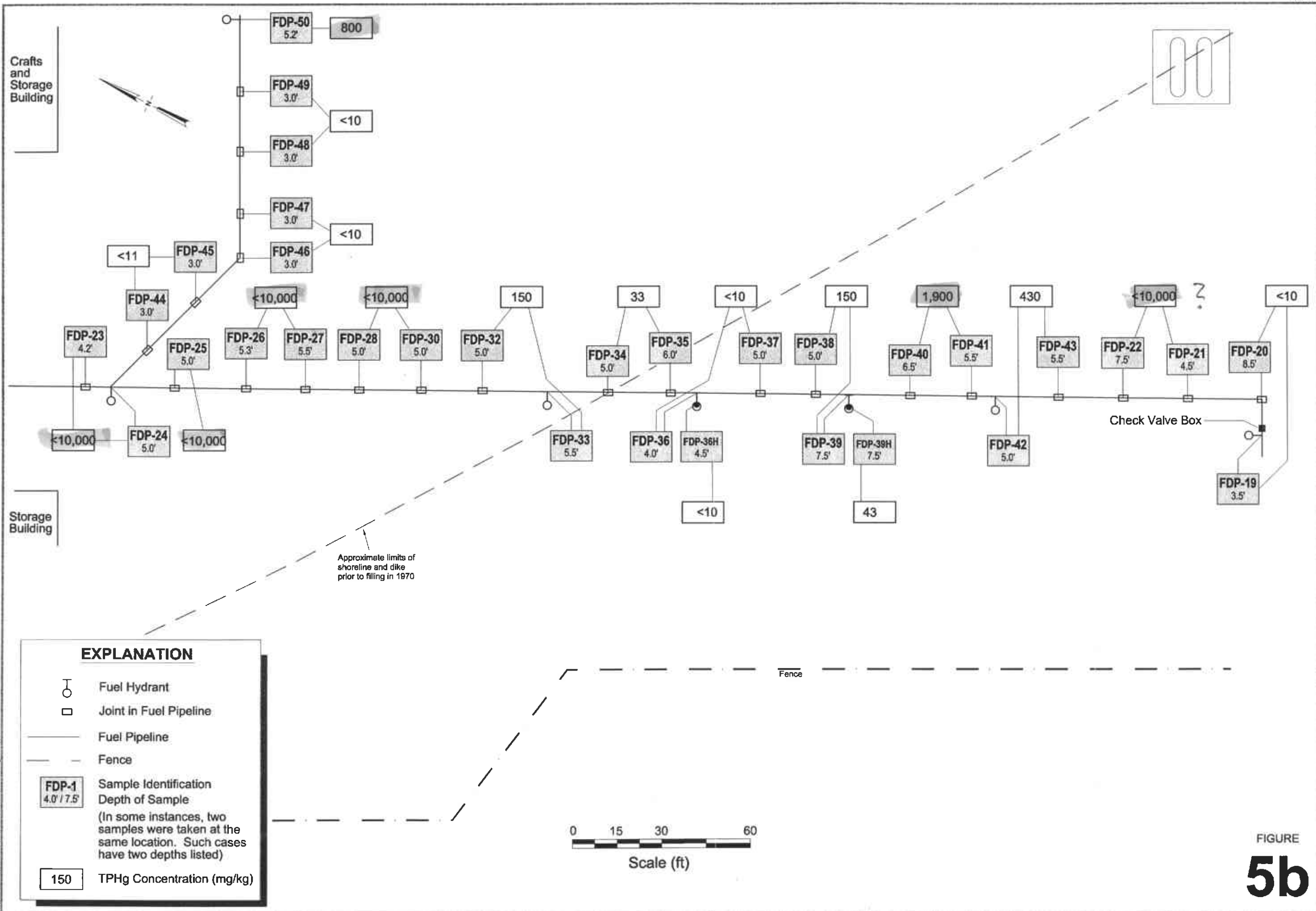
FIGURE
5a

Sample Locations and
TPHd Concentrations
September 23, 1998 - December 10, 1998

*Southernmost
areas*

CAMBRIA

Municipal Service Center
7101 Edgewater Drive
Oakland, California



Sample Locations and
TPHg Concentrations
September 23, 1998 - December 10, 1998

Southernmost area

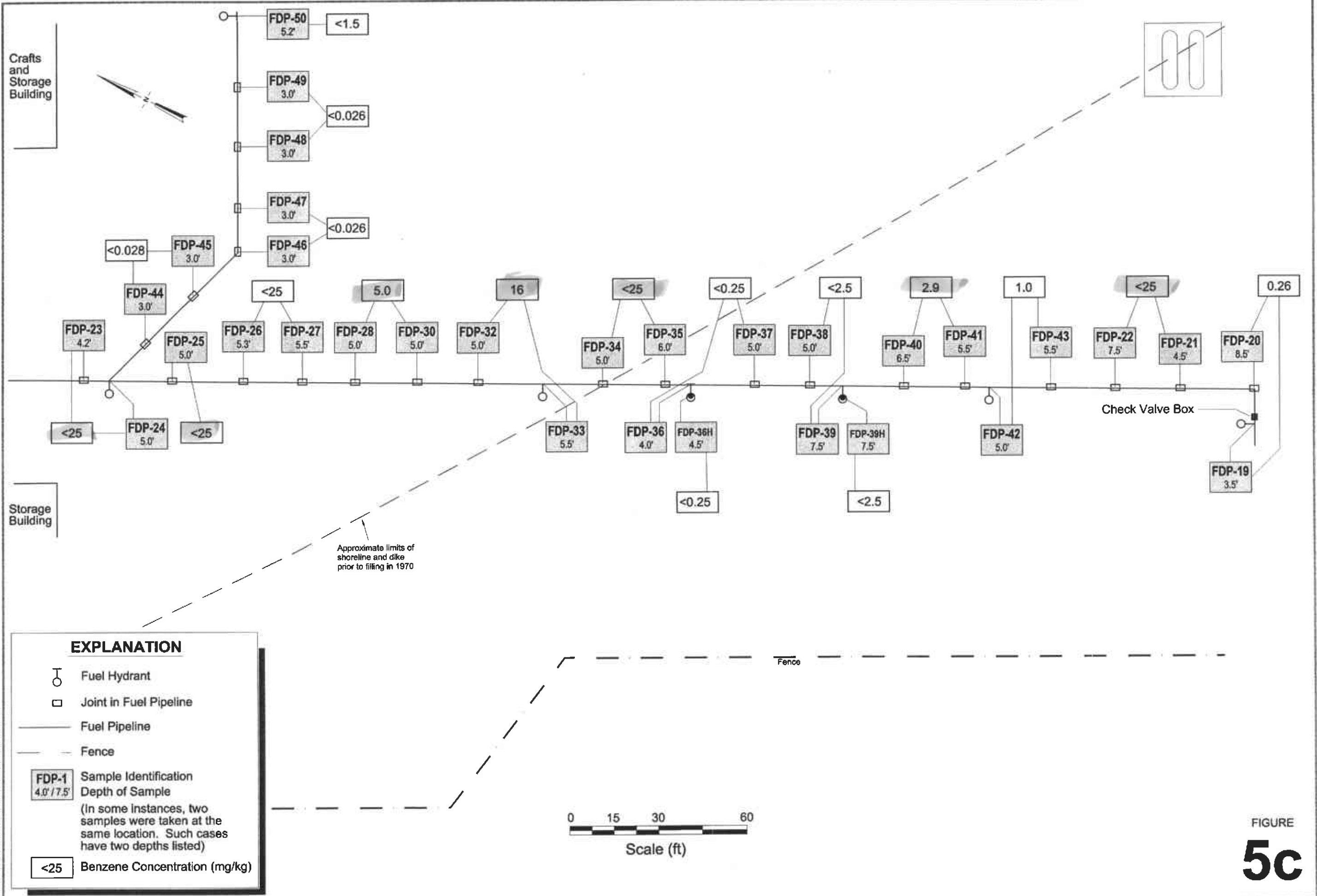


C A M B R I A

Municipal Service Center
7101 Edgewater Drive
Oakland, California

FIGURE
5b

H:\CITY OF CAMBRIDGE\SPRING REMOVAL\TPHg Levels.DWG



Sample Locations and Benzene Concentrations
September 23, 1998 - December 10, 1998

Southernmost Area



C A M B R I A

Municipal Service Center
7101 Edgewater Drive
Oakland, California

H:\CITY OF CAMBRIDGE\ENGINEERING\REMOVAL\BENZ\FIGURE5.DWG

CAMBRIA

Exceed SPIA Recommended Cleanup Levels

7/99

Table 1. Soil Analytical Results for Fuel Hydrocarbons
City of Oakland Municipal Service Center, Oakland, California

Sample ID	Date	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Xylenes	MTBE	Organic Lead
----- (mg/kg) ----->									
FDP-1-4.0',2-4.0'	09/23/98	240	48	<0.31	<0.31	2.7	6.2	<0.62	---
FDP-1-4.0',2-4.0',3-4.0',4-4.0'	09/23/98	---	---	---	---	---	---	---	<0.5
FDP-1-7.5',2-5.0'	09/25/98	2,300	650	<3.0	<3.0	45	77	<6.1	---
FDP-1-7.5',2-5.0',3-5.0',4-4.5'	09/25/98	---	---	---	---	---	---	---	<0.5
FDP-3-4.0',4-4.0'	09/23/98	2,000	230	<3.2	<3.2	29	54	<6.3	---
FDP-3-5.0',4-4.5'	09/25/98	1,300	160	<3.0	<3.0	27	120	<6.0	---
FDP-5-4.0',6-4.0'	09/23/98	1,400	130	<3.2	<3.2	23	52	<6.3	---
FDP-5-4.0',6-4.0',7-4.0',8-4.0'	09/23/98	---	---	---	---	---	---	---	<0.5
FDP-5-5.5',6-5.0'	09/25/98	3,000	840	<3.0	<3.0	53	160	<6.0	---
FDP-5-5.5',6-5.0',7-4.5',8-5.0'	09/25/98	---	---	---	---	---	---	---	<0.5
FDP-7-4.0',8-4.0'	09/24/98	1,200	120	<3.1	<3.1	5.1	7.0	<6.2	---
FDP-7-4.5',8-5.0'	09/25/98	640	190	<3.0	<3.0	13	52	<6.0	---
FDP-9-4.0',10-4.5'	09/25/98	140	130	<0.29	0.29	2.6	2.0	0.59	---
FDP-9-4.0',10-4.5',11-4.5',12-4.5'	09/25/98	---	---	---	---	---	---	---	<0.5
FDP-11-4.5',12-4.5'	09/25/98	2,400	580	<3.0	<3.0	44	78	5.2 L	---
FDP-13-6.0',14-5.5'	09/25/98	<12	72	<0.029	<0.029	<0.029	<0.029	<0.058	---
FDP-13-6.0',14-5.5',15-5.0',16-5.0'	09/25/98	---	---	---	---	---	---	---	<0.5
FDP-15-5.0',16-5.0'	09/25/98	21	29	<0.029	<0.029	<0.029	<0.029	<0.058	---
FDP-17-4.5'	09/25/98	180 L	74	---	---	---	---	---	---
FDP-19-3.5',20-8.5'	10/06/98	<10	30	0.26	<0.25	<0.25	<0.25	---	---
FDP-19-3.5',20-8.5',21-4.5',22-7.5'	10/06/98	---	---	---	---	---	---	---	<0.5

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Table 1. Soil Analytical Results for Fuel Hydrocarbons
City of Oakland Municipal Service Center, Oakland, California

Sample ID	Date	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Xylenes	MTBE	Organic Lead
FDP-21-4.5',22-7.5'	10/06/98	<10,000	150	<25	<25	7.8 L	6.6 L	---	---
FDP-23-4.2',24-5.0'	10/06/98	<10,000	82	<25	<25	15 L	62	---	---
FDP-23-4.2',24-5.0',25-5.0',26-5.3'	10/06/98	---	---	---	---	---	---	---	<0.5
FDP-25-5.0'	10/06/98	<10,000	220	<25	<25	<25	<25	---	---
FDP-26-5.3',27-5.5'	10/06/98	<10,000	180	<25	<25	16 L	37	---	---
FDP-27-5.5',28-5.0',30-5.0',32-5.0'	10/06/98	---	---	---	---	---	---	---	<0.5
FDP-28-5.0',30-5.0'	10/06/98	<10,000	140	5.0 L	<25	31	150	---	---
FDP-29-5.0',31-5.0'	10/06/98	970	110	<25	<25	9.8 L	38	---	---
FDP-32-5.0',33-5.5'	10/06/98	150	220	16 L	<25	48	170	---	---
FDP-33-5.5',34-5.0',35-6.0',36-4.0'	10/06/98	---	---	---	---	---	---	---	<0.5
FDP-34-5.0',35-6.0'	10/06/98	33	12	<25	<25	<25	<25	---	---
FDP-36-4.0',37-5.0'	10/07/98	<10	12	<0.25	<0.25	<0.25	<0.25	---	---
FDP-36H-4.5'	10/07/98	<10	45	<0.25	<0.25	<0.25	<0.25	---	---
FDP-36H-4.5',37-5.0',38-5.0',39-7.5',39H	10/07/98	---	---	---	---	---	---	---	<0.5
FDP-38-5.0',39-7.5'	10/07/98	150	150	<2.5	<2.5	4.6	12	---	---
FDP-39H-7.5'	10/07/98	43	120	<2.5	<2.5	0.78 L	1.2 L	---	---
FDP-40-6.5',41-5.5'	10/07/98	1,900	220	2.9	<2.5	19	30	---	---
FDP-40-6.5',41-5.5',42-5.0',43-5.5'	10/07/98	---	---	---	---	---	---	---	<0.5
FDP-42-5.0',43-5.5'	10/07/98	430	240	1.0	<2.5	5.0	<2.5	---	---
FDP-44-3.0',45-3.0'	10/14/98	<11	<10	<0.028	<0.028	<0.028	<0.028	<0.05	---
FDP-44-3.0',45-3.0',46-3.0',47-3.0'	10/14/98	---	---	---	---	---	---	---	<0.5

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Table 1. Soil Analytical Results for Fuel Hydrocarbons
City of Oakland Municipal Service Center, Oakland, California

Sample ID	Date	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Xylenes	MTBE	Organic Lead
←----- (mg/kg) -----→									
FDP-46-3.0',47-3.0'	10/14/98	<10	<10	<0.026	<0.026	<0.026	<0.026	<0.05	---
FDP-48-3.0',49-3.0'	10/14/98	<10	<10	<0.026	<0.026	<0.026	<0.026	<0.052	---
FDP-48-3.0',49-3.0',50-5.2'	10/14/98	---	---	---	---	---	---	---	<0.5
FDP-50-5.2'	10/14/98	800	<280	<1.5	15	17	69	<3.1	---
FDP-51-7.5',52-4.0'	10/19/98	27	74	1.2	<0.029	0.65	1.1	<0.058	---
FDP-51-7.5',52-4.0',53-5.0',54-8.0	10/19/98	---	---	---	---	---	---	---	2.4
FDP-53-5.0',54-8.0'	10/19/98	23,000	2,400	300	180	300	1,300	<0.06	---
FDP-55-5.5',56-4.5'	10/19/98	780	280	<1.5	1.5	18	15	<2.9	---
FDP-55-5.5',56-4.5',57-11.0',58-5.5'	10/19/98	---	---	---	---	---	---	---	<0.5
FDP-57-11.0'	10/19/98	<12	77	<0.031	<0.031	<0.031	<0.031	<0.062	---
FDP-58-5.5',59-4.5'	10/19/98	7,800	<10	<0.03	<0.03	0.36	<0.03	<0.06	---
FDP-59-4.5',60-7.5',61-4.0',62-4.5'	10/19/98	---	---	---	---	---	---	---	<0.5
FDP-60-7.5',61-4.0'	10/19/98	7,300	640	<2.9	<2.9	270	1,000	<0.057	---
FDP-62-4.5',63-8.5'	10/19/98	110	56	1.1	<0.029	1.4	1.6	0.34	---
FDP-63-8.5',64-6.0'	10/19/98	---	---	---	---	---	---	---	<0.5
FDP-65-5.5'	10/20/98	0.23	400	<1.4	<1.4	<1.4	<1.4	<2.8	---
FDP-65-5.5',66-9.0',67-3.0',68-3.0'	10/20/98	---	---	---	---	---	---	---	<0.5
FDP-66-9.0',67-3.0'	10/20/98	0.97	610	<1.5	<1.5	13	5.6	<3.0	---
FDP-66-9.0',67-3.0'-DUP	10/20/98	0.81	540	<1.5	<1.5	3.4	4.8	<3.0	---
FDP-68-3.0',69-5.5'	10/20/98	1.8	1,900	<3.0	<3.0	<3.0	<3.0	<6.0	---
FDP-69-5.5'	10/20/98	870	400	<0.03	1.0	0.86	4.3	<0.7	---

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CAMBRIA

Table 1. Soil Analytical Results for Fuel Hydrocarbons
City of Oakland Municipal Service Center, Oakland, California

Sample ID	Date	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Xylenes	MTBE	Organic Lead
----- (mg/kg) ----->									
FDP-70-3.5',71-5.5'	10/20/98	1.2 L	1,100	<3.0	<3.0	<3.0	<3.0	<6.1	---
FDP-72-6.5'	10/20/98	<0.013	970	<0.032	<0.032	<0.032	<0.032	<0.064	---
FDP-73-6.0',74-6.0'	10/27/98	110 L	26	0.44	<0.28	2.4	5.9	<0.057	---
FDP-73-6.0',74-6.0',75-6.5',76-4.5'	10/27/98	---	---	---	---	---	---	---	<0.5
FDP-75-6.5',76-4.5'	10/27/98	41	13	<0.028	<0.028	0.38	<0.028	<0.057	---
FDP-75-6.5',76-4.5'-DUP	10/27/98	<130	120	<0.032	<0.32	<0.32	<0.32	<0.065	---
FDP-77-5.5',78-6.0'	10/27/98	410	140	<2.9	<2.9	10	11	<5.9	---
FDP-77-5.5',78-6.0',79-4.5',80-5.0'	10/27/98	---	---	---	---	---	---	---	<0.5
FDP-79-4.5',80-5.0'	10/27/98	760 L	84	<1.4	<1.4	24	10	<58	---
FDP-81-5.0',82-6.5'	10/27/98	850 L	<12	<2.9	<2.9	29	68	<0.058	---
FDP-81-5.0',82-6.5',83-6.0',84-5.0'	10/27/98	---	---	---	---	---	---	---	<0.5
FDP-83-6.0',84-5.0'	10/27/98	830 L	800	<2.9	<2.9	25	57	<5.9	---
FDP-85-7.0',86-4.0'	10/27/98	850 L	230	<2.8	<2.8	<24	18	<5.6	---
FDP-85-7.0',86-4.0',87-5.0',88-4.0'	10/27/98	---	---	---	---	---	---	---	<0.5
FDP-86E-4.0'	10/27/98	1,500 L	860	110	100	470	220	<1.2	---
FDP-86W-4.5'	10/27/98	<12	840	<0.029	<0.029	<0.029	<0.029	<0.058	---
FDP-87-5.0',88-4.0'	10/27/98	28	69	<0.029	<0.029	0.28	<0.56	<0.058	---
FDP-89-4.0',90-3.0'	10/27/98	<12	150	<0.029	<0.029	<0.029	<0.029	<0.058	---
FDP-89-4.0',90-3.0',91-4.0',92-4.0'	10/27/98	---	---	---	---	---	---	---	<0.5
FDP-91-4.0',92-4.0'	10/27/98	130	290	5.2	3.2	2.4	9.0	<0.057	---
FDP-93-6.0',94-4.5'	11/02/98	<12	<12	<29	<29	<29	<29	<58	---

H:\NIR\City of Oakland\Database\QM.mdb - rptSoil_HydrantRemoval

CAMBRIA

Table 1. Soil Analytical Results for Fuel Hydrocarbons
City of Oakland Municipal Service Center, Oakland, California

Sample ID	Date	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Xylenes	MTBE	Organic Lead
FDP-93-6.0',94-4.5',95-5.5',96-4.0'	11/02/98	---	---	---	---	---	---	---	<0.5
FDP-95-5.5',96-4.0'	11/02/98	---	28	---	---	---	---	---	---
FDP-97-4.8',98-5.0'	11/02/98	80 L	62	<0.29	<0.29	0.71	0.73	<0.57	---
FDP-97-4.8',98-5.0',99-5.3',100-4.0'	11/02/98	---	---	---	---	---	---	---	<0.5
FDP-97-4.8',98-5.0'-DUP	11/02/98	850 L	6.9 L	<0.71	<0.71	9.3	6.8	<1.4	---
FDP-99-5.3',100-4.0'	11/02/98	330	49	0.29	<0.29	2.2	<2.7	<0.58	---
FDP-101-4.5'	11/02/98	110	32	0.038	<0.29	2.2	2.6	<0.058	---
FDP-101-4.5',102-4.0',103-3.5',104-3.5'	11/03/98	---	---	---	---	---	---	---	<0.5
FDP-103-3.5',104-3.5'	11/03/98	0.028	9.3 L	<0.028	<0.028	0.52	0.49	<0.057	---
FDP-105-3.0',106-4.0'	11/03/98	0.08	31	<0.15	<0.15	<0.15	2.7	<2.9	---
FDP-105-3.0',106-4.0',107-4.0',108-4.5'	11/03/98	---	---	---	---	---	---	---	<0.5
FDP-107-4.0',108-4.5'	11/03/98	0.013	<12	0.18	<0.03	0.22	0.35	<0.06	---
FDP-109-4.0',110-4.5'	11/03/98	0.65	450	<0.03	<0.03	23	26	17	---
FDP-109-4.0',110-4.5',112-4.8',113-4.0'	11/03/98	---	---	---	---	---	---	---	<0.5
FDP-109-4.0',110-4.5'-DUP	11/03/98	0.33	850	<0.15	<0.15	<0.15	17	<0.31	---
FDP-111-5.0',112-4.8'	11/03/98	0.011 L	89	<0.03	<0.03	<0.03	<0.03	<0.061	---
FDP-113-4.0',114-4.5'	11/03/98	0.15	930	<0.15	<0.15	1.2	<0.15	<0.3	---
FDP-114-4.5',115-5.5'	11/03/98	---	---	---	---	---	---	---	<0.5
FDP-115-5.5'	11/03/98	0.35	---	<0.61	<0.61	6.3	<0.61	<1.2	---
FDP-115-5.5',102-4.0'	11/03/98	---	410	---	---	---	---	---	---
FDP-116-4.8',117-3.9'	11/20/98	180	160	1.8	2.4	6.0	9.1	<0.28	---

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Table 1. Soil Analytical Results for Fuel Hydrocarbons
City of Oakland Municipal Service Center, Oakland, California

Sample ID	Date	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Xylenes	MTBE	Organic Lead
FDP-116-4.8',117-3.9',118-4.5',119-4.5'	11/20/98	---	---	---	---	---	---	---	<0.5
FDP-118-4.5',119-4.5'	11/20/98	410	840	5.5	3.4	15	4.8	<0.29	---
FDP-118-4.5',119-4.5'-DUP	11/20/98	270	790	0.75	2.7	14	5.9	<0.29	---
FDP-120-6.5'	11/20/98	2,300	1,300	35	150	75	400	<0.29	<0.5
FDP-121-4.5',122-5.0'	12/01/98	650	240	<1.4	<1.4	19	81	<3.0	---
FDP-121-4.5',122-5.0',123-5.0',124-5.0'	12/01/98	---	---	---	---	---	---	---	<0.5
FDP-123-5.0',124-5.0'	12/01/98	1,600	260	<30	16	28	100	<61	---
FDP-123-5.0',124-5.0'-DUP	12/01/98	---	180	---	---	---	---	---	---
FDP-123-5.0',124-5.0'-DUP1	12/01/98	1,200	---	<1.5	29	32	130	<3.0	---
FDP-123-5.0',124-5.0'-DUP2	12/01/98	<12,000	---	<30	5.5	10	34	<60	---
FDP-123-5.0',124-5.0'-DUP3	12/01/98	<600	---	<1.4	12	13	47	<3.0	---
FDP-125-4.5',126-4.0'	12/08/98	<1.0	19	<0.005	<0.005	<0.005	<0.005	<0.05	<0.5
FDP-127-4.5'	12/08/98	<1.0	14	<0.005	0.007	0.01	0.008	<0.05	---
FDP-127-4.5',128-4.0',128-6.0',129-5.0'	12/08/98	---	---	---	---	---	---	---	<0.5
FDP-128-4.0'	12/08/98	130	240	0.06	0.4	0.89	0.52	<0.2	---
FDP-128-6.0'	12/08/98	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	---
FDP-129-5.0'	12/08/98	<1.0	<1.0	<0.005	0.013	<0.005	0.022	<0.05	---
FDP-130-4.8',131-4.1'	12/10/98	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	---
FDP-130-4.8',131-4.1',132-4.5',133-4.0'	12/10/98	---	---	---	---	---	---	---	<0.5
FDP-132-4.5',133-4.0'	12/10/98	8.9	1.6	<0.005	0.03	0.015	0.032	<0.05	---
FDP-134-5.0',135-4.0'	12/10/98	92	47	0.1	0.15	0.69	0.37	<0.05	<0.5

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Table 1. Soil Analytical Results for Fuel Hydrocarbons
City of Oakland Municipal Service Center, Oakland, California

Sample ID	Date	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Xylenes	MTBE	Organic Lead
FDP-136-4.3',137-5.0'	12/10/98	25	34	0.059	0.06	0.044	0.096	<0.05	---
FDP-136-4.3',137-5.0',138-6.5'	12/10/98	---	---	---	---	---	---	---	<0.5
FDP-138-6.5',139-5.0'	12/10/98	840	300	2.3	2.3	7.0	28	<2.0	---
FDP-139-5.0',140-4.5',141-4.5'	12/10/98	---	---	---	---	---	---	---	<0.5
FDP-140-4.5',141-4.5'	12/10/98	950	210	2.1	5.2	13	58	<2.0	---

Notes

DUP = Duplicate sample.

All concentrations in milligrams per kilogram (mg/kg)

--- = not measured/analyzed

TPHd = Total Petroleum Hydrocarbons as diesel - analyzed by Modified EPA method 8015

TPHg = Total Petroleum Hydrocarbons as gasoline - analyzed by Modified EPA method 8015

MTBE = Methyl tert-butyl ether - analyzed by EPA Method 8020 or 8260

L = Concentration reported is less than Practical Quantitation Limit; value is estimated.

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Table 2. Groundwater Analytical Results for Fuel Hydrocarbons
 City of Oakland Municipal Service Center, Oakland, California

Sample ID	Date	TPHg	TPHd	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
FDP-57-W	10/19/98	32	13,000	8,600	400	510	2,000	<500
FDP-66-W	10/20/98	<5.0	39,000	<10	<10	<10	<10	<10
FDP-72-W	10/20/98	<5.0	49,000	<10	<10	<10	<10	<10

Notes

DUP = Duplicate sample.

All concentrations in micrograms per liter (ug/l)

--- = not measured/analyzed

TPHd = Total Petroleum Hydrocarbons as diesel - analyzed by Modified EPA method 8015

TPHg = Total Petroleum Hydrocarbons as gasoline - analyzed by Modified EPA method 8015

MTBE = Methyl tert-butyl ether - analyzed by EPA Method 8020 or 8260

L = Concentration reported is less than Practical Quantitation Limit; value is estimated.

C A M B R I A



ATTACHMENT A

Sample Logs

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 1-4.0'

Sample Location: <i>indoor - S end of storage shed</i>	Date: <i>9/23</i>
Collection Method: <i>hand-dive direct into soil, approximately</i>	Time: <i>13:15</i>
Sample Depth: <i>4.0'</i>	

Percentages				Color: <i>grey-black</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>slimy</i>	Permeability: <i>V. low</i>
<i>60</i>	<i>40</i>	<i>-</i>	<i>-</i>	Odor: <i>strong h.c.</i>	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	ML	<u>CL</u>	OL	MH	CH	OH	Pt

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *dark grey-black clay - underlain by light brown clay*
1st 2' of soil may be direct, staining

FDP- 2-4.0'

Sample Location: <i>indoor - S end of storage shed</i>	Date: <i>9/23</i>
Collection Method: <i>hand-dive + scoop</i>	Time: <i>15:00</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	ML	<u>CL</u>	OL	MH	CH	OH	Pt

Percentages				Color: <i>dark grey</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>slimy</i>	Permeability: <i>0</i>
<i>60</i>	<i>40</i>	<i>-</i>	<i>-</i>	Odor: <i>strong h.c.</i>	

Soil Type and Comments: *dark black/grey clay*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 3-4.0'

Sample Location: <i>Joint S end of storage shed</i>	Date: <i>9/23</i>
Collection Method: <i>hand-driven, scoop</i>	Time: <i>15:30</i>
Sample Depth: <i>4.0'</i>	

Percentages				Color: <i>black-charcoal</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>60</i>	<i>40</i>	<i>-</i>	<i>-</i>	Odor: <i>strong h.c.</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	<u>CL</u>	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	-----------	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *dark grey/black clay*

FDP- 4-4.0'

Sample Location: <i>hydrant</i>	Date: <i>9/23</i>
Collection Method: <i>hand driven, scoop</i>	Time: <i>15:55</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	<u>CL</u>	OL	MH	CH	OH	Pt
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Percentages				Color: <i>7 damp</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>dark grey/black</i>	Permeability: <i>V. low</i>
<i>60</i>	<i>40</i>	<i>-</i>	<i>-</i>	Odor: <i>strong h.c.</i>	

Soil Type and Comments: *dark grey, black clay*

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Client: <i>City of Oakland</i>	Project Number: <i>153-1547-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 5-4.0'

Sample Location: <i>Joint</i>	Date:
Collection Method: <i>hand-driven / scoop</i>	Time: <i>16:15</i>
Sample Depth: <i>4.0'</i>	

Percentages				Color: <i>dark gray, black</i>	Plasticity: <i>in high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>60</i>	<i>40</i>	<i>-</i>	<i>-</i>	Odor: <i>strong he</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	<u>CL</u>	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	-----------	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *dark gray, black clay - water intrench, sandst, clay clamp*

FDP- *5*

Sample Location:	Date:
Collection Method:	Time:
Sample Depth:	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments:

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 6 - 4.0'

Sample Location: <i>joint</i>	Date: <i>9/24</i>
Collection Method: <i>hand-driven, scoop for jars</i>	Time: <i>11:15</i>
Sample Depth: <i>4.0'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>M. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>-</i>	Odor: <i>strong he</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *strong he odor of soils decreases w/ depth clayey silt*

FDP- 7 - 4.0'

Sample Location: <i>joint - near center of Storage Shed</i>	Date: <i>9/24</i>
Collection Method: <i>hand driven, scoop</i>	Time: <i>11:45</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>brown and grey mottled</i>	Plasticity: <i>M. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>-</i>	Odor: <i>strong he</i>	

Soil Type and Comments: *grey becomes lighter w/ depth clayey silt*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 8 - 4.0' (1 lab duplicate)

Sample Location: <i>hydrant</i>	Date: <i>9/24</i>
Collection Method: <i>hand driven, scoop</i>	Time: <i>12:05</i>
Sample Depth: <i>4.0'</i>	

Percentages				Color: <i>greenish grey mottled w/ brown</i>	Plasticity: <i>M. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>-</i>	Odor: <i>strong hc</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt - rubble in soil*

FDP-

Sample Location:	Date:
Collection Method:	Time:
Sample Depth:	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments:

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Client: <i>City of Oakland</i>	Project Number: <i>153-1047-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 1 - 7.5'

Sample Location: <i>hydrant</i>	Date: <i>9/25</i>
Collection Method: <i>from backhoe</i>	Time: <i>9:30</i>
Sample Depth: <i>7.5'</i>	

Percentages				Color: <i>grey</i>	Plasticity: <i>moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>-</i>	Odor: <i>moderate gas</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt - note: some gravel encountered (in clay matrix) at bottom of trench*

FDP- 2 - 5.0'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>driven into backhoe</i>	Time: <i>10:10</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>grey mottled black</i>	Plasticity: <i>moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>moist</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>(<5)</i>	Odor: <i>slight hc</i>	

Soil Type and Comments: *clayey silt - some gravel -> black w/ what appears to be hc staining in zones*

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Client: <i>City of Oakland</i>	Project Number: <i>153-1047-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP-3-5.0'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>backhoe</i>	Time: <i>10:00</i>
Sample Depth: <i>5.0'</i>	

Percentages				Color: <i>grey</i>	Plasticity: <i>moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>—</i>	Odor: <i>none</i>	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP-4-4.5'

Sample Location: <i>hydrant</i>	Date: <i>9/25</i>
Collection Method: <i>backhoe</i>	Time: <i>10:25</i>
Sample Depth: <i>4.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt

Percentages				Color: <i>grey mottled brown</i>	Plasticity: <i>m. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i><5</i>	Odor: <i>moderate gas</i>	

Soil Type and Comments: *clayey silt - some gravel again at bottom of trench (in clay matrix)*

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Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 5-5.5'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>backhoe</i>	Time: <i>11:15</i>
Sample Depth: <i>5.5'</i>	

Percentages				Color: <i>grey-brown</i>	Plasticity: <i>M. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>slight he</i>	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP- 6-5.0'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>backhoe</i>	Time: <i>11:30</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt

Percentages				Color: <i>grey mottled brown</i>	Plasticity: <i>moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>slight gas</i>	

Soil Type and Comments: *clayey silt - some gravel + rock + wood debris*

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Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 7 - 4.5'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>back hoe</i>	Time: <i>11:45</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>grey mottled brown</i>	Plasticity: <i>Moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>-</i>	Odor: <i>slight he</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt - decreased amount of gravel from FDP location*

FDP- 8 - 5.0'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>driven into backhoe</i>	Time: <i>12:45</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	<u>CL</u>	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	-----------	----	----	----	----	----

Percentages				Color: <i>brown mottled grey</i>	Plasticity: <i>Moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>60</i>	<i>40</i>	<i>-</i>	<i>-</i>	Odor: <i>slight he</i>	

Soil Type and Comments: *sampled very stiff clay - grey area had*

less clay: clayey silt: 35, 60, 5

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Client: <i>City of Oakland</i>	Project Number: <i>153-1047-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 9-4.0'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>backhoe - drive</i>	Time: <i>13:15</i>
Sample Depth: <i>4.0'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>M. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>-</i>	Odor: <i>strong hc</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP- 10-4.5

Sample Location: <i>hydrant</i>	Date: <i>9/25</i>
Collection Method: <i>backhoe - drive into bucket soil</i>	Time: <i>13:45</i>
Sample Depth: <i>4.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

USC Class:

GW	GP	<u>GM</u>	GC	SW	SP	SM	SC	ML	<u>GC</u>	OL	MH	CH	OH	Pt
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Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
<i>10</i>	<i>30</i>	<i>10</i>	<i>50</i>	Odor:	

Soil Type and Comments: ~~clayey silt~~ *Gravel-sand-silt*

*silty gravel - fill, angular gravel
sand rocks - 1.0mm 1.2mm -*

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Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP-11-4.5'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>driven-backhoe</i>	Time: <i>14:00</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>grey mottled brown</i>	Plasticity: <i>moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>-</i>	Odor: <i>moderate hc</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt - gravelly area as well - fill.*

FDP-12-4.5'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>driven-backhoe</i>	Time: <i>14:30</i>
Sample Depth: <i>4.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	<u>Very dense</u>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	<u>CL</u>	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	-----------	----	----	----	----	----

Percentages				Color: <i>grey</i>	Plasticity: <i>M. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>45</i>	<i>10</i>	<i>10</i>	Odor: <i>moderate hc</i>	

Soil Type and Comments: *clayey silt w/ gravel and sand*

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Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP-13-6.0'

Sample Location: <i>hydrant</i>	Date: <i>9/25</i>
Collection Method: <i>driven - backhoe</i>	Time: <i>15:00</i>
Sample Depth: <i>6.0'</i>	

Percentages				Color: <i>greyish-brown</i>	Plasticity: <i>moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>10</i>	<i>30</i>	<i>30</i>	<i>30</i>	Odor: <i>moderate HC</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	-----------	----	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *silty sand w/gravel gravel-sand-silt mixture*

FDP-14-5.5'

Sample Location: <i>hydrant joint</i>	Date: <i>9/25</i>
Collection Method: <i>backhoe - driven</i>	Time: <i>15:15</i>
Sample Depth: <i>5.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	-----------	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>greyish-brown</i>	Plasticity: <i>moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>10</i>	<i>30</i>	<i>30</i>	<i>30</i>	Odor: <i>moderate HC</i>	

Soil Type and Comments: *gravel-sand-silt mix w/some clay (silt)*

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Client: <i>City of Oakland</i>	Project Number: <i>153-1047-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 15-5.0'

Sample Location: <i>point</i>	Date: <i>7/25</i>
Collection Method: <i>driven-backhoe</i>	Time: <i>15:25</i>
Sample Depth: <i>5.0'</i>	

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>m. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>10</i>	<i>30</i>	<i>30</i>	<i>30</i>	Odor: <i>mod. hc</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	-----------	----	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *gravel-sand-silt w/clay*

FDP- 16-5.0'

Sample Location: <i>hydrant</i>	Date: <i>9/25</i>
Collection Method: <i>driven-backhoe</i>	Time: <i>15:35</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	-----------	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>greyish-brown</i>	Plasticity: <i>m. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>10</i>	<i>30</i>	<i>30</i>	<i>30</i>	Odor: <i>mod. hc</i>	

Soil Type and Comments: *gravel-sand-silt w/clay*

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Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 17 - 4.5'

Sample Location: <i>joint</i>	Date: <i>9/25</i>
Collection Method: <i>backhoe - driven</i>	Time: <i>15:45</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>brown mottled gray</i>	Plasticity: <i>moderate</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>	<i>—</i>	Odor: <i>mod. he</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP-

Sample Location:	Date:
Collection Method:	Time:
Sample Depth:	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments:

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Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 19 - 3.5'

Sample Location: <i>S end of trench</i> ^{fix} <i>check valve + end of pipes</i> ^(no caps - presumably from US removal)	Date: <i>10/6</i>
Collection Method: <i>from backhoe</i>	Time: <i>9:30</i>
Sample Depth: <i>3.5'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>30</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>strong he</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments:

FDP- 20 - 8.5'

Sample Location: <i>corner - S end (joint)</i>	Date: <i>10/6</i>
Collection Method: <i>backhoe - driven</i>	Time: <i>9:35</i>
Sample Depth: <i>8.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>30</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>strong he</i>	

Soil Type and Comments: *clayey silt w/ gravel*

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Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 21 - 4.5'

Sample Location: <i>Joint</i>	Date: <i>10/6</i>
Collection Method: <i>Driven into backhoe bucket</i>	Time: <i>9:45</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>30</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>strong he</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>(ML)</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-------------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP- 22 - 5.5'

Sample Location: <i>Joint</i>	Date: <i>10/6</i>
Collection Method: <i>Driven into backhoe</i>	Time: <i>9:55</i>
Sample Depth: <i>5'3"</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>(ML)</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-------------	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>30</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>Strong he</i>	

Soil Type and Comments:

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Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 23-4.2'

Sample Location: <i>roadway (near FDP-1) Joint</i>	Date: <i>10/6</i>
Collection Method: <i>from backhoe</i>	Time: <i>10:20</i>
Sample Depth: <i>4.2'</i>	

Percentages				Color: <i>greenish grey w/ strong mottled brown</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>30</i>	<i>50</i>	<i>20</i>	<i>—</i>	Odor: <i>slight hc</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt w/ some sand - strong brown lenses very stiff to hard*

FDP- 24-5.0'

(this prop sample taken)

Sample Location: <i>hydrant</i>	Date: <i>10/6</i>
Collection Method: <i>driven into backhoe bucket</i>	Time: <i>11:00 am</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>dark greenish grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>30</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>slight hc</i>	

Soil Type and Comments: *clayey silt w/ some sand + gravel*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 25-5.0'

Sample Location: <i>joint</i>	Date: <i>10/6</i>
Collection Method: <i>driven into backhoe</i>	Time: <i>11:30</i>
Sample Depth: <i>5.0'</i>	

Percentages				Color: <i>dark greenish grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>55</i>	<i>10</i>	<i>10</i>	Odor: <i>slight hc</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt w/ sand + gravel*

FDP- 26-5.3'

Sample Location: <i>joint</i>	Date: <i>10/6</i>
Collection Method: <i>driven into backhoe</i>	Time: <i>12:15</i>
Sample Depth: <i>5.3'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>greenish grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>55</i>	<i>10</i>	<i>10</i>	Odor: <i>strong hc</i>	

Soil Type and Comments: *clayey silt w/ sand + gravel*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 27 - 5.5'

Sample Location: <i>joint</i>	Date: <i>10/6</i>
Collection Method:	Time: <i>13:00 (pm)</i>
Sample Depth:	

Percentages				Color: <i>strong brown mottled greenish grey</i>	Plasticity: <i>m high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>		Odor: <i>150 ppm moderate</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP- 28 - 5.0' and field duplicate FDP- 29-5.0'

Sample Location:	Date: <i>10/6</i>
Collection Method: <i>driven into backhoe</i>	Time: <i>13:15</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>greenish grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>60</i>	<i>5</i>		Odor: <i>pid 223 ppm</i>	

Soil Type and Comments: *clayey silt*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- ~~30~~ -5.0' and *field duplicate FDP-31-5.0'*

Sample Location: <i>joint</i>	Date: <i>10/6</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>13:45</i>
Sample Depth: <i>5.0</i>	

Percentages				Color: <i>strong brown mottled greenish grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>55</i>	<i>5</i>	<i>15</i>	Odor: <i>mod. hc</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt w/ gravel (coarse) some cobbles*

FDP- ~~30~~ -5.0'

Sample Location: <i>joint</i>	Date: <i>10/6</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>14:00</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>str. brn mottled w/ greenish grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>55</i>	<i>5</i>	<i>15</i>	Odor: <i>mod. hc</i>	

Soil Type and Comments: *clayey silt w/ gravel*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- ~~33~~ 34-5.5'

Sample Location: <i>hydrant</i>	Date: <i>10/6</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>14:15</i>
Sample Depth: <i>5.5'</i>	

Percentages				Color: <i>strong brown mottled w/ greenish gray</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>55</i>	<i>15</i>	<i>20</i>	Odor: <i>mod. hc</i>	

USC Class: *pid: 90mm*

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt w/ coarse gravel + cobbles*

FDP- 34-5.0'

Sample Location: <i>joint</i>	Date: <i>10/6</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>15:00</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>brown mottled w/ greenish gray</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>dry</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>65</i>	<i>10</i>	<i>10</i>	Odor: <i>Slight hc</i>	

Soil Type and Comments: *clayey silt w/ angular gravel*
30 ppm

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 35-6.0'

Sample Location: <i>joint</i>	Date: <i>10/6</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>15:15</i>
Sample Depth: <i>6.0'</i>	

Percentages				Color: <i>strong brown w/ mottled greenish gray</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>55</i>	<i>10</i>	<i>10</i>	Odor: <i>slight hc</i>	
<i>15 ppm</i>					

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP- 36-4.0'

Sample Location: <i>hydrant</i>	Date: <i>10/6</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>15:30</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>brown filled w/ gray</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
				Odor: <i>15 ppm low hc</i>	

Soil Type and Comments: *clayey silt*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 36H- 4.5'

Sample Location: <i>beneath hydrant (not joint to hydrant as usual)</i>	Date: <i>10/7</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>8:45</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>grayish brown</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>30</i>	<i>60</i>	<i>10</i>	<i>-</i>	Odor: <i>none - low</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt - mottled black, brown, + grey*

FDP- 37 - 5.0

Sample Location: <i>joint</i>	Date: <i>10/7</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>8:55</i>
Sample Depth: <i>5.0</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>grayish brown</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>30</i>	<i>60</i>	<i>10</i>	<i>-</i>	Odor: <i>none</i>	

Soil Type and Comments: *clayey silt*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 38-5.0'

Sample Location: <i>joint</i>	Date: <i>10/7</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>9:45</i>
Sample Depth: <i>5.0'</i>	

Percentages				Color: <i>grayish brown</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>20</i>	<i>40</i>	<i>20</i>	<i>20</i>	Odor: <i>slight he</i> <i>50 ppm</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Silt w/ clay, sand, + gravel*

FDP- 39-7.5

Sample Location: <i>hydrant</i>	Date: <i>10/7</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>10:00</i>
Sample Depth: <i>7.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>dark gray + black</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>35</i>	<i>65</i>	<i>-</i>	<i>-</i>	Odor: <i>strong HC</i> <i>80 ppm</i>	

Soil Type and Comments: *clayey silt*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP-40-6.5

Sample Location: <i>joint</i>	Date: <i>10/7</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>10:45</i>
Sample Depth: <i>6.5</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>moist</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>50</i>	<i>10</i>	<i>15</i>	Odor: <i>40 ppm</i> <i>mod. he</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	<u>Firm</u>	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt w/ sand + gravel*

FDP-41-5.5'

Sample Location: <i>joint</i>	Date: <i>10/7</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>11:00</i>
Sample Depth: <i>5.5</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>30</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>50 ppm</i> <i>mod. he</i>	

Soil Type and Comments: *clayey silt*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 42-5.0

Sample Location: at <i>hydrant</i>	Date: <i>10/7</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>11:45</i>
Sample Depth: <i>5.0'</i>	

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>M-high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>30</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>25 ppm</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	<u>Very stiff</u>	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP- 39A -7.5

Sample Location: <i>beneath hydrant - not ^{joint in} trench</i>	Date: <i>10/7</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>12:00</i>
Sample Depth: <i>7.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

USC Class:

GW	GP	GM	<u>GC</u>	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>none</i>
Clay	Silt	Sand	Gravel	Moisture: <i>wet</i>	Permeability: <i>M-high</i>
<i>10</i>	<i>10</i>	<i>30</i>	<i>50</i>	Odor: <i>60 ppm</i>	

Soil Type and Comments: *Gravel w/ clayey silt lenses*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 43-5.5'

(phys. prop. sample taken)

Sample Location: <i>joint</i>	Date: <i>10/7</i>
Collection Method: <i>driven → backhoe</i>	Time: <i>12:45</i>
Sample Depth: <i>5.5'</i>	

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>45</i>	<i>15</i>	<i>15</i>	Odor: <i>slight he</i>	

20 ppm

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt w/ sand + gravel*

FDP-

Sample Location:	Date:
Collection Method:	Time:
Sample Depth:	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments:

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 44 - 3.0'

Sample Location: <i>joint</i>	Date: <i>10/14</i>
Collection Method: <i>driven directly into ground w/hammer</i>	Time: <i>10:15</i>
Sample Depth: <i>3.0'</i>	

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>none</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>high</i>
		<i>100</i>		Odor: <i>none</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	-----------	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *fill sand used to surround fuel lines*
poorly sorted, very fine to coarse sand
+ trace (<5%) silt

FDP- 45 - 3.0'

Sample Location: <i>joint</i>	Date: <i>10/14</i>
Collection Method: <i>hand-push liner into ground</i>	Time: <i>10:30</i>
Sample Depth: <i>3.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	-----------	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>none</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>high</i>
		<i>100</i>		Odor: <i>none</i>	

Soil Type and Comments: *fill sand*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 46 - 3.0'

Sample Location: <i>joint</i>	Date: <i>10/14</i>
Collection Method: <i>hand-push</i>	Time: <i>11:00</i>
Sample Depth: <i>3.0'</i>	

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>none</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>high</i>
		<i>100</i>		Odor: <i>none</i>	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *fill sand*

FDP- 47 - 3.0'

Sample Location: <i>joint</i>	Date: <i>10/14</i>
Collection Method: <i>hand-push</i>	Time: <i>11:05</i>
Sample Depth: <i>3.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>none</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>high</i>
		<i>100</i>		Odor: <i>none</i>	

Soil Type and Comments: *fill sand*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schulte</i>

FDP- 48 - 3.0'

Sample Location: <i>joint</i>	Date: <i>10/14</i>
Collection Method: <i>hand-push</i>	Time: <i>11:20</i>
Sample Depth: <i>3.0'</i>	

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>none</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>high</i>
		<i>100</i>		Odor: <i>none</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *fill sand*

FDP- 49 - 3.0'

Sample Location: <i>joint</i>	Date: <i>10/14</i>
Collection Method: <i>hand-push</i>	Time: <i>11:25</i>
Sample Depth: <i>3.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	-----------	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>none</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>high</i>
		<i>100</i>		Odor: <i>none</i>	

Soil Type and Comments:

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-4</i>
Site Address: <i>7101 Edgewater Dr.</i>	Geologist: <i>Schultz</i>

FDP- 50 - 5.2'

Sample Location: <i>hydrant</i>	Date: <i>10/14</i>
Collection Method: <i>hand driven w/ block + hammer / scoop</i>	Time: <i>11:45</i>
Sample Depth: <i>5.2'</i>	

Percentages				Color: <i>greyish brown mottled w/ grey</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>35</i>	<i>65</i>	<i>-</i>	<i>-</i>	Odor: <i>strong h₂o</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt mottled colors - some green*

FDP-

Sample Location:	Date:
Collection Method:	Time:
Sample Depth:	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments:

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 51-7.5'

Sample Location: <i>hydrant</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe - driven</i>	Time: <i>14:00</i>
Sample Depth: <i>7.5'</i>	

Percentages				Color: <i>greyish brown mottled w/ grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>35</i>	<i>65</i>	<i>—</i>	<i>—</i>	Odor: <i>mod. hc</i>	<i>pid: 17 ppm</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	(ML)	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-------------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	(Stiff)	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP- 52 - 4.0'

Sample Location: <i>joint</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe</i>	Time: <i>14:20</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	(Stiff)	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	(ML)	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-------------	----	----	----	----	----	----

Percentages				Color: <i>brown</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>25</i>	<i>55</i>	<i>10</i>	<i>10</i>	Odor: <i>mod. hc</i>	<i>pid: 33 ppm</i>

Soil Type and Comments: *clayey silt w/ some sand + gravel*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP-53-5.0'

Sample Location: <i>Joint</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe</i>	Time: <i>14:30</i>
Sample Depth: <i>5.0</i>	

Percentages				Color: <i>grey mottled w/ brown</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>v. low</i>
<i>30</i>	<i>60</i>	<i>5</i>	<i>5</i>	Odor: <i>pid: 35</i>	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP-54-8.0'

Sample Location: <i>hydrant</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe</i>	Time: <i>14:45</i>
Sample Depth: <i>8.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt

Percentages				Color: <i>grey + black</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp wet</i>	Permeability: <i>v. low</i>
<i>60</i>	<i>30</i>	<i>5</i>	<i>5</i>	Odor: <i>strong ne</i>	

Soil Type and Comments: *clayey silt - some 2"-3" thick layers of coarse sand*
hit water here + product bubbled into trench

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP-55-5.5'

Sample Location: <i>joint</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe</i>	Time: <i>15:00</i>
Sample Depth: <i>5.5'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>35</i>	<i>65</i>	<i>-</i>	<i>-</i>	Odor: <i>mod. he</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

Soil Type and Comments: *clayey silt*

FDP-56-4.5'

Sample Location: <i>joint</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe</i>	Time: <i>15:15</i>
Sample Depth: <i>4.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>30</i>	<i>60</i>	<i>10</i>	<i>-</i>	Odor: <i>mod. he</i>	

Soil Type and Comments: *clayey silt*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-4</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP-57-11.0

Sample Location: <i>hydrant</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe</i>	Time: <i>10:45</i>
Sample Depth: <i>11.0'</i>	

Percentages				Color: <i>brown mottled w/grey</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>35</i>	<i>65</i>	<i>-</i>	<i>-</i>	Odor: <i>slight hc</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

Soil Type and Comments: *clayey silt*

FDP-58-5.5'

Sample Location: <i>joint</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe</i>	Time: <i>15:30</i>
Sample Depth: <i>5.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>greenish brown mottled brown</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>30</i>	<i>60</i>	<i>10</i>	<i>-</i>	Odor: <i>slight hc</i>	

Soil Type and Comments: *clayey silt*

CAMBRIA

Client: <i>City of Oakland</i>	Project Number: <i>153-1247-004</i>
Site Address: <i>7101 Edgewater</i>	Geologist: <i>Schultz</i>

FDP- 59 - 4.5'

Sample Location: <i>joint</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe</i>	Time: <i>15:45</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>grayish brown</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>35</i>	<i>65</i>	<i>-</i>	<i>-</i>	Odor: <i>7 ppm - pick slight h₂</i>	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

Soil Type and Comments: *clayey silt*

FDP- 60 - 7.5'

Sample Location: joint <i>hydrant</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe</i>	Time: <i>16:00</i>
Sample Depth: <i>7.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>grayish brown</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>35</i>	<i>65</i>	<i>-</i>	<i>-</i>	Odor: <i>strong h₂</i>	

Soil Type and Comments: *clayey silt* *pick: 85 ppm*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 61-4.0'

Sample Location: joint	Date: 10/19
Collection Method: backhoe - driven	Time: 16:15
Sample Depth: 4.0'	

Percentages				Color: brownish brown	Plasticity: m. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
35	65			Odor: none	PID Reading (ppm): 4

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: clayey silt

FDP- 62-4.5'

Sample Location: joint	Date: 10/19
Collection Method: backhoe - driven	Time: 16:30
Sample Depth: 4.5'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt

Percentages				Color: brownish brown	Plasticity: m. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
35	65	-	-	Odor: none	PID: 15

Soil Type and Comments:

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 63-8.5'

Sample Location: <i>hydrant</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe-driven</i>	Time: <i>16:45</i>
Sample Depth: <i>8.5'</i>	

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>35</i>	<i>65</i>	<i>-</i>	<i>-</i>	Odor: <i>high</i>	PID Reading (ppm): <i>10</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt*

FDP- 64-6.0'

Sample Location: <i>joint</i>	Date: <i>10/19</i>
Collection Method: <i>backhoe-driven</i>	Time: <i>17:00</i>
Sample Depth: <i>6.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>greyish brown</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>35</i>	<i>65</i>	<i>-</i>	<i>-</i>	Odor: <i>none</i>	PID <i>9 ppm</i>

Soil Type and Comments: *clayey silt*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP-65-5.5'

Sample Location: <i>joint</i>	Date: <i>10/20</i>
Collection Method: <i>backhoe</i>	Time: <i>9:45 am</i>
Sample Depth: <i>5.5'</i>	

Percentages				Color: <i>dark gray</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>20</i>	<i>15</i>	<i>20</i>	<i>45</i>	Odor: <i>slight hc</i>	PID Reading (ppm): <i>13</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey gravel - poorly sorted, fill*

FDP-66-9.0' *field duplicate + water sample*

Sample Location: <i>hydrant</i>	Date: <i>10/20</i>
Collection Method: <i>backhoe</i>	Time: <i>9:30 am</i>
Sample Depth: <i>9.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>brown mottled w/gray</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>wet</i>	Permeability: <i>v. low</i>
<i>30</i>	<i>60</i>	<i>10</i>	<i>-</i>	Odor: <i>slight hc</i>	

Soil Type and Comments: *clayey silt, some v. fine sand*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 67- 3.0'

Sample Location: joint	Date: 10/20
Collection Method: backhoe	Time: 9:50
Sample Depth: 3.0'	

Percentages				Color: black	Plasticity: m. low
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: v. low
20	30	20	30	Odor: mod. h.c	PID Reading (ppm): 15

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: clayey gravel - rubble/debris fill: ceramic pipe, wood, plastic bags, glass

FDP- 68-3.0

Sample Location: joint	Date: 10/20
Collection Method: backhoe	Time: 10:05
Sample Depth: 3.0'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments: clayey gravel - rubble/debris fill: glass, wood, plastic bags, bricks

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 69-5.5'

Sample Location: <i>hydrant</i>	Date: <i>10/20</i>
Collection Method: <i>backhoe</i>	Time: <i>10:15</i>
Sample Depth: <i>5.5'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>V. low</i>
<i>25</i>	<i>30</i>	<i><5</i>	<i>45</i>	Odor: <i>strong he</i>	PID Reading (ppm): <i>25</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey Gravel - some debris*

FDP- 70-3.5'

Sample Location: <i>joint</i>	Date: <i>10/20</i>
Collection Method: <i>backhoe</i>	Time: <i>10:25</i>
Sample Depth: <i>3.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity:
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability:
<i>30</i>	<i>40</i>	<i>30</i>		Odor: <i>mod. hc - gas</i>	<i>pid: 25</i>

Soil Type and Comments: *clayey + sandy silt - rubble + debris in trench*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 71 - 5.5' + phys. prep. 2 sample

Sample Location: <i>Joint</i>	Date: <i>10/20</i>
Collection Method: <i>backhoe</i>	Time: <i>10:55</i>
Sample Depth: <i>5.5'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp-moist</i>	Permeability: <i>low</i>
<i>25</i>	<i>45</i>	<i>30</i>	<i>-</i>	Odor: <i>h - mod.</i>	PID Reading (ppm): <i>20</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	-----------	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *silt - clayey + sandy*

FDP- 72 - 6.5' (+water sample @ 10:45)

Sample Location: <i>hydrant - end of NW line</i>	Date: <i>10/20</i>
Collection Method: <i>backhoe</i>	Time: <i>10:35</i>
Sample Depth: <i>6.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>M. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>wet</i>	Permeability: <i>v. low</i>
<i>30</i>	<i>60</i>	<i>10</i>		Odor: <i>mod. h c</i>	Pid: <i>5.0</i>

Soil Type and Comments: *clayey silt w/ fine sand*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz / <i>BS</i>

FDP- 73 (6')

Sample Location: JOINT 73	Date: 10.27.98
Collection Method: Backhoe	Time: 955
Sample Depth: 6'	

Percentages				Color: Brown	Plasticity: Med
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: Low
25	15	10	40	Odor: Strong H ₂ S	PID Reading (ppm):

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	<u>Firm</u>	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

Soil Type and Comments: Clayey GRAVEL (Fill)

FDP- 74 (6')

Sample Location: JOINT 74	Date: 10.27.98
Collection Method: Backhoe	Time: 1005
Sample Depth: 6'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: Brown	Plasticity: Low-Med
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: Low
25	15	15	45	Odor: Strong H ₂ S	

Soil Type and Comments: Clean GRAVEL (Fill)

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz / <i>ljsi</i>

FDP- 76 - 4.5' field duplicates + phys. prop.

Sample Location: <i>joint</i>	Date: <i>10/27/97</i>
Collection Method: <i>Backhoe</i>	Time: <i>9:00</i>
Sample Depth: <i>4.5' bgs</i>	

Percentages				Color: <i>BROWN REDDISH</i>	Plasticity: <i>low-med</i>
Clay	Silt	Sand	Gravel	Moisture: <i>Dried</i>	Permeability: <i>-L</i>
<i>20</i>	<i>40</i>	<i>25</i>	<i>15</i>	Odor: <i>lbs - gas</i>	PID Reading (ppm): <i>13</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

Soil Type and Comments: *Strong HC odor & stains sandy silt (fill)*

FDP- 75 (6.5') field duplicates

Sample Location: <i>475 Hydrant 75</i>	Date: <i>10/27/97</i>
Collection Method: <i>Backhoe</i>	Time: <i>10:10</i>
Sample Depth: <i>6.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>BROWN</i>	Plasticity: <i>Low to Med</i>
Clay	Silt	Sand	Gravel	Moisture: <i>Wet</i>	Permeability: <i>Low</i>
<i>25</i>	<i>30</i>	<i>15</i>	<i>40</i>	Odor: <i>HC</i>	

Soil Type and Comments: *clayey GRAVEL (fill) - staining/odor*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 77-5.5'

Sample Location: hydrant	Date: 10/27
Collection Method: backhoe	Time: 10:46
Sample Depth: 5.5'	

Percentages				Color: dark yellowish brown w/ grey mottling	Plasticity: m. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
15	25	25	35	Odor: strong he	PID Reading (ppm):

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: clayey gravel

FDP- 78-6.0

Sample Location: joint	Date: 10/27
Collection Method: backhoe	Time: 11:00
Sample Depth: 6.0'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: brown mottled grey	Plasticity: m. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
15	50	15	20	Odor: strong he	

Soil Type and Comments: silt w/ gravel, sand + clay

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 79- 4.5

Sample Location: joint	Date: 10/27
Collection Method: backhoe	Time: 11:15
Sample Depth: 4.5'	

Percentages				Color: brown mottled gray	Plasticity: m. W
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: L
20	50	25	5	Odor: strong gas	PID Reading (ppm): -

USC Class:

GW	GP	GM	GC	SW	SP	<u>SM</u>	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	-----------	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: Sandy Silt w/ clay + gravel

FDP- 80- 5.0'

small quantities in area isolated

Sample Location: joint	Date: 10/27
Collection Method: backhoe	Time: 11:25
Sample Depth: 5.0'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	<u>SM</u>	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	-----------	----	----	----	----	----	----	----	----

Percentages				Color: brown mottled gray	Plasticity: medium
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
15	35	45	5	Odor: strong gas	

Soil Type and Comments: ~~Silt~~ Sandy Silt Silty Sand

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz / <i>R. J. G.</i>

FDP- 81 (5')

Sample Location: <i>JOINT 81</i>	Date: <i>10/27/93</i>
Collection Method: <i>Backhoe</i>	Time: <i>1130</i>
Sample Depth: <i>Backhoe</i>	

Percentages				Color: <i>Brown</i>	Plasticity:
Clay	Silt	Sand	Gravel	Moisture: <i>Damp</i>	Permeability:
<i>15</i>	<i>20</i>	<i>15</i>	<i>40</i>	Odor: <i>Strong HC</i>	PID Reading (ppm):

USC Class:

GW	GP	GM	<u>GC</u>	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

Soil Type and Comments: *Clayey GRAVEL (FILL)*

FDP- 82-6.5'

Sample Location: <i>hydrant</i>	Date: <i>10/27</i>
Collection Method: <i>backhoe</i>	Time: <i>11:43</i>
Sample Depth: <i>6.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

USC Class:

GW	GP	GM	<u>GC</u>	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>dark grey w/ brown</i>	Plasticity: <i>medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>M. low</i>
<i>25</i>	<i>25</i>	<i>35</i>	<i>15</i>	Odor: <i>strong hc</i>	

Soil Type and Comments: *low Sand-gravel-silt-clay mixture
coarse angular sand w/*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 83 (6')

Sample Location: JOINT 83	Date: 10.27.99
Collection Method: Backhoe	Time: 1307
Sample Depth: 6'	

Percentages				Color: Brown	Plasticity: Low-Med
Clay	Silt	Sand	Gravel	Moisture: Damp	Permeability: Low-Med
25	20	15	40	Odor: Strong H ₂ S	PID Reading (ppm):

USC Class:

GW	GP	GM	<u>GC</u>	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

Soil Type and Comments: Clayey GRAVEL (FILL)

FDP- 84 (5')

Sample Location: JOINT 84	Date: 10.27.99
Collection Method: BACKHOE	Time: 1316
Sample Depth: 5'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

USC Class:

GW	GP	GM	<u>GC</u>	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: Brown	Plasticity: Med
Clay	Silt	Sand	Gravel	Moisture: Damp	Permeability: Low
30	10	25	35	Odor: Strong H ₂ S	

Soil Type and Comments:

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 85

Sample Location: <u>JOINT 85</u>	Date: <u>10.27.98</u>
Collection Method: <u>BARLIDE</u>	Time: <u>1321</u>
Sample Depth: <u>7'</u>	

Percentages				Color: <u>BROWN</u>	Plasticity: <u>MS</u>
Clay	Silt	Sand	Gravel	Moisture: <u>DAND</u>	Permeability: <u>LOW</u>
<u>20</u>	<u>20</u>	<u>20</u>	<u>40</u>	Odor: <u>Strong H₂</u>	PID Reading (ppm):

USC Class:

GW	GP	GM	<u>GC</u>	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	<u>Loose</u>	Medium dense	Dense	Very dense	

Soil Type and Comments: clayey gravel (fine)

FDP-

Sample Location:	Date:
Collection Method:	Time:
Sample Depth:	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments:

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 86 - 4.0'

Sample Location: <i>Joint</i>	Date: <i>10/27</i>
Collection Method: <i>backhoe</i>	Time: <i>2:05</i>
Sample Depth: <i>4.0'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>20</i>	<i>25</i>	<i>25</i>	<i>30</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>-</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Debris-fill clayey silt w/ gravel + sand + debris - roots, wires, glass, bricks*

FDP- 87 - 5.0'

Sample Location: <i>hydrant</i>	Date: <i>10/27</i>
Collection Method: <i>backhoe</i>	Time: <i>14:17</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>m. low</i>
<i>15</i>	<i>30</i>	<i>40</i>	<i>15</i>	Odor: <i>strong gas</i>	

Soil Type and Comments: *Fill: Debris - clayey silt w/ sand + gravel*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 88-4.0

Sample Location: joint	Date: 10/27
Collection Method: backhoe	Time: 14:25
Sample Depth: 4.0'	

Percentages				Color: dark grey - black	Plasticity: low (matrix m. hq)
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
20	35	25	20	Odor: moderate gas	PID Reading (ppm): -

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: clayey-silt w/ gravel + sand Fill: debris

FDP- 89-4.0'

Sample Location: joint	Date: 10/27
Collection Method: backhoe	Time: 14:33
Sample Depth: 4.0'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: dark grey	Plasticity: low
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low-medium
20	25	35	20	Odor: strong gas	

Soil Type and Comments: clayey silt w/ gravel + sand : Fill: debris

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 90- 3.0'

Sample Location: <i>joint</i>	Date: <i>10/27</i>
Collection Method: <i>backhoe</i>	Time: <i>14:47</i>
Sample Depth: <i>3.0'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>none</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>m. high</i>
<i>10</i>	<i>30</i>	<i>60</i>	<i>15</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>-</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Sand w/ chunks of clayey silt, fill (shading sand w/ clayey silt from below)*

FDP- 91- 4.0'

Sample Location: <i>joint</i>	Date: <i>10/27</i>
Collection Method: <i>backhoe</i>	Time: <i>14:55</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>medium</i>
<i>10</i>	<i>30</i>	<i>50</i>	<i>10</i>	Odor: <i>strong hc</i>	

Soil Type and Comments: *silty silt w/ clay + gravel*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP-92-4.0 - phys. prop.

Sample Location: hydrant	Date: 10/27
Collection Method: backhoe	Time: 15:00
Sample Depth: 4.0'	

Percentages				Color: dark grey	Plasticity: M. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
25	45	15	15	Odor: strong gas	PID Reading (ppm): -

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments:	Clayey Silt w/ sand + gravel
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FDP-86E-4.0'

Sample Location: cross-trench: 8' from trench	Date: 10/27
Collection Method: backhoe	Time: 15:43
Sample Depth: 4.0'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt

Percentages				Color: dark grey	Plasticity: M. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
25	45	15	15	Odor: strong gas	

Soil Type and Comments:	clayey silt / sand / gravel
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CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 86W-4.5

Sample Location: <i>cross trench : 7' west of trench</i>	Date: <i>10/27</i>
Collection Method: <i>back hoe</i>	Time: <i>15:35</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>dark gray-black</i>	Plasticity: <i>m. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>20</i>	<i>45</i>	<i>25</i>	<i>15</i>	Odor: <i>strong gas</i>	PID Reading (ppm):

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	<u>Stiff</u>	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt w/ sand + gravel*

FDP-

Sample Location:	Date:
Collection Method:	Time:
Sample Depth:	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments:

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 93-6.0

Sample Location: <i>Joint</i>	Date: <i>11/2/98</i>
Collection Method: <i>back hoe</i>	Time: <i>15:30</i>
Sample Depth: <i>6.0'</i>	

Percentages				Color: <i>yellowish brown w/ gravel</i>	Plasticity: <i>(slight) v. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
<i>10</i>	<i>15</i>	<i>50</i>	<i>25</i>	Odor: <i>mod. hc</i>	PID Reading (ppm): <i>—</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey sand w/ gravel*

FDP- 94-4.5

Sample Location: <i>joint</i>	Date: <i>11/2/98</i>
Collection Method: <i>back hoe</i>	Time: <i>15:45</i>
Sample Depth: <i>4.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

Percentages				Color: <i>yellowish br mottled grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>moderate</i>
<i>10</i>	<i>15</i>	<i>50</i>	<i>25</i>	Odor: <i>mod-strong hc</i>	

Soil Type and Comments: *clayey sand w/ gravel*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP-95-5.5

Sample Location: hydrant	Date: 11/2
Collection Method: backhoe	Time: 15:50
Sample Depth: 5.5'	

Percentages				Color: brown mottled w/ grey	Plasticity: low
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: mod.
10	15	50	25	Odor: mod. hc	PID Reading (ppm):

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: clayey sand w/ gravel

FDP-96-4.0'

Sample Location: joint	Date: 11/2
Collection Method: backhoe	Time: 15:55
Sample Depth: 4.0	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

Percentages				Color: strong brown mottled w/ grey	Plasticity: low
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: mod.
16	15	50	25	Odor: mod. hc	

Soil Type and Comments: clayey sand

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 97-4.8' *field duplicate*

Sample Location: <i>joint</i>	Date: <i>11/2</i>
Collection Method: <i>backhoe</i>	Time: <i>16:10</i>
Sample Depth: <i>4.8'</i>	

Percentages				Color: <i>brn with grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
<i>10</i>	<i>15</i>	<i>50</i>	<i>25</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>—</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	<u>SC</u>	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

Soil Type and Comments: *clayey sand w/ gravel*

FDP- 98-5.0 *field duplicate*

Sample Location: <i>joint</i>	Date: <i>11/2/98</i>
Collection Method: <i>backhoe</i>	Time: <i>16:15</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	<u>SC</u>	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

Percentages				Color: <i>brn with grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
<i>10</i>	<i>15</i>	<i>50</i>	<i>25</i>	Odor: <i>strong hc</i>	

Soil Type and Comments: *clayey sand*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 99-5.3'

Sample Location: <i>hydrant</i>	Date: <i>11/2</i>
Collection Method: <i>buckhoe</i>	Time: <i>16:25</i>
Sample Depth: <i>5.3'</i>	

Percentages				Color: <i>br mott grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
<i>10</i>	<i>15</i>	<i>50</i>	<i>25</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>-</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey sand*

FDP- 100-4.0

Sample Location: <i>hydrant</i>	Date: <i>11/2</i>
Collection Method: <i>buckhoe</i>	Time: <i>16:35</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

Percentages				Color: <i>br mott grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
<i>10</i>	<i>15</i>	<i>50</i>	<i>25</i>	Odor: <i>mod. hc</i>	<i>-</i>

Soil Type and Comments: *clayey sand w/ gravel*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 101 - 4.5'

Sample Location: <i>joint</i>	Date: <i>11/2</i>
Collection Method: <i>backhoe</i>	Time: <i>16:45</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>grayish tan</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>clump</i>	Permeability: <i>mod</i>
<i>10</i>	<i>15</i>	<i>50</i>	<i>25</i>	Odor: <i>mod-strong hc</i>	PID Reading (ppm): <i>-</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey sand w/ gravel*

FDP-

Sample Location:	Date:
Collection Method:	Time:
Sample Depth:	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments:

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 102 - 4.0'

Sample Location: <i>joint</i>	Date: <i>11/3</i>
Collection Method: <i>bucket → driven into bucket</i>	Time: <i>8:40</i>
Sample Depth: <i>4.0'</i>	

Percentages				Color: <i>olive grey</i>	Plasticity: <i>low (matrix high)</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
<i>10</i>	<i>10</i>	<i>60</i>	<i>20</i>	Odor: <i>mod.</i>	PID Reading (ppm): <i>-</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey sand w/ gravel*

FDP- 103 - 3.5'

Sample Location: <i>joint</i>	Date: <i>11/3</i>
Collection Method: <i>bucket</i>	Time: <i>8:45</i>
Sample Depth: <i>3.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

Percentages				Color: <i>olive grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.-</i>
<i>10</i>	<i>10</i>	<i>60</i>	<i>20</i>	Odor: <i>strong wa</i>	

Soil Type and Comments: *clayey sand w/ gravel*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP-104-3.5

Sample Location: <i>cont</i>	Date: <i>11/3</i>
Collection Method: <i>bucket</i>	Time: <i>8:55</i>
Sample Depth: <i>3.5'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
<i>10</i>	<i>10</i>	<i>60</i>	<i>20</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>—</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	<u>SC</u>	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

Soil Type and Comments: *Clayey Sand w/ gravel + cobbles*

FDP-105-3.0

dug test bit here - @ 4.5' v. strong odor

Sample Location: <i>hydrant</i>	Date: <i>11/3</i>
Collection Method: <i>bucket</i>	Time: <i>9:05</i>
Sample Depth: <i>3.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	<u>SC</u>	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

Percentages				Color: <i>brn mott grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
<i>10</i>	<i>10</i>	<i>60</i>	<i>20</i>	Odor: <i>strong hc</i>	

Soil Type and Comments: *Clayey Sand w/ gravel*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 106 - 4.0

Sample Location: <i>joint</i>	Date: <i>11/3</i>
Collection Method: <i>backhoe</i>	Time: <i>9:20</i>
Sample Depth: <i>4.0'</i>	

Percentages				Color: <i>gray</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod</i>
<i>10</i>	<i>20</i>	<i>50</i>	<i>20</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>-</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	-----------	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey sand w/ gravel - increased fines over 105*

FDP- 107 - 4.0

Sample Location: <i>joint</i>	Date: <i>11/3</i>
Collection Method: <i>backhoe</i>	Time: <i>9:30</i>
Sample Depth: <i>4.0</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	-----------	-----------	----	----	----	----	----	----	----

Percentages				Color: <i>gray-dk gray</i>	Plasticity: <i>low-med.</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod-low</i>
<i>15</i>	<i>25</i>	<i>40</i>	<i>20</i>	Odor: <i>strong hc</i>	<i>-</i>

Soil Type and Comments: *Silt Sand w/ gravel + clay*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

~~Field duplicate~~

FDP- 108-4.5 test pit to 7.5' - v. strong odor at bottom

Sample Location: joint	Date: 11/3
Collection Method: backhoe	Time: 9:40
Sample Depth: 4.5'	

Percentages				Color: br matt grey	Plasticity: med. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
20	60	15	5	Odor: strong he	PID Reading (ppm): —

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	-----------	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: clayey silt w/ sand + gravel

field duplicate

FDP- 109-4.0

Sample Location: joint	Date: 11/3
Collection Method: backhoe	Time: 10:30
Sample Depth: 4.0'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: black	Plasticity: m. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
20	60	20		Odor: strong he	

matrix:
w/ ~30%
debris

Soil Type and Comments: clayey + sandy silt w/ debris

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP-110-4.5 field duplicate

Sample Location: Hydrant	Date: 11/3
Collection Method: backhoe	Time: 11:00
Sample Depth: 4.5'	

Percentages				Color: dark grey	Plasticity: med.
Clay	Silt	Sand	Gravel/dup	Moisture: damp	Permeability: mod
20	30	20	30	Odor: strong hc	PID Reading (ppm): —

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Soil Strength:						
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: Debris fill - clayey silt matrix around glass, bricks, wires, bags, shoes, etc.

FDP-111-5.0

Sample Location: Joint	Date: 11/3
Collection Method: backhoe	Time: 11:25
Sample Depth: 5.0'	

Soil Strength:						
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: dark green/black	Plasticity: med.
Clay	Silt	Sand	Gravel/dup	Moisture: damp	Permeability: mod. - low
20	40	15	25	Odor: strong hc	

Soil Type and Comments: Debris fill w/ clayey silt w/ sand

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 112 - 4.8

Sample Location: <i>inlet</i>	Date: <i>11/3</i>
Collection Method: <i>backhoe</i>	Time: <i>11:45</i>
Sample Depth: <i>4.8</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>med.</i>
Clay	Silt	Sand	Gravel	Moisture: <i>slamp</i>	Permeability: <i>mod.</i>
<i>5</i>	<i>20</i>	<i>50</i>	<i>25</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>—</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	-----------	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Debris Fill - Silty Sand matrix*

FDP- 113 - 4.0

Sample Location: <i>inlet</i>	Date: <i>11/3</i>
Collection Method: <i>backhoe</i>	Time: <i>12:00</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	-----------	----	----	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>med</i>
Clay	Silt	Sand	Gravel	Moisture: <i>slamp</i>	Permeability: <i>mod.</i>
<i>5</i>	<i>20</i>	<i>50</i>	<i>25</i>	Odor: <i>strong hc</i>	<i>pid: 2.8 ppm</i>

Soil Type and Comments: *Debris fill w/ silty sand*

- this seen low

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 114 - 4.5'

Sample Location: <i>joint</i>	Date: <i>11/3</i>
Collection Method: <i>jack hoe</i>	Time: <i>12:15</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>dark gray</i>	Plasticity: <i>med.</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>med. high</i>
<i>5</i>	<i>20</i>	<i>50</i>	<i>25</i>	Odor: <i>strong h.c.</i>	PID Reading (ppm): <i>140</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Silty sand w/ gravel - not so much debris if any*

FDP- 115 - 5.5'

Sample Location: <i>hydrant</i>	Date: <i>11/3</i>
Collection Method: <i>jack hoe</i>	Time: <i>12:25</i>
Sample Depth: <i>5.5'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: <i>dark gray / gray</i>	Plasticity: <i>med.</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>med. high</i>
<i>5</i>	<i>20</i>	<i>50</i>	<i>25</i>	Odor: <i>strong h.c.</i>	PID: <i>280</i>

Soil Type and Comments: *Silty sand w/ gravel (debris not apparent)*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 116J-4.8'

Sample Location: joint	Date: 11/20
Collection Method: backhoe	Time: 12:45
Sample Depth: 4.8'	

Percentages				Color: brown	Plasticity: m. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
35	65			Odor: mod. hc	PID Reading (ppm): 25

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: **Clayey Silt**

FDP- 117-3.9 phys prep. Sample

Sample Location: joint	Date: 11/20
Collection Method: backhoe	Time: 13:15
Sample Depth: 3.9'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: brown	Plasticity: m. high
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
35	65			Odor: Med. hc	pid 25

Soil Type and Comments: **Clayey Silt**

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 118-4.5 field dup.

Sample Location: joint	Date: 11/20
Collection Method: backhoe	Time: 13:40
Sample Depth: 4.5'	

Percentages				Color: d. grey	Plasticity: low
Clay	Silt	Sand	Gravel	Moisture: damp-wet	Permeability: mod.
10	30	30	30	Odor: strong hc	PID Reading (ppm): 40

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: clayey + silty gravel

FDP- 119-4.5 field dup.

Sample Location: joint	Date: 11/20
Collection Method: backhoe	Time: 13:45
Sample Depth: 4.5	PID

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: grey m. brown	Plasticity: low
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: mod.
10	30	30	30	Odor: strong hc	PID: 200

Soil Type and Comments: clayey + silty gravel - some cobbles

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 120-6.5'

Sample Location: hydrant	Date: 11/20
Collection Method: backhoe	Time: 14:00
Sample Depth: 6.5'	

Percentages				Color: black-grey	Plasticity: med.
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: low
30	40	30	-	Odor: v. str. h.c.	PID Reading (ppm): 300

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	<u>ML</u>	CL	OL	MH	CH	OH	Pt

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	<u>Firm</u>	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments:	clay-silt-v.fine sand. mix-f:11
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FDP-

Sample Location:	Date:
Collection Method:	Time:
Sample Depth:	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:														
GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt

Percentages				Color:	Plasticity:
Clay	Silt	Sand	Gravel	Moisture:	Permeability:
				Odor:	

Soil Type and Comments:

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 121 - 4.5'

Sample Location: <i>joint</i>	Date: <i>12/1/98</i>
Collection Method: <i>backhoe</i>	Time: <i>11:30</i>
Sample Depth: <i>4.5'</i>	<i>Ad. 3.5</i>

Percentages				Color: <i>dark greenish gray</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp.</i>	Permeability: <i>mod.</i>
<i>5</i>	<i>40</i>	<i>50</i>	<i>5</i>	Odor: <i>med. hc</i>	PID Reading (ppm): <i>375</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Silty Sand - fill*

FDP- 122 5.0'

Sample Location: <i>joint</i>	Date: <i>12/1/98</i>
Collection Method: <i>backhoe</i>	Time: <i>11:45</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	-----------	----	----	----	----	----	----	----	----

Percentages				Color: <i>brn mod. off. / dark greenish gray</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp.</i>	Permeability: <i>mod.</i>
<i>5</i>	<i>40</i>	<i>50</i>	<i>5</i>	Odor: <i>med. hc</i>	<i>pid 400</i>

Soil Type and Comments: *Silty Sand*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 123-5.0'

Sample Location: <i>joint</i>	Date: <i>12/1/98</i>
Collection Method: <i>backhoe</i>	Time: <i>11:55</i>
Sample Depth: <i>5.0'</i>	

Percentages				Color: <i>olive grey</i>	Plasticity: <i>medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>10</i>	<i>60</i>	<i>30</i>	<i>—</i>	Odor: <i>mod. hc</i>	PID Reading (ppm): <i>50</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Sandy Silt - Fill*

FDP- 124-5.0'

Sample Location: <i>joint</i>	Date: <i>12/1/98</i>
Collection Method: <i>backhoe</i>	Time: <i>12:05</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: <i>brn mott grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
<i>5</i>	<i>30</i>	<i>50</i>	<i>15</i>	Odor: <i>strong hc</i>	<i>pid: 300</i>

Soil Type and Comments: *Silty Sand w/ gravel*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 125-4.5

Sample Location: <i>joint</i>	Date: <i>12/8</i>
Collection Method: <i>backhoe</i>	Time: <i>7:42</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>strong bn.</i>	Plasticity: <i>med. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.-low</i>
<i>5</i>	<i>35</i>	<i>40</i>	<i>20</i>	Odor: <i>none</i>	PID Reading (ppm): <i>—</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Silty SAND w/gravel - silt, Sand, Gravel Fill*

FDP- 126-4.0

Sample Location: <i>joint</i>	Date: <i>12/8</i>
Collection Method: <i>backhoe</i>	Time: <i>7:48</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: <i>bn.</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.-low</i>
<i>2</i>	<i>25</i>	<i>30</i>	<i>40</i>	Odor: <i>none</i>	

Soil Type and Comments: *Gravel-Sand-Silt Fill*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 127-4.5'

Sample Location: <i>joint</i>	Date: <i>12/8</i>
Collection Method: <i>backhoe</i>	Time: <i>7:59</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>tan with grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>5</i>	<i>35</i>	<i>40</i>	<i>20</i>	Odor: <i>mod. h.c</i>	PID Reading (ppm): <i>—</i>

USC Class:

GW	GP	<u>GM</u>	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

Soil Type and Comments: *Gravel-Sand-Silt Fill*

FDP- 128-4.0

Sample Location: <i>joint</i>	Date: <i>12/8</i>
Collection Method: <i>backhoe</i>	Time: <i>8:28 am</i>
Sample Depth: <i>4.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	<u>Medium dense</u>	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: <i>greenish grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod-low</i>
<i>2</i>	<i>28</i>	<i>40</i>	<i>30</i>	Odor: <i>strong h.c</i>	

Soil Type and Comments: *Gravel-Sand-Silt Fill*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 128-6.0

Sample Location: <i>joint</i>	Date: <i>12/8</i>
Collection Method: <i>backhoe</i>	Time: <i>8:45</i>
Sample Depth: <i>6.0'</i>	

Percentages				Color: <i>brn</i>	Plasticity: <i>Medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>15</i>	<i>45</i>	<i>35</i>	<i>5</i>	Odor: <i>none</i>	PID Reading (ppm): <i>—</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Soil Strength:						
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Sandy Silt-Fill*

FDP- 129-5.0'

Sample Location: <i>joint</i>	Date: <i>12/8</i>
Collection Method: <i>backhoe</i>	Time: <i>9:05</i>
Sample Depth: <i>5.0</i>	

Soil Strength:						
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: <i>brn</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>25</i>	<i>30</i>	<i>35</i>	<i>35</i>	Odor: <i>slight hc</i>	

Soil Type and Comments: *Gravel-sand-silt fill*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 130-4.8

Sample Location: <i>joint</i>	Date: <i>12/10</i>
Collection Method: <i>backhoe</i>	Time: <i>13:23</i>
Sample Depth: <i>4.0</i>	

Percentages				Color: <i>brown</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>dry</i>	Permeability: <i>mod.</i>
<i>5</i>	<i>20</i>	<i>45</i>	<i>30</i>	Odor: <i>none</i>	PID Reading (ppm): <i>0</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Fill - gravel-sand silt mix*

FDP- 131-4.1

Sample Location: <i>joint</i>	Date: <i>12/10</i>
Collection Method: <i>backhoe</i>	Time: <i>13:30</i>
Sample Depth: <i>4.1</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: <i>bn</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>dry</i>	Permeability: <i>mod.</i>
<i>5</i>	<i>25</i>	<i>45</i>	<i>25</i>	Odor: <i>none</i>	<i>pid: 0</i>

Soil Type and Comments: *Fill: gravel sand silt mix*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 132-4.5 ~1ft apart $\frac{1}{2}$ T

Sample Location: joint (and "T")	Date: 12/10
Collection Method: backhoe	Time: 13:35
Sample Depth: 4.5'	

Percentages				Color: <i>brn mott grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
5	25	45	25	Odor: <i>strong hc</i>	PID Reading (ppm): <i>300</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *gravel-sand-silt fill*

FDP- 133-4.0'

Sample Location: <i>hydrant</i>	Date: 12/10
Collection Method: <i>backhoe</i>	Time: 13:47
Sample Depth: 4.0'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: <i>brn mott grey</i>	Plasticity: <i>low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod.</i>
5	25	45	25	Odor: <i>slight hc</i>	Rid: <i>1.5</i>

Soil Type and Comments: *gravel-sand-silt fill*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 134 - 5.0

Phys. prop.

Sample Location: backhoe joint	Date: 12/10
Collection Method: backhoe	Time: 14:00
Sample Depth: 5.0'	

Percentages				Color: bn	Plasticity: med.
Clay	Silt	Sand	Gravel	Moisture: damp-	Permeability: med.
10	30	40	20	Odor: slight	PID Reading (ppm): 6.0

USC Class:

GW	GP	<u>GM</u>	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

Soil Type and Comments: Gravel-sand-silt fill; enough clay to make sample rollable

FDP- 135 - 4.0

Sample Location: hydrant	Date: 12/10
Collection Method: backhoe	Time: 14:05
Sample Depth: 4.0'	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	<u>Dense</u>	Very dense	

USC Class:

GW	GP	<u>GM</u>	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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Percentages				Color: bn mott grey	Plasticity: med
Clay	Silt	Sand	Gravel	Moisture: damp	Permeability: med.
10	30	40	20	Odor: med. hc	pid: 150

Soil Type and Comments: Gravel-sand-silt fill some clay

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 136 - 4.3

Sample Location: <i>joint</i>	Date:
Collection Method: <i>backhoe</i>	Time: <i>14:20</i>
Sample Depth: <i>4.3</i>	

Percentages				Color: <i>darkish grey w/ dark grey</i>	Plasticity: <i>med. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>20</i>	<i>40</i>	<i>30</i>	<i>10</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>90</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
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	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Gravel Sand - Clay mix fill*

FDP- 137 - 5.0

Sample Location: <i>joint</i>	Date:
Collection Method: <i>backhoe</i>	Time: <i>14:30</i>
Sample Depth: <i>5.0</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>med. high</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>30</i>	<i>40</i>	<i>30</i>	<i>10</i>	Odor: <i>strong hc</i>	PID: <i>15</i>

Soil Type and Comments: *Gravel - Sand - Clay mix fill*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 138 - 6.5' concrete vault in this locat sample at N end + below in trench

Sample Location: <i>Hydrant joint (main joint)</i>	Date: <i>12/10</i>
Collection Method: <i>back hoe</i>	Time: <i>14:44</i>
Sample Depth: <i>6.5'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>medium</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>30</i>	<i>40</i>	<i>20</i>	<i>10</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>125</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	----	----	----	----	----	----	-----------	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *clayey silt w/ sand + gravel - fill*

FDP- 139 - 5.0

Sample Location: <i>joint</i>	Date: <i>12/10</i>
Collection Method: <i>back hoe</i>	Time: <i>14:55</i>
Sample Depth: <i>5.0'</i>	

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>dark grey</i>	Plasticity: <i>med.</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>20</i>	<i>40</i>	<i>30</i>	<i>10</i>	Odor: <i>strong hc</i>	pid: <i>10</i>

Soil Type and Comments: *Gravel - sand - clay mix: full*

CAMBRIA

Client: City of Oakland	Project Number: 153-1247-004
Site Address: 7101 Edgewater Dr., Oakland	Geologist: Bob Schultz

FDP- 140 -4.5

Sample Location: <i>joint</i>	Date: <i>12/10</i>
Collection Method: <i>backhoe</i>	Time: <i>15:04</i>
Sample Depth: <i>4.5'</i>	

Percentages				Color: <i>dark grey</i>	Plasticity: <i>med.</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>low</i>
<i>15</i>	<i>40</i>	<i>25</i>	<i>20</i>	Odor: <i>strong hc</i>	PID Reading (ppm): <i>20</i>

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

Soil Type and Comments: *Gravel-sand-clay mix: fill*

FDP- 141 -4.5

Sample Location: <i>joint - ? might not have been a joint</i>	Date: <i>12/10</i>
Collection Method: <i>backhoe</i>	Time: <i>15:12</i>
Sample Depth: <i>4.5</i>	

took sample due to dist from other pts.

	Soil Strength:					
Fine-grained soils:	Very soft	Soft	Firm	Stiff	Very stiff	Hard
Coarse-grained soils:	Very loose	Loose	Medium dense	Dense	Very dense	

USC Class:

GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	Pt
----	----	----	-----------	----	----	----	----	----	----	----	----	----	----	----

Percentages				Color: <i>dark greenish grey</i>	Plasticity: <i>med. low</i>
Clay	Silt	Sand	Gravel	Moisture: <i>damp</i>	Permeability: <i>mod-low</i>
<i>5</i>	<i>25</i>	<i>45</i>	<i>25</i>	Odor: <i>strong hc</i>	<i>pic: 45</i>

Soil Type and Comments: *Gravel-sand silt mix - fill clay*

12457 x 0335

McCAMBELL ANALYTICAL INC.
 110 2nd AVENUE SOUTH, #D7
 PACHICO, CA 94553
 Telephone: (510) 798-1620 Fax: (510) 798-1622

CHAIN OF CUSTODY RECORD
 TURN AROUND TIME
 RUSH 24 HOUR 48 HOUR 5 DAY

Report To: Bob Schultz Bill To: Cambria
 Company: Cambria Environmental Technology
 1144 65th Street, Suite C
 Oakland, CA 94608
 Tele: (510) 420-0700 Fax: (510) 420-9170
 Project #: 153-1247-4 Project Name: Cofo, MSC
 Project Location: 7101 Edgewater
 Sampler Signature: Bob Schultz

Analysis Request Other Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other					
FDP-6 - 4.0'		9/24	11:15	1	air		X					X							
FDP-7 - 4.0'		↓	11:45	1	↓		↓					↓							
FDP-5 - 4.0'		↓	12:05	1	↓		↓					↓							
FDP-5		9/23																	

BTEX & TPH as Gas (602/8020 + 8015) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI	organic lead				
--	----------------------	---	--------------------------------------	----------------	----------------------------	----------------	---------------------------	-----------------------	----------------	--	---------------	---------------	-----------------------------	-----	--------------	--	--	--	--

95787

composite together with FDP-5 submitted on 9/24

ICE GOOD CONDITION HEAD SPACE ABSENT
 PRESERVATION APPROPRIATE CONTAINERS
 VOAS C&G METALS OTHER

Relinquished By: Schultz Date: 9/25 Time: 1110
 Relinquished By: Jan Berg 676 Date: 9/25/98 Time: 1155
 Relinquished By: Jan Berg 676 Date: 9/25/98 Time: 1155
 Received By: Jan Berg 676 Date: 9/25/98 Time: 11:10
 Received By: Anna A Butler Date: 9/25/98 Time: 11:10

Remarks: Composite - 4pt: FDP-5 through FDP-8

QC REPORT FOR ICP and/or AA METALS

Date: 09/29/98-09/30/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickle	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.06	4.09	5.0	81	82	0.9

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of Oakland	Date Sampled: 09/23-09/24/98
		Date Received: 09/25/98
	Client Contact: Bob Schultz	Date Extracted: 09/25/98
	Client P.O:	Date Analyzed: 09/25/98

10/02/98

Dear :Bob

Enclosed are:

- 1). the results of 1 samples from your #153-1247-4; City of Oakland project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.
If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

QC REPORT FOR ICP and/or AA METALS

Date: 09/29/98-09/30/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickle	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.06	4.09	5.0	81	82	0.9

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$



McCAMPBELL ANALYTICAL INC.

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<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4	Date Sampled: 09/23/98
		Date Received: 09/24/98
	Client Contact: Dave Elias	Date Extracted: 09/24/98
	Client P.O:	Date Analyzed: 09/24/98

10/01/98

Dear Dave:

Enclosed are:

- 1). the results of 1 samples from your #153-1247-4 project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

C A M B R I A



ATTACHMENT B

Standard Piping and Dispenser Removal Sampling Procedures

CAMBRIA

STANDARD PIPING AND DISPENSER REMOVAL SAMPLING PROCEDURES

Cambria Environmental Technology, Inc. (Cambria) has developed standard operating procedures for collecting soil samples during petroleum dispenser and piping removal. These procedures ensure that the samples are collected, handled, and documented in compliance with California Administration Code Title 23: Waters; Chapter 3: Water Resources Control Board; Subchapter 16: Underground Storage Tank Regulations (Title 23). Cambria's sampling procedures are based on guidelines contained in the California State Regional Water Quality Control Board Tri-Regional Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites dated August 10, 1990.

Piping and Dispenser Removal Sampling

The objective of sample collection during routine dispenser and piping removals is to determine whether hydrocarbons or other stored chemicals have leaked to the subsurface. We collect one soil sample from the native soil beneath each dispenser unit, at each piping elbow, and at every 20 ft of product piping, as applicable.

The soil samples are collected in steam cleaned brass or steel tubes from either a driven split-spoon type sampler or the bucket of a backhoe. When a backhoe is used, approximately three inches of soil are scraped from the surface and the tube is driven into the exposed soil.

Upon removal from the split-spoon sampler or the backhoe, the samples are trimmed flush, capped with Teflon sheets and plastic end caps, labeled, logged and refrigerated for delivery under chain of custody to a State certified analytic laboratory.

C A M B R I A



ATTACHMENT C

Laboratory Analytical Reports



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 09/25/98
		Date Received: 09/28/98
	Client Contact: Bob Schultz	Date Extracted: 09/28/98
	Client P.O:	Date Analyzed: 09/28/98

10/05/98

Dear Bob:

Enclosed are:

- 1). the results of 4 samples from your : #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

QC REPORT FOR ICP and/or AA METALS

Date: 09/29/98-09/30/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickle	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.06	4.09	5.0	81	82	0.9

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247; City of MSC	Date Sampled: 10/06/98
		Date Received: 10/08/98
	Client Contact: Bob Schultz	Date Extracted: 10/08/98
	Client P.O:	Date Analyzed: 10/08/98

10/15/98

Dear Bob:

Enclosed are:

- 1). the results of 3 samples from your #153-1247; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247; City of MSC	Date Sampled: 10/06/98
	Client Contact: Bob Schultz	Date Received: 10/08/98
	Client P.O:	Date Extracted: 10/08/98
		Date Analyzed: 10/09/98

Organic Lead

CA Title 22, Chapter 11, Appendix XI

Lab ID	Client ID	Matrix	Organic Lead *
96537	FDP-19-22	S	ND
96528A	FDP-23-26	S	ND
96539	FDP-27,28,30,32	S	ND
96540	FDP-33-36	S	ND
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W	0.1 mg/L	
	S	0.5 mg/kg	

* water samples are reported in mg/L, soil and sludge samples in mg/kg and wipes in mg/wipe
 h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment.

QC REPORT FOR ICP and/or AA METALS

Date: 10/09/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickle	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	44.00	42.70	50.0	88	85	3.0

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

12609 x C 349

Page 1 of 2

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553

Telephone: (510) 798-1620

Fax: (510) 798-1622

Report To: *Bob Schultz*

Bill To: *Cambria*

Company: Cambria Environmental Technology

1144 65th Street, Suite C

Oakland, CA 94608

Tele: (510) 420-0700

Fax: (510) 420-9170

Project #: *153-1247*

Project Name: *Cofo, MSC*

Project Location: *7101 Edgewater*

Sampler Signature: *Schultz*

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED							
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other				
FDP-19-3.5		10/6	9:30	1	✓	X					X							
FDP-20-8.5			9:35															
FDP-21-4.5			9:45															
FDP-22-7.5			9:55															
FDP-23-4.2			10:20															
FDP-24-5.0			11:00															
FDP-25-5.0			11:30															
FDP-26-5.3			12:15															
FDP-27-5.5			13:00															
FDP-28-5.0			13:15															
FDP- 30 5.0			13:45															
FDP-32-5.0			14:00															
FDP-31-5.0																		
3																		

Analysis Request												Other		Comments					
BTEX & TPH as Gas (602/8020 + 8015) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/601.0)	RCI	organic lead	PHYSICAL PROPERTIES	FVC, POROSITY, MOIST.	PCY BULLIC DENSITY	
																			96537
																			96538A
																			96538B
																			96539

Relinquished By: <i>[Signature]</i>	Date: 10/8	Time: 8:25	Received By: <i>[Signature]</i>
Relinquished By: <i>[Signature]</i>	Date: 10-8	Time: 11:45	Received By: <i>[Signature]</i>
Relinquished By:	Date:	Time:	Received By:

Remarks:	VOAS	O&G	METALS	OTHER
ICE <input checked="" type="checkbox"/>				
GOOD CONDITION <input checked="" type="checkbox"/>				
HEAD SPACE ABSENT <input checked="" type="checkbox"/>				
PRESERVATION APPROPRIATE <input checked="" type="checkbox"/>				
CONTAINERS <input checked="" type="checkbox"/>				

12609 x C349

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACIFICCO, CA 94553

Telephone: (510) 798-1620

Fax: (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME
RUSH 24 HOUR 48 HOUR 5 DAY

Report To: *Schultz* Bill To: *Cambria*

Company: Cambria Environmental Technology
1144 65th Street, Suite C
Oakland, CA 94608

Tele: (510) 420-0700 Fax: (510) 420-9170

Project #: *153-1247* Project Name: *CofO, MSC*

Project Location: *Flot Edgewater*

Sampler Signature: *Schultz*

Analysis Request

Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other					
FDP-33-5.5		10/6	14:15	1	jar	X						X							
FDP-34-5.0			15:00	↓	↓	↓						↓							
FDP-35-6.0			15:15	↓	↓	↓						↓							
FDP-36-4.0			15:30	↓	↓	↓						↓							

BTEX & TPH as Gas (602/8020 + 8015) MTBE																			
TPH as Diesel (8015)																			
Total Petroleum Oil & Grease (5520 E&F/B&F)																			
Total Petroleum Hydrocarbons (418.1)																			
EPA 601 / 8010																			
BTEX ONLY (EPA 602 / 8020)																			
EPA 608 / 8080																			
EPA 608 / 8080 PCB's ONLY																			
EPA 624 / 8240 / 8260																			
EPA 625 / 8270																			
PAH's / PNA's by EPA 625 / 8270 / 8310																			
CAM-17 Metals																			
LUFT 5 Metals																			
Lead (7240/7421/239.2/6010)																			
RCI																			
<i>organic lead</i>																			

96540

composite 33-36

Relinquished By: <i>[Signature]</i>	Date: <i>10/7</i>	Time: <i>8:25</i>	Received By: <i>[Signature]</i>
Relinquished By: <i>[Signature]</i>	Date: <i>10-8</i>	Time: <i>11:45</i>	Received By: <i>[Signature]</i>
Relinquished By:	Date:	Time:	Received By:

Remarks:

ICE/
GOOD CONDITION
HEAD SPACE ABSENT
PRESERVATION APPROPRIATE
CONTAINERS
VOAS O&G METALS OTHER



McCAMPBELL ANALYTICAL INC.

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<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 10/07/98
		Date Received: 10/08/98
	Client Contact: Bob Shultz	Date Extracted: 10/08/98
	Client P.O:	Date Analyzed: 10/08/98

10/05/98

Dear Bob:

Enclosed are:

- 1). the results of 3 samples from your #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

QC REPORT FOR ICP and/or AA METALS

Date: 10/09/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickle	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	44.00	42.70	50.0	88	85	3.0

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

12600 x C348

McCAMBELL ANALYTICAL INC.
110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553

Telephone: (510) 798-1620 Fax: (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME
RUSH 24 HOUR 48 HOUR 5 DAY

Report To: *Bob Schulte* Bill To: *Cambria*
Company: Cambria Environmental Technology
1144 65th Street, Suite B
Oakland, CA 94608
Tele: (510) 420-0700 Fax: (510) 420-9170
Project #: *153-1247-4* Project Name: *Coto, WSC*
Project Location: *7101 Edgewater*
Sampler Signature: *Schulte*

Analysis Request Other Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED							
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other				
FDP-37-5.0		10/7	8:55	1	jar		X											
FDP-36H-4.5			8:45															
FDP-39H-7.5			12:00															
FDP-38-5.0			9:45															
FDP-39-7.5			10:00															
FDP-40-6.5			10:45															
FDP-41-5.5			11:00															
FDP-42-5.0			11:45															
FDP-43-5.5			12:00	2	tube													

BTEX & TPH as Gas (602/8020 + 8015) MTBE	
TPH as Diesel (8015)	
Total Petroleum Oil & Grease (5520 E&F/B&F)	
Total Petroleum Hydrocarbons (418.1)	
EPA 601 / 8010	
BTEX ONLY (EPA 602 / 8020)	
EPA 608 / 8080	
EPA 608 / 8080 PCB's ONLY	
EPA 624 / 8240 / 8260	
EPA 625 / 8270	
PAH's / PNA's by EPA 625 / 8270 / 8310	
CAM-17 Metals	
LUFT 5 Metals	
Lead (7240/7421/239-2/6010)	
RCI	
organic lead	
physical properties:	
fo, porosity, moisture,	
dry bulk density	

Relinquished By: *[Signature]* Date: *10/8* Time: *8:25* Received By: *[Signature]*
Relinquished By: *[Signature]* Date: *10-8* Time: *11:45* Received By: *[Signature]*
Relinquished By: _____ Date: _____ Time: _____ Received By: _____

Remarks:
ICE/
GOOD CONDITION
HEAD SPACE ABSENT
PRESERVATION APPROPRIATE CONTAINERS
VOAS | O&G | METALS | OTHER

96535
96536A
96536B

composite 37, 36H, 39H, 38, 39
composite 10, 41, 42, 43



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 10/14/98
		Date Received: 10/14/98
	Client Contact: Bob Schultz	Date Extracted: 10/14/98
	Client P.O:	Date Analyzed: 10/14/98

10/21/98

Dear Bob:

Enclosed are:

- 1). the results of 2 samples from your #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

QC REPORT FOR ICP and/or AA METALS

Date: 10/16/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickle	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.37	4.22	5.0	87	84	3.4

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 10/19/98
		Date Received: 10/21/98
	Client Contact: Bob Schultz	Date Extracted: 10/21/98
	Client P.O:	Date Analyzed: 10/21/98

10/28/98

Dear Bob:

Enclosed are:

- 1). the results of 5 samples from your #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

QC REPORT FOR ICP and/or AA METALS

Date: 10/22/98-10/23/98

Matrix: WATER

Extraction:

Analyte	Concentration (mg/L)			Amount	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Iron	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Manganese	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickle	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	5.03	4.72	5.00	101	94	6.3

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

QC REPORT FOR ICP and/or AA METALS

Date: 10/27/98-10/28/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.67	4.77	5.0	93	95	2.1

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

12758 x C 354

1 of 1

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACHECO, CA 94553

Telephone: (510) 798-1620

Fax: (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

Report To: Bob Schultz Bill To: Cambria
Company: Cambria Environmental Technology
1144 65th Street, Suite C
Oakland, CA 94608
Tele: (510) 420-0700 Fax: (510) 420-9170
Project #: 153-1247-4 Project Name: CO₂, MSC
Project Location: 7101 Edgewater
Sampler Signature: Bob Schultz

Analysis Request

Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED						
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other			
FDP-51-7.5'		10/19	14:00	1	X	X					X						
FDP-52-4.0'			14:20														
FDP-53-5.0'			14:30														
FDP-54-8.0'			14:45														
FDP-55-5.5'			15:00														
FDP-56-4.5'			15:15														
FDP-57-11.0'			10:45														
FDP-58-5.5'			15:30														
FDP-59-4.5'			15:45														
FDP-60-7.5'			16:00														
FDP-61-4.0'			16:15														
FDP-62-4.5'			16:30														
FDP-63-8.5'			16:45														
FDP-64-6.0'		✓	17:00	✓	✓	✓					✓						
FDP-57-W		10/19	11:00	1	Water	X					X						

BTEX & TPH as Gas (602/8020 + 8015) MTBE	
TPH as Diesel (8015)	
Total Petroleum Oil & Grease (5520 E&F/B&F)	
Total Petroleum Hydrocarbons (418.1)	
EPA 601 / 8010	
BTEX ONLY (EPA 602 / 8020)	
EPA 608 / 8080	
EPA 608 / 8080 PCB's ONLY	
EPA 624 / 8240 / 8260	
EPA 625 / 8270	
PAH's / PNA's by EPA 625 / 8270 / 8310	
CAM-17 Metals	
LUFT 5 Metals	
Lead (7240/7421/239.2/6010)	
RCI	
organic lead	X

97458
97469
97470
97471
97472

Relinquished By: Bob Schultz, CAMBRIA Date: 10/20 Time: 9:45am Received By: [Signature]
Relinquished By: [Signature] Date: 10-21 Time: 11:30 Received By: Pin A Butler
Relinquished By: _____ Date: _____ Time: _____ Received By: _____

Remarks: # composite analyses + total 2 samples
+ 1 water sample analysis
ICE/NOI ✓
GOOD CONDITION ✓
HEADSPACE ABSENT ✓
PRESERVATION APPROPRIATE ✓
CONTAINERS ✓
VOAS | O&G | METALS | OTHER



McCAMPBELL ANALYTICAL INC.

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Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; C Of O MSC	Date Sampled: 10/20/98
		Date Received: 10/21/98
	Client Contact: Bob Schultz	Date Extracted: 12/29/98
	Client P.O:	Date Analyzed: 12/29/98

01/06/99

Dear Bob:

Enclosed are:

- 1). the results of 1 samples from your #153-1247-4; C Of O MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

QC REPORT FOR ICP and/or AA METALS

Date: 12/29/98-12/30/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Thallium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.65	4.67	5.0	93	93	0.5

* Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

12758 XC354 XC354A1

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #17
PACHECO, CA 94553

Telephone: (915) 798-1620

Fax: (915) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

Report To: *Bob Schultz* Bill To: *Cambria*
Company: Cambria Environmental Technology
1144 65th Street, Suite C
Oakland, CA 94608
Tele: (510) 420-0700 Fax: (510) 420-9170
Project #: *153-1247-4* Project Name: *Cefo, MSC*
Project Location: *7101 Edgewater*
Sampler Signature: *Schultz*

Analysis Request

Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other					
FDP-65-5.5'		10/20	9:45	1	Jar	X					X								
FDP-66-9.0'			9:30																
FDP-67-3.0'			9:50																
FDP-68-3.0'			10:05																
FDP-69-5.5'			10:15																
FDP-70-3.5'			10:25																
FDP-71-5.5'			10:55																
FDP-72-6.5'			10:35																
FDP-71-5.5'		10/20	10:55	1	tube	X					X								
Comp 1,2,3,4		10/20	7:45	4	tube	X					X								
Comp 5,6,7,8		10/20	7:45	4	tube	X					X								
FDP-69-5.5'		10/20	10:15	1	tube	X					X								

BTEX & TPH as Gas (602/8020 + 8015) MTBE	
TPH as Diesel (8015)	
Total Petroleum Oil & Grease (5520 E&F/B&F)	
Total Petroleum Hydrocarbons (418.1)	
EPA 601 / 8010	
BTEX ONLY (EPA 602 / 8020)	
EPA 608 / 8080	
EPA 608 / 8080 PCB's ONLY	
EPA 624 / 8240 / 8260	
EPA 625 / 8270	
PAH's / PNA's by EPA 625 / 8270 / 8310	
CAM-17 Metals	
LUFT 5 Metals	
Lead (7240/7421/239.2/6010)	
RCI	
Organic Lead	X
Physical Properties	

off Hold 12/28 per B.S.

97473E
97474
97475
Composite
Composite
97476
97477
97478

Relinquished By: *Schultz* Date: *10/21* Time: *9:45am* Received By: *[Signature]*
Relinquished By: *[Signature]* Date: *10/21* Time: *11:30* Received By: *Dina A Butler*
Relinquished By: _____ Date: _____ Time: _____ Received By: _____

Remarks:
ICE GOOD CONDITION PRESERVATION APPROPRIATE HEAD SPACE ABSENT CONTAINERS
VOAS O&G METALS OTHER



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 10/20/98
	Client Contact: Bob Schultz	Date Received: 10/21/98
	Client P.O:	Date Extracted: 10/21/98
		Date Analyzed: 10/21/98

10/28/98

Dear Bob:

Enclosed are:

- 1). the results of 6 samples from your #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director



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 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 10/20/98
	Client Contact: Bob Schultz	Date Received: 10/21/98
	Client P.O:	Date Analyzed: 10/21-10/23/98
		Date Extracted: 10/21/98

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & BTEX*
 EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g) ⁺	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	% Recovery Surrogate
97476	Comp 1-4	S	34,g,j	ND	0.037	0.017	0.071	0.18	93
97477	Comp 5-8	S	2.7,g	ND	ND	0.006	0.017	0.026	97
97478	FDP 69-5.5	S	870,g,j	ND<0.70	ND<0.03	1.0	0.86	4.3	93
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W		50 ug/L	5.0	0.5	0.5	0.5	0.5	
	S		1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, wipe samples in ug/wipe, soil and sludge samples in mg/kg, and all TCLP and SPLP extracts in ug/L
 * cluttered chromatogram; sample peak coelutes with surrogate peak

*The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment; j) no recognizable pattern.

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/21/98

Matrix: SOIL

Analyte	Concentration (mg/kg) Sample (#90401)			Amount Spiked	% Recovery		RPD
	MS	MSD			MS	MSD	
TPH (gas)	0.000	2.022	2.023	2.03	100	100	0.0
Benzene	0.000	0.208	0.216	0.2	104	108	3.8
Toluene	0.000	0.210	0.220	0.2	105	110	4.7
Ethylbenzene	0.000	0.204	0.214	0.2	102	107	4.8
Xylenes	0.000	0.600	0.622	0.6	100	104	3.6
TPH (diesel)	0	355	329	300	118	110	7.6
TRPH (oil and grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

QC REPORT FOR ICP and/or AA METALS

Date: 10/27/98-10/28/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.67	4.77	5.0	93	95	2.1

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

12758 XC354

104

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACIFIC, CA 94553

Telephone: (919) 798-1620

Fax: (919) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

Report To: Bob Schultz Bill To: Cambria
 Company: Cambria Environmental Technology
 1144 65th Street, Suite C
 Oakland, CA 94608
 Tele: (510) 420-0700 Fax: (510) 420-9170
 Project #: 153-1247-4 Project Name: C610, MSC
 Project Location: 7101 Edgewater
 Sampler Signature: Schultz

Analysis Request

Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED				BTEX & TPH as Gas (602/8020 + 8015) MTBE TPH as Diesel (8015) Total Petroleum Oil & Grease (5520 E&F/B&F) Total Petroleum Hydrocarbons (418.1) EPA 601 / 8010 BTEX ONLY (EPA 602 / 8020) EPA 608 / 8080 EPA 608 / 8080 PCB's ONLY EPA 624 / 8240 / 8260 EPA 625 / 8270 PAH's / PNA's by EPA 625 / 8270 / 8310 CAM-17 Metals LUFT 5 Metals Lead (7240/7421/239.2/6010) RCI	Organic Lead Physical Properties		
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other				
FDP-65-5.5'		10/20	9:45	1	Jar	X					X							
FDP-66-9.0'			9:30															
FDP-67-3.0'			9:50															
FDP-68-3.0'			10:05															
FDP-69-5.5'			10:15															
FDP-70-3.5'			10:25															
FDP-71-5.5'			10:55															
FDP-72-6.5'			10:35															
FDP-71-5.5'		10/20	10:55	1	tube	X					X							
Comp 1,2,3,4		10/20	7:45	4	tube	X					X							
Comp 5,6,7,8		10/20	7:45	4	tube	X					X							
FDP-69-5.5'		10/20	10:15	1	tube	X					X							

Remarks:

ICE GOOD CONDITION HEAD SPACE ABSENT

PRESERVATION APPROPRIATE CONTAINERS

VOAS | O&G | METALS | OTHER

Relinquished By: Schultz, CAMBRIA Date: 10/21 Time: 9:45am Received By: [Signature]

Relinquished By: [Signature] Date: 10/21 Time: 11:30 Received By: Dina A Butler

Relinquished By: _____ Date: _____ Time: _____ Received By: _____

9/24/74
9/24/74
9/24/75
Composite
Composite
9/24/76
9/24/77
9/24/78



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 10/27/98
		Date Received: 10/28/98
	Client Contact: Bob Schultz	Date Extracted: 10/28/98
	Client P.O:	Date Analyzed: 10/28/98

11/04/98

Dear :Bob

Enclosed are:

- 1). the results of 7 samples from your #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

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<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 10/27/98
	Client Contact: Bob Schultz	Date Received: 10/28/98
	Client P.O:	Date Extracted: 10/28-11/04/98
		Date Analyzed: 10/28/11/04/98

Analytical methods			Moisture	Bulk Density	Porosity	Air Filled Void Space	Fractional Organic Content
Lab ID	Client ID	Matrix	Weight %	Grams / cc	Vol % Porosity	Vol % Porosity	Weight %
	ASTM E3173		%	%	%	ASTM 2974c	
97843	FDP-92-4.0	S	19	1.7	36	----	2.7
97844	FDP-76-4.5	S	14	1.8	33	----	2.4
Reporting Limit or Method Accuracy unless otherwise stated; ND means not detected above the reporting limit		S	± 2%	± 0.1g/cc	± 2%	± 2%	± 0.3%

[#] calculated
[&] calculated volume percentage assuming that the specific gravity of soil is 2.65 grams/cc.

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR ICP and/or AA METALS

Date: 10/29/98-10/30/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	5.12	5.33	5.0	102	107	3.9

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #D7
PACIFIC CO, CA 94553

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

Telephone: (510) 798-1620

Fax: (510) 798-1622

Report To: *Bob Schulte*

Bill To: *Cambria*

Company: Cambria Environmental Technology

1144 65th Street, Suite C

Oakland, CA 94608

Tele: (510) 420-0700

Fax: (510) 420-9170

Project #: *153-1247-4*

Project Name: *w/o, MSC*

Project Location: *7101 Edgewater*

Sampler Signature: *Bob Schulte*

Analysis Request

Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED							
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other				
FDP-73-60		10/27	9:55	1	Jar	X					X							
FDP-74-6.0			10:05															
FDP-75-6.5			10:10															
FDP-76-4.5			9:00															
FDP-77-5.5			10:46															
FDP-78-6.0			11:00															
FDP-79-4.5			11:15															
FDP-80-5.0			11:23															
FDP-81-5.0			11:30															
FDP-82-6.5			11:43															
FDP-83-6.0			13:07															
FDP-84-5.0			13:16															

BTEX & TPH as Gas (602/8020 + 8015) MTBE	
TPH as Diesel (8015)	
Total Petroleum Oil & Grease (5520 E&F/B&F)	
Total Petroleum Hydrocarbons (418.1)	
EPA 601 / 8010	
BTEX ONLY (EPA 602 / 8020)	
EPA 608 / 8080	
EPA 608 / 8080 PCB's ONLY	
EPA 624 / 8240 / 8260	
EPA 625 / 8270	
PAH's / PNA's by EPA 625 / 8270 / 8310	
CAM-17 Metals	
LUFT 5 Metals	
Lead (7240/7421/239.2/6010)	
RCI	
organic lead	X

Relinquished By: <i>Bob Schulte</i>	Date: 10/28	Time: 10:30	Received By: <i>Ed Parker</i>
Relinquished By: <i>Ed Parker</i>	Date: 10/28	Time: 12:40	Received By: <i>Jma A Butler</i>
Relinquished By:	Date:	Time:	Received By:

Remarks:

97838

97839

97840



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 11/02/98
		Date Received: 11/03/98
	Client Contact: Bob Schultz	Date Extracted: 11/03/98
	Client P.O:	Date Analyzed: 11/03/98

11/10/98

Dear Bob:

Enclosed are:

- 1). the results of 3 samples from your #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553

Tele: 925-798-1620 Fax: 925-798-1622

QC REPORT FOR ICP and/or AA METALS

Date: 11/04/98-11/05/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.74	4.49	5.0	95	90	5.4

* Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

12891 xC 360

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #17
PACHECO, CA 94553

Telephone: (510) 798-1620

Fax: (510) 798-1622

CHAIN OF CUSTODY RECORD
TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

Report To: Bob Schultz Bill To: Cambria
Company: Cambria Environmental Technology
1144 65th Street, Suite C
Oakland, CA 94608
Tele: (510) 420-0700 Fax: (510) 420-9170
Project #: 153-1247-4 Project Name: Cap O, MSC
Project Location: 7101 Edgewater
Sampler Signature: Bob Schultz

Analysis Request

Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED						
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other			
FDP-93-6.0		11/2	15:30	1	jar	X					X						
FDP-94-4.5			15:45														
FDP-95-5.5			15:50														
FDP-96-4.0			15:55														
FDP-97-4.8			16:10														
FDP-98-5.0			16:15														
FDP-99-5.3			16:25														
FDP-100-4.0			16:35														
FDP-101-4.5		↓	16:45	↓	↓	↓											
FDP-100-4.0			16:35	1	tube	X					X						

BTEX & TPH as Gas (602/8020 - 8015) MTBE	
TPH as Diesel (8015)	
Total Petroleum Oil & Grease (5520 E&F/B&F)	
Total Petroleum Hydrocarbons (418.1)	
EPA 601 / 8010	
BTEX ONLY (EPA 602 / 8020)	
EPA 608 / 8080	
EPA 608 / 8080 PCB's ONLY	
EPA 624 / 8240 / 8260	
EPA 625 / 8270	
PAH's / PNA's by EPA 625 / 8270 / 8310	
CAM-17 Metals	
LUFT 5 Metals	
Lead (7240/7421/239.2/6010)	
RCI	

Organic Lead
Physical Properties

98094
98095
98097

Remarks:
ICE GOOD CONDITION HEAD SPACE ABSENT
PRESERVATION APPROPRIATE CONTAINERS
VOAS O&G METALS OTHER

Relinquished By: Bob Schultz Date: 11/3 Time: 9:49 Received By: Ken Soller
Relinquished By: Ken Soller Date: 11/3 Time: 3:20P Received By: Wendi Ruiz
Relinquished By: _____ Date: _____ Time: _____ Received By: _____



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of Oakland	Date Sampled: 11/03/98
		Date Received: 11/04/98
	Client Contact: Bob Schultz	Date Extracted: 11/04/98
	Client P.O:	Date Analyzed: 11/04/98

11/11/98

Dear Bob:

Enclosed are:

- 1). the results of 4 samples from your #153-1247-4; City of Oakland project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

QC REPORT FOR ICP and/or AA METALS

Date: 11/04/98-11/05/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.74	4.49	5.0	95	90	5.4

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

CAMBRIA ENVIRONMENTAL TECHNOLOGY, INC.

CHAIN OF CUSTODY

1144 65th Street, Suite C, Oakland, CA 94608
 (510) 420-0700 Fax: (510) 420-9170

Page 1 of 2

12900 xC 361

CAMBRIA INFORMATION					ANALYSES										LAB: <u>McC Campbell</u>				
Cambria Manager: <u>Bob Schultz</u>															organic lead				
Cambria Sampler: <u>Bob Schultz</u>																			
Client: <u>City of Oakland</u>																			
Site Address: <u>7101 Edgewater</u>																			
Project Number: <u>153-1247-4</u>																			
SAMPLE ID	DATE	TIME	MATRIX	# OF SAMPLES															
FDP-102-4.0	11/3	8:40	Soil	1	} composite w/FDP-101-4.0 sampled on 11/2												X	composite w/FDP-101-4.5	
FDP-103-3.5		8:45																	98143
FDP-104-3.5		8:55																	
FDP-105-3.0		9:05			} composite														
FDP-106-4.0		9:20																X	98144
FDP-107-4.0		9:30																	
FDP-108-4.5		9:40			} composite														
FDP-109-4.0		10:30																	
FDP-110-4.5		11:00																	
FDP-112-4.8		11:45																X	98145
FDP-113-4.0		12:00																	

Relinquished by: Bob Schultz

Relinquished by: Ed Parker

Relinquished by: _____

Relinquished by: _____

Received by: Ed Parker

Received by: Uma V. [Signature]

Received by: _____

Received by: _____

Time/Date: 11/4/98 9:20 AM

Time/Date: 11/4/98 2:19 PM

Time/Date: _____

Time/Date: VOAS O&G METALS OTHER

ICE/NO
 GOOD CONDITION
 HEAD SPACE ABSENT
 PRESERVATION APPROPRIATE CONTAINERS

CAMBRIA ENVIRONMENTAL TECHNOLOGY, INC.

1144 65th Street, Suite C, Oakland, CA 94608
 (510) 420-0700 Fax: (510) 420-9170

CHAIN OF CUSTODY

Page 2 of 2

Cambria Manager: <u>Bob Schultz</u> Cambria Sampler: <u>Bob Schultz</u> Client: <u>City of Oakland</u> Site Address: <u>7101 Edgewater</u> Project Number: <u>153-1247-4</u>					ANALYSES							LAB: <u>McC Campbell</u>
SAMPLE ID	DATE	TIME	MATRIX	# OF SAMPLES								
FDP-114-4.5	11/3	12:15	Soil	1	} composite							
FDP-115-5.5	11/3	12:25	Soil	1								
Relinquished by: <u>Bob Schultz</u>	Relinquished by: <u>Ed Becker</u>	Relinquished by: _____	Relinquished by: _____	Time/Date: <u>11/4/98 9:20am</u>	Time/Date: <u>11/4/98 2:19pm</u>	Time/Date: _____	Time/Date: _____	Time/Date: <u>VOAS O&G METALS OTHER</u>				

LWS
 ICE/☐ GOOD CONDITION
 HEAD SPACE ABSENT
 PRESERVATION APPROPRIATE CONTAINERS



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 11/20/98
		Date Received: 11/23/98
	Client Contact: Bob Schultz	Date Extracted: 11/23/98
	Client P.O:	Date Analyzed: 11/23/98

12/02/98

Dear Bob:

Enclosed are:

- 1). the results of 3 samples from your #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

QC REPORT FOR ICP and/or AA METALS

Date: 11/25/98-11/26/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.66	4.62	5.0	93	92	0.8

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

McCAMBELL ANALYTICAL INC.

110 2nd AVENUE SOUTH, #137
PACHECO, CA 94553

Telephone: (510) 798-1620

Fax: (510) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HOUR 48 HOUR 5 DAY

Report To: Bob Schmitt

Bill To: Cambria

Company: Cambria Environmental Technology

1144 65th Street, Suite C

Oakland, CA 94608

Tele: (510) 420-0700

Fax: (510) 420-9170

Project #: 153-1247-4

Project Name: CofC, MSC

Project Location: 7101 Edgewater

Sampler Signature: Bob Schmitt

Analysis Request

Other

Comments

SAMPLE ID	LOCATION	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED								
		Date	Time			Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other					
FDP-116-4.8		11/20	12:45	1	ice		X				X								
FDP-117-3.9			13:15	1															
FDP-118-4.5			13:40	1															
FDP-119-4.5			13:45	1															
FDP-120-6.5			14:00	1															
FDP-117-3.9		11/20	13:5	1	tube		X				X								

BTEX & TPH as Gas (602/8020 + 8015) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI
--	----------------------	---	--------------------------------------	----------------	----------------------------	----------------	---------------------------	-----------------------	----------------	--	---------------	---------------	-----------------------------	-----

Organic Lead
Physical Properties

99058
99059
99060

Relinquished By: Bob Schmitt	Date: 11/23	Time: 11:45	Received By: Thuan 2573
Relinquished By: Thuan 2573	Date: 11/23	Time: 12:45	Received By: Jillie Riera
Relinquished By:	Date:	Time:	Received By:

Remarks:

ICE/GOOD CONDITION HEAD SPACE ABSENT

PRESERVATION APPROPRIATE CONTAINERS

VOAS | O&G | METALS | OTHER



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 12/01/98
		Date Received: 12/02/98
	Client Contact: Bob Schultz	Date Extracted: 12/02/98
	Client P.O:	Date Analyzed: 12/02/98

12/09/98

Dear Bob:

Enclosed are:

- 1). the results of 1 samples from your #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 925-798-1620 Fax: 925-798-1622

QC REPORT FOR ICP and/or AA METALS

Date: 12/03/98-12/04/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.70	4.78	5.0	94	96	1.7

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; C Of O, MSC	Date Sampled: 12/08/98
		Date Received: 12/08/98
	Client Contact: Bob Schultz	Date Extracted: 12/08/98
	Client P.O:	Date Analyzed: 12/08/98

12/16/98

Dear Bob:

Enclosed are:

- 1). the results of 6 samples from your #153-1247-4; C Of O, MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director

QC REPORT FOR HYDROCARBON ANALYSES

Date: 12/07/98-12/08/98

Matrix: SOIL

Analyte	Concentration (mg/kg) Sample (#97134)			Amount Spiked	% Recovery		RPD
	MS	MSD			MS	MSD	
TPH (gas)	0.000	2.097	1.989	2.03	103	98	5.3
Benzene	0.000	0.180	0.188	0.2	90	94	4.3
Toluene	0.000	0.186	0.194	0.2	93	97	4.2
Ethylbenzene	0.000	0.180	0.182	0.2	90	91	1.1
Xylenes	0.000	0.544	0.538	0.6	91	90	1.1
TPH(diesel)	0	312	314	300	104	105	0.7
TRPH (oil and grease)	0.0	24.1	23.4	23.7	102	99	2.9

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

QC REPORT FOR HYDROCARBON ANALYSES

Date: 12/09/98

Matrix: SOIL

Analyte	Concentration (mg/kg) Sample (#97134)			Amount Spiked	% Recovery		RPD
	MS	MSD			MS	MSD	
TPH (gas)	0.000	2.171	2.099	2.03	107	103	3.4
Benzene	0.000	0.186	0.182	0.2	93	91	2.2
Toluene	0.000	0.200	0.190	0.2	100	95	5.1
Ethylbenzene	0.000	0.192	0.182	0.2	96	91	5.3
Xylenes	0.000	0.594	0.530	0.6	99	88	11.4
TPH(diesel)	0	316	327	300	105	109	3.4
TRPH (oil and grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
 Tele: 925-798-1620 Fax: 925-798-1622

QC REPORT FOR ICP and/or AA METALS

Date: 12/10/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.68	4.63	5.0	94	93	1.1

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 12/10/98
		Date Received: 12/11/98
	Client Contact: Bob Schultz	Date Extracted: 12/11/98
	Client P.O:	Date Analyzed: 12/11/98

12/18/98

Dear Bob:

Enclosed are:

- 1). the results of 12 samples from your #153-1247-4; City of MSC project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton, Lab Director



McCAMPBELL ANALYTICAL INC.

110 Second Avenue South, #D7, Pacheco, CA 94553-5560
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<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608	Client Project ID: #153-1247-4; City of MSC	Date Sampled: 12/10/98
	Client Contact: Bob Schultz	Date Received: 12/11/98
	Client P.O.:	Date Extracted: 12/14/98
		Date Analyzed: 12/15/98

Organic Lead

CA Title 22, Chapter 11, Appendix XI

Lab ID	Client ID	Matrix	Organic Lead *
99947-950	FDP-130/131-133	S	ND
99951-952	FDP-134-135	S	ND
99953-955	FDP-136-138	S	ND
99956-958	FDP-139-141	S	ND
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W	0.1 mg/L	
	S	0.5 mg/kg	

* water samples are reported in mg/L, soil and sludge samples in mg/kg and wipes in mg/wipe
h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~5 vol. % sediment.



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<http://www.mccampbell.com> E-mail: main@mccampbell.com

Cambria Environmental Technology 1144 65 th Street, Suite C Oakland, CA 94608			Client Project ID: #153-1247-4; City of MSC			Date Sampled: 12/10/98	
			Client Contact: Bob Schultz			Date Received: 12/11/98	
			Client P.O:			Date Extracted: 12/11/98	
						Date Analyzed: 12/11-12/22/98	
Analytical methods			Moisture	Bulk Density	Porosity	Air Filled Void Space	Fractional Organic Content
			ASTM E3173	#	&	&	ASTM 2974c
Lab ID	Client ID	Matrix	Weight %	Grams / cc	Vol % Porosity	Vol % Porosity	Weight %
99951	FDP-134	S	14	0.88	71	---	2.9
Reporting Limit or Method Accuracy unless otherwise stated; ND means not detected above the reporting limit		S	± 2%	± 0.1g/cc	± 2%	± 2%	± 0.3%
* calculated							
* calculated volume percentage assuming that the specific gravity of soil is 2.65 grams/cc.							

DHS Certification No. 1644

EH Edward Hamilton, Lab Director

QC REPORT FOR HYDROCARBON ANALYSES

Date: 12/11/98-12/12/98

Matrix: SOIL

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		RPD
	Sample (#97138)	MS	MSD		MS	MSD	
TPH (gas)	0.000	1.924	1.950	2.03	95	96	1.3
Benzene	0.000	0.174	0.176	0.2	87	88	1.1
Toluene	0.000	0.182	0.196	0.2	91	98	7.4
Ethylbenzene	0.000	0.172	0.172	0.2	86	86	0.0
Xylenes	0.000	0.512	0.512	0.6	85	85	0.0
TPH(diesel)	0	316	311	300	105	104	1.3
TRPH (oil and grease)	0.0	21.0	24.7	20.8	101	119	16.2

$$\ddagger \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 925-798-1620 Fax: 925-798-1622

QC REPORT FOR ICP and/or AA METALS

Date: 12/15/98-12/16/98

Matrix: SOIL

Extraction:

Analyte	Concentration (mg/kg, mg/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
Total Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cadmium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Nickel	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Zinc	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Copper	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	0.00	4.68	4.63	5.0	94	93	1.3

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

13292 x 383

McCAMPBELL ANALYTICAL INC.

110 2ND AVENUE SOUTH, #D7
PACHECO, CA 94553

Telephone: (925) 798-1620

Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

RUSH 24 HOUR 48 HOUR DAY

Report To: **Bob Schultz**

Bill To: **Cambria**

Company: Cambria Environmental Technology

1144 65th Street, Suite C

Oakland, CA 94608

Tele: (510) 420-0700

Fax: (510) 420-9170

Project #: **153-1247-4**

Project Name: **C of O, MSC**

Project Location: **7101 Edgewater**

Hydrant Renova

Sampler Signature: *Bob Schultz*

SAMPLE ID	Date	Time	# Containers	Type Containers	MATRIX					METHOD PRESERVED				Analysis Request	Other
					Water	Soil	Air	Sludge	Other	Ice	HCl	HNO ₃	Other		
FDP-130-4.8'	12/10	13:23	1	tube	X					X					
FDP-131-4.1'		13:30													
FDP-132-4.5'		13:35													
FDP-133-4.0'		13:47													
FDP-134-5.0'		14:00													
FDP-135-4.0'		14:05													
FDP-136-4.3'		14:20													
FDP-137-5.0'		14:30													
FDP-138-6.5'		14:44													
FDP-139-5.0'		14:55													
FDP-140-4.5'		15:04													
FDP-141-4.5'		15:12													

BTEX & TPH as Gas (602/8020 + 8015) MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (5520 E&F/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 601 / 8010	BTEX ONLY (EPA 602 / 8020)	EPA 608 / 8080	EPA 608 / 8080 PCB's ONLY	EPA 624 / 8240 / 8260	EPA 625 / 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals	Lead (7240/7421/239.2/6010)	RCI	organic lead	Physical Properties
X	X															
X	X									Comp. 130, 131, 132, 133					X	
X	X									Comp. 134, 135					X	
X	X									Comp. 136, 137, 138					X	
X	X									Comp. 139, 140, 141					X	

9004
9007
9009
9010
9011

VOAS LONG METALS (OTHE)

PRESERVATION APPROPRIATE CONTAINERS

90052
90053
90054
90055
90056

GOOD CONDITION LEAD SPACE ABSENT

Relinquished By: <i>Bob Schultz</i>	Date: 12/11	Time: 11:15	Received By: <i>DAVID MORA</i>
Relinquished By: <i>David Mora</i>	Date: 12/11	Time: 12:41	Received By: <i>David Mora</i>
Relinquished By:	Date:	Time:	Received By:

Remarks: Two pt. composites for TPH_g/BTEX/MTBE and TPH_d analyses as specified in column 2. Composite order for organic lead analyses specified above. Run physical properties analyses on FDP-134 only.

Case No.: QAO-98-15A Memo #02
 Site: Oakland Brownfield
 Lab.: APPL, Inc.
 Reviewer: Lorena Herrera, ESAT/Lockheed
 Date: December 3, 1998

TABLE 1A

UNVALIDATED DATA Analysis Type: Soil Samples for Volatiles
 by SW-846 Method 8020 and
 Concentration in mg/Kg Total Petroleum Hydrocarbons
 (as Gasoline) by SW-846 Metl

Sample I.D. Date of Collec	FDP-1+2 COMPOS 9/23/98		FDP-3+4 COMPOS 9/23/98		FDP-5+6+4.0' COMPG 9/23 & 24/98		FDP-7+8+4.0' COMPG 9/24/98		FDP-1-7.5'+2-5.0' COMI 9/25/98		FDP-3-5.0'+4-4.5' COMI 9/25/98		FDP-5-5.5'+6-5.0' COME 9/25/98	
	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com
Benzene	0.31 U		3.2 U		3.2 U		3.1 U		3.0 U		3.0 U		3.0 U	
Chlorobenzene	0.31 U		3.2 U		3.3 U		3.1 U		3.0 U		3.0 U		3.0 U	
1,2-Dichlorob	0.31 U		3.2 U		3.2 U		3.1 U		3.0 U		3.0 U		3.0 U	
1,3-Dichlorob	0.31 U		3.2 U		3.2 U		3.1 U		3.0 U		3.0 U		3.0 U	
1,4-Dichlorob	0.31 U		3.2 U		3.2 U		3.1 U		3.0 U		3.0 U		3.0 U	
Ethylbenzene	2.7		29		23		5.1		45		27		53	
Gasoline	240		2000		1400		1200 U		2300		1300		3000	
MTBE	0.62 U		6.3 U		6.3 U		6.2 U		6.1 U		6.0 U		6.0 U	
Toluene	0.31 U		3.2 U		3.2 U		3.1 U		3.0 U		3.0 U		3.0 U	
Total Xylenes	6.2		54		52		7.0		77		120		160	
Percent Solids	80.4 %		79.0 %		79.2 %		81.0 %		82.6 %		82.7 %		83.4 %	

Val-Validity. Refer to Data Qualifiers in Table 1B.

D1, D2, etc. -Field Duplicate Pairs

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank, BG-Backg

N/A-Not Applicable, NA-Not Analyzed

TABLE 1A

Case No.: QAO-98-15A Memo #02
 Site: Oakland Brownfield
 Lab.: APPL, Inc.

UNVALIDATED DATA Analysis Type: Soil Samples for Volatiles

Sample ID.	FDP-7-4.5'+8-5.0' COMF			FDP-9-4.0'+10-4.5' COM			FDP-11-4.5'+12-4.5' COM			FDP-13-6.0'+14-5.5' COM			FDP-15-5.0'+16-5.0' COM			Method Blank 980929S			Method Blank 981002S		
	Date of Colle	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com	Result	Val/Com		
Benzene	9/25/98	3.0 U		0.29 U		3.0 U		0.029 U		0.029 U		0.029 U		0.025 U		0.025 U		0.025 U			
Chlorobenzene	9/25/98	3.0 U		0.29 U		3.0 U		0.029 U		0.029 U		0.029 U		0.025 U		0.025 U		0.025 U			
1,2-Dichlorob	9/25/98	3.0 U		0.29 U		3.0 U		0.029 U		0.029 U		0.029 U		0.025 U		0.025 U		0.025 U			
1,3-Dichlorob	9/25/98	3.0 U		0.29 U		3.0 U		0.029 U		0.029 U		0.029 U		0.025 U		0.025 U		0.025 U			
1,4-Dichlorob	9/25/98	3.0 U		0.29 U		3.0 U		0.029 U		0.029 U		0.029 U		0.025 U		0.025 U		0.025 U			
Ethylbenzene	9/25/98	13		2.6		44		0.029 U		0.029 U		0.029 U		0.025 U		0.025 U		0.025 U			
Gasoline	9/25/98	640		140		2400		12 U		21		10.0 U		10.0 U		10.0 U		10.0 U			
MTBE	9/25/98	6.0 U		0.59		5.2 L		0.058 U		0.058 U		0.058 U		0.050 U		0.050 U		0.050 U			
Toluene	9/25/98	3.0 U		0.29		3.0 U		0.029 U		0.029 U		0.029 U		0.025 U		0.025 U		0.025 U			
Total Xylenes	9/25/98	52		2.0		78		0.029 U		0.029 U		0.029 U		0.025 U		0.025 U		0.025 U			
Percent Solids	9/25/98	84.0 %		85.3 %		82.0 %		86.2 %		86.3 %		N/A		N/A		N/A		N/A			

Val-Validity. Refer to Data Qualifiers in Table 1B.

D1, D2, etc. -Field Duplicate Pairs

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank, BG-Back

N/A-Not Applicable, NA-Not Analyzed

ANALYTICAL RESULTS

TABLE 1A

Case No.: QAO-98-15A Memo #02

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA Analysis Type: Soil Samples for Volatiles

Reviewer: Lorena Herrera, ESAT/Lockheed

by SW-846 Method 8020 and

Date: December 3, 1998

Concentration in mg/Kg

Total Petroleum Hydrocarbons

(as Gasoline) by SW-846 Met

ANALYTICAL RESULTS

Case No.: QAO-98-15A Memo #03

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Total

Reviewer: Lorena Herrera, ESAT/Lockheed

Concentration in µg/Kg

Petroleum Hydrocarbons

Date: February 10, 1999 (AMENDED February 19, 1999)

(as Diesel) by EPA Method

8015M

Station Location and Sample I.D. Date of Collection	FDP-5-6-4.0' COMPOSIT			FDP-7-8-4.0' COMPOSIT			Method Blank 980928S BLK			PQL								
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel 9/23,24/98	130000			120000			10000 U			10000								

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

TABLE 1A

Case No.: QAO-98-15A Memo #03
 Site: Oakland Brownfield
 Lab.: APPL, Inc.
 Reviewer: Lorena Herrera, ESAT/Lockheed
 Date: February 10, 1999

UNVALIDATED DATA
 Concentration in µg/Kg

Analysis Type: Soil Samples for Total
 Petroleum Hydrocarbons
 (as Diesel) by EPA Method
 8015M

Station Location and Sample I.D. Date of Collection	FDP-5-6-4.0' COMPOSIT 9/24/98			FDP-7-8-4.0' COMPOSIT 9/24/98			Method Blank 980928S BLK			PQL								
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	130000			120000			10000 U			10000								

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Case No.: QAO-98-15A Memo #04

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Total

Reviewer: Lorena Herrera, ESAT/Lockheed

Petroleum Hydrocarbons

Date: February 10, 1999

Concentration in µg/Kg

(as Diesel) by EPA Method

8015M

Station Location and Sample I.D. Date of Collection	FDP-1-7.5'-2-5.0' COMPOSITE 9/25/98			FDP-3-5.0'-4-4.5' COMPOSITE 9/25/98			FDP-5-5.5'-6-5.0' COMPOSITE 9/25/98			FDP-7-4.5'-8-5.0' COMPOSITE 9/25/98			FDP-9-4.0'-10-4.5' COMPOSITE 9/25/98			FDP-11-4.5'-12-4.5' COMPOSITE 9/25/98			FDP-13-6.0'-14-5.5' COMPOSITE 9/25/98		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	650000			160000			840000			190000			130000			580000			72000		
Station Location and Sample I.D. Date of Collection	FDP-15-5.0'-16-5.0' COMPOSITE 9/25/98			Method Blank 981002S BLK			PQL														
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	29000			10000 U			10000														
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Case No.: QAO-98-15A Memo #06

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Total

Reviewer: Lorena Herrera, ESAT/Lockheed

Concentration in µg/Kg

Petroleum Hydrocarbons

Date: February 10, 1999 (AMENDED February 22, 1999)

(as Diesel) by EPA Method

8015M

Station Location and Sample I.D.	FDP-65-5.5'			Duplicate 1 FDP-66-90', FDP-67-3.0'			Duplicate 1 FDP-66-90', FDP-67-3.0'			FDP-68-3.0, FDP-69-5.5'			FDP-70-3.5, FDP-71-5.5'			FDP-72-6.5			FDP-66-W		
Date of Collection	10/20/98			10/20/98			10/20/98			10/20/98			10/20/98			10/20/98			10/20/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	400000			610000			540000			1900000			1100000			97000			39000		
Station Location and Sample I.D.	FDP-72-W			FDP-51-7.5', FDP-52-4.0'			FDP-53-5.0', FDP-54-8.0'			FDP-55-5.5', FDP-56-4.5'			FDP-57-11.0			FDP-58-5.5', FDP-59-4.5'			FDP-60-7.5', FDP-61-4.0'		
Date of Collection	10/20/98			10/19/98			10/19/98			10/19/98			10/19/98			10/19/98			10/19/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	49000			74000			2400000			280000			77000			10000 U			640000		
Sample I.D.	FDP-62-4.5', FDP-63-8.5' 10/19/98			Method Blank 1 981028S BLK			Method Blank 2 981104S BLK			PQL											
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	56000			10000 U			10000 U			10000											

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Case No.: QAO-98-15A Memo #06

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Total

Reviewer: Lorena Herrera, ESAT/Lockheed

Petroleum Hydrocarbons

Date: February 10, 1999

Concentration in µg/Kg

(as Diesel) by EPA Method

8015M

Station Location and Sample I.D.	FDP-65-5.5'			Duplicate 1 FDP-66-90', FDP-67-3.0'			FDP-68-3.0, FDP-69-5.5'			FDP-70-3.5, FDP-71-5.5'			FDP-72-6.5'			FDP-66-W			FDP-72-W		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Date of Collection	10/20/98			10/20/98			10/20/98			10/20/98			10/20/98			10/20/98			10/20/98		
Compound	Diesel			Diesel			Diesel			Diesel			Diesel			Diesel			Diesel		
	400000			610000			1900000			1100000			97000			39000			49000		
	↓ 400ppm			↓ 610 RAN																	
Station Location and Sample I.D.	FDP-51-7.5', FDP-52-4.0'			FDP-53-5.0', FDP-54-8.0'			FDP-55-5.5', FDP-56-4.5'			FDP-57-11.0'			FDP-58-5.5', FDP-59-4.5'			FDP-60-7.5', FDP-61-4.0'			FDP-62-4.5', FDP-63-8.5'		
Date of Collection	10/19/98			10/19/98			10/19/98			10/19/98			10/19/98			10/19/98			10/19/98		
Compound	Diesel			Diesel			Diesel			Diesel			Diesel			Diesel			Diesel		
	74000			2400000			280000			77000			10000 U			640000			56000		
Sample I.D.	Method Blank 1 981028S BLK			Method Blank 2 981104S BLK			PQL														
Compound	Diesel			Diesel			Diesel			Diesel			Diesel			Diesel			Diesel		
	10000 U			10000 U			10000														

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

Case No.: QAO-98-15A Memo #07

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Total

Reviewer: Lorena Herrera, ESAT/Lockheed

Concentration in µg/Kg

Petroleum Hydrocarbons

Date: February 10, 1999 (AMENDED February 22, 1999)

(as Diesel) by EPA Method

8015M

Station Location and Sample I.D.	Duplicate 1			Duplicate 1			Duplicate 1			Duplicate 1			Duplicate 1			Duplicate 1					
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com			
FDP-73-6.0', FDP-74-6.0'	FDP-75-6.5', FDP-76-4.5'			FDP-75-6.5', FDP-76-4.5'			FDP-77-5.5', FDP-78-6.0'			FDP-79-4.5', FDP-80-5.0'			FDP-81-5.0', FDP-82-6.5'			FDP-83-6.0', FDP-84-5.0'					
10/27/98	10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98					
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com			
Diesel	26000			13000			120000			140000			84000			12000 U			800000		
Station Location and Sample I.D.	FDP-85-7.0', FDP-86-4.0'			FDP-87-5.0', FDP-88-4.0'			FDP-89-4.0', FDP-90-3.0'			FDP-91-4.0', FDP-92-4.0'			FDP-86E-4.0'			FDP-86W-4.5'			Method Blank 981104S BLK		
10/27/98	10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98					
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	230000			69000			150000			290000			860000			840000			10000 U		
Sample I.D.	PQL																				
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	10000																				

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

Case No.: QAO-98-15A Memo #07

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Total

Reviewer: Lorena Herrera, ESAT/Lockheed

Petroleum Hydrocarbons

Date: February 10, 1999

Concentration in µg/Kg

(as Diesel) by EPA Method

8015M

Station Location and Sample I.D.	FDP-73-6.0', FDP-74-6.0'			FDP-74-6.5', FDP-76-4.5'			Duplicate 1 FDP-75-6.5', FDP-76-4.5'			FDP-77-5.5', FDP-78-6.0'			FDP-79-4.5', FDP-80-5.0'			FDP-81-5.0', FDP-82-6.5'			FDP-83-6.0', FDP-84-5.0'		
Date of Collection	10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	26000			13000			120000			140000			34000			12000 U			800000		
Station Location and Sample I.D.	FDP-85-7.0', FDP-86-4.0'			FDP-87-5.0', FDP-88-4.0'			FDP-89-4.0', FDP-90-3.0'			FDP-91-4.0', FDP-92-4.0'			FDP-86E-4.0'			FDP-86W-4.5'			Method Blank 981104S BLK		
Date of Collection	10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98					
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	230000			69000			150000			290000			860000			840000			10000 U		
Sample I.D.	PQL																				
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	10000																				

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Case No.: QAO-98-15A Memo #08

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Total

Reviewer: Lorena Herrera, ESAT/Lockheed

Petroleum Hydrocarbons

Date: February 10, 1999

Concentration in µg/Kg

(as Diesel) by EPA Method

8015M

Station Location and Sample I.D. Date of Collection	FDP-93-6.0, FDP-94-4.5 11/2/98			FDP-95-5.5, FDP-96-4.0 11/2/98			Duplicate 1 FDP-97-9.8, FDP-98-5.0 11/2/98			FDP-99-5.3, FDP-100-4.0 11/2/98			FDP-101-4.5 11/2/98			FDP-103-3.5, FDP-104-3 11/3/98			FDP-105-3.0, FDP-106-4.0 11/3/98		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	12000	U		28000			62000			49000			32000			9300	L		31000		
Station Location and Sample I.D. Date of Collection	FDP-107-4.0, FDP-108-4 11/3/98			Duplicate 2 FDP-109-4.0, FDP-110-4 11/3/98			FDP-111-5.0, FDP-112-4 11/3/98			FDP-113-4.0, FDP-114-4 11/3/98			FDP-115-5.5, FDP-102-4 11/3/98			Method Blank 981112S BLK			PQL		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	12000	U		450000			89000			930000			410000			10000	U		10000		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

Case No.: QAO-98-15A Memo #08

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Total

Reviewer: Lorena Herrera, ESAT/Lockheed

Concentration in µg/Kg

Petroleum Hydrocarbons

Date: February 10, 1999 (AMENDED February 19, 1999)

(as Diesel) by EPA Method

8015M

Station Location and Sample I.D.	FDP-93-6.0, FDP-94-4.5			FDP-95-5.5, FDP-96-4.0			Duplicate 1 FDP-97-9.8, FDP-98-5.0			Duplicate 1 FDP-97-9.8, FDP-98-5.0			FDP-99-5.3, FDP-100-4.0			FDP-101-4.5			FDP-103-3.5, FDP-104-3.0		
	Date of Collection 11/2/98			11/2/98			11/2/98			11/2/98			11/2/98			11/2/98			11/3/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	12000	U		28000			62000			6900	L		49000			32000			9300	L	
Station Location and Sample I.D.	FDP-105-3.0, FDP-106-4.0			FDP-107-4.0, FDP-108-4.0			Duplicate 2 FDP-109-4.0, FDP-110-4.0			Duplicate 2 FDP-109-4.0, FDP-110-4.0			FDP-111-5.0, FDP-112-4.0			FDP-113-4.0, FDP-114-4.0			FDP-115-5.5, FDP-102-4.0		
Date of Collection	11/3/98			11/3/98			11/3/98			11/3/98			11/3/98			11/3/98			11/3/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	31000			12000	U		450000			850000			89000			930000			410000		
Sample I.D.	Method Blank 981112S BLK			PQL																	
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	10000	U		10000																	

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

Case No.: QAO-98-15A Memo #11

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Total

Reviewer: Lorena Herrera, ESAT/Lockheed

Petroleum Hydrocarbons

Date: February 10, 1999

Concentration in µg/Kg

(as Diesel) by EPA Method

8015M

Station Location and Sample I.D.	FDP-19-3.5, FDP-20-8.5			FDP-21-4.5, FDP-22-7.5			FDP-23-4.2, FDP-24-5.0			FDP-25-5.0			FDP-26-5.3, FDP-27-5.5			FDP-28-5.0, FDP-30-5.0			FDP-29-5.0, FDP-31-5.0		
Date of Collection	10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	30000			150000			82000			220000			180000			140000			110000		
Station Location and Sample I.D.	FDP-32-5.0, FDP-33-5.0			FDP-34-5.0, FDP-35-6.0			FDP-36-4.0, FDP-37-5.0			FDP-36H-4.5			FDP-39H-7.5			FDP-38-5.0, FDP-39-7.5			FDP-40-6.5, FDP-41-5.5		
Date of Collection	10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	220000			12000 U			12000 U			45000			120000			150000			220000		
Station Location and Sample I.D.	FDP-42-5.0, FDP-43-5.5			Method Blank 981014S BLK			PQL														
Date of Collection	10/6/98																				
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Diesel	240000			10000 U			10000														

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

Page 1 of 1

TABLE 1A

Case No.: QAO-98-15A Memo #13

Site: Oakland Brownfield

Lab.: APPL, Inc.

Reviewer: Lorena Herrera, ESAT/Lockheed

Date: February 11, 1999

UNVALIDATED DATA

Analysis Type: Soil Samples for Total
Petroleum Hydrocarbons
(as Gasoline) by EPA Method
8015M

Concentration in mg/Kg

Station Location and Sample I.D.	FDP-19-3.5, FDP-20-8.5			FDP-21-4.5, FDP-22-7.5			FDP-23-4.2, FDP-24-5.0			FDP-25-5.0			FDP-26-5.3, FDP-27-5.5			FDP-28-5.0, FDP-30-5.0			FDP-29-5.0, FDP-31-5.0		
Date of Collection	10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Gasoline	10.0 U			10000 U			10000 U			10000 U			10000 U			10000 U			970		
Percent Solids	83.5 %			81.8 %			82.9 %			85.0 %			83.9 %			85.9 %			86.6 %		
Station Location and Sample I.D.	FDP-32-5.0, FDP-33-5.0			FDP-34-5.0, FDP-35-6.0			FDP-36-4.0, FDP-37-5.0			FDP-36H-4.5			FDP-39H-7.5			FDP-38-5.0, FDP-39-7.5			FDP-40-6.5, FDP-41-5.5		
Date of Collection	10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Gasoline	150			33			10.0 U			10.0 U			43			150			1900		
Percent Solids	85.0 %			83.9 %			85.3 %			86.2 %			83.8 %			81.9 %			84.9 %		
Station Location and Sample I.D.	FDP-42-5.0, FDP-43-5.5			Method Blank 1 981020S-12340 BL			Method Blank 2 981020S-12341 BL			Method Blank 3 981021S-12349 BL			Method Blank 4 981016S-12345 BL			Method Blank 5 981022S-12350 BL			PQL		
Date of Collection	10/6/98																				
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Gasoline	430			10.0 U			10.0 U			10.0 U			10.0 U			10.0 U			10.0		
Percent Solids	84.6 %			N/A			N/A			N/A			N/A			N/A			N/A		

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Case No.: QAO-98-15A Memo #14

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for BTEX

Reviewer: Lorena Herrera, ESAT/Lockheed

Concentration in µg/Kg

by EPA Method 8260A

Date: February 11, 1999 (AMENDED February 19, 1999)

Station Location and Sample I.D. Date of Collection	FDP-42-5.0, FDP-43-5.5 10/7/98			Method Blank 981119S-13217 BL			PQL											
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	1000			5.0 U			5.0											
Ethylbenzene	5000			5.0 U			5.0											
Toluene	2500 U			5.0 U			5.0											
Xylene (Total)	2500 U			5.0 U			5.0											
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com

Val-Validity. Refer to Data Qualifiers in
 Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.
 N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs
 FB-Field Blank, EB-Equipment Blank, TB-Trip Blank
 BG-Background Sample
 PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

Page 1 of 2

Case No.: QAO-98-15A Memo #14

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for Volatiles

Reviewer: Lorena Herrera, ESAT/Lockheed

by EPA Method 8260A

Date: February 11, 1999

Concentration in µg/Kg

Station Location and Sample I.D.	FDP-19-3.5, FDP-20-8.5			FDP-21-4.5, FDP-22-7.5			FDP-23-4.2, FDP-24-5.0			FDP-25-5.0			FDP-26-5.3, FDP-27-5.5			FDP-28-5.0, FDP-30-5.0			FDP-29-5.0, FDP-31-5.0		
Date of Collection	10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	260			25000 U			25000 U			25000 U			25000 U			5000 L			25000 U		
Ethylbenzene	250 U			7800 L			15000 L			25000 U			16000 L			31000			9800 L		
Toluene	250 U			25000 U			25000 U			25000 U			25000 U			25000 U			25000 U		
Xylene (Total)	250 U			6600 L			62000			25000 U			37000			150000			38000		
Station Location and Sample I.D.	FDP-32-5.0, FDP-33-5.0			FDP-34-5.0, FDP-35-6.0			FDP-36-4.0, FDP-37-5.0			FDP-36H-4.5			FDP-39H-7.5			FDP-38-5.0, FDP-39-7.5			FDP-40-6.5, FDP-41-5.5		
Date of Collection	10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98			10/6/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	16000 L			25000 U			250 U			250 U			2500 U			2500 U			2900		
Ethylbenzene	48000			25000 U			250 U			250 U			780 L			4600			19000		
Toluene	25000 U			25000 U			250 U			250 U			2500 U			2500 U			2500 U		
Xylene (Total)	170000			25000 U			250 U			250 U			1200 L			12000			30000		

Val-Validity. Refer to Data Qualifiers in

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

Case No.: QAO-98-15A Memo #16

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for BTEX and MTBE

Reviewer: Lorena Herrera, ESAT/Lockheed

Concentration in µg/Kg

by EPA Method 8020

Date: February 16, 1999 (AMENDED February 23, 1999)

Station Location and Sample I.D. Date of Collection	FDP-65-5.5 10/20/98			Duplicate 1 FDP-66-9.0, FDP-67-3.0 10/20/98			Duplicate 1 FDP-66-9.0, FDP-67-3.0 10/20/98			FDP-68-3.0, FDP-69-5.5 10/20/98			FDP-70-3.5, FDP-71-5.5 10/20/98			FDP-72-6.5 10/20/98			Method Blank 981031S-12732 BLI		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	1400 U			1500 U			1500 U			3000 U			3000 U			32 U			25 U		
Ethylbenzene	1400 U			13000			3400			3000 U			3000 U			32 U			25 U		
Toluene	1400 U			1500 U			1500 U			3000 U			3000 U			32 U			25 U		
Xylenes (Total)	1400 U			5600			4800			3000 U			3000 U			32 U			25 U		
MTBE	2800 U			3000 U			3000 U			6000 U			6100 U			64 U			50 U		
Percent Solids	88.2 %			82.2 %			82.6 %			83.8 %			82.2 %			77.8 %			N/A		
Sample I.D.	Method Blank 981103S-12732 BLI			PQL																	
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	25 U			25																	
Ethylbenzene	25 U			25																	
Toluene	25 U			25																	
Xylenes (Total)	25 U			25																	
MTBE	50 U			50																	

Val-Validity. Refer to Data Qualifiers in

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Site: Oakland Brownfield

Lab.: APPL, Inc.

Reviewer: Lorena Herrera, ESAT/Lockheed

Date: February 16, 1999 (AMENDED February 23, 1999)

UNVALIDATED DATA

Concentration in µg/Kg

Analysis Type: Soil Samples for Total

Petroleum Hydrocarbons

(as Gasoline and Diesel)

by EPA Method 8015

Station Location and Sample I.D. Date of Collection	FDP-65-5.5 10/20/98			Duplicate 1 FDP-66-9.0, FDP-67-3.0 10/20/98			Duplicate 1 FDP-66-9.0, FDP-67-3.0 D1 10/20/98			FDP-68-3.0, FDP-69-5.5 10/20/98			FDP-70-3.5, FDP-71-5.5 10/20/98			FDP-72-6.5 10/20/98			Method Blank 981031S-12732 BL1		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	230			970			810			1800			1200 L			13 U			10 U		
TPH, as diesel	NA			NA			NA			NA			NA			NA			NA		
Percent Solids	88.2 %			82.2 %			82.6 %			83.8 %			82.2 %			77.8 %			N/A		
Sample I.D.	Method Blank 981103S-12732 BL1			PQL																	
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	10 U			10																	
TPH, as diesel	NA			NA																	
	N/A																				

Val-Validity. Refer to Data Qualifiers in

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Case No.: QAO-98-15A Memo #16

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for BTEX and MTBE

Reviewer: Lorena Herrera, ESAT/Lockheed

by EPA Method 8020

Date: February 16, 1999

Concentration in µg/Kg

Station Location and Sample I.D. Date of Collection	FDP-65-5.5 10/20/98			Duplicate 1 FDP-66-9.0, FDP-67-3.0 10/20/98			FDP-68-3.0, FDP-69-5.5 10/20/98			FDP-70-3.5, FDP-71-5.5 10/20/98			FDP-72-6.5 10/20/98			Method Blank 981031S-12732 BL			Method Blank 981103S-12732 BL		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	1400 U			1500 U			3000 U			3000 U			32 U			25 U			25 U		
Ethylbenzene	1400 U			13000			3000 U			3000 U			32 U			25 U			25 U		
Toluene	1400 U			1500 U			3000 U			3000 U			32 U			25 U			25 U		
Xylenes (Total)	1400 U			5600			3000 U			3000 U			32 U			25 U			25 U		
MTBE	2800 U			3000 U			6000 U			6100 U			64 U			50 U			50 U		
Percent Solids	88.2 %			82.2 %			83.8 %			82.2 %			77.8 %			N/A			N/A		
Sample I.D.	PQL																				
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	25																				
Ethylbenzene	25																				
Toluene	25																				
Xylenes (Total)	25																				
MTBE	50																				

Val-Validity. Refer to Data Qualifiers in

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Site: Oakland Brownfield
 Lab.: APPL, Inc.
 Reviewer: Lorena Herrera, ESAT/Lockheed
 Date: February 16, 1999

UNVALIDATED DATA
 Concentration in mg/Kg

Analysis Type: Soil Samples for Total
 Petroleum Hydrocarbons
 (as Gasoline and Diesel)
 by EPA Method 8015

Station Location and Sample I.D. Date of Collection	FDP-65-5.5 10/20/98			Duplicate 1 FDP-66-9.0, FDP-67-3.0 10/20/98			FDP-68-3.0, FDP-69-5.5 10/20/98			FDP-70-3.5, FDP-71-5.5 10/20/98			FDP-72-6.5 10/20/98			Method Blank 981031S-12732 BL			Method Blank 981103S-12732 BL		
	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	230			970			1800			1200 L			13 U			10000 U			10000 U		
TPH, as diesel	NA			NA			NA			NA			NA			NA			NA		
Percent Solids	88.2 %			82.2 %			83.8 %			82.2 %			77.8 %			N/A			N/A		
Sample I.D.	PQL																				
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	10000																				
TPH, as diesel	NA																				

Val-Validity. Refer to Data Qualifiers in
 Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.
 N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs
 FB-Field Blank, EB-Equipment Blank, TB-Trip Blank
 BG-Background Sample
 PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

Page 1 of 4

Case No.: QAO-98-15A Memo #17

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for BTEX and MTBE

Reviewer: Lorena Herrera, ESAT/Lockheed

by EPA Method 8020

Date: February 16, 1999

Concentration in µg/Kg

Station Location and Sample I.D.	FDP-73-6.0', FDP-74-6.0'			FDP-75-6.5', FDP-76-4.5'			FDP-75-6.5', FDP-76-4.5'			FDP-77-5.5', FDP-78-6.0'			FDP-79-4.5', FDP-80-5.0'			FDP-81-5.0', FDP-82-6.5'			FDP-83-6.0', FDP-84-5.0'		
Date of Collection	10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	440			28 U			32 U			2900 U			1400 U			2900 U			2900 U		
Ethylbenzene	2400			380			320 U			10000			24000			29000			25000		
Toluene	280 U			28 U			320 U			2900 U			1400 U			2900 U			2900 U		
Xylenes (Total)	5900			28 U			320 U			11000			10000			68000			57000		
MTBE	57 U			57 U			65 U			3900 U			58000 U			58 U			5900 U		
Percent Solids	88.3 %			87.8 %			77.1 %			85.2 %			86.5 %			86.6 %			85.4 %		
Station Location and Sample I.D.	FDP-85-7.0', FDP-86-4.0'			FDP-86E-4.0'			FDP-86W-4.5'			FDP-87-5.0', FDP-88-4.0'			FDP-89-4.0', FDP-90-3.0'			FDP-91-4.0', FDP-92-4.0'			Method Blank 1 981103S-12977 BLF		
Date of Collection	10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98					
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	2800 U			110000			29 U			29 U			29 U			5200			25 U		
Ethylbenzene	24000 U			470000			29 U			280			29 U			2400			25 U		
Toluene	2800 U			100000			29 U			29 U			29 U			3200			25 U		
Xylenes (Total)	18000			220000			29 U			560			29 U			9000			25 U		
MTBE	5600 U			1200 U			58 U			58 U			58 U			57 U			50 U		
Percent Solids	88.7 %			80.2 %			85.6 %			85.6 %			85.5 %			87.0 %			N/A		

Val-Validity. Refer to Data Qualifiers in

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Site: Oakland Brownfield
 Lab.: APPL, Inc.
 Reviewer: Lorena Herrera, ESAT/Lockheed
 Date: February 16, 1999

UNVALIDATED DATA
 Concentration in mg/Kg

Analysis Type: Soil Samples for Total
 Petroleum Hydrocarbons
 (as Gasoline and Diesel)
 by EPA Method 8015

Station Location and Sample I.D.	FDP-73-6.0', FDP-74-6.0'			FDP-75-6.5', FDP-76-4.5'			FDP-75-6.5', FDP-76-4.5'			FDP-77-5.5', FDP-78-6.0'			FDP-79-4.5', FDP-80-5.0'			FDP-81-5.0', FDP-82-6.5'			FDP-83-6.0', FDP-84-5.0'		
Date of Collection	10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	110 L			41			130 U			410			760 L			850 L			830 L		
TPH, as diesel	NA			NA			NA			NA			NA			NA			NA		
Percent Solids	88.3 %			87.8 %			77.1 %			85.2 %			86.5 %			86.6 %			85.4 %		
Station Location and Sample I.D.	FDP-85-7.0', FDP-86-4.0'			FDP-86E-4.0'			FDP-86W-4.5'			FDP-87-5.0', FDP-88-4.0'			FDP-89-4.0', FDP-90-3.0'			FDP-91-4.0', FDP-92-4.0'			Method Blank 1 981103S-12977 BL1		
Date of Collection	10/27/98			10/27/98			10/27/98			10/27/98			10/27/98			10/27/98					
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	850 L			1500 L			12 U			28			12 U			130			10.0 U		
TPH, as diesel	NA			NA			NA			NA			NA			NA			NA		
Percent Solids	88.7 %			80.2 %			85.6 %			85.6 %			85.5 %			87.0 %			NA		

Val-Validity. Refer to Data Qualifiers in
 Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.
 N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs
 FB-Field Blank, EB-Equipment Blank, TB-Trip Blank
 BG-Background Sample
 PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

ANALYTICAL RESULTS

Case No.: QAO-98-15A Memo #18

TABLE 1A

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for BTEX and MTBE

Reviewer: Lorena Herrera, ESAT/Lockheed

by EPA Method 8020

Date: February 17, 1999

Concentration in µg/Kg

Station Location and Sample I.D.	FDP-51-7.5', FDP-52-4.0'			FDP-53-5.0', FDP-54-8.0'			FDP-55-5.5', FDP-56-4.5'			FDP-57-11.0'			FDP-58-5.5', FDP-59-4.5'			FDP-60-7.5', FDP-61-4.0'			FDP-62-4.5', FDP-63-3.5'		
	Date of Collection			Date of Collection			Date of Collection			Date of Collection			Date of Collection			Date of Collection			Date of Collection		
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	1200			300000			1500 U			31 U			30 U			2900 U			1100		
Ethylbenzene	650			300000			18000			31 U			360			270000			1400		
Toluene	29 U			180000			1500 U			31 U			30 U			2900 U			29 U		
Xylenes (Total)	1100			1300000			15000			31 U			30 U			1000000			1600		
MTBE	58 U			60 U			2900 U			62 U			60 U			57 U			340		
Percent Solids	85.8 %			83.0 %			85.5 %			81.2 %			83.1 %			87.7 %			85.8 %		
Sample I.D.	Method Blank 1 981031S-12798 BL			Method Blank 2 981031S-12732 BL			Method Blank 3 981103S-12876 BL			PQL											
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	25 U			25 U			25 U			25											
Ethylbenzene	25 U			25 U			25 U			25											
Toluene	25 U			25 U			25 U			25											
Xylenes (Total)	25 U			25 U			25 U			25											
MTBE	50 U			50 U			50 U			50											

Val-Validity. Refer to Data Qualifiers in

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Site: Oakland Brownfield
 Lab.: APPL, Inc.
 Reviewer: Lorena Herrera, ESAT/Lockheed
 Date: February 17, 1999

UNVALIDATED DATA
 Concentration in mg/Kg

Analysis Type: Soil Samples for Total
 Petroleum Hydrocarbons
 (as Gasoline and Diesel)
 by EPA Method 8015

Station Location and Sample I.D.	FDP-51-7.5', FDP-52-4.0'			FDP-53-5.0', FDP-54-8.0'			FDP-55-5.5', FDP-56-4.5'			FDP-57-11.0'			FDP-58-5.5', FDP-59-4.5'			FDP-60-7.5', FDP-61-4.0'			FDP-62-4.5', FDP-63-8.5'		
Date of Collection	10/19/98			10/19/98			10/19/98			10/19/98			10/19/98			10/19/98					
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	27			23000			780			12 U			7800			7300			110		
TPH, as diesel	NA			NA			NA			NA			NA			NA			NA		
Percent Solids	85.8 %			83.0 %			85.5 %			81.2 %			83.1 %			87.7 %			85.8 %		
Sample I.D.	Method Blank 1 981031S-12798 BL			Method Blank 2 981031S-12732 BL			Method Blank 3 981103S-12876 BL			PQL											
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	10.0 U			10.0 U			10.0 U			10.0											
TPH, as diesel	NA			NA			NA			NA											

Val-Validity. Refer to Data Qualifiers in

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

ANALYTICAL RESULTS

TABLE 1A

ANALYTICAL RESULTS

TABLE 1A

Case No.: QAO-98-15A Memo #21

Site: Oakland Brownfield

Lab.: APPL, Inc.

UNVALIDATED DATA

Analysis Type: Soil Samples for BTEX and MT

Reviewer: Lorena Herrera, ESAT/Lockheed

by EPA Method 8020

Date: March 25, 1999

Concentration in µg/Kg

Station Location and Sample I.D.	FDP-116-4.8/FDP-117-3.9			FDP-118-4.5/FDP-119-4.5			FDP-118-4.5/FDP-119-4.5 Field Du			FDP 120-6.5 Lab Dup			Method Blank 1 981125S - BLK			Method Blank 2 981221S - BLK		
	11/20/98			11/20/98			11/20/98			11/20/98								
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	1800			5500			750			35000			25 U			25 U		
Ethylbenzene	6000			15000			14000			75000			25 U			25 U		
Toluene	2400			3400			2700			150000			25 U			25 U		
Xylenes (Total)	9100			4800			5900			400000			25 U			25 U		
MTBE	280 U			290 U			290 U			290 U			50 U			50 U		
Sample I.D.	PQL																	
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
Benzene	25																	
Ethylbenzene	25																	
Toluene	25																	
Xylenes (Total)	25																	
MTBE	50																	

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Case No.: QAO-98-15A Memo #21

TABLE 1A

Site: Oakland Brownfield

Analysis Type: Soil Samples for Total

Lab.: APPL, Inc.

UNVALIDATED DATA

Petroleum Hydrocarbons

Reviewer: Lorena Herrera, ESAT/Lockheed

(as Gasoline) by EPA Method

Date: March 25, 1999

Concentration in µg/Kg

8015

Station Location and Sample I.D.	FDP-116-4.8/FDP-117-3.9			FDP-118-4.5/FDP-119-4.5			FDP-118-4.5/FDP-119-4.5 Field Du			FDP 120-6.5 Lab Dup			Method Blank 1 981125S - BLK			Method Blank 2 981221S - BLK		
	Date of Collection 11/20/98			11/20/98			11/20/98			11/20/98								
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	180000			410000			270000			2300000			1000 U			1000 U		
Sample I.D.	PQL																	
Compound	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
TPH, as gasoline	1000																	

Val-Validity. Refer to Data Qualifiers in Table 1B.

Com-Comments. Refer to the Corresponding Section in the Narrative for each letter.

N/A-Not Applicable, NA-Not Analyzed

D1, D2, etc. -Field Duplicate Pairs

FB-Field Blank, EB-Equipment Blank, TB-Trip Blank

BG-Background Sample

PQL-Practical Quantitation Limit

Case Narrative
EPA 8015M METHOD
Total Petroleum Hydrocarbons - Gasoline
APPL, Inc. State Certification 1312

ARF: 29135

Project: USEPA Region 9 - QAO-98-15A

Sample Receipt Information:

The sample group was received December 02, 1998. The samples were assigned Analytical Request Form (ARF) number 29135. The sample numbers and requested analyses were compared to the chain of custody. No other exceptions were encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
FDP-121-4.5', FDP-122-5.0'	72086	Soil	12/01/98	12/02/98
FDP-123-5.0', FDP-124-5.0'	72087	Soil	12/01/98	12/02/98
FDP-123-5.0', FDP-124-5.0'	72088	Soil	12/01/98	12/02/98

Extraction Information:

The samples were extracted using EPA Method 5030A. No exceptions were encountered.

Analysis Information:**Samples:**

The samples were analyzed by EPA Method 8015M.

Calibrations:

The calibrations were performed according to the method with no other deviations for the initial calibration or the continuing calibrations.

TO: DAVE ELIAS
FROM: ROSE FONG
45 pgs
ARF 29135 19 pgs
ARF 28911 26 pgs

004

APPL, INC.

Calculations:

BTEX results were calculated using an external standard and against an average calibration curve using the following equation:

$$\text{Calibration factor} = \frac{PkAr_s}{(CoStd)(injectionvolume)}$$

Where:

$PkAr_s$ = Peak Area of compound in the Standard.

$CoStd.$ = Concentration of Standard.

Example: The instrument Harpo, calibration 1023002.D\FID1B.CH for Benzene at 1ppb.

$$26602 = \frac{133010 \text{ areacounts}}{(1 \mu\text{g} / \text{L})(5 \text{ mL})}$$

$$\text{Sample Conc.} = \frac{(PkAr_n) X (D)(\text{soilhandlingdilutionfactor})}{(Cf)(X\text{samplevolume})}$$

Where:

$PkAr_n$ = Peak Area of analyte.

D = Dilution factor.

Cf = Average calibration factor.

Soil handling dilution factor = 50

Note: All medium level soils are handled in a similar manner. Ten grams of soil are mixed with ten mLs of methanol and this extract is diluted fifty-fold as the sample is admitted to the purge unit. (Either 100 μ L of sample extract/5mL of purge volume or 1mL of sample extract/50mL of purge volume depending on the purge unit mechanics.)

Example: Sample FDP-121-4.5', FDP-122-5.0' (72086) at DF 100
Ethylbenzene from purge 113028.D\FID2A.CH: (Harpo)

$$21300.707 = \frac{(576050) X (100)(50)}{(27043.70329)(5)}$$

Calculations:

TPH Gasoline results were calculated using an external standard and against an average calibration curve using the following equation:

$$\text{Calibration Factor} = \frac{(PkAr_s - PkS_s)}{CoStd}$$

Where:

$PkAr_s$ = Peak Area of compound in the Standard.

PkS_s = Peak Area of Surrogate in Standard.

$CoStd.$ = Concentration of Standard.

$$\text{Sample Conc.} = \frac{(PkAr_s - PkSu_n) X (D)(\text{soilsampledilutionfactor})}{(Cf)(\text{samplevolume})}$$

Soil handling dilution factor = 50

Note: All medium level soils are handled in a similar manner. Ten grams of soil are mixed with ten mLs of methanol and this extract is diluted fifty-fold as the sample is admitted to the purge unit. (Either 100 μ L of sample extract/5mL of purge volume or 1mL of sample extract/50mL of purge volume depending on the purge unit mechanics.)

Example: Sample FDP-121-4.5', FDP-122-5.0' Gasoline from purge
1216047.D\FID2BCH: (Moe)

$$547216.676 = \frac{(13930908) X (50)(50)}{(12728.877)(5)}$$

Blanks:

No target compounds were detected at or above the reporting level.

Surrogates:

For the PID detector: The surrogate Bromofluorobenzene was recovered at 49.9% in MSD2 (FDP-123-5.0, FDP-124-5.0 DUP) on January 05, 1999 and at 216% in MS2 (FDP-123-5.0, FDP-124-5.0 DUP), 228% in MSD2 (FDP-123-5.0, FDP-124-5.0 DUP), at 245% in MS (FDP-123-5.0, FDP-124-5.0 DUP), 244% in MSD2 (FDP-123-5.0, FDP-124-5.0 DUP) on January 14, 1999.

1,1,1-Trifluorotoluene was recovered at 162% in MS2 (FDP-123-5.0, FDP-124-5.0 DUP), 183% in MSD2 (FDP-123-5.0, FDP-124-5.0 DUP), at 177% in MS (FDP-123-5.0, FDP-124-5.0 DUP), 173% in MSD2 (FDP-123-5.0, FDP-124-5.0 DUP) on January 14, 1999. All other PID surrogate recoveries met acceptance criteria.

For the FID detector: The surrogate Bromofluorobenzene was recovered at 55.8% in MSD2 (FDP-123-5.0,FDP-124-5.0 DUP) on January 05,1999 and at 536% in MS2 (FDP-123-5.0,FDP-124-5.0 DUP), 576% in MSD2 (FDP-123-5.0,FDP-124-5.0 DUP), at 650% in MS (FDP-123-5.0,FDP-124-5.0 DUP), 626% in MSD2 (FDP-123-5.0,FDP-124-5.0 DUP) on January 14,1999.

1,1,1-Trifluorotoluene was recovered at 288% in MS2 (FDP-123-5.0,FDP-124-5.0 DUP), 348% in MSD2 (FDP-123-5.0,FDP-124-5.0 DUP), at 335% in MS (FDP-123-5.0,FDP-124-5.0 DUP), 322% in MSD2 (FDP-123-5.0,FDP-124-5.0 DUP) on January 14,1999. All other FID surrogate recoveries met acceptance criteria.

Heavy contamination of the samples is suggested as the matrix effect in each case.

Spikes:


Sample FDP-123-5.0', FDP-124-5.0' (72088) was utilized as Matrix Spike/Matrix Spike Duplicate. For the BTEX MS/MSD and for the Gasoline MS/MSD, two sets of MS/MSDs were analyzed. No recoveries met acceptance criteria. The parent sample had greater than one hundred times the spike amount. A Laboratory Control Spike/Spike Duplicate (LCS/LCSD) was also analyzed. All analyte recoveries met laboratory acceptance criteria.

Summary:

Samples were analyzed within holding time with indeterminate quality control. The sample group was reanalyzed beyond holding time with similar results. No other analytical exceptions are noted.

CERTIFICATION

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the hard copy has been authorized by the Laboratory Manager or his designee, as verified by the following signature.


Mike Ray, Laboratory Manager/Date

Method Blank
EPA 8020.MTBE.GAS-Soil

Blank Name/QCG: 981210S -
Batch ID:

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	.025	mg/kg	12/10/98	12/10/98
BLANK	Ethylbenzene	Not detected	.025	mg/kg	12/10/98	12/10/98
BLANK	Gasoline	Not detected	10	mg/kg	12/10/98	12/10/98
BLANK	MTBE	Not detected	.050	mg/kg	12/10/98	12/10/98
BLANK	Toluene	Not detected	.025	mg/kg	12/10/98	12/10/98
BLANK	Total Xylenes	Not detected	.025	mg/kg	12/10/98	12/10/98
BLANK	Surrogate:a,a,a TFT-FID	117	60-125	%	12/10/98	12/10/98
BLANK	Surrogate:a,a,a TFT-PID	102	60-125	%	12/10/98	12/10/98
BLANK	Surrogate:BFB-FID	108	60-125	%	12/10/98	12/10/98
BLANK	Surrogate:BFB-PID	96.6	60-125	%	12/10/98	12/10/98

014

Run #: 33
Instrument: HARPO
Sequence: 981209
Initials: MT

Printed: 3/1/99 10:00:16 AM

Lab Blank
EPA 8020, MTBE, GAS-Soil

Blank Name/QCG: 981210S -
Batch ID:

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample	Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK		Benzene	Not detected	.025	mg/kg	12/10/98	12/10/98
BLANK		Ethylbenzene	Not detected	.025	mg/kg	12/10/98	12/10/98
BLANK		Gasoline	Not detected	10	mg/kg	12/10/98	12/10/98
BLANK		MTBE	Not detected	.050	mg/kg	12/10/98	12/10/98
BLANK		Toluene	Not detected	.025	mg/kg	12/10/98	12/10/98
BLANK		Total Xylenes	Not detected	.025	mg/kg	12/10/98	12/10/98
BLANK		Surrogate:a,a,a TFT-FID	122	60-125	%	12/10/98	12/10/98
BLANK		Surrogate:a,a,a TFT-PID	105	60-125	%	12/10/98	12/10/98
BLANK		Surrogate:BFB-FID	114	60-125	%	12/10/98	12/10/98
BLANK		Surrogate:BFB-PID	101	60-125	%	12/10/98	12/10/98

015

Run #: 34
Instrument: HARPO
Sequence: 981209
Initials: MT

Printed: 3/1/99 10:00:16 AM

Method Blank
EPA 8020.MTBE.GAS-Soil

Blank Name/QCG: 990105S -
Batch ID:

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	.025	mg/kg	1/5/99	1/5/99
BLANK	Ethylbenzene	Not detected	.025	mg/kg	1/5/99	1/5/99
BLANK	Gasoline	Not detected	10	mg/kg	1/5/99	1/5/99
BLANK	MTBE	Not detected	.050	mg/kg	1/5/99	1/5/99
BLANK	Toluene	Not detected	.025	mg/kg	1/5/99	1/5/99
BLANK	Total Xylenes	Not detected	.025	mg/kg	1/5/99	1/5/99
BLANK	Surrogate:a,a,a TFT-FID	112	60-125	%	1/5/99	1/5/99
BLANK	Surrogate:a,a,a TFT-PID	94.9	60-125	%	1/5/99	1/5/99
BLANK	Surrogate:BFB-FID	102	60-125	%	1/5/99	1/5/99
BLANK	Surrogate:BFB-PID	89.4	60-125	%	1/5/99	1/5/99

016

Run #: 11
Instrument: HARPO
Sequence: 990104
Initials: MT

Printed: 3/1/99 10:00:17 AM

Lab Blank
EPA 8020, MTBE, GAS-Soil

Blank Name/QCG: 981210S -
 Batch ID:

APPL Inc.
 4203 West Swift Avenue
 Fresno, CA 93722

Sample	Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK		Benzene	Not detected	.025	mg/kg	12/10/98	1/5/99
BLANK		Ethylbenzene	Not detected	.025	mg/kg	12/10/98	1/5/99
BLANK		Gasoline	Not detected	10	mg/kg	12/10/98	1/5/99
BLANK		MTBE	Not detected	.050	mg/kg	12/10/98	1/5/99
BLANK		Toluene	Not detected	.025	mg/kg	12/10/98	1/5/99
BLANK		Total Xylenes	Not detected	.025	mg/kg	12/10/98	1/5/99
BLANK		Surrogate:a,a,a TFT-FID	108	60-125	%	12/10/98	1/5/99
BLANK		Surrogate:a,a,a TFT-PID	93.3	60-125	%	12/10/98	1/5/99
BLANK		Surrogate:BFB-FID	99.9	60-125	%	12/10/98	1/5/99
BLANK		Surrogate:BFB-PID	89.1	60-125	%	12/10/98	1/5/99

Run #: 12
 Instrument: HARPO
 Sequence: 990104
 Initials: MT

017

Printed: 3/1/99 10:00:17 AM

Method Blank
EPA 8020,MTBE,GAS-Soil

Blank Name/QCG: 981210S -
Batch ID:

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	25	mg/kg	12/10/98	1/14/99
BLANK	Ethylbenzene	Not detected	25	mg/kg	12/10/98	1/14/99
BLANK	Gasoline	Not detected	1000	mg/kg	12/10/98	1/14/99
BLANK	MTBE	Not detected	50	mg/kg	12/10/98	1/14/99
BLANK	Toluene	Not detected	25	mg/kg	12/10/98	1/14/99
BLANK	Total Xylenes	Not detected	25	mg/kg	12/10/98	1/14/99
BLANK	Surrogate:a,a,a TFT-FID	100	60-125	%	12/10/98	1/14/99
BLANK	Surrogate:a,a,a TFT-PID	99.7	60-125	%	12/10/98	1/14/99
BLANK	Surrogate:BFB-FID	101	60-125	%	12/10/98	1/14/99
BLANK	Surrogate:BFB-PID	101	60-125	%	12/10/98	1/14/99

Run #: 20
Instrument: HARPO
Sequence: 990113
Initials: MT

018

Printed: 3/1/99 10:00:17 AM

Method Blank
EPA 8020, MTBE, GAS-Soil-dilution

Blank Name/QCG: 981217S -
Batch ID:

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	.025	mg/kg	12/17/98	12/17/98
BLANK	Ethylbenzene	Not detected	.025	mg/kg	12/17/98	12/17/98
BLANK	Gasoline	Not detected	10.0	mg/kg	12/17/98	12/17/98
BLANK	MTBE	Not detected	.050	mg/kg	12/17/98	12/17/98
BLANK	Toluene	Not detected	.025	mg/kg	12/17/98	12/17/98
BLANK	Total Xylenes	Not detected	.025	mg/kg	12/17/98	12/17/98
BLANK	Surrogate:a,a,a TFT-FID	95.0	60-125	%	12/17/98	12/17/98
BLANK	Surrogate:a,a,a TFT-PID	97.8	60-125	%	12/17/98	12/17/98
BLANK	Surrogate:BFB-FID	87.1	60-125	%	12/17/98	12/17/98
BLANK	Surrogate:BFB-PID	91.3	60-125	%	12/17/98	12/17/98

019

Run #: 33
Instrument: MOE
Sequence: 981216
Initials: MT

Printed: 3/1/99 10:00:16 AM

EPA 8020.MTBE.GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND HYDRANT REMOV

Sample ID: FDP-121-4.5/FDP-122-5.0

Sample Collection Date: 12/1/98

ARF: 29135

APPL ID: AP72086

QCG: \$820GR-981210A-14242

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 15.9 Percent Moisture)						
8015/8021B	Benzene	Not detected	30	mg/kg	12/10/98	12/10/98
8015/8021B	Ethylbenzene	25	3.0	mg/kg	12/10/98	12/10/98
8015/8021B	Gasoline	1800	1200	mg/kg	12/10/98	12/10/98
8015/8021B	MTBE	Not detected	59	mg/kg	12/10/98	12/10/98
8015/8021B	Toluene	Not detected	30	mg/kg	12/10/98	12/10/98
8015/8021B	Total Xylenes	65	30	mg/kg	12/10/98	12/10/98
8015/8021B	Surrogate:a,a,a TFT-FID	117	60-125	%	12/10/98	12/10/98
8015/8021B	Surrogate:a,a,a TFT-PID	101	60-125	%	12/10/98	12/10/98
8015/8021B	Surrogate:BFB-FID	105	60-125	%	12/10/98	12/10/98
8015/8021B	Surrogate:BFB-PID	95.3	60-125	%	12/10/98	12/10/98

DF1000 DF100

Run #: 49,28
Instrument: HARPO
Sequence: 981209
Initials: MT

039

Printed: 3/11/99 8:38:50 AM

EPA 8020.MTBE.GAS-Soil-dilution

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND HYDRANT REMOV

ARF: 29135

Sample ID: FDP-121-4.5/FDP-122-5.0

APPL ID: AP72086

Sample Collection Date: 12/1/98

QCG: \$82GSC-981216B-13846

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 15.9 Percent Moisture)						
8015/8021B	Benzene	Not detected	1.4	mg/kg	12/10/98	12/17/98
8015/8021B	Ethylbenzene	19	1.4	mg/kg	12/10/98	12/17/98
8015/8021B	Gasoline	650	590	mg/kg	12/10/98	12/17/98
8015/8021B	MTBE	Not detected	3.0	mg/kg	12/10/98	12/17/98
8015/8021B	Toluene	Not detected	1.4	mg/kg	12/10/98	12/17/98
8015/8021B	Total Xylenes	81 E	1.4	mg/kg	12/10/98	12/17/98
8015/8021B	Surrogate:a,a,a TFT-FID	103	60-125	%	12/10/98	12/17/98
8015/8021B	Surrogate:a,a,a TFT-PID	110	60-125	%	12/10/98	12/17/98
8015/8021B	Surrogate:BFB-FID	107	60-125	%	12/10/98	12/17/98
8015/8021B	Surrogate:BFB-PID	95.1	60-125	%	12/10/98	12/17/98

E = The reported value is estimated due to interference.

044

Run #: 47
Instrument: MOE
Sequence: 981216
Initials: MT

Printed: 1/14/99 6:13:05 PM

EPA 8020.MTBE.GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND HYDRANT REMOV

Sample ID: FDP-123-5.0/FDP-124-5.0

Sample Collection Date: 12/1/98

ARF: 29135

APPL ID: AP72087

QCG: \$820GR-981210A-14242

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 17.8 Percent Moisture)						
8015/8021B	Benzene	Not detected	30	mg/kg	12/10/98	12/10/98
8015/8021B	Ethylbenzene	28	3.0	mg/kg	12/10/98	12/10/98
8015/8021B	Gasoline	1600	1200	mg/kg	12/10/98	12/10/98
8015/8021B	MTBE	Not detected	61	mg/kg	12/10/98	12/10/98
8015/8021B	Toluene	16	3.0	mg/kg	12/10/98	12/10/98
8015/8021B	Total Xylenes	100	30	mg/kg	12/10/98	12/10/98
8015/8021B	Surrogate:a,a,a TFT-FID	118	60-125	%	12/10/98	12/10/98
8015/8021B	Surrogate:a,a,a TFT-PID	102	60-125	%	12/10/98	12/10/98
8015/8021B	Surrogate:BFB-FID	113	60-125	%	12/10/98	12/10/98
8015/8021B	Surrogate:BFB-PID	98.2	60-125	%	12/10/98	12/10/98

DF1000 DF100

Run #: 51,29
Instrument: HARPO
Sequence: 981209
Initials: MT

047

Printed: 3/11/99 8:38:50 AM

EPA 8020.MTBE.GAS-Soil-dilution

EPA Region 9
 75 Hawthorne Street
 San Francisco, CA 94105

APPL Inc.
 4203 West Swift Avenue
 Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3
 Project: QAO-98-15A CITY OF OAKLAND HYDRANT REMOV
 Sample ID: FDP-123-5.0/FDP-124-5.0
 Sample Collection Date: 12/1/98

ARF: 29135
 APPL ID: AP72087
 QCG: \$82GSC-981216B-13846

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 17.8 Percent Moisture)						
8015/8021B	Benzene	Not detected	1.5	mg/kg	12/10/98	12/17/98
8015/8021B	Ethylbenzene	32	1.5	mg/kg	12/10/98	12/17/98
8015/8021B	Gasoline	1200	610	mg/kg	12/10/98	12/17/98
8015/8021B	MTBE	Not detected	3.0	mg/kg	12/10/98	12/17/98
8015/8021B	Toluene	29	1.5	mg/kg	12/10/98	12/17/98
8015/8021B	Total Xylenes	130 E	1.5	mg/kg	12/10/98	12/17/98
8015/8021B	Surrogate:a,a,a TFT-FID	110	60-125	%	12/10/98	12/17/98
8015/8021B	Surrogate:a,a,a TFT-PID	112	60-125	%	12/10/98	12/17/98
8015/8021B	Surrogate:BFB-FID	98.0	60-125	%	12/10/98	12/17/98
8015/8021B	Surrogate:BFB-PID	103	60-125	%	12/10/98	12/17/98

E = The reported value is estimated due to interference.

DF50

Run #: 48
 Instrument: MOE
 Sequence: 981216
 Initials: MT

052

Printed: 1/14/99 6:13:06 PM

EPA 8020, MTBE, GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND HYDRANT REMOV

Sample ID: FDP-123-5.0/FDP-124-5.0 DUP

Sample Collection Date: 12/1/98

ARF: 29135

APPL ID: AP72088

QCG: \$820GR-981210A-14242

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 16.8 Percent Moisture)						
8015/8021B	Benzene	Not detected	30	mg/kg	12/10/98	12/10/98
8015/8021B	Ethylbenzene	10.0	3.0	mg/kg	12/10/98	12/10/98
8015/8021B	Gasoline	Not detected	12000	mg/kg	12/10/98	12/10/98
8015/8021B	MTBE	Not detected	60	mg/kg	12/10/98	12/10/98
8015/8021B	Toluene	5.5	3.0	mg/kg	12/10/98	12/10/98
8015/8021B	Total Xylenes	34	30	mg/kg	12/10/98	12/10/98
8015/8021B	Surrogate:a,e,a TFT-FID	116	60-125	%	12/10/98	12/10/98
8015/8021B	Surrogate:a,e,a TFT-PID	100	60-125	%	12/10/98	12/10/98
8015/8021B	Surrogate:BFB-FID	109	60-125	%	12/10/98	12/10/98
8015/8021B	Surrogate:BFB-PID	96.6	60-125	%	12/10/98	12/10/98

055

DF1000, DF50

Run #: 39,21
Instrument HARPO
Sequence: 981208, 99104
Initials: MT

Printed: 1/26/99 4:51:56 PM

EPA 8020.MTBE.GAS-Soil-dilution

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND HYDRANT REMOV

Sample ID: FDP-123-5.0/FDP-124-5.0 DUP

Sample Collection Date: 12/1/98

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

ARF: 29135

APPL ID: AP72088

QCG: \$82GSC-981216B-13846

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 16.8 Percent Moisture)						
8015/8021B	Benzene	Not detected	1.4	mg/kg	12/10/98	12/17/98
8015/8021B	Ethylbenzene	13	1.4	mg/kg	12/10/98	12/17/98
8015/8021B	Gasoline	Not detected	600	mg/kg	12/10/98	12/17/98
8015/8021B	MTBE	Not detected	3.0	mg/kg	12/10/98	12/17/98
8015/8021B	Toluene	12	1.4	mg/kg	12/10/98	12/17/98
8015/8021B	Total Xylenes	47	1.4	mg/kg	12/10/98	12/17/98
8015/8021B	Surrogate:a,a,a TFT-FID	106	60-125	%	12/10/98	12/17/98
8015/8021B	Surrogate:a,a,a TFT-PID	116	60-125	%	12/10/98	12/17/98
8015/8021B	Surrogate:BFB-FID	105	60-125	%	12/10/98	12/17/98
8015/8021B	Surrogate:BFB-PID	98.3	60-125	%	12/10/98	12/17/98

DF 50

Run #: 49
Instrument: MOE
Sequence: 981216
Initials: MT

060

Printed: 1/14/99 6:13:06 PM

Wet Lab Analysis

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND HYDRANT REMOV

Sample ID: FDP-121-4.5/FDP-122-5.0

Sample Collection Date: 12/1/98

APPL ID: AP72086

ARF: 29135

Method	Analyte	Result	PQL	Units	Prep Date	Analysis Date
CLP MOIST	Moieture	15.9	2	%	12/8/98	12/8/98

Wet Lab Analysis

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND HYDRANT REMOV

Sample ID: FDP-123-5.0/FDP-124-5.0

Sample Collection Date: 12/1/98

APPL ID: AP72087

ARF: 29135

Method	Analyte	Result	PQL	Units	Prep Date	Analysis Date
CLP MOIST	Moisture	17.8	2	%	12/8/98	12/8/98

Wet Lab Analysis

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND HYDRANT REMOV

Sample ID: FDP-123-5.0/FDP-124-5.0 DUP

Sample Collection Date: 12/1/98

APPL ID: AP72088

ARF: 29135

Method	Analyte	Result	PQL	Units	Prep Date	Analysis Date
CLP MOIST	Moisture	16.8	2	%	12/8/98	12/8/98

Case Narrative
EPA 8015M METHOD
Total Petroleum Hydrocarbons - Gasoline
APPL, Inc. State Certification 1312

ARF: 28911

Project: USEPA Region 9 - QAO-98-15A

Sample Receipt Information:

The sample group was received November 03, 1998 at 5°C. The samples were assigned Analytical Request Form (ARF) number 28911. The sample numbers and requested analyses were compared to the chain of custody. No other exceptions were encountered.

Sample Table

CLIENT ID	APPL ID	Matrix	Date Sampled	Date Received
FDP-93-6.0', FDP-94-4.5'	71000	Soil	11/02/98	11/03/98
FDP-95-5.5', FDP-96-4.0'	71001	Soil	11/02/98	11/03/98
FDP-97-9.8', FDP-98-5.0'	71002	Soil	11/02/98	11/03/98
FDP-97-9.8', FDP-98-5.0' DUP	71003	Soil	11/02/98	11/03/98
FDP-99-5.3', FDP-100-4.0'	71004	Soil	11/02/98	11/03/98
FDP-101-4.5', FDP-102-4.0'	71005	Soil	11/02/98	11/03/98

Sample FDP-101-4.5 was received "on hold" and was later composited with sample FDP-102-4.0.

Extraction Information:

The samples were extracted using EPA Method 5030A. No exceptions were encountered.

Analysis Information:

Samples:

The samples were analyzed by EPA Method 8015M.

Calibrations:

For the purge sequence of November 10, 1998, the initial Methyl-t-butyl ether response was from a standard which had degraded in the vial. A new standard was purged at the end of the sequence. The previous MTBE CCV was injected on November, 06, 1998 and is included in the data to demonstrate that the instrument was still in calibration. Samples were reinjected past hold times for MTBE confirmation. Results are reported from the purge sequence that was within holding time. The calibrations were performed according to the method with no other deviations for the initial calibration or the continuing calibrations.

004

APPL, INC.

Calculations:

BTEX results were calculated using an external standard and against an average calibration curve using the following equation:

$$\text{Calibration factor} = \frac{PkAr_s}{(CoStd)(injectionvolume)}$$

Where:

$PkAr_s$ = Peak Area of compound in the Standard.

$CoStd.$ = Concentration of Standard.

Example: The instrument Harpo, calibration 1023002.D\FID1B.CH for Benzene at 1ppb.

$$26602 = \frac{133010 \text{ areacounts}}{(1\mu\text{g} / \text{L})(5\text{mL})}$$

$$\text{Sample Conc.} = \frac{(PkAr_n) X (D)(\text{soilhandlingdilutionfactor})}{(Cf)(X\text{samplevolume})}$$

Where:

$PkAr_n$ = Peak Area of analyte.

D = Dilution factor.

Cf = Average calibration factor.

Soil handling dilution factor = 50

Note: All medium level soils are handled in a similar manner. Ten grams of soil are mixed with ten mLs of methanol and this extract is diluted fifty-fold as the sample is admitted to the purge unit. (Either 100 μ L of sample extract/5mL of purge volume or 1mL of sample extract/50mL of purge volume depending on the purge unit mechanics.)

Example: Sample FDP-97-9.8', FDP-98-5.0'DUP (71003) at DF 50
Ethylbenzene from purge 1207030.D\FID2B.CH: (Moe)

$$18032.533 = \frac{(853934) X (50)(50)}{(23677.594)(5)}$$

Calculations:

TPH Gasoline results were calculated using an external standard and against an average calibration curve using the following equation:

005

$$\text{Calibration Factor} = \frac{(PkAr_s - PkS_s)}{CoStd}$$

Where:

$PkAr_s$ = Peak Area of compound in the Standard.

PkS_s = Peak Area of Surrogate in Standard.

$CoStd.$ = Concentration of Standard.

$$\text{Sample Conc.} = \frac{(PkAr_s - PkSu_n) X (D)(\text{soilsampledilutionfactor})}{(Cf)(\text{samplevolume})}$$

Soil handling dilution factor = 50

Note: All medium level soils are handled in a similar manner. Ten grams of soil are mixed with ten mLs of methanol and this extract is diluted fifty-fold as the sample is admitted to the purge unit. (Either 100 μ L of sample extract/5mL of purge volume or 1mL of sample extract/50mL of purge volume depending on the purge unit mechanics.)

Example: Sample FDP-95-5.5', FDP-96-4.0' Gasoline from purge
1110013.D\FID2ACH: (Harpo)

$$178836.269 = \frac{(19941797) X (10)(50)}{(11150.868)(5)}$$

Blanks:

No target compounds were detected at or above the reporting level.

Surrogates:

For the PID detector, all surrogate recoveries met acceptance criteria. For the FID detector: 1,1,1-Trifluorotoluene was recovered at 143.3%, 134.2%, 145.3% and 187.1% in samples FDP-93-5.5', FDP-94-4.0 (71001), FDP-97-9.8', FDP-98.5.0DUP (71003) at a twenty-fivefold dilution, FDP-99-5.3', FDP-100-4.0' (71004) at a tenfold dilution and FDP-101-4.5' respectively. In the sample samples Bromofluorobenzene was recovered at 130.3%, 121.3%, 121.6%, 128.7% and 164.9%. Heavy contamination of the samples is suggested as the matrix effect in each case.

Spikes:

Sample FDP-95-5.5', FDP-96-4.0' (71001) was utilized as Matrix Spike/Matrix Spike Duplicate. For the BTEX MS/MSD, Toluene recoveries were 457% and 18% and Chlorobenzene recoveries were 540% and -143%. For the Gasoline MS/MSD, recoveries were -3271% and -3510%. The parent sample had greater than forty times the spike amount. A Laboratory Control Spike/Spike Duplicate (LCS/LCSD) was also analyzed. All analyte recoveries met acceptance criteria.

Summary:

Through an analyst's oversight, sample FDP-101-4.5 was not analyzed for confirmation. No other analytical exceptions are noted.

CERTIFICATION

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the hard copy has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Mike Ray 02/17/99
Mike Ray, Laboratory Manager/Date

007

Method Blank
EPA 8020, MTBE, GAS-Soil

Blank Name/QCG: 981110S - 13036
Batch ID: 820GS-981110A

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample	Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK		Benzene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK		Ethylbenzene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK		Gasoline	Not detected	1000	ug/kg	11/10/98	11/10/98
BLANK		MTBE	Not detected	50	ug/kg	11/10/98	11/10/98
BLANK		Toluene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK		Total Xylenes	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK		Surrogate:a,a,a TFT-FID	120	60-125	%	11/10/98	11/10/98
BLANK		Surrogate:a,a,a TFT-PID	106	60-125	%	11/10/98	11/10/98
BLANK		Surrogate:BFB-FID	108	60-125	%	11/10/98	11/10/98
BLANK		Surrogate:BFB-PID	99.0	60-125	%	11/10/98	11/10/98

014

Run #: 7
Instrument: HARPO
Sequence: 981110
Initials: MT

Printed: 3/8/99 5:14:02 PM

Lab Blank
EPA 8020.MTBE.GAS-Soil

Blank Name/QCG: 981110S - 13036
Batch ID: 5820GS-981110A

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Ethylbenzene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Gasoline	Not detected	1000	ug/kg	11/10/98	11/10/98
BLANK	MTBE	Not detected	50	ug/kg	11/10/98	11/10/98
BLANK	Toluene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Total Xylenes	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Surrogate:a,a,a TFT-FID	119	60-125	%	11/10/98	11/10/98
BLANK	Surrogate:a,a,a TFT-PID	106	60-125	%	11/10/98	11/10/98
BLANK	Surrogate:BFB-FID	112	60-125	%	11/10/98	11/10/98
BLANK	Surrogate:BFB-PID	98.4	60-125	%	11/10/98	11/10/98

015

Run #: 8
Instrument: HARPO
Sequence: 981110
Initials: MT

Printed: 3/8/99 5:14:02 PM

Method Blank
EPA 8020, MTBE, GAS-Soil

Blank Name/QCG: 990308S -
Batch ID:

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample	Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK		Benzene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK		Ethylbenzene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK		Gasoline	Not detected	1000	ug/kg	3/8/99	3/8/99
BLANK		MTBE	Not detected	50	ug/kg	3/8/99	3/8/99
BLANK		Toluene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK		Total Xylenes	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK		Surrogate:a,a,a TFT-FID	109	60-125	%	3/8/99	3/8/99
BLANK		Surrogate:a,a,a TFT-PID	97.6	60-125	%	3/8/99	3/8/99
BLANK		Surrogate:BFB-FID	103	60-125	%	3/8/99	3/8/99
BLANK		Surrogate:BFB-PID	89.2	60-125	%	3/8/99	3/8/99

016

Run #: 21
Instrument: MOE
Sequence: 981207
Initials: LF

Printed: 3/8/99 6:22:02 PM

Method Blank
EPA 8020,MTBE,GAS-Soil

Blank Name/QCG: 990308S - 13036
Batch ID: \$820GS-981110A

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Ethylbenzene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Gasoline	Not detected	1000	ug/kg	3/8/99	3/8/99
BLANK	MTBE	Not detected	50	ug/kg	3/8/99	3/8/99
BLANK	Toluene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Total Xylenes	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Surrogate:a,a,a TFT-FID	123	60-125	%	3/8/99	3/8/99
BLANK	Surrogate:a,a,a TFT-PID	105	60-125	%	3/8/99	3/8/99
BLANK	Surrogate:BFB-FID	107	60-125	%	3/8/99	3/8/99
BLANK	Surrogate:BFB-PID	97.3	60-125	%	3/8/99	3/8/99

017

Run #: 44
Instrument: HARPO
Sequence: 981201
Initials: LF

Printed: 3/8/99 6:22:02 PM

EPA 8020.MTBE.GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND

ARF: 28911

Sample ID: FDP-93-6.0,FDP-94-4.5

APPL ID: AP71000

Sample Collection Date: 11/2/98

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 14.2 Percent Moisture)						
8015/8021B	Benzene	Not detected	29	ug/kg	11/10/98	11/11/98
8015/8021B	Ethylbenzene	Not detected	29	ug/kg	11/10/98	11/11/98
8015/8021B	MTBE	Not detected	58	ug/kg	11/10/98	11/11/98
8015/8021B	Toluene	Not detected	29	ug/kg	11/10/98	11/11/98
8015/8021B	Total Xylenes	Not detected	29	ug/kg	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-FID	116	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-PID	113	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-FID	108	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-PID	96.2	60-125	%	11/10/98	11/11/98

032

Run #: 19
Instrument: HARPO
Sequence: 981110
Initials: DA
Dilution Factor: 1

Printed: 12/28/98 5:53:19 PM

EPA 8020,GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marion Mezquita, PMD-3
Project: QAO-98-15A CITY OF OAKLAND
Sample ID: FDP-93-6.0,FDP-94-4.5
Sample Collection Date: 11/2/98

ARF: 28911
APPL ID: AP71000

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 14.2 Percent Moisture)						
8015/8021B	Gasoline	Not detected	12	mg/kg	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-FID	116	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-FID	108	60-125	%	11/10/98	11/11/98

033

Run #: 19*
Instrument: HARPO
Sequence: 981110
Initials: DA
Dilution Factor: 1

EPA 8020.MTBE.GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

Attn: Marlon Mezquita, PMD-3
Project: QAO-98-15A CITY OF OAKLAND
Sample ID: FDP-97-9.8, FDP-98-5.0
Sample Collection Date: 11/2/98

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

ARF: 28911
APPL ID: AP71002

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 12.8 Percent Moisture)						
8015/8021B	Benzene	Not detected	290	ug/kg	11/10/98	11/11/98
8015/8021B	Ethylbenzene	710	290	ug/kg	11/10/98	11/11/98
8015/8021B	MTBE	Not detected	570	ug/kg	11/10/98	11/11/98
8015/8021B	Toluene	Not detected	290	ug/kg	11/10/98	11/11/98
8015/8021B	Total Xylenes	730	290	ug/kg	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-FID	124	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-PID	107	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-FID	120	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-PID	100	60-125	%	11/10/98	11/11/98

046

Run #: 20
Instrument: HARPO
Sequence: 981110
Initials: DA
Dilution Factor: 5

Printed: 12/28/98 6:09:33 PM

EPA 8020,GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND

Sample ID: FDP-97-9.8,FDP-98-5.0

Sample Collection Date: 11/2/98

ARF: 28911

APPL ID: AP71002

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 12.8 Percent Moisture)						
8015/8021B	Gasoline	80J	110	mg/kg	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-FID	124	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-FID	120	60-125	%	11/10/98	11/11/98

J = Estimated value, below quantitation limit.

047

Run #: 20
Instrument: HARPO
Sequence: 981110
Initials: DA

Printed: 12/28/98 5:53:20 PM

EPA 8020,MTBE,GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3
Project: QAO-98-15A CITY OF OAKLAND
Sample ID: FDP-97-9.8,FDP-98-5.0 DUP
Sample Collection Date: 11/2/98

ARF: 28911
APPL ID: AP71003

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 11.7 Percent Moisture)						
8015/8021B	Benzene	Not detected	710	ug/kg	11/10/98	11/11/98
8015/8021B	Ethylbenzene	9300	710	ug/kg	11/10/98	11/11/98
8015/8021B	MTBE	Not detected	1400	ug/kg	11/10/98	11/11/98
8015/8021B	Toluene	Not detected	710	ug/kg	11/10/98	11/11/98
8015/8021B	Total Xylenes	6800	710	ug/kg	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-FID	134#	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-PID	108	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-FID	122	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-PID	109	60-125	%	11/10/98	11/11/98

= Recovery is outside QC limits.

054

Run #: 21
Instrument: HARPO
Sequence: 981110
Initials: DA
Dilution Factor: 25

Printed: 12/28/98 6:09:34 PM

EPA 8020,GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3
Project: QAO-98-15A CITY OF OAKLAND
Sample ID: FDP-97-9.8,FDP-98-5.0 DUP
Sample Collection Date: 11/2/98

ARF: 28911
APPL ID: AP71003

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 11.7 Percent Moisture)						
8015/8021B	Gasoline	850J	1400	mg/kg	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-FID	134#	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-FID	122	60-125	%	11/10/98	11/11/98

J = Estimated value, below quantitation limit.
= Recovery is outside QC limits.

055

Run #: 21
Instrument: HARPO
Sequence: 981110
Initials: DA

Printed: 12/28/98 5:53:20 PM

EPA 8020,MTBE,GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND

Sample ID: FDP-99-5.3,FDP-100-4.0

Sample Collection Date: 11/2/98

ARF: 28911

APPL ID: AP71004

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 13.6 Percent Moisture)						
8015/8021B	Benzene	Not detected	290	ug/kg	11/10/98	11/11/98
8015/8021B	Ethylbenzene	2200	290	ug/kg	11/10/98	11/11/98
8015/8021B	MTBE	Not detected	580	ug/kg	11/10/98	11/11/98
8015/8021B	Toluene	Not detected	290	ug/kg	11/10/98	11/11/98
8015/8021B	Total Xylenes	2700	290	ug/kg	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-FID	145#	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-PID	111	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-FID	129#	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-PID	116	60-125	%	11/10/98	11/11/98

= Recovery is outside QC limits.

062

Run #: 22
Instrument: HARPO
Sequence: 981110
Initials: DA
Operator: [Signature]

Printed: 3/11/99 11:12:27 AM

EPA 8020.GAS-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3
Project: QAO-98-15A CITY OF OAKLAND
Sample ID: FDP-99-5.3,FDP-100-4.0
Sample Collection Date: 11/2/98

ARF: 28911
APPL ID: AP71004

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 13.6 Percent Moisture)						
8015/8021B	Gasoline	330	120	mg/kg	11/10/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-FID	145#	60-125	%	11/10/98	11/11/98
8015/8021B	Surrogate:BFB-FID	129#	60-125	%	11/10/98	11/11/98

= Recovery is outside QC limits.

063

Run #: 22
Instrument: HARPO
Sequence: 981110
Initials: DA
Dilution Factor: 10

Printed: 3/11/99 11:12:27 AM

BTEX, GAS, MTBE-Soil

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

Attn: Marlon Mezquita, PMD-3
Project: QAO-98-15A CITY OF OAKLAND
Sample ID: FDP-101-4.5
Sample Collection Date: 11/2/98

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

ARF: 28911
APPL ID: AP71005

Method	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
(Concentrations and Limits have been adjusted to reflect 13.1 Percent Moisture)						
8015/8021B	Benzene	38	29	ug/kg	11/11/98	11/11/98
8015/8021B	Ethylbenzene	2200	290	ug/kg	11/11/98	11/11/98
8015/8021B	Gasoline	110000	12000	ug/kg	11/11/98	11/11/98
8015/8021B	MTBE	Not detected	58	ug/kg	11/11/98	11/11/98
8015/8021B	Toluene	Not detected	290	ug/kg	11/11/98	11/11/98
8015/8021B	Xylenes	2600	290	ug/kg	11/11/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-FID	131#	60-125	%	11/11/98	11/11/98
8015/8021B	Surrogate:a,a,a TFT-PID	109	60-125	%	11/11/98	11/11/98
8015/8021B	Surrogate:BFB-FID	116	60-125	%	11/11/98	11/11/98
8015/8021B	Surrogate:BFB-PID	107	60-125	%	11/11/98	11/11/98

= Recovery is outside QC limits.

Run #: 23, 55
Instrument: HARPO
Sequence: 981110, 1201
Initials: DA

Printed: 3/11/99 11:24:37 AM

070

Method Blank
EPA 8020.MTBE.GAS-Soil

Blank Name/QCG: 981110S - 13036
Batch ID: \$820GS-981110A

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Ethylbenzene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Gasoline	Not detected	1000	ug/kg	11/10/98	11/10/98
BLANK	MTBE	Not detected	50	ug/kg	11/10/98	11/10/98
BLANK	Toluene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Total Xylenes	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Surrogate:a,a,a TFT-FID	120	60-125	%	11/10/98	11/10/98
BLANK	Surrogate:a,a,a TFT-PID	106	60-125	%	11/10/98	11/10/98
BLANK	Surrogate:BFB-FID	108	60-125	%	11/10/98	11/10/98
BLANK	Surrogate:BFB-PID	99.0	60-125	%	11/10/98	11/10/98

Run #: 7
Instrument: HARPO
Sequence: 981110
Initials: MT

Lab Blank
EPA 8020, MTBE, GAS-Soil

Blank Name/QCG: 981110S - 13036
Batch ID: 5820GS-981110A

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Ethylbenzene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Gasoline	Not detected	1000	ug/kg	11/10/98	11/10/98
BLANK	MTBE	Not detected	50	ug/kg	11/10/98	11/10/98
BLANK	Toluene	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Total Xylenes	Not detected	25	ug/kg	11/10/98	11/10/98
BLANK	Surrogate:a,a,a TFT-FID	119	60-125	%	11/10/98	11/10/98
BLANK	Surrogate:a,a,a TFT-PID	106	60-125	%	11/10/98	11/10/98
BLANK	Surrogate:BFB-FID	112	60-125	%	11/10/98	11/10/98
BLANK	Surrogate:BFB-PID	98.4	60-125	%	11/10/98	11/10/98

Run #: 8
Instrument: HARPO
Sequence: 981110
Initials: MT

Method Blank
EPA 8020,MTBE,GAS-Soil

Blank Name/QCG: 990308S - 13036
Batch ID: \$820GS-981110A

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Ethylbenzene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Gasoline	Not detected	1000	ug/kg	3/8/99	3/8/99
BLANK	MTBE	Not detected	50	ug/kg	3/8/99	3/8/99
BLANK	Toluene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Total Xylenes	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Surrogate:a,a,a TFT-FID	123	60-125	%	3/8/99	3/8/99
BLANK	Surrogate:a,a,a TFT-PID	105	60-125	%	3/8/99	3/8/99
BLANK	Surrogate:BFB-FID	107	60-125	%	3/8/99	3/8/99
BLANK	Surrogate:BFB-PID	97.3	60-125	%	3/8/99	3/8/99

Run #: 44
Instrument: HARPO
Sequence: 981201
Initials: LF

Method Blank
EPA 8020, MTBE, GAS-Soil

Blank Name/QCG: 990308S -
Batch ID:

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Sample Type	Analyte	Result	PQL	Units	Extraction Date	Analysis Date
BLANK	Benzene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Ethylbenzene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Gasoline	Not detected	1000	ug/kg	3/8/99	3/8/99
BLANK	MTBE	Not detected	50	ug/kg	3/8/99	3/8/99
BLANK	Toluene	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Total Xylenes	Not detected	25	ug/kg	3/8/99	3/8/99
BLANK	Surrogate:a,a,a TFT-FID	109	60-125	%	3/8/99	3/8/99
BLANK	Surrogate:a,a,a TFT-PID	97.6	60-125	%	3/8/99	3/8/99
BLANK	Surrogate:BFB-FID	103	60-125	%	3/8/99	3/8/99
BLANK	Surrogate:BFB-PID	89.2	60-125	%	3/8/99	3/8/99

215

Run #: 21
Instrument: MOE
Sequence: 981207
Initials: LF

Printed: 3/8/99 6:22:02 PM

Wet Lab Analysis

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3
Project: QAO-98-15A CITY OF OAKLAND
Sample ID: FDP-93-6.0,FDP-94-4.5
Sample Collection Date: 11/2/98

APPL ID: AP71000
ARF: 28911

Method	Analyte	Result	PQL	Units	Prep Date	Analysis Date
CLP MOIST	Moisture	14.2	2	%	11/7/98	11/7/98

Wet Lab Analysis

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marion Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND

Sample ID: FDP-95-5.5, FDP-96-4.0

Sample Collection Date: 11/2/98

APPL ID: AP71001

ARF: 28911

Method	Analyte	Result	PQL	Units	Prep Date	Analysis Date
CLP MOIST	Moisture	13.3	2	%	11/7/98	11/7/98

Wet Lab Analysis

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3
Project: QAO-98-15A CITY OF OAKLAND
Sample ID: FDP-97-9.8, FDP-98-5.0
Sample Collection Date: 11/2/98

APPL ID: AP71002
ARF: 25911

Method	Analyte	Result	PQL	Units	Prep Date	Analysis Date
CLP MOIST	Moisture	12.8	2	%	11/7/98	11/7/98

Wet Lab Analysis

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3

Project: QAO-98-15A CITY OF OAKLAND

Sample ID: FDP-97-9.8, FDP-98-5.0 DUP

Sample Collection Date: 11/2/98

APPL ID: AP71003

ARF: 26911

Method	Analyte	Result	PQL	Units	Prep Date	Analysis Date
CLP MOIST	Moisture	11.7	2	%	11/7/98	11/7/98

Wet Lab Analysis

EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

APPL Inc.
4203 West Swift Avenue
Fresno, CA 93722

Attn: Marlon Mezquita, PMD-3
Project: QAO-98-15A CITY OF OAKLAND
Sample ID: FDP-98-5.3, FDP-100-4.0
Sample Collection Date: 11/2/98

APPL ID: AP71004
ARF: 28911

Method	Analyte	Result	PQL	Units	Prep Date	Analysis Date
CLP MOIST	Moisture	13.6	2	%	11/7/98	11/7/98

C A M B R I A



ATTACHMENT D

USEPA Review of USEPA Contract Laboratory Analytical Results

POTENTIALLY-REJECTED DATA IN OAKLAND BROWNFIELD DATA PACKAGES
AS IDENTIFIED BY CURSORY REVIEW
APPL Case No.: QAO-98-15A

SDG No.: ARF-28806
Analysis: BTEX/MTBE (Benzene, toluene, ethylbenzene, xylenes/methyl tert-butyl ether)
and Total Petroleum Hydrocarbons (Gasoline)
Sample: 6 Soil and 2 Water Samples

It is not clear how the laboratory is choosing the reported results. The laboratory appears to report BTEX/MTBE results from the appropriate Method 8020A photoionization detector (PID) in some instances, but from the flame ionization detector (FID) in other instances. Similarly the laboratory appears to report TPH-g results from the appropriate Method 8015B FID in some instances, but from the PID in others. In addition, the laboratory appears to report results inconsistently from either the primary column or the confirmation column. A more detailed review is required to determine the appropriate qualification of sample results.

The QC limits specified in the client request form (CRF) for BTEX/MTBE by EPA Method 8020A were used for BTEX/MTBE qualification purposes. The QC limits specified in EPA Method 8015B were used for TPH-g qualification purposes. Advisory validation surrogate recovery QC limits of 65-135% for soils and 75-125% for waters were used for TPH-g.

Based on the forms review, the results for benzene, toluene, and MTBE in soil sample FDP-65-5.5, soil composite samples FDP-66-9.0, FDP-67-3.0; FDP-66-9.0, FDP-67-3.0 DUP; and FDP-70-3.5, FDP-71-5.5; and ethylbenzene and total xylenes in soil sample FDP-65-5.5 and soil composite sample FDP-70-3.5, FDP-71-5.5 may be rejected due to analytical holding time exceedance. The results for TPH-g in soil sample FDP-65-5.5, soil composite samples FDP-66-9.0, FDP-67-3.0; FDP-66-9.0, FDP-67-3.0 DUP; and FDP-70-3.5, FDP-71-5.5; and ethylbenzene and total xylenes in soil composite samples FDP-66-9.0, FDP-67-3.0 and FDP-66-9.0, FDP-67-3.0 DUP may be estimated due to analytical holding time exceedance. The results for all of the analytes for both water samples may be estimated due to analytical holding time exceedance.

The results for TPH-g in soil sample FDP-65-5.5; soil composite samples FDP-66-9.0, FDP-67-3.0; FDP-66-9.0, FDP-67-3.0 DUP; FDP-68-3.0, FDP-69-5.5; and FDP-70-3.5, FDP-71-5.5; and ethylbenzene and total xylenes in soil composite samples FDP-66-9.0, FDP-67-3.0 and FDP-66-9.0, FDP-67-3.0 DUP may be estimated due to high surrogate recoveries.

The results for MTBE in soil sample FDP-65-5.5; soil composite samples FDP-66-9.0, FDP-67-3.0; FDP-66-9.0, FDP-67-3.0 DUP; FDP-70-3.5, FDP-71-5.5; and both water samples may be estimated due to calibration problems.

The chain of custody form does not indicate that any analyses are to be performed on soil sample FDP-72-6.5. However, the laboratory analyzed soil sample FDP-72-6.5 for BTEX/MTBE and TPH-g.

The chain of custody form specifies that soil samples FDP-64-6.0 and FDP-65-5.5 are to be composited and analyzed for BTEX/MTBE, TPH-g, and TPH-d. The laboratory did not composite these soil samples and analyzed soil sample FDP-65-5.5 for BTEX/MTBE and TPH-g.

The analysis of TPH-d (total petroleum hydrocarbons-diesel) was also requested for soil composite samples FDP-66-9.0, FDP-67-3.0; FDP-66-9.0, FDP-67-3.0 DUP; FDP-68-3.0, FDP-69-5.5; FDP-70-3.5, FDP-71-5.5; and water samples FDP-66-W and FDP-72-W on the chain of custody form. However, no analytical data were provided for this additional analysis.

SDG No.: ARF-28865

Analysis: BTEX/MTBE (Benzene, toluene, ethylbenzene, xylenes/methyl tert-butyl ether) and Total Petroleum Hydrocarbons (Gasoline)

Sample: 13 Soil

It is not clear how the laboratory is choosing the reported results. The laboratory appears to report BTEX/MTBE results from the appropriate Method 8020A photoionization detector (PID) in some instances, but from the flame ionization detector (FID) in other instances. Similarly the laboratory appears to report TPH-g results from the appropriate Method 8015B FID in some instances, but from the PID in others. In addition, the laboratory appears to report results inconsistently from either the primary column or the confirmation column. A more detailed review is required to determine the appropriate qualification of sample results.

The QC limits specified in the client request form (CRF) for BTEX/MTBE by EPA Method 8020A were used for BTEX/MTBE qualification purposes. The QC limits specified in EPA Method 8015B were used for TPH-g qualification purposes. Advisory validation surrogate recovery QC limits of 65-135% for soil was used for TPH-g.

Based on the forms review, the results for the following analytes may be rejected due to analytical holding time exceedance.

- total xylenes in soil composite samples FDP-73-6.0', FDP-74-6.0'; FDP-77-5.5', FDP-78-6.0'; FDP-79-4.5', FDP-80-5.0'; FDP-81-5.0', FDP-82-6.5'; FDP-83-6.0', FDP-84-5.0'; FDP-85-7.0', FDP-86-4.0'; FDP-87-5.0', FDP-88-4.0'; FDP-91-4.0', FDP-92-4.0'; and soil sample FDP-86E-4.0';
- ethylbenzene in soil composite samples FDP-73-6.0', FDP-74-6.0'; FDP-75-6.5', FDP-76-4.5'; FDP-77-5.5', FDP-78-6.0'; FDP-79-4.5', FDP-80-5.0'; FDP-81-5.0', FDP-82-6.5'; FDP-83-6.0', FDP-84-5.0'; FDP-87-5.0', FDP-88-4.0'; FDP-91-4.0', FDP-92-4.0'; and soil sample FDP-86E-4.0';
- benzene in soil composite samples FDP-73-6.0', FDP-74-6.0'; FDP-91-4.0', FDP-92-4.0'; and soil sample FDP-86E-4.0';

- toluene in soil composite sample FDP-91-4.0', FDP-92-4.0'; and soil sample FDP-86E-4.0'

The results for the following analytes may be estimated due to high surrogate recoveries.

- TPH-g in soil composite samples FDP-75-6.5', FDP-76-4.5'; FDP-77-5.5', FDP-78-6.0'; FDP-87-5.0', FDP-88-4.0'; FDP-91-4.0', FDP-92-4.0';
- total xylenes in soil composite samples FDP-73-6.0', FDP-74-6.0'; FDP-77-5.5', FDP-78-6.0'; FDP-79-4.5', FDP-80-5.0'; FDP-81-5.0', FDP-82-6.5'; FDP-83-6.0', FDP-84-5.0'; FDP-85-7.0', FDP-86-4.0'; FDP-91-4.0', FDP-92-4.0'; and soil sample FDP-86E-4.0';
- ethylbenzene in soil composite samples FDP-73-6.0', FDP-74-6.0'; FDP-77-5.5', FDP-78-6.0'; FDP-79-4.5', FDP-80-5.0'; FDP-81-5.0', FDP-82-6.5'; FDP-83-6.0', FDP-84-5.0'; FDP-91-4.0', FDP-92-4.0'; and soil sample FDP-86E-4.0';
- benzene in soil composite samples FDP-73-6.0', FDP-74-6.0'; FDP-91-4.0', FDP-92-4.0'; and soil sample FDP-86E-4.0';
- toluene in soil composite sample FDP-91-4.0', FDP-92-4.0'; and soil sample FDP-86E-4.0'

The results for MTBE and total xylenes in all of the samples may be estimated due to calibration problems.

The analysis of TPH-d (total petroleum hydrocarbons-diesel) was also requested on the chain of custody form. However, no analytical data were provided for this additional analysis.

SDG No.: ARF-28809

Analysis: BTEX/MTBE (Benzene, toluene, ethylbenzene, xylenes/methyl tert-butyl ether) and Total Petroleum Hydrocarbons (Gasoline)

Sample: 7 Soil and 1 Water Samples

It is not clear how the laboratory is choosing the reported results. The laboratory appears to report BTEX/MTBE results from the appropriate Method 8020A photoionization detector (PID) in some instances, but from the flame ionization detector (FID) in other instances. Similarly the laboratory appears to report TPH-g results from the appropriate Method 8015B FID in some instances, but from the PID in others. In addition, the laboratory appears to report results inconsistently from either the primary column or the confirmation column. A more detailed review is required to determine the appropriate qualification of sample results.

The QC limits specified in the client request form (CRF) for BTEX/MTBE by EPA Method 8020A were used for BTEX/MTBE qualification purposes. The QC limits specified in EPA

Method 8015B were used for TPH-g qualification purposes. Advisory validation surrogate recovery QC limits of 65-135% for soils and 75-125% for waters were used for TPH-g.

Based on the forms review, the results for the following analytes may be rejected due to analytical holding time exceedance:

- benzene in soil composite samples FDP-51-7.5, FDP-52-4.0; FDP-53-5.0, FDP-54-8.0; FDP-62-4.5, FDP-63-8.5 and water sample FDP-57-W
- toluene in soil composite sample FDP-53-5.0, FDP-54-8.0; and water sample FDP-57-W
- ethylbenzene in soil composite samples FDP-51-7.5, FDP-52-4.0; FDP-53-5.0, FDP-54-8.0; FDP-55-5.5, FDP-56-4.5; FDP-58-5.5, FDP-59-4.5; FDP-60-7.5, FDP-61-4.0; FDP-62-4.5, FDP-63-8.5; and water sample FDP-57W
- total xylenes in soil composite sample FDP-51-7.5, FDP-52-4.0; FDP-53-5.0, FDP-54-8.0; FDP-55-5.5, FDP-56-4.5; FDP-60-7.5, FDP-61-4.0; FDP-62-4.5, FDP-63-8.5; and water sample FDP-57W
- MTBE in soil composite sample FDP-62-4.5, FDP-63-8.5

The results for soil sample FDP-57-11.0 and the results for TPH-g in all of the samples may be estimated due to analytical holding time exceedance.

The results for MTBE and gasoline in all of the samples may be estimated due to calibration problems.

The analysis of TPH-d (total petroleum hydrocarbons-diesel) was also requested on the chain of custody form. However, no analytical data were provided for this additional analysis.

Overview of Completeness of Data Packages in Memos #01 through #18

The analyses requested on the chain of custody forms or revised in telephone record logs were compared to the analytical data provided in Memos #01 through #18. The discrepancies observed are noted below.

[Memos #02 and #03] Benzene, toluene, ethylbenzene, total xylenes (BTEX), methyl tert-butyl ether (MTBE), total petroleum hydrocarbons-gasoline (TPH-g), and total petroleum hydrocarbons-diesel (TPH-d) were requested for soil sample FDP-6-4.0. However, results for BTEX, MTBE, TPH-g, and TPH-d were provided for soil composite sample FDP-5, FDP-6-4.0.

[Memos #05 and #15] Results were not reported for MTBE for soil composite samples FDP-44-3.0, FDP-45-3.0 and FDP-46-3.0, FDP-47-3.0 although requested.

[Memos #06 and #16] BTEX, MTBE, and TPH-g were requested for soil composite sample FDP-65-5.5, FDP-64-6.0. However, results for BTEX, MTBE, and TPH-g were provided for soil sample FDP-65-5.5 only.

Results for BTEX, MTBE, TPH-g, and TPH-d were provided for soil sample FDP-72-6.5. However, no analyses were requested for this sample on the chain of custody form.

Results for BTEX, MTBE, and TPH-g for samples FDP-66-W and FDP-72-W are reported in water units while the results for TPH-d were reported in soil units. The chain of custody form did not indicate the matrix of these samples.

[Memo #08] Results were not reported for BTEX, MTBE, and TPH-g for soil sample FDP-115-5.5; soil composite samples FDP-93-6.0, FDP-94-4.5; FDP-95-5.5, FDP-96-4.0; FDP-97-9.8, FDP-98-5.0; FDP-97-9.8, FDP-98-5.0 FIELD DUP; FDP-99-5.3, FDP-100-4.0; FDP-101-4.5, FDP-102-4.0; FDP-103-3.5, FDP-104-3.5; FDP-105-3.0, FDP-106-4.0; FDP-107-4.0, FDP-108-4.5; FDP-109-4.0, FDP-110-4.5; FDP-109-4.0, FDP-110-4.5 FIELD DUP; FDP-111-5.0, FDP-112-4.8; and FDP-113-4.0, FDP-114-4.5 although requested.

TPH-d was requested for soil composite sample FDP-101-4.5, FDP-102-4.0. However, a result for TPH-d was provided for soil sample FDP-101-4.5 only.

[Memo #09] Results were not reported for BTEX, MTBE, and TPH-g for soil sample FDP-120-6.5; soil composite samples FDP-116-4.8, FDP-117-3.9; FDP-118-4.5, FDP-119-4.5; and FDP-118-4.5, FDP-119-4.5 FIELD DUP although requested.

[Memos #11, #13, and #14] Results were not reported for MTBE for soil samples FDP-25-5.0, FDP-36H-4.5, FDP-39H-7.5; soil composite samples FDP-19-3.5, FDP-20-8.5; FDP-21-4.5, FDP-22-7.5; FDP-23-4.2, FDP-24-5.0; FDP-26-5.3, FDP-27-5.5; FDP-28-5.0, FDP-30-5.0; FDP-29-5.0, FDP-31-5.0; FDP-32-5.0, FDP-33-5.5; FDP-34-5.0, FDP-35-6.0; FDP-36-4.0, FDP-37-5.0; FDP-38-5.0, FDP-39-7.5; FDP-40-6.5, FDP-41-5.5; and FDP-42-5.0, FDP-43-5.5 although requested.