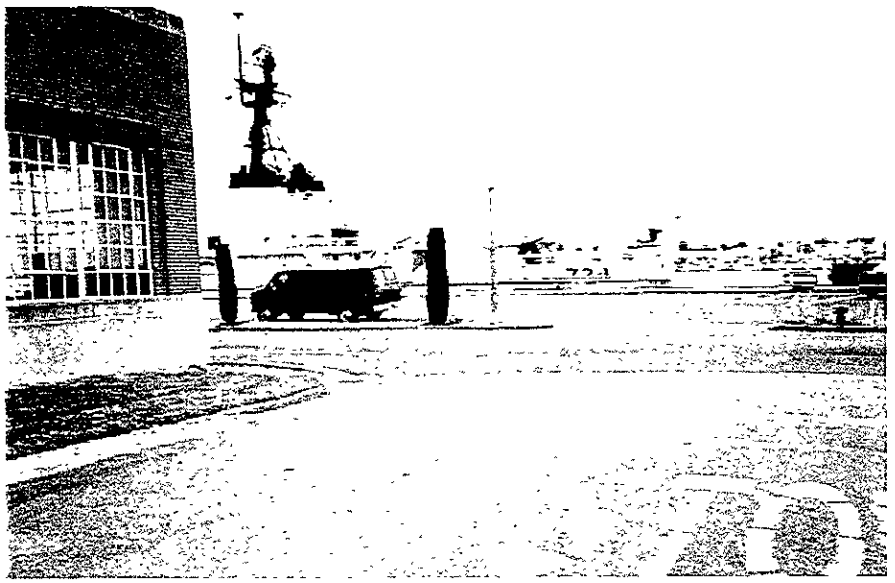
RESULTS OF SOIL AND GROUNDWATER SAMPLING AND ANALYSIS

COAST GUARD INTEGRATED SUPPORT COMMAND, ALAMEDA

COAST GUARD ISLAND
ALAMEDA, CALIFORNIA 94501-5100
CONTRACT NO. DTCG88-97-D-6AL186



Prepared for
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July 17, 1998

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Engineering & sciences applied to the earth & its environment

July 20, 1998

Joseph M. Sabel
Project Manager
USCG Civil Engineering Unit Oakland
2000 Embarcadero, Suite 200
Oakland, CA 94606-5337

Subject: Results of Soil and Groundwater Sampling and Analysis at the U. S. Coast Guard Integrated Support Command, Coast Guard Island, Alameda, California

Dear Mr. Sabel:

Woodward-Clyde Federal Services is pleased to submit the results of the sampling and analysis of the soil and groundwater investigation adjacent to the closed underground storage tanks at buildings 15 and 19 on Coast Guard Island.

The results indicate that there is some groundwater and soil contamination, but that the levels of contamination are not significant and present no apparent threat to the adjacent waterways.

Please call me at (510) 874-1710 if you have any questions or comments.

Sincerely,

Michael T. de Bettencourt
Project Manager

Enclosure: (a) Report of Groundwater and Soil Sampling Analysis, USCG ISC Alameda

U.S. Department of Transportation
United States Coast Guard

Civil Engineering Unit Oakland
United States Coast Guard

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ENVIRONMENTAL PROTECTION

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July 27, 1998

Mr. Larry Seto
Alameda County
Environmental Health Services
1131Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Dear Mr. Seto:

Enclosure (1) is a copy of our final report of investigation at Integrated Support Command Alameda. As anticipated, some contamination was detected. However, due to the constituents and concentrations, we believe that no additional action is either required or warranted.

For questions regarding this or other issues related to the site, please contact Mr. Joseph Sabel at 510-535-7239. Fax transmissions may be sent to 510-535-7288. Electronic mail may be sent to jsabel@d11.uscg.mil.

Sincerely,

Dave Stalters

DAVE STALTERS
Chief, Environmental Division
U.S. Coast Guard
By direction of the Commanding Officer

Encl: (1) Results of Soil and Groundwater Sampling and Analysis

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The objective of this soil and groundwater investigation was to characterize the nature, determine the concentration, and evaluate the horizontal and vertical extent of petroleum contamination discovered at or near two closed leaded gasoline underground storage tanks (USTs) at the U.S. Coast Guard Integrated Support Command (ISC) Alameda. Woodward-Clyde Federal Services (WCFS) conducted the site investigation in accordance with the *Final Soil and Groundwater Sampling Work Plan* (WCFS, 1998), which was approved by the USCG ISC and the Alameda County Department of Environmental Health (ACDEH).

The site investigation was conducted on April 13, 1998. Ten borings were drilled in the vicinity of Buildings 15 and 19. Based upon available area hydrogeologic data, groundwater flow direction is generally westward toward the Brooklyn Basin South Channel. The depth to groundwater as measured in the soil boring ranged between 7.14 feet below ground surface (bgs) and 4.19 feet bgs for Buildings 15 and 19, respectively.

Groundwater samples were taken at each boring location and analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX), methyl tert-butyl ether (MTBE), and dissolved lead. In addition, based upon organic vapor monitor (OVM) field screening results, the soil boring with the highest OVM reading at each building was analyzed for diesel (EPA Method 8015M) in groundwater and the full analytical suite in soil (EPA Methods 8260, 8015M, and 6010).

The results of the analytical data show that only trace amounts of hydrocarbons are found in the soils surrounding Buildings 15 and 19. The only soil hydrocarbon detections were of diesel fuel at 31 milligrams per kilogram (mg/kg) from Boring 19-3 and 66 mg/kg from Boring 15-4. The surrounding upgradient, cross-gradient, and downgradient soil samples were not analyzed due to the relatively low results at the borings located closest to the source. Hydrocarbons were detected in groundwater in trace quantities throughout the investigated areas at Buildings 15 and 19. Laboratory analyses indicated that the only groundwater samples from Borings 19-3 and 15-4 had hydrocarbons present in the parts per million (ppm) range. These were total petroleum hydrocarbons as diesel (TPH_d). Concentrations of approximately 3.3 ppm (3,300 micrograms per liter [µg/L]) and 4.5 ppm (4,500 µg/L) for Borings 15-4 and 19-3, respectively. Based upon the soil and groundwater analytical results for Buildings 15 and 19, the residual petroleum hydrocarbons appear to be present in the areas located closest to the former sources.

Diesel type hydrocarbons exist in the soil and groundwater at ISC Alameda along with trace amounts of BTEX, and MTBE. Both Buildings 15 and 19 still have relatively large TPH_d concentrations in groundwater near the former sources, but the concentrations fall precipitously with distance from the former source. These results indicate that contamination is localized around the former USTs. The vertical extent of the contamination appears to be in the vadose zone just above the existing groundwater table. This area is approximately 4 to 7 feet bgs at Building 15 and 2 to 4 feet bgs at Building 19. Based upon examination of analytical data generated from all soil borings, the residual contamination does not appear to be spreading westward toward the Brooklyn Basin South Channel.

In accordance with the November 25, 1997, signed Scope of Services from USCG Civil Engineering Unit (CEU) in Oakland, CA, the objectives of this soil and groundwater investigation were to characterize the nature, determine the concentration, and evaluate the horizontal and vertical extent of the petroleum contamination discovered at or near two closed leaded gasoline USTs in Buildings 15 and 19. The tasks for the project were divided into three phases. Phase I of the environmental investigation involved preparation of an investigation work plan, including a sampling and analysis plan and a site-specific health and safety plan. Phase II of the investigation consisted of securing the appropriate permits to perform the work, clearing the sampling areas for underground utilities, and conducting the site investigations in accordance with the approved final work plan. Submittal of a final report based upon modification of this draft report according to USCG and ACDEH comments will complete Phase III of the investigation.

In August 1997, a 1,000-gallon fuel oil UST was removed from Building 19 at the USCG ISC on Coast Guard Island in Alameda, CA. Following the removal of the tank, three soil samples were collected by RAH Environmental from a tank excavation and a soil stockpile. The sample labeled "BLDG. 19 WEST" was collected from the base of the west end of the tank excavation. The sample ("BLDG. 19 EAST") was taken from the base of the east end of the excavation. Finally, a four-point composite sample was collected from the excavated soil stockpile and labeled "BLDG. 19 PILE."

During the same project in August 1997, two samples were collected from the soil immediately adjacent to and below the 1,000-gallon fuel oil UST in Building 15. Specifically, one sample was collected from below the north end of the tank at a depth of 8.5 feet bgs and labeled "BLDG. 15 NORTH." The other sample was collected from below the south end of the tank at a depth of 8.0 feet bgs and labeled "BLDG. 15 SOUTH." The soil samples from both Buildings 19 and 15 were analyzed for total petroleum hydrocarbons as gasoline (TPHg), BTEX, and total lead. The analytical results from August 1997 soil sampling events for Buildings 15 and 19 are presented in Table 1.

Based upon the results of RAH's preliminary investigation, the ACDEH requested that the USCG perform an additional investigation of the areas surrounding Buildings 15 and 19 to define the vertical and horizontal extent of residual petroleum hydrocarbons. On November 25, 1997, the USCG ISC sent a request for proposal to WCFS to perform the additional investigation at Coast Guard Island in Alameda, CA. WCFS submitted this proposal to the USCG on December 12, 1997, and the USCG awarded the contract to WCFS on December 18, 1997.

TABLE 1
ANALYTICAL RESULTS FOR SOIL SAMPLES BUILDINGS 15, 19, AND 51 USCG - ISC ALAMEDA (RAH 1997)

LOCATION DATE SAMPLED SAMPLE DEPTH MATRIX	UNITS	BLDG 19 WEST 8/28/97 SOIL Result	BLDG 19 EAST 8/28/97 SOIL Result	BLDG 19 PILE 8/28/97 SOIL Result
Inorganic Analytical Results				
EPA Method 7421				
Total Lead	mg/kg	62	26	24
Organic Analytical Results				
Volatile Aromatic and Fuel Hydrocarbons				
EPA Method 8020A				
Benzene	mg/kg	0.35	0.10	<0.05
Ethylbenzene	mg/kg	<0.10	<0.10	<0.10
Toluene	mg/kg	14	4.2	1.3
Xylenes (Total)	mg/kg	11	2.7	2.5
Total Petroleum Hydrocarbons (Gasoline)	mg/kg	3000	730	230
Total Semi-Volatile Petroleum Hydrocarbons Method. GC				
TPH as Diesel	mg/kg	31	-----	-----

Notes:

(1) Shading = Non-Detect/Not Analyzed

(2) "< 11" = Represents a result of non-detect with a result limit of 11

(3) The sample depth is the average depth calculated from the sample interval listed.

TABLE 1

ANALYTICAL RESULTS
FOR SOIL SAMPLES
BUILDINGS 15, 19, AND 51
USCG - ISC ALAMEDA
(RAH 1997)

LOCATION DATE SAMPLED SAMPLE DEPTH MATRIX	UNITS	BLDG 15 NORTH 8/28/97 SOIL Result	BLDG 15 SOUTH 8/28/97 SOIL Result	BLDG 51 TANK 8/28/97 SOIL Result
Inorganic Analytical Results				
EPA Method 7421				
Total Lead	mg/kg	6.5	31	-----
Organic Analytical Results				
Volatile Aromatic and Fuel Hydrocarbons				
EPA Method 8020A				
Benzene	mg/kg	3.2	7.0	<0.05
Ethylbenzene	mg/kg	38	23	<0.10
Toluene	mg/kg	81	55	<0.10
Xylenes (Total)	mg/kg	270	190	<0.20
Total Petroleum Hydrocarbons (Gasoline)	mg/kg	6000	4100	-----
Total Semi-Volatile Petroleum Hydrocarbons				
Method GC				
TPH as Diesel	mg/kg	-----	-----	<10

Notes:

(1) Shading = Non-Detect/Not Analyzed

(2) "< 11" = Represents a result of non-detect with a result limit of 11

(3) The sample depth is the average depth calculated from the sample interval listed.

[redacted] TABLE 1 [redacted]

ANALYTICAL RESULTS
FOR SOIL SAMPLES
BUILDINGS 15, 19, AND 51
USCG - ISC ALAMEDA
(RAH 1997)

LOCATION **DATE SAMPLED** **SAMPLE DEPTH** **MATRIX**	**UNITS**	**BLDG 51 PUMP** 8/28/97 SOIL Result	**BLDG 51 PILE** 8/28/97 SOIL Result
Inorganic Analytical Results			
EPA Method 7421			
Total Lead	mg/kg	-----	31
Organic Analytical Results			
Volatile Aromatic and Fuel Hydrocarbons			
EPA Method 8020A			
Benzene	mg/kg	<0.05	<0.05
Ethylbenzene	mg/kg	<0.10	<0.10
Toluene	mg/kg	<0.10	<0.10
Xylenes (Total)	mg/kg	<0.20	<0.20
Total Petroleum Hydrocarbons	mg/kg	-----	-----
(Gasoline)			
Total Semi-Volatile Petroleum Hydrocarbons			
Method: GC			
TPH as Diesel	mg/kg	31	150

Notes:

(1) Shading = Non-Detect/Not Analyzed

(2) "< 11" = Represents a result of non-detect with a result limit of 11

(3) The sample depth is the average depth calculated from the sample interval listed.

On Thursday, January 8th, WCFS met with USCG representatives on Coast Guard Island to discuss the proposed approach for the investigation. A site-specific work plan was prepared by WCFS and approved by the USCG and ACDEH prior to the commencement of work at the site.

WCFS prepared a soil and groundwater sampling work plan that detailed the approach for the subsurface investigation. Following the USCG's internal review, WCFS's work plan was forwarded to the ACDEH for final approval. The soil and groundwater sampling work plan for the subsurface investigation of the areas surrounding Buildings 15 and 19 was approved on March 16, 1998.

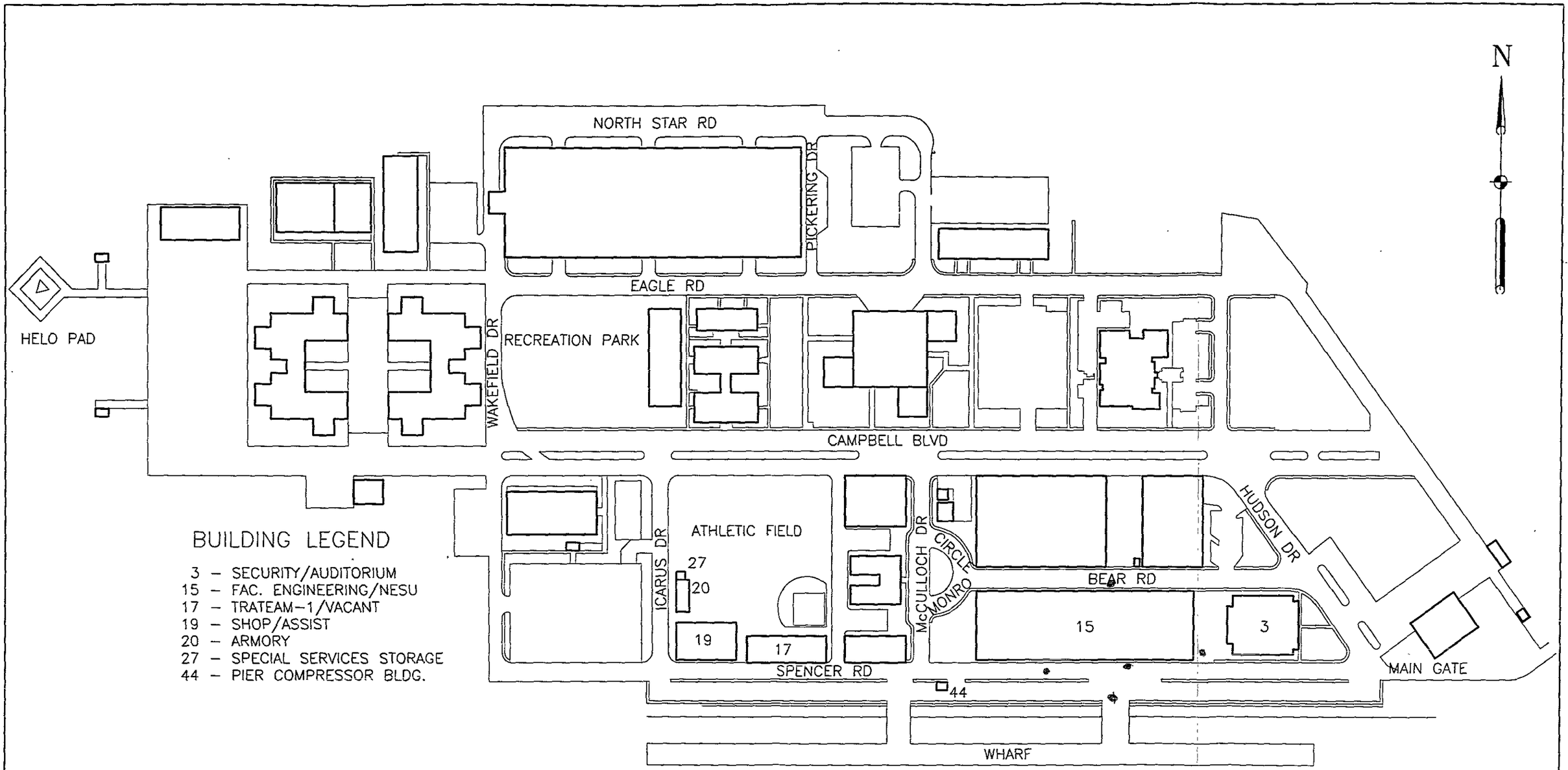
On Monday, April 13, 1998, WCFS conducted soil and groundwater sampling at the facility in accordance with requirements as discussed on-site with the USCG; as outlined in the ACDEH's letter to the USCG; in accordance with the Central Valley Regional Water Quality Control Board publication: *Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites* (August 1990); in accordance with the State Water Resources Control Board publication: *Leaking Underground Fuel Tank Field Manual* (October 1989); and in accordance with the ACDEH- and USCG-approved work plan.

All underground utilities were cleared prior to drilling by NORCAL and USA underground utility locating services, and no permits were required by the ACDEH for this investigation because of the limited drilling depth of less than 45 feet bgs. As designated in the work plan, the soil and groundwater samples were forwarded to Caltest Analytical Laboratory of Napa, CA, a State of California-certified laboratory.

Soil and groundwater samples were collected at the ten locations identified on Figures 2 and 3, and the Field Photography Log Sheet (see Appendix C). WCFS' initial scope of work stated that we would take a total of six boring samples near Building 19. Due to the drilling rig's limited maneuverability, we were unable to take boring samples inside Building 19. Therefore, our upgradient background boring (Boring 19-1) was moved outside the building to the athletic field adjacent to Building 19 (See Figure 1). Another boring which was located inside Building 19 and included in our initial scope of work (Boring 19-2), was eliminated from the investigation because it was also inaccessible. Based upon available area hydrogeologic data, groundwater flow direction was determined to be generally flowing westerly toward the Brooklyn Basin South Channel. Due to the site's relatively high water table and proximity to the Brooklyn Basin South Channel, this investigation focused on identifying potential soil and groundwater contamination to a maximum depth of 10 feet bgs.

WCFS subcontracted Gregg Drilling of Martinez, California, to provide drilling services. Gregg Drilling advanced ten borings using a GeoProbe 5400® drill rig under WCFS supervision. Prior to the commencement of drilling, each boring hole was cleared for utilities by NORCAL and USA underground utility locating services. Furthermore, WCFS requested Gregg Drilling to hand auger each bore hole to a depth of 3 feet prior to commencement of drilling operations.

The GeoProbe drill rig was used to collect soil samples from approximately 4 feet bgs down to an anticipated groundwater depth of 10 feet. Once groundwater was contacted, a temporary casing was set into the boring hole to obtain a groundwater sample at the approximate depth of groundwater. Specifically, groundwater samples were taken at the first incidence of groundwater within the boring using a peristaltic pump and polyethylene tubing to fill each of the sample



Project No. SK9746B	USCG ISC SUBSURFACE INVESTIGATION, ALAMEDA	SITE MAP	Figure 1
Federal Services			

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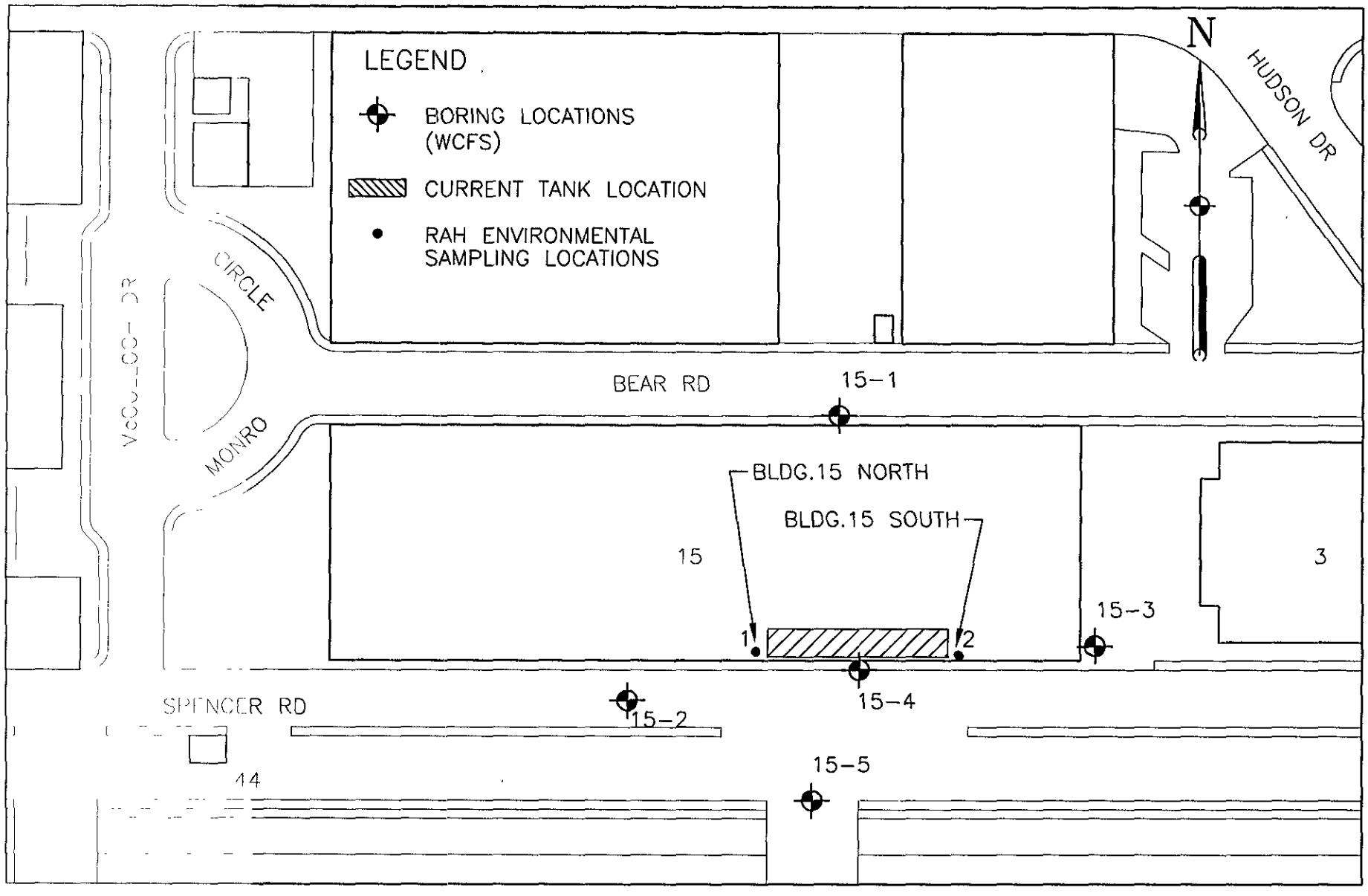
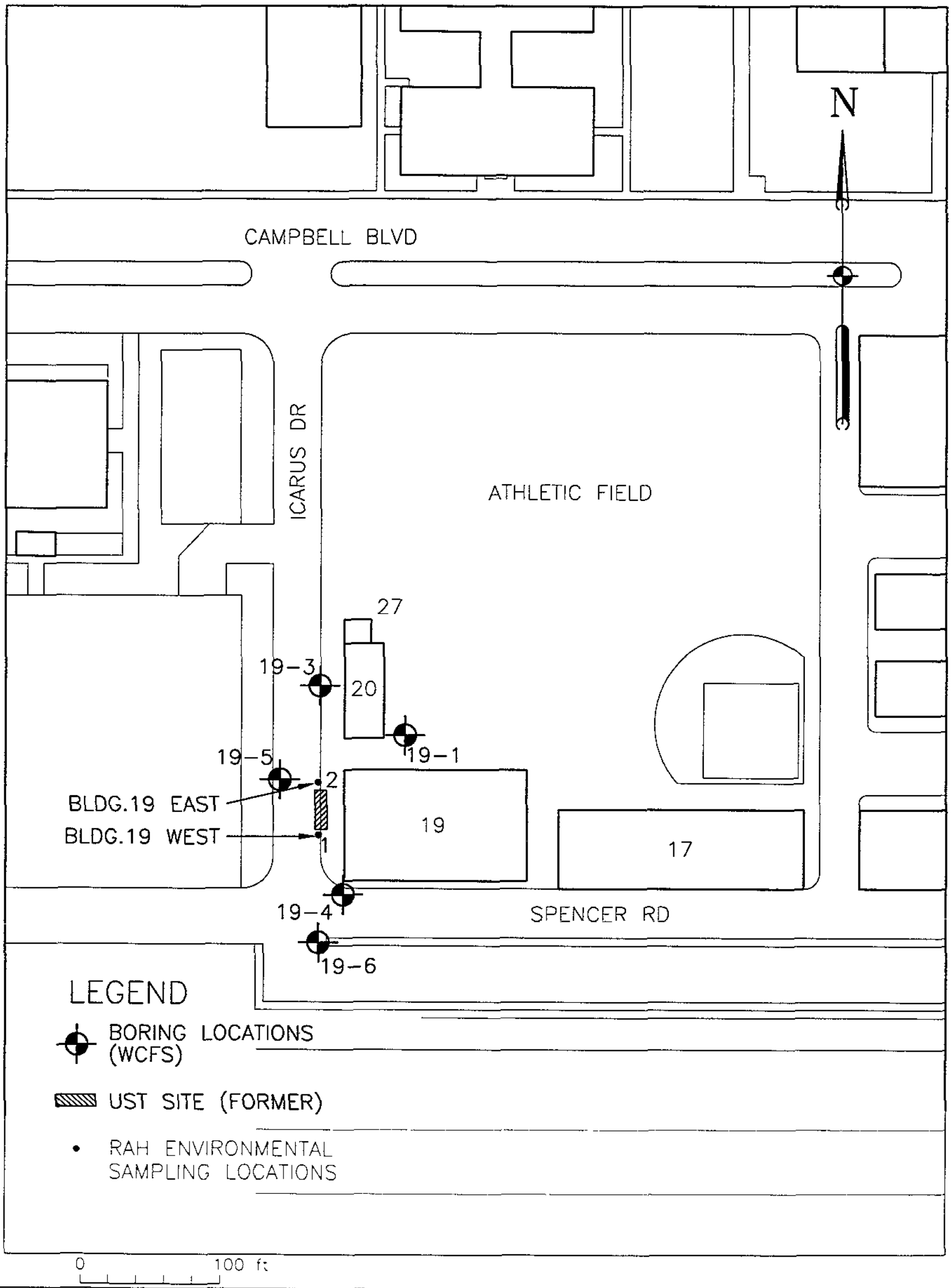


Project No. SK9746B	USCG ISC SUBSURFACE INVESTIGATION, ALAMEDA	FORMER AND CURRENT BORING LOCATIONS IN VICINITY OF BUILDING 15	Figure 2
	Federal Services		



Project No SK9746B	USCG ISC SUBSURFACE INVESTIGATION, ALAMEDA	FORMER AND CURRENT BORING LOCATIONS IN THE VICINITY OF BUILDING 19	Figure 3
	Federal Services		

containers (1 L amber bottles, 1 L polyethylene bottles, 500 mL polyethylene bottles, and 40 mL vials). To collect the dissolved lead groundwater sample (EPA Method 6010DS), a 0.45 µm filter was attached to the peristaltic pump, and the groundwater was pumped through the filter and into the 500 mL polyethylene container. The groundwater samples were then labeled with the appropriate date and time, registered into the chain-of-custody, and placed on ice in a cooler for storage prior to delivery to the laboratory.

4.1 GROUNDWATER SAMPLING AND ANALYSES

Groundwater samples were collected at each of the boring locations. Specifically, the groundwater samples which were analyzed for TPH_g, BTEX, and MTBE (EPA Method 8260) were collected by drawing out the water with a disposable plastic bailer and emptying the bailer into 40 mL vials. The peristaltic pump was not used to pump out the samples for EPA Method 8260 samples to avoid agitating the water and stripping the volatile organics out of the groundwater. The peristaltic pump was used to pump the groundwater from the temporary PVC casing to 1L glass amber bottles. The glass amber bottles were used for TPH_d, TPH as motor oil, diesel, and motor oil analyses. The pump was also used in conjunction with a 0.45 µm filter which was attached in-line with the pump to filter the groundwater samples for total dissolved lead (EPA Method 6010DS). The lead samples were collected in 500 mL plastic bottles.

The results of the groundwater sample analyses are shown in Table 2, and groundwater detections for Buildings 15 and 19 are shown on Figures 4 and 5, respectively. The analytical data show trace amounts of BTEX and MTBE at Boring 19-5 (36 µg/L and 16 µg/L, respectively). This boring is cross-gradient to the predicted groundwater flow direction for the source, and these results were the only EPA Method 8260 groundwater detections at Building 19. A TPH_d detection of 4,500 µg/L was found at Boring 19-3, which is immediately upgradient from the source.

Groundwater analytical data for Building 15 show significant groundwater detections at Borings 15-4 (adjacent to former Tank K05), 15-3 (cross-gradient east of predicted groundwater flow), 15-2 (cross-gradient west of predicted groundwater flow), and 15-1 (background well). Boring 15-4 had the following groundwater detections: a BTEX value of 1,200 µg/L, a TPH_d value of 3,300 µg/L, and an MTBE value of 18 µg/L. Boring 15-3 yielded the following groundwater results: a BTEX value of 47 µg/L and an MTBE value of 11 µg/L. Boring 15-2 had a BTEX groundwater detection of 26 µg/L and an MTBE groundwater detection of 18 µg/L. Boring 15-1 had a BTEX groundwater detection of 32 µg/L and an MTBE groundwater detection of 5 µg/L.

The results for Building 15 indicate that contamination at the source (Tank K05). However, the surrounding cross-gradient and background wells indicate that the contamination is restricted. The soil boring that served as the furthest downgradient point (Boring 15-5) had a detection of only 3 µg/L for BTEX. Based upon this preliminary analysis, the analytical groundwater results indicate that groundwater contamination for Tanks K05 and K06 does appear to threaten Brooklyn Basin South Channel, which is located approximately 150 feet downgradient from both sources.

4.2 SOIL SAMPLING AND ANALYSES

Sample collection for the soil samples proceeded in accordance with U.S. Environmental Protection Agency (EPA) document, *Test Methods for Evaluating Solid Waste - Physical/Chemical Methods* (EPA Reference SW-846). Soil samples were collected in 4-foot-long acetate tubing. Once the sample interval was determined based upon OVM readings, the acetate tubing was cut into appropriate 0.5-foot lengths, and the ends of the tubing were sealed with Teflon tape and plastic caps. The samples were labeled with the sample number, date, and

TABLE 2
ANALYTICAL RESULTS
FOR GROUNDWATER SAMPLES
BUILDINGS 15 AND 19
USCG-ISC ALAMEDA
(WCFS - 1998)

LOCATION DATE SAMPLED MATRIX	UNITS	USCG-ISC-19-1 4/13/98 GROUNDWATER Result	USCG-ISC-19-3 4/13/98 GROUNDWATER Result	USCG-ISC-19-4 4/13/98 GROUNDWATER Result	USCG-ISC-19-5 4/13/98 GROUNDWATER Result
Inorganic Analytical Results					
EPA Method 200.7					
Lead, dissolved	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
Organic Analytical Results					
Volatile Aromatic and Fuel Hydrocarbons					
EPA Method 8260					
Benzene	µg/L	<1	<1	<1	7
Ethylbenzene	µg/L	<1	<1	<1	6
Toluene	µg/L	<1	<1	<1	36
Xylenes (Total)	µg/L	<1	<1	<1	30
Methyl tert-Butyl Ether (MTBE)	µg/L	<1	<1	<1	16
Total Petroleum Hydrocarbons (Gasoline)	µg/L	<50	<50	<50	<50
Total Semi-Volatile Petroleum Hydrocarbons					
EPA Method 8015M					
Diesel Fuel	µg/L	-----	<50	-----	-----
TPH-Extractable (Diesel)	µg/L	-----	4500	-----	-----
Motor Oil	µg/L	-----	<200	-----	-----
TPH-Extractable (Motor Oil)	µg/L	-----	<200	-----	-----

Notes:

(1) Shading = Non-Detect/Not Analyzed

(2) "< 11" Represents a result of non-detect with a result limit of 11

TABLE 2
ANALYTICAL RESULTS
FOR GROUNDWATER SAMPLES
BUILDINGS 15 AND 19
USCG-ISC ALAMEDA
(WCFS - 1998)

LOCATION DATE SAMPLED MATRIX	UNITS	USCG-ISC-19-6 4/13/98 GROUNDWATER Result	USCG-ISC-15-1 4/13/98 GROUNDWATER Result	USCG-ISC-15-2 4/13/98 GROUNDWATER Result	USCG-ISC-15-3 4/13/98 GROUNDWATER Result
Inorganic Analytical Results					
EPA Method 200.7					
Lead, dissolved	mg/L	<0.002	<0.002	<0.002	<0.002
Organic Analytical Results					
Volatile Aromatic and Fuel Hydrocarbons					
EPA Method 8260					
Benzene	µg/L	<1	5	5	9
Ethylbenzene	µg/L	<1	4	3	6
Toluene	µg/L	<1	32	26	47
Xylenes (Total)	µg/L	<1	26	18	34
Methyl tert-Butyl Ether (MTBE)	µg/L	<1	5	2	11
Total Petroleum Hydrocarbons (Gasoline)	µg/L	<50	<50	<50	<50
Total Semi-Volatile Petroleum Hydrocarbons					
EPA Method 8015M					
Diesel Fuel	µg/L	-----	-----	-----	-----
EPH-Extractable (Diesel)	µg/L	-----	-----	-----	-----
Motor Oil	µg/L	-----	-----	-----	-----
EPH-Extractable (Motor Oil)	µg/L	-----	-----	-----	-----

Notes:

(1) Shading = Non-Detect/Not Analyzed

(2) " 11" Represents a result of non-detect with a result limit of 11

TABLE 2

ANALYTICAL RESULTS
FOR GROUNDWATER SAMPLES
BUILDINGS 15 AND 19
USCG-ISC ALAMEDA
(WCFS - 1998)

LOCATION DATE SAMPLED MATRIX	UNITS	USCG-ISC-15-4 4/13/98 GROUNDWATER Result	USCG-ISC-15-5 4/13/98 GROUNDWATER Result
Inorganic Analytical Results			
EPA Method 200.7			
Lead, dissolved	mg/L	< 0.002	< 0.002
Organic Analytical Results			
Volatile Aromatic and Fuel Hydrocarbons			
EPA Method 8260			
Benzene	µg/L	480	<1
Ethylbenzene	µg/L	660	<1
Toluene	µg/L	110	3
Xylenes (Total)	µg/L	1200	1
Methyl tert-Butyl Ether (MTBE)	µg/L	18	<1
Total Petroleum Hydrocarbons (Gasoline)	µg/L	<250	<50
Total Semi-Volatile Petroleum Hydrocarbons			
EPA Method 8015M			
Diesel Fuel	µg/L	~~3700~~ <50	-----
TPH-Extractable (Diesel)	µg/L	3300	-----
Motor Oil	µg/L	<200	-----
TPH-Extractable (Motor Oil)	µg/L	<200	-----

Notes:

(1) Shading = Non-Detect/Not Analyzed

(2) "< 11" = Represents a result of non-detect with a result limit of 11

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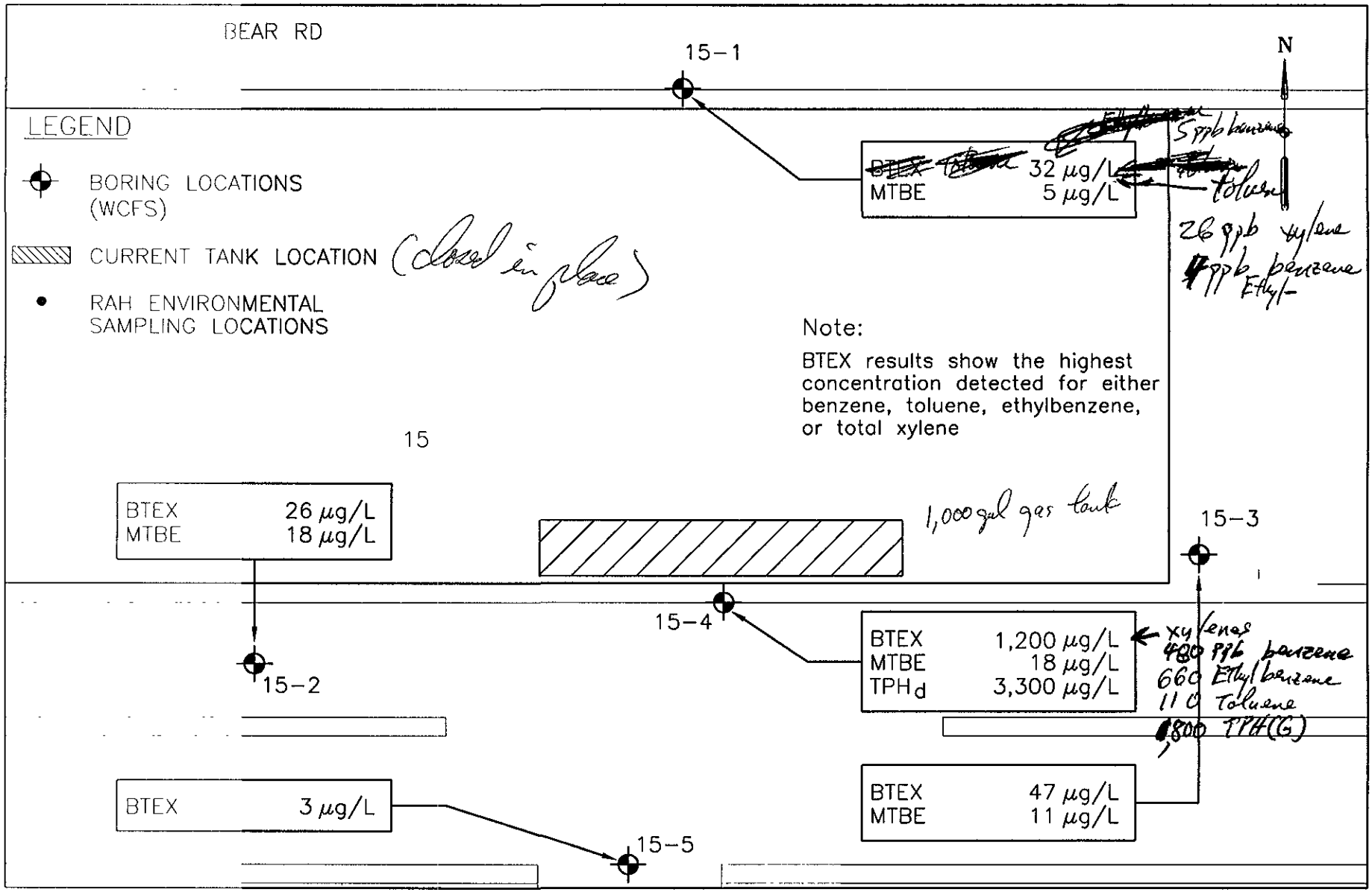
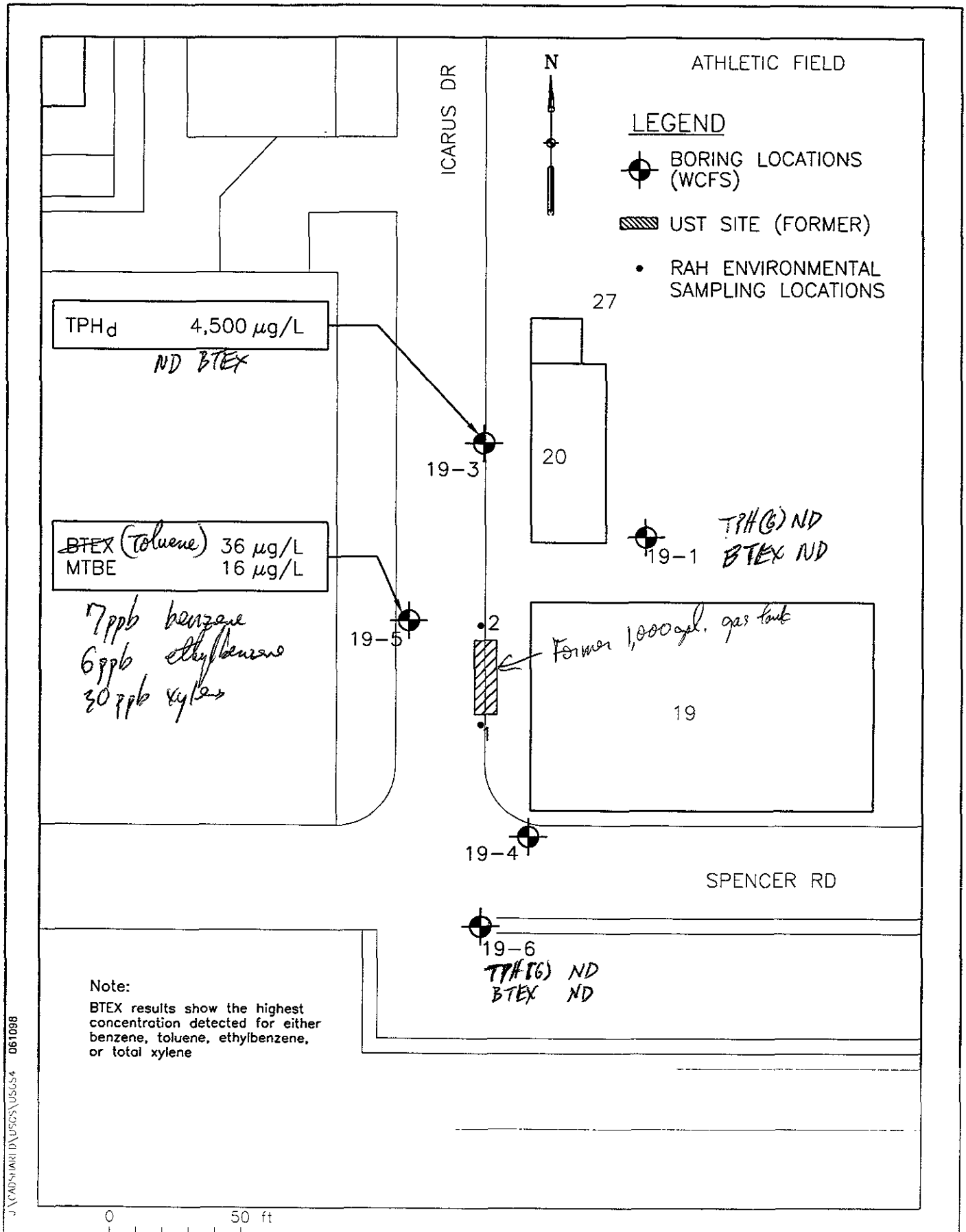


Project No. SK97468	USCG ISC SUBSURFACE INVESTIGATION, ALAMEDA	BUILDING 15 GROUNDWATER RESULTS (WCFS 1998)	Figure 4
	Federal Services		



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Project No. SK9746B	USCG ISC SUBSURFACE INVESTIGATION, ALAMEDA	BUILDING 19 GROUNDWATER RESULTS (WCFS 1998)	Figure 5
Federal Services			

time, and chain-of-custody seals were placed on each container. Each sample was then put into a plastic bag, placed in a cooler with ice, and maintained at 4°C to preserve sample integrity for delivery to the laboratory.

Each soil sample collected during the investigation was examined with an OVM in 1-foot intervals to determine the sample yielding the highest OVM reading at each boring location. Based upon the results of the OVM analysis, the soil samples were separated into two populations: (1) soil samples requiring immediate analysis and (2) soil samples to be put on hold by the laboratory. As requested by the USCG, the soil samples from the immediate population were analyzed by Caltest to determine preliminary concentrations. WCFS requested Caltest to fax a copy of the preliminary results to our office for initial review. After examining the preliminary analytical results and consulting with the USCG, WCFS decided that no additional chemical analyses were necessary for the site.

The results of the WCFS soil investigation are shown in Table 3, and soil contaminant detections for Buildings 15 and 19 are shown on Figures 6 and 7, respectively. The analytical soil data show trace amounts of Total Lead and TPH_d to be present at both buildings. Sample 15-4 collected at Building 15 showed a total lead detection of 3 mg/kg and a TPH_d detection of 66 mg/kg. Sample 19-3 collected at Building 19 showed a total lead detection of 10 mg/kg and a TPH_d detection of 31 mg/kg. As a result of the soil analyses from Borings 15-4 and 19-3, the additional soil samples from the second sample population placed on hold by the laboratory were not analyzed.

4.2.1 Soil Boring Information

In general, the soil consisted of coarse-grained, nonnative fill material and either brown, silty clay that was dry to moist, or highly compacted silty gravel. All locations except Boring 19-1 had an initial asphalt layer of 6 to 12 inches. The asphalt was then followed by a layer of nonnative fill material, which consisted of loose, moderately compacted coarse-grained sand and gravel. The fill material varied from depths of 2 to 4 feet bgs. Overall, borings at Building 15 had greater amounts of fill material than borings at Building 19.

The lithology surrounding Building 15 was fairly consistent except for the background well (Boring 15-1). The layers of fill material in each boring were followed by stiff layers of native, fine-grained silt, gravel, and sand. The average depth to groundwater for these samples was 7.14 feet bgs, and OVM readings ranged from 80 ppm to 1200 ppm at all borings except the background well.

Building 19 also had a fairly consistent lithology. Layers of fill material at this site were followed by stiff to very stiff layers of medium- to fine-grained silt and sand material. Bay Mud was encountered at each boring location at depths ranging from 2 to 5 feet bgs, and the average depth of the Bay Mud layer was approximately 4 feet. The average depth to groundwater for these samples was 4.19 feet bgs. OVM readings ranged from 0.0 ppm to 40.2 ppm for Building 19.

The soil samples were field-screened using an OVM to determine the concentration of volatile organic compounds (VOCs). Following the OVM screening, the sample interval yielding the

[redacted] TABLE 3

ANALYTICAL RESULTS
FOR SOIL SAMPLES
BUILDINGS 15 AND 19
USCG - ISC ALAMEDA
(WCFS 1998)

LOCATION **DATE SAMPLED** **SAMPLE DEPTH** **MATRIX**	**UNITS**	**USCG-ISC-19-3 (4.5 - 5.5)** 4/13/98 5.0 feet SOIL Result	**USCG-ISC-15-4 (4.5 - 5.5)** 4/13/98 5.0 feet SOIL Result
Inorganic Analytical Results			
EPA Method 6010			
Total Lead	mg/kg	10	3
Organic Analytical Results			
Volatile Aromatic and Fuel Hydrocarbons			
EPA Method 8260			
Benzene	mg/kg	<0.025	<0.025
Ethylbenzene	mg/kg	<0.025	<0.025
Toluene	mg/kg	<0.025	<0.025
Xylenes (Total)	mg/kg	<0.025	<0.025
Methyl tert-Butyl Ether (MTBE)	mg/kg	<0.025	<0.025
Total Petroleum Hydrocarbons (Gasoline)	µg/kg	<50	<50
Total Semi-Volatile Petroleum Hydrocarbons			
EPA Method 8015M			
Diesel Fuel	mg/kg	<2	<2
TPH-Extractable (Diesel)	mg/kg	31	66
Motor Oil	mg/kg	<7	<7
TPH-Extractable (Motor Oil)	mg/kg	<7	<7

Notes:

(1) Shading = Non-Detect/Not Analyzed

(2) "< 11" = Represents a result of non-detect with a result limit of 11

(3) The sample depth is the average depth calculated from the sample interval listed.

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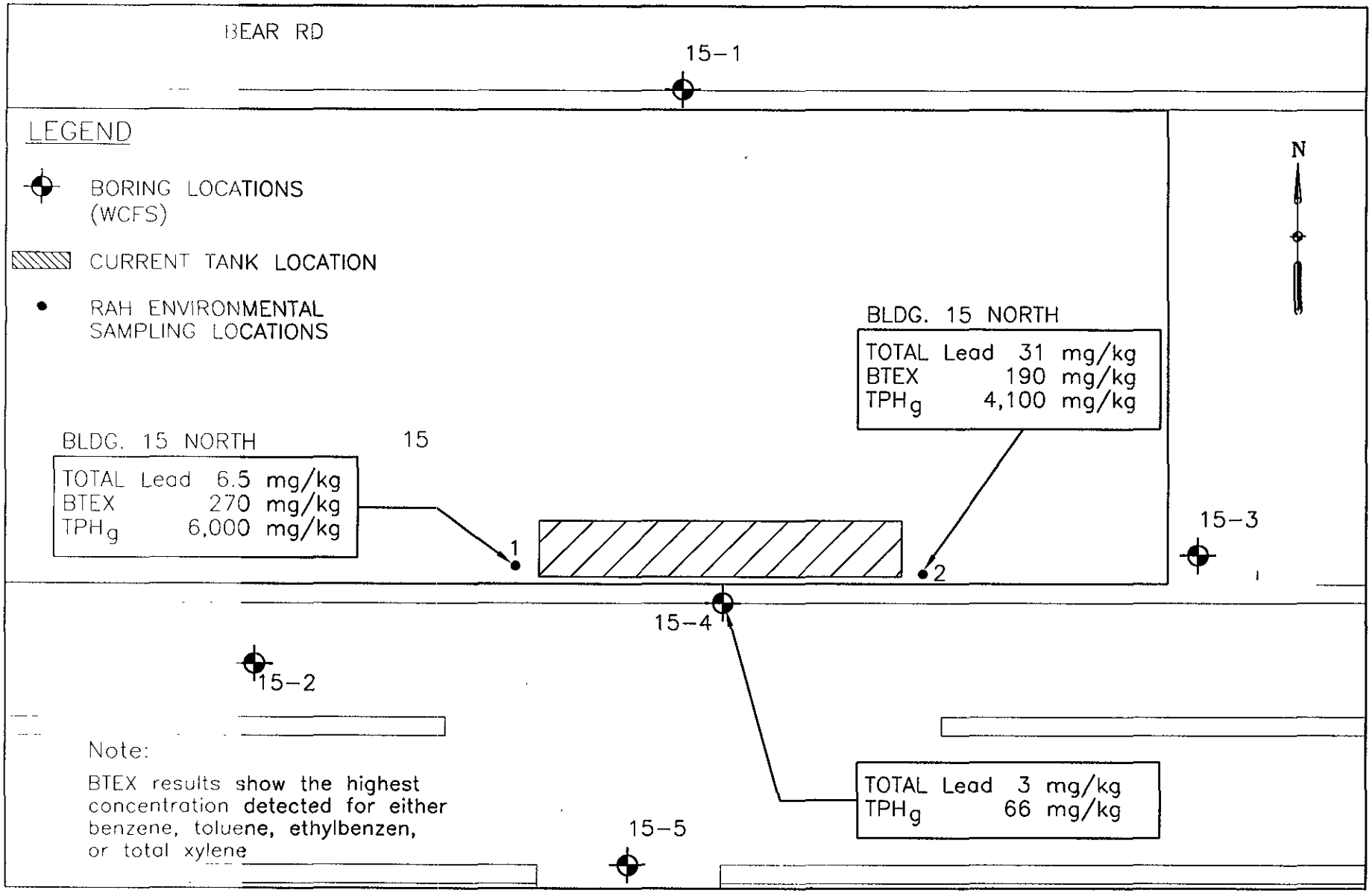
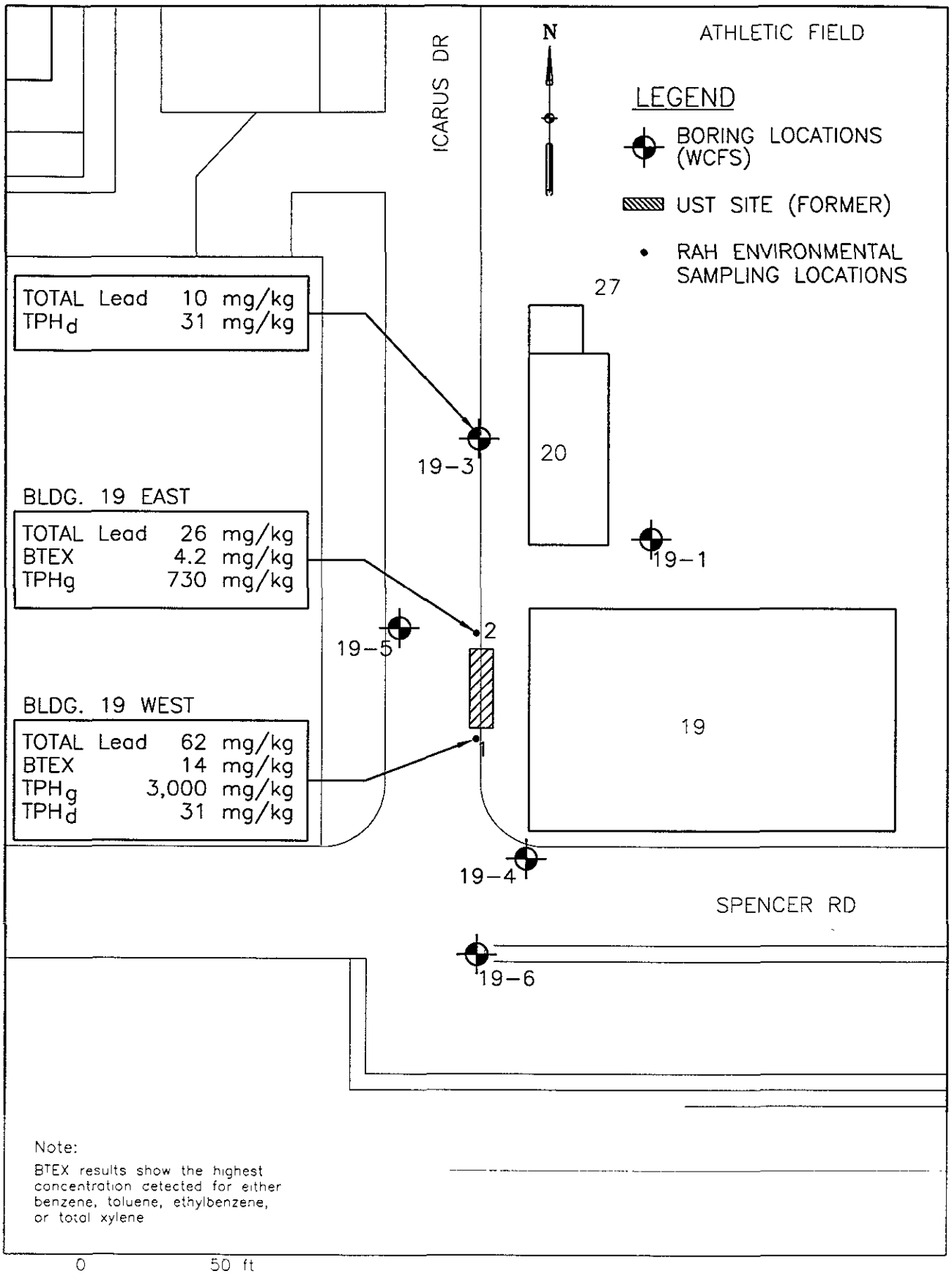


Project No. SK9746B	USCG ISC SUBSURFACE INVESTIGATION, ALAMEDA	BUILDING 15 SOIL SAMPLE RESULTS (WCFS 1998, RAH 1997)	Figure 6
	Federal Services		



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Project No. SK9746B	USCG ISC SUBSURFACE INVESTIGATION, ALAMEDA	BUILDING 19 SOIL SAMPLE RESULTS (WCFS 1998, RAH 1997)	Figure 7
Federal Services			

highest OVM reading was extruded, capped, labeled, and placed on ice to preserve the sample's integrity prior to analysis.

Borings

Building 15 Locations.

Boring 15-1. Boring 15-1 is located immediately project north of Tank K05 near the northeastern corner of Building 15. Boring 15-1 was placed at this location to serve as the upgradient sampling location for this investigation and was used to assess background hydrocarbon levels for Building 15. OVM screening results indicated no detectable concentrations of VOCs at any depth for this soil boring. Boring 15-1 was completed to a depth of 10 feet bgs. USCG-ISC-15-1(6.5 - 7.0) was submitted as a hold sample for laboratory analysis. After inspection of preliminary soil analytical results from Boring 15-4, WCFS and USCG decided not to analyze this soil sample.

Boring 15-2. Boring 15-2 is located approximately 30 feet cross-gradient west of former location Tank K05. OVM screening results for this borehole yielded significant detectable concentrations of VOCs. Specifically, readings of 300, 781, 900, and 560 ppm were recorded during drilling. However, Boring 15-2 did not have a strong odor during the drilling and sampling operations. Boring 15-2 was completed to a depth of 10 feet bgs. USCG-ISC-15-2(9.0 - 10.0) was submitted as a hold sample for laboratory analysis. After inspection of preliminary soil analytical results from Boring 15-4, WCFS and USCG decided not to analyze this soil sample.

Boring 15-3. Boring 15-3 is located approximately 30 feet cross-gradient east of Tank K05 in the southeastern corner of Building 15. OVM screening results for this borehole yielded trace concentrations of VOCs. Specifically, readings of 50, 373, 280, and 80 ppm were recorded during drilling. However, Boring 15-3 did not have a strong odor during the drilling and sampling operations. Boring 15-3 was completed to a depth of 10 feet bgs. USCG-ISC-15-3(5.5 - 6.0) was submitted as a hold sample for laboratory analysis. After inspection of preliminary soil analytical results from Boring 15-4, WCFS and USCG decided not to analyze this soil sample.

Boring 15-4. Boring 15-4 is located in between BLDG. 15 NORTH and BLDG. 15 SOUTH on the outside of Building 15. These two locations reported the highest values for TPH_g (6,000 ppm) and benzene (7 ppm) during the 1997 investigation. OVM screening results for this borehole yielded trace concentrations of VOCs. Specifically, readings of 1,200 and 800 ppm were recorded during drilling. In addition, Boring 15-4 had a strong odor during the drilling and sampling operations. Based upon these two criteria, USCG-ISC-15-4(4.5 - 5.5) was submitted as a hold sample for laboratory analysis. Boring 15-4 was completed to a depth of 10 feet bgs. Soil detections of 3 and 66 mg/kg were found for total lead and TPH_d, respectively. Analytical results for TPH_g, MTBE, BTEX, diesel fuel, motor oil, and TPH as motor oil were all nondetect.

Boring 15-5. Boring 15-5 is located 100 feet immediately south of Tank K05. Boring 15-5 served as the downgradient sampling location for this investigation and was used to assess potential downgradient migration of petroleum hydrocarbons. OVM screening results for this

borehole yielded significant concentrations of VOCs. An average reading of 320 ppm was recorded during drilling. However, Boring 15-5 did not have a strong odor during the drilling and sampling operations. Boring 15-5 was completed to a depth of 10 feet bgs. USCG-ISC-15-5(3.5 - 4.5) was submitted as a hold sample for laboratory analysis. After inspection of preliminary soil analytical results from Boring 15-4, WCFS and USCG decided not to analyze this soil sample.

Building 19 Locations.

Boring 19-1. Boring 19-1 is located in the field adjacent to Building 19, immediately 30 feet east of Tank K06. Boring 19-1 was chosen as the cross-gradient sampling location for this investigation to assess the northern migration of the contamination at Building 19. OVM screening results indicated no detectable concentrations of VOCs at any depth in this soil boring. Boring 19-1 was completed to a depth of 10 feet bgs. No soil samples were submitted for laboratory analysis from this borehole because no VOCs were detected during the OVM screening analyses performed during drilling.

Boring 19-2. This location was chosen to assess the contamination immediately adjacent to Tank K06. However, due to the inability of the GeoProbe Drill Rig to mobilize inside Building 19, this location was eliminated from the investigation.

Boring 19-3. Boring 19-3 is located immediately north of Tank K06 adjacent to the southwestern corner of Building 20. Boring 19-3 serves as the upgradient sampling location for this investigation. Due to the strong odor and relatively high OVM readings observed in this borehole (OVM readings of 2 ppm were recorded at this location), Boring 19-3 was chosen as the Building 19 location to be sampled for soil and diesel analytical results. Boring 19-3 was completed to a depth of 10 feet bgs. Soil detections of 10 and 31 mg/kg were found for total lead and TPH_d, respectively. Analytical results for TPH_g, MTBE, BTEX, diesel fuel, motor oil, and TPH as motor oil were all nondetect.

Boring 19-4. Boring 19-4 is located immediately south of Tank K06 adjacent to the southwestern corner of Building 19. Boring 19-4 was used to assess the potential downgradient migration of the petroleum contamination. OVM screening results indicated no detectable concentrations of VOCs at any depth for this soil boring. Boring 19-4 was completed to a depth of 10 feet bgs. USCG-ISC-19-4(4.5 - 5.0) was submitted as a hold sample for laboratory analysis. After inspection of preliminary soil analytical results from Boring 19-3, WCFS and USCG decided not to analyze this soil sample.

Boring 19-5. Boring 19-5 is located immediately west of Tank K06 on Icarus Drive. Boring 19-5 was used to assess the potential western cross-gradient migration of the petroleum contamination. OVM screening results indicated slightly detectable concentrations of VOCs (OVM readings of 32.8 ppm were detected) for this soil boring. Boring 19-5 was completed to a depth of 10 feet bgs. USCG-ISC-19-5(3.0 - 3.5) was submitted as a hold sample for laboratory analysis. This soil sample was not chosen for analysis due to the location's relatively large distance from the former location of Tank K06. After inspection of preliminary soil analytical results from Boring 19-3, WCFS and USCG decided not to analyze this soil sample.

Boring 19-6. Boring 19-6 is located on Spencer Road southwest of Tank K06. Boring 19-6 was used to assess the potential downgradient migration from the source. OVM screening results indicated slightly detectable concentrations of VOCs (OVM readings of 40.2, 40.0, and 38 ppm were detected throughout the soil column) for this soil boring. Boring 19-6 was completed to a depth of 10 feet bgs. USCG-ISC-19-6(4.0 - 5.0) was submitted as a hold sample for laboratory analysis. This soil sample was not chosen for analysis due to the location's relatively large distance from the former location of Tank K06. After inspection of preliminary soil analytical results from Boring 19-3, WCFS and USCG decided not to analyze this soil sample.

The objective to characterize the nature, determine the concentration, and evaluate the horizontal and vertical extent of petroleum contamination discovered at or near Buildings 15 and 19 at the ISC Alameda was met in accordance with the approved work plan and scope of work from the ACDEH.

At Building 15, residual TPH_g, BTEX, MTBE, diesel, motor oil, and TPH as motor oil were all not detected in the soil sample from Boring 15-4. A result of 66 mg/kg for TPH_d was the only hydrocarbon detection for the soil sample submitted for Building 15. Similarly, Building 19 did not have any detections in the soil sample from Boring 19-3 for TPH_g, BTEX, MTBE, diesel, motor oil, and TPH as motor oil. A detection of 31 mg/kg was found for TPH_d at Building 19.

Groundwater samples yielded hydrocarbon detections at Borings 19-3, 19-5, 15-1, 15-2, 15-3, 15-4, and 15-5. The residual petroleum hydrocarbon concentration in groundwater were all nondetect. Benzene concentrations ranged from nondetect to 7 µg/L at Building 19 and nondetect to 480 µg/L at Building 15. Ethylbenzene concentrations ranged from nondetect to 6 µg/L at Building 19 and nondetect to 660 µg/L at Building 15. Toluene concentrations ranged from nondetect to 36 µg/L at Building 19 and 3 to 110 µg/L were discovered for toluene at Building 15. Total xylene concentrations ranged from of nondetect to 30 µg/L for Building 19 and 1 µg/L to 1,200 µg/L for Building 15. Trace amounts of MTBE were discovered at Building 19 (Boring 19-5 had a result of 16 µg/L). MTBE detections at Building 15 ranged from nondetect to 18 µg/L. The diesel sampling analyses (EPA Method 8015M) yielded results of 4,500 µg/L at Building 19 and 3,300 µg/L at Building 15 for TPH_d .

The maximum concentrations of residual petroleum hydrocarbons appeared at the borings located closest to the former sources. A precipitous drop in hydrocarbon concentrations was observed at sites located upgradient, cross-gradient, and downgradient from Buildings 15 and 19. The OVM screening results helped to categorize the borings and served as a valuable initial tool for limiting the scope of the excavation. The OVM field screening gradients directly correlated with the laboratory results.

Based upon available data, groundwater flow direction was assessed to be generally flowing toward the Brooklyn Basin South Channel. Because of the close proximity of Buildings 15 and 19 to the channel, groundwater flows and fluxes are tidally influenced at both locations. The analytical results for soil and groundwater at both buildings at the USCG ISC indicate that a tidal effect is limiting the migration of the groundwater contaminants. Thus, the contaminants pose no threat to the Brooklyn Basin South Channel.

Laboratory quality control indicates that all internal quality control parameters were within acceptable limits, and the concentration levels of all the requested analytes in the method blanks were below the reporting detection limits.

Appendix A
Analytical Results

Appendix A
Analytical Results

CALTEST ANALYTICAL LABORATORY
1885 N. Kelly Rd. • Napa, California 94558
(707) 258-4000 • Fax: (707) 226-1001

CERTIFIED ENVIRONMENTAL SERVICES
CALIFORNIA ELAP #1664

LAB ORDER No.: 9804-315

REPORT of ANALYTICAL RESULTS

Report Date: 06 MAY 1998
Received Date: 15 APR 1998

Client: John Wharton
Woodward-Clyde
500 12th Street
Oakland CA 94607

Project: SK9746B; USCG - ISC ALAMEDA

Sampled by: JOHN WHARTON

Lab Number	Sample Identification	Matrix	Sampled Date/Time
9804315-1	USCG-ISC-19-6	AQUEOUS	13 APR 98 11:15
9804315-2	USCG-ISC-15-S	AQUEOUS	13 APR 98 16:15
9804315-3	USCG-ISC-19-1	AQUEOUS	13 APR 98 11:00
9804315-4	USCG-ISC-15-1	AQUEOUS	13 APR 98 17:45
9804315-5	USCG-ISC-15-4 (4.5-5.5)	SOIL	14 APR 98 15:30
9804315-6	USCG-ISC-19-3 (4.5-5.5)	SOIL	13 APR 98 12:00
9804315-7	USCG-ISC-19-3	AQUEOUS	13 APR 98 12:00
9804315-8	USCGISC-15-3	AQUEOUS	13 APR 98 17:00
9804315-9	TRIP BLANK #1 (TB041098)	AQUEOUS	14 APR 98 18:00
9804315-10	TRIP BLANK #2 (TB041098)	AQUEOUS	14 APR 98 18:00
9804315-11	USCG-ISC-15-5	AQUEOUS	13 APR 98 14:30
9804315-12	USCG-ISC-19-4	AQUEOUS	13 APR 98 11:30
9804315-13	USCG-ISC-19-5	AQUEOUS	13 APR 98 18:15
9804315-14	USCG-ISC-15-4	AQUEOUS	13 APR 98 15:30

Peter Halpin
Project Manager

CAHorn
Christine Horn
Laboratory Director

Results are specific to the sample as submitted and only to the parameters reported
All analyses performed by EPA Methods or Standard Methods (SM) 18th Ed. except where noted.
Results of 'ND' mean not detected at or above the listed Reporting Limit (R.L.).
'D.F.' means Dilution Factor and has been used to adjust the listed Reporting Limit (R.L.).
Acceptance Criteria for all Surrogate recoveries are defined in the QC Spike Data Reports.

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CERTIFIED ENVIRONMENTAL SERVICES
CALIFORNIA ELAP #1664

LAB ORDER No.: 9804-315

INORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	METHOD	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-1 **SAMPLE ID:** USCG-ISC-19-6 **SAMPLED:** 13 APR 98 11:15								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1
LAB NUMBER: 9804315-2 **SAMPLE ID:** USCG-ISC-15-S **SAMPLED:** 13 APR 98 16:15								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1
LAB NUMBER: 9804315-3 **SAMPLE ID:** USCG-ISC-19-1 **SAMPLED:** 13 APR 98 11:00								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1
LAB NUMBER: 9804315-4 **SAMPLE ID:** USCG-ISC-15-1 **SAMPLED:** 13 APR 98 17:45								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1
LAB NUMBER: 9804315-5 **SAMPLE ID:** USCG-ISC-15-4 (4.5-5.5) **SAMPLED:** 14 APR 98 15:30								
Lead	10.	1.	mg/kg	10	6010	04.23.98	A980286ICP	2,3
LAB NUMBER: 9804315-6 **SAMPLE ID:** USCG-ISC-19-3 (4.5-5.5) **SAMPLED:** 13 APR 98 12:00								
Lead	3.	1.	mg/kg	10	6010	04.23.98	A980286ICP	2,3

1) Sample Preparation on 04-27-98 using 3005A (Filtrate)
2) Sample Preparation on 04-21-98 using 3050
3) Result expressed as wet weight of sample.

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INORGANIC ANALYTICAL RESULTS

LAB ORDER No.: 9804-315

ANALYTE	RESULT	R.L.	UNITS	D.F.	METHOD	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-7 SAMPLE ID: USCG-ISC-19-3 SAMPLED: 13 APR 98 12:00								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1
LAB NUMBER: 9804315-8 SAMPLE ID: USCGISC-15-3 SAMPLED: 13 APR 98 17:00								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1
LAB NUMBER: 9804315-11 SAMPLE ID: USCG-ISC-15-5 SAMPLED: 13 APR 98 14:30								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1
LAB NUMBER: 9804315-12 SAMPLE ID: USCG-ISC-19-4 SAMPLED: 13 APR 98 11:30								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1
LAB NUMBER: 9804315-13 SAMPLE ID: USCG-ISC-19-5 SAMPLED: 13 APR 98 18:15								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1
LAB NUMBER: 9804315-14 SAMPLE ID: USCG-ISC-15-4 SAMPLED: 13 APR 98 15:30								
Lead, dissolved	ND	0.002	mg/L	1	200.7	04.27.98	A980297ICP	1

1) Sample Preparation on 04-27-98 using 3005A (Filtrate)

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LAB ORDER No.: 9804-315

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-1 40							
SAMPLE ID: USCG-ISC-19-6							
SAMPLED: 13 APR 98 11:15							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	1
Benzene	ND	1.	ug/L				
Ethylbenzene	ND	1.	ug/L				
Toluene	ND	1.	ug/L				
Xylenes (Total)	ND	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	ND	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	102.		%				
Surrogate 1,2-DCA-d4	96.		%				
Surrogate Toluene-d8	105.		%				
Surrogate 4-BFB	102.		%				
Tph-Quanted As Gas	ND	50.	ug/L				
LAB NUMBER: 9804315-2 H2O							
SAMPLE ID: USCG-ISC-15-8 5							
SAMPLED: 13 APR 98 16:15							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	1
Benzene	5.	1.	ug/L				
Ethylbenzene	3.	1.	ug/L				
Toluene	26.	1.	ug/L				
Xylenes (Total)	18.	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	2.	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	105.		%				
Surrogate 1,2-DCA-d4	97.		%				
Surrogate Toluene-d8	101.		%				
Surrogate 4-BFB	100.		%				
Tph-Quanted As Gas	ND	50.	ug/L				
LAB NUMBER: 9804315-3							
SAMPLE ID: USCG-ISC-19-1							
SAMPLED: 13 APR 98 11:00							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	1
Benzene	ND	1.	ug/L				

... notes continued on next page ...

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CALIFORNIA ELAP #1664

LAB ORDER No.: 9804-315

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-3 (continued) H2O							
SAMPLE ID: USCG-ISC-19-1							
SAMPLED: 13 APR 98 11:00							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS (continued)				1	04.24.98	V980050VOA	
Ethylbenzene	ND	1.	ug/L				
Toluene	ND	1.	ug/L				
Xylenes (Total)	ND	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	ND	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	107.		%				
Surrogate 1,2-DCA-d4	106.		%				
Surrogate Toluene-d8	109.		%				
Surrogate 4-BFB	112.		%				
Tph-Quanted As Gas	ND	50.	ug/L				
LAB NUMBER: 9804315-4 H2O							
SAMPLE ID: USCG-ISC-15-1							
SAMPLED: 13 APR 98 17:45							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	2
Benzene	5.	1.	ug/L				
Ethylbenzene	4.	1.	ug/L				
Toluene	32.	1.	ug/L				
Xylenes (Total)	26.	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	5.	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	102.		%				
Surrogate 1,2-DCA-d4	94.		%				
Surrogate Toluene-d8	108.		%				
Surrogate 4-BFB	101.		%				
Tph-Quanted As Gas	ND	50.	ug/L				

.. notes continued from prior page ...
1) Sample Preparation on 04-24-98 using EPA 5030
2) Sample Preparation on 04-24-98 using EPA 5030

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ORGANIC ANALYTICAL RESULTS

LAB ORDER No.: 9804-315

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-5 Soil							
SAMPLE ID: USCG-ISC-15-4 (4.5-5.5)							
SAMPLED: 14 APR 98 15:30							
METHOD: EPA 8015M							
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS				1	04.30.98	T980094TPH	1,2,3
Diesel Fuel	ND	2.	mg/Kg				
TPH-Extractable, quantitated as diesel	66.	2.	mg/Kg				
Motor Oil	ND	7.	mg/Kg				
TPH-Extractable, quantitated as Motor Oil	ND	7.	mg/Kg				
Surrogate o-Terphenyl	90.		%				
Surrogate Triacontane	126.		%				
LAB NUMBER: 9804315-5 (continued)							
SAMPLE ID: USCG-ISC-15-4 (4.5-5.5)							
SAMPLED: 14 APR 98 15:30 Soil							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.27.98	V980051VOA	2,4
Benzene	ND	0.025	mg/kg				
Ethylbenzene	ND	0.025	mg/kg				
Toluene	ND	0.025	mg/kg				
Xylenes (Total)	ND	0.025	mg/kg				
Methyl tert-Butyl Ether (MTBE)	ND	0.025	mg/kg				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/Kg				
Surrogate Dibromofluoromethane	96.		%				
Surrogate 1,2-DCA-d4	88.		%				
Surrogate Toluene-d8	93.		%				
Surrogate 4-BFB	106.		%				
Tph-Quanted As Gas	ND	50.	ug/kg				
LAB NUMBER: 9804315-6 Soil							
SAMPLE ID: USCG-ISC-19-3 (4.5-5.5)							
SAMPLED: 13 APR 98 12:00							
METHOD: EPA 8015M							
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS				1	04 25.98	T980094TPH	1,2,3
Diesel Fuel	ND	2	mg/Kg				

1) Sample Preparation on 04-23-98 using EPA 3550
2) Result expressed as wet weight of sample.
3) An unidentified petroleum hydrocarbon was present in the sample. An approximate concentration has been calculated based on Diesel #2 standards.

... notes continued on next page ...

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LAB ORDER No.: 9804-315

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-6 (continued) Soil							
SAMPLE ID: USCG-ISC-19-3 (4.5-5.5)							
SAMPLED: 13 APR 98 12:00							
METHOD: EPA 8015M							
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS (continued)				1	04.25.98	T980094TPH	
TPH-Extractable, quantitated as diesel	31.	2.	mg/Kg				
Motor Oil	ND	7.	mg/Kg				
TPH-Extractable, quantitated as Motor Oil	ND	7.	mg/Kg				
Surrogate o-Terphenyl	88.		%				
Surrogate Triacontane	129.		%				
LAB NUMBER: 9804315-6 (continued) Soil							
SAMPLE ID: USCG-ISC-19-3 (4.5-5.5)							
SAMPLED: 13 APR 98 12:00							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.27.98	V980051VOA	5,6
Benzene	ND	0.025	mg/kg				
Ethylbenzene	ND	0.025	mg/kg				
Toluene	ND	0.025	mg/kg				
Xylenes (Total)	ND	0.025	mg/kg				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/Kg				
Surrogate Dibromofluoromethane	101.		%				
Surrogate 1,2-DCA-d4	89.		%				
Surrogate Toluene-d8	100.		%				
Surrogate 4-BFB	109.		%				
Tph-Quanted As Gas	ND						

... notes continued from prior page ...
4) Sample Preparation on 04-27-98 using EPA 5030
5) Sample Preparation on 04-27-98 using EPA 5030
6) Result expressed as wet weight of sample.

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CERTIFIED ENVIRONMENTAL SERVICES
CALIFORNIA ELAP #1664

LAB ORDER No.: 9804-315

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-7 H2O							
SAMPLE ID: USCG-ISC-19-3							
SAMPLED: 13 APR 98 12:00							
METHOD: EPA 8015M							
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS				2	04.24.98	T980091TPH	1,2,3,4
Diesel Fuel	ND	50.	ug/L				
TPH-Extractable, quantitated as diesel	4500.	100.	ug/L				
Motor Oil	ND	200.	ug/L				
TPH-Extractable, quantitated as Motor Oil	ND	200.	ug/L				
Surrogate o-Terphenyl	51.		%				
Surrogate Triacontane	104.		%				
LAB NUMBER: 9804315-7 (continued)							
SAMPLE ID: USCG-ISC-19-3							
SAMPLED: 13 APR 98 12:00							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	5
Benzene	ND	1.	ug/L				
Ethylbenzene	ND	1.	ug/L				
Toluene	ND	1.	ug/L				
Xylenes (Total)	ND	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	ND	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	113.		%				
Surrogate 1,2-DCA-d4	104.		%				
Surrogate Toluene-d8	112.		%				
Surrogate 4-BFB	106.		%				
Tph-Quanted As Gas	ND	50.	ug/L				

1) Sample Preparation on 04-18-98 using EPA 3510
2) An unidentified petroleum hydrocarbon was present in the sample. An approximate concentration has been calculated based on Diesel #2 standards.
3) Sample diluted to bring concentration of target analyte(s) within the working range of the instrument, resulting in increased reporting limits.
4) Due to matrix interferences present in the sample, surrogate recoveries failed to meet the QA/QC acceptance criteria
5) Sample Preparation on 04-24-98 using EPA 5030

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CERTIFIED ENVIRONMENTAL SERVICES
CALIFORNIA ELAP #1664

LAB ORDER No.: 9804-315

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-8 H2O							
SAMPLE ID: USCGISC-15-3							
SAMPLED: 13 APR 98 17:00							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	1,2,3
Benzene	9.	1.	ug/L				
Ethylbenzene	6.	1.	ug/L				
Toluene	47.	1.	ug/L				
Xylenes (Total)	34.	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	11.	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	110.		%				
Surrogate 1,2-DCA-d4	106.		%				
Surrogate Toluene-d8	110.		%				
Surrogate 4-BFB	108.		%				
Tph-Quanted As Gas	80.	50.	ug/L				
LAB NUMBER: 9804315-9							
SAMPLE ID: TRIP BLANK #1 (TB041098)							
SAMPLED: 14 APR 98 18:00							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	1,2,3
Benzene	ND	1.	ug/L				
Ethylbenzene	ND	1.	ug/L				
Toluene	ND	1.	ug/L				
Xylenes (Total)	ND	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	ND	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	104.		%				
Surrogate 1,2-DCA-d4	104.		%				
Surrogate Toluene-d8	100.		%				
Surrogate 4-BFB	108.		%				
Tph -Quanted As Gas	ND	50.	ug/L				

1) Sample Preparation on 04-24-98 using EPA 5030
2) An unidentified petroleum hydrocarbon (product) was present in the sample. An approximate concentration has been calculated based on gasoline standards.
3) Refer to EPA SW-846 Third Edition for the specific protocol followed in the tentative identification of non-target compounds.

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CERTIFIED ENVIRONMENTAL SERVICES
CALIFORNIA ELAP #1664

LAB ORDER No.: 9804-315

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-10							
SAMPLE ID: TRIP BLANK #2 (TB041098)							
SAMPLED: 14 APR 98 18:00							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	1,2,3
Benzene	ND	1.	ug/L				
Ethylbenzene	ND	1.	ug/L				
Toluene	ND	1.	ug/L				
Xylenes (Total)	ND	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	ND	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	104.		%				
Surrogate 1,2-DCA-d4	100.		%				
Surrogate Toluene-d8	100.		%				
Surrogate 4-BFB	104.		%				
Tph-Quanted As Gas	1100.	50.	ug/L				
LAB NUMBER: 9804315-11 H_2O							
SAMPLE ID: USCG-ISC-15-5							
SAMPLED: 13 APR 98 14:30							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	1
Benzene	ND	1.	ug/L				
Ethylbenzene	ND	1.	ug/L				
Toluene	3.	1.	ug/L				
Xylenes (Total)	1.	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	ND	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	113.		%				
Surrogate 1,2-DCA-d4	111.		%				
Surrogate Toluene-d8	110.		%				
Surrogate 4-BFB	107.		%				
Tph-Quanted As Gas	ND	50.	ug/L				

1) Sample Preparation on 04-24-98 using EPA 5030
2) An unidentified petroleum hydrocarbon (product) was present in the sample. An approximate concentration has been calculated based on gasoline standards.
3) Refer to EPA SW-846 Third Edition for the specific protocol followed in the tentative identification of non-target compounds.

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CERTIFIED ENVIRONMENTAL SERVICES
CALIFORNIA ELAP #1664

ORGANIC ANALYTICAL RESULTS

LAB ORDER No.: 9804-315

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-12 H2O							
SAMPLE ID: USCG-ISC-19-4							
SAMPLED: 13 APR 98 11:30							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	1
Benzene	ND	1.	ug/L				
Ethylbenzene	ND	1.	ug/L				
Toluene	ND	1.	ug/L				
Xylenes (Total)	ND	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	ND	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	106.		%				
Surrogate 1,2-DCA-d4	101.		%				
Surrogate Toluene-d8	110.		%				
Surrogate 4-BFB	104.		%				
Tph-Quanted As Gas	ND	50.	ug/L				
LAB NUMBER: 9804315-13 H2O							
SAMPLE ID: USCG-ISC-19-5							
SAMPLED: 13 APR 98 18:15							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS				1	04.24.98	V980050VOA	1
Benzene	7.	1.	ug/L				
Ethylbenzene	6.	1.	ug/L				
Toluene	36.	1.	ug/L				
Xylenes (Total)	30.	1.	ug/L				
Methyl tert-Butyl Ether (MTBE)	16.	1.	ug/L				
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L				
Surrogate Dibromofluoromethane	104.		%				
Surrogate 1,2-DCA-d4	100.		%				
Surrogate Toluene-d8	110.		%				
Surrogate 4-BFB	108.		%				
Tph-Quanted As Gas	ND	50.	ug/L				

1) Sample Preparation on 04-24-98 using EPA 5030

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CERTIFIED ENVIRONMENTAL SERVICES
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LAB ORDER No.: 9804-315

ORGANIC ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	D.F.	ANALYZED	QC BATCH	NOTES
LAB NUMBER: 9804315-14 H2O							
SAMPLE ID: USCG-ISC-15-4							
SAMPLED: 13 APR 98 15:30							
METHOD: EPA 8015M							
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS				2	04.24.98	T980091TPH	1,2,3,4
Diesel Fuel	ND	50.	ug/L				
TPH-Extractable, quantitated as diesel	3300.	100.	ug/L				
Motor Oil	ND	200.	ug/L				
TPH-Extractable, quantitated as Motor Oil	ND	200.	ug/L				
Surrogate o-Terphenyl	64.		%				
Surrogate Triacontane	107.		%				
LAB NUMBER: 9804315-14 (continued)							
SAMPLE ID: USCG-ISC-15-4							
SAMPLED: 13 APR 98 15:30							
METHOD: EPA 8260							
VOLATILE AROMATICS AND FUEL HYDROCARBONS					04.27.98	V980051VOA	5,6
Benzene	480.	5.	ug/L	5			
Ethylbenzene	660.	5.	ug/L	5			
Toluene	110.	5.	ug/L	5			
Xylenes (Total)	1200.	5.	ug/L	5			
Methyl tert-Butyl Ether (MTBE)	18.	5.	ug/L	5			
Total Petroleum Hydrocarbons (Gasoline)	ND	250.	ug/L	5			
Surrogate Dibromofluoromethane	107.		%	5			
Surrogate 1,2-DCA-d4	92.		%	5			
Surrogate Toluene-d8	104.		%	5			
Surrogate 4-BFB	99.		%	5			
Tph-Quanted As Gas	1800. ?	250.	ug/L	5			

1) Sample Preparation on 04-18-98 using EPA 3510
2) An unidentified petroleum hydrocarbon was present in the sample. An approximate concentration has been calculated based on Diesel #2 standards.
3) Sample diluted to bring concentration of target analyte(s) within the working range of the instrument, resulting in increased reporting limits.
4) Due to matrix interferences present in the sample, surrogate recoveries failed to meet the QA/QC acceptance criteria.
5) Sample Preparation on 04-27-98 using EPA 5030
6) An unidentified petroleum hydrocarbon (product) was present in the sample An approximate concentration has been calculated based on gasoline standards.

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CERTIFIED ENVIRONMENTAL SERVICES
CALIFORNIA ELAP #1664

LAB ORDER No.: 9804-315

SUPPLEMENTAL QUALITY CONTROL (QC) DATA REPORT

Report Date: 06 MAY 1998
Received Date: 15 APR 1998

Client: John Wharton
Woodward-Clyde
500 12th Street
Oakland CA 94607

Project: SK9746B; USCG - ISC ALAMEDA

QC Batch ID	Method
A980286ICP	6010
A980297ICP	200.7
T980091TPH	8015M
T980094TPH	8015M
V980050VOA	8260
V980051VOA	8260

Peter Halpin
Project Manager

CAHorn
Christine Horn
Laboratory Director

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CERTIFIED ENVIRONMENTAL SERVICES
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LAB ORDER No.: 9804-315

METHOD BLANK ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	ANALYZED	NOTES
QC BATCH: A980286ICP					
Lead	ND	1.	mg/kg	04.23.98	
QC BATCH: A980297ICP					
Lead, dissolved	ND	0.002	mg/L	04.27.98	
QC BATCH: T980091TPH					
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS				04.23.98	
Diesel Fuel	ND	50.	ug/L		
TPH-Extractable, quantitated as diesel	ND	50.	ug/L		
Motor Oil	ND	200.	ug/L		
TPH-Extractable, quantitated as Motor Oil	ND	200.	ug/L		
Surrogate o-Terphenyl	97.		%		
Surrogate Triacontane	113.		%		
QC BATCH: T980094TPH					
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS				04.24.98	
Diesel Fuel	ND	2.	mg/Kg		
TPH-Extractable, quantitated as diesel	ND	2.	mg/Kg		
Motor Oil	ND	7.	mg/Kg		
TPH-Extractable, quantitated as Motor Oil	ND	7.	mg/Kg		
Surrogate o-Terphenyl	88.		%		
Surrogate Triacontane	126.		%		
QC BATCH: V980050VOA					
VOLATILE AROMATICS AND FUEL HYDROCARBONS				04.24.98	
Benzene	ND	1.	ug/L		
Ethylbenzene	ND	1.	ug/L		
Toluene	ND	1.	ug/L		
Xylenes (Total)	ND	1.	ug/L		
Methyl tert-Butyl Ether (MTBE)	ND	1.	ug/L		
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L		
Surrogate Dibromofluoromethane	110.		%		
Surrogate 1,2-DCA-d4	100.		%		
Surrogate Toluene-d8	106		%		
Surrogate 4-BFB	100.		%		
Tph-Quanted As Gas	ND	50.	ug/L		

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CERTIFIED ENVIRONMENTAL SERVICES
CALIFORNIA ELAP #1664

LAB ORDER No.: 9804-315

METHOD BLANK ANALYTICAL RESULTS

ANALYTE	RESULT	R.L.	UNITS	ANALYZED	NOTES
QC BATCH: V980051VOA					
VOLATILE AROMATICS AND FUEL HYDROCARBONS				04.27.98	
Benzene	ND	0.025	mg/kg		
Ethylbenzene	ND	0.025	mg/kg		
Toluene	ND	0.025	mg/kg		
Xylenes (Total)	ND	0.025	mg/kg		
Methyl tert-Butyl Ether (MTBE)	ND	0.025	mg/kg		
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/Kg		
Surrogate Dibromofluoromethane	102.		%		
Surrogate 1,2-DCA-d4	84.		%		
Surrogate Toluene-d8	102.		%		
Surrogate 4-BFB	100.		%		
Tph-Quanted As Gas	ND	50.	ug/kg		
VOLATILE AROMATICS AND FUEL HYDROCARBONS				04.27.98	
Benzene	ND	1.	ug/L		
Ethylbenzene	ND	1.	ug/L		
Toluene	ND	1.	ug/L		
Xylenes (Total)	ND	1.	ug/L		
Methyl tert-Butyl Ether (MTBE)	ND	1.	ug/L		
Total Petroleum Hydrocarbons (Gasoline)	ND	50.	ug/L		
Surrogate Dibromofluoromethane	102.		%		
Surrogate 1,2-DCA-d4	84.		%		
Surrogate Toluene-d8	102.		%		
Surrogate 4-BFB	100.		%		
Thp-Quanted As Gas	ND	50.	ug/L		

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CERTIFIED ENVIRONMENTAL SERVICES
CALIFORNIA ELAP #1664

LAB ORDER No.: 9804-315

LABORATORY CONTROL SAMPLE ANALYTICAL RESULTS

ANALYTE	SPIKE AMOUNT	SPIKE\DUP RESULT	SPK\DUP %REC	ACCEPTANCE %REC \RPD	REL% DIFF	ANALYZED	NOTES
QC BATCH: A980286ICP							
Lead	100.	92.3\93.9	92\94	75-125\35	1.7	04.23.98	
QC BATCH: A980297ICP							
Lead, dissolved	0.100	0.0932\0.0925	93\92	80-120\20	0.8	04.27.98	
QC BATCH: T980091TPH							
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS						04.23.98	
Diesel Fuel	1000	897.\	90\	50-150\35			
Surrogate o-Terphenyl	100.	78.6\	79\	50-148\			
Surrogate Triacontane	100.	92.4\	92\	40-140\			
QC BATCH: T980094TPH							
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS						04.24.98	
Diesel Fuel	66.7	62.8\	94\	50-150\35			
Surrogate o-Terphenyl	6.7	5.60\	84\	50-149\			
Surrogate Triacontane	3.34	4.40\	132\	40-140\			
QC BATCH: V980050VOA							
VOLATILE AROMATICS AND FUEL HYDROCARBONS						04.24.98	
Benzene	20.0	19.3\	96\	73-127\			
Toluene	20.0	19.4\	97\	74-124\			
Surrogate Dibromofluoromethane	20.0	24.7\	124\	86-118\			
Surrogate 1,2-DCA-d4	20.0	21.3\	106\	80-120\			
Surrogate Toluene-d8	20.0	21.4\	107\	88-110\			
Surrogate 4-BFB	20.0	22.4\	112\	86-115\			
QC BATCH: V980051VOA							
VOLATILE AROMATICS AND FUEL HYDROCARBONS						04 27.98	
Benzene	0.100	0.117\	117\	73-129\			
Toluene	0.100	0.118\	118\	72-128\			
Surrogate Dibromofluoromethane	0.100	0.116\	116\	80-120\			
Surrogate 1,2-DCA-d4	0 100	0.106\	106\	80-120\			
Surrogate Toluene-d8	0.100	0.107\	107\	81-117\			

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CERTIFIED ENVIRONMENTAL SERVICES
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LAB ORDER No.: 9804-315

LABORATORY CONTROL SAMPLE ANALYTICAL RESULTS

ANALYTE	SPIKE AMOUNT	SPIKE\DUP RESULT	SPK\DUP %REC	ACCEPTANCE %REC \RPD	REL% DIFF	ANALYZED	NOTES
QC BATCH: V980051VOA (continued)							
VOLATILE AROMATICS AND FUEL HYDROCARBONS (continued)						04.27.98	
Surrogate 4-BFB	0.100	0.108\	108\	74-121\			
VOLATILE AROMATICS AND FUEL HYDROCARBONS						04.27.98	
Benzene	20.0	23.4\	117\	73-127\			
Toluene	20.0	23.7\	118\	74-124\			
Surrogate Dibromofluoromethane	20.0	23.2\	116\	86-118\			
Surrogate 1,2-DCA-d4	20.0	21.2\	106\	80-120\			
Surrogate Toluene-d8	20.0	21.5\	108\	88-110\			
Surrogate 4-BFB	20.0	21.7\	108\	86-115\			

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CERTIFIED ENVIRONMENTAL SERVICES
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LAB ORDER No.: 9804-315

MATRIX SPIKE ANALYTICAL RESULTS

ANALYTE	ORIGINAL RESULT	SPIKE AMOUNT	SPIKE\DUP RESULT	SPK\DUP %REC	ACCEPTANCE %REC \RPD	REL% DIFF	ANALYZED	NOTES
QC BATCH: A980286ICP								
QC SAMPLE LAB NUMBER: 9804294-3								
Lead	5.37	100.	94.6\95.5	89\90	75-125\35	1	04.23.98	
QC BATCH: A980297ICP								
QC SAMPLE LAB NUMBER: 9804527-2								
Lead, dissolved	ND	0.100	0.0907\0.0919	91\92	80-120\20	1.3	04.27.98	
QC BATCH: T980094TPH								
QC SAMPLE LAB NUMBER: 9804315-5								
TOTAL SEMI-VOLATILE PETROLEUM HYDROCARBONS							04.24.98	
Diesel Fuel	ND	66.7	58.7\59.0	88\88	50-150\50	0.5		
Surrogate o-Terphenyl	92.%	6.70	5.60\5.60	84\84	50-149\			
Surrogate Triacontane	129.%	3.34	4.30\4.40	129\132	40-140\			
QC BATCH: V980050VOA								
QC SAMPLE LAB NUMBER: 9804315-1								
VOLATILE AROMATICS AND FUEL HYDROCARBONS							04.24.98	
Benzene	ND	20.0	20.2\20.2	101\101	72-131\26	0.0		
Toluene	ND	20.0	20.7\20.6	104\103	73-127\27	0.5		
Surrogate Dibromofluoromethane	102.%	20.0	22.3\23.1	112\116	86-118\			
Surrogate 1,2-DCA-d4	96.%	20.0	21.5\21.5	108\108	80-120\			
Surrogate Toluene-d8	105.%	20.0	22.0\20.9	110\104	88-110\			
Surrogate 4-BFB	102.%	20.0	24.0\23.5	120\118	86-115\			

[redacted]35 N[redacted]LY R[redacted]D • [redacted]A, C[redacted]558 [redacted]7) 2[redacted]00 [redacted] (70[redacted]6-100[redacted] LAB [redacted]R #: [redacted] 9804135

CALTEST ANALYTICAL LABORATORY

SAMPLE CHAIN OF CUSTODY

PROJECT # / PROJECT NAME: SK9746D/0000 ; USCG - ISC ALAMEDA

P.O. #:

CLIENT: WOODWARD - CLYDE

CONTACT NAME: JOHN WHARTON

ADDRESS: 500 12TH ST., STE. 200 CITY: OAKLAND STATE: CA ZIP: 94607

BILLING ADDRESS: SAME

PHONE #: (510) 874-3058 FAX PHONE: (510) 874 3268

SAMPLER (PRINT & SIGN NAME): JOHN WHARTON [signature]

ANALYSES REQUESTED: TOTAL Pb (6010)* ; BTEX (8260) - W/MTBE

TURN-AROUND TIME: ☒ STANDARD ☐ RUSH

DUE DATE:

CALTEST #	DATE SAMPLED	TIME SAMPLED	MATRIX	CONTAINER AMOUNT/TYPE	PRESERVATIVE	SAMPLE IDENTIFICATION SITE	CLIENT LAB #	COMP or GRAB		TOTAL Pb (6010)*	BTEX (8260) W/MTBE					REMARKS
	4/13/98	1115	H_2O	1 L AMBER	NONE	USCG-ISC-19-6		GRAB		X				—	1	
	4/13/98	1115	H_2O	3 VOA	HCl	USCG-ISC-19-6		GRAB			X				↓	
615 g.r.r. (4/14)	4/13/98	~~1015~~ 1615	H_2O	1 L AMBER	NONE	USCG-ISC-15-2		GRAB		X				—	2	
	4/13/98	1615	H_2O	3 VOA	HCl	USCG-ISC-15-2		GRAB			X				↓	
	4/13/98	1100	H_2O	1 L AMBER	NONE	USCG-ISC-19-1		GRAB		X				—	3	
	4/13/98	1100	H_2O	3 VOA	HCl	USCG-ISC-19-1		GRAB			X				↓	
	4/13/98	1745	H_2O	1 L AMBER	NONE	USCG-ISC-15-1		GRAB		X				—	4	
	4/13/98	1745	H_2O	3 VOA	HCl	USCG-ISC-15-1		GRAB			X				↓	
	~~4/13/98~~	~~1615~~	~~H_2O~~	~~1 L AMBER~~	~~NONE~~	~~USCG-ISC-15-2~~		~~GRAB~~		~~X~~	g.r.r. (4/14/98)					
	~~4/13/98~~	~~1700~~	g.r.r. (4/14/98)													

By submittal of sample(s), client agrees to abide by the Terms and Conditions set forth on the reverse of this document.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED BY
[signature]	4/15/98 1030	[signature]			[signature] CCX
[signature]	4/15/98 12:50	[signature]			

FOR LAB USE ONLY

Samples WC___ MICRO___ BIO___ AA___ pH? Y/N TEMP:___ SEALED: Y/N INTACT: Y/N

BD BIO___ WC___ AA___

CC: AA___ SV___ VOA___ * Log as Pb Dis per TLH

SL: HP___ PT___ QT___ VOA___

W/HNO_3___ H_2SO_4___ NaOH___

PL: HNO_3___ H_2SO_4___ NaOH___ HCL___

MATRIX: AQ = Aqueous Nondrinking Water, Digested Metals; FE = Low R.L.s, Aqueous Nondrinking Water, Digested Metals; DW = Drinking Water; SL = Soil, Sludge, Solid; FP = Free Product

CONTAINER TYPES: AL = Amber Liter; AQL = 250 mL. Amber; PT = Pint (Plastic); QT=Quart (Plastic); HG = Half Gallon (Plastic); SJ = Soil Jar; B4 = 4 oz. BACT; BT = Brass Tube; VOA = 40 mL.VOA; OTC = Other Type Container

R___ PR___ M___ F___

REV. 11/97

WHITE - LABORATORY YELLOW - CLIENT COPY TO ACCOMPANY FINAL REPORT PINK - CLIENT COPY AS RECEIPT

CALTEST ANALYTICAL LABORATORY [redacted] 35 N[redacted]LY R[redacted] • [redacted]A, C[redacted]558 [redacted]07) 2[redacted]00 [redacted]x (70[redacted]6-100[redacted] LAB [redacted]R #: [redacted]

SAMPLE CHAIN OF CUSTODY

PAGE 2 OF 4

PROJECT # / PROJECT NAME: SK9716B / 10000 ; USCG - ISC ALAMEDA

P.O. #:

CLIENT: WOODWARD - CLYDE

CONTACT NAME: JOHN WHARTON

ADDRESS: 5000 12TH ST., STE. 200 CITY: OAKLAND STATE: CA ZIP: 94618

BILLING ADDRESS: SAME

PHONE #: (510) 874-3008 FAX PHONE: (510) 874-3268

SAMPLER (PRINT & SIGN NAME): JOHN WHARTON

ANALYSES REQUESTED

TURN-AROUND TIME: ☑ STANDARD ☐ RUSH

DUE DATE:

CALTEST #	DATE SAMPLED	TIME SAMPLED	MATRIX	CONTAINER AMOUNT/TYPE	PRESERVATIVE	SAMPLE IDENTIFICATION SITE	CLIENT LAB #	COMP. or GRAB	TOTAL Pb (6010)	BTEX (8260) w/MTBE	DIESEL (8015M)			REMARKS
	4/13/98	1530	SOIL	1 ft tubing	NONE	USCG-ISC-15-4 (4.5'-5.5')		GRAB	X	X	X		–	5	
	4/13/98	1745	SOIL	6" tubing	NONE	USCG-ISC-15-1 (6.5'-7.0')		GRAB	X	X	X				HOLD PENDING RESULTS
	4/13/98	1415	SOIL	1 ft tubing	NONE	USCG-ISC-15-5 (3.5'-4.5')		GRAB	X	X	X				HOLD PENDING RESULTS
	4/13/98	1700	SOIL	6" tubing	NONE	USCG-ISC-15-3 (5.5'-6')		GRAB	X	X	X				HOLD PENDING RESULTS
	4/13/98	1615	SOIL	1 ft tubing	NONE	USCG-ISC-15-2 (9.0'-10.0')		GRAB	X	X	X				HOLD PENDING RESULTS
	4/13/98	1815	SOIL	6" tubing	NONE	USCG-ISC-19-5 (3.0'-3.5')		GRAB	X	X	X				HOLD PENDING RESULTS
	4/13/98	1130	SOIL	6" tubing	NONE	USCG-ISC-19-4 (4.5'-5.0')		GRAB	X	X	X				HOLD PENDING RESULTS
	4/13/98	1200	SOIL	1 ft tubing	NONE	USCG-ISC-19-3 (4.5'-5.5')		GRAB	X	X	X		–	6	
	4/13/98	1115	SOIL	1 ft tubing	NONE	USCG-ISC-19-6 (4.6'-5.6')		GRAB	X	X	X				HOLD PENDING RESULTS

By submittal of sample(s), client agrees to abide by the Terms and Conditions set forth on the reverse of this document.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED BY
[signature]	4/13/98 1030	[signature]			[signature] CCX
[signature]	4/15/98 12:55	[signature]			

FOR LAB USE ONLY

Samples WC____ MICRO____ BIO____ AA____ pH? Y/N TEMP:____ SEALED? Y/N INTACT: Y/N

BD: BIO____ WC____ AA____

CC. AA____ SV____ VOA____

SL: HP____ PT____ QT____ VOA____

W/HNO_3____ H_2SO_4____ NaOH____

P/L HNO_3____ H_2SO_4____ NaOH____ HCL____

MATRIX: AQ = Aqueous Nondrinking Water, Digested Metals; FE = Low R.L.s, Aqueous Nondrinking Water, Digested Metals; DW = Drinking Water; SL = Soil, Sludge, Solid; FP = Free Product

CONTAINER TYPES: AL = Amber Liter; AQL = 250 mL. Amber; PT = Pint (Plastic); QT=Quart (Plastic); HG = Half Gallon (Plastic); SJ = Soil Jar; B4 = 4 oz. BACT; BT = Brass Tube; VOA = 40 mL.VOA; OTC = Other Type Container

R____ PR____ M____ F____

REV. 11/97

WHITE - LABORATORY YELLOW - CLIENT COPY TO ACCOMPANY FINAL REPORT PINK - CLIENT COPY AS RECEIPT

[redacted] CALTEST ANALYTICAL LABORATORY [redacted] 1885 N. KELLY ROAD • NAPA, CA [redacted] 558 [redacted] (707) 2[redacted]000 [redacted] (707) 2[redacted]6-1001 [redacted] LAB ORDER #: [redacted]

PAGE 3 OF 4

SAMPLE CHAIN OF CUSTODY

LAB ORDER #: 9804136

PROJECT # / PROJECT NAME: SK9746B/6660 ; USCG-TSC ALAMEDA

P.O. #:

CLIENT: WOODWARD-CLYDE

CONTACT NAME: JOHN WHARTON

ADDRESS: 500 12TH ST., STE. 200 CITY: OAKLAND STATE: CA ZIP: 94607

BILLING ADDRESS: SAME

PHONE #: (510) 874-3008 FAX PHONE: (510) 874-3268

SAMPLER (PRINT & SIGN NAME): JOHN WHARTON [signature]

ANALYSES REQUESTED: TOTAL Pb (6010); BTEX (8260) w/ MTBE; DIESEL (8015M)

TURN-AROUND TIME: ☒ STANDARD ☐ RUSH

DUE DATE:

CALTEST #	DATE SAMPLED	TIME SAMPLED	MATRIX	CONTAINER AMOUNT/TYPE	PRESERVATIVE	SAMPLE IDENTIFICATION SITE	CLIENT LAB #	COMP. or GRAB	TOTAL Pb (6010)	BTEX (8260) w/ MTBE	DIESEL (8015M)			REMARKS
	4/13/98	1200	H_2O	1L AMBER	NONE	USCG-TSC-19-3		GRAB	X			-	7	
	4/13/98	1200	H_2O	3 VOAs	HCl	USCG-TSC-19-3		GRAB		X			↓	
	4/13/98	1200	H_2O	1L AMBER	NONE	USCG-TSC-19-3		GRAB			X		↓	
	4/13/98	1700	H_2O	1L AMBER	NONE	USCG-TSC-15-3		GRAB	X			-	8	
	4/13/98	1700	H_2O	3 VOAs	HCl	USCG-TSC-15-3		GRAB		X			↓	
	4/14/98	1800	H_2O	2 VOAs	HCl	TRIP BLANK #1 (TB041098)		N/A		X		-	9	
	4/14/98	1800	H_2O	2 VOAs	HCl	TRIP BLANK #2 (TB041098)		N/A		X		-	10	

By submittal of sample(s), client agrees to abide by the Terms and Conditions set forth on the reverse of this document.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED BY
[signature]	4/15/98 1050	M [signature]			[signature] CFX
[signature]	4/15/98 12:55	[signature]			

LAB USE ONLY

Samples: WC____ MICRO____ BIO____ AA____ | pH? Y/N | TEMP:____ | SEALED: Y/N | INTACT: Y/N

BD· BIO____ WC____ AA____

CC: AA____ SV____ VOA____

SIL: HP____ PT____ QT____ VOA____

W/HNO3____ H_2SO_4____ NaOH____

HNO3____ H_2SO_4____ NaOH____ HCL____

MATRIX: AQ = Aqueous Nondrinking Water, Digested Metals; FE = Low R.L.s, Aqueous Nondrinking Water, Digested Metals; DW = Drinking Water; SL = Soil, Sludge, Solid; FP = Free Product

CONTAINER TYPES: AL = Amber Liter; AQL = 250 mL. Amber; PT = Pint (Plastic); QT=Quart (Plastic); HG = Half Gallon (Plastic); SJ = Soil Jar; B4 = 4 oz. BACT; BT = Brass Tube; VOA = 40 mL.VOA; OTC = Other Type Container

R____ PR____ M____ F____

REV. 11/97 PINK - CLIENT COPY AS RECEIPT YELLOW - CLIENT COPY TO ACCOMPANY FINAL REPORT WHITE - LABORATORY

[redacted] 35 N[redacted]LY R[redacted] • [redacted]A, C[redacted]558 [redacted]7) 2[redacted]00 [redacted] (70[redacted]6-100[redacted] LAB[redacted]#: 9804315

CALTEST ANALYTICAL LABORATORY

SAMPLE CHAIN OF CUSTODY

PROJECT # / PROJECT NAME: SK9746B/~~[illegible]~~ ; USCG - ISC ALAMEDA

P.O. #

CLIENT: WOODWARD - CLYDE

CONTACT NAME: JOHN WHARTON

ADDRESS: 500 12TH ST., STE. 200 CITY: OAKLAND, STATE: CA ZIP: 94607

BILLING ADDRESS: SAME

PHONE #: (510) 874-3058 FAX PHONE: (510) 874-3268

SAMPLER (PRINT & SIGN NAME): JOHN WHARTON (signature)

ANALYSES REQUESTED

TURN-AROUND TIME: ☒ STANDARD ☐ RUSH

DUE DATE:

CALTEST #	DATE SAMPLED	TIME SAMPLED	MATRIX	CONTAINER AMOUNT/TYPE	PRESERVATIVE	SAMPLE IDENTIFICATION SITE	CLIENT LAB #	COMP. or GRAB		TOTAL Pb (6010)	BTEX (8260) - w/MTBE	DIESEL (8015 M)				REMARKS
	4/13/98	1430	H_2O	1L AMBER	NONE	USCG-ISC-15-5		GRAB		X				-	11	
	4/13/98	1430	H_2O	3 VOAs	HCl	USCG-ISC-15-5		GRAB			X				↓	
	4/13/98	1130	H_2O	1L AMBER	NONE	USCG-ISC-19-4		GRAB		X				-	12	
	4/13/98	1130	H_2O	3 VOAs	HCl	USCG-ISC-19-4 *		GRAB			X				↓	
	4/13/98	1815	H_2O	1L AMBER	NONE	USCG-ISC-19-5		GRAB		X				-	13	
	4/13/98	1815	H_2O	3 VOAs	HCl	USCG-ISC-19-5		GRAB			X				↓	
	4/13/98	1530	H_2O	1L AMBER	NONE	USCG-ISC-15-4		GRAB		X				-	14	
	4/13/98	1530	H_2O	3 VOAs	HCl	USCG-ISC-15-4		GRAB			X					
	4/13/98	1530	H_2O	1L AMBER	NONE	USCG-ISC-15-4		GRAB				X			↓	

By submittal of sample(s), client agrees to abide by the *Terms and Conditions* set forth on the reverse of this document.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED BY
(signature)	4/15/98 1030	(signature)			(signature) CLX
(signature)	4/15/98 1255	(signature)			

FOR LAB USE ONLY

Samples WC____ MICRO____ BIO____ AA____ pH? Y/N TEMP:____ SEALED: Y/N INTACT: Y/N

BD BIO____ WC____ AA____

CC: AA____ SV____ VOA____

SIL: HP____ PT____ QT____ VOA____

W/HNO_3____ H_2SO_4____ NaOH____

HNO_3____ H_2SO_4____ NaOH____ HCL____

* 3 of 3 VOA bubbles 8mm, 3.5mm, 4.5mm observed/[illegible]

MATRIX: AQ = Aqueous Nondrinking Water, Digested Metals; FE = Low R.L.s, Aqueous Nondrinking Water, Digested Metals; DW = Drinking Water; SL = Soil, Sludge, Solid; *FP = Free Product*

CONTAINER TYPES: AL = Amber Liter; AQL = 250 mL. Amber; PT = Pint (Plastic); QT=Quart (Plastic); HG = Half Gallon (Plastic); SJ = Soil Jar; B4 = 4 oz. BACT; BT = Brass Tube; VOA = 40 mL.VOA; OTC = Other Type Container

R____ PR____ M____ F____

REV. 11/97

WHITE - LABORATORY YELLOW - CLIENT COPY TO ACCOMPANY FINAL REPORT PINK - CLIENT COPY AS RECEIPT

Appendix B
Boring Logs

Appendix B
Boring Logs

Project No. SK9746B/0000 | Engineer JOHN WHARTON | Date 4/13/98 | BORING NO. 15-1

Project Name USCG-ISC ALAMEDA

Boring Location BUILDING 15

Drilling Co. GREGG DRILLING

Driller / Helper PAUL ROGERS

Type of Boring SOIL BORING & WATER SAMPLE

Rig GEOPROBE

HAMMER: Type _____ Weight _____ lbs Drop _____ inches

Sheet 1 of 1

Surface Conditions WET ASPHALT FROM LIGHT RAIN (INTERMITTENT)

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
0						-ASPHALT (3"- 6")	
1							
2						- FILL MATERIAL COARSE-GRAINED SAND (LOOSE)	OVM = 0.00 ppm
3							
4							
5							
6						- MEDIUM TO FINE GRAINED SILT & SAND	
7							OVM = 0.00 ppm
8						DTW = 7.91	
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Woodward-Clyde Consultants

Project No. SK9746B/0000 | Engineer JOHN WHARTON | Date 4/13/98 | BORING NO. 15-2

Project Name USCG - ISC ALAMEDA

Boring Location BUILDING 15

Drilling Co. GREGG DRILLING

Driller / Helper PAUL ROGERS

Type of Boring SOIL BORING & WATER SAMPLE

Sheet 1 of 1

Surface Conditions WET ASPHALT FROM LIGHT RAIN (INTERMITTENT)

Rig GEOPROBE

HAMMER: Type _____ Weight _____ lbs Drop _____ inches

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
						– ASPHALT (3"-6")	
1							
2						– LOOSE SAND/GRAVEL FILL MATERIAL (NO ODOR) (LT. BROWN)	OVM = 300 ppm
3							
4						– NATIVE, SANDY SILT; PRESENCE OF P-GRAVEL (VERY STIFF)	OVM = 781 ppm
5							
6					▼	– FINE GRAINED SAND/GRAVEL; LOOSE MATERIAL DTW = 6.40	OVM = 900 ppm
7							
8							
9						– SILTY SAND (LOOSE MATERIAL) SHELL FRAGMENTS PRESENT;	OVM = 560 ppm
10					☒		
11							
12						NOTE: LOOSE MATERIAL FROM SOIL @ DEPTHS GREATER THAN 5 FEET; NO ODOR OBSERVED	
13							
14							
15							
16							
17							
18							
19							
20							

Woodward-Clyde Consultants

Project No. SK9746B/0000 | Engineer JOHN WHARTON | Date 4/13/98 | BORING NO. 15-3

Project Name USCG-ISC ALAMEDA

Boring Location BUILDING 15

Drilling Co. GREGG DRILLING

Driller / Helper PAUL ROGERS

Type of Boring SOIL BORING & WATER SAMPLES

Sheet 1 of 1

Surface Conditions WET ASPHALT FROM LIGHT RAIN (INTERMITTENT)

Rig GEOPROBE

HAMMER: Type _____ Weight _____ lbs Drop _____ inches

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
1						-ASPHALT (3"-6") FILL MATERIAL - COARSE GRAINED SAND (LOOSE)	OVM = 50 ppm
2							
3						- FINE-GRAINED SILT AND SAND (NATIVE SOIL)	OVM = 373 ppm
4							
5							
6						- VERY FINE SILT W/CLAY DTW = 6.38' (BAY MUD)	OVM = 280 ppm
7						- MEDIUM TO FINE GRAINED SILT AND SAND	OVM = 80 ppm
8							
9						- COARSE GRAINED SAND (LOOSE MATERIAL)	OVM = 0.00 ppm
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Woodward-Clyde Consultants

Project No. SK9746B/0000	Engineer JOHN WHARTON	Date 4/13/98	BORING NO. 15-4
Project Name USCG-ISC ALAMEDA			
Boring Location BUILDING 15	Drilling Co. GREGG DRILLING		Sheet 1 of 1
	Driller / Helper PAUL ROGERS		
	Type of Boring SOIL BORING & WATER SAMPLE		
Surface Conditions WET ASPHALT FROM LIGHT RAIN (INTERMITTENT)	Rig GEOPROBE		
	HAMMER: Type		
	Weight ____ lbs Drop ____ inches		

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
0						- ASPHALT	
1							
2						- SILTY, MEDIUM GRAINED SAND; LOOSE MATERIAL (NON-NATIVE); P-GRAVEL PRESENT	OVM = 1200 ppm
3							
4							
5							
6							
7						- COARSE SAND & GRAVEL (VERY STIFF); SOME SILT PRESENT	OVM = 800 ppm Strong odor ⇒ solvent smell (not gasoline)
8					DTW = 7.90'		
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Woodward-Clyde Consultants

Project No. SK9746B/0000 | Engineer JOHN WHARTON | Date 4/13/98 | BORING NO. 15-5

Project Name USCG-ISC ALAMEDA

Boring Location BUILDING 15

Drilling Co. GREGG DRILLING

Driller / Helper PAUL ROGERS

Type of Boring SOIL BORING & WATER SAMPLE

Sheet 1 of 1

Surface Conditions WET ASPHALT DUE TO LIGHT RAIN

Rig GEOPROBE

HAMMER: Type _____ Weight _____ lbs Drop _____ inches

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
1						- ASPHALT	
						FILL MATERIAL	
						- COARSE - MEDIUM GRAINED SAND / SILT (DARK BROWN)	OVM = 250 ppm
3						- MEDIUM-GRAINED SILT AND SAND (VERY STIFF)	OVM = 300 ppm
6						- COARSE - SAND (DK. BROWN) SHELL FRAGMENTS PRESENT - STIFF	OVM = 250 ppm
7					▼	DTW = 7.10	
8						- FINE - MEDIUM GRAINED SILT & SAND (DARK GREY); VERY STIFF	OVM = 502 ppm
10						- BAY MUD (FINE TO V. FINE SILT AND CLAY); STIFF - BLACK	OVM = 300 ppm

Woodward-Clyde Consultants

Project No. SK9746B/0000 | Engineer JOHN WHARTON | Date 4/13/98 | BORING NO. 19-1

Project Name USCG - ISC ALAMEDA

Boring Location BUILDING 19

Surface Conditions WET GRASS FROM RAIN EARLIER IN THE DAY

Drilling Co. GREGG DRILLING

Driller / Helper PAUL ROGERS

Type of Boring SOIL BORING & WATER SAMPLE

Rig GEOPROBE

HAMMER: Type _____ Weight _____ lbs Drop _____ inches

Sheet 1 of 1

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
0						- GRASS	
1–2						- SILTY SAND (DARK GREY) STIFF; COARSE TO MEDIUM GRAINED	OVM = 0.00 ppm
3					DTW = 3.76'		
4					▼	- FINE SILT AND SAND (DARK BROWN); STIFF	OVM = 0.00 ppm
5–6							
7						- COARSE TO MEDIUM-GRAINED SAND; LOOSE MATERIAL (DARK GREY)	
8							OVM = 0.00 ppm
9–10							
11–20							

Woodward-Clyde Consultants

Project No. SK9746B/0000 | Engineer JOHN WHARTON | Date 4/13/98 | BORING NO. 19-3

Project Name USCG-ISC ALAMEDA

Boring Location BUILDING 19

Surface Conditions WET DUE TO LIGHT RAIN

Drilling Co. GREGG DRILLING

Driller / Helper PAUL ROGERS

Type of Boring SOIL BORING/WATER SAMPLE

Rig GEOPROBE

HAMMER: Type _____ Weight _____ lbs Drop _____ inches

Sheet 1 of 1

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
1						- ASPHALTIC CONCRETE	
2						- GRAVELLY SAND (DARK GRAY) FILL MATERIAL	OVM = 0.00 ppm
3						- SILTY SAND (DARK GRAY)	OVM = 0.00 ppm
4					▼	DTW = 4.34'	
5						- FINE TO VERY FINE SILT AND CLAY (BLACK) - BAY MUD STIFF	
6							OVM = 2.00 ppm
7							
8							
9						- COARSE SILT MATERIAL (DARK GRAY); VERY STIFF	OVM = 0.00 ppm
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Woodward-Clyde Consultants

Project No. SK9746B/0000 | Engineer JOHN WHARTON | Date 4/13/98 | BORING NO. 19-4

Project Name USCG - ISC ALAMEDA

Boring Location BUILDING 19

Surface Conditions WET DUE TO LIGHT RAIN

Drilling Co. GREGG DRILLING

Driller / Helper PAUL ROGERS

Type of Boring SOIL BORING & WATER SAMPLE

Rig GEOPROBE

HAMMER: Type ____ Weight ____ lbs Drop ____ inches

Sheet 1 of 1

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
0						-ASPHALTIC CONCRETE	
1							
2						-FILL MAT'L (GRAVELLY SILT)	OVM
3						(DARK GRAY)	= 0.00
4							
5					▼	DTW = 4.52'	
6						-GRAVELLY CLAY (DARK GRAY TO	OVM
7						BLACK)	= 0.00
8						- GRAVELLY SILT (BLACK)	
9							
10							
11							
12						NOTE: WOODWARD-CLYDE HAD GREGG DRILLING HAND AUGER TO 5 FT PRIOR TO PROCEEDING WITH THE GEOPROBE DRILL RIG	
13							
14							
15							
16							
17							
18							
19							
20							

Woodward-Clyde Consultants

Project No. SK9746B/0000 | Engineer JOHN WHARTON | Date 4/13/98 | BORING NO. 19-5

Project Name USCG-ISC ALAMEDA

Boring Location BUILDING 19

Surface Conditions WET DUE TO LIGHT RAIN

Drilling Co. GREGG DRILLING

Driller / Helper PAUL ROGERS

Type of Boring SOIL BORING/WATER SAMPLE

Rig GEOPROBE

HAMMER: Type _____ Weight _____ lbs Drop ____ inches

Sheet 1 of 1

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
						-ASPHALT	
1							
2						- SILTY SAND (DARK GREY)	OVM = 32.8 ppm
3							SLIGHT ODOR
4							
5					▼	DTW = 4.51 -WATER	
6							
7							
8						NOTE: THERE WAS VERY LITTLE RECOVERY FOR THE SAMPLES TAKEN BELOW 4 FEET	
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Woodward-Clyde Consultants

Project No. SK9746B/0000 | Engineer JOHN WHARTON | Date 4/13/98 | BORING NO. 19-6

Project Name USCG-ISC ALAMEDA

Boring Location BUILDING 19

Surface Conditions WET CONDITIONS DUE TO LIGHT RAIN

Drilling Co. GREGG DRILLING

Driller / Helper PAUL ROGERS

Type of Boring SOIL BORING & WATER SAMPLE

Rig GEOPROBE

HAMMER: Type _____ Weight _____ lbs Drop _____ inches

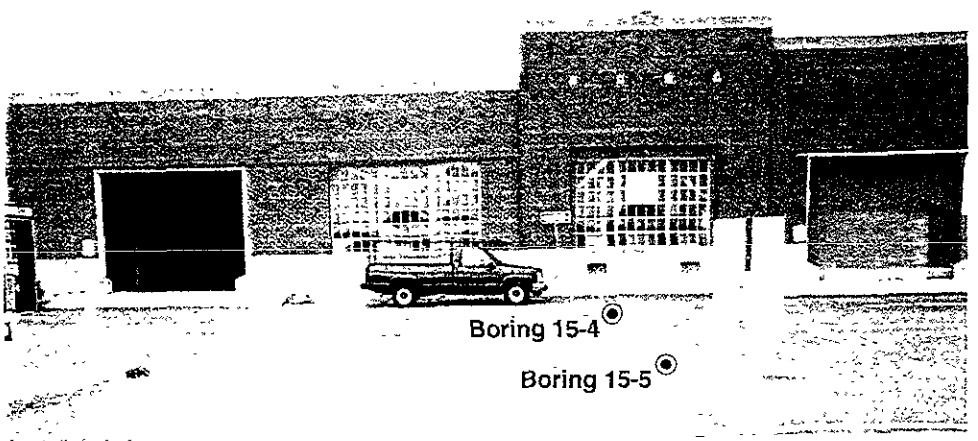
Sheet 1 of 1

DEPTH (FEET)	Sample No.	Sampler	Blow Count	Recovery	Water Level	MATERIAL DESCRIPTION (Elevation / Datum)	Comments/ Testing
						- ASPHALT (3"-6")	
1						- NON-NATIVE MATERIAL; COARSE SAND & SILT (DARK BROWN & LIGHT GRAY)	OVM = 40.2 ppm
2							
3						- SILTY SAND (DARK BROWN TO BLACK); STIFF	OVM = 40.0 ppm
4					DTW = 3.80'		
5							
6						- SILTY CLAY- FINE TO VERY FINE SILT W/ CLAY (DARK BROWN TO BLACK) NOT STIFF	OVM = 38 ppm
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

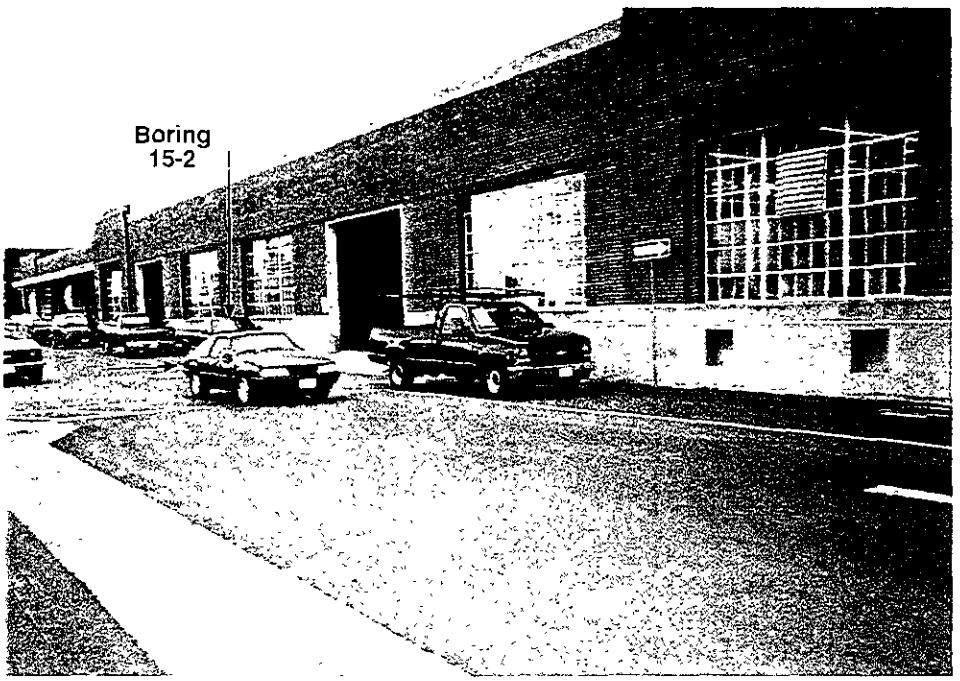
Woodward-Clyde Consultants

Appendix C
Photo Documentation

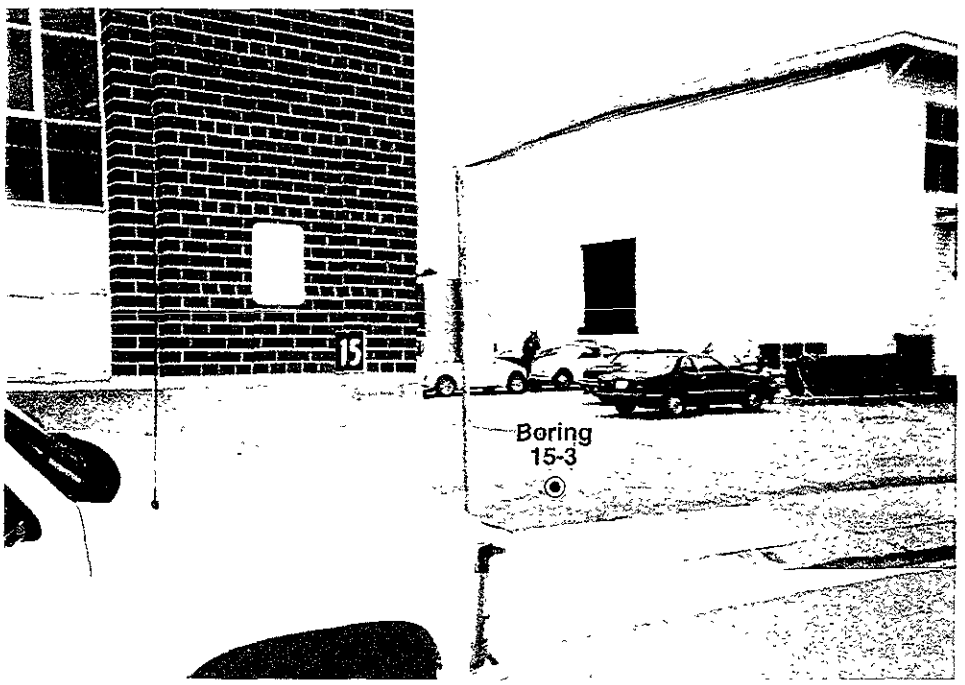
Building 15 currently operates as the Naval Engineering Support Unit's base of operations. This picture shows the intersection of Bear Road and the Building 15 driveway. The background well (Boring 15-1) was takem near the portion of Building 15 which is adjacent to Bear Road.



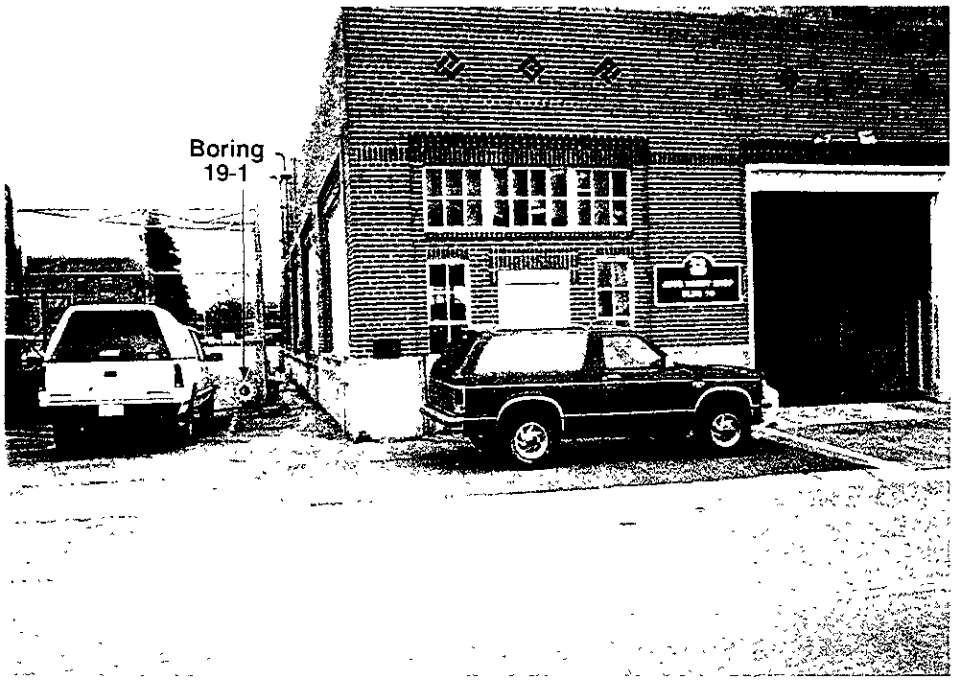
This picture shows the area where Tank #05 was excavated. Boring holes 15-5, 15-4 and 15-2 are located in this picture.



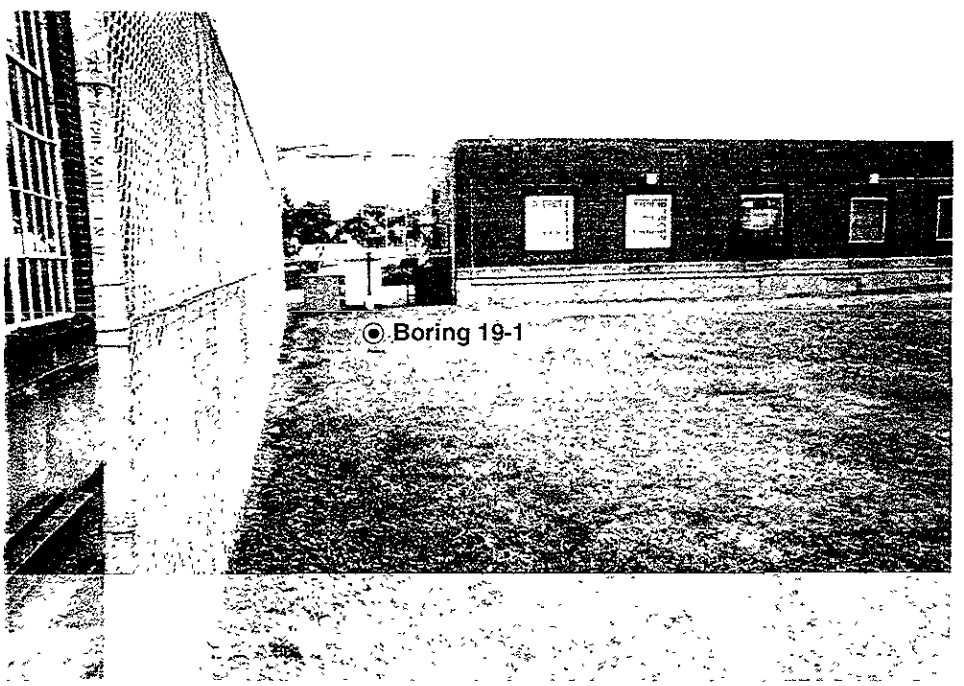
This picture shows a different perspective of the Tank K05 sampling area. Boring 15-2 (cross-gradient west well) is shown in this picture (underneath the truck).



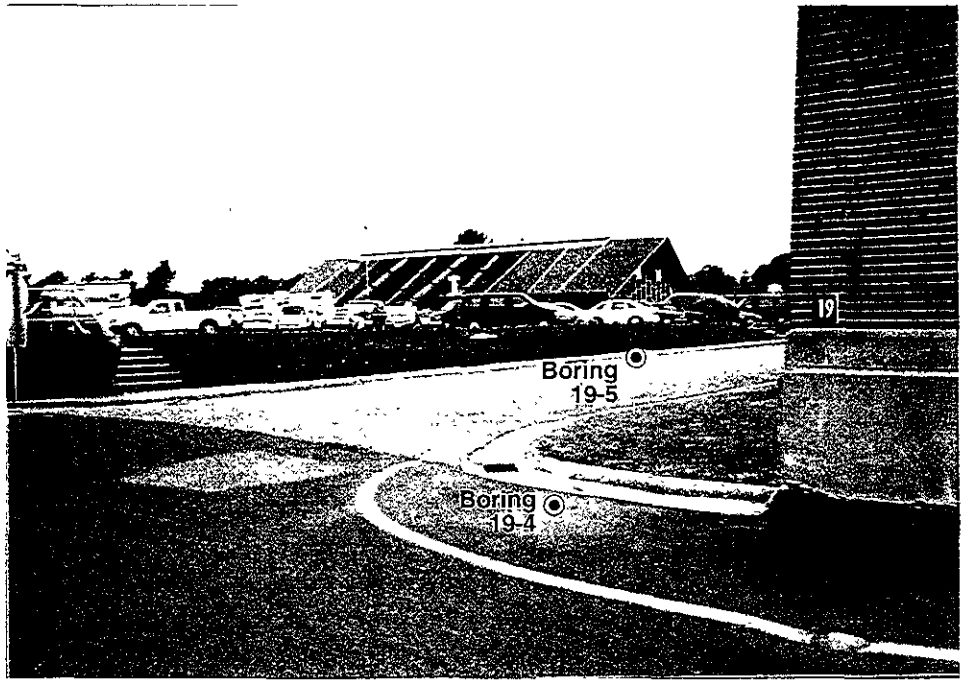
Boring 15-3 is located in the middle of this picture around the corner from the Building 15 sign.



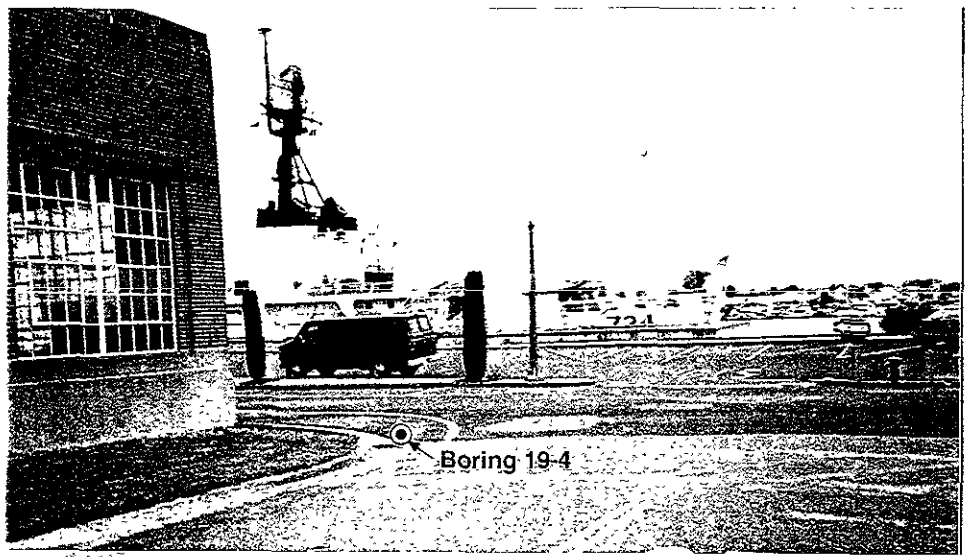
Boring 19 is currently used as the USCG ISC Alameda auto hobby shop The facility used to house a 1,000 gallon underground fuel storage tank (Tank K06) this tank was excavated in August 1997. The building is still used for various auto repair activities.



This photo shows the area where the background boring (Boring 19-1) was drilled This location was chosen due to the inaccessibility of Building 19 for the GeoProbe rig



This picture shows the area where Boring 19-5 and 19-4 were taken. Both of these borings are downgradient from the source.



This picture shows the reverse angle of Photo 19-3. This perspective shows the relative proximity of the source to the Brooklyn Basin South Channel. Boring 19-6 is located on the other side of the road in the picture (Spencer Road) adjacent to the parking lot.