August 18, 1995

ENV - STUDIES, SURVEYS & REPORTS
Former Texaco Service Station
1127 Lincoln Avenue, Alameda, CA
EBMUD Account No. 502-74621

Ms. Juliet Shin
Alameda County
Hazardous Materials
1131 Harbor Bay Pky
Alameda, CA 94502-6577

7/25/95

Dear Ms. Shin:

Enclosed is the *Additional Soil and Groundwater Site Assessment Report*, dated August 25, 1995, for the subject site. As the report clearly shows, and in response to your written concerns, the sewer and utility trenches are not a potential conduit of contamination eminating from the subject site.

Any questions regarding this report may be directed to me at (510) 236-9139.

Best Regards,

Karen E. Petryna
Project Coordinator
Texaco Environmental Services

KEP:eg
P:\EG\KEPCVRS\1127ASGR.CVR

Enclosure

cc: Mr. Tim Ross
Kaprealian Engineering Inc.
2401 Stanwell Dr., Suite 400
Concord, CA 94520

RAOFile-UCPFile (w/enclosure) RRZielinski (w/o enclosure)

PR RD

ENVIRONMENTAL

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ADDITIONAL SOIL AND GROUNDWATER ASSESSMENT REPORT
FORMER TEXACO SERVICE STATION
1127 LINCOLN AVENUE
ALAMEDA, CALIFORNIA

GTI Project 020200049

July 25, 1995

Prepared for:
Ms. Karen Petryna
Texaco Environmental Services
108 Cutting Boulevard
Richmond, California 94804

Groundwater Technology, Inc.
Submitted by:

Michael A. Chamberlain
Project Manager

Groundwater Technology, Inc.
Approved by:

Ed Simonis, R.G.
Senior Geologist

For:
Wendell W. Lattz
Vice President, General Manager
West Region

REGISTERED GEOLOGIST
EDVARDAS (ED) K. SIMONIS
No 4422
STATE OF CALIFORNIA

20200049.AR

GROUNDWATER TECHNOLOGY

Figures

Tables

Appendixes

1.0 INTRODUCTION

This report summarizes the environmental assessment work conducted by Groundwater Technology, Inc. (Groundwater Technology) at the Former Texaco Service Station located at 1127 Lincoln Avenue in Alameda, California (figure 1). The *Work Plan to Perform a Core-Hole Program and Install Two Groundwater Monitoring Wells* (RESNA, February 22, 1994) presented the general scope of the work performed. An *Addendum to the Work Plan* (Texaco Environmental Services, August 1, 1994) addressed comments received from Alameda County Health Care Services Agency (ACHCSA) in letters dated March 15, June 6, and July 21, 1994. The purpose of the work was to evaluate the lateral and vertical extent of petroleum hydrocarbons in the soil and groundwater offsite. The assessment performed during February and May 1995 included: drilling nine borings using direct penetration technology, using hollow-stem augers to drill and install three 4-inch-diameter groundwater monitoring wells (MW-9 through MW-11), collecting soil and groundwater samples, analyzing the collected samples, scheduling a professional well elevation/location survey, researching the sanitary sewer and storm drain beneath Bay Street, evaluating the data, and preparing this report.

2.0 BACKGROUND

The site is located in the City of Alameda in western Alameda County, California, on the northwest corner of the intersection of Lincoln Avenue and Bay Street (figure 2). The site is in a combined commercial and residential area. A plant nursery borders the site on the west, residential property borders the site to the north, and commercial and residential properties border the site across Lincoln Avenue and Bay Street to the south and east (RESNA, February 22, 1994). The site is currently an operating auto repair facility.

The site was an operating Texaco service station from 1931 to 1985, during which time underground storage tanks (USTs) had been removed and replaced. Existing records do not indicate the exact date or specifics concerning the USTs. During September 1989, four gasoline USTs and one waste oil UST were removed. Analytical results of soil samples from the UST excavation indicated concentrations of total petroleum hydrocarbons-as-gasoline (TPH-g) up to 6,200 parts per million (ppm). Work has been performed to investigate the extent of petroleum hydrocarbons in the soil and groundwater at the site. In March 1991, RESNA (formerly Applied Geosystems) drilled and sampled 13 soil borings, and installed 8 groundwater monitoring wells (MW-1 through MW-8) and 5 vapor extraction wells (VW-1 through VW-5). Quarterly groundwater monitoring was initiated by RESNA at the request of TES in August 1991 (Request for Bid, Additional Soil and Groundwater Assessment Investigation, October 31, 1994).

In March 1992, RESNA performed a vapor extraction test (VET). In the third quarter 1993, CEECON installed, and began operating, a vapor extraction system (VES) from five wells (VW-1 through VW-5), and a groundwater extraction system from three combination vapor/groundwater extraction wells (MW-1, MW-2, and MW-5). Effluent gases were treated using an internal combustion (I.C.) engine system. By March 1994, due to the decrease in effluent vapor concentrations, the I.C. engine system was replaced with a regenerative blower/two carbon canister system. Both VES and groundwater treatment systems are currently in operation at the site.

The site is located on Alameda Island approximately 0.5 mile west of the Inner Harbor and approximately 0.75 mile east of San Francisco Bay. Surface elevation at the site is approximately 5 feet above mean sea level. Surficial deposits on the island consist of Quaternary dune sand and artificial fill. Due to the heterogeneous nature of the artificial fill, groundwater flow direction and gradient in the shallow water-bearing zone tend to be variable

3.0 WORK SCOPE

3.1 Site-Specific *Health and Safety Plan* and Permits

Groundwater Technology prepared a site-specific *Health and Safety Plan* required by the Occupational Health and Safety Administration Standard Hazardous Waste Operations and Emergency Response guidelines (29 CFR 1910.120). The site-specific *Health and Safety Plan* was prepared after a review of site conditions and existing available site-specific health and safety plans for the site. The *Health and Safety Plan* was reviewed and signed by Groundwater Technology personnel and subcontractors before beginning work at the site.

Groundwater Technology personnel reviewed site history and information with TES representatives before beginning work at the site. A drilling permit application to install nine soil borings was approved by Mr. Wyman Hong of the Alameda County Zone 7 Water Agency on January 24, 1995. A City of Alameda Application For Permit To Excavate In The Right of Way of The City of Alameda was approved by Mr. William Mary on January 18, 1995. Encroachment permits were issued by the City of Alameda Engineering Office on January 31, 1995 Copies of the permits are included in appendix A

Before the installation of the three monitoring wells (MW-9 through MW-11), Groundwater Technology personnel reviewed the data from the recently drilled soil borings, and discussed site information with TES representatives A drilling permit application to install three groundwater

monitoring wells was approved by Mr. Wyman Hong of the Alameda County Zone 7 Water Agency on May 5, 1995. Excavation permits and encroachment permits were issued by the City of Alameda on May 8, 1995. Copies of the permits are included in appendix A.

3.2 Soil Borings

On February 7, 1995, Groundwater Technology supervised the drilling of nine soil borings (B-1 through B-9) using direct penetration technology (DPT) (figure 2). A Groundwater Technology field geologist, under the supervision of a California registered geologist, logged the materials encountered during drilling of the soil borings using the Unified Soil Classification System. Drilling was completed on February 7, 1995. Soil borings B1 through B9 were constructed to depths of approximately 5 to 12 feet below surface grade (BSG). After soil and groundwater samples were collected, the soil borings were immediately abandoned by backfilling with a bentonite cement grout mixture using the tremie pipe method.

On May 17 and 18, 1995, Groundwater Technology supervised the drilling of three soil borings, MW-9 through MW-11, using a limited access drilling rig equipped with a hollow stem auger system. A Groundwater Technology field geologist, under the supervision of a California registered geologist, logged the materials encountered during drilling of the soil borings using the Unified Soil Classification System. Monitoring wells MW-9 through MW-11 were constructed to depths of approximately 15 feet BSG.

Water, generated during the steam cleaning of the DPT equipment and hollow stem augers during drilling of the soil borings and monitoring wells, was stored in labeled 55-gallon drums pending characterization and disposal. No soil cuttings were generated using the DPT equipment. The soil cuttings generated during the drilling of the monitoring wells were placed into 55-gallon drums at the site due to limited space. Soil cuttings were then characterized, profiled, and transported to a local landfill on June 14, 1995. Water generated from steam cleaning the drilling equipment, purging, and sampling activities was pumped through the water treatment system at the site on June 13, 1995.

3.3 Soil Sampling

On February 7, 1995, soil samples were collected from soil borings B-1 through B-9 from approximately 3 to 10 feet BSG Soil samples were collected using a 2-inch-diameter polyethylene terephthalate glycol sample tube. Soil samples were sealed with teflon, capped, taped, labeled, placed on ice in an insulated container, and delivered to a California-certified laboratory on February 8 1995 Soil sampling was performed according to Groundwater Technology Standard

Operating Procedures (SOPs), which are included in appendix B. Soil samples collected from soil borings B-1 through B-9 were analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX), and TPH-g using Environmental Protection Agency (EPA) Methods 5030/8020/modified 8015.

On May 17 and 18, 1995, soil samples were collected from the soil borings for monitoring wells MW-9 through MW-11 from approximately 5 and 10 feet BSG. Soil samples were collected using a split-spoon sampler, lined with three 2-inch diameter by 6-inch-long brass sample tubes. At each sample point, the sampler was driven 18 inches ahead of the hollow-stem augers into undisturbed soil. Soil samples were sealed with teflon, capped, taped, labeled, placed on ice in an insulated container, and delivered to a California-certified laboratory on May 19, 1995. Soil sampling was performed according to Groundwater Technology SOPs (appendix B). Soil samples collected from monitoring wells MW-9 through MW-11 were analyzed for BTEX and TPH-g using EPA Methods 5030/8020/modified 8015.

3.4 Monitoring Well Installation

Monitoring wells MW-9 through MW-11 were constructed of approximately 3.5 feet of 4-inch-diameter, Schedule 40 PVC blank casing and 11 feet of 0.02-inch-slot well screen. A sand pack of No. 3 sand was placed into the annulus of the wells to approximately 0.5 foot above the slotted screen interval. A bentonite seal of approximately 0.5 foot was placed on top of the sand pack. A concrete sanitary seal was then placed into the annular space of the monitoring wells from approximately 3 feet BSG to surface grade. The well heads were secured with compression type locking caps and protected with a waterproof traffic-rated road boxes.

3.5 Monitoring Well Development

On May 19, 1995, monitoring wells MW-9 through MW-11 were developed by surging groundwater using a PVC bailer. Well development promotes a uniform sand filter pack, removes fine-grain sediments from the well screen and filter pack, and improves the hydraulic communication between the well and aquifer. The groundwater from the monitoring wells was bailed until the fine-grain sediments were removed. During development activities on May 19, 1995, approximately 9, 6, and 10 well volumes of water were removed from monitoring wells MW-9, MW-10, and MW-11, respectively. Purge data field sheets are presented in appendix C.

3.6 Groundwater Monitoring

On May 22, 1995, groundwater monitoring wells MW-3, MW-4, and MW-6 through MW-11 were monitored to measure the depth to groundwater and the thickness of separate phase hydrocarbons, if present. The water levels were measured using a well monitoring system consisting of a dual optical sensor and an electrical conductivity probe that distinguishes between water and petroleum products.

3.7 Groundwater Sampling

On February 7, 1995, groundwater samples were collected from soil borings B-1 through B-9. Water samples were collected using a stainless steel bailer. Each sample was labeled, placed on ice in an insulated container, and delivered to a California-certified laboratory. Groundwater sampling was performed according to Groundwater Technology SOPs (appendix B). Groundwater samples collected from soil borings B-1 through B-9 were analyzed for BTEX and TPH-g using EPA Methods 5030/8020/modified 8015.

On May 22, 1995, groundwater monitoring wells MW-9 through MW-11 were purged before sample collection. The monitoring wells became dry at approximately two well volumes. Groundwater sampling was performed according to Groundwater Technology SOPs. Groundwater samples collected from monitoring wells MW-9 through MW-11 were analyzed for BTEX and TPH-g using EPA Methods 5030/8020/modified 8015.

3.8 Monitoring Well Elevation Survey

On June 9, 1995, monitoring wells MW-9 through MW-11 were professionally surveyed for elevation relative to mean sea level using known monitoring well elevations previously surveyed at the site.

3.9 Underground Utilities

The City of Alameda Engineering Department was contacted for information regarding the location and position of the underground utility conduits, if any, beneath Bay Street. The locations of the utilities' conduits could provide information necessary to help determine the hydrologic effects of groundwater transportation across and downgradient beneath Bay Street

4.0 SITE CONDITIONS

4.1 Analytical Results of Soil Samples

The results of the soil analyses are summarized in table 1, and laboratory reports are included in appendix C. Laboratory analytical results of soil samples collected from soil borings B-1 through B-9 on February 7, 1995, indicated TPH-g and BTEX concentrations below the MDLs with the exception of the soil samples collected at 10 feet BSG in soil boring B-1 which contained 0.018 ppm xylenes.

Laboratory analytical results of soil samples collected from soil borings for monitoring wells MW-9 through MW-11 on May 17 and 18, 1995, indicated TPH-g and BTEX concentrations below the MDLs.

4.2 Analytical Results of Groundwater Samples

The results of the groundwater analyses are summarized in table 2, and laboratory reports are included in appendix C. Laboratory analytical results of groundwater samples collected from soil boring B-1 on February 7, 1995, indicated benzene and TPH-g concentrations at 11 parts per billion (ppb) and 4,400 ppb, respectively. Groundwater samples collected from soil boring B-8 contained 90 ppb TPH-g.

Groundwater samples collected from monitoring wells MW-9 through MW-11 on May 22, 1995, did not contain TPH-g and benzene concentrations above the MDLs.

4.3 Monitoring Well Elevation Survey and Geology

Monitoring well elevation survey results are presented in table 1. Copies of the field report is included in appendix C.

The materials encountered during drilling of soil borings B-1 through B-9 and MW-9, MW-10, and MW-11 consisted mainly of silty and clayey sands Groundwater levels encountered during drilling activities ranged from three to six feet BSG. Soil boring logs are presented in appendix D.

4.4 Hydrogeology

Groundwater levels measured on May 22, 1995, ranged from 4.10 feet below grade in monitoring well MW-11 to 8.67 feet below grade in monitoring well MW-6. A potentiometric surface map was prepared using the water-level data collected on May 22, 1995 and the well elevation survey data (figure 7). Figure 7 shows an irregular northerly groundwater flow direction with a gradient varying between 0.02 and 0.006 foot per foot. Groundwater-level data are presented in table 2.

4.5 Underground Utility Locations

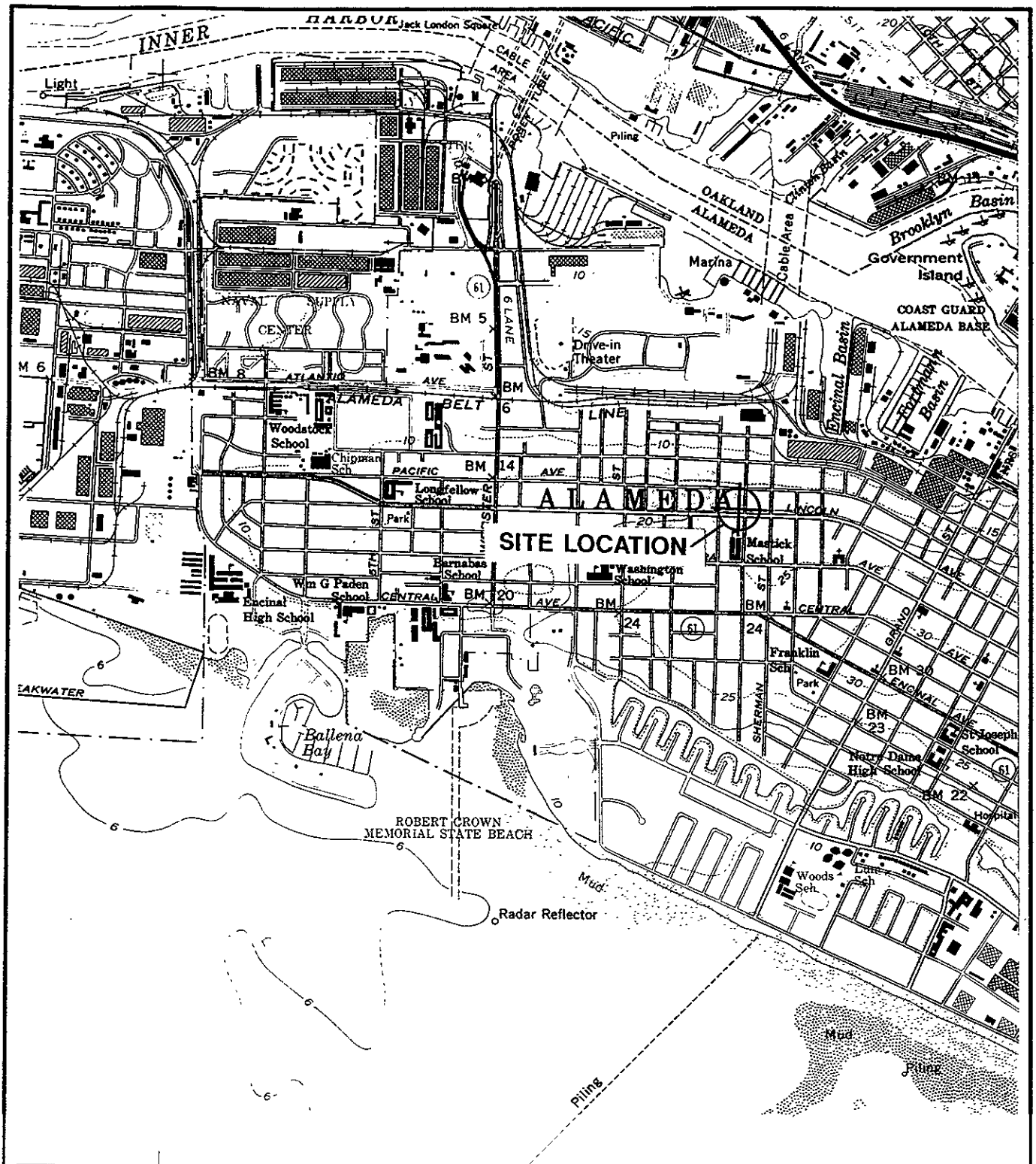
The City of Alameda Engineering Department supplied underground utility location maps of the sanitary sewer and storm drain lines (appendix E). There is an 8-inch diameter, clay sanitary sewer line running north to south approximately 8.79 to 8.81 feet beneath the middle of Bay Street between Lincoln and Pacific Avenues. On May 22, 1995, depth to groundwater in monitoring wells MW-6, MW-3, and MW-8 was 8.67, 8.54, and 7.81 feet below grade, respectively. The map of the storm drain lines indicates there are no storm drain lines beneath Bay Street between Lincoln and Pacific Avenues.

5.0 SUMMARY

- On February 7, and May 17 and 18, 1995, Groundwater Technology supervised the drilling of 12 soil borings for the collection of soil and groundwater samples. Three soil borings were converted into groundwater monitoring wells (MW-9, MW-10, and MW-11).
- Analytical results of the soil samples collected during drilling activities indicated only the sample collected at 10 feet below grade in soil boring B1 had been impacted by petroleum hydrocarbons. Analytical results of soil samples collected from soil boring B1 indicated a total xylene concentration at 0.018 ppm.
- Analytical results of the groundwater samples indicated TPH-g and benzene concentrations below the MDLs with the exception of the samples collected from soil borings B1 and B8 on February 7, 1995. Analytical results of groundwater samples collected from B1 indicated TPH-g and benzene concentrations at 4,400 ppb and 11 ppb, respectively. Groundwater samples collected from B8 indicated 90 ppb TPH-g.

FIGURES

1. Site Location Map
2. Site Plan
3. Potentiometric Surface Map (May 22, 1995)



GROUNDWATER TECHNOLOGY

SOURCE: U.S.G.S. 7.5' QUAD SHEET
OAKLAND WEST, CALIFORNIA
PHOTOREVISED 1980

N

SCALE: 0 FEET 2000

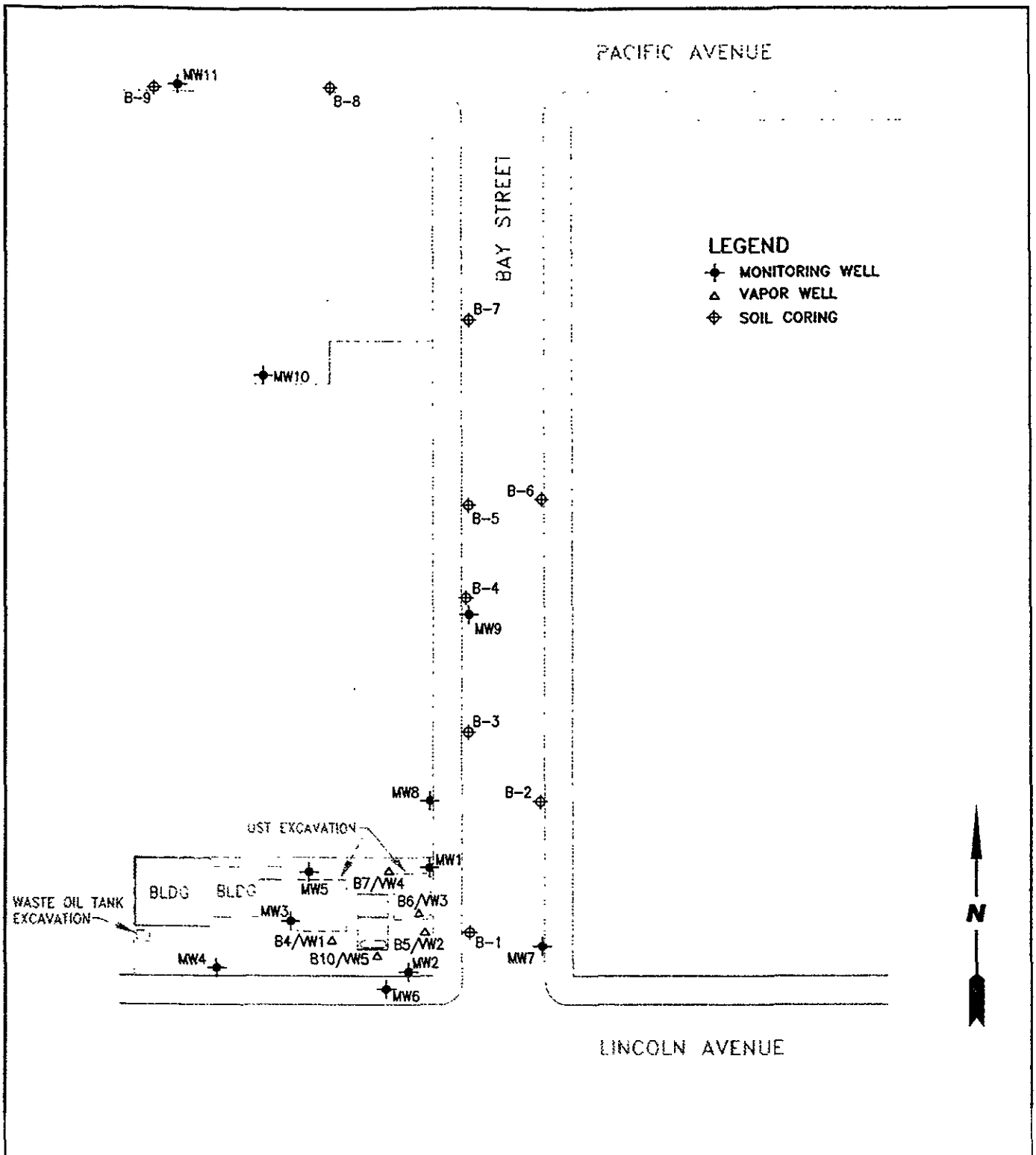
SITE LOCATION MAP

CLIENT: TEXACO REFINING & MARKETING INC.

DATE: 3/29/95

LOCATION: 1127 LINCOLN AVENUE
ALAMEDA, CALIFORNIA

FIGURE: 1

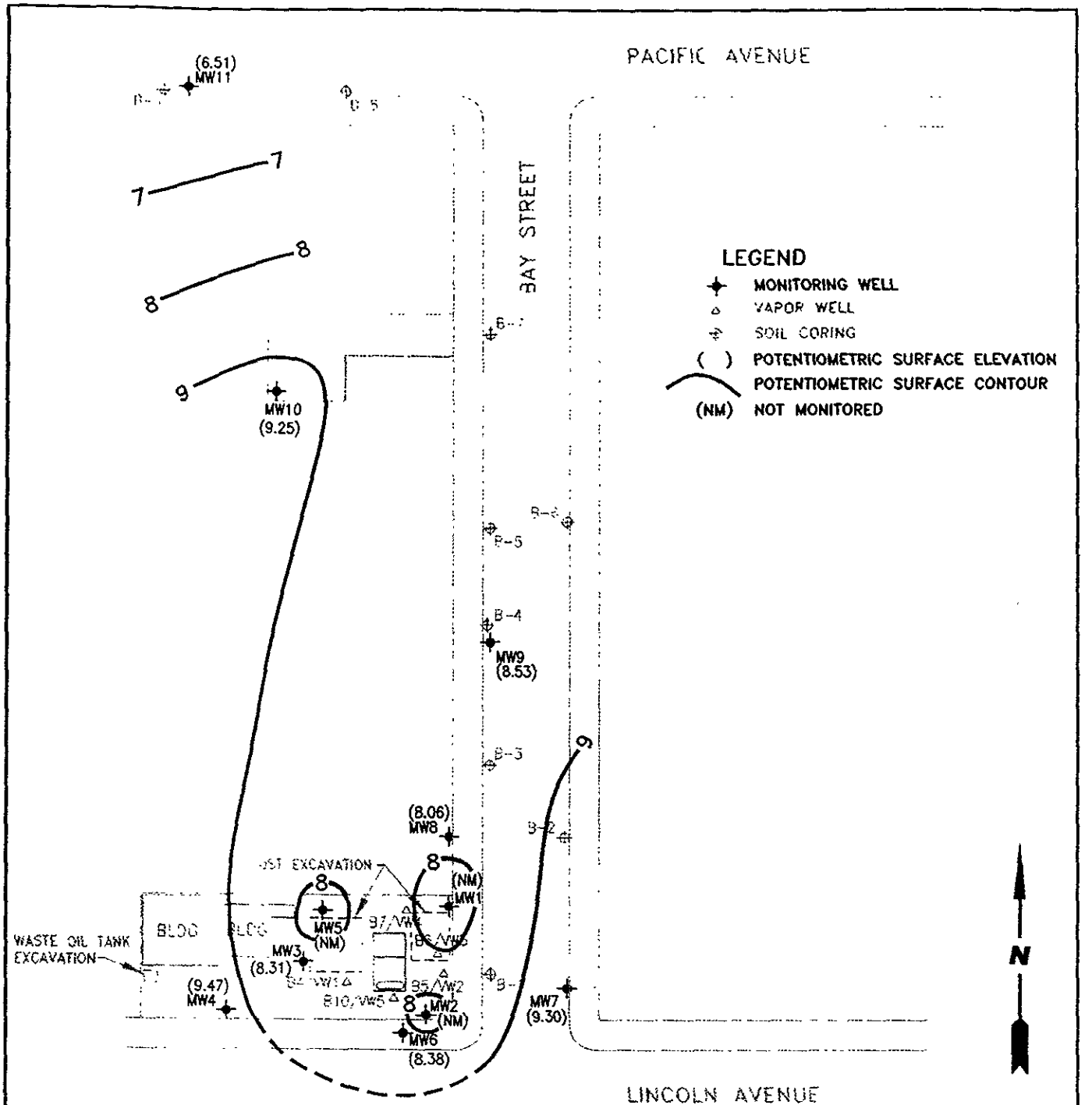


GROUNDWATER TECHNOLOGY

0 FEET 60
SCALE

SITE PLAN

CLIENT: TEXACO REFINING & MARKETING, INC.	FILE: SP695	PROJECT NO: 020200049	PM	RG/PE
LOCATION: 1127 LINCOLN AVENUE ALAMEDA, CALIFORNIA	REV: 1		FIGURE: 2	
	DES: TW	DET: ML	DATE: 6/14/95	



GROUNDWATER TECHNOLOGY

0 FEET 60
SCALE

POTENTIOMETRIC SURFACE MAP (5/22/95)

CLIENT: TEXACO REFINING & MARKETING, INC.	FILE: PSM52295/SP695	PROJECT NO: 020200049	PM	RG/PE
LOCATION: 1127 LINCOLN AVENUE ALAMEDA, CALIFORNIA	REV: 1			FIGURE: 3
	DES: TW	DET: ML	DATE: 7/17/95	

TABLES

TABLE 1
Analytical Results of Soil Samples
Former Texaco Service Station
1127 Lincoln Avenue, Alameda, California
(parts per million)

Date	Sample ID	Sample Depth (ft)	Benzene	Toluene	Ethyl benzene	Total Xylenes	TPH-g
02/07/95	B1/5	5	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B1/10	10	<0.005	<0.005	<0.005	0.018	<1
02/07/95	B2/4	4	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B2/10	10	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B3/5	5	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B3/10	10	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B4/5	5	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B5/3	3	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B6/3	3	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B7/3	3	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B8/3	3	<0.005	<0.005	<0.005	<0.005	<1
02/07/95	B9/3	3	<0.005	<0.005	<0.005	<0.005	<1
05/17/95	MW-9-5	5	<0.005	<0.005	<0.005	<0.005	<1
05/17/95	MW-9-15	15	<0.005	<0.005	<0.005	<0.005	<1
05/17/95	MW-10-5	5	<0.005	<0.005	<0.005	<0.005	<1
05/17/95	MW-10-15	15	<0.005	<0.005	<0.005	<0.005	<1
05/18/95	MW-11-5	5	<0.005	<0.005	<0.005	<0.005	<1
05/18/95	MW-11-15	15	<0.005	<0.005	<0.005	<0.005	<1

ft = feet
TPH-g = Total Petroleum Hydrocarbons as gasoline

TABLE 2
Monitoring Data and Analytical
Results of Groundwater Samples
Former Texaco Service Station
1127 Lincoln Avenue, Alameda, California
(parts per billion)

Well ID	Date	TOC Elevation (msl)	Benzene	Toluene	Ethyl benzene	Total Xylenes	TPH-g	DTW (ft)	SPT (ft)	GWE (ft)
B1	02/07/95	--	11	95	130	710	4,400	--	--	--
B2	02/07/95	--	<0.5	<0.5	<0.5	4.3	<50	--	--	--
B3	02/07/95	--	<0.5	3.2	<0.5	<0.5	<50	--	--	--
B4	02/07/95	--	<0.5	<0.5	<0.5	<0.5	<50	--	--	--
B5	02/07/95	--	<0.5	0.67	<0.5	0.64	<50	--	--	--
B6	02/07/95	--	<0.5	<0.5	<0.5	3.7	<50	--	--	--
B7	02/07/95	--	<0.5	<0.5	<0.5	0.65	<50	--	--	--
B8	02/07/95	--	<0.5	<0.5	<0.5	7.2	90	--	--	--
B9	02/07/95	--	<0.5	<0.5	<0.5	0.80	<50	--	--	--
MW-1	05/22/95	16.14	--	--	--	--	--	--	--	--
MW-2	05/22/95	16.84	--	--	--	--	--	--	--	--
MW-3	05/22/95	16.85	--	--	--	--	--	8.54	0.00	8.31
MW-4	05/22/95	17.13	--	--	--	--	--	7.66	0.00	9.47
MW-5	05/22/95	15.58	--	--	--	--	--	--	0.00	--
MW-6	05/22/95	17.05	--	--	--	--	--	8.67	0.00	8.38
MW-7	05/22/95	16.65	--	--	--	--	--	7.35	0.00	9.30
MW-8	05/22/95	15.87	--	--	--	--	--	7.81	0.00	8.06
MW-9	05/22/95	14.44	<0.5	<0.5	<0.5	<0.5	<50	5.91	0.00	8.53
MW-10	05/22/95	15.04	0.50	<0.5	<0.5	1.2	<50	5.79	0.00	9.25
MW-11	05/22/95	10.61	<0.5	<0.5	<0.5	<0.5	<50	4.10	0.00	6.51

TOC = top of casing
msl = mean sea level
TPH-g = total petroleum hydrocarbons-as-gasoline
DTW = depth to water
SPT = separate-phase hydrocarbon thickness
GWE = groundwater elevation
ft = feet

APPENDIX A

Well Installation Permits

ZONE 7 WATER AGENCY

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

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Former Texaco Service Station
1127 Lincoln Avenue
Alameda, California

CLIENT
Name Texaco Environmental Services
Address 108 Cutting Blvd. Phone (510) 236-9439
City Richmond, CA Zip 94804

APPLICANT
Name Groundwater Technology Inc.
Address 4057 Port Chicago Phone (510) 671-2387
City Concord, CA Zip 94520

TYPE OF PROJECT

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

PROPOSED WATER SUPPLY WELL USE
Domestic — Industrial — Other None
Municipal — Irrigation —

DRILLING METHOD:
Mud Rotary — Air Rotary — Auger —
Cable — Other Geoprobe

DRILLER'S LICENSE NO. C-57 624461 (Artesian Environmental)

WELL PROJECTS
Drill Hole Diameter — in. Maximum
Casing Diameter — in. Depth — ft.
Surface Seal Depth — ft. Number —

GEOTECHNICAL PROJECTS
Number of Borings 9 Maximum
Hole Diameter 2 in. Depth 10 ft.

ESTIMATED STARTING DATE January 30, 1995
ESTIMATED COMPLETION DATE February 13, 1995

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

APPLICANT'S SIGNATURE [signature]

FOR OFFICE USE

PERMIT NUMBER 95020
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

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

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

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

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 24 Jan 95
Wyman Hong

CITY OF ALAMEDA
CENTRAL PERMIT OFFICE

2263 SANTA CLARA AVE., ROOM 204
ALAMEDA, CA 94501

748 - 4500
~~415-522-4100~~

APPLICATION FOR PERMIT TO EXCAVATE IN THE RIGHT-OF-WAY OF THE CITY OF ALAMEDA

_____ SERVICE NUMBER

DATE JANUARY 17 19 95

Application is hereby made for a permit to excavate on the Southwest corner / west side of Pacific Avenue Ave. St. and west side of Bay Street between Pacific Ave & Lincoln Ave. feet _____ of

Please see attached map./ Borings are 2" diameter by 10ft deep. Will be backed filled with concrete/bentonite mixture.

House No. _____ Owner See attached map.

For the purpose of soil and groundwater environmental investigation. Nine soil borings are 2" diameter / 10 feet deep.

Name of Applicant Tim Watchers c/o Groundwater Technology, Inc Address 4057 Port Chicago Highway Concord, CA 94520

Phone (510) 671-2387 ext. 255

☐ VERBAL APPROVAL
Date _____
By _____
Reasons: _____

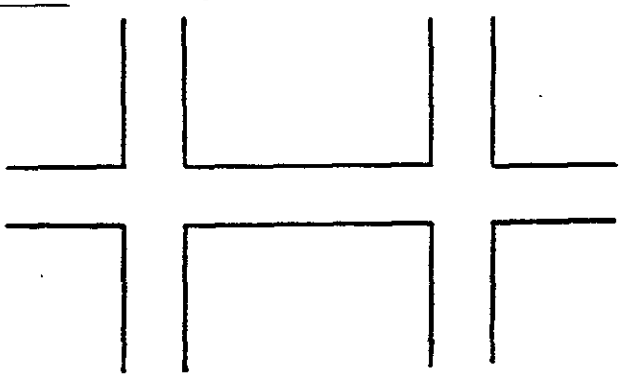


Diagram of Proposed Work

FOR OFFICE USE ONLY

This permit to be Inspected by ☑ ENGINEERING DIVISION ☐ MAINTENANCE DIVISION

☑ ALL STRIPING, PAINTED GRAPHICS AND PAVEMENT MARKERS DAMAGED OR DESTROYED BY STREET EXCAVATION WORK ARE TO BE RESTORED BY THE PERMITEE.

☑ ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY MUST HAVE BARRICADES WITH FLASHERS FOR NIGHT TIME PROTECTION.

☐ ALL WORK INVOLVED IS TO BE DONE IN ACCORDANCE WITH STANDARD CITY OF ALAMEDA SPECIFICATIONS AND CITY OF ALAMEDA PRACTICES ALL TO THE SATISFACTION OF THE CITY ENGINEER. INSPECTION CHARGES SHALL BE PAID TO THE CITY MONTHLY. ACCEPTANCE OF THIS PERMIT CONSTITUTES ACCEPTANCE OF THE CONDITIONS INCLUDED.

Tim Watchers — SIGNATURE — 1/18/95 DATE

☐ CONCRETE PERMIT REQUIRED

☐ NO OPEN TRENCH CUTTING

☐ STATE PERMIT REQUIRED — CLEAR — SIGNATURE — DATE

☐ SPECIAL CONDITIONS _____

RECEIVED DATE 1-19-95 SIGNED Paul S Moore

APPROVAL DATE 1/19/95 SIGNED _____

ISSUED DATE 1-23-95 SIGNED Paul S Moore

PERMIT # 95-0003

74[illegible]

CITY OF ALAMEDA — ENCROACHMENT PERM — Permit No: EN95-004

ENGINEERING OFFICE — STATUS: APPROVED

2263 Santa Clara Ave. Room 207 — Applied : 01/31/95

Alameda, CA 94501 748-4614 or 748-4518 — Approved : 01/31/95

JOB ADDRESS : 1132 LINCOLN AVE
Parcel number : 072 -0376-012-00
OWNER : PAGANO LEO & MARIA TRS
1134 FOUNTAIN ST
ALAMEDA CA 94501
APPLICANT : TIM WATCHERS
[illegible] HIGHWAY
CONCORD, CA 94520
[illegible]

HOURS OF CONSTRUCTION
MONDAY - FRIDAY 7 A.M. TO 7 P.M.
SATURDAY & SUNDAY 8 A.M. TO 5 P.M.

T. Watchers 1/31/95
Signature
Date

Repair Order # : 9 NON-METERED SPC. 9 SIGNS
Project Desc : 9 NON-METERED SPC. 9 SIGNS

Fee description	Units	Fee Unit	Ext fee	Data
- NON-METERED SPACES	18.00		18.00	
"NO PARKING" SIGNS	18.00		18.00	

*** Fees Required *** — *** Fees Collected & Credits ***

Account No.	Receipt No.	Date	Payment
001-300-4210-3341	R9500400	01/31/95	18.00
001-300-4210-3341	R9500400	01/31/95	18.00
TOTAL THIS DATE		*********	36.00

Fees:	36.00		
Adjustments:	.00	Total Credits:	.00
Total Fees:	36.00	Total Payments:	36.00
		Balance Due:	.00

FORMS MUST BE INSPECTED PRIOR TO CONCRETE POUR.
CALL 748-4614 OR 748-4518 FOR INSPECTION.
==

NOTE: ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY MUST HAVE BARRICADES WITH FLASHERS FOR NIGHT TIME PROTECTION.
Contractor's "NAME AND DATE" to be impressed in all concrete work.

THIS IS TO CERTIFY THAT THE ABOVE WORK HAS BEEN COMPLETED TO MY SATISFACTION AND APPROVAL

Date ____________ ______________________________
INSPECTOR

CALL 748-4614 OR 748-4518 FOR INSPECTION FOR FORMS AND AFTER COMPLETION. INSPECTION MUST BE MADE BEFORE DEPOSIT CAN BE PROCESSED FOR REFUND. REFUNDS TAKE 3 WEEKS AFTER FINAL INSPECTION.

ZONE 7 WATER AGENCY

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

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Former Texaco Service Station
1127 Lincoln Avenue
Alameda, CA

CLIENT
Name Texaco Environmental Services
Address 108 Cutting Blvd Voice (510) ~~232~~ 236-9139
City Richmond, CA Zip 94804

APPLICANT
Name Groundwater Technology Inc. Fax (510) 685-9148
Address 4057 Port Chicago Voice (510) 671-2387
City Concord CA Zip 94520

TYPE OF PROJECT

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

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

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

DRILLER'S LICENSE NO. 554979

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 4 in. Depth 10-12 ft.
Surface Seal Depth 2-3 ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings — Maximum
Hole Diameter — in. Depth — ft.

ESTIMATED STARTING DATE MAY 15
ESTIMATED COMPLETION DATE June 15

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

APPLICANT'S SIGNATURE L. Watcher Date 4/27/95

FOR OFFICE USE

PERMIT NUMBER 95282
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

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

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

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

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 5 May 95
Wyman Hong

91992

CITY OF ALAMEDA
CENTRAL PERMIT OFFICE
2263 SANTA CLARA AVE., ROOM 204
ALAMEDA, CA 94501

415-522-4100

APPLICATION FOR PERMIT TO EXCAVATE IN THE RIGHT-OF-WAY OF THE CITY OF ALAMEDA

_____ SERVICE NUMBER

DATE MAY 5 19 95

Application is hereby made for a permit to excavate on the west side / South Side side of Bay St. / Pacific Ave. St. @ 210' / 114' feet South of Pacific/west of Bay St of (Please see enclosed map.)

House No. _____ Owner _____

For the purpose of Soil and groundwater investigation

Name of Applicant Tim Watchers Address 4057 Port Chicago Hwy Concord, CA

Phone (510) 671 2387

☐ VERBAL APPROVAL
Date _____
By _____
Reasons: _____

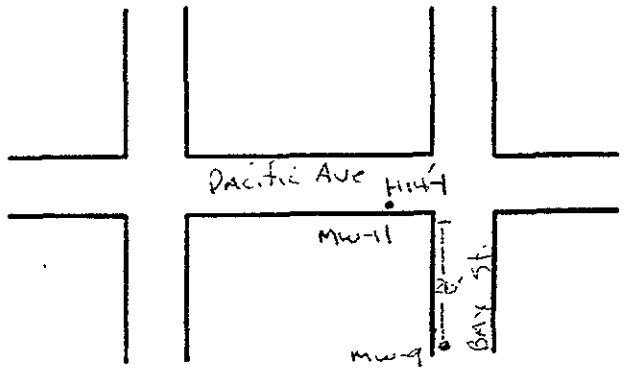


Diagram of Proposed Work

FOR OFFICE USE ONLY

This permit to be Inspected by ☒ ENGINEERING DIVISION ☐ MAINTENANCE DIVISION

☒ ALL STRIPING, PAINTED GRAPHICS AND PAVEMENT MARKERS DAMAGED OR DESTROYED BY STREET EXCAVATION WORK ARE TO BE RESTORED BY THE PERMITEE.

☒ ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY MUST HAVE BARRICADES WITH FLASHERS FOR NIGHT TIME PROTECTION.

☒ ALL WORK INVOLVED IS TO BE DONE IN ACCORDANCE WITH STANDARD CITY OF ALAMEDA SPECIFICATIONS AND CITY OF ALAMEDA PRACTICES ALL TO THE SATISFACTION OF THE CITY ENGINEER. INSPECTION CHARGES SHALL BE PAID TO THE CITY MONTHLY. ACCEPTANCE OF THIS PERMIT CONSTITUTES ACCEPTANCE OF THE CONDITIONS INCLUDED

T. Watchers 5/1/95
SIGNATURE DATE

☐ CONCRETE PERMIT REQUIRED

☐ NO OPEN TRENCH CUTTING

☐ STATE PERMIT REQUIRED

CLEAR _____ SIGNATURE _____ DATE

☐ SPECIAL CONDITIONS _____

RECEIVED DATE 5/2/95 SIGNED _____ PERMIT # 95-017

APPROVAL DATE 5/8/95 SIGNED _____

ISSUED DATE 5/8/95 SIGNED _____

CITY OF ALAMEDA
ENGINEERING OFFICE
2263 Santa Clara Ave. Room 207
Alameda, CA 94501 748-4614 or 748-4518

ENCROACHMENT PERM Permit No: EN95-030
STATUS: APPROVED
Applied : 05/08/95
Approved : 05/08/95

JOB ADDRESS : 1621 BAY ST
Parcel number : 072 -0376-006-00
OWNER : MURPHY WILLIAM H & LEA B TRS
1621 BAY ST
ALAMEDA CA 94501
APPLICANT GROUNDWATER TECHNOLOGY
4057 PORT CHICAGO HIGHWAY
CONCORD, CA 94520
415-671-2387

HOURS OF CONSTRUCTION
MONDAY - FRIDAY 7 A.M. TO 7 P.M.
SATURDAY & SUNDAY 8 A.M. TO - P.M.

L. [signature] 5/8/95

Legal Order # 1 NON-METERED SPACE 5/17 Signature
Project Desc. : 1 NON-METERED SPACE 5/17 95

Fee description	Units	Fee/Unit	Ext fee	Date
NON-METERED SPACES	2.00		2.00	
"NO PARKING" SIGNS	2.00		2.00	

*** Fees Required *** *** Fees Collected & Credits ***

Account No.	Receipt No.	Date	Payment
001-430-4210-7340	9502077	05/08/95	2.00
001-430-4210 33	9502077	05/08/95	2.00
TOTAL THIS DATE		*********	4.00

Fees:	4.00		
Adjustments:	.00	Total Credits:	.00
Total Fees:	4.00	Total Payments:	4.00
		Balance Due:	.00

FORMS MUST BE INSPECTED PRIOR TO CONCRETE POUR.
CALL 748-4614 OR 748-4518 FOR INSPECTION.

NOTE: ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY MUST HAVE BARRICADES WITH FLASHERS FOR NIGHT TIME PROTECTION.
Contractor's NAME AND DATE to be impressed in all concrete work.

THIS IS TO CERTIFY THAT THE ABOVE JOB HAS BEEN COMPLETED TO MY SATISFACTION AND APPROVAL.

Date

INSPECTOR

CALL 748-4614 OR 748-4518 FOR INSPECTION FOR FORMS AND AFTER COMPLETION. INSPECTION MUST BE MADE BEFORE DEPOSIT CAN BE PROCESSED FOR REFUND. REFUNDS TAKE 3 WEEKS AFTER FINAL INSPECTION

CITY OF ALAMEDA
ENGINEERING OFFICE
2263 Santa Clara Ave. Room 207
Alameda, CA 94501   748-4614 or 748-4518

ENCROACHMENT PERM

Permit No: EN95-029
STATUS: APPROVED
Applied : 05/08/95
Approved : 05/08/95

JOB ADDRESS : 1611 BAY ST
Parcel number : 072 -0376-009-00
OWNER : BISBEE ELVIRA J
1611 BAY ST
ALAMEDA CA 94501
APPLICANT : GROUNDWATER TECHNOLOGY
4057 PORT CHICAGO HIGHWAY
CONCORD, CA 94520
415-671-2387

HOURS OF CONSTRUCTION
MONDAY - FRIDAY 7 A.M. TO 7 P.M.
SATURDAY & SUNDAY 8 A.M. TO 5 P.M.

[signature] 5/8/95

Repair Order # : 1 NON-METERED SPACE [illegible] Signature
Project Desc. : 1 NON-METERED SPACE [illegible]

Fee description	Units	Fee/Unit	Ext fee	Date
- NON-METERED SPACES	2.00		2.00	
"NO PARKING" SIGNS	2.00		2.00	

*** Fees Required ***   *** Fees Collected & Credits ***

Account No.	Receipt No.	Date	Payment
001-300-4210-3341	P95[illegible]078	05/08/95	2.00
001-300-4210-3341	P950[illegible]78	05/08/95	2.00
TOTAL THIS DATE		*********	4.00

Fees:	4.00		
Adjustments:	.00	Total Credits:	.00
Total Fees:	4.00	Total Payments:	4.00
		Balance Due:	.00

FORMS MUST BE INSPECTED PRIOR TO CONCRETE POUR.
CALL 748-4614 OR 748-4518 FOR INSPECTION.
==

NOTE: ALL CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY MUST HAVE BARRICADES WITH FLASHERS FOR NIGHT TIME PROTECTION
Contractor's NAME AND DATE [illegible] be impressed in all concrete work.

THIS IS TO CERTIFY THAT THE ABOVE [illegible] HAS BEEN COMPLETED TO MY SATISFACTION AND APPROVAL.

Date

INSPECTOR

CALL 748-4614 OR 748-4518 FOR INSPECTION FOR FORMS AND AFTER COMPLETION. INSPECTION MUST BE MADE BEFORE DEPOSIT CAN BE PROCESSED FOR REFUND. REFUNDS TAKE 3 WEEKS AFTER FINAL INSPECTION.

APPENDIX B

Groundwater Technology's Standard Operating Procedures (SOPs)

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 8
GROUNDWATER MONITORING

Groundwater monitoring of wells at the site shall be conducted using an ORS Environmental Equipment (ORS) INTERFACE PROBE™ or SURFACE SAMPLER™. The INTERFACE PROBE™ is a hand-held, battery-operated device for measuring depth to petroleum product and depth to water as measured from an established datum (*i.e.*, top of the well casing which has been surveyed). Floating separate-phase hydrocarbon (product) thickness is then calculated by subtracting the depth to product from the depth to water. In addition, water elevations are adjusted for the presence of floating product with the following calculation:

(Product Thickness) x (0.8) + (Water Elevation) = Corrected Water Elevation

Note: The factor of 0.8 accounts for the density difference between water and petroleum hydrocarbons.

The thickness of dense non-aqueous phase liquids (DNAPLs) is calculated by subtracting the depth at which the DNAPL is encountered from the total depth of the well. Water-level elevations are not typically corrected for the presence of DNAPLs.

The INTERFACE PROBE™ consists of a dual-sensing probe which utilizes an optical liquid sensor and electrical conductivity to distinguish between water and petroleum products. A coated steel measuring tape transmits the sensor's signals to the reel assembly where an audible alarm sounds a continuous tone when the sensor is immersed in petroleum product and an oscillating tone when immersed in water. The INTERFACE PROBE™ is accurate to 0.01 inch.

A SURFACE SAMPLER™ shall be used for visual inspection of the groundwater to note sheens (difficult to detect with the INTERFACE PROBE™), odors, microbial action, etc.

The SURFACE SAMPLER™ used consists of a 12-inch-long case acrylic tube with a Delrin ball which closes onto a conical surface creating a seal as the sampler is pulled up. The sampler is calibrated in inches and centimeters for visual inspection of product thickness.

To reduce the potential for cross contamination between wells, the monitoring shall take place in order from the least to the most contaminated wells. Wells containing separate-phase hydrocarbons (free product) should be monitored last. Between each monitoring the equipment shall be washed with laboratory-grade detergent and double rinsed with distilled water.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 9
WATER SAMPLING METHODOLOGY

Before water sampling, each well shall be purged by pumping a minimum of four well volumes or until the discharge water indicates stabilization of temperature conductivity and pH. If the well is evacuated before four well volumes are removed or stabilization is achieved, the sample should be taken when the water level in the well recovers to 80 percent of its initial level.

Retrieval of the water sample, sample handling and sample preservation shall be conducted according to Standard Operating Procedure 10 concerning "Sampling for Volatiles in Water." The sampling equipment used shall consist of a Teflon® and/or stainless steel samplers which meet U.S. Environmental Protection Agency (EPA) regulations. Glass vials with Teflon® lids should be used to store the collected samples.

To ensure sample integrity, each vial shall be filled with the sampled water in such a way that the water stands above the lip of the vial. The cap should then be quickly placed on the vial and tightened securely. The vial should then be checked to ensure that air bubbles are not present prior to labeling of the sample. Label information should include a sample identification number, job identification, date, time, type of analysis requested, and sampler's name. Chain-of-custody records shall be completed according to Standard Operating Procedure (SOP) 11 concerning chain of custody.

The vials should be immediately placed in high quality coolers for shipment to the laboratory. The coolers should be packed with sufficient ice or freezer packs to ensure that the samples are kept below 4° Celsius (C). To minimize sample degradation the prescribed analysis shall take place within seven days of sample collection unless specially prepared acidified vials are used.

To minimize the potential for cross contamination between wells, all the well development and water sampling equipment which contacts the groundwater shall be cleaned between each sampling. As a second precautionary measure, the wells shall be sampled in order of increasing contaminant concentrations (the least contaminated well first, the most contaminated well last) as established by previous analysis.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 10
SAMPLING FOR VOLATILES IN WATER (DISSOLVED GASOLINE, SOLVENTS, ETC.)

1. Use only vials properly washed and oven dried (prepared by the laboratory).

2. Use clean sampling equipment. Scrub with Alconox or equivalent laboratory detergent and water followed by a thorough water rinse. Complete with a distilled water rinse.

   Sampling equipment which has come into contact with liquid hydrocarbons (free product) should be regarded with suspicion. Such equipment should have tubing and cables replaced and all resilient parts washed with laboratory detergent solution as indicated above. Visible deposits may have to be removed with hexane. Solvent washing should be followed by detergent washing, as indicated above.

   This procedure is valid for volatile organic analysis only. For extractable organics (for example, pesticides, or base neutrals for U.S. Environmental Protection Agency [EPA] Method 625 a final rinse with pesticide-grade isopropyl alcohol), followed by overnight or oven drying will be necessary.

3. Take duplicate samples. Mark on forms as a single sample with two containers to avoid duplication of analyses.

4. Take a site blank using distilled water or known uncontaminated source. This sample will be run at the discretion of the project manager.

5. Fill out labels and forms as much as possible ahead of time. Use an indelible marker.

6. Preservatives are required for some types of samples. Use specially prepared vials marked as indicated below, or use the appropriate field procedure (SOP 12 for acidification). Make note on forms that samples were preserved. Always have extra vials in case of problems. Samples for volatile analyses should be acidified below pH 2. Eye protection, foot protection, and disposable vinyl gloves are required for handling. Samples designated for expedited service and analyzed within seven (7) days of sampling will be acceptable without preservation. Glasses or goggles (not contact lenses) are necessary for protection of the eyes. Flush eyes with water for 15 minutes if contact occurs and seek medical attention Rinse off hands frequently with water during handling

   For sampling chlorinated drinking water supplies for chlorinated volatiles, samples shall be preserved with sodium thiosulfate. Use vials labeled "CONTAINS THIOSULFATE." No particular cautions are necessary.

7. Fill vial to overflowing with water, avoiding turbulence and bubbling as much as possible. Water should stand above lip of vial.

8. Carefully, but quickly, slip cap onto vial. Avoid dropping the Teflon® septum from cap by not inverting cap until it is in contact with the vial. Disc should have Teflon® face toward the water. Also avoid touching white Teflon® face with dirty fingers.

9. Tighten cap securely, invert vial, and tap against hand to see there are not bubbles inside.

10. Label vial, using indelible ink, as follows:

    A. Sample I.D. No.
    B. Job I.D. No.
    C. Date and Time
    D. Type of analysis required
    E. Your name

11. Unless the fabric-type label is used, place Scotch™ tape over the label to preserve its integrity.

12. For chain-of-custody reasons, sample vial should be wrapped end-for-end with Scotch™ tape or evidence tape and signed with indelible ink where the end of the tape seals on itself. The septum needs to be covered.

13. Chill samples immediately. Samples to be stored should be kept at 4° Celsius (C) (39.2° Fahrenheit [F]). Samples received at the laboratory above 10°C (as measured at glass surface by a thermocouple probe), after overnight shipping, will be considered substandard, so use a high quality cooler with sufficient ice or freezer packs.

14. Fill out Chain-of-Custody Manifest and Analysis Request Form (see Chain of Custody Procedures, SOP 11).

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 11
CHAIN-OF-CUSTODY PROTOCOL

1. Samples must be maintained under custody until shipped or delivered to the laboratory. The laboratory will then maintain custody. A sample is under custody if:

    a) It is in your possession
    b) It is in your view after being in your possession
    c) You locked it up after it was in your possession
    d) It is in a designated secure area

2. Custody of samples may be transferred from one person to another. Each transferrer and recipient must date, sign and note the time on the chain-of-custody form.

3. In shipping, the container must be sealed with tape, and bear the sender's signature across the area of bonding at the ends of the tape to prevent undetected tampering. Each sampling jar should be taped and signed as well. Scotch tape works well.

4. Write "sealed by" and sign in the "Remarks" box at the bottom of the form before sealing the box. Place form in a plastic bag and seal it inside the box.

5. The "REMARKS" section of the form is for documenting details such as:

    a) Correlation of sample numbers if samples are split between labs.
    b) QC numbers when lab is logging in the samples.
    c) Sample temperature and condition when received by lab.
    d) Preservation notation.
    e) pH of samples when opened for analysis (if acidified).
    f) Sampling observation or sampling problem.

6. The chain-of-custody form should be included inside the shipping container. A copy should be sent to the project manager.

7. When the samples are received by the lab, the chain-of-custody form will be dated, signed, and the time noted by a laboratory representative. The form will be retained in the laboratory files along with shipping bills and receipts

8 At the time of receipt of samples by the laboratory, the shipping container will be inspected and the sealing signature will be checked The samples will be inspected for condition and bubbles, and the temperature of a representative sample container will be measured

externally by a thermocouple probe (held tightly between two samples) and recorded. The laboratory QC numbers will be placed on the labels, in the accession log, and on the chain-of-custody form. If samples are acidified, their pH will be measured by narrow range pH paper at the time of opening for analysis. All comments concerning procedures requiring handling of the samples will be dated and initialed on the form by the laboratory person performing the procedure. A copy of the completed chain-of-custody form with the comments on sample integrity will be returned to the sampler.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 14
SOIL SAMPLING METHODOLOGY

1. Soil samples should be collected and preserved in accordance with Groundwater Technology Standard Operating Procedure (SOP 15) concerning Soil Sample Collection and Handling when Sampling for Volatile Organics. A hollow stem soil auger should be used to drill to the desired sampling depth. A standard 2 inch diameter split spoon sampler 18 inches in length shall be used to collect the samples. The samples are contained in 2 inch diameter by 6 inch long thin walled brass tube liners fitted into the split spoon sampler (three per sampler).

2. The split spoon sampler should be driven the full depth of the spoon into the soil by a 140 pound hammer. The spoon shall then be extracted from the borehole and the brass tube liners containing the soil sample removed from the sampler. The ends of the liner tubes should be immediately covered with aluminum foil, sealed with a teflon or plastic cap, and taped with duct tape. After being properly identified with sample data entered on a standard chain of custody form the samples shall be placed on dry ice (maintained below 4~C) and transported to the laboratory within 24 hours.

3. One of the three soil samples retrieved at each sample depth shall be analyzed in the field using a photoionization detector and/or explosimeter. The purpose of the field analysis is to provide a means to choose samples to be laboratory analyzed for hydrocarbon concentrations and to enable comparisons between the field and laboratory analyses. The soil sample shall be sealed in a plastic bag and allowed to equilibrate with the air surrounding the soil for approximately 10 minutes. One of the two field vapor instruments shall be used to quantify the amount of hydrocarbon released to the air from the soils. The data shall be recorded on the drill logs at the depth corresponding to the sample point.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 15
SOIL SAMPLE COLLECTION AND HANDLING WHEN SAMPLING FOR VOLATILE ORGANICS

1. Use a sampling means which maintains the physical integrity of the samples. The project sampling protocol will designate a preferred sampling tool. A split spoon sampler with liners, or similar tube sampler which can be sealed, is best.

2. The samples should be sealed in the liner, with teflon plugs (The "California Sampler") or plastic caps.

3. For sending whole-core samples (above):

   A. Seal ends of liner with teflon plugs or plastic caps, leaving no free air space inside.

   B. Tape with duct tape.

   C. Label the sample with the following information: sample identification, depth, date and time, project number and required analyses.

   D. Place in plastic bag labeled with indelible marker. Use Well #, depth, date, and job #.

   E. Place inside a second bag and place a labelling tag inside outer bag.

   F. Enclose samples in a cooler with sufficient ice or dry ice to maintain samples at 4 degrees C during shipment.

   G. Seal cooler with a lock, or tape with samplers signature so tampering can be detected.

   H. Package cooler in a box with insulating material. Chain of custody forms can be placed in a plastic bag in this outer box.

   I. If dry ice is used, a maximum of 5 pounds is allowed by Federal Express without special documents(documents are easy to obtain but are not necessary for under 5 pounds). Write "ORM-A dry ice", "____ pounds, for research" on outside packaging and on regular airbill under classification. UPS does not accept dry ice

J. Soil cores kept a 4 degrees C are only viable for up to 7 days when aromatic hydrocarbons are involved. The lab should prepare the samples in methanol once in the lab.

4. Good sampling practice would include preparing 1 out of 5 samples to be prepared in duplicates for analysis. These 4 out of 20 samples will be used for the following purposes:

   A. One in every 20 samples should be analyzed as a field replicate to evaluate the precision of the sampling technique. A minimum of 1 sample per data set is suggested.

   B. An additional 1 in 20 samples should be selected by sampler to be prepared in duplicate as alternative to Step (A). Choose a different soil type if available.

   C. The remaining 2 in 20 samples should be used by lab for spiking with reference materials for internal QC.

   Other QC procedures can be specified at the project manager's discretion. See Table 3-2 (reference 2) attached.

5. Decontamination of equipment in the field requires a detergent wash, with a distilled water rinse.

REFERENCES

1. Soil Sampling Quality Assurance Users Guide, U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, NV, EPA 600/4-84-043, May 1984.

2. Preparation of Soil Sampling Protocol. Techniques and Strategies, U.S. EPA, Environmental Monitoring Systems Laboratory, Las Vegas, NV, EPA 600/4-83-020, August 1983 (PB83-206979).

3. Test Methods for Evaluating Solid Waste, U.S. EPA, Office of Solid Waste and Emergency Response, Washington, D.C., SW 846, July 1982.

GROUNDWATER TECHNOLOGY, INC.
STANDARD OPERATING PROCEDURE NO. 19
OPERATION/CALIBRATION OF PHOTOIONIZATION ANALYZER

1. The Thermo Environmental Instruments Inc. Model 580B OVM Photoionization Analyzer shall be used, using photoionization, to measure the concentration of trace gases over a range of less than 1 ppm to 2,000 ppm. The specific instrument used for investigations related to hydrocarbon contamination should be calibrated for direct readings in parts per million (ppm) volume/volume of isobutylene. Specifics of the detection principle/theory and functions of various components can be found in the manufactures instruction manual.

2. To assure optimum performance, the photoionization analyzer should be calibrated with a standard gas mixture of known concentration from a pressurized container. A daily procedure for calibration involves bringing the probe and readout close to the calibration gas, cracking the valve on the tank and checking the instrument reading. This provides a useful spot check for the instrument.

3. A procedure conducted weekly for more accurate calibration of the instrument from a pressurized container is to connect one side of a "T" to the pressurized container of calibration gas, another side of the "T" to a rotameter and the third side of the "T" directly to the 8" extension to the photoionization probe (see Figure 2). Crack the valve of the pressurized container until a slight flow is indicated on the rotameter. The instrument draws in the volume of sample required for detection, and the flow in the rotameter indicates an excess of sample. Now adjust the span pot so that the instrument reads the exact value of the calibration gas. (If the instrument span setting is changed, the instrument should be turned back to the standby position and the electronic zero should be readjusted, if necessary).

APPENDIX C

**Laboratory Reports,
Chain-of-Custody Records,
Purge Data Sheets, and
Well Elevation Survey**

801 Western Avenue
Glendale, CA 91201
818/247-5737
Fax: 818/247-9797

LOG NO: G95-05-364
Received: 19 MAY 95
Mailed: MAY 31 1995

Mr. Mike Chamberlain
Groundwater Technology, Inc.
4057 Port Chicago Highway
Concord, California 94520

Purchase Order: 94-1446346+4370
Requisition: 624881450
Project: FKEP1001L

REPORT OF ANALYTICAL RESULTS

NON-AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TPH/BTEX (CADHS/8020)							
		Date Analyzed Date	Dilution Factor Times	TPH-g mg/kg	Benzene mg/kg	Toluene mg/kg	Ethyl-Benzene mg/kg	Total Xylenes Isomers mg/kg	Carbon Range
RDL			1	1	0.005	0.005	0.005	0.005	
1*MW-9-5	05/17/95	05/29/95	1	<1	<0.005	<0.005	<0.005	<0.005	C6-C12
2*MW-9-15	05/17/95	05/29/95	1	<1	<0.005	<0.005	<0.005	<0.005	C6-C12
3*MW-10-5	05/17/95	05/29/95	1	<1	<0.005	<0.005	<0.005	<0.005	C6-C12
4*MW-10-15	05/17/95	05/30/95	1	<1	<0.005	<0.005	<0.005	<0.005	C6-C12
5*MW-11-5	05/18/95	05/30/95	1	<1	<0.005	<0.005	<0.005	<0.005	C6-C12
6*MW-11-15	05/18/95	05/30/95	1	<1	<0.005	<0.005	<0.005	<0.005	C6-C12

Karen Petryna
1127 Lincoln Avenue, Alameda
Alameda County

Jane Freemyer, Program Manager

ORDER PLACED FOR CLIENT: Groundwater Technology, Inc. 9505364 :
BC ANALYTICAL : GLEN LAB : 09:43:23 31 MAY 1995 - P. 1 :

MPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE..... ANALYZED	METHOD.....	EQUIP.	BATCH..	ID.NO
05364*1	MW-9-5	GAS.BTX.TESNC	05.29.95	8015M.TX	536-21	9590115	8042
505364*2	MW-9-15	GAS.BTX.TESNC	05.29.95	8015M.TX	536-21	9590115	8042
0505364*3	MW-10-5	GAS.BTX.TESNC	05.29.95	8015M.TX	536-21	9590115	8042
05364*4	MW-10-15	GAS.BTX.TESNC	05.30.95	8015M.TX	536-21	9590115	8042
05364*5	MW-11-5	GAS.BTX.TESNC	05.30.95	8015M.TX	536-21	9590115	8042
05053[illegible]4*[illegible]	MW-11-15	GAS.BTX.TESNC	05.30.95	8015M.TX	536-21	9590115	8042

***

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.

ID.NO = BC Analytical employee identification number of analyst.

BC ANALYTICAL

ORDER QC REPORT FOR G9505364

ATE REPORTED : 05/31/95

LABORATORY CONTROL STANDARDS
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
TPH (8015M/8020)	C5053116*1					
Date Analyzed	05.29.95	9590115	05/29/95	05/29/95	Date	N/A
Benzene	05.29.95	9590115	0.0243	0.0152	mg/kg	160 Q
Toluene	05.29.95	9590115	0.114	0.0974	mg/kg	117
Ethylbenzene	05.29.95	9590115	0.0255	0.0204	mg/kg	125
Total Xylene Isomers	05.29.95	9590115	0.144	0.119	mg/kg	121 Q
TPH (Gasoline Range)	05.29.95	9590115	1.16	1.10	mg/kg	105
TPH (8015M/8020)	C5053117*1					
Date Analyzed	05.29.95	9590115	05/29/95	05/29/95	Date	N/A
Benzene	05.29.95	9590115	0.0210	0.0152	mg/kg	138
Toluene	05.29.95	9590115	0.126	0.0974	mg/kg	129 Q
Ethylbenzene	05.29.95	9590115	0.0280	0.0204	mg/kg	137 Q
Total Xylene Isomers	05.29.95	9590115	0.155	0.119	mg/kg	130 Q
TPH (Gasoline Range)	05.29.95	9590115	1.21	1.10	mg/kg	110

BC ANALYTICAL

ORDER QC REPORT FOR G9505364

TE REPORTED : 05/31/95

ADDITIONAL LCS PRECISION (DUPLICATES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	LC1 RESULT	LC2 RESULT	UNIT	RELATIVE % DIFF
TPH (8015M/8020)							
Date Analyzed		05.29.95	9590115	05/29/95	05/29/95	Date	N/A
Benzene		05.29.95	9590115	0.0243	0.0210	mg/kg	15
Toluene		05.29.95	9590115	0.114	0.126	mg/kg	10
Ethylbenzene		05.29.95	9590115	0.0255	0.0280	mg/kg	9
Total Xylene Isomers		05.29.95	9590115	0.144	0.155	mg/kg	7
TPH (Gasoline Range)		05.29.95	9590115	1.16	1.21	mg/kg	4

BC ANALYTICAL

ORDER QC REPORT FOR G9505364

TE REPORTED : 05/31/95

MATRIX QC PRECISION (DUPLICATE SPIKES)
BATCH QC REPORT

RAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS RESULT	MSD RESULT	UNIT	RELATIVE % DIFF
TPH (8015M/8020)	9505364*1						
Date Analyzed		05.29.95	9590115	05/29/95	05/29/95	Date	N/A
Benzene		05.29.95	9590115	0.0227	0.0211	mg/kg	7
Toluene		05.29.95	9590115	0.110	0.106	mg/kg	4
Ethylbenzene		05.29.95	9590115	0.0243	0.0238	mg/kg	2
Total Xylene Isomers		05.29.95	9590115	0.138	0.136	mg/kg	1
TPH (Gasoline Range)		05.29.95	9590115	0.907	0.823	mg/kg	10

BC ANALYTICAL

ORDER QC REPORT FOR G9505364

TE REPORTED : 05/31/95

MATRIX QC ACCURACY (SPIKES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS %	MSD %	TRUE RESULT	UNIT	
TPH (8015M/8020)	9505364*1							
Benzene		05.29.95	9590115	149 Q	139 Q	0.0152	mg/kg	Q
Toluene		05.29.95	9590115	113	109	0.0974	mg/kg	
Ethylbenzene		05.29.95	9590115	119	117	0.0204	mg/kg	
Total Xylene Isomers		05.29.95	9590115	116	114	0.119	mg/kg	
TPH (Gasoline Range)		05.29.95	9590115	82	75	1.10	mg/kg	

BC ANALYTICAL

ORDER QC REPORT FOR G9505364

TE REPORTED : 05/31/95

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT	METHOD
TPH (8015M/8020)	B5051619*1					
Date Analyzed	05.29.95	9590115	05/29/95	NA	Date	8015M.TX
Benzene	05.29.95	9590115	0	0.005	mg/kg	8015M.TX
Toluene	05.29.95	9590115	0	0.005	mg/kg	8015M.TX
Ethylbenzene	05.29.95	9590115	0	0.005	mg/kg	8015M.TX
Total Xylene Isomers	05.29.95	9590115	0	0.005	mg/kg	8015M.TX
TPH (Gasoline Range)	05.29.95	9590115	0	1	mg/kg	8015M.TX

SURROGATE RECOVERIES :
BC ANALYTICAL : GLEN LAB : 09:43:58 31 MAY 1995 - P. 1 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9505364*1							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0530	0.0500	106	
9505364*2							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0529	0.0500	106	
9505364*3							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0527	0.0500	105	
9505364*4							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/30/95	0.0531	0.0500	106	
9505364*5							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/30/95	0.0542	0.0500	108	
9505364*6							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/30/95	0.0544	0.0500	109	

SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 09:44:01 31 MAY 1995 - P. 1 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9505364*1*R1							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0530	0.0500	106	
9505364*1*S1							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0544	0.0500	109	
9505364*1*S2							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0448	0.0500	90	
9505364*1*T							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0500	0.0500	100	
B5051619*1*MB							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0488	0.0500	98	
C5053116*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0535	0.0500	107	
C5053116*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0500	0.0500	100	
C5053117*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0537	0.0500	107	
C5053117*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	9590115	05/29/95	0.0500	0.0500	100	

BCA Log Number [redacted]

CHAIN OF CUSTODY RECORD

Client name: TES / GROUNDWATER TECH
Project or PO#: 020200093
Address: 1127 LINCOLN/405 Port Chicago
Phone #: 510 671-2387
City, State, Zip: ALAMEDA/Concord
Report attention: MIKE CHAMBERLAIN

Analyses required: BTEX / TPH-G

Lab sample number	Date sampled	Time sampled	Type* See key below	Sampled by / Sample description	Number of containers	Hazardous sample / Special handling required	Remarks
9-5	5/17/95	10:50	SO	MW-9-5	1	-1	(5030, 8020, 8015) TPH-g/BTEX
9-10		11:16		MW-9-10			
09-15		11:30		MW-9-15		-2	
		13:30		MW-10-5		-3	
		13:45		MW-10-10			
		1400		MW-10-15		-4	
	5-18	12:15		MW-11-5		-5	
	5-18	12:45		MW-11-10			
	5/18	1300		MW-11-15		-6	

6248145C
Alameda Co
KEP
FILE1001L

	Signature	Print Name	Company	Date	Time
Relinquished by		TERRY JAMES	GROUND WATER TECHNOLOGY	5/17/95	17:00
Received by		Bill Lyons	BCA	5-19-95	1700
Relinquished by		Bill Lyons	BCA	5-19-95	1405
Received by					
Relinquished by					
Received by Laboratory					

*KEY: AG - Aqueous NA - Nonaqueous SI - Sludge GW - Groundwater SO - Soil PF - Petroleum

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense

B C ANALYTICAL
[illegible] Sharp Circle, Concord, CA 94518 (510) 825-3994

CHAIN OF CUSTODY RECORD

BCA Log Number _____

Client name: TES / GROUNDWATER TECH.	Project or PO#: 020200093
Address: 1127 LINCOLN #405 Port Chicago	Phone #: 510 671-2387
City, State, Zip: ALAMEDA/Concord	Report attention: MIKE CHAMBERLAIN

Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by / Sample description	Number of containers	BTEX/TPH-G								Remarks
MW9-5	5/17/95	10:50	SO	MW-9-5	1	X								(5020, 8x15, 8015)
MW9-10		11:10		MW-9-10		X								TPH-9/BTEX
MW9-15		11:30		MW-9-15		X								
		1330		MW-10-5		X								
		13:45		MW-10-10		X								
		1400		MW-10-15		X								
	5-18	12:15		MW-11-5										
	5-18	12:45		MW-11-10										
	5/19	1300		MW-11-15										

	Signature	Print Name	Company	Date	Time
Relinquished by		TERRY JAMES	GROUND WATER TECHNOLOGY	5/17/95	1700
Received by		BILL LYONS	BCA	5-19-95	1200
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory					

BC ANALYTICAL
1085 Shary Circle, Concord, CA 94518 (510) 825-3894
1001 Western Avenue, Glendale, CA 91201 (818) 247-6737
Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AG—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil PE—Petroleum

B C Analytical

801 Western Avenue
Glendale, CA 91201
818/247-5737
Fax: 818/247-9797

ANALYTICAL REPORT

LOG NO: G95-05-418
Received: 23 MAY 95
Mailed: JUN 5 1995

Mr. Brian Garber
Groundwater Technology, Inc.
1401 Halyard Drive, Suite 140
West Sacramento, California 95691

Purchase Order: 74-1446346+4370
Requisition: 624881450
Project: FKEP1001L

REPORT OF ANALYTICAL RESULTS

AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TPH/BTEX (CADHS/8020) Date Analyzed Date	Dilution Factor Times	TPH-g ug/L	Benzene ug/L	Toluene ug/L	Ethyl-Benzene ug/L	Total Xylenes Isomers ug/L	Carbon Range
RDL			1	50	0.5	0.5	0.5	0.5	
1*MW-9	05/22/95	05/31/95	1	<50	<0.5	<0.5	<0.5	<0.5	C6-C12
2*MW-10	05/22/95	05/31/95	1	<50	0.50	<0.5	<0.5	1.2	C6-C12
3*MW-11	05/22/95	05/31/95	1	<50	<0.5	<0.5	<0.5	<0.5	C6-C12
4*TB	05/22/95	06/01/95	1	<50	<0.5	<0.5	<0.5	<0.5	C6-C12

Karen Petryna
1127 Lincoln Ave., Alameda
Alameda County

Jane Freemyer, Program Manager

ORDER PLACED FOR CLIENT: Groundwater Technology, Inc. 9505418 :
BC ANALYTICAL : GLEN LAB : 12:08:42 02 JUN 1995 - P. 1 :

SAMPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE..... ANALYZED	METHOD.....	EQUIP.	BATCH..	ID.NO
9505418*1	MW-9	GAS.BTX.TESNC	05.31.95	8015M.TX	536-23	95563	8042
9505418*2	MW-10	GAS.BTX.TESNC	05.31.95	8015M.TX	536-23	95563	8042
9505418*3	MW-11	GAS.BTX.TESNC	05.31.95	8015M.TX	536-23	95563	8042
9505418*4	TB	GAS.BTX.TESNC	06.01.95	8015M.TX	536-23	95563	8042

*

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.

ID.NO = BC Analytical employee identification number of analyst.

BC ANALYTICAL

ORDER QC REPORT FOR G9505418

DATE REPORTED : 06/02/95

LABORATORY CONTROL STANDARDS
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
TPH (8015M/8020)	C5053357*1					
Date Analyzed	05.30.95	95563	05/30/95	05/30/95	Date	N/A
Benzene	05.30.95	95563	15.8	15.2	ug/L	104
Toluene	05.30.95	95563	84.4	97.4	ug/L	87
Ethylbenzene	05.30.95	95563	16.6	20.4	ug/L	81
Total Xylene Isomers	05.30.95	95563	98.4	119	ug/L	83
TPH (Gasoline Range)	05.30.95	95563	1180	1100	ug/L	107
TPH (8015M/8020)	C5053358*1					
Date Analyzed	05.30.95	95563	05/30/95	05/30/95	Date	N/A
Benzene	05.30.95	95563	15.7	15.2	ug/L	103
Toluene	05.30.95	95563	84.3	97.4	ug/L	87
Ethylbenzene	05.30.95	95563	17.9	20.4	ug/L	88
Total Xylene Isomers	05.30.95	95563	99.7	119	ug/L	84
TPH (Gasoline Range)	05.30.95	95563	1060	1100	ug/L	96

BC ANALYTICAL

ORDER QC REPORT FOR G9505418

ATE REPORTED : 06/02/95

ADDITIONAL LCS PRECISION (DUPLICATES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	LC1 RESULT	LC2 RESULT	UNIT	RELATIVE % DIFF
TPH (8015M/8020)							
Date Analyzed		05.30.95	95563	05/30/95	05/30/95	Date	N/A
Benzene		05.30.95	95563	15.8	15.7	ug/L	1
Toluene		05.30.95	95563	84.4	84.3	ug/L	0
Ethylbenzene		05.30.95	95563	16.6	17.9	ug/L	8
Total Xylene Isomers		05.30.95	95563	98.4	99.7	ug/L	1
TPH (Gasoline Range)		05.30.95	95563	1180	1060	ug/L	11

BC ANALYTICAL

ORDER QC REPORT FOR G9505418

DATE REPORTED : 06/02/95

MATRIX QC ACCURACY (SPIKES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS %	MSD %		TRUE RESULT	UNIT	
TPH (8015M/8020)	9505348*1								
Benzene		05.30.95	95563	118	134	Q	15.2	ug/L	Q
Toluene		05.30.95	95563	98	109		97.4	ug/L	
Ethylbenzene		05.30.95	95563	91	115		20.4	ug/L	
Total Xylene Isomers		05.30.95	95563	92	105		119	ug/L	
TPH (Gasoline Range)		05.30.95	95563	95	116		1100	ug/L	

BC ANALYTICAL

ORDER QC REPORT FOR G9505418

DATE REPORTED : 06/02/95

MATRIX QC PRECISION (DUPLICATE SPIKES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS RESULT	MSD RESULT	UNIT	RELATIVE % DIFF
TPH (8015M/8020)	9505348*1						
Date Analyzed		05.30.95	95563	05/30/95	05/30/95	Date	N/A
Benzene		05.30.95	95563	17.9	20.3	ug/L	13
Toluene		05.30.95	95563	95.2	106	ug/L	11
Ethylbenzene		05.30.95	95563	18.6	23.4	ug/L	23
Total Xylene Isomers		05.30.95	95563	109	125	ug/L	14
TPH (Gasoline Range)		05.30.95	95563	1040	1280	ug/L	21

BC ANALYTICAL

ORDER QC REPORT FOR G9505418

TE REPORTED : 06/02/95

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)
FOR BATCHES WHICH INCLUDE THIS ORDER

RAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT	METHOD
TPH (8015M/8020)	B5051732*1					
Date Analyzed	05.30.95	95563	05/30/95	NA	Date	8015M.TX
Benzene	05.30.95	95563	0	0.5	ug/L	8015M.TX
Toluene	05.30.95	95563	0.12	0.5	ug/L	8015M.TX
Ethylbenzene	05.30.95	95563	0	0.5	ug/L	8015M.TX
Total Xylene Isomers	05.30.95	95563	0	0.5	ug/L	8015M.TX
TPH (Gasoline Range)	05.30.95	95563	0	50	ug/L	8015M.TX

SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 12:08:10 02 JUN 1995 - P. 1 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9505418*1							
8015M.TX	a,a,a-Trifluorotoluene	95563	05/31/95	51.3	50.0	103	
9505418*2							
8015M.TX	a,a,a-Trifluorotoluene	95563	05/31/95	50.9	50.0	102	
9505418*3							
8015M.TX	a,a,a-Trifluorotoluene	95563	05/31/95	51.8	50.0	104	
9505418*4							
8015M.TX	a,a,a-Trifluorotoluene	95563	06/01/95	50.1	50.0	100	

SURROGATE RECOVERIES :
BC ANALYTICAL : GLEN LAB : 12:08:14 02 JUN 1995 - P. 1 :

THOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
505348*1*R1							
015M.TX	a,a,a-Trifluorotoluene	95563	05/30/95	51.4	50.0	103	
3015M	Naphthalene	9564	05/26/95	0.0365	0.0500	73	
05348*1*S1							
015M.TX	a,a,a-Trifluorotoluene	95563	05/30/95	53.2	50.0	106	
15M	Naphthalene	9564	05/26/95	0.0318	0.0500	64	
505348*1*S2							
015M.TX	a,a,a-Trifluorotoluene	95563	05/30/95	53.8	50.0	108	
3015M	Naphthalene	9564	05/26/95	0.0329	0.0500	66	
05348*1*T							
015M.TX	a,a,a-Trifluorotoluene	95563	05/30/95	50.0	50.0	100	
15M	Naphthalene	9564	05/26/95	0.0500	0.0500	100	
5051732*1*MB							
015M.TX	a,a,a-Trifluorotoluene	95563	05/30/95	51.2	50.0	102	
053357*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	95563	05/30/95	53.1	50.0	106	
053357*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	95563	05/30/95	50.0	50.0	100	
5053358*1*LC							
015M.TX	a,a,a-Trifluorotoluene	95563	05/30/95	52.9	50.0	106	
C5053358*1*LT							
015M.TX	a,a,a-Trifluorotoluene	95563	05/30/95	50.0	50.0	100	

CHAIN OF CUSTODY RECORD

Log [redacted]

Client name: Groundwater Technology INC.
Project or PO#: 020200049 630532
Address: 4057 Port Chicago Hwy
Phone #: 916-372-4700
City, State, Zip: Concord, CA 94521
Report attention: BRIAN GARBER

Analyses required: BTEX-TPH-G

Lab sample number	Date sampled	Time sampled	Type* See key below	Sampled by / Sample description	Number of containers	Hazardous sample / Special handling required	Remarks
	5-22-95	1310	GW	MW-9	2	-1	1127 Lincoln Ave
	↓	1300	↓	MW-15	2	-2	Alameda
	↓	1250	↓	MW-11	2	-3	
	↓	—	↓	TRIP BLANK	1	-4	
							62488 1450
							Alameda
							KEP
							FKEP 10D1 L

	Signature	Print Name	Company	Date	Time
Relinquished by	[signature]	MARK GARCIA	GTI	5-23-95	4:35
Received by	[signature]	Jan Winter	BCA	5/23/95	4:35
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory					

B C ANALYTICAL
[ ] 1085 Shary Circle, Concord CA 94518 (510) 825-3894
[ ] 801 Western Avenue, Glendale CA 91201 (818) 247-5737

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AG—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil PE—Petroleum

B C Analytical

801 Western Avenue
Glendale, CA 91201
818/247-5737
Fax: 818/247-9797

ANALYTICAL REPORT

AMENDED REPORT

JUL 11 1995 (W)

LOG NO: G95-02-137

Received: 08 FEB 95
Mailed : 24 FEB 95

Mr Tim Watchers
Groundwater Technology, Inc.
4057 Port Chicago Highway
Concord, California 94520

Purchase Order: 94-1446346+4370

Requisition: 624881450
Project: FKEP1001L

REPORT OF ANALYTICAL RESULTS

NON-AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TPH/BTEX (CADHS/8020) Date Analyzed Date	Dilution Factor Times	TPH-g mg/kg	Benzene mg/kg	Toluene mg/kg	Ethyl-Benzene mg/kg	Total Xylenes Isomers mg/kg
RDL			1	1	0.005	0.005	0.005	0.005
1*B1/5	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
2*B1/10	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	0.018
3*B2/4	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
4*B2/10	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
5*B3/5	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
6*B3/10	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
7*B4/5	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
8*B5/3	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
9*B6/3	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
10*B7/3	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
11*B8/3	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005
12*B9/3	02/07/95	02/10/95	1	<1	<0.005	<0.005	<0.005	<0.005

Karen Petryna
1127 Lincoln Ave., Alameda
Alameda County
Amended Report: Results for G95-02-137-2 (B1/10) corrected for detection limits. (L. Lem 7/95)

Jane Freemyer, Program Manager

BCA

B C Analytical

801 Western Avenue
Glendale, CA 91201
818/247-5737
Fax: 818/247-9797

ANALYTICAL REPORT

LOG NO: G95-02-137

Received: 08 FEB 95
Mailed : 24 FEB 95

Mr Jim Watchers
Groundwater Technology, Inc.
4057 Port Chicago Highway
Concord, California 94520

Purchase Order: 94-1446346+4370

Requisition: 624881450
Project: FKEP1001L

REPORT OF ANALYTICAL RESULTS

AQUEOUS

SAMPLE DESCRIPTION	DATE SAMPLED	TPH/BTEX (CADHS/8020) Date Analyzed Date	Dilution Factor Times	TPH-g ug/L	Benzene ug/L	Toluene ug/L	Ethyl-Benzene ug/L	Total Xylenes Isomers ug/L
RDL			1	50	0.5	0.5	0.5	0.5
13*B1	02/07/95	02/15/95	5	4400	11	95	130	710
14*B2	02/07/95	02/15/95	1	<50	<0.5	<0.5	<0.5	4.3
15*B3	02/07/95	02/09/95	1	<50	<0.5	3.2	<0.5	<0.5
16*B4	02/07/95	02/09/95	1	<50	<0.5	<0.5	<0.5	<0.5
17*B5	02/07/95	02/09/95	1	<50	<0.5	0.67	<0.5	0.64
18*B6	02/07/95	02/09/95	1	<50	<0.5	<0.5	<0.5	3.7
19*B7	02/07/95	02/09/95	1	<50	<0.5	<0.5	<0.5	0.65
20*B8	02/07/95	02/10/95	1	90	<0.5	<0.5	<0.5	7.2
21*B9	02/07/95	02/10/95	1	<50	<0.5	<0.5	<0.5	0.80

BCA

ORDER PLACED FOR CLIENT: Groundwater Technology, Inc. 9502137 :
BC ANALYTICAL : GLEN LAB : 15:56:47 23 FEB 1995 - P. 1 :

SAMPLES...	SAMPLE DESCRIPTION..	DETERM.....	DATE..... ANALYZED	METHOD.....	EQUIP.	BATCH..	ID.NO
9502137*1	B1/5	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*2	B1/10	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*3	B2/4	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*4	B2/10	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*5	B3/5	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*6	B3/10	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*7	B4/5	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*8	B5/3	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*9	B6/3	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*10	B7/3	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*11	B8/3	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*12	B9/3	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	9559166	1004
9502137*13	B1	GAS.BTX.TESNC	02.15.95	8015M.TX	536-23	95516	1004
9502137*14	B2	GAS.BTX.TESNC	02.15.95	8015M.TX	536-23	95516	1004
9502137*15	B3	GAS.BTX.TESNC	02.09.95	8015M.TX	536-23	95515	1004
9502137*16	B4	GAS.BTX.TESNC	02.09.95	8015M.TX	536-23	95515	1004
9502137*17	B5	GAS.BTX.TESNC	02.09.95	8015M.TX	536-23	95515	1004
9502137*18	B6	GAS.BTX.TESNC	02.09.95	8015M.TX	536-23	95515	1004
9502137*19	B7	GAS.BTX.TESNC	02.09.95	8015M.TX	536-23	95515	1004
9502137*20	B8	GAS.BTX.TESNC	02.10.95	8015M.TX	536-23	95515	
9502137*21	B9	GAS.BTX.TESNC	02.13.95	8015M.TX	536-23	95515	1004

**

Notes: Equipment = BC Analytical identification number for a particular piece of analytical equipment.

ID.NO = BC Analytical employee identification number of analyst.

BC ANALYTICAL

ORDER QC REPORT FOR G9502137

ATE REPORTED : 02/23/95

LABORATORY CONTROL STANDARDS
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
3. TPH-gas/BTEX (CADHS/80 C5021189*1						
Date Analyzed	02.10.95	9559166	02/10/95	02/10/95	Date	N/A
Benzene	02.10.95	9559166	0.0184	0.0152	mg/kg	121
Toluene	02.10.95	9559166	0.102	0.0974	mg/kg	105
Ethylbenzene	02.10.95	9559166	0.0228	0.0204	mg/kg	112 Q
Total Xylene Isomers	02.10.95	9559166	0.119	0.119	mg/kg	100
TPH (as Gasoline)	02.10.95	9559166	1.1	1.1	mg/kg	100
. TPH-gas/BTEX (CADHS/80 C5021190*1						
Date Analyzed	02.10.95	9559166	02/10/95	02/10/95	Date	N/A
Benzene	02.10.95	9559166	0.0187	0.0152	mg/kg	123
Toluene	02.10.95	9559166	0.106	0.0974	mg/kg	109 Q
Ethylbenzene	02.10.95	9559166	0.0222	0.0204	mg/kg	109 Q
Total Xylene Isomers	02.10.95	9559166	0.117	0.119	mg/kg	98
TPH (as Gasoline)	02.10.95	9559166	1.2	1.1	mg/kg	109
. TPH-gas/BTEX (CADHS/80 C5021387*1						
Date Analyzed	02.13.95	9559166	02/13/95	02/13/95	Date	N/A
Benzene	02.13.95	9559166	0.0208	0.0152	ug/kg	137 Q
Toluene	02.13.95	9559166	0.117	0.0974	ug/kg	120 Q
Ethylbenzene	02.13.95	9559166	0.0259	0.0204	ug/kg	127 Q
Total Xylene Isomers	02.13.95	9559166	0.132	0.119	ug/kg	111
TPH (as Gasoline)	02.13.95	9559166	0.902	1.10	ug/kg	82
4. TPH-gas/BTEX (CADHS/80 C5021388*1						
Date Analyzed	02.13.95	9559166	02/13/95	02/13/95	Date	N/A
Benzene	02.13.95	9559166	0.0202	0.0152	ug/kg	133
Toluene	02.13.95	9559166	0.114	0.0974	ug/kg	117
Ethylbenzene	02.13.95	9559166	0.0250	0.0204	ug/kg	123 Q
Total Xylene Isomers	02.13.95	9559166	0.129	0.119	ug/kg	108
TPH (as Gasoline)	02.13.95	9559166	1.09	1.10	ug/kg	99
5. TPH-gas/BTEX (CADHS/80 C5022106*1						
Date Analyzed	02.15.95	95516	02/15/95	02/15/95	Date	N/A
Benzene	02.15.95	95516	17.2	15.2	ug/L	113
Toluene	02.15.95	95516	95.8	97.4	ug/L	98
Ethylbenzene	02.15.95	95516	21.8	20.4	ug/L	107 Q
Total Xylene Isomers	02.15.95	95516	111	119	ug/L	93
TPH (as Gasoline)	02.15.95	95516	1260	1100	ug/L	115
6. TPH-gas/BTEX (CADHS/80 C5022109*1						
Date Analyzed	02.15.95	95516	02/15/95	02/15/95	Date	N/A
Benzene	02.15.95	95516	14.2	15.2	ug/L	93
Toluene	02.15.95	95516	95.9	97.4	ug/L	98
Ethylbenzene	02.15.95	95516	21.7	20.4	ug/L	106 Q
Total Xylene Isomers	02.15.95	95516	111	119	ug/L	93
TPH (as Gasoline)	02.15.95	95516	1330	1100	ug/L	121
7. TPH-gas/BTEX (CADHS/80 C5021054*1						
Date Analyzed	02.09.95	95515	02/09/95	02/09/95	Date	N/A
Benzene	02.09.95	95515	18.0	15.2	ug/L	118

LABORATORY CONTROL STANDARDS
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	LC RESULT	LT RESULT	UNIT	PERCENT RECOVERY
Toluene	02.09.95	95515	99.4	97.4	ug/L	102
Ethylbenzene	02.09.95	95515	22.4	20.4	ug/L	110 Q
Total Xylene Isomers	02.09.95	95515	114	119	ug/L	96
TPH (as Gasoline)	02.09.95	95515	1280	1100	ug/l	116
TPH-gas/BTEX (CADHS/80 C5021055*1						
Date Analyzed	02.09.95	95515	02/09/95	02/09/95	Date	N/A
Benzene	02.09.95	95515	16.2	15.2	ug/L	107
Toluene	02.09.95	95515	89.3	97.4	ug/L	92
Ethylbenzene	02.09.95	95515	19.9	20.4	ug/L	98 Q
Total Xylene Isomers	02.09.95	95515	102	119	ug/L	86 Q
TPH (as Gasoline)	02.09.95	95515	1160	1100	ug/L	105

BC ANALYTICAL

ORDER QC REPORT FOR G9502137

ATE REPORTED : 02/23/95

ADDITIONAL LCS PRECISION (DUPLICATES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	LC1 RESULT	LC2 RESULT	UNIT	RELATIVE % DIFF
. TPH-gas/BTEX (CADHS/80							
Date Analyzed		02.10.95	9559166	02/10/95	02/10/95	Date	N/A
Benzene		02.10.95	9559166	0.0184	0.0187	mg/kg	2
Toluene		02.10.95	9559166	0.102	0.106	mg/kg	4
Ethylbenzene		02.10.95	9559166	0.0228	0.0222	mg/kg	3
Total Xylene Isomers		02.10.95	9559166	0.119	0.117	mg/kg	2
TPH (as Gasoline)		02.10.95	9559166	1.1	1.2	mg/kg	9
. TPH-gas/BTEX (CADHS/80							
Date Analyzed		02.09.95	95515	02/09/95	02/09/95	Date	N/A
Benzene		02.09.95	95515	18.0	16.2	ug/L	11
Toluene		02.09.95	95515	99.4	89.3	ug/L	11
Ethylbenzene		02.09.95	95515	22.4	19.9	ug/L	12
Total Xylene Isomers		02.09.95	95515	114	102	ug/L	11
TPH (as Gasoline)		02.09.95	95515	1280	1160	ug/L	10

BC ANALYTICAL

ORDER QC REPORT FOR G9502137

TE REPORTED : 02/23/95

MATRIX QC PRECISION (DUPLICATE SPIKES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS RESULT	MSD RESULT	UNIT	RELATIVE % DIFF
TPH-gas/BTEX (CADHS/80	9502137*12						
Date Analyzed		02.10.95	9559166	02/10/95	02/10/95	Date	N/A
Benzene		02.10.95	9559166	0.0151	0.0149	mg/kg	1
Toluene		02.10.95	9559166	0.113	0.0998	mg/kg	12
Ethylbenzene		02.10.95	9559166	0.0253	0.0217	mg/kg	15
Total Xylene Isomers		02.10.95	9559166	0.130	0.112	mg/kg	15
TPH (as Gasoline)		02.10.95	9559166	1.11	1.01	mg/kg	9
TPH/Vol. Hydrocarbons	9502186*1						
Date Analyzed		02.16.95	95516	02/16/95	02/16/95	Date	N/A
TPH (as Gasoline)		02.16.95	95516	550	418	ug/L	27 Q
TPH-gas/BTEX	9502212*3						
Date Analyzed		02.16.95	95516	02/16/95	02/16/95	Date	N/A
Benzene		02.16.95	95516	18.4	17.4	ug/L	6
Toluene		02.16.95	95516	109	97.3	ug/L	11
Ethylbenzene		02.16.95	95516	25.8	21.6	ug/L	18
Total Xylene Isomers		02.16.95	95516	132	111	ug/L	17
TPH (as Gasoline)		02.16.95	95516	1320	1270	ug/L	4
TPH-gas/BTEX (CADHS/80	9502137*17						
Date Analyzed		02.09.95	95515	02/09/95	02/09/95	Date	N/A
Benzene		02.09.95	95515	17.2	16.9	ug/L	2
Toluene		02.09.95	95515	94.5	94.3	ug/L	0
Ethylbenzene		02.09.95	95515	21.3	20.9	ug/L	2
Total Xylene Isomers		02.09.95	95515	109	108	ug/L	1
TPH (as Gasoline)		02.09.95	95515	1200	820	ug/L	38 Q

BC ANALYTICAL

ORDER QC REPORT FOR G9502137

ATE REPORTED : 02/23/95

MATRIX QC ACCURACY (SPIKES)
BATCH QC REPORT

PARAMETER	SAMPLE NUMBER	DATE ANALYZED	BATCH NUMBER	MS %	MSD %	TRUE RESULT	UNIT	
. TPH-gas/BTEX (CADHS/80	9502137*12							
Benzene		02.10.95	9559166	99	98	0.0152	mg/kg	
Toluene		02.10.95	9559166	116	102	0.0974	mg/kg	
Ethylbenzene		02.10.95	9559166	124	106	0.0204	mg/kg	
Total Xylene Isomers		02.10.95	9559166	109	94	0.119	mg/kg	
TPH (as Gasoline)		02.10.95	9559166	101	92	1.10	mg/kg	
. TPH-gas/BTEX (CADHS/80	9502186*1							
TPH (as Gasoline)		02.16.95	95516	55	42 Q	1000	ug/L	Q
3. TPH-gas/BTEX (CADHS/80	9502212*3							
Benzene		02.16.95	95516	121	114	15.2	ug/L	
Toluene		02.16.95	95516	112	100	97.4	ug/L	
Ethylbenzene		02.16.95	95516	126	106	20.4	ug/L	
Total Xylene Isomers		02.16.95	95516	111	93	119	ug/L	
TPH (as Gasoline)		02.16.95	95516	120	115	1100	ug/L	
. TPH-gas/BTEX (CADHS/80	9502137*17							
Benzene		02.09.95	95515	113	111	15.2	ug/L	
Toluene		02.09.95	95515	97	97	97.4	ug/L	
Ethylbenzene		02.09.95	95515	104	102	20.4	ug/L	
Total Xylene Isomers		02.09.95	95515	92	91	119	ug/L	
TPH (as Gasoline)		02.09.95	95515	109	75	1100	ug/L	

BC ANALYTICAL

ORDER QC REPORT FOR G9502137

ATE REPORTED : 02/23/95

METHOD BLANKS AND REPORTING DETECTION LIMIT (RDL)
FOR BATCHES WHICH INCLUDE THIS ORDER

PARAMETER	DATE ANALYZED	BATCH NUMBER	BLANK RESULT	RDL	UNIT	METHOD
. TPH-gas/BTEX (CADHS/80 B502621*1						
Date Analyzed	02.10.95	9559166	02/10/95	NA	Date	8015M.TX
Benzene	02.10.95	9559166	0	0.005	mg/kg	8015M.TX
Toluene	02.10.95	9559166	0	0.005	mg/kg	8015M.TX
Ethylbenzene	02.10.95	9559166	0	0.005	mg/kg	8015M.TX
Total Xylene Isomers	02.10.95	9559166	0	0.005	mg/kg	8015M.TX
TPH (as Gasoline)	02.10.95	9559166	0	1	mg/kg	8015M.TX
. TPH-gas/BTEX (CADHS/80 B502729*1						
Date Analyzed	02.13.95	9559166	02/13/95	NA	Date	8015M.E
Benzene	02.13.95	9559166	0	0.1	mg/kg	8015M.E
Toluene	02.13.95	9559166	0	0.03	mg/kg	8015M.E
Ethylbenzene	02.13.95	9559166	0	0.03	mg/kg	8015M.E
Total Xylene Isomers	02.13.95	9559166	0	0.06	mg/kg	8015M.E
TPH (as Gasoline)	02.13.95	9559166	0	2	mg/kg	8015M.E
. TPH-gas/BTEX (CADHS/80 B5021121*1						
Date Analyzed	02.15.95	95516	02/15/95	NA	Date	8015M.TX
Benzene	02.15.95	95516	0	0.005	ug/L	8015M.TX
Toluene	02.15.95	95516	0	0.005	ug/L	8015M.TX
Ethylbenzene	02.15.95	95516	0	0.005	ug/L	8015M.TX
Total Xylene Isomers	02.15.95	95516	0	0.005	ug/L	8015M.TX
TPH (as Gasoline)	02.15.95	95516	0	1	ug/L	8015M.TX
4. TPH-gas/BTEX (CADHS/80 B502553*1						
Date Analyzed	02.09.95	95515	02/09/95	NA	Date	8015M.TX
Benzene	02.09.95	95515	0	0.5	ug/L	8015M.TX
Toluene	02.09.95	95515	0	0.5	ug/L	8015M.TX
Ethylbenzene	02.09.95	95515	0	0.5	ug/L	8015M.TX
Total Xylene Isomers	02.09.95	95515	0	0.5	ug/L	8015M.TX
TPH (as Gasoline)	02.09.95	95515	0	50	ug/L	8015M.TX

SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 15:58:03 23 FEB 1995 - P. 1 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9502137*1							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0521	0.0500	104	
9502137*2							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0516	0.0500	103	
9502137*3							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0514	0.0500	103	
9502137*4							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0525	0.0500	105	
9502137*5							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0510	0.0500	102	
9502137*6							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0515	0.0500	103	
9502137*7							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0505	0.0500	101	
9502137*8							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0512	0.0500	102	
9502137*9							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0491	0.0500	98	
9502137*10							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0519	0.0500	104	
9502137*11							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0498	0.0500	100	
9502137*12							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0490	0.0500	98	
9502137*13							
8015M.TX	a,a,a-Trifluorotoluene	95516	02/15/95	46.5	50.0	93	
9502137*14							
8015M.TX	a,a,a-Trifluorotoluene	95516	02/15/95	50.1	50.0	100	

SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 15:58:03 23 FEB 1995 - P. 2 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9502137*15							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	50.9	50.0	102	
9502137*16							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	50.7	50.0	101	
9502137*17							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	51.1	50.0	102	
9502137*18							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	51.0	50.0	102	
9502137*19							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	50.0	50.0	100	
9502137*20							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/10/95	48.5	50.0	97	
9502137*21							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/13/95	47.8	50.0	96	

SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 15:58:07 23 FEB 1995 - P. 1 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
9502137*12*R1							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0490	0.0500	98	
9502137*12*S1							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0518	0.0500	104	
9502137*12*S2							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0479	0.0500	96	
9502137*12*T							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0500	0.0500	100	
9502137*17*R1							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	51.1	50.0	102	
9502137*17*S1							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	51.1	50.0	102	
9502137*17*S2							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	46.2	50.0	92	
9502137*17*T							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	50.0	50.0	100	
9502186*1*R1							
8015M	a,a,a-Trifluorotoluene	95516	02/16/95	50.0	50.0	100	
9502186*1*S1							
8015M	a,a,a-Trifluorotoluene	95516	02/16/95	41.1	50.0	82	
9502186*1*S2							
8015M	a,a,a-Trifluorotoluene	95516	02/16/95	40.2	50.0	80	
9502186*1*T							
8015M	a,a,a-Trifluorotoluene	95516	02/16/95	50.0	50.0	100	
9502212*3*R1							
8015M	a,a,a-Trifluorotoluene	95516	02/16/95	50.0	50.0	100	
9502212*3*S1							
8015M	a,a,a-Trifluorotoluene	95516	02/16/95	50.0	50.0	100	

SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 15:58:07 23 FEB 1995 - P. 2 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
B502212*3*S2							
8015M	a,a,a-Trifluorotoluene	95516	02/16/95	51.0	50.0	102	
B5022.2*3*T							
8015M	a,a,a-Trifluorotoluene	95516	02/16/95	50.0	50.0	100	
B5021121*1*MB							
8015M.TX	a,a,a-Trifluorotoluene	95516	02/15/95	49.4	50.0	99	
B502553*1*MB							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	50.5	50.0	101	
B502621*1*MB							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0509	0.0500	102	
B502729*1*MB							
8015M.E	a,a,a-Trifluorotoluene	9559176	02/13/95	0.0499	0.0500	100	
B5021054*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	51.9	50.0	104	
B5021054*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	50.0	50.0	100	
C5021055*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	51.3	50.0	103	
C5021055*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	95515	02/09/95	50.0	50.0	100	
C5021189*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0516	0.0500	103	
C5021189*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0500	0.0500	100	
C5021190*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0479	0.0500	96	
C5021190*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	9559166	02/10/95	0.0500	0.0500	100	

SURROGATE RECOVERIES :
: BC ANALYTICAL : GLEN LAB : 15:58:08 23 FEB 1995 - P. 3 :

METHOD	ANALYTE	BATCH	ANALYZED	REPORTED	TRUE	%REC	FLAG
C5021387*1*LC							
8015M.E	a,a,a-Trifluorotoluene	9559176	02/13/95	0.0530	0.0500	106	
C5021387*1*LT							
8015M.E	a,a,a-Trifluorotoluene	9559176	02/13/95	0.0500	0.0500	100	
C5021388*1*LC							
8015M.E	a,a,a-Trifluorotoluene	9559176	02/13/95	0.0523	0.0500	105	
C5021388*1*LT							
8015M.E	a,a,a-Trifluorotoluene	9559176	02/13/95	0.0500	0.0500	100	
C5022106*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	95516	02/15/95	51.7	50.0	103	
C5022106*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	95516	02/15/95	50.0	50.0	100	
C5022109*1*LC							
8015M.TX	a,a,a-Trifluorotoluene	95516	02/15/95	50.0	50.0	100	
C5022109*1*LT							
8015M.TX	a,a,a-Trifluorotoluene	95516	02/15/95	50.0	50.0	100	

ROUND WATER TECHNOLOGY
4057 Port Chicago Hwy
CONCORD CALIF

Project or PO#: 02020 0037
Phone #: 510 671 2387
Report attention: TIM WATCHERS
Sampled by: TERRY JAMES

BTEX / TPH G

795-021

Date	Time	Type	Sample description	Number of containers	BTEX / TPH G	Lab #		Remarks
2/1	8:15	SO	Soil in Pit 6	1	X	-1		BTEX by EPA method 5030/8020
	8:66	SO	"	1	X	-2		TPH G by EPA method 5030/8015
	9:00	AQ	40ml VOA w/HCl	2	X		-13	
	10:00	SO	Soil in Pit 6	1	X	-3		
	10:10	SO	"	1	X	-4		5 DAY TAT
	10:00	AQ	40 ml VOA'S w/HCL	2	X		-14	
	11:15	SO	Soil in Pit 6	1	X	-5		TES-72 hr TAT
	11:30	SO	"	1	X	-6		
	11:30	AQ	40ml VOA's w/HCl	2	X		-15	due mon 2/13
	12:30	SO	Soil in Pit 6	1	X	-7		
	12:45	AQ	40ml VOA's w/Hcl	2	X		-16	
	13:47	SO	Soil in Pit 6	1	X	-8		

Signature	Print Name	Company	Date	Time
Terry James	TERRY JAMES	Groundwater Technology	2/8/95	9:00
Bill Lyons	Bill Lyons	BCA	2-8-95	10:[illegible]
Bill Lyons	Bill Lyons	BCA	2-8-95	11:[illegible]

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements:

*KEY AQ – Aqueous HA – Hazardous SL – Sludge GW – Groundwater SO – Soil OT – Other PE – [illegible]

ANALYTICAL

GROUND WATER TECHNOLOGY
4057 Port Chicago Hwy
Concord CALIF

Project or PO#: 02020 0037

Phone #: 510 611 2387

Report attention: TIM WATCHERS

Sampled by: Terry James

Sample ID	Date	Time	Type	Sample description	Number of containers	BTEX TPH-G				Remarks
BS	2/7	1400	Aq	40 ml Voa w/ HCl	2	X	[redacted]		-17	BTEX EPA 8020 5030/[illegible]
[illegible]		1500	So	Soil in PET G	1	X		-9		TPH G EPA
[illegible]		1515	Aq	40 ml Voa's w/ HCl	2	X	[redacted]		-18	5030/8015M
[illegible]		1600	So	Soil in PET G	1	X		-10		
[illegible]		1615	Aq	40 ml Voa's w/ HCl	2	X	[redacted]		-19	5 DAY TAT
[illegible]		1713	So	Soil in Pet G	1	X		-11		
[illegible]		1720	Aq	40 ml Voa w/ HCl	2	X	[redacted]		-20	
[illegible]		1850	So	Soil in Pet G	1	X		-12		
[illegible]	↓	1850	Aq	40 ml Voa w/ HCl	2	X			-21	~~Run TB for GH~~
~~TB~~			~~Aq~~	~~Tripblank / Lab Blank 40ml Voa~~	~~2~~	~~X~~				LB for Lab only

Signature	Print Name	Company	Date	Time
Terry James	TERRY JAMES	GROUND WATER TECHNOLOGY	2/8/95	9:0
Bill Lyons	Bill Lyons	B.C.A.	2-8-95	10
Bill Lyons	Bill Lyons	BCA	2-8-95	

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

KEY: AQ - Aqueous NA - Nonaqueous SL - Sludge GW - Groundwater SO - Soil OT - Other

ANALYTICAL

CHAIN OF CUSTODY RECORD

BCA Log Number ______

Client name	GROUND WATER TECHNOLOGY	Project or PO#	02020 0059
Address	4057 Port Chicago Hwy	Phone #	510 671 2387
City, State, Zip	Concord CALIF	Report attention	TIM WATCHERS
Sampled by	Terry James		

Analyses required: BTEX TPH-6; Hazardous sample / Special handling required

Lab Sample number	Date sampled	Time sampled	Type* See key below	Sample description	Number of containers	BTEX TPH-6	Remarks
B5	2/7	1400	Aq	40 ml Voa's w/ HCl	2	X	BTEX EPA
B6/3	↓	1500	So	Soil in PET 6	1	X	5030/8020
B6		1515	Aq	40ml Voa's w/ HCl	2	X	TPH6 EPA
B7/3		1600	So	Soil in PET 6	1	X	5030/8015M
B7		1615	Aq	40ml Voa's w/ HCl	2	X	
B8/3		1713	So	Soil in Pet 6	1	X	5 DAY TAT
B8		1720	Aq	40ml Voa w/ HCl	2	X	
B9/3		1850	So	Soil in Pet 6	1	X	
B9		1850	Aq	40ml Voa w/ HCl	2	X	
~~TB/LB~~			~~Aq~~	~~Tripblank / Lab Blank 40ml Voa~~	~~2~~	~~X~~	{Run TB for GTI / LB for Lab only}

	Signature	Print Name	Company	Date	Time
Relinquished by	Terry James	TERRY JAMES	GROUND WATER TECHNOLOGY	2/8/95	9:00
Received by	Bill Lyons	Bill Lyons	B.C.A.	2-8-95	1043
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory					

B C ANALYTICAL
☒ 1255 Powell Street, Emeryville, CA 94608 (510) 428-2300
☐ 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
☐ 1200 Gene Autry Way, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: ______

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil OT—Other PE—Petroleum

CHAIN OF CUSTODY RECORD

BCA Log Number _____

Client name	Project or PO#
GROUNDWATER TECHNOLOGY	02020 0059
Address	**Phone #**
4057 PORT CHICAGO HWY	(510) 671 2387
City, State, Zip	**Report attention**
CONCORD CALIF	TIM WATCHERS

Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by TERRY JAMES / Sample description	Number of containers	BTEX/TPH 6	Hazardous sample / Special handling required	Remarks
B1/5	2/7	8:15	SO	Soil in Pet 6	1	X		BTEX by EPA
B1/10		8:26	SO	"	1	X		Method 5030/8020
B1		9:00	OA	40ml VOA's w/HCl	2	X		TPH 6 by EPA
B2/4		10:00	SO	Soil in Pet 6	1	X		Method 5030/8015m
B2/10		10:10	SO	"	1	X		
B2		10:00	OA	40 ml VOA's w/HCL	2	X		5 DAY TAT
B3/5		11:15	SO	Soil in Pet 6	1	X		
B3/10		11:30	SO	"	1	X		
B3		11:30	OA	40ml VOA's w/HCl	2	X		
B4/5		12:30	SO	Soil in Pet 6	1	X		
B4		12:45	OA	40ml VOA's w/HCl	2	X		
B5/3		13:47	SO	Soil in Pet 6	1	X		

	Signature	Print Name	Company	Date	Time
Relinquished by	Terry James	TERRY JAMES	GROUNDWATER TECHNOLOGY	2/8/95	9:00
Received by	Bill Lyons	Bill Lyons	BCA	2-8-95	10:25
Relinquished by					
Received by					
Relinquished by					
Received by Laboratory					

B.C ANALYTICAL

☑ 1255 Powell Street, Emeryville, CA 94608 (510) 428-2300

☐ 801 Western Avenue, Glendale, CA 91201 (818) 247-5737

☐ 13200 Gpo Autry Way, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge GW—Groundwater SO—Soil OT—Other PE—Petroleum

Project Name: TES/LINCOLN

Site Address: 1127 LINCOLN AVE

Project Number: 02-02000049.030532

Date: 5/19/95

Page 1 of 3

Project Manager: BRIAN GARBER

Well ID: MW-11

Well Diameter: 4"

DTW Measurements:
Initial: 3.26
Recharge:
DTB: 12-95

Calc Well Volume: gal
Well Volume: X 10 60 gal

Purge Method
Peristaltic
Gear Drive
Submersible

Pump Depth ft.
Hand Bailed X
Air Lift
Other

Instruments Used
YSI:
Hydac:
Omega:
Other:

WELL DEVELOPMENT

Time	DTW	DTB	Purge Volume Gallons	Turbidity	Comments
10:08	4.08	13.40	10	DRK BROWN	
10:14	12.68	14.60	20	↓	
10:27	12.99	14.15	30	↓	DRY @ 30 gallons
			40		WELL IS STILL SILTY
			50		BAILED OUT APPROX 1/2 gallon OF SAND.
			60		

GROUNDWATER TECHNOLOGY

Project Name: TES/Lincoln

Site Address: 1127 LINCOLN AVE

Project Number: 020200049.030532

Date: 5/19/95

Page 2 of 3

Project Manager: BRIAN GARBER

Well ID: MW-10

Well Diameter: 4"

DTW Measurements:
Initial: 5.60
Recharge:
DTB: 13.90

Calc Well Volume: 5.4 gal
Well Volume: x10 54 gal

Purge Method
Peristaltic
Gear Drive
Submersible

Pump Depth ft.
Hand Bailed X
Air Lift
Other

Instruments Used
YSI:
Hydac:
Omega:

Other:

WELL DEVELOPMENT

Time	DTW	DTB	Purge Volume Gallons	Turbidity	Comments
10:50	7.25	14.15	5	DRK BROWN	SILTY
10:55	10.50	14.15	10		
11:00	10.98	14.45	20		HARD BOTTOM
11:06	14.01	14.45	25		DRY @ 25 GALLONS

GROUNDWATER TECHNOLOGY

Project Name: TES/Lincoln

Site Address: 1127 LINCOLN AVE

Project Number: 020200049-030532

Date: 5/19/95

Page 3 of 3

Project Manager: BRIAN CARBER

Well ID: MW-9

Well Diameter: 4"

DTW Measurements:
Initial: 5.80
Recharge:
DTB: 14.25

Calc Well Volume: 5.5 gal
Well Volume: x1 5.5 gal

Purge Method
Peristaltic
Gear Drive
Submersible

Pump Depth ft.
Hand Bailed X
Air Lift
Other

Instruments Used
YSI:
Hydac:
Omega:

Other:

WELL DEVELOPMENT

Time	DTW	DTB	Purge Volume Gallons	Turbidity	Comments
11:40	9.81	14.25	5	BRK Brown	SLTY
11:43	11.09	14.25	10	↓	↓
11:48	12.89	14.60	20	↓	HARDBOTTOM
11:54	13.00	14.60	25	↓	DRY @ 25 gallons

GROUNDWATER TECHNOLOGY

Project Name: TEXACO - LINCOLN

Date: 5.22.95

Site Address: 1127 Lincoln Ave. Alameda.

Page 1 of 3

Project Number: 020200049.030532

Project Manager: Brian Garber

Well ID: MW-11

Well Diameter: 4"

DTW Measurements:
Initial: _____
Recharge: _____

Calc Well Volume: 6.59 gal
Well Volume: 3 19.7 gal

Purge Method
Peristaltic _____
Gear Drive _____
Submersible X

Pump Depth _____ ft.
Hand Bailed _____
Air Lift _____
Other _____

Instruments Used
YSI: _____
Hydac: _____
Omega: X

Other: _____

Time	Temp X C / F	Conductivity	pH	Purge Volume Gallons	Turbidity	Comments
12:00	16.5	.489	7.72	0		Clear Cloudy
12:03	16.5	.220	7.61	7		"
12:05	16.4	.214	7.37	10		"
		DRY				

Project Name: TEXACO - LINCOLN

Site Address: 1127 Lincoln Ave. Alameda.

Project Number: 020200049.030532

Date: 5.22.95

Page 2 of 3

Project Manager: Brian Garber

Well ID: MW-10

Well Diameter: 4"

DTW Measurements:
Initial: /
Recharge: /

Calc Well Volume: 5.62 gal
Well Volume: 3 16.8 gal

Purge Method
Peristaltic
Gear Drive
Submersible X

Pump Depth ft.
Hand Bailed
Air Lift
Other

Instruments Used
YSI:
Hydac:
Omega: X

Other:

Time	Temp X C / F	Conductivity	pH	Purge Volume Gallons	Turbidity	Comments
12:23	16.9	.857	7.19	0		clear cloudy
12:25	16.8	.972	7.27	6		"
12:26	16.7	1.01	7.48	8		"
		DRY				

Project Name: TEXACO - LINCOLN

Date: 5.22.95

Site Address: 1127 Lincoln Ave, Alameda.

Page 3 of 3

Project Number: 020200049,030532

Project Manager: Brian Garber

Well ID: MW-9

Well Diameter: 4"

DTW Measurements:
Initial: —
Recharge: —

Calc Well Volume: 5.67 gal
Well Volume: 3 17.0 gal

Purge Method
Peristaltic
Gear Drive
Submersible

Pump Depth ft.
Hand Bailed
Air Lift
Other

Instruments Used
YSI:
Hydac:
Omega:
Other:

Time	Temp K C F	Conductivity	pH	Purge Volume Gallons	Turbidity	Comments
12:38	15.9	.888	7.53	8		Cloudy
12:40	16.0	.927	7.50	6		"
12:41	16.0	.928	7.50	7		"
			DRY			

RONALD
GREENWELL
& ASSOCIATES, INC.

• Land Development • Surveying • G.P.S. •

10 S. Lake Drive, Suite 1
Antioch, CA 94509-2057
(510) 778-0626

GROUND WATER MONITORING WELL LOCATIONS
AT
FORMER TEXACO SERVICE STATION
TEXACO ENVIRONMENTAL #62-488-1450
1127 LINCOLN AVENUE
ALAMEDA CALIFORNIA

	ELEVATION		
WELL #	LID	PVC	ASPHALT
MW-9	14.69	14.44	14.64
MW-10	15.41	15.04	15.34
MW-11	11.33	10.61	11.33

NOTES

1. Elevations are based on National Geodetic Vertical Datum of 1929 (NGVD29). Project Bench Mark is Well MW-4, elevation = 17.13.
2. Lid elevations are taken on the north rim of the steel lid casing marked by a punch mark or three chisel marks, unless noted otherwise.
3. PVC elevations are taken on the north rim of PVC pipe casing and marked by cut "V" and marking pen, unless noted otherwise.
4. Survey conducted on June 9, 1995.
5. Revised June 13, 1995 to correct elevation of MW-10.

LICENSED LAND SURVEYOR
RONALD
C.
GREENWELL
Exp. 9-30-96
L.S. 4802
STATE OF CALIFORNIA

W.O.#1344.09
06-13-95

APPENDIX D

Drill Logs and Well Construction Specifications

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring B-1

Project TES/Lincoln Ave Owner Texaco
Location 1127 Lincoln Ave. Alameda Proj. No. 020200049
Surface Elev. ____ Total Hole Depth 12 ft. Diameter 2" in.
Top of Casing ____ Water Level Initial 6 ft. Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material Neat cement Rig/Core Geo-probe/continuous
Drill Co. Artesian Method Direct penetration technology
Driller John Taylor Log By Terry James Date 02/07/95 Permit # 95-0003
Checked By Ed Simonis License No. RG 4422

See Site Map For Boring Location

COMMENTS:

Start 7:44, end 9:00 .

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0				ASP		3" Asphalt
2				Base		Base course
4						Silty SAND (20,80): light-brown, loose, moist, slight hydrocarbon odor.
6	200	B1/5			SM	Grades green staining, strong hydrocarbon odor.
						Encountered groundwater 8:26
10	3	B-1/10				Grades light-brown, no hydrocarbon odor.
12						End of Boring

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring B-2

Project TES/Lincoln Ave Owner Texaco
Location 1127 Lincoln Ave. Alameda Proj. No. 020200049
Surface Elev. ____ Total Hole Depth 11 ft. Diameter 2" in.
Top of Casing ____ Water Level Initial 4 ft. Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material Neat cement Rig/Core Geo-probe/continuous
Drill Co. Artesian Method Direct penetration technology
Driller John Taylor Log By Terry James Date 02/07/95 Permit # 95-0003
Checked By Ed Simonis License No. RG 4422

See Site Map For Boring Location

COMMENTS:

Start 9:21, end 10:15 Groundwater sampled

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0						3" Asphalt Concrete
2					SM	Silty SAND (20,80): light-brown, loose, moist, no hydrocarbon odor.
4						*Encountered groundwater 10:10*
6	3	B2/5				Grades Clayey SAND (20,80): brown, no hydrocarbon odor.
8					SC	
10	2	B-2/9				End of Boring
12						
14						
16						
18						
20						
22						
24						

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring B-3

Project *TES/Lincoln Ave* Owner *Texaco*
Location *1127 Lincoln Ave. Alameda* Proj. No. *020200049*
Surface Elev. ____ Total Hole Depth *12 ft.* Diameter *2" in.*
Top of Casing ____ Water Level Initial *5 ft.* Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material *Neat cement* Rig/Core *Geo-probe/continuous*
Drill Co. *Artesian* Method *Direct penetration technology*
Driller *John Taylor* Log By *Terry James* Date *02/07/95* Permit # *95-0003*
Checked By *Ed Simonis* License No. *RG 4422*

See Site Map For Boring Location

COMMENTS:

Start 10:25, end 11:35 Groundwater sampled

Depth (ft.)	PID (ppm)	Sample ID	Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0						3" Asphalt
						Concrete
2						Clayey fine SAND (20,80): brown-red, moist, no hydrocarbon odor.
4						Grades interbedded Clayey SAND (50,50): blue-gray, no hydrocarbon odor.
6	0	B3/5			SC	*Encountered groundwater 11:30*
8						
10	0	B3/9				
12						End of Boring
14						
16						
18						
20						
22						
24						

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring B-4

Project TES/Lincoln Ave Owner Texaco
Location 1127 Lincoln Ave. Alameda Proj. No. 020200049
Surface Elev. ____ Total Hole Depth 5 ft. Diameter 2" in.
Top of Casing ____ Water Level Initial 3 ft. Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material Neat cement Rig/Core Geo-probe/continuous
Drill Co. Artesian Method Direct penetration technology
Driller John Taylor Log By Terry James Date 02/07/95 Permit # 95-0003
Checked By Ed Simonis License No. RG 4422

See Site Map For Boring Location

COMMENTS:

Start 11:25, end 12:35 Groundwater sampled

Depth (ft.)	PID (ppm)	Sample ID	Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						3" Asphalt
						Concrete
2						Clayey fine SAND (20,80): brown, moist, no hydrocarbon odor.
					SC ▽	*Encountered groundwater 11:30*
4	0	B4/5				End of Boring
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring B-5

Project TES/Lincoln Ave Owner Texaco
Location 1127 Lincoln Ave. Alameda Proj. No. 020200049
Surface Elev. ____ Total Hole Depth 5 ft. Diameter 2" in.
Top of Casing ____ Water Level Initial 3 ft. Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material Neat cement Rig/Core Geo-probe/continuous
Drill Co. Artesian Method Direct penetration technology
Driller John Taylor Log By Terry James Date 02/07/95 Permit # 95-0003
Checked By Ed Simonis License No. RG 4422

See Site Map For Boring Location

COMMENTS:

Start 13:35, end 14:00 Groundwater sampled

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0						3" Asphalt
						Concrete
2	0	B5/3			SC	Clayey fine SAND (20,80): brown, moist, no hydrocarbon odor.
						Encountered groundwater 14:00
4						End of Boring
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring B-6

Project TES/Lincoln Ave Owner Texaco
Location 1127 Lincoln Ave. Alameda Proj. No. 020200049
Surface Elev. ____ Total Hole Depth 5 ft. Diameter 2" in.
Top of Casing ____ Water Level Initial 3 ft. Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material Neat cement Rig/Core Geo-probe/continuous
Drill Co. Artesian Method Direct penetration technology
Driller John Taylor Log By Terry James Date 02/07/95 Permit # 95-0003
Checked By Ed Simonis License No. RG 4422

See Site Map For Boring Location

COMMENTS:

Start 14:15, end 15:00 Groundwater sampled

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0						3" Asphalt
						Concrete
2						Clayey fine SAND (20,80): light-brown, moist, no hydrocarbon odor.
4	0	B6/3			SC	*Encountered groundwater 15:00*
						End of Boring

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring B-7

Project TES/Lincoln Ave Owner Texaco
Location 1127 Lincoln Ave. Alameda Proj. No. 020200049
Surface Elev. ____ Total Hole Depth 5 ft. Diameter 2" in.
Top of Casing ____ Water Level Initial 3 ft. Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material Neat cement Rig/Core Geo-probe/continuous
Drill Co. Artesian Method Direct penetration technology
Driller John Taylor Log By Terry James Date 02/07/95 Permit # 95-0003
Checked By Ed Simonis License No. RG 4422

See Site Map For Boring Location

COMMENTS:

Start 15:15, end 16:30 Groundwater sampled

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0						3" Asphalt
						Concrete
2	0	B7/3			SC	Clayey fine SAND (20,80): light-brown, moist, no hydrocarbon odor.
						Encountered groundwater 16:00
4						End of Boring
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring B-8

Project *TES/Lincoln Ave* Owner *Texaco*
Location *1127 Lincoln Ave. Alameda* Proj. No. *020200049*
Surface Elev. _____ Total Hole Depth *5 ft.* Diameter *2" in.*
Top of Casing _____ Water Level Initial *3 ft.* Static _____
Screen: Dia _____ Length _____ Type/Size _____
Casing: Dia _____ Length _____ Type _____
Fill Material *Neat cement* Rig/Core *Geo-probe/continuous*
Drill Co. *Artesian* Method *Direct penetration technology*
Driller *John Taylor* Log By *Terry James* Date *02/07/95* Permit # *95-0003*
Checked By *Ed Simonis* License No. *RG 4422*

See Site Map For Boring Location

COMMENTS:

Start 16:45, end 17:30 Groundwater sampled

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						3" Asphalt
					base	Base course
2						Silty fine SAND (20,80): light-brown, moist, no hydrocarbon odor.
	0	B7/3			SM	▽ *Encountered groundwater 16:30*
4						End of Boring
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring B-9

Project TES/Lincoln Ave Owner Texaco
Location 1127 Lincoln Ave. Alameda Proj. No. 020200049
Surface Elev. ____ Total Hole Depth 5 ft. Diameter 2" in.
Top of Casing ____ Water Level Initial 3 ft. Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material Neat cement Rig/Core Geo-probe/continuous
Drill Co. Artesian Method Direct penetration technology
Driller John Taylor Log By Terry James Date 02/07/95 Permit # 95-0003
Checked By Ed Simonis License No. RG 4422

See Site Map For Boring Location

COMMENTS:

Start 17:15, end 18:30 Groundwater sampled

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0						3" Asphalt
					base	Base course
2	0	B9/3			SM	Silty fine SAND (20,80): light-brown, moist, no hydrocarbon odor.
						▽ *Encountered groundwater 17:30*
4						End of Boring
6						
8						
10						
12						
14						
16						
18						
20						
22						
24						

Drilling Log

GROUNDWATER TECHNOLOGY

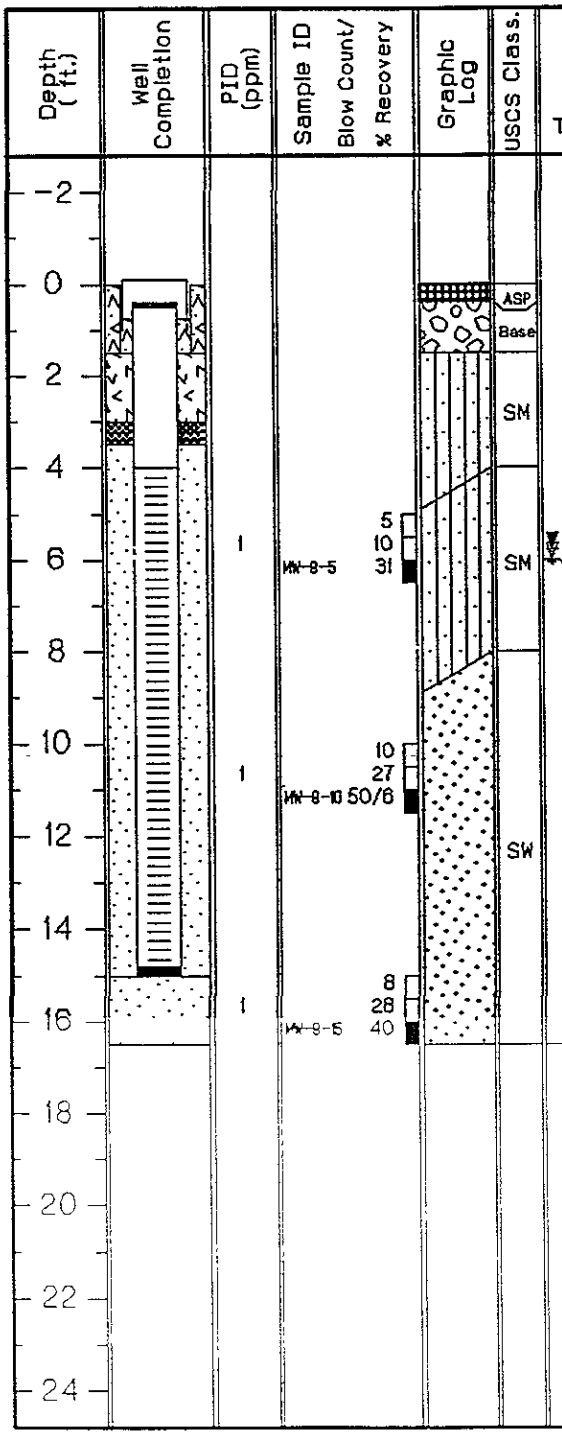
Monitoring Well **MW-9**

Project TES/Lincoln Ave Owner Texaco USA
Location 1127 Lincoln Ave. Alameda Proj. No. 020200049
Surface Elev. ____ Total Hole Depth 16.5 ft. Diameter 10 in.
Top of Casing ____ Water Level Initial 6 ft. Static 5.79 ft.
Screen: Dia 4 in. Length 11 ft. Type/Size 0.020 in.
Casing: Dia 4 in. Length 3.5 ft. Type PVC
Fill Material Monterey Sand #3 Rig/Core Simco 2400SK-1
Drill Co. Geo Environmental Method 10 in. Hollows Stem Auger
Driller Jim Condry Log By Terry James Date 5/17/95 Permit # 95282
Checked By Ed Simonis License No. RG 4422

See Site Map For Boring Location

COMMENTS:

Start time 10:30, end time 12:30. High blowcounts resulting from Sand volume expanding into sampler.



Description

(Color, Texture, Structure)
Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

4" Asphalt

Very large cobbles.

Silty, Clayey fine SAND (10,15,75): medium brown, soft, damp, no hydrocarbon odor.

Grades light brown.

Groundwater after 24 hrs.
Encountered groundwater while drilling, 5/17/95

(Grades trace red mottling, saturated.)

(Grades dark-brown.)

Silty, Clayey fine SAND (10,15,75): tan, dense, wet, no hydrocarbon odor.

End of Boring

Drilling Log

GROUNDWATER TECHNOLOGY

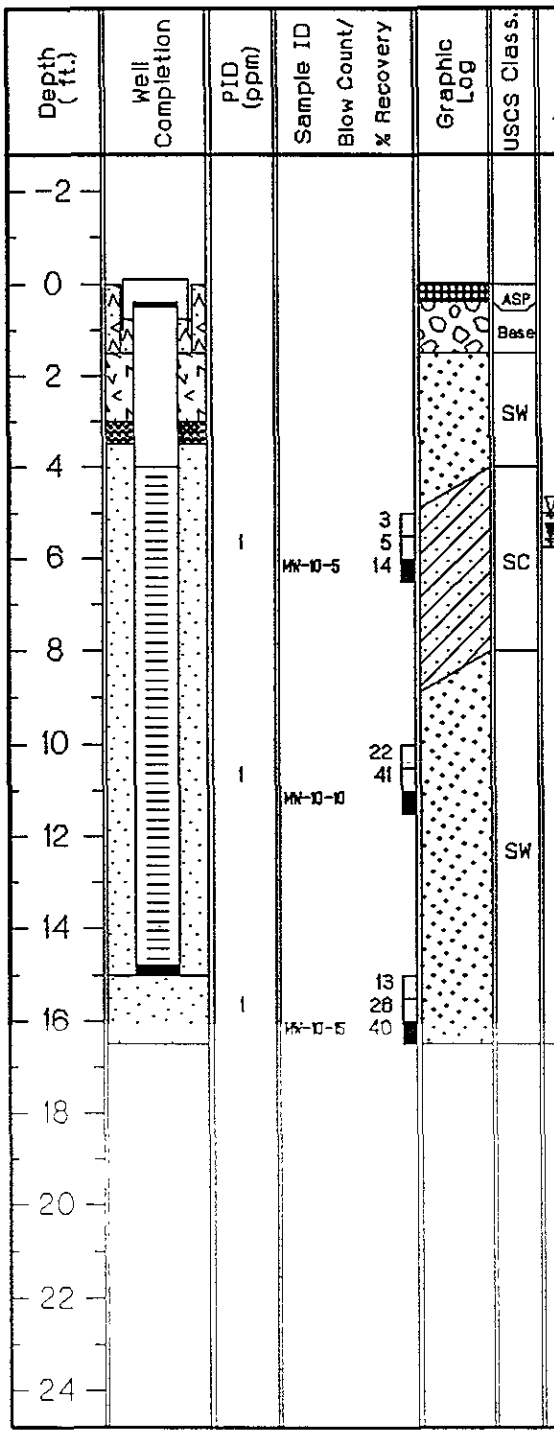
Monitoring Well MW-10

Project TES/Lincoln Ave Owner Texaco USA
Location 1127 Lincoln Ave. Alameda Proj. No. 020200049
Surface Elev. ____ Total Hole Depth 16.5 ft. Diameter 10 in.
Top of Casing ____ Water Level Initial 5 ft. Static 5.59 ft.
Screen: Dia 4 in. Length 11 ft. Type/Size 0.020 in.
Casing: Dia 4 in. Length 3.5 ft. Type PVC
Fill Material Monterey Sand #3 Rig/Core Simco 2400SK-1
Drill Co. Geo Environmental Method 10 in. Hollows Stem Auger
Driller Jim Condry Log By Terry James Date 5/17/95 Permit # 95282
Checked By Ed Simonis License No. RG 4422

See Site Map For Boring Location

COMMENTS:

Start time 12:30, end time 15:30. Sampling interval MW-10-10, sampler driven 1 ft., with 1.5 ft. of recovery.



Description

(Color, Texture, Structure)
Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

4" Asphalt

Very large cobbles.

Clayey, Silty fine SAND (5,5,90): medium brown, soft, damp, pieces of debris (Stucco), no hydrocarbon odor.

Clayey SAND (30,70): tan, slightly plastic, soft, damp, no hydrocarbon odor, trace red mottling.

Groundwater encountered while drilling, 5/17/95.

Groundwater level after 24 hrs.

Clayey, Silty SAND (10,10,80): brown, saturated, trace dark mottling, no hydrocarbon odor.

(Grades trace sub-angular, fine Gravel.)

End of Boring

Drilling Log

GROUNDWATER TECHNOLOGY

Monitoring Well **MW-11**

Project *TES/Lincoln Ave* Owner *Texaco USA*
Location *1127 Lincoln Ave. Alameda* Proj. No. *020200049*
Surface Elev. ____ Total Hole Depth *16.5 ft.* Diameter *10 in.*
Top of Casing ____ Water Level Initial *3 ft.* Static *3.33 ft.*
Screen: Dia *4 in.* Length *12 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *3 ft.* Type *PVC*
Fill Material *Monterey Sand #3* Rig/Core *Simco 2400SK-1*
Drill Co. *Geo Environmental* Method *10 in. Hollows Stem Auger*
Driller *Jim Condry* Log By *Terry James* Date *5/18/95* Permit # *95282*
Checked By *Ed Simonis* License No. *RG 4422*

See Site Map For Boring Location

COMMENTS:

Start time 12:00, end time 14:30.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0						ASP	4" Asphalt
0						Base	Very large cobbles.
2						SM	Clayey, Silty fine SAND (10,20,70): red-brown, no hydrocarbon odor.
4							*Encountered groundwater while drilling, 5/17/95*
4							*Groundwater level after 4 hrs.*
6		1	MW-11-5	10 30 50/5		CL/SC	Sandy CLAY (40,60) and Clayey SAND (40,60): gray, slightly plastic, wet, no hydrocarbon odor, sand is fine.
8							(Grades olive-green)
10		3	MW-11-10	15 15 14		SM	Clayey Silty fine SAND (20,20,60): olive-gray, slighlty plastic, soft, wet, no hydrocarbon odor, 20% red-brown mottling.
12							
14						SW	Clayey Silty fine SAND (10,10,80): light-brown, saturated, no odor.
16		3	MW-11-15	12 24 37			
16							End of Boring
18							
20							
22							
24							

APPENDIX E

Sanitary Sewer and Storm Drain Location Map

1 1 1 (16)

Post-it® Fax Note 7671 | Date | # of pages ▶ 2

To Tim Watchers	From The City of Alameda
Co./Dept. Groundwater Tech.	Co.
Phone #	Phone #
Fax # 685-9148	Fax #

1 of 2

VISTA AVE

60" E.B.M.U.D. INTERCEPTOR

BUENA VISTA AVE

PACIFIC AVE

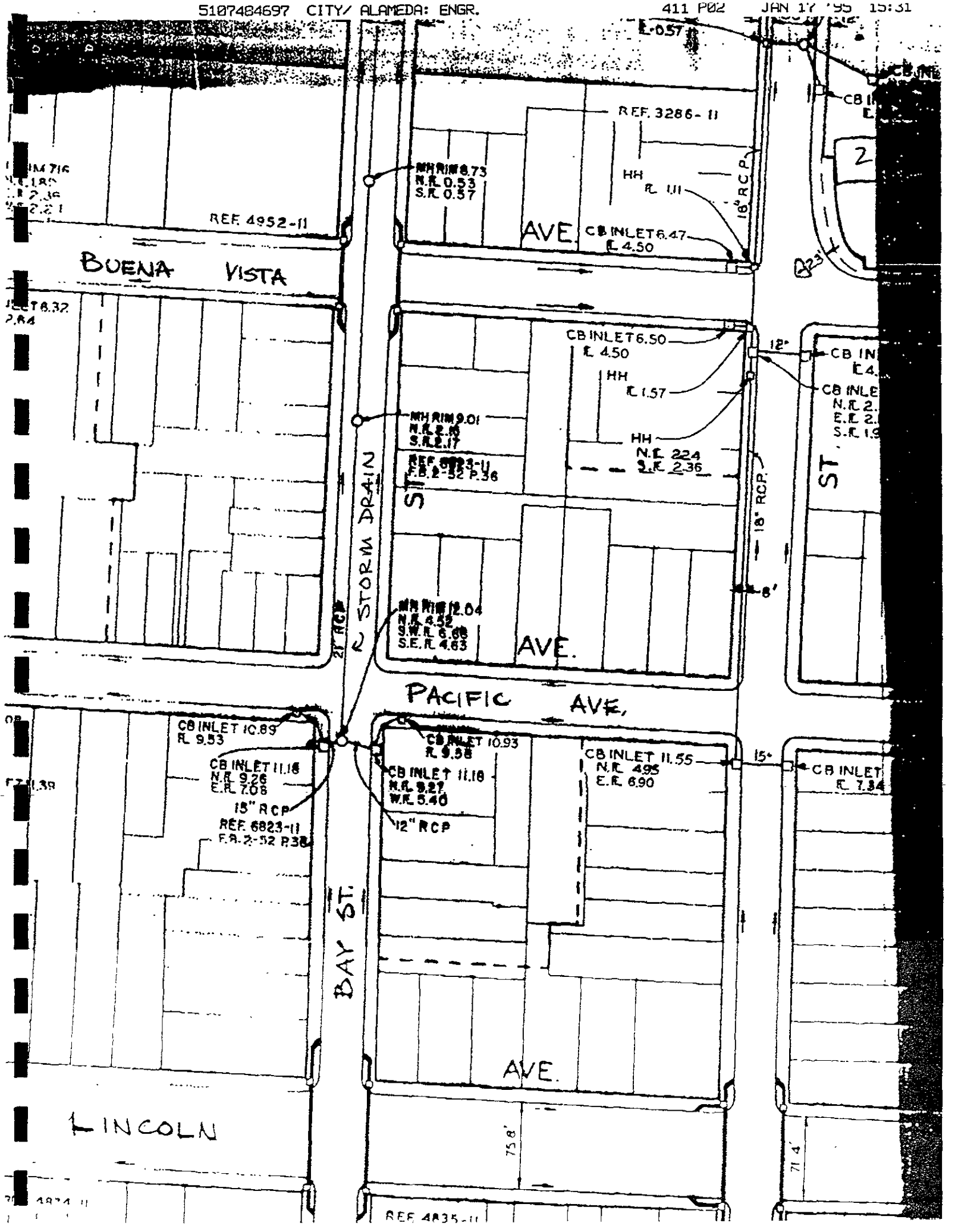
SANITARY SEWER

CHARLES ST

BAY ST

LINCOLN

E.B.M.U.D. VG473


REF. 3286-11
MH RIM 8.73
N.R. 0.53
S.R. 0.57
HH
R. 1.11
18" RCP
CB INLET 6.47
R. 4.50
AVE.
REF. 4952-11
BUENA VISTA
CB INLET 6.50
R. 4.50
HH
R. 1.57
MH RIM 9.01
HH
N.R. 2.24
S.R. 2.36
REF. 6823-11
F.B. 2-52 P.36
ST.
18" RCP
21" RCP
STORM DRAIN
MH RIM 12.04
N.R. 4.52
S.W.R. 6.66
S.E.R. 4.63
AVE.
PACIFIC AVE.
CB INLET 10.89
R. 9.53
CB INLET 11.18
N.R. 9.26
E.R. 7.08
15" RCP
REF. 6823-11
F.B. 2-52 P.38
CB INLET 10.93
R. 9.58
CB INLET 11.18
N.R. 9.27
W.R. 5.40
12" RCP
CB INLET 11.55
N.R. 4.95
E.R. 6.90
15"
BAY ST.
AVE.
LINCOLN
75.8'
71.4'
REF. 4835-11