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GETTLER-RYAN INC.

ENVIRONMENTAL PROTECTION

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TRANSMITTAL

TO: Mr. Thomas Bauhs
Chevron Products Company
P.O. Box 6004
San Ramon, CA 94583

DATE: May 12, 2000
PROJECT #: 346500.02

SUBJECT: Site Conceptual Model, Risk-Based Corrective Action Evaluation, and Closure Plan for Former Chevron Service Station #9-0019.

FROM:
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Project Geologist
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WE ARE SENDING YOU:

COPIES	DATED	DESCRIPTION
1	05/10/00	Site Conceptual Model, Risk-Based Corrective Action Evaluation, and Closure Plan for Former Chevron Service Station #9-0019, 210 Grand Avenue, Oakland, California.

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cc: Mr. Don Hwang, Alameda County Health Care Services Agency (certified mail)
Mr. Ron Basarich, City of Oakland, Real Estate Department (certified mail)
Mr. Andrew Clark-Clough, City of Oakland, Environmental Affairs Division (certified mail)
Ms. Betty Owen, Chevron Products Company
Mr. James Brownell, Delta Environmental Consultants, Inc.
GR File

COMMENTS: Attached is a copy of the final report submitted to you per Mr. Brett Hunter request. Copies of this report have been submitted to the above listed parties. Please call if you have questions.



GETTLER-RYAN INC.

**SITE CONCEPTUAL MODEL,
RISK-BASED CORRECTIVE ACTION EVALUATION,
AND CLOSURE PLAN**

for
Former Chevron Service Station #9-0019
210 Grand Avenue
Oakland, California

Report No. 346500.02

Prepared for:

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GETTLER - RYAN INC.

SITE CONCEPTUAL MODEL, RISK-BASED CORRECTIVE ACTION EVALUATION, AND CLOSURE PLAN

for
Former Chevron Service Station #9-0019
210 Grand Avenue
Oakland, California

Report No. 346500.02

1.0 INTRODUCTION

At the request of Chevron Products Company (Chevron), Gettler-Ryan Inc. (GR) is submitting this report presenting the site conceptual model (SCM), and documenting the results of the implementation of the Risk-Based Corrective Action (RBCA) planning process, as described in ASTM E-1739 "Standard Guide for Risk-Based Corrective Action Applied at Petroleum Sites" for the former Chevron Service Station located at 210 Grand Avenue in Oakland, California. The purpose of this work was to evaluate whether the implementation of further environmental investigation and/or remediation related to soil and groundwater is warranted at the site. This report was prepared based on information supplied by Chevron, and describes site hydrogeological conditions and distribution of contaminants in space and time, identifies potential current and future receptors, presents the RBCA model results for the site, and recommends the most appropriate action plan for the site.

2.0 SITE DESCRIPTION

2.1 General

The subject site is a former Chevron service station located at the intersection of Grand Avenue and Bay Place in Oakland, California, as shown on the Vicinity Map (Figure 1). Formerly the site was bounded on the north and northwest by Montecito Avenue, on the south and southwest by Grand Avenue, and on the east by Bay Place (see Figure 2 in Appendix A). Until 1990, the site was utilized as a Chevron service station. Station facilities consisted of a station building located in the central portion of the site, two product dispenser islands and three 10,000-gallon gasoline underground storage tanks (USTs) in a common pit south of the station building, and one 1,000-gallon waste oil UST near the northwestern corner of the station building. All station facilities have been removed. In December 1992, the subject site was acquired by the City of Oakland, and a parking lot for the Veteran's Memorial Building was constructed over the western portion of the site. Bay Place was extended over the eastern portion of the site. Montecito Avenue was closed at Bay Place, and its southernmost portion (between Bay Place and Grand Avenue) was incorporated into the Veteran's Building Memorial property and converted to a parking lot and planters. The current site configuration and locations of the former station facilities are shown on the Site Plan (Figure 2).

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- Figure 2. Site Plan
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- Figure 5. TPHg Concentration in Well MW-5
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APPENDICES

- Appendix A: WGR Vicinity Map
- Appendix B: Soil Data
- Appendix C: Well Inventory Tables
- Appendix D: Groundwater Data and Potentiometric Maps
- Appendix E: Groundwater Extraction System Operation Data
- Appendix F: Cross Sections and Boring Logs
- Appendix G: RBCA Input and Output Data

The site vicinity is used for transportation, commercial, residential, and recreational purposes. A senior center building (Veteran's Memorial Building) is located approximately 80 feet northwest of the subject site. The current Veteran's Memorial Building parking lot encompasses the western portion of the former Chevron service station site and the northern vicinity of this site. Residential properties are located approximately 130 feet northeast of the subject site (across Montecito Avenue and Bay place intersection). St. Paul church and school, small businesses, and residential housing are situated approximately 80 to 130 feet east of the subject site (across Bay Place). Lakeside Park is located south (across Grand Avenue) of the subject site.

2.2 Previous Environmental Work

Soil Vapor Survey

In February 1989, Western Geologic Resources, Inc. (WGR) performed a soil vapor survey at the site. A total of 19 vapor points at 12 sampling locations (VP-1 through VP-12) were installed. The highest hydrocarbon concentrations (up to 73,000 parts per million [ppm]) were detected in the vapor points located near the dispenser islands and gasoline UST pit. The soil vapor survey data are summarized in WGR Table 1, *Soil Vapor Survey Data*, and the vapor points locations are shown on WGR Figure 2, *Soil Vapor Point Locations*, included in Appendix B.

Well Search

In June 1989, WGR conducted a search of registered wells within ½ mile of the subject site. Twelve wells were identified during this well search. Another well search conducted by the County of Alameda Public Works Agency using their computer database and by WGR at the California Department of Water Resources office indicated that a total of 40 wells were located within a ½ -mile radius of the subject site and additional eighteen wells were located just outside. Of the forty wells identified within the ½ -mile radius, one was a water producing well (irrigation well), one was a cathodic protection well, and one was a test well. All other wells were monitoring wells. The irrigation well belongs to Bechtel and is located approximately 2,000 feet southwest of the subject site. Results of the well searches are summarized in WGR tables included in Appendix C.

Groundwater Monitoring Well Installation/Destruction

In March 1989, WGR drilled five on-site soil borings (B-1 through B-5) to 20 feet bgs, and installed groundwater monitoring wells (MW-1 through MW-5, respectively) in these borings. Well locations are shown on Figure 2. Groundwater was detected in the borings at depths between 9 and 12 feet below ground surface (bgs). Total petroleum hydrocarbons as gasoline (TPHg) and benzene were detected in the unsaturated soil samples collected from borings B-2 through B-5 at concentrations up to 390 ppm and 4.5 ppm, respectively. TPHg or benzene were not detected in the soil samples from boring B-1. The soil samples collected at 5 feet bgs from borings B-2, B-3, and B-5 contained up to 0.2 ppm of 1,2-

Dichloroethane (EDC), however, ethylene dibromide (EDB) was not detected in any soil samples. The saturated soil samples collected from boring B-3, located near the waste oil UST pit, contained oil and grease (O&G) at concentrations up to 360 ppm. Analytical results for samples from borings B-1 through B-5 are summarized in WGR Table 1, *Analytic Results: Soil*, included in Appendix B. Groundwater samples collected from wells MW-1 through MW-5 indicated that petroleum hydrocarbons at concentrations up to 20,000 parts per billion (ppb) TPHg and 6,600 ppb benzene were present in shallow groundwater beneath the site. EDC was detected in the groundwater samples from wells MW-2 (0.7 ppb) and MW-3 (3.0 ppb). O&G was not detected in the groundwater sample from well MW-3. The highest concentrations of dissolved hydrocarbons were present in well MW-5. Groundwater analytical data are summarized in Blaine Tech Services, Inc. (Blaine Tech) *Cumulative Table of Well Data and Analytical Results* included in Appendix D.

In June 1990, WGR drilled four off-site soil borings to 14 feet bgs, and installed groundwater monitoring wells MW-6 through MW-9 in these borings. Petroleum hydrocarbons were not present in the soil samples collected from borings MW-6 through MW-9. O&G was not detected in the soil samples collected from boring MW-6. Analytical results for samples from borings MW-6 through MW-9 are summarized in WGR Table 4, *Analytic Results: Soil Samples*, included in Appendix B.

Groundwater monitoring well MW-2 was destroyed during source removal activities in 1991 (see the next section). Groundwater monitoring wells MW-1 and MW-3 were destroyed in 1995 prior to site reconstruction.

USTs, Product Line and Hydraulic Hoists Removal

In June 1990, all existing service station structures at the site were demolished. Three 10,000-gallon fiberglass gasoline USTs and one 1,000-gallon fiberglass waste oil UST were removed by Armer/Norman. Blaine Tech collected soil samples during removal activities. Groundwater was present in the gasoline UST excavation at the depth of approximately 8 feet bgs. Hydrocarbons were present in soil adjacent to the gasoline USTs (up to 13 ppm TPHg and 0.10 ppm benzene), and beneath the product lines (up to 160 ppm TPHg and 2.9 ppm benzene), hydraulic hoists (up to 1,300 ppm O&G and 180 ppm of total petroleum hydrocarbons as diesel [TPHd]), and waste oil UST (up to 69 ppm TPHg, 0.29 ppm benzene, 190 ppm TPHd, and 3,600 ppm O&G). Analytical results for samples collected during UST, product lines and hoist removal are summarized in Blaine Tech *Table of Sampling Locations and Analytical Results*, and sample locations are shown on *Tank Removal Diagram*, included in Appendix B.

Source Removal

An extensive source removal was conducted at the site in 1990 and 1991 to prevent further transport of contaminants from soil to groundwater. The excavations covered a total area of approximately 6,000 square feet and were limited laterally by adjacent sidewalks and vertically by the groundwater depth. The excavation depth ranged from 4 to 9 feet bgs. The lateral extents and depths of excavations are shown on

WGR Figure 3, *Site Map with Excavations and Soil Sample Locations*, included in Appendix B. Confirmation samples were collected at the limits of the excavations. The highest hydrocarbon concentrations (210 ppm of TPHg and 0.57 ppm of benzene) were present in the sample collected at 7 feet bgs from the eastern wall (along Bay Place) of the excavation. The evidence of petroleum hydrocarbons in soil was still apparent at the excavation boundaries along the Grand Avenue and Montecito Place sidewalks. An unknown product line was discovered along Bay Place and removed. A total of 1,500 cubic yards of soil were removed from the excavations. Approximately 700 cubic yards of excavated soil were properly disposed of off-site. Approximately 800 cubic yards were aerated on-site to the concentrations not exceeding 6 ppm of TPHg and 0.006 ppm of benzene and reused as a backfill material. The waste oil tank pit and the central portion of the gasoline tank pit were backfilled with clean pea gravel. The western and eastern portions of the gasoline tank pit overexcavation were backfilled with aerated soil or clean backfill material. Summaries of analytical results for confirmation and stockpile samples are presented in RESNA Table 1, *Analytic Results: Soil Excavation Samples*, and Table 2, *Analytic Results: Soil Stockpile Samples*, included in Appendix B.

Groundwater Extraction System

In January 1993, Geraghty & Miller, Inc. (G&M) installed and began operating a remediation system which extracted groundwater from well MW-5. Due to extremely low flow rates (0.001 to 0.02 gallons per minute), the system was turned off in January 1994. A total of 2,502 gallons of hydrocarbon impacted groundwater has been removed from the site by the system. The system operation data are summarized in G&M Table 1, *Flow Totalizer Readings*, and Table 2, *Groundwater Analytical Results*, included in Appendix E. The removal of the groundwater extraction system was approved by the Alameda County Health Care Services Agency (ACHCSA) in November 1995, and the system was removed in December 1995.

Additional Soil Excavation

In November 1996, hydrocarbon impacted soil was encountered during excavating for storm drain in Montecito Avenue near the western boundary of the former Chevron site. Approximately 200 cubic yards of hydrocarbon impacted soil were overexcavated, and confirmation soil samples were collected by Touchstone Developments (Touchstone). The highest hydrocarbon concentrations (140 ppm of TPHg and 0.54 ppm of benzene) were detected in the soil sample from the southwestern wall of the excavation. The limits of the excavation are shown on Touchstone Figure 2, *Site Plan w/Sample Locations* and the analytical results for soil samples collected during excavation activities are summarized in Touchstone Table A, *Sample Analytical Summary*, included in Appendix B.

Groundwater Monitoring and Sampling

Quarterly monitoring and sampling of site wells has begun in March 1989. During the period of March 1989 to September 1999, a depth to shallow groundwater beneath the site fluctuated between 1 and 9 feet bgs.

The groundwater flow direction fluctuated between south and west until mid 1995, and then between west and north at the average gradient of 0.02. Groundwater monitoring and sampling data are summarized in Blaine Tech *Cumulative Table of Well Data and Analytical Results*, included in Appendix D. Historic potentiometric maps are also included in Appendix D.

The highest dissolved hydrocarbon concentrations (up to 72,000 ppb TPHg AND 18,000 ppb benzene, 28 ppb EDC, 1.2 ppm trichloroethene, 2.0 ppb 1,2-Dichloropropane, 2.0 ppb 1,2-Dichloroethene, and 0.7 ppb 1,1,1-Trichloroethane) have been present in on-site well MW-5. Concentrations of methyl tertiary butyl ether (MtBE) were also reported (up to 1,200 ppb), but later confirmed to be false positive result. O&G, ethanol, tertiary butanol (TBA), di-isopropyl ether (DIPE), ethyl tertiary butyl ether (EtBE), or tertiary amyl methyl ether (TAME) were not detected in well MW-5. In June 1998, a Oxygen Release Compound (ORC) was installed in well MW-5 to increase hydrocarbon natural degradation rate. Hydrocarbon concentrations in well MW-5 decreased significantly after introduction of the ORC.

On-site well MW-4 initially contained dissolved hydrocarbons (up to 3,000 ppm TPHg, 810 ppm benzene, and 2.3 ppm EDC). However, the EDC concentration decreased to a nondetectable level by October 1990. MtBE (7.4 ppb) has been detected in well MW-4 only on one occasion. Other oxygenate compounds (ethanol, TBA, EtBE, TAME, DIPE) have not been detected in this well. Since September 1995, TPHg and benzene were detected in well MW-4 only once at low concentrations of 120 ppb TPHg and 5.4 ppb benzene.

On-site wells MW-1 through MW-3 contained hydrocarbons only on few occasions, and had not contained TPHg or benzene for several quarters preceding well destruction. EDC (up to 3.3 ppm) had been present in well MW-3 until November 1991, and then concentration of this compound decreased to nondetectable level.

Off-site wells MW-8 and MW-9 have never contained petroleum hydrocarbons, and off-site well MW-7 has contained hydrocarbons only once (250 ppb TPHg and 34 ppb benzene in September 1994, and 5.3 ppb MtBE in June 1996). Sampling of wells MW-7 through MW-9 was discontinued in February 1998, however, well MW-7 is still being monitored. Off-site well MW-6 initially contained dissolved hydrocarbons (up to 320 ppm TPHg and 2.0 ppm benzene), however, TPHg and benzene have not been detected in this well since June 1997 and June 1993, respectively. Sampling of well MW-6 has been discontinued in August 1998, however, the well is still being monitored.

2.3 Geology and Hydrogeology

The subject site is located on the East Bay Plane, approximately 3 miles east of the Outer Harbor on the eastern shore of San Francisco Bay, and approximately 200 feet northeast of the Lake Merritt. As mapped by E.J. Helley and others (1979, *Flatland Deposits of the San Francisco Bay Region, California: U.S. Geological Survey Professional Paper 943*), soil in the site vicinity consists of Holocene-age Bay Mud consisting of unconsolidated saturated dark plastic carbonaceous clay and silty clay. These materials are underlain by Late Pleistocene-age alluvium consisting of weakly consolidated, slightly weathered, poorly sorted, irregularly interbedded clay, silt, sand and gravel. The nearest surface water is Lake Merritt. Based

on the historical monitoring data, the shallow groundwater flow direction in the vicinity of the site fluctuates between south, west and north.

The boring logs indicate that the subject site is underlain by silts and clays interbedded with silty sand and gravel to the total depth explored of 20 feet bgs. Fine grained materials (silts and clays) were encountered immediately beneath the surface fill material. A coarser grained unit consisting of silty sand to silty gravel ranging in thickness from 1 to 9 feet was encountered beneath the fine grained unit at depths between 5 to 16 feet bgs. The coarser grained unit is underlain by another fine grained unit consisting of silt to silty clay. Boring logs, WGR's geologic cross sections, and a map showing cross section locations are included in Appendix F.

3.0 SITE CONCEPTUAL MODEL

The site conceptual model was prepared based on the site assessment and quarterly monitoring and sampling data collected at the site to date. A pictorial representation of the site conceptual model is presented on Figure 3.

3.1 Release Scenario and Plume Characterization

A hydrocarbon leak was discovered at the subject site in 1989. Environmental investigations conducted at the site indicated that soil and shallow groundwater beneath the site have been impacted by petroleum hydrocarbons. The potential primary sources of release (gasoline and waste oil USTs, product lines, and hydraulic hoists) were removed from the site in 1990. An extensive removal of the affected subsurface soils (secondary source) was conducted at the site in 1990, 1991 and 1996 to prevent further transport of the hydrocarbon contaminants from soil to groundwater. The excavations extended over the area of approximately 7,000 square feet and covered almost the entire southern and western portions of the site. Vertically, the excavations extended to the maximum depth of 9 feet bgs (the deepest depth of shallow groundwater). The majority of hydrocarbon impacted soil has been excavated. The excavations were backfilled with clean material and 800 cubic yards of aerated soil (hydrocarbon concentrations not exceeding 6 ppm TPHg and 0.006 ppm benzene). The maximum hydrocarbon concentrations in soil within the smear zone beyond the limits of the excavations were as follows: 390 ppm TPHg and 3.4 ppm benzene at the southern excavation limit; 210 ppm TPHg and 0.57 ppm benzene at the eastern excavation limit; 56 ppm TPHg, 0.17 ppm benzene, and 170 ppm O&G at the northern excavation limit; and 140 ppm TPHg, 0.54 ppm benzene and 380 ppm O&G at the western excavation limit. The lateral extent of hydrocarbon impacted soil is delineated to the south, west, and north (downgradient directions) by nondetectable hydrocarbon levels in borings B-1 and MW-6 through MW-9. It appears, that hydrocarbon affected soil outside the excavation limits may be present over the area of approximately 12,500 square feet (conservative approach). The extent of hydrocarbon affected soil is depicted on Figure 4.

Groundwater beneath the subject site has been monitored and sampled since March 1989 through the network of nine groundwater monitoring wells. During this period of time a shallow groundwater depth

ranged from 1 to 9 feet bgs, and a groundwater flow direction fluctuated between south, west and north. The groundwater sampling data indicate that groundwater beneath the subject site has been impacted by gasoline hydrocarbons at concentrations up to 72,000 ppb TPHg and 18,000 ppb benzene. Groundwater beneath the subject site has also been impacted by EDC (up to 28 ppb), trichloroethene (up to 1.2 ppb), 1,2-Dichloropropane (up 2.0 ppb), 1,2-Dichloroethene (up to 2.0 ppb), and 1,1,1-Trichloroethane (0.7 ppb), but has not been impacted by O&G. Reported MtBE concentrations (up to 1,200 ppb) were confirmed to be false positive results. Current analyses by EPA Method 8260 indicated nondetectable concentrations of fuel oxygenates including MtBE. Initially, significant hydrocarbon concentrations were present in wells MW-4, MW-5 and MW-6, with the highest concentrations present in well MW-5. Hydrocarbon concentrations decreased to nondetectable levels in well MW-4 in September 1995 (except low concentrations detected in August 1998), and in well MW-6 in June 1998. Hydrocarbon concentrations in well MW-5 decreased after introduction of the ORC. Wells MW-8 and MW-9 have never contained hydrocarbons and wells MW-1 through MW-3 and MW-7 contained hydrocarbons only on few occasions.

Currently, dissolved hydrocarbons are present only in groundwater in the vicinity of well MW-5. The lateral extent of hydrocarbon impacted groundwater has been delineated. The dissolved hydrocarbon plume extends within approximately 30 feet of well MW-5, over the area of approximately 2,800 square feet (Figure 4). The dissolved hydrocarbon plume appears to be shrinking.

3.2 Potential Receptors

The hydrocarbon plume extends beneath the area which currently is used mostly for parking (parking lot for Veterans Memorial Building) and transportation (sidewalks and public streets: Bay Place and Grand Avenue). Most of this area is paved with asphalt or concrete. Only the western edge and the narrow strip in the center (along Bay Place sidewalk) are landscaped. No buildings are located over the plume area (the nearest residential or commercial buildings are located approximately 80 feet of the plume edges). Lake Merritt is located outside the plume (approximately 200 feet southwest of the site), downgradient of clean wells MW-7 through MW-9 and appears not affected. No water producing wells are located within the plume area (the nearest water producing well is the irrigation well located approximately 2,000 feet southwest of the site). Therefore, the only potential exposure receptors are the current and future site visitors (motorists, pedestrians, ground maintenance workers, etc.) and future construction workers (most likely utility maintenance workers). Potential exposure media are ambient air, and soil and groundwater in potential future excavation areas.

3.3 Other Environmental Issues

An underground utility survey has not been conducted, therefore, it is not known if underground utility trenches intersect the residual groundwater plume. The dissolved hydrocarbon plume at the subject site is located at the edge of the public street (Grand Avenue), in the area where underground utilities are likely to be present. Due to shallow groundwater, the underground utility trenches (if present within the plume area) may act as preferential pathways that could affect contaminant transport. However, due to the absence

of MtBE in groundwater, the absence of hydrocarbon-related health risks to utility workers, and the shrinking nature of the plume, the concerns associated with the potential utility conduits are thought to be minimal.

4.0 RISK-BASED CORRECTIVE ACTION (RBCA)

Tier 1 of the RBCA process involves comparison of the site constituent concentrations to generic Risk-Based Screening Levels (RBSL) to evaluate whether further evaluation and/or active remediation is required. RBSL values are derived from standard exposure equations and reasonable maximum exposure (RME) estimates per U.S. EPA guidelines. RBSL concentrations limits are designed to be protective of human health even if exposure occurs directly within the on-site area of affective soil or groundwater and inherently provide conservative estimates of potential threats to human health and the environment. According to the RBCA process, if Tier 1 limits are not exceeded, the user may proceed directly to compliance monitoring and/or no further action. However, if these generic screening levels are exceeded, the affected media may be addressed by 1) remediating to the generic Tier 1 limits, if practicable, 2) conducting Tier 2 evaluation to develop site-specific remediation goals, or 3) implement an interim action to abate risk "hot spots".

4.1 Site Parameters

The complete exposure pathways are those that could pose a reasonable potential for contaminant contact with a human or environmental receptor. Under Tier 1 RBCA, only on-site receptors apply. Based on the land usage within a plume (parking and transportation), commercial types of exposure scenarios were evaluated for the site. A construction worker exposure was also evaluated. There are no water supply wells either within the dissolved groundwater plume or close enough to the site to be affected by the plume, therefore, groundwater ingestion or subsurface soil leaching to groundwater exposure pathways are not complete. The smear zone extends from 1 to 9 feet bgs, therefore, the soil within the dissolved hydrocarbon plume area may be affected at the very shallow depths. However, the surface over the dissolved hydrocarbon plume area is paved or covered with clean planting soil, therefore, direct ingestion or dermal contact pathway for surface soil is not complete. There are no buildings present within the plume area, therefore, the only complete exposure pathways identified are volatilization to outdoor air from subsurface soils and from groundwater (commercial and construction worker receptor) and direct ingestion and dermal contact (construction worker only). These exposure pathways were evaluated during this RBCA analysis.

Site specific physical data was used in this RBCA evaluation. These parameters included most conservative values for contaminated soil area (12,500 ft²), depth to top of affected soil (1 ft), depth to groundwater (9 ft), and thickness of affected subsurface soils (8 ft). Where appropriate and consistent with site conditions, default values were used. The maximum hydrocarbon concentrations remaining in soil outside the excavations (data from boring B-5) and the current hydrocarbon concentrations in the center of the dissolved hydrocarbon plume (September 1999 data for well MW-5) were used for this RBCA evaluation.

4.2 Results of RBCA Analysis

Based on the RBCA analysis and review of the RBSLs, site conditions are below generic Tier 1 screening levels and, according to the RBCA decision making process, no further work is necessary. Pertinent input and output data for the plume including site specific parameters used in the analysis are presented in Appendix G.

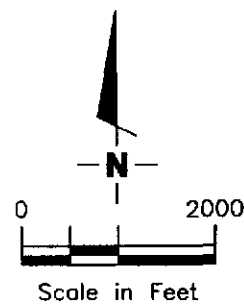
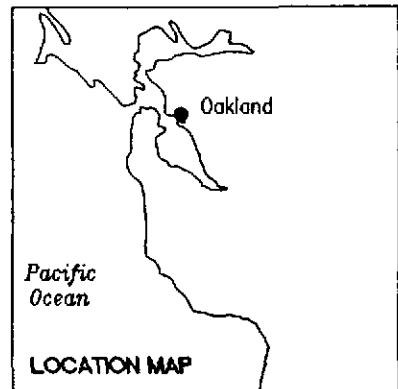
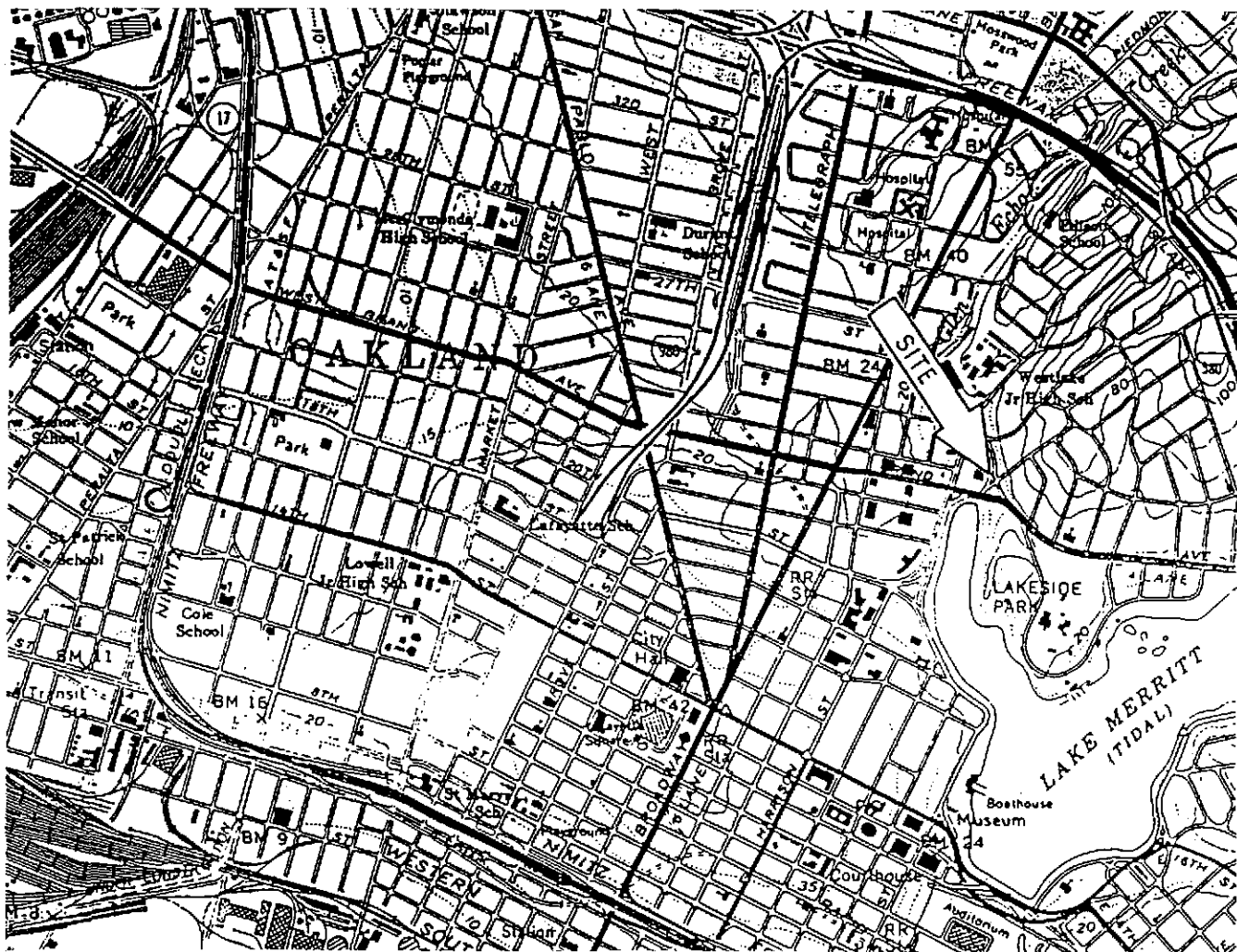
5.0 DISCUSSION AND CLOSURE PLAN

Site conditions consist of petroleum impacted soil and groundwater. An extensive source removal was conducted at the site. A majority of hydrocarbon impacted soil has been removed, however, some hydrocarbon affected soil still remains outside the limits of the former excavations. A groundwater extraction system was installed at the site to remediate hydrocarbon impacted groundwater, however, the system was inefficient due to extremely low flow rates. System operation data indicate that the pump and treat technology is not a viable option for the site. A significant decrease in hydrocarbon concentrations was observed in well MW-5 after installation of the ORC indicating that this compound was effective in enhancing biodegradation.

The lateral extents of hydrocarbon impacted soil and groundwater at the site have been delineated. The dissolved hydrocarbon plume appears to be shrinking indicating that the natural degradation of petroleum hydrocarbons is occurring. Currently, the dissolved hydrocarbons are detected only in well MW-5. There are no water supply wells within the dissolved groundwater plume, therefore, impacted groundwater present beneath the subject site is not a concern for groundwater ingestion. Impacted subsurface soil remaining in-place is not a concern for dermal contact, because it is covered by low permeability asphalt or concrete, or clean planting soil. RBCA analysis indicates that modeled concentrations of hydrocarbons volatilizing to outdoor air from subsurface soil and groundwater do not exceed RBSLs for commercial use of the subject property. RBSLs are also not exceeded for a construction worker.

Underground utility trenches may be present within the dissolved hydrocarbon plume area. However, due to the absence of MtBE in groundwater, the absence of hydrocarbon-related health risks to utility workers, and the shrinking nature of the plume, the concerns associated with the potential utility conduits are thought to be minimal.

Based on the site environmental conditions, it appears that risk mitigation is not required at the subject site. The contaminant plume is defined and shrinking, and there are no potential threats to human health and the environment based on the site usage. Therefore, natural attenuation appears to be the most appropriate approach to remediate the site. GR recommends initiating site closure proceedings. Semi-annual monitoring of wells MW-4 through MW-7 and sampling of wells MW-4 and MW-5 shall be continued to verify groundwater conditions until a closure status is granted.



Base Map: USGS Topographic Map



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VICINITY MAP

Former Chevron Service Station #9-0019
210 Grand Avenue
Oakland, California

FIGURE

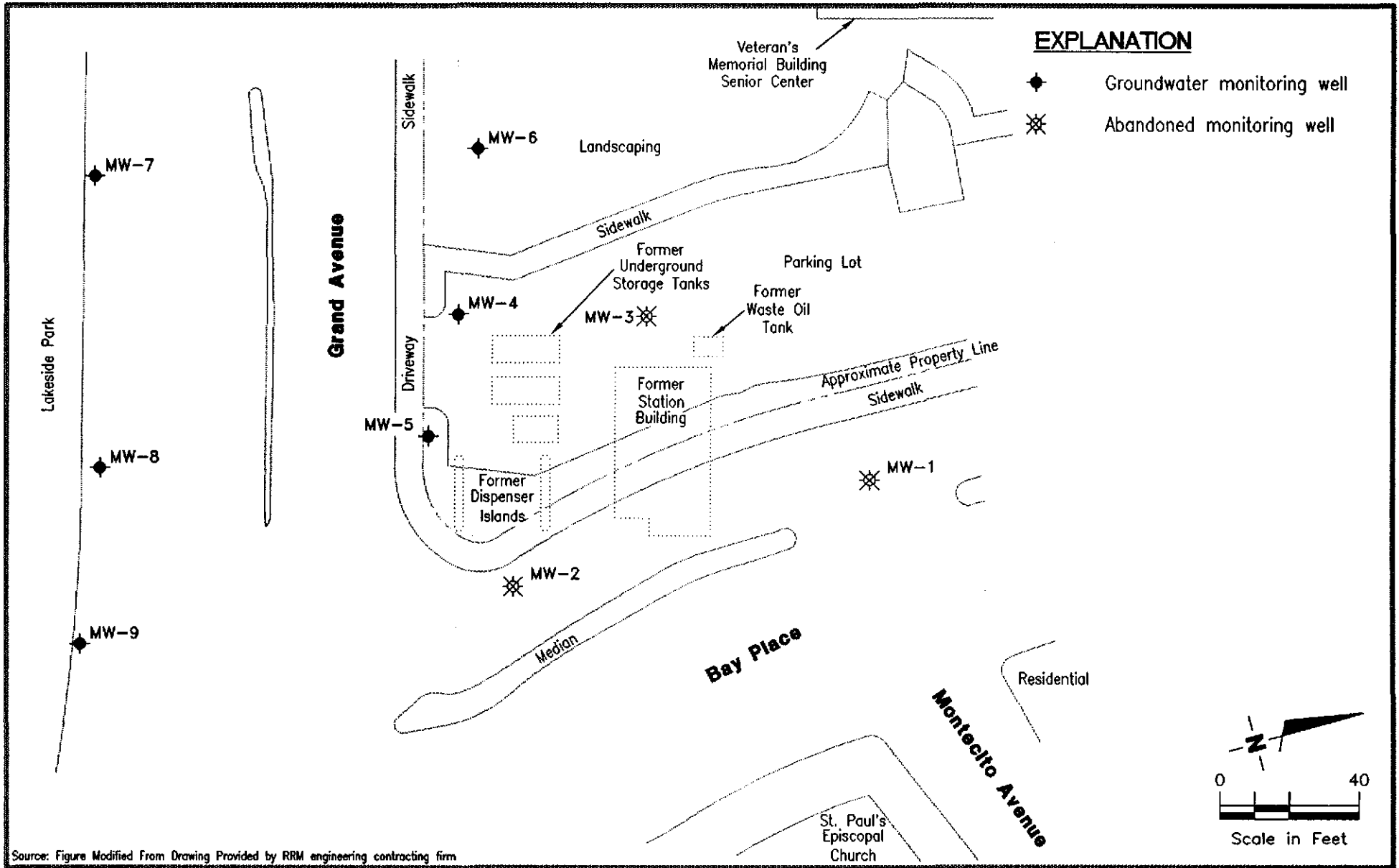
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SITE PLAN
Former Chevron Service Station #9-0019
210 Grand Avenue
Oakland, CA

FIGURE

2

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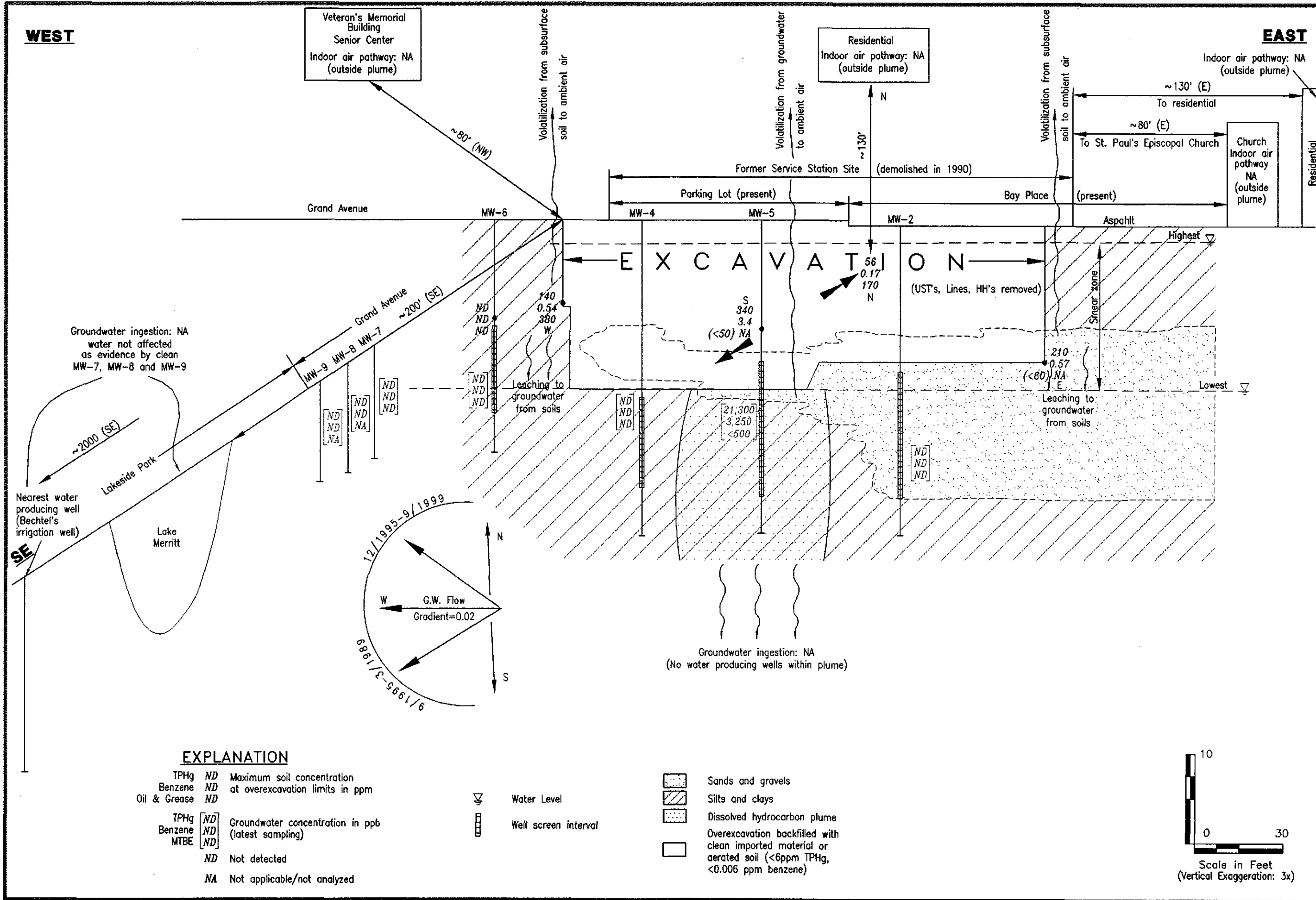
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FIGURE

3

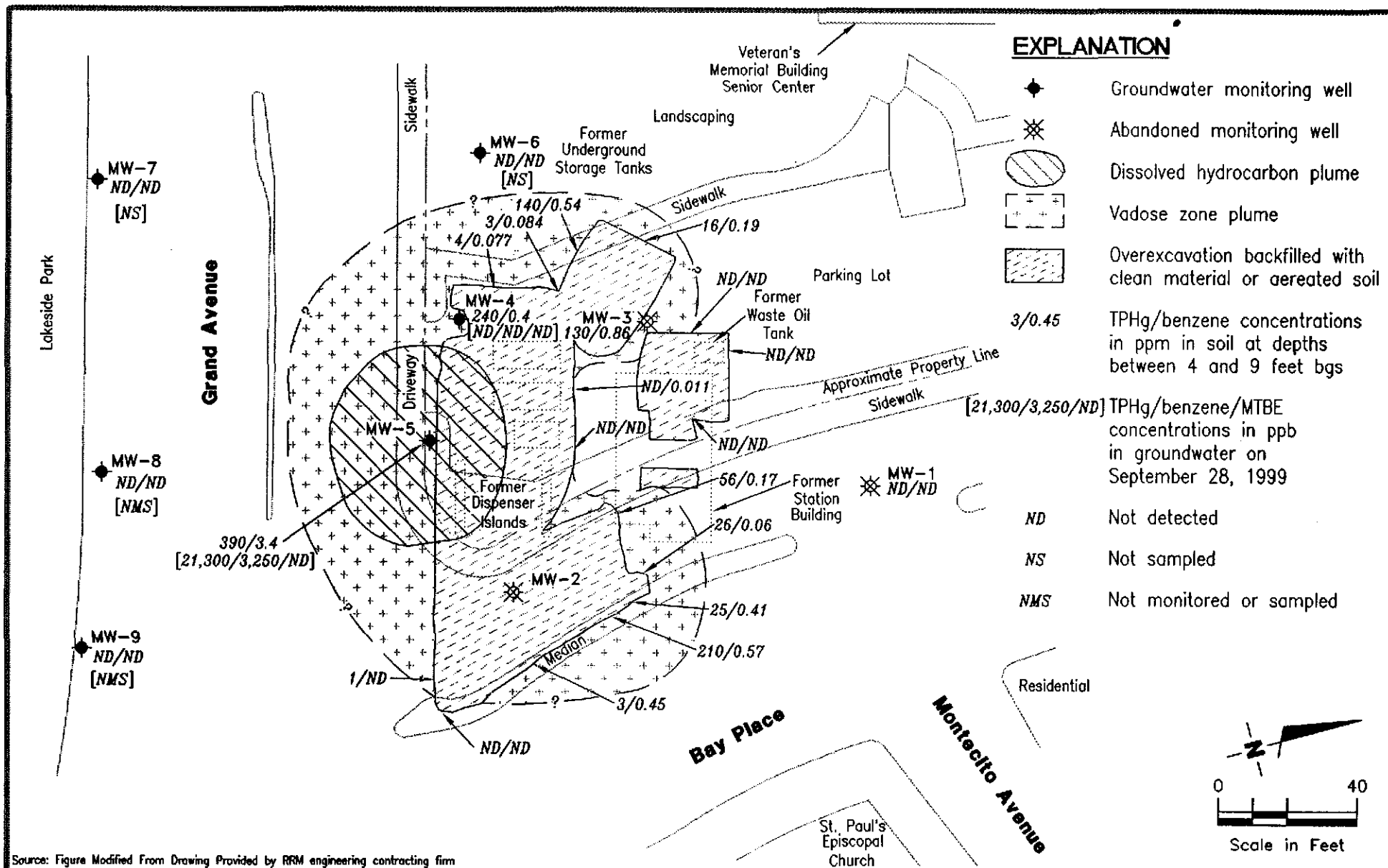


SITE CONCEPTUAL MODEL
 Former Chevron Service Station No. 9-0019
 210 Grand Avenue
 Oakland, California

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HYDROCARBON PLUME MAP

Former Chevron Service Station #9-0019
210 Grand Avenue
Oakland, CA

FIGURE

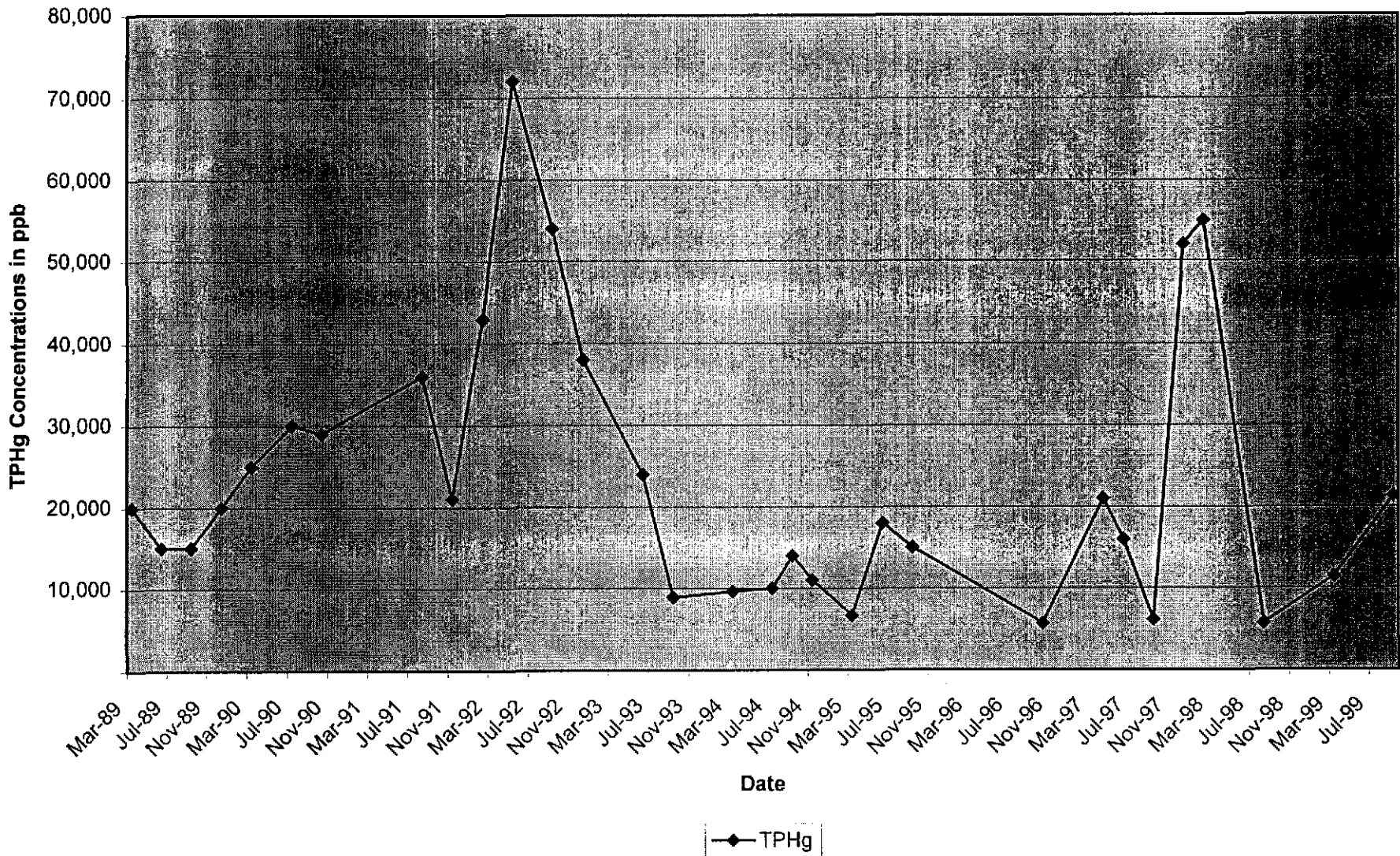
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02/00

REVISED DATE



Gettler - Ryan Inc.

6747 Sierra Ct., Suite J (925) 551-7555
 Dublin, CA 94568

TPHg CONCENTRATION IN WELL MW-5
 Former Chevron Service Station #9-0019
 210 Grand Avenue
 Oakland, California

FIGURE

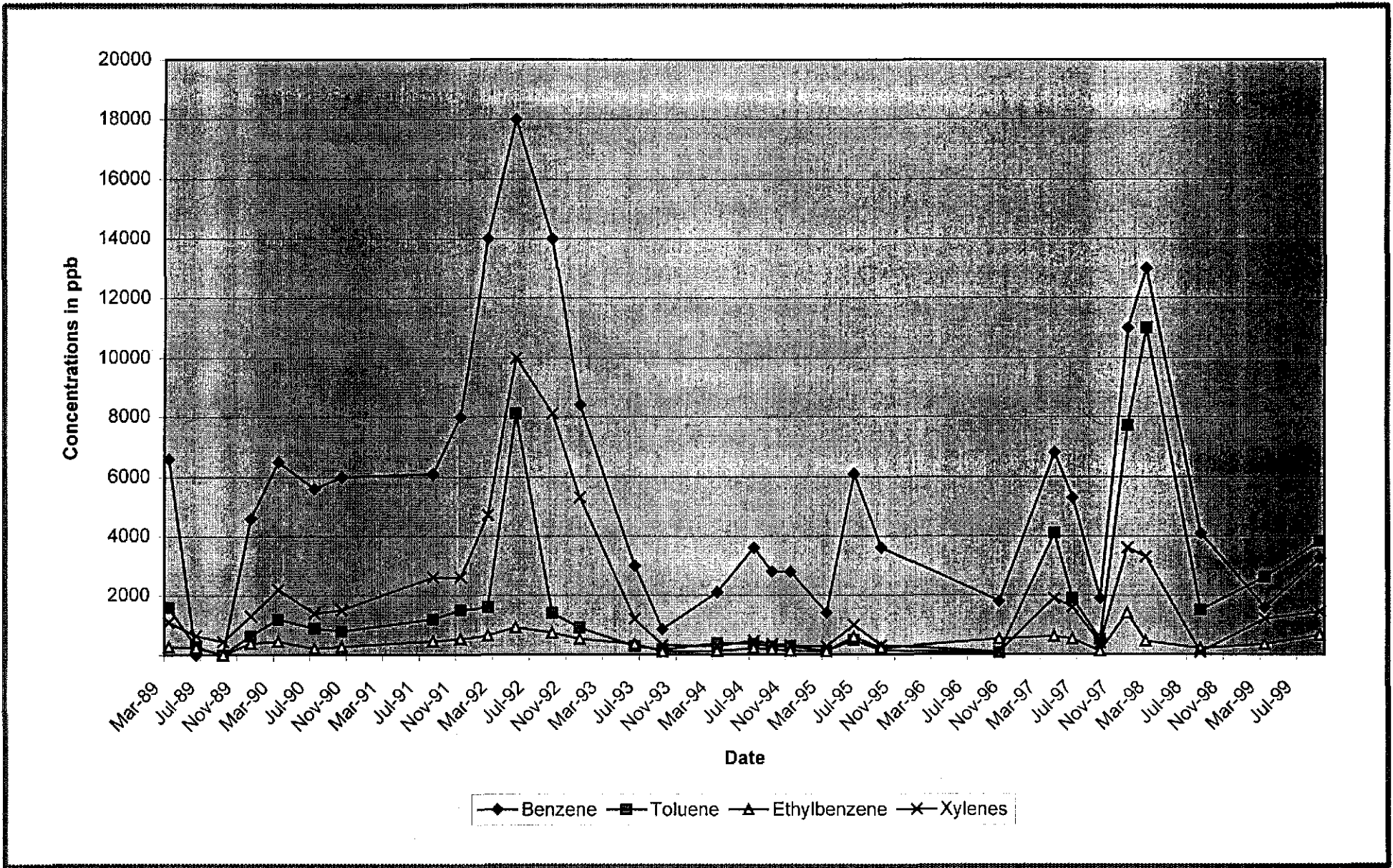
5

JOB NUMBER
 346500.02

REVIEWED BY

DATE
 02/00

REVISED DATE



Gettler - Ryan Inc.

6747 Sierrro Ct., Suite J (925) 551-7555
Dublin, CA 94568

BTEX CONCENTRATION IN WELL MW-5
Former Chevron Service Station #9-0019
210 Grand Avenue
Oakland, California

FIGURE
6

JOB NUMBER
346500.02

REVIEWED BY

DATE
02/00

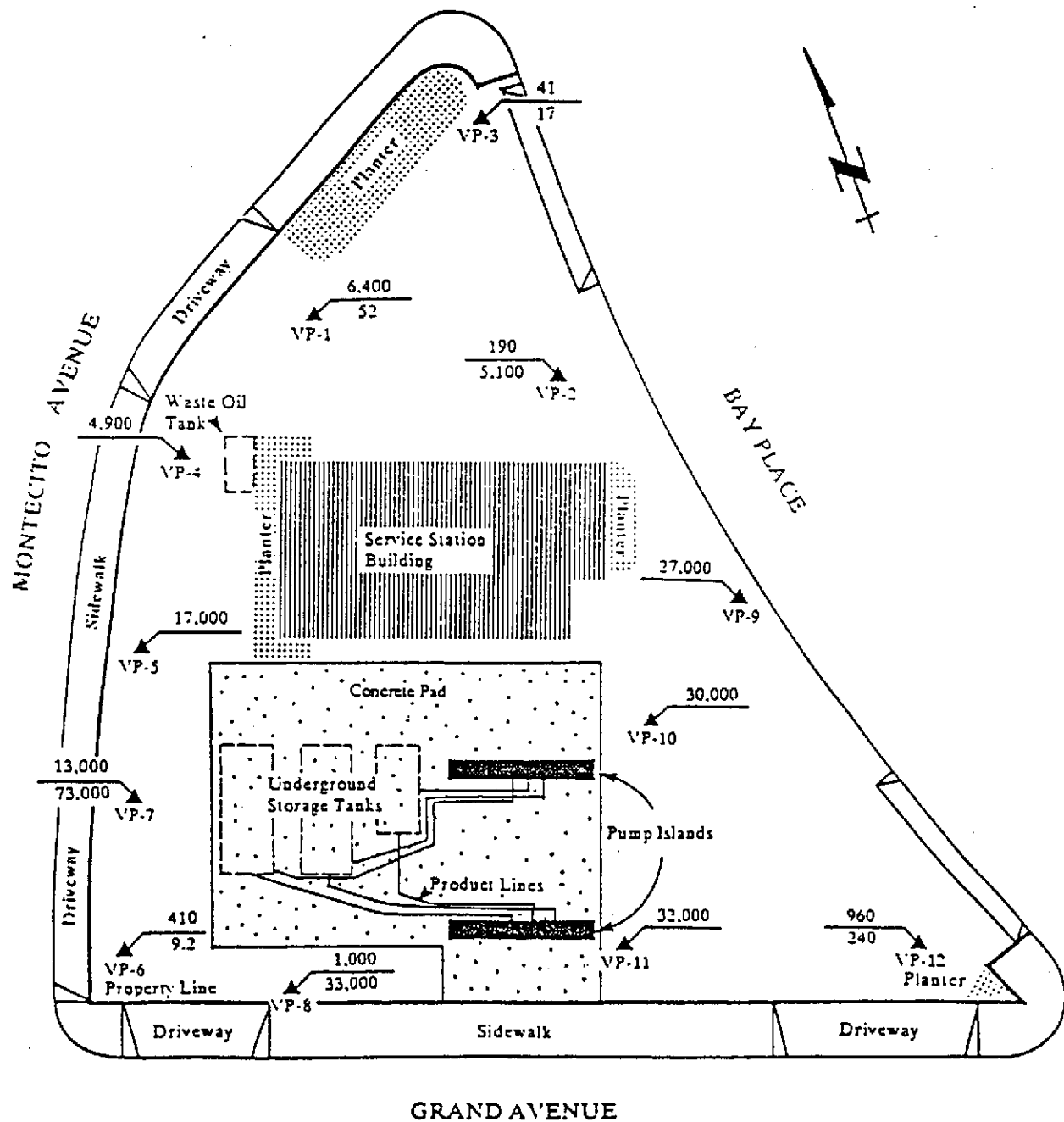
REVISED DATE

LEGEND

TVH @ 5' Soil Vapor Points,
 ID's and concentrations
 in parts per million

TVH @ 10'-15' Soil Vapor Points,
 ID's and concentrations
 in parts per million

TVH = Total Volatile Hydrocarbons



Source of Figure: Chevron USA

SCALE: 1" = 25'

Figure 2. Soil Vapor Point Locations, Chevron SS# 90019
 Oakland, California

TABLE 1. SOIL VAPOR SURVEY DATA
Chevron SS #90019
Oakland, California

ID#	DATE	DEPTH (ft)	BENZENE	TOLUENE	XYLENES	TVH
			ppm			
VP-1(A)	2 FEB 89	5.0	OP	200.0	160.0	6400.0
VP-1(B)	2 FEB 89	15.0	OP	ND	ND	52.0
VP-2(A)	2 FEB 89	5.0	43.0	31.0	6.7	190.0
VP-2(B)	2 FEB 89	15.0	OP	29.0	ND	5100.0
VP-3(A)	2 FEB 89	5.0	OP	ND	ND	41.0
VP-3(B)	2 FEB 89	15.0	ND	ND	ND	17.0
VP-4	2 FEB 89	5.0	OP	4700.0	180.0	4900.0
VP-5	2 FEB 89	5.0	OP	OP	OP	17000.0
VP-6(A)	2 FEB 89	5.0	29.0	120.0	160.0	410.0
VP-6(B)	2 FEB 89	15.0	ND	ND	ND	9.2
VP-7(A)	2 FEB 89	5.0	OP	OP	OP	13000.0
VP-7(B)	2 FEB 89	10.0	OP	OP	ND	73000.0
VP-8(A)	2 FEB 89	5.0	220.0	460.0	170.0	1000.0
VP-8(B)	2 FEB 89	13.0	OP	OP	ND	33000.0
VP-9	3 FEB 89	5.0	OP	OP	390.0	27000.0
VP-10	3 FEB 89	5.0	OP	OP	190.0	30000.0
VP-11	3 FEB 89	5.0	OP	OP	300.0	32000.0

ug/m³
 $\frac{245}{86} \times 10^3$
 35 284 = 10.4

TABLE 1 Continued

ID#	DATE	DEPTH (ft)	BENZENE	TOLUENE	XYLENES	TVH
			ppm			
VP-12(A)	3 FEB 89	5.0	OP	37.0	7.4	960.0
VP-12(B)	3 FEB 89	14.0	OP	20.0	ND	240.0

Notes:

ND = Not Detected (less than 6 ppm method detection limit)

OP = Overlapping Peaks (unable to resolve)

TVH = Total Volatile Hydrocarbons

TABLE 1 - ANALYTIC RESULTS: SOIL
Chevron SS #90019, Oakland, CA

SOIL RESULTS BY: EPA METHOD 8260 - "FUEL FINGERPRINT ANALYSIS"

SAMPLE ID#	DATE	DEPTH (FT)	BENZENE	TOLUENE	ETHYLBENZ	XYLENES	EDC	EDB	TPPH (G)
ppm									
B-1-5.0	8 Mar 89	5.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.5
B-1-10.0	8 Mar 89	10.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.5
B-1-13.0	8 Mar 89	13.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.5
B-2-5.0	8 Mar 89	5.0	4.5	16.0	8.4	32.0	0.2	<0.1	340.0
B-2-10.0	8 Mar 89	10.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.5
B-2-13.5	8 Mar 89	13.5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.5
B-2-16.5	8 Mar 89	16.5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.5
B-4-5.0	9 Mar 89	5.0	0.2	1.1	1.0	4.0	<0.1	<0.1	30.0
B-4-5.0 (dup.)	9 Mar 89	5.0	0.4	1.3	0.83	4.4	<0.1	<0.1	30.0
B-4-8.5	9 Mar 89	8.5	<0.05	0.05	0.05	0.13	<0.05	<0.05	240.0
B-4-13.5	9 Mar 89	13.5	<0.005	0.006	<0.005	<0.005	<0.005	<0.005	<0.5
B-4-16.5	9 Mar 89	16.5	0.031	0.037	0.014	0.057	<0.005	<0.005	6.0
B-5-5.5	9 Mar 89	5.5	3.4	13.0	8.3	29.0	0.06	<0.05	390.0
B-5-10.0	9 Mar 89	10.0	2.0	0.12	0.27	0.43	<0.05	<0.05	30.0
B-5-13.0	9 Mar 89	13.0	0.43	0.07	0.20	0.46	<0.05	<0.05	52.0
B-5-15.0	9 Mar 89	15.0	0.12	0.03	0.04	0.15	<0.05	<0.05	28.0

Notes:

Analyses by Central Coast Analytical Services, Inc.

< = Less than indicated detection limit

ETHYLBENZ = Ethylbenzene

EDC = 1,2-Dichloroethane

EDB = Ethylene Dibronide

TPPH (G) = Total Purgeable Petroleum Hydrocarbons characterized as gasoline

(dup.) = Duplicate sample

TABLE 2 - ANALYTIC RESULTS: SOIL
Chevron SS #90019, Oakland, CA

SOIL RESULTS BY: EPA METHOD 8260 - "FULL-SCAN ANALYSIS"
CS METHOD 503E - OIL AND GREASE (O & G)

SAMPLE ID#	DATE	DEPTH (FT)	BENZENE	TOLUENE	E-BEN	XYLENES	EDC	ACETONE	TPPH(G)	O & G
B-3-5.0	9 Mar 89	5.0	860.0	2500.0	2300.0	10000.0	61.0	770.0	130000.0	---
B-3-5.0	9 Mar 89	5.0	---	---	---	---	---	---	---	<50.0
B-3-10.0	9 Mar 89	10.0	5.0	7.0	<5.0	<5.0	<5.0	<100.0	<100.0	---
B-3-10.0	9 Mar 89	10.0	---	---	---	---	---	---	---	<50.0
B-3-15.0	9 Mar 89	15.0	<3.0	<5.0	<5.0	<5.0	<5.0	<100.0	<100.0	---
B-3-15.0	9 Mar 89	15.0	---	---	---	---	---	---	---	160.0
B-3-18.0	9 Mar 89	18.0	<3.0	<5.0	<5.0	<5.0	<5.0	<100.0	<100.0	---
B-3-18.0	9 Mar 89	18.0	---	---	---	---	---	---	---	360.0

Notes:

Analyses by Central Coast Analytical Services, Inc.
 CS METHOD = California Standard Method
 < = Less than indicated detection limit
 E-BEN = Ethylbenzene
 EDC = 1,2-Dichloroethane
 TPPH (G) = Total Purgeable Petroleum Hydrocarbons characterized as gasoline
 O & G = Oil and Grease reported in parts-per-million (ppm)



TABLE 4. Analytic Results: Soil Samples
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

Sample ID #	Date	Depth (ft)	TPPH/TPH	Benzene	Toluene	E-Benzene	Xylenes	O&G	Cd	Cr	Pb	Zn	EPA Methods
----->													
ppm													
MU-6-5.5	29 Jun 90	5.5	<10	<0.005	<0.005	0.01	<0.015	<5	1	29	6	22	8015/8020/8010/413.2/6010
MU-6-8.7	29 Jun 90	8.7	<10	<0.005	<0.005	0.01	<0.015	<5	3	26	15	46	8015/8020/8010/413.2/6010
MU-6-11.7	29 Jun 90	11.7	<10	<0.005	<0.005	<0.005	<0.015	<5	3	24	15	51	8015/8020/8010/413.2/6010
MU-7-4.5	27 Jun 90	4.5	<10	<0.005	<0.005	<0.005	<0.015	---	---	---	---	---	8015/8020
MU-7-6.5	27 Jun 90	6.5	<10	<0.005	<0.005	<0.005	<0.015	---	---	---	---	---	8015/8020/8010
MU-7-10.3	27 Jun 90	10.3	<10	<0.005	<0.005	<0.005	<0.015	---	---	---	---	---	8015/8020
MU-8-4.8	27 Jun 90	4.8	<10	<0.005	<0.005	<0.005	<0.015	---	---	---	---	---	8015/8020
MU-8-7.0	27 Jun 90	7.0	<10	<0.005	<0.005	<0.005	<0.015	---	---	---	---	---	8015/8020/8010
MU-8-12.0	27 Jun 90	12.0	<10	<0.005	<0.005	<0.005	<0.015	---	---	---	---	---	8015/8020
MU-9-5.0	28 Jun 90	5.0	<10	<0.005	<0.005	<0.005	<0.015	---	---	---	---	---	8015/8020
MU-9-6.8	28 Jun 90	6.8	<10	<0.005	<0.005	<0.005	<0.015	---	---	---	---	---	8015/8020/8010
MU-9-10.3	28 Jun 90	10.3	<10	<0.005	<0.005	<0.005	<0.015	---	---	---	---	---	8015/8020

NOTES:

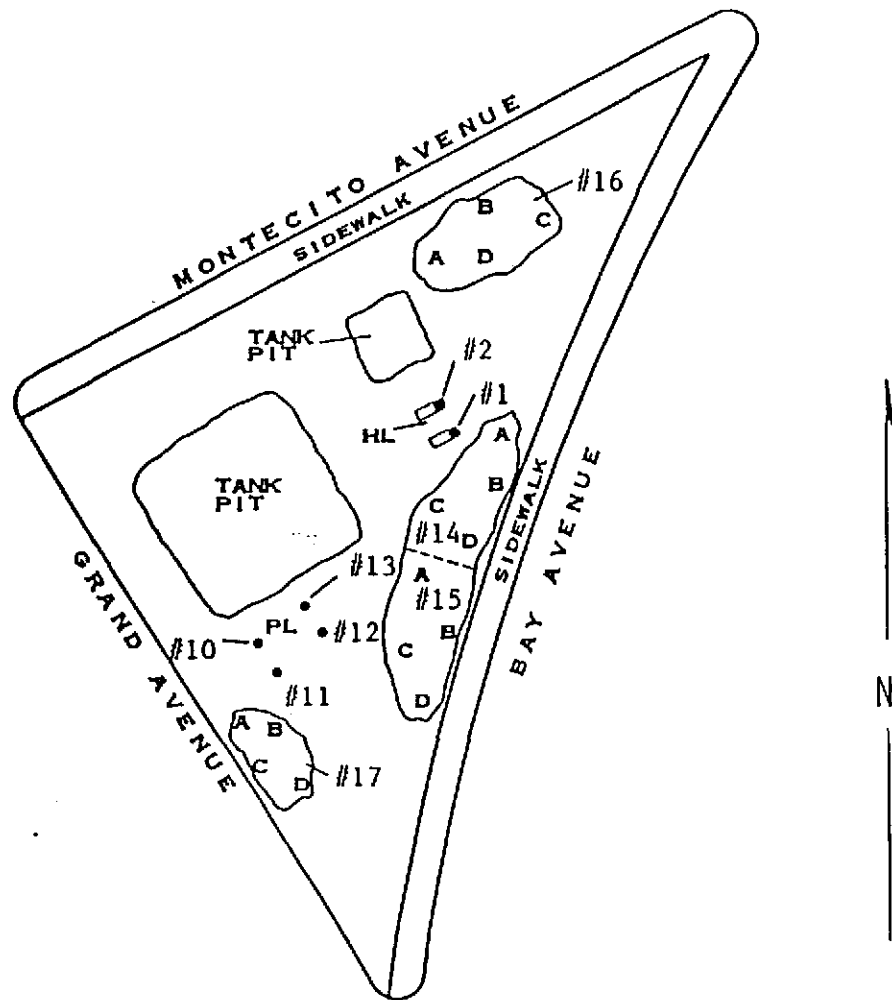
TPPH/TPH = Total Purgeable Petroleum Hydrocarbons as gasoline/
 Total Petroleum Hydrocarbons as gasoline, diesel and waste oil
 E-Benzene = Ethylbenzene
 O&G = Oil and Grease
 Cd = Cadmium, total threshold limit concentration in soil
 Cr = Chromium, total threshold limit concentration in soil

Pb = Lead, total threshold limit concentration in soil
 Zn = Zinc, total threshold limit concentration in soil
 ppm = parts-per-million
 < = Less than listed detection limit
 --- = Not analyzed

TANK REMOVAL DIAGRAM

June 20, 1990 / 900620-G-1

DIAGRAM TWO



MAP REF: THOMAS BROS.
ALAMEDA COUNTY
P. 9 C-10

SCALE: 0 75'

LEGEND: HL = HYDRAULIC LIFT
PL = PRODUCT LINE

SAMPLING PERFORMED BY CHUCK GRAVES
DIAGRAM PREPARED BY BRENT ADAMS

TABLE OF SAMPLING LOCATIONS AND ANALYTICAL RESULTS

NOTE: Analytical results are reported in
Parts Per Million or Parts Per Billion

I.D. GIVEN THIS SAMPLE AREA	SAMPLE DEPTH IN FT. BELOW GRADE	SAMPLING LOCATION DICTATED BY	TYPE & METHOD FOR THE SAMPLE OBTAINED	SAMPLE MATRIX	DATE SAMPLED	BTS CHAIN OF CUSTODY I.D.	BTS SAMPLE I.D.	NAME OF DOHS HMTL LABORATORY	LABORATORY SAMPLE I.D.	---PPM---				
										TFM AS GAS	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES
Wof	11.5	LIA	INTERFACE	SOIL	06/20/90	900620-G-1	#3	SEQUOIA	006-3049	41	0.005	0.33	0.20	1.6
	10.0	ELECTIVE	EXPLOR	SOIL	06/20/90	900620-G-1	#4	SEQUOIA	006-3050	ND	ND	ND	ND	
	12.0	ELECTIVE	EXPLOR	SOIL	06/20/90	900620-G-1	#18	SEQUOIA	006-3051	69	0.29	2.1	1.2	4.0
Wostk	12"	STANDARD	BAAQMD-H	SOIL	06/20/90	900620-G-1	#16A-D	SEQUOIA	0063064 A-D	960,000	14,000	99,000	31,000	120,000

I.D. GIVEN THIS SAMPLE AREA	SAMPLE DEPTH IN FT. BELOW GRADE	SAMPLING LOCATION DICTATED BY	TYPE & METHOD FOR THE SAMPLE OBTAINED	SAMPLE MATRIX	DATE SAMPLED	BTS CHAIN OF CUSTODY I.D.	BTS SAMPLE I.D.	NAME OF DOHS HMTL LABORATORY	LABORATORY SAMPLE I.D.	---PPM---		---PPB---
										TFM-NEW DIESEL	TOTAL OIL & GREASE	EPA 8010 COMPOUNDS
Wof	11.5	LIA	INTERFACE	SOIL	06/20/90	900620-G-1	#3	SEQUOIA	006-3049	190	3,600	SEE LAB REPORT
	10.0	ELECTIVE	EXPLOR	SOIL	06/20/90	900620-G-1	#4	SEQUOIA	006-3050	ND	170	SEE LAB REPORT
	12.0	ELECTIVE	EXPLOR	SOIL	06/20/90	900620-G-1	#18	SEQUOIA	006-3051	140	650	ND
Wostk	12"	STANDARD	BAAQMD-H	SOIL	06/20/90	900620-G-1	#16A-D	SEQUOIA	0063064 A-D	510	6,400	ND

HYDRAULIC LIFTS

HL	8.0	LIA	INTERFACE	SOIL	06/20/90	900620-G-1	#1	SEQUOIA	006-3047	ND	100	--
	8.0	LIA	INTERFACE	SOIL	06/20/90	900620-G-1	#2	SEQUOIA	006-3048	180	1,300	--

I.D. GIVEN THIS SAMPLE AREA	SAMPLE DEPTH IN FT. BELOW GRADE	SAMPLING LOCATION DICTATED BY	TYPE & METHOD FOR THE SAMPLE OBTAINED	SAMPLE MATRIX	DATE SAMPLED	BTS CHAIN OF CUSTODY I.D.	BTS SAMPLE I.D.	NAME OF DOHS HMTL LABORATORY	LABORATORY SAMPLE I.D.	---PPM---			
										CADMIUM	CHROMIUM	LEAD	SILIC
Wof	11.5	LIA	INTERFACE	SOIL	06/20/90	900620-G-1	#3	SEQUOIA	006-3049	ND	39	20	43
	10.0	ELECTIVE	EXPLOR	SOIL	06/20/90	900620-G-1	#4	SEQUOIA	006-3050	ND	41	3.1	26
	12.0	ELECTIVE	EXPLOR	SOIL	06/20/90	900620-G-1	#18	SEQUOIA	006-3051	ND	22	2.6	15
Wostk	12"	STANDARD	BAAQMD-H	SOIL	06/20/90	900620-G-1	#16A-D	SEQUOIA	0063064 A-D	ND	26	18	44

Standard - The location conformed to established (professional or regulatory) definitions for the type of sample being collected.
Example: a standard RMQCB interface sample.

LIA - The local implementing agency inspector chose a sampling location that was different from a standard (pre-defined) location.

Elective - Elective samples are not taken to comply with regulatory requirements, but to obtain information. Sampling locations may be chosen by the property owner, the contractor, a consultant, etc. The samples may or may not be analyzed.

TABLE OF SAMPLING LOCATIONS AND ANALYTICAL RESULTS

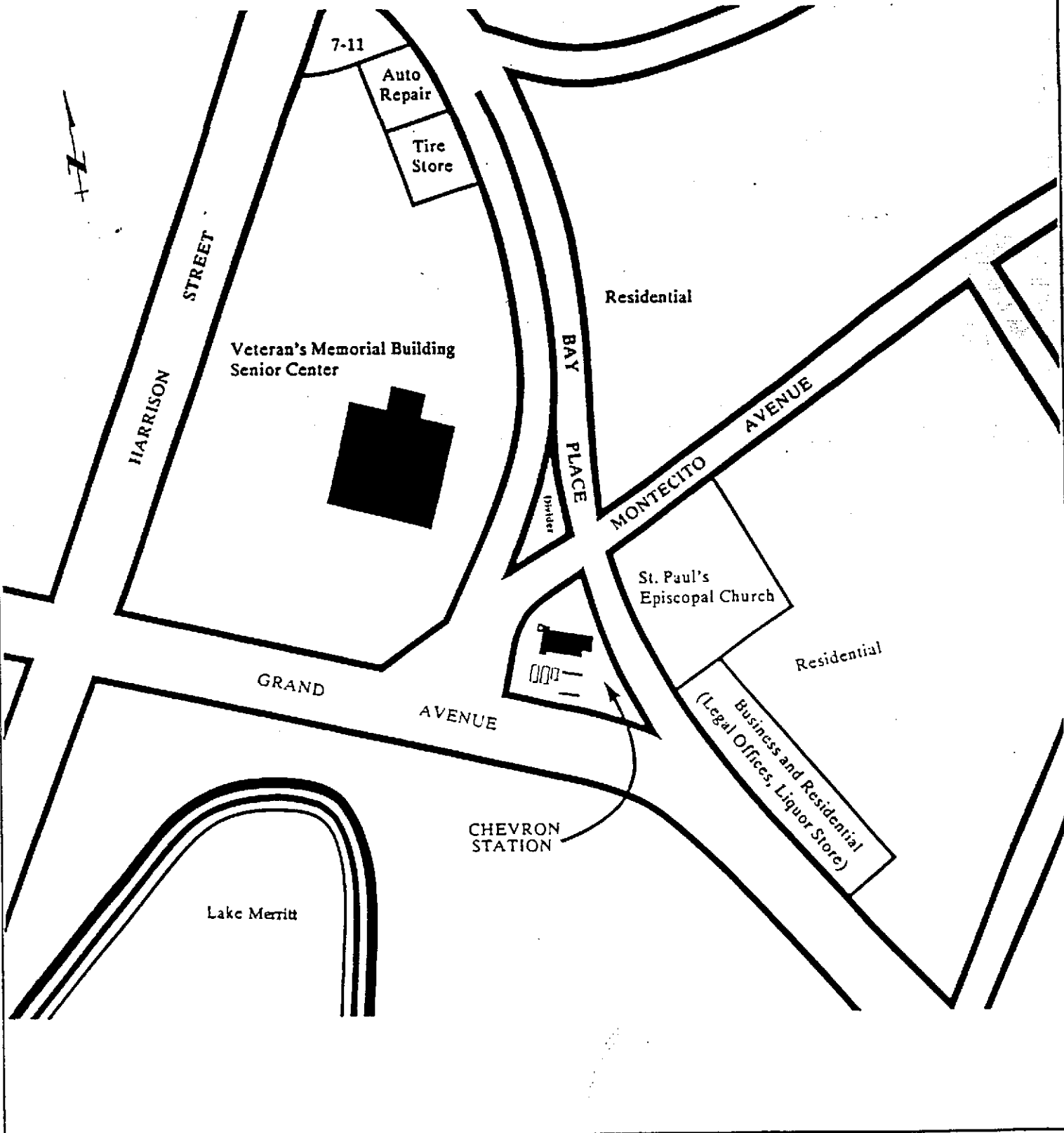
NOTE: Analytical results are reported in
Parts Per Million or Parts Per Billion

I.D. GIVEN THIS SAMPLE AREA	SAMPLE DEPTH IN FT. BELOW GRADE	SAMPLING LOCATION DICTATED BY	TYPE & METHOD FOR THE SAMPLE OBTAINED	SAMPLE MATRIX	DATE SAMPLED	BTS CHAIN OF CUSTODY I.D.	BTS SAMPLE I.D.	NAME OF DONOR HCTL LABORATORY	LABORATORY SAMPLE I.D.	PPM					
										TPH AS GAS	BEN-SENE	TOL-DEME	ETHYL BEN-SENE	XY-LENES	
TANK PIT															
WALL	7.5	LIA	CAPILLAR	SOIL	06/20/90	900620-G-1	#5	SEQUOIA	006-3052	ND	ND	ND	ND	ND	
	7.0	LIA	CAPILLAR	SOIL	06/20/90	900620-G-1	#6	SEQUOIA	006-3053	3.3	0.075	0.012	0.033	0.051	
	6.5	LIA	CAPILLAR	SOIL	06/20/90	900620-G-1	#7	SEQUOIA	006-3054	ND	ND	ND	ND	ND	
	4.0	ELECTIVE	EXPLOR	SOIL	06/20/90	900620-G-1	#8	SEQUOIA	006-3055	ND	0.011	ND	0.025	0.0054	
	7.0	LIA	CAPILLAR	SOIL	06/20/90	900620-G-1	#9	SEQUOIA	006-3056	13	0.10	0.30	0.18	0.54	
PRODUCT LINES															
PL	3.0	LIA	INTRFACE	SOIL	06/20/90	900620-G-1	#10	SEQUOIA	006-3057	160	2.9	13	4.4	19	
	3.0	LIA	INTRFACE	SOIL	06/20/90	900620-G-1	#11	SEQUOIA	006-3058	100	1.7	0.36	5.1	2.9	
	3.0	LIA	INTRFACE	SOIL	06/20/90	900620-G-1	#12	SEQUOIA	006-3059	67	2.8	7.7	1.4	9.0	
	3.0	LIA	INTRFACE	SOIL	06/20/90	900620-G-1	#13	SEQUOIA	006-3060	5.1	0.84	0.43	0.19	0.74	
STOCK	12"	STANDARD	BAAQMD-M	SOIL	06/20/90	900620-G-1	#14A-D	SEQUOIA	0063062 A-D	3.1	ND	0.0097	0.0086	0.025	
	12"	STANDARD	BAAQMD-M	SOIL	06/20/90	900620-G-1	#15A-D	SEQUOIA	0063063 A-D	11	ND	0.061	0.078	0.47	
	12"	STANDARD	BAAQMD-M	SOIL	06/20/90	900620-G-1	#17A-D	SEQUOIA	0063061 A-D	290	0.33	6.3	4.7	31	

Standard - The location conformed to established (professional or regulatory) definitions for the type of sample being collected.
Example: a standard RWOCB interface sample.

LIA - The local implementing agency inspector chose a sampling location that was different from a standard (pre-defined) location.

Elective - Elective samples are not taken to comply with regulatory requirements, but to obtain information. Sampling locations may be chosen by the property owner, the contractor, a consultant, etc. The samples may or may not be analyzed.



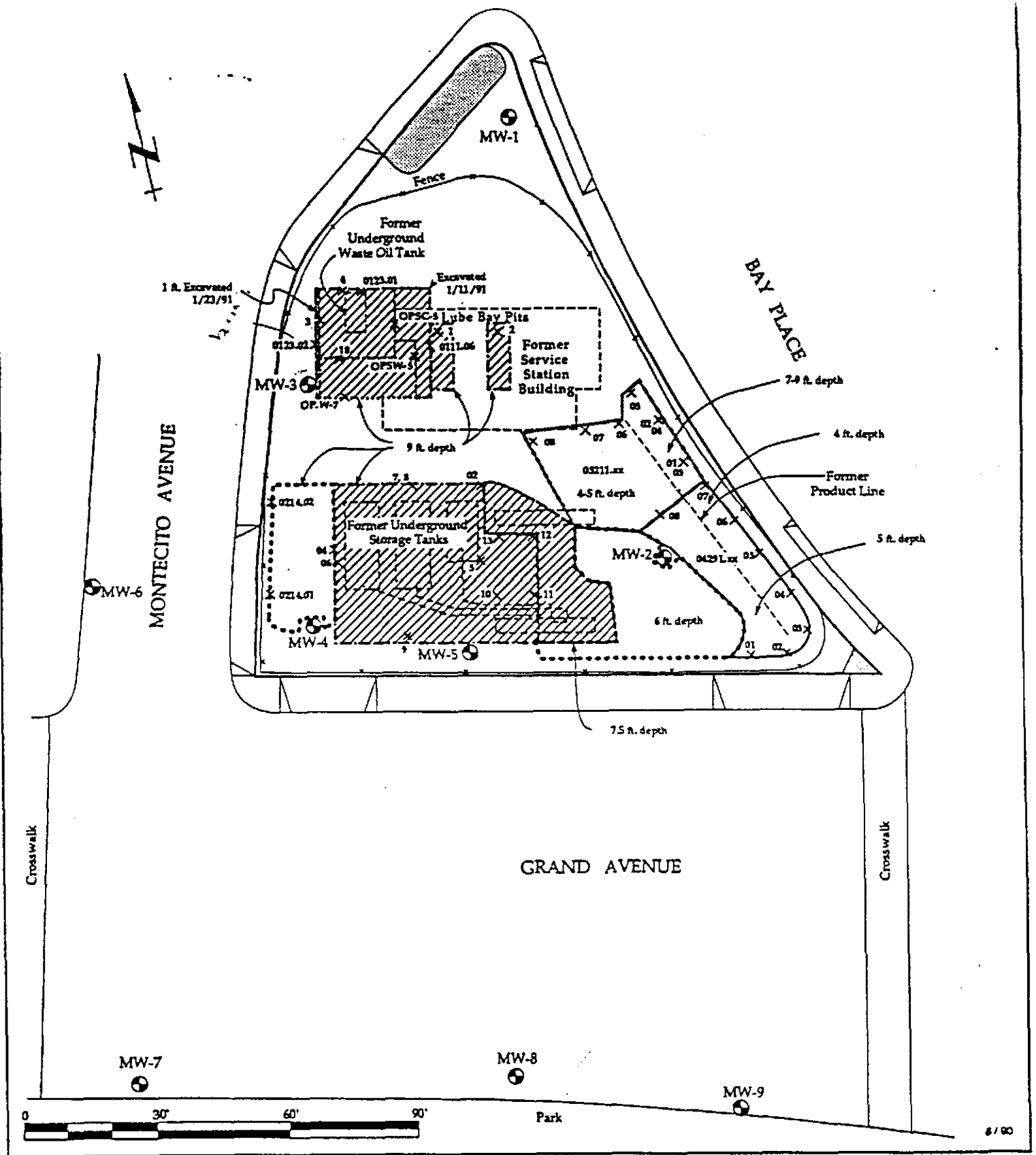
Approximate Scale : 1" = 135'

Vicinity Map
Chevron SS #90019, Oakland, California

June 1989

FIGURE

2



EXPLANATION

- MW-7 Monitor Well Location
- X 0123.01 Soil Sample Location
- Excavation, Blaine Tech Services, 6/20/90
- Excavation, WGR/ Armer Norman, 7/2/90
- Excavation, WGR, 11/19/90 & 12/6/90
- Excavation, WGR, 1/11/91 & 1/23/91
- Excavation, WGR, 2/14, 2/15 and 2/19/91
- Excavation, WGR, 4/29/91
- Excavation, WGR, 5/21/91
- ////// Backfilled Excavation, 2/5/91 & 2/14/91

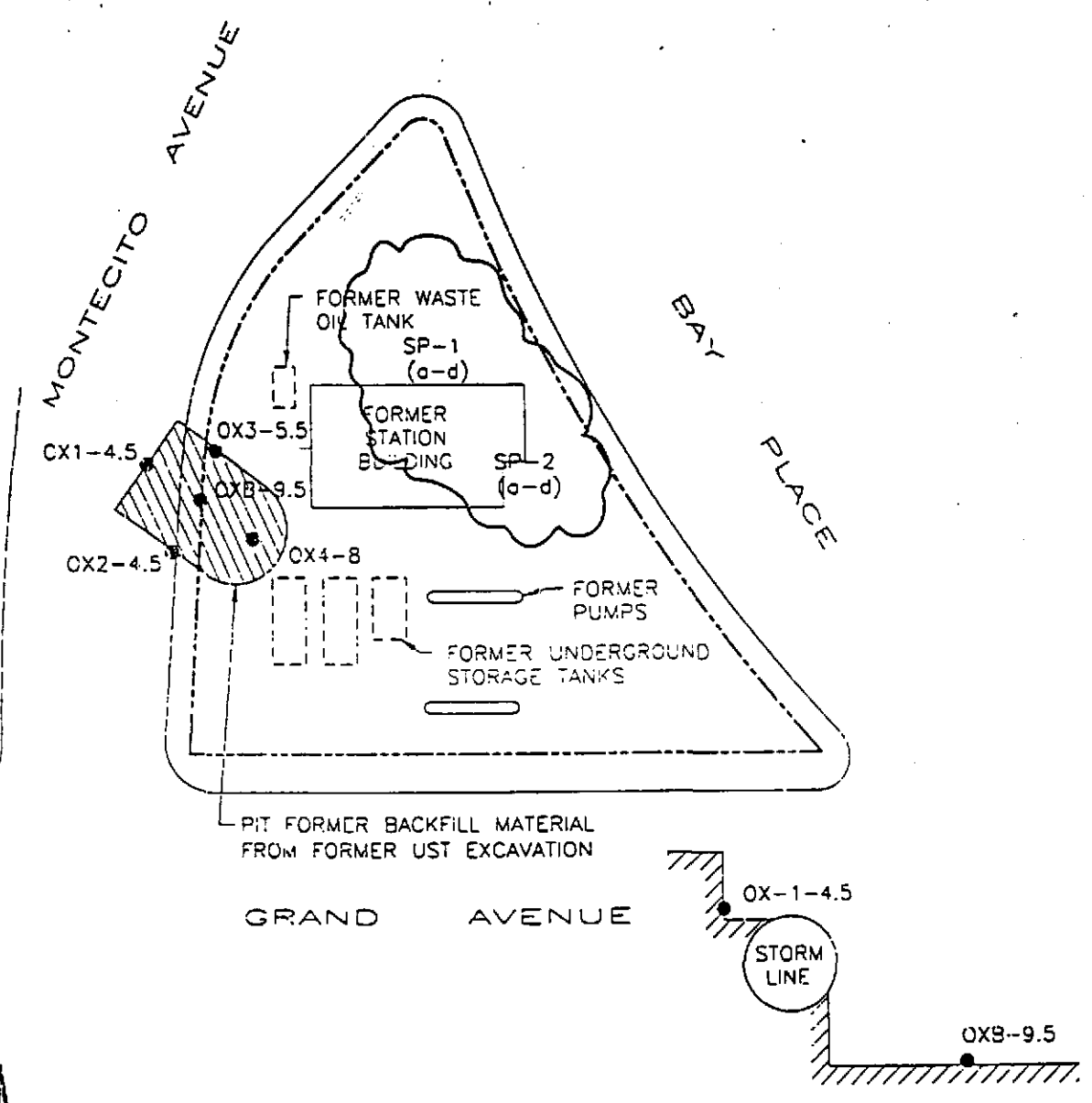
Site Map with Excavations and Soil Sample Locations
 Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

FIGURE

3

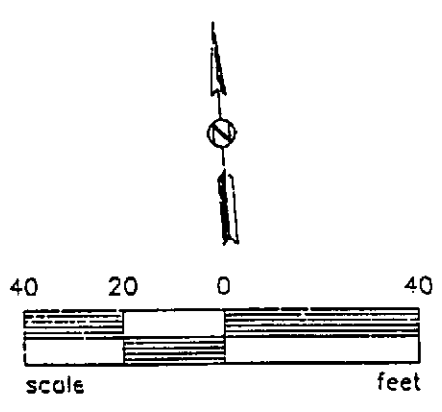
WESTERN GEOLOGIC RESOURCES, INC.

1-101.06



EXPLANATION

- OXB-9.5 SAMPLE ID & LOCATION
- ▨ EXCAVATION VARIED FROM 9.5' DEEP TO 8.0' DEEP IN THE SOUTHERN END
- ☁ STOCKPILED SOIL



Reference: Cambria



**Touchstone
Developments**
Environmental Management

Job. No: 96-0019
Appr:
Drawn: CD
Date: DEC 1996

**SITE PLAN W/ SAMPLE
LOCATIONS**
Chevron Station No. 9-0019
210 Grand Avenue
Oakland, California

FIGURE
2

TABLE A
Sample Analytical Summary
 Results in mg/Kg (ppm)

EXCAVATION SAMPLES

Sample ID	Date Sampled	Depth (ft.)	TPH-Gas	Benzene	Toluene	Ethylbenzene	Xylenes	Lead
OX1	11-14-96	4.5	16	0.19	0.39	0.26	1.0	NA
OX2	11-14-96	4.5	140	0.54	0.78	1.3	4.8	NA
OX3	11-14-96	5.5	ND	0.0096	0.014	ND	0.016	NA
OX4	11-14-96	8	ND	ND	ND	ND	ND	NA
OXB	11-14-96	9.5	ND	ND	0.0098	ND	0.016	NA

STOCKPILE SAMPLES

Sample ID	Date Sampled	TPH-Gas	Benzene	Toluene	Ethylbenzene	Xylenes	Lead
SP-1 (a-d)	11-14-96	50	0.31	0.67	0.76	3.0	4.2
SP-2 (a-d)	11-14-96	300	1.4	3.9	3.5	17	4.3

ND = Not Detected at or above lab detection limits
 NA = Not Analyzed
 TPH = Total Petroleum Hydrocarbons
 ppm = parts per million
 * Unidentified Hydrocarbon

TABLE 1. Analytic Results: Soil Excavation Samples
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

Sample ID #	Date	TPPHg	B	T	E	X	O&G	Lab	Analytical Methods	
							←-----ppm-----→			
# 1*A	20 Jun 90	---	---	---	---	---	100	SQA	EPA 8015 (diesel); SM 503 D&E	
# 2*B	20 Jun 90	---	---	---	---	---	1,300	SQA	EPA 8015 (diesel); SM 503 D&E	
# 3*C	20 Jun 90	41	0.085	0.33	0.20	1.6	3,600	SQA	EPA 8015/8020/8010 SM 503 D&E; metals	
# 4*D	20 Jun 90	<1.0	<0.005	<0.005	<0.005	<0.005	170	SQA	EPA 8015/8020/8010 SM 503 D&E; metals	
# 5*	20 Jun 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	SQA	EPA 8015/8020	
# 6*	20 Jun 90	3.3	0.075	0.012	0.033	0.051	---	SQA	EPA 8015/8020	
# 7*	20 Jun 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	SQA	EPA 8015/8020	
# 8*	20 Jun 90	<1.0	0.011	<0.005	0.025	0.0054	---	SQA	EPA 8015/8020	
# 9*	20 Jun 90	13	0.10	0.30	0.18	0.54	---	SQA	EPA 8015/8020	
#10*	20 Jun 90	160	2.9	13	4.4	19	---	SQA	EPA 8015/8020	
#11*	20 Jun 90	100	1.7	0.36	5.1	2.9	---	SQA	EPA 8015/8020	
#12*	20 Jun 90	57	2.8	7.7	1.4	9.0	---	SQA	EPA 8015/8020	
#13*	20 Jun 90	5.1	0.84	0.43	0.19	0.74	---	SQA	EPA 8015/8020	
#18*E	20 Jun 90	69	0.29	2.1	1.2	4.0	650	SQA	EPA 8015/8020/8010; SM 503 D&E; metals	
OP-W-7.0	02 Jul 90	130	<0.50	1.9	2.6	9.0	50	PACE	EPA 8015/8020; SM 503 D&E	
OPSW-5	02 Jul 90	3.6	0.06	0.12	0.06	0.19	<50	PACE	EPA 8015/8020; SM 503 D&E	
OPSC-5	02 Jul 90	800	1.9	28	17	68	850	PACE	EPA 8015/8020; SM 503 D&E	
02	19 Nov 90	<1.0	<0.005	<0.005	<0.005	<0.005	<50	PACE	EPA 8015/8020; SM 503 D&E	
04	19 Nov 90	<1.0	<0.005	<0.005	<0.005	<0.005	140	PACE	EPA 8015/8020; SM 503 D&E	
111-06	11 Jan 91	<1.0	<0.005	<0.005	<0.005	<0.005	60	PACE	EPA 8015/8020; SM 503 D&E	



TABLE 1. Analytic Results: Soil Excavation Samples (continued)
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

Sample ID #	Date	TPPHg	B	T	E	X	O&G	Lab	Analytical Methods
123-01	23 Jan 91	<1	<0.005	<0.005	<0.005	<0.005	<50	SAL	EPA 8015/8020; SM 503 D&E
123-02	23 Jan 91	<1	<0.005	<0.005	<0.005	<0.005	380	SAL	EPA 8015/8020; SM 503 D&E
0214.01	14 Feb 91	4	0.077	0.027	0.29	0.11	190	SAL	EPA 8015/8020 SM 503 A&E
0214.02	14 Feb 91	3	0.084	0.019	0.17	0.35	<50	SAL	EPA 8015/8020 SM 503 A&E
04291.01, 02 Comp	29 Apr 91	1	<0.005	<0.005	<0.005	0.013	---	SAL	EPA 8015/8020
04291.03, 04 Comp	29 Apr 91	<1	<0.005	<0.005	<0.005	0.005	---	SAL	EPA 8015/8020
04291.05, 06 Comp	29 Apr 91	3	0.045	0.051	0.023	0.086	---	SAL	EPA 8015/8020
04291.07, 08 Comp	29 Apr 91	1,100	4.2	48	24	84	---	SAL	EPA 8015/8020
05211-01, 02 Comp	21 May 91	25	0.41	2.2	0.69	2.3	---	SAL	EPA 8015/8020
05211-03, 04 Comp	21 May 91	210	0.57	6.4	3.6	12	---	SAL	EPA 8015/8020
05211-05, 06 Comp	21 May 91	26	0.06	0.48	0.54	1.7	---	SAL	EPA 8015/8020
05211-07, 08 Comp	21 May 91	56	0.17	1.9	1.3	4.6	---	SAL	EPA 8015/8020

TABLE 1. Analytic Results: Soil Excavation Samples (continued)
Former Chevron Service Station #90019
210 Grand Avenue
Oakland, California

NOTES:

All samples collected by Western Geologic Resources, Inc. unless noted

* = Samples collected by Blaine Tech Services, Inc.

TPPHg = Total Purgeable Petroleum Hydrocarbons as gasoline

B = Benzene

T = Toluene

E = Ethylbenzene

X = Total Xylenes

O&G = Oil and Grease

ppm = parts-per-million

SQA = Sequoia Analytical, Inc.

PACE = Pace, Inc.

SAL = Superior Analytical Laboratories, Inc.

< = Less than listed detection limit

--- = Not analyzed

A = <1.0 ppm total petroleum hydrocarbons as diesel (TPHd)

B = 180 ppm TPHd

C = 190 ppm TPHd, 0.140 ppm cis-1,2-dichloroethene (c-1,2-DCE), 0.052 ppm tetrachloroethene (PCE), 0.250 ppm 1,1,1-trichloroethane (TCA), 39 ppm chromium (Cr), 20 ppm lead (Pb), 43 ppm zinc (Zn)

D = <1.0 ppm TPHd, 0.026 ppm c-1,2-DCE, 41 ppm Cr, 3.1 ppm Pb, 26 ppm Zn

E = 140 ppm TPHd, 22 ppm Cr, 2.6 ppm Pb, 15 ppm Zn

Comp = Composite Sample

TABLE 2. Analytic Results: Soil Stockpile Samples
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

Sample ID #	Date	TPPHg	B	T	E	X	O&G	Lab	Analytical Methods	
		←-----ppm-----→								
#14(a-d)*	20 Jun 90	3.1	<0.005	0.0097	0.0088	0.025	---	SQA	EPA 8015/8020	
#15(a-d)*	20 Jun 90	11	<0.005	0.061	0.078	0.47	---	SQA	EPA 8015/8020	
#16(a-d)*A	20 Jun 90	960,000	14,000	99,000	31,000	120,000	6,400	SQA	EPA 8015/8020/8010; SM 503 D&E; metals	
#17(a-d)*B	20 Jun 90	290	0.33	6.3	4.7	31	---	SQA	EPA 8015/8020	
1-MC	2 Jul 90	130	<0.10	0.70	0.34	5.5	50	PACE	EPA 8015/8020; SM 503 D&E	
A-1	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020	
A-2	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020	
A-3	23 Jul 90	1.5	<0.005	<0.005	<0.005	0.009	---	PACE	EPA 8015/8020	
A-4	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020	
A-5	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020	
A-6	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020	
A-7	23 Jul 90	<1.0	<0.005	<0.005	<0.005	1.2	---	PACE	EPA 8015/8020	
A-8	23 Jul 90	1.9	<0.005	0.010	<0.005	<0.005	---	PACE	EPA 8015/8020	
A-9	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020	
A-10	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020	
A-11	23 Jul 90	5.3	<0.005	<0.005	0.037	0.054	---	PACE	EPA 8015/8020	
A-12	23 Jul 90	<1.0	<0.005	<0.005	<0.005	0.011	---	PACE	EPA 8015/8020	
A-13	23 Jul 90	6.7	<0.005	0.006	0.007	0.043	---	PACE	EPA 8015/8020	
A-14	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020	
A-15	23 Jul 90	4.9	<0.005	0.016	<0.050	0.020	---	PACE	EPA 8015/8020	
A-16	23 Jul 90	7.0	<0.005	0.017	<0.050	0.026	---	PACE	EPA 8015/8020	



TABLE 2. Analytic Results: Soil Stockpile Samples (continued)
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

Sample ID #	Date	TPPHg	B	T	E	X	O&G	Lab	Analytical Methods
-----> ppm <-----									
A-17	23 Jul 90	70	<0.005	0.13	0.26	0.87	---	PACE	EPA 8015/8020
A-18	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020
A-19	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020
A-20	23 Jul 90	<1.0	<0.005	<0.005	<0.005	<0.005	---	PACE	EPA 8015/8020
1A	17 Aug 90	<1.0	<0.005	<0.005	<0.005	<0.005	250	PACE	EPA 8015/8020 SM 503 D&E
2A	17 Aug 90	4.4	<0.005	<0.005	<0.005	0.016	600	PACE	EPA 8015/8020 SM 503 D&E
3A	17 Aug 90	5.2	<0.005	<0.005	<0.005	0.016	500	PACE	EPA 8015/8020 SM 503 D&E
4A	17 Aug 90	<1.0	<0.005	<0.005	<0.005	0.007	250	PACE	EPA 8015/8020 SM 503 D&E
5A	17 Aug 90	370	<0.50	4.24	2.97	26.2	6,350	PACE	EPA 8015/8020 SM 503 D&E
1B	17 Aug 90	1.9	<0.005	<0.005	<0.005	0.016	2,500	PACE	EPA 8015/8020 SM 503 D&E
2B	17 Aug 90	13	<0.005	<0.005	0.017	0.077	2,750	PACE	EPA 8015/8020 SM 503 D&E
3B	17 Aug 90	1.8	<0.005	<0.005	<0.005	0.013	1,200	PACE/SQA	EPA 8015/8020/8080/8240; metals; Aquatic Toxicity
4B	17 Aug 90	2.9	<0.005	<0.005	<0.005	0.019	2,850	PACE	EPA 8015/8020; SM 503 D&E
5B	17 Aug 90	1.3	<0.005	<0.005	<0.005	0.017	350	PACE	EPA 8015/8020; SM 503 D&E
1-C	20 Sep 90	---	---	---	---	---	---	GYEL	C
1	8 Oct 90	---	---	---	---	---	---	GYEL	D
111-01	11 Jan 91	6.7E	<0.020	<0.020	<0.020	0.024	160	PACE	EPA 8015/8020; SM 503 D&E
111-02	11 Jan 91	210E	<0.50	<0.50	<0.50	2.0	220	PACE	EPA 8015/8020; SM 503 D&E
111-03	11 Jan 91	6.7E	<0.020	<0.020	<0.020	0.023	<50	PACE	EPA 8015/8020; SM 503 D&E
111-04	11 Jan 91	36E	<0.10	<0.10	<0.10	<0.10	140	PACE	EPA 8015/8020; SM 503 D&E
111-05	11 Jan 91	43E	<0.10	<0.10	<0.10	0.13	<50	PACE	EPA 8015/8020; SM 503 D&E

TABLE 2. Analytic Results: Soil Stockpile Samples (continued)
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

Sample ID #	Date	TPPHg	B	T	E	X	O&G	Lab	Analytical Methods
219-01	19 Feb 91	---	---	---	---	---	<50	SAL	SH 503 A&E
219-02	19 Feb 91	---	---	---	---	---	B6	SAL	SH 503 A&E
07021-01	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-02	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-03	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-04	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-05	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-06	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-07	2 Jul 91	3	<0.005	<0.005	<0.005	0.012	---	SAL	EPA 8015/8020
07021-08	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-09	2 Jul 91	6	0.006	0.006	<0.005	0.026	---	SAL	EPA 8015/8020
07021-10	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-11	2 Jul 91	2	0.006	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-12	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-13	2 Jul 91	1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-14	2 Jul 91	2	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-15	2 Jul 91	2	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-16	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-17	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-18	2 Jul 91	2	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020
07021-19	2 Jul 91	2	<0.005	<0.005	<0.005	0.009	---	SAL	EPA 8015/8020
07021-20	2 Jul 91	<1	<0.005	<0.005	<0.005	<0.005	---	SAL	EPA 8015/8020

Handwritten notes and signatures, including a signature that appears to read "C. G. ...".



TABLE 2. Analytic Results: Soil Stockpile Samples (continued)
Former Chevron Service Station #90019
210 Grand Avenue
Oakland, California

NOTES:

All samples collected by Western Geologic Resources, Inc. unless noted

TPPHg = Total Purgeable Petroleum Hydrocarbons as gasoline

B = Benzene

T = Toluene

E = Ethylbenzene

X = Total Xylenes

O&G = Oil and Grease

ppm = parts-per-million

< = Less than listed detection limit

--- = Not analyzed

* = Samples collected by Blaine Tech Services, Inc.

A = 510 ppm total petroleum hydrocarbons as diesel (TPHd), 26 ppm chromium (Cr), 18 ppm lead (Pb)
44 ppm zinc (Zn)

B = Sample 3B analyzed by Sequoia Analytical for pesticides by EPA 8080, volatile organics by EPA 8240,
TTLIC and STLIC metals, and aquatic toxicity. Refer to laboratory analytical reports for results
(EPA 8080 & 8240 were below detection limits).

C = Analyzed for ignitability, reactivity and corrosivity. Refer to laboratory analytical reports for results.

D = Analyzed for semivolatile organics by EPA 8270 (below detection limits), and TCLP for arsenic (As)
barium (Ba), Cr, Pb, nickel (Ni) and vanadium (V) by EPA Method 3005/6010. Refer to laboratory analytical reports for results.

E = Sample contains hydrocarbons heavier than gasoline (possibly kerosene); results quantified as gasoline

SQA = Sequoia Analytical, Inc.

PACE = Pace, Inc.

GTEL = GTEL Environmental Laboratories, Inc.

SAL = Superior Analytical Laboratories, Inc.



TABLE 5. Wells Located Within One-Half Mile Radius
of Former Chevron Service Station #90019
210 Grand Avenue
Oakland, California

Map Location Number	Well Owner	Well Address	City	No. of Wells	Date Drilled	Use
1	Eagan & Co.	172 Santa Clara Street	Oakland	1	6/89	Mon.
2	Five City Center, City of Oakland	Crn of Clay & 14th Street	Oakland	3	9/88	Des.
3	PG&E	Adams & Lee Street	Oakland	1	8/74	Cat.
4	Ehler Contractors	225 27th Street	Oakland	3	6/89	Mon.
5	Quick Stop Mkts.	363 Grand Avenue	Oakland	4	11/88, 12/88	Mon.
6	Texaco Inc.	500 Grand Avenue	Oakland	2	3/89	Mon.
7	Shell Oil Co.	2800 Telegraph Avenue	Oakland	3	4/88	Mon.
8	Shell Oil Co.	2800 Telegraph Avenue	Oakland	4	10/88	Mon.
9	Shell Oil Co.	2800 Telegraph Avenue	Oakland	3	9/89	Mon.
9	Shell Oil Co.	2800 Telegraph Avenue	Oakland	3	7/89	Mon.
10	Shell Oil Co.	2800 Telegraph Avenue	Oakland	3	7/89	Mon.
10	Shell Oil Co.	2800 Telegraph Avenue	Oakland	1	10/89	Mon.
11	Shell Oil Co.	2800 Telegraph Avenue	Oakland	1	10/89	Mon.
11	Shell Oil Co.	2800 Telegraph Avenue	Oakland	3	1/89	Mon.
12	Broadway VW	2740 Broadway	Oakland	3	8/88	Mon.
13	Oakland Tribune	23rd & Valdez	Oakland	3	8/88	Mon.
14	Morrison & Forester	2302 Valdez Street	Oakland	4	8/89	Mon.
15	Texaco Station #62488000195	2225 Telegraph Avenue	Oakland	6	7/88	Mon.
16	Texaco Station #62488000195	2225 Telegraph Avenue	Oakland	6	12/88	Mon.
17	Carter-Hawley-Male	1911 Telegraph Avenue	Oakland	1	3/88	Test
18	Bank of America	21st Street & Broadway	Oakland	1	11/88	Mon.
19	Lakeside Corp (Bechtel)	244 Lakeside	Oakland	1	77	Irr.
20	Chevron	17th & Harrison NW	Oakland	3	10/88	Mon.
21	Chevron	17th & Harrison NW	Oakland	4	6/90	Mon.
22	Chevron	17th & Harrison NW	Oakland	5	4/89	Mon.

TABLE 5. Wells Located Within One-Half Mile Radius (continued)
of Former Chevron Service Station #90019
210 Grand Avenue
Oakland, California

NOTES:

- Wells = 40 in 1/2-mile radius
- Total = 58
- Mon. = Monitor well
- Cat. = Cathodic Protection
- Test = Test well
- Irr. = Irrigation well
- Des. = Destroyed

Table 5. Water Wells Within a One-Half Mile Radius of Chevron SS# 90019
Oakland, CA

No.	Owner	Owner's Address	Well Location	Year Drilled	Use
1.	PG&E	4801 Oakport Street Oakland, CA	Adams & Lee Streets Oakland, CA	1974	Cathodic Protection
2-4.	Shell Oil Company	2800 Telegraph Ave. Oakland, CA	NE corner of Telegraph and 28th Street Oakland, CA	1988	Monitoring
5-8.	Texaco USA	10 Universal City Plaza Los Angeles, CA	W Corner of Intersection of Grand & Telegraph	1988	Monitoring
9.	B.P.O.E.	SE corner of 20th and Broadway	same	?	?
10.	Leamington Hotel	19th & Franklin	same	?	?
11.	Raymond Hotel	1461 Alice Street	same	?	?
12.	Lakeside Corp (Bechtel)	244 Lakeside	100'NW of Jackson 200'SW of Lakeside	1977	Irrigation

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Gasoline	Benzene	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE
MW-1																		
03/14/89	9.63	2.89	6.74	--	600	<0.2	<0.2	3.2	1.7	<3000	1.0	<0.2	<20	<0.2	--	--	--	--
06/08/89	9.63	2.49	7.14	--	<50	<0.1	<0.5	<0.1	<0.2	--	<0.5	<0.1	<20	<0.1	--	--	--	--
09/14/89	9.63	2.42	7.21	--	<50	<0.2	<1.0	<0.2	<0.4	--	<1.0	<0.2	<1.0	0.7	--	--	--	--
12/08/89	9.63	2.34	7.29	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--
03/19/90	9.63	2.63	7.00	--	190	0.8	<0.3	7.0	3.0	--	<0.5	<0.5	--	<0.5	--	--	--	--
07/06/90	9.63	2.50	7.13	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--
10/03/90	9.63	2.10	7.53	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--
08/23/91	9.63	2.57	7.06	--	150	5.0	11	3.5	10	--	<0.5	<0.5	--	<0.5	--	--	--	--
11/22/91	9.63	2.16	7.47	--	86	7.2	11	2.9	13	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--
02/26/92	9.63	2.94	6.69	--	<50	<0.5	<0.5	<0.5	1.4	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--
05/22/92	9.63	2.67	6.96	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--
09/29/92	9.63	2.44	7.19	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--
12/23/92	9.63	2.60	7.03	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
03/22/93	9.63	3.03	6.60	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
06/07/93	9.63	2.66	6.97	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
09/10/93	9.63	2.55	7.08	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
03/07/94	9.63	2.80	6.83	--	<50	<0.5	<0.5	<0.5	1.0	--	--	--	--	--	--	--	--	--
06/16/94	9.63	2.60	7.03	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
09/08/94	9.63	2.53	7.10	--	<50	1.3	1.5	<0.5	1.7	--	--	--	--	--	--	--	--	--
11/29/94	9.63	2.81	6.82	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
03/21/95	9.63	3.73	5.90	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
06/27/95	9.63	2.69	6.94	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
09/27/95	9.63	2.13	7.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/29/95	--	--	--	Abandoned	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Gasoline	Benzene	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE	
MW-2																			
03/14/89	8.99	2.91	6.08	--	<100	6.7	7.1	0.5	4.6	<3000	<1.0	0.7	<20	<0.2	--	--	--	--	
06/08/89	8.99	3.77	5.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
06/09/89	8.99	--	--	--	<100	<0.2	<1.0	<0.2	<0.4	--	<1.0	<0.2	<20	<0.2	--	--	--	--	
09/14/89	8.99	3.04	5.95	--	<50	<0.2	<1.0	<0.2	<0.4	--	<1.0	<0.2	<1.0	<0.2	--	--	--	--	
12/08/89	8.99	-0.26	9.25	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--	
03/19/90	8.99	3.07	5.92	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--	
07/06/90	9.01	2.22	6.79	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--	
10/03/90	9.01	--	--	--	--	--	--	--	--	--	<0.5	<0.5	--	<0.5	--	--	--	--	
08/23/91	9.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
11/15/91	9.01	--	--	Well Destroyed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Gasoline	Benzene	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE	
MW-3																			
03/14/89	8.19	2.16	6.02	--	<100	2.1	0.8	<0.2	2.0	<3000	<1.0	3.0	<20	<0.2	--	--	--	--	
06/08/89	8.19	2.30	5.88	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
06/09/89	8.19	--	--	--	<100	<0.5	<1.0	<0.2	<0.4	--	<1.0	3.3	<20	<0.2	--	--	--	--	
09/14/89	8.19	1.88	6.30	--	<50	<0.2	<1.0	<0.2	<0.4	--	<1.0	2.2	<1.0	<0.2	--	--	--	--	
12/08/89	8.19	-1.34	9.52	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	1.3	--	<0.5	--	--	--	--	
03/19/90	8.19	2.01	6.17	--	<50	<0.3	<0.3	<0.3	<0.6	--	0.5	1.3	--	<0.5	--	--	--	--	
07/06/90	8.19	0.67	7.52	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--	
10/03/90	8.19	0.88	7.31	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	0.83	--	<0.5	--	--	--	--	
08/23/91	8.19	2.53	5.65	--	220	16	22	5.5	16	--	<0.5	0.6	--	<0.5	--	--	--	--	
11/22/91	8.19	1.41	6.78	--	<50	<0.5	<0.5	<0.5	0.6	--	0.6	1.0	<0.5	<0.5	--	--	--	--	
02/26/92	8.19	3.54	4.65	--	<50	4.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
05/22/92	8.19	2.63	5.56	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
09/29/92	8.19	1.96	6.23	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
12/23/92	8.19	2.37	5.82	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
03/22/93	8.19	3.27	4.92	--	<50	7.0	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
06/07/93	8.19	2.50	5.69	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
09/10/93	8.19	2.15	6.04	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
03/07/94	8.19	3.04	5.15	--	<50	1.0	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
06/16/94	8.19	2.30	5.89	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
09/08/94	8.19	2.13	6.06	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	1.0	--	--	--	
11/29/94	8.19	3.00	5.19	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
03/21/95	8.19	4.43	3.76	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
06/27/95	8.19	3.09	5.10	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
09/27/95	8.19	2.94	5.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12/29/95	--	--	--	Abandoned	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Benzene Gasoline	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE
MW-4																	
03/14/89	7.60	2.08	5.52	--	3000	810	200	30	130	<3000	<20	<5.0	<20	<5.0	--	--	--
06/08/89	7.60	3.41	4.19	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/09/89	7.60	--	--	--	900	440	13	22	40	--	<20	<5.0	60	<5.0	--	--	--
09/14/89	7.60	2.80	4.80	--	540	220	2.0	6.1	9.3	--	<1.0	2.3	<1.0	<0.2	--	--	--
12/08/89	7.60	2.74	4.86	--	150	18	<0.3	1.0	<0.6	--	<0.5	1.9	--	<0.5	--	--	--
03/19/90	7.60	2.95	4.65	--	270	50	<0.3	0.7	<0.6	--	<0.5	0.8	--	<0.5	--	--	--
07/06/90	7.59	1.17	6.42	--	140	0.7	<0.3	0.5	<0.6	--	<0.5	0.79	--	<0.5	--	--	--
10/03/90	7.59	1.20	6.39	--	180	<0.3	<0.3	2.0	<0.6	--	<0.5	0.5	--	<0.5	--	--	--
08/23/91	7.59	3.17	4.42	--	400	9.9	6.8	3.1	7.1	--	<0.5	<0.5	--	<0.5	--	--	--
11/22/91	7.59	2.21	5.38	--	130	3.4	1.3	3.5	6.0	--	<0.5	<0.5	<0.5	<0.5	--	--	--
02/26/92	7.59	4.94	2.65	--	520	15	2.7	6.1	8.6	--	<0.5	<0.5	<0.5	<0.5	--	--	--
05/22/92	7.59	3.63	3.96	--	460	20	2.8	5.0	6.9	--	<0.5	<0.5	<0.5	<0.5	--	--	--
09/29/92	7.59	2.91	4.68	--	160	1.1	1.7	0.8	2.8	--	<0.5	<0.5	--	<0.5	--	--	--
12/23/92	7.59	3.96	3.63	--	110	0.7	0.5	0.9	1.7	--	--	--	--	--	--	--	--
03/22/93	7.59	4.69	2.90	--	930	9.0	3.0	7.0	8.0	--	--	--	--	--	--	--	--
06/07/93	7.59	3.70	3.89	--	240	2.0	0.9	3.0	3.0	--	--	--	--	--	--	--	--
09/10/93	7.59	3.07	4.52	--	<50	<0.5	<0.5	0.8	<0.5	--	--	--	--	--	--	--	--
03/07/94	7.59	4.44	3.15	--	550	3.0	3.0	8.0	12	--	--	--	--	--	--	--	--
06/16/94	7.59	3.51	4.08	--	150	<0.5	0.6	1.5	0.7	--	--	--	--	--	--	--	--
09/08/94	7.59	3.04	4.55	--	<50	<0.5	<0.5	<0.5	1.2	--	--	--	--	--	--	--	--
11/29/94	7.59	4.74	2.85	--	130	<0.5	1.1	<0.5	0.58	--	--	--	--	--	--	--	--
03/21/95	7.59	5.89	1.70	--	720	2.2	<2.0	5.9	<2.0	--	--	--	--	--	--	--	--
06/27/95	7.59	4.21	3.38	--	100	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
09/27/95	7.59	3.84	3.75	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
12/29/95	7.59	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--
10/10/96	7.59	3.71	3.88	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
12/19/96	7.59	2.53	5.06	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
03/22/97	7.59	3.42	4.17	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
06/29/97	10.03	5.76	4.27	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
09/12/97	10.03	5.61	4.42	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
12/05/97	10.03	5.57	4.46	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
02/21/98	10.03	5.92	4.11	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
08/17/98	10.03	5.61	4.42	--	120	5.4	7.8	3.0	28	--	--	--	--	--	--	--	7.4
03/11/99	10.03	5.69	4.34	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.0
09/28/99	10.03	4.50	5.53	*	<50	<0.5	0.69	<0.5	0.901	--	--	--	--	--	--	--	<5.0

*See Table of Additional Analyses.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Gasoline	Benzene	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE	
MW-5																			
03/14/89	8.35	1.37	6.98	--	20,000	6600	1600	270	1100	<3000	<100	<20	<20	<20	--	--	--	--	
06/08/89	8.35	3.62	4.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
06/09/89	8.35	--	--	--	15,000	>2800	270	240	640	--	<20	28	<20	<5.0	--	--	--	--	
06/09/89	8.35	--	--	Duplicate	12,000	5100	300	240	700	--	<200	<50	<20	<50	--	--	--	--	
09/14/89	8.35	2.98	5.37	--	15,000	>730	>320	>290	440	--	<10	<2.0	<20	<2.0	--	--	--	--	
09/14/89	8.35	--	--	Duplicate	15,000	3300	450	490	730	--	<100	<20	100	<20	--	--	--	--	
09/14/89	8.35	--	--	Triplicate	16,000	3100	550	400	690	--	<50	<10	<50	<10	--	--	--	--	
12/08/89	8.35	-0.78	9.13	--	20,000	4600	640	390	1300	--	<0.5	27	--	<0.5	--	--	--	--	
03/19/90	8.35	3.23	5.12	--	25,000	6500	1200	450	2200	--	<0.5	10	--	0.7	--	--	--	--	
07/06/90	8.35	2.54	5.81	--	30,000	5600	890	210	1400	--	<0.5	<0.5	--	<0.5	1.2	--	--	--	
10/03/90	8.35	1.45	6.90	--	29,000	6000	790	270	1500	--	<0.5	<0.5	--	<0.5	--	2.0	--	--	
08/23/91	8.35	3.30	5.05	--	36,000	6100	1200	460	2600	--	<0.5	3.9	--	<0.5	--	0.9	--	--	
11/22/91	8.35	2.10	6.25	--	21,000	8000	1500	530	2600	--	<0.5	3.9	<0.5	<0.5	1.0	0.8	--	--	
02/26/92	8.35	5.35	3.00	--	43,000	14,000	1600	640	4700	--	<0.5	2.0	<0.5	<0.5	--	--	--	--	
05/22/92	8.35	3.86	4.49	--	72,000	18,000	8100	920	10,000	--	<0.5	6.8	<0.5	<0.5	--	--	--	--	
09/29/92	8.35	3.50	4.85	--	54,000	14,000	1400	740	8100	--	<0.5	4.4	--	<0.5	--	--	--	--	
12/23/92	8.35	4.77	3.58	--	38,000	8400	910	530	5300	--	<0.5	2.9	--	<0.5	--	--	--	--	
03/22/93	8.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
06/07/93	8.35	-3.82	12.17	--	24,000	3000	280	360	1200	--	<0.5	<0.5	--	<0.5	--	--	--	--	
09/10/93	8.35	-0.15	8.50	--	8900	860	160	100	320	--	<5.0	<5.0	--	<5.0	--	--	--	--	
03/07/94	8.35	5.30	3.05	--	9600	2100	380	120	290	--	<12.5	<12.5	--	<12.5	--	--	--	--	
06/16/94	8.35	2.64	5.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
07/08/94	8.35	2.43	5.92	--	10,000	3600	360	210	460	--	<0.5	<0.5	--	<0.5	1.2	--	2.0	--	
09/08/94	8.35	3.04	5.31	--	14,000	2800	270	170	360	--	<0.5	2.8	--	<0.5	--	--	--	--	
11/29/94	8.35	5.72	2.63	--	11,000	2800	280	130	300	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	
03/21/95	8.35	7.41	0.94	--	6700	1400	120	100	260	--	<0.5	0.59	<0.5	<0.5	<0.5	<0.5	--	--	
06/27/95	8.35	6.01	2.34	--	18,000	6100	480	600	990	--	<10	<10	<10	<10	<10	<10	--	--	
09/27/95	8.35	4.65	3.70	--	15,000	3600	140	210	310	--	<25	<25	<25	<25	<25	<25	--	--	
12/29/95	8.35	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
10/10/96	8.35	4.31	4.04	--	5700	1800	53	530	84	--	--	--	--	--	--	--	--	<100	

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Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	TOG	Chloro-form	1,2-DCA	Freon	1,1,1-TCA	PCE	1,2-DCPA	1,2-DCE	MTBE	
MW-5 (CONT'D)																			
12/19/96	8.35	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/22/97	8.35	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/03/97	--	--	4.46	--	21,000	6800	4100	610	1900	--	--	--	--	--	--	--	--	--	530
06/29/97	10.99	5.90	5.09	--	16,000	5300	1900	530	1600	--	--	--	--	--	--	--	--	--	<250
09/12/97	10.99	5.98	5.01	--	6100	1900	510	120	390	--	--	--	--	--	--	--	--	--	<25
12/05/97	10.99	5.36	5.63	--	52,000	11,000	7700	1400	3600	--	--	--	--	--	--	--	--	--	920
02/21/98	10.99	6.34	4.65	--	55,000	13,000	11,000	450	3300	--	--	--	--	--	--	--	--	--	1200
06/24/98	10.99	5.51	5.48	ORC Installed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
08/17/98	10.99	6.05	4.94	--	5700	4100	1500	210	81	--	--	--	--	--	--	--	--	--	<50
03/11/99	10.99	6.09	4.90	--	11,400	1590	2610	351	1200	--	--	--	--	--	--	--	--	--	58.2
09/28/99	10.99	5.45	5.54	*	21,300	3250	3830	656	1450	--	--	--	--	--	--	--	--	--	<500

* See Table of Additional Analyses.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Benzene Gasoline	Benzene	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE
MW-6																		
07/06/90	6.56	-2.53	9.09	--	210	<0.3	<0.3	3.0	7.0	--	<0.5	<0.5	--	<0.5	--	--	--	--
10/03/90	6.56	0.78	5.78	--	320	<0.3	0.3	1.0	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--
08/23/91	6.56	-0.93	7.49	--	320	1.7	<0.5	2.1	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--
11/22/91	6.56	-1.07	7.63	--	190	1.9	2.2	5.4	7.7	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--
02/26/92	6.56	1.01	5.55	--	120	2.0	1.5	3.5	5.1	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--
05/22/92	6.56	-0.38	6.94	--	160	1.1	0.6	0.9	1.0	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--
09/29/92	6.56	-0.24	6.80	--	65	0.5	1.4	0.5	0.64	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--
12/23/92	6.56	0.57	5.99	--	140	0.7	0.7	0.9	2.1	--	--	--	--	--	--	--	--	--
03/22/93	6.56	-0.51	7.07	--	71	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
06/07/93	6.56	-1.05	7.61	--	85	<0.5	<0.5	2.0	1.0	--	--	--	--	--	--	--	--	--
09/10/93	6.56	1.88	4.68	--	<50	<0.5	<0.5	1.0	<0.5	--	--	--	--	--	--	--	--	--
03/07/94	6.56	1.34	5.22	--	<50	<0.5	<0.5	<0.5	0.8	--	--	--	--	--	--	--	--	--
06/16/94	6.56	2.39	4.17	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
09/08/94	6.56	1.96	4.60	--	70	<0.5	0.6	<0.5	2.3	--	--	--	--	--	--	--	--	--
11/29/94	6.56	0.03	6.53	--	120	<0.5	<0.5	1.3	<0.5	--	--	--	--	--	--	--	--	--
03/21/95	6.56	-0.47	7.03	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
06/27/95	6.56	0.20	6.36	--	84	<0.5	<0.5	<0.5	1.1	--	--	--	--	--	--	--	--	--
09/27/95	6.56	2.21	4.35	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--
12/29/95	6.56	0.41	6.15	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	3.2
03/28/96	6.56	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/04/96	6.56	2.75	3.81	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5
06/21/96	6.56	1.64	4.92	--	130	<0.5	<0.5	<0.5	0.66	--	--	--	--	--	--	--	--	<2.5
09/26/96	6.56	-0.18	6.74	--	130	<0.5	0.52	0.92	1.0	--	--	--	--	--	--	--	--	<2.5
12/19/96	6.56	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/22/97	6.56	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--	--
06/29/97	10.23	3.45	6.78	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5
09/12/97	10.23	3.97	6.26	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5
12/05/97	10.23	3.95	6.28	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5
02/21/98	10.23	3.88	6.35	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5
08/17/98	10.23	4.33	5.90	No longer sampled	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/11/99	10.23	4.88	5.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/28/99	10.23	4.61	5.62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Benzene Gasoline	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE
MW-7																	
07/06/90	4.99	-0.86	5.85	--	<50	<0.3	<0.3	<0.3	<0.6	<1000	<0.5	<0.5	--	<0.5	--	--	--
10/03/90	4.99	-1.26	6.25	--	<50	<1.5	<1.5	<1.5	<3.0	--	<0.5	<0.5	--	<0.5	--	--	--
08/23/91	4.99	-0.51	5.50	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--
11/22/91	4.99	-0.74	5.73	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--
02/26/92	4.99	0.15	4.84	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--
05/22/92	4.99	0.10	4.89	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--
09/29/92	4.99	-0.56	5.55	--	<50	<0.5	<0.5	<0.5	0.6	--	<0.5	<0.5	--	<0.5	--	--	--
12/23/92	4.99	0.12	4.87	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
03/22/93	4.99	0.94	4.05	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
06/07/93	4.99	0.36	4.63	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
09/10/93	4.99	-0.57	5.56	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
03/07/94	4.99	0.34	4.65	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
06/16/94	4.99	-0.08	5.07	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
09/08/94	4.99	-0.34	5.33	--	250	34	40	4.4	26	--	--	--	--	--	--	--	--
11/29/94	4.99	0.12	4.87	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
03/21/95	4.99	1.31	3.68	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
06/27/95	4.99	0.53	4.46	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--
12/29/95	4.99	1.24	3.75	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
03/28/96	4.99	1.74	3.25	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
06/21/96	4.99	0.66	4.33	--	<50	<0.5	1.2	<0.5	<0.5	--	--	--	--	--	--	--	5.3
09/26/96	4.99	0.04	4.95	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
12/19/96	4.99	1.81	3.18	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
03/22/97	4.99	2.26	2.73	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
06/29/97	8.08	4.04	4.04	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
09/12/97	8.08	6.04	2.04	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
12/05/97	8.08	5.68	2.40	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	<2.5
02/21/98	8.08	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--
08/17/98	8.08	3.46	4.62	No longer sampled	--	--	--	--	--	--	--	--	--	--	--	--	--
03/11/99	8.08	6.33	1.75	--	--	--	--	--	--	--	--	--	--	--	--	--	--
09/28/99	8.08	6.29	1.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Gasoline	Benzene	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE	
MW-8																			
07/06/90	6.77	2.79	3.98	--	<50	<0.3	<0.3	<0.3	<0.6	<1000	<0.5	<0.5	--	<0.5	--	--	--	--	
10/03/90	6.77	2.04	4.73	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--	
08/23/91	6.77	2.01	4.76	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
11/22/91	6.77	1.04	5.73	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
02/26/92	6.77	2.47	4.30	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
05/22/92	6.77	3.11	3.66	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
09/29/92	6.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12/23/92	6.77	3.94	2.83	--	<50	<0.5	7.2	0.6	2.5	--	--	--	--	--	--	--	--	--	
03/22/93	6.77	2.39	4.38	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
06/07/93	6.77	1.60	5.17	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
09/10/93	6.77	1.61	5.16	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
03/07/94	6.77	2.06	4.71	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
06/16/94	6.77	2.62	4.15	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
09/08/94	6.77	1.66	5.11	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
11/29/94	6.77	1.94	4.83	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
03/21/95	6.77	0.94	5.83	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
06/27/95	6.77	0.57	6.20	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
09/27/95	6.77	1.62	5.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12/29/95	6.77	2.22	4.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
03/28/96	6.77	2.55	4.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
06/21/96	6.77	3.41	3.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
09/26/96	6.77	2.65	4.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12/19/96	6.77	3.83	2.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
03/22/97	6.77	3.88	2.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
06/29/97	9.88	6.92	2.96	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
09/12/97	9.88	7.11	2.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12/05/97	9.88	7.16	2.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
02/21/98	9.88	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

NO LONGER MONITORED OR SAMPLED

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Gasoline	Benzene	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE	
MW-9																			
07/06/90	7.63	3.02	4.61	--	<50	<0.3	<0.3	<0.3	<0.6	<1000	<0.5	<0.5	--	<0.5	--	--	--	--	
10/03/90	7.63	2.49	5.14	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--	
08/23/91	7.63	2.18	5.45	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
11/22/91	7.63	2.15	5.48	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
02/26/92	7.63	5.00	2.63	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
05/22/92	7.63	3.63	4.00	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	
09/29/92	7.63	2.93	4.70	--	<50	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	--	--	--	--	
12/23/92	7.63	3.87	3.76	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
03/22/93	7.63	5.52	2.11	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
06/07/93	7.63	4.35	3.28	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
09/10/93	7.63	2.45	5.18	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
03/07/94	7.63	4.61	3.02	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
06/16/94	7.63	3.50	4.13	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
09/08/94	7.63	2.84	4.79	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
11/29/94	7.63	3.71	3.92	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
03/21/95	7.63	0.14	7.49	In suff. water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
06/27/95	7.63	5.73	1.90	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
09/27/95	7.63	3.68	3.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12/29/95	7.63	5.08	2.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
03/28/96	7.63	5.43	2.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
06/21/96	7.63	4.98	2.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
09/26/96	7.63	4.27	3.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12/19/96	7.63	5.02	2.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
03/22/97	7.63	5.30	2.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
06/29/97	10.74	7.85	2.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
09/12/97	10.74	7.33	3.41	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
12/05/97	10.74	8.00	2.74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
02/21/98	10.74	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

NO LONGER MONITORED OR SAMPLED

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Gasoline	Benzene	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE	
TRIP BLANK																			
12/08/89	--	--	--	--	<100	<0.1	<0.2	<0.1	<0.2	--	<0.5	<0.1	--	<0.1	--	--	--	--	
06/09/89	--	--	--	--	<50	<0.5	<0.5	<0.1	<0.2	--	<0.5	<0.1	<20	<0.1	--	--	--	--	
09/14/89	--	--	--	--	<50	<0.1	<0.5	<0.1	<0.2	--	<0.5	<0.1	<0.5	<0.1	--	--	--	--	
12/08/89	--	--	--	--	<50	<0.3	<0.3	<0.3	<0.6	--	4.4	<0.5	--	1.9	--	--	--	--	
03/19/90	--	--	--	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--	
07/06/90	--	--	--	--	<50	<0.3	<0.3	<0.3	<0.6	--	<0.5	<0.5	--	<0.5	--	--	--	--	
10/03/90	--	--	--	--	<50	<0.3	<0.3	<0.3	1.0	--	<0.5	<0.5	--	<0.5	--	--	--	--	
08/23/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
11/22/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	<0.5	--	--	--	--	--	
02/26/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
05/22/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
09/29/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
12/23/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
03/22/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
06/07/93	--	--	--	--	<50	<0.5	<0.5	<0.5	1.0	--	--	--	--	--	--	--	--	--	
09/10/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
03/07/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
06/16/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
09/08/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
11/29/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
03/21/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
06/27/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
09/27/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
12/29/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
03/28/96	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
06/21/96	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5	
09/26/96	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	--	
12/19/96	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5	
03/22/97	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5	
06/29/97	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5	

CONTINUED ON NEXT PAGE

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet.

Analytical results are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth To Water	Notes	TPH- Gasoline	Benzene	Toluene	Ethyl- Benzene	Xylene	TOG	Chloro- form	1, 2- DCA	Freon	1, 1, 1- TCA	PCE	1, 2- DCPA	1, 2- DCE	MTBE
TRIP BLANK (CONT'D)																		
09/12/97	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5
12/05/97	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5
02/21/98	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5
08/17/98	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.5
03/11/99	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<2.0
09/28/99	--	--	--	*	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--	--	<5.0

* See Table of Additional Analyses.

ADDITIONAL ANALYSES

Analytical values are in parts per billion (ppb)

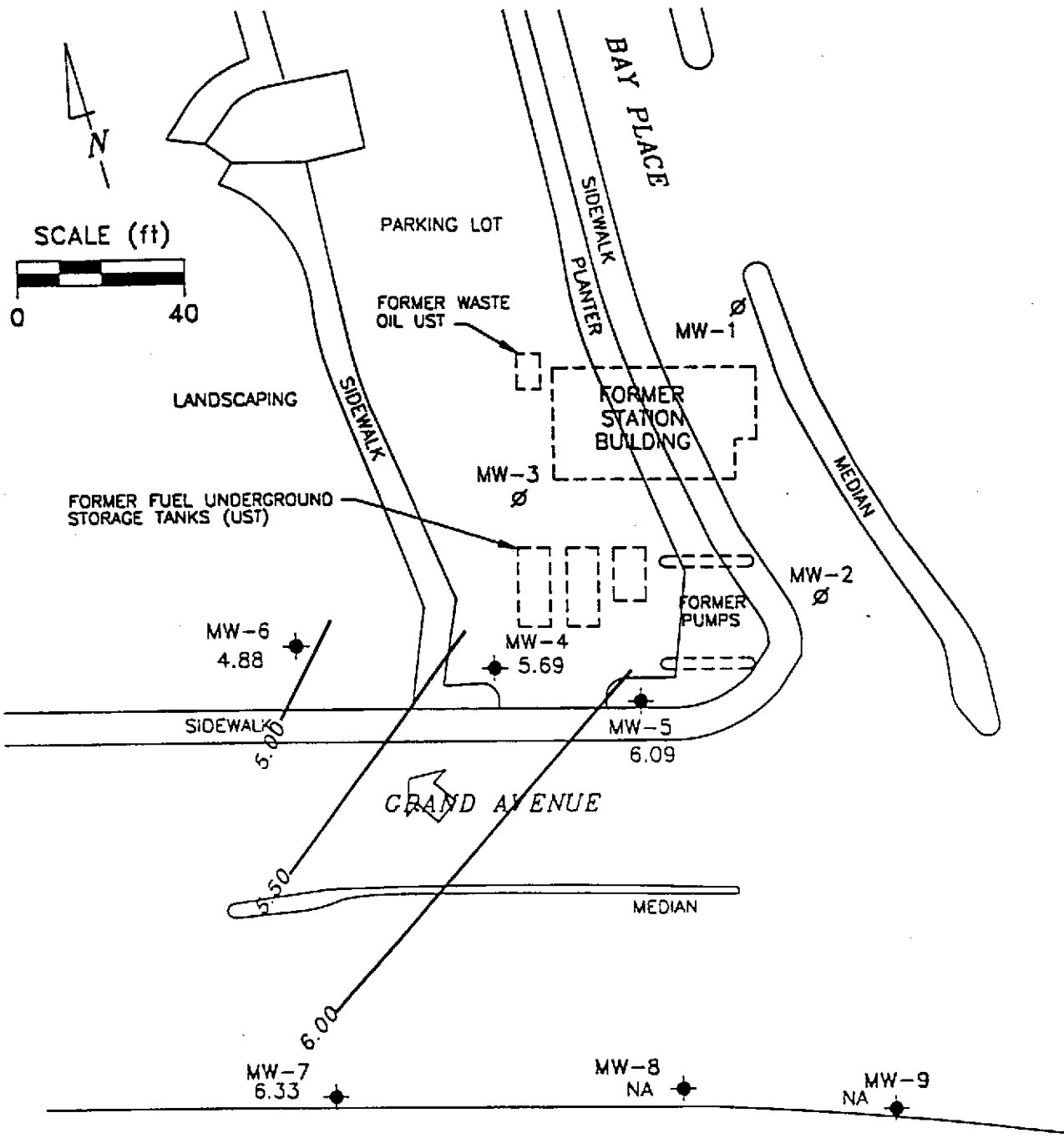
DATE	Notes	Ethanol	t- Butanol	MTBE	DIPE	ETBE	TAME
MW-4 09/28/99		<1000	<200	<2.0	<2.0	<2.0	<2.0
MW-5 09/28/99		<20,000	<4000	<40	<40	<40	<40
TB 09/28/99		<1000	<200	<2.0	<2.0	<2.0	<2.0

Note: Blaine Tech Services, Inc. began routine monitoring of the groundwater wells at this site on November 1, 1994. Earlier field data and analytical results are drawn from the September 27, 1994 Groundwater Technology, Inc. report. Resurvey of wells was performed by Ron Archer Civil Engineer Inc. on July 22, 1997.

ABBREVIATIONS:

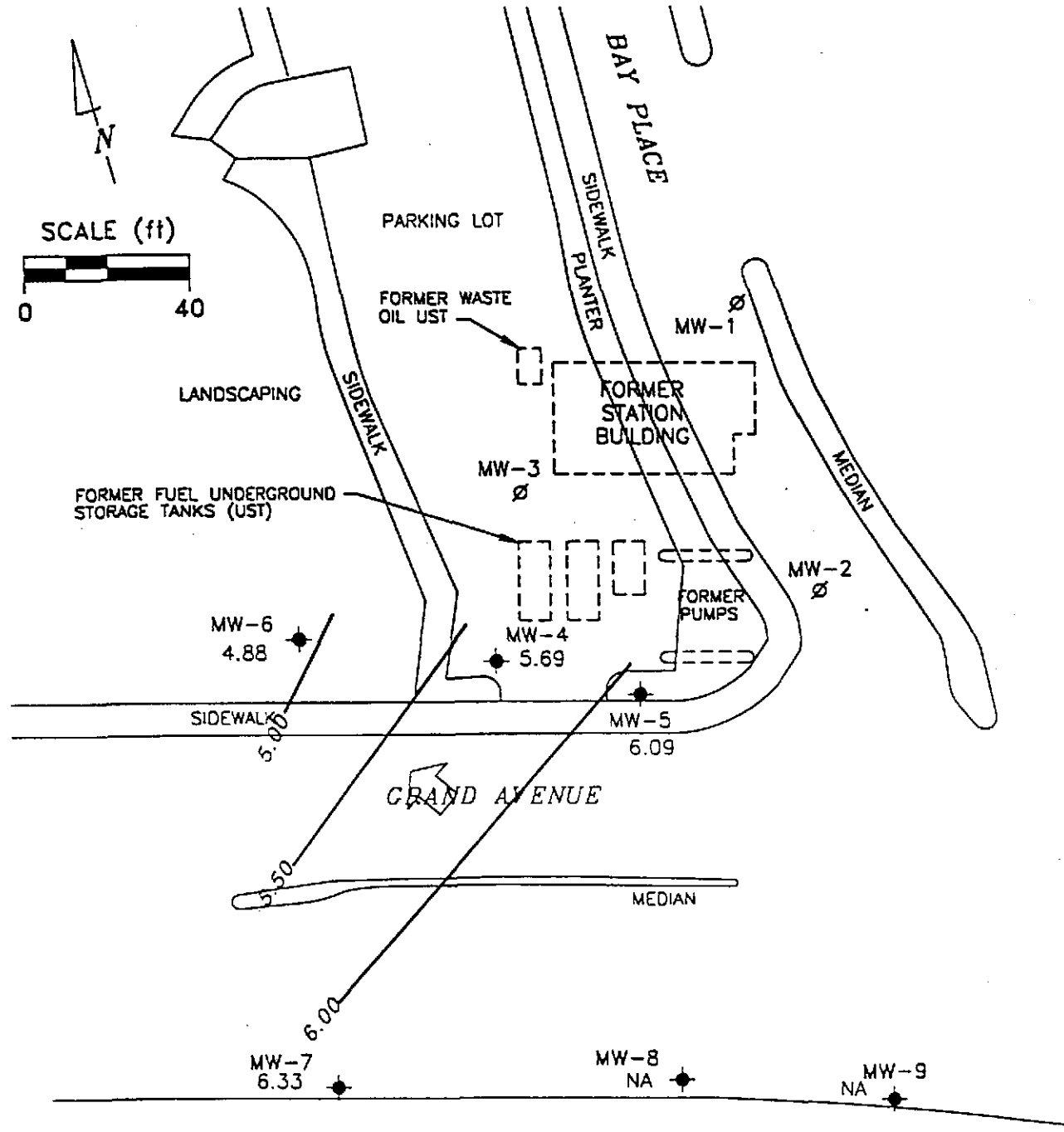
TPH = Total Petroleum Hydrocarbons
 TOG = Total Oil and Grease
 1,2-DCA = 1,2-Dichloroethane
 1,1,1-TCA = 1,1,1-Trichloroethane
 DIPE = Di-Isopropyl ether
 ETBE = Ethyl tert-butyl ether

PCE = Trichloroethene
 1,2-DCPA = 1,2-Dichloropropane
 1,2-DCE = 1,2-Dichloroethene
 MTBE = Methyl t-butyl Ether
 TAME = Tert-amyl methyl ether



Ref. 0019-gm3.dwg

PREPARED BY RRM engineering contracting firm	Former Chevron Station 9-0019 210 Grand Avenue Oakland, California	FIGURE: 1
	GROUNDWATER ELEVATION CONTOUR MAP, MARCH 11, 1999	PROJECT: DAC04

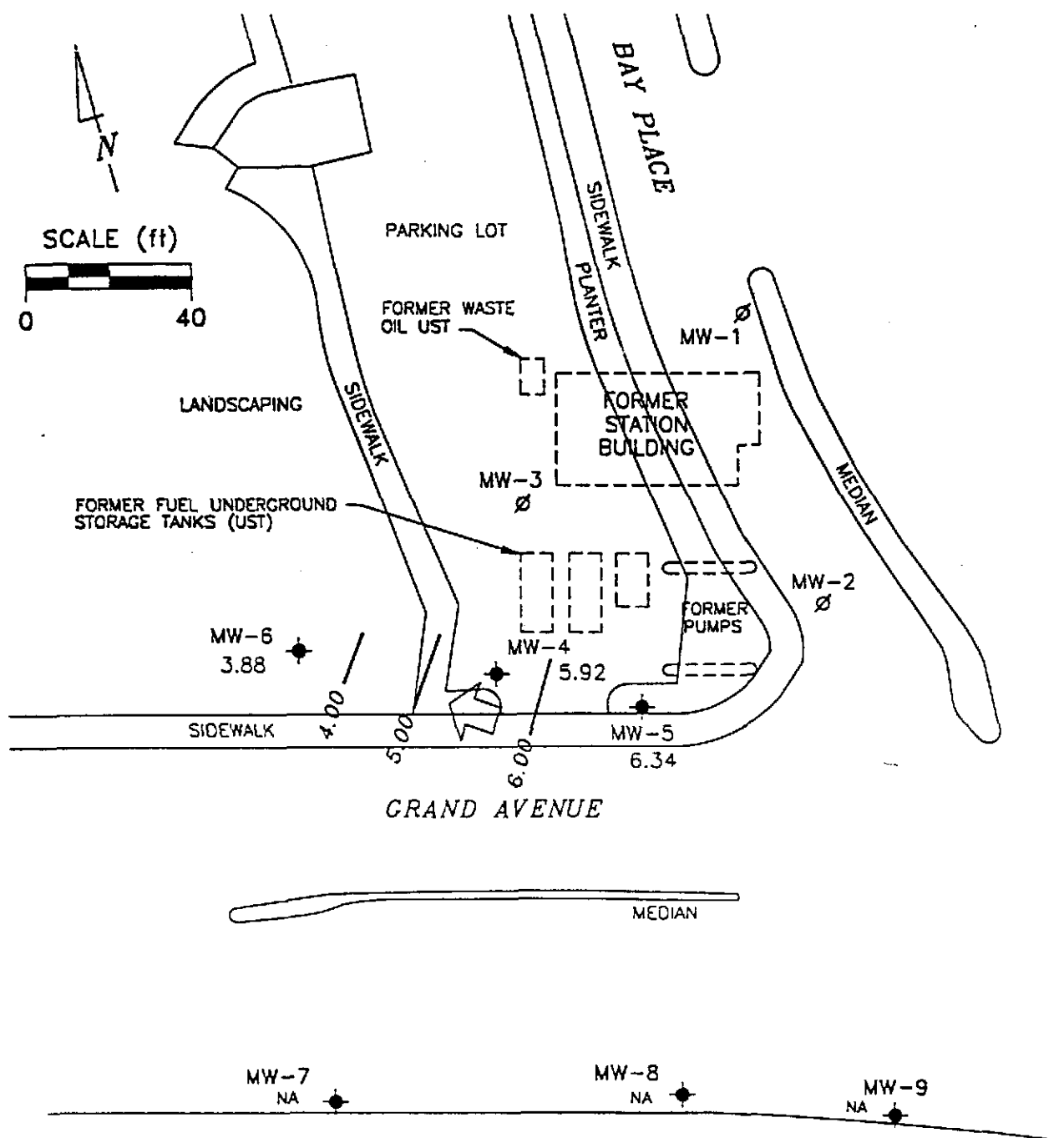


- EXPLANATION**
- MONITORING WELL
 - Ø ABANDONED OR DESTROYED MONITORING WELL
 - 6.33 GROUNDWATER ELEVATION (FT. MSL)
 - 5.00 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
 - NA DATA NOT AVAILABLE
 - ↖ APPROXIMATE GROUNDWATER FLOW DIRECTION;
APPROXIMATE GRADIENT = 0.02



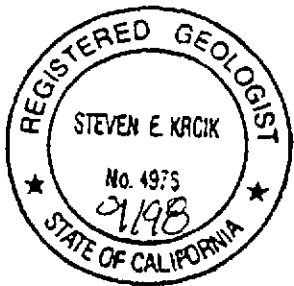
Ref. 0019-qm3.dwg

PREPARED BY 	Former Chevron Station 9-0019 210 Grand Avenue Oakland, California	FIGURE: 1
	GROUNDWATER ELEVATION CONTOUR MAP, MARCH 11, 1999	PROJECT: DAC04



EXPLANATION

- MONITORING WELL
- ∅ ABANDONED OR DESTROYED MONITORING WELL
- 5.92 GROUNDWATER ELEVATION (FT. MSL)
- 5.00 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- NA DATA NOT AVAILABLE
- ↗ APPROXIMATE GROUNDWATER FLOW DIRECTION;
APPROXIMATE GRADIENT = 0.02



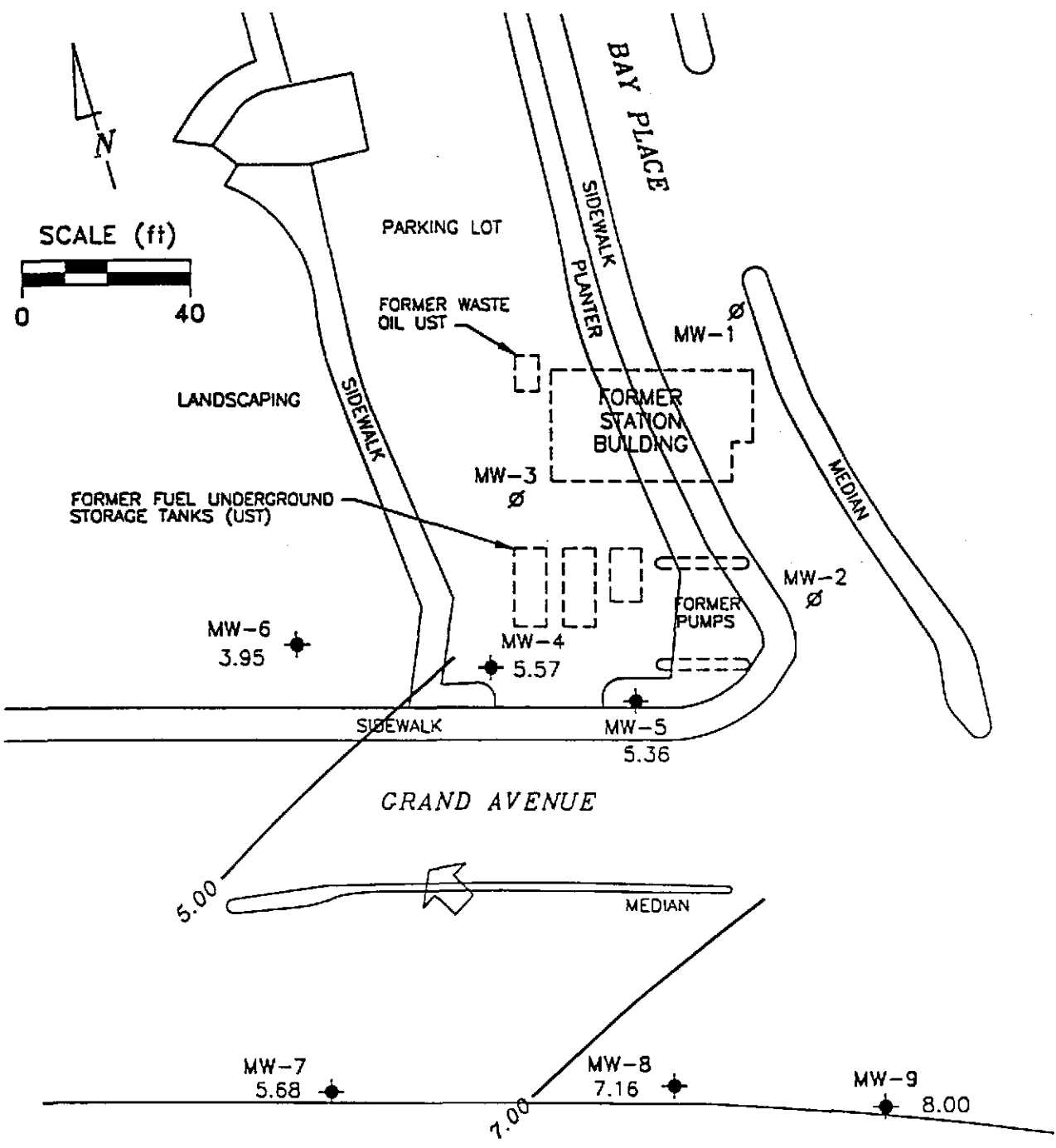
PREPARED BY



Former Chevron Station 9-0019
210 Grand Avenue
Oakland, California

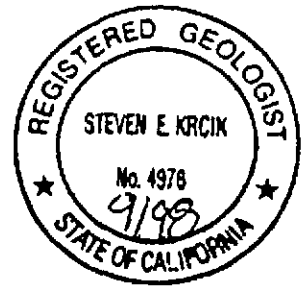
GROUNDWATER ELEVATION CONTOUR MAP,
FEBRUARY 21, 1998

FIGURE:
1
PROJECT:
DAC04



EXPLANATION

- ◆ MONITORING WELL
- Ø ABANDONED OR DESTROYED MONITORING WELL
- 8.00 GROUNDWATER ELEVATION (FT, MSL)
- 5.00 — GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- ➔ APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.02

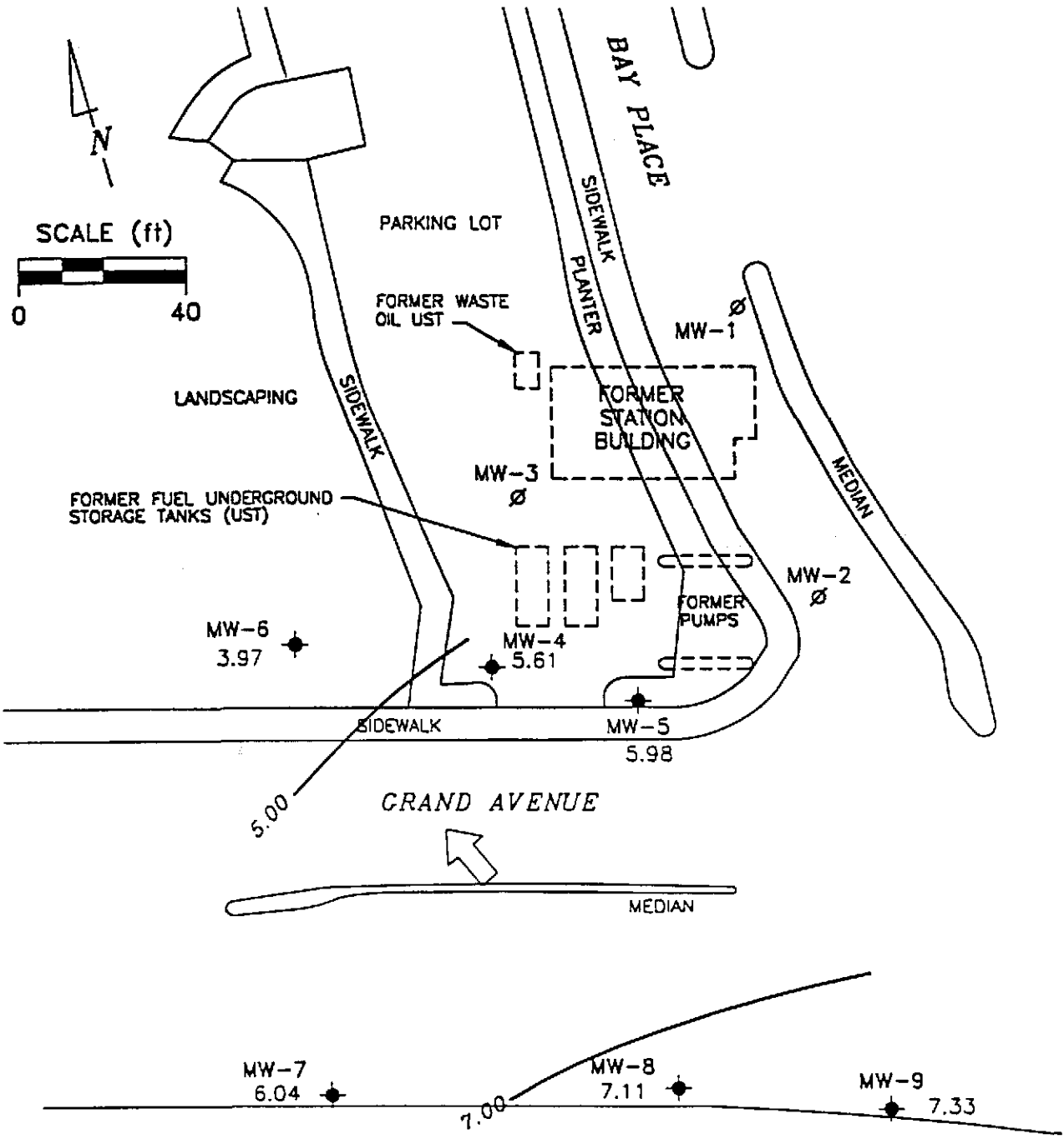


PREPARED BY
RRM
 engineering contracting firm

Former Chevron Station 9-0019
 210 Grand Avenue
 Oakland, California

**GROUNDWATER ELEVATION CONTOUR MAP,
 DECEMBER 5, 1997**

FIGURE:
 1
 PROJECT:
 DAC04



EXPLANATION

- MONITORING WELL
- ∅ ABANDONED OR DESTROYED MONITORING WELL
- 7.33 GROUNDWATER ELEVATION (FT. MSL)
- 7.00 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- ↗ APPROXIMATE GROUNDWATER FLOW DIRECTION;
APPROXIMATE GRADIENT = 0.02



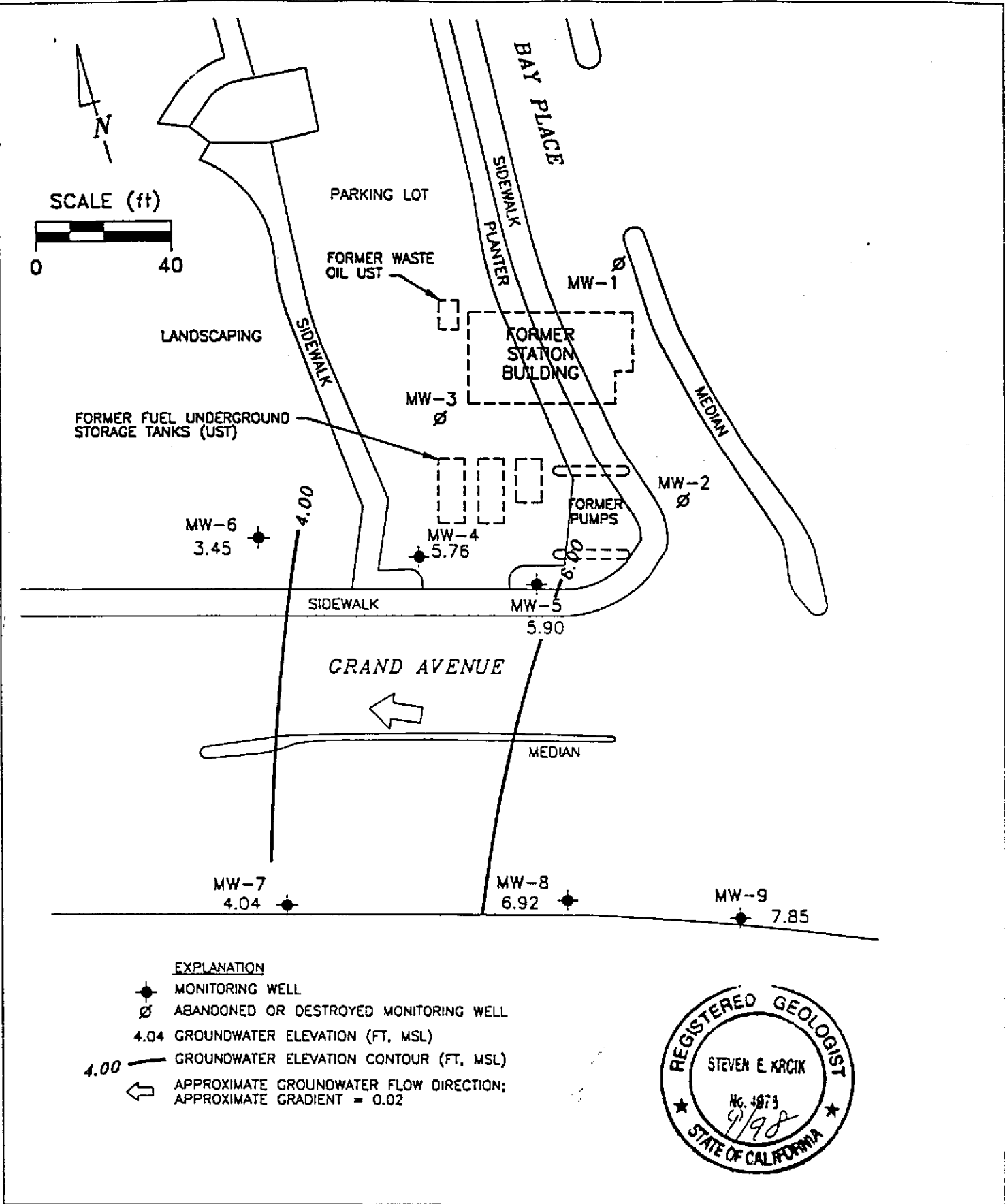
PREPARED BY



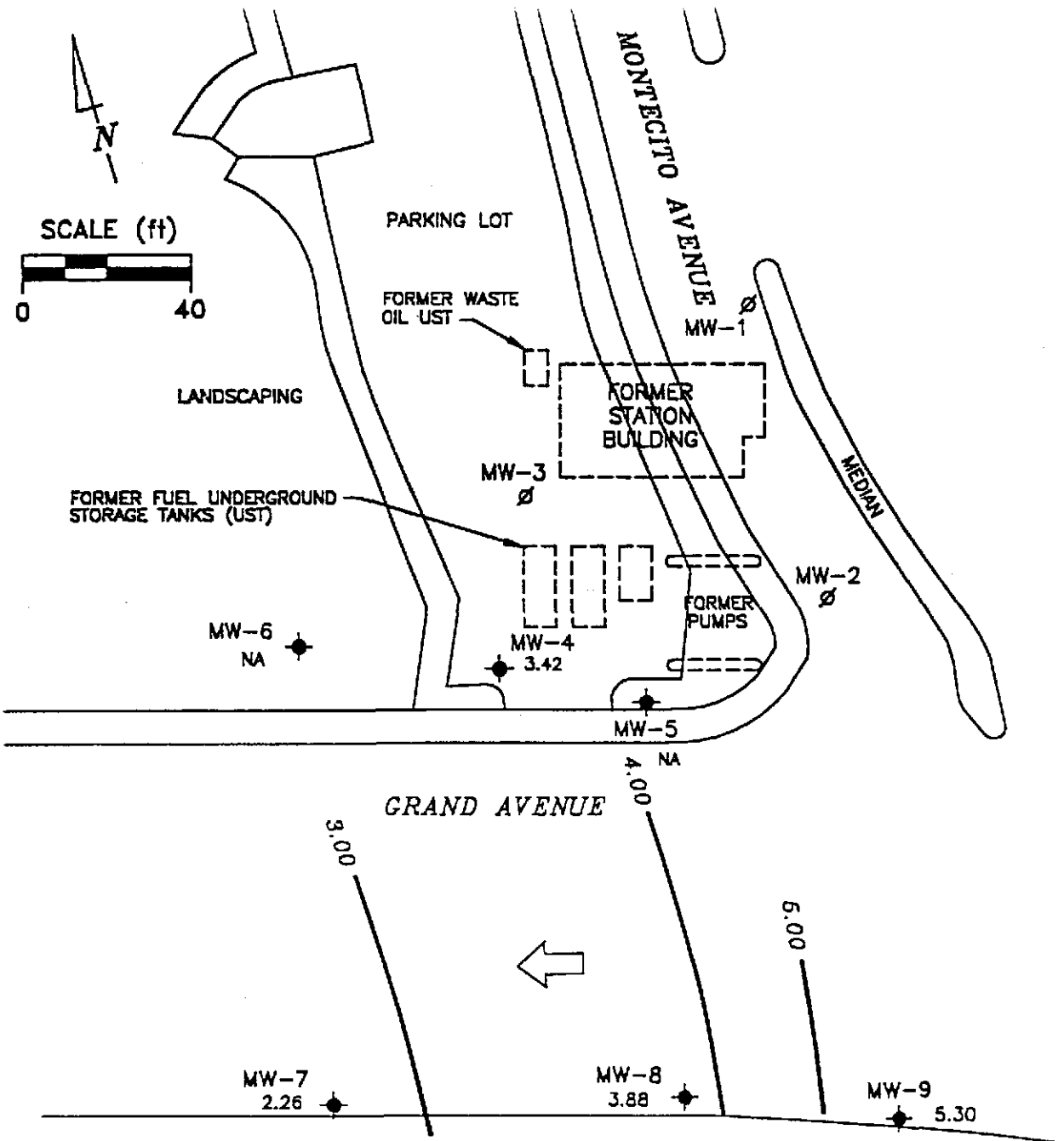
Former Chevron Station 9-0019
210 Grand Avenue
Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP,
SEPTEMBER 12, 1997

FIGURE:
1
PROJECT:
DAC04



PREPARED BY RRM engineering contracting firm	Former Chevron Station 9-0019 210 Grand Avenue Oakland, California <hr/> GROUNDWATER ELEVATION CONTOUR MAP, JUNE 29, 1997	FIGURE: 1 PROJECT: DAC04
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EXPLANATION

- ◆ MONITORING WELL
- ∅ ABANDONED OR DESTROYED MONITORING WELL
- 2.26 GROUNDWATER ELEVATION (FT. MSL)
- 4.00 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- NA DATA NOT AVAILABLE
- ← APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.02

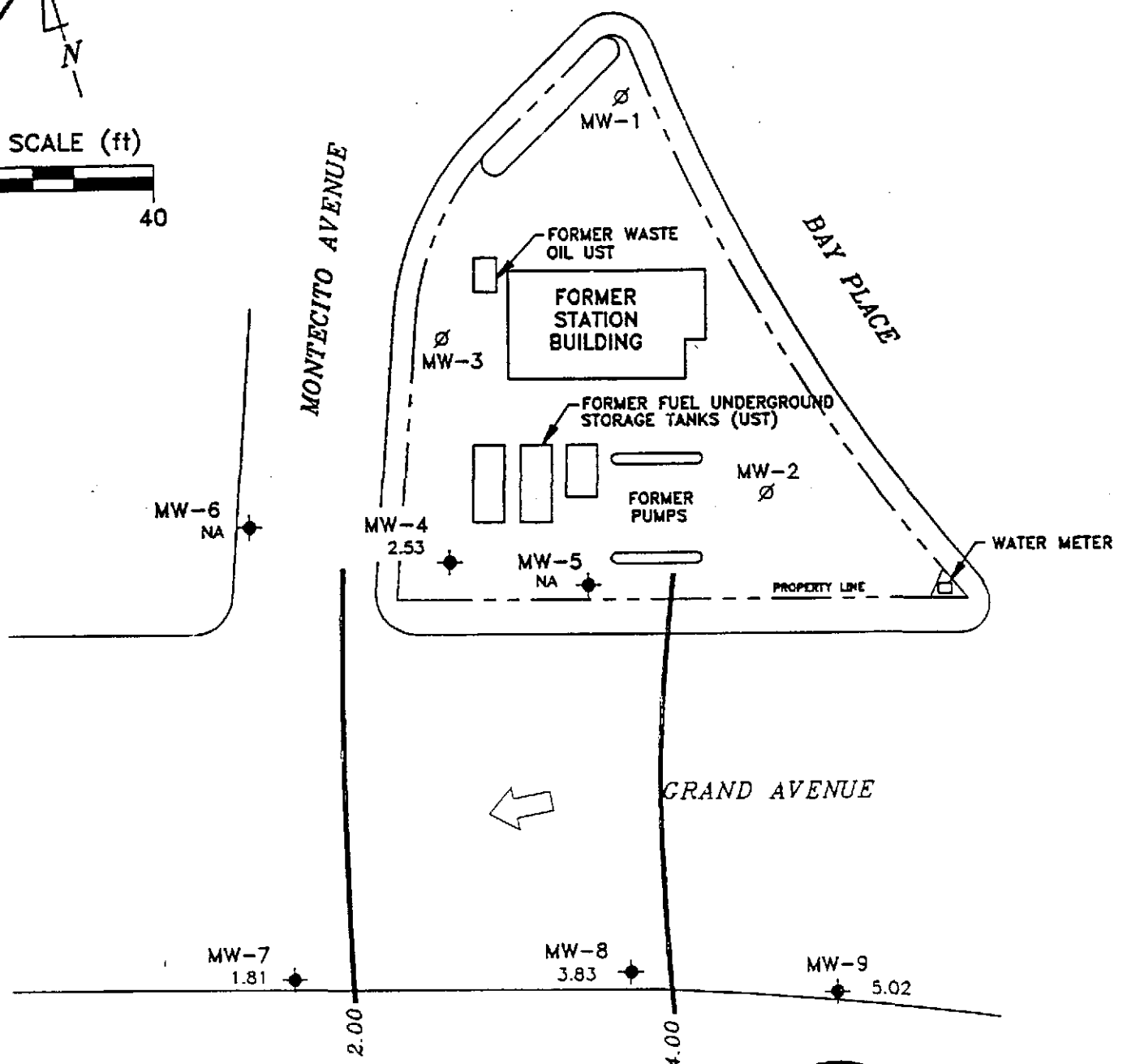
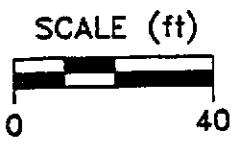


PREPARED BY
RRM
 engineering contracting firm

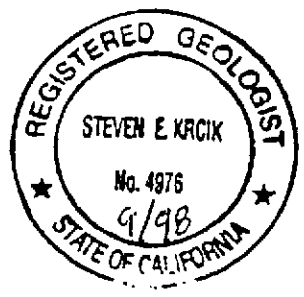
Chevron Station 9-0019
 210 Grand Avenue
 Oakland, California

GROUNDWATER ELEVATION CONTOUR MAP,
MARCH 22, 1997

FIGURE:
1
PROJECT:
DAC04



- ABANDONED OR DESTROYED MONITORING WELL
- 1.80 GROUNDWATER ELEVATION (FT, MSL)
- 4.00 GROUNDWATER ELEVATION CONTOUR (FT, MSL)
- NA DATA NOT AVAILABLE
- APPROXIMATE GROUNDWATER FLOW DIRECTION;
APPROXIMATE GRADIENT = 0.02

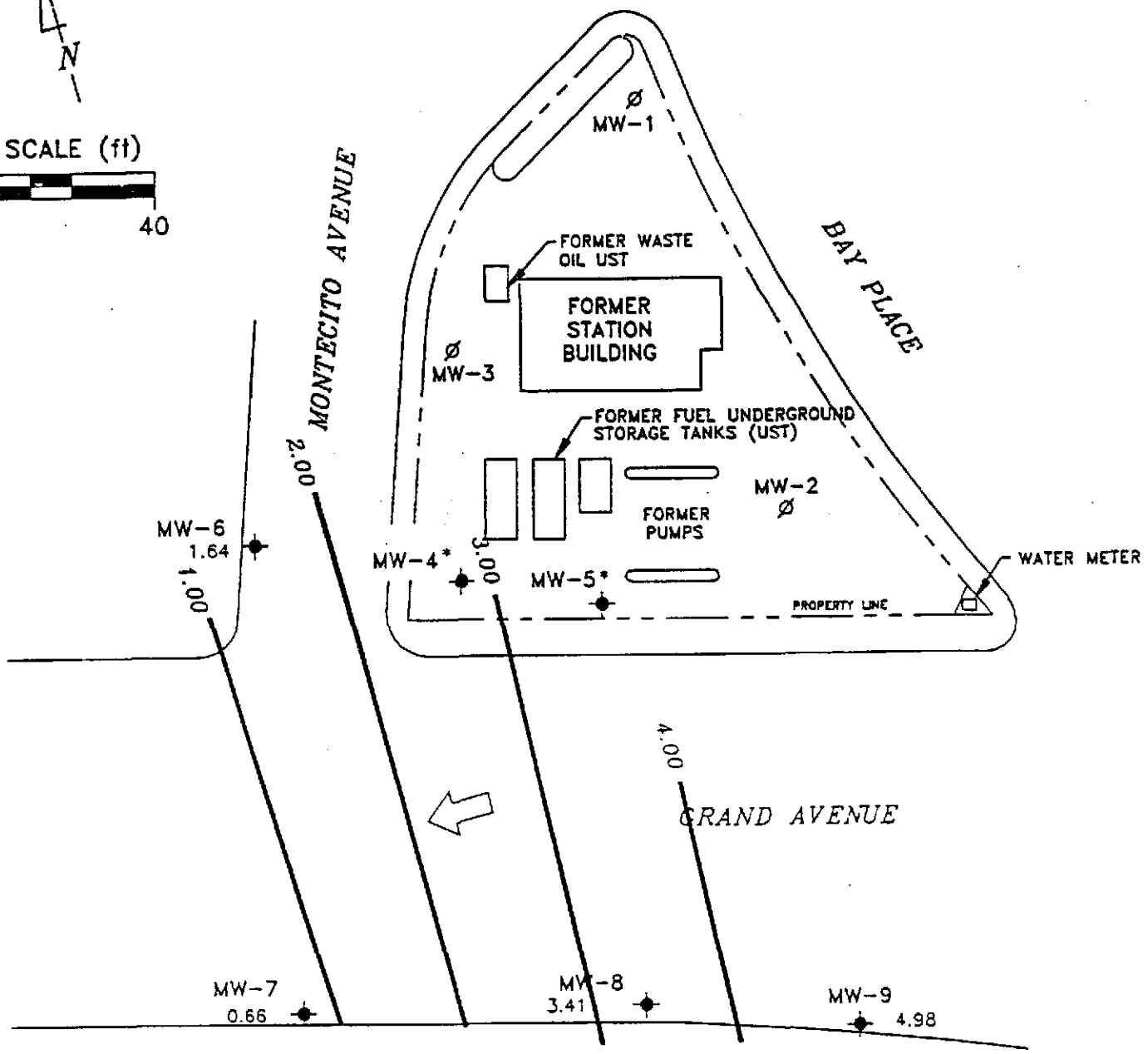
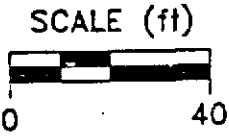


PREPARED BY
RRM INC.

Chevron Station 9-0019
210 Grand Avenue
Oakland, California

**GROUNDWATER ELEVATION
CONTOUR MAP, DECEMBER 19, 1998**

**FIGURE:
1
PROJECT:
DAC04**



EXPLANATION

- ◆ MONITORING WELL
- ∅ ABANDONED OR DESTROYED MONITORING WELL
- 1.64 GROUNDWATER ELEVATION (FT. MSL)
- 4.00 — GROUNDWATER ELEVATION CONTOUR (FT. MSL)
- GROUNDWATER ELEVATION NOT AVAILABLE; WELL INACCESSIBLE
- ⇨ APPROXIMATE GROUNDWATER FLOW DIRECTION; APPROXIMATE GRADIENT = 0.03



Basemap from Cambria Environmental Technology, Inc.

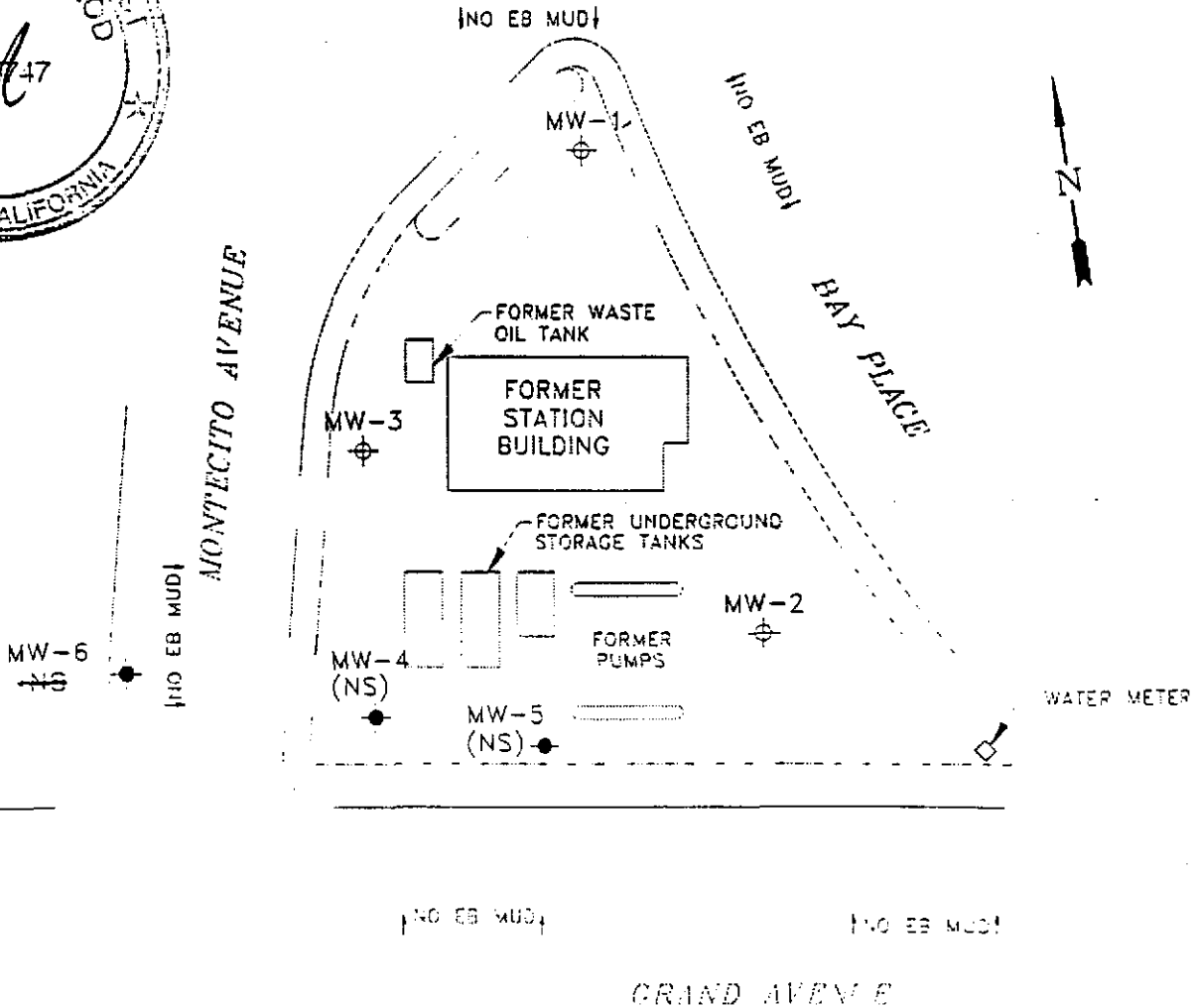
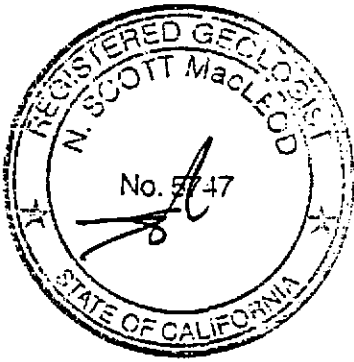
PREPARED BY

RRM INC.

Chevron Station 9-0019
 210 Grand Avenue
 Oakland, California

**GROUNDWATER ELEVATION
 CONTOUR MAP, JUNE 21, 1996**

FIGURE:
 1
 PROJECT:
 DAC04



MW-7
1.74

MW-8
2.55

MW-9
5.43

LEGEND

- - - PROPERTY LINE
- MONITORING WELL
- ⊕ ABANDONED MONITORING WELL
- NS NOT SAMPLED
- X.XX POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- ← GROUNDWATER FLOW DIRECTION

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS RELATIVE TO MEAN SEA LEVEL.



Base map from Groundwater Technology, Inc.

CAMBRIA
Environmental Technology, Inc.

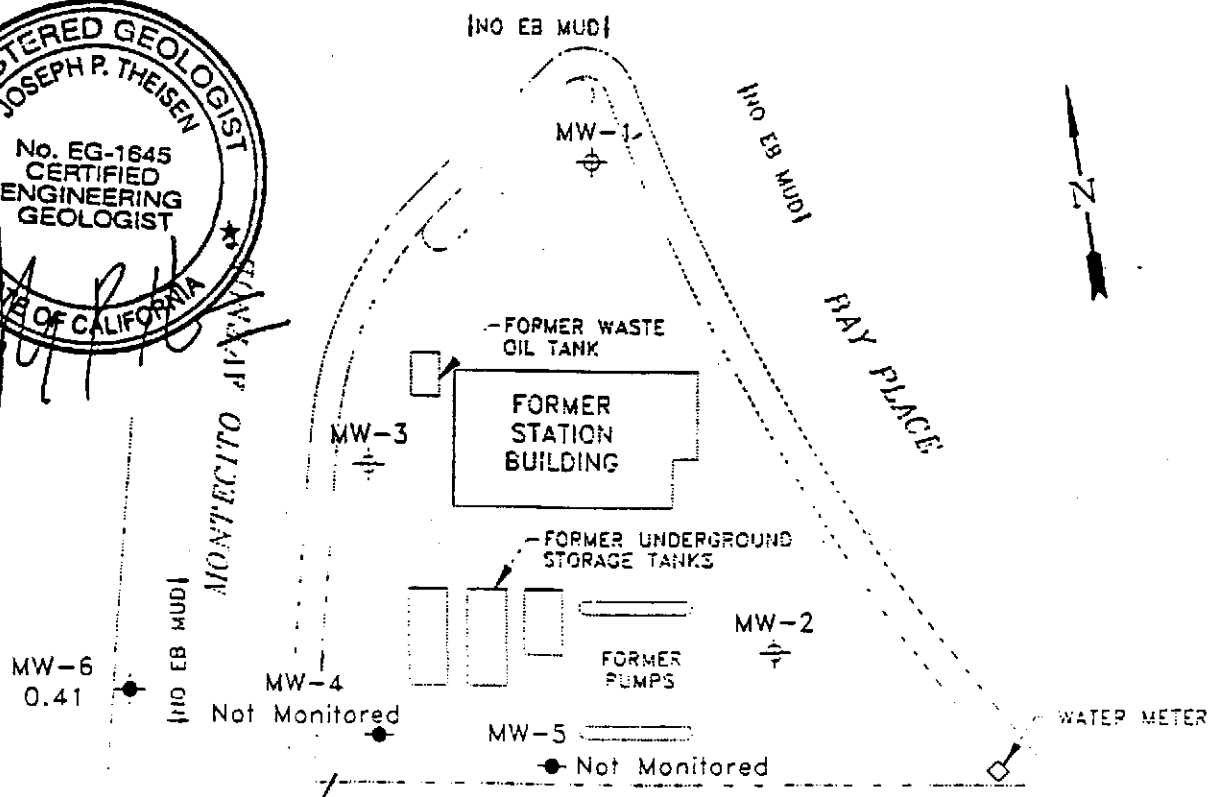
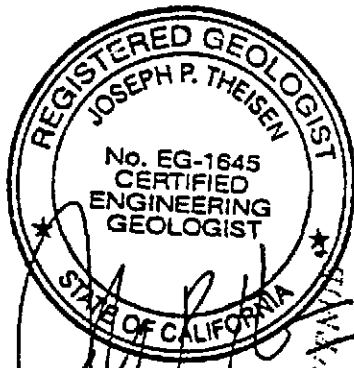
Chevron Station 9-0019
210 Grand Avenue
Oakland, California

Ground Water Elevation
March 28, 1996

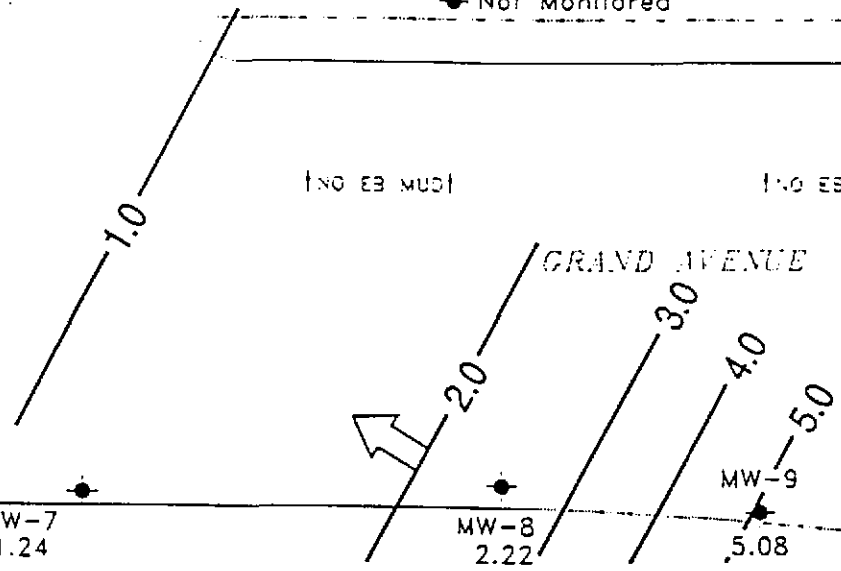
FIGURE

1

YCHEVRON9-00190019-QM.DWG



(NO EB MUD) (NO EB MUD)



LEGEND

- PROPERTY LINE
- ◆ MONITORING WELL
- ⊕ ABANDONED MONITORING WELL
- X.XX POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- ← GROUNDWATER FLOW DIRECTION

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS RELATIVE TO MEAN SEA LEVEL.



Base map from Groundwater Technology, Inc.

CAMBRIA
Environmental Technology, Inc.

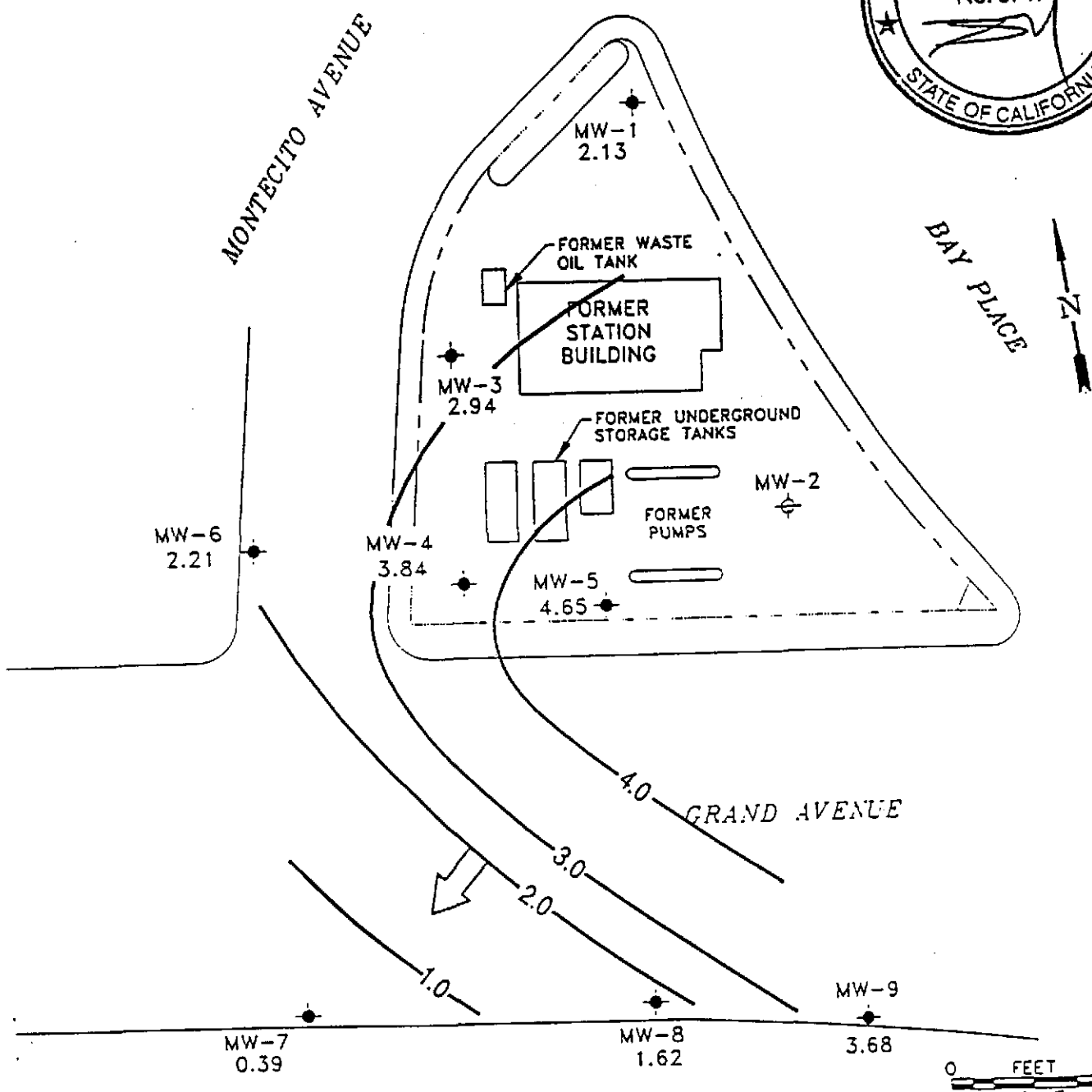
Chevron Station 9-0019
210 Grand Avenue
Oakland, California

Ground Water Elevation
December 29, 1995

FIGURE

1

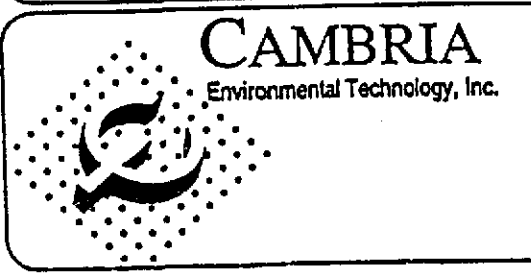
VCHEVRON9-00190019-0M.DWG



LEGEND

- MONITORING WELL
- POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUND WATER FLOW DIRECTION

Base map from Groundwater Technology, Inc.



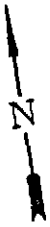
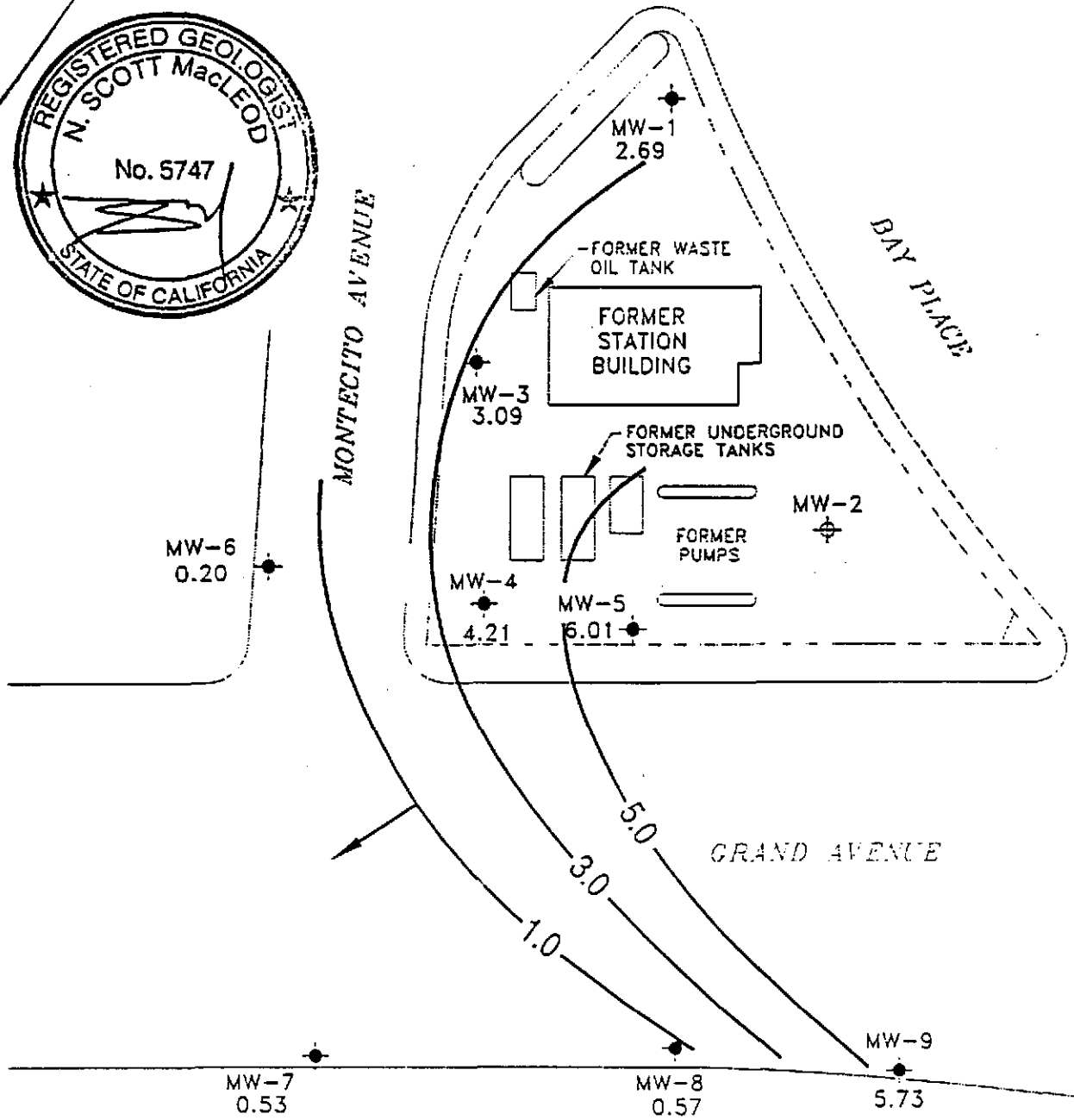
Chevron Station 9-0019
 210 Grand Avenue
 Oakland, California

\\CHEVRON\9-0019\0019-QM.DWG

Ground Water Elevations
 September 27, 1995

FIGURE

1



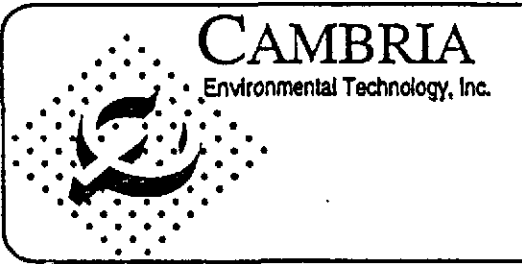
LEGEND

- PROPERTY LINE
- MONITORING WELL
- ABANDONED MONITORING WELL
- POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTE:
 1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS RELATIVE TO MEAN SEA LEVEL.



Base map from Groundwater Technology, Inc.



CAMBRIA
 Environmental Technology, Inc.

Chevron Station 9-0019
 210 Grand Avenue
 Oakland, California

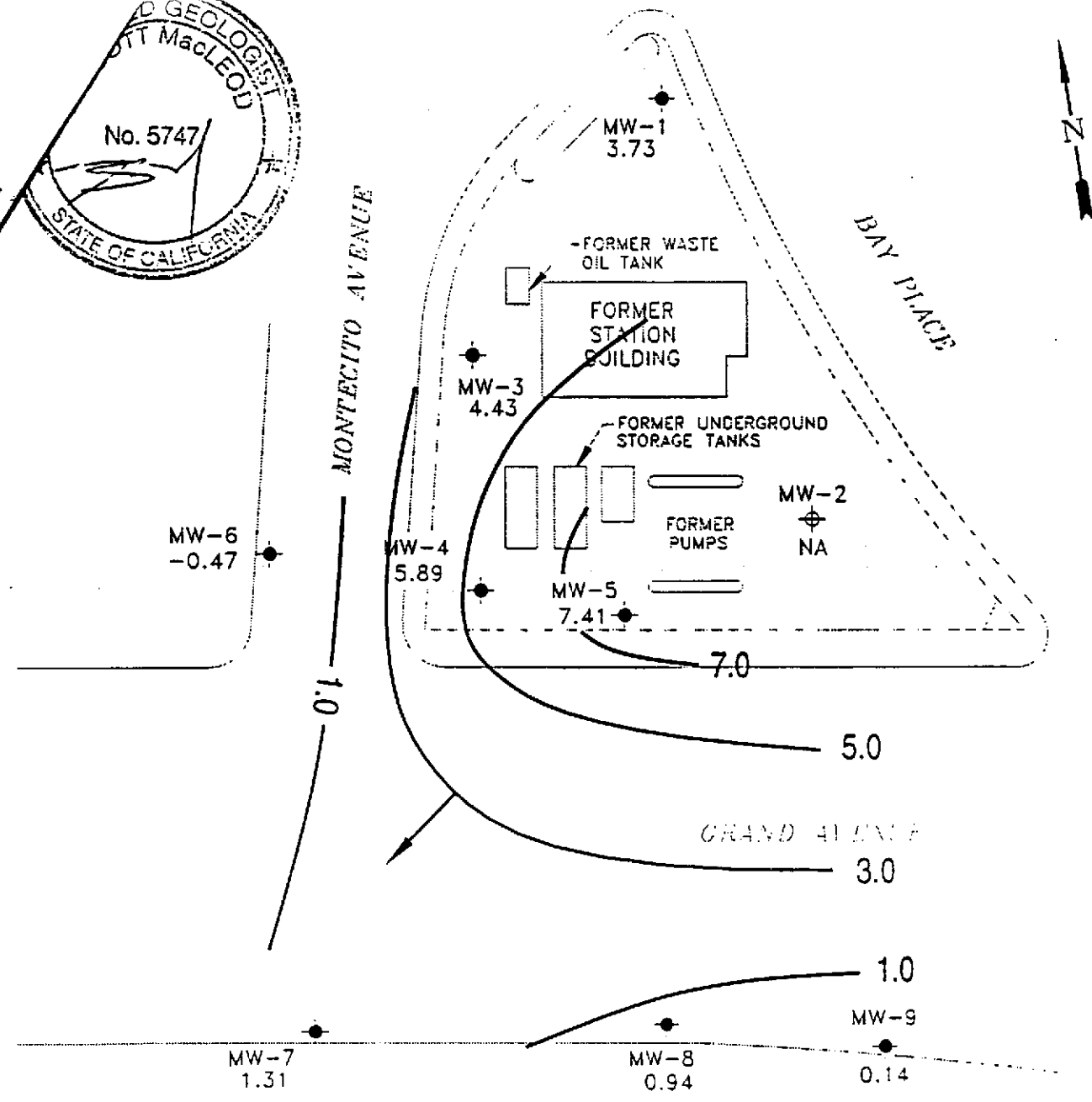
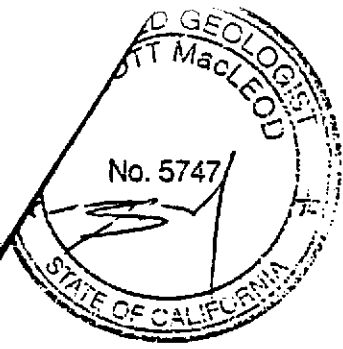
VCHEVRON9-00190019-QM.DWG

Ground Water Elevation

June 27, 1995

FIGURE

1



LEGEND

- PROPERTY LINE
- MONITORING WELL
- ABANDONED MONITORING WELL
- POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTE:

1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS RELATIVE TO MEAN SEA LEVEL.



Base map from Groundwater Technology, Inc.

CAMBRIA
Environmental Technology, Inc.

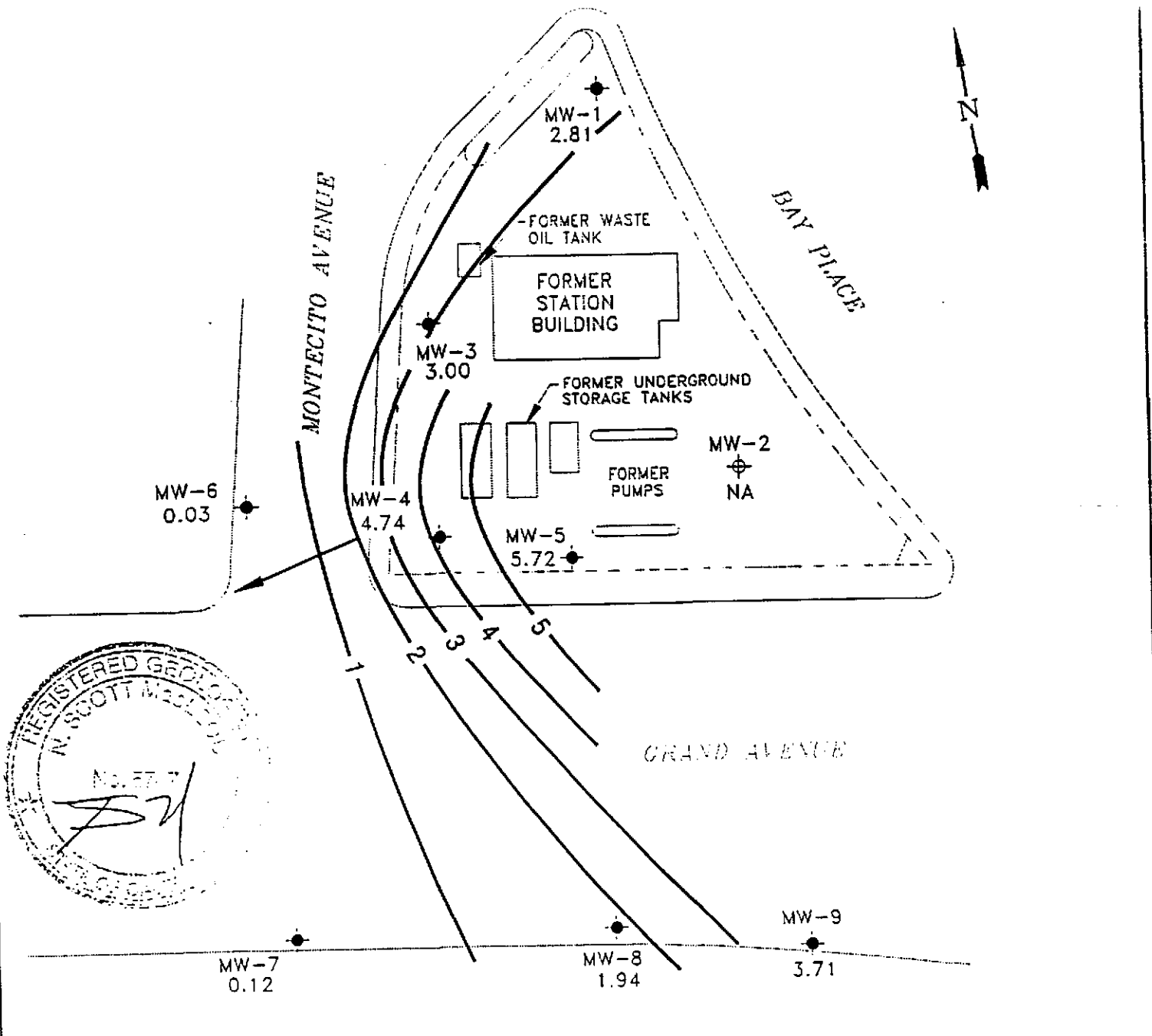
Chevron Station 9-0019
210 Grand Avenue
Oakland, California

VCHEVROM9-00190019-QM.DWG

Ground Water Elevation
March 21, 1995

FIGURE

1




LEGEND

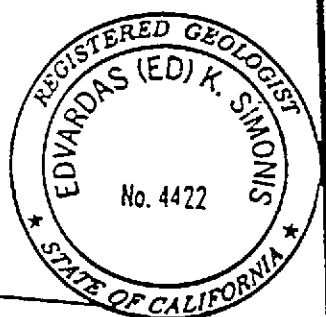
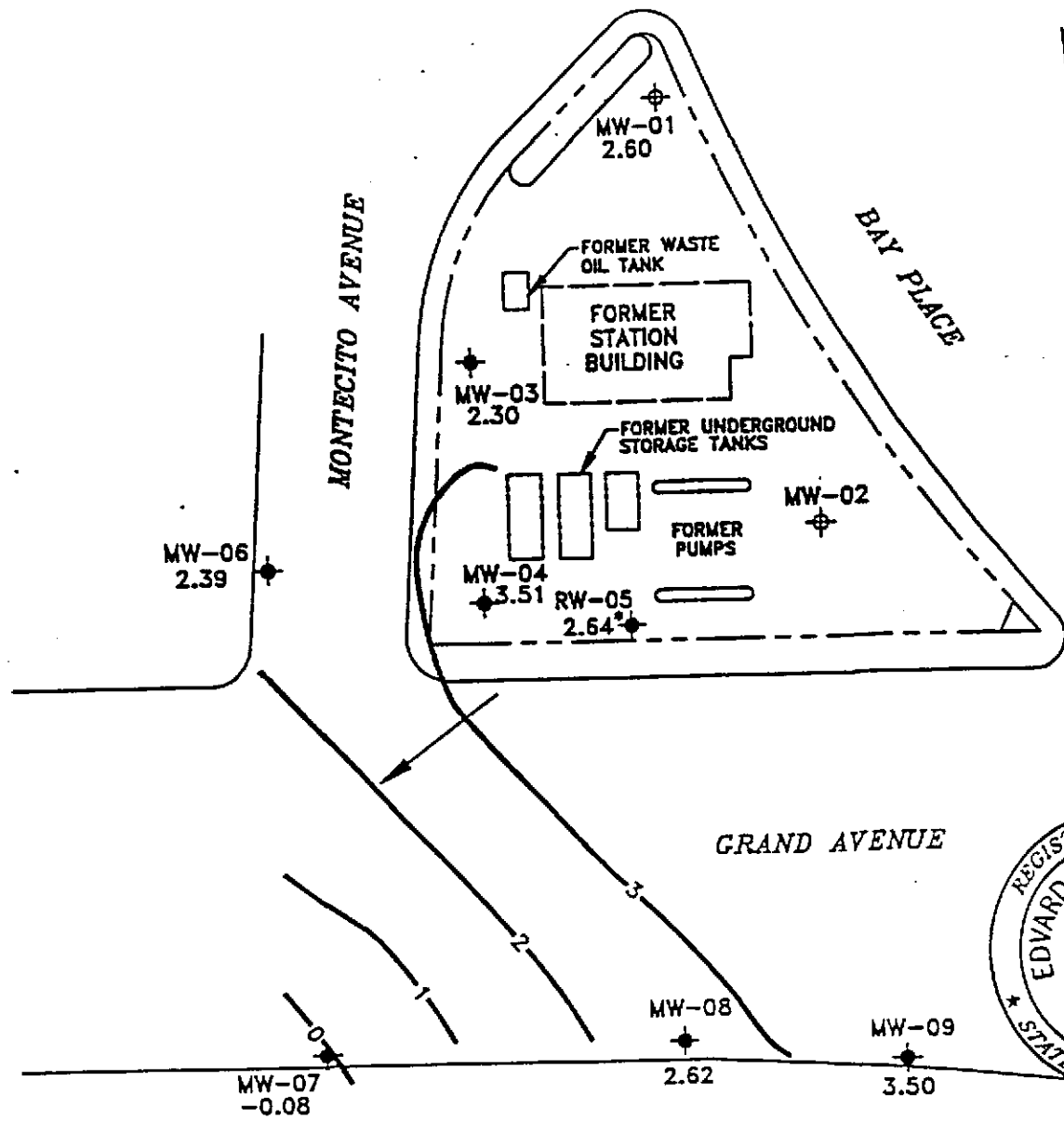
- PROPERTY LINE
- MONITORING WELL
- ⊕ ABANDONED MONITORING WELL
- X.XX POTENTIOMETRIC SURFACE ELEVATION (FT)
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTE:
 1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS RELATIVE TO MEAN SEA LEVEL.



Base map from Groundwater Technology, Inc.

 <p>CAMBRIA Environmental Technology, Inc.</p>	<p>Chevron Station 9-0019 210 Grand Avenue Oakland, California</p> <p>VCHEVRON9-00190019-QM(4094).DWG</p>	<p>Ground Water Elevation November 29, 1994</p>	<p>FIGURE 1</p>
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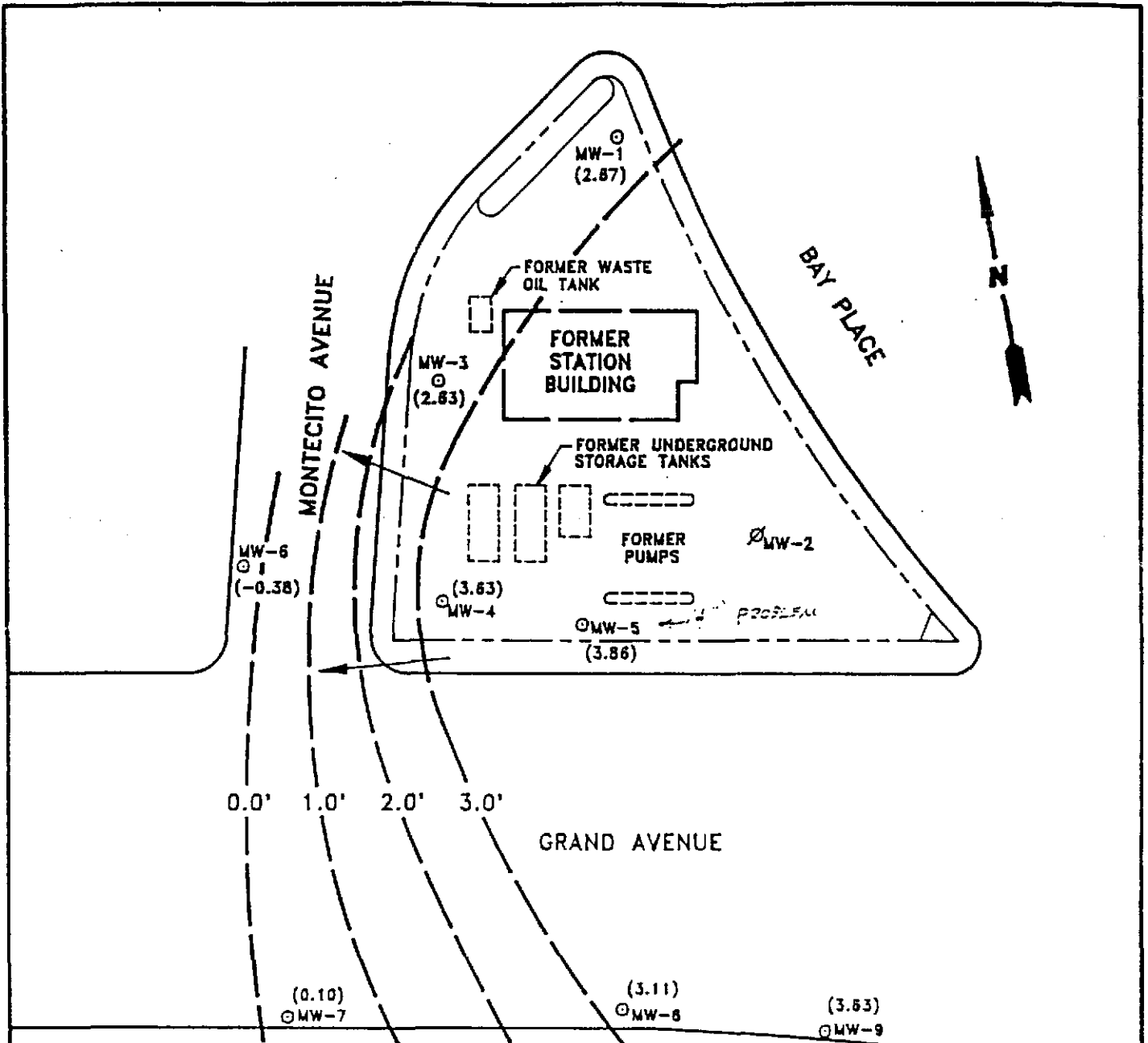


LEGEND

- PROPERTY LINE
- ⊕ MONITORING WELL
- ⊕ ABANDONED MONITORING WELL
- X.XX POTENTIOMETRIC SURFACE ELEVATION (FT)
- ANOMALOUS DATA; NOT USED IN CONTOURING
- POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

NOTE:
 1. CONTOURS REPRESENT APPROXIMATE ELEVATIONS RELATIVE TO MEAN SEA LEVEL.

				POTENTIOMETRIC SURFACE MAP (6/23/94)			
CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-0019		FILE: 4096PSM, (1:40)		PROJECT NO.: 02010-4096		PM <i>KJ</i>	PE/RG <i>EDS</i>
LOCATION: 210 GRAND AVENUE OAKLAND, CALIFORNIA		REV.		FIGURE: 1			
		DES. SS	DET. SS	DATE: 6/23/94			



LEGEND

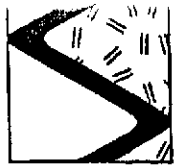
- ⊙ MONITORING WELL
- ∅ ABANDONED MONITORING WELL
- () POTENTIOMETRIC SURFACE ELEVATION
- - - POTENTIOMETRIC SURFACE CONTOUR
- ← GROUNDWATER FLOW DIRECTION



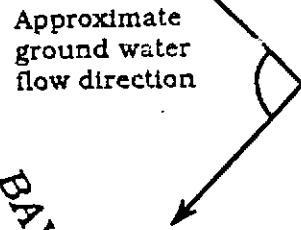
		4057 PORT CHICAGO HWY. CONCORD, CA 94520 (510) 871-2387		POTENTIOMETRIC SURFACE MAP (5/22/92)			
CLIENT: CHEVRON U.S.A. PRODUCTS CO. SERVICE STATION No. 9-0019			LOCATION: 210 GRAND AVENUE OAKLAND, CALIFORNIA		REV. NO.: 0	DATE: 8/26/92	
PM GAM	PE/RG DRK	DESIGNED GM	DETAILED ML	ACAD FILE: PSM52292/SP692	PROJECT NO.: 020302500	FIGURE: 1	

EXPLANATION

- ⊕ MW-9 Existing monitoring well
- ⊕ MW-2 Destroyed monitoring well
- 5.00 Ground water elevation, in feet
- 3.00 Ground water elevation contour, dashed where inferred, queried where uncertain



SIERRA



BAY PLACE

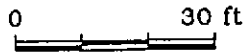
former waste oil tank
 FORMER SERVICE STATION BUILDING

former underground storage tanks
 former pumps

MONTECITO AVE.

GRAND AVENUE

N



1.01 MW-6

4.94 MW-4

5.35 MW-5

5.00 MW-2

2.94 MW-1

3.54 MW-3

0.15 MW-7

2.47 MW-8

5.00 MW-9

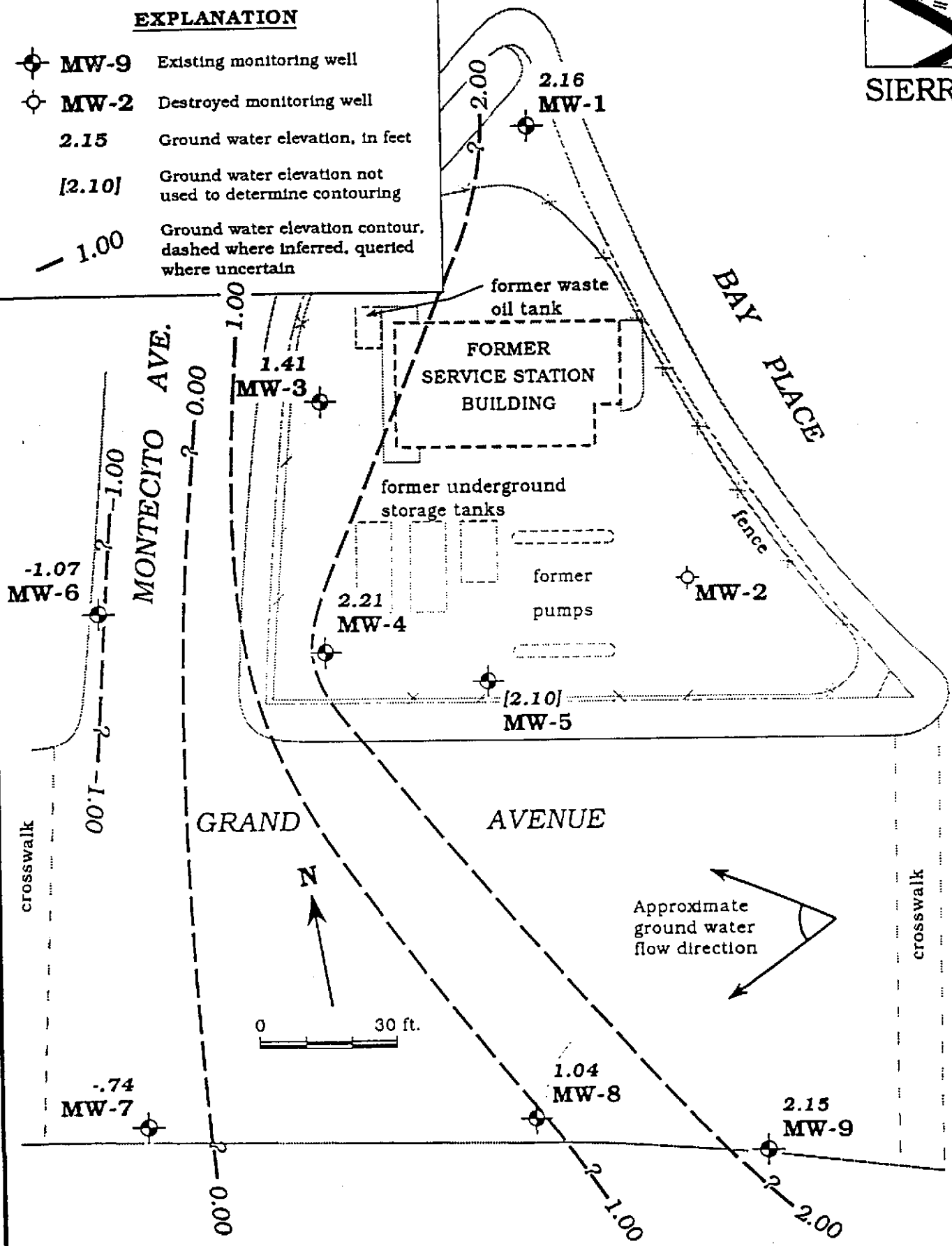
Base map after Western Geologic Resources, Inc.

Figure 2. Monitoring Well Locations and Ground Water Elevation Contour Map - February 26, 1992 - Former Chevron Service Station #9-0019, 210 Grand Avenue, Oakland, California



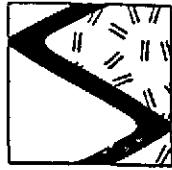
EXPLANATION

- ⊕ MW-9 Existing monitoring well
- ⊙ MW-2 Destroyed monitoring well
- 2.15 Ground water elevation, in feet
- [2.10] Ground water elevation not used to determine contouring
- 1.00 Ground water elevation contour, dashed where inferred, queried where uncertain



Base map after Western Geologic Resources, Inc.

Figure 2. Monitoring Well Location and Ground Water Elevation Contour Map - November 22, 1991 - Former Chevron Service Station #9-0019, 210 Grand Avenue, Oakland, California



EXPLANATION

- ⊕ MW-3 Existing monitoring well
- ⊙ MW-2 Monitoring well filled with dirt
- 2.53 Ground water elevation
- 2.50 Ground water elevation contour, dashed where inferred, queried where uncertain

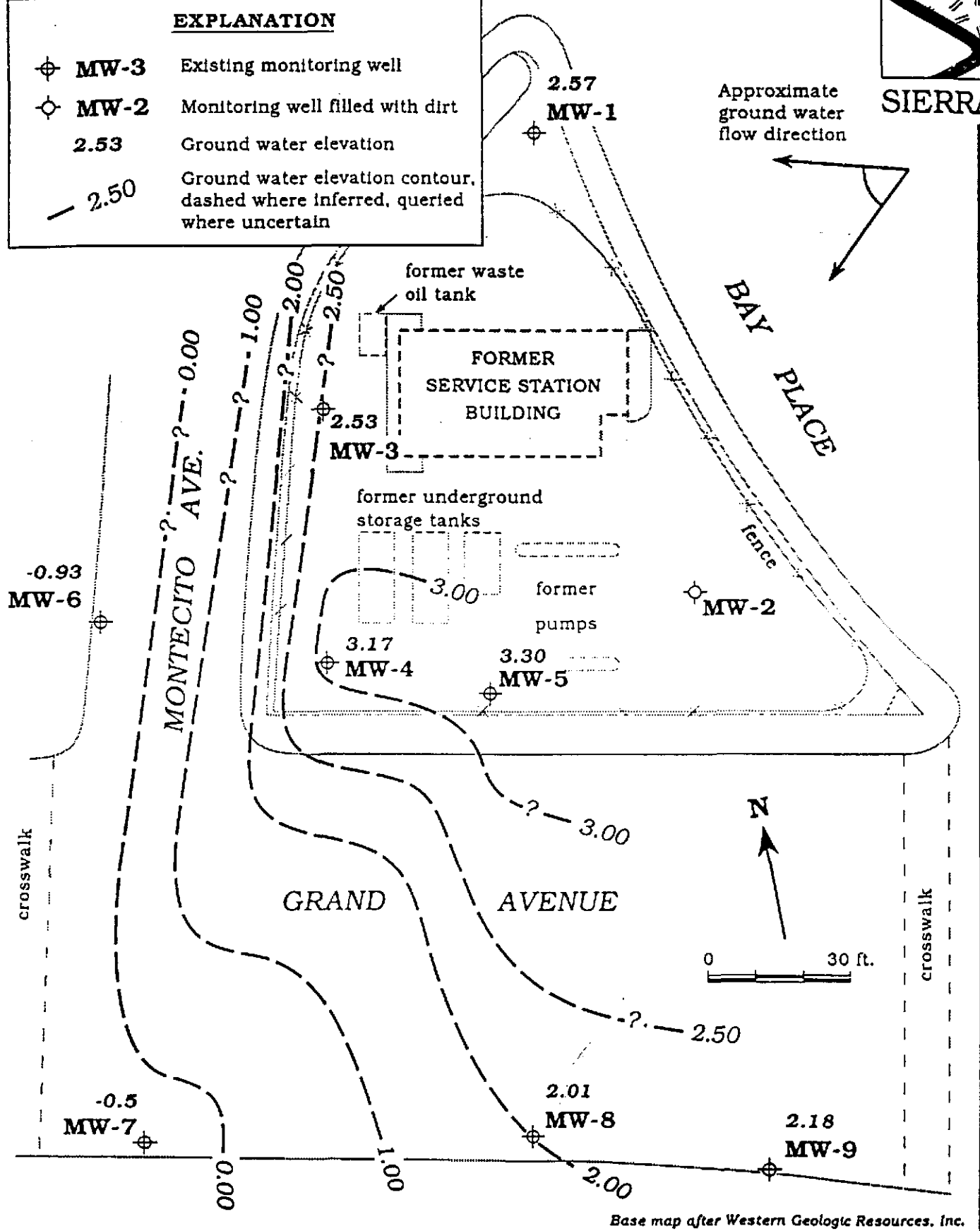
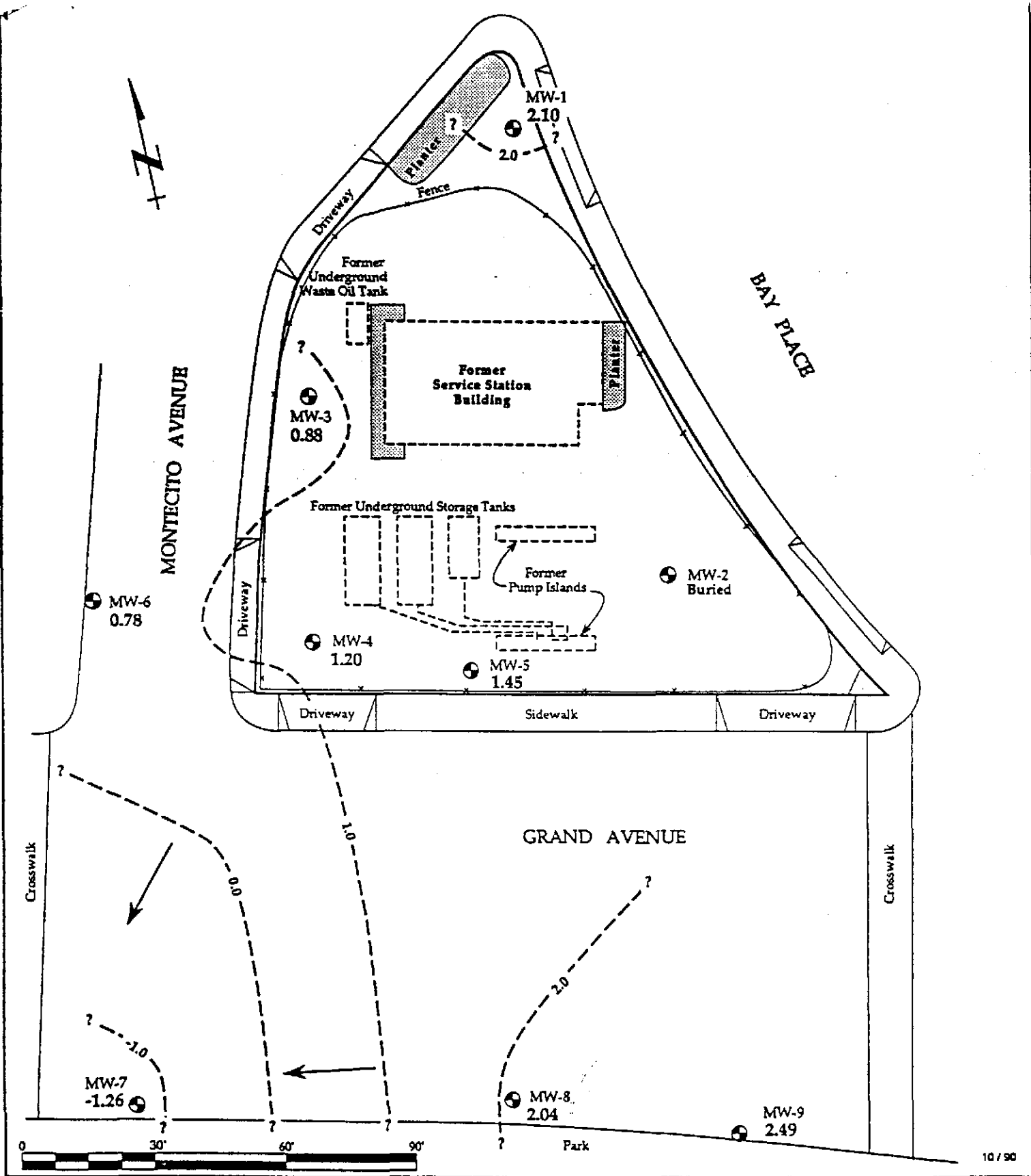


Figure 2. Monitoring Well Location and Ground Water Elevation Contour Map - August 23, 1991 - Former Chevron Service Station #9-0019, 210 Grand Avenue, Oakland, California



10 / 90

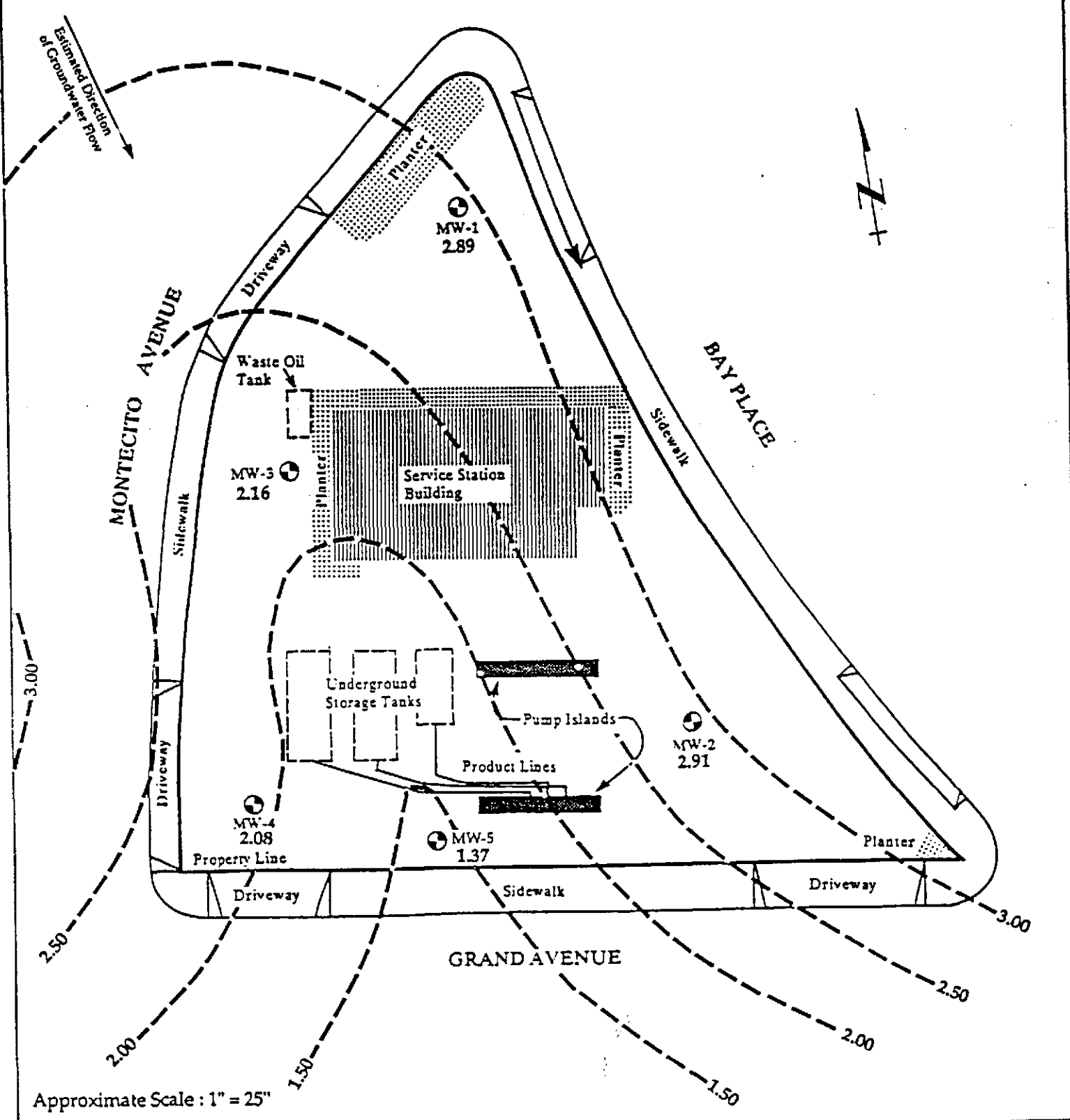
EXPLANATION	
● MW-8 2.04	Monitor Well location and groundwater elevation, feet above mean sea level
1.0 - - - ?	Groundwater elevation contour, feet above mean sea level, dashed where inferred, queried where uncertain
←	Estimated direction of groundwater flow

Potentiometric Surface of Shallow Groundwater
 3 October 1990
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

WESTERN GEOLOGIC RESOURCES, INC.

FIGURE
2

1-101.03



LEGEND

- MW-1
2.89
 Monitoring well location and groundwater elevation, feet above mean sea level

- 3.00
 Groundwater elevation contour, feet above mean sea level, dashed where inferred

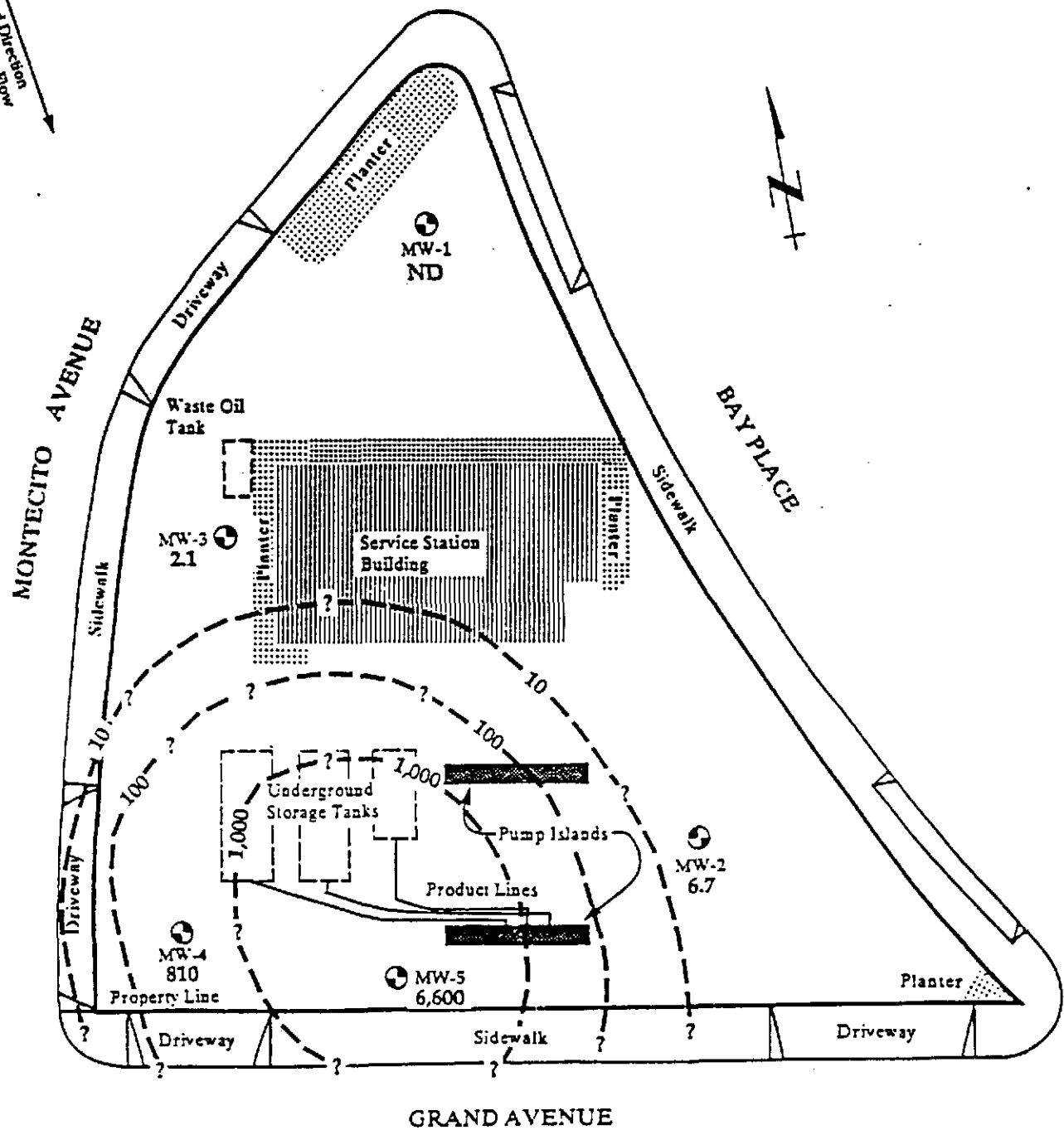
Potentiometric Surface of the Shallow Water-Bearing Zone for 14 March 1989, Chevron SS #90019, Oakland, California

June 1989

FIGURE

3

Estimated Direction
of Groundwater Flow



Approximate Scale : 1" = 25"

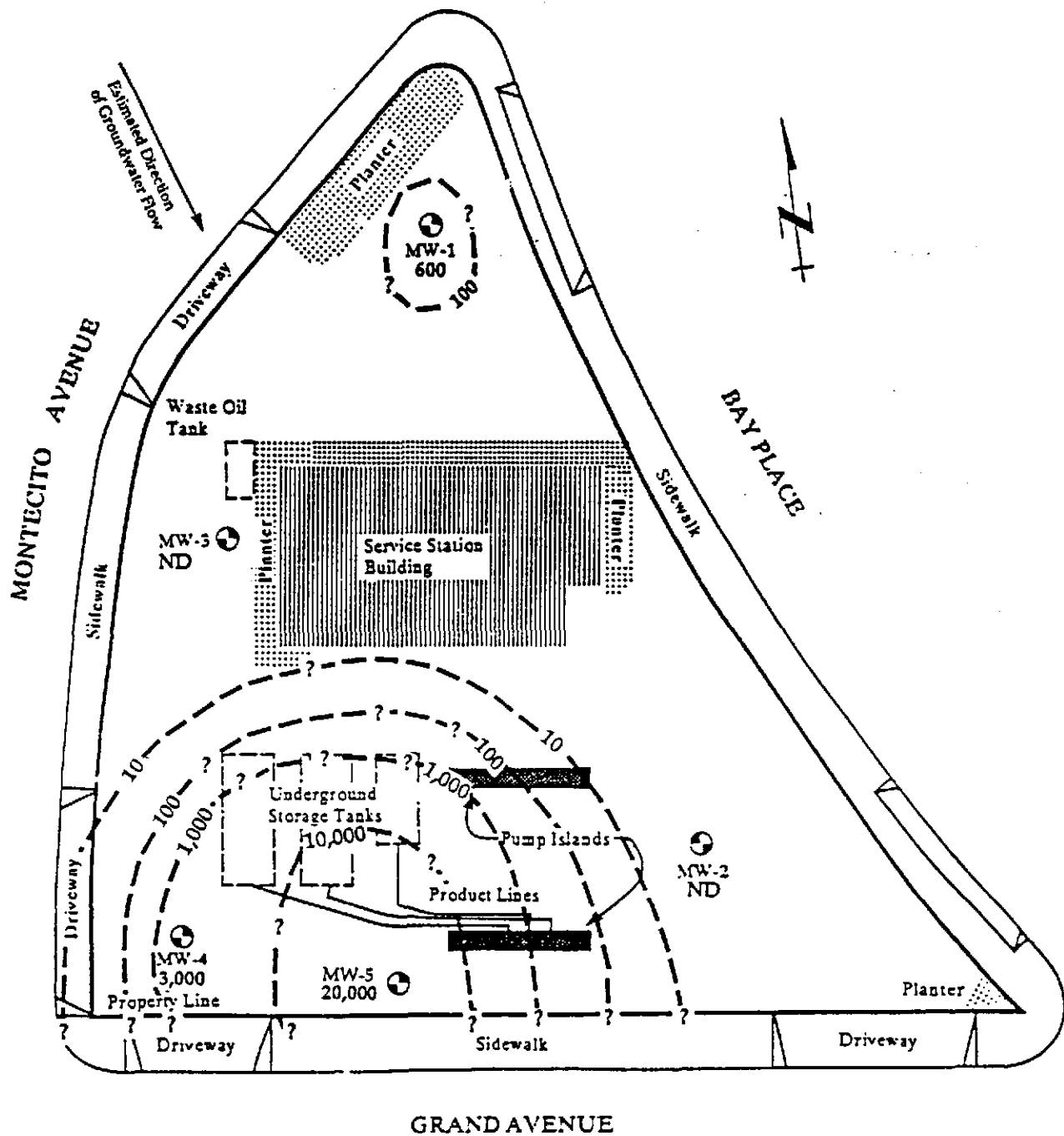
LEGEND	
⊙ MW-4 810	Monitoring Well Location and Total Benzene Concentration in ppb (parts per billion)
- - 10 ?	Isoconcentration Contour for Benzene in ppb, dashed where inferred, queried where uncertain

Distribution of Total Benzene in the Shallow Water-Bearing Zone
14 March 1989, Chevron SS #90019, Oakland, California

June 1989

WESTERN GEOLOGIC RESOURCES, INC.

FIGURE
5
1-101.02



Approximate Scale : 1" = 25"

LEGEND

- ⊕ MW-1 Monitoring Well Location and Total Purgeable Petroleum Hydrocarbons in ppb (parts per billion)
600
- 100 ? Isoconcentration Contour for TPPH in ppb, dashed where inferred, queried where uncertain
- ND Non-detectable (<10.0 ppb)

Distribution of Total Purgeable Petroleum Hydrocarbons (TPPH)

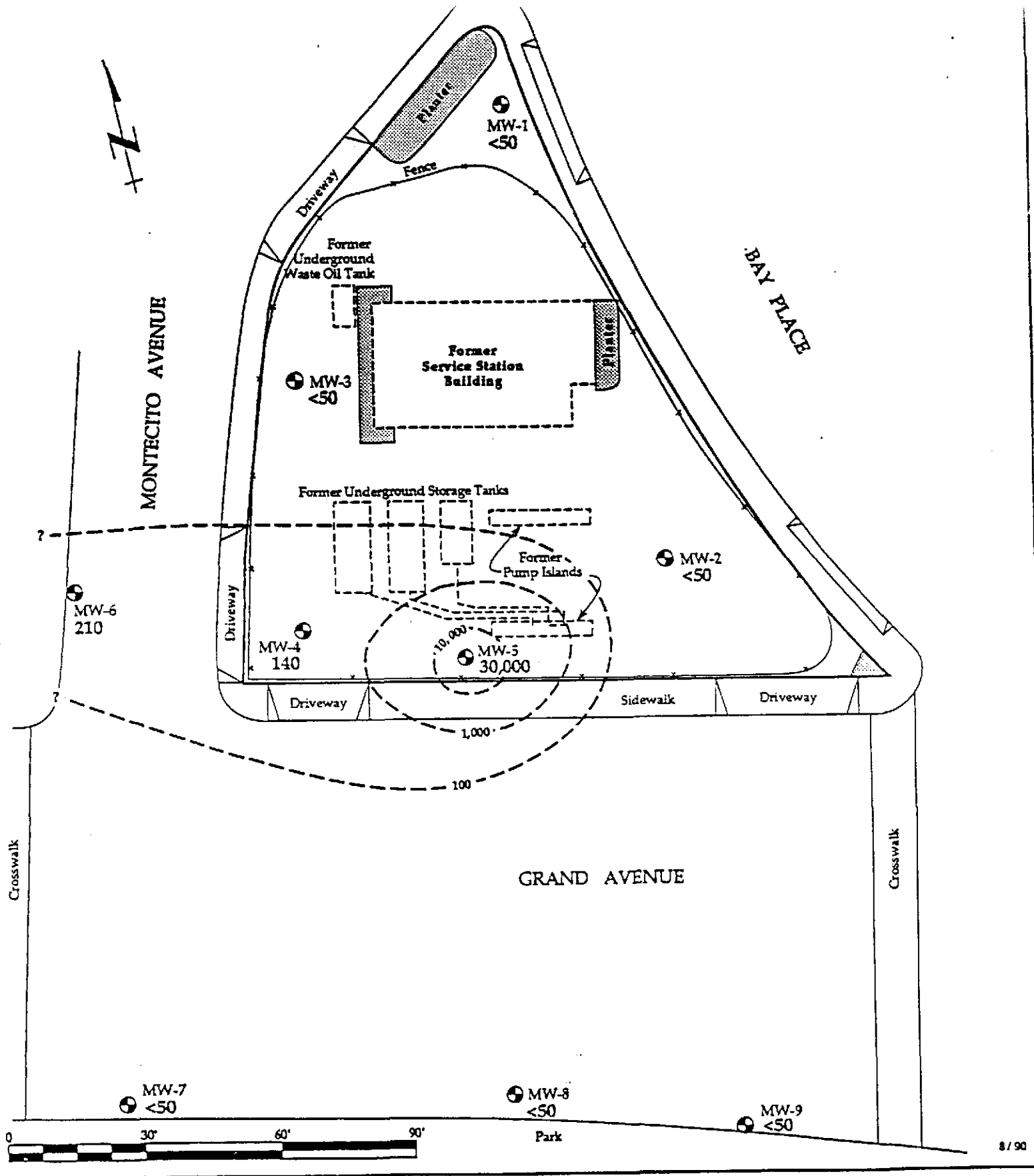
in the Shallow Water-Bearing Zone

14 March 1989, Chevron SS #90019, Oakland, California


June 1989

FIGURE

6



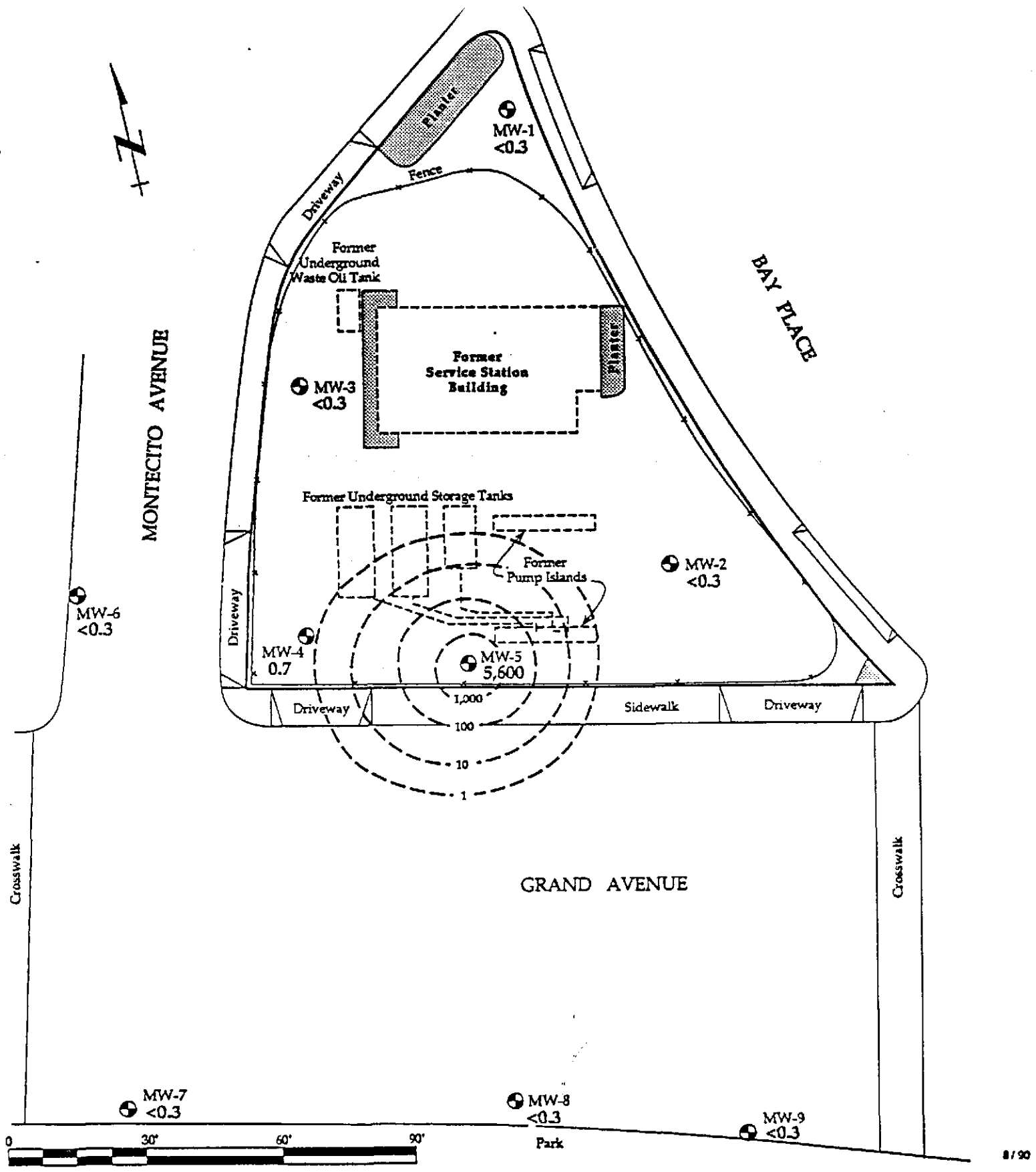
EXPLANATION

-  MW-7
 <50 Monitor Well location and TPPH concentration in parts-per-billion (ppb)
- 100 - - - - ? Isoconcentration contour for TPPH in ppb, dashed where inferred, queried where uncertain


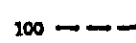
Distribution of Total Purgeable Petroleum Hydrocarbons (TPPH) in Shallow Groundwater, 6 July 1990
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

FIGURE

7



EXPLANATION

-  MW-7
 <math><0.3</math> Monitor Well location and benzene concentration in parts-per-billion (ppb)
-  100 - - - Isoconcentration contour for benzene in ppb, dashed where inferred

Distribution of Benzene in Shallow Groundwater, 6 July 1990
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

FIGURE

8

Table 1: Flow Totalizer Readings
Former Chevron Service Station #9-0019
210 Grand Avenue, Oakland, California.

Date	Totalizer Reading (Gallons)	Gallons Discharged This Period	Cumulative Gallons	Days Since Previous Reading	Average Discharge Rate (GPM)	Notes
1-Jan-93	0	0	0		0	System nonoperational
11-Mar-93	16 (a)	0	0		0	Startup
12-Mar-93	16	0	0	1	0.00	Low flow; no sample taken
22-Mar-93	16	0	0	10	0.00	Sampling
30-Mar-93	300	284	284	8	0.02	Sampling
20-Apr-93	793	493	777	21	0.02	
12-May-93	1,204	412	1,188	22	0.01	
10-Jun-93	1,713	509	1,697	29	0.01	1,413 gal. discharged this quarter
29-Jul-93	1,762	49	1,746	49	0.001	Sampling
18-Aug-93	1,900	138	1,884	20	0.005	Sampling
9-Sep-93	2,113	213	2,097	22	0.01	400 gal. discharged this quarter
14-Oct-93	2,229	116	2,213	35	0.002	Sampling
15-Nov-93	2,380	151	2,364	32	0.003	Sampling
13-Dec-93	2,502	122	2,486	28	0.003	389 gal. discharged this quarter

GPM = Gallons per minute

(a) Meter not zeroed when system began operation.

Table 2: Groundwater Analytical Results
Former Chevron Service Station #9-0019
210 Grand Avenue, Oakland, California

Sample	Date	TPH as Gasoline (µg/L) (a)	Benzene (µg/L) (b)	Toluene (µg/L) (b)	Ethylbenzene (µg/L) (b)	Xylenes (µg/L) (b)
Influent	22-Mar-93	6,700	3,900	590	130	600
	30-Mar-93	15,000	2,900	610	83	610
	20-Apr-93	6,000	970	260	26	400
	12-May-93	3,900	620	140	20	180
	10-Jun-93	2,000	430	46	ND(<5)	110
	21-Jul-93	2,200	480	68	15	94
	29-Jul-93	3,600	560	52	6.7	120
	18-Aug-93	550	27	3.5	2.6	9.3
	9-Sep-93	650	ND(<0.5)	3.8	ND(<0.5)	9.1
	14-Oct-93	2,800	1,100	250	39	110
	15-Nov-93	2,800	300	55	14	56
	13-Dec-93	6,500	1,300	270	75	180
	Intermediate	22-Mar-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)
30-Mar-93		ND(<50)	0.5	ND(<0.5)	ND(<0.5)	ND(<1.5)
20-Apr-93		ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
12-May-93		ND(<50)	1.4	0.7	ND(<0.5)	ND(<1.5)
10-Jun-93		71	7.2	2.7	ND(<0.5)	8.9
21-Jul-93		ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
29-Jul-93		ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
18-Aug-93		ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
9-Sep-93		ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	2.3
14-Oct-93		ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)
15-Nov-93		ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
13-Dec-93		ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)
Effluent		22-Mar-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)
	30-Mar-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	20-Apr-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	12-May-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	10-Jun-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	21-Jul-93	61	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	29-Jul-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	18-Aug-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	9-Sep-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	14-Oct-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)
	15-Nov-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	13-Dec-93	NS	NS	NS	NS	NS



Table 2: Groundwater Analytical Results
 Former Chevron Service Station #9-0019
 210 Grand Avenue, Oakland, California

Sample	Date	TPH as				
		Gasoline (µg/L) (a)	Benzene (µg/L) (b)	Toluene (µg/L) (b)	Ethylbenzene (µg/L) (b)	Xylenes (µg/L) (b)
Trip Blank	22-Mar-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	30-Mar-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	20-Apr-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	12-May-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	10-Jun-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	18-Aug-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	9-Sep-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)
	14-Oct-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)
	15-Nov-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<1.5)

(a) Analyzed by USEPA Method 8015, modified.

(b) Analyzed by USEPA Method 8020.

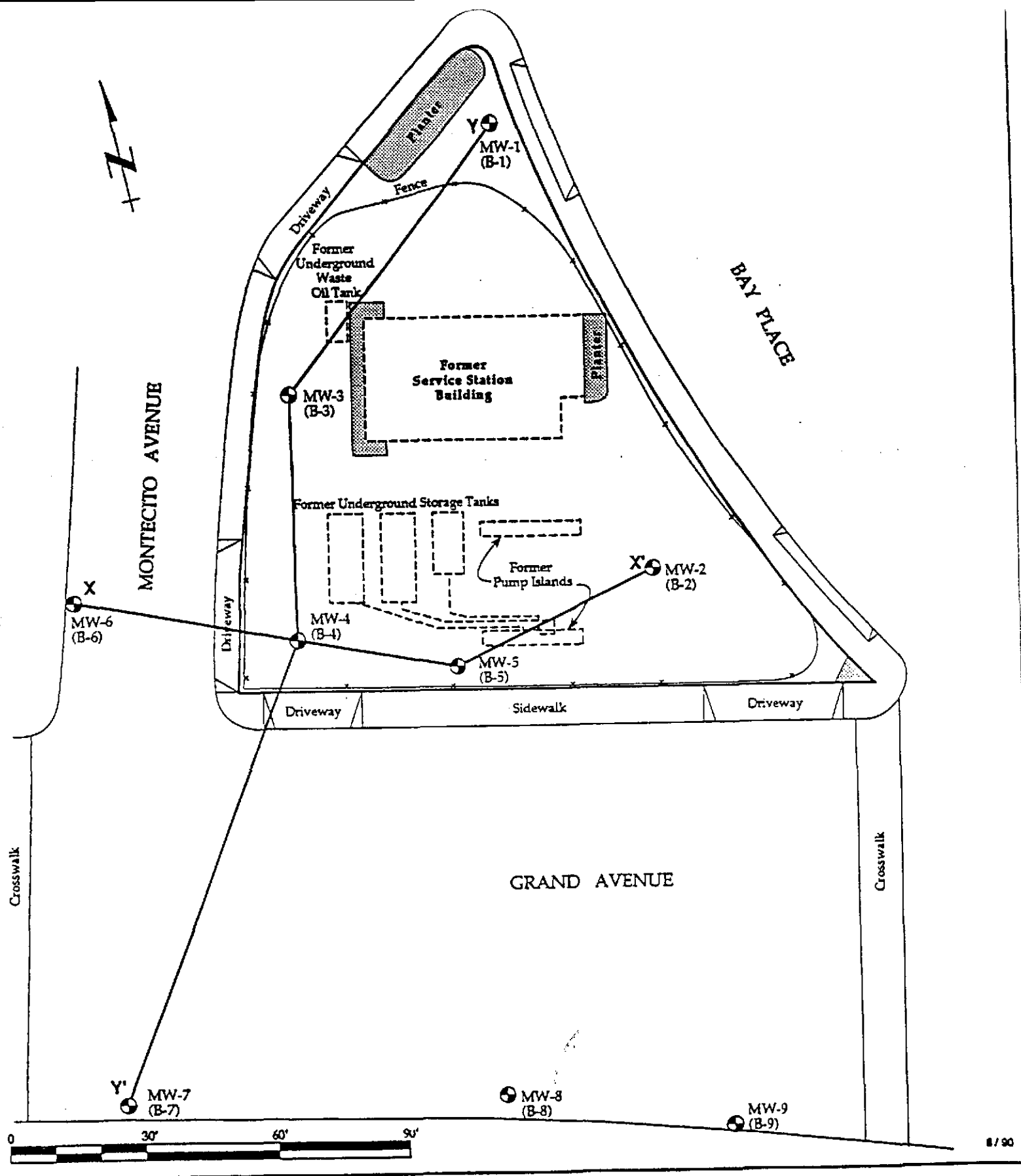
TPH Total petroleum hydrocarbons

µg/L Micrograms per liter



ND() Laboratory method detection limit; limit in parentheses

NS Not sampled





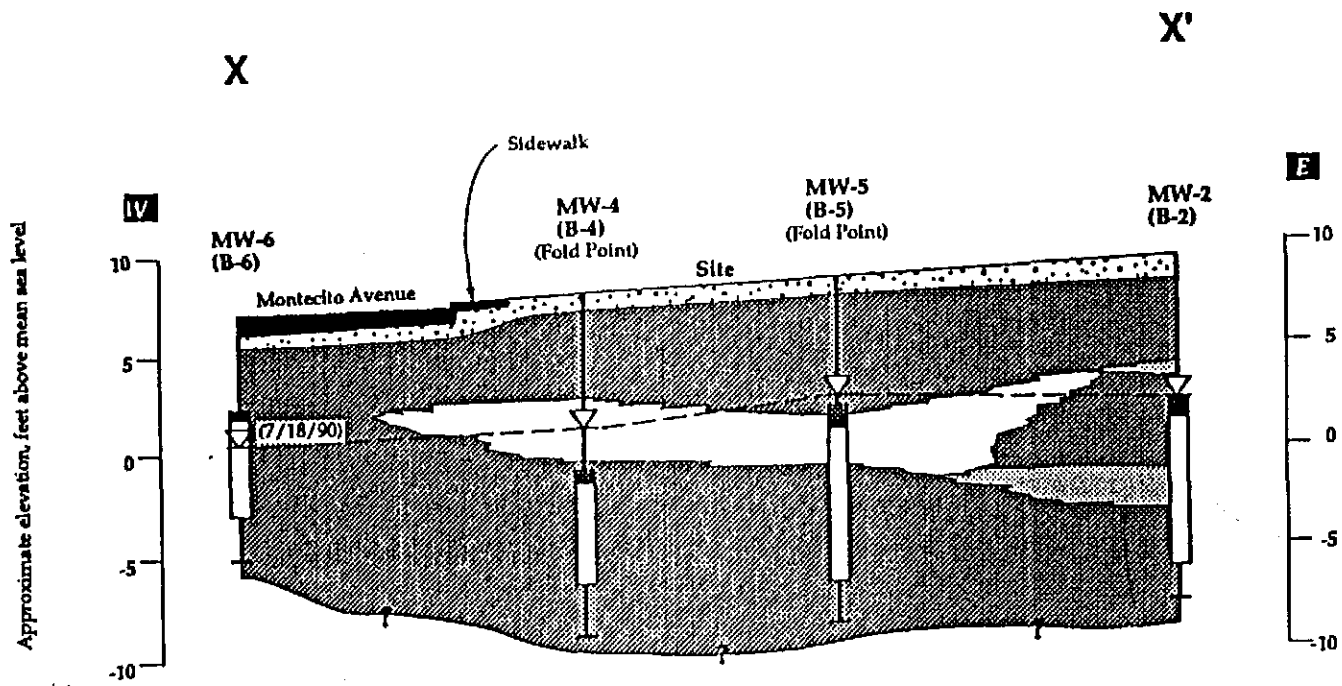
EXPLANATION

-  MW-7 (B-7) Monitor Well (and Boring) location
-  X — X' Generalized hydrogeologic cross section line

Site Map with Monitor Well and Generalized Hydrogeologic Cross Section X-X' and Y-Y' Locations
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

FIGURE

3



0 30.0 ft.
 Horizontal Scale
 Vertical Scale 3X Exaggeration

8/90

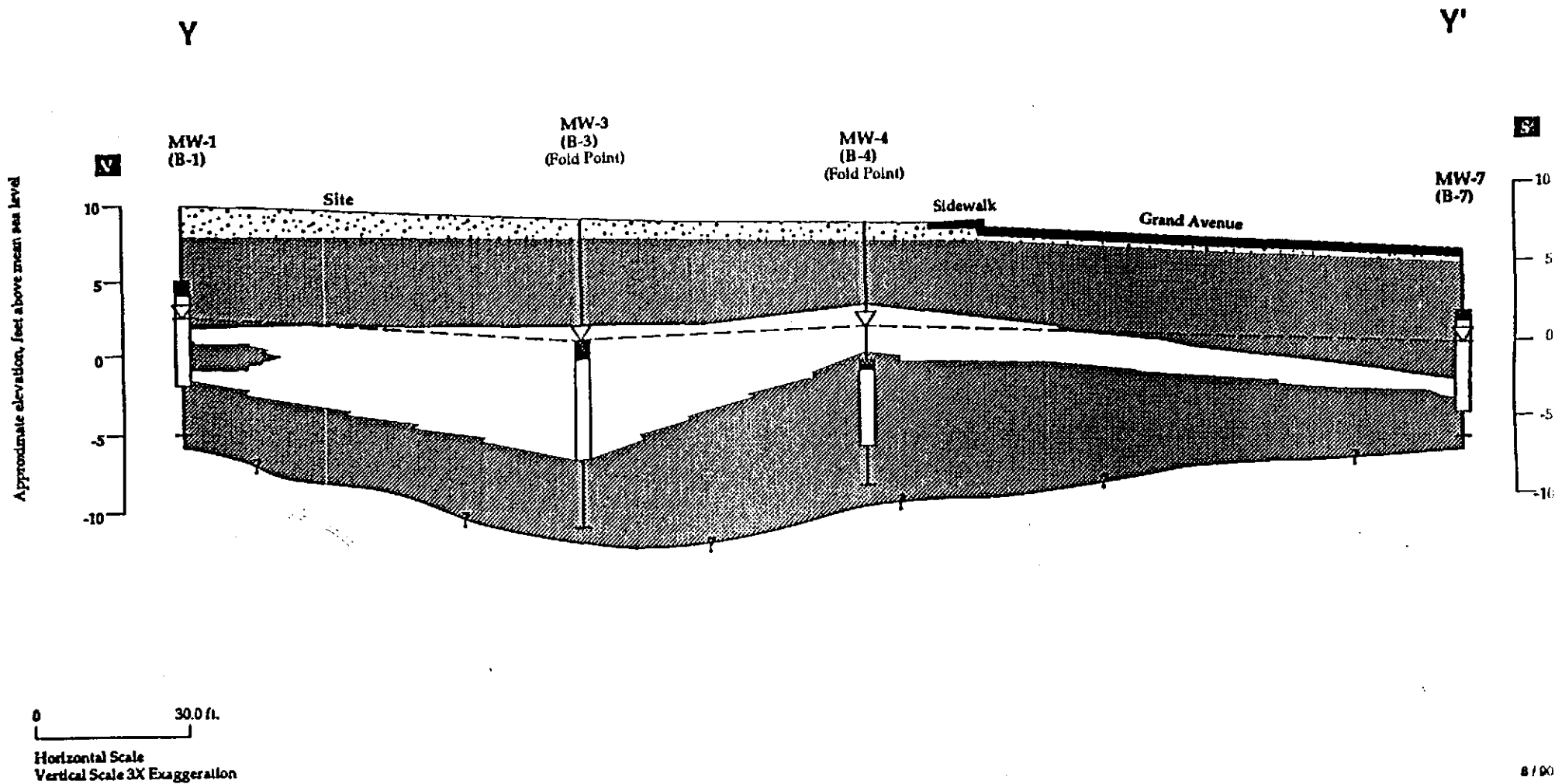
EXPLANATION

- Asphalt/Concrete
- Fill
- Low estimated permeability soils; silty clay, clayey to sandy silt, silty sand
- Low-to-moderate estimated permeability soils; gravelly silt, silty gravel
- Moderate estimated permeability soils; silty sand/silty gravel

- MW-4 Monitor Well location
- Boring location
- Sand pack
- Screen interval
- Boring
- Static water level, 6 July 1990
- Potentiometric Surface

Generalized Hydrogeologic Cross Section X-X'
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

FIGURE
4



EXPLANATION

■ Asphalt/Concrete

▨ Fill

▨ Low estimated permeability soils; silty clay, clayey to sandy silt

□ Moderate estimated permeability soils; silty sand, gravelly sand, silty gravel

MW-1 Monitor Well location (B-1) Boring location

▭ Sand pack
▭ Screen interval
| Boring

▽ Static water level, 6 July 1990

--- Potentiometric Surface

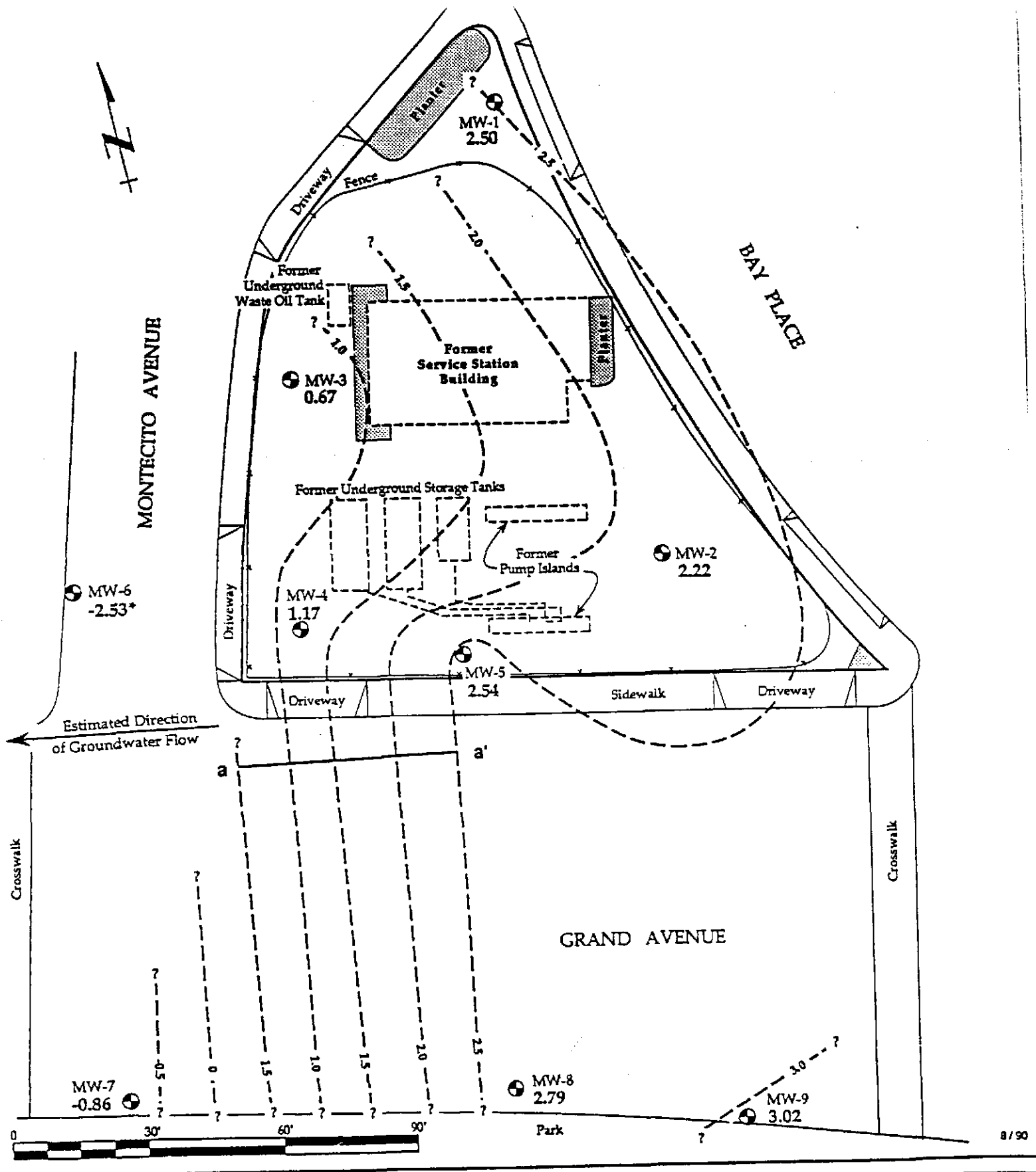
Generalized Hydrogeologic Cross Section Y-Y'
Former Chevron Service Station #90019
210 Grand Avenue
Oakland, California

WESTERN GEOLOGIC RESOURCES, INC.

FIGURE

5

1-101A



EXPLANATION

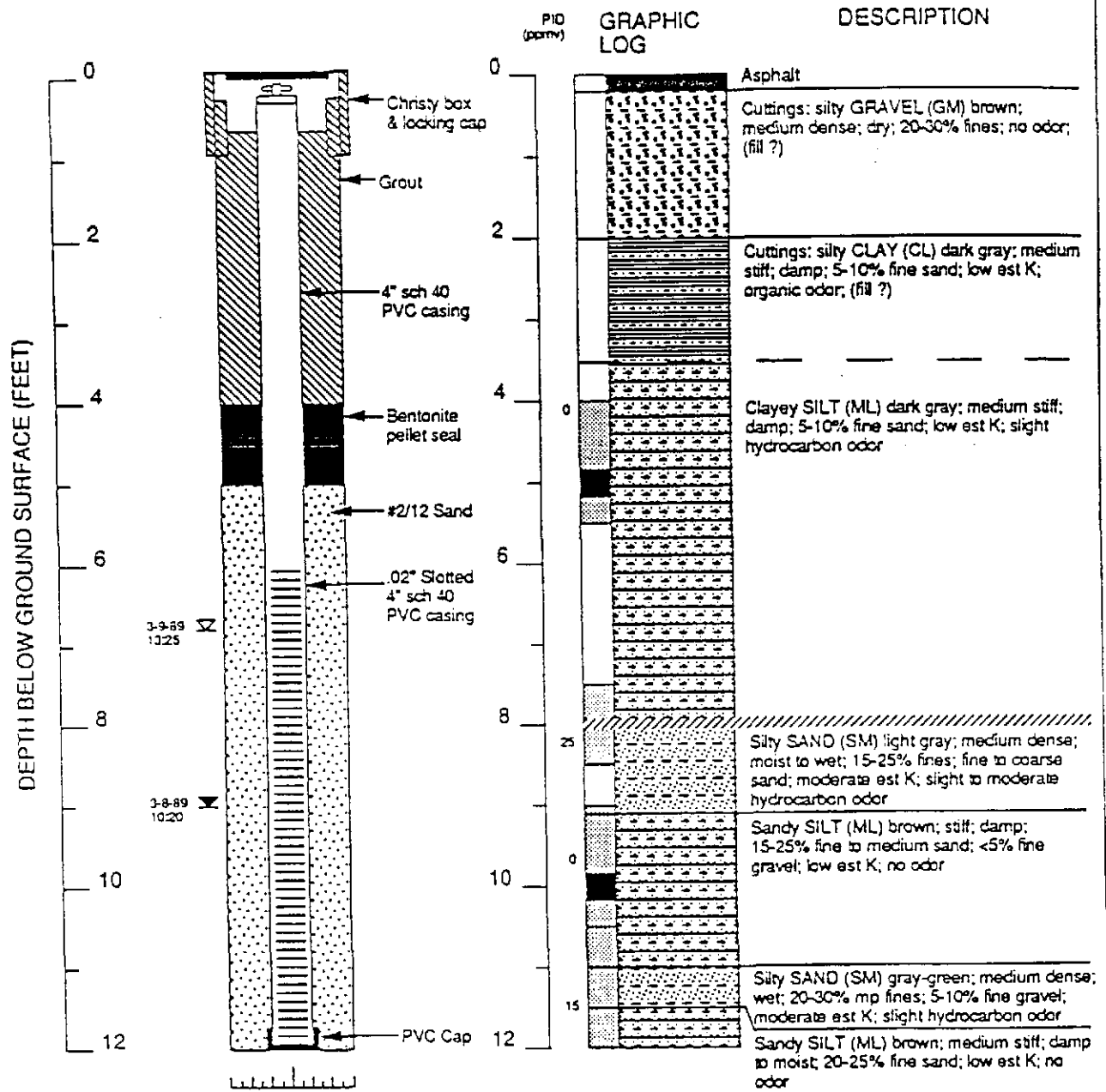
- MW-8
2.79
Monitor Well Location and groundwater elevation, feet above mean sea level
- 2.5 --- ?
Groundwater elevation contour, feet above mean sea level, dashed where inferred, queried where uncertain
- a — a'
Reference line for gradient calculation

Potentiometric Surface of Shallow Groundwater
 6 July 1990
 Former Chevron Service Station #90019
 210 Grand Avenue
 Oakland, California

FIGURE

6

MONITOR WELL MW-1



Continues

EXPLANATION

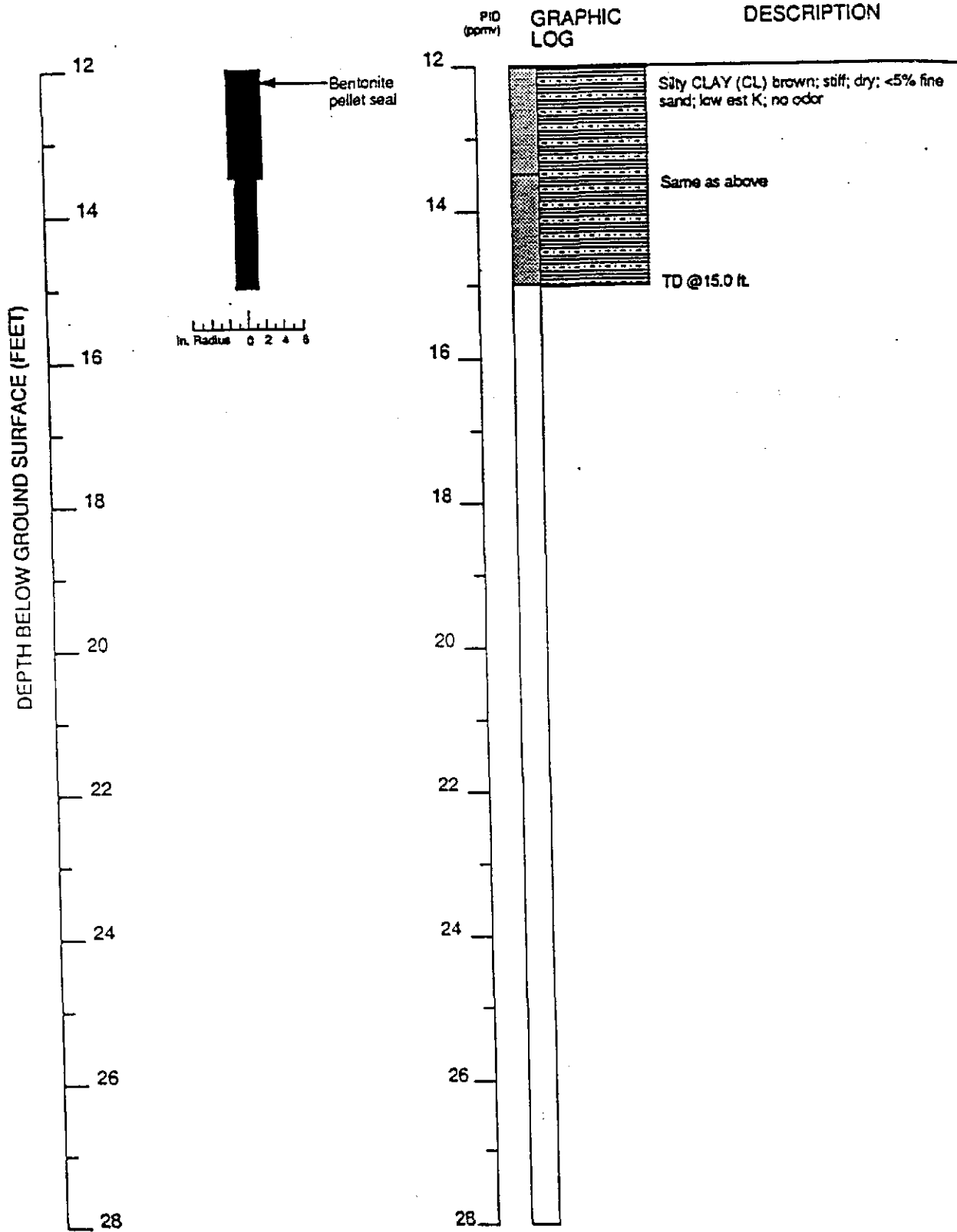
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Gradational (hachured), uncertain (dashed) contact
- Location of recovered drive sample
- No recovery
- Location of drive sample sealed for chemical analysis
- Grab sample
- est K = Estimated permeability (hydraulic conductivity)

Logged by: Mike Edmonson
 Supervisor: Doug Sheeks
 Drilling Company: Exploration Geoservices
 Driller: Dave Yeager
 Drilling Method: 12" Hollow stem auger
 Dates Drilled: 3/8/89
 Well Head Completion: Christy box & locking cap
 Type of Sampler: 2" split barrel
 TD: Total depth= 15.0 ft.

Boring Log and Well Completion Details MW-1
 WGR Project No.: 1-101.01

Chevron Facility # 90019
 Oakland, CA

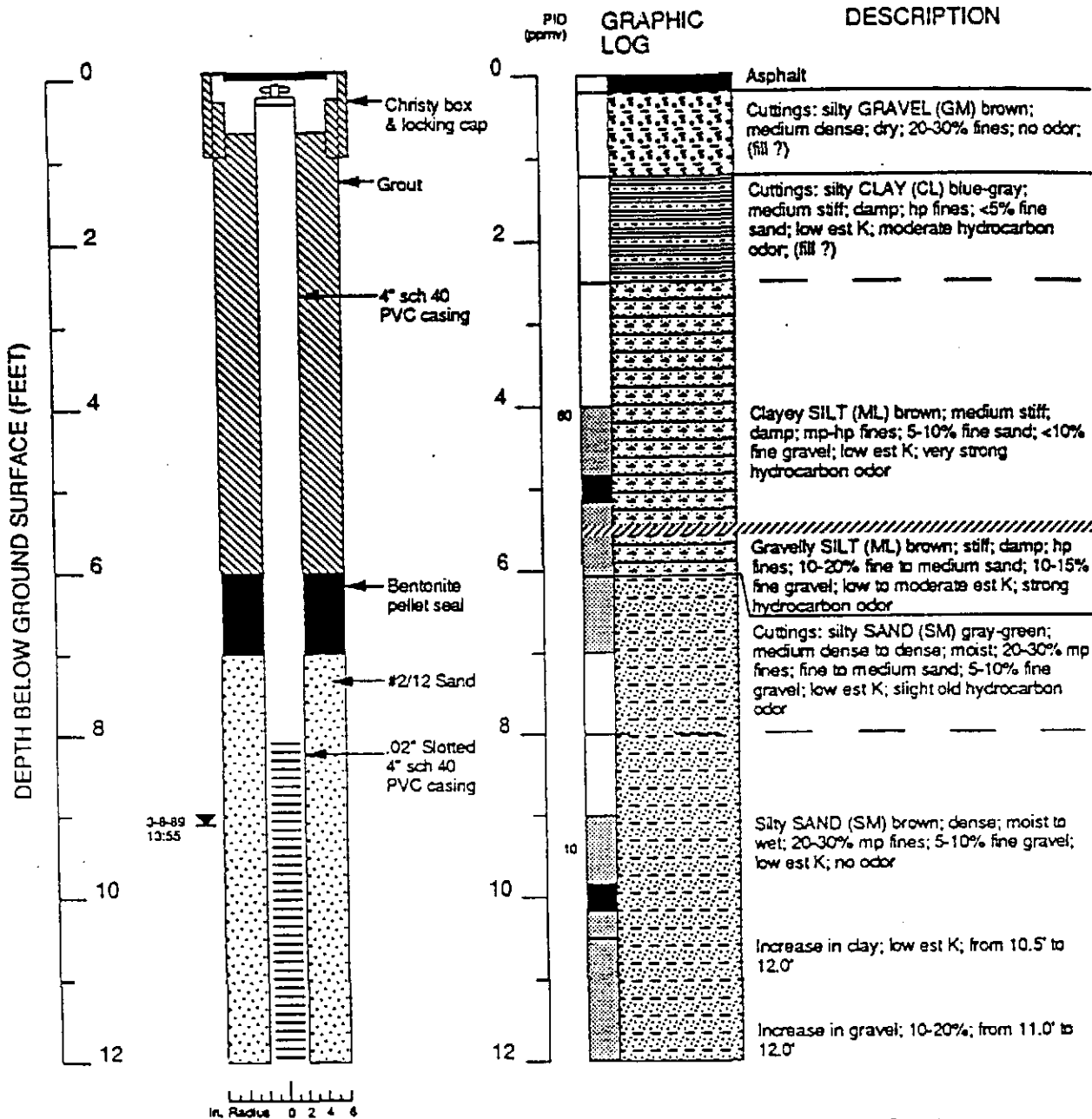
MONITOR WELL MW-1 (cont.)



Boring Log and Well Completion Details MW-1 (cont.)
 WGR Project No.: 1-101.01

Chevron Facility # 90019
 Oakland, CA

MONITOR WELL MW-2



Continues

EXPLANATION

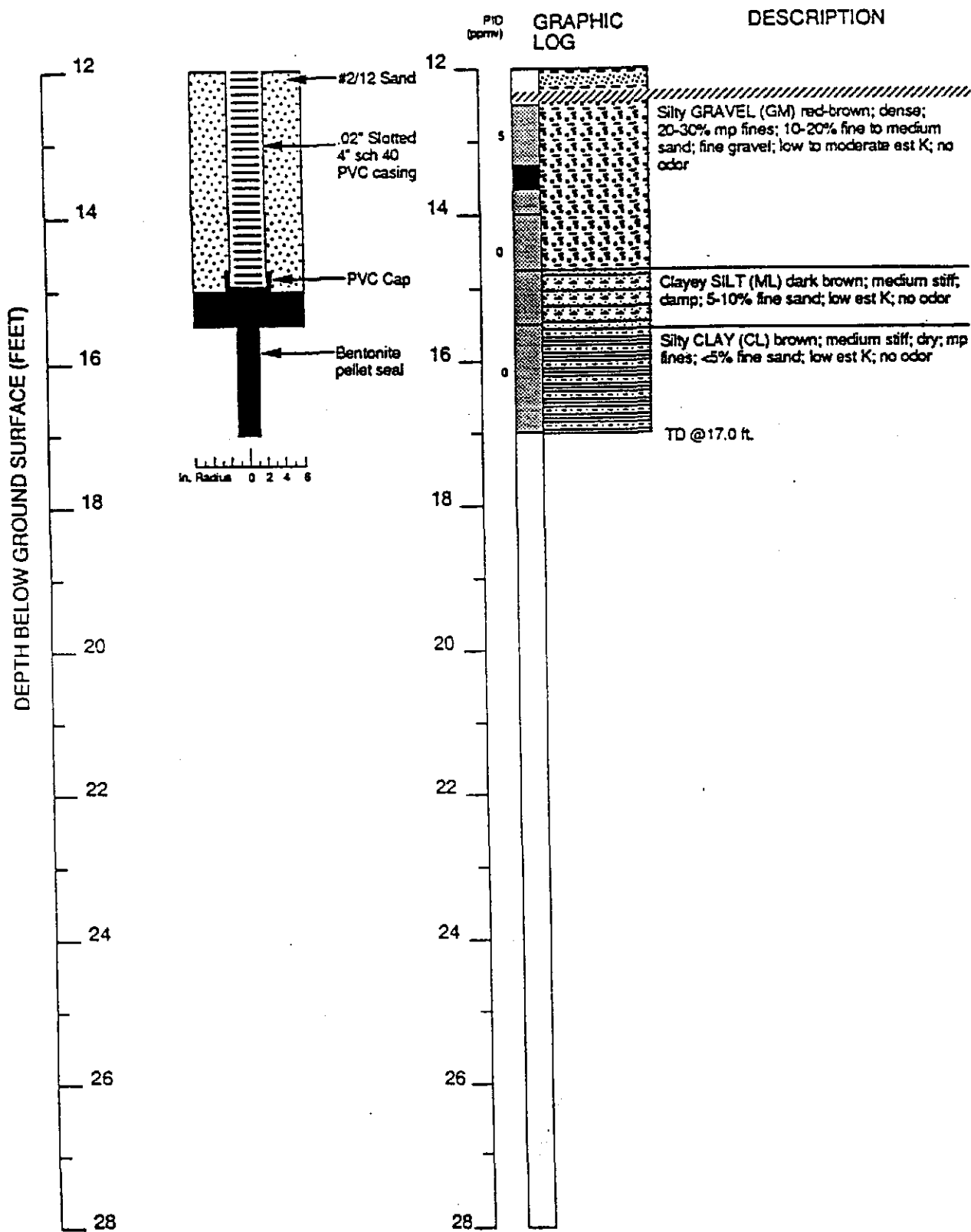
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Gradational (hachured), uncertain (dashed) contact
- Location of recovered drive sample
- NR** No recovery
- Location of drive sample sealed for chemical analysis
- Grab sample
- est K = Estimated permeability (hydraulic conductivity)

Logged by: Mike Edmonson
 Supervisor: Doug Sheeks
 Drilling Company: Exploration Geoservices
 Driller: Dave Yeager
 Drilling Method: 12" Hollow stem auger
 Dates Drilled: 3/8/89
 Well Head Completion: Christy box & locking cap
 Type of Sampler: 2" split barrel
 TD: Total depth= 17.0 ft.

Boring Log and Well Completion Details MW-2
 WGR Project No.: 1-101.01

Chevron Facility # 90019
 Oakland, CA

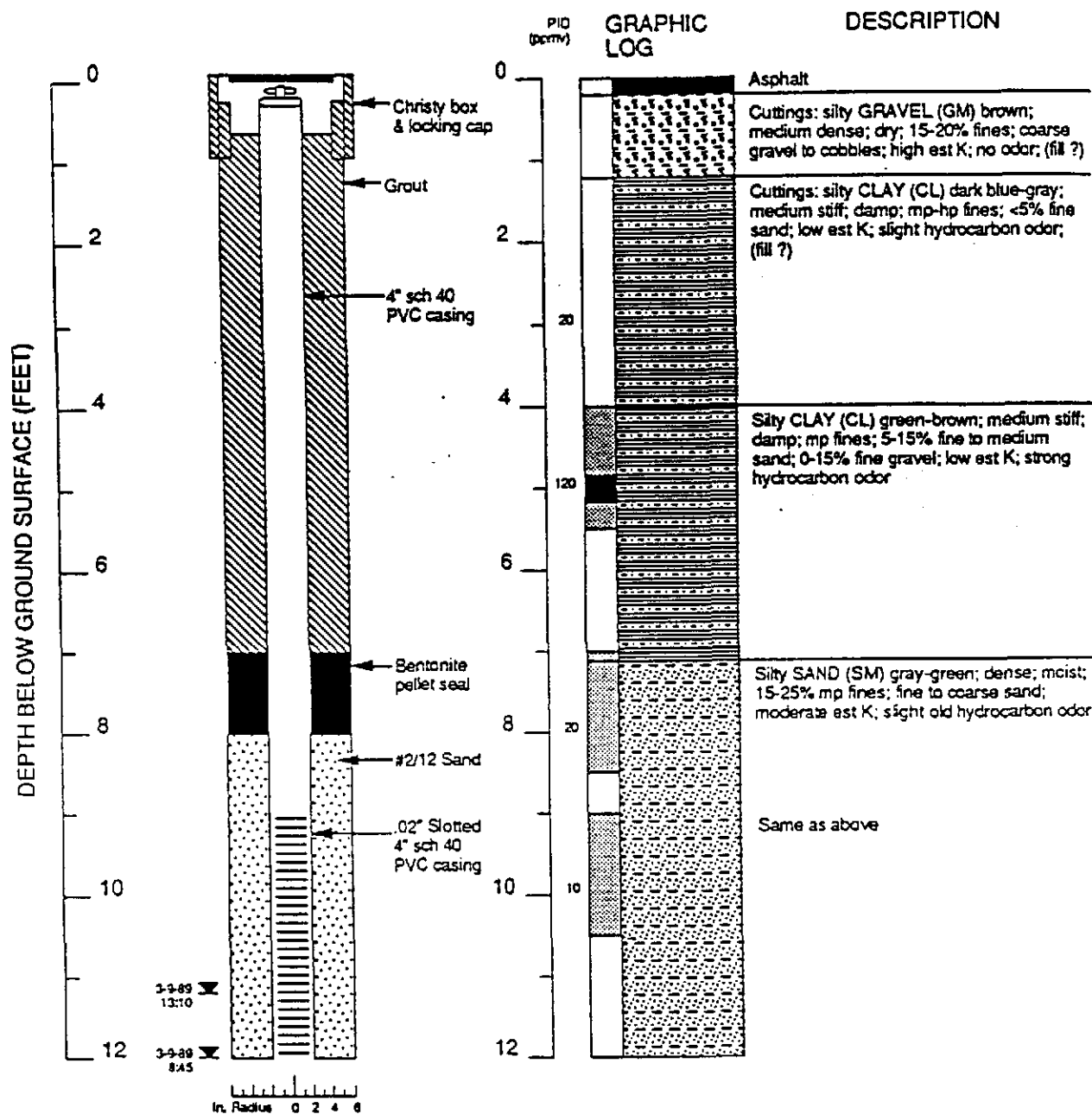
MONITOR WELL MW-2 (cont.)



Boring Log and Well Completion Details MW-2 (cont.)
 WGR Project No.: 1-101.01

Chevron Facility # 90019
 Oakland, CA

MONITOR WELL MW-3



Continues

EXPLANATION

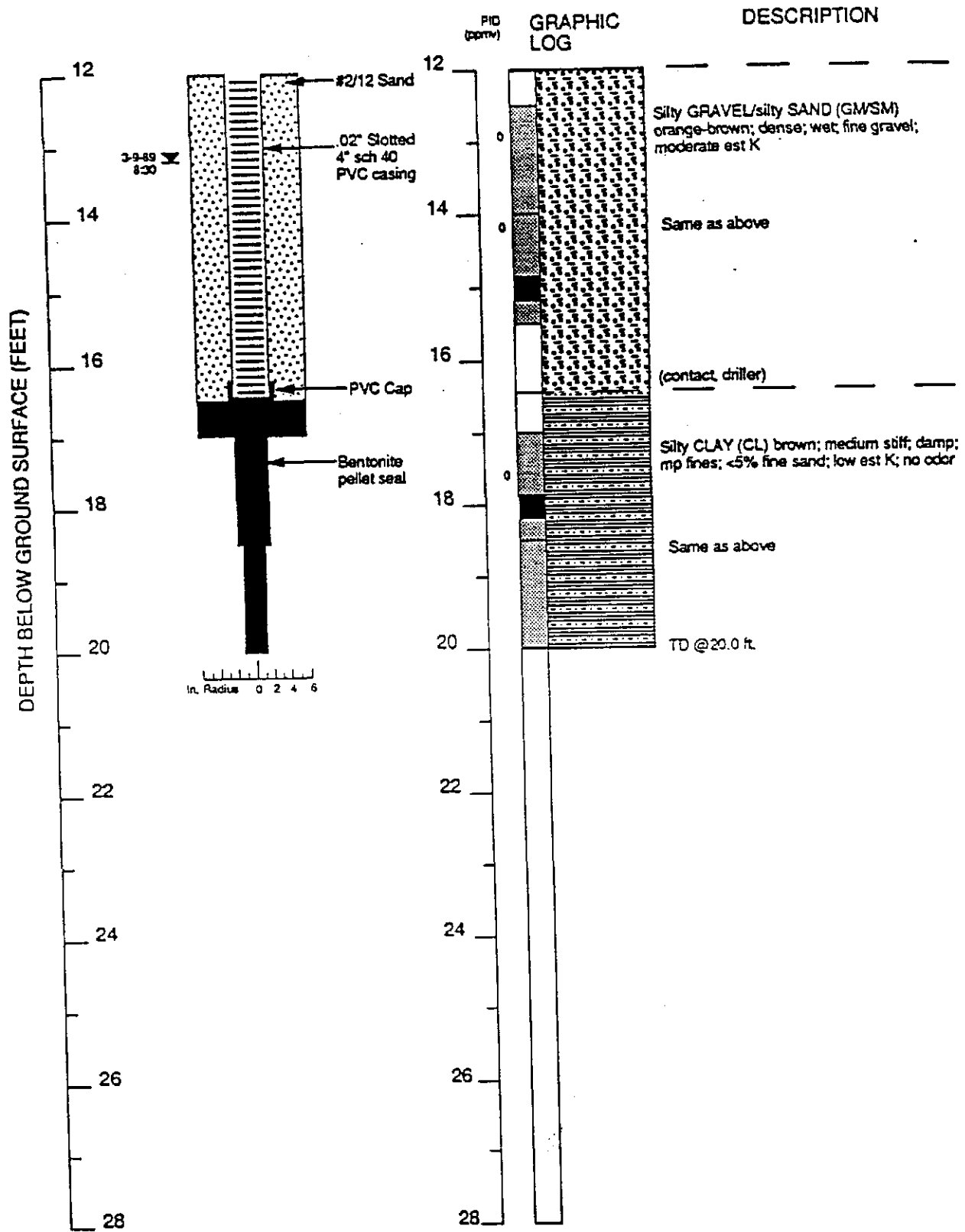
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Gradational (hachured), uncertain (dashed) contact
- Location of recovered drive sample
- NR No recovery
- Location of drive sample sealed for chemical analysis
- Grab sample
- est K = Estimated permeability (hydraulic conductivity)

Logged by: Mike Edmonson
 Supervisor: Doug Sheeks
 Drilling Company: Exploration Geoservices
 Driller: Dave Yeager
 Drilling Method: 12" Hollow stem auger
 Dates Drilled: 3/9/89
 Well Head Completion: Christy box & locking cap
 Type of Sampler: 2" split barrel
 TD: Total depth= 20.0 ft.

Boring Log and Well Completion Details MW-3
 WGR Project No.: 1-101.01

Chevron Facility # 90019
 Oakland, CA

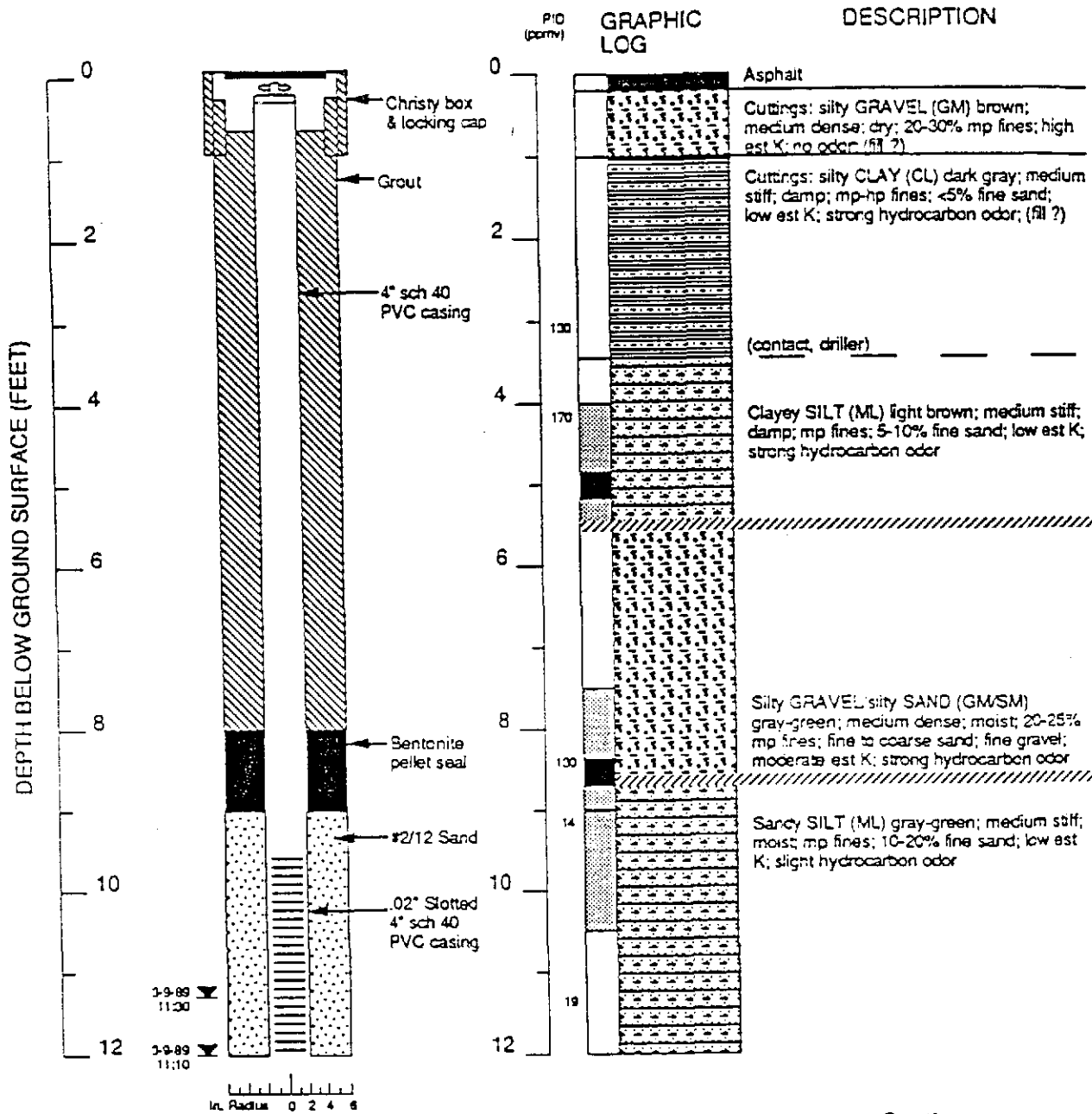
MONITOR WELL MW-3 (cont.)



Boring Log and Well Completion Details MW-3 (cont.)
 WGR Project No.: 1-101.01

Chevron Facility # 90019
 Oakland, CA

MONITOR WELL MW-4



Continues

EXPLANATION

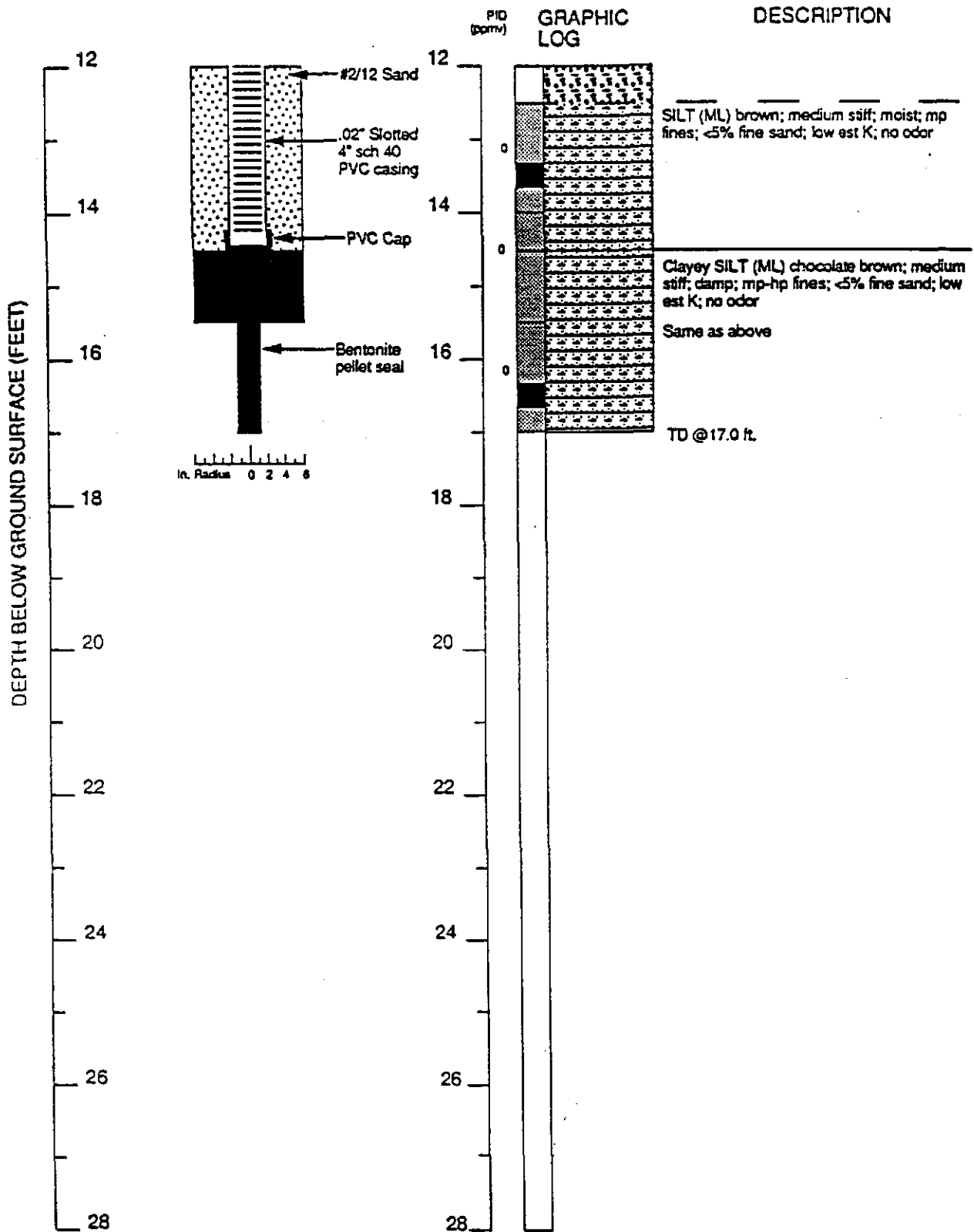
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Gradational (hachured), uncertain (dashed) contact
- Location of recovered drive sample
- NR No recovery
- Location of drive sample sealed for chemical analysis
- Grab sample
- est K = Estimated permeability (hydraulic conductivity)

Logged by: Mike Edmonson
 Supervisor: Doug Sheeks
 Drilling Company: Exploration Geoservices
 Driller: Dave Yeager
 Drilling Method: 12" Hollow stem auger
 Dates Drilled: 3/9/89
 Well Head Completion: Christy box & locking cap
 Type of Sampler: 2" split barrel
 TD: Total depth= 17.0 ft.

Boring Log and Well Completion Details MW-4
 WGR Project No.: 1-101.01

Chevron Facility # 90019
 Oakland, CA

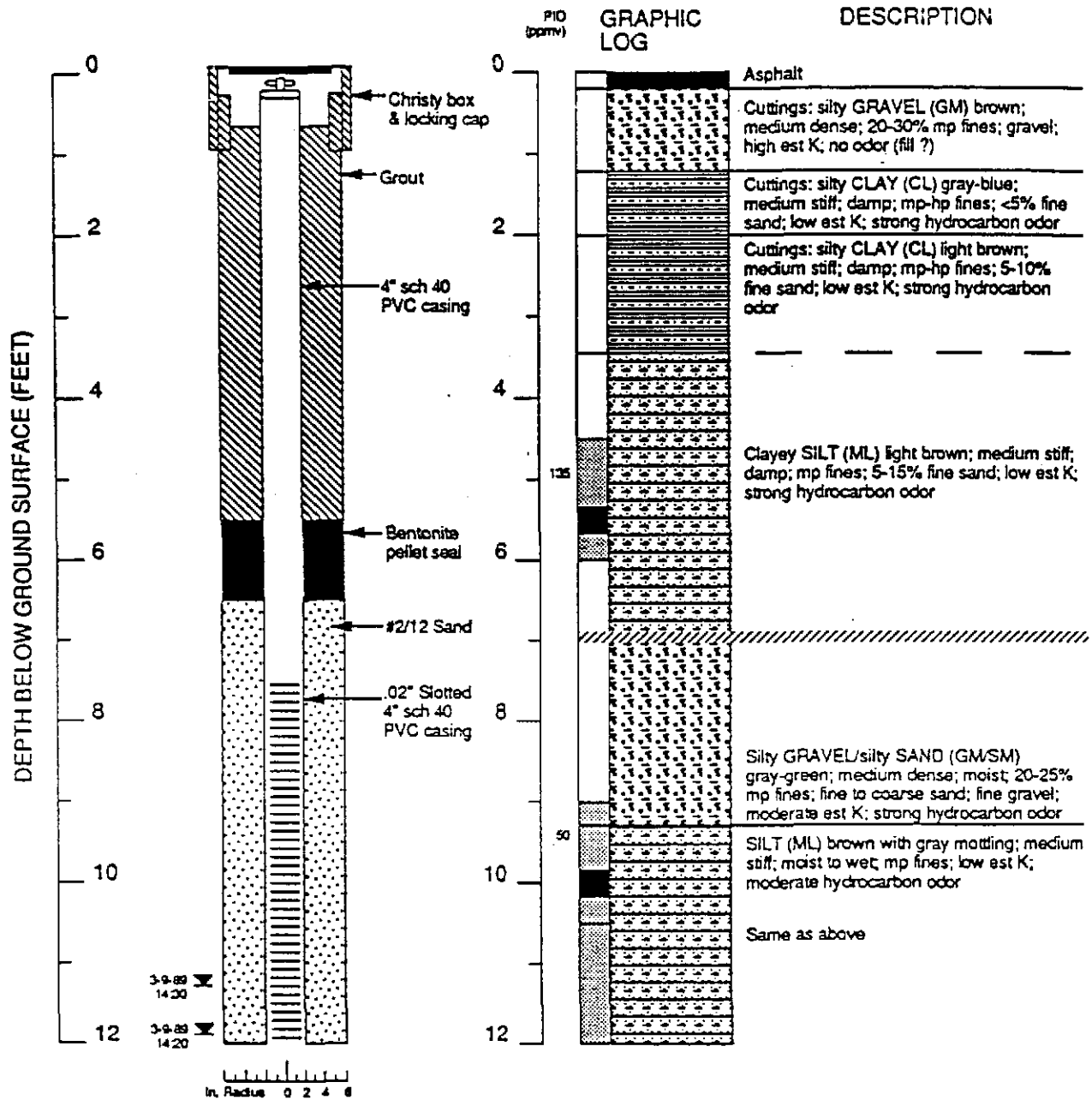
MONITOR WELL MW-4 (cont.)



Boring Log and Well Completion Details MW-4 (cont.)
 WGR Project No.: 1-101.01

Chevron Facility # 90019
 Oakland, CA

MONITOR WELL MW-5



Continues

EXPLANATION

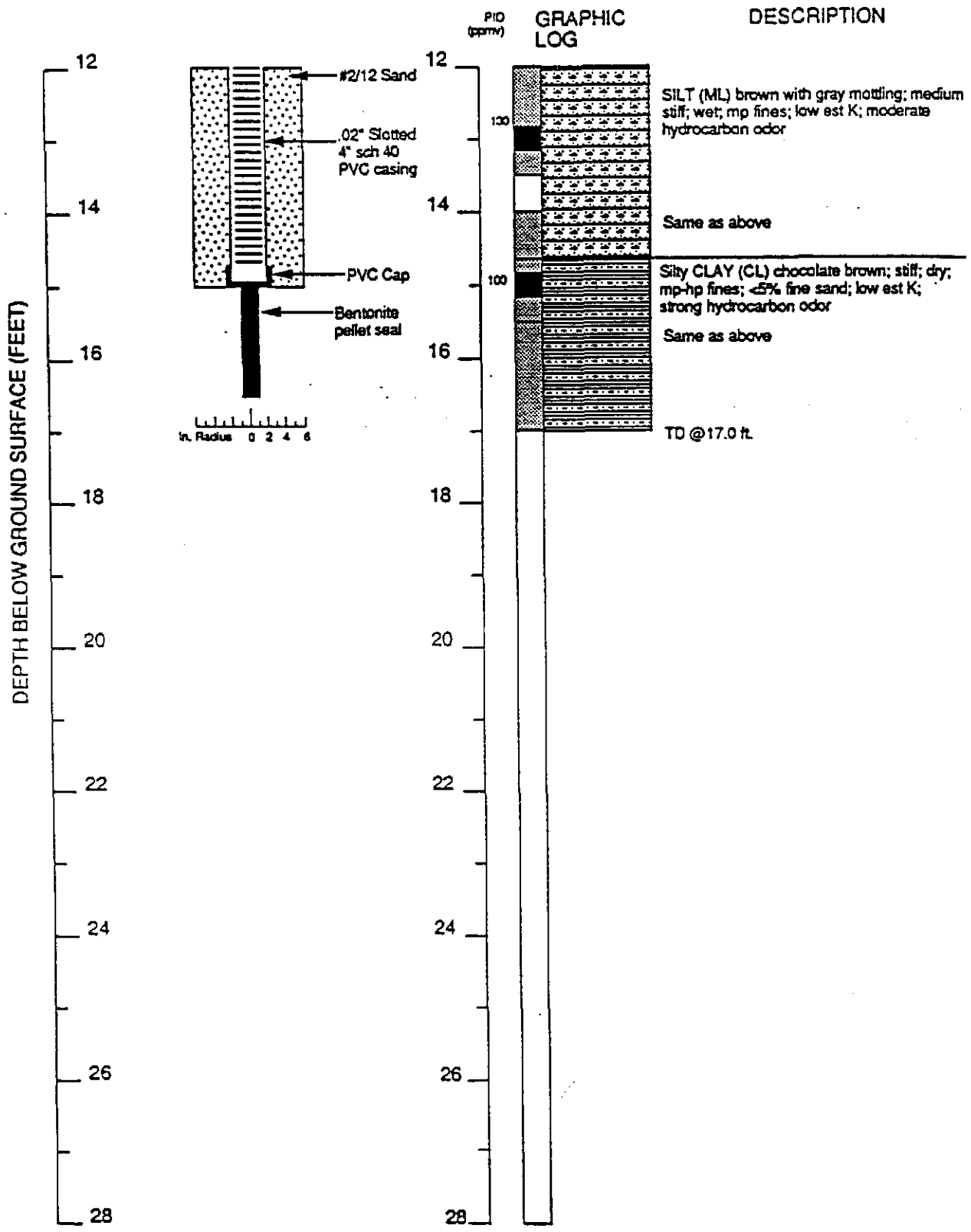
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Gradational (hachured), uncertain (dashed) contact
- Location of recovered drive sample
- NR No recovery
- Location of drive sample sealed for chemical analysis
- Grab sample
- est K = Estimated permeability (hydraulic conductivity)

Logged by: Mike Edmonson
 Supervisor: Doug Sheeks
 Drilling Company: Exploration Geoservices
 Driller: Dave Yeager
 Drilling Method: 12" Hollow stem auger
 Dates Drilled: 3/9/89
 Well Head Completion: Christy box & locking cap
 Type of Sampler: 2" split barrel
 TD: Total depth= 17.0 ft.

Boring Log and Well Completion Details MW-5
 WGR Project No.: 1-101.01

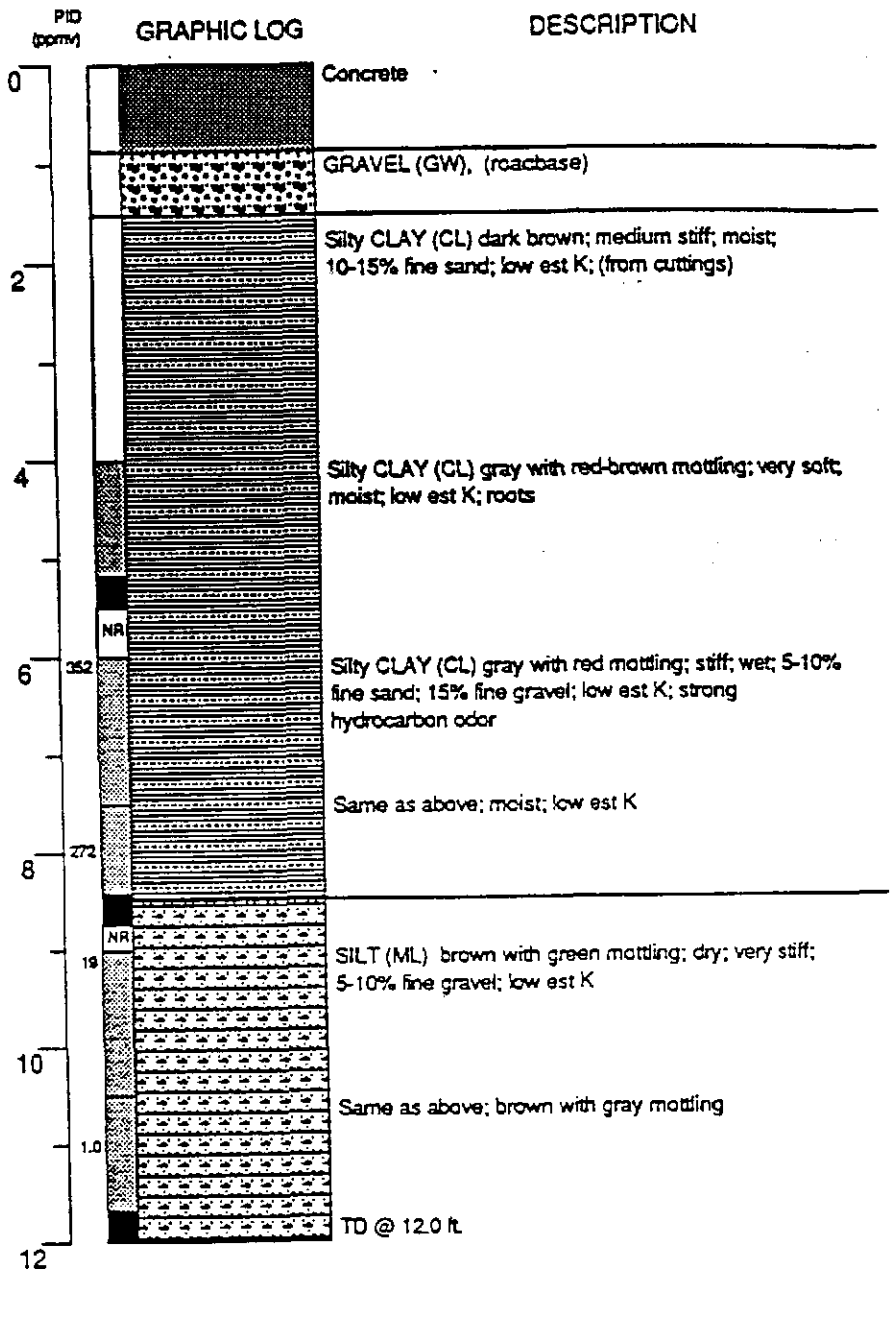
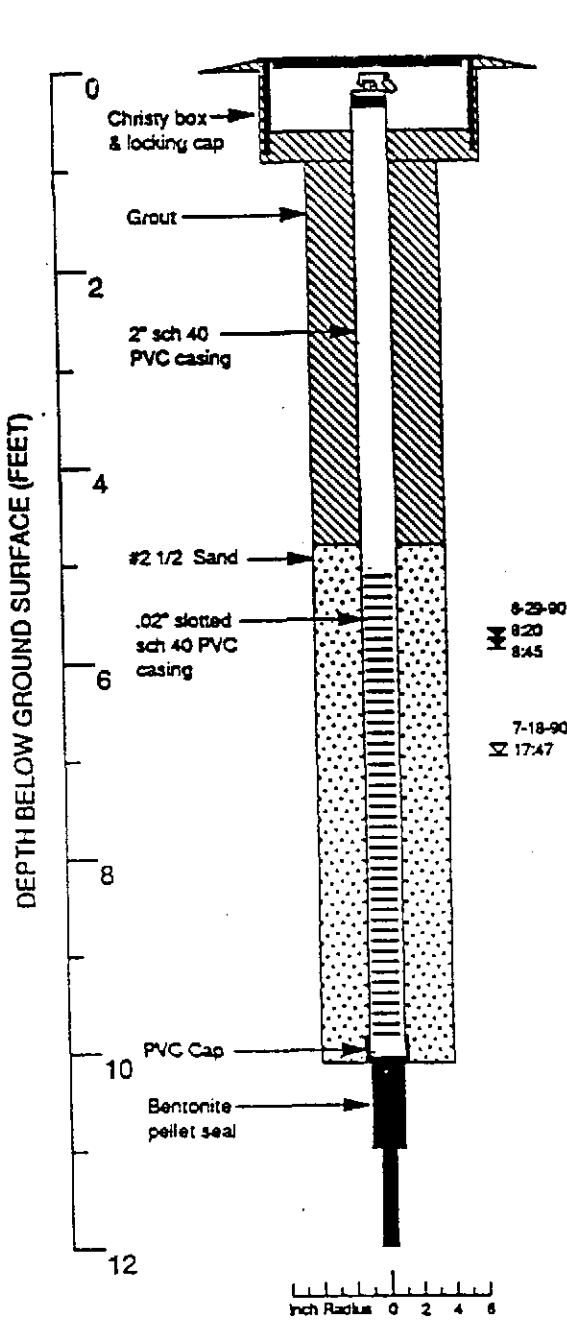
Chevron Facility # 90019
 Oakland, CA

MONITOR WELL MW-5 (cont.)



Boring Log and Well Completion Details MW-5 (cont.)
 WGR Project No.: 1-101.01

Chevron Facility # 90019
 Oakland, CA



Logged by: Justin Power Project Mgr: Len Niles Dates Drilled: 6/29/90	Drilling Company: B & F Drilling Drilling Method: 8" Hollow stem auger Driller: Bruce Cox	Well Head Completion: Christy box & locking cap Type of Sampler: 2" split barrel TD (Total Depth): 12.0 ft.
---	---	---

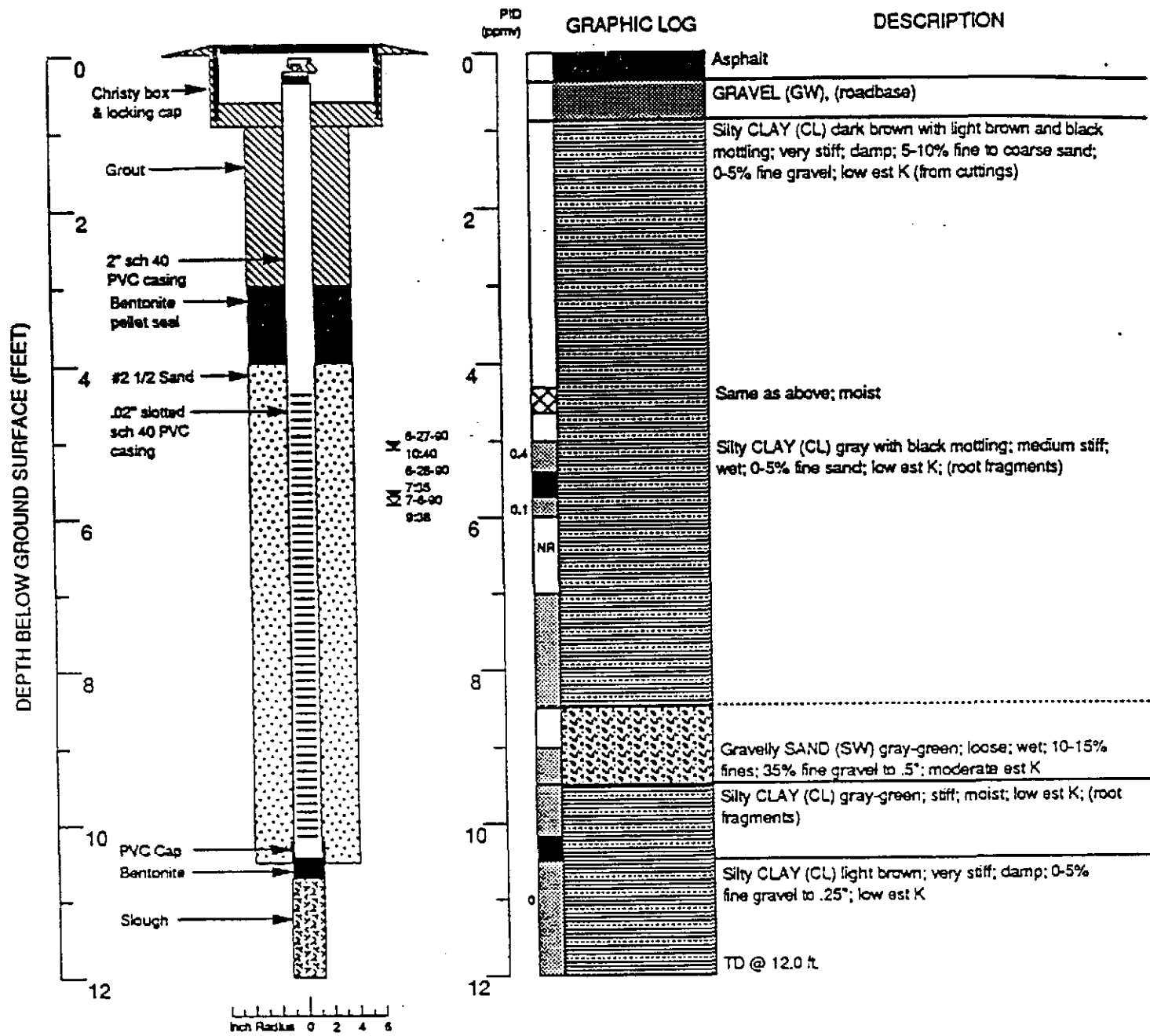
EXPLANATION	
☒ Water level during drilling	——— Contactor Solid where certain
☒ Water level in completed well Dotted where approximate
▣ Location of recovered drill sample	- - - Dashed where uncertain
▣ Location of sample sealed for chemical analysis	////// Hatched where gradational
▣ Sieve sample	est K Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
☒	NR No recovery

Boring Log and Well Completion Details
 MW-6 (Boring B-6)

Chevron Service Station #90019
 Oakland, California

MONITOR WELL

6



Logged by: Justin Power
Project Mgr: Len Niles
Dates Drilled: 6/27/90

Drilling Company: B & F Drilling
Drilling Method: 8" Hollow stem auger
Driller: Bruce Cox

Well Head Completion: Christy box & locking cap
Type of Sampler: 2" split barrel
TD (Total Depth): 12.0 ft.

EXPLANATION

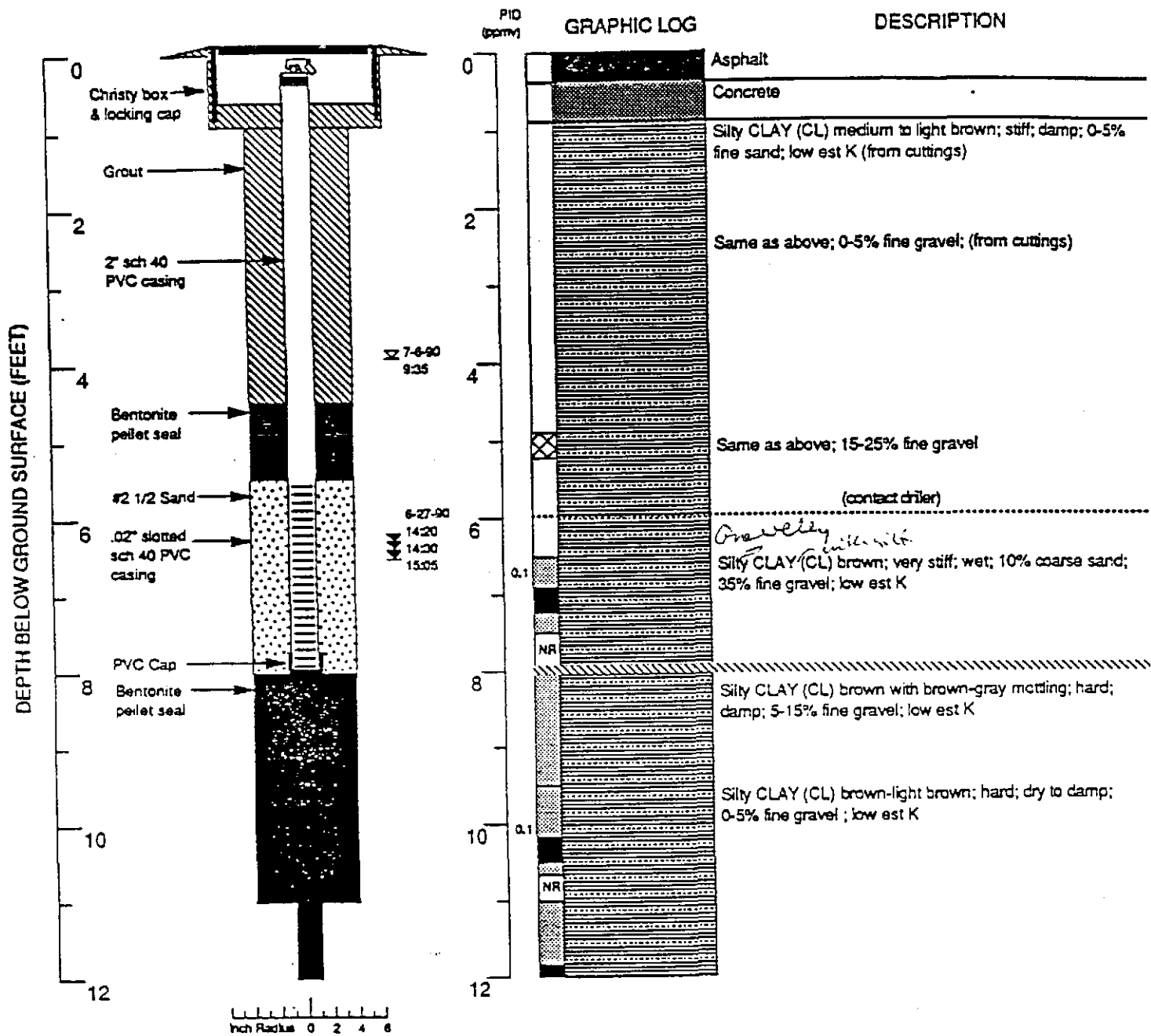
- ☒ Water level during drilling
- ☒ Water level in completed well
- ☒ Location of recovered drill sample
- ☒ Location of sample sealed for chemical analysis
- ☒ Slave sample
- ☒ Grab sample
- Contacts
Solid where certain
- Dotted where approximate
- - - Dashed where uncertain
- ////// Hatched where gradational
- est K Estimated permeability (hydraulic conductivity)
1X = primary 2X = secondary
- NR No recovery

Boring Log and Well Completion Details
MW-7 (Boring B-7)

Chevron Service Station #90019
Oakland, California

MONITOR
WELL

7



Continues

Logged by: Justin Power
 Project Mgr: Len Niles
 Dates Drilled: 6/27/90

Drilling Company: B & F Drilling
 Drilling Method: 8" Hollow stem auger
 Driller: Bruce Cox

Well-Head Completion: Christy box & locking cap
 Type of Sampler: 2" split barrel
 TD (Total Depth): 14.0 ft.

EXPLANATION

- ☒ Water level during drilling
- ☒ Water level in completed well
- ☒ Location of recovered drill sample
- ☒ Location of sample sealed for chemical analysis
- ☒ Sieve sample
- ☒ Grab sample
- Contact: Solid where certain
- Dotted where approximate
- - - Dashed where uncertain
- ////// Hachured where gradational
- est K Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR No recovery

**Boring Log and Well Completion Details
 MW-8 (Boring B-8)**

Chevron Service Station #90019
 Oakland, California

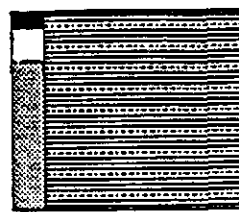
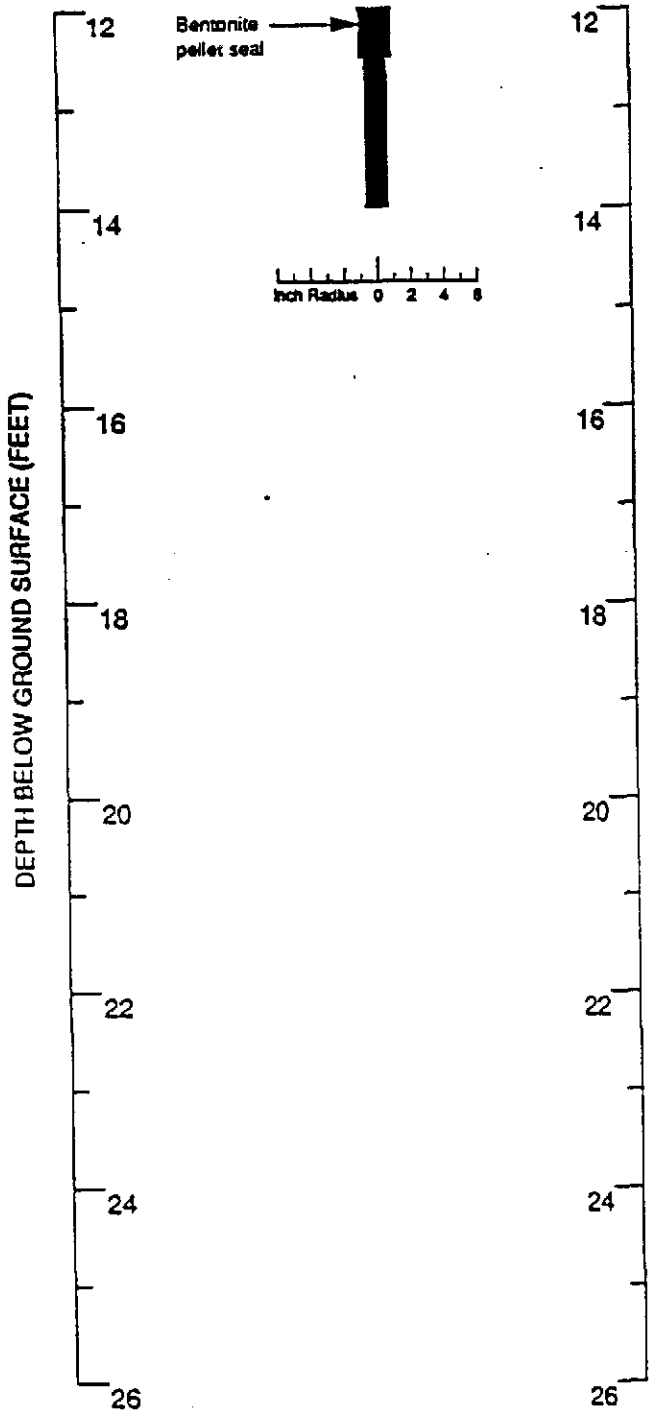
MONITOR WELL

8

PID
(ppmv)

GRAPHIC LOG

DESCRIPTION



Silty CLAY (CL) brown-light brown; very stiff; dry to damp; 0-5% fine gravel; low est K

Same as above

TD @ 14.0 ft.

EXPLANATION

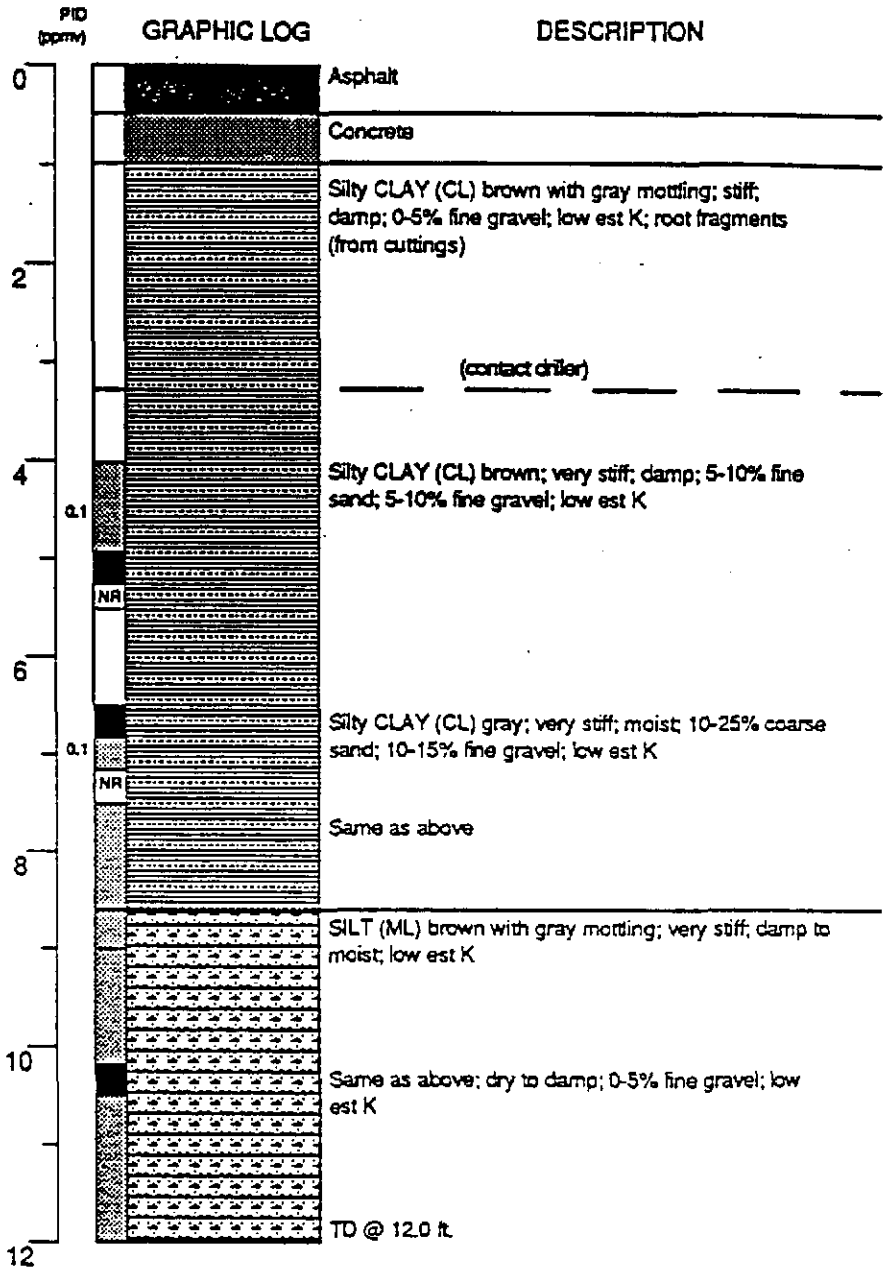
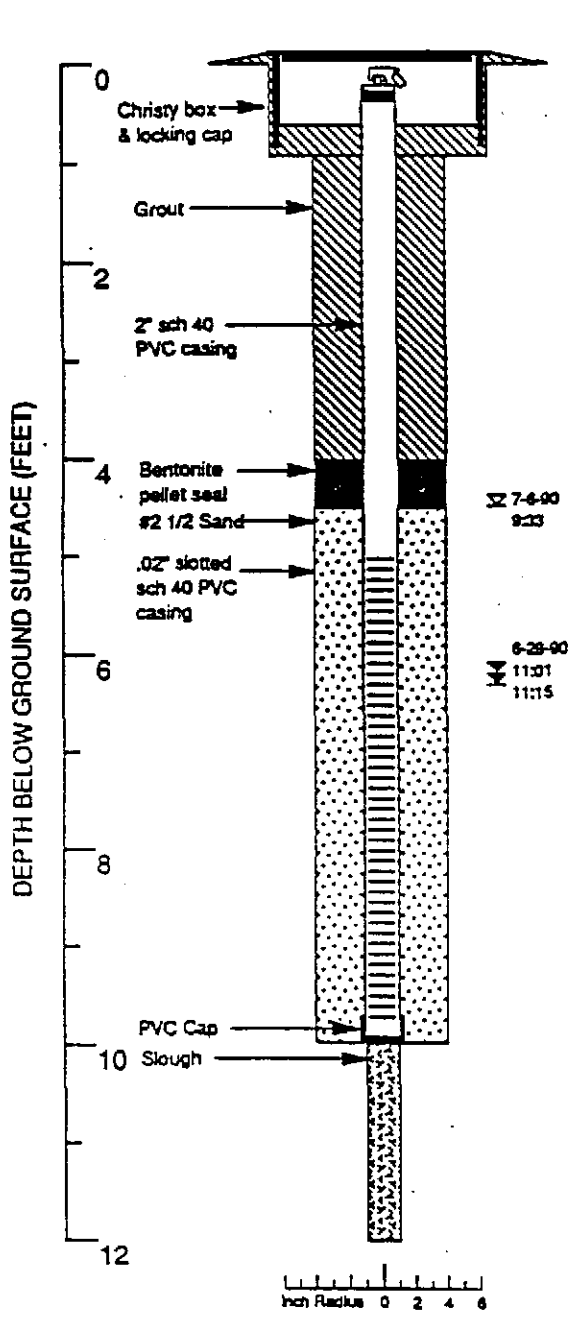
- ☒ Water level during drilling
- ☒ Water level in completed well
- ☒ Location of recovered drill sample
- ☒ Location of sample sealed for chemical analysis
- ☒ Sieve sample
- ☒ Contacts
- Contacts
Solid where certain
- Dotted where approximate
- - - Dashed where uncertain
- ////// Hachured where gradational
- est K Estimated permeability (hydraulic conductivity)
1K = primary 2K = secondary
- NR No recovery

Boring Log and Well Completion Details
MW-8 (Boring B-8)

Chevron Service Station #90019
Oakland, California

MONITOR
WELL

8



Σ 7-4-90
9:23

6-28-90
11:01
11:15

Logged by: Justin Power	Drilling Company: B & F Drilling	Well Head Completion: Christy box & locking cap
Project Mgr: Len Niles	Drilling Method: 8" Hollow stem auger	Type of Sampler: 2" split barrel
Dates Drilled: 6/28/90	Driller: Bruce Cox	TD (Total Depth): 12.0 ft

EXPLANATION

- ☒ Water level during drilling
- ☒ Water level in completed well
- ☒ Location of recovered drill sample
- ☒ Location of sample sealed for chemical analysis
- ☒ Sieve sample
- ☒ Grab sample
- Contact: Solid where certain
- Dotted where approximate
- - - Dashed where uncertain
- ////// Hatched where gradational
- est K Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR No recovery

**Boring Log and Well Completion Details
MW-9 (Boring B-9)**

Chevron Service Station #90019
Oakland, California

MONITOR WELL

9

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Former Chevron SS #9-0019 Job Identification: 346500.02
 Site Location: 210 Grand Avenue, Oakland Date Completed: 2/1/2000
 Completed By: Barbara Sieminski

Software: GSI RBCA Spreadsheet
 Version: 1.0.1

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential		Commercial/Industrial		Surface Parameters		Residential	Constrctn
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Constrctn	Definition (Units)		
ATc	Averaging time for carcinogens (yr)	70						<u>1.2E+07</u>	1.0E+06
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1		<u>4.8E+03</u>	1.0E+03
BW	Body Weight (kg)	70	15	35	70			<u>4.8E+03</u>	
ED	Exposure Duration (yr)	30	6	16	25	1		2.3E+02	
t	Averaging time for vapor flux (yr)	30			25	1		2.0E+02	
EF	Exposure Frequency (days/yr)	350			250	180			
EF.Derm	Exposure Frequency for dermal exposure	350			250				
IRgw	Ingestion Rate of Water (L/day)	2			1				
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100			
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01				
IRa.in	Inhalation rate indoor (m ³ /day)	15			20				
IRa.out	Inhalation rate outdoor (m ³ /day)	20			20	10			
SA	Skin surface area (dermal) (cm ²)	5.8E+03		2.0E+03	5.8E+03	5.8E+03			
SAadj	Adjusted dermal area (cm ² -yr/kg)	2.1E+03			1.7E+03				
M	Soil to Skin adherence factor	1							
AAFs	Age adjustment on soil ingestion	FALSE			FALSE				
AAFd	Age adjustment on skin surface area	FALSE			FALSE				
tox	Use EPA tox data for air (or PEL based)?	TRUE							
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE							
Matrix of Exposed Persons to Complete Exposure Pathways		Residential		Commercial/Industrial					
Outdoor Air Pathways:									
SS.v	Volatiles and Particulates from Surface Soils	FALSE			FALSE	TRUE			
S.v	Volatilization from Subsurface Soils	FALSE			TRUE				
GW.v	Volatilization from Groundwater	FALSE			TRUE				
Indoor Air Pathways:									
S.b	Vapors from Subsurface Soils	FALSE			FALSE				
GW.b	Vapors from Groundwater	FALSE			FALSE				
Soil Pathways:									
SS.d	Direct Ingestion and Dermal Contact	FALSE			FALSE	TRUE			
Groundwater Pathways:									
GW.i	Groundwater Ingestion	FALSE			FALSE				
S.l	Leaching to Groundwater from all Soils	FALSE			FALSE				
Matrix of Receptor Distance and Location On- or Off-Site		Residential		Commercial/Industrial					
GW	Groundwater receptor (cm)		TRUE			TRUE			
S	Inhalation receptor (cm)		TRUE			TRUE			
Matrix of Target Risks									
TRab	Target Risk (class A&B carcinogens)		1.0E-06						
TRc	Target Risk (class C carcinogens)		1.0E-05						
THQ	Target Hazard Quotient		1.0E+00						
Opt	Calculation Option (1, 2, or 3)		1						
Tier	RBCA Tier		1						
Surface Parameters									
A	Contaminated soil area (cm ²)							<u>1.2E+07</u>	1.0E+06
W	Length of affect. soil parallel to wind (cm)							<u>4.8E+03</u>	1.0E+03
W.gw	Length of affect. soil parallel to groundwater (cm)							<u>4.8E+03</u>	
Uair	Ambient air velocity in mixing zone (cm/s)							2.3E+02	
delta	Air mixing zone height (cm)							2.0E+02	
Lss	Thickness of affected surface soils (cm)								
Pe	Particulate areal emission rate (g/cm ² /s)							6.9E-14	
Groundwater Definition (Units)									
delta.gw	Groundwater mixing zone depth (cm)							2.0E+02	
I	Groundwater infiltration rate (cm/yr)							3.0E+01	
Ugw	Groundwater Darcy velocity (cm/yr)							2.5E+03	
Ugw.tr	Groundwater seepage velocity (cm/yr)							6.6E+03	
Ks	Saturated hydraulic conductivity (cm/s)								
grad	Groundwater gradient (cm/cm)								
Sw	Width of groundwater source zone (cm)							1.8E+03	
Sd	Depth of groundwater source zone (cm)							4.6E+02	
phi.eff	Effective porosity in water-bearing unit							3.8E-01	
foc.sat	Fraction organic carbon in water-bearing unit							1.0E-03	
BIO?	Is bioattenuation considered?							TRUE	
BC	Biodegradation Capacity (mg/L)								
Soil									
hc	Capillary zone thickness (cm)							5.0E+00	
hv	Vadose zone thickness (cm)							<u>2.7E+02</u>	
rho	Soil density (g/cm ³)							1.7	
foc	Fraction of organic carbon in vadose zone							0.01	
phi	Soil porosity in vadose zone							0.38	
Lgw	Depth to groundwater (cm)							<u>2.7E+02</u>	
Ls	Depth to top of affected subsurface soil (cm)							<u>3.0E+01</u>	
Lsubs	Thickness of affected subsurface soils (cm)							<u>2.4E+02</u>	
pH	Soil/groundwater pH							6.5	
								capillary	vadose
									foundation
phi.w	Volumetric water content							0.342	<u>0.12</u>
phi.a	Volumetric air content							0.038	0.26
Building									
Lb	Building volume/area ratio (cm)								
ER	Building air exchange rate (s ⁻¹)								
Lcrk	Foundation crack thickness (cm)								
eta	Foundation crack fraction								
Transport Parameters									
Groundwater									
ax	Longitudinal dispersivity (cm)								
ay	Transverse dispersivity (cm)								
az	Vertical dispersivity (cm)								
Vapor									
dcy	Transverse dispersion coefficient (cm)								
dcz	Vertical dispersion coefficient (cm)								

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration					
	in Groundwater		in Surface Soil		in Subsurface Soil	
	value (mg/L)	note	value (mg/kg)	note	value (mg/kg)	note
Benzene	3.3E+0	MAX			3.4E+0	MAX
Ethylbenzene	6.6E-1	MAX			8.3E+0	MAX
Methyl t-Butyl Ether	5.0E-1	MAX				
Toluene	3.8E+0	MAX			1.3E+1	MAX
Xylene (mixed isomers)	1.5E+0	MAX			2.9E+1	MAX

Site Name: Former Chevron SS #9-0019
Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski
Date Completed: 2/1/2000

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Benzene	
Ethylbenzene	
Methyl t-Butyl Ether	
Toluene	
Xylene (mixed isomers)	

Site Name: Former Chevron SS #9-001 Completed By: Barbara Sieminski
Site Location: 210 Grand Avenue, Oakl Date Completed: 2/1/2000

GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)
Dilution Attenuation Factor
(DAF) in Groundwater

CONSTITUENT	Residential	Comm./Ind.
	Receptor	Receptor
Benzene	1.0E+0	1.0E+0
Ethylbenzene	1.0E+0	1.0E+0
Methyl t-Butyl Ether	1.0E+0	1.0E+0
Toluene	1.0E+0	1.0E+0
Xylene (mixed isomers)	1.0E+0	1.0E+0

Site Name: Former Chevron SS #9-0019
Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski
Date Completed: 2/1/2000

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Benzene	
Ethylbenzene	
Methyl t-Butyl Ether	
Toluene	
Xylene (mixed isomers)	

Site Name: Former Chevron SS #9-0019 Completed By: Barbara Sieminski
Site Location: 210 Grand Avenue, Oakla Date Completed: 2/1/2000

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater	Air (Comm. only)
	(MCL) (mg/L)	(PEL/TLV) (mg/m ³)
Benzene		
Ethylbenzene		
Methyl t-Butyl Ether		
Toluene		
Xylene (mixed isomers)		

Site Name: Former Chevron SS #9-0019
Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski
Date Completed: 2/1/2000

RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.1

Site Name: Former Chevron SS #9-0019

Completed By: Barbara Sieminski

Site Location: 210 Grand Avenue, Oakland

Date Completed: 2/1/2000

1 OF 1

**SURFACE SOIL RBSL VALUES
(< 0 FT BGS)**

Target Risk (Class A & B) 1.0E-6

MCL exposure limit?

Calculation Option: 1

Target Risk (Class C) 1.0E-5

PEL exposure limit?

(Two-directional vert. dispersion)

Target Hazard Quotient 1.0E+0

RBSL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			Ingestion, Inhalation and Dermal Contact		Construction Worker	Applicable RBSL	RBSL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Commercial: (on-site)	(mg/kg)	<input type="checkbox"/> If yes	Only if "yes" left
71-43-2	Benzene	0.0E+0	NA	NA	NA	NA	NA	1.1E+2	1.1E+2	<input type="checkbox"/>	<1
100-41-4	Ethylbenzene	0.0E+0	NA	NA	NA	NA	NA	>Res	>Res	<input type="checkbox"/>	<1
1634-04-4	Methyl t-Butyl Ether	0.0E+0	NA	NA	NA	NA	NA	2.4E+2	2.4E+2	<input type="checkbox"/>	<1
108-88-3	Toluene	0.0E+0	NA	NA	NA	NA	NA	>Res	>Res	<input type="checkbox"/>	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0	NA	NA	NA	NA	NA	>Res	>Res	<input type="checkbox"/>	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.2

Site Name: Former Chevron SS #9-0019

Completed By: Barbara Sieminski

Site Location: 210 Grand Avenue, Oakland

Date Completed: 2/1/2000

1 OF 1

**SUBSURFACE SOIL RBSL VALUES
(> 0 FT BGS)**

Target Risk (Class A & B) 1.0E-6

MCL exposure limit?

Calculation Option: 1

Target Risk (Class C) 1.0E-5

PEL exposure limit?

(Two-directional vert. dispersion)

Target Hazard Quotient 1.0E+0

RBSL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			Soil Volatilization to Indoor Air		Soil Volatilization to Outdoor Air		Applicable RBSL	RBSL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential: (on-site)	Commercial: (on-site)	(mg/kg)	<input type="checkbox"/> If yes	Only if "yes" left
71-43-2	Benzene	3.4E+0	NA	NA	NA	NA	NA	NA	9.2E+0	9.2E+0	<input type="checkbox"/>	<1
100-41-4	Ethylbenzene	8.3E+0	NA	NA	NA	NA	NA	NA	>Res	>Res	<input type="checkbox"/>	<1
1634-04-4	Methyl t-Butyl Ether	0.0E+0	NA	NA	NA	NA	NA	NA	>Res	>Res	<input type="checkbox"/>	<1
108-88-3	Toluene	1.3E+1	NA	NA	NA	NA	NA	NA	>Res	>Res	<input type="checkbox"/>	<1
1330-20-7	Xylene (mixed isomers)	2.9E+1	NA	NA	NA	NA	NA	NA	>Res	>Res	<input type="checkbox"/>	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.3

Site Name: Former Chevron SS #9-0019
 Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski
 Date Completed: 2/1/2000

1 OF 1

GROUNDWATER RBSL VALUES

Target Risk (Class A & B) 1.0E-6
 Target Risk (Class C) 1.0E-5
 Target Hazard Quotient 1.0E+0

MCL exposure limit?
 PEL exposure limit?

Calculation Option: 1

(Two-directional vert. dispersion)

RBSL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration (mg/L)	Groundwater Ingestion			Groundwater Volatilization to Indoor Air		X	Groundwater Volatilization to Outdoor Air		Applicable RBSL (mg/L)	RBSL Exceeded ? "■" If yes	Required CRF Only if "yes" left
			Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)		Residential (on-site)	Commercial: (on-site)			
71-43-2	Benzene	3.3E+0	NA	NA	NA	NA	NA	NA	5.9E+0	5.9E+0	<input type="checkbox"/>	<1	
100-41-4	Ethylbenzene	6.6E-1	NA	NA	NA	NA	NA	NA	>Sol	>Sol	<input type="checkbox"/>	<1	
1634-04-4	Methyl t-Butyl Ether	5.0E-1	NA	NA	NA	NA	NA	NA	>Sol	>Sol	<input type="checkbox"/>	<1	
108-88-3	Toluene	3.8E+0	NA	NA	NA	NA	NA	NA	>Sol	>Sol	<input type="checkbox"/>	<1	
1330-20-7	Xylene (mixed isomers)	1.5E+0	NA	NA	NA	NA	NA	NA	>Sol	>Sol	<input type="checkbox"/>	<1	

>Sol indicates risk-based target concentration greater than constituent solubility

Site Name: Former Chevron SS #9-0019

Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Siemins Date Completed: 2/1/2000

1 OF 9

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS: VAPOR AND
DUST INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m ³ /kg) Receptor	3) Exposure Medium Outdoor Air: POE Conc. (mg/m ³) (1) / (2)	4) Exposure Multiplier (IR×EF×ED)/(BW×AT) (m ³ /kg·day)	5) Average Daily Intake Rate (mg/kg·day) (3) X (4)
	Surface Soil Conc. (mg/kg)				
Benzene	0.0E+0				
Ethylbenzene	0.0E+0				
Methyl t-Butyl Ether	0.0E+0				
Toluene	0.0E+0				
Xylene (mixed isomers)	0.0E+0				

NOTE:

ABS = Dermal absorption factor (dim)
AF = Adherence factor (mg/cm²)
AT = Averaging time (days)

BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)

EF = Exposure frequency (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m³/day)

POE = Point of exposure
SA = Skin exposure area (cm²/day)

Site Name: Former Chevron SS #9-0019

Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Siemins Date Completed: 2/1/2000

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TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS: VAPOR

Exposure Concentration

INHALATION

Constituents of Concern	1) Source Medium		2) NAF Value (m ³ /kg) Receptor		3) Exposure Medium Outdoor Air: POE Conc. (mg/m ³) (1) / (2)		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m ³ /kg-day)		5) Average Daily Intake Rate (mg/kg-day) (3) X (4)	
	Subsurface Soil Conc. (mg/kg)	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial
Benzene	3.4E+0	1.9E+4		1.8E-4		7.0E-2		1.3E-5		
Ethylbenzene	8.3E+0	1.9E+4		4.4E-4		2.0E-1		8.7E-5		
Methyl t-Butyl Ether	0.0E+0	1.9E+4		0.0E+0		2.0E-1		0.0E+0		
Toluene	1.3E+1	1.9E+4		6.9E-4		2.0E-1		1.4E-4		
Xylene (mixed isomers)	2.9E+1	1.9E+4		1.5E-3		2.0E-1		3.0E-4		

NOTE: ABS = Dermal absorption factor (dim) BW = Body weight (kg) EF = Exposure frequency (days/yr) POE = Point of exposure
 AF = Adherence factor (mg/cm²) CF = Units conversion factor ET = Exposure time (hrs/day) SA = Skin exposure area (cm²/day)
 AT = Averaging time (days) ED = Exposure duration (yrs) IR = Inhalation rate (m³/day)

Site Name: Former Chevron SS #9-0019

Site Location: 210 Grand Avenue, Oakland Completed By: Barbara Sieminski

Date Completed: 2/1/2000

3 OF 9

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR

INHALATION

Exposure Concentration

TOTAL PATHWAY INTAKE (mg/kg-day)

Constituents of Concern	1) Source Medium	2) NAF Value (m ³ /L) Receptor	3) Exposure Medium Outdoor Air, POE Conc. (mg/m ³) (1) / (2)	4) Exposure Multiplier (IR×EF×ED)/(BW×AT) (m ³ /kg-day)	5) Average Daily Intake Rate (mg/kg-day) (3) X (4)	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from surface, subsurface & groundwater routes.)	
	Groundwater Conc. (mg/L)	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial	On-Site Commercial	
Benzene	3.3E+0	1.2E+4	2.7E-4	7.0E-2	1.9E-5	3.2E-5	
Ethylbenzene	6.6E-1	1.2E+4	5.6E-5	2.0E-1	1.1E-5	9.8E-5	
Methyl t-Butyl Ether	5.0E-1	2.0E+4	2.4E-5	2.0E-1	4.8E-6	4.8E-6	
Toluene	3.8E+0	1.2E+4	3.2E-4	2.0E-1	6.2E-5	2.0E-4	
Xylene (mixed isomers)	1.5E+0	1.3E+4	1.1E-4	2.0E-1	2.2E-5	3.3E-4	

NOTE: ABS = Dermal absorption factor (dim)
AF = Adherence factor (mg/cm²)
AT = Averaging time (days)

BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)

EF = Exposure frequency (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m³/day)

POE = Point of exposure
SA = Skin exposure area (cm²/day)

Site Name: Former Chevron SS #9-0019

Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Siemins Date Completed: 2/1/2000

4 OF 9

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS:

VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration				
	1) Source Medium Subsurface Soil Conc. (mg/kg)	2) NAF Value (m ³ /kg) Receptor	3) Exposure Medium Indoor Air: POE Conc. (mg/m ³) (1) / (2)	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m ³ /kg-day)	5) Average Daily Intake Rate (mg/kg-day) (3) X (4)
Benzene	3.4E+0				
Ethylbenzene	8.3E+0				
Methyl t-Butyl Ether	0.0E+0				
Toluene	1.3E+1				
Xylene (mixed isomers)	2.9E+1				

NOTE:	ABS = Dermal absorption factor (dim)	BW = Body weight (kg)	EF = Exposure frequency (days/yr)	POE = Point of exposure
	AF = Adherence factor (mg/cm ²)	CF = Units conversion factor	ET = Exposure time (hrs/day)	SA = Skin exposure area (cm ² /day)
	AT = Averaging time (days)	ED = Exposure duration (yrs)	IR = Inhalation rate (m ³ /day)	

Site Name: Former Chevron SS #9-0019

Site Location: 210 Grand Avenue, Oakland Completed By: Barbara Sieminski

Date Completed: 2/1/2000

5 OF 9

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INTRUSION TO BUILDINGS	Exposure Concentration					TOTAL PATHWAY INTAKE (mg/kg-day)	
	1) Source Medium Groundwater Conc. (mg/L)	2) NAE Value (m ³ /L) Receptor	3) Exposure Medium Indoor Air: POE Conc. (mg/m ³) (1) / (2)	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m ³ /kg-day)	5) Average Daily Intake Rate (mg/kg-day) (3) X (4)	(Sum Intake values from subsurface & groundwater routes.)	
Constituents of Concern							
Benzene	3.3E+0						
Ethylbenzene	6.6E-1						
Methyl t-Butyl Ether	5.0E-1						
Toluene	3.8E+0						
Xylene (mixed isomers)	1.5E+0						

NOTE: ABS = Dermal absorption factor (dim) BW = Body weight (kg) EF = Exposure frequency (days/yr) POE = Point of exposure
 AF = Adherence factor (mg/cm²) CF = Units conversion factor ET = Exposure time (hrs/day) SA = Skin exposure area (cm²/day)
 AT = Averaging time (days) ED = Exposure duration (yrs) IR = Inhalation rate (m³/day)

Site Name: Former Chevron SS Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Si Date Completed: 2/1/2000

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TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS: DERMAL CONTACT	Exposure Concentration				
	1) Source Medium	2) Exposure Multiplier (SAxAFxABSxCFxEFxED)/(BWxAT) (kg/kg-day)		3) Average Daily Intake Rate (mg/kg-day) (1) x (2)	
	Constituents of Concern	Surface Soil Conc. (mg/kg)	On-Site Residential	On-Site Commercial	On-Site Residential
Benzene	0.0E+0				
Ethylbenzene	0.0E+0				
Methyl t-Butyl Ether	0.0E+0				
Toluene	0.0E+0				
Xylene (mixed isomers)	0.0E+0				

NOTE: ABS = Dermal absorption factor (dim) BW = Body weight (kg) EF = Exposure frequency (days/
 AF = Adheranca factor (mg/cm^2) CF = Units conversion factor ET = Exposure time (hrs/day) POE = Point of exposure
 AT = Averaging time (days) ED = Exposure duration (yrs) IR = Intake rate (mg/day) SA = Skin exposure area (cm^2/day)

Site Name: Former Chevron SS #9- Site Location: 210 Grand Avenue, Oakland Completed By: Barbara Siemins Date Completed: 2/1/2000

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS: INGESTION	Exposure Concentration				TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from dermal & ingestion routes.)		
	1) Source Medium	2) Exposure Multiplier (IRxCFxEFxED)/(BWxAT) (kg/kg-day)		3) Average Daily Intake Rate (mg/kg-day) (1) x (2)		On-Site Residential	On-Site Commercial
Constituents of Concern	Surface Soil Conc. (mg/kg)	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial
Benzene	0.0E+0						
Ethylbenzene	0.0E+0						
Methyl t-Butyl Ether	0.0E+0						
Toluene	0.0E+0						
Xylene (mixed isomers)	0.0E+0						

NOTE: ABS = Dermal absorption factor (dim) BW = Body weight (kg) EF = Exposure frequency (days/yr) POE = Point of exposure
 AF = Adherence factor (mg/cm²) CF = Units conversion factor ET = Exposure time (hrs/day) SA = Skin exposure area (cm²/day)
 AT = Averaging time (days) ED = Exposure duration (yrs) IR = Intake rate (mg/day)

Site Name: Former Chevron SS #9- Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Siemins Date Completed: 2/1/2000

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

SOIL: LEACHING TO GROUNDWATER/
GROUNDWATER INGESTION

Constituents of Concern	Exposure Concentration		3) Exposure Medium Groundwater: POE Conc (mg/L) (1)/(2)	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day)	5) Average Daily Intake Rate (mg/kg-day) (3) x (4)
	1) Source Medium Soil Concentration (mg/kg)	2) NAF Value (L/kg) Receptor			
Benzene	3.4E+0				
Ethylbenzene	8.3E+0				
Methyl t-Butyl Ether	0.0E+0				
Toluene	1.3E+1				
Xylene (mixed isomers)	2.9E+1				

NOTE: ABS = Dermal absorption factor (dim)
AF = Adherence factor (mg/cm²)
AT = Averaging time (days)

BW = Body Weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)

EF = Exposure frequency (days/yr)
ET = Exposure time (hrs/day)
IR = intake rate (L/day)

POE = Point of exposure
SA = Skin exposure area (cm²/day)

Site Name: Former Chevron SS #9- Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski

Date Completed: 2/1/2000

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

(CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: INGESTION

Exposure Concentration

MAX. PATHWAY INTAKE (mg/kg-day)

(Maximum Intake of active pathways soil leaching & groundwater routes.)

Constituents of Concern	1) Source Medium	2) NAF Value (dim)	3) Exposure Medium	4) Exposure Multiplier	5) Average Daily Intake Rate	
	Groundwater Conc. (mg/L)	Receptor	Groundwater: POE Conc. (mg/L) (1)/(2)	(IR*EF*ED)/(BW*AT) (L/kg-day)	(mg/kg-day) (3) x (4)	
Benzene	3.3E+0					
Ethylbenzene	6.6E-1					
Methyl t-Butyl Ether	5.0E-1					
Toluene	3.8E+0					
Xylene (mixed isomers)	1.5E+0					

NOTE: ABS = Dermal absorption factor (dim)
 AF = Adherence factor (mg/cm²)
 AT = Averaging time (days)

BW = Body weight (kg)
 CF = Units conversion factor
 ED = Exposure duration (yrs)

EF = Exposure frequency (days/yr)
 ET = Exposure time (hrs/day)
 IR = Intake rate (L/day)

POE = Point of exposure
 SA = Skin exposure area (cm²/day)

Site Name: Former Chevron SS #9-0019

Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski

Date Completed: 2/1/2000

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TIER 1 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	CARCINOGENIC RISK				TOXIC EFFECTS			
	(1) EPA	(2) Total Carcinogenic Intake Rate (mg/kg/day)	(3) Inhalation Slope Factor	(4) Individual COC Risk (2) x (3)	(5) Total Toxicant Intake Rate (mg/kg/day)	(6) Inhalation Reference Dose	(7) Individual COC Hazard Quotient (5) / (6)	
	Carcinogenic Classification	On-Site Commercial	(mg/kg-day) ⁻¹	On-Site Commercial	On-Site Commercial	(mg/kg-day)	On-Site Commercial	
Benzene	A	3.2E-5	2.9E-2	9.2E-7	8.9E-5	1.7E-3	5.2E-2	
Ethylbenzene	D				9.8E-5	2.9E-1	3.4E-4	
Methyl t-Butyl Ether					4.8E-6	8.6E-1	5.6E-6	
Toluene	D				2.0E-4	1.1E-1	1.7E-3	
Xylene (mixed isomers)	D				3.3E-4	2.0E+0	1.6E-4	

Total Pathway Carcinogenic Risk = **9.2E-7** **0.0E+0**

Total Pathway Hazard Index = **5.4E-2** **0.0E+0**

Site Name: Former Chevron SS #9-0019

Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski

Date Completed: 2/1/2000

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TIER 1 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS

(CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK			TOXIC EFFECTS		
		(2) Total Carcinogenic Intake Rate (mg/kg/day)	(3) Inhalation Slope Factor (mg/kg-day) ⁻¹	(4) Individual COC Risk (2) x (3)	(5) Total Toxicant Intake Rate (mg/kg/day)	(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6)
Benzene	A		2.9E-2			1.7E-3	
Ethylbenzene	D					2.9E-1	
Methyl t-Butyl Ether						8.6E-1	
Toluene	D					1.1E-1	
Xylene (mixed isomers)	D					2.0E+0	

Total Pathway Carcinogenic Risk = 0.0E+0 0.0E+0

Total Pathway Hazard Index = 0.0E+0 0.0E+0

Site Name: Former Chevron SS #9-0019

Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski

Date Completed: 2/1/2000

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TIER 1 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAYS

(CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK				TOXIC EFFECTS					
		(2) Total Carcinogenic Intake Rate (mg/kg/day)		(3) Oral Slope Factor	(4) Individual COC Risk (2) x (3)		(5) Total Toxicant Intake Rate (mg/kg/day)		(6) Oral Reference Dose	(7) Individual COC Hazard Quotient (5) / (6)	
		On-Site Residential	On-Site Commercial	(mg/kg-day) ⁻¹	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial	(mg/kg-day)	On-Site Residential	On-Site Commercial
Benzene	A			2.9E-2							
Ethylbenzene	D								1.0E-1		
Methyl t-Butyl Ether									5.0E-3		
Toluene	D								2.0E-1		
Xylene (mixed isomers)	D								2.0E+0		

Total Pathway Carcinogenic Risk = **0.0E+0** **0.0E+0**

Total Pathway Hazard Index = **0.0E+0** **0.0E+0**

Site Name: Former Chevron SS #9-0019

Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski

Date Completed: 2/1/2000

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TIER 1 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS

[CHECKED IF PATHWAYS ARE ACTIVE]

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK			TOXIC EFFECTS		
		(2) Total Carcinogenic Intake Rate (mg/kg/day)	(3) Oral Slope Factor (mg/kg-day) ⁻¹	(4) Individual COC Risk (2) x (3)	(5) Total Toxicant Intake Rate (mg/kg/day)	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6)
Benzene	A		2.9E-2				
Ethylbenzene	D				1.0E-1		
Methyl t-Butyl Ether					5.0E-3		
Toluene	D				2.0E-1		
Xylene (mixed isomers)	D				2.0E+0		

Total Pathway Carcinogenic Risk = 0.0E+0 0.0E+0

Total Pathway Hazard Index = 0.0E+0 0.0E+0

RBCA SITE ASSESSMENT

Tier 1 Worksheet 8.3

Site Name: Former Chevron SS #9-0019
 Site Location: 210 Grand Avenue, Oakland

Completed By: Barbara Sieminski
 Date Completed: 2/1/2000

TIER 1 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK					BASELINE TOXIC EFFECTS				
	Individual COC Risk		Cumulative COC Risk		Risk Limit(s) Exceeded?	Hazard Quotient		Hazard Index		Toxicity Limit(s) Exceeded?
	Maximum Value	Target Risk	Total Value	Target Risk		Maximum Value	Applicable Limit	Total Value	Applicable Limit	
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	9.2E-7	1.0E-6	9.2E-7	N/A	<input type="checkbox"/>	5.2E-2	1.0E+0	5.4E-2	N/A	<input type="checkbox"/>
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	N/A	<input checked="" type="checkbox"/>	NC	1.0E+0	NC	N/A	<input checked="" type="checkbox"/>
SOIL EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	N/A	<input checked="" type="checkbox"/>	NC	1.0E+0	NC	N/A	<input checked="" type="checkbox"/>
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	N/A	<input checked="" type="checkbox"/>	NC	1.0E+0	NC	N/A	<input checked="" type="checkbox"/>
CRITICAL EXPOSURE PATHWAY (Select Maximum Values From Complete Pathways)										
	9.2E-7	1.0E-6	9.2E-7	N/A	<input type="checkbox"/>	5.2E-2	1.0E+0	5.4E-2	N/A	<input type="checkbox"/>