



June 29, 1990
88-44-380-20-744

Ms. Penny Silzer
San Francisco Bay Regional
Water Quality Control Board
1800 Harrison Street, Room 700
Oakland, California 94612

Subject: Shell Oil Company - Quarterly Report - Q2/1990
2724 Castro Valley Boulevard
Castro Valley, California

Dear Ms. Silzer:

Enclosed please find one copy of the Shell Oil Company Quarterly Report of Activities Quarter 2, 1990 prepared by Converse Environmental West (CEW) - San Francisco.

Please call if you have any questions.

Very truly yours,

Converse Environmental West

Michael Carey
Project Geologist

MCC:cjd

Enclosure

cc: Mr. Lawrence Seto - Alameda County Health Care Services Agency
Mr. Charles R. Comstock - Converse Environmental West

**REPORT OF ACTIVITIES
QUARTER 2, 1990**

**SHELL OIL COMPANY FACILITY
2724 CASTRO VALLEY ROAD
CASTRO VALLEY, CALIFORNIA**

Prepared for:

Shell Oil Company
1390 Willow Pass Road, Suite 900
Concord, California 94520

Prepared by:

Converse Environmental West
55 Hawthorne Street, Suite 500
San Francisco, California 94015

June 29, 1990

CEW Project No. 88-44-380-20

TABLE OF CONTENTS

	<u>Page</u>
SECTION 1 INTRODUCTION	1
1.1 Background and Objectives	1
1.2 Scope of Activities	3
SECTION 2 WORK COMPLETED THIS QUARTER	4
2.1 Verification of Soil Remediation	4
2.1.1 Q2/90 Drilling and Sampling	4
2.2 Site Restoration	5
2.3 Groundwater Investigations	5
2.3.1 Groundwater Sampling and Analyses	5
2.3.2 Physical Monitoring Activities	5
SECTION 3 FINDINGS AND DISCUSSION	6
3.1 Soil	6
3.1.1 Stratigraphy	6
3.1.2 Results of Chemical Analyses	7
3.1.3 Discussion	7
3.2 Groundwater	7
3.2.1 Physical Parameters	7
3.2.2 Elevation and Gradient	8
3.2.3 Results of Chemical Analyses	8
3.2.4 Physical Monitoring	9
3.2.5 Discussion	9
SECTION 4 NEXT QUARTER ACTIVITIES	10

TABLE OF CONTENTS (cont'd)

BIBLIOGRAPHY

TABLES

DRAWINGS

APPENDICES

- A SITE DESCRIPTION
- B CHRONOLOGICAL SUMMARY
- C BORING LOGS
- D LABORATORY REPORTS AND CHAIN-OF-CUSTODY
- E FIELD DATA
- F SITE RESTORATION PLAN AND SCHEDULE OF FUTURE WORK

LIST OF TABLES

<u>Table</u>	<u>Description</u>
1	Activity Summary - Quarter 2, 1990
2	Soil Boring Information
3	Recommended Minimum Verification Analyses for Underground Tank Leaks
4	Results of Downhole Soil Chemical Analyses
5	Well Installation Information
6	Results of Groundwater Chemical Analyses
7	Groundwater Monitoring Information
8	Field Parameters

LIST OF DRAWINGS

<u>Drawing</u>	<u>Description</u>
1	Site Location Map
2	Plot Plan
3	Schematic Geologic Cross Section
4	Potentiometric surface map (Q2/90)
5	Plan: Groundwater TPH-g and TPH-d (Q2/90)
6	Plan: Groundwater BTEX (Q2/90)
7	Proposed Soil Borings and Monitoring Wells

SECTION 1

INTRODUCTION

1.1 BACKGROUND AND OBJECTIVES

This report presents the results of investigative activities conducted by Converse Environmental West (CEW) during Quarter 2, 1990 (Q2/90) for the former Shell Oil Company (Shell) station (site) at 2724 Castro Valley Blvd, Castro Valley, California (Drawing 1). This report is prepared to fulfill the quarterly reporting requirements as specified in the Work Plan prepared by CEW and dated January 16, 1990 for achievement of environmental closure of the facility. The Work Plan is on file with the regulatory agencies of jurisdiction.

This former retail gasoline station is located on the northeast corner of Castro Valley Blvd and Lake Chabot Road in Castro Valley, California. The site is approximately 160 feet long by 100 feet wide (Drawing 2). Commercial businesses exist on all corners of the intersection. Surrounding neighborhood development is commercial along both roads. Single family dwellings are located on nearby side streets. The site was an active service station before 1989, but is now temporarily closed due to ongoing renovation work, tank replacement, and environmental remediation.

Topographically, the site is located on the western edge of a gentle valley (Castro Valley) on recent alluvial fill. The terrain rises northward into the San Leandro Hills and the site is approximately 50 feet above the valley floor. An isolated hillside knob with 60 to 100 feet of relief exists 600 feet south of the site. An intermittent stream is shown 300 feet west on the Hayward, Calif USGS topographic map. This stream enters San Lorenzo Creek approximately one mile south of the site.

During the past four years Shell and its environmental consultants Blaine Technical Services, Woodward-Clyde Consultants, Crosby and Overton, and Converse

Environmental West (CEW) have investigated the extent of soil contamination associated with underground storage tanks and product lines at the former Shell gasoline station at the subject address. First environmental activities were initiated in November, 1986, when Shell replaced the waste oil tank and discovered minor soil contamination in tank backfill.

In March, 1989, Shell removed the underground gasoline storage tanks and discovered subjacent soil contamination. The contaminated soil was removed in three successive stages.

During June and July, 1989, soil around the former storage tanks was excavated to a depth of 12 feet, the approximate depth of the water table. The enlarged excavation extended from the existing building on the north, to the sidewalk of Castro Valley Boulevard on the South (Drawing 2). The spoils from the excavation were removed from the site, and taken to a Class I or II landfill at Buttonwillow, California, by Crosby and Overton, a licensed waste hauler. Verification samples taken in the sidewalls showed that the exposed soils were clean, except at the northeast corner, where further excavation was impractical due to obstruction from buildings and underground utilities. Mr. Larry Seto of ACHCSA was notified of the sample results in letters dated July 11 and July 27, 1989, and the excavation was backfilled soon thereafter (Drawing 2).

A second excavation currently exists immediately to the west, under the former pump islands. In late August, 1989, exploratory test pits were excavated under the drive pad area, to determine the extent of suspected near-surface contamination. Local areas of contaminated soil were discovered between the pump islands. In early October 1989, the test pits were expanded into an excavation (Drawing 2) and contaminated soil was removed. Soil samples were taken from the sidewalls and bottom of the excavation, and the excavation was expanded slightly where residual soil contamination was present.

Final verification samples taken in January 1990 showed that the exposed soils were clean. Three samples taken in the deepest portion of the excavation (#16, SW-22, SW-23) showed some contamination. These samples were all taken in the capillary or saturated zone.

A letter has been sent to ACHCSA describing these sampling results, and requesting permission to backfill the excavation and fully restore the site.

1.2 SCOPE OF ACTIVITIES

The investigative activities conducted during Q2/90 were authorized under an existing purchase order and blanket number from Shell for environmental services at the site. The work completed during Q2/90 consisted of the following activities:

- Sampling monitoring wells MW-1, MW-2, MW-3 and MW-5, and analyzing for benzene, toluene, ethylbenzene, xylenes (BTEX) and total petroleum hydrocarbons.
- Hand-augering and abandoning one soil boring, drilled at a 20° angle under the gas station building.
- Meetings with ACHCSA, Shell and the property owner to discuss the site conditions, and to obtain permission to proceed with backfill of the open excavation.
- Preparation of a Site Restoration Plan and Schedule for future work, describing in detail the proposed onsite and offsite future actions.

SECTION 2

WORK COMPLETED THIS QUARTER

Work initiated and completed during Q2/90 followed the task descriptions of the Work Plan dated January 16, 1990 and the CEW protocols on file with the regulatory agencies of jurisdiction. Modifications and additions to the Work Plan are contained in a Site Restoration Plan and Schedule for Future Work, dated May 31, 1990.

2.1 VERIFICATION OF SOIL REMEDIATION

Final soil samples were taken during Q1/90, in the existing excavation. To verify that all contaminated soil had been removed, five samples were taken at depths of 4 to 5 feet (Soil I Horizon) and 13 samples were taken at depths of 6 to 9 feet (Soil II Horizon) (Table 4). Before sampling, the existing exposed excavation surface was removed to a depth of approximately 6 inches. The soil samples were properly stored, transported to a state-certified analytical laboratory and analyzed for TPH-g, TPH-d and BTEX. Laboratory reports and chain-of-custody forms are included in Appendix C.

Because the samples collected in Program I lacked concentrations of total TPH greater than 100 ppm, additional lateral and vertical excavation was not carried out. A letter requesting permission to proceed with site restoration was sent to the ACHCSA on March 12, 1990. Mr. Larry Seto of ACHCSA gave permission to backfill the excavation in a letter dated May 2, 1990.

2.1.1 Q2/90 Drilling and Sampling

During Q2/90, one hand-auger boring was drilled along the building foundation 20 feet from MW-2, southwest of the existing waste oil tank. The boring encountered black silty clay to topsoil to a depth of approximately six feet. From six to seven feet, the boring

- Results?

encountered very stiff silty clay. Because the hole was drilled at an angle, and used only hand equipment, it met refusal in the stiff colluvium at a depth of 7 feet. Chemical analysis was performed on two samples, taken from 4.5 and 6.5 feet below the building foundation.

2.2 SITE RESTORATION

As of the date of this report, the excavation had not been backfilled.

2.3 GROUNDWATER INVESTIGATIONS

2.3.1 Groundwater Sampling and Analyses

Groundwater samples were collected on April 20, 1990 from monitoring wells MW-1 through MW-3, and MW-5 following CEW protocols. These samples were submitted to NET Pacific, Inc., a California-certified laboratory in Santa Rosa, California, under proper chain-of-custody. The samples were analyzed for TPH-g, TPH-d, and BTEX following the recommended analytical methods listed in Table 3. Analytical data for the water samples collected from the monitoring wells are summarized in Table 7. Laboratory reports and chain-of-custody forms are provided in Appendix D.

2.3.2 Physical Monitoring Activities

During Q2/90, wells MW-1 through MW-3 and MW-5 were physically monitored once for depth to water table and measured for floating product, if present. A summary of these results is presented in Table 8.

SECTION 3

FINDINGS AND DISCUSSION

3.1 SOIL

The soil stratigraphy revealed in the excavations consists of three major soil layers above the local bedrock: (1) dark brown topsoil and fill, to a depth of approximately 5 feet below ground surface (bgs), (2) light brown firm silty clay subsoil (or colluvium), to a depth of approximately 11 feet (bgs), and (3) damp to wet gravelly sand (highly weathered bedrock) below 11 feet (bgs) (CEW report, January 16, 1990). The exploratory borings encountered weathered shale bedrock at about 12 to 14 feet.

3.1.1 Stratigraphy

Drilling in 1990 confirmed the initial soil stratigraphy exposed in the excavations. Drilling results are described below.

Clay, topsoil, loam, and minor sand gravel constitutes the upper 4 to 5 feet of the soil sequence. This interval has been informally named "Soil Horizon I" in prior reports of soil stratigraphy established during excavations (CEW, January 16, 1990). Petroleum odor from the Soil Horizon I zone was observed during excavation and sampling around the former pump islands. On the eastern side of the site. This zone exhibited no odor, and one only sample was collected,

Underlying the topsoil is a dense, light brown silty clay with minor intercalated lenses of clayey sand (inferred <6" thick, discontinuous), which extend to approximately 9 to 11 feet bgs; this interval is "Soil Horizon II" of prior reports.

Immediately below Soil Horizon II, discontinuous, thin (< 3 feet thick) lenses of saturated, poorly-sorted sand, gravel silt and clay; this interval is "Soil Horizon III" of excavation stratigraphy. The sand is grayish green in color loosely consolidated, well graded (poorly sorted), with abundant angular and rounded shale pebbles of 3/4 inch diameter.

Franciscan bedrock extends from the base of Soil Horizon II or Soil Horizon III to the maximum depth of exploration, 25 feet below grade (Drawing 6).

3.1.2 Results of Chemical Analyses

Soil samples from the monitoring well borings contained negligible concentrations of petroleum hydrocarbons, BTEX and lead (Table 5).

3.1.3 Discussion

At present, minor residual contamination remains near the waste oil tank. Contaminated soil has been removed by excavation at the center of the site, to clean sidewalls (complete practical lateral extent) and to the capillary zone (winter, 1989 vertical extent).

3.2 GROUNDWATER

3.2.1 Physical Parameters

Reported Q1/90

Neither floating product or hydrocarbon odors were present in the wells.

Reported Q2/90

Floating product was not present in the wells at the facility during Q2/90 monitoring activities.

3.2.2 Elevation and Gradient

Reported Q1/90

The groundwater gradient is approximately 0.03 ft/ft to 0.01 ft/ft with flow south to the southwest across the site.

Reported Q2/90

Depth to groundwater ranges from 8.63 to 10.20 ft bgs (Table 7). Groundwater flow is to the southwest with a gradient of approximately .02 to .01 ft/ft (Drawing 4).

3.2.3 Results of Chemical Analyses

Reported Q1/90

TPH-g and BTEX were below detectable concentrations in MW-3 and MW-5. MW-1 contained trace amounts of benzene and toluene, and MW-2 contained detectable concentrations of BTEX, TPH-g and TPH-d.

Reported Q2/90

Only MW-2 contained detectable amounts of TPH-g (9.1 ppm), TPH-d (1.8 ppm) or BTEX (0.50, 0.33, 0.11, 0.90 ppm, respectively) (Table 6, Drawings 5 and 6). Concentrations of these constituents in MW-2 was similar in both Q1/90 and Q2/90.

3.2.4 Physical Monitoring

The four wells were monitored once during the quarter for groundwater conditions, at the time of sampling. No free product sheen or petroleum odor were present in groundwater samples in April, 1990 (Table 9).

3.2.5 Discussion

Groundwater from MW-2 was analyzed for waste-oil constituents (EPA Method 624) in Q2/90. All dissolved constituents, other than BTEX, were below detectable levels. This demonstrates that the minor contamination in the upper soil near the waste oil tank has had a negligible impact on the local groundwater.

SECTION 4

NEXT QUARTER ACTIVITIES

A detailed description of planned activities is contained in the Site Restoration Plan and Schedule, dated May 31, 1990. Planned Q3/90 activities include drilling one additional onsite soil boring, near the waste oil tank.

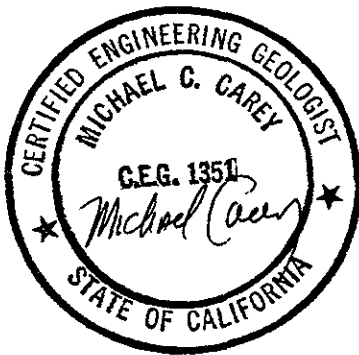
CEW will describe and report progress of activities on the next Q3/90 Quarterly Report to the agency.

CERTIFICATION

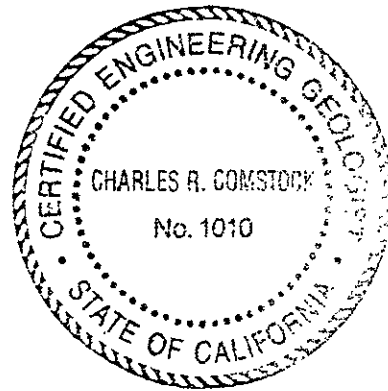
This report of activities for the Shell Oil Company facility at 2724 Castro Valley Road, Castro Valley, California has been prepared by the staff of **Converse Environmental West** under the professional supervision of the Engineer and/or Geologist whose seal(s) and signature(s) appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the Client, after being prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied.

Respectfully submitted,



MICHAEL C. CAREY
Project Geologist



A handwritten signature in black ink, appearing to read "Charles R. Comstock".

CHARLES R. COMSTOCK
Technical Director

PRIMARY CONTACTS

Shell Oil Company Facility
2724 Castro Valley Road
Castro Valley, California

Quarter 2, 1990

Regional Water Quality Control
Board Representative:

Ms. Penny Silzer
San Francisco Bay Regional Water
Quality Control Board
1800 Harrison Street, Room 700
Oakland, California 94612

LIA Representative:

Mr. Lawrence Seto
Alameda County Health Care
Services Agency
Department of Public Health
80 Swan Way, Room 200
Oakland, California 94621

Shell Engineer:

Ms. Diane M. Lundquist
Shell Oil Company
1390 Willow Pass Road, Suite 900
Concord, California 94520

Converse Project Manager:

Mr. Michael C. Carey
Converse Environmental West
55 Hawthorne Street, Suite 500
San Francisco, California 94105

Registered Geologist in Charge:

Mr. Charles R. Comstock
Converse Environmental West
55 Hawthorne Street, Suite 500
San Francisco, California 94105

Site Owner:

Mr. Matthew Righetti, Esq.
1410 Jackson Street
Oakland, CA 94612

BIBLIOGRAPHY

BIBLIOGRAPHY

- California Regional Water Quality Control Board, San Francisco Bay Region, 1986, Water quality control plan, San Francisco Bay Basin Region (2), December.
- California Regional Water Quality Control Board, 1988, Regional Board staff recommendations for initial evaluation and investigation of underground tanks, June 2, 1988.
- California State Water Resources Control Board, 1985, California Administrative Code, Title 23 Waters, Chapter 3 Water Resources Control Board, Subchapter 16 Underground Tank Regulations, effective August 13, 1985.
- _____, 1988, Leaking underground fuel tank field manual: guidelines for site assessment, cleanup, and underground storage tank closure, May 24, 1988.
- _____, 1989, LUFT field manual revision, April 5, 1989.
- CEW, See Converse Environmental West
- Converse Environmental West, 1989, Revised Work Plan, Shell Oil Company facility, 2724 Castro Valley Road, Castro Valley, California, dated January 16, 1990.
- Helley, E.J., La Joie, K.R., Spangle, W.E., and Blair, M.L., 1979, Flatland deposits of the San Francisco Bay Region, California - their geology and engineering properties, and their importance to comprehensive planning, U.S. Geological Survey Professional Paper 943, 88 p.
- Hickenbottom, K. and Muir, K., 1988. Geohydrology and groundwater - quality overview, of the East Bay Plain area, Alameda County, California 205(j) Report, Alameda County Flood Control and Water Conservation District, 83p. plus appendix.

TABLES

TABLE 1. ACTIVITY SUMMARY - QUARTER 2, 1990

Shell Oil Company Facility
 2724 Castro Valley Road
 Castro Valley, California

Activity	PERCENT COMPLETE			
	Quarter 2, 1990		Total to Date	
	Onsite	Offsite	Onsite	Offsite
Soil Characterization	5	N/A	90	NA
Groundwater Characterization (Dissolved Product)	10	0	30	0
Groundwater Characterization (Floating Product)	NA	NA	NA	NA
Soil Remediation	0	NA	90*	N/A
Groundwater Remediation (Dissolved Product)	0	0	0	0
Groundwater Remediation (Floating Product)	NA	NA	NA	NA

NOTES:

- * Presumes that excavation to 11 feet below ground surface will be accepted as the full vertical extent of the unsaturated zone
- NA Not Applicable

TABLE 2. SOIL BORING INFORMATION

Shell Oil Company Facility
2724 Castro Valley Road
Castro Valley, California

Boring No.	Date Drilled	Total Depth (ft bgs)	Completion	Unsaturated Soil Samples (ft bgs)	Saturated Soil Samples (ft bgs)
MW-1	1/18/90	16	4" diameter well	5, 10	NC
MW-2	1/19/90	15	4" diameter well	5, 9, 15, 20, 25	NC
MW-3	1/19/90	25	4" diameter well	5, 10, 15	NC
MW-5	1/22/90	23	4" diameter well	5, 9, 15, 20, 25	NC
SB-1	1/18/90	15	Abandoned	5, 9	NC

NOTES:

ft bgs feet below ground surface
ppm part per million
NC none collected

TABLE 3. RECOMMENDED MINIMUM VERIFICATION ANALYSES FOR UNDERGROUND TANK LEAKS

From: RWQCB Guidelines for Evaluation of Fuel Tank Leaks (Revised May 18, 1989)

HYDROCARBON LEAK	SOIL ANALYSIS				WATER ANALYSIS			
	Prep	Analysis	D.L. (mg/kg)		Prep	Analysis	D.L. (ug/l)	
Unknown Fuel	TPH-g	5030	GCFID	1.0	TPH-g	5030	GCFID	50.0
	TPH-d	3550	GCFID	1.0	TPH-d	3510	GCFID	50.0
	BTEX	5030	8020/8240	0.005	BTEX	5030	602/624	0.50
Leaded Gas	TPH-g	5030	GCFID	1.0	TPH-g	5030	GCFID	50.0
	BTEX	5030	8020/8240	0.005	BTEX	5030	602/624	0.50
	TEL*	---	DHS-LUFT		TEL	---	DHS-LUFT	
	EDB*	---	DHS-AB1803		EDB	---	DHS-AB1803	
Unleaded Gas	TPH-g	5030	GCFID	1.0	TPH-g	5030	GCFID	50.0
	BTEX	5030	8020/8240	0.005	BTEX	5030	602/624	0.50
Diesel	TPH-d	3550	GCFID	1.0	TPH-d	3510	GCFID	50.0
	BTEX	5030	8020/8240	0.005	BTEX	5030	602/624	0.50
Waste Oil or Unknown	TPH-g	5030	GCFID	1.0	TPH-g	5030	GCFID	50.0
	TPH-d	3550	GCFID	1.0	TPH-d	3510	GCFID	50.0
	O&G	---	503D&E	50.0	O&G	---	503A&E	5000.0
	BTEX	5030	8020/8240	1.0	BTEX	5030	602/624	0.50
	CL HC	5030	8010/8240	1.0	CL HC	5030	601/624	0.50

ICAP or AA for soil or water to detect metals: Cadmium, Chromium, Lead, Zinc
 Method 8270 for soil or water to detect: PCB, PCP, PNA, Creosote

NOTES:

- * Optional Analysis
- RWQCB Regional Water Quality Control Board
- ug/l Microgram per liter
- mg/kg Milligram per kilogram
- D.L. Detection Limit
- TPH-g Total Petroleum Hydrocarbons as Gasoline
- TPH-d Total Petroleum Hydrocarbons as Diesel
- BTEX Benzene, Toluene, Ethylbenzene and Xylenes
- O & G Oil and Grease
- CL HC Chlorinated Hydrocarbons
- TEL Tetra Ethyl Lead
- EDB Ethylene Dibromide

TABLE 4. RESULTS OF DOWNHOLE SOIL CHEMICAL ANALYSES (mg/kg)

**Shell Oil Company Facility
2724 Castro Valley Road
Castro Valley, California**

Boring No.	Sample Depth (ft bgs)	Date Sampled	TPH-g	TPH-d	TPH-mo	Benzene	Toluene	Ethyl-Benzene	Xylenes	Total Lead ¹
MW-1	5'	1/18/90	<1.0	5.8	73	<2.5	<2.5	<2.5	<2.5	4.4
MW-1	10'	1/18/90	<1.0	4.4	39	<2.5	<2.5	<2.5	<2.5	4.3
MW-2 ¹	5'	1/19/90	<1.0	14	90	<2.5	<2.5	<2.5	<2.5	4.6
MW-2 ²	9'	1/19/90	<1.0	<1.0	23	<2.5	<2.5	<2.5	<2.5	5.3
MW-2 ³	15'	1/19/90	<1.0	3.1	<10	3.2	2.9	<2.5	54	6.3
MW-2 ⁴	20'	1/19/90	<1.0	3.2	<10	8.4	21	<2.5	16	7.9
MW-2 ⁵	25'	1/19/90	<1.0	8.2	19	23	34	3.6	23	8.0
MW-3	5'	1/19/90	<1.0	<1.0	<10	<2.5	5.9	<2.5	<2.5	6.2
MW-3	10'	1/19/90	<1.0	<1.0	<10	<2.5	11	<2.5	<2.5	5.8
MW-3	15'	1/19/90	<1.0	2.4	<10	<2.5	23	<2.5	7.4	6.5
MW-5	5'	1/22/90	<1.0	<1.0	<10	<2.5	6.5	<2.5	2.6	5.5
MW-5	9'	1/22/90	<1.0	<1.0	<10	<2.5	3.1	<2.5	<2.5	6.4
MW-5	15'	1/22/90	<1.0	<1.0	<10	<2.5	4.4	<2.5	2.7	8.0
MW-5	20'	1/22/90	<1.0	1.6	<10	3.0	11	<2.5	6.1	35
MW-5	25'	1/22/90	<1.0	<1.0	<10	<2.5	6.0	<2.5	4.9	3.9
SB-1	5'	1/18/90	<1.0	<1.0	<10	<2.5	6.7	<2.5	4.6	4.7
SB-1	9'	1/18/90	<1.0	<1.0	<10	<2.5	7.7	<2.5	3.4	6.5
SB-1	10	1/18/90	<1.0	<1.0	<10	<2.5	18	<2.5	6.8	NR ⁸

TABLE 4 (cont'd). RESULTS OF DOWNHOLE SOIL CHEMICAL ANALYSES (mg/kg)

Shell Oil Company Facility
2724 Castro Valley Road
Castro Valley, California

Boring No.	Sample Depth (ft bgs)	Date Sampled	TPH-g	TPH-d	TPH-mo	Benzene	Toluene	Ethyl-Benzene	Xylenes	Total Lead ¹
SB-2-2A ⁶	4.5	5/9/90	1.0	14	73	<2.5	<2.5	3.9	16	9.1
SB-2-3A ⁷	6.5	5/9/90	<1	18	26	<2.5	<2.5	<2.5	<2.5	7.0

NOTES:

- 1 Sample contained 370 ppm total oil and grease, 350 ppm non-polar oil and grease, 18 ppm chromium, and 67 ppm zinc.
- 2 Sample contained 45 ppm chromium and 56 ppm zinc.
- 3 Sample contained 40 ppm chromium, 60 ppm zinc, 240 ppb total xylenes, and 380 ppb bis (2-ethylhexyl) phthalate.
- 4 Sample contained 53 ppm chromium, 99 ppm zinc, and 550 ppb bis (2-ethylhexyl) phthalate.
- 5 Sample contained 48 ppm chromium and 110 ppm zinc.
- 6 Sample contained 33 ppm chromium and 46 ppm zinc.
- 7 Sample contained 32 ppm chromium and 46 ppm zinc.

TABLE 5. WELL INSTALLATION INFORMATION

Shell Oil Company Facility
 2724 Castro Valley Road
 Castro Valley, California

Well No.	Date Installed	Well Diameter (inches)	Total Depth of Well (ft bgs)	Screened Interval (ft bgs)	Bentonite Seal Interval (ft bgs)	Grout Seal Interval (ft bgs)
MW-1	1/18/90	4	16	6 to 16	4 to 6	0 to 4
MW-2	1/19/90	4	15	5 to 15	3 to 4	0 to 3
MW-3	1/19/90	4	25	5 to 25	3 to 4	0 to 3
MW-5	1/22/90	4	23	9 to 23	6 to 8	0 to 6

NOTES:

ft bgs Feet below ground surface
 CEW Converse Environmental West

TABLE 6. RESULTS OF GROUNDWATER CHEMICAL ANALYSES

Shell Oil Company Facility
 2724 Castro Valley Road
 Castro Valley, California

Well No.	Date Sampled	Concentration (ppm)					
		TPH-g	TPH-d	Benzene	Toluene	Ethyl-Benzene	Xylenes
MW-1	02/09/90	<1.0	NS	<0.0005	<0.0005	<0.0005	<0.0005
	04/20/90	<.05	NS	<0.0005	<0.0005	<0.0005	<0.0005
MW-3	02/09/90	8.6	8	360	490	896	66
	04/20/90	9.9	8	2500	490	896	99
MW-5	02/09/90	<1.0	NS	<0.0005	<0.0005	<0.0005	<0.0005
	04/20/90	<.05	NS	<0.0005	<0.0005	<0.0005	<0.0005

NOTES:

TPH-g Total petroleum hydrocarbons as gasoline (GCFID)
 TPH-d Total petroleum hydrocarbons as diesel (GCFID)
 NS Not sampled
 MW-4 was not completed as groundwater monitoring well

TABLE 7. GROUNDWATER MONITORING INFORMATION

Shell Oil Company Facility
 2724 Castro Valley Road
 Castro Valley, California

Well No.	Date Monitored	Depth to Water (ft bgs)	Petroleum Odor In Water	Floating Product Thickness (inches)	Comments
MW-1	02/08/90	8.39	NS	NS	---
El. 99.78'	04/20/90	9.21	NS	NS	---
MW-2	02/08/90	7.33	NS	NS	---
El. 100.83'	04/20/90	8.63	NS	NS	---
MW-3	02/08/90	8.91	NS	NS	---
El. 101.48'	04/20/90	10.20	NS	NS	---
MW-5	02/08/90	8.80	NS	NS	---
El. 99.90'	04/20/90	9.35	NS	NS	---

NOTES:

ft bgs Feet below ground surface

NS None observed

All elevations are tied into a temporary benchmark elevation of 100.00 feet

TABLE 8. FIELD PARAMETERS

**Shell Oil Company Facility
2724 Castro Valley Blvd.
Castro Valley, California**

Well Number	Date Sampled	Time	Purge Method	Total Gallons Purged	pH (pH units)	Conductivity (µmhos)	Temperature (° C)
MW-1	2/09/90	1029	Hand Bailed	NM	8.16	120	19
		1105	Hand Bailed	14	7.55	130	19
		1115	Hand Bailed	22	7.50	120	19
		1124	Hand Bailed	30	7.40	130	19
		1130	Hand Bailed	35	7.38	130	19
		1136	Hand Bailed	40	7.35	130	19
		1143	Hand Bailed	45	7.38	130	20
		1147	Hand Bailed	50	7.32	130	20
		1156	Hand Bailed	55	7.35	130	20
		1201	Hand Bailed	62	7.36	130	20
MW-2	2/09/90	125	Hand Bailed	NM	7.56	120	18
		146	Hand Bailed	10	7.71	120	19
		201	Hand Bailed	15	7.74	110	19
		237	Hand Bailed	20	7.74	100	20
		318	Hand Bailed	25	7.72	100	20
MW-3	2/08/90	1019	Hand Bailed	NM	7.42	1300	19
		1045	Hand Bailed	10	7.59	1500	20
		1115	Cent. Pump	18	7.54	1200	20
		1121	Cent. Pump	23	7.67	1200	21
		1131	Cent. Pump	28	7.64	1300	21
		1145	Cent. Pump	33	7.64	1600	22
		1155	Cent. Pump	38	7.66	1700	22
		1305	Cent. Pump	43	7.48	2500	23
		1318	Cent. Pump	48	7.55	1200	23
		1418	Cent. Pump	52	7.43	1700	23
1425	Cent. Pump	55	7.55	1400	23		

NOTE:

NM None measured

TABLE 8 (cont'd). FIELD PARAMETERS*

Shell Oil Company Facility
 2724 Castro Valley Blvd.
 Castro Valley, California

Well Number	Date Sampled	Time	Purge Method	Total Gallons Purged	pH (pH units)	Conductivity (µmhos)	Temperature (° C)
MW-5	2/08/90	1245	Hand Bailed	NM	7.22	250	18
		152	Hand Bailed	10	7.74	230	20
		206	Cent. Pump	15	7.57	220	20
		216	Cent. Pump	20	7.60	220	21
		227	Cent. Pump	25	7.63	220	21
		257	Cent. Pump	27	NM	NM	NM
	2/09/90	1337	Cent. Pump	43	7.63	200	22
		1347	Cent. Pump	48	7.35	200	22
		1356	Cent. Pump	53	7.62	200	22

NOTE:

NM None measured

TABLE 8 (cont'd). FIELD PARAMETERS*

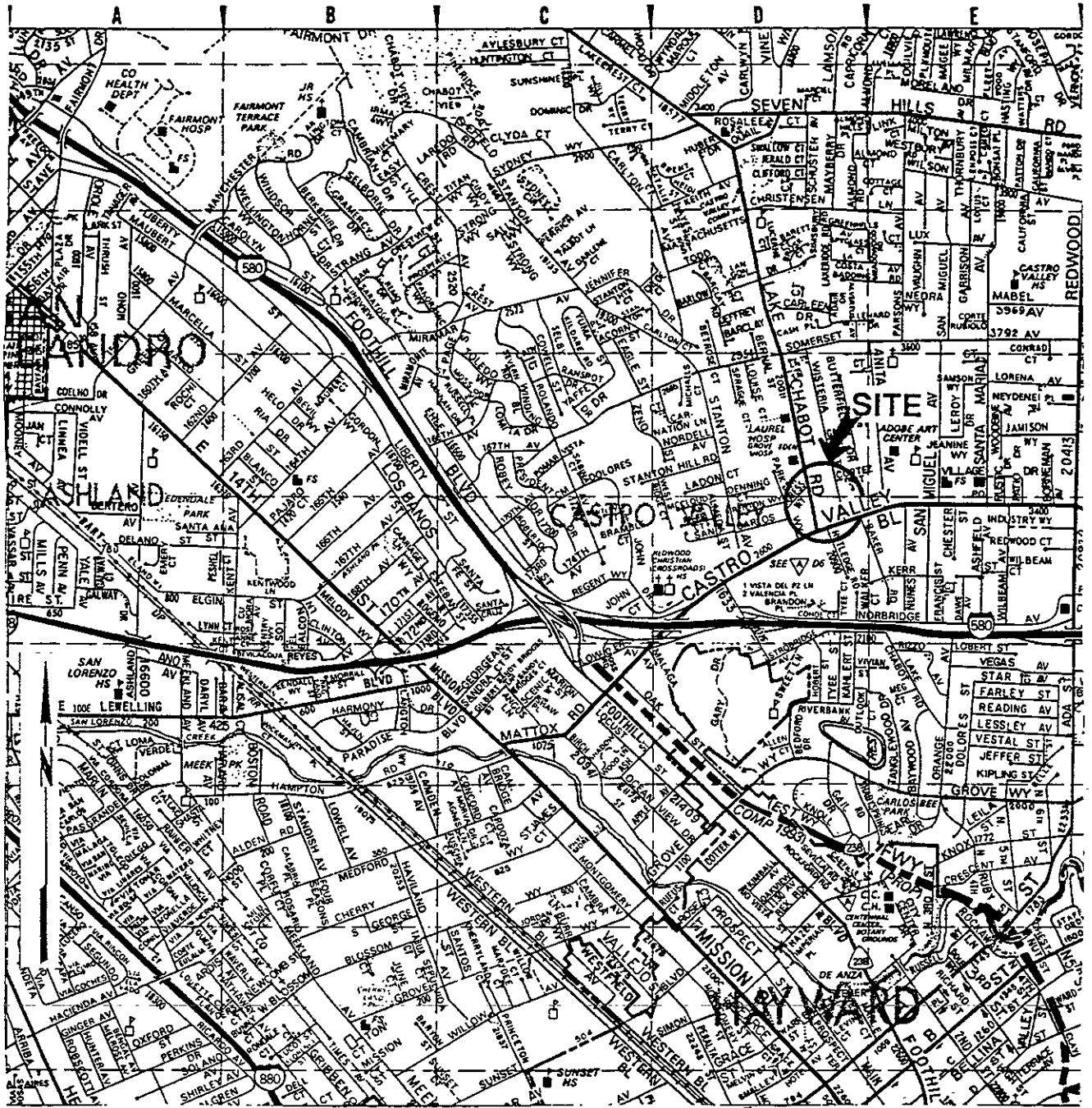
Shell Oil Company Facility
 2724 Castro Valley Blvd.
 Castro Valley, California

Well Number	Date Sampled	Time	Purge Method	Total Gallons Purged	pH (pH units)	Conductivity (µmhos)	Temperature (° C)	Notes
MW-1	4/20/90	10:40	Hand Bailed	NM	6.46	130	22	Clear
		10:45	Hand Bailed	4	7.08	120	22	Cloudy
		10:50	Hand Bailed	6	7.04	110	23	Sl. Cloudy
		10:52	Hand Bailed	10	7.02	110	23	
		10:58	Hand Bailed	12	7.05	110	23	Clear No Odor
MW-2	4/20/90	10:50	Hand Bailed	NM	6.94	070	236	
		10:58	Hand Bailed	7	6.99	080	236	Sheen
		11:03	Hand Bailed	12	7.13	070	236	Slow Recharge
		11:08	Hand Bailed	16	7.11	070	236	Dry
MW-3	4/20/90	12:50	Cent. Pump	NM	6.8	220	24	Clear
		1:00	Cent. Pump	10	7.10	210	24	Clear
		1:05	Cent. Pump	15	7.54	120	24	Clear
		1:10	Cent. Pump	20	7.62	120	N/A	Clear
		1:17	Cent. Pump	25	7.68	120	N/A	Clear
		1:30	Cent. Pump	30	7.18	N/A	24	Clear
MW-5	4/20/90	12:45	Cent. Pump	NM	6.82	190	246	
		12:51	Cent. Pump	10	6.80	170	246	Cloudy
		1:00	Cent. Pump	15	6.94	180	246	Dirty Brown Color
		1:03	Cent. Pump	20	6.96	190	246	
		1:10	Cent. Pump	26	6.99	200	246	Murky

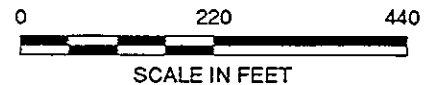
NOTE:

NM None measured

DRAWINGS



SOURCE: Thomas Brothers Maps, 1989.



SITE LOCATION MAP

SHELL OIL COMPANY
 2724 Castro Valley Boulevard
 Castro Valley, California

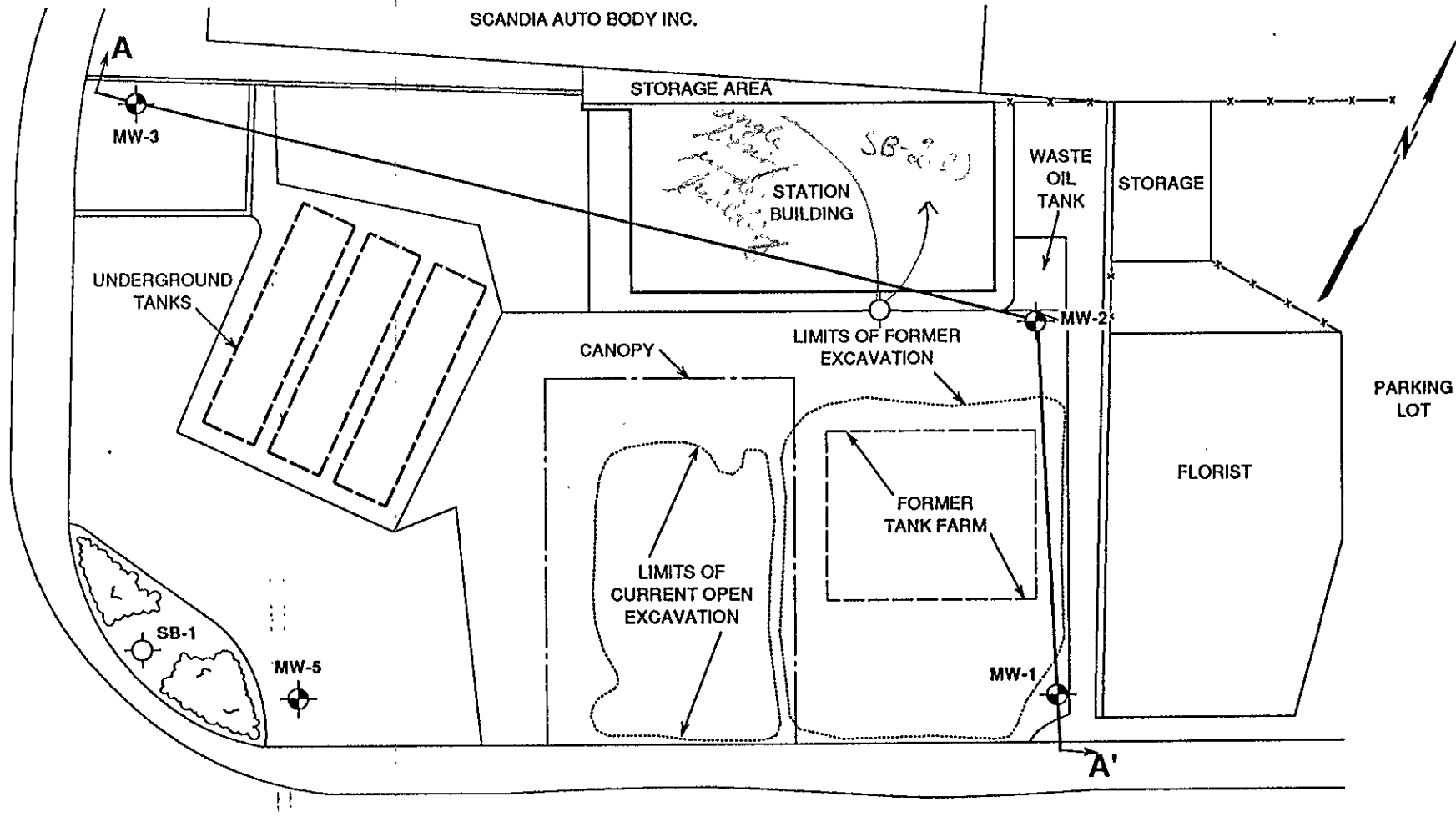
Scale	AS SHOWN	Project No.	89-44-380-20
Prepared by	LQL	Date	6/8/90
Checked by	MCC	Drawing No.	
Approved by	CRC		1



Converse Environmental West

LAKE CHABOT ROAD




SCANDIA AUTO BODY INC.



CASTRO VALLEY BLVD.



LEGEND

- MW-1  GROUNDWATER MONITORING WELL
- SB-1  SOIL BORING
- A  A' LINE OF GEOLOGIC CROSS SECTION

Base Map: Surveyed with electronic distance meter by CEW, 1990.

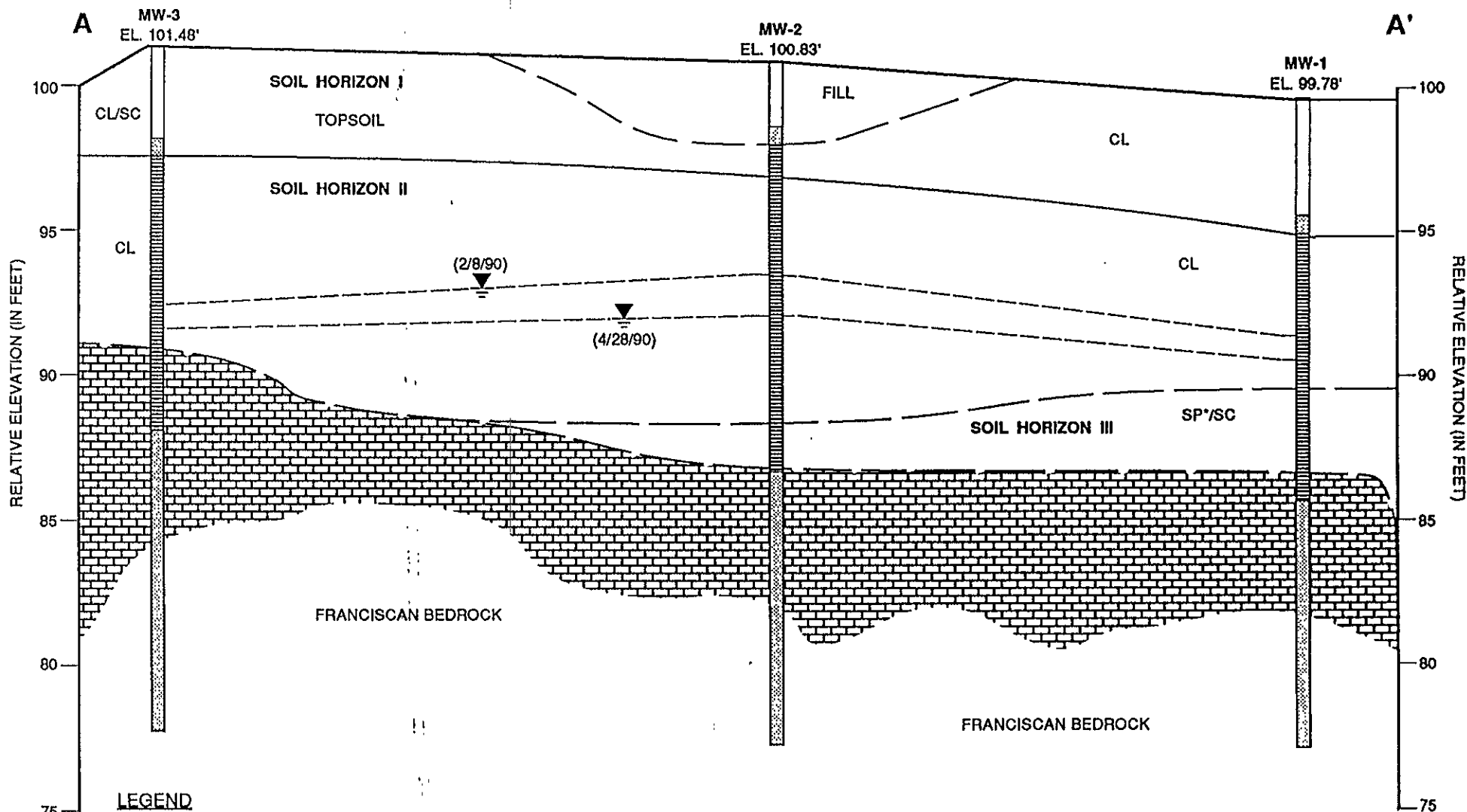
PLOT PLAN

SHELL OIL COMPANY
 2724 Castro Valley Boulevard
 Castro Valley, California

Scale	AS SHOWN	Project No.	88-44-380-20
Prepared by	DEN	Date	6/27/90
Checked by	MCC	Drawing No.	2
Approved by	CRC		



Converse Environmental West



LEGEND

BEDROCK

STATIC GROUNDWATER ELEVATION

MONITORING WELL/BORE HOLE

- Blank Casing
- Screen Casing
- Bentonite Backfill

* WITH SHALE FRAGMENTS (PALEOREGOLITH?)

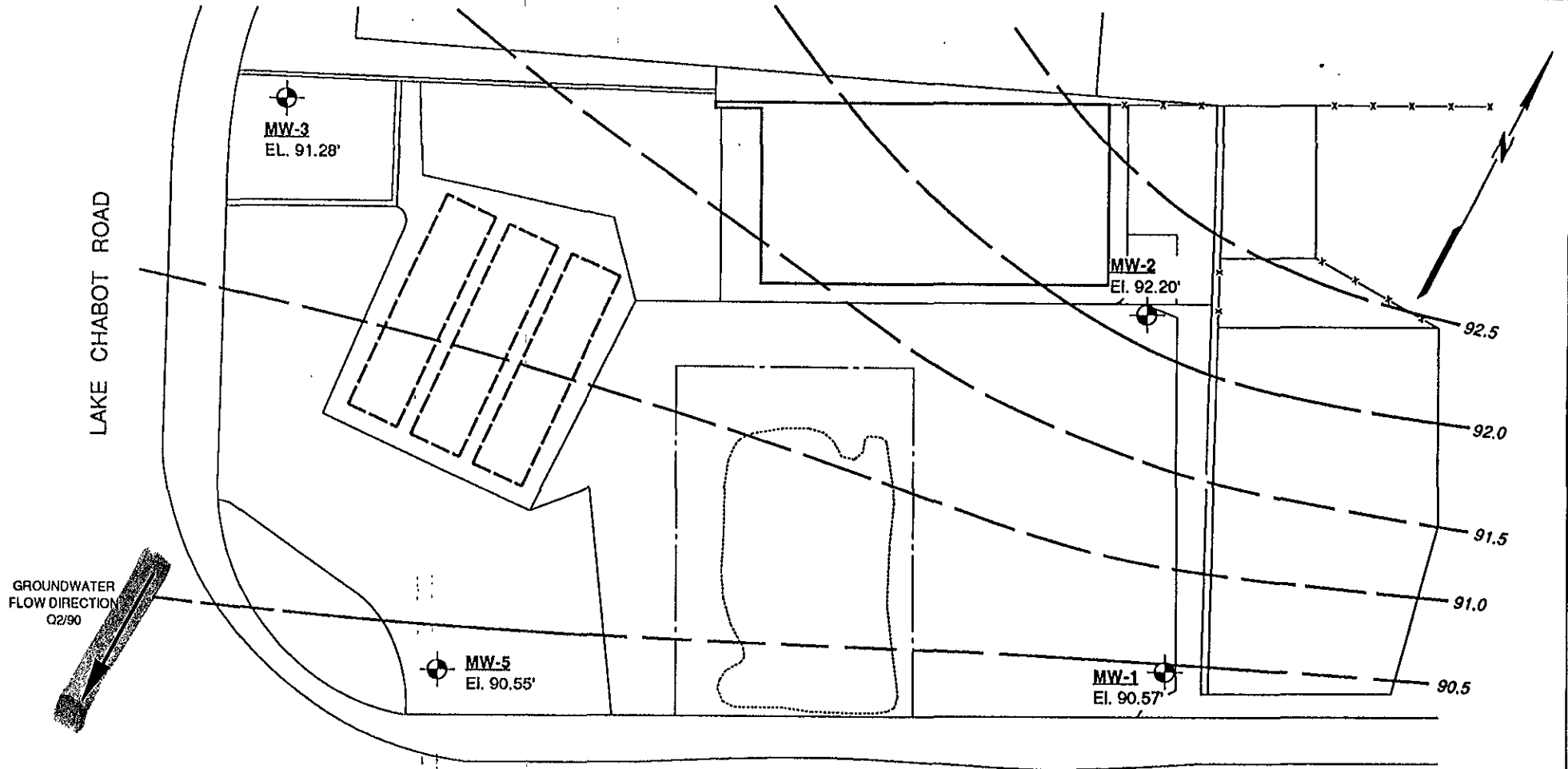
SCHMATIC GEOLOGIC CROSS SECTION A-A'

SHELL OIL COMPANY
2724 Castro Valley Boulevard
Castro Valley, California

Scale
NOT TO SCALE
Prepared by
LQL
Checked by
MCC
Approved by
CRC

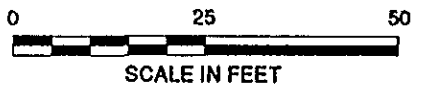
Project No.
88-44-380-20
Date
6/29/90
Drawing No.





LAKE CHABOT ROAD

CASTRO VALLEY BLVD.



Base Map: Surveyed with electronic distance meter by CEW, 1990.

LEGEND

— GROUNDWATER CONTOUR (long dash where approximate, short dash where inferred)

MW-1 GROUNDWATER MONITORING WELL SHOWING GROUNDWATER ELEVATION

NOTE: GROUNDWATER ELEVATIONS GIVEN WITH RESPECT TO A POINT HAVING AN ARBITRARY DATUM OF 100.00 FEET

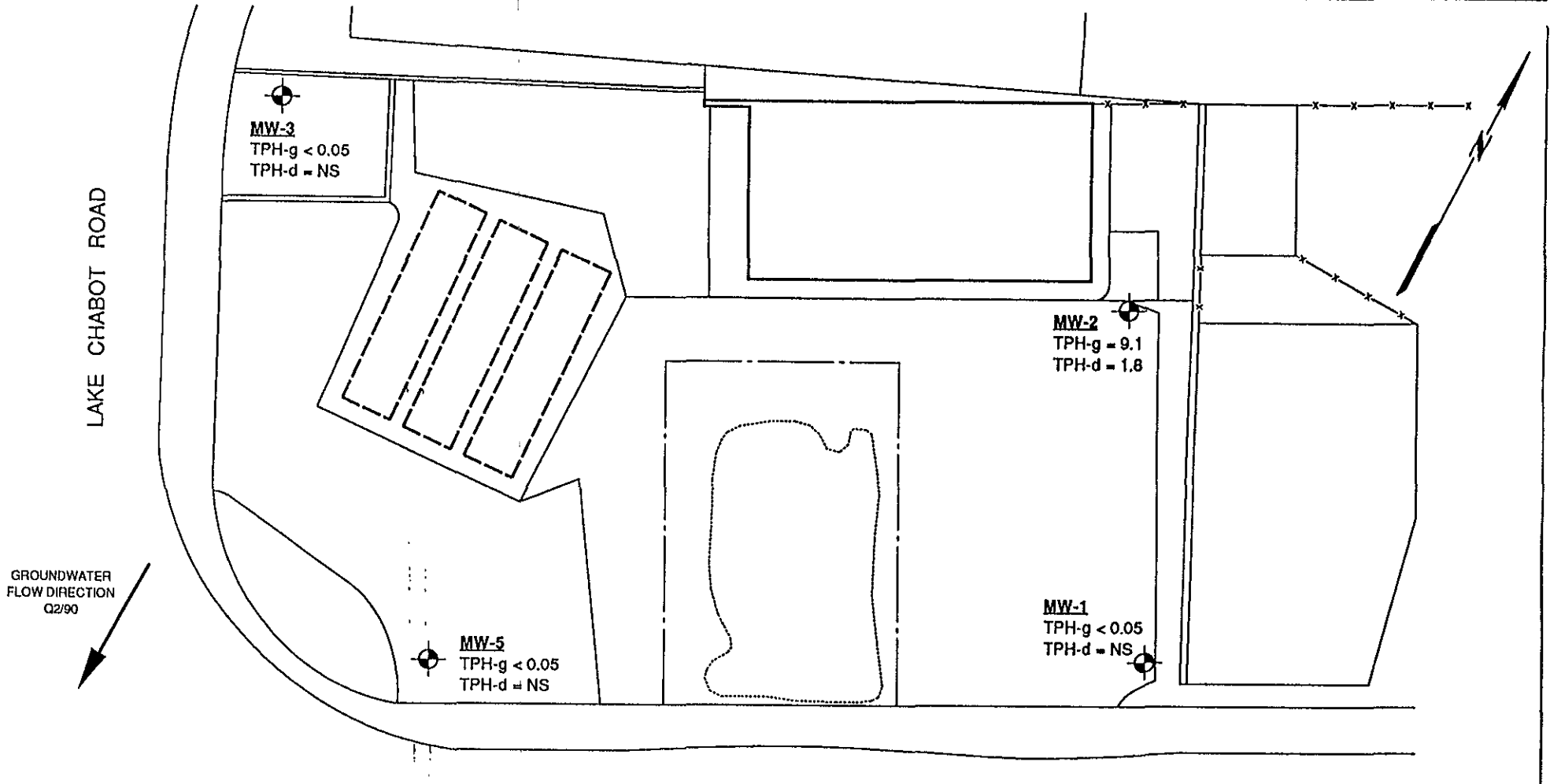
GROUNDWATER CONTOUR MAP Q2/90

SHELL OIL COMPANY
2724 Castro Valley Boulevard
Castro Valley, California

Scale	AS SHOWN	Project No.	88-44-380-20
Prepared by	DEN	Date	6/27/90
Checked by	MCC	Drawing No.	4
Approved by	CRC		



Converse Environmental West



LEGEND

- MW-1 GROUNDWATER MONITORING WELL
- TPH-g = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (In milligrams per liter)
- TPH-d = TOTAL PETROLEUM HYDROCARBONS AS DIESEL (In milligrams per liter)
- NS NOT SAMPLED

CASTRO VALLEY BLVD.



Base Map: Surveyed with electronic distance meter by CEW, 1990.

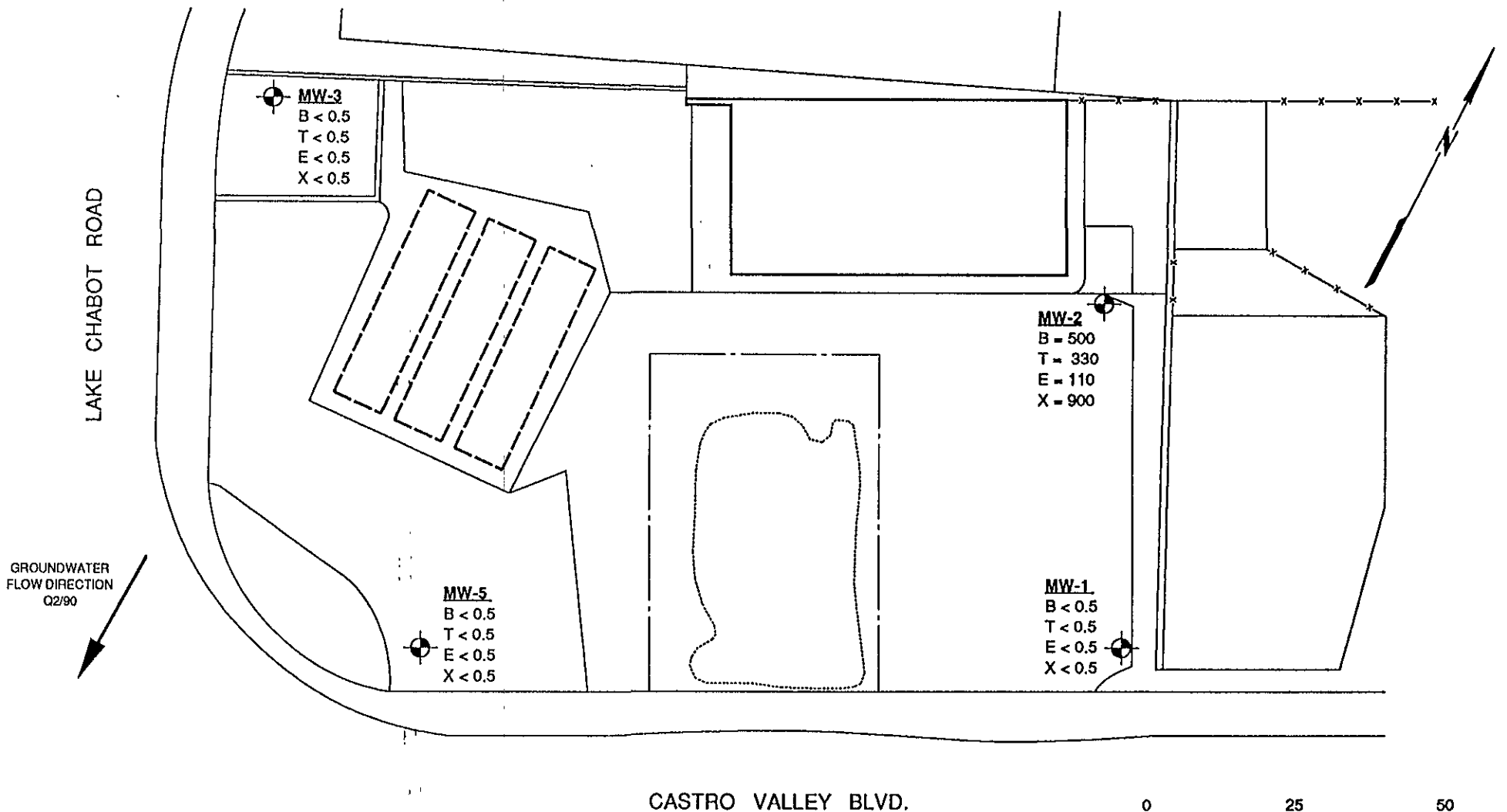
PLAN: GROUNDWATER TPH-g AND TPH-d Q2/90

SHELL OIL COMPANY
 2724 Castro Valley Boulevard
 Castro Valley, California


Scale	AS SHOWN	Project No.	88-44-380-20
Prepared by	DEN	Date	6/27/90
Checked by	MCC	Drawing No.	5
Approved by	CRC		



Converse Environmental West



LEGEND

- MW-1  GROUNDWATER MONITORING WELL
- B = BENZENE (In micrograms per liter)
- T = TOLUENE (In micrograms per liter)
- E = ETHYLBENZENE (In micrograms per liter)
- X = XYLENES (In micrograms per liter)

CASTRO VALLEY BLVD.



Base Map: Surveyed with electronic distance meter by CEW, 1990.

PLAN: GROUNDWATER BTEX Q2/90

SHELL OIL COMPANY
 2724 Castro Valley Boulevard
 Castro Valley, California

Scale	AS SHOWN	Project No.	88-44-380-20
Prepared by	DEN	Date	6/27/90
Checked by	MCC	Drawing No.	6
Approved by	CRC		



Converse Environmental West

APPENDIX A
SITE DESCRIPTION

APPENDIX A

SITE DESCRIPTION

SITE DESCRIPTION

This retail gasoline station is located on the northeast corner of Castro Valley Blvd and Lake Chabot Road in Castro Valley, California (Drawing 1). It was an active service station, but is now temporarily closed due to ongoing renovation work, tank replacement, major building construction and environmental remediation.

Commercial businesses exist on all corners of the intersection. Surrounding neighborhood development is commercial along both roads. Single family dwellings are located on side streets nearby.

Topographically, the site is located on the western edge of a gentle valley (Castro Valley) on recent alluvial fill. The terrain rises northward into the San Leandro Hills and the site is approximately 50 feet above the valley floor. An isolated hillside knob with 60 to 100 feet of relief exists 600 feet south of the site. An intermittent stream is shown 300 feet west on the Hayward, Calif USGS topographic map. This stream enters San Lorenzo Creek approximately one mile south of the site.

Surface water drainage has been altered by urbanization but is probably south to southwest. Groundwater flow is assumed to be south, as well.

SETTING

The facility is located within the East Bay Plain area of Alameda County. The site lies on Quaternary age older alluvium composed of weakly consolidated, slightly weathered, poorly sorted, irregularly interbedded clay, silt, sand and gravel (Helley et al., 1979), east of the Hayward fault (Hickenbottom and Muir, 1988). The Hayward Fault, a northwest trending strike-slip fault, which passes approximately 1 mile west of the site. The alluvial deposits are underlain by consolidated bedrock of the Franciscan complex.

The older alluvium is the major groundwater reservoir in the East Bay Plain east of the Hayward Fault. In Castro Valley, however, the older alluvial deposits have a maximum thickness of approximately 80 feet and do not produce large quantities of water (Hickenbottom and Muir, 1988).

Recharge to groundwater reservoirs in the East Bay Plain are occur mainly from infiltration of rain, seepage from streams, and subsurface flow from adjacent areas. There is probably a small amount of recharge from excess irrigation water, lawn and garden watering, and leaking municipal sewer lines (Hickenbottom and Muir, 1988). Groundwater pumpage from wells is, at the present time, probably the main element of groundwater use. Discharge to streams, underflow to San Francisco Bay, and spring discharge are also contributory factors (Hickenbottom and Muir, 1988).

The quality of groundwater in the East Bay Plain area is generally good. Total dissolved solids concentrations are generally in the range of 300 to 1000 mg/l. It is likely that groundwater in shallow wells in Castro Valley have been affected by bacterial contamination, possibly from leaking sewers (Hickenbottom and Muir, 1988).

APPENDIX B
CHRONOLOGICAL SUMMARY

CHRONOLOGICAL SUMMARY
For Shell Property at
2724 Castro Valley Blvd., Castro Valley, California

The following chronological summary is based on information provided to Converse Environmental West (CEW) by Shell Oil Company (Shell). CEW was not provided with certain information related to the construction, operational, and environmental history of the facility. According to Shell, the following information is not available in Shell files: volume of contaminated soil removed at the time of tank removal, geometry of the excavation created during tank removal, if any, and date and volume of any possible releases at the facility.

<u>Date</u>	<u>Description of Activity</u>
11/21/86	Blaine Tech Services removed one 550 gallon waste oil tank and conducted field sampling.
04/22/88	Woodward-Clyde drilled and sampled three soil borings around the existing underground storage tank (UST) complex. Attachment 2.
03/06/89	Crosby & Overton, Inc conducted field sampling during removal of 4 underground storage tanks. Contaminated soil was discovered and additional excavation and sampling was performed. Attachment 3.
03/31/89	Field sampling in the vicinity of the new tank hole was performed. Attachment 4.
05/05/89	Converse Environmental West (CEW) was retained by Shell Oil Co to supervise environmental activities at the site.
06/12/89	Samples SW-1 through SW-7 were collected.
07/05/89	Samples SW-8 through SW-11 were collected.
07/06/89	One water sample in the excavation pit was collected.
07/11/89	CEW sent an "Interim Sampling Report and Recommendations" to the Alameda County Health Agency.
07/27/89	CEW sent an "Addendum to July 11, 1989 Interim Sampling Report and Recommendations" to the Alameda County Health Agency.
08/30/89	Samples SS-1 through SS-7 were collected.
10/02/89 to 10/11/89	Soil samples 1 through 4 and S-1 through S-7 were collected.
10/26/89	Samples 20 through 23, and stockpile 10:26 were collected.
10/31/89	CEW sent a report titled "Soil Sampling Report" to the Alameda County Health Agency.
11/30/89	CEW sent a Draft Work Plan to the ACHCSA.
01/11/90	CEW sent a Progress Report for Q4/89 to the ACHCSA.

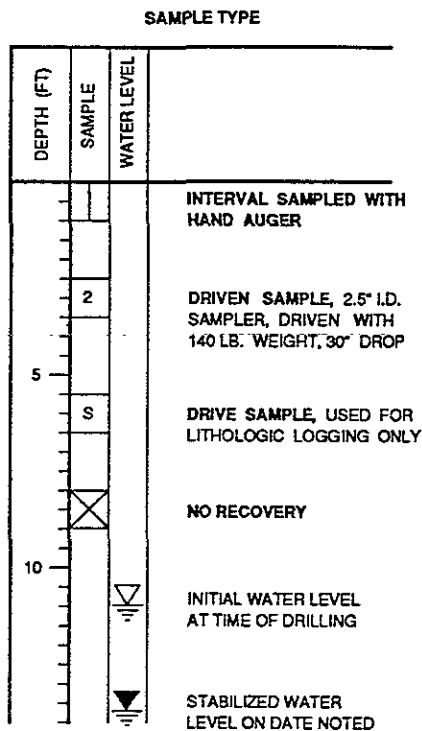
CHRONOLOGICAL SUMMARY (cont'd)
For Shell Property at
2724 Castro Valley Blvd., Castro Valley, California

<u>Date</u>	<u>Description of Activity</u>
01/18/90 to 01/23/90	Bored and sampled MW-2 through MW-5 and installed MW-2, MW-3 and MW-5. MW-4 grouted. Surface completed: MW-2 and MW-3.
02/08/90	Developed MW-5. Surveyed wells MW-1, MW-2, MW-3, MW-5 and soil borings site survey.
02/09/90	Developed, sampled MW-1, MW-2, MW-3 and MW-5.
02/22/90	Sampled MW-2 for pesticides and 0.1 and grease.
3/12/90	CEW requested permission from ACHCSA to backfill the existing excavation onsite.
01/18/90- 01/23/90	Drilled and sampled MW-2 through MW-5 and installed MW-2, MW-3 and MW-5. MW-4 grouted. Surface completed: MW-2 and MW-3.
02/08/90	Developed MW-5. Surveyed wells MW-1, MW-2, MW-3, MW-5 and soil borings site survey.
02/09/90	Developed, sampled MW-1, MW-2, MW-3 and MW-5.
02/22/90	Sampled MW-2 for EPA 608, (Pesticides), oil and grease, metals.
3/12/90	CEW requested permission from ACCHCSA to backfill the existing excavation onsite.
3/16/90	CEW obtained site assessment information on uses of nearby properties, and reported fuel leaks from nearby underground tanks.
4/02/90	CEW conducted E.D.M. survey of adjacent streets, extending 200 to 300 feet from the site.
4/20/90	CEW conducted Q2/90 water sampling in MW-1, MW-2, MW-3 and MW-5. Requested analyses of TPH-g, TPH-d, BTEX, 601/602, oil and grease.
4/23/90	CEW arranged to have one segment of chain-link fence moved, to protect MW-3.
4-26-90	CEW, Shell, ACCHCSA and Rheghetti meet at site to discuss backfilling of the existing excavation.
5-2-90	Shell received permission from ACCHCSA to backfill the existing excavation.
5-31-90	CEW issues site restoration plan and schedule for future work.
6-27-90	CEW personnel visit the site to assess current conditions.
6-29-90	CEW issues Q2/90 report.

Bold Boldface indicates work completed this quarter.

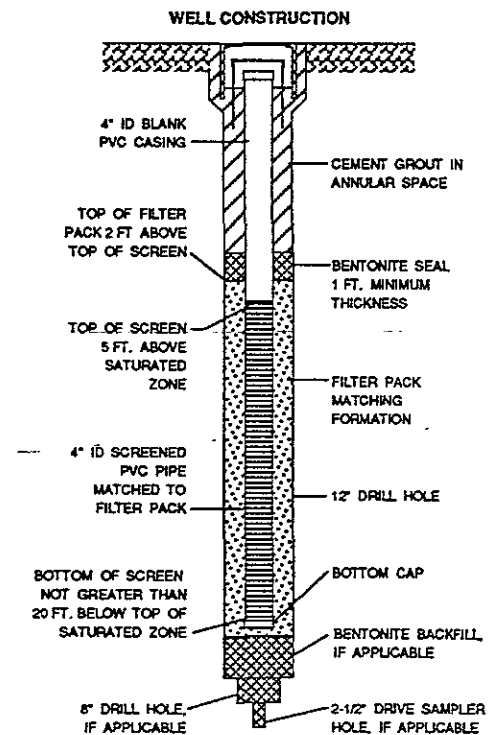
APPENDIX C
BORING LOGS

MAJOR DIVISIONS			SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS MORE THAN HALF IS LARGER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN HALF IS SMALLER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS 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 CLAY	
		OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	SILTS AND 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 SILTS	
HIGHLY ORGANIC SOILS		Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS	



NOTE:

SOIL CONDITIONS INDICATED BY BORING LOGS APPLY ONLY AT THE LOCATION OF THE PARTICULAR BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THE BORING LOCATION WITH THE PASSAGE OF TIME. DATA PRESENTED IN THE LOGS REPRESENT A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.



UNIFIED SOIL CLASSIFICATION, BORING LOG, AND WELL CONSTRUCTION SYMBOLS

SHELL OIL COMPANY
2724 Castro Valley Boulevard
Castro Valley, California

Project No.

88-44-380-20

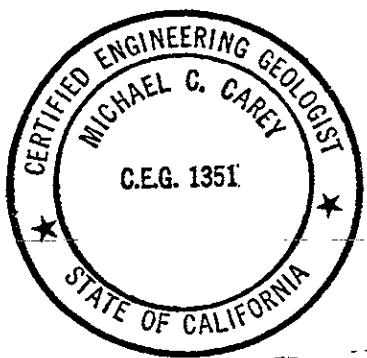


Converse Environmental West

Drawing No.

A-1

LOG OF BORING NO. SB-2

DATE DRILLED: 5/9/90		EL:		WL TAKEN: n/a		EQUIPMENT: Hand Auger				
DEPTH (ft)	SAMPLE WATER LEVEL	SYMBOL	MOISTURE	CONSISTENCY	COLOR	DESCRIPTION	BLOWS/5IN.	O.V.M. (ppm)	DRY DENSITY lb/ft ³	TESTS
		(Symbol with circles)			red brn	GRAVEL BASEROCK.				
		(Symbol with diagonal lines)	slightly moist	plastic	black	Silty CLAY, trace fine Sand. CL				
5	2A 2B	(Symbol with diagonal lines)								
	3A	(Symbol with diagonal lines)	slightly moist	very stiff	grn brn, mottled red brn	Silty CLAY, trace Sand. CL/CH (Colluvium)				
10						Total Depth of Boring: 7 ft Below Ground Surface. Boring angled at approximately 20 degrees from vertical: at foundation of building. Sampler Diameter : 2.5 in.				
15										
20										

SHELL OIL COMPANY
2724 Castro Valley Boulevard
Castro Valley, California

Project No.
88-44-380-60

APPENDIX D

LABORATORY REPORTS AND CHAIN-OF-CUSTODY



NATIONAL
ENVIRONMENTAL
TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

RECEIVED

MAY 22 1990

CONVERSE ENVIRONMENTAL

Michael Carey
Converse Consultants
55 Hawthorne St, Ste 500
San Francisco, CA 94105

Date: 05-18-90
NET Client Acct. No: 18.02
NET Pacific Log No: 1934
Received: 05-11-90 1800

Client Reference Information

SHELL- 2724 Castro Valley, Project: 88-44-380-60

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by: --


Jules Skamarack
Laboratory Manager

Enclosure(s)

Client Acc: 18.02
Client Name: Converse Consultants
NET Log No: 1934

Date: 05-18-90
Page: 2

Ref: SHELL- 2724 Castro Valley, Project: 88-44-380-60

SAMPLE DESCRIPTION: 2-2A 05-09-90
LAB Job No: (-52684)

Parameter	Method	Reporting Limit	Results	Units
Oil & Grease(Total)	9071	50	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	mg/Kg
Cadmium	7130	0.5	ND	mg/Kg
Chromium	7190	0.5	33	mg/Kg
Lead (EPA 7421)	7421	0.2	9.1	mg/Kg
Zinc	7950	0.5	46	mg/Kg
PETROLEUM HYDROCARBONS VOLATILE (SOIL)			--	
DILUTION FACTOR *			1	
DATE ANALYZED			05-11-90	
METHOD GC FID/5030 as Gasoline		1	1.0	mg/Kg
METHOD 8020			--	
DILUTION FACTOR *			1	
DATE ANALYZED			05-11-90	
Benzene		2.5	ND	ug/Kg
Ethylbenzene		2.5	3.9	ug/Kg
Toluene		2.5	ND	ug/Kg
Xylenes, total		2.5	16	ug/Kg
PETROLEUM HYDROCARBONS EXTRACTABLE (SOIL)			--	
DILUTION FACTOR *			1	
DATE EXTRACTED			05-11-90	
DATE ANALYZED			05-11-90	
METHOD GC FID/3550 as Diesel		1	14	mg/Kg
as Motor Oil		10	73	mg/Kg

Client Acc: 18.02
Client Name: Converse Consultants
NET Log No: 1934

Date: 05-18-90
Page: 3

Ref: SHELL- 2724 Castro Valley, Project: 88-44-380-60

SAMPLE DESCRIPTION: 2-2A 05-09-90
LAB Job No: (-52684)

Parameter	Method	Reporting Limit	Results	Units
-----------	--------	-----------------	---------	-------

METHOD 8240

DATE ANALYZED			05-11-90	
DILUTION FACTOR *			1	
Benzene		25	ND	ug/Kg
Acetone		50	ND	ug/Kg
Bromodichloromethane		25	ND	ug/Kg
Bromoform		25	ND	ug/Kg
Bromomethane		25	ND	ug/Kg
2-Butanone		50	ND	ug/Kg
Carbon disulfide		25	ND	ug/Kg
Carbon tetrachloride		25	ND	ug/Kg
Chlorobenzene		25	ND	ug/Kg
Chloroethane		25	ND	ug/Kg
2-Chloroethyl Vinyl Ether		50	ND	ug/Kg
Chloroform		25	ND	ug/Kg
Chloromethane		25	ND	ug/Kg
Dibromochloromethane		25	ND	ug/Kg
1,2-Dichlorobenzene		25	ND	ug/Kg
1,3-Dichlorobenzene		25	ND	ug/Kg
1,4-Dichlorobenzene		25	ND	ug/Kg
1,1-Dichloroethane		25	ND	ug/Kg
1,2-Dichloroethane		25	ND	ug/Kg
1,1-Dichloroethene		25	ND	ug/Kg
trans-1,2-Dichloroethene		25	ND	ug/Kg
1,2-Dichloropropane		25	ND	ug/Kg
cis-1,3-Dichloropropene		25	ND	ug/Kg
trans-1,3-Dichloropropene		25	ND	ug/Kg
Ethylbenzene		25	ND	ug/Kg
2-Hexanone		50	ND	ug/Kg
Methylene chloride		25	ND	ug/Kg
4-Methyl-2-pentanone		50	ND	ug/Kg
Styrene		25	ND	ug/Kg
1,1,2,2-Tetrachloroethane		25	ND	ug/Kg
Tetrachloroethene		25	ND	ug/Kg
Toluene		25	ND	ug/Kg
1,1,1-Trichloroethane		25	ND	ug/Kg
1,1,2-Trichloroethane		25	ND	ug/Kg
Trichloroethene		25	ND	ug/Kg
Trichlorofluoromethane		25	ND	ug/Kg
Vinyl Acetate		50	ND	ug/Kg
Vinyl chloride		25	ND	ug/Kg
Xylenes, total		25	ND	ug/Kg

Client Acc: 18.02
Client Name: Converse Consultants
NET Log No: 1934

Date: 05-18-90
Page: 4

Ref: SHELL- 2724 Castro Valley, Project: 88-44-380-60

SAMPLE DESCRIPTION: 2-3A 05-09-90
LAB Job No: (-52685)

Parameter	Method	Reporting Limit	Results	Units
Oil & Grease(Total)	9071	50	ND	mg/Kg
Oil & Grease(Non-Polar)	SM503D/E	100	ND	mg/Kg
Cadmium	7130	0.5	ND	mg/Kg
Chromium	7190	0.5	32	mg/Kg
Lead (EPA 7421)	7421	0.2	7.0	mg/Kg
Zinc	7950	0.5	36	mg/Kg
PETROLEUM HYDROCARBONS VOLATILE (SOIL)			--	
DILUTION FACTOR *			1	
DATE ANALYZED			05-11-90	
METHOD GC FID/5030 as Gasoline		1	ND	mg/Kg
METHOD 8020			--	
DILUTION FACTOR *			1	
DATE ANALYZED			05-11-90	
Benzene		2.5	ND	ug/Kg
Ethylbenzene		2.5	ND	ug/Kg
Toluene		2.5	ND	ug/Kg
Xylenes, total		2.5	ND	ug/Kg
PETROLEUM HYDROCARBONS EXTRACTABLE (SOIL)			--	
DILUTION FACTOR *			1	
DATE EXTRACTED			05-11-90	
DATE ANALYZED			05-11-90	
METHOD GC FID/3550 as Diesel		1	18	mg/Kg
as Motor Oil		10	26	mg/Kg

Ref: SHELL- 2724 Castro Valley, Project: 88-44-380-60

SAMPLE DESCRIPTION: 2-3A 05-09-90
LAB Job No: (-52685)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8240				
DATE ANALYZED			05-11-90	
DILUTION FACTOR *			1	
Benzene		25	ND	ug/Kg
Acetone		50	ND	ug/Kg
Bromodichloromethane		25	ND	ug/Kg
Bromoform		25	ND	ug/Kg
Bromomethane		25	ND	ug/Kg
2-Butanone		50	ND	ug/Kg
Carbon disulfide		25	ND	ug/Kg
Carbon tetrachloride		25	ND	ug/Kg
Chlorobenzene		25	ND	ug/Kg
Chloroethane		25	ND	ug/Kg
2-Chloroethyl Vinyl Ether		50	ND	ug/Kg
Chloroform		25	ND	ug/Kg
Chloromethane		25	ND	ug/Kg
Dibromochloromethane		25	ND	ug/Kg
1,2-Dichlorobenzene		25	ND	ug/Kg
1,3-Dichlorobenzene		25	ND	ug/Kg
1,4-Dichlorobenzene		25	ND	ug/Kg
1,1-Dichloroethane		25	ND	ug/Kg
1,2-Dichloroethane		25	ND	ug/Kg
1,1-Dichloroethene		25	ND	ug/Kg
trans-1,2-Dichloroethene		25	ND	ug/Kg
1,2-Dichloropropane		25	ND	ug/Kg
cis-1,3-Dichloropropene		25	ND	ug/Kg
trans-1,3-Dichloropropene		25	ND	ug/Kg
Ethylbenzene		25	ND	ug/Kg
2-Hexanone		50	ND	ug/Kg
Methylene chloride		25	ND	ug/Kg
4-Methyl-2-pentanone		50	ND	ug/Kg
Styrene		25	ND	ug/Kg
1,1,2,2-Tetrachloroethane		25	ND	ug/Kg
Tetrachloroethene		25	ND	ug/Kg
Toluene		25	ND	ug/Kg
1,1,1-Trichloroethane		25	ND	ug/Kg
1,1,2-Trichloroethane		25	ND	ug/Kg
Trichloroethene		25	ND	ug/Kg
Trichlorofluoromethane		25	ND	ug/Kg
Vinyl Acetate		50	ND	ug/Kg
Vinyl chloride		25	ND	ug/Kg
Xylenes, total		25	ND	ug/Kg

Client Acc: 18.02
Client Name: Converse Consultants
NET Log No: 1934

Date: 05-18-90
Page: 6

Ref: SHELL- 2724 Castro Valley Project: 88-44-380-60

SAMPLE DESCRIPTION: METHOD BLANK
LAB Job No: (-52686)

Parameter	Method	Reporting Limit	Results	Units
METHOD 8240				
DATE ANALYZED			05-11-90	
DILUTION FACTOR *			1	
Benzene		25	ND	ug/Kg
Acetone		50	ND	ug/Kg
Bromodichloromethane		25	ND	ug/Kg
Bromoform		25	ND	ug/Kg
Bromomethane		25	ND	ug/Kg
2-Butanone		50	ND	ug/Kg
Carbon disulfide		25	ND	ug/Kg
Carbon tetrachloride		25	ND	ug/Kg
Chlorobenzene		25	ND	ug/Kg
Chloroethane		25	ND	ug/Kg
2-Chloroethyl Vinyl Ether		50	ND	ug/Kg
Chloroform		25	ND	ug/Kg
Chloromethane		25	ND	ug/Kg
Dibromochloromethane		25	ND	ug/Kg
1,2-Dichlorobenzene		25	ND	ug/Kg
1,3-Dichlorobenzene		25	ND	ug/Kg
1,4-Dichlorobenzene		25	ND	ug/Kg
1,1-Dichloroethane		25	ND	ug/Kg
1,2-Dichloroethane		25	ND	ug/Kg
1,1-Dichloroethene		25	ND	ug/Kg
trans-1,2-Dichloroethene		25	ND	ug/Kg
1,2-Dichloropropane		25	ND	ug/Kg
cis-1,3-Dichloropropene		25	ND	ug/Kg
trans-1,3-Dichloropropene		25	ND	ug/Kg
Ethylbenzene		25	ND	ug/Kg
2-Hexanone		50	ND	ug/Kg
Methylene chloride		25	ND	ug/Kg
4-Methyl-2-pentanone		50	ND	ug/Kg
Styrene		25	ND	ug/Kg
1,1,2,2-Tetrachloroethane		25	ND	ug/Kg
Tetrachloroethene		25	ND	ug/Kg
Toluene		25	ND	ug/Kg
1,1,1-Trichloroethane		25	ND	ug/Kg
1,1,2-Trichloroethane		25	ND	ug/Kg
Trichloroethene		25	ND	ug/Kg
Trichlorofluoromethane		25	ND	ug/Kg
Vinyl Acetate		50	ND	ug/Kg
Vinyl chloride		25	ND	ug/Kg
Xylenes, total		25	ND	ug/Kg

Ref: SHELL- 2724 Castro Valley, Project: 88-44-380-60

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Diesel	1	mg/Kg	72	ND	74	68	7.6

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	1	mg/Kg	107	ND	91	94	3
Benzene	2.5	ug/Kg	90	ND	93	89	4
Toluene	2.5	ug/Kg	94	ND	84	84	<1

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	1	mg/Kg	111	ND	105	103	2
Benzene	2.5	ug/Kg	84	ND	82	89	9
Toluene	2.5	ug/Kg	92	ND	86	94	9

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Lead (EPA 7421)	0.2	mg/Kg	90	ND	80	89	5.7
Cadmium		mg/Kg	95	ND	101	101	<1
Chromium		mg/Kg	100	ND	93	92	<1
Zinc		mg/Kg	96	ND	103	102	1.1

Ref: SHELL- 2724 Castro Valley, Project: 88-44-380-60

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Oil & Grease(Total)	50	mg/Kg	95	ND	93	94	1.5
Oil & Grease(Non-Polar)	100	mg/Kg	74	ND	N/A	N/A	N/A

QUALITY CONTROL DATA - GC/MS SURROGATE RECOVERY SUMMARY

Lab No.	Toluene d-8	BFB ^a	1,2 Dichloro-ethane d-4	Nitro-Benzene d-5	2-Fluoro-Biphenyl	Terphenyl-d-14	Phenol d-5	2-Fluoro-Phenol	2,4,6 Tribromo-Phenol
52684	111	112	123	---	---	---	---	---	---
52685	102	94	92	---	---	---	---	---	---
52686	105	109	111	---	---	---	---	---	---

^aBFB—4-Bromofluorobenzene.

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
1,1-Dichloroethene	25	ug/Kg	100	ND	96	96	<1
Trichloroethene	25	ug/Kg	100	ND	109	110	1.4
Benzene	25	ug/Kg	100	ND	101	104	2.8
Toluene	25	ug/Kg	100	ND	96	103	6.9
Chlorobenzene	25	ug/Kg	100	ND	96	102	6.1

KEY TO ABBREVIATIONS and METHOD REFERENCES

- < : Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit.
- * : Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values).
- ICVS : Initial Calibration Verification Standard (External Standard).
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
- mg/L : Concentration in units of milligrams of analyte per liter of sample.
- mL/L/hr : Milliliters per liter per hour.
- MPN/100 mL : Most probable number of bacteria per one hundred milliliters of sample.
- N/A : Not applicable.
- NA : Not analyzed.
- ND : Not detected; the analyte concentration is less than applicable listed reporting limit.
- NTU : Nephelometric turbidity units.
- RPD : Relative percent difference, $100 \text{ [Value 1 - Value 2] / mean value}$.
- SNA : Standard not available.
- ug/Kg (ppb) : Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
- ug/L : Concentration in units of micrograms of analyte per liter of sample.
- umhos/cm : Micromhos per centimeter.

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 16th Edition, APHA, 1985.



Converse Consultants

CHAIN OF CUSTODY RECORD

WIC: 204-1381-0407

APR 086657

BXP 5440

PM: MCL/DWC

Project No. 88-44-38060		Project Name Shell from <u>2724 CASTRO VALLEY</u>				Number of Containers	<div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); display: inline-block;"> TPH-g TPH-a O+g BTX CLHC (8020) TCAP: CL, Cr, Pb-20 </div>					1934
Samplers: (signature) Michael Carey												[All WASTE oil Tank TESTS]
Station No.	Date	Time	Comp.	Grab	Station Location							Remarks
	5-9-90	Noon	/		Z-2A	1	/	/	/	/	/	ASAP
	"	"	/		Z-3A	1	/	/	/	/	/	"
DO NOT TAKE THESE YET! SAMPLES 5-10-90 MCE												
Relinquished by: (signature) Michael Carey		Date/Time 5/10/90 15:10		Received by: (signature) Jeff ...		Relinquished by: (signature) Jeff ...		Date/Time 5/10/90		Received by: (signature) M...		
Relinquished by: (signature)		Date/Time		Received by: (signature)		Relinquished by: (signature)		Date/Time		Received by: (signature)		
Relinquished by Courier: (signature)		Date/Time 5-10-90 18:00		Received by Mobile Lab: (signature)		Relinquished by Mobile Lab: (signature)		Date/Time		Received by Courier: (signature)		
Method of shipment				Shipped by: (signature)		Courier from Airport: (signature)		Received for Laboratory: (signature)		Date/Time 5/10/90 1800		



NATIONAL ENVIRONMENTAL TESTING, INC.

RECEIVED
MAY 7 1990

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

CONVERSE ENVIRONMENTAL

Douglas Charlton
Converse Consultants
55 Hawthorne St, Ste 500
San Francisco, CA 94105

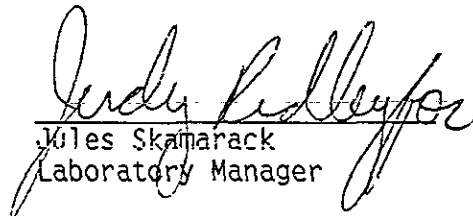
Date: 05-03-90
NET Client Acct No: 18.02
NET Pacific Log No: 1658
Received: 04-20-90 2300

Client Reference Information

SHELL, 2724 Castro Valley Blvd.; Project: 88-44-380-20

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:


Jules Skamarack
Laboratory Manager

Enclosure(s)

Client Ac : 18.02
 Client Name: Converse Consultants
 NET Log No: 1658

Date: 05-03-90
 Page: 2

Ref: SHELL, 2724 Castro Valley Blvd.; Project: 88-44-380-20

Descriptor, Lab No. and Results

Parameter	Reporting Limit	MW-2	MW-2 dup	trip blank	Units
		04-20-90 1320	04-20-90 1320	04-20-90	
		51347	51348	51349	
Oil & Grease(Total)	5	ND	ND	ND	mg/L
Oil & Grease(Non-Polar) METHOD 601/602	10	ND	ND	ND	mg/L
DATE ANALYZED		04-26-90	04-26-90	04-26-90	
DILUTION FACTOR*		1	1	1	
Bromodichloromethane	0.4	ND	ND	ND	ug/L
Bromoform	0.4	ND	ND	ND	ug/L
Bromomethane	0.4	ND	ND	ND	ug/L
Carbon tetrachloride	0.4	ND	ND	ND	ug/L
Chlorobenzene	0.4	ND	ND	ND	ug/L
Chloroethane	0.4	ND	ND	ND	ug/L
2-Chloroethylvinyl ether	1.0	ND	ND	ND	ug/L
Chloroform	0.4	ND	ND	ND	ug/L
Chloromethane	0.4	ND	ND	ND	ug/L
Dibromochloromethane	0.4	ND	ND	ND	ug/L
1,2-Dichlorobenzene	0.4	ND	ND	ND	ug/L
1,3-Dichlorobenzene	0.4	ND	ND	ND	ug/L
1,4-Dichlorobenzene	0.4	ND	ND	ND	ug/L
Dichlorodifluoromethane	0.4	ND	ND	ND	ug/L
1,1-Dichloroethane	0.4	ND	ND	ND	ug/L
1,2-Dichloroethane	0.4	ND	ND	ND	ug/L
1,1-Dichloroethene	0.4	ND	ND	ND	ug/L
trans-1,2-Dichloroethene	0.4	ND	ND	ND	ug/L
1,2-Dichloropropane	0.4	ND	ND	ND	ug/L
cis-1,3-Dichloropropene	0.4	ND	ND	ND	ug/L
trans-1,3-Dichloropropene	0.4	ND	ND	ND	ug/L
Methylene Chloride	10	ND	ND	ND	ug/L
1,1,2,2-Tetrachloroethane	0.4	ND	ND	ND	ug/L
Tetrachloroethene	0.4	ND	ND	ND	ug/L
1,1,1-Trichloroethane	0.4	ND	ND	ND	ug/L
1,1,2-Trichloroethane	0.4	ND	ND	ND	ug/L
Trichloroethene	0.4	ND	ND	ND	ug/L
Trichlorofluoromethane	0.4	ND	ND	ND	ug/L
Vinyl chloride	2.0	ND	ND	ND	ug/L
Benzene	0.5	590	540	ND	ug/L
Ethylbenzene	0.6	80	91	ND	ug/L
Toluene	0.5	260	300	ND	ug/L
Xylenes, total	0.6	960	1,100	ND	ug/L

Client Ac .: 18.02
 Client Name: Converse Consultants
 NET Log No: 1658

Date: 05-03-90
 Page: 3

Ref: SHELL, 2724 Castro Valley Blvd.; Project: 88-44-380-20

Descriptor, Lab No. and Results

Parameter	Reporting Limit	MW-2	MW-2 dup	trip blank	Units
		04-20-90 1320	04-20-90 1320	04-20-90	
		51347	51348	51349	
PETROLEUM HYDROCARBONS		--	--	--	
VOLATILE (WATER)		--	--	--	
DILUTION FACTOR *		10	10	1	
DATE ANALYZED		04-26-90	04-26-90	04-26-90	
METHOD GC FID/5030		--	--	--	
as Gasoline	0.05	9.1	7.7	ND	mg/L
METHOD 602		--	--	--	
DILUTION FACTOR *		10	10	1	
DATE ANALYZED		04-26-90	04-26-90	04-26-90	
Benzene	0.5	500	460	ND	ug/L
Ethylbenzene	0.5	110	110	ND	ug/L
Toluene	0.5	330	280	ND	ug/L
Xylenes, total	0.5	900	790	ND	ug/L
PETROLEUM HYDROCARBONS		--	--	--	
EXTRACTABLE (WATER)		--	--	--	
DILUTION FACTOR *		1	1	1	
DATE EXTRACTED		04-24-90	04-24-90	04-24-90	
DATE ANALYZED		04-24-90	04-24-90	04-24-90	
METHOD GC FID/3510		--	--	--	
as Diesel	0.05	1.8	2.2	ND	mg/L
as Motor Oil	0.05	ND	ND	ND	mg/L

Client Account: 18.02
 Client Name: Converse Consultants
 NET Log No: 1658

Date: 05-03-90
 Page: 4

Ref: SHELL, 2724 Castro Valley Blvd.; Project: 88-44-380-20

Descriptor, Lab No. and Results

Parameter	Reporting Limit	MW-3	MW-1	MW-5	Units
		04-20-90 1330	04-20-90 1115	04-20-90 1535	
		51350	51351	51352	
PETROLEUM HYDROCARBONS		--	--	--	
VOLATILE (WATER)		--	--	--	
DILUTION FACTOR *		1	1	1	
DATE ANALYZED		04-27-90	04-27-90	04-27-90	
METHOD GC FID/5030		--	--	--	
as Gasoline	0.05	ND	ND	ND	mg/L
METHOD 602		--	--	--	
DILUTION FACTOR *		1	1	1	
DATE ANALYZED		04-27-90	04-27-90	04-27-90	
Benzene	0.5	ND	ND	ND	ug/L
Ethylbenzene	0.5	ND	ND	ND	ug/L
Toluene	0.5	ND	ND	ND	ug/L
Xylenes, total	0.5	ND	ND	ND	ug/L

Ref: SHELL, 2724 Castro Valley Blvd.; Project: 88-44-380-20

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Gasoline	0.05	mg/L	101	ND	100	100	<1
Benzene	0.5	ug/L	94	ND	93	97	4
Toluene	0.5	ug/L	93	ND	95	95	<1

QUALITY CONTROL DATA

Parameter	Reporting Limits	Units	Cal Verf Stand % Recovery	Blank Data	Spike % Recovery	Duplicate Spike % Recovery	RPD
Oil & Grease(Total)	5	mg/L	91	ND	N/A	N/A	N/A
Oil & Grease(Non-Polar)	10	mg/L	N/A	ND	N/A	N/A	N/A

QUALITY CONTROL RESULTS - TOTAL PETROLEUM HYDROCARBONS (water)

Parameter	Reporting Limits	Units	Blank Results	Lab No. Spike and Spike Replicate Results (% Recovery)		RPD
				(-DISpike)	(-DISpikeR)	
as Diesel	0.05	mg/L	ND	87	110	21

BATCH SPIKE AND SPIKE REPLICATE RESULTS FOR ANALYSIS BY EPA METHOD 601/602

Compound	Lab No. and Percent Recovery		RPD (%)
	(-51347S)	(-51347SR)	
Benzene*	—	—	—
Toluene*	30.0	<1	—
1,1-Dichloroethene	92.5	88.5	4.4
Trichloroethene	91.0	87.0	4.5
Chlorobenzene	91.5	89.0	2.8

* Low spike recoveries due to matrix interferences.

Client Acc: 18.02
Client Name: Converse Consultants
NET Log No: 1658

Date: 05-03-90
Page: 6

Ref: SHELL, 2724 Castro Valley Blvd.; Project: 88-44-380-20

SAMPLE DESCRIPTION: Blank

<u>Parameter</u>	<u>Reporting Limit</u>	<u>Results</u>	<u>Units</u>
METHOD 601/602			
DATE ANALYZED		04-26-90	
Bromodichloromethane	0.4	ND	ug/L
Bromoform	0.4	ND	ug/L
Bromomethane	0.4	ND	ug/L
Carbon tetrachloride	0.4	ND	ug/L
Chlorobenzene	0.4	ND	ug/L
Chloroethane	0.4	ND	ug/L
2-Chloroethylvinyl ether	1.0	ND	ug/L
Chloroform	0.4	ND	ug/L
Chloromethane	0.4	ND	ug/L
Dibromochloromethane	0.4	ND	ug/L
1,2-Dichlorobenzene	0.4	ND	ug/L
1,3-Dichlorobenzene	0.4	ND	ug/L
1,4-Dichlorobenzene	0.4	ND	ug/L
Dichlorodifluoromethane	0.4	ND	ug/L
1,1-Dichloroethane	0.4	ND	ug/L
1,2-Dichloroethane	0.4	ND	ug/L
1,1-Dichloroethene	0.4	ND	ug/L
trans-1,2-Dichloroethene	0.4	ND	ug/L
1,2-Dichloropropane	0.4	ND	ug/L
cis-1,3-Dichloropropene	0.4	ND	ug/L
trans-1,3-Dichloropropene	0.4	ND	ug/L
Methylene Chloride	10	ND	ug/L
1,1,2,2-Tetrachloroethane	0.4	ND	ug/L
Tetrachloroethene	0.4	ND	ug/L
1,1,1-Trichloroethane	0.4	ND	ug/L
1,1,2-Trichloroethane	0.4	ND	ug/L
Trichloroethene	0.4	ND	ug/L
Trichlorofluoromethane	0.4	ND	ug/L
Vinyl chloride	2.0	ND	ug/L
Benzene	0.5	ND	ug/L
Ethylbenzene	0.6	ND	ug/L
Toluene	0.5	ND	ug/L
Xylenes, total	0.6	ND	ug/L

KEY TO ABBREVIATIONS and METHOD REFERENCES

- < : Less than; When appearing in results column indicates analyte not detected at the value following, which supercedes the listed reporting limit.
- mean : Average; sum of measurements divided by number of measurements.
- mg/Kg (ppm) : Concentration in units of milligrams of analyte per kilogram of sample, wet-weight basis (parts per million).
- mg/L : Concentration in units of milligrams of analyte per liter of sample.
- mL/L/hr : Milliliters per liter per hour.
- MPN/100 mL : Most probable number of bacteria per one hundred milliliters of sample.
- N/A : Not applicable.
- NA : Not analyzed.
- ND : Not detected; the analyte concentration is less than applicable listed reporting limit.
- NTU : Nephelometric turbidity units.
- RPD : Relative percent difference, $100 \text{ [Value 1 - Value 2] / mean value}$.
- SNA : Standard not available.
- ug/Kg (ppb) : Concentration in units of micrograms of analyte per kilogram of sample, wet-weight basis (parts per billion).
- ug/L : Concentration in units of micrograms of analyte per liter of sample.
- umhos/cm : Micromhos per centimeter.

Method References

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

- * Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated reporting limits by the dilution factor.



CHAIN OF CUSTODY RECORD

r. m. Douglas Charlton
 Lic# 204-1381-0407
 AFE# 986675
 Exp# 5441
 Shell Engineer: Jack Brustad

1658

PROJECT NO.:				PROJECT NAME / CROSS STREET:		NUMBER OF CONTAINERS	ANALYSES					REMARKS	
SAMPLERS: (Signature)				GRAB	STATION LOCATION		TPH-Gas	BTEX	TPH-DISE	Vol/602	Oil/Grease		
STATION NO.	DATE	TIME	COMP.										
88-44-380-20	Shell Oil Company		2724 Castro Valley BL		Castro Valley, CA		Shell						
1W-2	4/20/90	1:20		V	40ml VOA	6	X	X		X		All Samples Regular T-A- TE Incl. one VOA and one Amber for QC	
MW-2	4/20/90	1:20		V	Ambers Litr	3			X	X			
Dup MW-2	4/20/90	1:20		V	40ml VOA	6	X	X		X			
Dup MW-2	4/20/90	1:20		V	Ambers Litr	3			X	X			
MW-3	4/20/90	1:20		V	40ml VOA	3	X	X					
MW-1	4/20/90	11:15		V	40ml VOA	3	X	X					
MW-5	4/20/90	3:35		V	40ml VOA	3	X	X					
Trip Blank	4/20/90			V	40ml VOA	1	X	X		X			split voa + amber btain. tests per JR to JS 4/23/90 JS
Trip Blank	4/20/90			V	Ambers Litr	1			X	X			
*CUSTODY SEAL APPLIED 4/20/90 5:30pm custody seal intact 4/20/90 JS													

RELINQUISHED BY: (Signature) <i>Thomas Smith</i>	DATE: 4/20/90 TIME: 4:00 PM	RECEIVED BY: (Signature) <i>J. M. ...</i>	RELINQUISHED BY: (Signature) <i>J. M. ...</i>	DATE:	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE:	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE:	RECEIVED BY: (Signature)
RELINQUISHED BY COURIER: (Sign.)	DATE:	RECEIVED BY MOBILE LAB: (Sign.)	RELINQ. BY MOBILE LAB: (Signature)	DATE:	RECEIVED BY COURIER: (Signature)
METHOD OF SHIPMENT (VIA NCS)		SHIPPED BY: (Signature)	RECEIVED FOR LAB: (Signature) <i>K. Sample</i>	DATE: 4-20-90 TIME: 2:00	COURIER FROM AIRPORT: (Signature)

APPENDIX E
FIELD DATA

CONVERSE ENVIRONMENTAL WEST
Water Sampling Field Survey Form

Job # 88-44-380-20 Site 2724 CASTRO VALLEY Sampling Team K.R. + T.J.
Date 4/20/90 Well # MW-3 Sampling Method DISP. BAILER

Field Conditions SUNNY, MILD

Describe Equipment D-Con Before Sampling This Well ALC NOX WASH, H₂O RINSE, D.I. F.W.

Describe Meter Calibration _____

Total Depth of Well 24.35 FT. Time 10:37
Depth to Water Before Pumping 10.20 Product Present YES/NO (Circle) Thickness _____
Height of Water Column 14.15 * $\begin{matrix} 2'' & 3'' & 4'' \\ .16 & .37 & .65 \end{matrix}$ = Volume 9.18 Purge Multiple * X3 Volume to Purge = 28 GAL.
Depth Purging From BOTTOM OF WELL
Time Purging Begins 12:45 Notes on Initial Discharge CLEAR NO ODOX

Time	Volume Purged	pH	Conductivity X10 I	I	Notes
12:50	P.P.	6.88	220	24°C	CLEAR
1:00	10	7.10	210	24°C	CLEAR
1:05	15	7.54	120	24°C	CLEAR
1:10	20	7.62	120		CLEAR
1:17	25	7.68	120		CLEAR

Pre-Sample Collection Volume Purged ~~25~~ 30 ± Gal.

Time Sample Collection Begins 1:30 Time Sample Collection Ends 1:40

Total Volume Purged 30 ± Gal. Depth to Water After Sampling _____

Comments: D.T.W AT 1:30 = 11.73 FT.
D.T.W BEFORE SAMPLING = 11.55 FT. 80% RECHARGE = 13.03 FT.

CONVERSE ENVIRONMENTAL WEST
Water Sampling Form

Job # 88-44-380-20 Site 2724 CASTRO VALLEY Sampling Team R.R. + T.S.
Date 4/20/90 Well # MW-1 Sampling Method DISP. BAILER

Field Conditions OVERCAST, MILD

Describe Equipment D-Con Before Sampling This Well ALCONOX WASH, H₂O RINSE, D.I. FINAL

Describe Meter Calibration _____

Total Depth of Well 15.32 FT. Time 10:30

Depth to Water Before Pumping 9.21 FT. Product Present YES/NO (Circle) Thickness _____

Height of Water Column 6.11 * $\begin{matrix} 2'' & 3'' & 4'' \\ .16 & .37 & .65 \end{matrix}$ = Volume 3.97 * Purge Multiple 3 = Volume to Purge 12 gals.

Depth Purging From BOTTOM OF WELL

Time Purging Begins 10:35 Notes on Initial Discharge CLEAR NO ODOR

Time	Volume Purged	pH	Conductivity x10 I	Notes	Time	Volume Purged	pH	Conductivity I	pH	Notes
10:40	P.P.	6.46	130	22°C CLEAR						
10:45	4	7.08	120	22°C CLOUDY WHITE						
10:50	6	7.04	110	23°C CLEAR TO CLOUDY						
10:52	10	7.02	110	23°C						
10:58	12	7.05	110	23°C CLEAR NO ODOR						

Pre-Sample Collection Volume Purged 12 ± Gal. D.T.W AT 11:02 = 10.43 FT.

Time Sample Collection Begins 11:15 Time Sample Collection Ends 11:25

Total Volume Purged 12 ± Gal. Depth to Water After Sampling _____

Comments: D.T.W BEFORE SAMPLING = 10.80 FT 80% RECHARGE = 10.43 FT.

CONVERSE ENVIRONMENTAL WEST
Water Sampling Form

Job # 8844-360-20 Site Shell-2724 Castro Valley Sampling Team T.J.
Date 4/20/90 Well # MW-2 Sampling Method Disposable Baiters

Field Conditions Overcast, Cool

Describe Equipment D-Con Before Sampling This Well _____

Describe Meter Calibration Calibrated at lab

Total Depth of Well 14.92 FT Time 10:30 AM

Depth to Water Before Pumping 8.62 FT Product Present YES (NO) (Circle) Thickness _____

Height of Water Column 6.29 ^{2* 3* 4*} * .16 .37 .65 = 4.08 Purge Multiple * 3 Volume to Purge = 12.26

Depth Purging From Bottom of the well

Time Purging Begins 10:50

Notes on Initial Discharge Strong odor, Clear

Time	Volume Purged	pH	Conduc-tivity	X10 I	Notes
10:50	Pre-purge	6.94	070	64°	
10:58	7gals	6.99	080	64°	Sheen
11:03	12gals	7.13	070	66°	Slow Recharge
11:08	16gals	7.11	070	69°	Dry

Time	Volume Purged	pH	Conduc-tivity	I	pH	Notes

Pre-Sample Collection Volume Purged _____ Gal.

Time Sample Collection Begins 1:20 Time Sample Collection Ends 1:30

Total Volume Purged 16 ± Gal. Depth to Water After Sampling _____

Comments: DTW at 11:10 is 14.30 FT 80% Recharge = 9.98 FT
DTW is 12.61 FT @ 11:28
DTW is 9.38 FT @ 1:15

CONVERSE ENVIRONMENTAL WEST
Water Sampling Form

Job # 88-44-260-20 Site Shell-2724 Castro Valley Sampling Team T.J.
Date 4/20/90 Well # MW-5 Sampling Method Disposable Bailor

Field Conditions Partly Cloudy

Describe Equipment D-Con Before Sampling This Well _____

Describe Meter Calibration Calibrated the meter at lab

Total Depth of Well 22.80 FT Time 10:35 AM

Depth to Water Before Pumping 9.35 FT Product Present YES/NO (Circle) Thickness _____

Height of Water Column 13.45 ^{2" 3" 4"} * .16 .37 .65
= 8.74 * 3 = 26 gal

Depth Purging From Bottom of the well

Time Purging Begins 12:44 Notes on Initial Discharge clear, No odor

Time	Volume Purged	pH	Conductivity	T	Notes	Time	Volume Purged	pH	Conductivity	T	pH	Notes
12:45	Pre-purge	6.82	190	65°								
12:51	10 gals	6.80	170	66°	Cloudy							
1:00	15 gals	6.94	180	66°	Dirty Brown in color							
1:03	20 gals	6.96	190	66°								
1:10	26 gals	6.99	200	67°	Marked							

Pre-Sample Collection Volume Purged _____ Gal.

Time Sample Collection Begins 3:35 Time Sample Collection Ends 3:40

Total Volume Purged 26 ± Gal. Depth to Water After Sampling _____

Comments: DTW = 21.52e 1:14 PM 80% Recharge = 12.04 FT

DTW = 14.24e 2:10 PM

DTW = 9.40 FT e 3:20

Thompson Fence Co. (415) 271-9250

APPENDIX F

**SITE RESTORATION PLAN AND
SCHEDULE OF FUTURE WORK**



May 31, 1990
88-44-380-60-657

Mr. Larry Seto
Alameda County Health Care Services Agency
Department of Environmental Hazardous Material
80 Swan Way, Room 200
Oakland, California 94621

Subject: Site Restoration Plan and Schedule for future work
2724 Castro Valley Boulevard
Castro Valley, California

Dear Mr. Seto:

This letter is a request by Shell Oil Company (Shell) to proceed with excavation, backfilling and site restoration at 2724 Castro Valley Boulevard, to return the site to useable condition with negligible residual soil contamination. Background information, a summary of current site conditions, and planned future onsite and offsite activities are discussed in this letter.

BACKGROUND

Over the past four years Shell and its environmental consultants Blaine Technical Services, Woodward-Clyde Consultants, Crosby and Overton, and Converse Environmental West (CEW) have investigated the extent of soil contamination associated with underground storage tanks and product lines at the former Shell gasoline station at the subject address. First environmental activities were initiated in November, 1986, when Shell replaced the waste oil tank and discovered minor soil contamination in tank backfill. In March, 1989, Shell removed the underground gasoline storage tanks and discovered subjacent soil contamination.

88-44-380-60-657

Mr. Larry Seto

Alameda County Health Care Services Agency

May 31, 1990

Page 2

Shell expanded the size of the initial excavation in three subsequent stages. The excavation was expanded first around the former tanks, then to the south, towards Castro Valley Boulevard. Finally the excavation was expanded to the west, under the former pump islands (Drawing 1). Part of the excavation was backfilled and restored to grade in July 1989 (Drawing 1), upon demonstration through verification samples that the sidewall soils lacked detectable levels petroleum hydrocarbons.

Approximately 1200 cubic yards of soil were removed in these excavations. This soil was piled temporarily onsite and partly covered with plastic to control passive aeration. The soil was disposed of at a Class II waste disposal site, near Buttonwillow, California on June 23 - June 30, 1989, July 6 - July 13, 1989 and October 10 - 12, 1989. Crosby and Overton, a licensed waste transporter, handed the soil under proper manifests (Exhibit A). No soil spoils remain onsite.

A summary of the sampling and analytical history of the site is provided in the attached exhibits. Table 1 presents a chronological summary for the site, including the references to the stages of excavation which were conducted. Table 2 provides a summary of the soil analytical results from sidewall samples and verification samples taken from the various stages of the excavations.

CEW has provided periodic progress reports on activities on this site since CEW began consulting for Shell in May 1989. These reports have been presented on the following dates: July 11, 1989, July 27, 1989, September 29, 1989, October 11, 1989, October 31, 1989, November 30, 1989, and two reports on January 16, 1990.

CURRENT SITE CONDITIONS

The present site conditions are summarized in Drawing 1. This diagram shows the extent of the currently open soil excavation, as well as the locations and analytical results of all soil samples that have been taken from this excavation.

88-44-380-60-657

Mr. Larry Seto

Alameda County Health Care Services Agency

May 31, 1990

Page 3

The last round of soil samples, taken from sidewalls at the maximum extent of the excavation, verify that the lateral extent of soil contamination has been defined and removed completely by excavation. Only a small amount of residual contamination remains onsite, at the northeast corner of the stage 1 excavation (backfilled). This residual contamination is not currently accessible by excavation equipment because the former gas station building and an existing waste oil tank are in the way. This area will be investigated with additional borings, as describe below.

As demonstrated by hydrogeologic information presented in the CEW letter to you dated January 16, 1990, the vertical extent of soil contamination is defined as the water table at approximately 10 to 12 feet below grade.

Verification sampling of the excavation indicates removal of known soil contamination essentially to this water table, establishing complete removal of the vertical extent of unsaturated soil contamination. As discussed by CEW (January, 1990), soil contamination at -12' (Table 3) is essentially in the saturated zone, and will be subject to groundwater remediation.

PLANNED ONSITE ACTIVITIES

1. Backfill Existing Excavation

Program I of the Revised Project Work Plan dated January 16, 1990 is complete, and Shell is prepared to proceed with Program II of that Work Plan: Site Restoration. This letter is a notification that Shell Oil Company intends to proceed with backfilling the excavation and restoring the site to grade at the earliest opportunity. In former correspondence from Alameda County Health Care Services Agency to Mr. Matthew Righetti, Esq., dated March 21, 1989, Shell has been directed that backfill of this excavation will require approval from both the Alameda County Health Care Services Agency and the current property owner, Mr. Righetti. Because there is no regulatory or other known reason to delay site restoration, Shell requested your permission to proceed as quickly as possible, in a letter dated May 8, 1990.

88-44-380-60-657

Mr. Larry Seto

Alameda County Health Care Services Agency

May 31, 1990

Page 4

Shell intends to proceed with this backfilling operation, using properly sized and compacted backfill, within the next thirty days. This backfilling will restore the site to grade, thus eliminating the hazard posed by the existing open excavation. This action is consistent with the desires of Mr. Larry Seto of ACHCSA, who gave permission that the excavation be backfilled for safety reasons, in a letter dated May 2, 1990.

2. Removal of Residual Onsite Soil Contamination

Based upon soil sample data from MW-2, and sidewall verification samples from the former tank excavation, some soil contamination remains in the northeast corner of the site, near the existing waste oil tank. The limits of the soil contamination are uncertain, but it is possible that contamination extends under the building, behind the waste oil tank and under the utility trench on the eastern boundary of the site.

To characterize and remove the remaining contaminated soil to the maximum extent possible, Shell will proceed with the following activities in this area:

Task 1 Drill and Sample Soil Borings

Two soil borings will be drilled to the water table at a maximum depth of 12 feet, at locations shown on Drawing 1. Soil samples will be taken at approximate depths of 5 and 8 feet, in accordance with CEW standard protocols. The samples will be analyzed for all waste oil constituents, including metals.

Task 2 Lateral Extend of Soil Contamination

Based on data obtained from the samples, CEW will estimate the lateral extent and depth of soil contamination remaining on the property, which will be removed during the next stage of excavation.

Task 3 Removal Soil and Relocate Existing Waste Oil Tank

The existing waste oil tank will be removed and relocated and onsite contaminated soil near the waste oil tank will be removed to the maximum reasonable extent possible. No lateral excavations will be made below the building or the utility trench. The excavation will extend vertically to the water table at a depth of approximately 12 feet.

88-44-380-60-657

Mr. Larry Seto

Alameda County Health Care Services Agency

May 31, 1990

Page 5

The soil removed in the excavations will be treated on-site or disposed in a Class I or II landfill.

Task 4 Verification Sampling

Verification samples will be taken at 20 foot intervals along the excavation sidewalls at depths of 4 and 8 feet below grade, as schematically shown on Drawing 1. The samples will be analyzed by a mobile laboratory for all waste oil constituents and metals using a GC-MS.

Task 5 Backfilling and Recompaction

Upon receiving permission from the ACHCSA, Shell will backfill the excavation with non-expansive soil, compacted to a minimum relative density of 90 percent (using ASTM D-1557-70). After the excavation is backfilled, the area may be utilized in anyway desired, including the re-installation of the waste oil tank

INVESTIGATION OF OFFSITE SUBSURFACE CONDITIONS

The lateral extent of offsite soil contamination north and east of the property boundaries has not yet been established. With this letter, Shell proposes to proceed with soil and groundwater investigations to define the extent of contamination on the property to the east, Castro Valley Florist, 2728 Castro Valley Boulevard. Further subsurface investigations will probably be required in the future to define the extent of contamination in the adjacent property to the north, Scandia Auto Body, 20736 Lake Chabot Boulevard.

CEW will contact the owner of Castro Valley Florist and obtain a right-of-entry to conduct the necessary subsurface investigations in 5 tasks, described below.

Task 1 Exploratory Soil Borings

Approximately three soil borings will be drilled in the florist parking lot, at the approximate locations shown in Drawing 2, subject to the permission of the owner. The soil borings will be drilled using a hand-auger, a portable drill rig or normal truck mounted equipment to the water table or to a maximum depth of 12 feet. Samples will be collected at depths of 5 and 9 feet and analyzed for all waste oil constituents including metals.

88-44-380-60-657
Mr. Larry Seto
Alameda County Health Care Services Agency
May 31, 1990
Page 6

Task 2 Groundwater Monitoring Wells

Three groundwater monitoring wells will be drilled in the parking lot at the approximate locations shown on Drawing 2 subject to permission by the owner. The well locations will be cleared with the florist to ensure that the drilling and monitoring will have a minimum effect on the daily operations of the business.

The three wells will be installed according to CEW standard protocols and will be developed and sampled according to those same protocols. The wells will be constructed with 4-inch diameter, PVC Schedule 40 casing. Screen size will be either .010 or .020 inch. Boring logs and well construction diagrams will be supplied in the appropriate quarterly report.

Task 3 Collect and Analyzed Groundwater Samples

The wells will be fully developed by surge-purge methods, with at least eight casing volumes of water removed and contained in tightly covered 55-gallon drums onsite. Following development, groundwater samples will be collected quarterly or as recovery permits for period of one year. Water from the well shall be analyzed for TPH as gasoline, diesel and waste oil, BTEX, and lead.

The field data, as-built well construction diagrams, boring logs, analytical results, and the results of initial sampling will be compiled and presented in an appropriate quarter report of activities for the site.

If groundwater sampling of the monitor wells indicates that the groundwater is contaminated and that a contaminant plume is incompletely assessed, additional groundwater monitoring wells will be installed onsite or offsite in an iterative manner until-plume limits are defined.

Task 4 Survey Wellhead Elevation

Following groundwater well construction, wellheads will be surveyed and a detailed site plan showing wellhead elevations will be prepared. The depth to groundwater will be measured in each well to establish the groundwater gradient. This will allow precise measurements of the groundwater elevation and flow gradient across the site.

88-44-380-60-657

Mr. Larry Seto

Alameda County Health Care Services Agency

May 31, 1990

Page 7

Task 5 Reporting

The results of the soil and water sampling will be compiled onto maps and presented to regulators in the first quarterly report after completion of well construction and groundwater sampling.

FINAL REMARKS

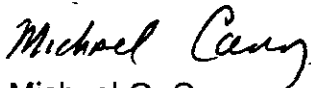
Once the excavation is properly backfilled, compacted and repaved, the site will be restored to useable conditions, and will no longer retain soil liabilities above the water table. The site may then be developed and used for any purpose which meets the City zoning requirements. Future site use will not be restricted or impaired by the ongoing subsurface groundwater investigations which Shell will conduct in order to attain final site closure.

Shell recognizes the need to continue to investigate groundwater quality at this site as part of closure requirements. The progress of this groundwater investigation onsite and offsite will be reported to you on a quarterly basis, in accordance with Regional Water Quality Control Board guidelines.

Thank you for your prompt attention to this matter.

Very truly yours,

Converse Environmental West



Michael C. Carey
Project Geologist



Charles R. Comstock, CEG #1010
Technical Director

MCC:arm

Attachments: Drawings (2)

cc: Ms. Diane Lundquist - Shell Oil Company (w/ att.)

Mr. Ray Newsome - Shell Oil Company (w/ att.)