PORT OF OAKLAND

December 13, 1994

Ms. Jennifer Eberle
Hazardous Materials Specialist
Hazardous Materials Division
Alameda County Health
Care Services Agency
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Subject: Report of Groundwater Monitoring Well Installation and Sampling, Transbay Container Terminal (TBCT), 707 Ferry Street, Port of Oakland, Oakland, California

Dear Ms. Eberle:

Enclosed, you will find a copy of the Report of Groundwater Monitoring Well Installation and Sampling, Transbay Container Terminal (TBCT), 707 Ferry Street, Port of Oakland, Oakland, California. The report indicates that only a low concentration of TPH-Diesel is present in the groundwater. The Port proposes to continue to monitor the well quarterly, for a period of one year.

Please call me at 272-1184 if you have any questions or comments. Thank you for your cooperation on this project.

Sincerely,

Jon Amdur
Port Environmental Scientist

CC: Rich Hiett, San Francisco Regional Water Quality Control Board, 2101 Webster Street, Suite 500 Oakland, CA 94612
Neil Werner (Environmental Department)

enclosure

Prepared for
Port of Oakland
530 Water Street, Oakland, California 94607

Report of Groundwater Monitoring Well Installation and Sampling at 707 Ferry Street Oakland, California

December 8, 1994

Prepared by

Uribe & Associates
Environmental Consulting Services

2930 Lakeshore Avenue, Suite 200
Oakland, California 94610-3614

URIBE & ASSOCIATES
2930 LAKESHORE AVENUE
SUITE TWO HUNDRED
OAKLAND CALIFORNIA 94610
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ENVIRONMENTAL CONSULTING SERVICES

December 12, 1994

Mr. Jon Amdur
Associate Port Environmental Scientist
Port of Oakland
530 Water Street
Oakland, CA 94607

Subject: Groundwater Monitoring Well Installation Report
707 Ferry Street, Oakland, California

Dear Mr. Amdur:

Uribe & Associates (U&A) is pleased to submit four copies of the final draft of the subject report. Please contact me if you have any questions regarding the information presented therein.

Sincerely,

Gerard L. Slattery, R.G.
Operations Director

GLS:abm

Enclosure

Report of Groundwater Monitoring Well Installation and Sampling at 707 Ferry Street, Oakland, California

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Report of Groundwater Monitoring Well Installation and Sampling at 707 Ferry Street, Oakland, California

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1 Introduction

1.1 Purpose

This report presents the results of environmental services performed by Uribe & Associates (U&A) during the installation and sampling of one groundwater monitoring well at 707 Ferry Street, Oakland, California (Figure 1) for the Port of Oakland (Port). The groundwater monitoring well was installed to provide site-specific groundwater data.

1.2 Project Background and Site Description

The site is in the Marine Terminals area of the Port of Oakland. The site is currently a container shipping terminal operated by Trans Bay Container Corporation (TBCT). The topography is generally flat and the elevation is approximately 14 feet above Port of Oakland Datum (3.2 feet below MSL).

One underground storage tank (UST) was removed from the site on December 3, 1993 (U&A, 1994). After the tank was removed, a slight sheen was observed on groundwater within the tank excavation and total petroleum hydrocarbons as diesel (TPH-D) were detected in both soil and groundwater samples collected at the time the tank was removed. Consequently, the Port submitted a work plan for additional site investigation (U&A, 1994a). The work plan called for installing one groundwater monitoring well in the assumed downgradient direction from the UST excavation. The proposed well location was selected after review of groundwater elevation data collected from approximately 32 monitoring wells located on the adjacent Mearsk Terminal northeast of the site. The work plan was approved by the Alameda County Department of Environmental Health (ACDEH) on March 14, 1994.

As discussed herein, U&A implemented the work plan with the installation and sampling of the one groundwater monitoring well. Figure 2 shows the former UST location and the location of the monitoring well.

1.3 Regional and Site Geology/Hydrogeology

The Marine Terminals area of the Port is underlain by fill. The fill consists of material dredged from the estuary and material brought from other undetermined areas. In some areas the fill contains a large percentage of debris. Beneath the fill, are the silts, sands, and clayey silts of the original tidal marsh. These soils are commonly called Bay Mud. Below

the Bay Mud is the Merritt Sand formation, which contains a fresh water aquifer that is a potential source of irrigation water both in Oakland and Alameda.
The soils encountered at the site during the UST removals consisted of aggregate fill, and clayey silt to sandy silt to the base of the excavation. The backfill material for the tank was pea gravel, and the tank was overlain by a concrete slab.

2 Groundwater Monitoring Well Installation Procedures

2.1 Introduction

On May 18, 1994, U&A oversaw the drilling and construction of one groundwater monitoring well at the site. A permit from Alameda County Water Agency, Zone 7 was obtained before construction work and is included as Appendix A.

2.2 Soil Sampling and Analysis

One 15-foot-deep soil boring was advanced using a truck-mounted drill rig (Mobile model B61) operated by Gregg Drilling and Testing, Inc. Soil samples were collected at five foot intervals during drilling. Soil sampling activities were conducted in accordance with U&A's Standard Operating Procedures (SOPs) for hollow-stem auger drilling (Appendix B). The boring log compiled during drilling is included in Appendix C.

The two soil samples collected at 5 and 8.5 feet below ground surface (bgs) were submitted to D&M Laboratories of Petaluma, California for analysis. The soil samples were analyzed for TPH-D and benzene, toluene, ethylbenzene, xylenes (BTEX). These analyses were performed using EPA Methods 8015 (modified) for TPH-D and 8020 for BTEX.

2.3 Monitoring Well Construction and Surveying

At the conclusion of drilling, one groundwater monitoring well was installed in the boring. The well was completed to a total depth of 15 feet bgs. The well was constructed with 10 feet of 2-inch diameter 0.010-inch slotted PVC well screen installed from 5 to 15 feet bgs. Two-inch diameter schedule 40 PVC blank casing was installed from 5 feet bgs to the ground surface. The gravel pack was constructed from #2/16 sand installed from 4 to 15 feet bgs. A 1 foot thick bentonite seal was installed immediately above the sand pack. Cement and concrete were used to fill the remainder of the annulus, create a surface seal, and secure the grade-level well enclosure. A diagram of the well construction is included in Appendix C. The well has been designated MW-1.

The groundwater monitoring well was surveyed on June 8, 1994 by Greiner, Inc. The well was surveyed to the Port of Oakland Datum (3.2 feet below mean sea level).

2.4 Well Development

The groundwater monitoring well was developed on June 8, 1994. The well was surged with a surge block and water bailed until water parameters (pH, temperature, electrical

conductivity) were stabilized. Groundwater monitoring well development followed the U&A SOPs included in Appendix B.

2.5 Groundwater Sampling and Analysis

A groundwater sample was collected from well MW-1 on June 9, 1993. Prior to sampling, the depth to groundwater was measured. Groundwater sampling was performed in accordance with the U&A SOPs in Appendix B. The groundwater sample was sent to D&M Laboratories and analyzed for TPH-D by modified EPA Method 8015, BTEX by EPA Method 602, and total dissolved solids (TDS).

3 Results

3.1 Soil and Groundwater Conditions

The soils encountered during drilling consisted of aggregate fill, sand, and silty sand to the total depth of the boring (15 feet bgs). The soil appeared water saturated at approximately 9.5 feet bgs.

The groundwater elevation measured on June 9, 1994 was 4.77 feet; approximately 10 feet bgs. No measurable free product nor sheen were observed on the groundwater within the well.

3.2 Soil Sample Analyses

No TPH-D or BTEX were detected in the soil samples. Table 1 contains a summary of the soil sample results. A copy of the laboratory report is included as Appendix D.

3.3 Groundwater Sample Analyses

TPH-diesel was detected in the groundwater sample at a concentration of 0.41 milligrams per liter (mg/l). The laboratory reported that the "sample chromatograph resembled an aged hydrocarbon product." No BTEX were detected in the sample. The TDS concentration reported was 1900 mg/l. Table 2 contains a summary of groundwater monitoring data. The laboratory report for the groundwater sample is included as Appendix D.

4 Conclusions and Recommendations

4.1 Conclusions

The petroleum hydrocarbons detected in soil at the time of the UST excavation do not appear to extend into the area of monitoring well MW-1; no TPH-D was detected in the soil samples collected from the soil boring.

At the time of the UST removal, a sheen was observed on the groundwater and the groundwater samples collected from the excavation contained 19 to 50 mg/l of TPH-D. The concentration of TPH-D reported in the groundwater sample from MW-1 was 0.41 mg/l. This suggests that the petroleum hydrocarbons detected at the time of the tank removal have not migrated significantly into the area of MW-1.

4.2 Recommendations

U&A recommends that quarterly groundwater monitoring be initiated on well MW-1. Concurrently, monitoring data from the Maersk site should be checked to see if the inferred groundwater flow direction at TBCT remains to the northwest. After four quarters of monitoring data are collected, if the sample results continue to indicate that no BTEX are detected and the TPH-D concentrations remain low to non-detectable, the Port could consider petitioning ACDEH to close the case and abandon the well.

5 References

U&A, 1994, *Underground Storage Tank Removal and Soil Excavation at Berth 25, 707 Ferry Street, Oakland, California.* Prepared for the Port of Oakland.

_____, 1994a, *Work Plan for Additional Site Investigation Activities at Berth 25, 707 Ferry Street, Oakland, California.* Prepared for the Port of Oakland.

6 Remarks and Signature

This report is based on available information and was prepared in accordance with currently accepted geologic, hydrogeologic, and engineering practices. No other warranty is implied or intended. This report has been prepared for the sole use of the Port of Oakland and applies to the subject site only. Use of this report by third parties shall be at their sole risk.

The work reported herein was conducted under the direct supervision of the professional geologist, registered with the State of California, whose signature appears below.

Uribe & Associates

Gerard L. Slattery, R.G.
Senior Geologist, Operations Director
CRG No. 5038

Tables

Table 1:
Summary of Laboratory Results for Soil Samples
From Boring MW-1, Installed May 18, 1994 at
707 Ferry Street, Oakland, California

SAMPLE NUMBER	ANALYTICAL PARAMETER (Concentrations in mg/kg)				
	TPH-D	Benzene	Toluene	Ethylbenzene	Xylenes
MW-1-5.0	ND (5.0)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
MW-1-8.5	ND (5.0)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)

5-18-94

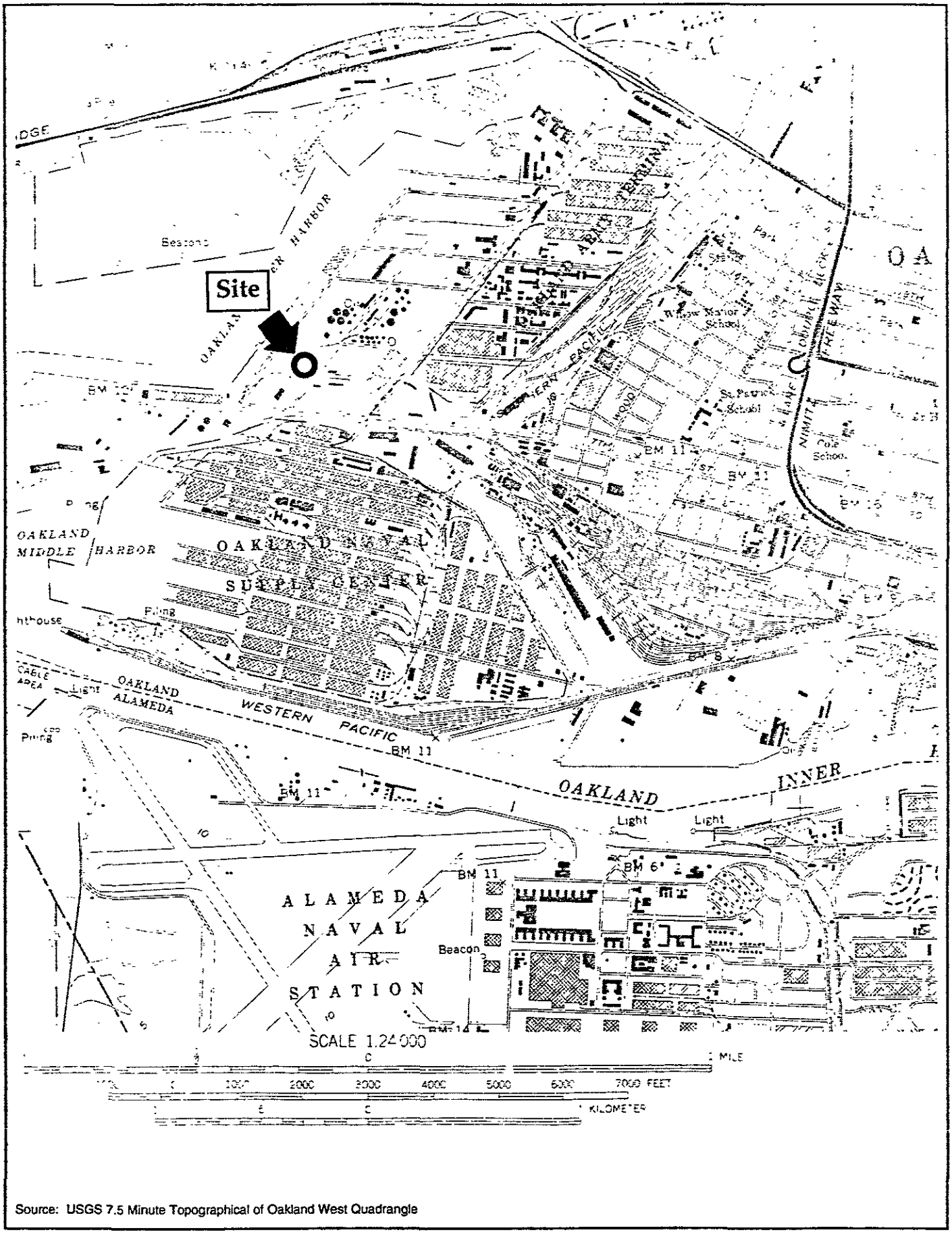
Notes:
Soil samples from below the apparent groundwater level were not analyzed.
ND = Not detected (detection limit in parentheses).

Table 2:
Summary of Groundwater Monitoring Data Collected
From Monitoring Well MW-1 at
707 Ferry Street, Oakland, California

WELL Date	TOC Elevation (feet)	Groundwater Elevation (feet)	ANALYTICAL PARAMETER (Concentrations in mg/l)					
			TPH-D	Benzene	Toluene	Ethylbenzene	Xylenes	TDS
MW-1 6/9/94	14.65	4.77	0.413	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.0005)	1,900

Notes:
TOC = Top-of-casing (elevation relative to Port of Oakland datum)
ND = Not detected (detection limit in parentheses).
Laboratory reported the Diesel Chromatograph resembled an aged hydrocarbon product.

Figures



Source: USGS 7.5 Minute Topographical of Oakland West Quadrangle

Figure 1: Site Location Map, Berth 25, 707 Ferry Street, Oakland, California

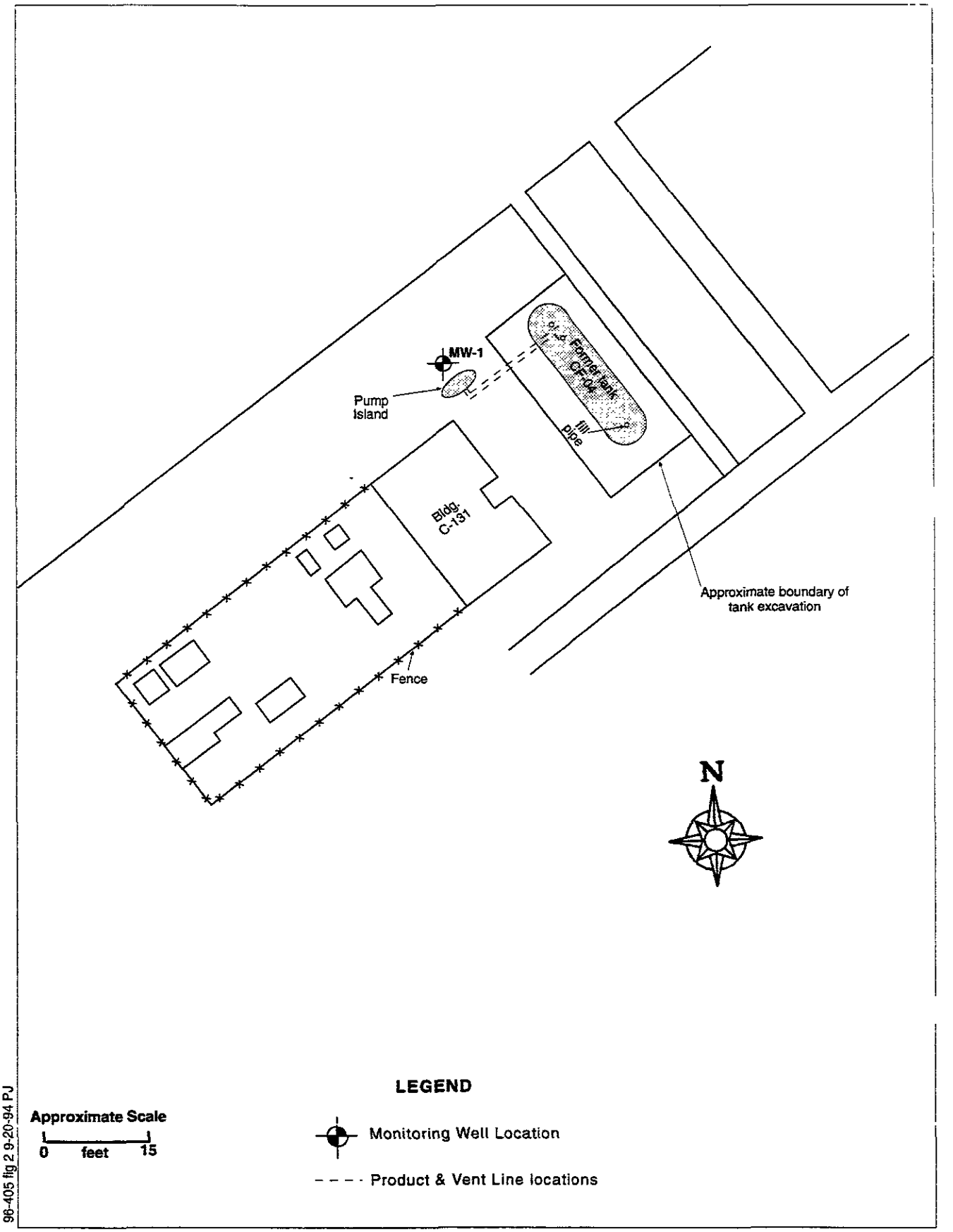


Figure 2: Site Plan, Berth 25, 707 Ferry Street, Oakland, California

Appendix A

Permit for Drilling

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 707 Ferry St Oakland CA

CLIENT
Name Port of Oakland
Address 530 Water St Phone
City Oakland Zip 94607

APPLICANT
Name John Borrego
Uribe + Associates
Address 2140 Lakeshore Ave Phone 832-2233
City Oakland Zip 94610

TYPE OF PROJECT

Construction		Geotechnical Investigation	
Cathodic Protection		General	
Water Supply		Contamination	
Monitoring	X	Well Destruction	

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C57 - ~~555479~~ 485165

WELL PROJECTS

Drill Hole Diameter	8	in.	Maximum Depth	35	ft.
Casing Diameter	2	in.			
Surface Seal Depth	5	ft.	Number	1	

GEOTECHNICAL PROJECTS

Number of Borings			Maximum Depth		ft.
Hole Diameter		in.			

ESTIMATED STARTING DATE 4/8/94 *
ESTIMATED COMPLETION DATE 4/8/94

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE John C Borrego Date 4/6/94

FOR OFFICE USE

PERMIT NUMBER 94235
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

* Project is not to start before 16 Apr 94 due to ten day non-compliance penalty of permit 93321 as discussed with Stephanie Knott of Uribe & Associates.

Approved Wyman Hong Date 14 Apr 94
Wyman Hong

31992

Appendix B

Standard Operating Procedures

HOLLOW-STEM AUGER DRILLING, LOGGING AND SOIL SAMPLING

Introduction:

For environmental investigations of sites underlain by most unconsolidated formations, anticipated total depths (TDs) of less than 100 feet, and especially when wells or piezometers will be installed, hollow-stem augers are the preferred method of drilling. Borings are drilled with augers of a sufficient diameter to allow sampling and if necessary, the completion a monitoring well. Typically, 8-inch diameter augers are used. These allow for a minimum two-inch annulus, as required by most regulatory agencies, when a 4-inch casing is used.

Procedure for Clearing Boring Locations:

Prior to drilling any borehole, a drilling objective and program for each boring, including possible variations, will be determined by the supervising professional (registered geologist or civil engineer) and project manager, and defined in the scope of work. This will include a review of the anticipated formations, depth to first water, sampling frequency and anticipated total depth (TD). All locations will be cleared for subsurface utilities, by Underground Service Alert (USA), a utilities locating contractor. At a minimum, the upper five feet of the subsurface will be hand augered, to verify the absence of any unidentified utilities. Hand augering may continue at the discretion of the field geologist. If any obstructions are encountered the project manager will be notified. A new location will be determined and cleared.

Drilling Program:

Borings will be drilled to meet drilling objectives described in the scope of work, i.e., characterization of the vadose zone and the first water-bearing zone. Because of the extreme heterogeneity of most unconsolidated formations, continuous sampling is performed to ensure complete hydrogeologic characterization. In some instances continuous sampling may not be desirable, or practical, and an alternative sampling frequency will be determined. Borings may be extended to deeper depths, if obvious contamination is encountered at the drilling objective TD. Furthermore, drilling program objectives may be modified in consideration of information obtained during drilling. All drilling and sampling equipment which enters the borehole, will be thoroughly steam

cleaned and/or decontaminated with Tri-sodium phosphate (TSP) and rinsed with distilled water prior to drilling.

Borehole Logging:

All boreholes will be logged by a registered geologist or civil engineer, or a geologist trained with logging procedures and working under the direct supervision of a registered geologist or civil engineer. All materials encountered in the borehole will be described according to the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) ASTM D 2488-90. All fluids encountered in the borehole will be described and liquid levels will be determined according to ASTM procedure 4750-87. To determine the depth and nature of fluid occurrence in the borehole, drilling may be stopped at the direction of the drilling program or the field geologist, and the borehole will be allowed to stand open while fluid-level measurements are taken. The fluid content of all materials encountered will be described. If necessary, a grab sample of fluids for chemical analysis may be collected with a bailer. The depth drilled, date and time of sample collection will be noted.

Geophysical Logging:

If necessary, boreholes will be logged with geophysical equipment as determined by the project manager and supervising professional. All geophysical logging equipment will be cleaned prior to entering the borehole(s).

GROUNDWATER MONITORING WELL AND PIEZOMETER CONSTRUCTION

Introduction:

Groundwater monitoring well and piezometer design will be determined by the supervising professional and project manager. Wells or piezometers will be designed to satisfy the requirements of the drilling objective and provide the information needed for the investigation. Generally, it is desirable to complete wells in water-bearing formations (i.e., those which will produce some minimal amount of water such that a representative samples can be collected from the well in a reasonable amount of time). Typically water-bearing zones are of moderate- or higher-estimated permeability. However, because of the requirements of the investigation, it may be necessary to set well screens in low-estimated permeability formations, such as clays and silts.

Borehole Design:

Boreholes for wells or piezometers will be a minimum of 6 inches in diameter to allow for a minimum annulus of 2 inches.

Monitoring Well Construction Materials:

Monitoring wells will be generally constructed with flush thread, schedule 40 PVC casing: blank and slotted. Casing lengths are typically 5 or 10 feet. The bottom of the casing string will be fitted with a PVC endcap. Slotted intervals and sand packs will be set adjacent to the appropriate water-bearing formation or saturated formation, depending on the goal(s) of the investigation. In all instances, no well will be constructed so as to permit cross contamination between water-bearing units or between uncontaminated water and contaminated soils.

Slot openings will generally be 0.020 inch. Sand for sand packs will be matched to screen slot size and formation to the extent possible. Only new, factory washed sand will be used. Generally some settling of the sand pack will occur during development. As a countermeasure, depending on borehole conditions

and formation characteristics, sand packs will generally extend 1 foot above the top of the well screen, prior to well development.

A bentonite seal will be placed above the sand pack. Generally, one 5 gallon bucket of bentonite pellets is sufficient to create a 2 foot seal above the sand pack. The purpose of the seal is to prevent grout in the annulus from permeating the sand pack, and thus reduce or eliminate the flow of water into the well.

Annular space above the sand pack and bentonite seal will be sealed with a mixture of Portland cement and up to 5 % bentonite powder (grout).

Well Design:

For hydrocarbon investigations, generally the uppermost saturated formation is the target of the investigation. It may be necessary to complete wells in low-estimated permeability formations, where groundwater first occurs. If the zone of interest is unconfined (i.e., the water table can fluctuate freely) and/or free product may be encountered, the well screen will extend from the anticipated high water level, from unsaturated formation to saturated formation, to a maximum of twenty feet below the first occurrence of water (i.e., the water level at the time of well completion).

For shallow, confined water-bearing zones (i.e., groundwater is prevented from rising by an overlying aquitard) the borehole will be advanced through the water-bearing zone to a competent aquitard (at least 3 feet of low permeability materials) or a maximum of 20 feet below the top of the water-bearing zone (the bottom of the overlying confining aquitard). The screen will generally be set from the top of the water-bearing formation to the top of the bottom confining aquitard or a maximum of 20 feet below the top of the water-bearing formation, whichever is less. If the borehole is overdrilled, it will be backfilled back to a depth of 20 feet below the top of the water-bearing zone, before the well is completed. Under no circumstances, will the screen interval and/or sand pack extend across aquitard(s).

For deep, confined water-bearing zones the borehole will be advanced to the water-bearing zone of interest, and if necessary beyond to allow for complete geophysical logging. Once logging is completed, excess borehole will be backfilled. Generally, deeper zone wells will be drilled with rotary drilling techniques, and may involve setting surface casing through upper aquifers.

However, hollow-stem augers may be used to drill deeper wells, as the augers act as a casing during drilling. As with shallow completions, well screen interval will match the thickness of the confined water-bearing zone and not exceed twenty feet. Under no circumstances, will the screen interval and/or sand pack extend across aquitard(s).

Well Completion:

Well construction materials will be used uncontaminated from straight of the factory box or decontaminated by steam cleaning or cleaned with TSP and clean water. The casing string will be assembled one piece at a time and lowered through the hollow stem augers. The casing will be held under tension to the degree possible to ensure straightness. Once in position, the augers will be lifted up, a few feet at a time, and the sand for the sand pack will be added, slowly, to avoid bridging in the open borehole and/or locking the casing in the augers. The sand pack will be followed by the bentonite seal, and finally grout. Grout will be emplaced by lowering a tremmie pipe to a foot above the bentonite seal, and then pumping grout until it rises to the ground surface and displaces any borehole fluids and/or cuttings. The top of the casing will be trimmed, and a water tight, lockable cap will be fitted.

Generally, some settling of the grout will occur, and depending on the amount of settlement, more grout may be added. The remaining annular space will be filled with concrete and a well cover will be set. Flush mounted covers will be set slightly above ground level and the concrete finished so that surface fluids will move away from the well. If a stove pipe cover is used, traffic barriers will be installed to prevent damage to the cover and well. The well will be identified on its' casing and a survey mark will be inscribed on the top, northern side of the casing. All well-sites will be secured and cleaned to their previous condition or better.

Piezometer Design and Completion:

Piezometer design will be determined by the project manager and the supervising professional. Piezometers will be constructed with short screen well points or PVC casing, both 2-inch diameter, and will not exceed 5 feet in length. Piezometers will generally be temporary and will therefore not be set with grout. Instead, fine sand will be used instead of grout as annular fill. Piezometer screens will be set following the same guidelines for the various well completion

scenarios. Piezometers will be fitted with water-tight, locking caps, and generally will not have well head protection cemented in place, instead a protective stove pipe may be set in place, temporarily. Piezometers will be identified and marked with a reference point for surveying.

SOIL SAMPLING:

During boring activities, soil samples for chemical analysis will be collected at 5-foot intervals, as required by regulations, and more frequently if warranted. Samples will be collected in decontaminated brass sleeves inserted into the sampler. Upon recovery, the sampler will be opened, and the sleeves separated and immediately covered with Teflon tape and plastic end-caps. Samples will be placed in a cooler, chilled to 4°C, and transported to the analytical laboratory under chain-of-custody. Each sample will be labelled with an identification number appropriate for the project written in indelible ink. The sample label will also include the date, company name, project number, preservative used, and sampler's initials. The number will be included on the chain-of-custody form along with any special information necessary to identify the sample.

Grab samples will also be collected in brass sleeves and capped with Teflon and plastic end caps. Grab sample frequency and distribution will vary according to the project. Generally, a minimum of one discreet grab sample will be collected from each 20 cubic yards of soil. Sample locations will be determined using a nine-point random grid system. Transportation and chain-of-custody procedures will be identical to boring samples.

All sampling equipment will be decontaminated after each use with simple green™ or Tri-Sodium Phosphate.

CHAIN-OF-CUSTODY PROCEDURES

Sample Handling:

All soil and water samples will be labelled with the sample number, date, company name, preservative used, and sampler's initials. A chain-of-custody form will then be filled out including the time and date of the sample, the sample number, the number of containers for each sample, the analysis required and any distinguishing comments or laboratory notifications. The chain-of-custody form will remain with the samples at all times during transportation and storage.

Transfer of Custody to Laboratory

The chain-of-custody will be signed and dated by the sampler when relinquished to the laboratory. The laboratory courier or sample receiver will also sign and date the chain-of-custody.

Organic Compound Monitor (OVA or PID or HNU)

Equipment Preparation

1. Ensure that the battery in the Organic Compound Monitor is fully charged.
2. Recharge the hydrogen gas cylinder in the Century OVA.
3. Ensure that the Organic Compound Monitor has been calibrated within the last week.
4. Follow manufacturer's instructions.

Monitoring Activities

1. Once an hour, record the instrument reading on the data sheet.

Post-Monitoring Activities

Maintenance, care, and calibration of Organic Compound Monitors should be carried out in accordance with the instrument's instruction manual.

GROUNDWATER SAMPLING

Groundwater samples for chemical analysis will be collected following this procedure:

All purging and sampling equipment will be decontaminated prior to use.

Upon arrival at the site, the wells will be located and opened up, to allow for equilibration with the atmosphere. The monitoring well is first checked for floating product with a dual interface probe. Water or liquid-level measurements will be collected, to the nearest one hundredth of a foot (0.01 foot). If a probe is not available, a clear plastic bailer may be used to check for product. The volume of water in the well casing will be calculated and three to five casing volumes of water will be evacuated. The well will be bailed or pumped to remove the correct volume of water. Stabilization parameters, temperature, conductivity and pH, will be monitored. For wells with extremely low flow rates, i.e. less than 0.01 gallon per minute (GPM), the well will be bailed dry and allowed to recover overnight, and then sampled.

Once the well has been purged, samples will be collected with a bailer and transferred to appropriate sampling vials or bottles. Samples will be labeled and placed in a cooler, cooled to 4 ° C and transported to the analytical laboratory under chain-of-custody. Purge water will be stored on-site pending analytical results, and then properly disposed of.

WELL DEVELOPMENT

Introduction:

Once monitoring wells or piezometers are installed, it is desirable, and generally required by regulations, to develop the well to improve or restore the hydraulic conductivity of the formation and the sand pack; both may have been impaired during drilling and well construction. The goal of development is to dislodge fines and draw them into the well casing, and once there remove them from the casing. Generally, well development activities will improve the flow rate of the well. Typically, wells will be developed for 4 hours and/or until the well no longer yields sediment and water is clear. This may not be possible for wells completed in fine-grained or extremely heterogeneous formations.

Development Methods:

Methods of choice are surging, bailing, jetting and pumping. Surging consists of moving a tightly fitting surge block or disc up and down in the well casing, which creates suction in the casing, below the surge block. Bailing consists of removing fluids with a bailer, which is simply a tube or pipe with a check valve fixed to the bottom of it. Both of these methods are accomplished by using the sand line winch on the drill or development rig. Jetting consists of lowering a special tool into the well which will direct compressed air against the well screen slots. Jet-air lifting is a method of pumping and also uses compressed air. It has the advantage of directing suction locally against the well screen. Pumping can be accomplished with a bladder pump or electric submersible.

For wells completed in fine grained or clayey formations, it may be necessary to add a fluid to assist in development; clean water is not recommended as it may hydrate clays and further reduce porosity and permeability. If necessary an engineered development fluid will be obtained.

Generally, the most rapid improvements from development are noted when development is performed as soon as possible, shortly after the sand pack and bentonite seal have been set.

Development Procedures:

All development equipment will be decontaminated prior to use. Development will usually begin by noting fluid-level measurements, and then proceeding slowly, so as to not impact the formation or damage the well screen. Next, a bailer may be used to remove fines which have probably settled in the casing, through the screen during well construction. Typically, a surge block, which is capable of creating significant suction may be used for low flow rate wells. If development is proceeding, or if the formation is of moderate- or high-estimated permeability, pumping may be sufficient to complete development. Development will proceed for 4 hours or until produced groundwater is clear and sand free. All fluids and materials added to and removed from the well will be noted. An initial estimate of the well flow rate will be made, based on well recovery rates or pumping rates. Temperature, conductivity and pH will be monitored during development.

All fluids and materials removed from the well will be stored on-site in drums, pending sampling and analysis. All fluids and materials used and generated by the well installation and development activities will be properly disposed of.

Appendix C

Well Construction Detail and Boring Log

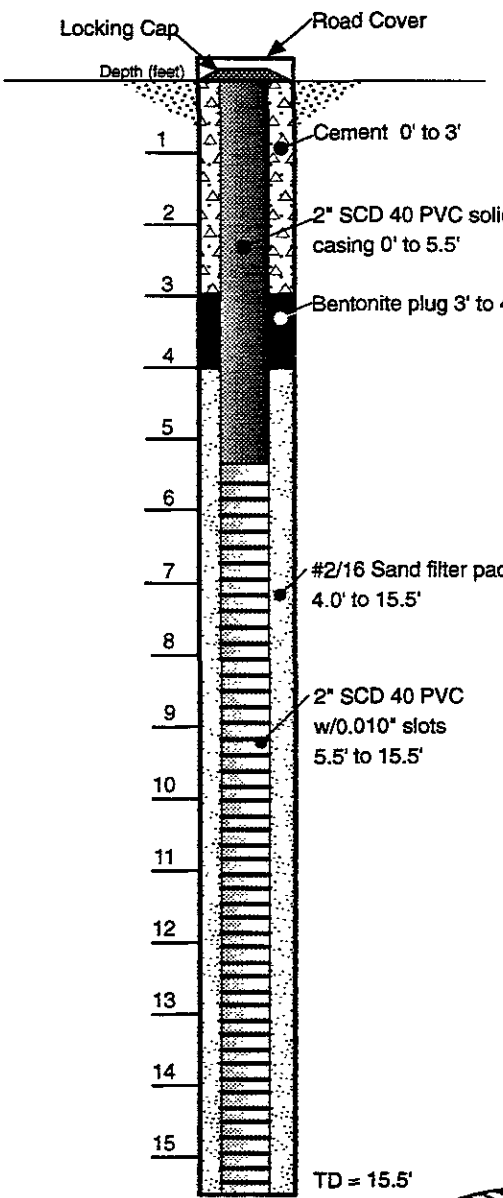
Port of Oakland - 707 Ferry Street

Bore Hole MW-1

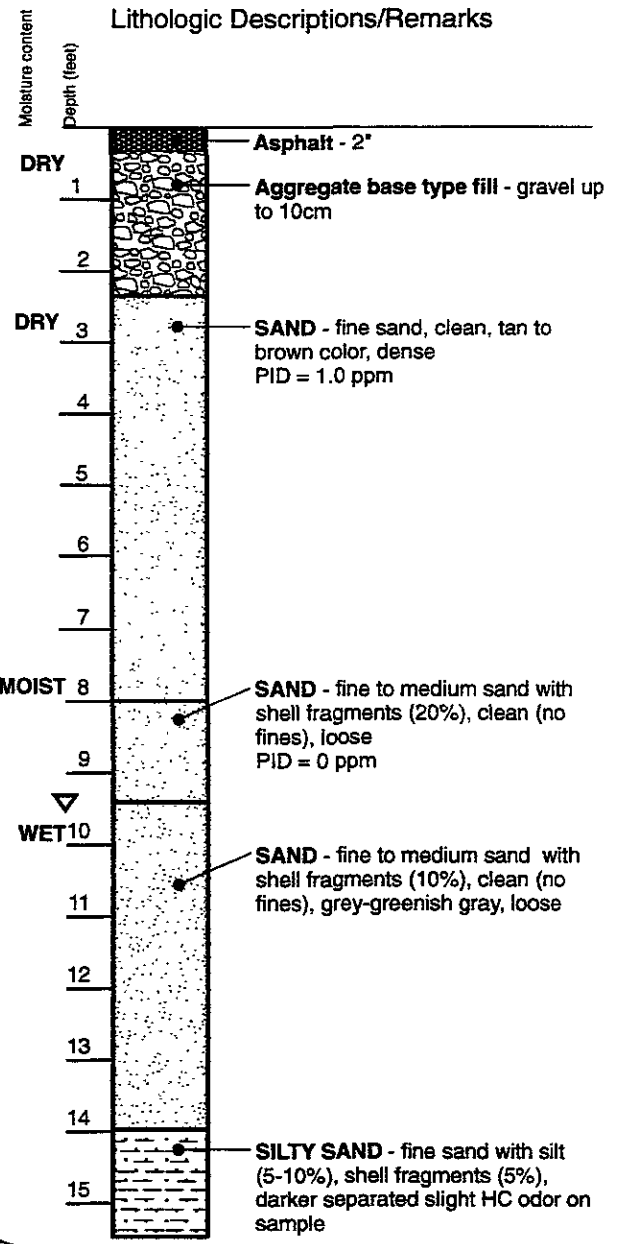
Location: Northwest of Pump Island

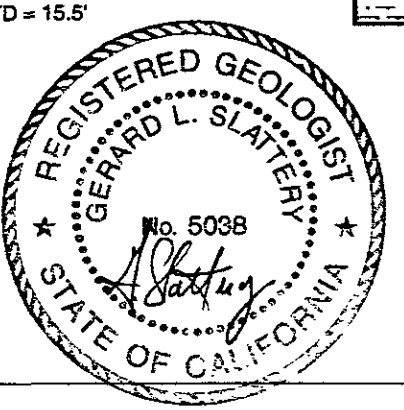
Date 5.18/94
Drilling Method HS Auger/hand auger
Sampling Method 18" Split spoon
Surface Elevation 14.65
Recorded By JC Borrego
Registered Geologist

Well As-Built



Lithologic Descriptions/Remarks





96-405 MW-1 9/19/94 DY

Uribe & Associates

Appendix D

Laboratory Analysis Results and Chain-of-Custody Forms

D&M LABORATORIES
ENVIRONMENTAL AND INDUSTRIAL HYGIENE SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245
FAX (707) 763-4065

John Borrego
Uribe & Associates
2930 Lakeshore Avenue #200
Oakland, CA 94610-3614

June 9, 1994

Customer Project: 96-405 707 Ferry St.
Laboratory Job: L9405210

On May 19, 1994 we received 4 sample(s) for analysis. Samples were analyzed by the following method(s):

Diesel (EPA 8015M)

BTEX (EPA 8020A)

Hold Sample(s)

Stella Wanis
Project Manager
for Mary Janney

Robert Peak
Laboratory Director
Robert Peak

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Uribe & Associates
Project Id: 96-405 707 Ferry St.
Sample Id: MW-1-5.0
Lab Id: L9405210-1

Collected: 18-MAY-94
Received: 19-MAY-94
Reported: 09-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
8015DS					
Diesel	ND <	5.00	mg/Kg	25-MAY-94	28-MAY-94
Surrogate					
o-Terphenyl	73.0	-	%	25-MAY-94	28-MAY-94
Comments:	None				
BTEX-S					
Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Ethyl Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Toluene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Xylene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Surrogate:					
Bromofluorobenzene	88.	-	%	24-MAY-94	24-MAY-94
Comments:	None				

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Uribe & Associates
Project Id: 96-405 707 Ferry St.
Sample Id: MW-1-8.5
Lab Id: L9405210-2

Collected: 18-MAY-94
Received: 19-MAY-94
Reported: 09-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
8015DS					
Diesel	ND <	5.00	mg/Kg	25-MAY-94	28-MAY-94
Surrogate					
o-Terphenyl	82.0	-	%	25-MAY-94	28-MAY-94
Comments:	None				
BTEX-S					
Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Ethyl Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Toluene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Xylene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Surrogate:					
Bromofluorobenzene	88.	-	%	24-MAY-94	24-MAY-94
Comments:	None				

QUALITY CONTROL REPORT

In order to provide you with the means of assessing the quality of the data in our report, **D&M Laboratories** reports the results of Quality Control samples analyzed with your samples.

The Quality Control samples provide the following QC information:

The Method Blank (**MB**) monitors the level of contamination introduced by reagents or glassware. A minimum of one MB is run per batch of 20 samples or less.

The Method Blank Spike (**MBS**) measures the accuracy of analytical techniques and is not subject to matrix effects. A minimum of one MBS is run per batch of 20 samples or less.

The Matrix Spike (**MS**) measures the accuracy of the method for a matrix type. Due to the high variability within matrix types and the necessity of batching samples from varied sources, matrix spike information from one sample is not necessarily relevant to other samples on the batch. A minimum of two matrix spikes, MS and MSD, are run per batch of 20 samples or less. The sample selected for the matrix spike is designated **MX**, and may or may not have been submitted by the recipient of this report.

The Matrix Spike Duplicate (**MSD**), along with the MS, is used to monitor the precision (**RPD**) of the method and to indicate possible non homogeneity of the sample matrix.

Equations used for determining percent recovery and relative percent difference (RPD) are as follows:

MBS % Recovery = (MBS result / MBS spike level) x 100
MS % Recovery = [(MS result - MX result) / MS spike level] x 100
RPD ={ | MS result - MSD result | / [(MS result + MSD result) / 2]} x 100

We continue to strive to improve the quality of service to our clients. We welcome any questions or comments you may have about this information, or about **D&M Laboratories** in general. Please contact a Project Manager for further information.

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG4800-6

Reported: 09-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
GAS/BTEX-S					
Gasoline	ND <	0.20	mg/Kg	31-MAY-94	31-MAY-94
Surrogate Bromofluorobenzene	102.	-	%	31-MAY-94	31-MAY-94
Comments:	None				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG4800-7

Reported: 09-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-S							
Gasoline	5.90	mg/Kg	5	mg/Kg		31-MAY-94	31-MAY-94
Surrogate Bromofluorobenzene	102.	%				31-MAY-94	31-MAY-94
Comments:	None						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG4800-11

Reported: 09-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
GAS/BTEX-S					
Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Ethyl Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Toluene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Xylene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Gasoline	ND <	0.20	mg/Kg	24-MAY-94	24-MAY-94
-	-				
Surrogate	-				
Bromofluorobenzene	88.0	-	%	24-MAY-94	24-MAY-94
-	-				
Comments:	MX = L9405210-1				
-	-				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG4800-12

Reported: 09-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-S							
Benzene	102.	ug/Kg	100	ug/Kg	102 %	24-MAY-94	24-MAY-94
Ethyl Benzene	103.	ug/Kg	100	ug/Kg	103 %	24-MAY-94	24-MAY-94
Toluene	103.	ug/Kg	100	ug/Kg	103 %	24-MAY-94	24-MAY-94
Xylene	310.	ug/Kg	300	ug/Kg	103 %	24-MAY-94	24-MAY-94
Gasoline	4.70	mg/Kg	5	mg/Kg	94.0%	24-MAY-94	24-MAY-94
-	-						
Surrogate	-						
Bromofluorobenzene	87.0	%				24-MAY-94	24-MAY-94
-	-						
Comments:	None						
-	-						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG4800-13

Reported: 09-JUN-94

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
GAS/BTEX-S						
Benzene	93.4	ug/Kg	93.4%	8.8	24-MAY-94	24-MAY-94
Ethyl Benzene	108.	ug/Kg	108 %	4.7	24-MAY-94	24-MAY-94
Toluene	114.	ug/Kg	114 %	10.	24-MAY-94	24-MAY-94
Xylene	357.	ug/Kg	119 %	14.	24-MAY-94	24-MAY-94
Gasoline	4.62	mg/Kg	92.4 %	1.7	24-MAY-94	24-MAY-94
-	-					
Surrogate	-					
Bromofluorobenzene	96.0	%			24-MAY-94	24-MAY-94
-	-					
Comments:	None					
-	-					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG4800-14

Reported: 09-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
GAS/BTEX-S					
Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Ethyl Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Toluene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Xylene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Gasoline	ND <	0.20	mg/Kg	24-MAY-94	24-MAY-94
Surrogate					
Bromofluorobenzene	92.0	-	%	24-MAY-94	24-MAY-94
Comments:	None				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG4800-15

Reported: 09-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-S							
Benzene	103.	ug/Kg	100	ug/Kg	103 %	24-MAY-94	24-MAY-94
Ethyl Benzene	105.	ug/Kg	100	ug/Kg	105 %	24-MAY-94	24-MAY-94
Toluene	104.	ug/Kg	100	ug/Kg	104 %	24-MAY-94	24-MAY-94
Xylene	318.	ug/Kg	300	ug/Kg	106 %	24-MAY-94	24-MAY-94
Gasoline	4.75	mg/Kg	5	mg/Kg	94.9%	24-MAY-94	24-MAY-94
-	-						
Surrogate	-						
Bromofluorobenzene	92.0	%				24-MAY-94	24-MAY-94
-	-						
Comments:	None						
-	-						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG4799-18

Reported: 09-JUN-94

Parameter	Value		Limit	Units	Extracted	Analyzed
GAS/BTEX-W						
Benzene	ND	<	0.50	ug/L	25-MAY-94	25-MAY-94
Ethyl Benzene	ND	<	0.50	ug/L	25-MAY-94	25-MAY-94
Toluene	ND	<	0.50	ug/L	25-MAY-94	25-MAY-94
Xylene	ND	<	0.50	ug/L	25-MAY-94	25-MAY-94
Gasoline	ND	<	0.050	mg/L	25-MAY-94	25-MAY-94
-	-					
Surrogate:	-					
Bromofluorobenzene	100.		-	%	25-MAY-94	25-MAY-94
-	-					
Comments:	None					
-	-					
-	-					

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG4799-19

Reported: 09-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-W							
Benzene	24.	ug/L	25	ug/L	96.8%	25-MAY-94	25-MAY-94
Ethyl Benzene	23.	ug/L	25	ug/L	92.8%	25-MAY-94	25-MAY-94
Toluene	24.	ug/L	25	ug/L	95.2%	25-MAY-94	25-MAY-94
Xylene	68.	ug/L	75	ug/L	91.2%	25-MAY-94	25-MAY-94
Gasoline	0.91	mg/L	1	mg/L	91.0%	25-MAY-94	25-MAY-94
-	-						
Surrogate:	-						
Bromofluorobenzene	100.	%	25	ug/L		25-MAY-94	25-MAY-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG4799-20

Reported: 09-JUN-94

Parameter	Value	limit	Units	Extracted	Analyzed
GAS/BTEX-W					
Gasoline	ND <	0.050	mg/L	02-JUN-94	02-JUN-94
-	-				
Surrogate:	-				
Bromofluorobenzene	113.	-	%	02-JUN-94	02-JUN-94
-	-				
Comments:	None				
-	-				
-	-				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG4799-21

Reported: 09-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-W							
Gasoline	0.98	mg/L	1	mg/L	98.0%	02-JUN-94	02-JUN-94
-	-						
Surrogate:	-						
Bromofluorobenzene	109.	%	25	ug/L		02-JUN-94	02-JUN-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG4799-1

Reported: 09-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
GAS/BTEX-W					
Benzene	ND <	0.500	ug/L	04-JUN-94	04-JUN-94
Ethyl Benzene	ND <	0.500	ug/L	04-JUN-94	04-JUN-94
Toluene	ND <	0.500	ug/L	04-JUN-94	04-JUN-94
Xylene	ND <	0.500	ug/L	04-JUN-94	04-JUN-94
Gasoline	ND <	0.0500	mg/L	04-JUN-94	04-JUN-94
-	-				
Surrogate:	-				
Bromofluorobenzene	115.	-	%	04-JUN-94	04-JUN-94
-	-				
Comments:	MX = L9406012-1 (8020)				
-	MX = L9405261-1 (GAS)				
-	-				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG4799-2

Reported: 09-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX-W							
Benzene	20.	ug/L	20	ug/L	102 %	04-JUN-94	04-JUN-94
Ethyl Benzene	22.	ug/L	20	ug/L	107 %	04-JUN-94	04-JUN-94
Toluene	20.	ug/L	20	ug/L	102 %	04-JUN-94	04-JUN-94
Xylene	63.	ug/L	60	ug/L	104 %	04-JUN-94	04-JUN-94
Gasoline	1.0	mg/L	1	mg/L	102 %	04-JUN-94	04-JUN-94
-	-						
Surrogate: Bromofluorobenzene	108.	%		ug/L		04-JUN-94	04-JUN-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG4799-3

Reported: 09-JUN-94

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
GAS/BTEX-W						
Benzene	21.	ug/L	103 %	0.43	04-JUN-94	04-JUN-94
Ethyl Benzene	23.	ug/L	115 %	6.6	04-JUN-94	04-JUN-94
Toluene	22.	ug/L	109 %	6.5	04-JUN-94	04-JUN-94
Xylene	67.	ug/L	112 %	7.4	04-JUN-94	04-JUN-94
Gasoline	1.0	mg/L	101 %	1.1	04-JUN-94	04-JUN-94
-	-					
Surrogate:	-					
Bromofluorobenzene	113.	%			04-JUN-94	04-JUN-94
-	-					
Comments:	None					
-	-					
-	-					

LABORATORY FOOTNOTES

(1) Sample containers were received broken.
(2) The samples were not properly refrigerated during transport to the laboratory.
(3) The samples were not properly preserved.
(4) The information on the chain-of-custody does not match the information on the sample containers.
(5) The samples were received after the required holding time.
(6) This analyte was detected in the method blank above the reporting limit.
(7) This analyte was detected in the trip blank above the reporting limit.
(8) The recovery of the matrix spike indicates the presence of matrix effects. The MBS recovery was acceptable.
(9) The matrix spike recovery is not significant due to the high concentration of the analyte in the sample relative to the amount of spike added.
(10) The method of standard additions was performed and confirmed a matrix interference.
(11) The variation in spike recoveries reflects the nonhomogeneity of the sample.
(12) Accurate quantitation of the surrogate was not possible due to the extent of sample dilution.
(13) The surrogate recovery was high due to the presence of interfering compounds in the sample.
(14) The surrogate recovery was low due to matrix effects. The analysis was repeated with similiar results.
(15) The detection limit was raised due to the insufficient amount of sample available for analysis.
(16) The detection limit was raised due to the dilution required by high-level analytes in the sample.
(17) The detection limit was raised due to the dilution required by high-level non-target analytes in the sample.
(18) These compounds co-elute; therefore, a total value is reported for both.
(19) The sample was tentatively identified and semi-quantitated based on the best chromatographic fit from the available standards.
(20) The sample chromatograph resembled an "aged" hydrocarbon product.
(21) Hydrocarbons were found in the range of gasoline and diesel but did not resemble a gasoline or diesel fingerprint.
(22) This sample was extracted outside of the required holding time.
(23) This sample was analyzed outside of the required holding time.
(24) The variation in duplicate results reflects the nonhomogeneity of the sample.
(25) The recovery of the matrix spike(s) reflects the nonhomogeneity of the sample. The MBS recovery was acceptable.
(26) The sample was not analyzed on a second column.
(27) The presence of di-n-butyl phthalate may be due to laboratory contamination.
(28) This sample was analyzed outside of the required holding time per client request.
(29) The detection limit was raised due to the high background from matrix interferences.

Z9405210

Page 1 of 1

U&A | URIBE & ASSOCIATES
ENVIRONMENTAL CONSULTING SERVICES

CHAIN-OF-CUSTODY RECORD

Project No.: 96-405
Project Name: Port of Oakland 707 Ferry St

REPORT RESULTS TO
Name: John Borrego
Company: URIBE & ASSOCIATES
Mailing Address: 2930 LAKESHORE AVE., SUITE 200
City, State, Zip: OAKLAND, CA 94610-3614
Telephone No.: 510-832-2233 Telefax No.: 510-832-2237

SEND INVOICE TO
Purchase Order Number: 201 ~~867~~ 597
Name: D. Schoenholz
Company: Port of Oakland Dept:
Mailing Address:
City, State, Zip:

Turn-Around Time:
☐ 24 hr ☐ 48 hr ☐ 72 hr
☐ 5 day ☒ 10 day (Standard)

Rush Charges Authorized? ☐ Yes ☒ No

Phone Results ☐ Fax Results ☒

Special Instructions:

ANALYSES REQUESTED

No.	Date	Time	Matrix/Medium	Sample Identification Number	# OF CONTAINERS	TPH-Diesel	BTEX	Remarks
1	5/18/94		Soil	MW-1 - 5.0	1	X	X	
2				- 8.5	1	X	X	
3				- 10.5	1			hold
4				- 15.0	1			hold

COOLER CUSTODY SEALS INTACT ☐ NOT INTACT ☒ N/A
COOLER TEMPERATURE: CALD °C

SAMPLES RECEIVED IN GOOD CONDITION
NO BROKEN OR LEAKING CONTAINERS

CHAIN OF CUSTODY

Collected by: John C Borrego (Print)
Relinquished by: John C Borrego Date: 5/18/94 Time: 1:30 P
Relinquished by: Date: Time:

Collector's Signature:
Received by: JC Borrego Date: Time:
Received by: Date: Time:

Method of Shipment:

Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain)

4/ Soils - UPS RED

Original (White) Laboratory Copy (Yellow) Field Copy (Pink)

QUALITY CONTROL REPORT

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The Quality Control samples provide the following QC information:

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The Matrix Spike (**MS**) measures the accuracy of the method for a matrix type. Due to the high variability within matrix types and the necessity of batching samples from varied sources, matrix spike information from one sample is not necessarily relevant to other samples on the batch. A minimum of two matrix spikes, MS and MSD, are run per batch of 20 samples or less. The sample selected for the matrix spike is designated **MX**, and may or may not have been submitted by the recipient of this report.

The Matrix Spike Duplicate (**MSD**), along with the MS, is used to monitor the precision (**RPD**) of the method and to indicate possible non homogeneity of the sample matrix.

Equations used for determining percent recovery and relative percent difference (RPD) are as follows:

MBS % Recovery = (MBS result / MBS spike level) x 100
MS % Recovery = [(MS result - MX result) / MS spike level] x 100
RPD ={ | MS result - MSD result | / [(MS result + MSD result) / 2]} x 100

We continue to strive to improve the quality of service to our clients. We welcome any questions or comments you may have about this information, or about **D&M Laboratories** in general. Please contact a Project Manager for further information.

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG4904-1

Reported: 31-MAY-94

Parameter	Value	Limit	Units	Extracted	Analyzed
8015DS					
Diesel	43.	5.0	mg/Kg	24-MAY-94	26-MAY-94
-	-				
Surrogate	-				
o-Terphenyl	92.0	-	%	24-MAY-94	26-MAY-94
-	-				
Comments:	MX= L9405204-17. Hydrocarbons were found in the				
-	diesel range but did not match a diesel fingerprint.				
-	-				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG4904-2

Reported: 31-MAY-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
8015DS							
Diesel	150.	mg/Kg	100	mg/Kg	98	24-MAY-94	26-MAY-94
-	-						
Surrogate	-						
o-Terphenyl	87.0	%				24-MAY-94	26-MAY-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG4904-3

Reported: 31-MAY-94

Parameter	Value	Limit	Units	Extracted	Analyzed
8015DS					
Diesel	167.	5.0	mg/Kg	24-MAY-94	26-MAY-94
Surrogate					
o-Terphenyl	93.0	-	%	24-MAY-94	26-MAY-94
Comments:	None				

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG4904-4

Reported: 31-MAY-94

Parameter	Value	Limit	Units	Extracted	Analyzed
8015DS					
Diesel	ND <	5.0	mg/Kg	24-MAY-94	26-MAY-94
-	-				
Surrogate	-				
o-Terphenyl	99.0	-	%	24-MAY-94	26-MAY-94
-	-				
Comments:	None				
-	-				
-	-				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG4904-5

Reported: 31-MAY-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
8015DS							
Diesel	114.	mg/Kg	100	mg/Kg	114	24-MAY-94	26-MAY-94
-	-						
Surrogate	-						
o-Terphenyl	100.	%				24-MAY-94	26-MAY-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG4904-6

Reported: 31-MAY-94

Parameter	Value	Limit	Units	Extracted	Analyzed
TPHIDQ-S					
Gas	ND <	5.0	mg/Kg	25-MAY-94	28-MAY-94
Mineral Spirits	ND <	5.0	mg/Kg	25-MAY-94	28-MAY-94
Jet Fuel	ND <	5.0	mg/Kg	25-MAY-94	28-MAY-94
Kerosine	ND <	5.0	mg/Kg	25-MAY-94	28-MAY-94
Diesel	ND <	5.0	mg/Kg	25-MAY-94	28-MAY-94
Waste Oil	ND <	50.	mg/Kg	25-MAY-94	28-MAY-94
-	-				
Surrogate	-				
o-Terphenyl	102.	-	%	25-MAY-94	28-MAY-94
-	-				
Comments:	None				
-	-				
-	-				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG4904-7

Reported: 31-MAY-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
TPHIDQ-S							
Gas	ND <	mg/Kg				25-MAY-94	28-MAY-94
Mineral Spirits	ND <	mg/Kg				25-MAY-94	28-MAY-94
Jet Fuel	ND <	mg/Kg				25-MAY-94	28-MAY-94
Kerosine	ND <	mg/Kg				25-MAY-94	28-MAY-94
Diesel	104.	mg/Kg	100	mg/Kg	104%	25-MAY-94	28-MAY-94
Waste Oil	ND <	mg/Kg				25-MAY-94	28-MAY-94
-	-						
Surrogate	-						
o-Terphenyl	104.	%				25-MAY-94	28-MAY-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG4904-1

Reported: 01-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
8015DS					
Diesel	43.	5.0	mg/Kg	24-MAY-94	26-MAY-94
Surrogate					
o-Terphenyl	92.0	-	%	24-MAY-94	26-MAY-94
Comments:	MX= L9405204-17. Hydrocarbons were found in the diesel range but did not match a diesel fingerprint.				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG4904-2

Reported: 01-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
8015DS							
Diesel	150.	mg/Kg	100	mg/Kg	98	24-MAY-94	26-MAY-94
-	-						
Surrogate	-						
o-Terphenyl	87.0	%				24-MAY-94	26-MAY-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG4904-3

Reported: 01-JUN-94

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
8015DS						
Diesel	167.	mg/Kg	116	11.	24-MAY-94	26-MAY-94
-	-					
Surrogate	-					
o-Terphenyl	93.0	%			24-MAY-94	26-MAY-94
-	-					
Comments:	None					
-	-					
-	-					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG4800-4

Reported: 03-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
BTEX-S					
Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Ethyl Benzene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Toluene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
Xylene	ND <	5.0	ug/Kg	24-MAY-94	24-MAY-94
-	-				
Surrogate:	-				
Bromofluorobenzene	92.	-	%	24-MAY-94	24-MAY-94
-	-				
Comments:	None				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG4800-5

Reported: 03-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
BTEX-S							
Benzene	103.	ug/Kg	100	ug/Kg	103 %	24-MAY-94	24-MAY-94
Ethyl Benzene	105.	ug/Kg	100	ug/Kg	105 %	24-MAY-94	24-MAY-94
Toluene	104.	ug/Kg	100	ug/Kg	104 %	24-MAY-94	24-MAY-94
Xylene	318.	ug/Kg	300	ug/Kg	106 %	24-MAY-94	24-MAY-94
-	-						
Surrogate:	-						
Bromofluorobenzene	92.0	%				24-MAY-94	24-MAY-94
-	-						
Comments:	None						

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG4800-1

Reported: 03-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
BTEX-S					
Benzene	ND <	5.00	ug/Kg	24-MAY-94	24-MAY-94
Ethyl Benzene	ND <	5.00	ug/Kg	24-MAY-94	24-MAY-94
Toluene	ND <	5.00	ug/Kg	24-MAY-94	24-MAY-94
Xylene	ND <	5.00	ug/Kg	24-MAY-94	24-MAY-94
Surrogate: Bromofluorobenzene	88.0	-	%	24-MAY-94	24-MAY-94
Comments:	MX = L9405210-1 (MW-1-5.0)				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG4800-2

Reported: 03-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
BTEX-S							
Benzene	102.	ug/Kg	100	ug/Kg	102 %	24-MAY-94	24-MAY-94
Ethyl Benzene	103.	ug/Kg	100	ug/Kg	103 %	24-MAY-94	24-MAY-94
Toluene	103.	ug/Kg	100	ug/Kg	103 %	24-MAY-94	24-MAY-94
Xylene	310.	ug/Kg	300	ug/Kg	103 %	24-MAY-94	24-MAY-94
-	-						
Surrogate:	-						
Bromofluorobenzene	87.0	%				24-MAY-94	24-MAY-94
-	-						
Comments:	None						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG4800-3

Reported: 03-JUN-94

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
BTEX-S						
Benzene	93.4	ug/Kg	93.4 %	8.8	24-MAY-94	24-MAY-94
Ethyl Benzene	108.	ug/Kg	108 %	4.7	24-MAY-94	24-MAY-94
Toluene	114.	ug/Kg	114 %	10.	24-MAY-94	24-MAY-94
Xylene	357.	ug/Kg	119 %	14.	24-MAY-94	24-MAY-94
-	-					
Surrogate:	-					
Bromofluorobenzene	96.0	%			24-MAY-94	24-MAY-94
-	-					
Comments:	None					

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Water Spike
Lab Id: WG4888-1

Reported: 27-MAY-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
8015DW							
Diesel	0.665	mg/L	.5	mg/L	133	23-MAY-94	25-MAY-94
Surrogate o-Terphenyl	66.0	%				23-MAY-94	25-MAY-94
Comments:	None						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Water Spike Duplicat
Lab Id: WG4888-2

Reported: 27-MAY-94

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
8015DW						
Diesel	1.26	mg/L	126	1.0	25-MAY-94	27-MAY-94
Surrogate						
o-Terphenyl	88.0	%			25-MAY-94	27-MAY-94
Comments:	None					

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG4888-3

Reported: 27-MAY-94

Parameter	Value	Limit	Units	Extracted	Analyzed
8015DW					
Diesel	ND <	0.050	mg/L	23-MAY-94	25-MAY-94
Surrogate o-Terphenyl	57.0	-	%	23-MAY-94	25-MAY-94
Comments:	None				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG4888-4

Reported: 27-MAY-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
8015DW							
Diesel	0.380	mg/L	.5		76	23-MAY-94	25-MAY-94
Surrogate							
o-Terphenyl	90.0	%				23-MAY-94	25-MAY-94
Comments:	None						

D&M LABORATORIES
ENVIRONMENTAL AND INDUSTRIAL HYGIENE SERVICES

3700 Lakeville Highway, Petaluma, CA 94954
P.O. Box 808024, Petaluma, CA 94975-8024
Telephone: (707) 763-8245
FAX (707) 763-4065

June 23, 1994

Andrew Meyer
Uribe & Associates
2930 Lakeshore Avenue #200
Oakland, CA 94610-3614

Customer Project: 96-405 Berth 25
Laboratory Job: L9406113

On June 11, 1994 we received 1 sample(s) for analysis. Samples were analyzed by the following method(s):

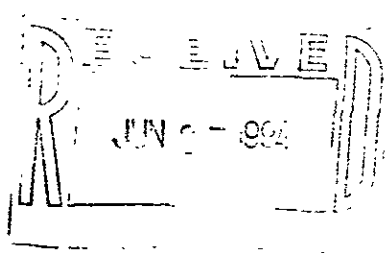
Diesel (8015 Modified)

BTEX (EPA 8020A)

Total Dissolved Solids (EPA 160.1)

Stella Wands
Project Manager
for Mary Janney

Robert Peak
Laboratory Director
Robert Peak



D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for: Uribe & Associates
Project Id: 96-405 Berth 25
Sample Id: MW-1
Lab Id: L9406113-1

Collected: 09-JUN-94
Received: 11-JUN-94
Reported: 23-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
8015D					
Diesel	0.41	0.050	mg/L	14-JUN-94	16-JUN-94
Surrogate: o-Terphenyl	48.	-	%	14-JUN-94	16-JUN-94
Comments:	See labnote 20.				
Total Dissolved Solids					
Total Dissolved Solids	1900	200	mg/L		14-JUN-94
Comments:	See lab note 29. (Suspended solids interference).				
GAS/BTEX SOIL					
Benzene	ND <	0.50	ug/L	16-JUN-94	16-JUN-94
Ethyl Benzene	ND <	0.50	ug/L	16-JUN-94	16-JUN-94
Toluene	ND <	0.50	ug/L	16-JUN-94	16-JUN-94
Xylene	ND <	0.50	ug/L	16-JUN-94	16-JUN-94
Surrogate: Bromofluorobenzene	68.0	-	%	16-JUN-94	16-JUN-94
Comments:	None				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG5115-4

Reported: 20-JUN-94

Parameter	Value	limit	units	Extracted	Analyzed
8015D					
Diesel	ND <	0.050	mg/L	14-JUN-94	16-JUN-94
Surrogate: o-Terphenyl	110	-	%	14-JUN-94	16-JUN-94
Comments:	None				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG5115-5

Reported: 20-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
8015D							
Diesel	0.650	mg/L	1	mg/L	65%	14-JUN-94	16-JUN-94
Surrogate: o-Terphenyl	51.	%			%	14-JUN-94	16-JUN-94
Comments:	None						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Water Spike
Lab Id: WG5115-2

Reported: 20-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
8015D							
Diesel	1.51	mg/L	1	mg/L	151%	09-JUN-94	13-JUN-94
Surrogate: o-Terphenyl	120	%			%	09-JUN-94	13-JUN-94
Comments:	None						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Water Spike Duplicat
Lab Id: WG5115-3

Reported: 20-JUN-94

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
8015D						
Diesel	1.35	mg/L	135%	11.	09-JUN-94	13-JUN-94
Surrogate: o-Terphenyl	110	%	%		09-JUN-94	13-JUN-94
Comments:	None					

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG5146-1

Reported: 22-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
Total Dissolved Solids					
Total Dissolved Solids	ND <	20.	mg/L		14-JUN-94

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG5146-2

Reported: 22-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
Total Dissolved Solids							
Total Dissolved Solids	95.0	mg/L	100	mg/L	95%		14-JUN-94

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG5076-3

Reported: 22-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
TDS					
Total Dissolved Solids	1940	20.	mg/L		09-JUN-94

D&M Laboratories

ANALYTICAL DATA REPORT

Prepared for:
Project Id:
Sample Id: Duplicate
Lab Id: WG5076-4

Reported: 22-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
TDS					
Total Dissolved Solids	1920	20.	mg/L		09-JUN-94

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG5056-4

Reported: 22-JUN-94

Parameter	Value	limit	Units	Extracted	Analyzed
GAS/BTEX SOIL					
Benzene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Ethyl Benzene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Toluene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Xylene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Gasoline	ND <	0.050	mg/L	14-JUN-94	14-JUN-94
-	-				
Surrogate:	-				
Bromofluorobenzene	70.5	-	%	14-JUN-94	14-JUN-94
-	-				
Comments:	None				
-	-				
-	-				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG5056-5

Reported: 22-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX SOIL							
Benzene	23.8	ug/L	25	ug/L	95.1%	14-JUN-94	14-JUN-94
Ethyl Benzene	24.7	ug/L	25	ug/L	99%	14-JUN-94	14-JUN-94
Toluene	24.2	ug/L	25	ug/L	96.9%	14-JUN-94	14-JUN-94
Xylene	72.7	ug/L	75	ug/L	97%	14-JUN-94	14-JUN-94
Gasoline	0.953	mg/L	1	mg/L	95.3%	14-JUN-94	14-JUN-94
-	-						
Surrogate:	-						
Bromofluorobenzene	68.0	%	25	ug/L	%	14-JUN-94	14-JUN-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG5056-6

Reported: 22-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
GAS/BTEX SOIL					
Benzene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Ethyl Benzene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Toluene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Xylene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Gasoline	ND <	0.050	mg/L	14-JUN-94	14-JUN-94
-	-				
Surrogate:	-				
Bromofluorobenzene	65.0	-	%	14-JUN-94	14-JUN-94
-	-				
Comments:	None				
-	-				
-	-				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG5056-7

Reported: 22-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX SOIL							
Benzene	23.5	ug/L	25	ug/L	94.1%	14-JUN-94	14-JUN-94
Ethyl Benzene	24.5	ug/L	25	ug/L	97.9%	14-JUN-94	14-JUN-94
Toluene	23.9	ug/L	25	ug/L	95.7%	14-JUN-94	14-JUN-94
Xylene	71.7	ug/L	75	ug/L	95.6%	14-JUN-94	14-JUN-94
Gasoline	0.938	mg/L	1	mg/L	93.8%	14-JUN-94	14-JUN-94
-	-						
Surrogate:	-						
Bromofluorobenzene	68.7	%	25	ug/L	%	14-JUN-94	14-JUN-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank
Lab Id: WG5056-8

Reported: 22-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
GAS/BTEX SOIL					
Benzene	ND <	0.50	ug/L	16-JUN-94	16-JUN-94
Ethyl Benzene	ND <	0.50	ug/L	16-JUN-94	16-JUN-94
Toluene	ND <	0.50	ug/L	16-JUN-94	16-JUN-94
Xylene	ND <	0.50	ug/L	16-JUN-94	16-JUN-94
Gasoline	ND <	0.050	mg/L	16-JUN-94	16-JUN-94
Surrogate:					
Bromofluorobenzene	68.2	-	%	16-JUN-94	16-JUN-94
Comments:	None				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Method Blank Spike
Lab Id: WG5056-9

Reported: 22-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX SOIL							
Benzene	23.2	ug/L	25	ug/L	93%	16-JUN-94	16-JUN-94
Ethyl Benzene	24.1	ug/L	25	ug/L	96.4%	16-JUN-94	16-JUN-94
Toluene	23.6	ug/L	25	ug/L	94.5%	16-JUN-94	16-JUN-94
Xylene	70.8	ug/L	75	ug/L	94.4%	16-JUN-94	16-JUN-94
Gasoline	0.852	mg/L	1	mg/L	85.2%	16-JUN-94	16-JUN-94
-	-						
Surrogate:	-						
Bromofluorobenzene	62.0	%	25	ug/L	%	16-JUN-94	16-JUN-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: MX
Lab Id: WG5056-1

Reported: 22-JUN-94

Parameter	Value	Limit	Units	Extracted	Analyzed
GAS/BTEX SOIL					
Benzene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Ethyl Benzene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Toluene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Xylene	ND <	0.50	ug/L	14-JUN-94	14-JUN-94
Gasoline	ND <	0.050	mg/L	14-JUN-94	14-JUN-94
Surrogate:					
Bromofluorobenzene	68.0	-	%	14-JUN-94	14-JUN-94
Comments:	MX = sample # L9406095-2 for Gas				
	MX = sample # L9406095-3 for BTEX				

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike
Lab Id: WG5056-2

Reported: 22-JUN-94

Parameter	Value	Units	Spike	Units	% Rec	Extracted	Analyzed
GAS/BTEX SOIL							
Benzene	23.2	ug/L	25	ug/L	92.7%	14-JUN-94	14-JUN-94
Ethyl Benzene	23.7	ug/L	25	ug/L	94.7%	14-JUN-94	14-JUN-94
Toluene	23.4	ug/L	25	ug/L	93.4%	14-JUN-94	14-JUN-94
Xylene	69.6	ug/L	75	ug/L	92.8%	14-JUN-94	14-JUN-94
Gasoline	0.892	mg/L	1	mg/L	89.2%	14-JUN-94	14-JUN-94
-	-						
Surrogate:	-						
Bromofluorobenzene	58.2	%	25	ug/L	%	14-JUN-94	14-JUN-94
-	-						
Comments:	None						
-	-						
-	-						

D&M Laboratories

QUALITY CONTROL REPORT

Prepared for:
Project Id:
Sample Id: Matrix Spike Dup
Lab Id: WG5056-3

Reported: 22-JUN-94

Parameter	Value	Units	% Rec	RPD	Extracted	Analyzed
GAS/BTEX SOIL						
Benzene	24.4	ug/L	97.8%	5.0	14-JUN-94	14-JUN-94
Ethyl Benzene	25.2	ug/L	100.9%	6.1	14-JUN-94	14-JUN-94
Toluene	24.7	ug/L	98.8%	5.4	14-JUN-94	14-JUN-94
Xylene	73.9	ug/L	98.6%	6.0	14-JUN-94	14-JUN-94
Gasoline	0.946	mg/L	94.6%	1.5	14-JUN-94	14-JUN-94
-	-					
Surrogate:	-					
Bromofluorobenzene	54.0	%	%		14-JUN-94	14-JUN-94
-	-					
Comments:	None					
-	-					
-	-					

LABORATORY FOOTNOTES

(1) Sample containers were received broken.
(2) The samples were not properly refrigerated during transport to the laboratory.
(3) The samples were not properly preserved.
(4) The information on the chain-of-custody does not match the information on the sample containers.
(5) The samples were received after the required holding time.
(6) This analyte was detected in the method blank above the reporting limit.
(7) This analyte was detected in the trip blank above the reporting limit.
(8) The recovery of the matrix spike indicates the presence of matrix effects. The MBS recovery was acceptable.
(9) The matrix spike recovery is not significant due to the high concentration of the analyte in the sample relative to the amount of spike added.
(10) The method of standard additions was performed and confirmed a matrix interference.
(11) The variation in spike recoveries reflects the nonhomogeneity of the sample.
(12) Accurate quantitation of the surrogate was not possible due to the extent of sample dilution.
(13) The surrogate recovery was high due to the presence of interfering compounds in the sample.
(14) The surrogate recovery was low due to matrix effects. The analysis was repeated with similiar results.
(15) The detection limit was raised due to the insufficient amount of sample available for analysis.
(16) The detection limit was raised due to the dilution required by high-level analytes in the sample.
(17) The detection limit was raised due to the dilution required by high-level non-target analytes in the sample.
(18) These compounds co-elute; therefore, a total value is reported for both.
(19) The sample was tentatively identified and semi-quantitated based on the best chromatographic fit from the available standards.
(20) The sample chromatograph resembled an "aged" hydrocarbon product.
(21) Hydrocarbons were found in the range of gasoline and diesel but did not resemble a gasoline or diesel fingerprint.
(22) This sample was extracted outside of the required holding time.
(23) This sample was analyzed outside of the required holding time.
(24) The variation in duplicate results reflects the nonhomogeneity of the sample.
(25) The recovery of the matrix spike(s) reflects the nonhomogeneity of the sample. The MBS recovery was acceptable.
(26) The sample was not analyzed on a second column.
(27) The presence of di-n-butyl phthalate may be due to laboratory contamination.
(28) This sample was analyzed outside of the required holding time per client request.
(29) The detection limit was raised due to the high background from matrix interferences.

QUALITY CONTROL REPORT

In order to provide you with the means of assessing the quality of the data in our report, **D&M Laboratories** reports the results of Quality Control samples analyzed with your samples.

The Quality Control samples provide the following QC information:

The Method Blank (**MB**) monitors the level of contamination introduced by reagents or glassware. A minimum of one MB is run per batch of 20 samples or less.

The Method Blank Spike (**MBS**) measures the accuracy of analytical techniques and is not subject to matrix effects. A minimum of one MBS is run per batch of 20 samples or less.

The Matrix Spike (**MS**) measures the accuracy of the method for a matrix type. Due to the high variability within matrix types and the necessity of batching samples from varied sources, matrix spike information from one sample is not necessarily relevant to other samples on the batch. A minimum of two matrix spikes, MS and MSD, are run per batch of 20 samples or less. The sample selected for the matrix spike is designated MX, and may or may not have been submitted by the recipient of this report.

The Matrix Spike Duplicate (**MSD**), along with the MS, is used to monitor the precision (**RPD**) of the method and to indicate possible non homogeneity of the sample matrix.

Equations used for determining percent recovery and relative percent difference (RPD) are as follows:

MBS % Recovery = (MBS result / MBS spike level) x 100
MS % Recovery = [(MS result - MX result) / MS spike level] x 100
RPD = { | MS result - MSD result | / [(MS result + MSD result) / 2]} x 100

We continue to strive to improve the quality of service to our clients. We welcome any questions or comments you may have about this information, or about **D&M Laboratories** in general. Please contact a Project Manager for further information.

L9406713

URIBE & ASSOCIATES
ENVIRONMENTAL CONSULTING SERVICES

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CHAIN-OF-CUSTODY RECORD

Project No.:	Project Name:
96-405	Earth 25

REPORT RESULTS TO

Name: Andrew Meyer
Company: URIBE & ASSOCIATES
Mailing Address: 2930 LAKESHORE AVE., SUITE 200
City, State, Zip: OAKLAND, CA 94610-3614
Telephone No.: 510-832-2233 Telefax No.: 510-832-2237

SEND INVOICE TO

Purchase Order Number: 201517
Name: Lewis Leonhardt
Company: Port of Oakland Dept: Environ.
Mailing Address: 530 Water St
City, State, Zip: Oakland CA 94607

Turn-Around Time: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☐ 5 day ☒ 10 day (Standard)
Rush Charges Authorized? ☐ Yes ☒ No
Phone Results ☐ Fax Results ☒
Special Instructions:

No.	Date	Time	Matrix/Medium	Sample Identification Number	# OF CONTAINERS	ANALYSES REQUESTED: TPH-Diesel, BTEX, TPH-G	Remarks
	6/9/94	2:00	Water	MW-1	7	X X X	

2-1L Amber / 1-1L Plastic
4 VOAs

COOLER CUSTODY SEALS INTACT ☐ NOT INTACT ☐ N/A
COOLER TEMPERATURE Cold °C

CHAIN OF CUSTODY

Collected by: Andrew Meyer 6/9/94 2:00 (Print)
Relinquished by: Andrew Meyer Date: 6/9/94 Time: 5:00
Relinquished by: Date: Time:

Collector's Signature: Andrew Meyer 6/9/94 2:00
Received by: Christy Cockerham Date: Time:
Received by: Date: Time:

Method of Shipment: UPS Red

Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain)

SAMPLES RECEIVED IN GOOD CONDITION
NO BROKEN OR LEAKING CONTAINERS

Original (White) Laboratory Copy (Yellow) Field Copy (Pink)