ENVIRONMENTAL RESOLUTIONS, INC.

TRANSMITTAL

TO: Ms. Eva Chu
Alameda County Health Care Services Agency
Department of Environmental Health Services
1131 Harbor Bay Parkway, # 250
Alameda, California 94502-6577

DATE: May 12, 1999
PROJECT NUMBER: 223503T4
SUBJECT: Tosco 76 Service Station 1156,
4276 MacArthur Boulevard, Oakland, California.

FROM: Glenn L. Matteucci
TITLE: Project Manager

WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	May 12, 1999	Work Plan for Evaluation of Soil and Groundwater

THESE ARE TRANSMITTED as checked below:

[ ] For review and comment	[ ] Approved as submitted	[ ] Resubmit __ copies for approval
[X] As requested	[ ] Approved as noted	[ ] Submit__ copies for distribution
[ ] For approval	[ ] Return for corrections	[ ] Return __ corrected prints
[X] For your files	[ ] For distribution to regulatory agencies	

REMARKS: At the request of Tosco Marketing Company, ERI is forwarding a copy of the above referenced report. Please call with any questions or comments.

Glenn L. Matteucci, Project Manager

cc: Mr. Dave DeWitt, Tosco Marketing Company
1 to ERI project file 223503T4

ERI
ENVIRONMENTAL RESOLUTIONS, INC.

May 12, 1999
ERI 223503.W01

Mr. Dave DeWitt
Tosco Marketing Company
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

Subject: Work Plan for Evaluation of Soil and Groundwater at Tosco 76 Service Station 1156, 4276 MacArthur Boulevard, Oakland, California.

Mr. DeWitt:

At the request of Tosco Marketing Company (Tosco), Environmental Resolutions, Inc. (ERI) is submitting this Work Plan to perform an evaluation of soil and groundwater at the subject site. The Work Plan was prepared in response to a letter from the Alameda County Health Care Services Agency-Environmental Health Services (the County) dated March 12, 1999 (Attachment A). The purpose of the work is to evaluate the extent of hydrocarbons detected in soil and groundwater beneath the site during the underground storage tank (UST) removal activities.

The scope of work for the investigation includes: obtaining drilling permits from the Alameda County Public Works Agency (the County Public Works), drilling four on-site soil borings (MW1 through MW4); collecting soil samples from the borings; constructing groundwater monitoring wells MW1 through MW4 in the borings; developing and purging the wells; collecting groundwater samples from the newly installed wells; submitting soil and groundwater samples for analysis; interpreting the data; and preparing a summary report.

BACKGROUND

The site is located on the north corner of MacArthur Boulevard and High Street in Oakland, California, as shown on the Site Vicinity Map (Plate 1). The locations of new and former USTs, dispenser islands, and other selected site features are shown on the Generalized Site Plan (Plate 2). Properties in the vicinity of the site are occupied by residential and commercial developments.

To date, environmental work at the site has included removal of two 10,000-gallon single-walled steel gasoline USTs, one 280-gallon single-wall steel used-oil UST, and product lines, and excavation and disposal of approximately 1,350 tons of soil and backfill to Forward Landfill in Manteca, California. Laboratory analyses of samples collected during UST removal detected residual hydrocarbons in the soil and dissolved hydrocarbons in the groundwater beneath the site. The results of the soil and groundwater sample analyses and sample locations are provided in Attachment B.

PROPOSED WORK

This investigation is proposed to evaluate the extent of residual and dissolved hydrocarbons detected in soil and groundwater beneath the site. ERI will perform field work in accordance with ERI's standard protocol (Attachment C), and a site-specific Health and Safety Plan. ERI will perform the following tasks:

- Prepare and obtain a well installation permit from the County Public Works to install four groundwater monitoring wells at the subject site.

- Observe the drilling of four on-site soil borings (MW1 through MW4) utilizing a hollow-stem auger drilling rig and constructing groundwater monitoring wells MW1 through MW4 in these borings. The borings will be advanced to a minimum depth of 10 feet below first encountered groundwater. ERI anticipates groundwater will be encountered at approximately 5 to 12 feet below ground surface (bgs). The locations of the proposed wells are shown on Plate 2. Well locations were selected to evaluate soil and groundwater conditions in the inferred downgradient flow direction (west-southwest) of potential source areas. Groundwater gradient information was provided by the County.

- Collect soil samples at 5-foot intervals, at obvious changes in lithology as noted by the driller or field geologist, and directly above first-encountered groundwater to evaluate soil stratigraphy.

- Contract with a licensed land surveyor to survey the well locations relative to a permanent datum and casing elevations relative to mean sea level.

- Develop newly installed wells MW1 through MW4 and collect groundwater samples from the monitoring wells.

- Submit collected soil samples to Sequoia Analytical Laboratories, Inc. (Sequoia) (California State Certification No. 1210) for potential analysis of total purgeable petroleum hydrocarbons as gasoline (TPPHg) using Environmental Protection Agency (EPA) method 8015 (modified), benzene, toluene, ethylbenzene, total xylene isomers (BTEX), and methyl tertiary butyl ether (MTBE) using EPA method 5030/8020. At the request of Tosco, ERI will also analyze for select hydrogeologic parameters. Additionally, soil samples collected from boring MW1 will be analyzed for total extractable petroleum hydrocarbons as diesel (TEPHd) using EPA method 8015 (modified), total recoverable petroleum hydrocarbons (TRPH) using EPA method 5520 E&F, halogenated volatile organic compounds (HVOCs) using EPA method 8010, and semivolatile organic compounds (SVOCs) using EPA method 8270. A composite soil sample (four brass sleeves) will be collected from the drill cuttings to profile for disposal and will be analyzed for TPPHg, TPPHd, BTEX, MTBE, HVOCs, and SVOCs using the laboratory methods listed above. The stockpile will also be analyzed for total lead using EPA method 6010.

- Submit collected groundwater samples to Sequoia for analysis for TPPHg, BTEX, and MTBE using the methods listed above. The groundwater sample exhibiting the highest MTBE concentration will be confirmed for MTBE and analyzed for oxygenated compounds using EPA method 8260. Additionally, the groundwater samples collected from well MW1 will be analyzed for TEPHd, TRPH, HVOCs and SVOCs using the methods listed above.

- Interpret field and laboratory data to evaluate groundwater conditions.

- Prepare a report describing subsurface conditions at the site as observed in borings and wells and summarize the findings.

SCHEDULE OF OPERATIONS

ERI is prepared to implement the work plan within 45-days upon regulatory approval and obtaining appropriate permits and access agreements. ERI is prepared to submit the report within 45-days of the completion of field activities.

ERI recommends copies of this report be forwarded to:

Ms. Eva Chu
Alameda County Health Care Services Agency
Department of Environmental Health Services
1131 Harbor Bay Parkway, #250
Alameda, California 94502-6577

Ms. Jolanta Uchman
California Region Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Please call Mr.Glenn Matteucci at (415) 382-5994 if you have questions regarding this Work Plan.

Sincerely,
Environmental Resolutions, Inc.

Glenn L. Matteucci
Project Manager

Mark S. Dockum
R.G. 4412
C.E.G. 1675

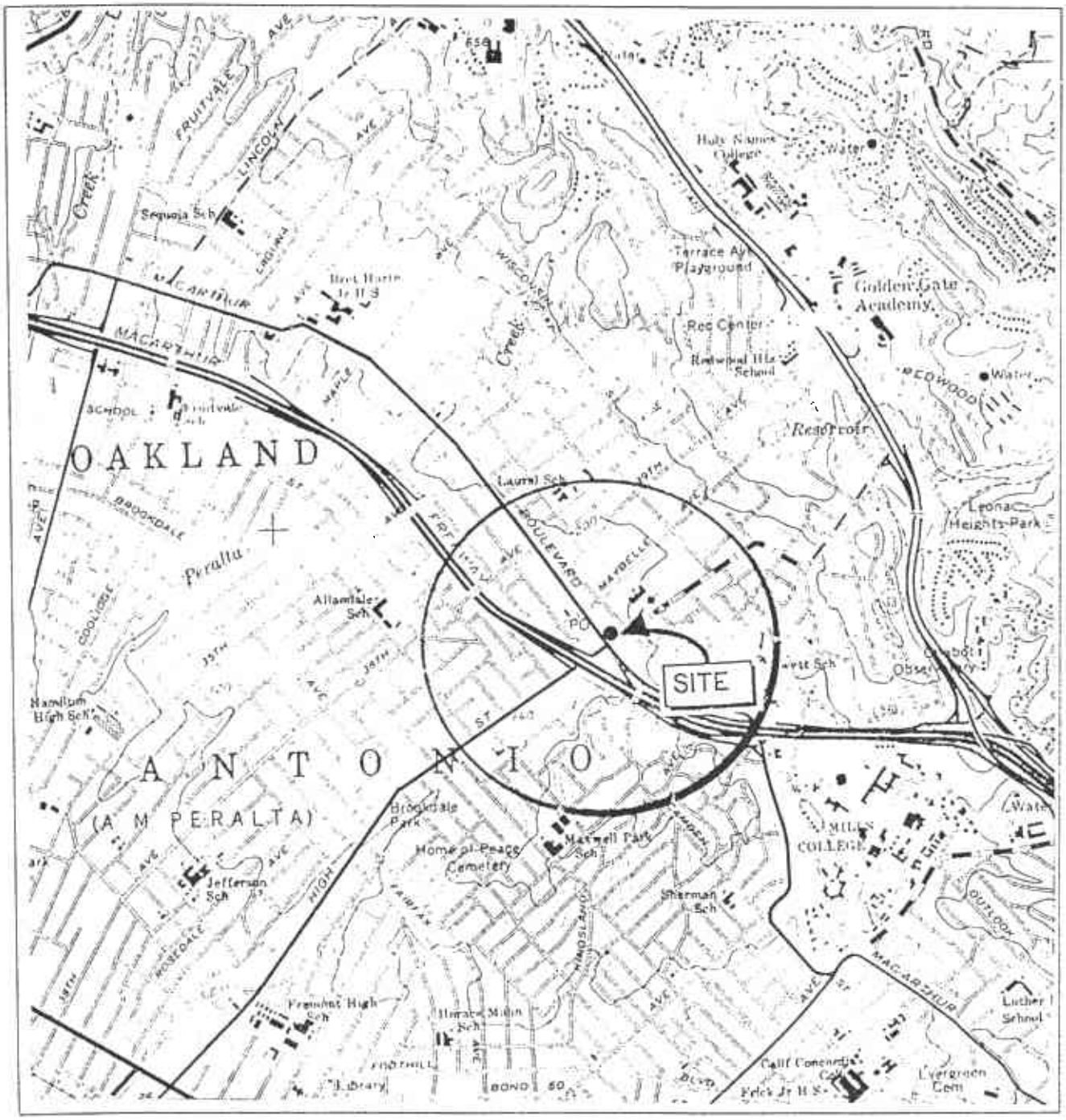
Attachments:
Plate 1: Site Vicinity Map
Plate 2: Generalized Site Plan

Attachment A: Alameda County Health Care Services Agency-Environmental Health Services, letter (March 12, 1999)
Attachment B: Sample Analysis Results of Soil and Groundwater and Sample Locations
Attachment C: Field Protocol

REFERENCES

Environmental Resolutions, Inc. August 24, 1998. Underground Storage Tank and Associated Piping and Dispenser Replacement Report. ERI 223532.R01

United States Geological Survey. 1980. Oakland West, California, 7.5-Minute Topographic Quadrangle Map.



FN 22350001

N

APPROXIMATE SCALE

0 1/2 1

MILE

Source: U.S.G.S. 7.5 minute topographic quadrangle map Oakland East, California (Photorevised 1980)

ENVIRONMENTAL RESOLUTIONS, INC.

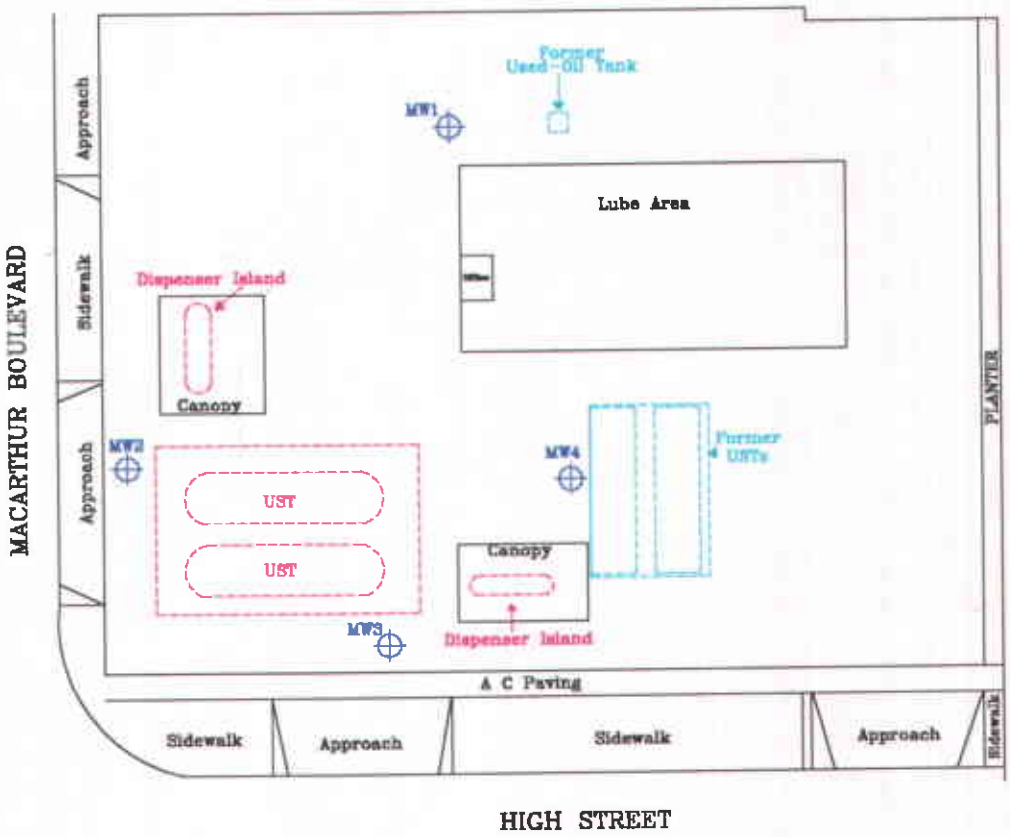
PROJECT ERI 2235

SITE VICINITY MAP

TOSCO 76 SERVICE STATION 1156
4276 MacArthur Boulevard
Oakland, California

PLATE

1



Inferred Groundwater Flow Direction

Source: Modified from a map provided by Tosco

FN 22350002

EXPLANATION

MW4 Proposed Groundwater Monitoring Well

APPROXIMATE SCALE

0 30 60 FEET

ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

TOSCO 76 SERVICE STATION 1156
4276 MacArthur Boulevard
Oakland, California

PROJECT NO. 2235

PLATE 2

October 22, 1997

ATTACHMENT A
LETTER

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY-
ENVIRONMENTAL HEALTH SERVICES
LETTER (dated March 12, 1999)

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

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700

StID 1163

March 12, 1999

Mr. Dave DeWitt
Tosco
P.O. Box 5155
San Ramon, CA 94583

RE: PSA for 76 Service Station 1156 at 4276 MacArthur Blvd., Oakland, CA

Dear Mr. Dewitt:

I have completed review of Environmental Resolutions, Inc's August 1998 *Underground Storage Tank and Associated Piping and Dispenser Replacement* report prepared for the above referenced site. This report summarized activities for the removal on one waste oil UST and removal and replacement of two gasoline USTs and associated piping and dispensers. Soil and groundwater samples collected from the excavation and trenches contained elevated petroleum hydrocarbon constituents.

At this time, additional investigations are required to delineate the extent and severity of soil and groundwater contamination at the site. Such an investigation shall be in the form of a **Preliminary Site Assessment**, or PSA. The information gathered by the PSA will be used to determine an appropriate course of action to remediate the site, if deemed necessary. A PSA proposal is due within 90 days of the date of this letter, or **by June 18, 1999.**

I have also enclosed an *Underground Storage Tank Unauthorized Release (Leak)/Contamination Site Report* which should be completed and returned to this office within 10 working days.

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

eva chu
Hazardous Materials Specialist

enclosure

76SS1156-1

Post-It™ brand fax transmittal memo 7671	# of pages ▸ 1
To Glenn M	From Dave DeWitt
Co.	Co.
Dept.	Phone #
Fax #	Fax #

ATTACHMENT B

SAMPLE ANALYSIS RESULTS OF SOIL AND GROUNDWATER AND SAMPLE LOCATIONS

TABLE 1
SAMPLE ANALYSIS RESULTS OF SOIL AND GROUNDWATER
Tosco (Union) 76 Service Station 1156
4276 MacArthur Boulevard
Oakland, California

Sample #	Depth	Date	TEPHd	TPPHg	B	T	E	X	TRPH	TTLC Lead	SVOC's	HVOC's
FUEL USTS - SOIL												
S-6-T1N	6.0	3/23/98	NA	1,200	0.90	ND	14	100	NA	6.8	NA	NA
S-9.5-T1S	9.5	3/23/98	NA	590	1.5	ND	5.6	33	NA	NA	NA	NA
S-7-T2S	7.0	3/23/98	NA	670	1.0	0.74	6.8	51	NA	NA	NA	NA
S-6-T2N	6.0	3/23/98	NA	83	ND	ND	0.15	0.41	NA	NA	NA	NA
DISPENSERS - SOIL												
S-2-D1	2.0	4/9/98	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
S-3-D2	3.0	4/9/98	NA	16	ND	ND	ND	0.13	NA	NA	NA	NA
S-3-D3	3.0	4/9/98	NA	590	1.6	15	18	99	NA	110*	NA	NA
S-3-D4	3.0	4/9/98	NA	ND	ND	ND	ND	0.070	NA	NA	NA	NA
PRODUCT LINES - SOIL												
S-3-PL1	3.0	4/9/98	NA	160	ND	ND	ND	8.4	NA	NA	NA	NA
S-3.5-PL2	3.5	4/9/98	NA	63	ND	ND	ND	0.45	NA	NA	NA	NA
USED - OIL UST - SOIL												
S-6.5-T3S	6.5	3/23/98	78,000	130	0.55	1.3	1.2	11	8,400	7.2	ND	ND**
S-4.5-T3W	4.5	4/9/98	2.3	5.0	ND	0.066	ND	0.011	ND	ND	ND	ND
S-3-T3S	3.0	4/9/98	ND	1.6	0.043	ND	0.0091	ND	ND	ND	ND	ND
S-6-T3S	6.0	4/9/98	560	81	0.64	1.4	1.1	5.9	360	ND	ND***	ND
FUEL UST CAVITY- WATER												
W-7.5-T2	7.5	3/23/98	NA	41,000	ND	400	770	8,900	NA	NA	NA	NA
STOCKPILE												
SP-1-(1-4)	NA	4/3/98	NA	15	0.024	0.034	0.024	0.069	NA	16	NA	NA
SP-1-(5-8)	NA	4/3/98	NA	3.2	0.013	ND	ND	0.014	NA	12	NA	NA
SP-2-(1-4)	NA	4/3/98	NA	13	0.076	ND	0.019	0.060	NA	5.0	NA	NA
SP-2-(5-8)	NA	4/3/98	NA	42	0.19	ND	0.11	0.60	NA	5.4	NA	NA
SP-2-(9-12)	NA	4/3/98	NA	15	0.19	ND	0.034	0.092	NA	ND	NA	NA
SP-2-(13-16)	NA	4/3/98	NA	41	0.66	0.61	0.42	2.2	NA	ND	NA	NA
SP-2-(17-20)	NA	4/3/98	NA	10	0.036	0.027	0.013	0.058	NA	ND	NA	NA
SP-3-(1-4)	NA	4/9/98	290	12	0.13	0.027	0.094	0.53	570	30	ND	ND
SP-4-(A-10)	NA	4/9/98	NA	19	0.0076	0.058	0.068	0.40	NA	10	NA	NA

TABLE 1
SAMPLE ANALYSIS RESULTS OF SOIL AND GROUNDWATER
Tosco (Union) 76 Service Station 1156
4276 MacArthur Boulevard
Oakland, California

Sample #	Depth	Date	TEPHd	TPPHg	B	T	E	X	TRPH	TTLC Lead	SVOC's	HVOC's

Notes:
Soil results (S) in milligrams per kilogram (mg/kg) unless otherwise noted.
Water results (W) in micrograms per liter (ug/L).

ug/kg	=	micrograms per liter
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using modified EPA method 8015.
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using modified EPA method 8015.
BTEX	=	Benzene, Toluene, Ethylbenzene, and Total Xylenes analyzed using EPA method 8020.
TRPH	=	Total recoverable petroleum hydrocarbons analyzed using EPA method 5520 E&F.
TTLC Lead	=	Total threshold limit concentration of lead analyzed using EPA method 6010.
STLC Lead	=	Soluble threshold limit concentration of lead analyzed using EPA method 6010.
SVOC's	=	Semi-volatile organic compounds analyzed using EPA method 8270.
HVOC's	=	Halogenated volatile organic compounds analyzed using EPA method 8010.
NA	=	Not Analyzed/Not Applicable
ND	=	Not detected
*	=	Additional analysis: STLC Lead = 8.0 mg/L
**	=	HVOC's ND except cis-1,2-Dichloroethene = 56 ug/kg
***	=	SVOC's ND except 2-Methylnaphthalene = 580 ug/kg; Naphthalene = 500 ug/kg

Additional Analyses:

Sample S-6.5-T3S analyzed for TTLC Cadmium = ND; Chromium = 50 mg/kg; Nickel = 64 mg/kg; Zinc = 52 mg/kg using EPA method 6010.

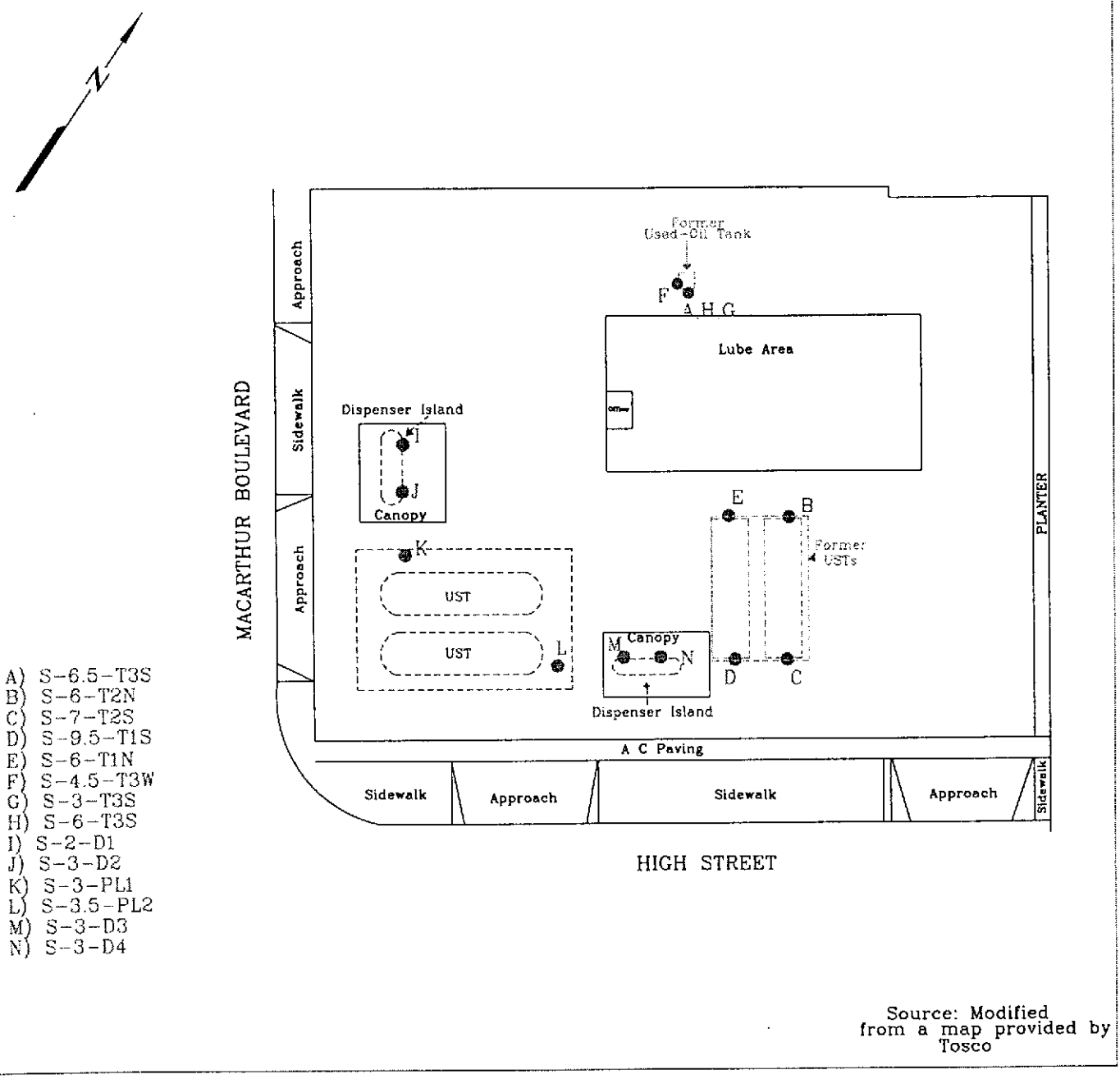
Sample S-4.5-T3W analyzed for TTLC Cadmium = ND; Chromium = 22 mg/kg; Nickel = 70 mg/kg; Zinc = 22 mg/kg using EPA method 6010.

Sample S-3-T3S analyzed for TTLC Cadmium = ND; Chromium = 37 mg/kg; Nickel = 34 mg/kg; Zinc = 34 mg/kg using EPA method 6010.

Sample S-6-T3S analyzed for TTLC Cadmium = ND; Chromium = 27 mg/kg; Nickel = 25 mg/kg; Zinc = 27 mg/kg using EPA method 6010.

Sample SP-3-(1-4) analyzed for TTLC Cadmium = ND; Chromium = 35 mg/kg; Nickel = 40 mg/kg; Zinc = 42 mg/kg using EPA method 6010.

Sample W-7.5-T2 analyzed for methyl tertiary butyl ether = 1,800 ug/L using EPA method 8020.



A) S-6.5-T3S
B) S-6-T2N
C) S-7-T2S
D) S-9.5-T1S
E) S-6-T1N
F) S-4.5-T3W
G) S-3-T3S
H) S-6-T3S
I) S-2-D1
J) S-3-D2
K) S-3-PL1
L) S-3.5-PL2
M) S-3-D3
N) S-3-D4

Source: Modified from a map provided by Tosco

FN 22350002

EXPLANATION

N
● Soil Sample

APPROXIMATE SCALE

0 30 60
FEET

ERI ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

TOSCO 76 SERVICE STATION 1156
4276 MacArthur Boulevard
Oakland, California

PROJECT NO. 2235

PLATE 2

October 22, 1997

ATTACHMENT C

FIELD PROTOCOL

FIELD PROTOCOL

Site Safety Plan

Field work will be performed by ERI personnel in accordance with a site safety plan developed for the site. This plan describes the basic safety requirements for the subsurface investigation and the drilling of soil borings at the work site. The site safety plan is applicable to personnel and subcontractors of ERI. Personnel at the site are informed of the contents of the site safety plan before work begins. A copy of the site safety plan is kept at the work site and is available for reference by appropriate parties during the work. The ERI geologist will act as the Site Safety Officer.

Soil Borings

Prior to drilling of borings and construction of wells, ERI will acquire necessary permits from the appropriate agency(ies). ERI will also contact Underground Service Alert (USA) before drilling to help locate public utility lines at the site. ERI will observe the driller clear boring locations to a depth of approximately 4 feet before drilling to reduce the risk of damaging underground structures.

Soil borings will be drilled with a CME-55 (or similar) drill rig with hollow-stem auger. Auger flights and sampling equipment will be steam-cleaned before use to minimize the possibility of crosshole contamination. The rinsate will be containerized and stored on site. ERI will coordinate with Tosco for appropriate disposal or recycling of the rinsate.

Drilling will be performed under the observation of a field geologist, and the earth materials in the borings will be identified using visual and manual methods, and classified as drilling progresses using the Unified Soil Classification System. Soil borings MW1 through MW4 will be drilled to approximately 10 feet below first encountered groundwater or 5 feet into any competent clay layer (aquitard) encountered beneath the water-bearing zone. If an aquitard is encountered, the boring will be terminated and backfilled with bentonite before installing a groundwater monitoring well.

During drilling, soil samples will be collected at 5-foot intervals, obvious changes in lithology, and just above the groundwater surface. Samples will be collected with a California-modified, split-spoon sampler equipped with laboratory-cleaned brass sleeves. Samples will be collected by advancing the auger to a point just above the sampling depth and driving the sampler into the soil. The sampler will be driven 18 inches with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows required to drive the sampler each successive 6-inch interval will be counted and recorded to give an indication of soil consistency.

Soil samples will be monitored with a photoionization detector (PID), which measures hydrocarbon concentrations in the ambient air or headspace above the soil sample. Field instruments such as the PID are useful for indicating relative levels of hydrocarbon vapors, but do not detect concentrations of hydrocarbons with the same precision as laboratory analyses. Soil samples selected for possible chemical analysis will be sealed promptly with Teflon® tape and plastic caps. The samples will be labeled and placed in iced storage for transport to the laboratory. Chain of Custody Records will be initiated by the geologist in the field, updated throughout handling of the samples, and sent with the samples to the laboratory. Copies of these records will be in the final report. Cuttings generated

during drilling will be placed on plastic sheeting and covered and left at the site. ERI will coordinate with Tosco for the soil to either be treated on site or removed to an appropriate disposal or recycling facility.

Monitoring Well Construction

Monitoring wells will be constructed in borings using thread-jointed, 2-inch inner diameter, Schedule 40 polyvinyl chloride (PVC) casing. No chemical cements, glues, or solvents will be used in well construction. The screened portion of each well will consist of factory-perforated casing with 0.010-inch wide slots. If unconfined aquifer conditions exist, the well screen will be installed from the total depth of each well to approximately 5 feet above the uppermost water-bearing unit. If confined conditions exist, the uppermost water-bearing unit will be screened exclusively. Unperforated casing will be installed from the top of each screen to the ground surface. The annular space in the well will be packed with number 2/12 sand to approximately one foot above the slotted interval and a surged and refilled bentonite plug will be added above the sand pack to prevent cement from entering the well pack. The remaining annulus will be backfilled to grade with a slurry of cement and bentonite powder.

The monitoring wells will be protected with a locking cap and a traffic-rated, cast-aluminum utility box equipped with a PVC skirt. The box has a watertight seal to protect against surface-water infiltration and must be opened with a special wrench. The design of this box discourages vandalism and reduces the possibility of accidental disturbance of the well.

Well Development and Sampling

ERI will wait a minimum of 24 hours before development of the monitoring wells to allow the grout to set. Initially, a water sample will be collected for subjective analysis before development of the monitoring wells. This sample will be collected from near the water surface in the well with a new disposable Teflon® bailer. The wells will be developed with a surge block and pump. Well development will continue until the discharge water is clear of silt and sand. Clay-size sediments derived from the screened portion of the formation cannot be eliminated by well development. After the well has been allowed to stabilize, the well will be checked for separate phase hydrocarbons using an interface probe. The thickness of any free-phase hydrocarbons detected in the well will be recorded. If free-phase hydrocarbons are encountered in the well, the well will not be purged, and the water will not be sampled for chemical analysis.

If no free-phase hydrocarbons are detected after development, the well will be purged of stagnant water and a sample will be collected for laboratory analysis. The well will be purged of approximately three to five well volumes of water with a submersible pump, or until pH, conductivity, and temperature of the purged water have stabilized. Water purged from the wells will be stored in labeled, 55-gallon, steel drums approved for this use by the Department of Transportation until suitable disposal or recycling options can be selected based on laboratory analysis. ERI will coordinate with Tosco for disposal or recycling of the purged water.

The wells will be allowed to recover to at least 80 percent of static conditions, and a sample of the formation water will be collected with a Teflon® bailer cleaned with a laboratory-grade detergent and deionized water. The water will be transferred slowly from the bailer to laboratory-cleaned, 1 liter

amber bottles and 40-milliliter glass vials for analyses by the laboratory. The glass vials will contain hydrochloric acid as a preservative. The sampler will check to see if headspace is present. If headspace is present, the sampler will collect more samples until none is present. Chain of Custody Records will be initiated in the field by the sampler, updated throughout handling of the samples, and sent along with the samples to the laboratory. Copies of Chain of Custody Records will be included in our final report.

Gradient Evaluation

ERI will evaluate the direction of flow and gradient at the site. The elevation of the top of each well casing will be measured relative to mean sea level by a licensed land surveyor. Water-depth measurements will be made from the top of the casing in the well to the nearest 0.01 foot with an electronic water-level indicator. The well will be vented to atmosphere for a minimum of 0.5 to 1 hour before obtaining depth-to-water measurements. Venting is conducted to allow the groundwater to equilibrate with barometric pressure. These data will be combined to evaluate the relative elevation of the groundwater surface in each well and the slope of the groundwater surface across the site.

Quality Assurance/Quality Control

The sampling and analysis procedures employed by ERI for groundwater monitoring and sampling follow regulatory guidance documents for quality assurance/quality control (QA/QC). Quality control is maintained by site-specific field protocols and quality control checks performed by the laboratory. Laboratory and field handling of samples may be monitored by including QC samples for analysis. QC samples may include any combination of the following. The number and types of QC samples are selected and analyzed on a project-specific basis.

Trip Blanks - Trip blanks are sent to the project site, and travel with samples collected from the project site to the laboratory. They are not opened, and are returned from the project site with the samples for analysis.

Field Blank - Prepared in the field using organic-free water. Field blanks accompany samples collected at the project site to the laboratory and are analyzed periodically for specific chemical compounds present at the project site where they were prepared.

Duplicates - Duplicate samples are collected from a selected well and project site. They are analyzed at two different laboratories, or at the same laboratory under different labels.

Equipment Blank - Periodic QC samples are collected from field equipment rinsate to verify adequate cleaning procedures.