ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

February 15, 2012

Mr. Casey Sondgeroth
San Francisco Public Utilities Commission
1145 Market Street, 4th Floor
San Francisco, CA 94103
(*Sent via E-mail to: CSondgeroth@sfwater.org*)

Subject: Case Closure for Fuel Leak Case No. RO0000340 and GeoTracker Global ID T0600101172, SFWD Sunol Yard, 505 Paloma Way, Sunol, CA 94586

Dear Mr. Sondgeroth:

This letter transmits the enclosed underground storage tank (UST) case closure letter in accordance with Chapter 6.75 (Article 4, Section 25299.37[h]). The State Water Resources Control Board adopted this letter on February 20, 1997. As of March 1, 1997, the Alameda County Environmental Health (ACEH) is required to use this case closure letter for all UST leak sites. We are also transmitting to you the enclosed case closure summary. These documents confirm the completion of the investigation and cleanup of the reported release at the subject site. The subject fuel leak case is closed. This case closure letter and the case closure summary can also be viewed on the State Water Resources Control Board's Geotracker website (http://geotracker.swrcb.ca.gov) and the Alameda County Environmental Health website (http://www.acgov.org/aceh/index.htm).

SITE INVESTIGATION AND CLEANUP SUMMARY

Please be advised that the following conditions exist at the site:

- Total Oil and Grease remains in soil below a storage shed in the Maintenance Yard at concentrations up to 12,000 ppm.
- Total Petroleum Hydrocarbons as diesel remains in groundwater at the Pump Station at concentrations up to 340 ppb.
- As described in section IV of the attached Case Closure Summary, the case was closed with Site Management Requirements that limit future land use to the current municipal corporation yard and pump station land use only.

If you have any questions, please call Jerry Wickham at (510) 567-6791. Thank you.

Sincerely,

Donna L. Drogos, P.E.
Division Chief

Enclosures:
1. Remedial Action Completion Certification
2. Case Closure Summary

cc:

Colleen Winey (QIC 8021)
Zone 7 Water Agency
100 North Canyons Pkwy
Livermore, CA 94551
(Sent via E-mail to: cwiney@zone7water.com))

Closure Unit
State Water Resources Control Board
UST Cleanup Fund
P.O. Box 944212
Sacramento, CA 94244-2120
(uploaded to GeoTracker)

Craig Freeman
San Francisco Public Utilities Commission
Environmental and Regulatory Compliance
1145 Market Street, Suite 500
San Francisco, CA 94103
(*Sent via E- mail to: CFreeman@sfwater.org*)

Donna Drogos, ACEH (*Sent via E-mail to: donna.drogos@acgov.org*)
Jerry Wickham, ACEH (*Sent via E-mail to: jerry.wickham@acgov.org*)

GeoTracker (w/enc)
eFile (w/orig enc)

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
OFFICE OF THE DIRECTOR
1131 HARBOR BAY PARKWAY
ALAMEDA, CA 94502
(510) 567-6777
FAX (510) 337-9135

REMEDIAL ACTION COMPLETION CERTIFICATION

February 15, 2012

Mr. Casey Sondgeroth
San Francisco Public Utilities Commission
1145 Market Street, 4th Floor
San Francisco, CA 94103
(*Sent via E-mail to: CSondgeroth@sfwater.org*)

Subject: Case Closure for Fuel Leak Case No. RO0000340 and GeoTracker Global ID T0600101172, SFWD Sunol Yard, 505 Paloma Way, Sunol, CA 94586

Dear Mr. Sondgeroth:

This letter confirms the completion of a site investigation and remedial action for the underground storage tanks formerly located at the above-described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tank(s) are greatly appreciated.

Based on information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, this agency finds that the site investigation and corrective action carried out at your underground storage tank(s) site is in compliance with the requirements of subdivisions (a) and (b) of Section 25299.37 of the Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.77 of the Health and Safety Code and that no further action related to the petroleum release(s) at the site is required.

Claims for reimbursement of corrective action costs submitted to the Underground Storage Tank Cleanup Fund more than 365 days after the date of this letter or issuance or activation of the Fund's Letter of Commitment, whichever occurs later, will not be reimbursed unless one of the following exceptions applies:

- Claims are submitted pursuant to Section 25299.57, subdivision (k) (reopened UST case); or
- Submission within the timeframe was beyond the claimant's reasonable control, ongoing work is required for closure that will result in the submission of claims beyond that time period, or that under the circumstances of the case, it would be unreasonable or inequitable to impose the 365-day time period.

This notice is issued pursuant to subdivision (h) of Section 25299.37 of the Health and Safety Code. Please contact our office if you have any questions regarding this matter.

Sincerely,

Ariu Levi
Director

CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK - LOCAL OVERSIGHT PROGRAM

I. AGENCY INFORMATION

Date: August 29, 2011

Agency Name: Alameda County Environmental Health	Address: 1131 Harbor Bay Parkway
City/State/Zip: Alameda, CA 94502-6577	Phone: (510) 567-6791
Responsible Staff Person: Mr. Jerry Wickham	Title: Senior Hazardous Materials Specialist

II. CASE INFORMATION

Site Facility Name: SFPUC Sunol Yard and Pump Station		
Site Facility Address: 505 Paloma Road, Sunol, CA 94586		
RB Case No.: 01-1275	STID No.: 3118	LOP Case No.: RO0000340
URF Filing Dates: 11/03/1986	Geotracker ID: T0600101172	APN: 96-375-12-2

Responsible Parties	Addresses	Phone Numbers
Casey Sondgeroth, San Francisco Public Utilities Commission	1145 Market Street, 4th Floor, San Francisco, CA 94103	415-554-1566

Tank I.D. No	Size in Gallons	Contents	Closed In Place/Removed?	Date
1	550	Regular Gasoline	Removed	5/16/1990
2	1,000	Unleaded Gasoline	Removed	5/16/1990
3	550	Diesel	Removed	5/16/1990
4	10,000	Diesel	Removed	11/16/1993
5	400	Lube Oil	Removed	11/10/1993
6	400	Waste Oil	Removed	11/10/1993
Piping			Removed	05/1990 and 11/1993

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Unknown. No holes, cracks, corrosion, or other signs of failure were observed in the tanks during removal.		
Site characterization complete? Yes	Date Approved By Oversight Agency: -----	
Monitoring wells installed? Yes	Number: 3	Proper screened interval? ---
Highest GW Depth Below Ground Surface: 18 feet bgs	Lowest Depth: 20 feet bgs	Flow Direction: Southwest
Most Sensitive Current Use: Drinking water source.		

Summary of Production Wells in Vicinity: No water supply wells appear to be located within 2,000 feet of the site. One well (04S/01E 17G1), identified as an "observation well," is located approximately 900 feet south of the site. Based on the distance from the site, well 04S/01E 17G1 is not expected to be a receptor for the site. Two water wells identified as Alameda County District wells B-1 and GW-2 are located approximately 100 feet south and 250 feet southeast of the site, respectively. The wells are reportedly used for measuring water levels and analyzing groundwater for pesticides. Based on their cross gradient locations, these two wells are not expected to be receptors for the site.	
Are drinking water wells affected? No	Aquifer Name: Sunol Subbasin of Sunol Groundwater Basin
Is surface water affected? No	Nearest SW Name: Arroyo de Laguna is approximately 300 feet northwest of the site.
Off-Site Beneficial Use Impacts (Addresses/Locations): None	
Reports on file? Yes	Where are reports filed? Alameda County Environmental Health

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	3 tanks	The tanks were transported to H&H Ship Service in San Francisco, CA for disposal.	05/16/1990
	3 tanks	The tanks were transported to Erickson, Inc. in Richmond, CA for disposal.	11/16/1993
Piping	Not reported	Piping was transported to H&H Ship Service in San Francisco, CA for disposal.	05/16/1990
	No reported	Piping was transported to Erickson, Inc. in Richmond, CA for disposal	11/16/1993
Free Product	----	----	----
Soil	Estimated 50 cubic yards	The soil was reportedly sent to Laidlaw Environmental in Button Willow, CA for disposal	11/1989
	170 tons	Soil was transported to Vasco Road Landfill in Livermore, CA for disposal	08/23/1995
Groundwater	----	----	----

MAINTENANCE YARD AND OIL SPILL AREA
MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS BEFORE AND AFTER CLEANUP
(Please see Attachments 1-6 for additional information on contaminant locations and concentrations)

Contaminant	Soil (ppm)		Water (ppb)	
	Before	After	Before	After
TPH (Gas)	810	7.6	<50	<50
TPH (Diesel)	40	3.1	<50	<50
TPH (Motor Oil)	203	203	Not Analyzed	Not Analyzed
Total Oil & Grease (TOG)	31,000	12,000	<1,900	<1,900
Benzene	0.7	<0.005	<0.5	<0.5
Toluene	910	<0.005	<0.5	<0.5
Ethylbenzene	320	<0.005	<0.5	<0.5
Xylenes	2,300	<0.005	<0.5	<0.5
Heavy Metals (Cd, Cr, Pb, Zn)	42(1)	18(2)	Not Analyzed	Not Analyzed
MTBE	<0.005(3)	<0.005(3)	<5.0(4)	<5.0(4)
Other VOCs	3.2(5)	<0.2	Not Detected(6)	Not Detected(6)
SVOCs	0.07(7)	0.07(7)	Not Analyzed	Not Analyzed

Footnotes:

(1) Lead = 42 ppm; cadmium <1.0 ppm; chromium = 86 ppm; and zinc = 72 ppm.
(2) Lead = 18 ppm; cadmium <1.0 ppm; chromium = 86 ppm; and zinc = 45 ppm.
(3) MTBE, EDB, and EDC <0.005 ppm; no other fuel oxygenates analyzed.
(4) MTBE <5.0 ppb; no other fuel oxygenates analyzed.
(5) PCE = 3.2 ppm; 1,1-Dichloroethane = 0.4 ppm; 1,1,1-Trichloroethane = 0.74 ppm; no other VOCs detected at various reporting limits.
(6) VOCs not detected at various reporting limits.
(7) Phenol = 0.07 ppm; no other SVOCs detected at various reporting limits.

PUMP STATION
MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS BEFORE AND AFTER CLEANUP
(Please see Attachments 1-6 for additional information on contaminant locations and concentrations)

Contaminant	Soil (ppm)		Water (ppb)	
	Before	After	Before	After
TPH (Gas)	180	180	Not Analyzed	Not Analyzed
TPH (Diesel)	3,200	48	340	340
Total Oil & Grease (TOG)	3,200	1,400	<1,900	<1,900
Benzene	<0.005	<0.005	0.7	0.7
Toluene	0.01	<0.005	<0.5	<0.5
Ethylbenzene	0.026	<0.005	<0.5	<0.5
Xylenes	0.064	<0.005	1.4	1.4
Heavy Metals (Cd, Cr, Pb, Zn)	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
MTBE	<0.005(1)	<0.005(1)	<5.0(2)	<5.0(2)
Other VOCs	Not Detected(3)	Not Detected(3)	Not Analyzed	Not Analyzed
PAHs	3.8(4)	<0.05 ppm	6.5(5)	6.5(5)

Footnotes:

(1) MTBE, EDB, and EDC <0.005 ppm; no other fuel oxygenates analyzed.
(4) MTBE <5.0 ppb; no other fuel oxygenates analyzed.
(3) VOCs not detected at various reporting limits.
(4) Fluoranthene = 3.8 ppm; benzo(a)anthracene = 1.8 ppm; benzo(a)pyrene = 1.1 ppm; benzo(b)fluoranthene = 1.0 ppm.
(5) Napthalene =6.5 ppb; acenapthene = 14 ppb; phenol = 11 ppb; 4-methylphenol = 13 ppb; dibenzofuran = 5.2 ppb; flourene = 10 ppb; phenanthrene = 13 ppb; anthracene = 4 ppb; and benzoic acid = 32 ppb. no other SVOCs detected at various reporting limits.

Site History and Description of Corrective Actions:

This fuel leak case addresses unauthorized releases that occurred at different times in three separate areas:

- Three USTs (550-gallon diesel, 550-gallon gasoline, and 1,000-gallon gasoline USTs) at the Sunol Yard, 505 Paloma Way, Sunol, CA;
- Oil Spill Area approximately 100 feet south of the former USTs at the Sunol Yard, 505 Paloma Way, Sunol, CA;
- Three USTs (10,000-gallon diesel, 400-gallon lube, and 400-gallon waste oil USTs) at the Sunol Pump Station, Sunol, CA.

Each of these three areas is discussed in separate sections below. This case closure addresses the areas affected by the three unauthorized releases above and does not include evaluations of conditions in other areas of the facility.

Three USTs (550-gallon diesel, 550-gallon gasoline, and 1,000-gallon gasoline USTs) at the Sunol Yard, 505 Paloma Way, Sunol, CA

The Sunol Yard is currently used as a municipal corporation yard. The surrounding area is generally agricultural with some surface mining. In February 1987, three USTs, consisting of one 550-gallon regular gasoline UST, one 1,000-gallon unleaded gasoline UST, and one 550-gallon diesel UST, were integrity tested. The 1,000-gallon regular gasoline UST system was found to be leaking. A leak in a piping coupling was repaired. A soil sample collected 1.5 feet below the piping contained 810 ppm of total petroleum hydrocarbons as gasoline (TPHg). On March 30, 1987, a three-foot diameter area was excavated beneath the suction pump. At a depth of 4 feet bgs, photoionization (PID) meter readings indicated 1,500 to 2,000 ppm of petroleum hydrocarbons vapors.

Two slant soil borings (SB-1 and SB-2) were advanced to the capillary fringe (approximately 12 feet bgs) below the suction pump. Soil samples collected from the borings did not contain TPHg at concentrations above the reporting limit. Additional soil removal was conducted on June 26, 1987 to remove contaminated soil directly below the pump. A hole with a diameter of approximately 2.5 feet was excavated to a depth of 9.5 feet bgs. At a depth of 8 feet bgs, the soil had PID readings of 600 to 800 ppm. At a depth of 9.5 feet bgs, the soil appeared clean with no PID readings. A soil sample collected from the bottom of the excavation did not contain TPHg at concentrations above the reporting limit.

The three USTs were removed from the southern portion of the Sunol Maintenance Yard in May 1990. Total petroleum hydrocarbons as gasoline (TPHg) and TPH as diesel (TPHd) were detected in soil samples collected from the tank excavation at concentrations up to 7.6 and 40 ppm, respectively. Benzene was detected at concentrations up to 0.7 ppm.

On August 22 and 23, 1991, three soil borings were advanced to a depth of 30 feet bgs and were converted into monitoring wells (MW-1 through MW-3). The monitoring wells were monitored quarterly from February 1992 to January 1993. TPHg, TPHd, TOG, BTEX, and VOCs were not detected at concentrations exceeding reporting limits in groundwater samples from the monitoring wells.

Oil Spill Area approximately 100 feet south of the former USTs at the Sunol Yard, 505 Paloma Way, Sunol, CA

An unlined sump near the southeast corner of a storage shed in the Sunol Maintenance Yard was reportedly used for disposal of waste oil and other liquids. The storage shed was located approximately 50 feet southwest of the three USTs in the Maintenance Yard. In November 1989, an area approximately 225 spare feet in size was excavated to a depth of 5 to 7.5 feet bgs in the Oil Spill Area. During excavation, soil samples collected from the most visibly contaminated zones contained up to 31,000 ppm of Total Oil and Grease (TOG), various VOCs at concentrations ranging from 0.3 to 3.2 ppm, and elevated concentrations of metals. Soil samples collected at a depth of 7 feet bgs from the bottom of the excavation contained Total Recoverable Petroleum Hydrocarbons (TRPH) at concentrations up to 290 ppm. Soil samples from the sidewall of the excavation at a depth of approximately 3 feet below the concrete foundation of the shop/storage shed contained 12,000 ppm of TRPH. The excavation was deepened to 7.5 feet bgs where additional confirmation soil samples were collected. The confirmation soil samples contained TOG at a concentration of 120 ppm. The excavation was not extended further beneath the building foundation to remove residual contamination to avoid damaging the concrete foundation slab. Soil from the excavation was stockpiled for future bioremediation.

Site History and Description of Corrective Actions (continued):

On August 22, 2002, a soil boring was advanced beneath the storage shed to a depth of 20 feet below grade. The boring (MY-1) originated 3 feet from the shed and was angled at 14 degrees to terminate 20 feet below the shed. TPHd was detected in soil samples from the boring at concentrations of 1.3 to 3.1 milligrams per kilogram (mg/kg) but TPHd was not detected in one grab groundwater sample collected from the boring. Oil and grease, TPHg, BTEX, MTBE, and VOCs were not detected in the soil or groundwater samples from the angled boring. Three additional soil borings (MY-2 through MY-4) were advanced south and southwest (downgradient) of the Oil Spill Area and the three former USTs to evaluate the extent of contamination. No chemicals of concern were detected at concentrations greater than reporting limits in soil or groundwater samples from the downgradient borings.

Three USTs (10,000-gallon diesel, 400-gallon lube oil, and 400-gallon waste oil USTs) at the Sunol Pump Station, Sunol, CA

The Sunol Pump Station is approximately 1 mile west of the I-680 Freeway and one half mile south not the City of Sunol. The site is bounded on the south by Alameda Creek, which flows in a channel with an elevation that is approximately 15 feet below surface grade at the site.

Three underground storage tanks (USTs), consisting of one 10,000-gallon diesel UST and two 400-gallon waste oil USTs, were removed from the Sunol Pump Station in November 1993. Total petroleum hydrocarbons as diesel (TPHd), oil and grease, and semi-volatile organic compounds (SVOCs) were detected in soil samples collected from the tank excavations.

On June 25, 1993, six soil borings (BH-1 through BH-6) were advanced to evaluate conditions around the three USTs at the Sunol Pump Station. TOG was detected in one soil sample from BH-6 at a concentration of 60 ppm. A soil sample collected from a depth of 15 feet bgs from boring BH-4 contained TOG at a concentration of 90 ppm and TPHd at a concentration of 410 ppm. Soil samples from the remaining soil borings did not contain petroleum hydrocarbons at concentrations above the reporting limits.

On July 27, 1995, approximately 60 cubic yards of soil was excavated in the area between the former oil and diesel USTs. Impacted soil was observed between depths of 8 to 14 feet bgs in the excavation. The excavation was terminated at a depth of 16 feet bgs based on portable infrared (IR) testing of two soil samples, which indicated that TRPH concentrations were less than 100 ppm. Approximately 15 cubic yards of impacted soil were excavated beneath the lube oil tank before the excavation was terminated at a depth of 8 feet bgs based on IR readings. However, confirmation soil samples from the sidewalls of the two excavations contained up to 3,200 ppm of TPHd and 7,000 ppm of TOG. On August 7, 1995, a second phase of excavation was conducted to remove approximately 5 cubic yards of soil. Confirmation soil samples collected from the excavation sidewalls following the second phase of excavation contained less than 100 ppm of TRPH with the exception of a sidewall sample from the east side of the lube oil excavation which contained 120 ppm TRPH. Excavation was terminated in the east sidewall to avoid undermining the pump station building foundation.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes		
Does corrective action protect public health for current land use? Alameda County Environmental Health staff does not make specific determinations concerning public health risk. However, based upon the information available in our files to date, it does not appear that the release would present a risk to human health based upon current land use and conditions.		
Site Management Requirements: Case closure for this fuel leak site is granted for the current municipal corporation yard and pump station land use only. If a change in land use to any residential, other commercial, or other conservative land use scenario occurs at this site, Alameda County Environmental Health (ACEH) must be notified as required by Government Code Section 65850.2.2. ACEH will re-evaluate the case upon receipt of approved development/construction plans. Excavation or construction activities in areas of residual contamination require planning and implementation of appropriate health and safety procedures by the responsible party prior to and during excavation and construction activities.		
Should corrective action be reviewed if land use changes? Yes		
Was a deed restriction or deed notification filed? No		Date Recorded: --
Monitoring Wells Decommissioned: No	Number Decommissioned: 0	Number Retained: 3
List Enforcement Actions Taken: Notice to Comply dated November 4, 2010.		
List Enforcement Actions Rescinded: All		

V. ADDITIONAL COMMENTS, DATA, ETC.

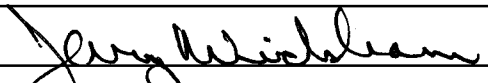
Considerations and/or Variances:

Residual soil contamination remains in place beneath the storage shed in the Oil Spill Area. No soil vapor sampling was conducted to evaluate the potential for vapor intrusion to indoor air. Based on the reported use of the storage shed and limited extent of contamination, potential exposure does not appear to be likely based on the reported current and expected future use.

Conclusion:

Alameda County Environmental Health staff believe that the levels of residual contamination do not pose a significant threat to water resources, public health and safety, and the environment under the current municipal corporation yard and pump station land use based upon the information available in our files to date. No further investigation or cleanup for the fuel leak case is necessary unless a change in land use to any residential, other commercial, or other conservative land use scenario occurs at this site. ACEH staff recommend case closure for this fuel leak site.

VI. LOCAL AGENCY REPRESENTATIVE DATA

Prepared by: Jerry Wickham	Title: Senior Hazardous Materials Specialist
Signature: 	Date: 10/26/11
Approved by: Donna L. Drogos, P.E.	Title: Division Chief
Signature: 	Date: 10/26/11

This closure approval is based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions.

VII. REGIONAL BOARD NOTIFICATION

Regional Board Staff Name: Cherie McCaulou	Title: Engineering Geologist
Notification Date: 10/28/11	

VIII. MONITORING WELL DECOMMISSIONING

Date Requested by ACEH: 11/01/11	Date of Well Decommissioning Report: 02/09/12	
All Monitoring Wells Decommissioned: Yes	Number Decommissioned: 3	Number Retained: Ø
Reason Wells Retained: NA		
Additional requirements for submittal of groundwater data from retained wells: None		
ACEH Concurrence - Signature: Jerry Wickham		Date: 02/21/12

Attachments:
1. Vicinity Maps and Aerial Photographs (4 pp)
2. Maintenance Yard and Oil Spill Area Site Plans (4 pp)
3. Pump Station Site Plans (4 pp)
4. Soil Analytical Data (12 pp)
5. Groundwater Analytical Data (4 pp)
6. Boring Logs (14 pp)

This document and the related CASE CLOSURE LETTER & REMEDIAL ACTION COMPLETION CERTIFICATE shall be retained by the lead agency as part of the official site file.

Wickham, Jerry, Env. Health

From: Cherie MCcaulou [CMccaulou@waterboards.ca.gov]
Sent: Friday, October 28, 2011 10:53 AM
To: Wickham, Jerry, Env. Health
Subject: Re: Pending closure for 505 Paloma Road, Sunol

Jerry - The Regional Water Board has no objection to the ACEH's recommendation for case closure for 505 Paloma Road, Sunol. Thank you for the notification. Have a good day.

Sincerely,

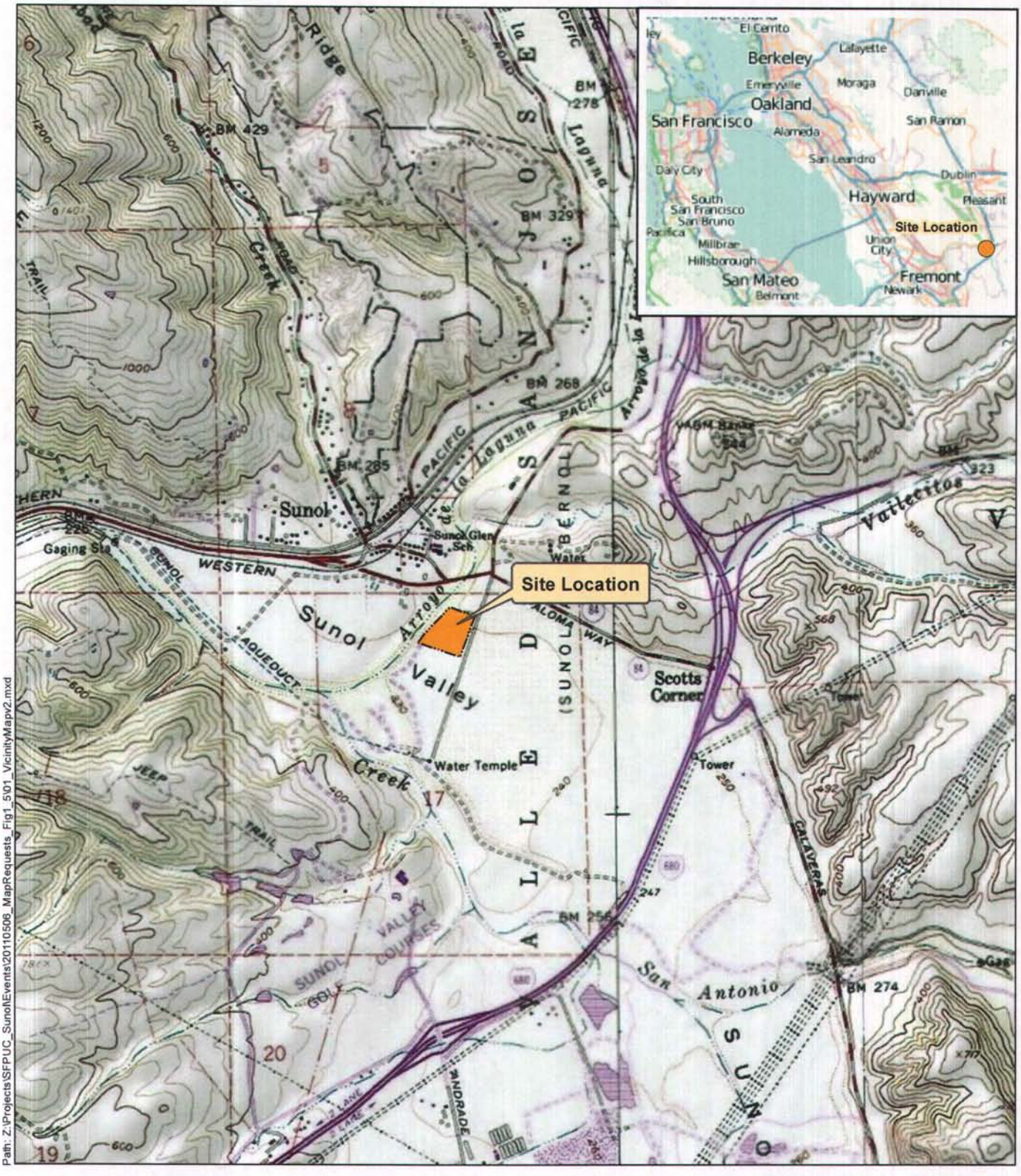
Cherie McCaulou
Engineering Geologist
San Francisco Bay Regional Water Quality Control Board
cmccaulou@waterboards.ca.gov
510-622-2342

>>> "Wickham, Jerry, Env. Health" <jerry.wickham@acgov.org> 10/27/2011 6:31 PM >>>
Hi Cherie,

This email provides notification of pending closure for ACEH case RO0340, 505 Paloma Road, Sunol.

Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
phone: 510-567-6791
jerry.wickham@acgov.org

Maintenance Yard



Path: Z:\Projects\SFPUC_SunolEvents\20110506_MapRequests_Fig1_5\01_VicinityMapv2.mxd

N

0 0.5

Scale: Miles

Kennedy/Jenks Consultants

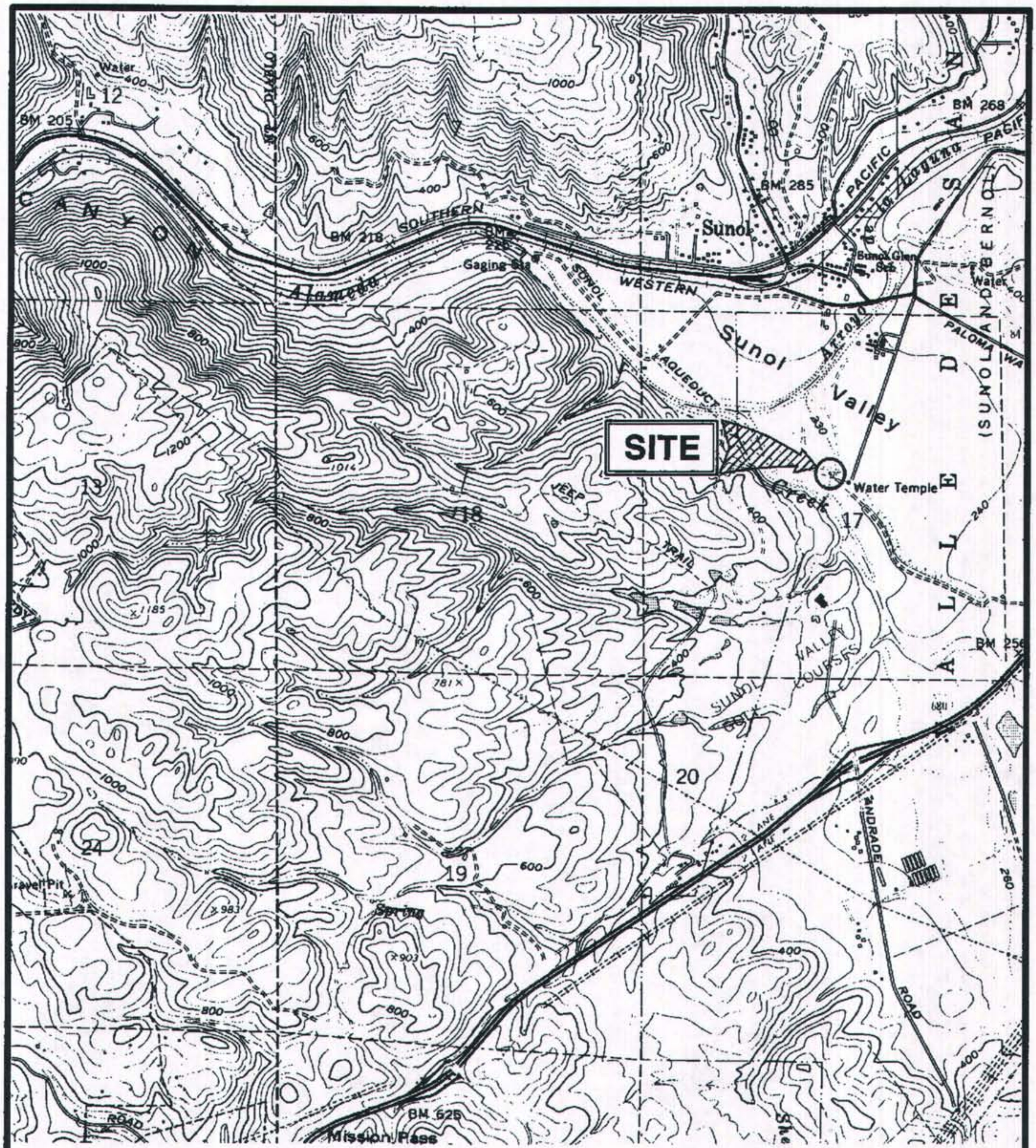
San Francisco Public Utilities Commission
Sunol Yard

Vicinity Map

K/J 1164008.00
May 2011

ATTACHMENT 1

Pump Station



0 1000 2000 4000
SCALE 1:24000

REFERENCE: USGS TOPOGRAPHIC MAP, NILES CA, 15 MINUTE QUADRANGLE.

SUNOL PUMPING STATION

SITE LOCATION MAP

CDM
environmental engineers, scientists, planners, & management consultants

Figure No. 1

Maintenance Yard

Pump Station

Maintenance Yard and Oil Spill Area

Weiss Associates

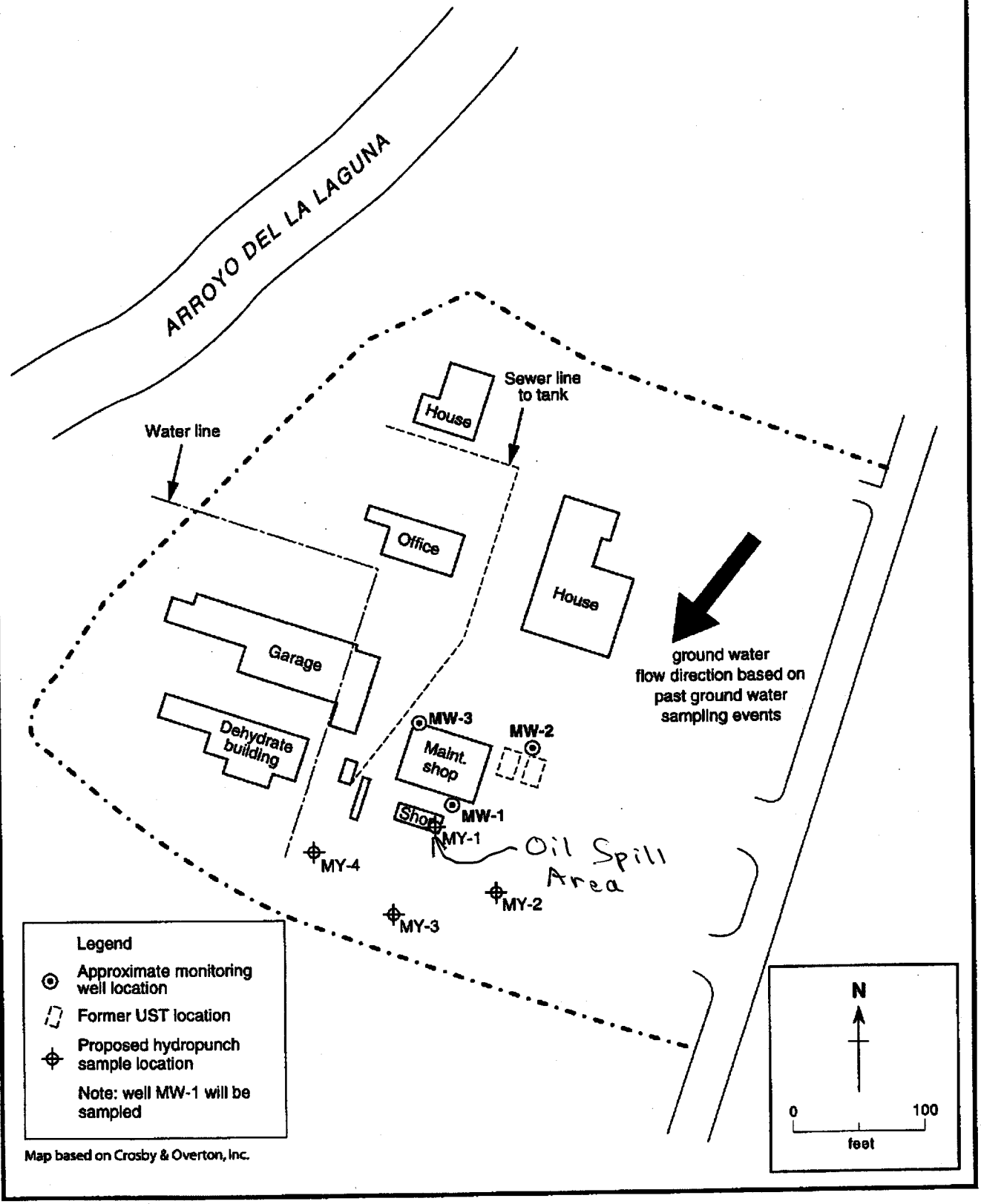
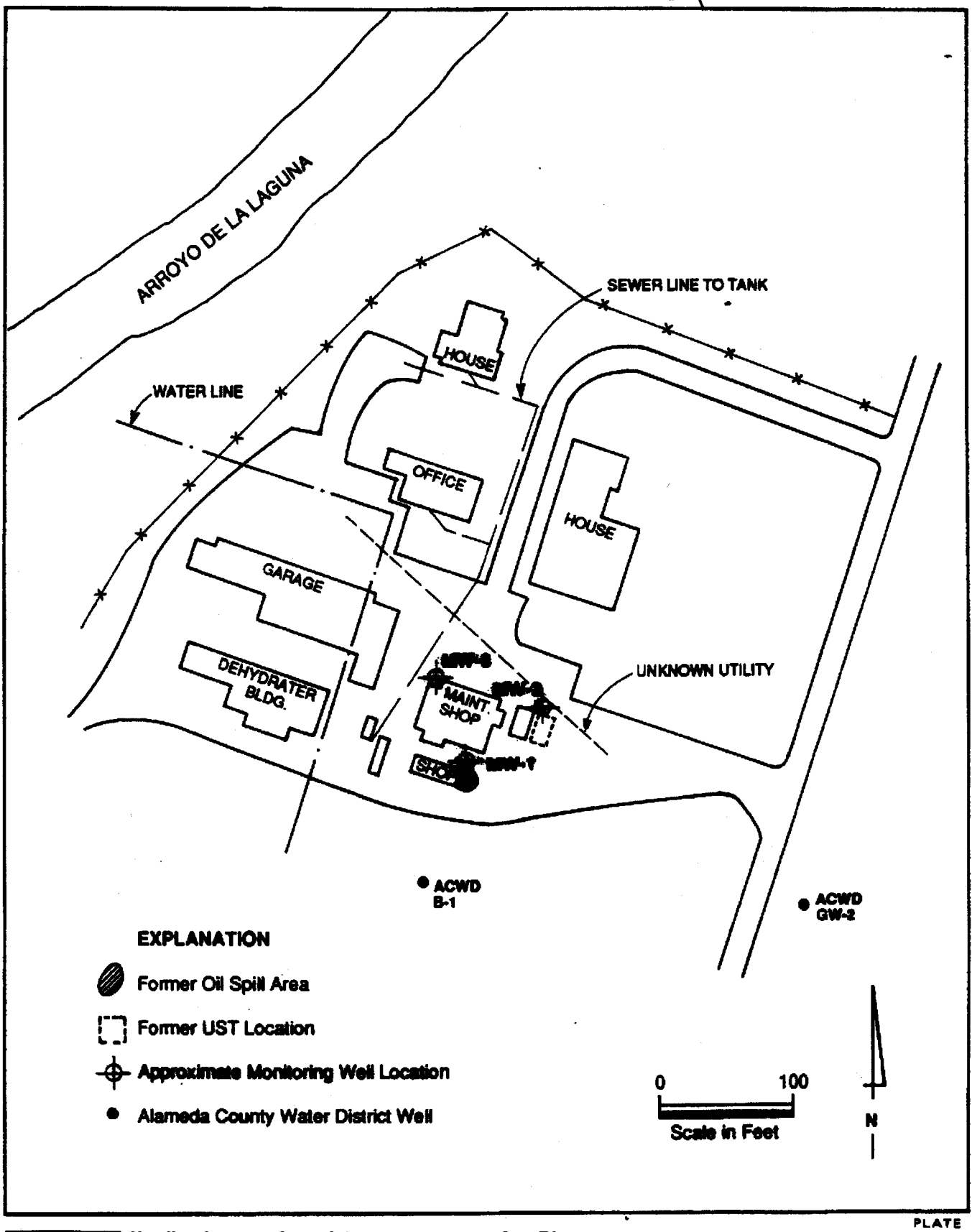


Figure 2. Site Plan, Sunol Maintenance Yard

1573-02.ai

Maintenance Yard and Oil Spill Area



HLA

Harding Lawson Associates
Engineering and Environmental Services

Site Plan
SFWD 505 Paloma Way
Sunol, California

PLATE 3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
AM	3457,008.04		10/90	

Maintenance Yard

Excavating with ± 3/4 cy backhoe to ± depth of 2'± below tank

Roadway to Office

Oil Storage Building

(Abandoned Pumps)

550 gal ⊕ Reg. Gas. — Sample #1

550 gal ⊕ Diesel — Sample #2

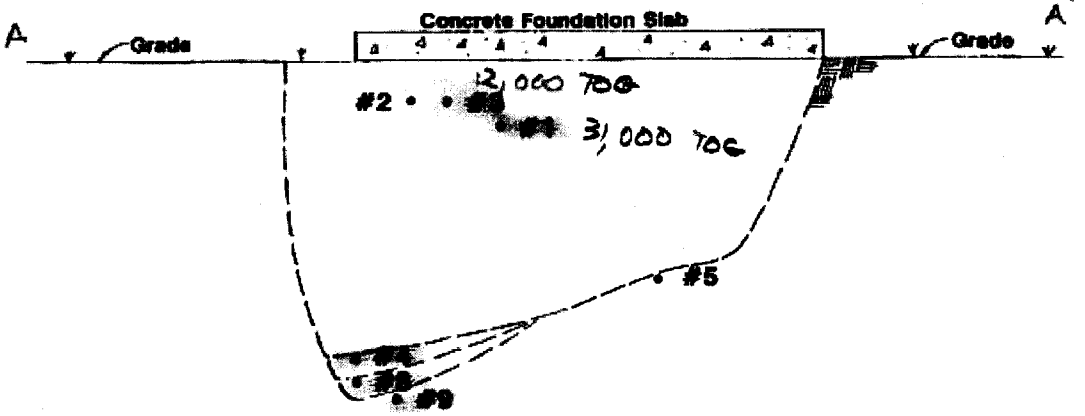
1000 gal ⊕ ⊕ Unleaded Gas. — Sample #3, Sample #4

Sampling done by L. Genner on May 16, 1990 in the afternoon

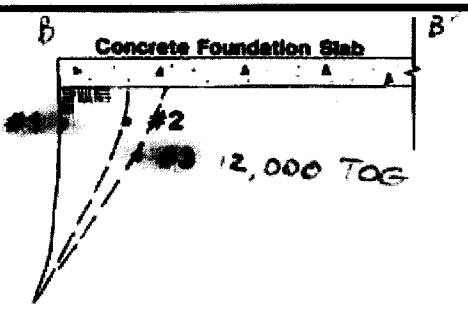
Contractor:

Tracy & Witbeck - Rogers/Genner

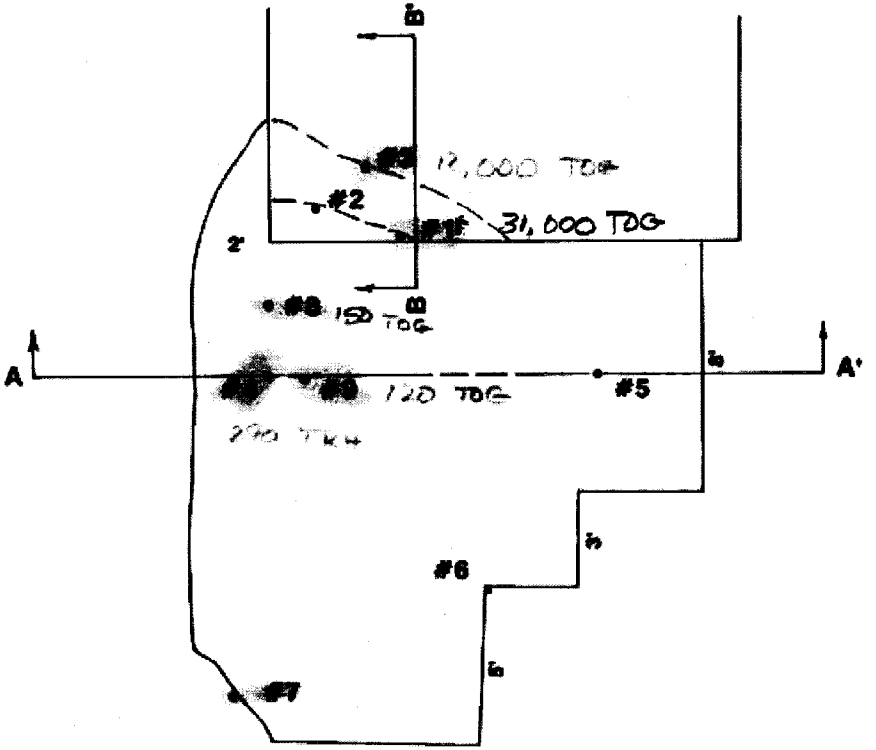
San Francisco Water Dept
Corporation Yard
505 Paloma Way
Sunol, CA.



SECTION A - A'



SECTION B - B'



PLAN VIEW

N

NOTE: Drawing Not To Scale

AMERICAN
ENVIRONMENTAL MANAGEMENT CORP.

FIGURE 2

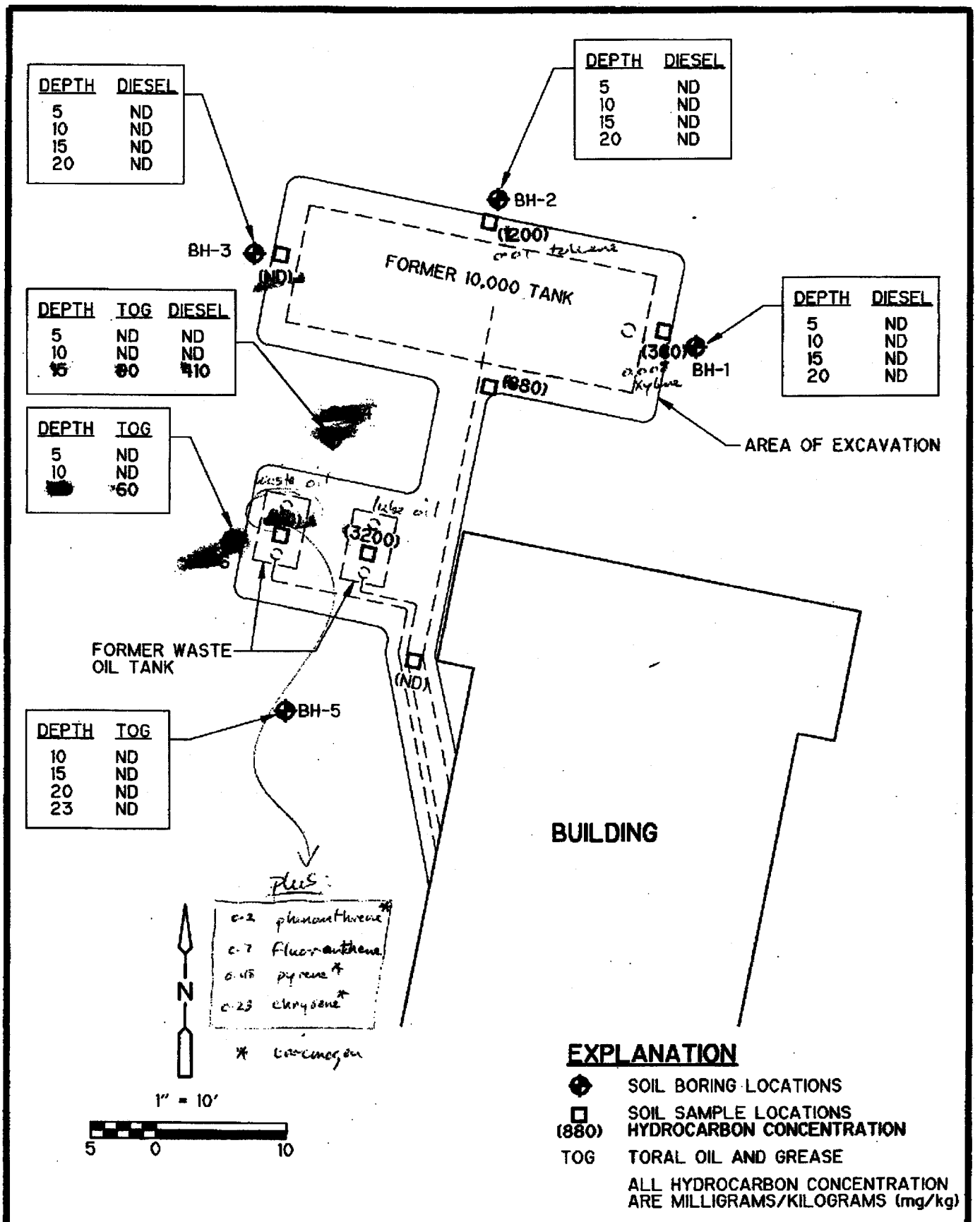
SAMPLE LOCATION MAP

San Francisco Department of Public Health

DRAWN BY:	DATE:	PROJECT NO.
JAV	12/22/99	#1980

Oil Spill Area

Pump Station



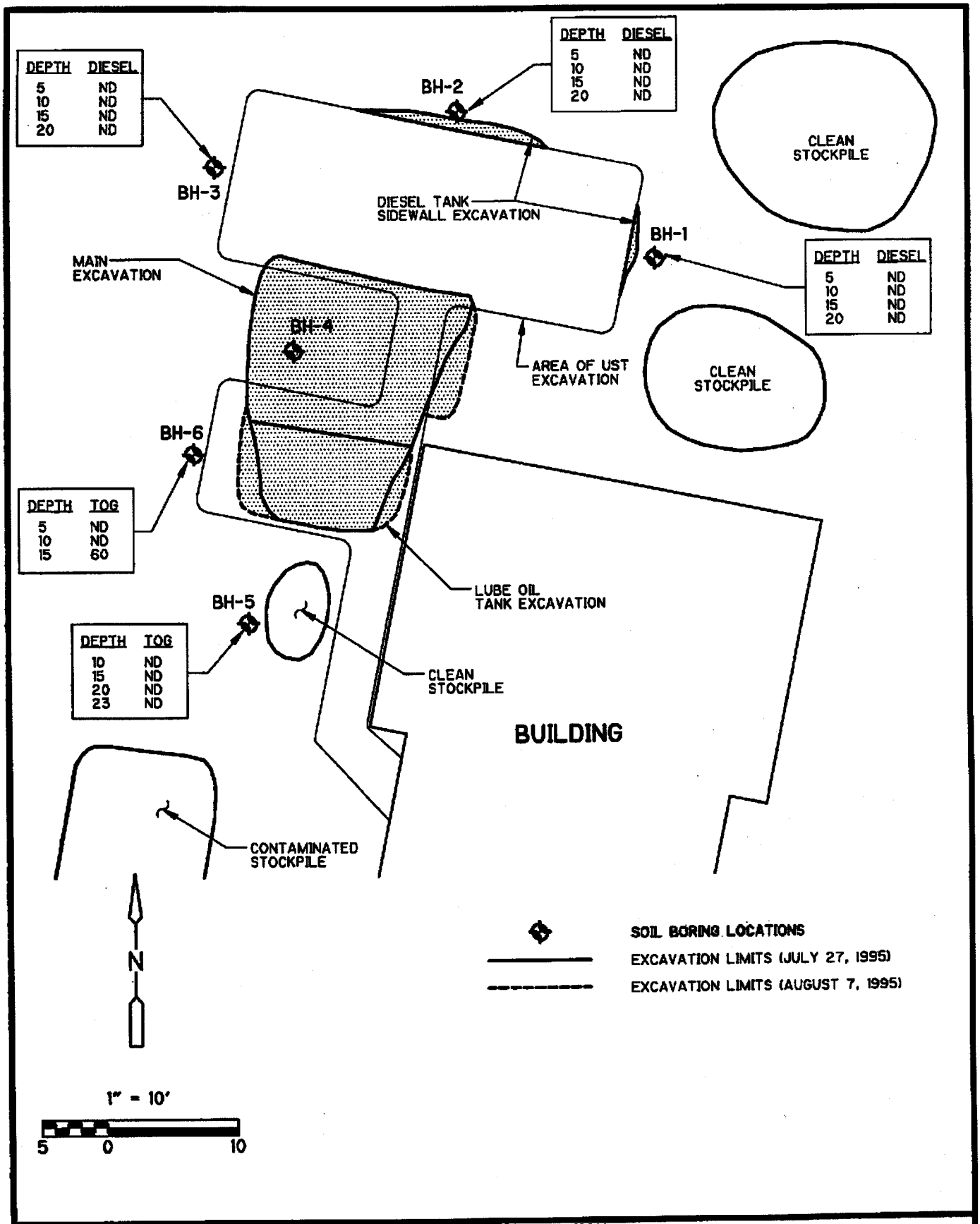
SUNOL PUMPING STATION

SITE PLAN AND SAMPLE LOCATIONS

CDM
environmental engineers, scientists, planners, & management consultants

[redacted]

Pump Station



SUNOL PUMPING STATION

SITE PLAN

CDM
environmental engineers, scientists, planners, & management consultants

Figure 2

X:\ACAD\5800-110\CSOIL2_1 08/25/95 15:32:06 2.52.16 CDM/CADD ST6/TVN

Pump Station

Weiss Associates

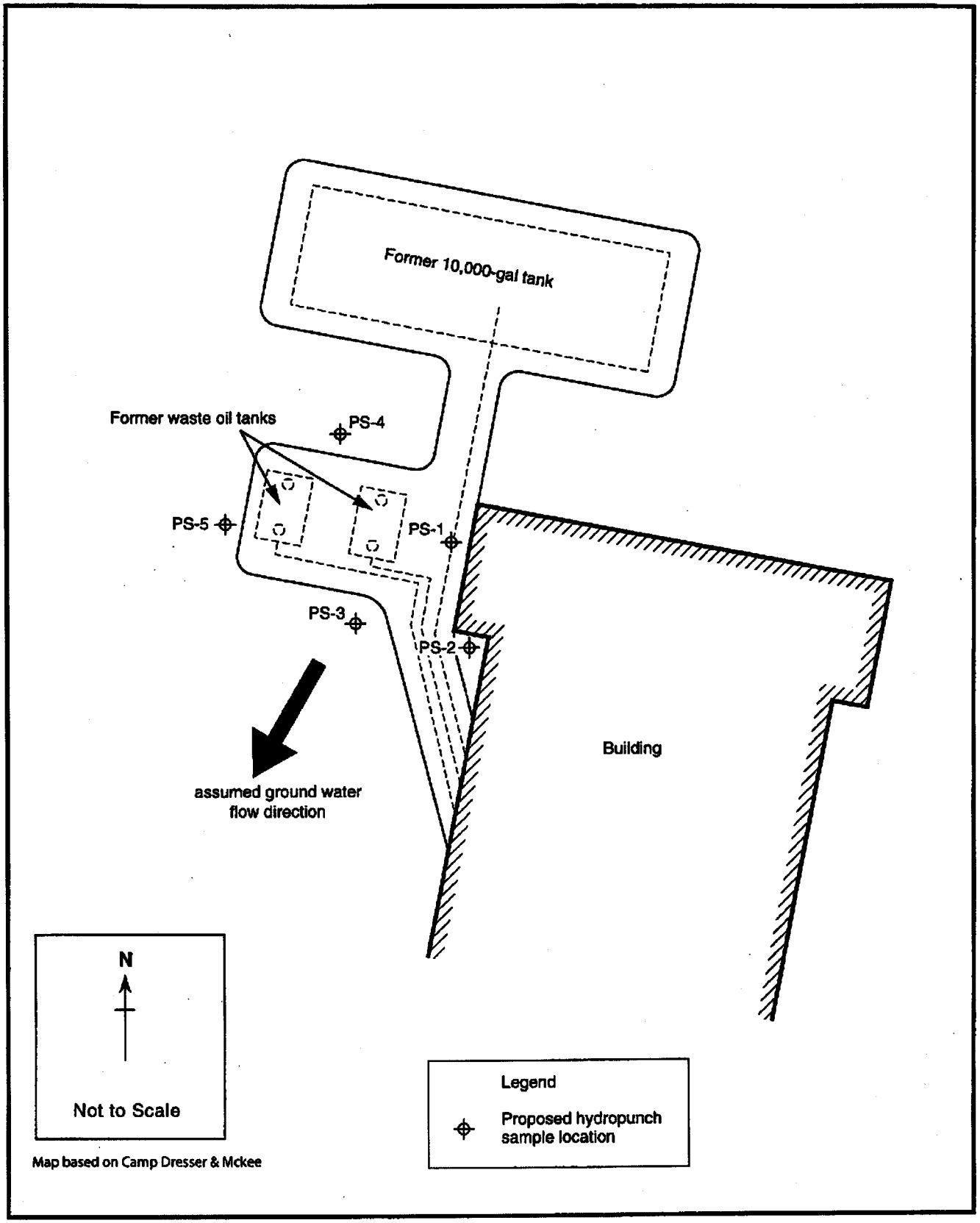
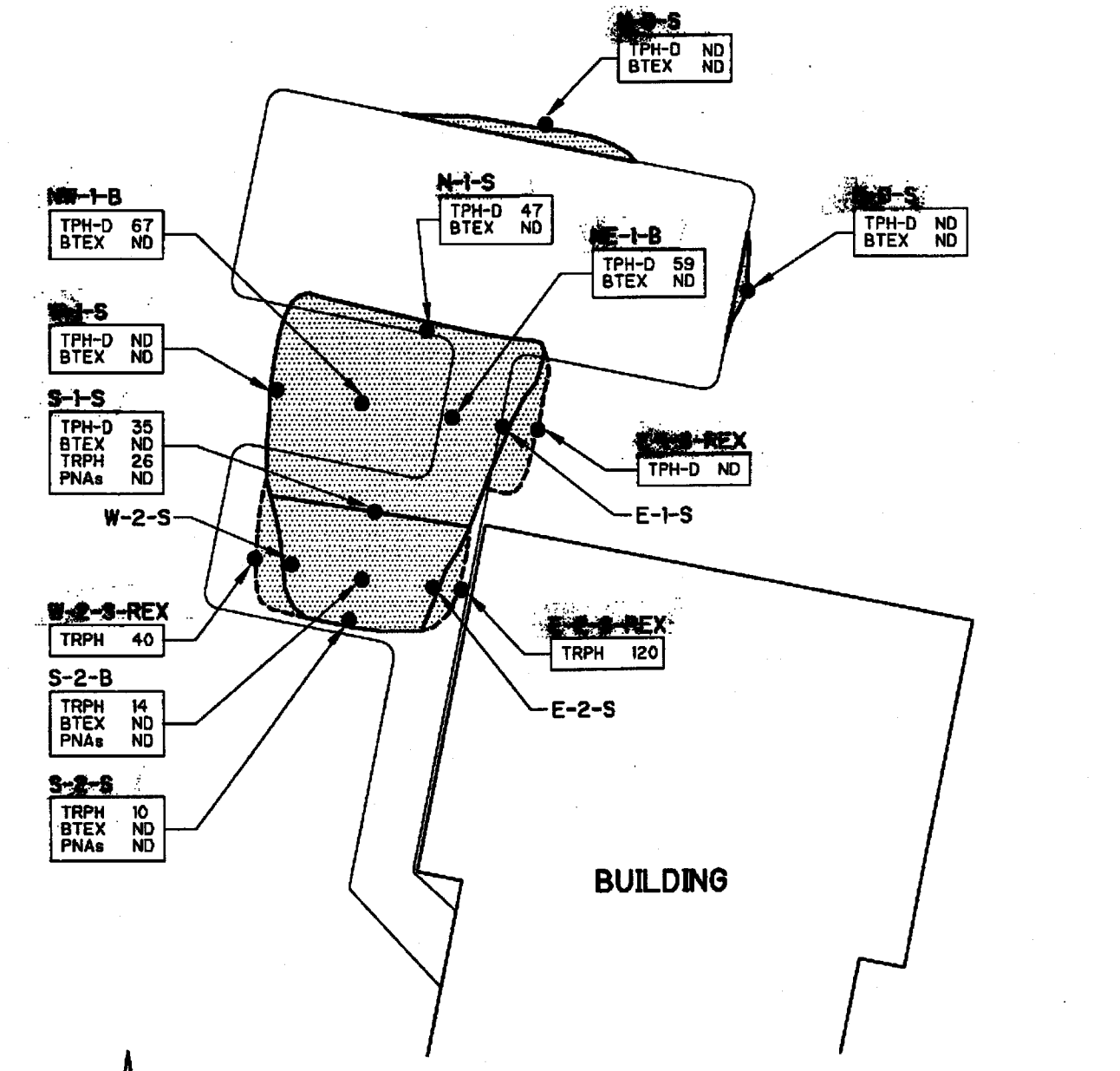


Figure 2. Site Plan, Sunol Pump Station

1573-05.ai

12/16/02

Pump Station



- ● CONFIRMATORY SOIL SAMPLING LOCATION
- ——— EXCAVATION LIMITS (JULY 27, 1995)
- - - - - - - - EXCAVATION LIMITS (AUGUST 7, 1995)
- TPH-D TOTAL PETROLEUM HYDROCARBON AS DIESEL
- BTEX BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENE
- TRPH TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
- PNAs POLYNUCLEAR AROMATICS HYDROCARBONS

ALL CONCENTRATIONS IN MILLIGRAMS/KILOGRAMS (MG/KG)

SUNOL PUMPING STATION

SOIL SAMPLE LOCATION & RESULT MAP

CDM
environmental engineers, scientists, planners, & management consultants

Figure 3

X:\ACAD\5800-110\SOIL2_2 08/16/95 12:57:20 0.39.49 CDM/CADD ST6/TVN

Maintenance Yard
1990 Tank Removal

Table 1

Summary Stacy & Witback and Rogers & Genner May 1990

Soil Sample Analytical Results

Former UST Location

Sample #	TPH-G	TPH-D	Benzene	Toluene	Ethyl Benzene	Xylene
WD 2022-1	7.6	40	0.70	1.7	0.12	0.80
WD 2022-2	<0.50	NA	0.018*	0.12*	<0.015*	0.14*
WD 2022-3	<0.50	NA	<0.015	0.06	<0.015	0.048
WD 2022-4	<0.50	NA	0.07	0.21	<0.015	0.13

Notes:

Concentrations are in milligams per kilograms
NA= Not Analyzed
TPH-G= Total petroleum hydrocarbons as gasoline
TPH-D= total petroleum hydrocarbons as diesel
<0.50= Not detected at or above the indicated laboratory detection limit
*=Laboratory report indicates that sample ID is WD 2022-4
HLA interprets it to be WD 2022-2

[redacted]

Maintenance Yard

Table 1. Soil Sample Results from Hydropunch Borings, Sunol Maintenance Yard, August 22-23, 2002

Sample Number	TPH-D	O&G	TPH-G	BTEX	MTBE	HVOCs
	mg/kg					
MY-1-S-5	1.3	ND	ND	ND	ND	ND
MY-1-S-10	3.1	ND	ND	ND	ND	ND
MY-1-S-15	2.1	ND	ND	ND	ND	ND
MY-1-S-20	ND	ND	ND	ND	ND	ND
MY-2-S-5	3.0	ND	ND	ND	ND	ND
MY-2-S-10	2.5	ND	ND	ND	ND	ND
MY-2-S-15	1.4	ND	ND	ND	ND	ND
MY-2-S-20	ND	ND	ND	ND	ND	ND
MY-3-S-5	ND	ND	ND	ND	ND	ND
MY-3-S-10	ND	ND	ND	ND	ND	ND
MY-3-S-15	ND	ND	ND	ND	ND	ND
MY-3-S-20	1.4	ND	ND	ND	ND	ND
MY-4-S-5	ND	ND	ND	ND	ND	ND
MY-4-S-10	ND	ND	ND	ND	ND	ND
MY-4-S-15	ND	ND	ND	ND	ND	ND
MY-4-S-20	ND	ND	ND	ND	ND	ND
Reporting Limit	1.0	50	1.0	0.005	0.005	Various
Regulatory Limit*	100/ 100	--	100/100	B-0.045/0.045 T-2.6/2.6 E-2.5/2.5 X-1.0/1.0	0.028/0.028	--

ND – Not detected above the laboratory reporting limit.

*Per RWQCB, Risk Based Screening Levels, Interim Final December 2001, Table C. Subsurface Soil and Groundwater RBSLs where groundwater IS a potential drinking water source. (Residential / Industrial)

Maintenance Yard

TABLE 1

SUMMARY OF ANALYTICAL FINDINGS AND PID METER READINGS

Date	Feet BGL Depth	TPHg Concentration (ppm)	EPA Method	Detection Limit (ppm)
03/02/87	3	810 ppm	8015	0.3
03/20/87	4	1500-2000 ppm	PID Meter	---
06/08/87	3 (SB-1)	ND	8015 Modified	10
06/08/87	5 (SB-1)	ND	8015 Modified	10
06/08/87	7 (SB-1)	ND	8015 Modified	10
06/08/87	9 (SB-1)	ND	8015 Modified	10
06/08/87	11 (SB-1)	ND	8015 Modified	10
06/08/87	13 (SB-1)	ND	8015 Modified	10
06/26/87	8	600-800 ppm	PID Meter	---
06/29/87	9-1/2	ND	PID Meter	---
06/29/87	11-1/2 (SB-2)	ND	8015 Modified	10

Maintenance Yard
Monitoring Well Borings

Table 3. Detected Compounds in Soil Samples

	Toluene (ppb)	TPH as Motor Oil EPA 8015 (ppm)	TOG EPA 413.2 (ppm)	TRH EPA 418.1 (ppm)
B-1 @ 6.0 feet	5	NA	ND(4)	ND(4)
B-1 @ 11.0 feet	7	NA	ND(4)	ND(4)
B-2 @ 6.0 feet	17	ND(25)	NA	NA
B-2 @ 11.0 feet	30	ND(25)	NA	NA
B-2 @ 16.0 feet	14	ND(25)	NA	NA
B-3 @ 20.0 feet	124	203	213	181

Notes:

All other compounds analyzed for were not detected.

ppb = parts per billion
ppm = parts per million
TOG = Total oil and grease
TPH = Total petroleum hydrocarbon
TRH = Total recoverable hydrocarbons
ND(4) = Not detected at or above the indicated laboratory detection limit
NA = Not analyzed
Total oil and grease by EPA Method 413.2 and TRH by EPA Method 418.1 are the same methods 5520 C and F/D and F.

Table 2

Summary American Environmental Management Corp. September 1989

Soil Sample Analytical Results

Former Oil Stain Area

Sample #	Sunol 1	Sunol 2	Sunol 3	Sunol 4	Sunol 5	Sunol 6	Sunol 7	Sunol 8	Sunol 9
Depth (feet)	2.0	2.0	3.0	7.0	6.0	6.0	5.0	7.0	7.5
TOG	31,000	<100	12,000	NA	NA	NA	<100	150	120
TRH	NA	NA	NA	290	<10	<10	NA	NA	NA
TPH	NA	NA	NA	NA	NA	NA	NA	<10	NA
1,1-Dichloroethane	400	NA	NA	<200	NA	NA	<200	NA	NA
1,1,1-Trichloroethane	740	NA	NA	<200	NA	NA	<200	NA	NA
Tetrachloroethane	3200	NA	NA	<200	NA	NA	<200	NA	NA
Toluene	910	NA	NA	<200	NA	NA	<200	NA	NA
Ethyl Benzene	320	NA	NA	<200	NA	NA	<200	NA	NA
Xylenes	2300	NA	NA	<400	NA	NA	<400	NA	NA
Cadmium	<1.0	NA	NA	<1.0	<1.0	NA	<1.0	NA	NA
Chromium	73	NA	NA	79	81	NA	86	NA	NA
Lead	42	NA	NA	11	14	NA	18	NA	NA
Zinc	72	NA	NA	45	41	NA	45	NA	NA

Notes:
TOG, TRH, TPH, and metal concentrations are in milligrams per kilograms; all others are in micrograms per kilograms
NA= Not Analyzed
<100= Compound not detected at or above the indicated laboratory detection limit
TOG= Total oil and grease
TRH= Total recoverable hydrocarbons
TPH= Total petroleum hydrocarbons
Depths are approximate

6-11 Soil

Pump Station

Table 2
Laboratory Analytical Results
Diesel Tank and Main Excavation Samples

Sample #	Test Constituents (mg/kg)				
	TPH-diesel	Benzene	Toluene	Ethylbenzene	Xylene
[redacted]	ND	ND	ND	ND	ND
[redacted]	ND	ND	ND	ND	ND
[redacted]	47	ND	ND	ND	ND
[redacted]	ND	ND	ND	ND	ND
[redacted]	67	ND	ND	ND	ND
[redacted]	59	ND	ND	ND	ND
E-1-S	3,200	ND	ND	[redacted]	[redacted]
[redacted]	ND	NA	NA	NA	NA
[redacted]	35	ND	ND	ND	ND

[redacted] = final sample

Table 3
Laboratory Analytical Results
Lube Oil Tank Excavation Samples

Sample #	Test Constituents (mg/kg)		
	TRPH	BTEX	PNAs
[redacted]	26	ND	ND
W-2-S	6,900	ND	Phenanthrene = 1.2 Anthracene = 0.5 Flouranthrene = 3.8 Pyrene = 3.3 Benzo(a)anthracene = 1.8 Chrysene = 2.3 Benzo(b)fluoranthene = 1.0 Benzo(k)fluoranthene = 1.0 benzo(a)pyrene = 1.1
[redacted]	40	NA	NA
[redacted]	14	ND	ND
E-2-S	7,000	ND	ND
[redacted]	120	NA	NA
[redacted]	10	ND	ND

Method detection limit for TPH-diesel = 1.0 mg/kg
Method detection limit for BTEX = 0.005 mg/kg
Method detection limit for TRPH = 10 mg/kg
Method detection limit for PNAs = 0.05 mg/kg to 2.5 mg/kg
ND = Not detected above method detection limit
NA = Not analyzed

Pump Station

Table 1
Laboratory Analytical Results
Diesel Tank Samples

Sample #	Test Constituents (mg/kg)				
	TPH-diesel	Benzene	Toluene	Ethylbenzene	Xylene
3177B West end	ND	ND	ND	ND	ND
3177B North end	1,200	ND	.010	ND	ND
3177B South end	880	ND	ND	ND	ND
3177B East end	360	ND	ND	ND	.008
3177B Stockpile	50	ND	ND	ND	ND

Method Detection Limit for BTEX = .005 mg/kg
Method Detection Limit for TPH diesel = 1 mg/kg

Lube Oil Tank Samples

Sample #	Total Oil and Grease (mg/kg)
3177B-L-CF (Exe. Bottom)	3200
3177B Stockpile	ND

Method Detection Limit for TOC = 50 mg/kg

9005#23.039

Table 1 (continued)
Waste Oil and Product Line Samples

Sample ID	TOG (mg/kg)	BTEX (mg/kg)	TPH Diesel (mg/kg)	TPH Gasoline (mg/kg)	VOCs (µg/kg)	Base Acid Extractables (µg/kg)
3177 WCF (Exc. Bottom)	ND	ND	ND	ND	ND	Phenanthrene = .20 Fluoranthene = .70 Pyrene = .48* Chrysene = .23*
3177 PL (Product Line)	ND	ND	1.1	ND	ND	ND
3177B Stockpile	2,300	xylene = .012	780	180	ND	Acenaphthene = .50 Fluorene = .37 Phenanthrene = 1.50 Anthrancene = .67 Fluoranthene = 6.70 Benzo(a) anthacene = 1.50 Bis (2-eth)phthalate = 2.30 Chrysene = 1.30*

VOC Method Detection Limit	= 1 to 50 µg/kg
TOG Method Detection Limit	= 50 mg/kg
TPH Method Detection Limit	= 1 mg/kg
Base Acid Extractables Method Detection Limit	= 0.12 mg/kg to 0.61 mg/kg
BTEX Method Detection Limit	= .005 mg/kg

* carcinogen

9005#23.039

Pump Station

Pump Station

Table 3. Soil Sample Results from Hydropunch Borings, Sunol Pump Station, August 22-23, 2002

Sample Number	TPH-D	O&G	BTEX	MTBE	Run SVOCs?
	mg/kg				
PS-1-S-5	48	1400			Yes
PS-1-S-10	2.3	ND			No
PS-1-S-15	7.0	78			Yes
PS-1-S-20	ND	ND			No
PS-2-S-5	ND	ND			No
PS-2-S-10	ND	ND			No
PS-2-S-15	ND	ND			No
PS-2-S-20	1.1	ND			No
PS-3-S-5	ND	ND			No
PS-3-S-10	1.2	ND			No
PS-3-S-15	2.0	ND			No
PS-3-S-20	ND	ND			No
PS-4-S-5	ND	ND			No
PS-4-S-10	3.8	ND			No
PS-4-S-15	ND				
PS-4-S-20	ND				
PS-5-S-5	ND				
PS-5-S-10	ND				
PS-5-S-15	1.2				
PS-5-S-20	ND				

Table 4. Ground Water Results from Hydropunch Borings, Sunol Pump Station, August 22-23, 2002

Sample Number	TPH-D	O&G	BTEX	MTBE	Run SVOCs?
	µg/L				
PS-1-GW	ND	ND			No
PS-2-GW	ND	ND			No
PS-3-GW	ND	ND			No
PS-4-GW	340	ND			Yes- in progress
PS-5-GW	ND	ND			No

Pump Station

Table 1. Soil Sample Results from Hydropunch Borings, Sunol Pump Station, August 22-23, 2002

Sample Number	TPH-D	O&G	BTEX	MTBE	SVOCs
	mg/kg				
PS-1-S-5	48	1400	ND	ND	See Table 4
PS-1-S-10	2.3	ND	ND	ND	NA
PS-1-S-15	7.0	78	ND	ND	See Table 4
PS-1-S-20	ND	ND	ND	ND	NA
PS-2-S-5	ND	ND	ND	ND	NA
PS-2-S-10	ND	ND	ND	ND	NA
PS-2-S-15	ND	ND	ND	ND	NA
PS-2-S-20	1.1	ND	ND	ND	NA
PS-3-S-5	ND	ND	ND	ND	NA
PS-3-S-10	1.2	ND	ND	ND	NA
PS-3-S-15	2.0	ND	ND	ND	NA
PS-3-S-20	ND	ND	ND	ND	NA
PS-4-S-5	ND	ND	ND	ND	NA
PS-4-S-10	3.8/4.0*	ND	ND	ND	NA
PS-4-S-15	ND	ND	ND	ND	NA
PS-4-S-20	ND	ND	ND	ND	NA
PS-5-S-5	ND	ND	ND	ND	NA
PS-5-S-10	ND	ND	ND	ND	NA
PS-5-S-15	1.2	ND	ND	ND	NA
PS-5-S-20	ND	ND	ND	ND	NA
Reporting Limit	1.0	50	0.005	0.005	--
Regulatory Limit**	100/ 100	--	B-0.045/0.045 T-2.6/2.6 E-2.5/2.5 X-1.0/1.0	0.028/0.028	--

*The second result is after silica gel cleanup.

**Per RWQCB, Risk Based Screening Levels, Interim Final December 2001, Table C. Subsurface Soil and Groundwater RBSLs where groundwater IS a potential drinking water source. (Residential / Industrial)

NA – Not analyzed

ND – Not detected above the laboratory reporting limit.

Pump Station Excavation

Table 1
Field IR Analysis
Soil Sampling Location and Results

Screening Samples

Sample Number	Sampling Location	[redacted] (mg/kg)
S-1-4CY	main excavation	ND
S-2-10CY	main excavation	ND
S-3-C1	clean stockpile, west of building	ND
S-4-PH1	contaminated stockpile, west of building	[redacted]23
S-5-20CY	main excavation	[redacted]41
S-6-PH2	contaminated stockpile, west of building	[redacted]
S-7-PH3	clean stockpile north of building	ND
S-8-23CY	main excavation	[redacted]
S-9-PH4	clean stockpile north of building	ND
S-10-45CY	main excavation	[redacted]71
S-11-45CY	main excavation	[redacted]
S-12-50CY	lube oil UST excavation	[redacted]
S-13-60CY	lube oil UST excavation	ND
S-14-SW1	diesel UST excavation, side wall east of BH-2	ND
S-15-SW2	diesel UST excavation, side wall west BH-2	ND
S-16-SW3	diesel UST excavation, side wall near BH-1	ND
S-17-SW4	lube oil UST excavation, south side wall	ND
S-18-SW5	main excavation, west side wall	ND

CY: Cubic yards removed at time of soil sample collection
Main Excavation: Area between the former diesel and oil USTs
C: Soil sample collected from clean stockpiles on-site
PH: Soil sample collected from petroleum hydrocarbons impacted stockpile on-site
SW: Soil sample collected from excavation side wall
ND: Not detected above 50 mg/kg

Pump Station

Weiss Associates

Table 4. SVOC Results in Soil from Hydropunch Borings, Sunol Pump Station, August 22-23, 2002

	PS-1-S-5	PS-1-S-15	Reporting Limit	Regulatory Limit**
Analyte	mg/kg			
Phenol	ND	0.070	1.7/0.067*	0.076/0.076

*The first reporting limit is for PS-1-S-5, the second is for PS-1-S-15.
** Per RWQCB, Risk Based Screening Levels, Interim Final December 2001, Table C. Subsurface Soil and Groundwater RBSLs where groundwater IS a potential drinking water source. (Residential / Industrial)
Note: All other 8270 compounds were report as non-detect.
ND – Not detected above the laboratory reporting limit.

Maintenance Yard and Oil Spill Area

TABLE 2
ANALYTIC RESULTS OF GROUNDWATER WELL SAMPLING

DATE	SAMPLE	TPH-G	TPH-D	TOG	B	T	E	X	VOC
2-21-92	MW-1	ND	ND	ND	NA	NA	NA	NA	ND
2-21-92	MW-2	ND	ND	ND	ND	ND	ND	ND	NA
2-21-92	MW-3	ND	ND	ND	NA	NA	NA	NA	ND
4-29-92	MW-1	ND	ND	ND	NA	NA	NA	NA	ND
4-29-92	MW-2	ND	ND	ND	ND	ND	ND	ND	NA
4-29-92	MW-3	ND	ND	ND	NA	NA	NA	NA	ND
8-3-92	MW-1	ND	ND	ND	NA	NA	NA	NA	ND
8-3-92	MW-2	ND	ND	ND	ND	ND	ND	ND	NA
8-3-92	MW-3	ND	ND	ND	NA	NA	NA	NA	ND
11-2-92	MW-1	ND	ND	ND	NA	NA	NA	NA	ND
11-2-92	MW-2	ND	ND	ND	ND	ND	ND	ND	NA
11-2-92	MW-3	ND	ND	ND	NA	NA	NA	NA	ND
1-29-93	MW-1	ND	ND	ND	NA	NA	NA	NA	ND
1-29-93	MW-2	ND	ND	ND	ND	ND	ND	ND	NA
1-29-93	MW-3	ND	ND	ND	NA	NA	NA	NA	ND

ND = NOT DETECTED AT OR ABOVE THE REPORTING LIMIT (RL)
NA = NOT ANALYZED
TPH-G = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (RL = 50 ppb)
TPH-D = TOTAL PETROLEUM HYDROCARBONS AS DIESEL (RL = 50 ppb)
B = BENZENE (RL = 0.5 ppb)
T = TOLUENE (RL = 0.5 ppb)
E = ETHYL BENZENE (RL = 0.5 ppb)
X = TOTAL XYLENES (RL = 0.5 ppb)
VOC = VOLATILE ORGANIC COMPOUNDS (RL ≤ 20 ppb -see lab reports)

Analysis

All three groundwater monitoring wells had below detectable quantities of contamination for the analyte measured (see table 2).

[redacted]

Maintenance Yard and Oil Spill Area

Weiss Associates

Table 2. Ground Water Results from Monitoring Well Sampling and Hydropunch Borings, Sunol Maintenance Yard, August 20-23, 2002

Sample Number	TPH-D	O&G	TPH-G	BTEX	MTBE	HVOCs
	µg/L (unless otherwise noted)					
MY-MW-1	ND	ND	ND	ND	ND	ND
MY-1-GW	ND	ND	ND	ND	ND	ND
MY-2-GW	ND	ND	ND	ND	ND	ND
MY-3-GW	ND	ND	ND	ND	ND	ND
MY-4-GW	ND	ND	ND	ND	ND	ND
Reporting Limit	50	1.0-1.9 mg/L	50	0.5	5.0	Various
Regulatory Limit*	100	--	100	B-1.0 T-40 E-30 X-13	5.0	Various

ND – Not detected above the laboratory reporting limit.

*Per RWQCB, Risk Based Screening Levels, Interim Final December 2001, Table C. Subsurface Soil and Groundwater RBSLs where groundwater IS a potential drinking water source. (Residential / Industrial)

Pump Station

Weiss Associates

Table 2. Ground Water Results from Hydropunch Borings, Sunol Pump Station, August 22-23, 2002

Sample Number	TPH-D	O&G	BTEX	MTBE	SVOCs
	µg/L (unless otherwise noted)				
PS-1-GW	ND	ND	ND	ND	NA
PS-2-GW	ND	ND	ND	ND	NA
PS-3-GW	ND	ND	ND	ND	NA
PS-4-GW	340	ND	B-0.70 T-ND E-ND X-1.4	ND	See Table 3
PS-5-GW	ND	ND	ND	ND	NA
Reporting Limit	50	1.0-1.9 mg/L	0.5	5.0	--
Regulatory Limit*	100	--	B-1.0 T-40 E-30 X-13	5.0	Various

*Per RWQCB, Risk Based Screening Levels, Interim Final December 2001, Table C. Subsurface Soil and Groundwater RBSLs where groundwater IS a potential drinking water source. (Residential / Industrial)
NA – Not analyzed
ND – Not detected above the laboratory reporting limit.

Pump Station

Weiss Associates

Table 3. SVOC Results in Ground Water from Hydropunch Borings, Sunol Pump Station, August 22-23, 2002

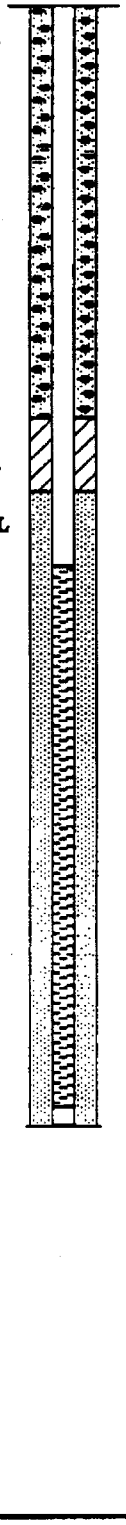
	PS-4-GW	Reporting Limit	Regulatory Limit*
Analyte	µg/L		
Phenol	11	3.5	5.0
4-Methylphenol	13	3.5	--
Napthalene	6.5	3.5	21
Acenapthene	14	3.5	20
Dibenzofuran	5.2	3.5	--
Fluorene	10	3.5	3.9
Phenanthrene	13	3.5	4.6
Anthracene	4	3.5	0.73
Benzoic acid	32	17	--

*Per RWQCB, Risk Based Screening Levels, Interim Final December 2001, Table C. Subsurface Soil and Groundwater RBSLs where groundwater IS a potential drinking water source.
Note: All other 8270 compounds were report as non-detect.

Top of Casing 238.79 feet

Equipment 10"Hollow Stem Auger

Elevation 240.0 ft Date 08/22/91



Depth (ft)	Sample	OVA (PPm)	Odor	Blows/foot	
0					3" ASPHALT CONCRETE DARK BROWN SILT (ML) medium dense, moist
5		0	No		LIGHT OLIVE BROWN SAND WITH SILT (SP-SM) medium dense, moist, fine sand
		0	No	10	
10		0	No	24	OLIVE BROWN SAND WITH FINE GRAVEL (SW) dense, moist
					OLIVE BROWN TO DARK BROWN CLAYEY SAND WITH GRAVEL (SC) very dense, moist
15					FINE TO COARSE GRAVEL (GC)
20		0	No	50/3"	OLIVE BROWN SAND WITH FINE GRAVEL AND SILT (SW-SM) very dense, moist
					OLIVE BROWN POORLY GRADED GRAVEL WITH CLAY AND SAND (GP-GC) very dense, saturated
25		0	No		
30					Boring was terminated at 30.0 feet. Groundwater was encountered at 21.5 feet.
35					
40					

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B-1/MW-1
SFWD 505 Paloma Way
Sunol, California

(Sheet 1 of 1)

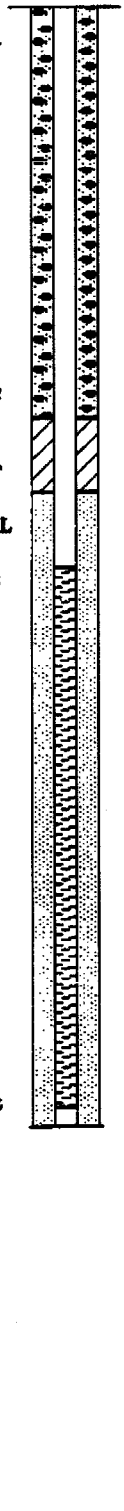
PLATE 5

DRAWN 238.79 | JOB NUMBER 3457,008.04 | APPROVED

Top of Casing 239.32 feet

Equipment 10"Hollow Stem Auger

Elevation±240.0 ft Date 08/22/91



OVA (PPM)	Odor	Blows/foot	Depth (ft)	Sample
			0	
0	No	10	5	
0	No	7	10	
0	No	23	15	
0	Slight	50/5"	20	
0	No	50/4"	25	
			30	
			35	
			40	

3" ASPHALT CONCRETE
DARK BROWN SILT (ML)
moist

OLIVE BROWN SILTY SAND (ML)
medium dense, moist

loose

OLIVE BROWN SAND (SP)
medium dense to dense, dry, medium grained
FINE GRAVEL (GC)

BROWN SILTY SAND WITH GRAVEL (SM)
very dense, moist, fine gravel

Boring was terminated at 30.0 feet.
Groundwater was encountered at 20.5 feet.

Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring B-2/MW-2
SFWD 505 Paloma Way
Sunol, California

(Sheet 1 of 1)

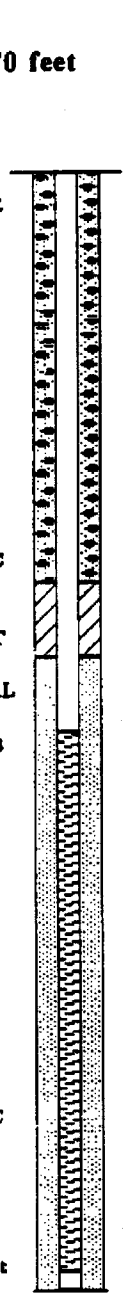
PLATE 6

DRAWN	JOB NUMBER	APPROVED	FILE	DATE	REVISED DATE
239.32	3457,008.04	MgF	12211G19		

Top of Casing 238.70 feet

Equipment 10"Hollow Stem Auger

Elevation ±240.0 ft Date 08/23/91



OVA (ppm)	Odor	Blows/foot	Depth (ft)	Sample
0	No	7	0	
0	No	9	5	
0	No	50/5"	10	
0	No	50/3"	15	
0	No	50/5"	20	
			25	
			30	
			35	
			40	

DARK BROWN SILT (ML)
loose, wet

GRAVEL (GC)

DARK BROWN SILT (ML)
wet

OLIVE BROWN SAND WITH GRAVEL (SP)
medium dense, moist,
medium grained sand with fine gravel

OLIVE BROWN SAND WITH GRAVEL (SW)
very dense, moist, fine gravel

BROWN GRAVEL WITH SAND (GP)
very dense, saturated

OLIVE BROWN SAND WITH SILT AND GRAVEL (SP-SM)
very dense, saturated, medium to coarse sand, fine gravel

Boring was terminated at 30.0 feet.
Groundwater was encountered at 20.5 feet.

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B-3/MW-3
SFWD 505 Paloma Way
Sunol, California

(Sheet 1 of 1)

PLATE 7

DRAWN	JOB NUMBER	APPROVED	FILE	DATE	REVISED DATE
238.70	3457,008.04		12211G19		

ZONE 7 PERMIT 22120

SUNOL MAINT. YARD

8-22-02
GREGG DRILLING
DRILLER: PAUL

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Page 1 of 1

Project / Job No.: 348.1573

Borehole/Well No.: MW-1

Notes: LOGGED BY LMS

Sample	PID/PID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact	
				12	0		2"				0			(0-1) NO RECOVERY
					12						1			(1-4) SANDY GRAVEL (GW); DARK YELLOW BROWN (10YR 4/4); LOOSE; DRY TO DAMP; <10% FINES, 40-50% FINE-COARSE SAND, 50-60% FINE-COARSE GRAVEL; NON-PLASTIC; VHEK
									GROUT		2			
											3			
											4			(4-8) SAND (SP); DARK YELLOW BROWN (10YR 4/4); LOOSE; DAMP TO MOIST, 80-90% FINE TO MED. SAND, <10% FINES, 10-20% FINE-MED. GRAVEL; NON-PLASTIC; HEK
MW-1-S-5											5			
											6			
											7			
											8			(8-18) GRAVELLY SAND (SW); DARK YELLOW BROWN (10YR 4/4); LOOSE; DAMP TO MOIST, <10% FINES, 60-70% FINE-COARSE SAND, 30-40% FINE-MED. GRAVEL; NON-PLASTIC; VHEK
MW-1-S-10											9			
											10			
											11			
											12			1600; DTW @ 27.5 BGS
											13			
											14			
MW-1-S-15											15			TD @ ~~24'~~ 30' (bm)
											16			@ 18' → LARGE COBBLES
											17			@ 19' → COLOR CHANGES TO 7.5YR 5/8 FOR 0.5'
											18			
MW-1-S-20											19			(18-24) SANDY GRAVEL (GW); DARK YELLOW BROWN (10YR 4/4); LOOSE; DAMP TO MOIST, <10% FINES, 30-40% FINE-COARSE SAND 60-70% FINE TO COARSE
											20			

NOTE: HOLE ANGLE 2° FROM PERPENDICULAR. ALL DEPTHS GIVEN ARE PARALLEL TO DRILL STRING.

(@ 23-24' BGS TO 24' BGS)

ZONE 7
PERMIT 22130

SUNOL
MAINT. YARD

8/20/12
GREGG DRILLING
DRILLER: PAUL

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Page 1 of 1

Project / Job No.: 326-1573

Borehole/Well No.: MW-2

Notes: LOGGED BY LMS

Sample	PID/FID	Sampler Type	Blows / 6 inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact	
				12	0		2"		GROUT		0			NO RECOVERY
											1			0-6 FT BGS
											2			
											3			
											4			
											5			
MW-2-5-5					↓						6			(10YR 4/4)
					12						7			(?-11.5') SAND (SP); DARK
											8			YELLOW BROWN; DRY TO DAMP;
											9			LOOSE; 70-80% FINE-MED
MW-2-5-10											10			SAND, <10% FINES, 10-20%
											11			COARSE SAND TO FINE GRAVEL;
											12			NON-PLASTIC; HEK
											13			(11.5'-24') GRAVELLY SAND
											14			(SW); DARK YELLOWISH BROWN
											15			(10YR 4/4); DAMP TO MOIST;
MW-2-5-15											16			LOOSE; 60-70% FINE TO
											17			COARSE SAND, <10% FINES,
											18			20-30% FINE TO COARSE
											19			GRAVEL; NON-PLASTIC; VHEK
MW-2-5-20				↓	↓		↓		20-21'		20			DTW @ 0820 = 22' BGS
														TD @ 24'

ZONE 7 PERMIT NO. 22120 — SUNOL MAINT. YARD — GREGG DRILLING DRILLER: PAUL — 8/22/02

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Page 1 of 1

Project / Job No.: 208.1573 | Borehole/Well No.: MW-3

Notes: LOGGED BY LMS

Sample	PID/PID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact	Description
				12	6		2"	GROUT			0			(0-0.5') NO RECOVERY
					12						1			(0.5-5.5) SILTY SAND (SM); BROWN (10YR 4/3); SOFT; DRY TO DAMP; 10-20% SILTY FINES, 70-80% FINE-MED. SAND, ~10% FINE GRAVEL; NON-PLASTIC; MEK
											2			
											3			
											4			
MW-3-S-5											5			(1 ms) 8/22/02
											6			(5.5-11) SAND (SP); DARK YEL. BROWN (10YR 4/4); LOOSE; DRY TO DAMP; <10% FINES, 80-90% FINE-MED. SAND, 10-20% COARSE SAND TO FINE GRAVEL; NON-PLASTIC; MEK
											7			
											8			
											9			
MW-3-S-10											10			
											11			
MW-3-S-11											11			(11-20.5) GRAVELLY SAND (SW); DARK YELLOW BROWN (10YR 4/4); LOOSE; DRY TO DAMP; <10% FINES, 60-70% FINE-COARSE SAND, 30-40% FINE-COARSE GRAVEL; NON-PLASTIC; MEK
											12			
											13			
MW-3-S-15											14			
											15			
											16			
											17			
											18			
											19			
MW-3-S-20											20			(20.5-24) SANDY GRAVEL (GW); AS ABOVE, BUT SAND-GRAVEL RATIO REVERSED.
											21			
											22			
											23			DTW @ 21.5 @ 1330
											24			TD @ 24'

@ 22-24' BGS

ZONE 7 PERMIT SUNOL MAINT. YARD
22120

8/22/02
GREGG DRILLING
DRILLER: PAUL

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Page 1 of 1

Project / Job No.: 26-8-1573 | Borehole/Well No.: MW-4

Notes: LOGGED BY LMS

Sample	PID/FID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact	
				12	6		2"				0			NO RECOVERY 0-0.5'
					12						1			(0.5-6) GRAVELLY SAND (SW); DARK BROWN (10YR 3/3); DENSE; DRY TO DAMP; ~10% FINES, 60-70% FINE-MED. SAND, 30-40% COARSE SAND & FINE GRAVEL, OCCASIONAL COBBLE (UP TO 5 cm DIAM.); NON-PLASTIC; VHEK
											2			
											3			
											4			
MW-4-S-5											5			
											6			(6-9) SAND (SP); DARK YELLOW BROWN (10 YR 4/4); LOOSE; DRY TO DAMP; <10% FINES; 80-90% FINE-MED. SAND, 10-20% FINE GRAVEL; NON-PLASTIC; HEK
											7			
											8			
MW-4-S-10											9			(9-20) GRAVELLY SAND (SW); DARK YELLOW BROWN (10YR 4/4); LOOSE; DRY TO DAMP; <10% FINES, 60-70% FINE-COARSE SAND, 30-40% FINE TO COARSE GRAVEL; NON-PLASTIC; VHEK
											10			
											11			
											12			
											13			
											14			
MW-4-S-15											15			@ 22.5' BGS COLOR CHANGE TO GREY (5Y 5/1)
											16			@ 20' BGS → SOIL BECOMES VERY INDURATED. DENSE LIKE CONCRETE. CALICHE? (SEE COLOR CHANGE)
											17			
											18			
											19			TD @ 24'
MW-4-S-20											20			DTW on 8/23/02 @ 0700 : 22.5'

CP 23-24

SUNOL PUMP STATION 8/22 - 8/23/02
ZONE 7 PERMIT: 22120 CRESS DRILL.

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Page 1 of 1

Project / Job No.: 248.1573 Borehole/Well No.: PS-1

Notes: LOGGED BY LMS

Sample ID	PID/FID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact	Description
				12	0		2" & 3.25"		Grout		0			(0-2'). NO RECOVERY
				↓	↓						1			
					12						2			(2-25) GRAVELLY SAND (SW): DARK YEL. BROWN (10YR 4/4); LOOSE; DRY TO DAMP; <10% FINES, 60-70% FINE-COARSE SAND, 30-40% FINE-COARSE GRAVEL; NON-PLASTIC; VHEF
				↓	↓						3			
					0						4			
PS1-S-5					12						5			(NO RECOVERY FROM 4-5')
					↓						6			BLACK, OILY STAINING @ 6.5'
											7			
											8			
											9			PETRO. ODOR @ 9.5'
PS-1-S-10											10			
											11			
				↓	↓						12			(NO RECOVERY FROM 12-15')
				12	0						13			
											14			
					↓						15			W/ DIRECT PUSH
PS-1-S-15					12						16		*	refusal @ 16' on 8/22/02
											17			resume drilling w/ HSA rig on 8/23/02
											18			
PS-1-S-20.5-21											19			TD @ 25'
PS-1-S-25				↓	↓						20			DTW @ 0815: 21.5'

SUNOL PUMP STATION 8/23/02

ZONE 7 PERMIT: 22180 GREGG DRILLING

WA WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Page 1 of 1

Project / Job No.: 268-1573

Borehole/Well No.: PS-2

Notes: logged by lms

Sample	PID/FID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact	Description
				HSA			4.25"				0			(0-25) GRAVELLY SAND (SW): DARK YELLOW BROWN (10YR4/4); LOOSE; DRY TO DAMP; <10% FINES, 60-70% FINE-MED. SAND, 30-40% COARSE SAND, FINE GRAVEL; SOME COARSE GRAVEL (<10%, UP TO 2cm DIAM); NON-PLASTIC; HEK
PS-2-S-5											5			
PS-2-S-10											10			
PS-2-S-15											15			
PS-2-S-20											20			

TD@ 25'

DTW @ 1340: 22.5'

SUNOL PUMP STATION 8/23/05
ZONE 7 PERMIT: 2212C GREGG DRILLING

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Page 1 of 1

Project / Job No.: 268-1573
Borehole/Well No.: PS-3
Notes: logged by LMS

Sample	PID/FID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact	Description
			HSA				4.25"		GROUT		0–1			(0-25) GRAVELLY SAND (SW); DARK YELLOW BROWN (10YR 4/4); LOOSE TO MOD. DENSE; DRY TO DAMP; <10% FINES, 60-70% FINE-MED. SAND, 30-40% COARSE SAND TO FINE GRAVEL; SOME COBBLES, BUT NOT MANY (UP TO 5 cm DIAM.); NON-PLASTIC; HEK
PS-3-S-5											5			
PS-3-S-10											10			
PS-3-S-15											15			
PS-3-S-20											20			
PS-3-S-25											25			(25-35) CLAYEY SAND W/ GRAVEL (SC); DARK GREEN GREY (5BG 4/1); DENSE; DAMP TO MOIST; ~20% CLAY-RICH FINES, ~70% FINE SAND ~10% FINE-MED. GRAVEL. LOW PLASTICITY (MATRIX); L-MEK
PS-3-S-30											30			
											35–40			TD @ 40' DTW @ 1245: 30'

Depth scale: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

CHEVRON PUMP STATION
ZONE 7 PERMIT: 22120

8/23/05
CHECK DRILLING

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Page 1 of 1

Project / Job No.: 268-1573 | Borehole/Well No.: PS-4

Notes: Logged By CMS

Sample ID	PID/FID	Sampler Type	Blows / 6 Inches	Inches Driven	Inches Recov'd	Sample Cond.	Boring Diameter	Conduct. Casing	Sand / Grout	Well Casing	Depth (ft)	Recovery	Contact	Description
				12	0		9" A.S.	CEMENT GROUT			0			(0-2) NO RECOVERY
											1			(2-4) GRAVELLY SAND (SW); DARK YELLOW BROWN (10YR4/4); LOOSE; DRY; <10% FINES, 60-70% FINE-COARSE SAND, 30-40% FINE TO COARSE GRAVEL, SOME COBBLES (>2" DIAM.); NON-PLASTIC; VHEK
PS-4-S-5					12						2			
					4						3			
					0						4			(4-7) NO RECOVERY
											5			
											6			
											7			
					12						8			(7-9) GRAVELLY SAND (SW); AS ABOVE
PS-4-S-10					0						9	?		? ? ? ? ? ? ? ? ? ? ?
					12						10			(9-25) SANDY GRAVEL (GW); DARK YELLOW BROWN (10YR4/4); LOOSE; DAMP; <10% FINES, 30-40% FINE-COARSE SAND, 60-70% FINE-COARSE GRAVEL & COBBLES (UP TO ≤ 5 cm DIAM.); NON-PLASTIC; VHEK
								CREEP SAG @ 10' BGS on 8/22/05. RESUME drilling w/ 8" OD HSA rig 8/23/05			11			
											12			
											13			
											14			
											15			TD @ 25'
PS-4-S-15											16			DTW @ 0930 = 23.5'
											17			
PS-4-S-21											18			
PS-4-S-20											19			
											20			

SHAZL PUMP STATION . DRILLER: PAUL 8/23/02
ZONE 7 PERMIT: 22120 GREGG DRILLING

WEISS ASSOCIATES

BOREHOLE / WELL CONSTRUCTION LOG (cont.)

Page 1 of 1

Project / Job No.: 268.1573

Borehole/Well No.: PS-5

Notes: LOGGED BY LMS

Depth (ft)	Sample	Blows / 6 Inches	Boring Diameter	Conduct. Casing	Description
0–0.3		HSA	4.25"	GROUT	(0-19.5?) GRAVELLY SAND (SW); DARK YELLOW BROWN (10YR 4/4); SLIGHTLY DENSE; DAMP; ~10% FINES, 60-70% FINE-MED. SAND, 20-30% COARSE SAND - FINE GRAVEL (UP TO 1 CM DIAM.); NON-PLASTIC; HEK
0.5	PS-5-S-5				
0.9					DTW @ 1040: 20'
					TD @ 21.5'
1.0	PS-5-S-10				
1.4	PS-5-S-15				(SC)
1.5					(~19.5-20.5) CLAYEY SAND W/ GRAVEL; DARK GREENISH GREY (5BG 4/1); DENSE; MOIST; ~20% CLAY-RICH FINES, ~70% FINE SAND, ~10% FINE-MED. GRAVEL; LOW PLASTICITY; L-HEK (MATRIX ONLY)
1.7					(20.5-21.5) GRAVELLY SAND (SW); AS ABOVE, BUT <10% FINES, 70-80% FINE-COARSE SAND, 20-30% FINE GRAVEL
1.8–2.0	PS-5-S-20; 1" 20-20.5'				? ? ? ? ? ? ? ? ? ?

SAMPLE	USCS	LITHOLOGIC DESCRIPTION	WELL DIAGRAM
	ML	Dusky brown, slightly sandy, clayey SILT. Less than 1% pebbles.	
	ML	Dusky brown, slightly clayey, sandy SILT.	
	ML	Moderate yellowish brown, slightly clayey, sandy SILT.	
	SM	Moderate yellowish brown, silty SAND.	
	SM	Dark yellowish brown, silty SAND.	
	ML	Moderate yellowish brown, light gray mottling, clayey sandy SILT. Iron oxide staining and organics rich. 0-2% gravels.	
	SP	Salt and pepper color, slightly silty, well sorted, medium grained SAND. Moist. Less than 1% pebbles.	
		End of boring at 13 feet. Groundwater not encountered.	

DEPTH IN FEET (SLANTED)

0 2 4 6 8 10 12 14 16 18 20

LEGEND:

- WATER LEVEL
- SOIL TUBE SAMPLE
- BENTONITE
- CEMENT-GROUT
- PVC WELL SCREEN ( )
- PVC WELL CASING ( )

Clayton Environmental Consultants

A Marsh & McLennan Company

San Francisco Water Dept., Sunol
505 Paloma Way, Sunol, California

BOREHOLE NO. 1

DATE: June 1, 1987

PROJECT NO. 7825-EF (090)

TOC ELEVATION:

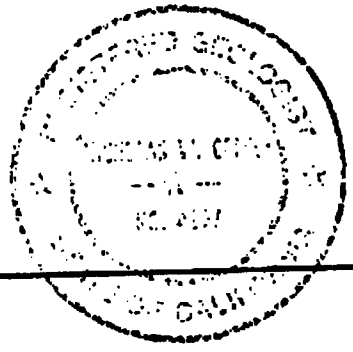
EQUIPMENT: Hand held, gas powered hammer.

FIGURE

SAMPLE	USCS	LITHOLOGIC DESCRIPTION	WELL DIAGRAM
	ML	Dusky brown, slightly sandy, clayey SILT. Less than 1% pebbles.	
	ML	Dusky yellowish brown, slightly clayey, SILT. 1-2% pebbles.	
	ML	Dusky yellowish brown, slightly clayey, SILT. 3-4% pebbles.	
	SM	Moderate yellowish brown, silty SAND.	
	SM	Dark yellowish brown, slightly clayey, silty SAND.	
	ML	Moderate yellowish brown, with light gray mottling, clayey sandy SILT. Iron oxide staining and organics rich. 2% gravels.	
	SP	Salt and pepper color, slightly silty, well sorted, medium grained SAND. Moist. Less than 1% pebbles.	
		End of boring at 12 feet. Groundwater not encountered.	

DEPTH IN FEET (SLANTED)

0
2
4
6
8
10
12
14
16
18
20



LEGEND:

- WATER LEVEL
- SOIL TUBE SAMPLE
- BENTONITE
- CEMENT GROUT
- PVC WELL SCREEN ( )
- PVC WELL CASING ( )

Clayton Environmental Consultants

A Marsh & McLennan Company

San Francisco Water Dept., Sunol
505 Paloma Way, Sunol, California

BOREHOLE NO. 2

FIGURE 5

DATE: June 1, 1987

PROJECT NO. 7825-EF(090)

TOC ELEVATION:

EQUIPMENT: Hand held, gas powered hammer.