Environmental Restoration Services

Site Investigations • Fuel Tank Closures • Remediation Technologies • Regulatory Reporting

Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Second Floor
Alameda, CA 94502

August 18, 1995

Attn: Mr. Barney Chan; Haz Mat. Specialist for : DiSalvo Trucking
4919 Tidewater Ave., Oakland

Re: Investigative Report, Groundwater Extraction/Disposal Description

Dear Mr. Chan,

This report has been prepared by Environmental Restoration Services, (ERS) to address requirements by the Alameda County Department of Environmental Health (ACDEH) for the performance of a groundwater investigation at a Underground Storage Tank (UST) site, 4919 Tidewater Ave., Oakland, California.

The purpose of this investigation was to further determine the hydraulic groundwater gradient and the horizontal extent of hydrocarbons in soil and groundwater. This report first reviews the known site history, describes the site vicinity, and presents existing chemical data. Then, the findings of the investigation are presented including on-site soil sampling and the construction of an additional monitor well with associated soil sampling, monitor well development, sampling and gradient determination.

1.2 Site Location

The site is located in a light industrial district of Oakland, California on property at 4919 Tidewater Ave.(Figure 1).

1.3 Previous Subsurface Work at Site

Previous subsurface work at the site includes soil excavation and bio remediation, groundwater disposal, soil borings and sampling, monitor well construction and sampling. Description and chemical results from all work conducted to date are given in reports by Geo Environmental Technology (GTE) of San Jose dated April, 1989, June 1989 and February 1991 and in reports by Gen-Tech Environmental, Inc., (GTE) dated May 1994 and November 1994.

2.0 SITE DESCRIPTION

2.1 Site Description and Hydrogeologic Setting

The site is located on the west side of Tidewater Ave.. A 8000 square foot metal building is located on the northwest portion of the approximate one acre parcel. The majority of the remaining property is paved with asphalt.

The site is located at the fringe of the San Francisco Bay on soil that appears to have been imported to fill the location to approximately four feet above the mean high tide elevation. The imported fill caps the entire site and contains sands, gravels, concrete and asphalt. Native silty clay, silt, clayey sand and peat underlie this fill.

2.2 Vicinity Map

A vicinity map is given in Figure 1 which includes the location of any known hydraulic influences. The San Francisco Bay lies approximately 100 feet southeast of the site. A site map is given in Figure 2 which includes information on adjacent streets, site building locations, locations of existing wells, past soil borings and former tanks.

2.3 Existing Analytical Results

In April of 1994, three monitoring wells were installed at the site at locations shown in Figure 4 and 6. Corresponding analytical results for TPH/g, TPH/d and BTEX are shown in the GTE Figure 6.

In April of 1994, eleven soil boring were advanced at the site by GTE at locations shown in the GTE Figure 4 and 6. Groundwater grab samples were recovered from each boring and tested for TPH/g, TPH/d and BTEX. Corresponding analytical results for TPH/g, TPH/d and BTEX are shown in the GTE Figure 6.

2.3.2 **Depth to Groundwater**

Depth to groundwater based on the monitor well sampling is approximately two to three feet below ground surface.

2.3.3 **Soil Profile**

The boring logs for the monitor wells show predominantly import sands and gravels underlain with peat.

2.3.4 **Location of Samples and Analytical Results**

The GTE April of 1994 soil and water sampling locations with corresponding analytical results are shown in Figure 4 and 6 of the ERS June 1995 Workplan.

2.4 Waste Removal

Three fuel tanks, one waste oil tank and approximately 40,000 gallons of hydrocarbon impacted groundwater have been removed from the site. No documentation exists for the disposal of soils, wash water, or groundwater from monitor well construction. Groundwater and wash-water generated by the shallow soil borings was placed in 55-gallon drums. Soils generated by borings are presently stored on-site in a 55-gallon drums.

3.0 FINDINGS OF THE INVESTIGATION

3.1 Introduction

Based on the hydrogeology of the site vicinity, ERS believes that the vertical distribution of groundwater containing hydrocarbons does not require investigation. The floating characteristics of the low density hydrocarbons, make the downward migration of hydrocarbons a low probability.

In addition, ERS believes that the extent of any soil contamination on the site is due to the migration of the hydrocarbon on the shallow groundwater as it moves through the imported sand and gravel fill material. Most of the impacted soil was adequately removed by the 1989 excavation.

Because the contaminates exist within the relatively shallow aquifer range (0.5 to 5 feet) at the site and this section of the subsurface contains sand and gravel fill materials, ERS believes that a groundwater extraction system, designed to extract from known " hot spot" locations, will work well to both remove the higher concentrations of hydrocarbon from the groundwater and help to draw back the relative slow migration of the plume.

The lateral extent of groundwater contamination at the site has been defined to the South, West and East during the April of 1994 GTE investigation by the existing monitor well MW1 and soil borings EB-5 through EB-10, (shown in Figure 6). The northwestern portion of the site and needed to be further defined.

On the basis of the past investigative findings, the scope of this investigation was limited to further determination of the hydraulic gradient and to further investigate the extent of hydrocarbons in the groundwater. At the request of the ACDEH two soil samples were recovered along a former product line that runs from the former tank location to the northwest (Figure 3).

The investigation also included drilling and construction of one additional monitor well on the site, development and sampling of the new monitor well, hydraulic gradient determination, and quarterly monitoring of all existing wells.

3.2 On-site Soil Sampling

On July 19, 1995 two borings were constructed to determine the presence of higher concentrations of hydrocarbons in the soil below the former northwest product line. The locations of the borings were based on GTE drawings of the site. As such, the borings SB-I and SB-2 were located to the northwest of the former tanks at the locations shown in Figure 3.

Prior to mobilization of the drilling equipment on-site, and prior to leaving the site, all associated equipment and well installation equipment was thoroughly cleaned to removed all soil, oil, grease, mud, tar, etc. The cleaning process consisted of TSP cleaning of the drilling equipment and a clean water final rinse. Before drilling each boring, all drill stems, bits, and other down-hole equipment was cleaned.

3.2.1 **Soil Boring Procedure**

The borings were advanced using a three-inch diameter hand auger to a depth of four feet. All of the soil recovered from the boring was logged under the supervision of a registered civil engineer. Visual and olfactory observations of petroleum hydrocarbons were made and recorded on the boring log.

3.2.2 **Soil Sampling Procedures**

Soil samples were obtained from each boring at a depth of 4 feet. Samples were recovered in a two inch diameter by three inch brass sample container within a bullet sampler.

At the desired sample depth, the sleeved, bullet sampler was driven into the undisturbed soil until the sample container had completely filled with soil. Upon removal of the sample container from the bullet sampler, the container ends were sealed with Teflon sheet and plastic caps.

Sample containers were obtained directly from the analytical laboratory.

Sample containers were labeled with self-adhesive tags. Field personnel will label each tag, using waterproof ink, with the following information: Sampling location and number, Project name, Date and time samples were collected, Treatment (preservatives, filtered, etc.), Name of sampler.

Subsequent to collection, the samples were immediately stored on ice in an appropriate ice chest. Samples were transferred under Chain-of-Custody procedures to Hull Developmental Labs of San Jose.

Care was taken to collect all excess water resulting from the sampling and cleaning procedures. The excess water is contained in a pre-labeled 55-gallon drum on-site pending receipt of laboratory analyses.

The borings were backfilled immediately after completion of the sampling with a cement grout mixture containing approximately 3% bentonite.

3.2.3 **Laboratory Analyses**

The following analyses will be performed by a State Certified Laboratory on groundwater samples obtained from the borings:

TPH-diesel (EPA Method 3550/8015); BTEX (EPA Method 8020)

The results of the analysis were as follows;

Results in Parts Per Million (PPM)

Sample#	TPH/d	Benzene	Toluene	EthylBenzene	Xylene
SB1@4'	34	ND	ND	ND	ND
SB2@4'	ND	ND	ND	ND	ND

Chain-of-Custody and laboratory results are contained in the appendix.

3.3 Location of New Monitor Well

Because no plume defining wells exist to the northwest of the site, construction of an additional monitor well (MW4) was installed to help determine the horizontal hydraulic gradient and to serve as a possible clean, plume defining monitor well with respect to water quality (Figure 3).

3.4 Monitor Well Drilling and Installation Methods

Prior to initiating drilling, a monitor well permit was obtained from the ACFCWCD, Zone 7.

On July 19, 1995 West Haz Mat Drilling Corp. of Fremont, installed monitoring well MW4. Prior to mobilization of the drill rig on-site, and prior to leaving the site, all associated equipment and well installation equipment was thoroughly cleaned to removed all soil, oil, grease, mud, tar, etc. The cleaning process consisted of high pressure steam cleaning of the drilling equipment and a high-pressure hot water final rinse. Before drilling the boring, all drilling equipment was steam-cleaned.

A nominal 8-inch diameter boring was advanced using a hollow stem auger. Soils were visually logged and samples collected every four feet. In addition, olfactory and visual observations of petroleum hydrocarbons were noted on the logs.

Based on a groundwater depth of approximately 3 feet in the other wells located at the site, the boring was terminated, and the monitor well constructed, at a depth of approximately 8 feet below ground surface. The well casing and screens for the monitor well will be constructed with 2-inch diameter, Schedule 40, flush-joint threaded material. The PVC screens will consist of factory-milled 0.020 inch slots. The screens were installed at the interval from approximately 3 to 8 feet below ground surface.

A sand pack of clean washed Monterey 2/12 sand was placed adjacent to the entire screened interval and was extended a distance of 0.5 feet above the top of the screen. The sand pack was placed by carefully pouring sand down the annulus between the hollow stem and the well casing. The auger was raised periodically and an auger flight removed to allow the sand to fill the annulus between the casing and the borehole wall.

A one foot thick bentonite pellet seal was placed above the sand pack. The seal will be placed in the same manner as the sand pack. The bentonite will be hydrated with clean water at the quantity of 1 gallon per pound of bentonite. The bentonite will be hydrated three times and allowed to swell for a minimum of 45 minutes.

The annulus above the bentonite seal was grouted with a cement/bentonite grout. The grout will consist of clean water mixed with Portland cement and powdered bentonite. The grout was placed after the auger flights are entirely withdrawn from the borehole.

Well completion consisted of a locking PVC cap and subsurface traffic-rated utility box set slightly above grade in concrete.

3.5 Monitor Well Development and Sampling

3.5.1 **Monitor Well Development**

After the concrete and cement/bentonite grout have set for a minimum of 24 hours, the new well, MW4 was developed by swabbing, surging, and bailing with clean equipment in order to prepare the well for collection of a representative groundwater sample. Ten casing volumes were purged from the well until the water is relatively clear. Water generated during development is stored separately, on-site, in labeled 55gallon drums pending analytical results.

3.5.2 **Sampling Procedure**

On August 13, 1995, a single round of groundwater samples were obtained from monitoring wells MW1 through MW4.

Groundwater samples were collected as follows:

Each well was bailed until the volume of water withdrawn is equal to at least four casing volumes. To assure that a representative groundwater sample was collected, periodic measurements of the temperature, pH and specific conductance were made. The sample was collected only when the temperature, pH, and/or specific conductance reached relatively constant values.

A hand operated bailer was used for evacuating the well casing (purging) of each monitor well. Water samples were collected using a new disposable bailer. An effort was made to minimize exposure of the sample to air.

Sample containers were labeled with self-adhesive tags, with the following information: Sampling location and number, Project name, Date and time samples were collected, Treatment (preservatives, filtered, etc.), Name of sampler.

Subsequent to collection, the samples were immediately stored on ice in an appropriate ice chest. Samples were transported under Chain-of-Custody procedures to Priority Environmental Labs (PEL) of Milpitas. why 2 different Labs?

Sample bottles, bottle caps and septa were cleaned by the analytical laboratory subcontractor using standard EPA-approved protocols. Sample bottles, bottle caps, and septa were protected from solvent contact or other contamination.

Sampling equipment was cleaned after its use at each sampling location. Thermometers, pH electrodes, and conductivity probes were also cleaned after sampling of each well. Cleaning procedures shall be accomplished as follows:

Scrub with a detergent-potable water solution; Rinse with potable water;

Care was taken to collect all excess water resulting from the sampling and cleaning procedures. The excess water is contained in a pre-labeled 55-gallon drum on-site pending receipt of laboratory analyses.

3.5.3 **Laboratory Analyses**

The following analyses were performed by PEL on groundwater samples obtained from the monitor wells:

TPH-gasoline TPH-diesel (EPA Method 8015M); BTEX (EPA Method 602)

The results of the analysis were as follows;

Results in Parts Per Billion (PPB)

Sample#	TPH/g	Benzene	Toluene	EthylBenzene	Xylene	TPH/d
MW1	ND	ND	ND	ND	ND	ND
MW2	ND	ND	ND	ND	ND	180
MW3	ND	ND	ND	ND	ND	1500
MW4	450	2.1	0.7	4.1	13	ND

Include laboratories data for easy comparison

Chain-of-Custody and laboratory results are contained in the appendix.

3.6 Determination of Horizontal Groundwater Gradient

On August 13, 1995. the monitor well head elevation of MW4 was surveyed by James Rasp, a California Registered Civil Engineer, to an accuracy of 0.01 feet. Elevations were determined relative to MSL and the existing well heads were used as benchmarks.

On August 13, 1995, the water levels in each of the monitor wells were measured within a one hour period. The water surface elevations in the wells were calculated using the survey data. Then, the horizontal hydraulic gradient was calculated based on accurately determined well locations. The gradient calculated indicates a southwestern direction at a magnitude of approximately 0.5%.

Since groundwater elevations will vary continuously based on tidal action, the average gradient and direction may be different than the one shown for this period in time.

3.7 Reporting

This report contains the documents of the investigation including boring logs, well sampling field notes, chains of custody, and laboratory reports.

4.0 EXTRACTION SYSTEM DESCRIPTION

Groundwater will first be extracted from the existing recovery sump and/or the six inch extraction stand pipe located within the pea gravel backfilled, 1989 excavation (Figure 5). A pumping limit of five gallons per minute has been established for the discharge permit.

A suction pump will be used to draw groundwater from the extraction point to the holding tank. Groundwater is drawn to the pump through a half inch braided poly line contained within an underground 1 1/2 inch, schedule 40, ABS pipe that will have a minimum 1% fall from the pump location back to the recovery point. (Detail in Figure 5.) At the recovery point, the 1 1/2 inch secondary containment pipe will drain into the recovery sump/pipe. (Detail in Figure 5.)

The groundwater will be discharged into a 3000 gallon open top tank. The tank will be equipped with a high water shut off switch. In case of failure, groundwater will over flow through the secondary containment and back to the recovery point.

Floating product will be passively skimmed from the top of the tank using CEE Selective oil Skimmer (CEE Product Specifications attached). The skimmer revision will be emptied weekly into a double contained 55 gallon drum. The drum contents will be removed with the normally scheduled shop waste oil removal.

Diesel contaminated groundwater entering the top of the tank will have approximately 11 hours to separate, with most diesel molecules remaining at the top tank and lower concentrations of dissolved diesel moving to the bottom. The separation tank will discharge from approximately 6 inches off the bottom of tank into a sample box.

Groundwater effluent samples will be recovered from the sample box bi-weekly or as per EBMUD permit requirements. The samples will be recovered by immersing two. 1 liter amble sample bottles and two, 40 VOAs into the sample box with a Teflon gloved hand, until the containers have completely filled with water, with no head space. The samples will then be transported on ice under proper Chain-of-Custody to a State certified lab where it will be analyzed for Total Petroleum Hydrocarbons as diesel (TPH/d) and BTEX.

If the effluent is found to exceed the allowable contaminant levels set by the discharge permit, a second, 5000 gallon closed top tank will be utilized as a second stage separation unit, giving the system an additional 18 hours of separation time.

From the sample box, the groundwater will flow through a meter and into the sanitary sewer system.

4.1 Secondary Recovery Point

Groundwater influent samples will be analyzed on a monthly basis. When the contaminate level of the groundwater influent becomes lower than the contaminate level of the groundwater found in monitoring wells MW2 or MW3 quarterly analytical results, the extraction system recovery point will be moved to a proposed recovery trench to be constructed between monitoring wells MW2 and MW3, as shown in Figure 5.

4.1.1 Recovery Trench Construction

An 18 inch wide by 4 foot deep trench, approximately 100 feet long, will be excavated between monitoring wells MW2 and MW3. The trench will be lined with a filter fabric and backfilled with pea gravel to within 8 inches from the surface. The trench will then be capped with concrete. At eastern end of the trench, a 12 inch perforated stand pipe will be installed as an extraction point (Detail, Figure 5).

4.2 Extraction System Reporting

Included in the quarterly well monitoring reports, a report describing the amount of groundwater discharged, the amount of product recovered from passive skimming, influent and effluent analytical results collected during the three month period, and disposal manifests, will be prepared and submitted to the ACDEH.

LIMITATIONS

The observations and conclusions presented in this report are professional opinions based on the scope of work outlined herein. This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time this investigation was performed. The opinions presented apply to site conditions existing at the time of our study and cannot apply to site conditions or changes of which we are not aware or have not had the opportunity to evaluate. This investigation was conducted solely to evaluate environmental conditions of the soil and groundwater with respect to hydrocarbons identified during previous work. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation. It must be recognized that any conclusions drawn from these data rely on the integrity of the information available at the time of investigation and that a full and complete determination of environmental contamination and risks cannot be made.

If you have any questions regarding these findings or scope of this investigation, please do not hesitate to call Ben Halsted at 415-325-3216.

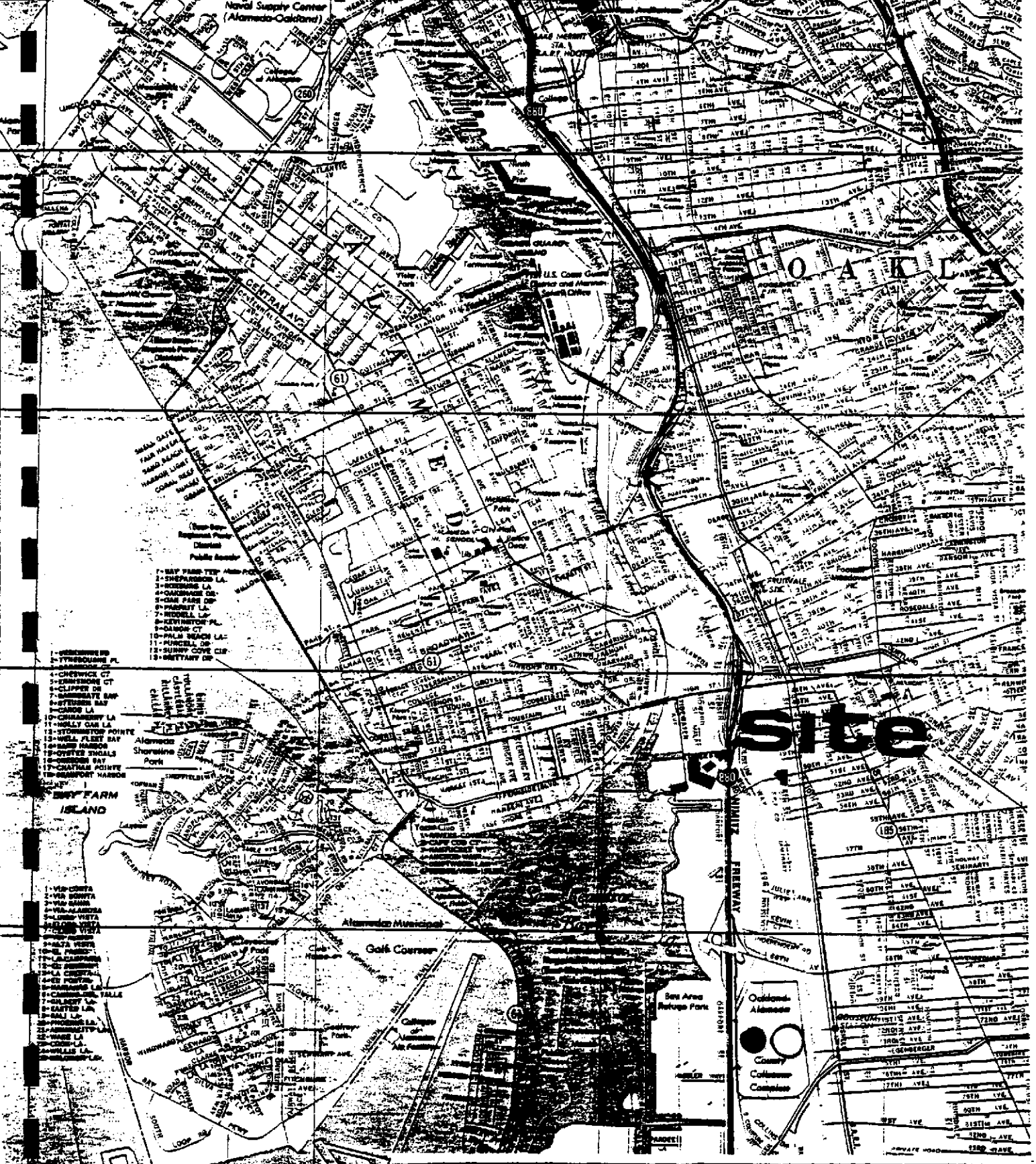
Respectfully submitted this 18th day of August, 1995,

Bennett T Halsted
Project Manager

Samuel H Halsted P.E.
CE 14095

REGISTERED PROFESSIONAL ENGINEER
SAMUEL H. HALSTED
14095
DATE
CIVIL
STATE OF CALIFORNIA

LIST OF FIGURES



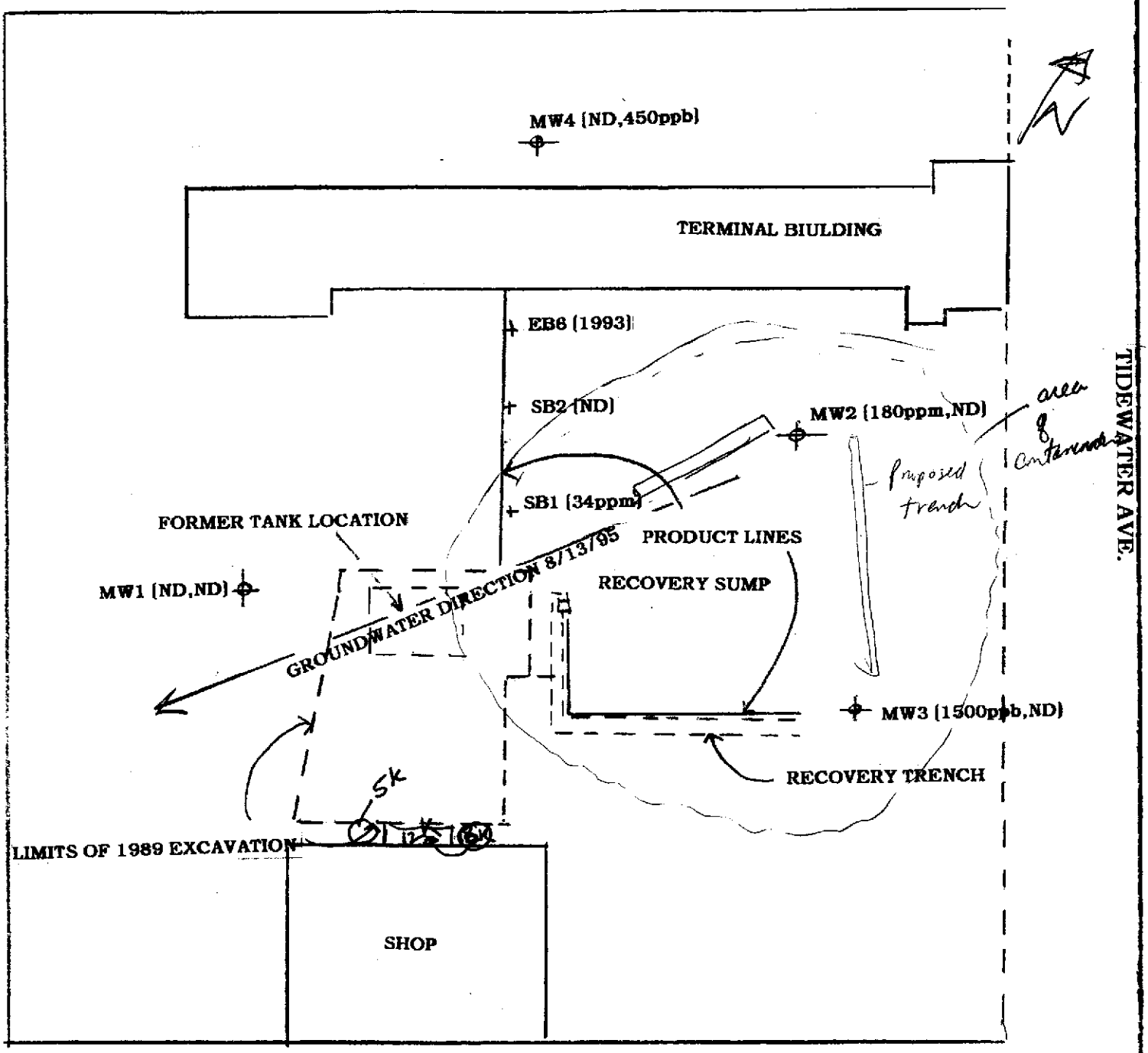
VICINITY MAP DI SALVO TRUCKING
4919 TIDEWATER AVE. OAKLAND FIGURE 1

SCALE:	APPROVED BY:	DRAWN BY
DATE: 8/12/95		REVISED

Environmental Restoration Services

1115 Merrill Street • Menlo Park, California 94025

DRAWING NUMBER
FIGURE 1



MONITORING WELL LOCATIONS (TPH/d,TPH/g)

SOIL BORING LOCATIONS (TPH/d)

SITE PLAN

DISALVO TRUCKING 4919 TIDEWATER AVE., OAKLAND

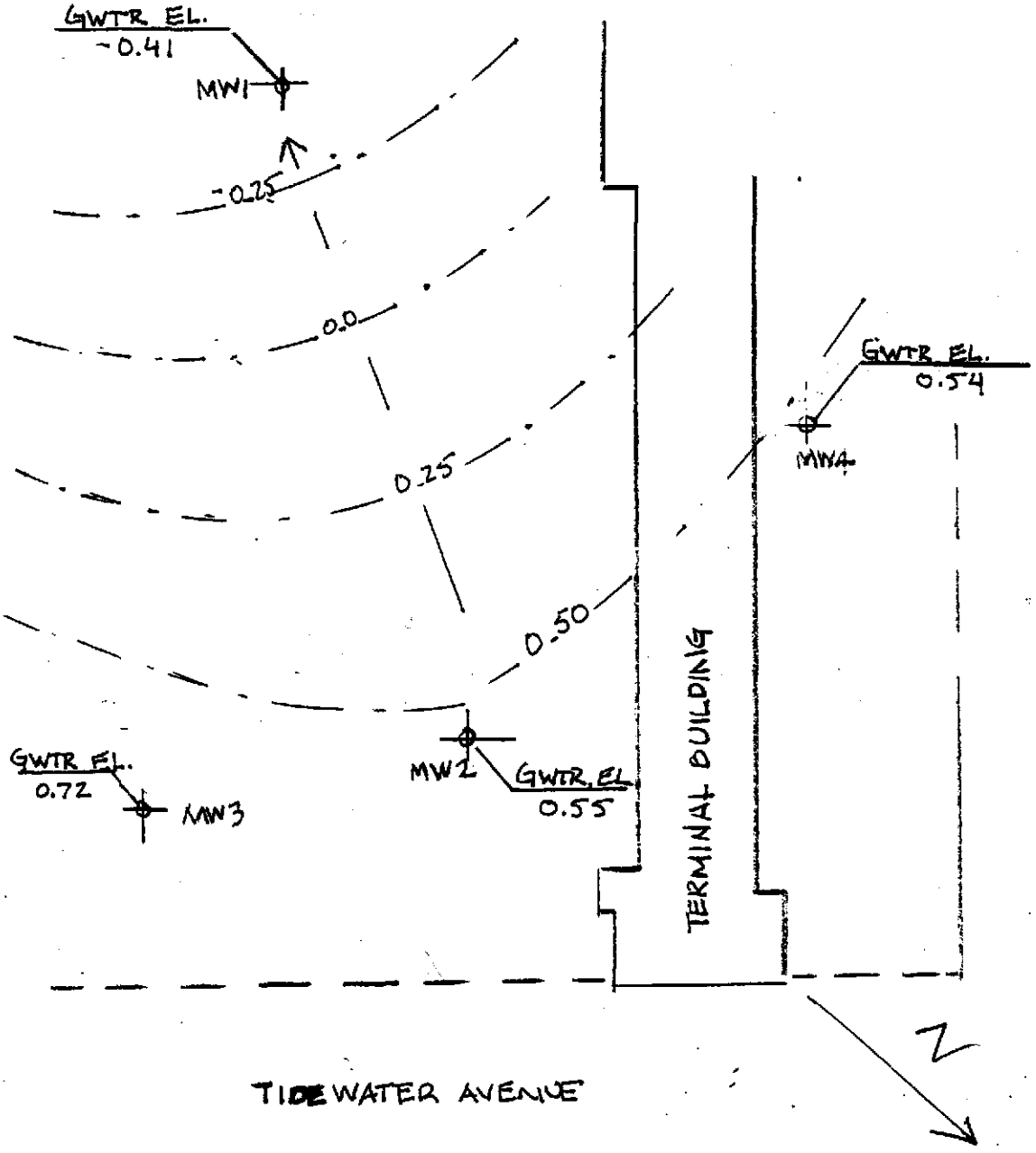
SCALE: 1"=50'	APPROVED BY:	DRAWN BY
DATE: 8/12/95		REVISED

Environmental Restoration Services

1115 Merrill Street • Menlo Park, California 94025

DRAWING NUMBER
FIGURE 2

WELL #	CASING ELEV	DEPTH TO GRNDWTR	GRNDWTR ELEV
MW1	2.68	3.09	-0.41
MW2	3.50	2.95	0.55
MW3	2.90	2.18	0.72
MW4	3.87	3.33	0.54



—·—0.50— GROUNDWATER ELEVATION CONTOUR

SITE PLAN SHOWING GROUNDWATER CONTOURS

DISALVO TRUCKING 4919 TIDEWATER AVE., OAKLAND

SCALE: 1"=50'	APPROVED BY:	DRAWN BY
DATE: 8/12/95		REVISED

Environmental Restoration Services

1115 Merrill Street • Menlo Park, California 94025

DRAWING NUMBER FIGURE 3

JAMES RASP P.E.
Civil and Structural Engineering
5134 Elrose Avenue
San Jose, California 95124
(408) 448-6768

JOB 25074/ENVIRONMENTAL RESTORATIONS
SHEET NO. 1 OF 1
CALCULATED BY JIM RASP DATE 8/13/05
CHECKED BY _____ DATE _____
SCALE 1" = 50'

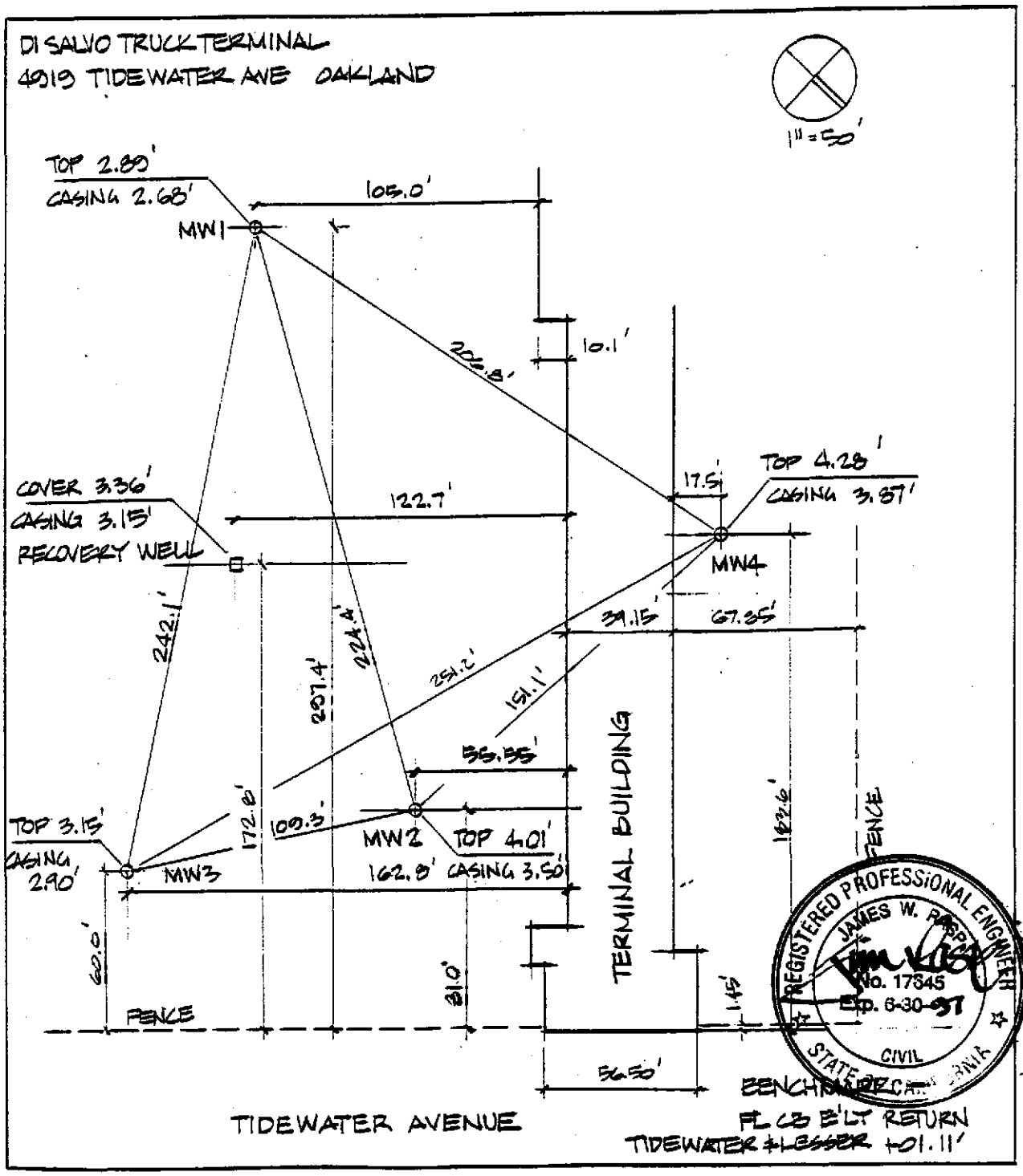
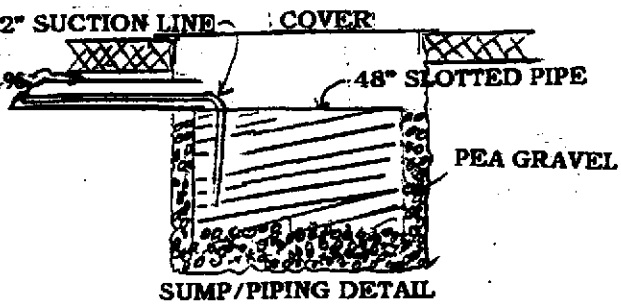


FIGURE 4



SUMP/PIPING DETAIL

5000 GALLON CLOSED TOP TANK

PEA GRAVEL BACKFILLED EXCAVATION LIMITS

SHOP

12,000 GALLON TANK

SAMPLE BOX

SIX INCH STANDPIPE

1%

3000 GALLON OPEN TOP TANK

DOUBLE CONTAINED SUCTION LINE

Extraction pump w/i

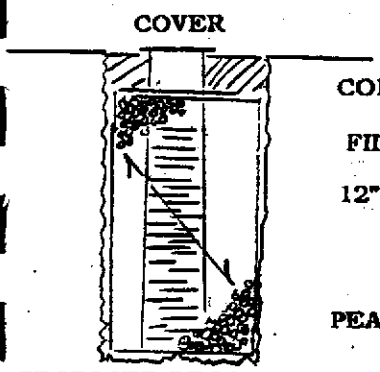
RECOVERY SUMP

SANITARY SEWER

PEA GRAVEL BACKFILLED RECOVERY TRENCH

MW2

PROPOSED RECOVERY TRENCH



PROPOSED RECOVERY TRENCH DETAIL

MW3

PROPOSED RECOVERY STANDPIPE

SITE PLAN– GROUNDWATER EXTRACTION SYSTEM

DISALVO TRUCKING 4919 TIDEWATER AVE., OAKLAND

SCALE: NTS	APPROVED BY:	DRAWN BY
DATE: 8/12/95		REVISED

Environmental Restoration Services

1115 Merrill Street • Menlo Park, California 94025

DRAWING NUMBER
FIGURE 5

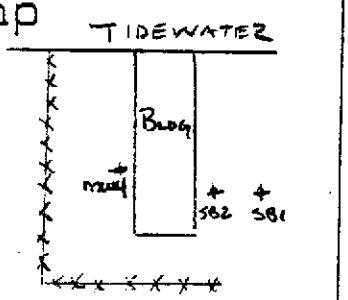
APPENDIX A

MONITORING WELL MW-4
BORINGS SB-1 and SB-2

Boring/Well Completion Log
Soil Sample Lab Report
Chain-of-Custody

Boring Log SB-1 Page 1 of 1

Client D. SALVO TRUCKING	Date 7/19/95
Location 4919 TIDEWATER AVE., OAKLAND	Site Map
Driller	
Method / Sampler BH	
Logger BH / Permit #	
Inspector / Agency ZONE 7	



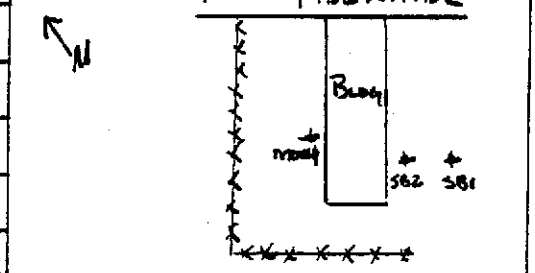
Sample #	Depth	Blows Per 6 Inches	Moisture	Samples USCS	Description of Subsurface Materials	Completion Data
SB1@4'	3.5-4.0'	N/A	WET	GW	Asphalt Sandy GRAVEL – Poss. ble Import some broken asphalt/concrete 40% sand, mod. Petro. Odor	Portland

Total Depth: 4' | Water Level: 3' | Sanitary Seal: Portland

Well/Boring Designation: SB-1

Boring Log SB-2 Page 1 of 1

Client D. SALVO TRUCKING	Date 7/19/95
Location 4919 TIDEWATER AVE., OAKLAND	Site Map
Driller ERS	
Method Hand Auger (3")	Sampler BH
Logger BH	Permit #
Inspector	Agency ZONE 7



Sample #	Depth	Blows Per 6 Inches	Moisture	Sample	USCS	Description of Subsurface Materials	Completion Data
						ASPHALT	
SB2@4'	3.5-4'	N/A	WET		GW	Sandy Gravel, possible import w/ med. fine grain sand med. density, slight odor.	Portland Cement
						BOH	

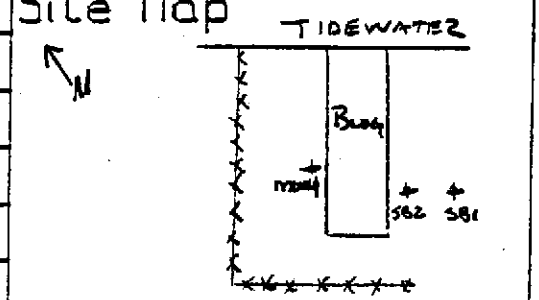
Total Depth: 4' | Water Level: 3' | Sanitary Seal: Portland

Well/Boring Designation: SB-2

Boring Log MW-4

Client D. SALVO TRUCKING	Date 7/19/95
Location 4919 TIDEWATER AVE., OAKLAND	
Driller	
Method	Sampler BH
Logger BH	Permit #
Inspector	Agency ZONE 7

Site Map



Sample #	Depth	Blows Per 6 Inches	Moisture	Samples	USCS	Description of Subsurface Materials	Completion Data
MW4@4'	4'	2/2/3	Moist		SC	Asphalt Clayey Sand, greenish grey 5 GL 4/5/1, 25% silty clay loose, wet	8" Bolt cover, 2" Lock cap, 2' Portland, Sanitary seal, Bentonite seal (1')
MW4@8'	8'	3/4/4	WET		OH/SM PT	High organic CLAY/50% Silty Sand Pet, Black, methane odor very moist, dissem. clay	2/12 Sand Pack, Sch 40, 2" PVC Screen 0.02 slt.

Total Depth: 8' | Water Level: 3' | Sanitary Seal: Portland

Well/Boring Designation: MW-4

Hull Development Labs

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • Telephone: (408) 735-1550 (800) 287-1799 • Fax: (408) 735-1554

Chain of Custody/Analysis Work Order

Client: ERS
Address: 1115 Merrill St
M. Palo
Contact: B. Halsted
Telephone #:
Date Received: 7/19/95
Turn Around: Norm

Project ID: D. Salvo
Purchase Order #:
Sampler/Company: ERS Telephone #: 415
B. Halsted
Special Instructions/Comments

LAB USE ONLY

Samples arrived chilled and intact:
(Yes) No
Notes:

Sample Information

Lab #	Sample ID	Grab/ Composite	Matrix	Date Collected	Time Collected	Pres.	Sample Container
B7148	MW4@4'		Soil	7/19/95	815		2x6
B7149	MW4@8'		"	"	830		2x6
B7150	SB1@4'		"	"	850		2x3
B7151	SB2@4'		"	"	940		2x3

Requested Analysis

TPH/BTEX

Relinq. By:	Received By:	Date	Time
	Chi Tang	7/19/95	440
Relinq. By:	Received By:	Date	Time
Relinq/ By:	Received By:	Date	Time

Received cold + intact

Hull Development Labs, Inc.

CA ELAP# 1369

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Environmental Restoration Services
1115 Merrill St.
Menlo Park, CA 94025
Attn: Ben Halsted

Date:	8/1/95
Date Received:	7/19/95
Date Analyzed:	7/26/95
Project:	Di Salvo
Sampled By:	Client

Certified Analytical Report

Soil Sample Analysis:

Test	*MW4 @ 4'*	*MW4 @ 8'*	*SB1@4'*	*SB2@4'*	*Units*	*MDL*	*EPA Method #*
Sample Matrix	Soil	Soil	Soil	Soil			
Sample Date	7/19/95	7/19/95	7/19/95	7/19/95			
Sample Time	815	820	850	940			
Lab #	B7148	B7149	B7150	B7151			
DF-Diesel	1	1	1	1			
TPH-Diesel	**ND**	**ND**	**34**	**ND**	mg/kg	1.0 mg/kg	8015M
DF-BTEX	1	1	1	1			
Benzene	**ND**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Toluene	**ND**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Ethyl Benzene	**ND**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020
Xylenes	**ND**	**ND**	**ND**	**ND**	mg/kg	0.005 mg/kg	8020

1. PQL=DF x MDL
2. Analysis performed by Hull Development Labs, Inc. (CAELAP #1369)

Michael N. Golden, Lab Director

DF=Dilution Factor
MDL=Method Detection Limit

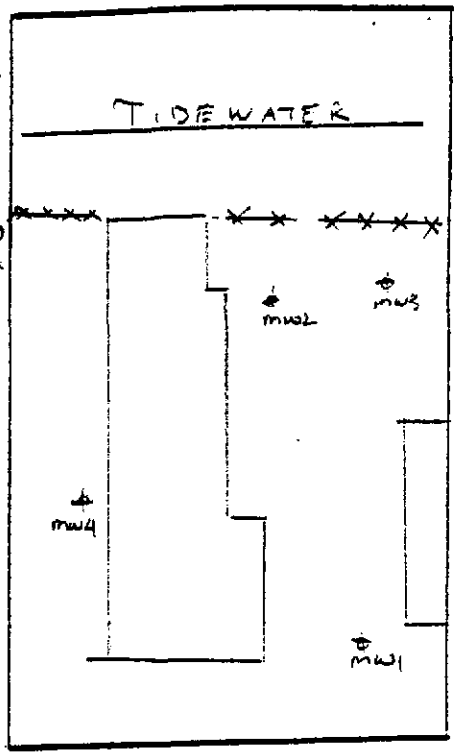
PQL=Practical Quantitation Limit
ND=None Detected at or above PQL

APPENDIX B

Monitoring Well Purge Logs
Water Sample Lab Report
Chain-of-Custody

WATER-QUALITY SAMPLING INFORMATION

Project Name: DiSalvo Trucking
Project No.:
Date: 8-13-95
Sample No.:
Samplers Name: B. Halsted
Sampling Location: 4919 Tidewater Av. Oakland
Sampling Method: Disp Bailer
Analyses Requested: TPH/d - TPH/g BTEX
Number and Types of Sample Bottles used: (1) 1 Liter Amber (1) 40 VOA
Method of Shipment: on ice



LOCATION MAP

GROUND WATER

Well No.: MW-1
Well Diameter (in.): 2"
Depth to Water, Static (ft): 2.00
Water in Well Box: no
Well Depth (ft): ± 8'
Height of Water Column in Well: ± 5'
Water Volume in Well: 0.8

SURFACE WATER

Stream Width:
Stream Depth:
Stream Velocity:
Rained recently?:
Other:

2-inch casing = 0.16 gal/ft
4-inch casing = 0.65 gal/ft
5-inch casing = 1.02 gal/ft
6-inch casing = 1.47 gal/ft

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
2:35	3.00	0	73	6.86	10.87			clear
2:40		2 (1.5)	71.5	6.80	9.72			cloudy
2:55		4 (3.0)	71.0	6.88	10.01			Slow Recharge
3:10		6 (4.5)	71.2	6.90	10.15			Sampled

Suggested Method for Purging Well:

WATER-QUALITY SAMPLING INFORMATION

Project Name: DiSalvo Trucking
Project No.:
Date: 8-13-95
Sample No.:
Samplers Name: B. Halsted
Sampling Location: 4919 Tidewater Av. Oakland
Sampling Method: Disp Bailer
Analyses Requested: TPH/d; TPH/g BTEX
Number and Types of Sample Bottles used: (1) 1 Liter Amber (1) 40 VOA
Method of Shipment: on ice

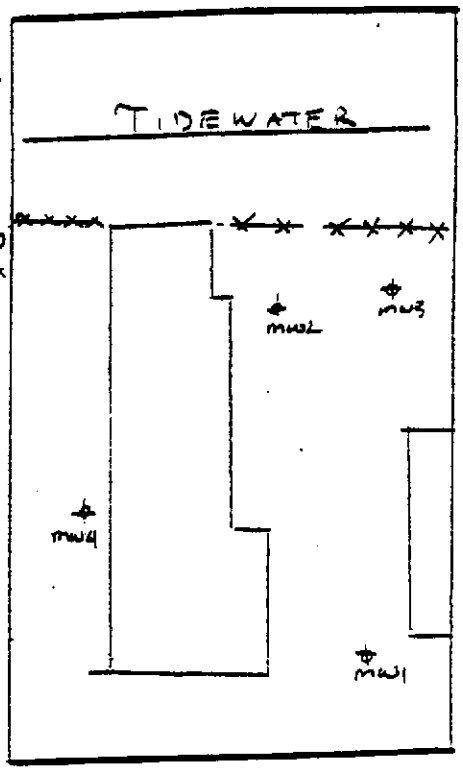
GROUND WATER

Well No.: MW-2
Well Diameter (in.): 2"
Depth to Water, Static (ft): 2.95
Water in Well Box: no
Well Depth (ft): 18'
Height of Water Column in Well: ~5'
Water Volume in Well: 0.8

SURFACE WATER

Stream Width:
Stream Depth:
Stream Velocity:
Rained recently?:
Other:

2-inch casing = 0.16 gal/ft
4-inch casing = 0.65 gal/ft
5-inch casing = 1.02 gal/ft
6-inch casing = 1.47 gal/ft



LOCATION MAP

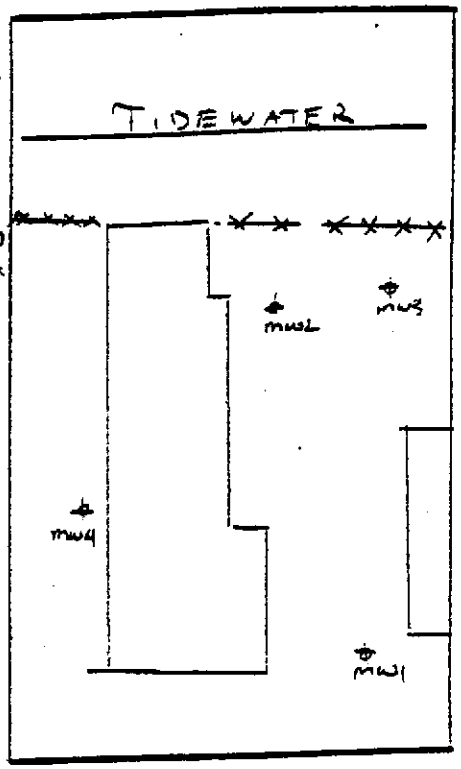
TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
1330	2.95	2	73.5	7.10	3.59			clear
1345		2 (1.5)	70.1	6.93	4.21			silty
2000		4 (3.0)	70.5	6.89	4.16			cloudy Sampled
								Petro. Odor

Suggested Method for Purging Well:

[redacted]

WATER-QUALITY SAMPLING INFORMATION

Project Name: DiSalvo Trucking
Project No.:
Date: 8-13-95
Sample No.:
Samplers Name: B. Halsted
Sampling Location: 4919 Tidewater Av. Oakland
Sampling Method: Disp Bailer
Analyses Requested: TPH/d; TPH/g BTEX
Number and Types of Sample Bottles used: (1) 1 Liter Amber (1) 40 VOA
Method of Shipment: on ice



LOCATION MAP

GROUND WATER

Well No.: MW-3
Well Diameter (in.): 2"
Depth to Water Static (ft): 2.18
Water in Well Box: no
Well Depth (ft): ±8'
Height of Water Column in Well: ±5.75
Water Volume in Well: 0.90

SURFACE WATER

Stream Width:
Stream Depth:
Stream Velocity:
Rained recently?:
Other:

2-inch casing = 0.16 gal/ft
4-inch casing = 0.65 gal/ft
5-inch casing = 1.02 gal/ft
6-inch casing = 1.47 gal/ft

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
2[10]		0	73.0	6.62	3.15			clear
2[15]		2 (2)	71.9	6.83	2.90			turbid
2[20]		4 (4)	71.2	6.91	2.98			slow recharge
2[30]		5 (5)	71.4	7.03	2.87			cloudy - sampled

WATER-QUALITY SAMPLING INFORMATION

Project Name: DiSalvo Trucking — Project No.:

Date: 8-13-95 — Sample No.:

Samplers Name: B. Halsted

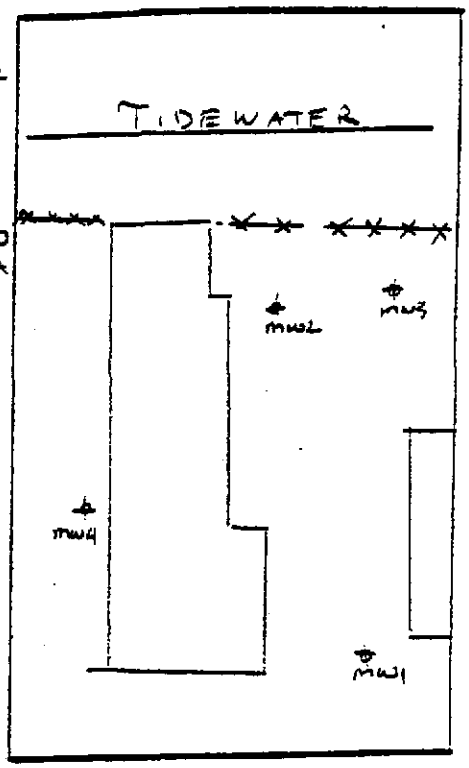
Sampling Location: 4919 Tidewater Av. Oakland

Sampling Method: Disp Bailer

Analyses Requested: TPH/d; TPH/g BTEX

Number and Types of Sample Bottles used: (1) 1 liter Amber (1) 40 VOA

Method of Shipment: on ice



LOCATION MAP

GROUND WATER		SURFACE WATER	
Well No.	MW4	Stream Width	
Well Diameter (in.)	2"	Stream Depth	
Depth to Water Table (ft)	3.33	Stream Velocity	
Water in Well Box	no	Rained recently?	
Well Depth (ft)	~18'	Other	
Height of Water Column in Well	4.66	2-inch casing = 0.16 gal/ft	
Water Volume in Well	0.70	4-inch casing = 0.65 gal/ft	
		5-inch casing = 1.02 gal/ft	
		6-inch casing = 1.47 gal/ft	

TIME	DEPTH TO WATER (feet)	VOLUME WITHDRAWN (gallons)	TEMP (deg. C)	pH (S.U.)	COND (mhos/cm)	OTHER		REMARKS
315		2	73.8	7.86	4.15			clear
320		2 (1.5)	71.1	7.65	3.78			cloudy
330		4 (3.0)	70.6	7.71	4.05			cloudy
335		5 (4.5)	70.3	7.13	4.12			slow recharge
345		7 (7.5)	70.1	7.15	3.89			sample - cloudy

Suggested Method for Purging Well:

PRIORITY ENVIR

PEL # 9508038

INV # 26238

ABS

Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-

DATE: 8/13/95 PAGE: 1 OF 1

PROJECT MGR.: B. Talsted
COMPANY: ERS
ADDRESS: 1115 Merrill ST Menlo Park
PHONE: FAX:
SIGNATURE:

SAMPLE ID:	DATE	TIME	MATRIX	TPH-Gasoline (EPA 5030.8015)	TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020)	TPH-Diesel (EPA 3510/3550.8015)	PURGEABLE AROMATICS BTEX (EPA 602.8020)	TOTAL OIL & GREASE (EPA 5520 C.D&F)	PESTICIDES/PCB (EPA 608.8080)	TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1)	CHLORINATED HYDROCARBONS (EPA 601.8010)	NUMBER OF CONTAINERS
MW-1	8/13/95	3:10 pm	Water		X	X						2
MW-2	"	2:55 pm	"		X	X						2
MW3	"	2:30 pm	"		X	X						2
MW-4	"	3:45 pm	"		X	X						2

PROJECT INFORMATION
PROJECT NAME: DiSalvo
PROJECT NUMBER: 9529

SAMPLE RECEIPT
TOTAL # OF CONTAINERS: 8
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS:

RELINQUISHED BY: 1	RECEIVED BY: 1	RELINQUISHED BY: 2	RECEIVED BY: 2
B. Talsted	DAVID DUDNT		
SIGNATURE:	SIGNATURE:	SIGNATURE:	SIGNATURE:
Date: 8/14/95 Time: 3:55 pm	Date: 8/14/95 Time: 3:59 PM	Date: Time:	Date: Time:
COMPANY: ERS	COMPANY: PEL	COMPANY:	COMPANY:

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

August 17, 1995 9508038

ENVIRONMENTAL RESTORATION SERVICES

Attn: Ben Halsted

Re: Four water samples for Gasoline/BTEX and Diesel analyses.

Project name: Disalvo
Project number: 9569

Date sampled: Aug 13, 1995
Date extracted: Aug 15-16, 1995

Date submitted: Aug 14, 1995
Date analyzed: Aug 15-16, 1995

RESULTS:

SAMPLE I.D.	Gasoline (ug/L)	Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylene (ug/L)
MW-1	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
MW-2	N.D.	180	N.D.	N.D.	N.D.	N.D.
MW-3	N.D.	1500	N.D.	N.D.	N.D.	N.D.
MW-4	450	N.D.	2.1	0.7	4.1	13
Blank	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spiked Recovery	99.5%	83.2%	105.9%	86.6%	100.1%	84.4%
Detection limit	50	50	0.5	0.5	0.5	0.5
Method of Analysis	5030 / 8015	3510 / 8015	602	602	602	602

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

APPENDIX C

C.E.E. OIL SKIMMER SPEC SHEETS

C E E

SOS-P

Passive Selective Oil Skimmers

S P E C I F I C A T I O N S

The Passive Selective Oil Skimmer (SOS-P) is designed to recover free-floating hydrocarbon from any depth down to a sheen (≤ 0.01 inches). The floating intake head follows water table fluctuations. Alternate size Passive SOS Skimmers for operating in 2-inch (5cm) and 4-inch(10cm) diameter wells, and Tidal Skimmers with extra long strokes are available for sites with high and low tide considerations. All CEE Passive Skimmers can be upgraded to fully automatic, active Product Only Recovery Systems.

The Passive SOS Skimmer consists of four main items: a Floating Intake Head, Guide Rod & Flexible Tube, a Well Centering Disk, and a Clear Product Canister.

METHOD OF OPERATION

The skimmer is lowered into the well until the midpoint of the skimmer's travel is located at the fluid level in the well. The support rope is tied off holding the skimmer at a specific depth and the skimmer is left in the well to collect floating hydrocarbons.

A floating intake head follows any water table fluctuation. Hydrocarbon first enters the skimmer through the floating intake's outer debris screen and then an inner oileophilic hydrophobic screen, down through a flexible, yellow tube, and into the see-through canister.

To empty the skimmer, it is pulled to the surface and the canister is drained using the valve at its base. The skimmer is returned to the well until next checked at its predetermined maintenance interval.

FLOATING INTAKE HEAD

The Floating Intake Head:

- Consists of an outer debris screen, a floatation collar, and an inner semi-permeable (selective) screen which allows liquid hydrocarbons to pass and repels water.
- Reduces product level to a sheen (≤ 0.01 in.).
- Floats at the product-water interface in the well and automatically adjusts to any groundwater fluctuation within its travel range.
- Recovers product with a < 1.0 specific gravity.
- Slides on a hollow, stainless steel guide tube which passes down through the center of the skimmer head.

WELL-CENTERING DISK

The well-centering disk:

- Prevents the Skimmer Floating Intake Head from contacting the sidewalls of the well.
- Resides on the upper and lower ends of the skimmer.

PRODUCT CANISTER

The product canister is a clear volume that comes in many sizes and materials dependent on site specifications. The product canister:

- Is a see-through volume that allows easy viewing and measurement.
- Resides at the bottom of the skimmer.
- Has a valve at the bottom for draining product.

CAPACITIES AND DIMENSIONS

Capacity is contingent on volume size. Passive SOS Skimmers come with:

SKIMMER	CAPACITY oz (L)
SOS-2P/18 (18-inch canister)	13.0 (0.38)
SOS-2P/36 (36-inch canister)	25.5 (0.75)
SOS-4P/18 (18-inch canister)	47.0 (1.4)
SOS-4P/36 (36-inch canister)	94.0 (2.8)

SYSTEM OPTIONS

The Passive Selective Oil Skimmer (SOS-P) has three upgrade options that are simply undertaken in the field. All conversions require simple tools and do not take longer than thirty minutes. Should it be needed, reverse upgrading back to the standard Passive SOS Skimmer is an easy process that involves the same upgrade steps in reverse order.

CANISTER UPGRADE. CEE Passive Skimmers come in stock canister lengths ranging from 12 - 36 inches with ranging capacities from 8.5 oz. (0.25 L) to 94 oz. (2.8 L) depending on canister diameter. (Other sizes are available dependent on site requirements.) Furthermore, canisters can be removed and replaced as capacity or compatibility demands change.

HAND-PUMP UPGRADE. Most CEE Passive Skimmers, when outfitted with a skimmer-to-surface product tubes, can be serviced without raising the skimmer out of the well. Using a pump at the surface, maintenance personnel can pump product out of the skimmer's product canister and into a portable collection canister at the surface.

FULLY AUTOMATIC PRODUCT RECOVERY UPGRADE. CEE Passive Skimmers can be upgraded to active, fully automatic Product Only Recovery Systems as site needs change. As active systems, product can be recovered at rates over 2000 gpd. Safety and protective features are available such as Tank-Full Shut-Off (TFSO), which turns off the system when the product tank becomes full, and High-Water Shut-Off (HWSO), which turns off the product pump temporarily when water levels rise above the skimmer's effective travel. (Part Number for upgrade is 300031.)

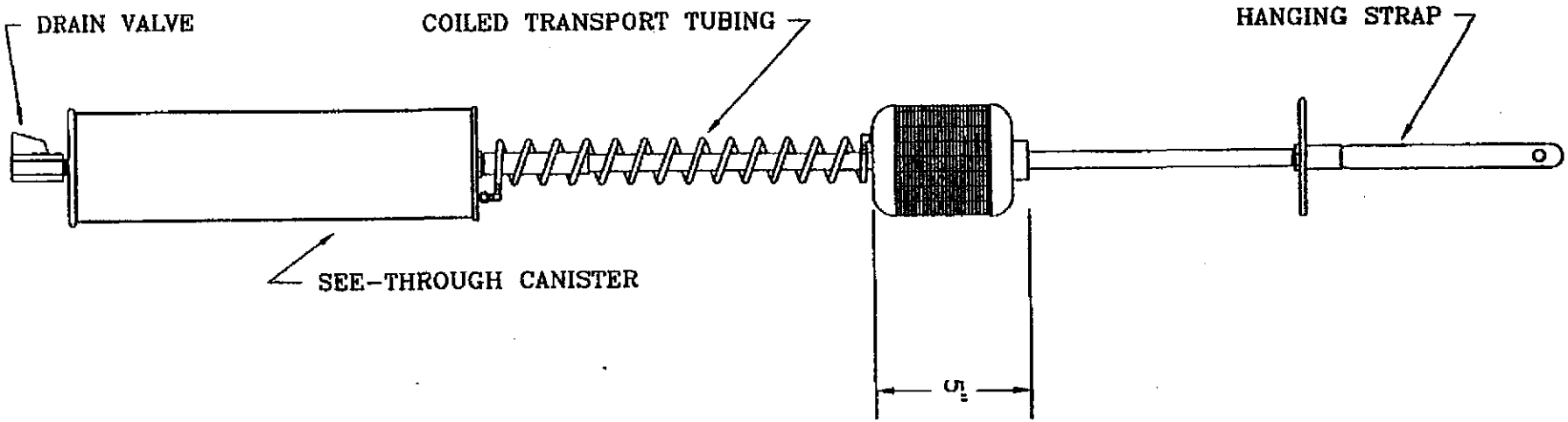
MATERIALS OF CONSTRUCTION

- Stainless Steel
- Viton
- Clear PVC
- Delrin & other Engineering Plastics
- Closed Cell Foam
- Brass

COMPONENT AND SHIPPING WEIGHTS

ITEM	COMPONENT (lb./kg.)	SHIPPING (lb./kg.)
SOS-2P/18 (18-inch canister)	6 / 2.7	9 / 4.1
SOS-2P/36 (36-inch canister)	7 / 3.1	10 / 4.5
SOS-4P/18 (18-inch canister)	8 / 3.7	11 / 4.9
SOS-4P/36 (36-inch canister)	10 / 4.5	13 / 5.9

4-INCH PASSIVE SELECTIVE OIL SKIMMER



SPECIFICATIONS	MODEL 18	MODEL 36
OUTSIDE DIAMETER	3.8" (10 cm)	3.8" (10 cm)
TOTAL LENGTH	56" (142 cm)	67" (170 cm)
WEIGHT	8 Lbs (3.7 kg)	10 Lbs (5 kg)
CANISTER CAPACITY	47 fl oz (1.4 l.)	94 fl. oz (2.78 l.)
EFFECTIVE SKIMMING TRAVEL	19.5" (50 cm)	19.5" (50 cm)

NOTE: OPTIONAL CANISTER LENGTHS AND FLOAT RANGES ARE AVAILABLE

Clean Environment Equipment
EQUIPMENT FOR GROUNDWATER REMEDIATION AND LEACHATE EXTRACTION
1133 7th ST.
OAKLAND, CA 94607
(510) 891-0880 (800) 537-1767 FAX (510) 444-6789

TOLERANCES UNLESS OTHERWISE SPECIFIED ANGULAR : .30° FRAC : XX : .01 XXX : .005 XXXX : .0005	APPROVALS	DATE	TITLE
	DRAWN TONY RAMIREZ	4-15-93	SOS-4P
MATERIAL	DESIGNER		DWG No. 600019 REV. 6-16-94
FINISH	CHECKED		SCALE NONE SHT OF
	APPROVED		