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Reviews
4/22/02
(Signature)

INTERIM SITE INVESTIGATION WORKPLAN

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PROJECT SITE:
Express Gas & Mart
2951 High Street
Oakland, California

MAR 01 2002

PREPARED FOR:
Mr. Aziz Kandahari
Himalaya Trading Company
2951 High Street
Oakland, CA 94619

SUBMITTED TO:
Alameda County Health Care Services
Hazardous Materials Division
1131 Harbor Bay Parkway
Alameda, California 94502

W. A. CRAIG, INC. PROJECT # 3936

February 12, 2002

INTRODUCTION

Site Location and Description

Express Gas and Minimart ("the Site") is located at 2951 High Street, in Oakland, California (Figure 1) in an upland area of southeastern Oakland, California. The Site is located on the corner of High Street and Penniman Avenue in a mixed commercial and residential district. The Site is a fuel station and convenience store. Site topography runs southeasterly toward High Street. The regional topography generally slopes westerly toward San Francisco Bay. Site soils are primarily clayey silt, sandy silt, and silty sand with minor amounts of gravelly sand. Groundwater beneath the Site occurs at approximately 21 feet below grade (fbg). Previous potentiometric surface maps for the Site indicate groundwater flows southeasterly (ASE, November 14, 2000). Site features are depicted on Figure 2.

Objectives

The objective of this Interim Site Investigation Workplan is to describe methods and procedures to investigate the vertical and lateral extent of petroleum hydrocarbon contamination released from the former underground storage tanks (USTs).

Background

Presently, there are three onsite monitoring wells (MW-1, MW-3 and MW-5) and one offsite monitoring well (MW-6). Two wells (MW-2 and MW-4) were destroyed during remediation activities by W.A. Craig, Inc. Hydrocarbons have not been detected to date in groundwater samples from wells MW-1, MW-3, and MW-6. Thus, the extent of groundwater contamination in to the north and west of the former USTs has been delineated. Hydrocarbons have been detected in wells MW-2, MW-4 and MW-5.

Between May 28 and June 24, 1997, 2,550 pounds of ORC slurry was injected into borings along the northern and eastern side of the old USTs to promote aerobic biodegradation of petroleum hydrocarbons dissolved in groundwater. On August 21, 1998, ORC socks were installed in wells MW-4 and MW-5 (ASE, November 14, 2000). The location of the former UST pit and the six former and existing monitoring wells are shown on Figure 2.

A site specific risk assessment determined site specific formed and site specific threshold levels (SSTLs) for petroleum hydrocarbon constituents under various exposure scenarios.

On February 28, 2001, W.A. Craig, Inc (WAC) collected six soil samples from a pipe trench located near the former pump dispensers in front of the convenience store. High concentrations of petroleum hydrocarbons were detected in all six samples (W.A. Craig, March 9, 2001).

At the request of the Alameda County Health Care Services (ACHCS), a *Site Investigation Workplan* dated March 26, 2001 was prepared. The work plan recommended a limited soil and

groundwater investigation. The work plan was approved in a letter from the ACHCS dated March 29, 2001. The letter also requested over-excavation of contaminated soils.

Six soil borings were advanced on April 26, 2001. Soil samples were collected from 5 feet and 10 feet below grade (fbg). A grab groundwater sample was also collected from borings where groundwater was encountered. Groundwater samples from borings TB-1 and TB-3 yielded MtBE, benzene, toluene, ethylbenzene and xylenes significantly in excess of the Site Specific Threshold Levels (SSTLs).

Soil and groundwater sample results were compared to SSTLs established in the *Addendum to Risk Assessment for Zima Center Corporation, 2951 High Street, Oakland, August 22, 1997*. In addition to the SSTLs previously established in the risk assessment, we proposed to use a SSTL of 100 mg/kg for TPH-g. This cleanup level was established by the San Francisco Bay Regional Water Quality Control Board (RWQCB) for surface soils (\leq 3m fbg) where groundwater is a current or potential source of drinking water (RWQCB, 2000).

On May 16, 2001 two 6,000-gallon gasoline (Tank 1 and 4) and one 4,000-gallon gasoline (Tank 2) underground fuel storage tanks (USTs) were removed from the Site. An additional 4,000-gallon gasoline UST (Tank 3) was removed on May 17, 2001. Approximately 1,000 gallons of fuel were removed and disposed of by Alviso Independent Oil. The tanks were inspected and were observed to be in good condition with no obvious pitting, rust or holes. Soil samples from the base and the sides of the excavation yielded high concentrations of hydrocarbon constituents.

WAC excavated contaminated soil from the Site in several phases from May 9, 2001 through September 27, 2001. Approximately 3,700 tons of petroleum hydrocarbon contaminated soil was excavated, hauled and disposed of at B&J landfill, a Class II landfill, in Vacaville, California.

PROPOSED SCOPE OF WORK

The scope of services proposed herein will be performed to replace wells that were destroyed during remedial activities and to delineate the extent of petroleum hydrocarbons in soil and groundwater south and east of the former UST pit. The proposed scope of services includes installing four monitoring wells to sample soil and groundwater. Upon completion of the proposed scope of services, we will provide conclusions and make recommendations regarding further investigative or remedial actions as necessary to achieve site closure.

Specific tasks to be completed for this interim site investigation include:

- Preparing this Interim Site Investigation Work Plan and a Site-Specific Health and Safety Plan for submittal to the ACHCS;
- Advance four monitoring wells to a depth of approximately 30 fbg;
- Log the well borings to determine subsurface geology;

- Collect and analyze soil samples from each well boring;
- Develop monitoring wells;
- Collect groundwater samples from each monitoring well;
- Analyze soil and groundwater samples for TPH-g using EPA Method 8015 (modified); benzene, toluene, ethylbenzene and xylenes (BTEX) using EPA Method 8020; and methyl tert-butyl ether (MTBE) and other fuel oxygenates using EPA Method 8260; and
- Prepare Quarterly Groundwater Monitoring Reports to evaluate site conditions and make recommendations regarding corrective actions, if necessary.

FIELD PROCEDURES

Borings for soil sampling and the construction of monitoring wells will be situated in the locations shown on **Figure 2**. Monitoring well MW-7 will be placed in the southern corner of the former UST excavation. Monitoring well MW-8 will be placed in the west corner of the Site near the intersection of Penniman Avenue and High Street. Well MW-9 will be placed southeast of the new dispenser-island in front of the convenience store. Well MW-10 will be placed downgradient of the Site within the High Street right of way southwest of the Site. The purpose of the wells is to delineate the extent of petroleum hydrocarbons to the south and east of the former UST pit.

Well Permits and Utility Clearance

The Alameda County Department of Public Works ("County") requires that well permits be obtained prior to the installation of monitoring wells or temporary borings. Well permit applications will be filed with the County at least 14 days prior to installation of the wells. The county will be given at least 48 hours notice prior to the installation of wells so that they may observe the installation of the annular seal.

Per requirements of California law, underground service alert (USA) will be notified of the intent to perform subsurface investigation at the Site. USA will notify public and private utility companies and each utility will send a field representative to mark the location of underground utilities owned and maintained by each utility company. In addition, W.A. Craig will review existing utility plans to ensure that buried utilities are not within two feet of the proposed monitoring well locations.

Drilling Procedures

All soil borings will be drilled using a truck-mounted hollow-stem auger drill rig. A California Registered Geologist will supervise drilling and sampling operations. Drilling will cease approximately 10 feet below the first encountered water-bearing zone.

Borings will be continuously logged in the field using the Unified Soil Classification System. The field geologist will observe significant changes in material penetrated, changes in drilling conditions, record lithologic changes, the relative moisture content of soils and note water-

producing zones. This record will be used later to prepare detailed boring logs. Lithologic descriptions will include soil type, color, grain, size, texture, hardness, degree of induration, carbonate content, presence of fossils, hydrocarbons and other pertinent information. All soil cuttings from the drilling operations will be stored on-site in 55-gallon, steel, DOT-approved drums. These investigation-derived wastes will be characterized as hazardous or non-hazardous based of the results of the investigation. Disposal of these wastes is not included in this scope of work.

Soil Sample Collection

One soil sample will be collected from each of the four monitoring wells at the soil-groundwater interface. The sample will be collected using a modified California sampler lined with three 6-inch long brass tubes. The sampler will be decontaminated prior to use by washing with a laboratory grade detergent solution and triple rinsing with tap water. The sampler will be driven to the desired sampling depth using a 140-pound hammer dropped approximately 30 inches. The blow counts for each 6-inch interval will be recorded on the boring log for each well. Immediately after opening the modified California sampler, 5-gram aliquots of soil will be removed from the brass tubes in the sampler using an EnCore sampler and a T-handle. This sampling device meets all the requirements for the collection of solid and waste oil samples for volatile organic analytes described in EPA Method 5030. The EnCore sampler will be pushed into the brass tube using the T-handle until the coring sampler is completely full. The cap coring body will be properly seated and locked in place to form an airtight seal. The EnCore samplers will be placed in a zipper foil pouch.

The zipper foil pouch will be labeled indicating project name (or number), sample number, sample depth, date and collection time. The same information will be recorded on the chain of custody form. EnCore samplers will be placed in a cooler with frozen gel packs or ice. The sample cooler will be delivered to the analytical laboratory within 24 hours of collection. Soil samples will be extracted within 48 hours of receipt by the lab and will be kept at 4 degrees Centigrade pending analysis. Groundwater will be analyzed for TPH-g using EPA Method 8015 (modified); BTEX using EPA Method 8020, and fuel oxygenates and lead scavengers by EPA Method 8260b.

Monitoring Well Construction

Monitoring wells will be constructed using two-inch diameter, flush-threaded, Schedule-40 PVC well casing. The wells will be constructed through the hollow-stem augers, with materials placed from the bottom of the borehole to the ground surface. The screened interval of the well will be factory slotted with a slot size of 0.020 inches. The well screen will be installed to approximately 10-feet below the first encountered groundwater, or as conditions warrant. The screened section annulus will be packed with clean #2/12 graded sand. The monitoring well sand filter pack will extend two feet above the well screen as per section 2649(d)(5) of the California Code of Regulations.

Hydrated bentonite pellets will be placed above the sand as a sealing material. The well will be sealed from the bentonite seal to the ground surface using a Portland cement/bentonite grout mixture. No glues or other solvents will be used in the construction of the wells. The wells have not been designed to provide optimum flow but are intended to provide water samples that are representative of water quality in the first water-bearing zone.

The wellheads will be protected from vandalism using a locking expansion-plug cap and will be housed within traffic-rated boxes to protect the wells from traffic and surface water runoff. The well sealing material (grout) will be allowed to set for a period of 72 hours prior to development or sampling.

Well Development

Monitoring wells will be developed by surging and pumping, if possible. A minimum of five well casings will be purged. Field parameters, including color, odor, free-phase liquid, turbidity, specific-conductance, temperature, and pH, will be monitored during the development of the wells. Development will continue until field parameters stabilize and the water is relatively clear and free of silt and sand.

Monitoring Well Surveying

The monitoring wells will be surveyed for horizontal and vertical control. The datum of the survey will be a permanent benchmark referencing mean sea level (msl). The top of well casing elevations will be accurate to within 0.01 foot and tied into the three existing monitoring wells. The wells will be measured in a manner consistent with the Regional Water Quality Control Board GEOTRACKER requirements. A permanent mark on the top of the well casing such as an indelible mark or notch will reference the surveyed point on the casing. All subsequent water level measurements will be tied to this reference point.

Groundwater Sample Collection

The following description relates to each quarterly groundwater-sampling event. Prior to sampling, water levels will be measured using an electronic water level sounder. The elevation of the water table will be determined by subtracting the depth of water below the top of casing from the top of casing elevation as determined by the surveyor.

At least three well volumes will be purged from the well to ensure that the groundwater sample is representative of groundwater quality in the water-bearing zone. Field parameters such as temperature, pH and specific conductance will be monitored during purging. A sample will be collected after these parameters have stabilized. The wells will be purged using a 12-volt submersible pump or a disposable polyethylene bailer. Should the well become completely evacuated during purging, samples will be collected after the well has recovered to 80 percent of its initial water level. The temperature, pH and specific conductivity of the water will be

monitored during the purging of the well to ensure the water sample is representative of water quality in the water-bearing zone.

Groundwater samples will be decanted from the bailer into laboratory supplied containers, approved for the analyses required. The samples will be immediately placed in refrigerated storage for delivery to the laboratory. Groundwater samples will be labeled with the project name, project number, sample number, sample depth, date and collection time. The same information will be recorded on the chain of custody form. After collection, the groundwater samples will be placed in a cooler with ice. The sample cooler will be delivered to McCampbell Analytical Inc in Pacheco, California within eight hours of collection.

LABORATORY ANALYSIS

Soil and groundwater samples will be analyzed by McCampbell Analytical, Inc. for total petroleum hydrocarbons as gasoline (TPH-g) by EPA method 8015 modified; for benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA method 8020; and for fuel oxygenates (MtBE, TAME, DIPE, ETBE and TBA) and lead scavengers (EDB and 1,2-DCE) by EPA method 8260b. McCampbell Analytical is certified by the State of California to perform these analyses.

QUARTERLY MONITORING REPORTS

Quarterly Monitoring Reports will be prepared and submitted to the City and the San Regional Water Quality Control Board, San Francisco Bay Region (RWQCB). The first quarterly report will include results of the Sensitive Receptor Survey. All reports will include a site history, figures identifying monitoring well locations, groundwater elevations and flow direction, laboratory analytical reports, well sampling logs, a tabulation of analytical results, and conclusions and recommendations for additional investigation or remediation work, if necessary.

SCHEDULE

Approval of this work plan, obtaining well permits and scheduling of subcontractor services could be completed in approximately five weeks. The drilling, well installation, well development, and well sampling activities should be completed in approximately ten working days (allowing for 72 hours curing of the well sealant and sampling 48 hours after well development). The results of soil sample analyses should be completed within 14 days of sample collection. Groundwater sample analytical results should be available approximately 10 days after sample collection. The results of the additional investigative work will be presented in a report approximately three weeks after completion of the receipt of the final laboratory analytical results. Subsequent quarterly monitoring reports will be submitted at three-month intervals. WAC estimates the scope of work for the first quarterly monitoring report could be completed in approximately 12 weeks, although additional time may be required for pre-approval of the investigation costs by the Underground Storage Tank Cleanup Fund.



Site Location
2951 High Street



W.A. Craig, Inc.








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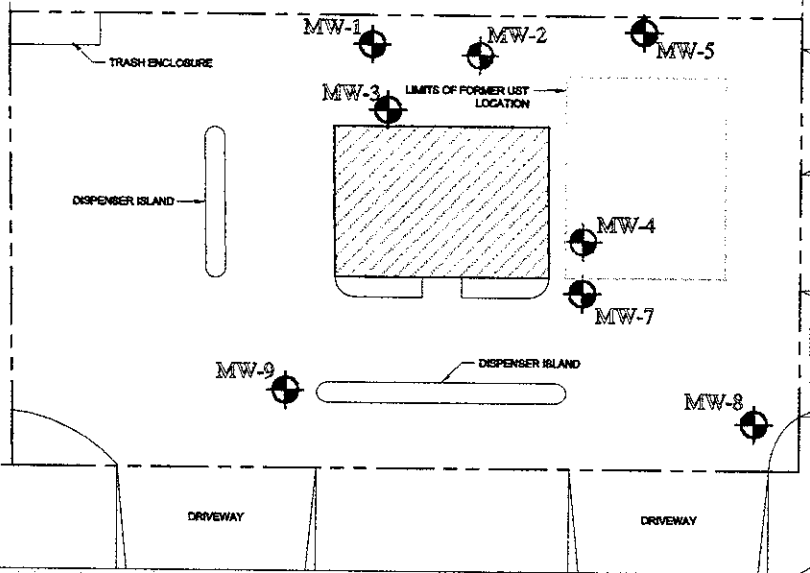
SITE LOCATION MAP
 2951 HIGH STREET
 OAKLAND, CALIFORNIA



Project #: 3936	Figure:
Date: 2/12/02	1
Scale:	

LEGEND

-  MONITORING WELL LOCATION
-  GROUNDWATER CONTOUR LINE
-  GROUNDWATER FLOW DIRECTION
-  COVERED STRUCTURE
-  UST EXCAVATION LIMITS
-  PROPOSED MONITORING WELL LOCATION
-  DESTROYED MONITORING WELL

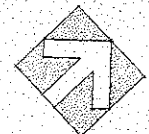


MW-6

MW-10

H I G H S T R E E T

P E N N I M A N A V E N U E



NORTH

scale: 1"=40'



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PROPOSED MONITORING WELL
 LOCATIONS
 2951 HIGH STREET
 OAKLAND, CALIFORNIA

Project #: 3936	Figure:
Date: 2/12/02	2
Scale: 1"=40'	