

PRELIMINARY SITE CHARACTERIZATION

Former Service Station Facility 7600 MacArthur Boulevard Oakland, California

Prepared For:

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INTRODUCTION

Purpose

As per the request of Inspector Keith Matthews of the Oakland Fire Department - Hazardous Materials Unit (OFD-HMU), Golden Gate Tank Removal, Inc. (GGTR) has conducted a preliminary site characterization to assess the impact of petroleum hydrocarbons to soil in the vicinity of the underground storage tanks (UST) and hydraulic lifts reportedly removed in January 2007 from the former service station facility located at 7600 MacArthur Boulevard in Oakland, California (the Site). The following sections discuss the activities and findings of the preliminary site characterization conducted at the Site on October 3, 2007.

Site Location and Description

The Site is located at 7600 MacArthur Boulevard, at the northeast corner of the intersection of MacArthur Blvd. and 76th Avenue in Oakland, California (Alameda County). The Site is currently a vacant lot that lies approximately 0.8 mile west of Interstate 580 and approximately 2.3 miles northeast of Interstate 880 and the San Francisco Bay. The attached Figure 1 depicts the general Site location.

The Site is relatively flat lying, slightly sloping to the west-southwest with an estimated grade surface elevation of approximately 92 feet above Mean Sea Level (MSL; Figure 1). The topographic relief in the immediate vicinity of the Site is also generally directed toward the west-southwest, toward the San Francisco Bay. Regional topographic relief appears to be directed toward the west-southwest, in the general direction of the San Francisco Bay that connects to the Oakland Inner Harbor. One 1,000-gallon UST (#1) was reportedly located in the central northwest half of the property. The tank was reportedly constructed of single wall bare steel measuring approximately 10 feet in length by 4 feet in diameter. In addition, one 300-gallon UST (#2) was reportedly located beneath the sidewalk along the MacArthur Blvd. frontage of the Site. This tank was also reportedly constructed of single wall bare steel, measuring approximately 6 feet in length by 3 feet in diameter. Both tanks reportedly contained gasoline and were filled with concrete (circa 1970) and subsequently removed in January 2007. A set of hydraulic lifts was reportedly located centrally in the northeast portion of the Site (personal communication by Mrs. Gardner) and was removed in January 2007. Figure 2 depicts the approximate former location of the USTs and hydraulic lifts.

Site Geology and Hydrogeology

Based on the Geologic Map of the San Francisco-San Jose Quadrangle published by the California Department of Conservation, the Site is underlain by Sand and Quaternary Alluvium and possibly marine sandstone, greenstones, shale, conglomerates, and cherts of the Mesozoic Franciscan Complex (thicknesses not established). The map also indicates that the Site lies approximately on top of the trace of the Hayward Fault Zone.

Native subsurface soil observed at the Site during the GGTR site reconnaissance on July 25, 2007 and field activities on October 3, 2007, was predominantly silty clay to silty sand with some fine-grained gravel to approximately 13 feet below grade surface (fbg). Groundwater at the Site is estimated to be approximately less than 25 (fbg) based on topography and proximity to the San Francisco Bay, and a cursory review of groundwater data from surrounding sites, as provided by on the State Water Resources Control Board's Geotracker database. The regional groundwater flow in the vicinity of the Site is assumed to be towards the west-southwest, in the direction of the San Francisco Bay, and generally following the natural topographic relief of the area (Figure 1).

The site is in the East Bay Plain groundwater basin according to the San Francisco Bay Basin Water Quality Control Plan prepared by the California Regional Water Quality Control Board – Region 2 (CRWQCB, 1995). Groundwater in this basin is designated beneficial for municipal and domestic water supply and industrial process, service water, and agricultural water supply. The nearest surface water body is Arroyo Viejo Creek, flowing generally southwest to the Oakland Inner Harbor and located approximately 0.4 mile southwest and presumably down-gradient of the site (Figure 1).

SITE INVESTIGATION

Pre-Field Activities

On September 20, 2007, GGTR received approval via e-mail from Inspector Keith Matthews of the OFD-HMU to proceed with the preliminary Site characterization outlined in the Work Plan (GGTR, 2007). On September 21, 2007, GGTR visited the Site and outlined the proposed work areas in white surface paint and subsequently notified Underground Service Alert (USA) to locate and mark any subsurface utilities extending through the designated work areas. GGTR also met with Mr. Matthews on September 28, 2007 for a Site walk to confirm the soil sampling locations. GGTR contacted the Alameda County Public Works Agency and was informed that no permit was required for hand augering activities.

GGTR prepared a Site Health and Safety Plan as required by the California Occupational Health and Safety Administration (Cal-OSHA) Title 8, 5192 Hazardous Waste Operations and Emergency Response and the U.S. Occupational Health and Safety Administration (OSHA) 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response.

Preliminary Site Characterization Activities

Preliminary Site Inspection

GGTR conducted a thorough visual property inspection and magnetometer survey to determine whether additional UST or other anomalies existed beneath the sidewalk/parking lanes along both street frontages of the Site. At this time, GGTR did not find any indications of the existence of an additional UST beneath the street frontages of the property. A locked fence surrounding the property inhibited GGTR from accessing the site. The magnetometer survey can detect metal structures buried within the first 2 fbg.

Soil Boring Locations

GGTR advanced four (4) hand auger soil borings (B-1, B-2, B-3 and B-4) in the direct vicinity of the reported locations of the former USTs and hydraulic lifts, to define the vertical extent of potential soil contamination at the Site. Soil borings B-1 and B-2 were advanced to evaluate potential contamination in the unsaturated soil zone beneath the former 1,000-gallon UST location. Soil boring B-3 was advanced to assess potential contamination in the unsaturated soil zone beneath the area of the former hydraulic lift(s) location. Soil boring B-4 was drilled to assess potential contamination in the unsaturated soil zone beneath the former 300-gallon UST location. Figure 2 depicts the soil boring locations.

GGTR advanced soil borings B-1 and B-2 to a total depth of 13 fbg and were located adjacent to the northwest and southeast end of former 1,000-gal UST location, respectively. Soil boring B-3 was advanced to a total depth of 9 fbg in the northeast area of the former hydraulic lifts location. Soil boring B-4 was advanced to a total depth of 11 fbg beneath the center of the former 300-gal UST location.

Drilling & Soil Sampling Activities

Utilizing a backhoe equipped with a 2-foot wide bucket, GGTR excavated a pothole at boring location B-1 and B-2 to approximately 9 fbg (presumed depth of bottom of former 1,000-gallon UST) to remove any overlying slough material generated during the UST removal activities. Then, GGTR manually drilled soil borings B-1 and B-2 using a 3-inch diameter hand auger to a total depth of 13 fbg. Two discrete soil samples were collected from each boring at approximately 11 and 13 fbg. The soil consisted predominantly of Silty Clay (CL) 10YR3/4 dark yellowish brown. Groundwater was not encountered at boring locations B-1 or B-2. The soil did not appear stained and no hydrocarbon odor was noted during soil sampling activities. Figure 2 shows soil boring locations B-1 and B-2. During excavation and drilling activities at B-2, GGTR uncovered 2 one-inch diameter and one 2-inch diameter pipes running across the excavation in a southeast – northwest direction. GGTR also uncovered a 4-inch diameter pipe running in the same direction as the previous piping, but was cut in the center of the existing excavation. At this time, it is not conclusive whether these pipes are product lines associated with the former 1,000 – gallon UST. Figure 3 depicts photographs of the underground piping.

Also utilizing a backhoe, GGTR excavated a pothole at boring location B-3 to approximately 6.5 fbg (presumed depth of the bottom of a typical hydraulic lift) to remove any overlying slough material generated during the hydraulic lifts removal activities. Then, GGTR manually drilled soil boring B-3 using a 3-inch diameter hand auger to a total depth of 9 fbg. Two discrete soil samples were collected from B-3 at approximately 7 and 9 fbg. The soil samples consisted predominantly of Silty Sand (SM) 5Y3/2 dark olive gray. Both soil samples were stained and contained strong hydrocarbon odor. No groundwater was observed in B-3. Figure 2 depicts soil boring location B-3.

GGTR drilled a 6-inch diameter by 5-inch thick concrete core through the sidewalk at soil boring location B-4. Then, GGTR manually drilled soil boring B-4 using a 3-inch diameter hand auger to a total depth of 11 fbg. From 0.5 fbg to approximately 5 fbg the soil consisted of Sans (SP) 10YR5/2 grayish brown, fine grained, poorly graded. At 5 fbg, GGTR encountered a 4-inch diameter pipe that was not identified by USA. Based on the presumed depth of the bottom of the former UST at 7 fbg, GGTR collected two discrete soil samples from B-4 at approximately 9 and 11 fbg. These soil samples consisted of Silty Clay (CL) 5Y3/2 dark olive gray. Both samples were stained with strong hydrocarbon odors. GGTR did not observed staining or hydrocarbon odors in the sand overlying the pipe. Groundwater was not encountered at soil boring B-4. Figure 2 depicts the location of B-4 and the location and orientation of the unknown pipe.

Stockpile Soil Sampling

GGTR collected 2 four-point composite soil samples for analysis and characterization of the soil stockpiles for offsite transport/disposal or potential onsite reuse for excavation backfill. One composite soil sample was collected from the UST excavation stockpile and labeled *Composite 1*. The other composite soil sample was collected from the existing imported soil stockpile and labeled *Composite 2*. Figure 2 depicts the approximate location of the composite soil samples.

Backfilling Activities

Immediately following soil sampling, GGTR backfilled the potholes at soil boring locations B-1, B-2 and B-3 with the excavated soil and properly compacted them. During restoration activities, GGTR backfilled soil boring B-3 with neat Portland cement up to approximately 0.5 fbg and concrete to grade surface.

Soil Sample Analysis

All soil samples retained for laboratory analysis were sealed with Teflon and plastic end caps, appropriately labeled, and transferred to a cooler chilled to approximately 4° Centigrade. On October 4, 2007, GGTR submitted the soil samples to Entech Analytical Labs, Inc. (CAL ELAP# 2346) of Santa Clara, California, under formal chain-of-custody protocol for the required analyses.

In general accordance with the approved work plan, soil samples collected from soil boring B-1, B-2 and B-4 were analyzed for the following constituents:

- Total Petroleum Hydrocarbons as Diesel (TPH-D) w/ Silica Gel Cleanup by EPA Method 3545A/3630C/8015B(M).
- Total Petroleum Hydrocarbons as Motor Oil (TPH-MO) w/ Silica Gel Cleanup by EPA Method 3545A/3630C/8015B(M).
- Total Petroleum Hydrocarbons as Gasoline (TPH-G) by EPA Method 5030B/GC/MS.
- Volatile Organic Compounds (VOCs), including Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX) and Fuel Oxygenates by EPA Method 5030B/8260B
- LUFT 5 Metals (cadmium, chromium, lead, nickel, and zinc) by EPA Method 3050B/6010B

The soil samples collected from soil boring B-3 were analyzed for the following constituents:

- TPH-D w/ Silica Gel Cleanup by EPA Method 3545A/3630C/8015B(M).
- TPH-MO w/ Silica Gel Cleanup by EPA Method 3545A/3630C/8015B(M).

The stockpile composite soil samples were analyzed for the following constituents:

- TPH-D by EPA Method 3545A/8015B(M)
- TPH-G by EPA Method 5030B/8015B
- BTEX by EPA Method 5030B/8021B.
- Methyl-Tertiary-Butyl Ether (MTBE) by EPA Method 5030B/8021B
- Total Lead by EPA Method 3050B/6010B.

Samples B-3-7 and B-3-9 were not analyzed for TPH-Extractable as hydraulic Oil as requested because the laboratory indicated that these samples were already being analyzed for TPH-Extractable as Diesel and Motor Oil and the range of hydraulic oil was covered by these analyses. Entech performed all volatile analyses in conformance with the minimum 14-day holding time for these analyses. Quality assurance and Quality Control (QA/QC) details are included in the attached laboratory certificate of analysis. A copy of each Laboratory Certificate of Analysis and associated Chain of Custody form is also presented as an attachment.

Soil Sample Results

The soils samples collected in soil borings B-1 and B-2 contained non-detectable concentrations of TPH-G. Concentrations of TPH-G were detected above its Environmental Screening Level (ESL) in soil samples collected from soil boring B-4 at 9 fbg (B-4-9) and 11 fbg (B-4-11) at 500 milligrams per kilograms (mg/kg) and 360 mg/kg, respectively. The laboratory report indicated that these concentrations were the result of an "atypical pattern". GGTR contacted the laboratory to clarify this finding and further review of the chromatograph by a laboratory scientist revealed that the TPH-G concentrations detected in soil samples B-4-9 and B-4-11 represented decomposed or weathered gasoline. Laboratory sample results are presented in the attached Table.

All soil samples collected in B-1 to B-4 contained non-detectable concentrations of TPH-D. The laboratory report for the sample collected in B-3 at 7 fbg (B-3-7) indicated that "no diesel pattern" was present in this sample; rather a "higher boiling hydrocarbon compound (C9-C16)" was detected at levels of 560 mg/kg, which is above the applicable ESL. Again, GGTR contacted the laboratory to clarify this result and further review of the chromatograph by a laboratory scientist revealed that this carbon range is an indication that aged or decomposed diesel was present. The soil samples collected in B-1 to B-4 contained non-detectable concentrations of TPH-MO, except in B-3 at 7 fbg (4,500 mg/kg) and 9 fbg (360 mg/kg); such concentrations reportedly may resemble hydraulic fluid (C14-C36). The sample in B-3 at 7 fbg exceeded its applicable ESL of 500 mg/kg.

Concentrations of BTEX, MTBE and other fuel oxygenates were not detected in any of the soil samples collected from soil borings B-1, B-2, and B-4. However the Laboratory reporting limits for Benzene, Total Xylenes and MTBE were greater than their respective ESL in soil samples collected from soil boring B-4 at 9 fbg (B-4-9) and at 11 fbg (B-4-11). Also, the laboratory reporting limits for 1,2-Dichloroethane and 1,2-Dibromoethane were slightly higher than their respective ESL for soil samples collected from B-1 and B-2 at 11fbg (B-1-11 and B-2-11), and higher than their respective ESL for soil samples collected from B-4 at 9 fbg (B-4-9) and 11 fbg (B-4-11).

Composite soil sample collected from the existing excavation soil stockpile (Composite 1) did not contained concentrations of TPH-D above the laboratory reporting limit. However, the laboratory report indicated the presence of TPH-MO at levels of 100 mg/kg, which is below its ESL. BTEX and MTBE were not detected in this sample either, but the laboratory reporting limits for Benzene and MTBE were higher than their respective ESL. TPH-G, TPH-D, BTEX and MTBE were not detected in the composite soil sample collected from the imported soil stockpiles (Composite 2). However the laboratory detection limits for Benzene and MTBE were greater than their respective ESL.

None of the soil samples collected from soil borings B-1, B-2 and B-4, and both composite soil samples detected concentrations of metals above their respective ESL. Soil samples collected from soil boring B-3 were not analyzed for metals.

Conclusions and Recommendations

Based on the field observations and analytical results, GGTR recommends the following:

- If warranted, trace the location and extent of the existing underground piping in the vicinity of the former 1,000-gallon UST excavation to confirm their association with the UST system; drain any residual product, and remove and dispose of the piping according to regulatory guidelines.
- Based on composite soil sample analysis, it appears that the soil stockpiles remaining onsite can be utilized as excavation backfill material.
- Excavate and dispose of impacted soil in the vicinity of boring B-3 to approximately 9 fbg. Once the impacted soil has been removed, collect confirmation soil sample(s) and backfill the excavation with the stockpiled soil and/or clean import fill soil.
- The vertical as well as the lateral extent of gasoline-range hydrocarbon contamination in soil in the vicinity of B-4 and the former 300-gallon gasoline UST has not been adequately assessed at this time. Additional characterization of the soil contamination in this area and its potential impact to underlying groundwater appears warranted.

Report Distribution

All reports that are prepared during the continuing work on this project will be sent to:

Oakland Fire Department
Fire Prevention Bureau
Hazardous Materials Unit
250 Frank Ogawa Plaza, Suite 3341
Oakland City Hall
Oakland, CA 94612-2032
Attention: Mr. Keith Matthews (1 Bound Copy and 1 electronic PDF file)

Mrs. Hong Nguyen Gardner 1501 23rd Avenue Oakland, California 94606 (1 Bound Copy)

Limitations

It should be understood that all environmental assessments are inherently limited in that conclusions are drawn and recommendations developed from information obtained from limited research and visual observations. Subsurface conditions change significantly with distance and time and therefore may differ from the conditions implied by subsurface investigation. It must be noted that no investigation can absolutely rule out the existence of any hazardous or petroleum substances at a given site. Existing hazardous materials and contaminants can escape detection using these methods. The work performed in conjunction with this assessment and the data developed are intended as a description of available information at the dates and location given.

GGTR's professional services have been performed, with findings obtained and recommendations prepared in accordance with customary principles and practices in the field of environmental science, at the time of the assessment. This warranty is in lieu of all other warranties either expressed or implied. GGTR is not responsible for the accuracy of information reported by others or the independent conclusions, opinions or recommendations made by others based on the field exploration presented in this report. The scope of services conducted in execution of this phase of investigation may not be appropriate to satisfy the needs of other users and any use or reuse of this document and any of its information presented herein is at the sole risk of said user. The figures, drawings and plates presented in this report are only for the purposes of environmental assessment and no other use is recommended. No other third party may rely on this report, figures or plates for any other purpose.

Golden Gate Tank Removal, Inc.

ATTACHMENTS

Table
Figures
Laboratory Certificates of Analysis
Chain of Custody Record

TABLE SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS Sample Date October 03, 2007

Sample Location	Sample	- manple	TPH-G		TPH-MO	Benzene	Toluene	Tab.d	TATIN	n. Ronl	evard, (Dakland	d, CA								
	Oceation Depth ID (ft bgs)		(mg/kg)	(mg/kg)	(mg/kg)		Lordene	Benzene	Total	MTBE (mg/kg)	TBEE (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	TAME	1,2-DCA	1,2-EDB	Cd	Cr	Pb	Ni	Zn
B-1	11.00	B-1-11	ND<0.1	ND<5	ND<20	NID -0 005		(mg/kg)	(mg/kg)			1 10 100 100		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/
B-2	11.00	B-2-11	ND<0.1		140-20	ND<0.005	ND<0.005	ND<0.005	ND<0.01	ND<0.005	ND<0.005	ND<0.04	ND<0.005	ND<0.005	ND <0.005						
	7.00	D 2 7	1.0.0.1	1.5	ND<20	ND<0.005	5 ND<0.005	ND<0.005	ND<0.01	ND<0.005	ND<0.005	NID-0.04		0.002	1	1 1	ND<1	40	3.9	29	31
B-3		B-3-7		ND<2501	4500						110 -0.003	ND<0.04	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<1	39	2.9	20	32
	9.00	B-3-9		ND<202	360																
B-4	9.00	B-4-9	500 3	ND<5	ND<20	ND<2.5															
	11.00	B-4-11	360 ³	ND<5 ⁴			ND<2.5	ND<2.5	ND<5	ND<2.5	ND<2.5	ND<20	ND<2.5	ND<2.5	ND<2.5						
Excavation				IND/S	ND<20	ND<1.2	ND<1.2	ND<1.2	ND<2.5	ND<1.2	ND<1.2	ND<10	ND<1.2			ND<2.5	ND<1	34	10	21	36
Stockpile	NA	Composite 1	ND<5	ND<20 ⁵		ND<0.1	ND<0.1	ND<0.1	NID O			1112/10	NDC1.2	ND<1.2	ND<1.2	ND<1.2	ND<1	38	4.9	38	23
Imported	d							1412<0.1	ND<0.1	ND<0.5									2.7		
Stockpiles	NA	Composite 2	ND<5	ND<5		ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.5									7.7		
CRWQCB February 2005 ESL ** CRWQCB February 2005 ESL **		100	100					1115 -0.1	ND<0.5									3.3			
				500	0.044	2.9	3.3	2.3	0.023	NE	0.073	NE						3.3			
		100	100	1000	0.044	2.9	3.3	2.0		112	0.073	NE	NE	0.0045	0.00033	1.7	58	150	150	600	
otes								3.3	2.3	0.023	NE	0.073	NE	NE	0.0045	0.00033	38	58	750	1000	
bgs = Feet b	elow grou	and surface m Hydrocarbon																36	750	1000	2500
			ons as Mot	tor Oil																	
BEE = Meth BEE = Tertia				and the same said.																	

TBA = Tertiary-Butyl Ethyl Ether
TBA = Tertiary-Butanol
DIPE = Diisipropyl Ether
TAME = Tertiary-Amyl Methyl Ether
1,2-DCA = 1,2-Diichloroethane

1,2-EDB = 1,2-Dibromoethane

mg/kg = milligrams per kilograms Cd = Cadmium

Cr = Chromium

Pb = Lead

Ni = Nickel

Zn = Zinc -- = Not Analyzed

ND = Not Detected

NA = Not Applicable

- 1 = 560 mg/kg Higher Boiling Hydrocarbon (C9-C16). No Diesel pattern present 2 = 33 mg/kg Higher Boiling Hydrocarbon (C9-C16). No Diesel pattern present 3 = Atypical pattern.

- 5 Copied pattern.
 4 6.4 mg/kg Higher Boiling Hydrocarbon (C9-C16). No Diesel pattern present
 5 = 100 mg/kg Motor Oil. No Diesel pattern present
 NE = Not Established

NE = Not Established

* CRWQCB/ESL: California Regional Water Quality Control Board Environmental Screening Level for Shallow Soils (< 9.8 fbg) where groundwater IS a current or potential source for drinking water

* CRWQCB/ESL: California Regional Water Quality Control Board Environmental Screening Level for Deep Soils (> 9.8 fbg) where groundwater IS a current or potential source for drinking water



