Chevron

July 22, 1994

Chevron U.S.A. Products Company
2410 Camino Ramon
San Ramon, CA 94583
P.O. Box 5004
San Ramon, CA 94583-0804

Marketing Department
Phone 510 842 9500

Mr. Scott Seery
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94501

Re: Former Chevron Service Station #9-4930
3369 Castro Valley Boulevard, Castro Valley, CA

Dear Mr. Seery:

Enclosed is the Comprehensive Site Evaluation and Proposed Future Action Plan dated July 11, 1994, prepared by our consultant Weiss Associates for the above referenced site.

As we discussed, Chevron is currently in the process of evaluating a large number of our sites to determine what activities are necessary to move them to a "no further action" or "closure" point. The enclosed document summarizes all data gathered to date and proposes scientifically based remedial actions to guide all future work at this site.

We would like to schedule a meeting with yourself and any other individuals or agencies you feel appropriate to discuss this document. I will contact you by telephone during the next week to set up such a meeting.

If you have any questions or comments, please do not hesitate to call me at (510) 842-8134 or Kenneth Kan at (510) 842-8752.

Sincerely,
CHEVRON U.S.A. PRODUCTS COMPANY

Mark A. Miller
Site Assessment and Remediation Engineer

Enclosure

cc: Mr. Kenneth Kan, Office
Mr. Kevin Graves, RWQCB - Bay Area
Ms. B.C. Owen

Anna Counelis & Tula Gallanes
109 Casa Viejo Place
Orinda, CA 94563

File: 9-4930 WP1

Weiss Associates

COMPREHENSIVE SITE EVALUATION AND PROPOSED FUTURE ACTION PLAN

at

Chevron Service Station 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

prepared for

Chevron U.S.A. Products Company
P.O. Box 5004
San Ramon, California 94583-0804

July 11, 1994

Weiss Associates

COMPREHENSIVE SITE EVALUATION AND PROPOSED FUTURE ACTION PLAN

at

Chevron Service Station 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

prepared by

Weiss Associates
5500 Shellmound Street
Emeryville, CA 94608

Cynthia N. Okano
Staff Engineer

Alison W. Watts
Senior Staff Geologist

Weiss Associates work for Chevron U.S.A. Products Company, P.O. Box 5004, San Ramon, California, was conducted under my supervision. To the best of my knowledge, the data contained herein are true and accurate and satisfy the specified scope of work prescribed by the client for this project. The data, findings, recommendations, specifications, or professional opinions were prepared solely for the use of Chevron U.S.A. in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied, and are not responsible for the interpretation by others of these data.

Eric M. Nichols July 11, 1994
Registered Civil Engineer
No. 42695

CONTENTS

APPENDICES

SUMMARY

The Chevron site at 3369 Castro Valley Boulevard in Castro Valley, California is a former Chevron Service Station. The station was closed in January 1993 and the service station building and car wash located at the site were demolished in February 1993. In March 1993, Gettler-Ryan Inc., removed the station's underground storage tanks (USTs) and associated product lines and Touchstone Developments (Touchstone) supervised the over-excavation of areas suspected of containing hydrocarbon-impacted soil. This excavation removed all the remaining soil in the potential source areas in the vicinity of the former underground tanks and dispenser islands. The site is currently vacant.

Review of subsequent subsurface site investigation data shows that:

- ***The site has been impacted by offsite sources:*** Hydrocarbon concentrations in MW-2, located upgradient of the former underground storage tanks, are **higher** than concentrations detected in MW-4, on the downgradient site border. Halogenated Volatile Organic Compounds (HVOCs) detected in all of the site wells probably originate from a dry cleaning facility or other offsite source.

- ***All source areas have been removed from the site:*** Soil samples taken after tank excavation indicate that no detectable hydrocarbons remain in the unsaturated soil.

- ***The site has been remediated to the extent feasible:*** A comparison of ground water samples before and after the excavation in and near monitoring well MW-4 indicate a decrease in both total petroleum hydrocarbons as gasoline (TPH-G) and benzene concentrations in the ground water after the excavation. No additional remedial alternatives are appropriate at this site, due to the low permeability sediments, and the risks of encouraging migration of the offsite plume.

Therefore, we submit that:

- Although elevated contaminant concentrations are present in ground water at this site, these contaminants are primarily due to offsite sources. We submit that any residual hydrocarbons originating from the Chevron site do not present any additional threat to human health or to the quality of the surrounding aquifer; and

- All economically and technically feasible measures have been taken to reduce the Chevron contaminant plume.

And we request that Alameda County Department of Environmental Health (ACDEH) approve the Chevron site as remediated to the extent feasible and allow a gradual reduction in well sampling frequency.

INTRODUCTION

At the request of Chevron U.S.A. (Chevron), Weiss Associates (WA) has prepared this site evaluation for former Chevron Service Station 9-4930, located at 3369 Castro Valley Boulevard, in Castro Valley, California. The objectives of this evaluation are to; 1) provide a comprehensive summary of all investigative and remedial actions performed at the site to date, 2) evaluate whether the site meets the Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) criteria for establishment of a non-attainment area, and 3) outline a recommended future action plan. This summary presents background on the site investigation and remediation activities, reviews the RWQCB criteria for establishment of a non-attainment area, and outlines the proposed future action plan. The site-specific information presented in this petition is compiled from the reports listed in the references section.

SITE HISTORY

SITE SETTING

The former service station is located on the southeast corner of the intersection of Castro Valley Boulevard and Wilbeam Avenue in Castro Valley, California. The site is currently vacant. Hydrocarbons were first discovered beneath the site in November 1992 when RESNA Industries, Inc. (RESNA) of Novato, California conducted a subsurface environmental investigation at the site.

SITE INVESTIGATION

1992 Subsurface Investigation: RESNA identified two former service station configurations at the site (see Appendix A for a generalized site plan). The tanks located on the western side of the site were still present at the time of the investigation. The tanks marked 'Former Underground Storage Tanks' and 'Former Waste Oil Tank' had apparently been removed at an earlier date.

Ten machine augured borings (B-1 through B-10) and six hand augured borings (H-1 through H-6) were drilled on the site; four of the machine augured borings extended below the ground water table and were converted into temporary monitoring wells (B-1 through B-4). Boring H-5 was hand augured immediately adjacent to the former waste oil tank. Hydrocarbons were present in soil samples collected from B-1, B-3, B-4, B-8 and H-5 with a maximum concentration of 2,500 ppm total petroleum hydrocarbons as gasoline (TPH-G) detected in B-4, located in the center of the former underground storage tanks near the eastern border of the site. [redacted] soil samples. Total oil and grease (TOG) was detected in H-5 at 57 ppm [redacted] organic compounds (HVOCs) were detected in H-5 [redacted] A site map with boring locations is included in Appendix A. Summary tables of hydrocarbon concentrations detected in soil and ground water are presented in Appendix B.

1992 Offsite Source Investigation: In 1992, RESNA performed an offsite source investigation and located other potential sources of petroleum hydrocarbons in the area. Five sites within approximately 750 ft of Chevron Service Station 9-4930 were listed on the Leaking Underground Storage Tank Information System maintained by the State Water Resources Control Board. These sites include (1) Arnold Property at 3234 Castro Valley Boulevard; (2) Sal's Foreign Car Service at 3343 Castro Valley Boulevard; (3) Sal's Foreign Car Service at 20845 Wilbeam Avenue; (4) Xtra Oil at 3495 Castro Valley Boulevard; and (5) a Shell service station at 3496 Castro Valley Boulevard. The Xtra Oil and Shell

Note: many soil samples collected from saturated sediments

NOTE: BTEX detection limits varied from 0.1 to 0.005 mg/kg; the "widest" soil samples in terms of TPH conc. invariably had higher-than-acceptable Benzene detection limits (e.g., B-4: 0.5)

Note: in boring H-5, a layer of sandy GRAVEL encountered @ ~ 7.5'. BG was not sampled even though log indicated a strong HC odor.

Note: the Xtra Oil (4) and Shell (5) sites are one in the same. Sal's Foreign Care Service (2)(3)[same site] appears to be downgradient of Chevron site.

Note: recent hydropunch study has shown the absence of HCs in water sampled from points located between Xtra Oil and Chevron sites.

service station are located to the north and east of the Chevron site and are potentially upgradient; Sal's Foreign Car Service (both locations) are located to the south and west of the Chevron site. The Arnold Property is also located to the west of the Chevron site. Preliminary site investigations have been undertaken at the Arnold Property and Xtra Oil sites, but not at Sal's Foreign Car Service (both locations) or the Shell service station. Approximate locations are presented in a vicinity map included in Appendix A.

1993 Tank/Line Removal and Over-excavation: Chevron demolished the service station building and car wash located at the site in February 1993. In March 1993, Gettler-Ryan of Hayward, California removed three fiberglass 10,000 gallon underground storage tanks (USTs), associated product line piping and car wash waste water reclaim tanks (WWRTs). Touchstone observed the condition of the USTs and collected soil samples during removal. [redacted] most recent pipes [redacted] One water sample and eight soil samples were collected from the UST excavation. Four soil samples were collected from the WWRT excavation and thirteen soil samples were collected from beneath the removed product line piping. Stockpiled soil from the excavation was also sampled. Hydrocarbons were detected in most soil samples, with a maximum concentration of 720 ppm. Sample analyses are presented in Appendix B.

Touchstone then over-excavated suspected areas containing hydrocarbon-impacted soil to a depth of 2 to 3 feet below ground water. During excavation, soil samples were collected from the bottom of the excavation as well as from various depths along the side walls to determine the effectiveness of the excavation. The north and west sides of the excavation were limited by property boundaries and the south and east sides were determined by acceptable hydrocarbon concentrations and/or property boundaries. The final depth of the excavation ranged from 11 to 15 feet.

TPH-G was detected at greater than 100 ppm in soil samples collected from the northern area of the excavation, from an area south of the older UST area and from a small area in the center of the site. Benzene concentrations did not exceed 3.9 ppm in any sample and were not detected in most samples.

Analysis by EPA Method 8270 detected 2-methylnapthalene at 280 ppb in over-excavation sample OX-15-5 from a small area in the center of the site. Final excavation limits and sidewall samples are illustrated in Appendix A. Sample analysis results for samples collected during over-excavation are provided in Appendix B. Throughout the excavation, additional debris such as concrete slabs and electrical conduits were removed as they were discovered at various depths. Approximately 7,500 cubic yards of soil were removed and disposed of at Redwood Landfill, Inc. in Novato, California.

1993 Well Installation: In October 1993, RESNA drilled four borings (B-11 through B-14) and converted the four borings into ground water monitoring wells (MW-1 through MW-4) to define the upgradient, downgradient and vertical extent, if any, of dissolved gasoline in ground water. TPH-G was detected in a soil sample from B-12 at 8.0 ft below ground surface (bgs) at 100 ppm and in B-14 at 6.0 ft bgs at 530 ppm. Stabilized water levels shown on the boring logs indicate that both these samples were taken from near or below the water table. Benzene was not detected in any of the soil samples.

After the borings were converted into monitoring wells, a ground water sample was collected from each well and analyzed for dissolved hydrocarbons. TPH-G was detected in monitoring wells MW-1, MW-2 and MW-4 at a maximum concentration of 5,600 ppb TPH-G and 140 ppb benzene in MW-2. The interpreted ground water gradient is to the southwest, and MW-2 is cross-gradient of the former underground tanks. A compound which does not match the typical gasoline pattern was detected in monitoring well MW-3. In a written correspondence to Kenneth Kan of Chevron, U.S.A., Scott Seery of the ACDEH mentions a conversation with a chemist at the lab that performed the analysis. The chemist indicated that the compound was probably a chlorinated compound, most likely perchloroethylene or trichloroethylene.

The four site wells were sampled again on February 25, 1994. TPH-G was detected in monitoring wells MW-1, MW-2 and MW-4 at a maximum concentration of 820 ppb TPH-G and 41 ppb benzene in MW-2. The ground water samples were also tested for purgeable halocarbons in water

using EPA Method 601. Tetrachloroethane was detected in all of the samples, at a maximum concentration of 400 ppb in MW-4. Trichloroethane was detected in samples collected from MW-1, MW-3 and MW-4; MW-4 contained the maximum concentration of 51 ppb. 1,2-Dichloroethene was detected in samples from MW-1 and MW-4 at 0.8 ppb and 13 ppb, respectively. A site map with boring locations is illustrated in Appendix A. Summary tables of hydrocarbon concentrations detected in soil and ground water during this investigation are presented in Appendix B, and the boring logs are included in Appendix C.

REMEDIAL ACTIONS

Tank/Line Removal and Over-excavation: Tank/line removal and over-excavation, as described above, removed as much of the hydrocarbon-impacted soil from the site as possible. Excavation sampling indicated that no soil containing more than 3.9 ppm benzene remained at the site.

A comparison of ground water samples before and after excavation indicates a significant decrease in both TPH-G and benzene concentrations. Temporary monitoring well B-1 and monitoring well MW-4 were drilled in an area that was not excavated. They are located near each other on the east property boundary in the vicinity of the removed USTs. Ground water samples collected in B-1 before excavation contained concentrations of 2,700 ppb TPH-G and 51 ppb benzene. Ground water samples collected in MW-4 after excavation contained 640 ppb TPH-G and 6.7 ppb benzene. It is apparent, therefore, that a significant reduction in hydrocarbon concentrations was achieved during source removal. The remaining hydrocarbon concentrations detected in MW-4 are probably partially residue from the former Chevron underground storage tanks, and partially from the offsite plume entering the site from the east. Ground water sampling results are summarized in the Historical Groundwater Analytical Results and Monitoring Data table presented in Appendix B.

which wells??

Note! Concentrations has since climbed back up to pre-excavation levels during 6/94 event

unsubstantiated!

EVALUATION OF NON-ATTAINMENT AREA CRITERIA AND FUTURE ACTION PLAN

DISCUSSION OF NON-ATTAINMENT AREA CRITERIA

In the following section each of the RWQCB criterion for establishment of a non-attainment area, and potential Chevron responsibility for these criteria, is considered for the subject site.

Criteria a. The Discharger has demonstrated (e.g. pump tests, ground water monitoring, transport modeling) and will verify (e.g. ground water monitoring) that no significant pollution migration will occur due to hydrogeologic or chemical characteristics.

Plume Distribution: Hydrocarbons and/or HVOCs have been detected in all of the site wells. However, the data indicate that most of the hydrocarbons and all of the HVOCs originate from an offsite source. The distribution of these compounds is discussed below.

Hydrocarbons: Hydrocarbons have been detected in three of the site wells.

- Up to 5,600 ppb TPH-G has been detected in upgradient well MW-2.
- Up to 640 ppb TPH-G has been detected in downgradient well MW-4.
- Up to 1,000 ppb TPH-G has been detected in crossgradient well MW-1 and no hydrocarbons have been detected in down/cross-gradient well MW-3.

It is not possible to determine precisely what portion of the hydrocarbon plume detected at this site originates from an offsite source. However, hydrocarbon concentrations detected in ground water entering the site at the upgradient boundary are higher than concentrations detected in ground water at the downgradient site boundary, indicating that a significant portion of the onsite plume originates from an offsite source.

wrong - 6/94 values are similar in both MW-2 and -4

HVOCs: HVOCs have been detected in all of the site wells. However, after review of the site data, we believe that these compounds do not originate at the Chevron site.

I agree

- Tetrachloroethane has been detected in all of the site wells. However, ground water from MW-3 does not contain petroleum hydrocarbons. Tetrachloroethane is generally associated with dry cleaning operations, which also generate other HVOC compounds.
- The saturated soil sample collected from adjacent and downgradient of the former Chevron waste oil tank contained no detectable concentrations of HVOCs.
- The compounds are present in all of the site wells. MW-1 and MW-2 are located cross- and upgradient of the Chevron waste oil tank, and it is improbable that compounds originating at the center of the site would be found in these wells.

These data indicate that the HVOCs detected at the Chevron site originate offsite, possibly at a dry cleaning facility, or are associated with the offsite hydrocarbon plume, but are not associated with the Chevron site. A dry cleaning facility is located upgradient of the site, on Castro Valley Boulevard.

Site Hydrogeology: The sediments beneath the site consist primarily of silty clay, clay and clayey silt. The wells are completed in an upper water bearing area which consists of clayey silt. The wells are screened with a screen interval from 5 to 21 ft bgs. Descriptions of the materials encountered are shown on the boring logs included in Appendix C at the end of this report.

Site Hydrology: The elevation of each newly installed wellhead was surveyed to within 0.01 foot with respect to a known benchmark and mean sea level by Ron Archer Civil Engineering of Pleasanton, California, a licensed land surveyor. Compiled water level data for MW-1, MW-2, MW-3 and MW-4 are presented in the Ground Water Elevation Data table presented in Appendix B. The uppermost potentiometric surface lies approximately 6.50 ft bgs with a range of ±1.0 ft depending on the ground surface elevation. Based on these data, the interpreted ground water flow direction at the site is to the west or southwest (see Appendix A for potentiometric surface maps). [redacted] October 29, 1993 was approximately 0.006 ft/ft.

A detailed description of the hydrogeology and ground water chemistry at the site can be found in the Subsurface and Additional Subsurface Environmental Investigation reports (RESNA Industries, 1992 and 1993).

Criteria b. Adequate source removal and/or isolation is undertaken to limit future migration of pollutants to ground water.

Source Removal: No spill has ever been documented at the site and the source of the hydrocarbons detected in ground water has never been determined. However, a significant portion of the plume appears to originate offsite. The gasoline and waste water reclaim tanks and product piping removed in March 1993 were inspected and reported to be in good condition, and approximately 7,500 cubic yards of hydrocarbon-impacted soil was excavated from the vicinity of the former tanks and product lines after tank removal. [redacted] after the site was excavated, indicating that the primary source area has been removed.

so?

wrong!

there's your source

Criteria c. Dissolved phase cleanup is not appropriate or cost-effective due to limited water quality impacts or human health risks.

The most appropriate remedial technology for this site, excavation, has been successfully performed, as discussed in detail under the Remedial Actions section presented above. Other potential options are discussed below.

Ground Water and Soil Vapor Extraction: Ground water extraction and treatment combined with soil vapor extraction and treatment is the most common and often most effective technology for controlling and remediating ground water hydrocarbon plumes. Ground water/soil vapor extraction is initially very effective at reducing plume mass and concentrations. At this point, these technologies would not be effective or appropriate at this site, partially because the sediments encountered beneath the site are

predominantly low permeability silts and clays (see boring logs in Appendix C), and partially because ground water extraction would encourage migration of the offsite plumes.

what does this mean ?

Air Sparging: Air sparging might theoretically enhance clean-up by encouraging biological degradation of hydrocarbons in both the unsaturated and saturated zones. However, this technique would be hindered by the low permeability sediments encountered at this site.

Innovative Technologies: Technologies for increasing benzene mobility and/or degradation are not proven, and would not be appropriate or cost-effective at this site. All data indicate that the amount of benzene remaining at the site that is not dissolved in ground water is quite small, and does not warrant the expense and uncertainty associated with technologies to increase mobility.

In summary, results for the site to date indicate that the remediation which has been performed at the site has removed as much of the hydrocarbons as is technically and economically feasible. No other appropriate alternative or cost effective technologies for further reducing Chevron's hydrocarbon plume exist for this site.

Criteria d. An acceptable plan is submitted for containing and managing the remaining human health and environmental risks, if any, posed by residual ground water pollution.

The data summarized in this report demonstrate that the hydrocarbons and HVOCs detected at the Chevron site are primarily due to offsite sources, and we maintain that containing and managing the risks associated with these plumes is not Chevron's responsibility. However, we propose to maintain a reduced monitoring plan as part of a cooperative effort, to monitor Chevron's residual plume, and to assist in determining the origin of the offsite sources. Our proposed ground water monitoring schedule and contingency plan is presented in the future action plan presented below.

wrong !!

wrong !!

Note: Criteria "d" also requires: 1) assessment of human/env. risks; 2) management measures (e.g., deed notif./restrictions, indemnification agreements, etc., etc.); 3)

After consideration of the criteria listed in this section, we conclude that the residual portion of the plume attributable to Chevron does meet the RWQCB requirements for designation of a non-attainment area. However, we recognize that the presence of the additional plume(s) will complicate this approach, and that establishment of a non-attainment area may not be possible at this time. We maintain, however, that active remediation is not appropriate at this site, and request that ACDEH and the RWQCB accept that Chevron's responsibility be limited to the reduced sampling plan presented in the future action plan below.

FUTURE ACTION PLAN

Continued Ground Water Monitoring: The goal of this future action plan is to 1) monitor Chevron's residual plume, and 2) to assist the ACDEH in identifying the source(s) of the offsite plume. The achieve these goals we propose to:

monthly for 12 mos.

1) Perform water level measurements in all four site wells and calculate the hydraulic gradient quarterly through the fourth quarter of 1994, to confirm that the ground water gradient does not fluctuate seasonally.

2) Sample the four wells quarterly through fall 1994, to complete one year of quarterly monitoring after the excavation. Unless the contingency plan is activated, we will follow the year of quarterly sampling with one year of semi-annual sampling, then two years of annual sampling to complete four years of sampling after installation of the monitoring wells. If the data continue to indicate that the residual Chevron plume is not a threat to the aquifer, we will cease monitoring after four years.

no!

Contingency Plan: For each of these four sampling points, "baseline" and "trigger" conditions have been defined. Should monitoring indicate that "trigger" conditions are met or exceeded in any well, a contingency plan for increasing monitoring will go into effect. This plan will ensure that "baseline" concentrations are re-attained and maintained in all wells. Details of the contingency plan are presented in Appendix D.

CONCLUSIONS

Data collected at the site demonstrate the following points:

- A significant portion of the contaminants detected in the ground water at this site originate from offsite sources. only HVOCs
- Hydrocarbon concentrations in ground water **decrease** from the upgradient to the downgradient site boundaries. wrong!
- HVOCs detected in the ground water appear to originate from an offsite source. OK
- Hydrocarbon concentrations in ground water have decreased significantly after soil excavation. initially (indicating on-site source); since have increased
- The ground water is in low-yielding sediments where the rate of migration of pollutants is significantly inhibited; soils beneath the site consist of low permeability clayey / silty sediments.

Based on the data summarized in this report, it is apparent that no additional appropriate or cost-effective technologies exist that might significantly accelerate cleanup of any remaining hydrocarbons originating from the Chevron site.

Although elevated contaminant concentrations are present in ground water at this site, these contaminants are primarily due to offsite sources, and we submit that the portion of the plume which is attributable to Chevron meets all the RWQCB criteria for establishing a non-attainment area at the Chevron site. However, we recognize that the presence of co-mingled onsite and offsite plumes will complicate this approach. We propose, therefore, that active remediation of the Chevron plume is not appropriate, but that Chevron continue to maintain a reduced monitoring plan through 1997. Chevron will also maintain a cooperative approach in assisting other responsible parties in determining an appropriate response for management of the co-mingled plumes.

Note: "NAZ" requires fundamental need to define extent of soil/GW plume, which yet to be done.

REFERENCES

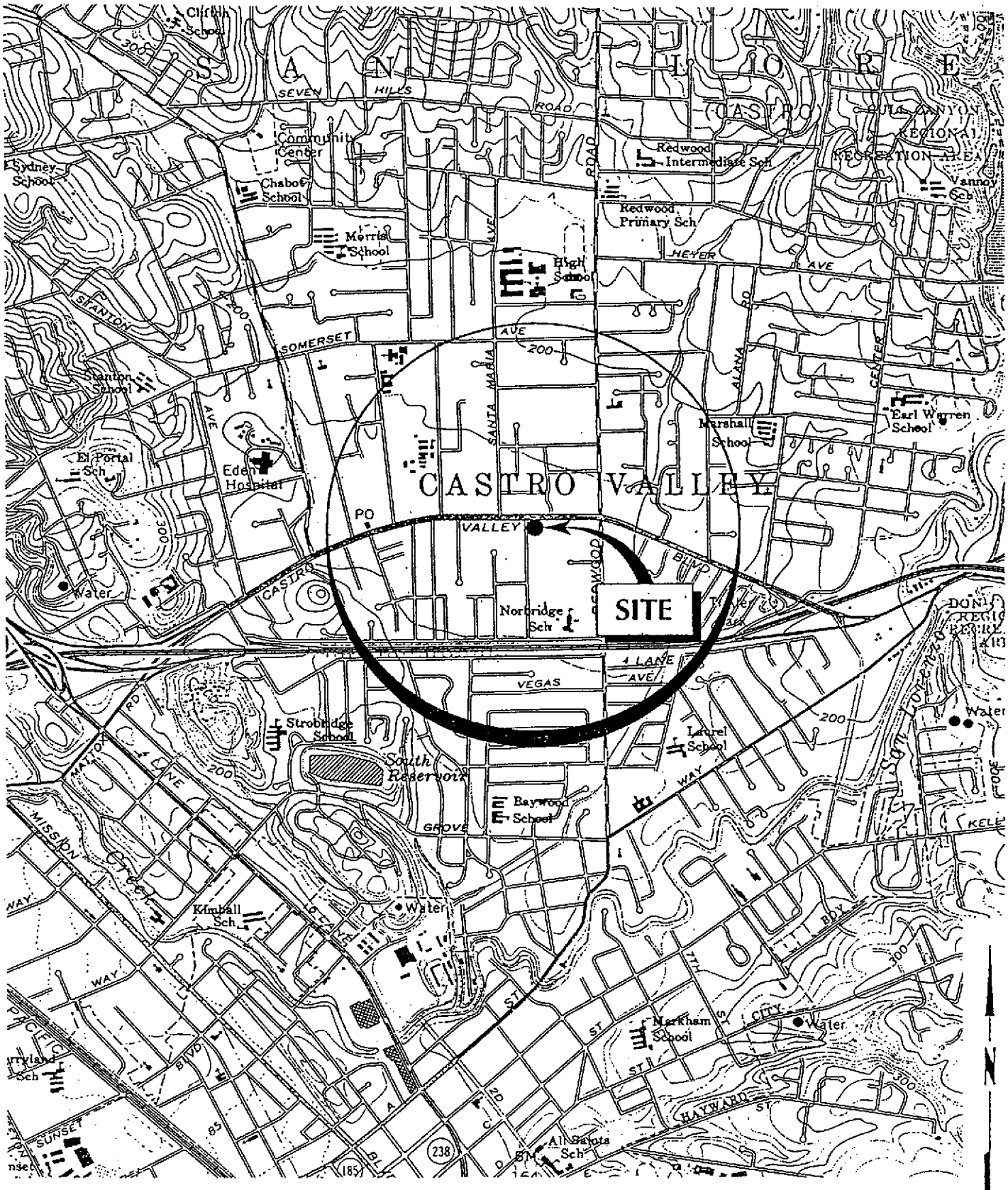
Seery, Scott, January 21, 1994, Alameda County Department of Environmental Health, letter to Kenneth Kan, Chevron U.S.A., 2pp.

RESNA Industries, December 16, 1992. Report: Subsurface Environmental Investigation, Chevron Station 9-4930, 3369 Castro Valley Boulevard, Castro Valley, California. 17068.01.

Touchstone Developments, June 5, 1993. Tank/Line Removal and Over-Excavation Report, Former Chevron Service Station No. 9-4930, 3369 Castro Valley Boulevard, Castro Valley, California.

RESNA Industries, December 13, 1993. Report: Additional Subsurface Environmental Investigation, Former Chevron Service Station No. 9-4930, 3369 Castro Valley Boulevard, Castro Valley, California. 17068.02.

RWQCB, June, 1994. Ground Water Basin Plan Amendments, 23 pp. plus tables and attachments.



Source: USGS Topographic Map, 7.5 minute series, Hayward, Calif. quadrangle, 1980

0 1/2 1 MILE

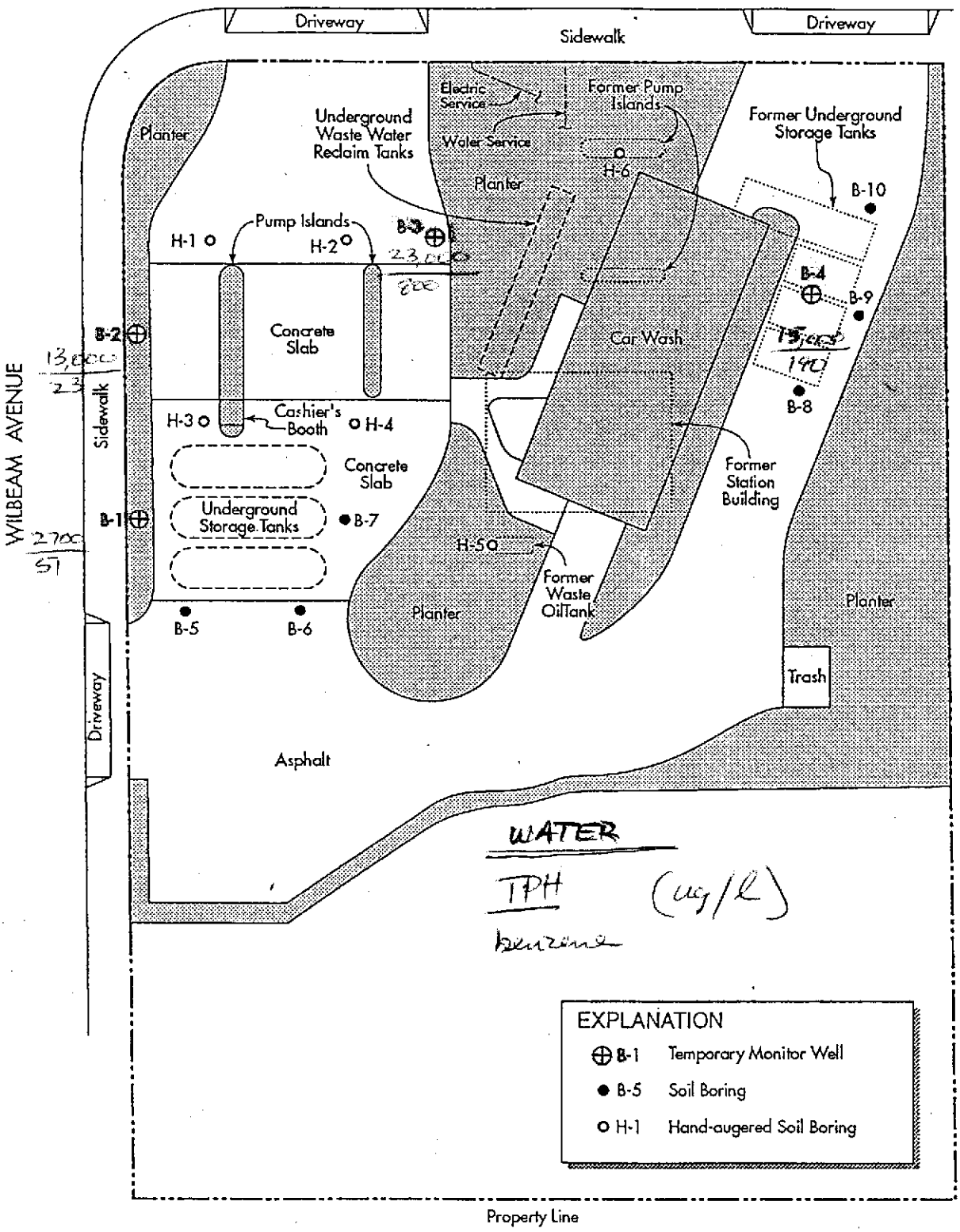
RESNA

PROJECT NO. 17068.01 | 11/92

SITE VICINITY MAP

Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

FIGURE 1



Source: site plans by Chevron USA, Inc.

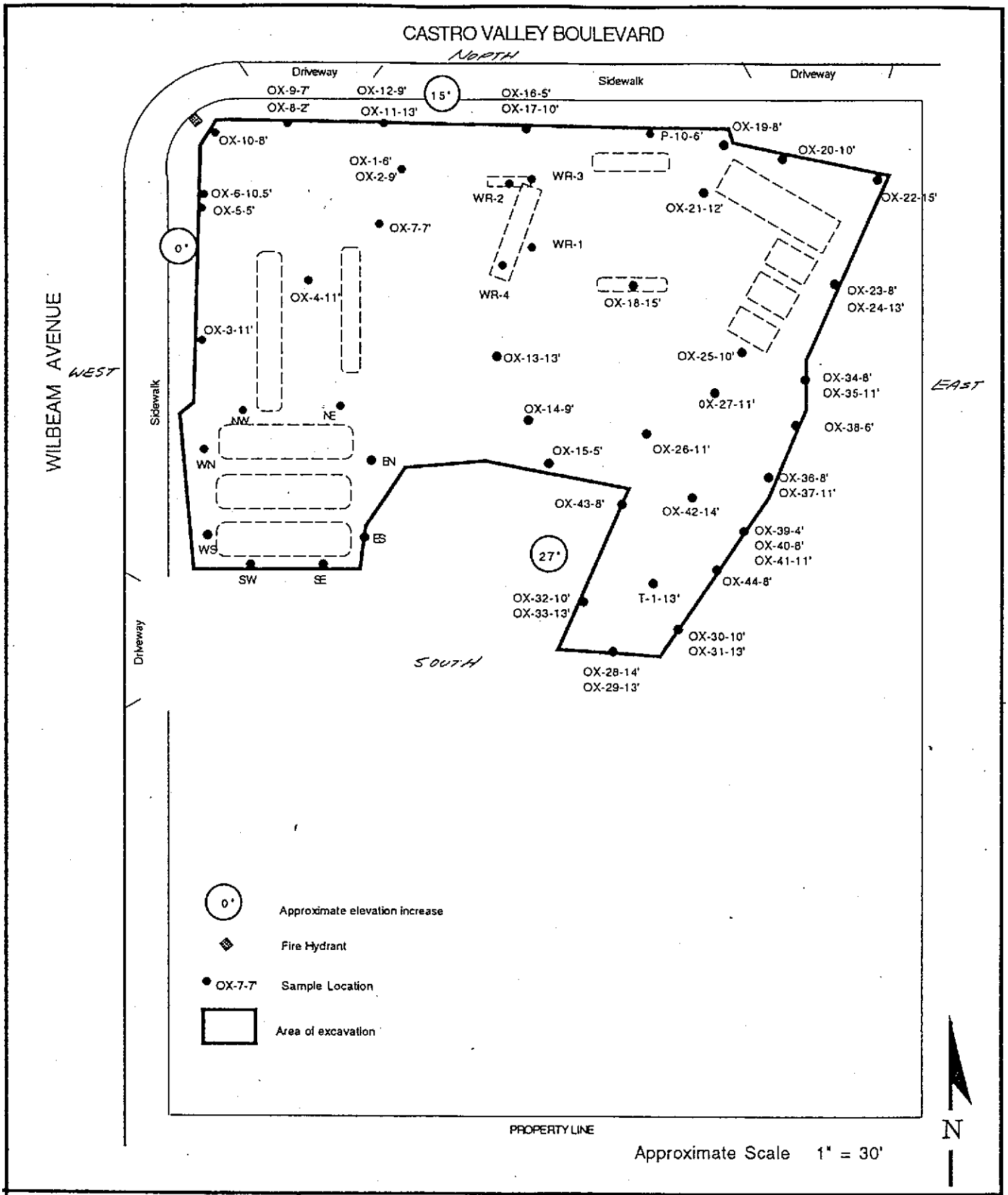
RESNA

PROJECT NO. 17068.01 | 11/92

GENERALIZED SITE PLAN

Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

FIGURE 2



Touchstone Developments
Environmental Management

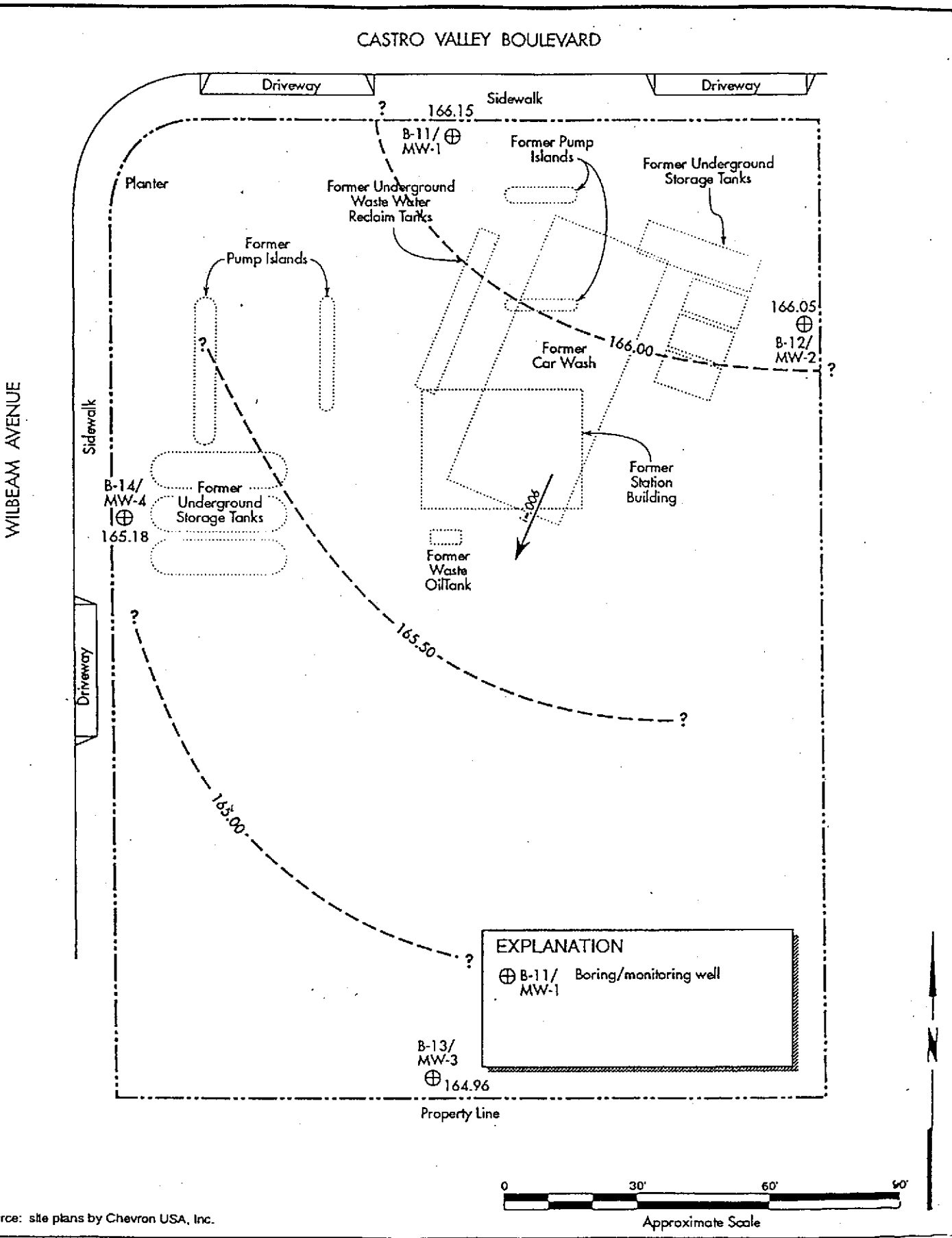
Over-excavation Sample Location Map

Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

Figure 3

05-10-93 | mjt

Project # 4930-2



Source: site plans by Chevron USA, Inc.

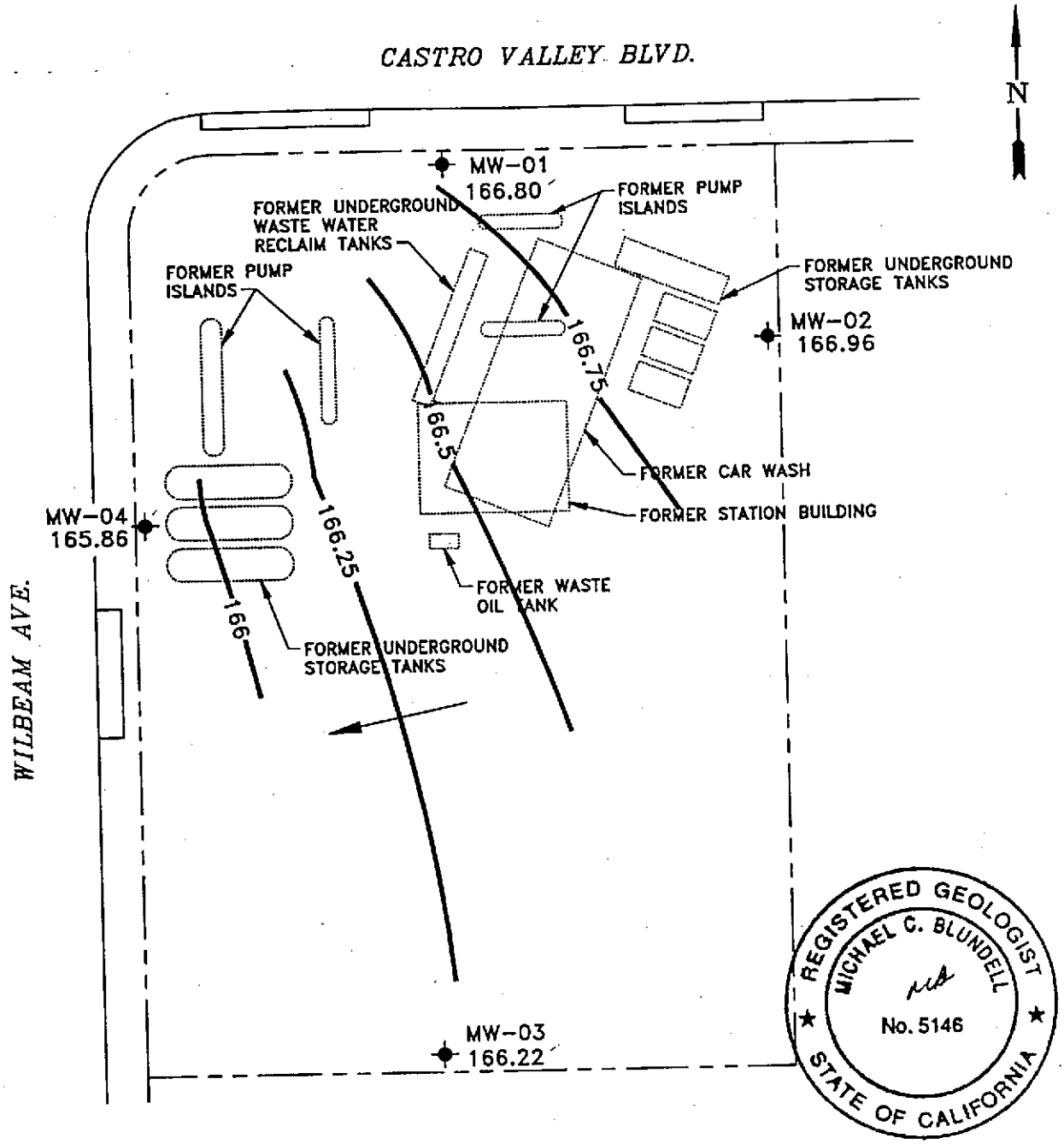
RESNA

PROJECT NO. 17068.02 | 8/93

POTENTIOMETRIC SURFACE OF SHALLOW GROUNDWATER 10/29/93

Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard

PLATE 3



LEGEND

- PROPERTY LINE
- MONITORING WELL
- X.XX — POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

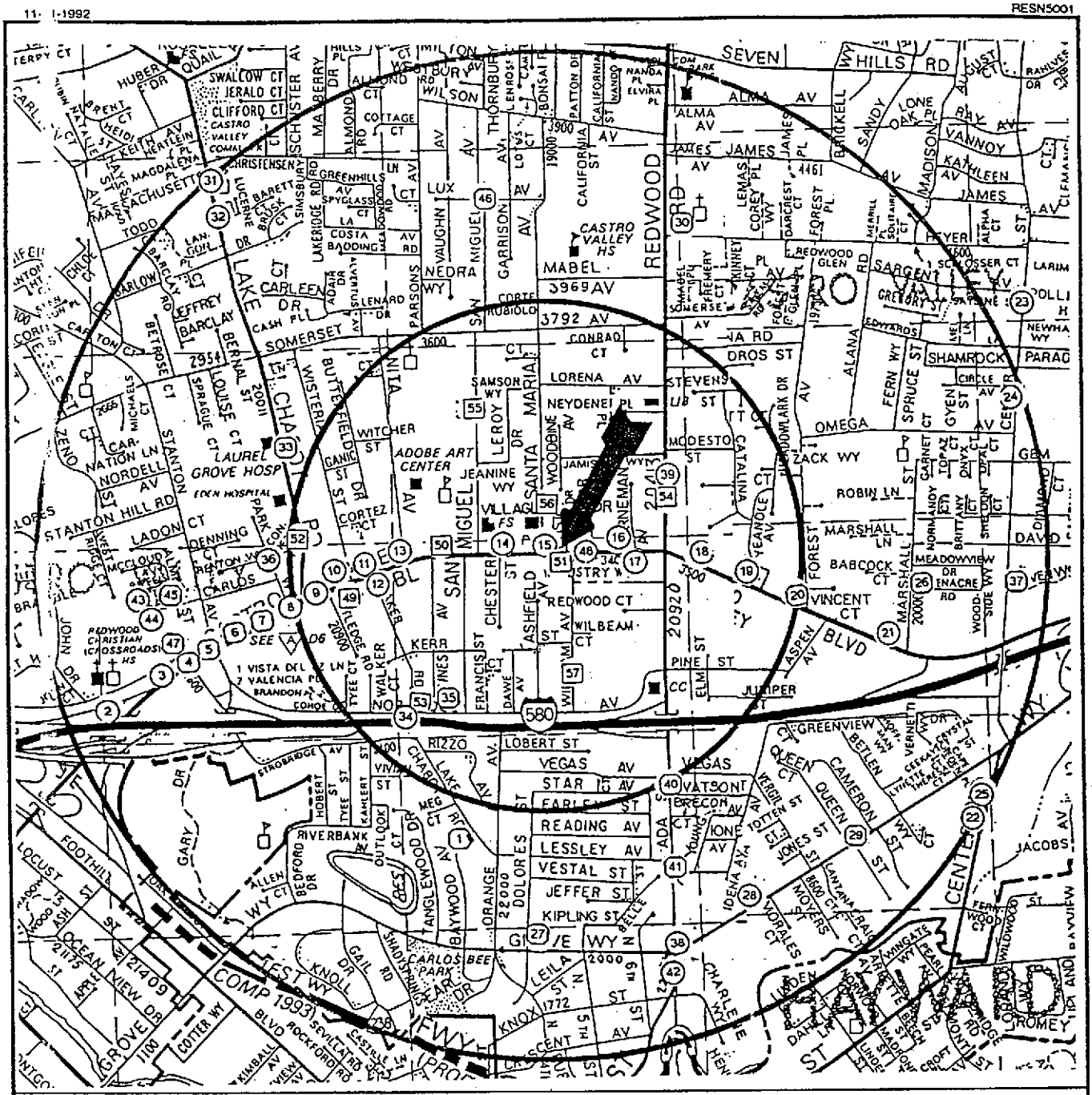
NOTE:
1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS ABOVE MEAN SEA LEVEL.

GROUNDWATER TECHNOLOGY

0 FEET 40
SCALE

POTENTIOMETRIC SURFACE MAP (2/25/94)

CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION NO. 9-1723	FILE: 5001PSM, (1:40)	PROJECT NO.: 02010-5001	PM	PE/RG
	REV. 1			FIGURE: 1
LOCATION: 3369 CASTRO VALLEY BLVD. CASTRO VALLEY, CALIFORNIA	DES. TW	DET. SS	DATE: 3/21/94	



Map reproduced under license from Thomas Bros. (ALAM28E3)

APPROXIMATE LOCATION OF IDENTIFIED SITES IN THE VICINITY OF
3369 CASTRO VALLEY BLVD, CASTRO VALLEY

11-21-1992

1.	DESIGNS BY DE RON	21605	BAYWOOD AVE
2.	UNOCAL	2445	CASTRO VALLEY BLVD
3.	THRIFTY OIL	2504	CASTRO VALLEY BLVD
4.	R & J QUICK CLEAN CENTER	2522	CASTRO VALLEY BLVD
5.	JOSEPH NESBITT COMPANY INC	2544	CASTRO VALLEY BLVD
6.	ONE HOUR MARTINIZING	2678	CASTRO VALLEY BLVD
7.	VALLEY COIN LAUNDRY	2678	CASTRO VALLEY BLVD
8.	UNKNOWN	2691	CASTRO VALLEY BLVD
9.	SHELL	2724	CASTRO VALLEY BLVD
10.	ARCO	2770	CASTRO VALLEY BLVD
11.	MINIT LUBE	2896	CASTRO VALLEY BLVD
12.	CHEVRON	2920	CASTRO VALLEY BLVD
13.	ADOBE PLAZA	3098	CASTRO VALLEY BLVD
14.	ARNOLD PROPERTY	3234	CASTRO VALLEY BLVD
15.	SAL'S FOREIGN CAR SERVICE	3343	CASTRO VALLEY BLVD
16.	XTRA OIL	3495	CASTRO VALLEY BLVD
17.	SHELL	3496	CASTRO VALLEY BLVD
18.	MOBIL	3519	CASTRO VALLEY BLVD
19.	RUDY'S DONUT	3692	CASTRO VALLEY BLVD
20.	HELIUM TECHNOLOGY	3738	CASTRO VALLEY BLVD
21.	TEXACO	3940	CASTRO VALLEY BLVD
22.	CALTRANS	2115	CENTER ST
23.	ANTHONY'S AUTO SERVICE	19592	CENTER ST
24.	HAYWARD MAINTENANCE CENTER	21195	CENTER ST
25.	ARCO	22141	CENTER ST
26.	RELIABLE MOVERS	4070	GREENACRE RD
27.	GARBERS PAINTING	1911	GROVE WAY
28.	CHEVRON	2416	GROVE WAY
29.	RETHREAD INC	2870	GROVE WAY
30.	CLYDE ROBIN SEED COMPANY INC	4233	HEYER AVE
31.	UNOCAL	18950	LAKE CHABOT RD
32.	HERTLEIN RESIDENCE	19051	LAKE CHABOT RD
33.	EDEN TOWNSHIP HOSPITAL	20103	LAKE CHABOT RD
34.	CLARK'S WOODWORKING	2620	NORBRIDGE AVE
35.	STRAND ELECTRONICS LTD	21175	NUNES AVE
36.	CASTRO VALLEY AUTOHAUS	20697	PARK WAY
37.	JIM'S MOTOR EXPRESS	4118	RAVENSWOOD DR
38.	CHEVRON		REDWOOD & GROVE
39.	TIEN'S UNOCAL	20405	REDWOOD RD
40.	JESS SPENCER MORTUARY	21228	REDWOOD RD
41.	IDEAL PEST CONTROL	21701	REDWOOD RD
42.	BEACON	22315	REDWOOD RD
43.	RJ QUICK CLEAN	2517	SAN CARLOS AVE
44.	EAST BAY SCAFFOLDING	2552	SAN CARLOS AVE
45.	ANTHONYS TERMITE CONTROL	2586	SAN CARLOS AVE
46.	MIZER & SON TREE AND GARDEN SP	19121	SAN MIGUEL AVE
47.	UNOCAL		STROBRIDGE & CASTRO VLY
48.	SAL'S FOREIGN CAR SERVICE	20845	WILBEAM AVE
49.	QUALITY TUNE UP	2780	CASTRO VALLEY BLVD
50.	ROCKY AUTO BODY AND PAINTING	3142	CASTRO VALLEY BLVD
51.	94930	3369	CASTRO VALLEY BLVD
52.	QUIK STOP #88	20757	LAKE CHABOT RD
53.	PACIFIC BELL (P5-200)	2610	NORBRIDGE AVE
54.	EXXON SERVICE STATION	20450	REDWOOD RD
55.	CASTRO VALLEY FIRE PROTECTION	20336	SAN MIGUEL AVE
56.	R.T. NAHAS	3336	VILLAGE DR
57.	CORPORATION YARD	21000	WILBEAM AVE

UNKNOWN LOCATIONS

	ODS SITE #2	CASTRO VALLEY BLVD
	OLYMPIC SERVICE STATION	UNKNOWN

INDEX OF SITES LISTED BY MAP NUMBERS

Table 1

SOIL ANALYTICAL RESULTS
Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California
(page 1 of 2)

Sample Number	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	TOG	HVO
B-1 6.0	11/24/92	<0.1	0.087	1.0	1.9	79	---	---	---
B-1 11.25	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
B-2 11.25	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
B-3 10.25	11/24/92	<0.025	<0.025	0.063	3.5	96	---	---	---
B-4 11.25	11/24/92	<0.5	5.1	20	130	2,500	---	---	---
B-5 10.75	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
B-6 10.6	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
B-7 10.6	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
B-8 10.5	11/24/92	~~<0.50~~ <0.05	0.056	0.47	1.4	36	---	---	---
B-9 5.5	11/24/92	<0.005	<0.005	<0.005	~~0.10~~ 0.01	<1	---	---	---
B-9 11.0	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
B-10 11.5	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
H-1 5.5	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
H-2 5.5	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
H-3 5.5	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
H-4 1.0	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---
H-5 5.5	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	<10	57	---
H-5 10.5	11/24/92	<0.005	~~<0.005~~ 0.014	~~<0.005~~ 0.043	~~<0.005~~ 0.027	~~<1~~ 15	<10	<50	ND
H-6 5.5	11/24/92	<0.005	<0.005	<0.005	<0.005	<1	---	---	---

Notes: See page 2 of 2

Table 1

SOIL ANALYTICAL RESULTS
Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California
(page 2 of 2)

Sample Number	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	TOG	HVO
A,B,C,D,*	8/10/92	0.008	0.024	0.008	.053	ND<1	- - -	- - -	- - -

All results in parts per million (ppm)
TPHg = Total Petroleum Hydrocarbons as Gasoline.
TPHd = Total Petroleum Hydrocarbons as Diesel
TOG = Total Oil and Grease
HVO = Halogenated Volatile Organics
ND = Not Detected
- - - = Not analyzed
< = Less than detection limit established by the laboratory
* = Cuttings

17040.01

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Table 2

GROUNDWATER ANALYTICAL RESULTS
Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

Sample Number	Date Sampled	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg
B-1	11/2392	51	120	~~2,300~~ 87	~~87~~ 270	2,700
B-2	11/23/92	23	11	470	1,100	13,000
B-3	11/23/92	800	38	1,000	2,000	23,000
B-4	11/23/92	190	13	240	690	15,000

All results in parts per billion (ppb)
TPHg = Total Petroleum Hydrocarbons as Gasoline.

TABLE A: UGST/Piping and Waste Water Reclaim Tank Sampling Results

Analytical Results in Parts Per Million (ppm) Unless Noted

UGST SAMPLE RESULTS

Sample ID	Date Sampled	Laboratory	TPH as Gasoline	Benzene	Toluene	Ethyl Benzene	Xylenes	Total Lead
H2O-Pit	3-10-93	Superior	3900*	180*	110*	170*	380*	ND
SE-9'	3-10-93	Superior	ND	ND	ND	ND	ND	NA
SW-6'	3-10-93	Superior	ND	ND	ND	ND	ND	NA
WS-9'	3-10-93	Superior	ND	ND	ND	ND	ND	NA
ES-6'	3-10-93	Superior	ND	ND	ND	ND	ND	NA
EN-9'	3-10-93	Superior	ND	ND	ND	.014	.024	NA
NE-6'	3-10-93	Superior	430	.056	.64	7.7	33	NA
NW-8'	3-10-93	Superior	620	.15	.75	11	53	NA
WN-6'	3-10-93	Superior	240	ND	.57	4.9	4.0	NA

PIPE TRENCH SAMPLE RESULTS

Sample ID	Date Sampled	Laboratory	TPH as Gasoline	Benzene	Toluene	Ethyl Benzene	Xylenes	Total Lead
V-1	3-10-93	Superior	ND	ND	ND	ND	ND	NA
P-1	3-10-93	Superior	ND	ND	ND	ND	ND	NA
P-2	3-10-93	Superior	ND	ND	ND	ND	ND	NA
P-3	3-10-93	Superior	ND	ND	ND	ND	ND	NA
P-4	3-10-93	Superior	ND	ND	ND	ND	ND	NA
P-5	3-10-93	Superior	ND	ND	ND	ND	ND	NA
P-6	3-10-93	Superior	ND	.020	.020	ND	ND	NA
P-7	3-10-93	Superior	ND	ND	.018	ND	.019	NA
P-8	3-10-93	Superior	14	.39	2.3	.32	1.8	ND
P-9-5'	3-10-93	Superior	1.5	.074	.007	.007	.011	7
P-10-4.5'	3-10-93	Superior	720	2.3	17	9	49	6
P-11-5'	3-10-93	Superior	3.0	.079	.01	.025	.03	6
P-12-6'	3-10-93	Superior	1.6	ND	.011	.036	.007	6

WASTE WATER RECLAIM TANK SAMPLE RESULTS

Sample ID	Date Sampled	Laboratory	TPH as Gasoline	Benzene	Toluene	Ethyl Benzene	Xylenes	Oil and Grease
WWR-1-9'	3-15-93	Superior	8	ND	.019	.078	.36	ND
WWR-2-9'	3-15-93	Superior	230	ND	.17	2.2	4.5	ND
WWR-3-12'	3-15-93	Superior	ND	ND	ND	ND	ND	ND
WWR-4-12'	3-15-93	Superior	ND	ND	ND	ND	ND	ND
SP-WWR-1A-D	3-15-93	Superior	28	ND	ND	.17	.96	ND
SP-WWR-2A-D	3-15-93	Superior	17	ND	.023	.057	.38	ND

Sample ID	Date Sampled	Laboratory	8010	TPH as Diesel	Cadmium	Chromium	Lead	Zinc	Nickel
WWR-1-9'	3-15-93	Superior	ND	ND	ND	28	10	48	29
WWR-2-9'	3-15-93	Superior	ND	ND	ND	31	5	100	31
WWR-3-12'	3-15-93	Superior	ND	ND	ND	26	5	41	32
WWR-4-12'	3-15-93	Superior	ND	ND	ND	33	6	46	28
SP-WWR-1A-D	3-15-93	Superior	ND	ND	ND	31	12	49	30
SP-WWR-2A-D	3-15-93	Superior	ND	ND	ND	29	10	61	32

Sample ID	Date Sampled	Laboratory	TCLP TPH as Gasoline	TCLP Benzene	TCLP Toluene	TCLP Ethyl Benzene	TCLP Xylenes	TCLP TPH as Diesel
SP-WWR-1A-D	3-15-93	Superior	770*	3.3*	1.5*	27*	150*	ND
SP-WWR-2A-D	3-15-93	Superior	200*	2.9*	.8*	1.6*	13*	ND

TPH as Gasoline = Total petroleum Hydrocarbons calculated as gasoline
TPH as Diesel = Total petroleum Hydrocarbons calculated as diesel
ND = Not Detected at or above the laboratory detection limit
NA = Not Analyzed
* = Results shown in parts per billion (ppb)

TABLE B: Over-excavation Sampling Results

Analytical Results in Parts Per Million (ppm) Unless Noted

UGST SAMPLE RESULTS

Sample ID	Date Sampled	Laboratory	TPH as Gasoline	Benzene	Toluene	Ethyl Benzene	Xylenes	Oil & Grease	TPH/D
OX-1-6'	3-19-93	Superior	340	ND	.33	4.4	15	NA	NA
OX-2-9'	3-19-93	Superior	97	ND	ND	1.8	9	NA	NA
OX-3-11'	3-22-93	Superior	ND	.026	ND	.006	ND	NA	NA
OX-4-11'	3-22-93	Superior	11	.38	.30	.31	1	NA	NA
OX-5-5'	3-22-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-6-10.5'	3-22-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-7-7'	3-22-93	Superior	11	ND	.045	ND	.083	NA	NA
OX-8-2'	3-25-93	Superior	4	.010	.006	.031	.36	NA	NA
OX-9-7'	3-25-93	Superior	990	ND	2.1	8	43	ND	NA
OX-10-8'	3-26-93	Superior	110	ND	.14	.39	1.3	NA	NA
OX-11-13'	3-26-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-12-9'	3-26-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-13-13'	3-30-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-14-9'	4-02-93	Superior	340	ND	.18	5.8	28	NA	NA
OX-15-5'	4-02-93	Superior	ND	ND	.008	ND	ND	ND	2
OX-16-5'	4-07-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-17-10'	4-07-93	Superior	290	ND	.65	4.6	21	NA	NA
OX-18-15'	4-09-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-19-8'	4-09-93	Superior	760	.5	4	17	76	NA	NA
OX-20-10'	4-09-93	Superior	74	.032	.18	2.2	1.8	NA	NA
OX-21-12'	4-09-93	Superior	850	2.6	14	17	80	NA	NA
OX-22-15'	4-19-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-23-8'	4-19-93	Superior	160	ND	.29	2.2	4.2	NA	NA
OX-24-13'	4-19-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-25-10'	4-19-93	Superior	5100	3.9	6.6	77	360	NA	NA
OX-26-11'	4-20-93	Superior	510	.59	3.6	9.7	51	NA	NA
OX-27-11'	4-20-93	Superior	310	.3	.98	4.9	18	NA	NA
OX-28-14'	4-22-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-29-13'	4-22-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-30-10'	4-22-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-31-13'	4-22-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-32-10'	4-22-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-33-13'	4-22-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-34-8'	4-28-93	Superior	89	ND	.15	1.5	3.1	NA	NA
OX35-11'	4-28-93	Superior	8	ND	.011	.15	.31	NA	NA
OX-36-8'	4-28-93	Superior	18	ND	.065	.34	.86	NA	NA
OX-37-11'	4-28-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-38-6'	4-28-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-39-4'	4-30-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-40-8'	4-30-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-41-11'	4-30-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-42-14'	4-30-93	Superior	ND	ND	ND	ND	ND	NA	NA
OX-44-8'	5-03-93	Superior	ND	ND	ND	ND	ND	NA	NA
T-1-13'	4-20-93	Superior	1600	.98	18	34	140	NA	NA

			8010	Ca	Cr	Pb	Zn	Ni	8270(2-Methylnapthalene)
OX-15-5'	4-02-93	Superior	ND	ND	22	6	39	21	280

TPH as Gasoline = Total petroleum Hydrocarbons calculated as gasoline
TPH as Diesel = Total petroleum Hydrocarbons calculated as diesel
ND = Not Detected at or above the laboratory detection limit
NA = Not Analyzed
* = Results shown in parts per billion (ppb)

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Table 1

GROUNDWATER ELEVATION DATA
Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

WELL NUMBER	DATE MEASURED	TOC	DTW	ELEV./P.S.
MW-1	10-29-93	172.90	6.75	166.15
MW-2	10-29-93	173.91	7.86	166.05
MW-3	10-29-93	172.60	7.64	164.96
MW-4	10-29-93	170.68	5.50	165.18

Notes:

TOC = Top-of-Casing elevation feet above sea level (feet)
DTW = Depth to Water (feet)
ELEV./P.S. = Groundwater/Potentiometric Surface elevation above mean sea level (feet)

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Table 2

SOIL ANALYTICAL RESULTS
Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

Sample	Date	TPHg	B	T	E	X
S-6.0-B11	10/25/93	<1	<0.005	<0.005	<0.005	<0.015
S-5.8-B12	10/25/93	<1	<0.005	<0.005	<0.005	<0.015
S-8.0-B12	10/25/93	100	<0.05	0.18	0.45	3.6
S-5.8-B13	10/25/93	<1	<0.005	<0.005	<0.005	<0.015
S-8.0-B13	10/25/93	<1	<0.005	<0.005	<0.005	<0.015
S-6.0-B14	10/25/93	530	<0.25	0.48	4.5	18

Notes:

All results in parts per million (ppm)

S = Soil sample
6.5 = Sample depth in feet
B-11 = Boring 11
TPHg = Total petroleum hydrocarbons as gasoline.
B = Benzene
T = Toluene
E = Ethyl-benzene
X = Total xylenes
< = Less than indicated detection limit established by the laboratory

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Table 3

GROUNDWATER ANALYTICAL RESULTS
Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

Sample Number	Date Sampled	TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes
MW1	9/23/93	1,000	11	17	32	110
MW2	9/23/93	5,600	140	3.2	17	330
MW3	9/23/93	110*	<0.5	<0.5	<0.5	<1.5
MW4	9/23/93	640	6.7	3.3	0.6	6.7
TB-LB	9/23/93	<50	<0.5	<0.5	<0.5	<1.5

Notes:

All results in parts per billion (ppb)

MW1 = Monitoring Well MW-1
TPHg = Total petroleum hydrocarbons as gasoline.
< = Less than detection limit established by the laboratory
TB-LB = Travel blank
* = Laboratory reported that compound does not match typical gasoline pattern

TABLE 1
HISTORICAL GROUNDWATER ANALYTICAL RESULTS AND MONITORING DATA
Chevron Service Station No. 9-4930
3369 Castro Valley Blvd., Castro Valley, California

Well ID/ Elev	Date	TPH-G	Benzene	Toluene	Ethyl-benzene	Xylenes	DTW (ft)	SPT (ft)	WTE (ft)
MW-1 172.90	10/29/93 02/25/94	1,000 250	11 6	17 1	32 5	110 3	6.75 6.10	0.00 0.00	166.15 166.80
MW-2 173.91	10/29/93 02/25/94	5,600 820	140 41	3.2 <0.5	17 17	330 5	7.86 6.95	0.00 0.00	166.05 166.96
MW-3 172.60	10/29/94 02/25/94	110* <50	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	7.64 6.38	0.00 0.00	164.96 166.22
MW-4 170.68	10/29/93 02/25/94	640 450	6.7 20	3.3 0.8	0.6 12	6.7 6	5.50 4.82	0.00 0.00	165.18 165.86
Rinsate	02/25/94	<50	<0.5	<0.5	<0.5	<0.5	---	---	---
TBLB	02/25/94	<50	<0.5	<0.5	<0.5	<0.5	---	---	---

TPH-G = Total petroleum hydrocarbons-as-gasoline
DTW = Depth to water
SPT = Separate-phase hydrocarbon thickness
WTE = Water-table elevation
* = Compound does not match typical gasoline pattern
C-Form = Chloroform

Concentrations are in parts per billion.

Data from 10/29/93 is from RESNA.

GROUNDWATER TECHNOLOGY

Table 1

ANALYTICAL RESULTS

Purgeable Halocarbons in Water

EPA Method 601[a]

GTEL Sample Number		03	05	07	09
Client Identification		MW-1	MW-2	MW-3	MW-4
Date Sampled		02/25/94	02/25/94	02/25/94	02/25/94
Date Analyzed		03/02/94	03/02/94	03/02/94	03/02/94
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	1	<1	<1	<1	<1
Chloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride	0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethene	0.5	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethene	0.5	0.8	<0.5	<0.5	13
Chloroform	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	0.5
Trichloroethene	0.5	8	<0.5	1	51
Dichlorodifluoromethane	0.5	9	<0.5	<0.5	5
Dibromochloromethane	0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.5	<0.5	<0.5	<0.5	<0.5
2-Chloroethylvinyl ether	1	<1	<1	<1	<1
Bromoform	0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	0.5	41	0.6	170	400
1,1,2,2-Tetrachloroethane	0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	0.5	<0.5	<0.5	<0.5	<0.5
Detection Limit Multiplier		1	1	1	1
BFB surrogate, % recovery		114	108	124	125

a. Federal Register, Vol. 49, October 26, 1984. BFB surrogate recovery acceptability limits are 65-135%.

Table 1 (Continued)

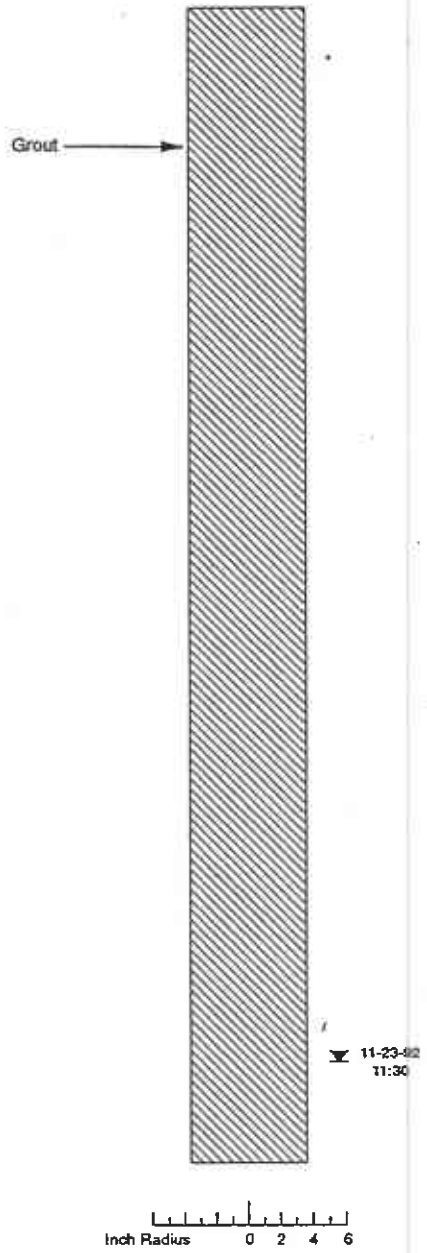
ANALYTICAL RESULTS

Purgeable Halocarbons in Water

EPA Method 601[a]

GTEL Sample Number		C030294			
Client Identification		METHOD BLANK			
Date Sampled		–			
Date Analyzed		03/02/94			
Analyte	Detection Limit, ug/L	Concentration, ug/L			
Chloromethane	0.5	<0.5			
Bromomethane	0.5	<0.5			
Vinyl chloride	1	<1			
Chloroethane	0.5	<0.5			
Methylene chloride	0.5	<0.5			
1,1-Dichloroethene	0.5	<0.5			
1,1-Dichloroethane	0.5	<0.5			
1,2-Dichloroethene	0.5	<0.5			
Chloroform	0.5	<0.5			
1,2-Dichloroethane	0.5	<0.5			
1,1,1-Trichloroethane	0.5	<0.5			
Carbon tetrachloride	0.5	<0.5			
Bromodichloromethane	0.5	<0.5			
1,2-Dichloropropane	0.5	<0.5			
cis-1,3-Dichloropropene	0.5	<0.5			
Trichloroethene	0.5	<0.5			
Dichlorodifluoromethane	0.5	<0.5			
Dibromochloromethane	0.5	<0.5			
1,1,2-Trichloroethane	0.5	<0.5			
trans-1,3-Dichloropropene	0.5	<0.5			
2-Chloroethylvinyl ether	1	<1			
Bromoform	0.5	<0.5			
Tetrachloroethene	0.5	<0.5			
1,1,2,2-Tetrachloroethane	0.5	<0.5			
Chlorobenzene	0.5	<0.5			
1,2-Dichlorobenzene	0.5	<0.5			
1,3-Dichlorobenzene	0.5	<0.5			
1,4-Dichlorobenzene	0.5	<0.5			
Trichlorofluoromethane	0.5	<0.5			
Detection Limit Multiplier		1			
BFB surrogate, % recovery		115			

a. Federal Register, Vol. 49, October 26, 1984. BFB surrogate recovery acceptability limits are 65-135%.



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
0				Gravelly CLAY (CL); fine to medium gravel; damp; dense (Fill)
2				
4				
	6	363		Silty CLAY (CL); gray-black; damp; medium stiff to stiff
	9			
6	11			
		NR		
8				
10	7	28.1		Silty CLAY (CL); gray; moist; medium stiff to stiff; SILT (ML) lenses; orange
	12			
	20			
		NR		
	3			Clayey SILT (ML); trace fine to medium gravel; reddish brown with gray lenses; damp; soft to medium stiff
12				

continues

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	Erich Neupert
Project Mgr:	Barry Marcus
Dates Drilled:	11/23/92
Drilling Company:	Kvilhaug
Drilling Method:	7.25" Hollow Stem Auger
Driller:	Mike Crocker
Well Head Completion:	none
Type of Sampler:	2.5" split barrel
TD (Total Depth):	14.0 feet

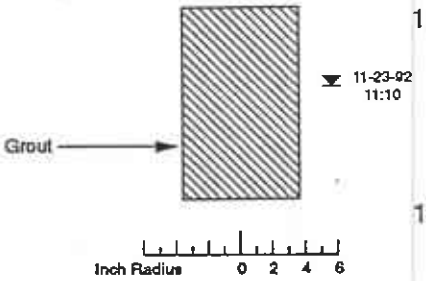
RESNA

PROJECT NO. 17068.01 | 12/92

BORING LOG—Boring B-1

Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING B-1



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12	7			Clayey SILT (ML); trace fine to medium gravel; reddish brown with gray lenses; damp; soft to medium stiff
	7			
14				TD @ 14.0 ft.
16				
18				
20				
22				
24				
26				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample

- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

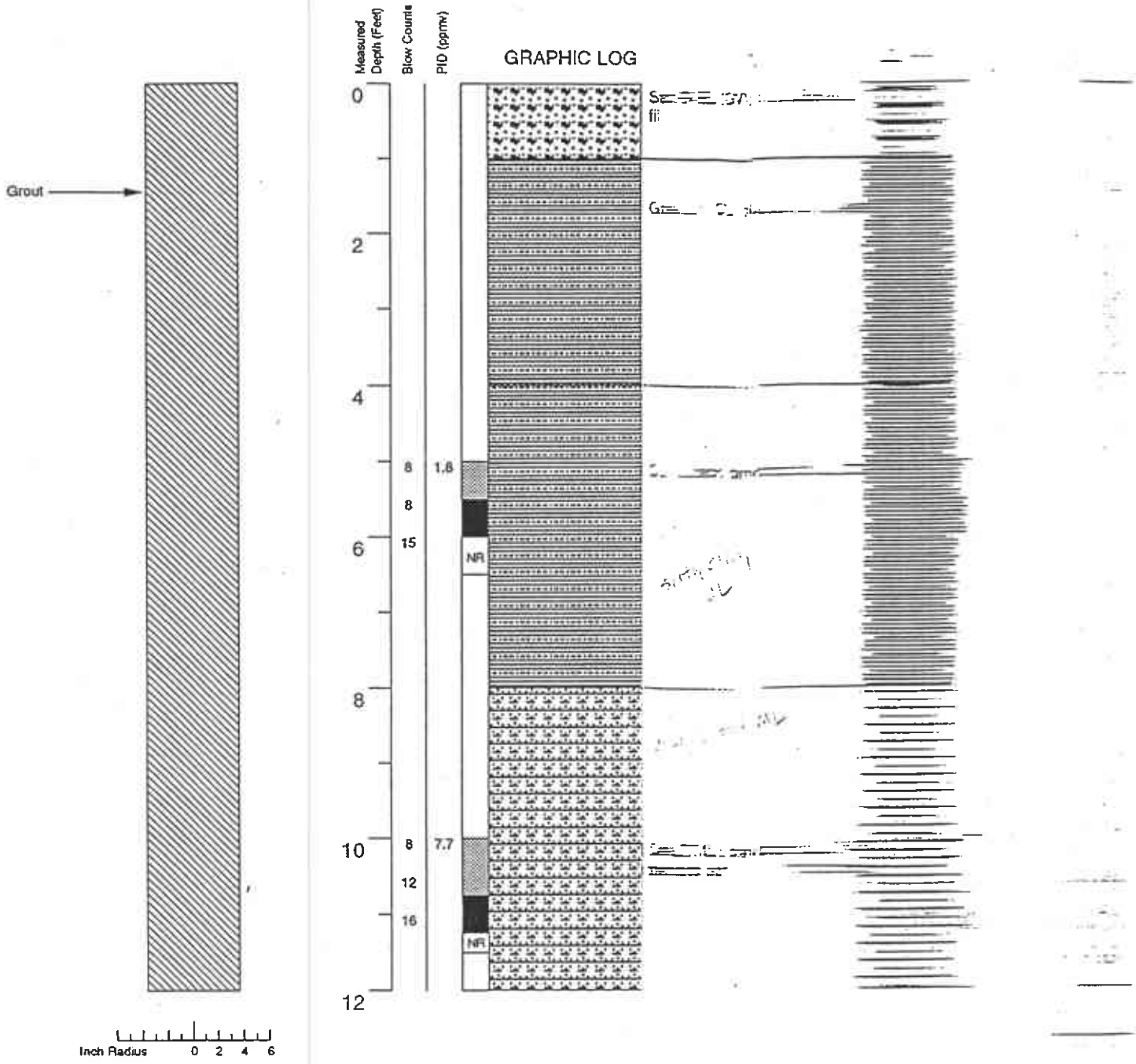
RESNA

PROJECT NO. 17068.01 | 12/92

BORING LOG—Boring B-1

Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING
B-1



EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample

est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary

NR — No recovery

Water level during drilling

Water level in completed well

CONTACTS:

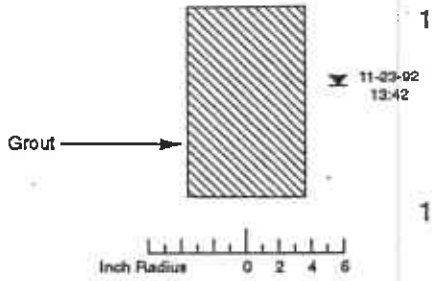
- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

RESNA

PROJECT NO. 17068.01 | 12/92

BORING

Chevron Service
3369 Castro
Castro Valley



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				Clayey SILT (ML); orange-brown with gray lenses;moist; medium stiff to stiff
14				TD @ 14.0 ft.
16				
18				
20				
22				
24				
26				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample

- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

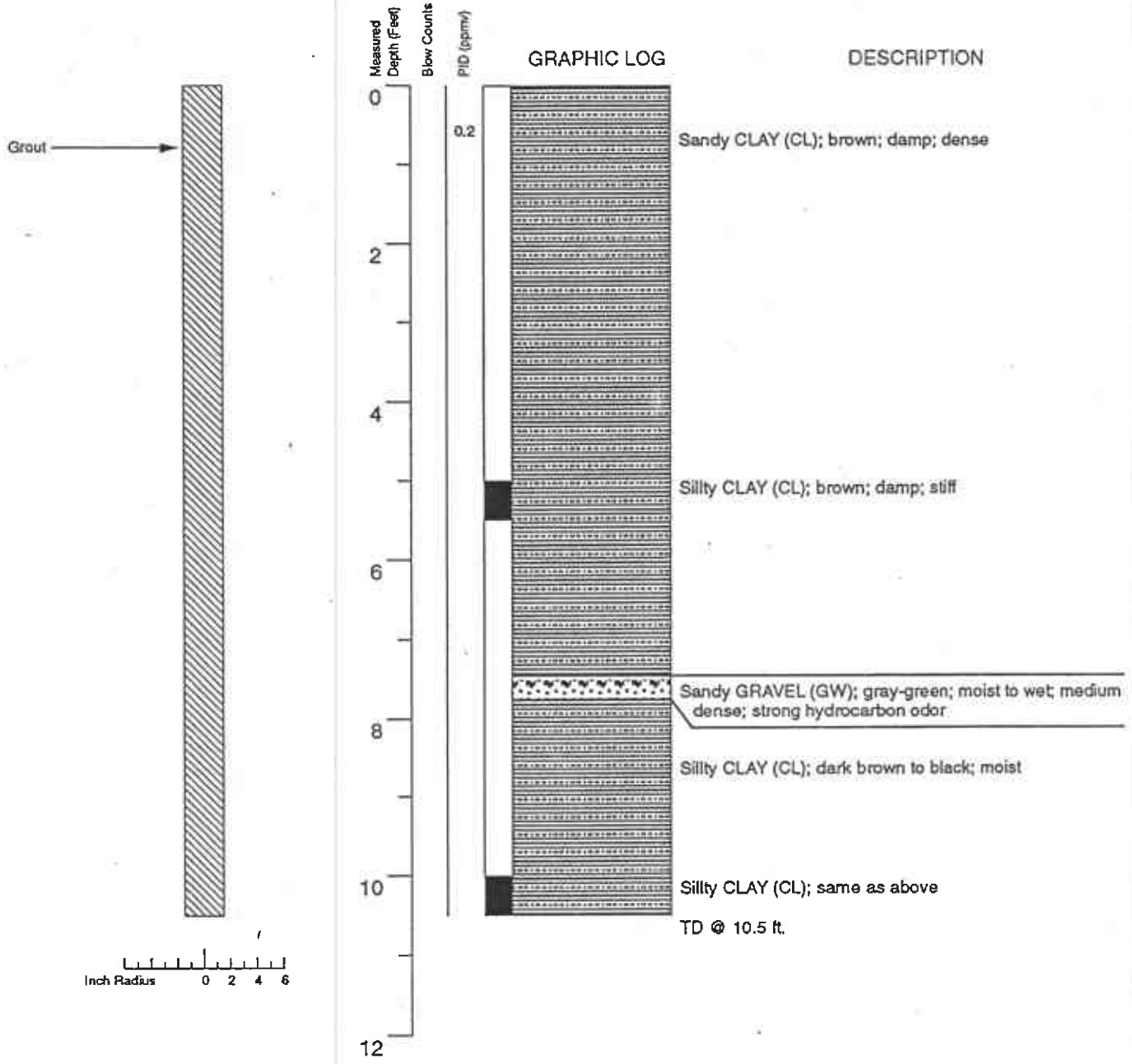
RESNA

PROJECT NO. 17068.01 | 12/92

BORING LOG—Boring B-2

Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING
B-2



EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample

- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	Erich Neupert
Project Mgr:	Barry Marcus
Dates Drilled:	11/24/92
Drilling Company:	RESNA
Drilling Method:	3" Hand Auger
Driller:	Erich Neupert
Well Head Completion:	none
Type of Sampler:	Slide hammer
TD (Total Depth):	10.5 feet

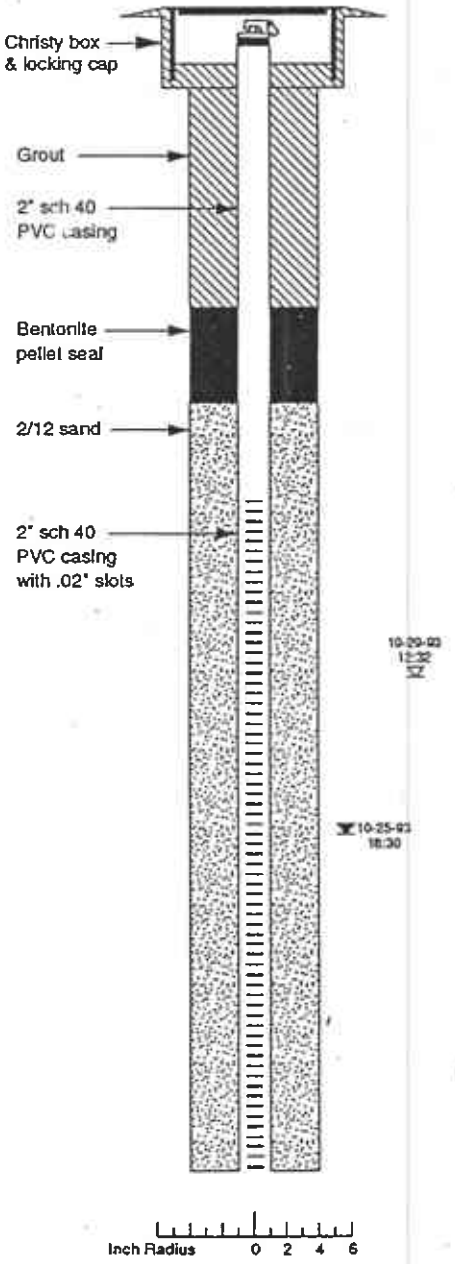
RESNA

PROJECT NO. 17068.01 | 12/92

BORING LOG—Boring H-5

Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING H-5



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
0				
1				Sandy GRAVEL (GW) (fill)
2				Silty CLAY (CL); black; damp
3				
4				
5	11	3.2		
	23			
6	27			Clayey SILT (ML); dark gray; damp; stiff - v. stiff
		NR		
7	3	771		Clayey SILT (ML); brown with gray mottling; damp; petroleum odor; med. stiff - stiff
	11			
8	15			
		NR		
9				
10	4	116		Clayey SILT (ML); brown with gray mottling; damp - moist; soft
	9			
11	15			
		NR		
12				

continues

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	Erich Neupert
Project Mgr:	Justin Power
Dates Drilled:	10/25/93
Drilling Company:	Kvilhaug
Drilling Method:	8" Hollow Stem Auger
Driller:	Paul Santos
Well Head Completion:	Christy box & locking cap
Type of Sampler:	1½" 2½" split spoon
TD (Total Depth):	20.5 feet

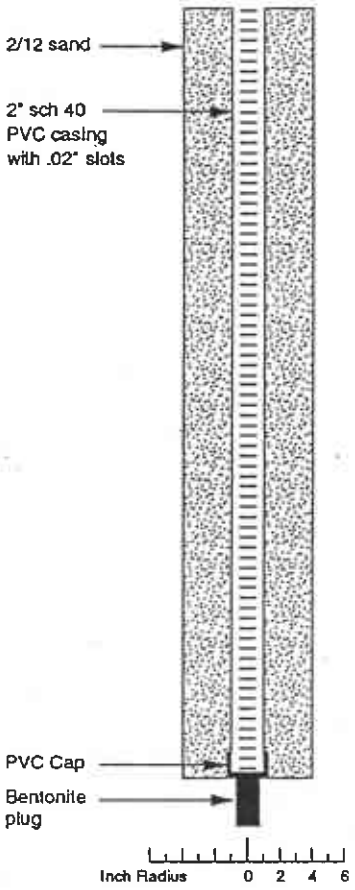
RESNA

PROJECT NO. 17068.02 | 11/93

BORING LOG—Boring B-11 (Monitoring Well MW-1)

Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING B-11



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				
13				
14				
15	3	6.3		Clayey SILT (ML); brown; moist; tr. f-gravels; soft - med. stiff
	6			
16				
17				
18				
19				
20	4			
21				TD @ 20.5 ft.
22				
23				
24				
25				
26				
27				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

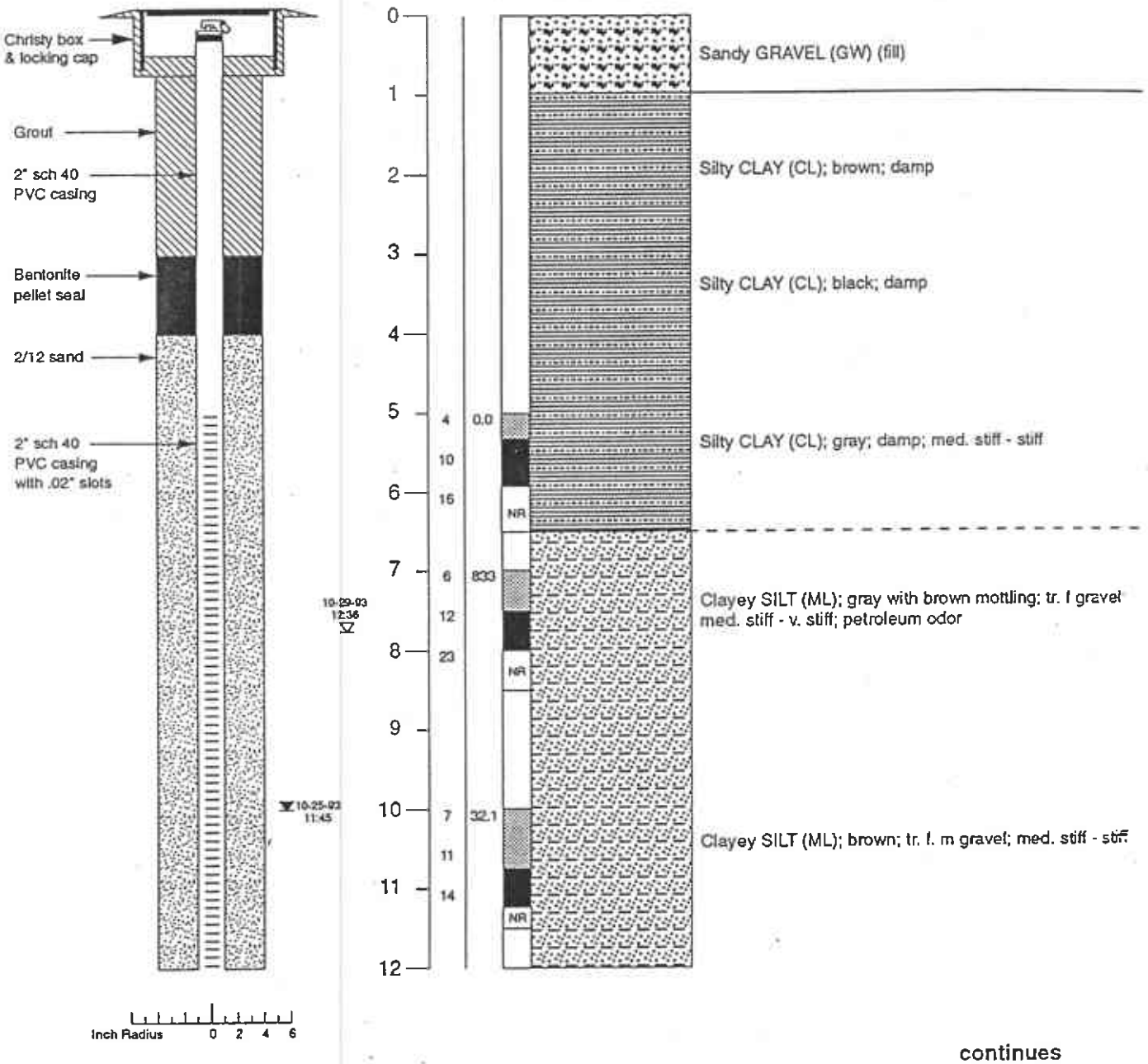
RESNA

PROJECT NO. 17068.02 | 11/93

BORING LOG—Boring B-11 (Monitoring Well MW-1)

Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING
B-11



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EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	Erich Neupert
Project Mgr:	Justin Power
Dates Drilled:	10/25/93
Drilling Company:	Kvilhaug
Drilling Method:	8" Hollow Stem Auger
Driller:	Paul Santos
Well Head Completion:	Christy box & locking cap
Type of Sampler:	1½" 2½" split spoon
TD (Total Depth):	21.5 feet

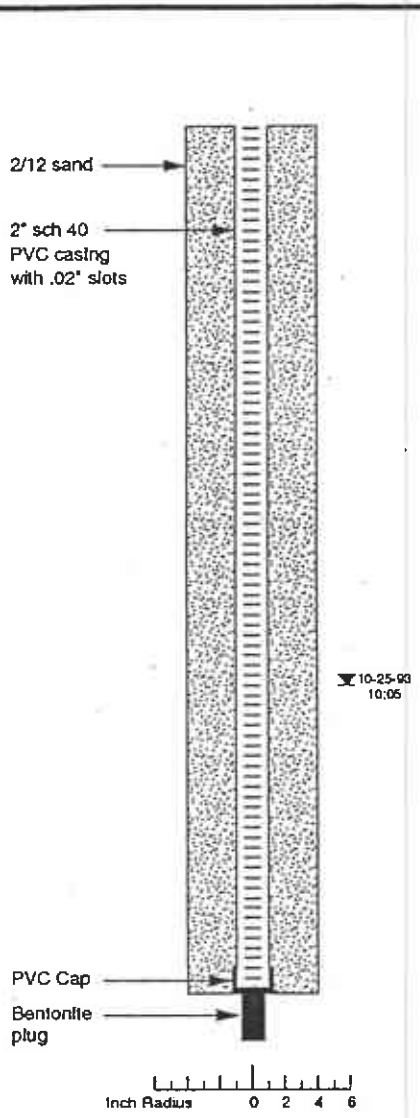
RESNA

PROJECT NO. 17068.02 | 11/93

BORING LOG—Boring B-12 (Monitoring Well MW-2)

Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING B-12



Measured Depth (Feet)	Blow Count	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				
13	14	31.3		Clayey SILT (ML); brown; damp; stiff - hard; trace fine-gravel
	24			
14	50			
15	10	26.2		Clayey SILT (ML); brown; damp - moist on bottom; stiff - v. stiff
	17			
16	27			
		NR		
17				
18				
19				
20	11	30.8		Clayey SILT (ML); brown; moist; stiff - v. stiff
	25			
21	30			
		NR		
22				TD @ 21.5 ft.
23				
24				
25				
26				
27				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

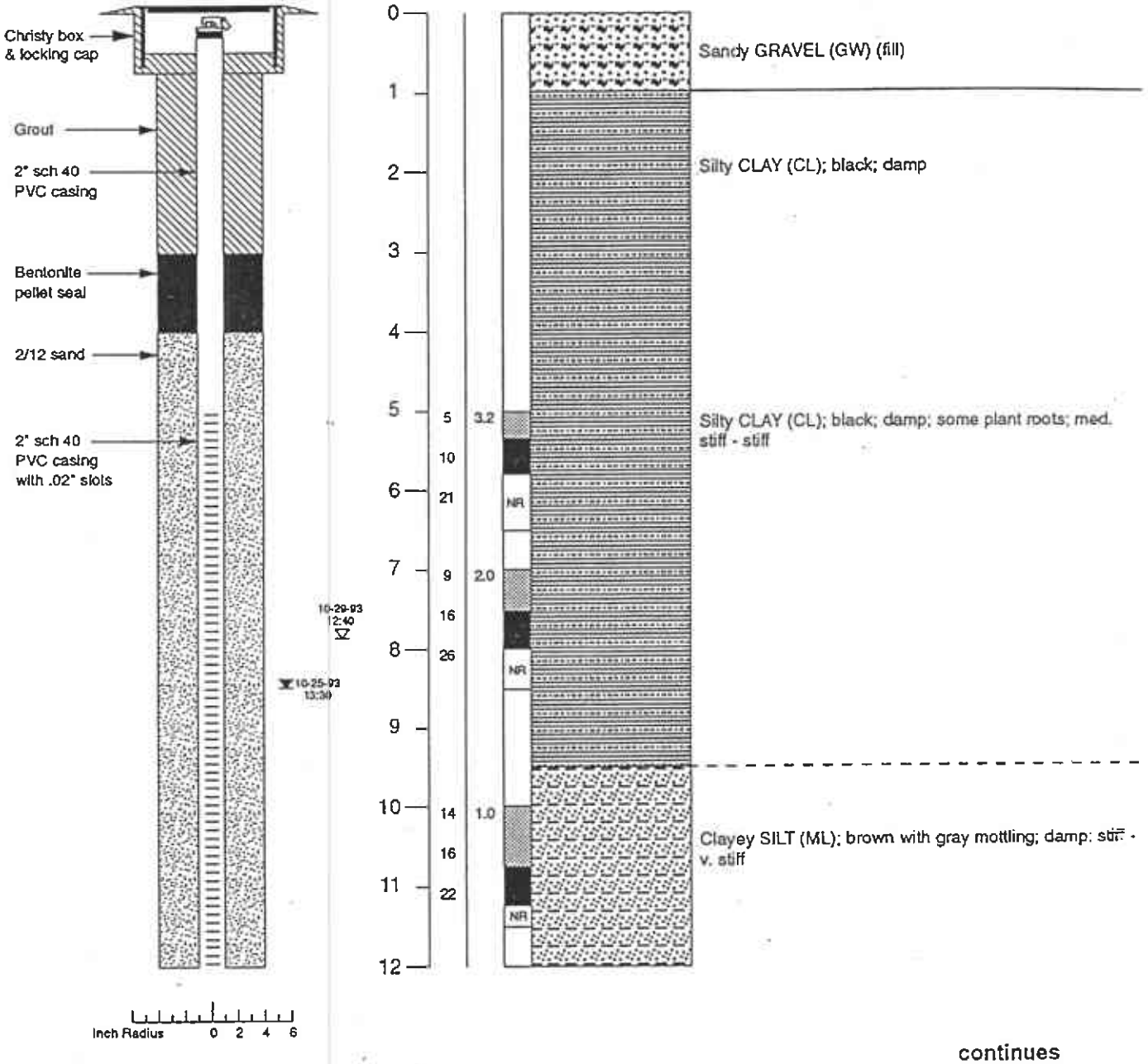
RESNA

PROJECT NO. 17068.02 | 11/93

BORING LOG—Boring B-12 (Monitoring Well MW-2)

Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING B-12



continues

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	Erich Neupert
Project Mgr:	Justin Power
Dates Drilled:	10/25/93
Drilling Company:	Kvilhaug
Drilling Method:	8" Hollow Stem Auger
Driller:	Paul Santos
Well Head Completion:	Christy box & locking cap
Type of Sampler:	1½" 2½" split spoon
TD (Total Depth):	21.5 feet

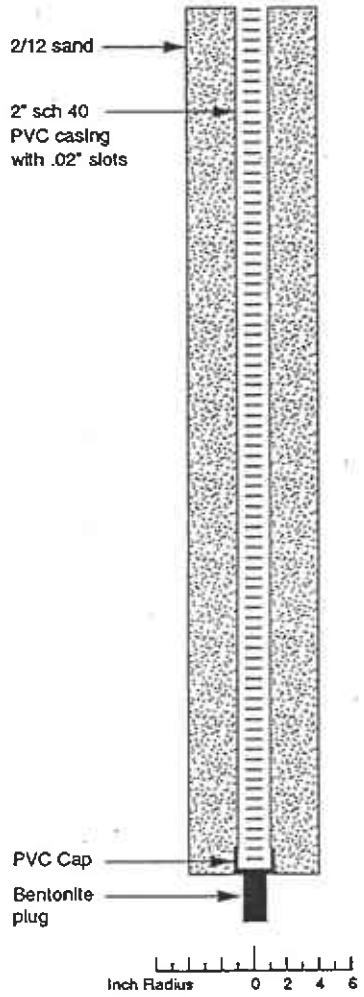
RESNA

PROJECT NO. 17068.02 | 11/93

BORING LOG—Boring B-13 (Monitoring Well MW-3)

Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING B-13



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				
13				
14				
15	7	1.0		Clayey SILT (ML); brown with gray mottling; damp - moist; med. stiff - v. stiff
16	18 30			
17		NR		
18				
19				
20	7			
21	17 26			TD @ 21.5 ft.
22				
23				
24				
25				
26				
27				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample

- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

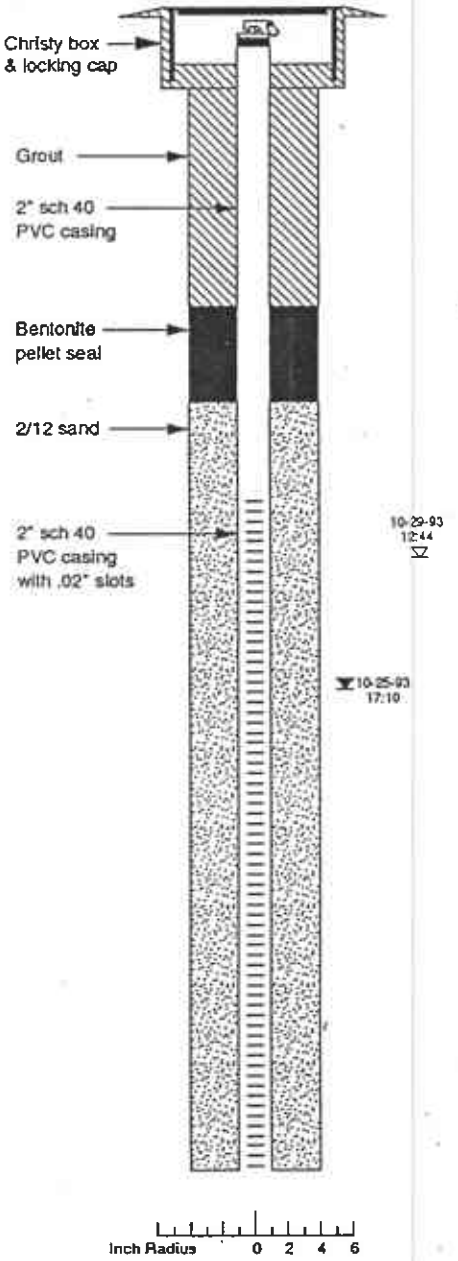
RESNA

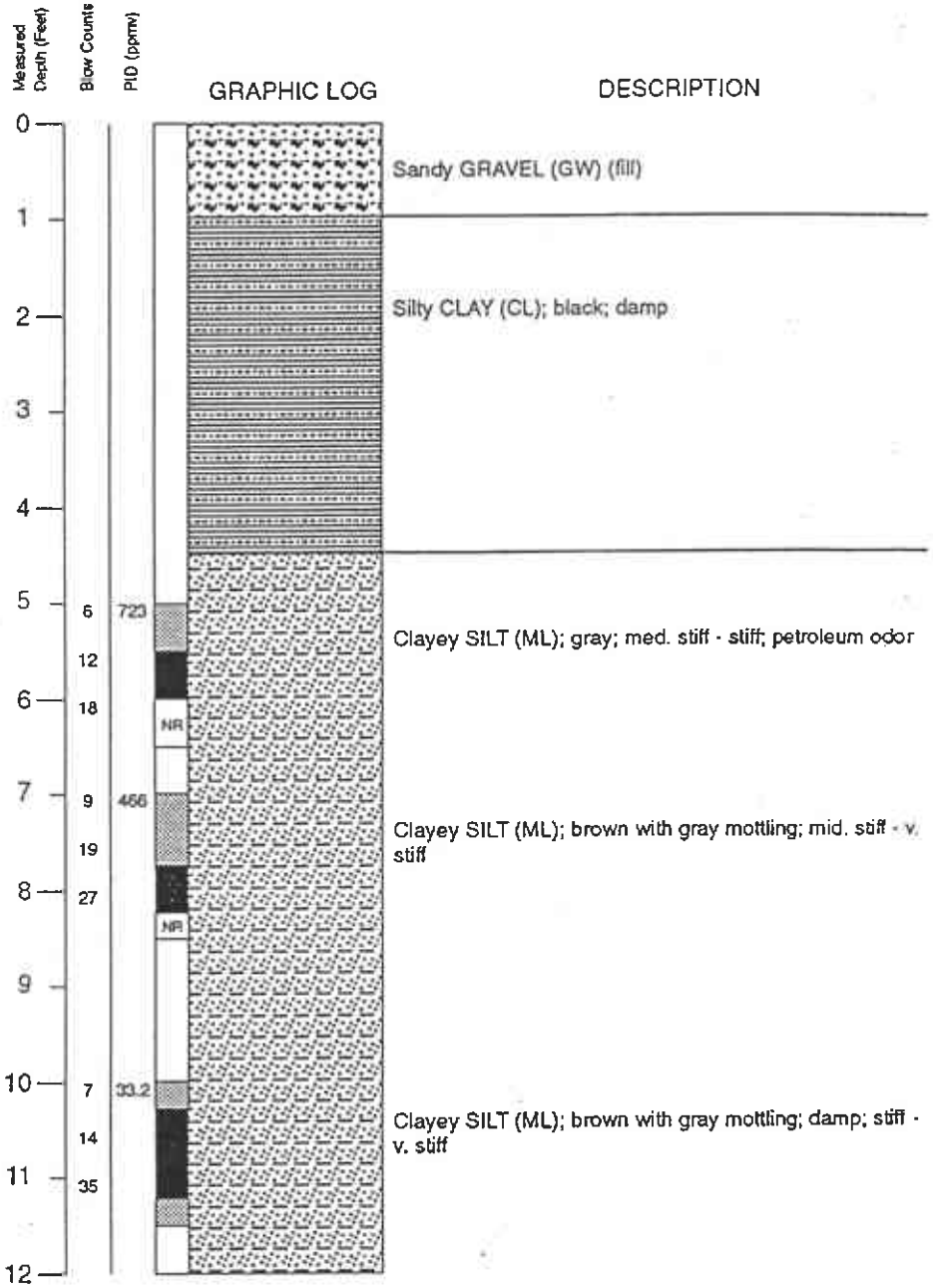
PROJECT NO. 17068.02 | 11/93

BORING LOG—Boring B-13 (Monitoring Well MW-3)

Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING
B-13





continues

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	Erich Neupert
Project Mgr:	Justin Power
Dates Drilled:	10/25/93
Drilling Company:	Kvilhaug
Drilling Method:	8" Hollow Stem Auger
Driller:	Paul Santos
Well Head Completion:	Christy box & locking cap
Type of Sampler:	1½" 2½" split spoon
TD (Total Depth):	21.5 feet

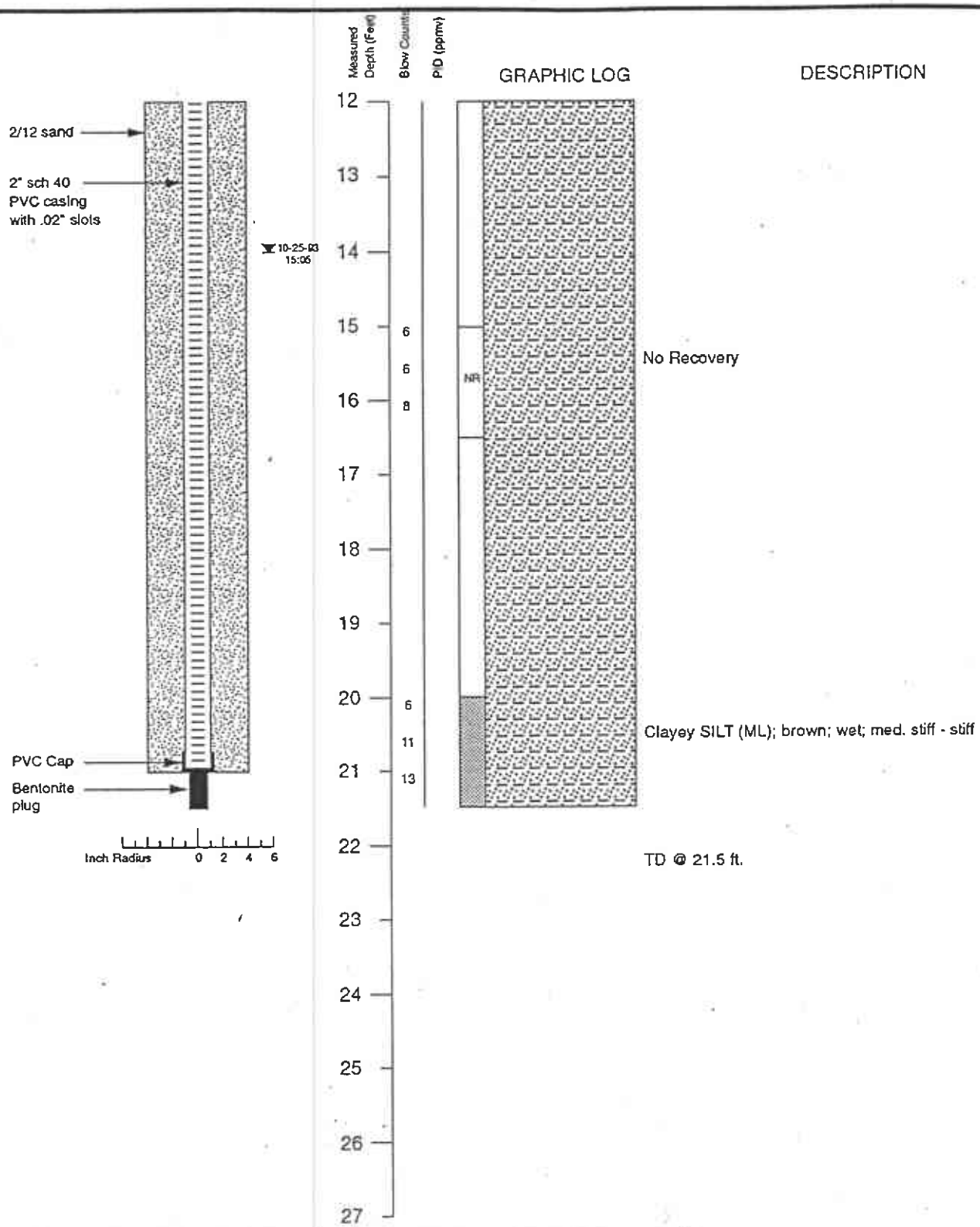
RESNA

PROJECT NO. 17068.02 | 11/93

BORING LOG—Boring B-14 (Monitoring Well MW-4)

Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING B-14



EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary ;2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

RESNA

PROJECT NO. 17068.02 | 11/93

BORING LOG—Boring B-14 (Monitoring Well MW-4)

Former Chevron Service Station No. 9-4930
3369 Castro Valley Boulevard
Castro Valley, California

BORING B-14

APPENDIX D
CONTINGENCY PLAN

At least one, and probably two offsite sources have significantly impacted ground water at this site. In order to monitor the residual Chevron and offsite plumes, four years of monitoring will be performed; quarterly monitoring will be performed through 1994, followed by one year of semi-annual monitoring, followed by two years of annual monitoring.

If this ground water monitoring indicates that certain conditions are met, a contingency plan will be triggered. These conditions and contingency plan responses are summarized in Table D-1. In general, each monitoring well is assigned a "baseline" condition which represents a typical trend detected during the last several years, and a "trigger" condition which represents a significant concentration increase that may lead to non-compliance with the cleanup goal. When the trigger condition is met or exceeded, or when concentrations are increasing at a rate such that the trigger condition might be met or exceeded before the next sampling event, the contingency plan will go into effect.

When triggered, the contingency plan calls for three responses:

1) The Alameda County Department of Environmental Health (ACDEH) is notified;

2) All four wells are sampled in the following quarter.

3) If the monitoring data indicate that **the Chevron site is not the source** of the hydrocarbons (e.g. if elevated concentrations are detected only in upgradient wells, or if a known offsite source is identified), Chevron will resume the monitoring schedule proposed above.

   If the sampling data indicate that **the Chevron site is the source** of the hydrocarbons, quarterly sampling of all wells will be resumed until sufficient data has been collected to establish an appropriate course of action.

how will this be shown?

Table D-1. Contingency Plan for Maintaining Compliance, Chevron Service Station #9-4930, 3369 Castro Valley Boulevard, Castro Valley, California. All conditions are for TPH-G unless otherwise noted.

	Monitoring Well	Baseline Concentration	Trigger Concentration	Response to Trigger Concentration[1]	Additional Monitoring
Guard Points	All wells (MW-1, MW-2, MW-3, MW-4)	Decreasing trend	Increasing trend	1. Notify ACDEH 2. Sample all site wells in the next quarter 3. Identify an appropriate course of action based upon determination of source	Quarterly monitoring of all wells

Footnotes:

[1] Response is triggered when the trigger condition is met or exceeded, or when concentrations are increasing at a rate such that the trigger condition might be met or exceeded before the next sampling event.