January 19, 1996

Ms. Eva Chu
Alameda County Health Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

③ UST in bldg needs to be confirmed and addressed
④ checks for SVOCs + HVOCs in downgrad MWs in future

Subject: **Submittal of Groundwater Quality Investigation Report for Petroleum Hydrocarbon Contaminated Soil and Groundwater Site 4629 Martin Luther King, Jr. Way, Oakland, California**

Dear Ms. Chu:

Advanced Assessment and Remediation Services (AARS), is pleased to present this groundwater quality investigation report for the above referenced site.

This report has been prepared in general accordance with the Tri-Regional Board Staff Recommendation for Preliminary Investigation and Evaluation of Underground Tank Sites, Addendum to Appendix A, dated August 30, 1991, and the guidelines of Alameda County Environmental Health Department. This report contains information pertaining to the summary of all work from underground tank removal and preliminary site assessment at the above referenced site.

Please contact Tridib Guha at (510) 370-8295 if you have any questions regarding this report.

Sincerely,

Advanced Assessment and Remediation Services

Tridib K. Guha, R.G., R.E.A.
Principal

Enclosure

cc: Ms. Lynn Nightingale, San Francisco, California

TG/MLKPRP.RPT

GROUNDWATER QUALITY INVESTIGATION REPORT

at

4629 Martin Luther King, Jr. Way
Oakland, California

Prepared for:

Ms. Lynn Nightingale
250 Executive Park Boulevard, Suite 3100
San Francisco, California

January 19, 1996

TABLE OF CONTENTS

GROUNDWATER QUALITY INVESTIGATION REPORT
FOR
PETROLEUM HYDROCARBON AFFECTED SOIL AND GROUNDWATER SITE
AT
4629 Martin Luther King Jr. Way
Oakland, California

INTRODUCTION

Advanced Assessment and Remediation Services (AARS) was retained by Ms. Lynn Nightingale, on September 22, 1995, to perform a groundwater quality investigation at 4629 Martin Luther King Jr. Way, Oakland, California.

1.1 Purpose and Objectives

The primary goals of the site investigation report are to:

1. Document all site assessment work performed at the site;

2. Address the concerns of the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) and the Alameda County Environmental Health Department (ACEHD);

3. Develop an appropriate course of action for additional investigation or remediation, if warranted, in accordance with the requirements of the regulatory agencies.

1.2 Scope of Work

AARS has performed the following tasks:

1. Summarized previous site investigation;

2. Acquired necessary permit for field activities;

3. Installed three soil borings, converted them to two temporary wells and one groundwater monitoring well;

4. Developed and sampled monitoring well and sampled temporary wells;

5. Analyzed soil and groundwater samples for specified constituents;

6. Evaluated soil and groundwater sampling and analytical results;

7. Prepared report presenting the results and findings of the above activities and the appropriate recommendations.

2.0 SITE CHARACTERISTICS

A brief description of the site location and summary of past activities is presented below.

2.1 Site Description

The project site is located at 4629 Martin Luther King Jr. Way, Oakland, California. The site is set in a commercial development consisting of an unoccupied one-story warehouse type structure with a concrete slab-on-grade floor. The structure has plan dimensions of approximately 110 by 192 feet.

The property is bounded by Martin Luther King, Jr. Way to the east, and commercial development to the south. Single-family residences are located west of the property. A large paved parking area is located north of the building across 47th Street.

The site is located at an elevation of approximately 80 feet above mean sea level. San Francisco Bay is located approximately 1½ mile west of the project site. A site vicinity map and a site plan are presented in Figure 1 and Figure 2 respectively.

2.2 Site History

"In July 1992, five underground storage tanks (two tanks had stored gasoline and three had stored fuel oil) were excavated and removed by SEMCO Inc.. Soil samples were collected from the excavations. Analytical results indicated that petroleum hydrocarbons, quantified as diesel and oil & grease, were present in the soil below the fuel tanks. Additionally, toluene, ethylbenzene and xylenes were detected at low concentrations in the soil. Petroleum hydrocarbons and benzene, toluene, ethylbenzene and xylenes (BTEX) were not detected in samples obtained from the gasoline tank excavations at concentrations above the reporting limits" [Subsurface Consultants, Inc.(SCI) 1993].

In May 1993, SCI conducted a site investigation by drilling and sampling of nine soil borings and analyzing selected soil samples. SCI reported that oil and grease and diesel hydrocarbons were detected in the soil beneath and adjacent to the previous fuel oil tanks, at concentrations up to 760 and 1700 mg/kg, respectively.

Previous report issued for this site is:

"Preliminary Fuel Oil Contamination Assessment 4629 Martin Luther King Jr. Way, Oakland, California", Subsurface Consultants, Inc., November 4, 1993.

2.3 Regional Geology and Hydrogeology

The site is located on a broad alluvial plain on the east side of San Francisco Bay. The plain is characterized by nearly level topography. Locally, the alluvial deposits consist largely of interfingered lenses of clayey gravel, sandy and silty clays and sand-clay-silt mixtures.

Groundwater at this site is shallow. Soil borings drilled during May of 1993 encountered groundwater at 17 to 27 feet below ground surface (bgs).

3.0 FIELD METHODS AND PROCEDURES

To assess the nature and extent of contamination in groundwater, three soil borings were drilled on-site. One of the soil borings was converted into a monitoring well, and the other two were converted into temporary wells. Soil samples were collected and classified during drilling, starting at 1 feet bgs, and selected samples were analyzed for specified constituents. The monitoring well was developed and sampled. The procedures and methods used during field activities were in accordance with the requirements and guidelines of the ACEHD and RWQCB.

3.1 Soil Borings and Sampling

Prior to commencement of drilling activities, permits for the proposed groundwater monitoring well and temporary wells were obtained from the Alameda County Water Agency Zone 7. The work plan was approved by the ACEHD. The Underground Service Alert was informed 72 hours prior to drilling. Copies of the permit and the letter of work plan approval are presented in Appendix A.

The surface concrete was removed by diamond-saw cutting at the proposed drilling locations. On November 14 and 15, 1995, AARS supervised the drilling of three soil borings. On November 14, 1995, while attempting to drill proposed soil boring MW-1, there was auger refusal and then a piece broke off which constituted a metal jacket (approximately 3/4 inch thick) embedded in concrete. Further investigation noted a cavity approximately 5 feet below the ground surface. Ms. Eva Chu of ACEHD was informed. Ms. Chu visited the site and the drilling locations were revised. The proposed location TW-1 was changed to MW-1 and TW-3 was changed to TW-1.

The drilling activities were performed by Soils Exploration Services of Benicia, California, using a limited access drilling rig (ACCESS II). The soil boring MW-1 was drilled with 8-inch-hollowstem augers and the soil borings TW-1 and TW-2 were drilled with 6-inch-solid flight augers. Soil borings MW-1 and TW-2 were drilled to total depths of 30 feet bgs and TW-1 was drilled to total depth of 27 feet bgs.

During drilling, soil samples were collected from 1 feet bgs. MW-1 was sampled continuously from 10 feet bgs to the top of the water table, using a modified California split-spoon sampler lined with clean brass tubes. One soil sample from each borehole at a depth of 21 feet bgs was collected for laboratory analyses. The soil sample tubes were sealed using plastic caps and teflon tape and placed immediately in a iced cooler for chemical analysis. The soil borings were lithologically logged in the field using the Unified Soil Classification System. Soil samples were screened in the field using a portable photo ionization detector. Details of the sampling depths are presented in boring logs in Appendix B.

3.2 Qualitative Water Survey

The qualitative groundwater survey is essentially a screening process to assist in determining the appropriate locations of additional monitoring wells necessary to define the lateral extent of contamination, as well to obtain information on subsurface soils. The procedure is based on soil boring and sampling, combined with temporary wells for ground water sampling.

Soil borings, TW-1 and TW-2 were advanced 3 to 5 feet below the top of the saturated zone. Two inch diameter 0.010-inch slotted screen (flush-threaded, Schedule 40 PVC) covered with a polyester filter sock was installed in the two bore holes. The water was allowed to stabilize and a small volume, approximately 3 to 4 gallons of water was purged. Following purging, a water sample was collected from each temporary well and the casings were removed. Then the borings were backfilled to grade with neat cement.

3.3 Groundwater Monitoring Well Construction

Soil boring MW-1 was converted into a monitoring well and completed to a total depth of 30 feet bgs. The monitoring well was constructed of one 10-foot section of 2-inch diameter flush-threaded, Schedule 40, PVC blank casing and two 10-foot sections of 2-inch diameter 0.020-inch, slotted PVC casing, which extended to a depth of at least 7 feet beneath the water table. The annular space surrounding the screened portion was backfilled with No.3 Monterey sand to 1 foot above the top of the screened section. A 1 foot thick bentonite annular seal was placed above the filter pack. The remaining annulus was grouted with neat cement to the surface. A well box was installed slightly above grade with a locking watertight well cap to ensure the integrity of the well. Monitoring well construction details are included in Appendix B.

3.4 Monitoring Well Development and Sampling

Well development and sampling procedures were conducted in accordance with RWQCB guidelines and ACEHD requirements.

The monitoring well MW-1 was developed on November 15, 1995 by removing a minimum of 10 casing volumes of water from the well with a 2-inch-diameter PVC bailer.

During purging of the well and prior to sampling, pH, specific conductivity, and temperature measurements of purged water were recorded and observed to stabilize, indicating that formation water had entered the well. A groundwater sample was collected at 92 % total recovery. Field observations during well development and purging prior to sampling are presented in Appendix C.

The groundwater sample was collected in clean containers and transported in an iced cooler to the laboratory for analysis following the usual chain of custody procedures.

3.5 Soil Cutting and Well Development Water Storage and Disposal

Soil cuttings generated during drilling and sampling of the soil borings were stockpiled on site for proper disposal.

All purged water generated from the well development and sampling, as well as rinseate, were stored in properly labeled 55 gallon DOT 17H drums for proper disposal.

4.0 ANALYTICAL METHODS AND RESULTS

All soil and groundwater samples were analyzed by McCampbell Analytical Inc. of Pacheco, California, a California- certified Laboratory. All chemical analyses of soil and groundwater samples were performed using standard test methods of the United States Environmental Protection Agency (EPA) and the California Department of Health Services (Cal-DHS), as discussed below.

4.1 Analysis of Soil Samples

A total of three soil samples were collected for chemical analysis, one sample from each soil boring at depth 21 feet bgs. Soil samples were analyzed for total Petroleum hydrocarbon as gasoline (TPHg) using EPA Methods 8015 and 8020, Benzene, toluene, ethylebenzene and total xylenes (BTEX) using EPA Method 8020, total petroleum hydrocarbon as diesel (TPHd) using EPA Methods 8015 modified, 3550 or 3510, total recoverable petroleum hydrocarbon as total oil and grease (TRPH as TOG) using EPA Method 418.1. Results of soil sample analyses are presented in Table 1. The official laboratory reports and chain of custody documents are included in Appendix D.

4.2 Analysis of Groundwater Samples

All groundwater samples were analyzed for TPHg using EPA Method 8015 modified, BTEX using EPA Method 8020, TPHd using EPA Methods 8015 modified, TRPH as TOG using EPA Method 418.1, and lead using EPA Methods 6010/200.7, 239.2. Results of the groundwater analysis are summarized in Table 2. The official laboratory reports and chain of custody documents are included in Appendix C.

5.0 DISCUSSION OF RESULTS

A brief description of site geology and hydrogeology based on the results of the drilling activities is presented below. The results of the laboratory analysis of the soil and groundwater samples collected during this investigation are also discussed below.

5.1 Site Geology

The subsurface lithology in all three soil borings encountered a fine-grained alluvial material consisting of poorly sorted clay and silty clay and clayey sand with fine gravel to the maximum explored depth of 30 feet in MW-1 and TW-2. Most of the silty clays are stiff with high plasticity. Very strong hydrocarbon odor was noted in soil samples obtained from MW-1 and TW-1.

5.2 Site Hydrogeology

Groundwater was encountered between 24 and 25 feet bgs during drilling. The stabilized groundwater depth in MW-1 was 22.8 feet bgs on November 15, 1995.

5.3 Soil analysis

The analytical results of all three soil samples (MLK MW-1-S21, MLK TW-1-S21 and MLK TW-2-S21) detected TPHg ranging from 38 to 500 ppm; TPHd ranging from 33 to 200 ppm; TRPH as TOG ranging from 100 to 380 ppm; toluene ranging from nondetect to 0.23 ppm; total xylenes ranging from 0.029 to 0.39 ppm; benzene and ethylbenzene not detected above the detection limit. The highest concentrations of all constituents were detected highest in the TW-1 soil sample, while the lowest was detected in the TW-2 soil sample.

5.4 Groundwater Analysis

The analytical results of all three groundwater samples (MLK MW-1-W, MLK TW-1-W and MLK TW-2-W) from each borings detected TPHg ranging from 190 to 580 ppb; TPHd ranging from 1,600 to 20,000 ppb; TRPH as TOG ranging from 3.7 to 9.9 ppm; toluene and ethylbenzene not detected above the detection limit; total xylenes ranging from nondetect to 0.68 ppb; benzene ranging from nondetect to 2.3 ppb; total lead ranging from 0.021 to 11 ppm. The highest concentrations of TPHd and TRPH as TOG were detected in the groundwater sample from MW-1. The highest concentration of TPHg was detected in the groundwater sample from TW-1. The laboratory reported that the elevated lead content in groundwater samples from TW-1 and TW-2 may be caused by high sediment contents (sample turbidity). The concentrations of all constituents detected is the lowest in TW-2 groundwater sample.

6.0 SUMMARY OF CONCLUSIONS

The findings and conclusions based on the results of the subsurface investigative work performed at the site, as well as results of previous work, are summarized below.

- Shallow groundwater at the site has been impacted by petroleum hydrocarbon. The results of groundwater sampling indicated that the concentrations of TRPH as TOG range between 3.7 and 9.9 ppm; TPHg range between 190 and 580 ppb; TPHd ranges between 1,600 to 20,000 ppb.

- Benzene was detected in groundwater sample from MW-1 at a concentration of 2.3 ppb.

- Higher lead concentrations in groundwater samples from TW-1 and TW-2 may be due to high sediment contents.

- Analytical results of soil samples from each boring detected TPHg ranging from 38 to 500 ppm; TPHd ranging from 33 to 200 ppm; TRPH as TOG ranging from 100 to 380 ppm.

- The subsurface lithology is consistent among all three borings; a dense, stiff, highly plastic silty clay and clayey sand with fine gravel to a depth of 30 feet.

- Based on November 15, 1995 water level measurements, the average depth of stabilized groundwater was 23 feet bgs in MW-1.

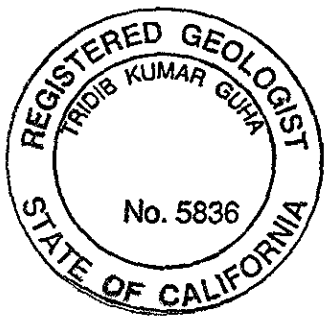
- The highest concentrations of hydrocarbon constituents was detected in groundwater samples from MW-1 and the lowest concentrations in TW-2. From this it appears that the groundwater flow direction is to the southeast.

7.0 CERTIFICATION

The information provided in this report is based on the reports of previous work conducted at the site by previous consultants. All data presented in this report is believed to be factual and accurate, unless proven otherwise. Any conclusions or recommendations provided within are based on our expertise and experience conducting work of a similar nature.

Advanced Assessment and Remediation Services

Tridib K. Guha
Registered Geologist Number 5836



FIGURES

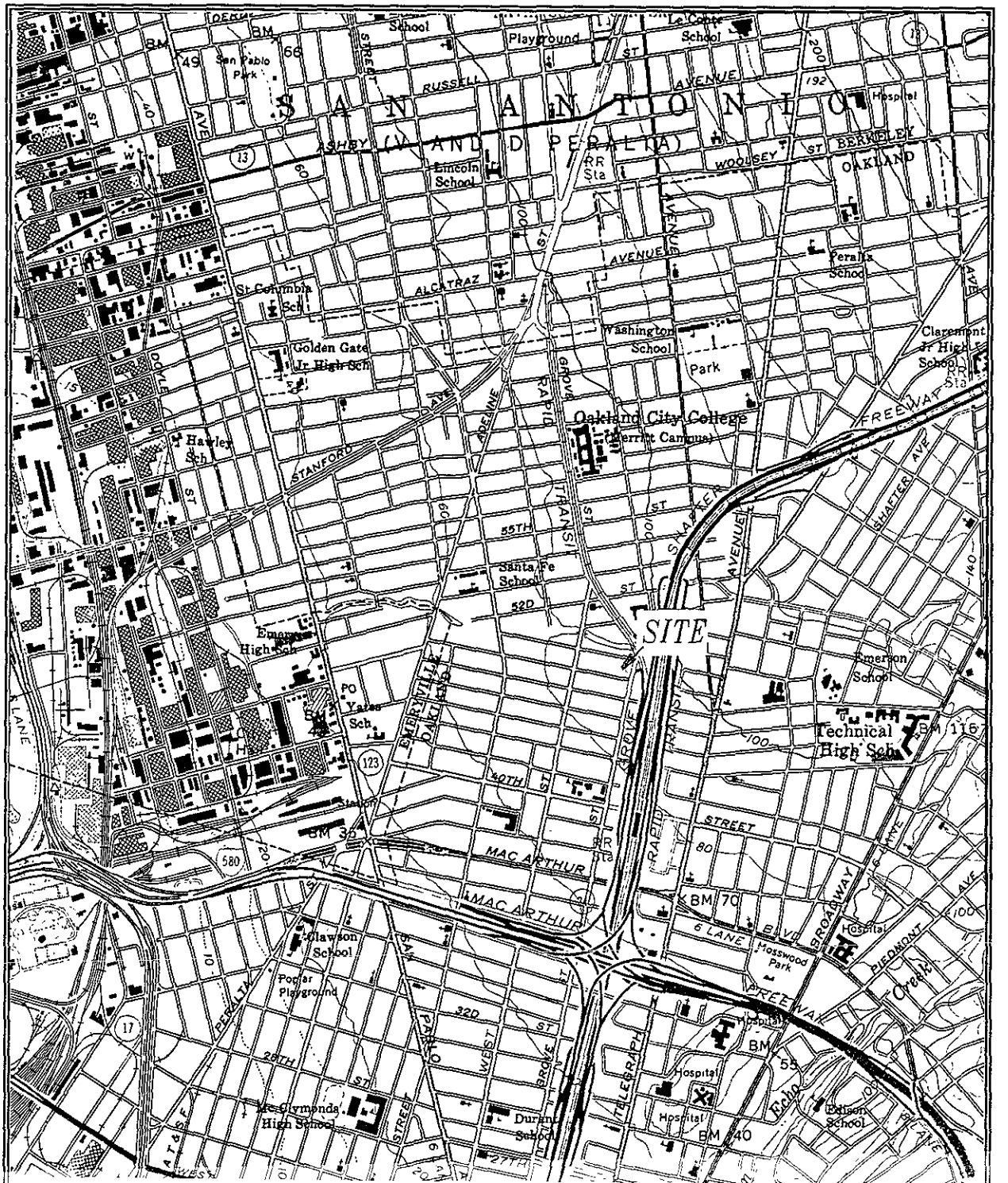
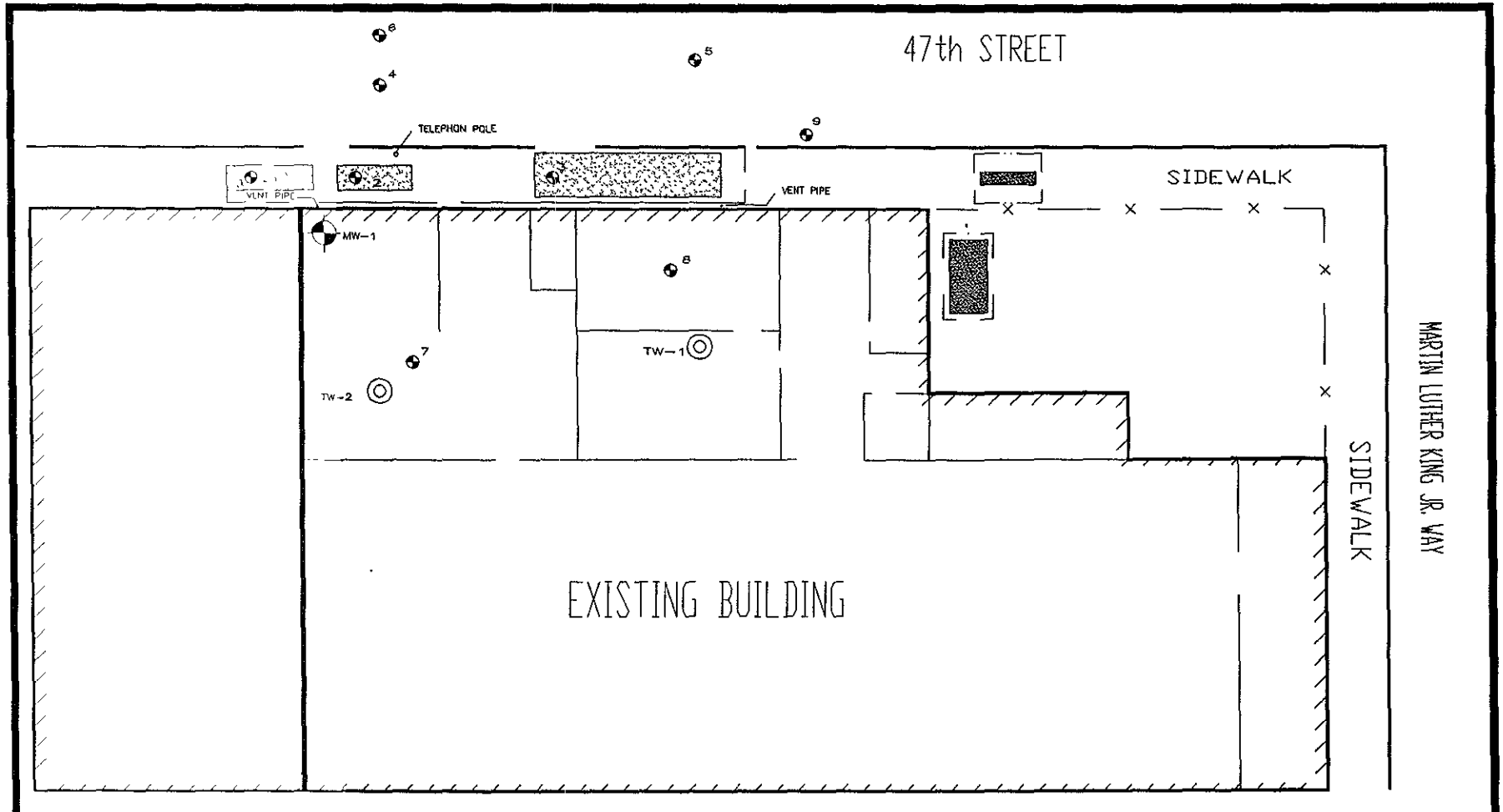


FIGURE 1: SITE VICINITY MAP
4629 Martin Luther King Jr. Way
Oakland, California

Advanced Assessment and Remediation Services
5016 Gloucester Lane
Martinez, CA 94553



LEGEND

- TEST BORING BY SUBSURFACE CONSULTANT
- APPROXIMATE LOCATION OF PREVIOUS HEATING OIL FUEL TANKS
- APPROXIMATE LOCATION OF PREVIOUS GASOLINE TANK
- TW-2 TEMPORARY WELL
- MW-1 MONITORING WELL
- EXTENT OF TANK EXCAVATION

APPROXIMATE SCALE (feet)

0 20 40

FIGURE 2: SITE PLAN

4629 MARTIN LUTHER KING JR. WAY
OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED
95018	09/20-1995	

ADVANCED ASSESSMENT AND REMEDIATION SERVICES
5016 Gloucester Lane
Martinez, CA 94553

TABLES

TABLE 1 - SUMMARY OF ANALYTICAL RESULTS OF SOIL SAMPLING
4629 Martin Luther King Jr. Way
Oakland, California

Sample #	Date of sampling	TPH(g) (mg/kg)	TPH(d) (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TRPH as TOG (mg/kg)
MLK MW-1-S21	11/14/95	350	180	ND<0.02	0.23	ND<0.02	0.39	380
MLK TW-1-S21	11/15/95	500	200	ND<0.02	ND<0.02	ND<0.02	ND<0.02	500
MLK TW-2-S21	11/15/95	38	33	ND	ND	ND	0.029	100
Method Detection Limit	11/15 thru 21/95	1.0	1.0	0.005	0.005	0.005	0.005	10.0

Notes:

ND - Not Detected
mg/kg - Milligram per kilogram (parts per million)
TPH(g)- Total petroleum hydrocarbon as gasoline (EPA methods 5030, 8015 modified and 8020 or 602)
TPH(d)- Total petroleum hydrocarbon as diesel (EPA methods 8015 modified, 3550 or 3510)
Benzene, toluene, ethylbenzene, and total xylenes (EPA method 8020)
TRPH as TOG - Total Recoverable Petroleum Hydrocarbon as Oil and Grease (EPA Method 418.1)

All concentrations reported are in micrograms per kilogram (mg/kg)

TABLE 2 - SUMMARY OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLING
4629 Martin Luther King Jr. Way
Oakland, California

Sample #	Date of sampling	Depth to Water below ground surface(ft)	TPH(g) (µ/L)	TPH(d) (µ/L)	Benzene (µ/L)	Toluene (µ/L)	Ethylben zene (µ/L)	Total Xylenes (µ/L)	Total Lead (mg/L)	TRPH as TOG (mg/L)
MLK MW-1-W	11/15/95	22.80	220	20,000	2.3	ND	ND	0.68	0.021	9.9
MLK TW-1-W	11/15/95	24.00	580	12,000	ND	ND	ND	ND	11	7.7
MLK TW-2-W	11/15/95	24.00	190	1,600	ND	ND	ND	ND	1.0	3.7
Method Detection Limit	11/15 thru 21/95	-	50	50	0.5	0.5	0.5	0.5	0.005	1.0

Notes:

ND - Not Detected
ug/L - Microgram per liter (parts per billion)
mg/L - Milligram per liter (parts per million)
TPH(g)- Total petroleum hydrocarbon as gasoline (EPA method 8015 modified)
TPH(d)- Total petroleum hydrocarbon as diesel (EPA method 8015 modified)
Benzene, toluene, ethylbenzene, and total xylenes (EPA method 8020)
TRPH as TOG - Total Recoverable Petroleum Hydrocarbon as Oil and Grease (EPA Method 418.1)
Lead - EPA Method 6010/200.7, 239.2

All concentrations reported are in micrograms per liter (µg/L), except TRPH as TOG and Lead concentrations reported in milligram per liter (mg/L)

APPENDIX A

Permits

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
State Water Resources Control Board
Division of Clean Water Programs
UST Local Oversight Program
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6700

StID 1489

October 20, 1995

Ms. Lynn Nightingale
102 Flying Cloud Isle
Foster City, CA 94404

RE: Workplan Approval for 4629 Martin Luther King Jr Way, Oakland 94609

Dear Ms. Nightingale:

I have completed review of Advanced Assessment and Remediation Services' October 1995 Work Plan for Groundwater Quality Investigation to be performed at the above referenced site. The proposal to install three temporary wells (TW-1, 2, and 3), and one monitoring well (MW-1) to evaluate groundwater quality is acceptable. Field work should commence within 45 days of the date of this letter, or **by December 5, 1995.** Please notify me at least 72 hours prior to the start of field activities.

If you have any questions, I can be reached at (510) 567-6762.

eva chu
Hazardous Materials Specialist

cc: Tridib Guha, AARS, 5016 Gloucester Ln, Martinez 94553
files

ntngale5

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 4629 Martin L.K. Jr. Way
Oakland, CA

CLIENT
Name Lynn Nightingale
Address 250 Executive Pk Voice (415) 468-4900
City San Francisco, CA Zip 94134

APPLICANT
Name Advanced Assessment and Remediation Services Fax (510) 370-8295
Address 5016 Gloucester Ln Voice (510) 370-8295
City Martinez, CA Zip 94553

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C-57-582696

WELL PROJECTS
Drill Hole Diameter 8.5 in. Maximum
Casing Diameter 2 in. Depth 30 ft.
Surface Seal Depth 5 ft. Number 1

GEOTECHNICAL PROJECTS
Number of Borings 3 Maximum
Hole Diameter 8.5 in. Depth 20 ft.

ESTIMATED STARTING DATE November 7, 1995
ESTIMATED COMPLETION DATE November 7, 1995

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] Date 10/6/95

FOR OFFICE USE

PERMIT NUMBER 95695
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

(C.) GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved [signature] Wyman Hong Date 20 Oct 95

91992

APPENDIX B

Boring Logs and Monitoring Well Installation Details

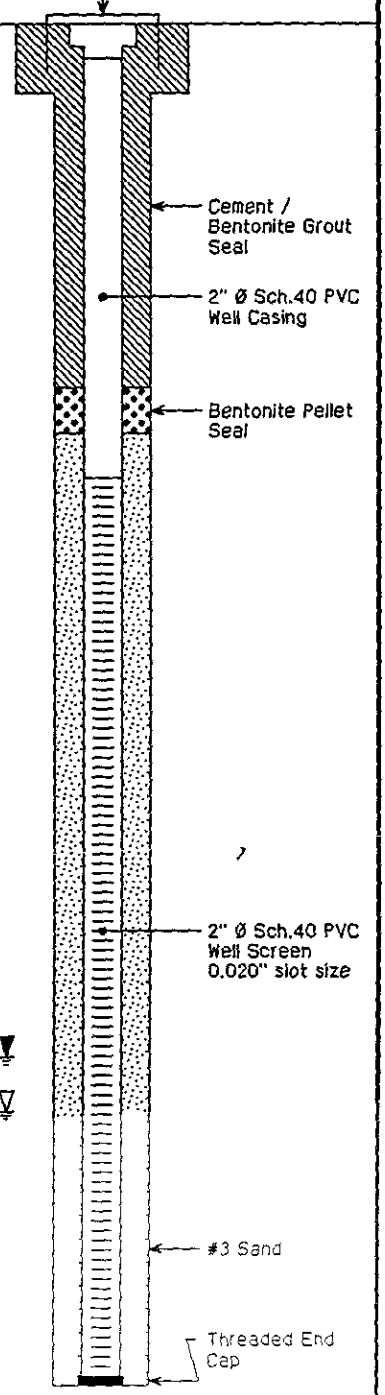
Monitoring Well No. MW-1

PROJECT: MLK Property, Oakland | **DATE:** 11- 14-95 | **LOGGED BY:** T. Guha

DRILL METHOD: HSA | **HOLE DIA.:** 8 in. | **SAMPLER:** Split Spoon

INITIAL GW DEPTH: 24 ft. | **FINAL GW:** 22.8 ft. | **HOLE ELEV.:** 80 ft. MSL

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT	PID (ppm)
CONCRETE: (5 in.)			0			
CLAYEY SAND: brownish yellow (10YR 5/8) soft, slightly moist.	SC		1			
@ 2 ft. reddish black (10R 2.5/1).			2			
			3			
			4			
SANDY CLAY: dark gray (2.5YR N4/1) soft, moist, low plasticity.	CL		5			
			6		30	125
			7			
			8			
			9			
			10			
SILTY CLAY: light brownish gray (10YR 6/2) soft, moist, high plasticity.			11		34	94
			12			
			13			
			14			
@ 15 ft. color changes to grayish brown (10YR 5/2).			15			
			16		19	96
			17			
			18			
			19			
@ 20 ft. with some sand, strong odor.			20			
			21		26	1750
			22			
			23			
			24			
SILTY CLAY: light brownish gray (10YR 6/2) some sand, soft, wet, high plasticity, slight odor.			25			
			26			
			27			
			28			
			29			
Bottom of hole at 30 feet.			30			



WELL CONSTRUCTION DETAIL

ADVANCED ASSESSMENT AND REMEDIATION SERVICES
5016 GLOUCESTER LANE 510-370-8295
MARTINEZ, CA 94553

Notes:

Borehole was drilled by Soils Exploration Services using a Limited Access Rig, Access II.

Project No. 95018

Boring Log No. TW-1

PROJECT: MLK Property, Oakland | **DATE:** 11-15-95 | **LOGGED BY:** T. Guha

DRILL METHOD: SSFA | **HOLE DIA.:** 6 in. | **SAMPLER:** Split Spoon

INITIAL GW DEPTH: 23 ft. | **FINAL GW:** na | **HOLE ELEV.:** 80 ft. MSL

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT	PID (ppm)	BORING CLOSURE
CONCRETE: (5 in.)			0				
SILTY CLAY: dark reddish brown (2.5YR N2.5/3), stiff, moist, no odor.	CL		1	⊠			
			2				
			3				
			4				
			5				
			6				
			7				
			8				
			9				
@ 10 ft. color changes to reddish brown (2.5YR N4/3), few gravels.			10	⊠			Cement / Bentonite grout seal
			11				
			12				
			13				
			14				
			15				
			16				
			17				
			18				
			19				
CLAYEY SAND: dark gray (2.5YR N4/1), with some gravel (1/2 in.), soft, moist, strong odor.	SC		20				
			21	▮	33	950	
			22				
			23				▽
			24				
			25				
			26				
			27				
Bottom of hole at 27 feet.			28				
			29				
			30				

ADVANCED ASSESSMENT AND REMEDIATION SERVICES
5016 GLOUCESTER LANE 510-370-8295
MARTINEZ, CA 94553

Notes:

Borehole was drilled by Soils Exploration Services using a limited access rig, Access II. A groundwater grab sample was collected (see text).

Project No. 95018

Boring Log No. TW-2

PROJECT: MLK Property, Oakland
DATE: 11-15-95
LOGGED BY: T. Guha
DRILL METHOD: SSFA
HOLE DIA.: 6 in.
SAMPLER: Split Spoon
INITIAL GW DEPTH: 23 ft.
FINAL GW: na
HOLE ELEV.: 80 ft. MSL

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT	PID (ppm)	BORING CLOSURE
CONCRETE: (5 in.)			0				
SILTY CLAY: dark reddish gray (5YR 4/2), stiff, moist, some gravels.	CL		1	⊠			
			2				
			3				
			4				
			5				
			6				
@ 7 ft. color changes to brown (7.5YR 5/4)			7	⊠			
			8				
			9				
			10				Cement / Bentonite grout seal
			11				
			12				
			13				
			14				
			15				
			16				
			17				
			18				
			19				
			20				
CLAYEY SAND: reddish gray (5YR 5/2), few gravels, soft, moist, slight odor.	SC		21	▮	29	170	
			22				
			23				▽
			24				
			25				
			26				
			27				
			28				
			29				
Bottom of hole at 30 feet.			30				

ADVANCED ASSESSMENT AND REMEDIATION SERVICES
5016 GLOUCESTER LANE 510-370-8295
MARTINEZ, CA 94553

Notes:
Borehole was drilled by Soils Exploration Services using a limited access rig, Access II. A 5 ft. section of auger fell in the bottom of the hole. A groundwater grab sample was collected (see text).

Project No.
95018

UNIFIED SOIL CLASSIFICATION SYSTEM
ASTM D2488-84

MAJOR DIVISIONS			SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS OVER 50%>No.200 SIEVE SIZE	GRAVELS MORE THAN 1/2 OF COARSE FRACTION> NO.4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	Well graded gravels or gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GRAVELS WITH OVER 12% FINES	GM	Silty gravels, gravel-sand mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS MORE THAN 1/2 OF COARSE FRACTION< NO.4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	Well graded sands or gravelly sands, little or no fines
			SP	Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH OVER 12% FINES	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS OVER 50%<No.200 SIEVE SIZE	SILTS & CLAYS LIQUID LIMIT 50% OR LESS		ML	Inorganic siltys and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts andorganic silty clays of low plasticity
	SILTS & CLAYS LIQUID LIMIT GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS			Pt	Peat and other hightly organic soils

SYMBOLS KEY

- Driven Interval
- Bulk or Classification Sample
- Laboratory Sample
- Undisturbed Samp. for Classification
- First encountered groundwater level
- Static groundwater level

(10YR 4/4) Munsell soil color 1990 edition

GRAIN SIZE CHART

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL	3" to No.4	76.2 to 4.76
coarse	3" to 3/4"	76.2 to 19.1
fine	3/4" to No.4	19.1 to 4.76
SAND	No.4 to No.200	4.76 to 0.074
coarse	No 4 to No 10	4 76 to 2 00
medium	No 10 to No.40	2 00 to 0.420
fine	No 40 to No 200	0 420 to 0.074
SILT & CLAY	Below No 200	Below No 0 074

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MARTINEZ, CA 94553

SOIL CLASSIFICATION CHART AND KEY TO BORING LOG

APPENDIX C

Monitoring Well Purge/Sampling Worksheet

GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET

PROJECT NAME: MLK Property, Oakland PROJECT NUMBER: 95014

SITE ADDRESS: 4629 Matin Luther King, Jr.Way Oakland, CA REG. AGENCY: Alameda County-Haz Mat

WELL NUMBER: MW-1 WELL CASING DIA.: 2 inch DATE: 11-15-95

Stagnant Volume Calculation

Total Well Depth (ft)	- Initial Depth to Water	= Water Column Height (ft)	Time: 10:05
30	22.8	7.2	

Water column Height (ft)	x Gallons/Linear Foot	= Stagnant Volume (Gallons)
7.2	0.17	1.2

(Gallons/Linear Foot: 2" dia. = 0.17; 4" dia. = 0.66; 6" dia. = 1.5)

Groundwater Inspection

Floating Product (ft. or in.): Yes Odor: Yes Sheen/Iridescence: Yes

Field observations: Floating product not measurable; oily and sticky appearence

Purge Method Used 2-inch PVC Bailer

Time	Volume Purged (gal)	Temperature (°F)	pH	Conductivity µS	Color/Turbidity
10:09	0	61	8.0	1700	cloudy
10.17	1.2	63	7.6	1850	cloudy
10.27	2.5	62	7.9	1820	cloudy
10.35	3.7	62	7.8	1680	cloudy
10.42	4.9	62	7.8	1590	muddy
10.48	6.1	62	7.8	1520	muddy
11.04	7.3	62	7.9	1410	muddy
11.11	8.5	62	7.9	1380	muddy
11.19	9.8	62	7.9	1330	muddy
11.27	11.0	62	8.0	1310	muddy
11.34	12.4	62	8.0	1320	muddy

Purged Water Containment: _30_ gals stored in _1_ 55 gal (drums); Any previous drums?_no_ Capacity ____

Groundwater Sampling Water Level Recovery (Depth to groundwater in feet)

(P) After purging: 25.20; (I) Initially: 22.80; (S) Before sampling: 23.00 Time: 13:00_

(P-S)/P-I) x 100 = 92 % Total Recovery:

Sample Containers (How many? Preservatives?)

1 liter amber glass: 1 ; 40 ml VOA: 4 ; 500 ml polypropylene: 1

REMARKS:

SAMPLER: Tridib K. Guha

TRIDIB K. GUHA

APPENDIX D

Laboratory Reports and Chain of Custody Documents

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Advanced Assessment & Remediation Services 5016 Gloucester Lane Martinez, Ca. 94553	Client Project ID: MLK Property	Date Sampled: 11/14-11/15/95
		Date Received: 11/15/95
	Client Contact: Tridib Guha	Date Extracted: 11/15-11/17/95
	Client P.O:	Date Analyzed: 11/15-11/18/95

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
58718	MLK MW1-S21	S	180,e/d	110
58719	MLK TW2-SS21	S	33,e/d	106
58720	MLK TW1-S21	S	200,e/d	110
58721	MLK MW1-W	W	20,000,c	106
58722	MLK TW2-W	W	1600,a,d/b/e,i	114#
58723	MLK TW1-W	W	12,000,a,d/e,i	118#
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	
		S	1.0 mg/kg	

*** water samples are reported in ug/L, soil samples in mg/kg, and all TCLP and STLC extracts in mg/L**

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract.

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) aged diesel? is significant); d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel (Stoddard solvent?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Advanced Assessment & Remediation Services	Client Project ID: MLK Property	Date Sampled: 11/14-11/15/95
		Date Received: 11/15/95
5016 Gloucester Lane	Client Contact: Tridib Guha	Date Extracted: 11/15-11/20/95
Martinez, Ca. 94553	Client P.O:	Date Analyzed: 11/15-11/20/95

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
58718	MLK MW1-S21	S	350,j	ND< 0.02	0.23	ND< 0.02	0.39	99
58719	MLK TW2-SS21	S	38,j/e	ND	ND	ND	0.029	93
58720	MLK TW1-S21	S	500,e/g	ND< 0.02	ND< 0.02	ND< 0.02	ND< 0.02	102
58721	MLK MW1-W	W	220,b,c	2.3	ND	ND	0.68	91
58722	MLK TW2-W	W	190,b,d,i	ND	ND	ND	ND	95
58723	MLK TW1-W	W	580,b,d,i	ND	ND	ND	ND	94
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

* water and vapor samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; sample peak coelutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (Stoddard solvent?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment; j) no recognizable pattern.

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Advanced Assessment & Remediation Services 5016 Gloucester Lane Martinez, Ca. 94553	Client Project ID: MLK Property	Date Sampled: 11/14-11/15/95
		Date Received: 11/15/95
	Client Contact: Tridib Guha	Date Extracted: 11/15/95
	Client P.O:	Date Analyzed: 11/15/95

Total Recoverable Petroleum Hydrocarbons as Oil & Grease (with Silica Gel Clean-up) by Scanning IR Spectrometry*

EPA method 418.1 or 9073; Standard Methods 5520 C&F

Lab ID	Client ID	Matrix	TRPH+
58718	MLK MW1-S21	S	380
58719	MLK TW2-SS21	S	100
58720	MLK TW1-S21	S	500
58721	MLK MW1-W	W	9.9
58722	MLK TW2-W	W	3.7,i
58723	MLK TW1-W	W	7.7,i
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		W	1.0 mg/L
		S	10 mg/kg

* water samples are reported in mg/L and soils in mg/kg

surrogate diluted out of range

+ At the laboratory's discretion, one positive sample may be run by direct injection chromatography with FID detection. The following comments pertain to this GC result: a) gasoline-range compounds (C6-C12) are present; b) diesel range compounds (C10-C23) are present; c) oil-range compounds (> C18) are present; d) other patterned solvent (?); e) isolated peaks; f) GC compounds are absent or insignificant relative to TRPH inferring that complex biologically derived molecules (lipids?)are the source of IR absorption; h) a lighter than water immiscible sheen is present; i) liquid sample that contains greater than ~ 5 vol. % sediment.

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

Advanced Assessment & Remediation Services 5016 Gloucester Lane Martinez, Ca. 94553	Client Project ID: MLK Property	Date Sampled: 11/14-11/15/95
		Date Received: 11/15/95
	Client Contact: Tridib Guha	Date Extracted: 11/16/95
	Client P.O:	Date Analyzed: 11/20-11/21/95

Lead*

EPA analytical methods 6010/200.7, 239.2+

Lab ID	Client ID	Matrix	Extraction°	Lead*	% Recovery Surrogate
58721	MLK MW1-W	W	TTLC	0.021	NA
58722	MLK TW2-W	W	TTLC	1.0,i	NA
58723	MLK TW1-W	W	TTLC	11,i	NA
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit		S	TTLC	3.0 mg/kg	
		W	TTLC	0.005 mg/L	
		—	STLC,TCLP	0.2 mg/L	

* soil samples are reported in mg/kg, and water samples and all STLC & TCLP extracts in mg/L

+ Lead is analysed using EPA method 6010 (ICP)for soils, STLC & TCLP extracts and method 239.2 (AA Furnace) for water samples

o EPA extraction methods 1311(TCLP), 3010/3020(water,TTLC), 3040(organic matrices,TTLC), 3050(solids,TTLC), STLC from CA Title 22

surrogate diluted out of range, N/A means surrogate not applicable to this analysis

i) liquid sample that contains greater than ~ 2 vol. % sediment, this sediment is extracted with the liquid, in accordance with EPA methodologies and can significantly effect reported metal concentrations

DHS Certification No. 1644

Edward Hamilton, Lab Director

ADVANCED ASSESSMENT & REMEDIATION SERVICES
5016 Gloucester Lane Martinez, CA 94553
PHONE / FAX (510) 370-8295

Chain of Custody

5282 AAARSX2

CLIENT: AARS
ADDRESS: 5016 GLOUCESTER LANE MARTINEZ, CA 94553
PROJECT #: MLK PROPERTY
SAMPLER: T. GUHA
SHIP TO: McCAMPBELL ANALYTICAL

DATE: 11-15-95 PAGE 1 OF 1

TURN AROUND TIME: 24 HRS | 3 DAYS | 5 DAYS | 10 DAYS | 15 DAYS

SAMPLE NO	DATE	TIME	LOCATION	TPHd	TPHg/BTEX	O+G	TOTAL LEAD	SAMPLE TYPE OR MATRIX (e.g. water, soil, filters, charcoal tube, asbestos, oil)	# CONTAINERS	OBSERVATIONS, CONTENTS, VOLUMES, SPECIAL ON ADDITIONAL
MLK MW1-S21	11-14-95	13:15	4629 MLK Jr. Lvy. OAKLAND, CA	X	X	X		SOIL	1	1 BRASS TUBES — 58718
MLK TW2-S21	11-15-95		"					SOIL	1	" — 58719
MLK TW1-S21			"					SOIL	1	"
MLK MW1-W		13:00				X		WATER	6	1 LITER AMBER, 4 VOAs, 1 PLASTIC
MLK TW2-W		15:00				X		WATER	6	" — 58720
MLK TW1-W	11-15-95	18:00		X	X	X	X	WATER	6	" — + 58721
										VOAs — + 58722
										5+ 58723

HEAD SPACE ABSENT ✓ CONTAINERS ✓ PRESERVATIVE ✓ APPROPRIATE ✓

TOTAL NUMBER OF CONTAINERS

REPORT TO:

1) RELINQUISHED BY: Signature / Printed Name / Company	DATE / TIME	2) RECEIVED BY: Signature / Printed Name / Company	DATE / TIME	3) RELINQUISHED BY: Signature / Printed Name / Company	DATE / TIME	4) RECEIVED BY: Signature / Printed Name / Company	DATE / TIME
Signature: Tridib K. Guha / Printed Name: TRIDIB K. GUHA / Company: ADV. ASSMT & REMD.	11/15/95 / PM	Signature: David Keeler / Printed Name: David Keeler / Company: MAI					
5) RELINQUISHED BY: Signature / Printed Name / Company	DATE / TIME	6) RECEIVED BY: Signature / Printed Name / Company	DATE / TIME	7) RELINQUISHED BY: Signature / Printed Name / Company	DATE / TIME	RECEIVED BY (Laboratory): Signature / Printed Name	DATE / TIME

HEAD SPACE ABSENT ✓ CONTAINERS ✓ PRESERVATIVE ✓ APPROPRIATE ✓ VOAs ✓