PORT OF OAKLAND

ENVIRONMENTAL PROTECTION
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#6409

March 27, 2000

Mr. Barney Chan
Alameda County Health Care Services Agency
Environmental Protection Division
1131 Harbor Bay Parkway, #250
Alameda, CA 94502-6577

SUBJECT: Work Plan, Groundwater Monitoring, Former USTs: MF08/09/10
South Field, Oakland International Airport, Oakland, CA 94621

Dear Mr. Chan:

Enclosed is a copy of the MSE Group's, "*Work Plan, Groundwater Monitoring, South Airport Self-Fueling Facility, Taxiway U*", dated March 16, 2000.

The field work is tentatively scheduled for April 17, 2000. Should you have any questions or need additional information, please contact me at 627-1118. Thank you for your on-going assistance and support on this project.

Sincerely,

Dale H. Klettke

Dale H. Klettke, CHMM
Associate Environmental Scientist
Environmental Health & Safety Compliance

enclosure

c: (w/o encl.): Jeff Jones - EH & SC Files
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MSE
GROUP

Engineers
Scientists
Constructors
Construction Management
License No 724938

March 16, 2000

Mr. Dale Klettke, CHMM
Associate Environmental Scientist
EH&S Compliance
530 Water Street
Oakland, California 94607

Subject: Work Plan, Groundwater Monitoring
South Airport Self-Fueling Facility, Taxiway U
Oakland International Airport, Oakland, California

Dear Mr. Klettke:

MSE Group, formerly MicroSearch Environmental, has prepared the enclosed Work Plan for groundwater monitoring at Taxiway U of the South Airport Self-Fueling Facility at the Oakland International Airport in Oakland, California.

This Work Plan describes the services to be undertaken to perform the well installation, soil sampling, and quarterly monitoring at the subject site property. The Work Plan presents procedures for well installation and for the collection, preservation, and transportation of soil and groundwater samples, as well as the analytical procedures and quality control procedures to be employed.

The Work Plan has been developed prior the commencement of field activities to ensure that the project objectives are met. The objectives of the proposed site activities described in the Work Plan are to characterize the variations in the groundwater levels and the concentrations of petroleum hydrocarbons beneath the site in the vicinity of former underground storage tanks MF-08, MF-09, and MF-10

Should you have any questions or comments, please call me at 510/383-9600.

Sincerely,

Dan Etheredge
Program Manager

1550 Bryant Street • Suite 535
San Francisco, CA 94103
415.431.1811 Fax
415.431.1820

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Port of Oakland

Oakland, California

Work Plan – Groundwater Monitoring, Oakland International Airport, Oakland, California

March 2000

Document Number 037W00.0001

Prepared by:

Dan Etheredge
Program Manager

Reviewed by:

Stephen Osborne
Principal Engineer

1.0 INTRODUCTION

MSE Group (MSE) has prepared this project-specific Work Plan for Harding Lawson Associates (HLA) for activities associated with groundwater monitoring at Taxiway U of the South Airport Self-Fueling Facility at the Oakland International Airport in Oakland, California (Plate 1; Site Location).

The objectives of the proposed site activities described in the Work Plan are to characterize the variations in the groundwater levels and the concentrations of petroleum hydrocarbons beneath the site in the vicinity of former underground storage tanks MF-08, MF-09, and MF-10.

2.0 PROJECT DESCRIPTION

2.1 Background

1000 gal sump tank sampled ?

On April 26, 1999, the Port of Oakland's contractor, Enviroclean, removed three underground storage tanks (USTs), MF-08, MF-09, and MF-10 from an area adjacent to Taxiway U, see Plate 2. MF-08 and MF-09 were 1,000-gallon capacity diesel tanks, and MF-10 was a 5,000-gallon capacity. Removal of the three USTs involved two separate excavations, one for the diesel tanks and one for the gasoline tank. Soil and groundwater samples collected from the excavations indicated that there had been a release of petroleum hydrocarbons at both sites. Total petroleum hydrocarbons as diesel (TPH-diesel), total petroleum hydrocarbons as gasoline (TPH-gas), benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tertiary butyl-ether (MTBE) were detected in both soil and groundwater samples collected from the excavations.

On August 31, 1999, HLA performed a subsurface investigation at the site. Eight geoprobe borings were advanced in locations surrounding the former USTs. Soil and groundwater samples were collected from the borings. TPH-diesel was detected in soil at concentrations of 8.7 µg/kg to 680 µg/kg. The soil sample with the highest diesel concentration was also analyzed for polynuclear aromatic hydrocarbons (PAHs). Naphthalene was detected at 8,800 µg/kg and benzo(a)pyrene was detected at 620 µg/kg, as well as minimal concentrations of several other PAHs.

TPH-diesel was detected in the groundwater at concentrations ranging from 72 µg/L to 380 µg/L. TPH-gas was detected in the groundwater at concentrations ranging from 33 µg/L to 300 µg/L. MTBE was encountered at concentrations ranging from 3.5 µg/L to 4,500 µg/L. Benzene was detected above the MCL for drinking water at a concentration of 63 µg/L. PAHs were analyzed in the groundwater sample with the highest diesel concentration and no PAHs were detected at or above their reporting limits.

The groundwater samples were subjected to a variety of chemical analyses to evaluate the potential for natural attenuation. HLA also measured certain groundwater parameters in the field to supplement the chemical data. The recorded groundwater temperature and pH measurements are all within ranges acceptable to support the presence of microorganisms. Organic carbon in the groundwater is also an indication of an environment that will support microorganisms. The presence of ferrous iron in the groundwater is evidence of natural bio-degradation of the petroleum hydrocarbons. The absence of phosphorous in the groundwater indicates microbial growth because phosphorous is utilized by the microbes to break down the petroleum hydrocarbons.

2.2 Physical Setting

Soil in the eight borings installed by HLA after UST removal activities consisted of approximately 1 to 1.5 feet of asphalt, base rock or fill with organic material, underlain by poorly graded sand. During HLA's investigation, groundwater in the borings appeared to stabilize at approximately 5.5 to 6.5 feet below ground surface.

3.0 HEALTH AND SAFETY

MSE has attached a site-specific Health and Safety Plan (HASP) for the proposed on-site activities at the former self-fueling facility adjacent to Taxiway U. The HASP was prepared to provide an assessment of known hazards and evaluations of the risks associated with the assessment. Available site information was examined to select and implement adequate warnings and safeguards for field personnel and other on-site visitors. The HASP also discusses procedures to reduce the potential for off-site migration of possible contamination during investigation activities.

4.0 MONITORING WELL INSTALLATION AND DEVELOPMENT

Four groundwater monitoring wells, to be designated as MW-1 through MW-4, will be placed in the locations as depicted on the attached Plate 2.

Prior to initiating drilling activities, MSE will notify Underground Service Alert and contract a private underground utility locating firm to identify buried utilities in the vicinity of the work area.

Drilling of the boreholes for the monitoring wells will be performed using an 8-inch outside diameter hollow-stem auger. The borings will be continuously cored and contained within a plastic liner. Our field geologist will screen the soil core with a portable photoionization detector (PID). Soil samples will be collected continuously during advancement of the augers. The field geologist will carefully log the soils and note discoloration, odor, and record the PID readings. The field geologist will then select the soil sample with the most obvious signs of impact of petroleum hydrocarbons contamination and seal it with plastic caps and waxed tape, and store the sample in a cooled ice chest until delivery to a state-certified laboratory designated by the Port of Oakland.

A lithologic log will be prepared for each of the boreholes. The lithologic log will include detailed geologic information, Unified Soil Classification System labeling, apparent moisture, PID readings, initial and static water levels, and any pertinent field observations.

The wells will be constructed of 2-inch diameter Schedule 40 PVC (polyvinyl chloride). Assuming a depth to groundwater to be approximately 5 feet, the screened interval will consist of 0.020-inch slotted casing which will be located between the approximate depths of 3 and 10 feet. Approximately 3 feet of flush-threaded, 2-inch-diameter PVC solid casing will be installed from the top of the slotted casing to existing grade. The actual length and depth of the well screen installed will be adjusted in the field, based upon the depth to ground water and the types, depths, and thicknesses of the sediments encountered.

The hollow stem augers will be slowly removed from the borehole as the annulus materials (sand and bentonite) are added. The slotted interval will be sand packed using Lonestar No. 3 sand to a minimum of 1 foot above the uppermost slot. A 1 foot bentonite spacer will be placed on top of the sand pack. The bentonite spacer will be hydrated to separate the sandpack from the well seal grout.

A neat cement grout annular seal will be placed from the top of the bentonite spacer to the ground surface. The annular seal will be a neat cement grout composed of one sack of Portland Type I/II Cement (94 lbs.) to five gallons of clean water. The grout well seal will be placed in one continuous pour until the specified interval is filled.

The top of the well casing will be fitted with an expandable locking well plug, and the top of the wells will be covered with a watertight, traffic rated, vault. The cover of each monitoring well will be clearly marked to denote a groundwater monitoring well.

The total boring depth, as well as the depths of the sand pack and bentonite seal, will be sounded with a weighted tape during installation of the well. Soil and drilling mud generated during field activities will be placed in 55-gallon drums and located in a nearby area designated by the Port of Oakland, pending appropriate disposal by the Port of Oakland.

Upon completion of well construction activities, the top of casing elevations for the monitoring wells will be surveyed vertically to the nearest 0.01 foot, relative to a mean sea level permanent benchmark located in the vicinity of the site. The wells will also be surveyed horizontally. Groundwater flow direction and gradient will then be calculated.

The newly installed monitoring wells will be developed a minimum of 72 hours following well installation. Each monitoring well will be developed to remove fine particles from the well near the well screen. This will be accomplished by surging and overpumping the water from each monitoring well using a centrifugal pump and surge block. The surge block is used in order to move the water back and forth across the well screen, which aids in producing a well that will improve hydraulic communication with the surrounding formation and yield water representative of the groundwater in the vicinity of the well.

Observations regarding odor and possible floating product will be noted. Once the water discharged from the well is relatively clear, the well will be considered developed. Purge water will be stored onsite, pending appropriate disposal by the Port of Oakland.

5.0 SAMPLING AND ANALYTICAL PROCEDURES

5.1 Soil

The soil samples will be analyzed for TPH-diesel, with silica gel cleanup; TPH-gas; BTEX; MTBE; and total lead. The laboratory program is summarized in the attached Table 1.

5.2 Groundwater

Groundwater sampling activities in the wells will be performed a minimum of 72 hours following development of the wells. Prior to sample collection, depth-to-ground water will be measured using an electric water level meter. Floating petroleum hydrocarbons (product) on the ground water, if present, will be measured with an electronic product/water interface probe or product finding paste on a steel tape. Additionally, the product, if present, will be observed and measured using a clear acrylic product bailer. Groundwater sampling will involve removing 4 to 10 well casing volumes of water from the well prior to sampling. Parameters such as water clarity, pH, temperature, electrical conductivity, dissolved oxygen, oxidation-reduction potential, and volume extracted will be measured during purging. In cases of slowly-recovering wells, the well will be pumped or bailed dry and then allowed to recover to approximately 80 percent of its static water level before being pumped dry again, or after approximately two hours. Rapidly-recovering wells will be pumped or bailed near-continuously until all stagnant water has been removed. All water purged during sampling activities will be contained on-site in 55-gallon drums, and stored in a nearby location designated by the Port of Oakland.

Ground-water samples will be collected from each well using a disposable bailer. The samples will be transferred into laboratory prepared containers. The samples will be stored in a chilled cooler, containing ice, for delivery to Sequoia Analytical. Strict chain-of-custody protocols will be followed in all phases of sample handling.

(8260)

The groundwater samples will be analyzed for TPH-diesel, TPH-gas, BTEX, MTBE, ferrous iron, total iron, nitrate, sulfate, orthophosphates, and total organic carbon. The laboratory program is summarized in the attached Table 1.

The wells will be sampled and analyzed, for the constituents above, on a quarterly basis.

6.0 REPORTING

A written report will be prepared following completion of the well installation and sampling activities. The report will describe the field activities, laboratory analytical results, our conclusions regarding the impact at the site by underground storage tank releases, and our recommendations for further action, if any. Laboratory documentation, lithologic logs, and well construction details will also be included.

Reports summarizing the quarterly monitoring events and results will also be prepared.

7.0 ORC INJECTION

After well installation and sampling, MSE may recommend injecting an oxygen releasing compound (ORC) slurry into the soil near the groundwater surface elevation at both former UST sites. Prior to the injection, MSE will obtain permits, as necessary, and retain a licensed driller, to advance a 1.5-inch hydraulic probes into the subsurface to an approximate depth of four feet. It is anticipated that the ORC will be injected in batches of 50 pounds, at ten locations per UST site, for a total of 1,000 pounds of ORC.

After ORC injection, the wells will be sampled monthly, for six months, to evaluate dissolved oxygen concentrations in the underlying aquifer. Quarterly sampling and analysis will also be performed as described in the previous sections.

TABLE 1
Laboratory Program

Sample Matrix	Analytical Parameters	Number of Samples
Soil	TPH-diesel	4
	TPH-gas	4
	BTEX	4
	MTBE	4
	Lead	4
Groundwater	BTEX	4
	MTBE	4
	TPH-gas	4
	TPH-diesel	4
	ferrous iron	4
	total iron	4
	nitrate	4
	sulfate	4
	Orthophosphates	4
	total organic carbon	4

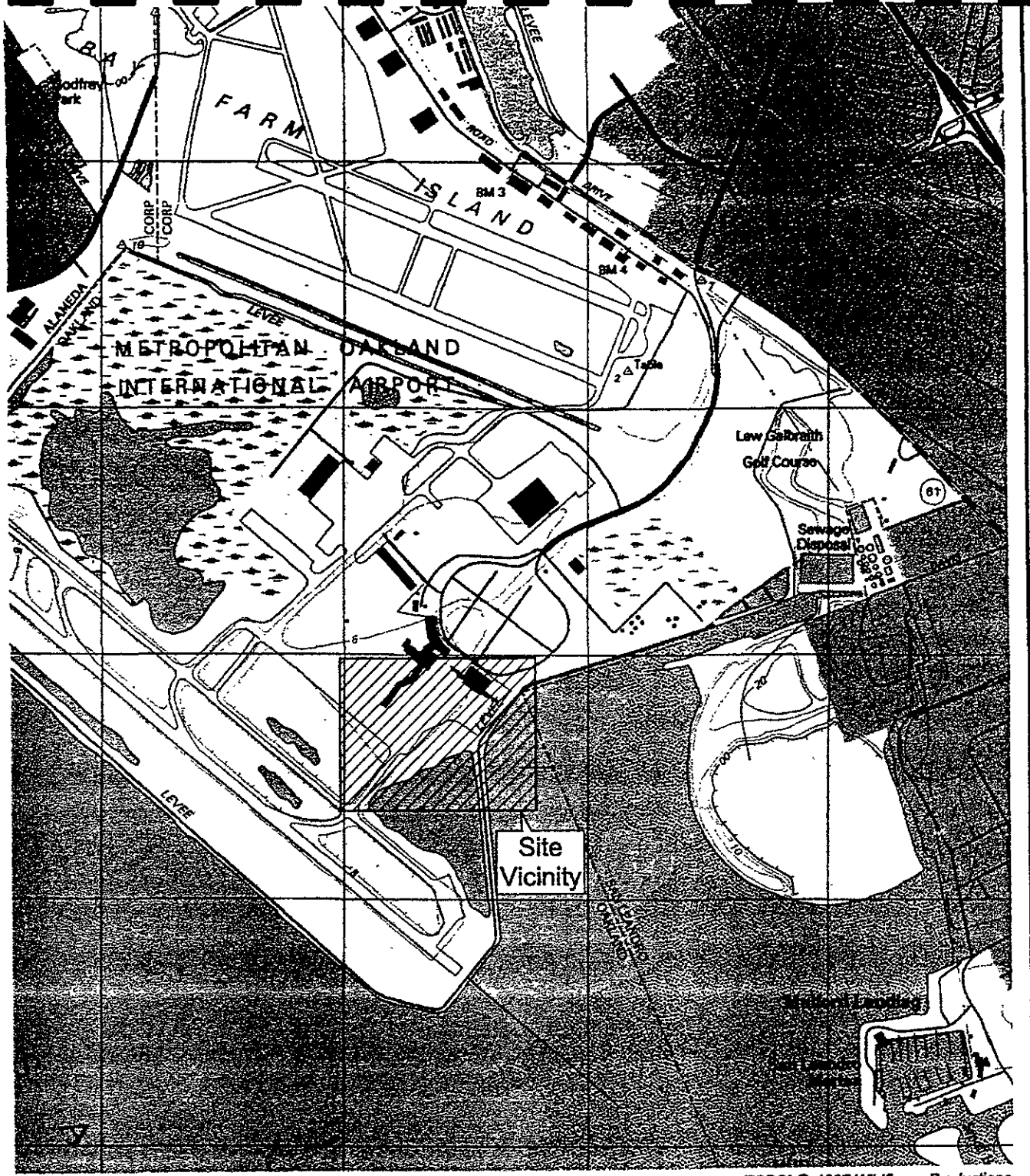

FARM
ISLAND
LEVEE
ROAD
DRIVE
BM 3
BM 4
CORP
CORP
ALAMEDA
OAKLAND
METROPOLITAN OAKLAND
INTERNATIONAL AIRPORT
Law Galbraith
Golf Course
Sewage
Disposal
Site
Vicinity
Maritime Landing
Source: TOPO! © 1997 Wildflower Productions.

Plate
1

Explanation

- Proposed Well Locations
- ORC Injection Points

Former 6"Ø Product Line

Former 5,000-Gallon UST

MW-1

Former 4"Ø Drain Line

Former 25gpm Pump

Former 1,000-Gallon Sump Tank

Former Hydril Surge Absorber

Former Separator Box

Edge of Apron

Edge of Pavement

Former 1,000-Gallon USTs

MW-2

Edge of Pavement

Former 4"Ø Drain Line From Separator Box to Culvert

MW-3

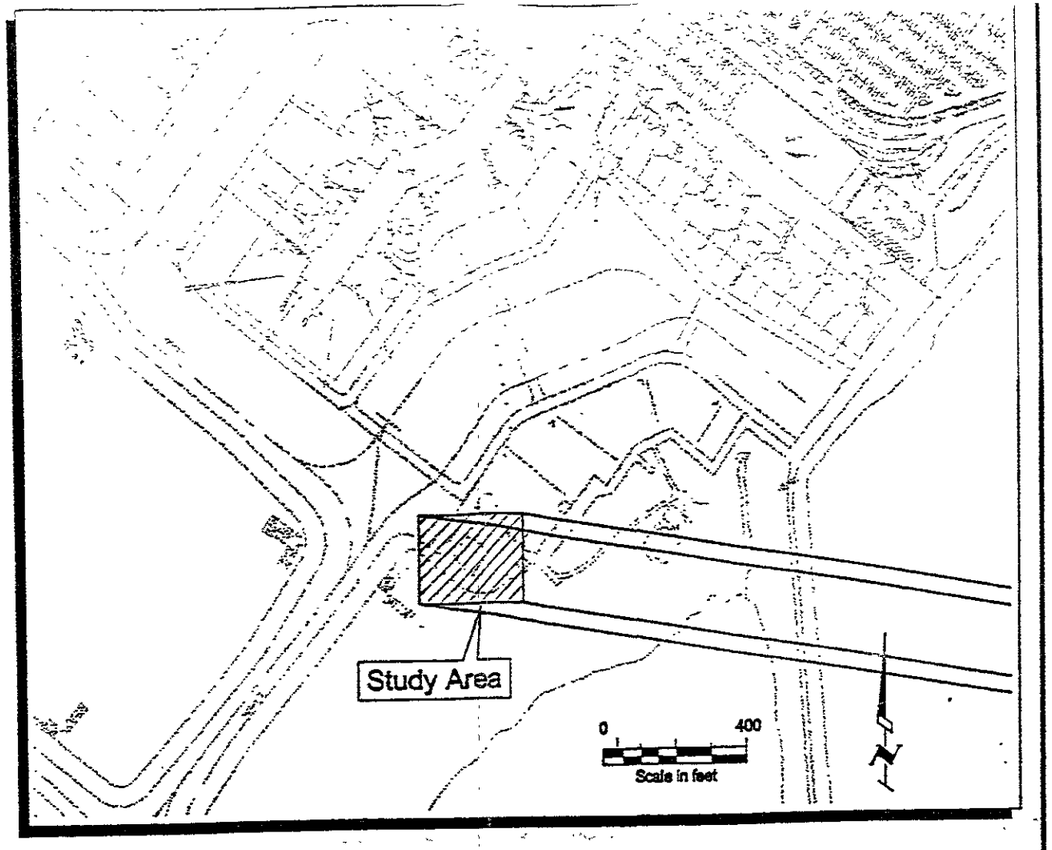
MW-4

N

0 20

Scale in feet

file-det.dwg



Harding Lawson Associates
Engineering and Environmental Services

Site Plan
Work Plan, Taxiway U
Oakland International Airport
Oakland, California

PLATE **2**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AJW	47858-1	JGM	08/09/99	---

HEALTH AND SAFETY PLAN
MONITORING WELL INSTALLATION AND SAMPLING

OAKLAND INTERNATIONAL AIRPORT
SELF-FUELING FACILITY, TAXIWAY U

Health and Safety Plan
Monitoring Well Installation and Sampling
Oakland International Airport
Self-Fueling Facility, Taxiway U

1.0 INTRODUCTION

This site-specific Health and Safety Plan (HASP) has been developed by MSE to establish the health and safety procedures required to minimize any potential risk to personnel who will perform well installation and sampling activities at the subject site, Self-Fueling Facility, Taxiway U, Oakland International Airport, Oakland, California.

The provisions of this plan apply to all MSE/HLA and their subcontractor personnel who will potentially be exposed to safety and/or health hazards during the performance of site activities.

This HASP has been written to comply with the requirements of the Occupational Safety and Health Administration (OSHA) Health and Safety Standards, and MSE's Health and Safety Policy. All activities covered by this HASP must be conducted in complete compliance with this HASP and with all applicable federal, state and local health and safety regulations. Specific reference is given to the OSHA Construction Industry Standards. Personnel covered by this HASP who cannot or will not comply with these requirements will be excluded from site activities by the on-site Project Manager.

2.0 SITE DESCRIPTION AND SCOPE OF WORK

2.1 Site Description

On April 26, 1999, the Port of Oakland's contractor, Enviroclean, removed three underground storage tanks (USTs), MF-08, MF-09, and MF-10 from an area adjacent to Taxiway U, see Plate 2. MF-08 and MF-09 were 1,000-gallon capacity diesel tanks, and MF-10 was a 5,000-gallon capacity. Removal of the three USTs involved two separate excavations, one for the diesel tanks and one for the gasoline tank. Soil and groundwater samples collected from the excavations indicated that there had been a release of petroleum hydrocarbons at both sites. Total petroleum hydrocarbons as diesel (TPH-diesel), total petroleum hydrocarbons as gasoline (TPH-gas), benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tertiary butyl-ether (MTBE) were detected in both soil and groundwater samples collected from the excavations.

On August 31, 1999, HLA performed a subsurface investigation at the site. Eight geoprobe borings were advanced in locations surrounding the former USTs. Soil and groundwater samples were collected from the borings. TPH-diesel was detected in soil at concentrations of 8.7 µg/kg to 680 µg/kg. The soil sample with the highest diesel concentration was also analyzed for polynuclear aromatic hydrocarbons (PAHs). Naphthalene was detected at 8,800 µg/kg and benzo(a)pyrene was detected at 620 µg/kg, as well as minimal concentrations of several other PAHs.

TPH-diesel was detected in the groundwater at concentrations ranging from 72 µg/L to 380 µg/L. TPH-gas was detected in the groundwater at concentrations ranging from 33 µg/L to 300 µg/L. MTBE was encountered at concentrations ranging from 3.5 µg/L to 4,500 µg/L. Benzene was detected above the MCL for drinking water at a concentration of 63 µg/L. PAHs were analyzed in the groundwater sample with the highest diesel concentration and no PAHs were detected at or above their reporting limits.

2.2 Scope of Work

The purpose of the planned work is to provide the Port of Oakland with information to assist in assessing the environmental condition of the property.

A total of four wells will be installed. Soil and groundwater samples will be collected and analyzed. Drilling of the boreholes for the monitoring wells will be performed using an 8-inch outside diameter hollow-stem auger. The wells will be constructed of 2-inch diameter Schedule 40 PVC. After well installation and development, the wells will be sampled.

2.3 Schedule and Limitations

MSE will perform this work near the end of March, 00. The scope of work covered by this HASP includes the potential physical and chemical hazards of the activities described above.

3.0 HAZARD ASSESSMENT

The potential chemical and physical hazards that apply to this project are detailed in the following text:

3.1 Chemical Hazards

The material of concern during this investigation is petroleum hydrocarbons. Petroleum hydrocarbons may or may not be present, but is not expected in the air in high concentrations during the scheduled field activities. There is no specific, established exposure limit (Threshold Limit Value-TLV, or Permissible Exposure Limit-PEL), for petroleum hydrocarbons, however some of its constituents do have TLV's or PEL's. Specific effects of overexposure are listed below.

3.1.1 Total Petroleum Hydrocarbons (TPH)

Petroleum hydrocarbons may include a wide range of substances, some of very low toxicity and some very toxic. The volatile substances are generally of greater concern, as they are more likely to exist in the worker's breathing zone. In outside conditions such as this, however, short of extremely high concentrations in the waste materials, soil, or water, and warm environmental temperatures, exposures approaching the Permissible Exposure Limits (PELs) are unlikely.

Benzene, toluene, ethyl-benzene, and xylene (BTEX), may be constituents of TPH; in moderate exposures, BTEX all produce similar acute physiological effects, including headache, irritation, narcosis and anesthesia. Benzene, however, is associated with leukemia and aplastic anemia in chronic exposures, and is therefore the primary substance of concern.

Exposure to some of the less volatile organic substances may occur through airborn dust generated during drilling activities. Precautions should be taken to prevent dust exposure for this reason.

The OSHA PEL for benzene is 1 ppm, with a STEL of 5 ppm. Its olfactory detection level is 5 ppm. Benzene is very flammable, with flash points of 12 ° F. Ethyl benzene is also extremely flammable. Its permissible exposure limit is 100 ppm (TWA) and 125 as a STEL.

The current OSHA PEL for toluene is 100 ppm as an eight-hour average, and 150 as a STEL. The odor of toluene is a strong, aromatic one, not as sweet as toluene or benzene. The OSHA PEL for xylene is 100 ppm, with a STEL of 150 ppm. The IDLH is 1000 ppm. Xylene has a flash point of 81° F.

3.2 Physical Hazards

The physical hazards on the site include drilling, sample collection, tripping, falling, airplane and support vehicle traffic, and possible heat stress.

3.2.1 Tripping and Falling

MSE will be cautions regarding any potential hazards in walkway or on the surface of the work area, which may cause tripping of falling.

Whenever possible, trip and fall hazards will be eliminated or identified for avoidance. Specific tripping and falling hazards for the site include tools and sampling equipment and wet surfaces.

3.2.2 Vehicular Traffic

Routine vehicular traffic in the vicinity may not be controlled, and drivers may be unaware of this work. To protect themselves, MSE and subcontractors will wear easily visible clothing, and remain aware of traffic in the area. They should:

- Watch for vehicles that may approach too close to the work area and guide them around the area. Put barricade tape around the work area and any obstructions (e.g., sampling apparatus).
- Keep work vehicles and sampling apparatus visible and identified.

3.2.3 Drill Rig Hazards

Drilling precautions are addressed below, in Section 6.

3.2.4 Noise

Noise from the drill rig, airplanes, and other equipment may be hazardous. If noise levels make speech difficult at 5 feet, hearing protection should be worn.

4.0 AIR MONITORING

4.1 Gases and Vapors

Total petroleum hydrocarbons (TPH) vapors could potentially be detected in the work area. It is not expected that significant vapor exposures will exist on this site. Nevertheless, periodic monitoring of the breathing zone will be done with a photoionization detector (PID). In the event of a sustained PID reading of 1 unit, MSE will assure that benzene is not present above 1 part per million (ppm). If benzene is detected at 1 ppm, or if sustained, general PID readings of 20 or more occur, respirators will be donned, per Section 5 below.

4.2 Dust

Dust exposure will be avoided through use of water, when possible, standing clear of plumes, and the use of respirators, if necessary. However, toxic dust exposures are not expected on this site.

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

5.1 Respiratory Protection

Specification	No respiratory protection.
First Upgrade[1]	Half Mask, Air Purifying Respirator (APR), with high efficiency particulate/organic vapor cartridges)
Second Upgrade(Not anticipated[2])	

1. If soil disturbance or sampling activities create irritating dust or vapors above their exposure limits, workers will wear respiratory protection, as specified above. If TPH is detected at 25 ppm or if general PID readings reach 25 units for 15 minutes or more, respirators will be worn. During periods of respirator use, cartridges are to be changed each day of use, or when dust loading makes breathing difficult, whichever occurs first.

2. In the event that PID readings in the breathing zone exceeded 100 units for a sustained period, or sustained benzene concentrations in air reached 10 ppm, Full-face respirators would be necessary. This is not expected on this site.

5.2 Protective Clothing and Equipment

Specification:

1. Cotton Coveralls or street clothing
2. Inner Latex and Outer Nitrile Gloves (when skin contact is possible)
3. Steel Toed Boots
4. Safety Glasses with Side Shields, meeting ANSI Z87.
5. Goggles or Faceshield (for splashing hazards or high dust)
6. Hearing Protection
7. Hard Hat
8. Eye Wash for Splashing Hazards

During all activities, PPE items 1, 3, 4, and 7 must be worn in the work area at all times. Activities which may result in direct skin, or clothing contact with materials of concern require the use of items 2, and item 5 if a splash hazard is likely or if dust poses an eye hazard. Tyvek® should be worn if excessive dust is encountered. Polyethylene Tyvek® coveralls should be worn over regular coveralls if contaminated liquid contact is likely. Hearing protection must be worn if nearby operations produce excessive noise.

6.0 PROTECTIVE MEASURES

6.1 General Safety Measures

The following measures are designed to augment the specific health and safety guidelines provided in this plan.

- The "buddy system" will be used at all times by all field personnel. No one is to perform on-site activities alone, unless communication devices are used to remain in touch with off-site personnel.
- Avoid direct contact with contaminated soil.
- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer of materials is prohibited in the work area.
- Hands and face must be thoroughly washed upon leaving the work area before eating, drinking or any other activities.
- Beards or other facial hair that interfere with respirator fit are prohibited when respirators must be worn.
- The use of alcohol or drugs is prohibited during the conduct of field operations.
- Safety equipment is required for all field personnel.

6.2 Decontamination

All personnel coming in contact with contaminated soil will decontaminate their equipment and themselves prior to leaving the area. Soap and water will be used for this purpose.

Contaminated PPE (Tyvek®, gloves, etc.) will be placed in plastic bags and sealed. These may be disposed of as ordinary waste.

6.3 Drilling Precautions

- Underground pipes and cables must be located before drilling takes place. The appropriate utility locator or local utility companies should be notified prior to any drilling activity. The owner of the site should be contacted for a consultation as to the location of any buried pipes, tanks, and cables.
- Rotating equipment or energized parts in which workers could be entangled or injured shall be covered or guarded to the extent feasible. Barriers, work procedures, or other protective means shall be used where guards are not feasible.

- Machinery with exposed moving parts must be equipped with an operational emergency stop device. Drillers and geologists must be aware of the location of this device. This device must be tested prior to job initiation and periodically thereafter. The driller and helper shall not simultaneously handle moving equipment unless there is a standby person to activate the emergency stop.

- Drillers, helpers, and geologists must secure all loose clothing when in the vicinity of drilling operations.

- Employees should not remain near drill rigs longer than necessary. Only staff necessary to run the rig shall remain in its proximity, except during essential sampling and other activities.

- When cutting samples from their plastic sleeves, it is essential that the sleeve be secured, preferably in a jig.

- Exposure to generated dusts during any activity should be avoided and/or minimized. Water should be used for this purpose to the extent feasible.

- Workers will wear chemically resistant boots, safety glasses, and hard hats in areas where there is a risk of falling objects (heavier than 1 pound).

- Hearing protection shall be worn when noise levels are above 85 decibels (speech becomes difficult at 5 feet).

- Operation of rigs will cease in the event of lightning or a storm.

- Only equipment that has been approved by the manufacturer may be used in conjunction with site equipment and specifically to attach sections of drilling tools together.

- Minimum clearance between overhead power lines and any part of a drill rig must be 10 feet. All personnel involved in drilling activities must be informed of the presence of any overhead cables or electrical lines near the work area. Appropriate steps must be taken to avoid potential contact with energized lines.

- Drilling operations should be performed with a clearance of 50 feet from flammable liquid drums or storage.

7.0 TRAINING/MEDICAL SURVEILLANCE

7.1 Training

All personnel who will perform or be exposed to activities associated with soil sampling on this site must have completed the training and medical surveillance requirements specified in the OSHA Hazardous Waste Operations and Emergency Response Standard [29 CFR 1910.120(e) and (f)].

Therefore, such personnel must have completed the 40 hours of initial training or the 8 hours of refresher training within the last year. After arriving at the site, all personnel will receive orientation relative to the specifics of the site. This will be conducted by the MSE site manager.

Managers or supervisors of personnel performing such activities must have completed the specified 8 hours of management training in addition to the initial/refresher training.

7.2 Medical Surveillance

Such personnel must also have completed an annual and/or baseline occupational medical surveillance examination within the last year, and been cleared to work on 1910.120 sites. Employees potentially wearing respirators must have passed a fit-test for the specific respirators utilized, and must have medical approval to wear a respirator.

Documentation of the above, in the form of a copy of each employee's training certificate(s) and summary letter from the occupational medical surveillance examination, must be provided to MSE prior to performing activities at the site.

8.0 EMERGENCY RESPONSE

All personnel entering the work area will receive orientation training from the site manager. This training will include the safety rules, the emergency alarm/evacuation system, and a site orientation. The Port of Oakland will provide an escort, if necessary.

The phone numbers of the police and fire departments, ambulance service, local hospital, and MSE representatives are included in the **emergency reference sheet on the following page**. Directions to the nearest hospital, which will provide care for injured personnel is also provided on this sheet.

Prior to initiating work at the site, the Site Manager will activate emergency response provisions. In the event of an injury or illness requiring more than first aid treatment, the injured person will be accompanied to the medical facility by other site personnel, who will remain with the person until release or admittance is determined. The escort will relay all appropriate medical information to the MSE Project Manager listed on the following page.

Any accident/incident resulting in an OSHA recordable injury or illness, treatment at a hospital or physician's office, property damage or a near miss accident requires that an accident/incident report be completed and submitted to MSE in accordance with MSE's Health and Safety Policy No. The investigation will be initiated as soon as emergency conditions are under control. The purpose of this investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided.

EMERGENCY REFERENCES

AMBULANCE / POLICE / FIRE:	911
Hospital:	Sutter Occupational Health 675 Hegenberger Rd, Suite 121 Oakland, CA 94621 510/633-7654
Directions:	Exit airport on Airport Drive, turn right on Hegenberger, cross freeway, left at 675 Hegenberger, enter at rear of building.
NATIONAL RESPONSE CENTER:	800/424-8802
MSE	510/383-9600
Port of Oakland:	

HEALTH AND SAFETY PLAN SIGNOFF
and
PRE-JOB SAFETY MEETING ATTENDANCE

Port of Oakland
Oakland International Airport

Date: _____

The Pre-job Safety meeting has been attended by those listed below. By signing below all site workers agree that they have read and understand this HASP, AND that they will abide by its provisions:

Name	Signature

Notes:

Meeting Conducted by:

_____