



## PORT OF OAKLAND

November 24, 2015

Mr. Keith Nowell  
Hazardous Materials Specialist  
Alameda County Environmental Health  
1131 Harbor Way Parkway  
Alameda, California 94501-6540

**RECEIVED**

By Alameda County Environmental Health 9:43 am, Nov 25, 2015

**Subject: R0000101 – Revised Soil and Groundwater Investigation Work Plan,  
Former Kaiser Underground Storage Tank Site,  
2801 Seventh Street, Berth 30,  
Port of Oakland**

Dear Mr. Nowell:

Please find enclosed, a letter responding to the comments provided by the Alameda County Department of Environmental Health (“ACDEH”) on October 2, 2015, on the Soil and Groundwater Investigation Work Plan, Kaiser Yard UST, Berth 30, Port of Oakland, Oakland, California, dated July 1, 2015, and the Revised Soil and Groundwater Investigation Work Plan, Former Kaiser Yard Underground Storage Tank Site, Port of Oakland, Oakland, California (“the Revised Work Plan”) prepared on behalf of the Port of Oakland (“Port”) by Terraphase Engineering Inc. (“Terraphase”). The Revised Work Plan was prepared under a directive of the Alameda County Environmental Health to investigate an underground storage tank (“UST”) site located in the present day Berth 30 Container Terminal due to UST removal activities in April 1992. The removal action was preparatory for the then redevelopment of Port land for the present day Berth 30 Container Terminal. The Revised Work Plan was prepared to investigate the UST site for residual petroleum hydrocarbons noted upon the 1992 UST removal. Terraphase will implement the Revised Work Plan upon obtaining approval of the plan from ACDEH.

I declare, under the penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge. If you have any questions or comments about the RTC letter or Revised Work Plan, contact me at [jprall@portoakland.com](mailto:jprall@portoakland.com) or at (510) 627-1373.

Sincerely,

John Prall, P.G.  
Port Associate Environmental Scientist

Enclosure noted in text

cc: Anne Whittington – Port of Oakland  
Michele Heffes, Port of Oakland





November 24, 2015

Mr. Keith Nowell  
Alameda County Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

**Subject: Response to Conditional Work Plan Approval; Fuel Leak Case No. RO0000101 and GeoTracker Global ID T0600101099, Port of Oakland/Kaiser & Powerline Oil/Berth 30, 2800-2801 7<sup>th</sup> Street, Oakland, CA 94607**

Dear Mr. Nowell:

On behalf of the Port of Oakland (“the Port”), Terraphase Engineering Inc. (“Terraphase”) is pleased to provide responses to comments provided by the Alameda County Environmental Health Services (“ACEH”) on October 2, 2015, on the *Soil and Groundwater Investigation Work Plan, Kaiser Yard UST, Berth 30, Port of Oakland, Oakland, California* (“the Work Plan”), dated July 1, 2015, for the former Kaiser Yard located on Berth 30 of the Port (“the Site”). The comment responses are presented below. The Work Plan has been revised accordingly, and is attached to this letter.

Technical Comment 1: LTCP General Criteria d (Free Product)

This comment summarizes the LTCP requirements for free product removal. The comment includes the statement that “ACEH’s review of the case files indicates that insufficient data and analysis has been presented to assess FP at the site.” It does not specifically comment on the proposed investigation activities.

Response to Technical Comment 1

Comment noted. As discussed below in the response to Comment 3, a boring will be advanced at the location of the former underground storage tank (UST) pit, and soil and groundwater samples will be collected and analyzed for petroleum hydrocarbons. The groundwater that collects within this boring, and all other borings advanced around the former UST pit, will be assessed for the presence of free product.

Technical Comment 2: LTCP General Criteria e (Site Conceptual Model)

This comment summarizes the elements of a CSM as described in the LTCP. The comment includes the statement that the ACEH’s “review of the case files indicates that insufficient data collection and analysis has been presented to assess the nature, extent, and mobility of the release and to support compliance with the General Criteria...” addressed in other comments in the ACEH’s letter. It does not specifically comment on the proposed investigation activities.

### Response to Technical Comment 2

Comment noted. The location of the proposed soil borings, including the additional boring to be advanced in response to Comment 3, and the soil sampling strategy proposed in Comment 7, should provide the necessary data to assess the nature, extent, and potential mobility of the release. The sampling strategy is designed to provide vertical and horizontal delineation of potential impacts related to the former USTs.

### Technical Comment 3: General Criteria f – Secondary Source Has Been Removed to the Extent Practicable

This comment summarizes the residual petroleum hydrocarbons as a potential secondary source of contamination. The comment notes that evidence of a release remained after the removal action was completed, i.e. odors and staining. ACEH requests a boring be advanced in the location of the UST pit for the sampling and analysis of groundwater and a native soil, as discussed further in Technical Comment 7 below.

### Response to Technical Comment 3

A boring will be advanced in the approximate center of the former UST pit. One grab-groundwater sample will be collected from the first encountered water-bearing zone within the boring. One soil sample will be collected at a depth below the observed UST excavation backfill material. It should be noted that the soil sample may not represent native soil, because the Site elevation was raised multiple times over its history using engineered fill. Drilling to a depth of true native soil could require a deep boring and the sample may not be representative of conditions at the Site immediately below the former UST excavation. The Port assumes that ACEH's definition of "native soil" in the context of this investigation is equivalent to the soil encountered below the import soil used to backfill the UST excavation.

The soil and groundwater sample will be analyzed for the complete analytical suite presented in the Revised Work Plan.

Please note that the Port will make their best effort to identify the exact location of the former UST pit using historical maps and documents, although this will be very difficult given the past redevelopment work that resulted in loss of reference points, including two relocations of Seventh Street.

### Technical Comment 4: General Criteria g – Soil and Groundwater Have Been Tested for MTBE

This comment requests that MTBE be added to the analytical testing scope for soil and groundwater samples that are collected as part of this investigation.

### Response to Technical Comment 4

The USTs at the Site were utilized by the Kaiser Steel Corporation from 1965 to 1985 and removed in 1992. MTBE was used in gasoline at low levels since 1979 to replace lead as an octane enhancer. Between 1992 and 2005, MTBE was used at higher concentrations in gasoline to fulfill the oxygenate requirements of the 1990 Clean Air Act Amendments.

Although MTBE is not anticipated, the soil and groundwater samples will be analyzed for MTBE. The work plan has been revised to reflect this change.

#### Technical Comment 5: LTCP Media-Specific Criteria for Groundwater

This comment discusses the characterization of groundwater, and states that "...insufficient data collection and analysis has been presented to support the requisite characteristics of plume stability or plume classification." However, at this time, ACEH has determined that the installation of monitoring wells is unnecessary.

#### Response to Technical Comment 5

Comment noted.

#### Technical Comment 6: LTCP Media-Specific Criteria for Direct Contact and Outdoor Air Criteria

This comment discusses the potential volatilization of residual contaminants into outdoor air and the potential human-health risk from inhalation. The comment states:

*"Our review of the case files indicates that insufficient data collection and analysis has been collected to satisfy the media-specific criteria for direct contact and outdoor air exposure. Specifically, naphthalene has not been analyzed at this site. In order to satisfy the LTCP, please include naphthalene as an analyte in the analysis suite. Please recover the samples at the depths described in Technical Comment 7 below."*

#### Response to Technical Comment 6

Naphthalene will be added to the analytical testing scope for soil and groundwater samples that are collected as part of this investigation.

#### Technical Comment 7: Soil Sampling

*"The proposed soil sampling is based solely on PID readings, so conceivably no soil samples will be recovered for analysis should the PID readings be less than 25 ppm."*

*In order to satisfy the LTCP, ACEH requests at least one soil sample be recovered and analyzed from each boring from the 0- to 5-foot and 5- to 10 foot intervals, as measured from the ground surface. Additionally, ACEH requests that soil samples be collected and analyzed at intervals of not more than five feet, signs of obvious contamination, such as odor, discoloration, free product, etc., the soil/groundwater interface, and at significant changes in lithology. Please ensure that the analytical results define the vertical and horizontal extent of TPH impacts in soil and groundwater at the site."*

#### Response to Technical Comment 7

The work plan has been revised to reflect the requested soil sampling strategy.

#### Technical Comment 8: Extractable Range Petroleum Hydrocarbons (Diesel) Analysis

*"As previously stated above, the site was the location of gasoline and diesel USTs. Therefore, ACEH requests the addition of TPH as diesel (TPHD), using EPA Test Method 8015, to the scope of analysis. In*

*regards to silica gel cleanup, it is the policy of the San Francisco Bay Region, Regional Water Quality Control Board (SFBR-RWQCB) that extractable range petroleum hydrocarbon samples be analyzed both with and without silica gel cleanup. In order to be consistent with the SFBR-RWQCB policy, ACEH requests that these samples be analyzed both with and without silica gel cleanup and have a determination performed for organic matter content using ASTM test method D2974."*

#### Response to Technical Comment 8

Although TPHd was not previously detected in soil or groundwater samples following the removal of the USTs, the soil and groundwater samples collected during the proposed investigation will be analyzed for TPHd by EPA Method 8015. It should be noted that heavier fractions of gasoline (in the C10-C12 carbon range) may be detected in the analysis for TPHd by EPA Method 8015B. Therefore, TPHd detection using this method may not provide a conclusive determination regarding the nature of the release.

As requested, the soil and groundwater samples will be analyzed with and without the silica gel cleanup (SGC). However, only soil and groundwater analyzed with SGC will be compared to the proposed Environmental Screening Levels (ESLs) for TPHd, because RWQCB ESLs are based upon quantification of non-polar TPH fractions only. In addition, soil samples will be analyzed for organic matter content by ASTM Method D2974.

#### **CLOSING**

We appreciate ACEH's review of the Work Plan. If you have any questions, please feel free to contact me at 510-645-1850 ext. 38 or by email at [daren.roth@terrphase.com](mailto:daren.roth@terrphase.com) or Peter Zawislanski at 510-645-1858 or by email at [peter.zawislanski@terrphase.com](mailto:peter.zawislanski@terrphase.com).

Sincerely,

For Terraphase Engineering Inc.



Daren Roth  
Senior Project Geologist



Peter Zawislanski, P.G., C.H.G.  
Principal Hydrogeologist

cc: John Prall, Port of Oakland  
Anne Whittington, Port of Oakland  
Michele Heffes, Port of Oakland

Attachments: Revised Soil and Groundwater Investigation Work Plan, Kaiser Yard UST, Berth 30, Port of Oakland, Oakland, California

**REVISED SOIL AND GROUNDWATER INVESTIGATION  
WORK PLAN  
KAISER YARD UST, BERTH 30  
PORT OF OAKLAND, OAKLAND, CALIFORNIA**

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*Prepared for*

Port of Oakland  
530 Water Street  
Oakland, California 94607

*Prepared by*

Terraphase Engineering Inc.  
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Oakland, California 94612

November 24, 2015

Project Number 0059.007.001







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- 1 Site Location Map

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### **APPENDICES**

- A ACEH Technical Report Request and Response to Inquiry About Test Method D2974
- B Guidelines for Working in Active Marine Terminals

## Acronyms and Abbreviations

ACEH	Alameda County Environmental Health
ACPWA	Alameda County Public Works Agency
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylenes
ESLs	Environmental Screening Levels
GPS	global positioning system
HASP	Health and Safety Plan
PID	photoionization detector
PPM	parts per million
QC	quality control
RWQCB	Regional Water Quality Control Board
Terraphase	Terraphase Engineering Inc.
TPH	total petroleum hydrocarbons
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHmo	total petroleum hydrocarbons as motor oil
ug/L	micrograms per liter
USA	Underground Service Alert
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank

## Certification

Information, conclusions, and recommendations in this document have been prepared by a California Professional Geologist.

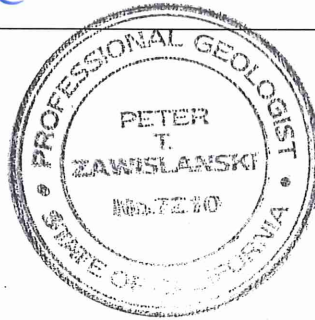


11/24/15

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Peter T. Zawislanski  
California Professional Geologist (7210)  
California Certified Hydrogeologist (925)

Date



## 1.0 INTRODUCTION

Terraphase Engineering Inc. (Terraphase) has prepared this *Revised Soil and Groundwater Investigation Work Plan* (“the Work Plan”) on behalf of the Port of Oakland (“the Port”) for the former Kaiser Yard, Underground Storage Tank (UST) Site, located in Berth 30 of the Port of Oakland, Oakland, California (“the Site”; Figure 1).

The soil and groundwater investigation was requested by the Alameda County Environmental Health (ACEH) in their March 20, 2015 and November 13, 2015 emails from Mr. Keith Nowell (ACEH) to Mr. John Prall of the Port (Appendix A). This request was issued following a review of the Site prompted by the submittal of the *Low Threat Closure Request, Kaiser Yard UST, Berth 30, Port of Oakland, 2801 7<sup>th</sup> Street, Oakland, California* on March 27, 2014.

The purpose of the Work Plan is to describe the methods planned to investigate the potential residual impact to soil and groundwater from three USTs formerly located at the Site. The Work Plan proposes the advancement of soil borings in the vicinity of the former USTs for the purpose of collecting soil and groundwater samples.

### 1.1 Background

The Site is located in Berth 30 of the Port of Oakland and in an area formerly occupied by Kaiser Steel Corporation (“Kaiser”) from 1965 to 1985. During that time, Kaiser used three USTs for equipment refueling. The tanks included one 5,000-gallon gasoline, UST, one 3,000-gallon gasoline UST, and one 5,000-gallon diesel UST. Ancillary equipment, including vent piping, two fuel dispenser islands, and product conveyance piping, were all located under a concrete pad. During redevelopment activities for the then future Berth 30, the three USTs and associated facilities were removed from the Site in 1992 (ARCADIS 2014).

Prior to removal, the USTs were inspected for fuel content. The diesel UST contained no residual liquid, whereas both of the gasoline USTs contained approximately 1.5 inches of residual liquid, which was pumped out. The USTs were also inspected for integrity following removal; no holes or cracks were identified (ARCADIS 2014).

During the removal of the USTs and associated piping, approximately 120 cubic yards of soil were excavated and stockpiled at the Site. Figure 2 presents the approximate locations of the UST site and excavation footprint. The excavation was approximately 38 feet by 17 feet and extended to a depth of approximately 9.5 to 11 feet below ground surface (bgs). Groundwater was encountered at a depth of approximately 9 feet bgs. There were no odors or obvious signs of staining on the excavated soil or sidewalls of the excavation, although a potential film of free product was observed on the groundwater. A similar film was observed after the water was pumped from the excavation and allowed to recharge. This process of pump-and-recharge was repeated until a total of approximately 800 gallons of water were pumped from the excavation. Subsequently, a grab groundwater sample was collected from the excavation, and soil samples

were collected from six locations along the sidewalls of the excavation at a depth of approximately 8.5 feet bgs, just above the apparent water table. The grab groundwater and sidewall soil samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline (TPHg), TPH as diesel (TPHd), benzene, toluene, ethylbenzene, and xylenes (BTEX), and total lead.

TPHg, TPHd, and BTEX were not detected above the laboratory reporting limits in the six sidewall soil samples, and lead was detected at very low levels equivalent to regional background concentrations (Geomatrix 1992).

In the grab groundwater sample, TPHg, benzene, ethylbenzene, toluene, and total xylenes were detected at concentrations of 4,100 micrograms per liter (ug/L), 3.4 ug/L, 62 ug/L, 1.4 ug/L, and 860 ug/L, respectively. TPHd and total lead were not detected above laboratory reporting limits (Geomatrix 1992).

Following sample collection, the excavation was backfilled with import soil and clean stockpile soil as approved by the ACEH.

At the request of the ACEH, the Port submitted a work plan in 1993 to install groundwater monitoring wells in the vicinity of the former USTs. The ACEH did not approve the work plan until 1996, at which point the Port notified the ACEH that it was not feasible to safely complete an investigation in this area of Berth 30 due to the location of the site within the truck gate driveway.

In 2008, the Port responded to a request by ACEH to upload the site groundwater monitoring data to GeoTracker, by providing a summary of the site history and remedial activities, and presenting the rationale provided in 1996 for not installing monitoring wells. The Port also expressed interest in working with ACEH to gain closure at the Site in this summary.

The Port submitted a closure request to ACEH in 2014 under the Low Threat Closure Policy. During their review, the new ACEH case officer noted that monitoring wells had not been installed, which prompted the request for the preparation of this Work Plan and subsequent investigation.

## **2.0 SOIL AND GROUNDWATER INVESTIGATION**

The proposed investigation comprises the advancement of seven soil borings for the collection of soil and grab groundwater samples in the vicinity of the former UST Site. The proposed soil boring locations are shown on Figure 2. The borings will be advanced in all four compass directions of the former UST excavation zone and in the approximate center of the former UST pit. The methods and procedures of this soil and groundwater investigation are discussed further below.

The Port will make their best effort to identify the exact location of the former UST pit using historical maps and documents, although this will be very difficult given the past redevelopment work that resulted in loss of reference points, including two relocations of Seventh Street.

### **2.1 Pre-Field Activities**

#### **2.1.1 Health and Safety Plan**

A Site-specific Health and Safety Plan (HASP) will be prepared and will be followed by the on-site project personnel during the Site activities. The HASP will be prepared in accordance with OSHA 29 CFR 1910.120 and Cal OSHA Title 8 Section 5192(e). Site personnel, including on-site subcontractors, will be required to familiarize themselves with, and sign, the HASP to minimize safety hazards. The HASP will identify the specific chemical compounds that have been encountered at the Site and will present the chemical properties and a task-specific health-and-safety risk analysis. The HASP will also include the Port Guidelines for Working in Active Marine Terminals (Appendix B).

#### **2.1.2 Permitting**

A parcel soil boring permit application will be prepared and submitted to Alameda County Public Works Agency (ACPWA). Any other pertinent permits, access agreements, or approvals will be obtained, as required.

### **2.2 Utility Survey**

Proposed soil boring locations will be marked out with white paint. The soil boring locations will be confirmed using a portable Global Positioning System device with sub-meter accuracy.

A private subsurface utility locating company will mark out any potential subsurface structures within a 10-by-10 foot area surrounding each of the proposed soil boring locations. Utility location will be performed with a combination of radio-detection, ground penetrating radar and electro-magnetic induction methods, as necessary. Underground Services Alert (USA) will be notified a minimum of 48 hours prior to commencing drilling activities.

## 2.3 Sampling Methodology

### 2.3.1 Soil Sampling

Soil samples will be collected using both a hand auger and a hydraulic -actuated, direct-push drill rig. Terraphase will subcontract a California-licensed drilling contractor to advance the soil borings under the supervision of Terraphase field staff working under the direction of a California Professional Geologist. Prior to drilling, each location will be hand-cleared to a depth of 5 feet bgs to confirm the absence of underground utilities at the location. The direct-push rig will advance borings from 5 feet bgs to the target depth (approximately 12 feet bgs). The core barrel will be lined with a clear plastic liner to facilitate lithological logging. Soil from borings advanced using a hand auger will be logged using cuttings extracted directly from the auger bucket.

Boring logs will be prepared in the field and completed under the direction of a California Professional Geologist. The borings will be logged in general accordance with the Unified Soil Classification System. In addition to standard descriptors (e.g., soil types, moisture, grain size), other pertinent field observations will be recorded, including color, odors encountered, and visual observations of unusual conditions.

The soil cores will be field-screened using a photoionization detector (PID) to assess the potential impact from fuels associated with the former USTs. At a minimum, the soil cores will be screened using the PID every 3 feet and when changes in soil characteristics are observed. The field screening procedure will be as follows:

- Fill a Ziploc® baggie approximately one-half full of soil and seal completely;
- Vigorously shake the bag for 30 seconds twice in a 10-minute period to allow for headspace development;
- Unzip the corner of the bag and quickly insert the PID probe approximately 1 to 2 inches;
- Record the maximum meter response.

Soil with headspace readings greater than 25 parts per million (ppm) will be collected and submitted to the analytical laboratory for analysis. If it is determined that a soil sample should be collected, the soil will be extracted from a relatively undisturbed portion of the core using a laboratory-provided TerraCore sampling kit. Soil samples will not be collected below the water table.

At least one soil sample be recovered and analyzed from each boring from the 0- to 5-foot and 5- to 10 foot intervals, as measured from the ground surface. Additionally, soil samples be collected and analyzed at intervals of not more than five feet. Soil samples will be collected from



depth intervals with signs of obvious contamination, such as odor, discoloration, free product, etc., the soil/groundwater interface, and at significant changes in lithology.

### 2.3.2 Grab Groundwater Sampling

Grab groundwater samples will be collected from each soil boring. Soil borings will be advanced to approximately 2 feet below the groundwater table. It is anticipated that groundwater will be encountered at approximately 10 feet bgs. A temporary, 1-inch slotted PVC casing will be placed in the boring to keep the boring from collapsing and to allow groundwater to enter the casing. The casing will remain in the boring until sufficient water is collected for sampling. An electronic depth-to-water meter will be used to measure the depth to water in the boring. Once sufficient water has entered the boring, a disposable Teflon bailer will be used to collect a grab groundwater sample. The sample will be transferred to laboratory-supplied sample containers. A new bailer will be used at each boring location. Observations of potential free product or petroleum-related sheen will be documented in the field logs.

Water quality parameters, including temperature, pH and specific conductance, will be measured in the field using a calibrated water quality meter and recorded on the field forms.

### 2.3.3 Sample Handling and Documentation

Samples will be placed in laboratory-supplied and appropriately preserved containers. Sample containers will be labeled, logged on chain-of-custody forms, and placed in an ice-chilled cooler for transport to a California-certified laboratory for analysis.

Samples will be tracked using chain-of-custody forms. Copies of these documents will be maintained in the project files, as well as annotated in the applicable field logbook. The field logbook provides a means of recording data collection activities performed at the Site.

Sample labels will be completed in waterproof, permanent ink, and will have a self-adhesive backing to allow for attachment to the sample container.

### 2.3.4 Field Quality Control Samples

Field quality control (QC) samples will include the collection of an equipment blank during the soil boring advancement of soil borings.

One equipment blank will be collected per day by pouring distilled water over the decontaminated equipment used for sampling and collecting the resulting water for analysis. The equipment blank will be analyzed for the same constituents as the soil and groundwater samples to ensure that proper decontamination procedures were followed during the field activities.

In addition, one trip blank will be included in each cooler that contains samples for BTEX and MTBE analyses.

## **2.4 Equipment Decontamination**

To prevent potential cross-contamination between sample locations, non-disposable equipment that comes into contact with soil, solids or groundwater will be decontaminated prior to initiating work at each subsequent sampling location. Equipment will be decontaminated using a three-step process: (1) non-phosphate detergent wash, (2) potable water rinse, and (3) distilled water rinse.

## **2.5 Borehole Abandonment**

After soil and groundwater sampling is complete, the borings will be abandoned by using a neat cement grout in accordance with ACPWA boring permit requirements. The temporary casing will be removed, and the boreholes will be filled with the neat-cement grout to the surface.

## **2.6 Sample Analysis**

Soil and groundwater samples collected from the borings during this field investigation will be submitted to an analytical laboratory certified by the California Department of Health Services through the Environmental Laboratory Accreditation Program, for the analysis of:

- TPHg by EPA Method 8015
- TPHd by EPA Method 8015, with and without silica gel cleanup (EPA Method 3630C)
- BTEX by EPA Method 8260
- MTBE by EPA Method 8260
- Organic Matter Content by American Society for Testing and Materials (ASTM) Test Method D2974 (soil samples only)

The required volumes, preservation methods, holding times, and analytical reporting limits for the analytical methods are presented in Table 1.

The samples collected for organic matter content will be placed on hold and only analyzed if the associated TPHd result without silica gel exceeds the site screening criteria for TPHd.

## **2.7 Investigation-Derived Waste**

Equipment wash water and waste soil generated during this investigation will be stored in separate 55-gallon drums and handled and disposed of in accordance with state and federal requirements. The drums will be temporarily staged at the Site in a location approved by the Port.

Terraphase will collect a four-point composite sample (four sub-samples) of the waste soil generated during the drilling. One sample will also be collected from the waste water drum. The waste samples will be collected in laboratory supplied containers, properly labeled, placed into an ice-chilled chest, and submitted to an analytical laboratory for chemical analysis of the following analytes:

- Title 22 metals (CAM 17): antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc, by EPA Method 6010/7470
- TPHg, TPHd and TPH as motor oil (TPHmo) by EPA Method 8015 [TPH-d and TPHmo should be analyzed with and without a silica gel cleanup procedure.]
- BTEX by EPA Method 8260

The required volumes, preservation methods, holding times, and analytical reporting limits for the analytical methods are presented in Table 1.

Following characterization, the waste to be transported and disposed of at an appropriate facility. Waste manifests will be signed by a Port representative.

## **2.8 Soil Boring Survey**

Following the advancement of the soil borings, the elevation, northings, and eastings of the soil will be surveyed using a hand-held GPS unit with sub-meter accuracy.

### **3.0 QUALITY CONTROL**

Analytical data will be reviewed and data validation reports will be prepared in general accordance with the principles for data validation presented in the U.S. Environmental Protection Agency (U.S. EPA) National Functional Guidelines for Inorganic Laboratory Data Review (U.S. EPA 2010).

## 4.0 DATA EVALUTION AND REPORTING

### 4.1 Screening Criteria

Upon receipt, the analytical results will be compared with the following screening criteria for soil and groundwater.

**Soil.** The soil analytical results will be compared with the Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs), Direct Exposure Screening Levels, Construction/Trench Worker Exposure Scenario (RWQCB 2013; Table K-3). Based on the impermeable site cover limiting surface water infiltration, the exposure of potentially impacted shallow soil is greatest to site workers completing maintenance activities that involve trenching.

**Groundwater.** The groundwater analytical results will be compared with the RWQCB ESLs for Groundwater (groundwater is not a current or potential drinking water resource; RWQCB 2013; Table F-1b). This criterion is appropriate because the groundwater in the area is generally not suitable as a drinking water source due to high total dissolved solids concentrations, and ESLs are typically protective of human health and ecological receptors.

As requested by ACEH, the soil and groundwater samples will be analyzed for TPHd with and without the silica gel cleanup (SGC). However, only soil and groundwater analyzed with SGC will be compared to the proposed Environmental Screening Levels (ESLs) for TPHd, as RWQCB ESLs are based upon quantification of non-polar TPH fractions only.

### 4.2 Investigation Summary Report

A report will be prepared summarizing the results of the field investigation. The report will include:

- brief site history including the number and type of USTs
- description of the current site use
- summary of sampling activities
- analytical results
- data validation reports
- boring logs
- survey data
- field sampling forms
- discussion of findings and the interpretation of the analytical results

- recommendations for site closure or further investigation.

The report will be reviewed and signed by a California Professional Geologist.

## 5.0 SCHEDULE

The work will commence upon approval of the Work Plan by ACEH. Due to the high traffic associated with the Berth 30 site use, the soil and groundwater sampling activities may need to occur at night, on weekends, or during the scheduled monthly safety stand down practiced by the Port terminals. The work will be scheduled with the Port and Berth 30 tenant at time that will maximize the safety of the field staff conducting the investigation and minimize the impact on Port operations. Field activities will be conducted in accordance with the Port Guidelines for Working in Active Marine Terminals (Appendix B).

In addition, the investigation may need to be conducted in phases if shipping containers are blocking access to the proposed sample locations.

It is anticipated that the summary report will be submitted to ACEH within 60 days of the receipt of analytical data.

## 6.0 REFERENCES

ARCADIS. 2014. Low Threat Closure Request, Kaiser Yard UST, Berth 30, Port of Oakland, 2801 7<sup>th</sup> Street, Oakland, California. March 27.

Geomatrix. 1992. Removal of Underground Storage Tanks, Kaiser Yard, 2801 Seventh Street, Oakland, California. June.

San Francisco Bay Regional Water Quality Control Board (RWQCB). 2013. Environmental Screening Levels. December.

U.S. Environmental Protection Agency. 2010. U.S. EPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Data Review. Office of Solid Waste and Emergency Response. EPA 540-R-08-01. January.



## TABLES

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**Table 1**  
**Analytical Laboratory Methods, Sample Requirements, and Reporting Limits**  
**Kaiser Yard UST, Berth 30**  
**Port of Oakland, Oakland, California**

Analyte	Matrix	Method	Container	Minimum Sample Volume	Preservation	Hold Time (days)	Reporting Limits <sup>1</sup>
TPH as gasoline	solids	EPA 8015	TerraCore	5 grams	methanol; chill to 4 ± 2°C	14	1 mg/kg
TPH as gasoline	water	EPA 8015	3 x 40mL VOA	40 mL	hydrochloric acid; chill to 4 ± 2°C	14	50 ug/L
BTEX	solids	EPA 8260	TerraCore	5 grams	methanol; chill to 4 ± 2°C	14	5 ug/kg
BTEX	water	EPA 8260	3 x 40mL VOA	40 mL	hydrochloric acid; chill to 4 ± 2°C	14	0.5 ug/L
MTBE	solids	EPA 8260	TerraCore	5 grams	methanol; chill to 4 ± 2°C	14	5 ug/kg
MTBE	water	EPA 8260	3 x 40mL VOA	40 mL	hydrochloric acid; chill to 4 ± 2°C	14	0.5 ug/L
TPH as diesel <sup>2</sup>	solids	EPA 8015B	glass jar	50 grams	chill to 4 ± 2°C	14	1 - 5 mg/kg
TPH as diesel <sup>2</sup>	water	EPA 8015B	amber glass	500 mL	chill to 4 ± 2°C	14	50 - 300 ug/L
Naphthalene	solids	EPA 8270C	glass jar	30 grams	chill to 4 ± 2°C	14	67 ug/L
Naphthalene	water	EPA 8270C	amber glass	1000 mL	chill to 4 ± 2°C	7	10 ug/L
Organic Matter Content <sup>3</sup>	solids	ASTM Method D2974	glass jar	100 grams	None	NA	NA

**Table 1**  
**Analytical Laboratory Methods, Sample Requirements, and Reporting Limits**  
**Kaiser Yard UST, Berth 30**  
**Port of Oakland, Oakland, California**

Analyte	Matrix	Method	Container	Minimum Sample Volume	Preservation	Hold Time (days)	Reporting Limits <sup>1</sup>
<b>Additional Analyses for Waste Characterization Purposes Only</b>							
TPH as motor oil <sup>4</sup>	solids	EPA 8015B	glass jar	50 grams	chill to 4 ± 2°C	14	1 - 5 mg/kg
TPH as motor oil <sup>4</sup>	water	EPA 8015B	amber glass	500 mL	chill to 4 ± 2°C	14	50 - 300 ug/L
Metals <sup>2</sup>	solids	EPA 6010B	glass jar	2 grams	chill to 4 ± 2°C	180	0.25 - 1 mg/kg
Metals <sup>2</sup>	water	EPA 6010B	polyethylene bottle	100 mL	nitric acid; chill to 4 ± 2°C	28	3 to 20 ug/L

**Note:**

1 = reporting limits may vary depending on matrix interference and dilution

2 = TPH as diesel samples will be analyzed both with and without silica gel cleanup

3 = samples for organic matter content will be placed on hold and only analyzed if the associated TPHd result without silica gel cleanup exceeds the site screening criteria

4 = analyses completed only for the characterization of investigation derived waste

BTEX = benzene, toluene, ethylbenzene, and xylenes

°C = degrees Celsius

EPA = Environmental Protection Agency

mg/kg = milligrams per kilogram

mL = milliliter

MTBE = Methyl t-butyl ether

NA = not applicable

TPH = total petroleum hydrocarbons

ug/kg = micrograms per kilogram

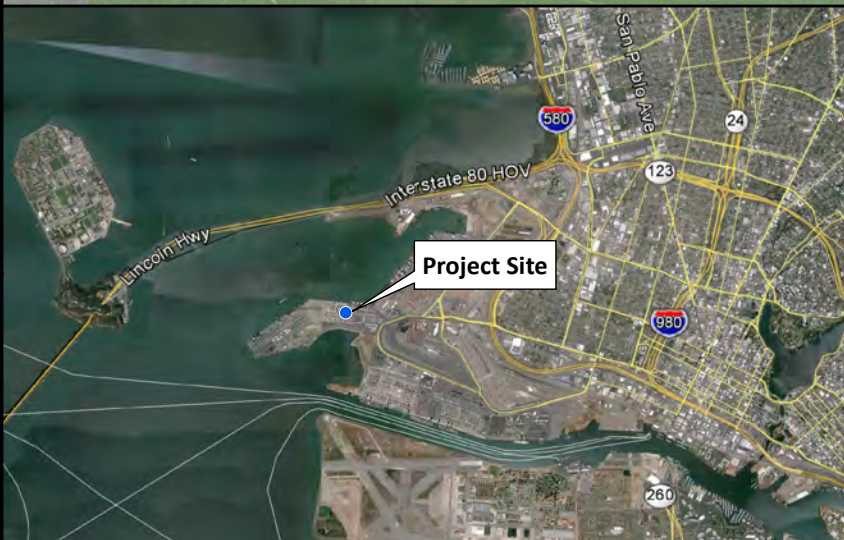
ug/L = micrograms per liter

## FIGURES

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Approximate Location  
of UST Excavation



0 500 1,000 1,500 2,000  
 Feet  
 1 inch = 1,000 feet



**SAFETY FIRST**



CLIENT: Port of Oakland

PROJECT: Berth 30

PROJECT NUMBER: 0059.00X.00X




**Site Location Map**

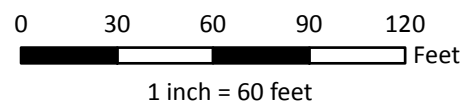
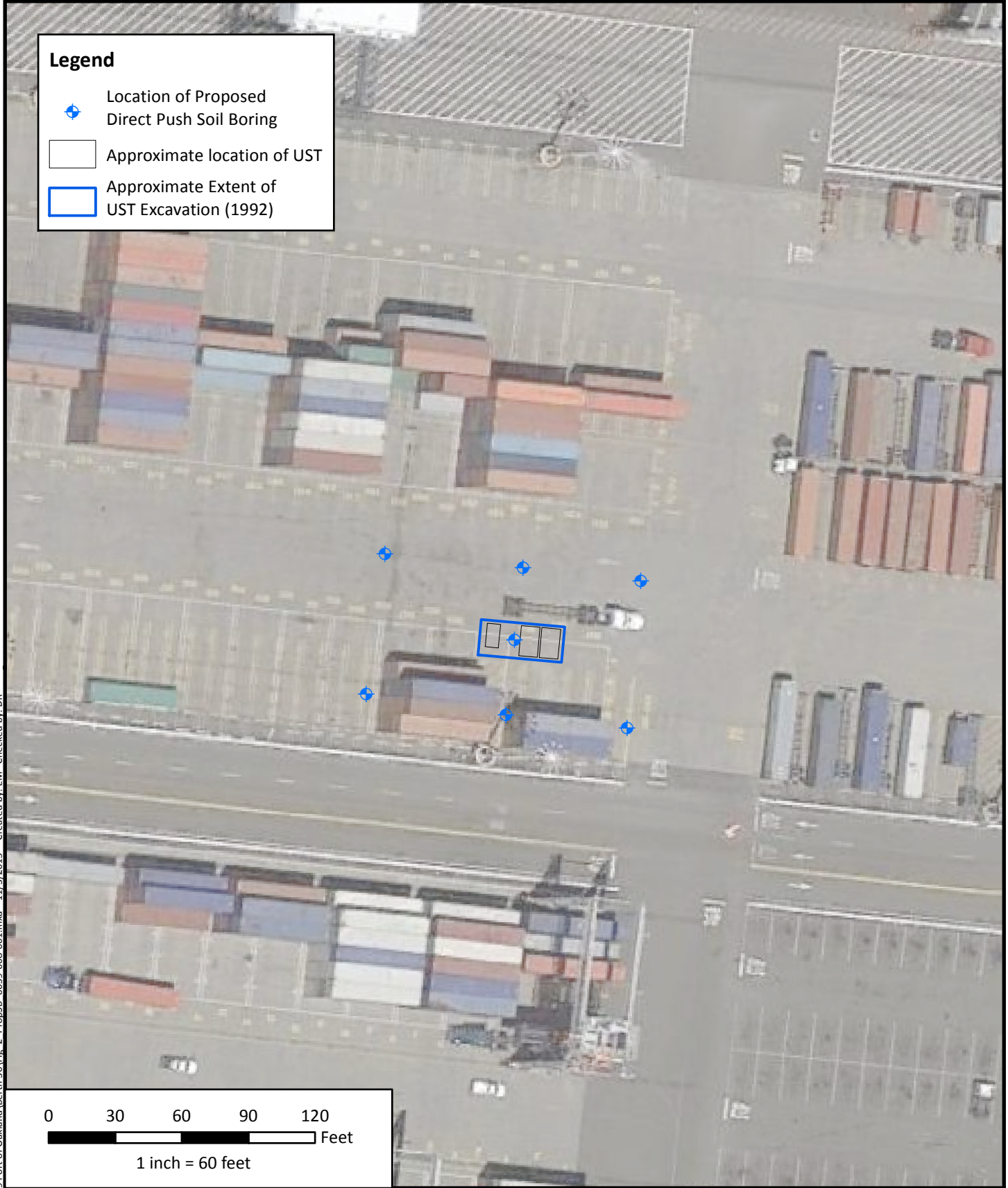
**FIGURE 1**





File: J:\GIS Backup\GIS Data\0059 Port of Oakland\Berth 30\Fig. 2 - PropSB 0059-008-001.mxd 11/3/2015 Created by: EM Checked by: DR

**Legend**

-  Location of Proposed Direct Push Soil Boring
-  Approximate location of UST
-  Approximate Extent of UST Excavation (1992)



 <b>SAFETY FIRST</b> 	CLIENT: Port of Oakland
	PROJECT: Berth 30
	PROJECT NUMBER: 0059.007.001

**Proposed Soil Boring Locations**

**FIGURE 2**



**APPENDIX A**  
ACEH TECHNICAL REPORT REQUEST AND RESPONSE TO INQUIRY  
ABOUT TEST METHOD D2974

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## John Prall

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**From:** Nowell, Keith, Env. Health <Keith.Nowell@acgov.org>  
**Sent:** Friday, March 20, 2015 7:56 AM  
**To:** John Prall  
**Cc:** Diane Heinze; Roe, Dilan, Env. Health  
**Subject:** Fuel leak case RO101, Port of Oakland / Kaiser & Powerine Oil / Berths 30, 2800-2801 7th Street

Dear Mr. Prall,

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the subject fuel leak case. The Berth 30 site includes the location of three former underground storage tanks (USTs) which were removed in April, 1992. The tanks consisted of one 3,000- and one 5,000-gallon USTs used for the storage of gasoline and one 5,000-gallon UST used for the storage of diesel fuel. The three tanks occupied a shared pit. Though no visible holes were apparent in the USTs, visible staining was reported in the soil beneath the two 5,000-gallon USTs and petroleum hydrocarbon odors emanated from the tank pit upon their removal. A quarter-inch-thick layer of free phase product was observed on the groundwater infiltrating into the tank pit.

Approximately 800 gallons of groundwater infiltrating into the pit was pumped out and disposed offsite. Following evacuation of the pit water, a grab-groundwater sample was recovered from tank pit recharge water and found to include 4,100 micrograms per liter ( $\mu\text{g/L}$ ) total petroleum hydrocarbons as gasoline (TPHg) and 3.4  $\mu\text{g/L}$  benzene. The presence of groundwater in the pit precluded the recovery of soil samples from beneath the base of the tanks.

On June 30, 1993 and again on June 10, 1996, ACEH requested monitoring wells be installed for this fuel release site. Recent conversations between ACEH and Port of Oakland staff members have indicated the wells have not been installed.

Therefore, at this juncture, ACEH requests preparation of a work plan for a soil and groundwater investigation of this area.

### **Technical Report Request**

Please upload technical reports to the ACEH ftp site (Attention: Keith Nowell), and to the SWRCB Geotracker website, in accordance with the following specified file naming convention and schedule:

- **May 4, 2015 – Work Plan for Soil and Groundwater Investigation** (file name: RO0000101\_WP\_R\_yyyy-mm-dd)

Thank you for your cooperation. ACEH looks forward to working with you and your consultants to advance the case toward closure. Should you have any questions regarding this correspondence or your case, please call me at (510) 567-6764 or send an electronic mail message at [keith.nowell@acgov.org](mailto:keith.nowell@acgov.org).

Regards,  
Keith Nowell

Keith Nowell PG, CHG  
Hazardous Materials Specialist  
Alameda County Environmental Health  
1131 Harbor Bay Parkway  
Alameda, CA 94502-6540

phone: 510 / 567 - 6764  
fax: 510 / 337 - 9335  
email: [keith.nowell@acgov.org](mailto:keith.nowell@acgov.org)

PDF copies of case files can be reviewed/downloaded at:

<http://www.acgov.org/aceh/lop/ust.htm>

## John Prall

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**From:** Nowell, Keith, Env. Health <Keith.Nowell@acgov.org>  
**Sent:** Friday, November 13, 2015 9:44 AM  
**To:** John Prall  
**Cc:** Roe, Dilan, Env. Health  
**Subject:** RO#101, Inquiry About Test Method D2974

John,

The standard test method for total extractable range petroleum hydrocarbon (TEPH- which includes diesel and motor oil range petroleum hydrocarbons) analysis is EPA Test Method 8015. The 8015 analysis reports both polar and non-polar compounds. Non-polar compounds include diesel and motor oil. Sources of polar compounds include naturally occurring organics, e.g. plant matter, and TEPH degradation by-products (referred to as metabolites). Silica gel cleanup (SGC- EPA Method 3630C) removes the polar compounds, hence the 8015 analysis with SGC may provide a more accurate determination of the actual concentration of TEPH.

The San Francisco Bay Region, Regional Water Quality Control Board (SFBR-RWQCB) guidance is to perform the 8015 analysis with and without SGC. SFBR-RWQCB rationale for performing the analysis with and without SGC is that it provides a line of evidence when evaluating the occurrence of bioattenuation. The toxicity of most polar metabolite compounds has not been established and many regulatory agencies request the 8015 analysis be evaluated against the non-SGC TEPH concentrations. This is agency specific, and ACEH follows the SFBR-RWQCB for consistency in our evaluation of a site. The Environmental Screening Levels (ESLs) prepared by the SFBR-RWQCB (Interim Final 2013) states the inclusion of polars provides some protection from their likely adverse effects by assuming that the toxicity of the metabolites present in a TPH sample is, on average, similar to that of the parent hydrocarbons.

As stated previously, sources of polar compounds include naturally occurring organics. Locales in Alameda County, such as bay margin environments, may contain significant quantities of naturally occurring organics and/or organic material present in fill. One method of evaluating the amount of organic material in a soil sample is by performing ASTM Test Method D2974, entitled Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils. Unless soil is heavily contaminated, quantities of organic matter found in soil typically vastly exceeds the concentrations of TEPH and polar metabolites. Better yet are soil samples from uncontaminated areas of the site (up gradient, or other). Thus the D2974 analysis may provide a line of evidence regarding the disposition of naturally occurring organics and polar metabolites.

By evaluating and comparing the results of ASTM D2974 and EPA 8015 with and without SGC, a determination might be made regarding the presence of TEPH and the state of degradation at the site.

Regards,  
Keith Nowell

Keith Nowell PG, CHG  
Hazardous Materials Specialist  
Alameda County Environmental Health  
1131 Harbor Bay Parkway  
Alameda, CA 94502-6540  
phone: 510 / 567 - 6764  
fax: 510 / 337 - 9335  
email: [keith.nowell@acgov.org](mailto:keith.nowell@acgov.org)

PDF copies of case files can be reviewed/downloaded at:

<http://www.acgov.org/aceh/lop/ust.htm>

On Nov 10, 2015, at 12:29 PM, John Prall <[jprall@portoakland.com](mailto:jprall@portoakland.com)<<mailto:jprall@portoakland.com>>> wrote:

Keith & Dilan-

The County comment letter of October 2, 2015 for Fuel Leak Case #RO0000101, Port of Oakland/Kaiser & Powerine Oil/Berth 30, 2800-2801 7th Street, Oakland, Ca requested test method D2974 to be used in conjunction with and without silica gel cleanup for TPH-diesel testing, see Comment #8, top of page 4. Test method D2974 is apparently used to determine carbon content of organic soils for classification purposes. Reading about the method also indicates the test requires heating to 440 degrees Centigrade overnight (which drives off the volatiles), if this description of the test method is correct what kind of correlation is expected when the results of D2974 method are compared to the with and without silica gel cleanup test results? How are the results interpreted? Where can one read how the two test methods have been used in conjunction at other UST sites?

John Prall, PG  
Port Associate Environmental Scientist  
Environmental Programs & Planning Division

Port of Oakland  
530 Water Street  
Oakland, CA 94607

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[jprall@portoakland.com](mailto:jprall@portoakland.com)<<mailto:jprall@portoakland.com>>  
(510) 627-1373

## **APPENDIX B**

### **GUIDELINES FOR WORKING IN ACTIVE MARINE TERMINALS**

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# **PORT OF OAKLAND CONTRACTOR SAFETY**

## **WORKING IN ACTIVE MARINE TERMINALS**

The Port Wharfinger Department coordinates Port-sponsored access to the marine terminals. Before entering terminals, contact the appropriate Wharfinger. Any deviation from established procedures or work schedules should be cleared at least 24 hours in advance (or as soon as feasible).

The primary issues when working in marine terminals are:

- The safety of contractor, terminal, trucking, terminal employees, and Port employees.
- Minimizing interference with terminal and vessel operations.
- Security: Vehicle inspection & personnel identification (valid California Driver's license or equal).

### **VEHICLES**

Vehicles brought into the terminal must be equipped with identifying signs on each side. Vehicles not so equipped will not be admitted.

Limit on-terminal vehicles to those necessary to perform the work. Park others outside.

Minimize the need to drive around the terminal. Stage operations and remain there. Enter and exit the terminal only via company vehicle.

Obey terminal driving rules, including speed limits. Terminal equipment has the right-of-way.

### **SITE OF OPERATIONS**

The area of operations shall encumber no more space than is required to perform the work safely.

Delineate the area of operation using traffic cones, K-rail, caution tape, or other high-visibility method. Park vehicles to form a protective barrier.

Workers must wear hard hats, hard-toed shoes, and high visibility clothing (with reflective elements at night).

Individuals must remain in the area of operations.

Use a "spotter" where workers are exposed to traffic.