CONESTOGA-ROVERS & ASSOCIATES

5900 Hollis St., Suite A
Emeryville, California 94608
Telephone: (510) 420-0700 Fax: (510) 420-9170
www.CRAworld.com

TRANSMITTAL

DATE: January 14, 2010

REFERENCE NO.: 311642

PROJECT NAME: Former Chevron #9-1153, RO #341

TO: Mr. Mark Detterman
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

RECEIVED
9:11 am, Jan 15, 2010
Alameda County
Environmental Health

Please find enclosed:
- ☐ Draft
- ☐ Originals
- ☐ Prints
- ☒ Final
- ☐ Other

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QUANTITY	DESCRIPTION
1	Work Plan For Remediation And Vapor Surveys

- ☐ As Requested
- ☐ For Your Use
- ☒ For Review and Comment
- ☐
- ☐

COMMENTS:
Please contact Charlotte Evans at (510) 420-3351 if you have any questions or concerns.

Copy to: Mr. Aaron Costa, Chevron
Mr. Mark Hom

Completed by: Charlotte Evans [Please Print]
Signed: C Evans

Filing: **Correspondence File**

Aaron Costa
Project Manager
Marketing Business Unit

Chevron Environmental Management Company
6111 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 543-2961
Fax (925) 543-2324
acosta@chevron.com

Alameda County Health Care Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Former Chevron Service Station No. 9-1153
3135 Gibbons Drive
Alameda, CA

I have reviewed the attached work plan dated January 14, 2010.

I agree with the conclusions and recommendations presented in the referenced work plan. This information in this work plan is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This work plan was prepared by Conestoga Rovers Associates, upon who assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Aaron Costa
Project Manager

Attachment: Work Plan

WORK PLAN FOR REMEDIATION AND VAPOR SURVEY

FORMER CHEVRON SERVICE STATION #9-1153
3135 GIBBONS DRIVE (3126 FERNSIDE BOULEVARD)
ALAMEDA, CALIFORNIA
FUEL LEAK CASE NO. RO0341

Prepared For:

Mr. Mark Detterman
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Prepared by:
Conestoga-Rovers & Associates

5900 Hollis Street, Suite A
Emeryville, California
U.S.A. 94608

Office: (510) 420-0700
Fax: (510) 420-9170

web: http:\\www.CRAworld.com

JANUARY 14 , 2010
REF. NO. 311642 (4)
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WORK PLAN FOR REMEDIATION AND VAPOR SURVEY

FORMER CHEVRON SERVICE STATION #9-1153
3135 GIBBONS DRIVE (3126 FERNSIDE BOULEVARD)
ALAMEDA, CALIFORNIA
FUEL LEAK CASE NO. RO0341

Charlotte Evans

Bruce Eppler, P.G. #7779

Prepared by:
Conestoga-Rovers & Associates

5900 Hollis Street, Suite A
Emeryville, California
U.S.A. 94608

Office: (510) 420-0700
Fax: (510) 420-9170

web: http:\\www.CRAworld.com

JANUARY 14, 2010
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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) is submitting this *Work Plan for Remediation and Vapor Survey* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. In a letter dated October 27, 2009, Alameda County Environmental Health Services (ACEH) requested a work plan that "discusses a proposal to remove or otherwise remediate residual free product from beneath the site and vicinity" (Appendix A). This work plan is designed to remove free product (light non-aqueous phase liquid [LNAPL]) and prevent LNAPL recurrence. ACEH also requested that the following three additional elements be included in this work plan: a proposal to install, sample, and analyze vapor from permanent sampling points; a review of the appropriateness of the screen length in wells C-1 and C-2; and the design details of the remediation system that was employed at this site between 1991 and 1994. The site background, requested information and scope of work are presented below.

1.1 SITE CONDITIONS

The site is located on a triangular-shaped lot at the intersection of Gibbons Drive, Fernside Boulevard and High Street in Alameda, California (Figure 1). Chevron leased the property in approximately 1956. The station was constructed at that time and operated until June 1986. When station operations ceased in 1986, two used-oil underground storage tanks (USTs) (550 and 750-gallon) and three gasoline USTs (3,000, 6,000, and 8,000-gallon) were removed. A residence was built over the former UST complex in 1989 using a slab-on-grade foundation (Figure 2). The remaining portions of the property are landscaped. Surrounding area use is residential and commercial.

A total of 8 soil borings, 10 groundwater monitoring wells, 1 extraction well, 4 temporary wells and 7 temporary soil vapor probes have been installed at the site. Groundwater monitoring has been conducted at the site since 1986. A summary of previous environmental investigations conducted at the site are included in Appendix B.

1.2 SITE GEOLOGY AND HYDROGEOLOGY

Soil beneath the site consists primarily of clay, silty clay, sandy clay, clayey sand and sand to the total depth explored of approximately 23 feet below grade (fbg). Poorly graded sand is typically encountered onsite from 0 to 5 fbg underlain by silty clay or clayey sand from 5 to 12 fbg and poorly graded sand from 12 to 23 fbg. The site is regionally underlain by the Merritt Member of the late Pleistocene Alameda Formation.

The site is roughly 8 feet above mean sea level. Depth to water in onsite wells ranges from 1 to 6 feet. Groundwater flow direction is typically east toward the Oakland-Alameda Estuary at a gradient of 0.01. The estuary is the closest surface water and is approximately 600 feet east of the site. Light non-aqueous phase liquids (LNAPL) are detected in well C-1, ranging in thickness during 2009 from 0.01 to 0.04 feet.

2.0 SURFACTANT APPLICATION WORK PLAN

CRA proposes using surfactants to remove residual LNAPL. Surfactants are wetting agents with the ability to lower the interfacial surface tension between two liquids (such as oil and water). Injecting a solution containing a low percentage of surfactants can effectively reduce interfacial tension between LNAPL and water and release LNAPL adsorbed to soil in the source area, thereby allowing improved LNAPL removal and recovery during subsequent fluid extraction. The granular nature of the soil and the limited lateral and vertical extent of the smear zone make surfactant application a potentially viable remedial alternative at the site.

CRA recommends pilot testing a 4 percent surfactant solution application in well C-1 to determine the effectiveness of this method. If the treatment is effective, the pilot test itself may remove enough LNAPL from the subsurface to prevent LNAPL recurrence in well C-1. Prior to applying the surfactant, CRA will conduct an injection and extraction test on this well to assess the ability of the formation to accept the surfactant as well as to ensure sufficient extraction of surfactant-related liquids (surfactant, LNAPL, and groundwater). If this test demonstrates that the formation is conducive to surfactant application, CRA will apply and extract surfactant at C-1 at a later date. Specific procedures are detailed below.

2.1 INJECTION AND EXTRACTION TEST

CRA will conduct an injection and extraction test on well C-1 using potable water to evaluate the extent to which the formation will accept surfactant, as well as to ensure sufficient extraction of surfactant-related liquids. The depth to water in well C-1 has ranged from approximately 3 to 4.5 feet in the past year. CRA proposes to gravity feed approximately 50 to 100 gallons of potable water into well C-1, or as much as can be injected in a 6-hour period. CRA will measure the groundwater depths in wells MW-7, RW-1, MW-6, and C-3 to detect any possible mounding of the water table during the test. If the volume of water is accepted without significant mounding in wells C-1,

MW-7, RW-1, MW-6, or C-3, the use of surfactant will be deemed acceptable. Since the water table is so shallow, CRA will adjust the injection rate to ensure that groundwater does not mound up to the ground surface. If potable water can not be injected at a rate low enough to avoid mounding to the ground surface, CRA will re-evaluate the use of surfactant or revise the surfactant treatment strategy. Because of the shallow groundwater conditions at the site, CRA proposes performing all injection and extraction activities during the dry season (early fall).

CRA will then use either a vacuum truck or a submersible pump to extract at least four times the volume of fluid that was injected into the well. If a submersible pump is required, the liquid will be pumped directly to a vacuum truck. CRA will continue to measure the groundwater depths in wells MW-7, RW-1, MW-6, and C-3 to assess drawdown of the water table caused by fluid extraction from C-1. If the extraction test indicates that sufficient volume can be extracted in one day, CRA will proceed with the planning of the surfactant application. If the well cannot produce sufficient groundwater to allow extraction of the injected fluid, CRA will re-evaluate the use of surfactant or revise the surfactant treatment strategy.

2.2 PROPOSED SURFACTANT

The proposed surfactant is Gold Crew Release®, which is a non-toxic, biodegradable, non-ionic, pH-neutral surfactant capable of reducing the surface tension between the LNAPL and water. The reduction in surface tension permits the release of LNAPL adsorbed to saturated soil, and allows for more effective removal of LNAPL during groundwater extraction. A copy of the Material Safety Data Sheet for Gold Crew Release® surfactant is included as Appendix C.

2.3 SURFACTANT PREPARATION AND APPLICATION

CRA will prepare 50-gallon batches of surfactant solution onsite by mixing 2 gallons of concentrated surfactant with 48 gallons of potable water in a 55-gallon drum, or equivalent. The resulting 4 percent solution will be gravity-fed into the injection well (C-1). The injection rate will be controlled with a ball valve, or equivalent, to prevent overflow and mounding in the injection well. The maximum amount of surfactant solution to be applied will be between 100 and 200 gallons; the volume determined by analyzing the results of the extraction test. Injection will cease after 6 hours of injection if the predicted volume is not accepted by the well. The surfactant solution will be

allowed to soak in the formation for a maximum of 24 hours to envelop and emulsify the residual LNAPL prior to extraction.

Wells MW-7, RW-1, MW-6, and C-3 will be monitored for the presence of surfactant during the injection process. A field test for the presence of surfactant will be performed at least once in each of the monitoring wells listed above. This test is a qualitative visual analysis, based on an observation of suds when a sample of the mixture is shaken vigorously in a sample bottle. If foaming indicative of surfactant occurs during this test, injection will be stopped immediately. The monitoring wells will also be gauged for changes in groundwater depth during both the injection and the equilibration period to assess the radial influence of the surfactant injection.

2.4 LIQUID EXTRACTION

After the surfactant solution has soaked in the formation for no more than 24 hours, the resulting liquid (a mixture of surfactant, LNAPL, and groundwater) will be extracted into a vacuum truck. The extraction will be complete when the volume of extraction is at least four times the volume of surfactant solution injected. CRA will collect samples during the extraction event from the extraction well approximately four times to estimate mass removed during fluid extraction. Groundwater samples will be analyzed for the following:

- Total petroleum hydrocarbons as gasoline (TPHG) by EPA Method 8260B
- Benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8260B

2.5 GROUNDWATER MONITORING

CRA will monitor well C-1 for LNAPL monthly for three months following fluid extraction. CRA will continue with routine groundwater monitoring pursuant to regulatory requirements. A second round of surfactant application may occur if LNAPL is detected in the well after 1 year.

2.6 PERMITS

CRA will obtain an encroachment permit from the City and County of Alameda and a state waste discharge permit as necessary.

2.7 HEALTH AND SAFETY PLAN

CRA will prepare a site- and activity-specific health and safety plan (HASP) to protect site workers. The plan will be kept on site during field activities and will be reviewed and signed by all site workers and visitors.

2.8 REPORT PREPARATION

CRA will prepare a report 120 days after the surfactant application is completed. This report will include a discussion of the field procedures, laboratory results, completion dates, and results of subsequent groundwater monitoring. CRA will continue to report monitoring results and provide an analysis of the efficiency of this remedial action in subsequent groundwater monitoring reports.

3.0 VAPOR SURVEY

A risk assessment was completed in 2003 to assess the potential risk of vapor intrusion into the residence from hydrocarbons in soil and groundwater from former service station activities. The risk assessment demonstrated that the estimated excess cancer risks and the non-carcinogenic hazard index were below the United States Environmental Protection Agency's acceptable target risk range for the resident occupants. When the risk assessment was completed, no sampling protocols were reported and it is unknown if any leak tracer was used to confirm the integrity of the sampling methods. ACEH is requesting additional soil vapor sampling from permanent points either near or within the residence to more precisely determine the potential risk posed by subsurface vapors.

Based on the shallow depth to groundwater of less than 5 fbg, it in not possible to install multiple depth vapor probes and collect data in accordance with California Environmental Protection Agency (CalEPA) and Department of Toxic Substances Control's (DTSC) *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air – Interim Final* (Guidance) dated December 15, 2004 and revised February 7, 2005. Therefore, sub-slab probes will be installed near or within the residence and indoor and outdoor air surveys will be completed to evaluate the potential risk of vapor intrusion. All proposed work will be completed according to CalEPA and DTSC's Guidance and the scope of work is presented below.

3.1 SUB-SLAB PROBE INSTALLATION

Installation of the probes is based on the U.S. Environmental Protection Agency's *Standard Operating Procedure (SOP) for Installation of Sub-Slab Vapor Probes and Sampling Using EPA Method TO-15 to Support Vapor Intrusion Investigations (Draft).* A rotary hammer drill will be used to create a 2-inch diameter and 1-inch deep "outer" hole that partially penetrates the slab. A small portable vacuum cleaner will be used to remove cuttings from the hole. Removal of cuttings in this manner in a non-penetrated slab will not compromise soil vapor samples because of lack of pneumatic communication between sub-slab material and the vacuum cleaner.

The rotary hammer drill will then be used to create a smaller diameter "inner" hole through the remainder of the slab into sub-slab material. Drilling into sub-slab material will create an open cavity for the probes, which will prevent obstructions by small pieces of gravel.

Once the thickness of the slab is known, stainless steel tubing will be cut to ensure that the probe tubing does not reach the bottom of the hole to avoid obstruction of the probe with sub-slab material. Sub-slab vapor probes will be constructed using stainless steel tubing and compression fittings to ensure that construction materials are not a source of volatile organic compounds.

The sub-slab vapor probe will be set in the hole. The top of the probe will be completed flush with the slab and have a recessed stainless steel cover to prevent interference with day-to-day use of the building. A quick-drying Portland cement slurry will be pushed into the annular space between the probe and outside of the "outer" hole. The cement will be allowed to cure for at least 72 hours prior to sampling.

3.2 SUB-SLAB PROBE SAMPLING

Vapor samples will be collected at least 72 hours after the placement of the sub-slab probes using 100 percent certified clean 1-liter Summa™ canisters in a manifold system, connected to each sub-slab probe. While sampling, the vacuum of the Summa™ canister will be used to draw the soil vapor through the flow controller until a negative pressure of approximately 5 inches of Hg is observed on the vacuum gauge. In accordance with the DTSC's *Advisory-Active Soil Gas Investigations* guidance document, dated January 28, 2003, leak testing using laboratory grade helium and shroud will be performed during sampling of the sub-slab probes. After sampling, the Summa™ canisters will be packaged and sent to the Air Toxics laboratory under chain-of-custody

for analysis. Final placement of the sub-slab probes is dependant upon the layout of the residence and potential utilities. Once the placement of the sub-slab probes is determined, CRA will submit an updated site plan with the residence layout and proposed locations to ACEH for final approval. Standard Field Procedures for Soil Vapor Probe Installation and Sampling are presented as Appendix D.

3.3 INDOOR AN D OUTDOOR AIR SAMPLING

Indoor and outdoor air sampling will be concurrent with the sub-slab probe sampling. All air samples will be collected over a 24-hour period in 100 percent certified clean 6-liter Summa™ canisters within the breathing zone, approximately 3 to 5 feet off the ground. At least one sample will be collected on each floor within the living spaces.

Indoor air sampling will be conducted in an environment that is representative of normal use by the occupants. Any heating or cooling systems will be operated normally. As commonly acknowledged, numerous sources for petroleum related chemicals exist in normal living spaces. The presence of these sources may contribute to indoor air sampling results and make it difficult to determine whether chemicals detected in indoor air are present due to vapor transport from the subsurface or from other potential sources. In order to address this issue, a survey of the occupied residence will be made prior to conducting indoor air sampling and an inventory of potential VOC contributors will be collected with the Building Survey Form (Appendix K of Guidance). At the discretion of the resident, significant potential sources may be removed prior to indoor air sampling.

Ambient air samples will be collected simultaneously with the indoor air samples in the upwind direction of the residence, approximately 5 to 15 feet from the building. Background samples are used to determine if the chemicals of concern are present in the ambient environment and could be contributing to any indoor concentrations.

Final placement of the indoor and outdoor ambient air samples is dependant upon the layout of the residence. Once the placement of the samples is determined, CRA will submit an updated site plan with the residence layout and proposed locations to ACEH for final approval.

CRA will also collect the following data:

- predominant wind direction
- types of industries in the area that could have potential air releases
- permits issued in the surrounding neighborhood by the local air district
- evaluation of utility corridors

3.4 SAMPLE ANALYSIS

Vapor samples will be analyzed for the following:

- TPHg, BTEX, and naphthalene by EPA Method TO-15 (GC/MS) for the sub-slab samples and by EPA Method TO-15 SIM for the indoor and outdoor air samples
- Oxygen, carbon dioxide, nitrogen, methane and helium by ASTM D-1946 (GC/TCD)

3.5 REPORTING

CRA will prepare a report 90 days after the completion of all vapor sampling. This report will include descriptions of the installation and sampling methods, vapor analytical results, risk evaluation, and conclusions and recommendations.

4.0 MONITORING WELLS C-1 AND C-3 SCREEN INTERVALS

CRA has reviewed the boring logs for monitoring wells C-1 through C-3. Monitoring wells C-1 through C-3 were installed in 1986 as 3-inch diameter wells with screen intervals from 2 to 22 fbg. Monitoring well C-1 has had LNAPL intermittently since January 1995. Based on the boring log for well C-1, the lithology is sand and clayey sand to the bottom of the screened interval. Although the clayey sands could potentially be a confining interval, the boring log states that groundwater was encountered at approximately 4 fbg and all intervals were documented as wet, indicating that groundwater is present throughout the formation. The monitoring well should not enhance vertical migration since the formation is saturated and any dissolved phase hydrocarbons could move within the formation.

5.0 REMEDIATION EXTRACTION TRENCH CONSTRCTION DESIGN

CRA located three documents regarding the previously operated remedial extraction system design. EA Engineering, Science, and Technology submitted a Revised Work Plan and Budget for Remediation to Chevron on March 9, 1990 that includes the diagrams: Process and Instrumentation Diagram and Detail of Proposed Recovery Trench. A Wastewater Discharge Permit was issued by East Bay Municipal Utility District (EBMUD) on September 15, 1992. A Semi-Annual Monitoring Report was submitted to EBMUD on July 22, 1194. This report states groundwater was extracted from a French drain using an electric pump and groundwater was treated by two 200-pound carbon vessels before discharging to the sanitary sewer. On May 31, 1994, the system was shut off and all discharge ceased. The total amount of groundwater treated by the system was 99,850 gallons. CRA reviewed Chevron's files and has not been able to find any other additional information regarding the remedial extraction system. All documents are included as Appendix E.

6.0 SCHEDULE

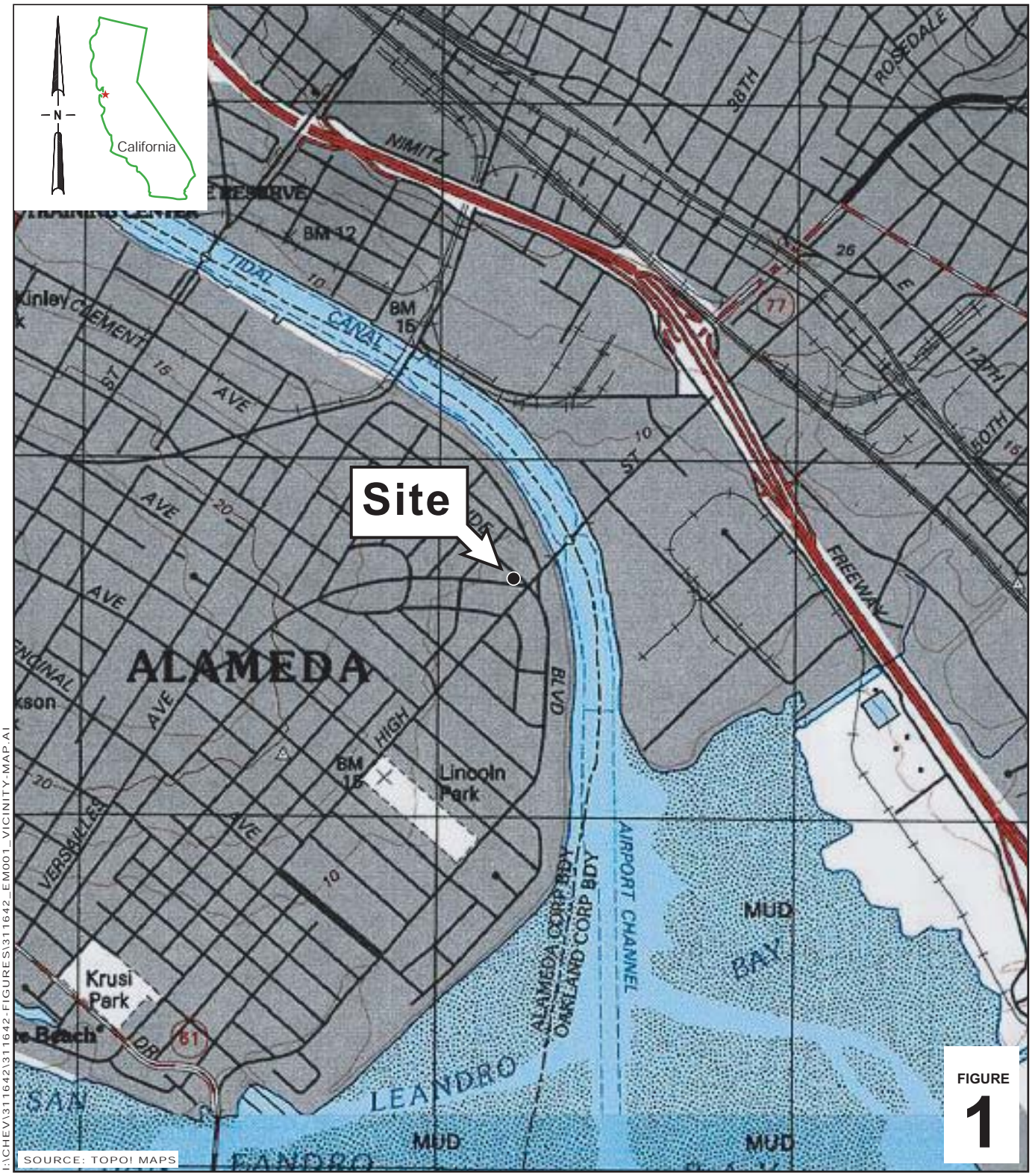
Chevron and CRA will need to contact the residents to discuss the scope of the work and obtain access to the onsite residence prior to any work being performed.

CRA proposes to commence work after receiving property owner approval and upon receipt of regulatory approval of this work plan. Delivery of surfactant and preparations to begin work will require a minimum of 8 to 10 weeks. The proposed remedial action of the surfactant should be conducted when depth to groundwater is greatest, typically near the end of the third quarter. The proposed work, including preparation of the report, is estimated to be completed in approximately 7 months.

The indoor air survey can be completed prior to the remedial action and CRA will commence work upon approval.

FIGURES

11/17/08



I:\CHEV\311642\311642-FIGURES\311642_EM001_VICINITY-MAP.AI

FIGURE
1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

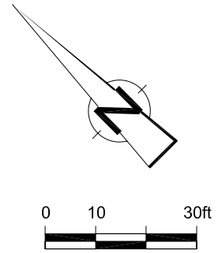
Former Chevron Station 9-1153

3135 Gibbons Drive (3126 Fernside Blvd)

Alameda, California

CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map



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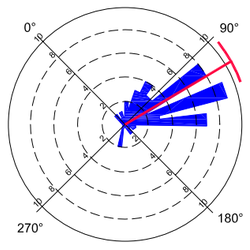


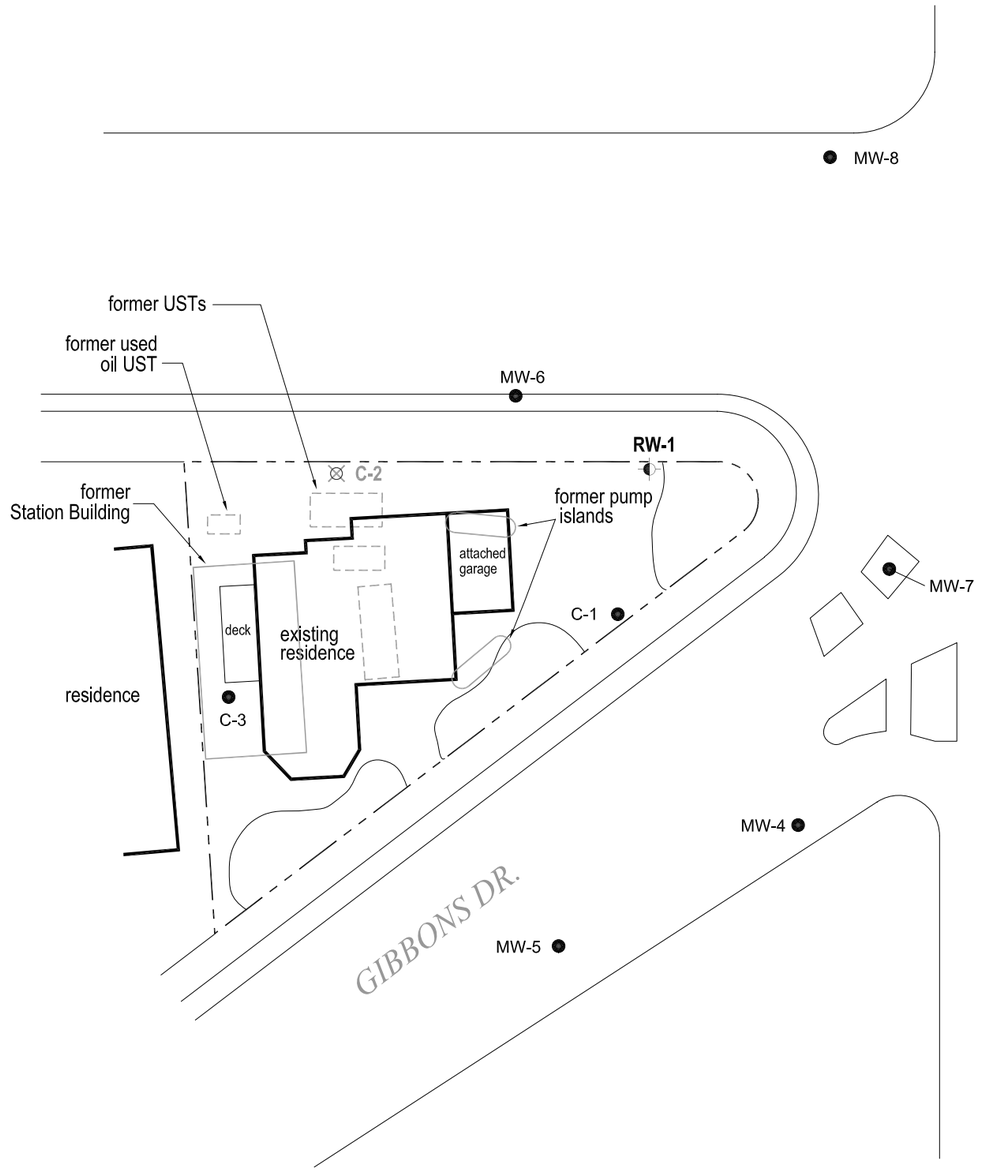
GROUNDWATER FLOW DIRECTION
1986 - 2009

EXPLANATION

MW-1 ● Monitoring well location

RW-1 ⊕ Extraction well location

C-2 ⊗ Destroyed well location



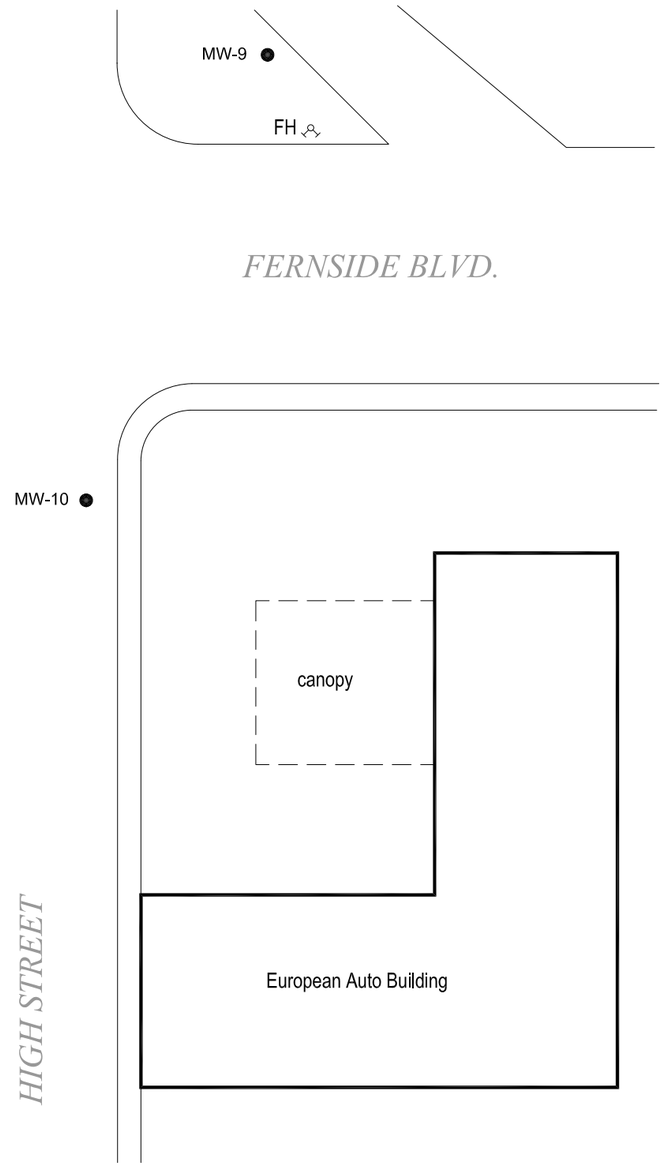


Figure 2

SITE PLAN
FORMER CHEVRON SERVICE STATION 9-1153
3135 GIBBONS DRIVE (3126 FERNSIDE BLVD)
Alameda, California

I:\CHEVRON\3116--\311642 9-1153 ALAMEDA\311642-FIGURES\311642-SITEPLAN.DWG

APPENDIX A

REGULATORY CORRESPONDENCE

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

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

October 27, 2009

Mr. Aaron Costa
Chevron Corporation
6111 Bollinger Canyon Road, Rm 3660
San Ramon, CA
(sent via electronic mail to acosta@chevron.com)

Mr. Mark Hom and Anna Cheng
3135 Gibbons Drive
Alameda, CA, 94501-1749

JL and Jane Bolton
3135 Gibbons Drive
Alameda, CA 94501-1749

Subject: Request for Interim Remedial Actions; Fuel Leak Case No. RO0000341 (Global ID # T0600100330), Chevron #9-1153, (3126 Fernside Blvd), 3135 Gibbons Drive, Alameda, CA 94501

Ladies and Gentlemen:

Alameda County Environmental Health Department (ACEH) staff has reviewed the case file, and the most recent report prepared by Conestoga-Rovers & Associates (CRA) and submitted for this site, *Third Quarter 2008 Groundwater Monitoring Report,* dated November 18, 2008. Thank you for submitting the reports. As you are aware, this is a residential property. During the October 2008 sampling event approximately 0.4 feet of free phase petroleum hydrocarbon was detected in onsite monitoring well C-1. Between September 2009 and December 2009 free-phase was again present in this well at increased thicknesses in comparison to recent monthly measurements. This appears to be the most recent data currently available for review. As a consequence, ACEH requests that you address the following technical comments and send us the reports requested below.

TECHNICAL COMMENTS

1. **Interim Remedial Action**. Measurable thickness records for the site date to the mid-1990's and document that free-phase has generally been present in well C-1 on a on-going (monthly) basis since January 1995. While five mobile extraction events were conducted to reduce free-phase thicknesses in 2001 and early 2002, and the monthly hand bailing of well C-1 continues, no on-going active remediation to remove residual free product has been performed at the site since May 1994 when the extraction trench was shut down. Three soil vapor sampling events have occurred at the site (1987, 1989, and 2002) and data from each event continues to indicate residual hydrocarbons in the south and eastern portions of the site, consistent with a residual hydrocarbon source in this vicinity of the site. Due to the increased and continued presence of free phase in well C-1, and elevated soil vapor concentrations indicative of residual hydrocarbon sources in the vicinity, ACEH requests that you prepare a work plan which discusses a proposal to remove or otherwise remediate residual free product from beneath the site and vicinity. To evaluate progress of free product removal or treatment we request that you include a proposal to perform groundwater monitoring and sampling during these actions. Should recent changes to the monitoring schedule be warranted, please propose them. Please submit your proposal in the work plan requested below.

2. **Installation of Vapor Points.** Three previous vapor surveys have been conducted at the site using varying or undisclosed sampling protocols. Elevated vapor concentrations were detected, including some within the area of the residential building. While a risk assessment has been generated using the data, changing advances in vapor sampling methodology, including use of shrouds and tracer gases to confirm a lack of sampling leaks, has been occurring. As you are aware, these changes help assure the vapor samples are representative of subsurface vapor concentrations. As a consequence ACEH is also requesting the generation of a work plan for

the installation, sampling, and analysis of vapor from permanent vapor sampling points at this residential site. Because groundwater is very shallow (under 5 feet) sub-slab samples may be warranted; please evaluate this potential in the work plan. Please submit your proposal in the work plan requested below.

3. **Screen Interval for Wells C-1 and C-2.** The screen interval for these wells is 20-feet in length. The bore log for all wells including well C-1 suggests that the presence of hydrocarbons is predominately limited to the upper four to eight feet below grade surface (bgs). ACEH is concerned that the screen interval for well C-1 may allow dissolved phase to migrate down well. Please evaluate the appropriateness of the screen length at these locations in the work plan requested below.

4. **Extraction Trench Construction Design.** A groundwater extraction trench and recovery well RW-1 functioned between 1991 and May 1994, had an estimated groundwater extraction rate of 0.08 gallons per minute, and treated nearly 100,000 gallons of highly impacted groundwater. Other than the plan location of the extraction trench and the location of the recovery well, an extraction system design was not found in the case file. Please forward design details of this remedial extraction system in the work plan requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Mr. Mark Detterman), according to the following schedule:

- **January 15, 2009** – Work Plan

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company.

Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Should you have any questions, do not hesitate to call me at (510) 567-6876.

Sincerely,

Mark E. Detterman, PG, CEG
Hazardous Materials Specialist

cc: Charlotte Evans, Conestoga-Rovers & Assoc., 5900 Hollis Street, Suite A, Emeryville, CA 94608
(sent via electronic mail to Cevans@craworld.com)

Donna Drogos (sent via electronic mail to donna.drogos@acgov.org),
Mark Detterman (sent via electronic mail to mark.detterman@acgov.org),
File

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**ISSUE DATE:** July 5, 2005
	REVISION DATE: March 27, 2009
	PREVIOUS REVISIONS: December 16, 2005, October 31, 2005
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**. (Please do not submit reports as attachments to electronic mail.)
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- Signature pages and perjury statements **must** be included and have either original or electronic signature.
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:
  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Additional Recommendations

- A separate copy of the tables in the document should be submitted by e-mail to your Caseworker in **Excel** format. These are for use by assigned Caseworker only.

Submission Instructions

1) Obtain User Name and Password:
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to dehloptoxic@acgov.org
         Or
      ii) Send a fax on company letterhead to (510) 337-9335, to the attention of My Le Huynh.
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape and Firefox browsers will not open the FTP site.
   b) Click on File, then on Login As.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to dehloptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO# use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

APPENDIX B

PREVIOUS ENVIRONMENTAL INVESTIGATIONS

SUMMARY OF PREVIOUS ENVIRONMENTAL WORK

1986 UST Removal and Excavation: The underground storage tanks (USTs) were removed and an unreported volume of soil was excavated from the former UST pit and product line trenches. Excavated soil was aerated on-site and used as backfill. More information is available in Blaine Tech Services' June 19, 1986 *Field Sampling* report and Weiss Associates' (Weiss) December 20, 1994 *Comprehensive Site Evaluation and Proposed Future Action Plan*.

1986 Well Installation: Wells C-1 through C-3 were installed onsite shortly after the removal of the USTs. More information is available in Emcon Associates' September 18, 1986 *Well Installation Memorandum*.

1987 Area Well Survey: In August 1987 Pacific Environmental Group, Inc. (PEG) conducted a well survey and indentified 47 wells within approximately 0.5 mile of the site. The majority of these wells were used for groundwater monitoring or cathodic protection but some were used for irrigation. None of the wells were listed as municipal drinking water supply wells. More information is available in PEG's August 12, 1987 *Well Survey Report*.

1987 and 1989 Soil Vapor Survey: Soil vapor surveys were conducted to quantify vapor intrusion to indoor air risks for on-site residents. The vapor samples collected from the southeastern portion of the site indicated benzene concentrations of up to 2,200 parts per million by volume. A vapor barrier was recommended for any structures. More information is available in EA Engineering's August 19, 1987 *Risk Assessment* and June 9, 1989 *Soil vapor Contaminant Assessment Report of Investigation*.

1989 House Construction and Destruction of Monitoring Well C-2: According to Weiss' December 20, 1994 *Comprehensive Site Evaluation and Proposed Future Action Plan*, a majority of the soil beneath the planned residence footprint was removed for installation of the foundation in early 1989. Groundwater monitoring well C-2 was apparently destroyed during construction prior to May 1989. More information is available in Weiss' December 20, 1994 *Comprehensive Site Evaluation and Proposed Future Action Plan*.

1989 Subsurface Investigation: In July 1989, EA collected soil samples from between 0.5 and 9.5 feet below grade (fbg) in 5 shallow onsite borings and 3 shallow offsite borings (SB1 through SB8). The highest concentrations of total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene and xylenes (BTEX) were found in the areas east of the UST complex and pump islands. No hydrocarbons were detected in soil samples from the northwestern corner of the site. Low hydrocarbon concentrations were detected in soil samples from offsite soil borings SB-6, SB-7 and SB-8. Grab-groundwater samples collected from the soil borings contained a maximum of 52,000 micrograms per liter (µg/L) benzene with the highest

concentrations near the western corner of the site. More information is available in EA's October 20, 1989 *Report of Soil and Groundwater Investigation*.

1991 Groundwater Treatment: A groundwater pump and treat system was installed and operated by EA from 1991 to 1994. The system extracted groundwater from a recovery trench and extraction well RW-1. The system treated 99,850 gallons of water and removed 54 lbs of hydrocarbon mass, according to an evaluation presented in Weiss' December 20, 1994 *Comprehensive Site Evaluation and Proposed Future Action Plan*.

1992 Well Installations: Offsite wells MW-4 through MW-6 were installed to further delineate the lateral extent of dissolved hydrocarbons. More information is available in Groundwater Technology Inc.'s (GTI) July 16, 1992 *Environmental Assessment Report*.

1993 Offsite Groundwater Sampling: Weiss collected groundwater samples from three temporary offsite borings crossgradient and downgradient of the groundwater extraction trench. Groundwater samples collected from two-inch diameter borings BH-A, BH-B and BH-C contained benzene at 6.4 µg/L, 2.1 µg/L and 3,200 µg/L, respectively. More information is available in Weiss' February 3, 1993 *Offsite Ground Water Sampling* report.

1993 Monitoring Well Installation: On November 11, 1993 GTI installed groundwater monitoring well MW-7 and temporary monitoring well TMW-1 to further characterize the distribution of hydrocarbons in soil and groundwater upgradient and downgradient of the site. Low concentrations of TPHg and benzene were detected in soil at 5 fbg in MW-7. No hydrocarbons were detected in soil from TMW-1. Groundwater samples collected from subsequent sampling events contained benzene at a maximum concentration of 110 µg/L. More information is available in GTI's January 31, 1994 *Additional Environmental Assessment Report*.

1995 Site Evaluation and Proposed Further Action: At Chevron's request Weiss prepared a site evaluation to summarize all investigative and remedial actions performed to date and to outline a recommended future action plan. More information is available in WA's December 20, 1994 *Site Evaluation and Proposed Further Action Plan*.

1995 Well Installations: Wells MW-8 through MW-10 were installed to further delineate the downgradient extent of hydrocarbons in groundwater. No hydrocarbons were detected in soil samples collected during this investigation. Groundwater samples were not collected during this investigation, but were collected during subsequent groundwater sampling events. More information is available in GTI's October 31, 1995 *Additional Site Assessment Report*.

1996 Evaluation for Potential Migration Pathway via Buried Utility Pipelines: Fluor Daniel GTI (FD-GTI) compiled utility location and depth information to analyze the potential for offsite migration of dissolved hydrocarbons. The report concludes that several utilities penetrated groundwater, but that these utilities were not acting as preferential pathways. The report states that the buried utilities were installed in materials similar to native soil at the site and that monitoring well data near the utilities showed no elevated hydrocarbon concentrations. Additional information is available in FD-GTI's May 15, 1996 *Evaluation for Potential Migration Pathway via Buries Utility Pipelines*.

1996 Geophysical Investigation for Buried Underground Storage Tanks: FD-GTI performed a geophysical survey of approximately 70 feet of sidewalk along Gibbons Boulevard and near monitoring well C-1. Both ground penetrating radar and vertical magnetic gradiometer were used. No buried underground storage tanks were identified within the survey areas. More information is available in FD-GTI's July 8, 1996 *Geophysical Investigation for Buried Underground Storage Tanks*.

1997 Shallow Soil Investigation: Shallow soil samples S-1 through S-15 were collected along the north, west, and east property boundaries to assess lead concentrations in onsite soil. Lead concentrations were below risk-based regulatory guidelines. More information is available in Gettler-Ryan's (G-R) October 22, 1997 *Soil Sampling Report*.

1997 ORC and Peroxide Injection: As reported in ChevronTexaco Energy Research and Technology Company's (Chevron ETC) May 2003 *Risk-Based Corrective Action Evaluation of Vapor Intrusion to Indoor Air from Soil Vapor*, Oxygen releasing compound (ORC) and hydrogen peroxide were placed in three onsite wells to treat non-aqueous phase liquids.

1998 Bio-Parameter Evaluation: Three samples collected during the third quarter 1998 groundwater monitoring event were analyzed for bio-parameter data to evaluate biodegradation processes. The report concluded that only two of six parameters indicated biodegradation was occurring. However, the report adds the recently added ORC and hydrogen peroxide would potentially increase bioremediation. More information is available in Chevron's September 29, 1998 *Bio-Remediation Evaluation Letter*.

1999 Hydrogen Peroxide Injection: In July 1999 Cambria Environmental Technology (Cambria) injected a hydrogen peroxide solution into well C-1 to oxidize residual hydrocarbons. Approximately 1.5 gallons of hydrocarbon impacted water were bailed from the well and then approximately 5 gallons of hydrogen peroxide solution were injected. More information is available in Cambria's July 12, 1999 *Hydrogen Peroxide Injection* report.

2001 to 2002 Groundwater Extraction Events: Five groundwater extraction events occurred and 350 gallons of groundwater were removed. These events were discontinued because of inconvenience to the resident. Information reported in Chevron ETC's May 2003 *Risk-Based Corrective Action Evaluation of Vapor Intrusion to Indoor Air from Soil Vapor*.

2002-2003 Vapor Intrusion Study and Risk-Based Correction Action Evaluation of Vapor Intrusion to Indoor Air from Soil Vapor: Seven borings (SV-1 through SV-7) were hand-augered along the edges of the current building. Soil-vapor samples were collected from temporary probes installed in undisturbed soil adjacent to each boring. These data were used to evaluate potential indoor air risks to onsite residents. Risks were assessed for potential residential exposure and were compared to the United States Environmental Protection Agency's established target risk levels for adults and children. The report concludes that vapor intrusion risks from soil vapor intrusion to indoor air were well below the established guidelines. More information is available in Chevron ETC's May 2003 *Risk-Based Corrective Action Evaluation of Vapor Intrusion to Indoor Air from Soil Vapor*.

APPENDIX C

MSDS FOR SURFACTANT

APPENDIX C

MSDS FOR SURFACTANT

International Chemical Systems, Inc.

ENVIRONMENTAL CHEMICAL SOLUTIONS

"Delivering Solutions to the Customer"

MATERIAL SAFETY DATA SHEET
HYDROCARBON DESORPTION AGENT

RELEASE

GOLD CREW HDA-E081

Emergency: 1-877-253-2665

SECTION I - GENERAL INFORMATION

Name:	Release, Gold Crew HDA-E081, Hydrocarbon Desorption Agent
Manufacturer	Environmental Chemical Solutions P.O. Box 2029 Gig Harbor, WA 98335 Tel: (877) 253-2665 Fax: (253) 853-1340 www.ecschem.com
Generic Description	Water Based, Biodegradable, Wetting Agents & Surfactants
HMIS Code	Health 0, Fire 0, Reactivity 0
HMIS Key	4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Insignificant
D.O.T. Class	Not regulated: not hazardous
Formula:	Proprietary

SECTION II - HAZARDOUS INGREDIENTS

This product does not contain any hazardous ingredients as defined by CERCLA and California's Prop. 65

SECTION III - PHYSICAL & CHEMICAL CHARACTERISTICS

Flash Point:	None	Melting Point:	32F
Specific Gravity:	1.0315 ±.01	Vapor Pressure mm/Hg:	NA
Pounds Per Gallon	8.6	Vapor Density Air 1:	NA
Solubility in Water	Complete	Reactivity with Water:	No
Viscosity	15 Centipoise	Surface Tension @ 5%:	27.7 Dyne/cm at 25°C
Evaporation Rate:	>1 as compared to Water	pH:	10.0 ±.5
Appearance:	Clear Liquid Unless Dyed	Fire Extinguisher Media:	NA
Odor:	Light Fragrance	Fire Fighting Procedures:	NA

SECTION IV - Fire and Explosion Data

Special Fire Fighting Procedures	NA	Percent Volatile by Volume	NA
Unusual Fire and Explosion Hazards	None	Flammable Limit	NA
Solvent for Clean-Up	Water	Auto Ignite Temperature	NA
Flash Point	NA	Fire Extinguisher Media	NA

SECTION V - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions to be taken in Handling and Storage: Use good normal hygiene.
Precautions to be taken in case of Spill or Leak -
Small spills. Soak up with absorbent materials.
Large spills: dike and contain. Remove with vacuum truck or pump to storage/salvage vessel. Soak up residue with absorbent materials.

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Waste Disposal Procedures: Dispose in an approved disposal area or in a manner that complies with all local, state, and federal regulations.

SECTION VI - HEALTH HAZARDS

Threshold Limit Values: NA

Signs and Symptoms of Over Exposure-

Acute: Moderate eye irritation. Skin: Causes redness, edema, drying of skin.
Chronic: Pre-existing skin and eye disorders may be aggravated by contact with this product.

Medical Conditions Generally Aggravated by Exposure: Unknown

Carcinogen: No

Emergency First Aid Procedures -

Eyes: Flush thoroughly with water for 15 minutes. Get medical attention.
Skin: Remove contaminated clothing. Wash exposed areas with soap and water. Wash clothing before reuse. Get attention if irritation develops.
Ingestion: Get medical attention.
Inhalation: None considered necessary.

SECTION VII - SPECIAL PROTECTION INFORMATION

Respiratory Protection:	Not necessary	Ventilation Required:	Normal
Local Exhaust Required:	No	Protective Clothing:	Gloves, safety glasses, wash clothing before reuse.

SECTION VIII - PHYSICAL HAZARDS

Stability:	Stable	Incompatible Substances:	None known
Polymerization:	No	Hazardous Decomposition Products:	NA

SECTION IX - TRANSPORT & STORAGE

DOT Class	: Not Regulated/Non Hazardous	Freeze Temperature	: 28°F
Storage	: 35°F-120°F	Freeze Harm	: None
Shelf Life	: Approximately one year unopened		

SECTION X - REGULATORY INFORMATION

The Information on this Material Safety Data Sheet reflects the latest information and data that we have on hazards, properties, and handling of this product under the recommended conditions of use. Any use of this product or method of application, which is not described on the Product label or in this Material Safety Data Sheet is the sole responsibility of the user. This Material Safety Data Sheet was prepared to comply with the OSHA Hazardous Communication Regulation.

All information appearing herein is based upon data obtained by the manufacturer and technical sources. Judgments as to the suitability of information herein for the purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of this information, ICS, ECS or Gold Crew, or its distributors extends no warrantees, makes no representations and assumes no responsibility as to the suitability of such information for application to purchasers intended purposes or for consequences of its use.

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APPENDIX D

STANDARD FIELD PROCEDURES FOR SOIL VAPOR PROBE INSTALLATION AND SAMPLING

STANDARD FIELD PROCEDURES FOR SOIL VAPOR PROBE INSTALLATION AND SAMPLING

VAPOR POINT METHODS

This document describes Conestoga-Rovers & Associates' standard field methods for soil vapor sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives: Soil vapor samples are collected and analyzed to assess whether vapor-phase subsurface contaminants pose a threat to human health or the environment.

***Shallow Soil Vapor Point Installation*:** The shallow soil vapor point method for soil vapor sampling utilizes a hand auger or drill rig to advance a boring for the installation of a soil vapor sampling point. Once the boring is hand augered to the final depth, a probe, connected with Swagelok fittings to nylon or Teflon tubing of ¼-inch outer-diameter, is placed within 12-inches of number 2/16 filter sand. A 12-inch layer of dry granular bentonite is placed on top of the filter pack. Pre-hydrated granular bentonite is then poured to fill the borehole. The tube is coiled and placed within a wellbox finished flush to the surface. Soil vapor samples will be collected no sooner than 48 hours after installation of the soil vapor points to allow adequate time for representative soil vapors to accumulate. Soil vapor sample collection will not be scheduled until after a minimum of three consecutive precipitation-free days and irrigation onsite has ceased. A measured volume of air will be purged from the tubing using a different Summa purge canister. Immediately after purging, soil vapor samples will be collected using the appropriate size Summa canister with attached flow regulator and sediment filter. The soil vapor points will be preserved until they are no longer needed for risk evaluation purposes. At that time, they will be destroyed by extracting the tubing, hand augering to remove the sand and bentonite, and backfilling the boring with neat cement. The boring will be patched with asphalt or concrete, as appropriate.

Sampling of Soil Vapor Points: Samples will be collected using a SUMMA™ canister connected to sampling tubing at each vapor point. Prior to collecting soil vapor samples, the initial vacuum of the canisters is measured and recorded on the chain-of-custody. The vacuum of the SUMMA™ canister is used to draw the soil vapor through the flow controller until a negative pressure of approximately 5-inches of Hg is observed on the vacuum gauge and recorded on the chain-of-custody. The flow controllers should be set to 100-200 ml/minute. Field duplicates should be collected for every day of sampling and/or for every 10 samples collected.

Prior to sample collection, stagnant air in the sampling apparatus should be removed by purging approximately three purge volumes. The purge volume is defined as the amount of air within the probe and tubing.

In accordance with the DTSC Advisory-Active Soil Gas Investigations guidance document, dated January 28, 2003, leak testing needs to be performed during sampling. Helium is recommended, although shaving cream is acceptable.

Vapor Sample Storage, Handling, and Transport: Samples are stored and transported under chain-of-custody to a state-certified analytic laboratory. Samples should never be cooled due to the possibility of condensation within the canister.

APPENDIX E

DESIGN DETAILS OF REMEDIAL EXTRACTION SYSTEM

APPENDIX E

DESIGN DETAILS OF REMEDIAL EXTRACTION SYSTEM

EA Engineering, Science, and Technology

EA Western Regional Operations
41 Lafayette Circle
Lafayette, CA 94549
Telephone: 415-283-7077
Fax: 415-283-3894

9 March 1990

Mr. John Randall
Chevron U.S.A. Inc.
P.O. Box 5004
San Ramon, California 94583-0804

KLD MAR 12'90

RE: Revised Work Plan and Budget for Remediation
Former Chevron SS 9-1153
3126 Fernside Boulevard
Alameda, California

Dear John:

Enclosed for your review is the revised work plan and budget for a pump-and-treat remediation system at the site of the former Chevron SS 9-1153, located at 3126 Fernside Boulevard, Alameda, California.

This revised work plan includes the following:

- conceptual drawings showing alternate locations of equipment housing structure
- use of electrical pumps vs. air-operated Ejector pumps; alternative costs for purchasing either system are compared in Table 1, attached
- extraction of groundwater from an extraction trench
- installation of one new monitoring/recovery well
- cost comparison of using activated carbon in canisters of various sizes; alternative costs are compared in Table 2, attached.

Permitting with EBMUD has been progressing with additional monitoring of water for priority pollutants required, and they want more detailed background information. The City of Alameda Planning Department will also require a variance to locate our treatment system housing on either location of the property. This appeals process will delay the project about three months. We also had to modify our design to turn off our system when the city's sewers are surcharged during sustained rainy weather due to excessive infiltration into their sewage collection system.

April 3, 1990

Ms. Cynthia Chapman
Alameda County
Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

FILE

Re: Former Chevron SS# 9-1153
3126 Fernside Blvd.
Alameda, CA

Dear Ms. Chapman:

Enclosed we are forwarding a Work Plan prepared by our consultant EA Engineering, dated March 1990, which describes additional work steps we propose to take at the above referenced site. We would appreciate you review and concurrence.

Chevron will proceed under self direction unless otherwise informed by your office.

I declare under penalty of perjury that the information contained in the attached report is true and correct, and that any recommended actions are appropriate under the circumstances, to the best of my knowledge.

If you have any questions or comments please do not hesitate to call me at (415) 842 - 9625.

Very truly yours,

C. G. Trimbach

JMR/jmr
Enclosure

By_____
John Randall

cc: Mr. Lester Feldman
RWQCB-Bay Area
1800 Harrison Street
Suite # 700
Oakland, CA 94612

We hope that this work plan has incorporated those items you wished to be included. If you have any questions, please give me or Terry Winsor a call.

Sincerely,

Jack Becker, P.E.
Project Manager

JB:ds
Enclosures

TABLE 1 ESTIMATED BUDGET TO DESIGN, CONSTRUCT, AND OPERATE A GROUNDWATER REMEDIATION SYSTEM, FORMER CHEVRON SS 9-1153, 3126 FERNSIDE BOULEVARD, ALAMEDA, CALIFORNIA, REVISED 7 MARCH 1990

TASK I - INSTALLATION OF GROUNDWATER RECOVERY TRENCH AND WELLS

INSTALLATION OF RECOVERY TRENCH AND RECOVERY WELLS

EA Labor	$ 5,914
EA Usage	1,588
Subcontractor (includes EA markup)	13,070
Analytical (includes EA markup)	2,893
Subtotal, Well Installation	$ 23,465

QUARTERLY GROUNDWATER SAMPLING

EA Labor	7,128
EA Usage	440
Analytical	6,231
Subtotal, Quarterly Groundwater Sampling	$ 13,799
Subtotal, Task I	$ 37,264

TASK II - SYSTEM PERMITTING AND DESIGN

EA Labor	$ 21,062
EA Usage	2,700
Subtotal, Task II	$ 23,762

TASK III - SYSTEM CONSTRUCTION AND INSTALLATION

	All Electric System	Air System
EA Labor	$ 6,708	$ 6,708
EA Usage	1,760	1,760
Subcontractor (includes EA markup)		
Equipment*	29,769	42,570
Rentals	3,082	3,082
Installation	10,787	10,787
Subtotal, Task III	$ 52,106	$ 64,907

TASK IV - SYSTEM STARTUP, OPERATION, AND MAINTENANCE

EA Labor	$ 20,100
EA Usage	550
Subcontractor (includes EA markup)	
Analytical	1,600
Subtotal, Task IV	$ 22,245

TABLE 1 (Cont.)

	All Electric System	Air System
Total Task I	37,264	37,264
Total Task II	23,762	23,762
Total Task III	52,106	64,907
Total Task IV	22,245	22,245
Project Total	$135,377	$148,178

Deduct $7,000 if a standard equipment enclosure can be used.

* Pumping equipment costs (does not include sales tax or markup).

	All Electric System	Air System
Pump	$ 803	$ 7,550
Controls	2,168	1,400
Float Switch		300
Compressor		3,600
Gauges		500
	$ 2,971	$ 13,350

TABLE 2 COMPARISON OF THE COSTS OF ACTIVATED CARBON AT THE SITE OF FORMER CHEVRON SS 9-1153, ALAMEDA, CALIFORNIA

	200 Pound Canister	1,000 Pound Vessel	2,000 Pound Vessel
Purchase Cost (includes carbon)	$ 495	$ 4,900	$ 8,100
Haul Away	320		
Refill		2,100	3,650
Rental First Month		2,045	2,940
Rental Each Month		150	265
Freight From LA		130	260
	$ 815*		
Costs for Two Years of Operation (based on purchase)			
Days Per Cycle	26.6	133	266
Cycles	27	5.5	2.7
Purchase Cost	$13,365	$ 4,900	$ 8,100
Haul Away	8,640		
Recharge		9,450	6,205
Freight	702	702	702
	$22,707	$15,052	$15,007
Cost Per Month (based on purchase)	$ 946	$ 627	$ 625
Rental Cost for Two Years			
First Month		$ 2,045	$ 2,940
23 Months		3,450	6,095
		$ 5,495	$ 9,035
Cost Per Month (based on rental)			
Rental Cost for Two Years		$ 5,495	$ 9,035
Recharge		9,450	$ 6,205
Freight		702	702
		$15,647	$15,942
Cost Per Month (based on rental)		$ 651	$ 664

* $815 for each exchange.

Note: (1) A flow of 8 gpm at 100 ug/L TPH and benzene requires 7.5 lb/day.
(2) It is cheaper to purchase and the vessels can be used on other sites; also there would be more handling using the 200 pound canisters.

Source: Peter Guichard, Weststates Carbon, Oakland, CA.

c61/91153/tb2

REVISED WORK PLAN FOR REMEDIATION OF SOIL AND GROUNDWATER AT THE SITE OF FORMER CHEVRON SS 9-1153 3126 FERNSIDE BOULEVARD ALAMEDA, CALIFORNIA

Prepared for

Chevron U.S.A. Inc.

KLD MAR 12'90

Prepared by

EA Engineering, Science, and Technology
Western Division

March 1990
80201.04

80201.04

REVISED WORK PLAN FOR REMEDIATION OF SOIL AND GROUNDWATER AT THE SITE OF FORMER CHEVRON SS 9-1153 3126 FERNSIDE BOULEVARD ALAMEDA, CALIFORNIA

Prepared for

Chevron U.S.A. Inc.
2410 Camino Ramon
San Ramon, California 94583

Prepared by

EA Engineering, Science, and Technology
41 Lafayette Circle
Lafayette, California 94549

John A. Becker, P.E.
Project Manager

3-9-90
Date

Terry R. Winsor
Manager, UST Services

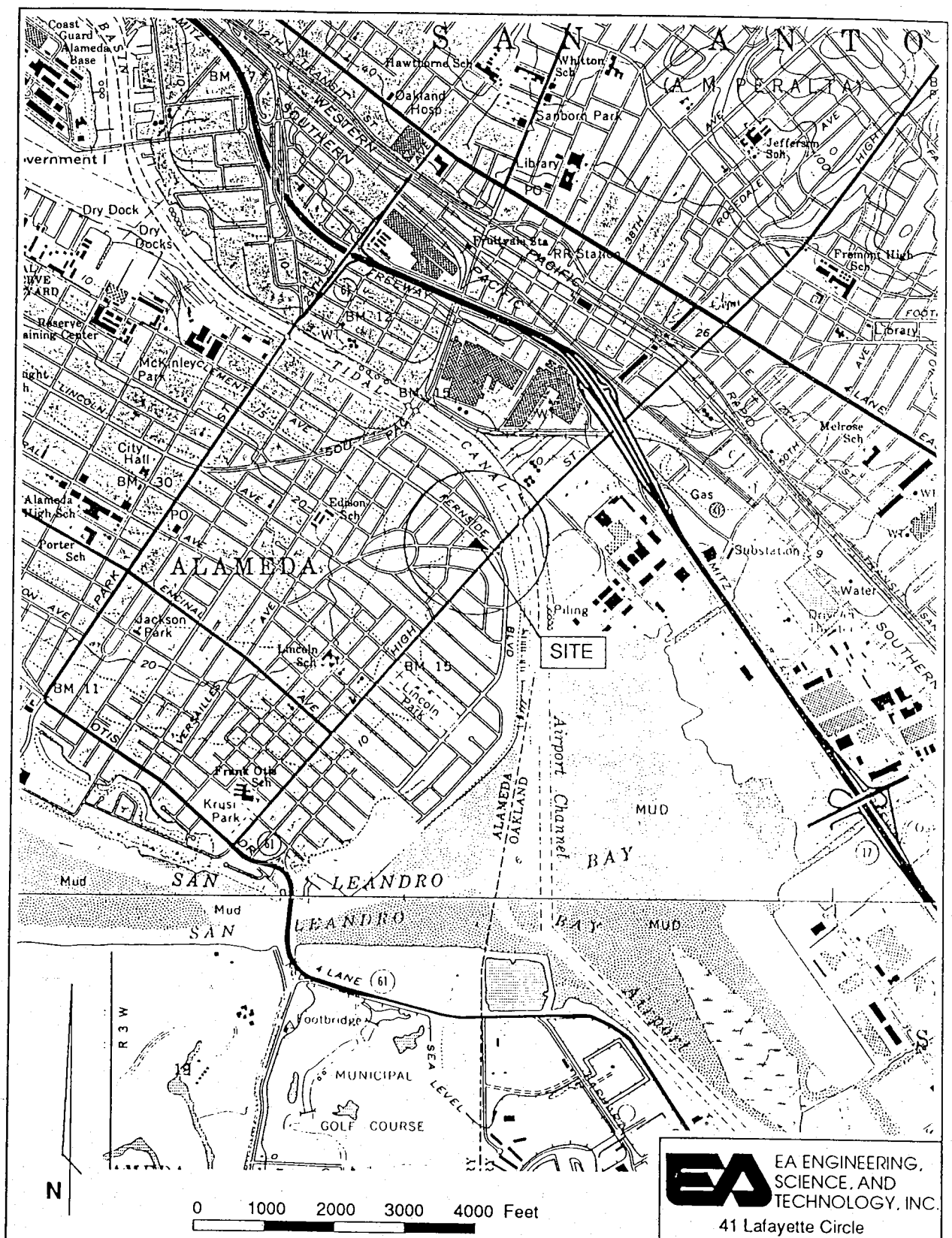
9 Mar 90
Date

March 1990

CONTENTS

1. INTRODUCTION

At the request of Chevron U.S.A. Inc., EA proposes the following work plan to remediate soils and groundwater containing petroleum hydrocarbons at former Chevron SS 9-1153 in Alameda, California. The site is located at 3216 Fernside Drive, at the intersection of Gibbons Drive and Fernside Boulevard (Figures 1 and 2). The site was a Chevron service station until 1986, when the station was deactivated and demolished. A residence has since been constructed on the site (Figure 3). The extent and levels of residual petroleum hydrocarbons in the soils and groundwater have been investigated, and the following work plan has been developed to remediate these contaminants.



EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.
41 Lafayette Circle
Lafayette, CA. 94549

Figure 1. Location and topography of former Chevron SS 9-1153, 3126 Fernside Blvd., Alameda, CA.

Drawn	Date
Reviewed	Date 9 Feb 90

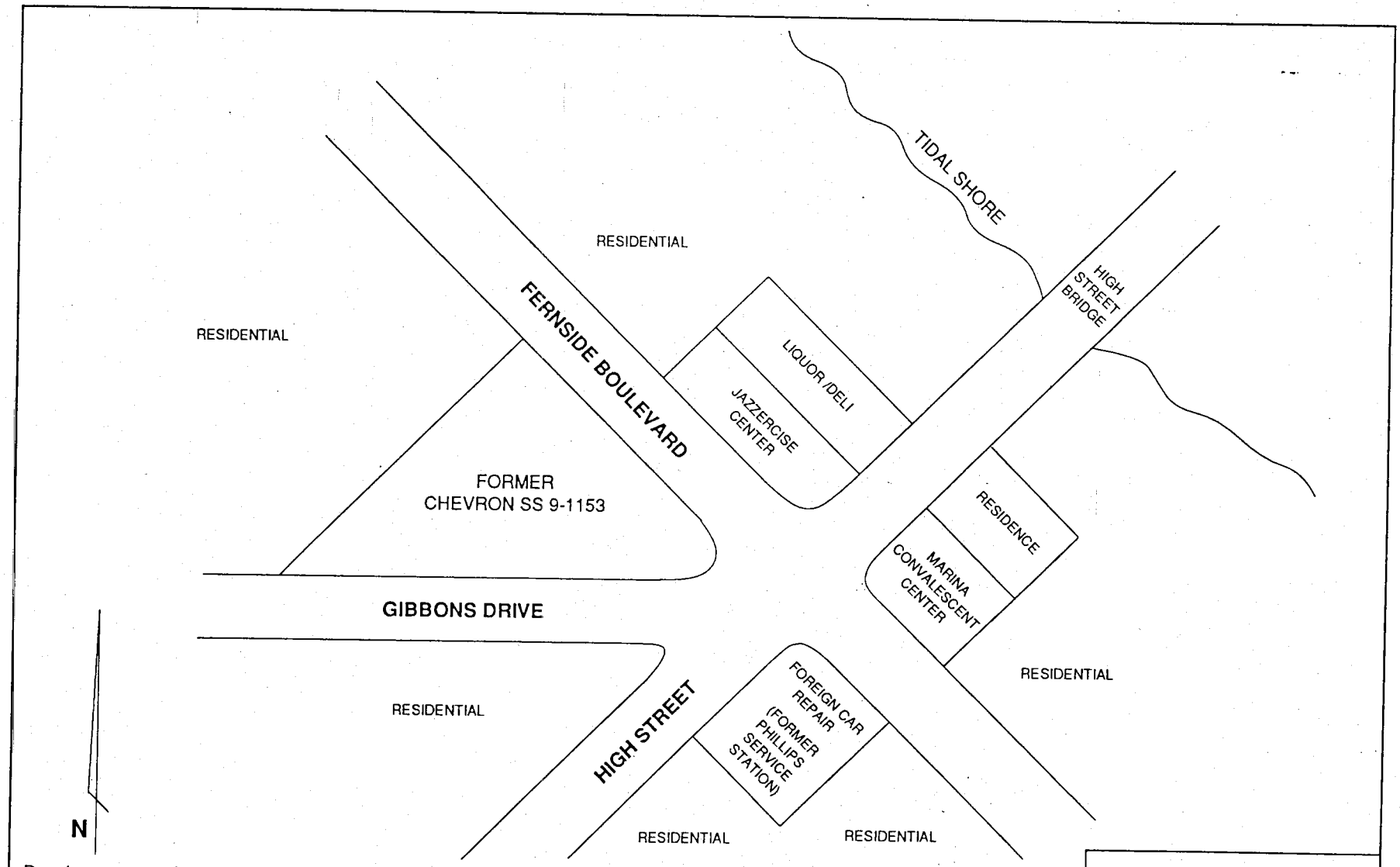


Figure 2. Land use in the vicinity of former Chevron SS 9-1153, Alameda, California, May 1989.

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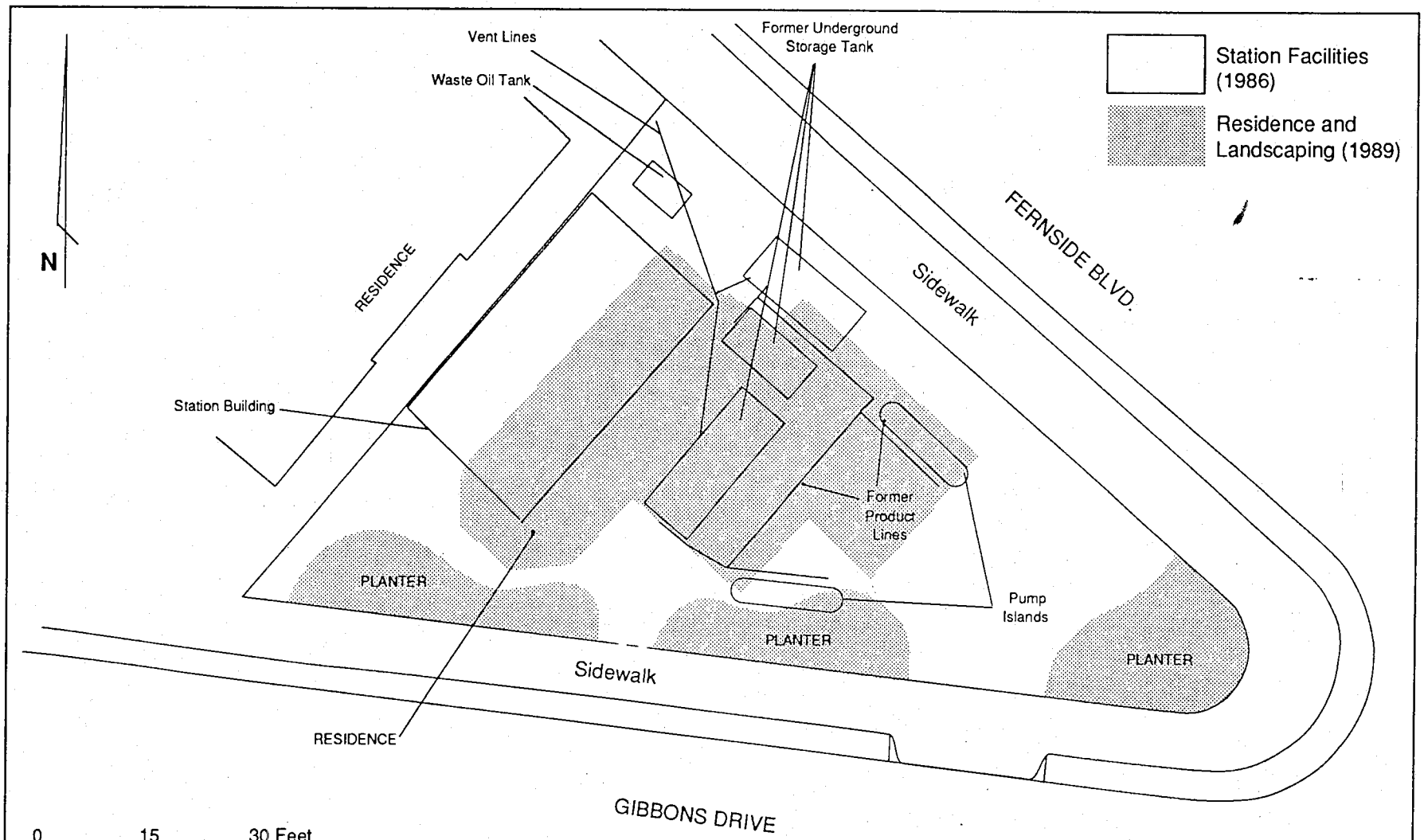

Figure 3. Structures and service station facilities, former Chevron SS 9-1153, Alameda, California, 1986.

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2. SITE HISTORY AND PREVIOUS INVESTIGATIONS

2.1 SITE HISTORY AND TANK PULL

Five underground storage tanks were maintained at Chevron SS 9-1153 for approximately 30 years. The station was deactivated, and the USTs were removed on 4 June 1986. An unspecified amount of soil was excavated at that time and subsequently aerated on the site. Soil samples taken at the time of excavation contained concentrations of total petroleum hydrocarbons (TPH) to 1,400 mg/kg (Table 1), but the aeration lowered the levels to less than method detection limits of 1 mg/kg.

2.2 GROUNDWATER MONITORING

Three groundwater monitoring wells (C-1, C-2, C-3, Figure 4) were installed on the site on 18 August 1986. Soil samples collected during drilling were not analyzed for petroleum hydrocarbons, but hydrocarbon odors were noted in the soil from the shallow portions of C-1. The groundwater in the wells has been sampled and analyzed for TPH and benzene, toluene, ethylbenzene, and xylenes. Analytical results of the sampling and analysis are summarized in Table 2; concentrations of petroleum hydrocarbons have been measured in samples of groundwater from each of the wells, ranging from 50 ug/L to 15,000 ug/L of TPH and from 1.8 ug/L to 3,800 ug/L of benzene. In C-3, the concentrations of TPH, benzene, and the other constituents were low, near the analytical method detection limits in 1987 and below detection limits in both July 1987 and May 1989. BTEX and TPH concentrations were near or below detection in C-2 in 1987, but C-2 could not be located in 1989 because it may have been destroyed or covered during construction of the residence. Concentrations of BTEX and TPH in C-1 were and have remained higher than those in C-3 (see Table 2). Wells C-1 and C-3 are protected at the surface and are still usable for monitoring groundwater and potentially for remediation.

TABLE 1 CONCENTRATIONS (mg/kg [ppm]) OF TOTAL PETROLEUM HYDROCARBONS IN EXCAVATED AND AERATED SOILS AT FORMER CHEVRON SS 9-1153, 3126 FERNSIDE BOULEVARD, ALAMEDA, CALIFORNIA, 4 JUNE, 7 JULY 1986

Sample Number	Description/Location	Total Petroleum Hydrocarbons as Gasoline[a]
4 June 1986		
1	Soil from 11 feet, beneath SE end of 6,000 gallon UST	<1
2	Soil from 12 feet, beneath NW end of 6,000 gallon UST	<1
3	Soil from 10 feet, beneath fill end of 3,000 gallon UST	<1
4	Soil from 10.5 feet, beneath NW end of 3,000 gallon UST	<1
6	Soil from 8 feet, analysis for waste oil	<11*
7	Soil from stockpile of excavated soils	1,400
8	Soil from stockpile of excavated soils	530
9	Soil from stockpile of excavated soils	150
10	Soil from 10 feet, beneath SW end of 8,000 gallon UST	<1
11	Soil from 12 feet, beneath fill end of 8,000 gallon UST	<1
12	Soil from 10 feet, beneath waste oil tank	<11*
13	Soil from stockpile	33
7 July 1986		
1	Stockpile soil composite from sample points 1A-1D (east half of stockpile)	<1
2	Stockpile soil composite from sample points 2A-2D (west half of stockpile)	<1

a. Analyses by Thermo Analytical, Inc./ERG.
* Analysis for oil and grease by extraction.

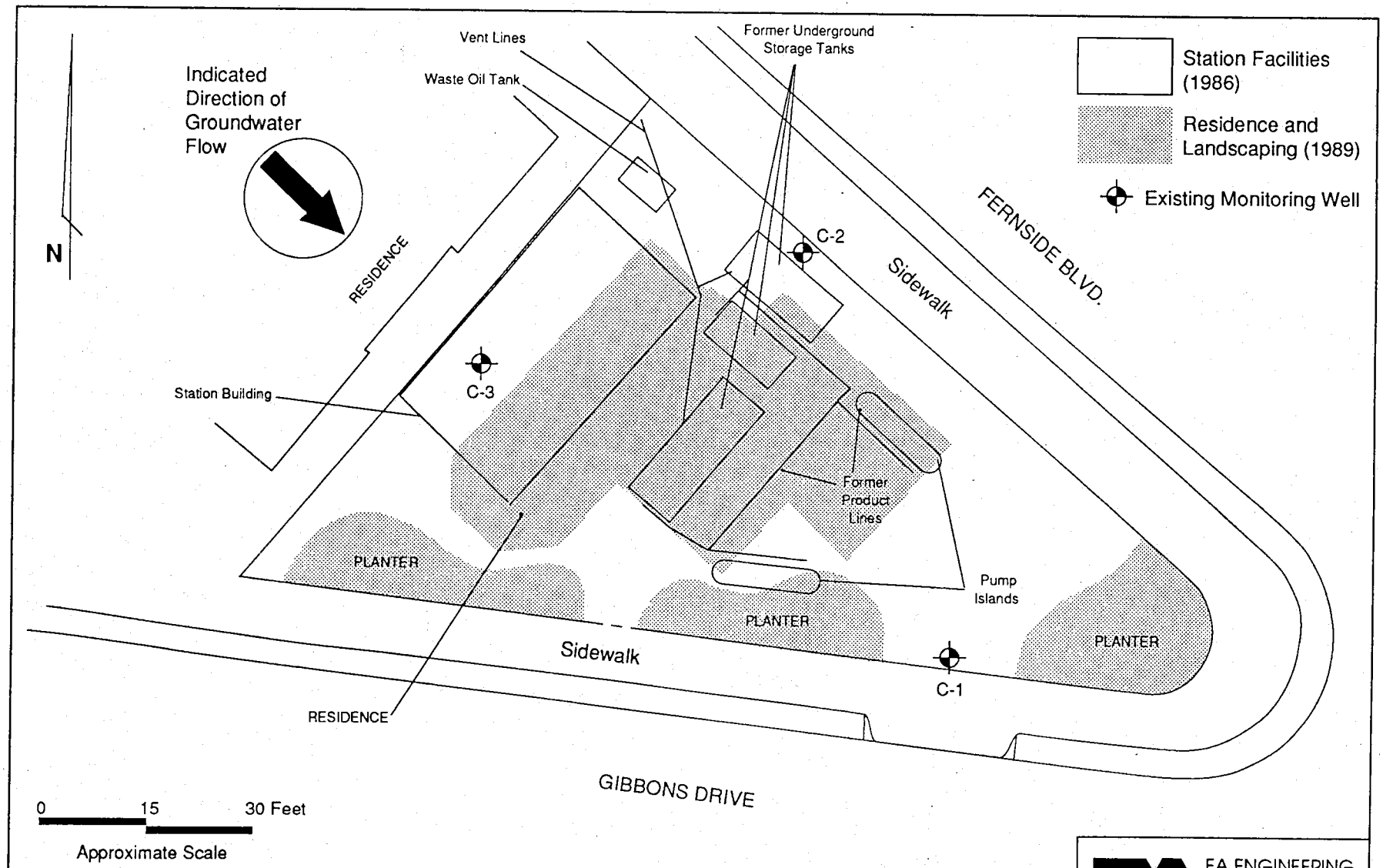

Figure 4. Groundwater monitoring wells with direction of groundwater flow, former Chevron SS 9-1153, Alameda, California, August 1986.

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TABLE 2 CONCENTRATIONS (ug/L [ppb]) OF PETROLEUM HYDROCARBONS IN THE GROUNDWATER AT FORMER CHEVRON SS 9-1153, ALAMEDA, CALIFORNIA, 1986, 1987, 1989

Well No.	Date	Benzene	Toluene	Ethylbenzene and Xylenes	Total Petroleum Hydrocarbons
C-1	09/04/86	760	820	1,500	15,000
	07/22/87	250	7	40	1,100
	05/03/89	3,800	190	229	6,900
	12/04/89	8,000	490	470	17,000
C-2	09/04/86	49	18	84	1,100
	07/22/87	1.8	<1.0	<4.0	<50
	05/03/89	well not found			
	12/04/89	well not found			
C-3	09/04/86	3.2	5.4	5.8	50
	07/22/87	<0.5	<1.0	<4.0	<50
	05/03/89	<0.5	<1.0	<2.0	<50
	12/04/89	<0.5	<0.5	<0.5	<250
5[1]	06/04/86	--	--	--	130

1. Surface water sample collected during tank pull.

2.3 SOIL VAPOR CONTAMINANT ASSESSMENTS

Two soil vapor surveys have been conducted on the site. The first survey was conducted on 21 July 1987: soil gas samples were taken from 12 points above the shallow groundwater. High concentrations of benzene, toluene, and lower-boiling-point compounds were detected at vapor points V1 through V4 (Figure 5), the points nearest well C-1. Concentrations of petroleum hydrocarbons greater than 1 ppm were measured in only three of the remaining eight points. A risk assessment based on the analytical results of the soil vapor survey concluded that the moderate levels of hydrocarbons in the soil vapor and groundwater did not constitute an immediate threat to human health. A potential for odor and nuisance problems was noted. Recommendations included groundwater monitoring and soil venting and a vapor barrier for construction over the areas such as the southeast corner of the site where concentrations of petroleum hydrocarbons in the soil vapors were highest.

On 4 and 10 May 1989, a second SVCA was conducted at former Chevron SS 9-1153. A residence had been constructed, and the site had been landscaped. The depth to groundwater at the site was measured at about 4.5 feet below grade; hence, only two sampling depths (2-3 feet and 4-4.5 feet) were used in the SVCAs. High concentrations of total volatile hydrocarbons (TVH) and aromatic hydrocarbons (BTXE) in the shallow soil gas (2.5 feet below grade) were found along the southern site boundary and about midway up the northeast boundary (Figure 6). The highest levels of TVH and aromatics were detected near the southeast corner as in the 1987 SVCA. Concentrations of benzene and other petroleum hydrocarbons in soil vapors vary broadly across the site but generally decline to the west and northwest and extend off the site to the southeast.

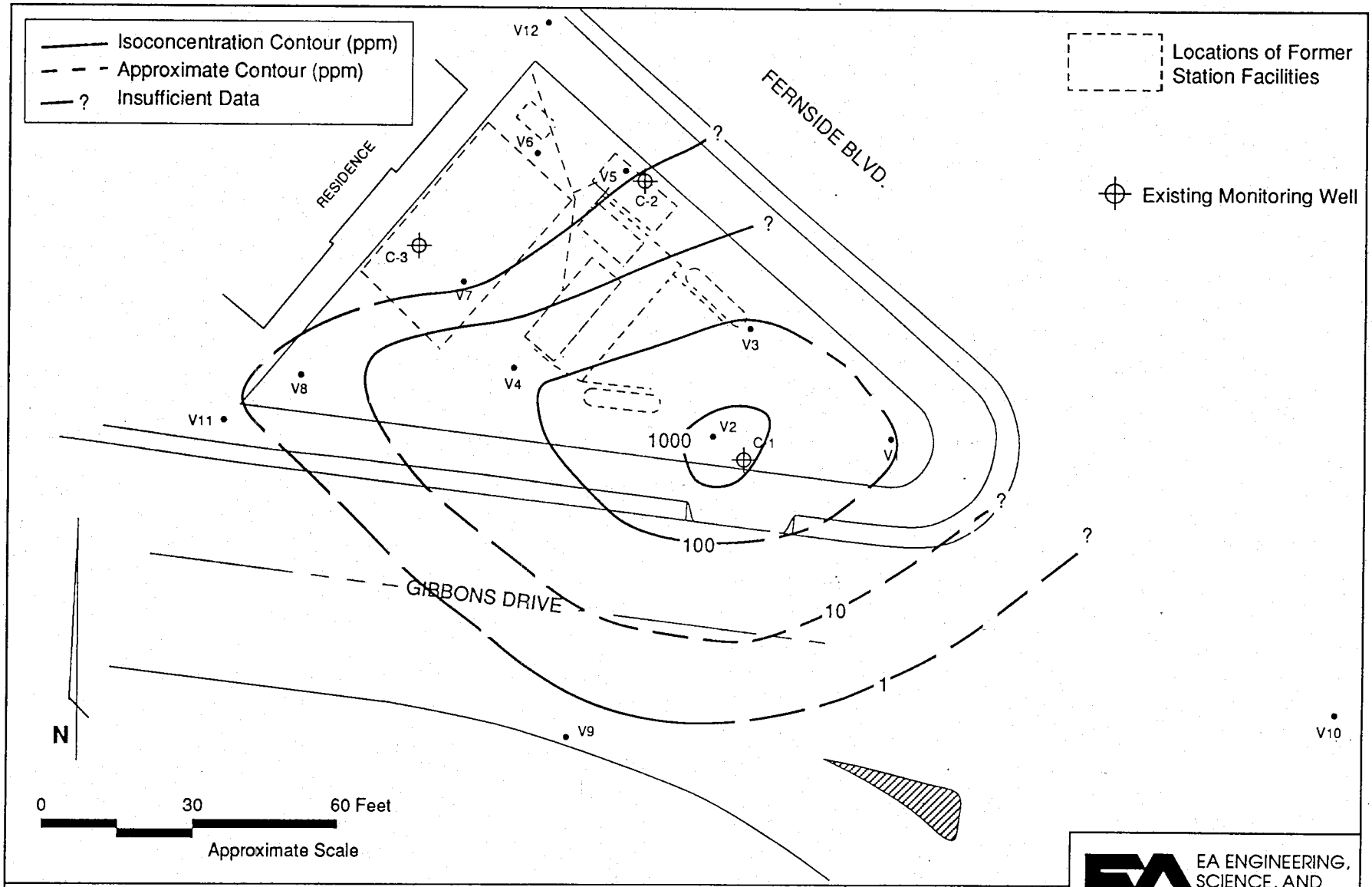

Figure 5. Location of soil vapor sampling points and isoconcentration contours (ppm) of benzene in the soil vapor at a depth of 3 feet, former Chevron SS 9-1153, Alameda, California, July 1987.

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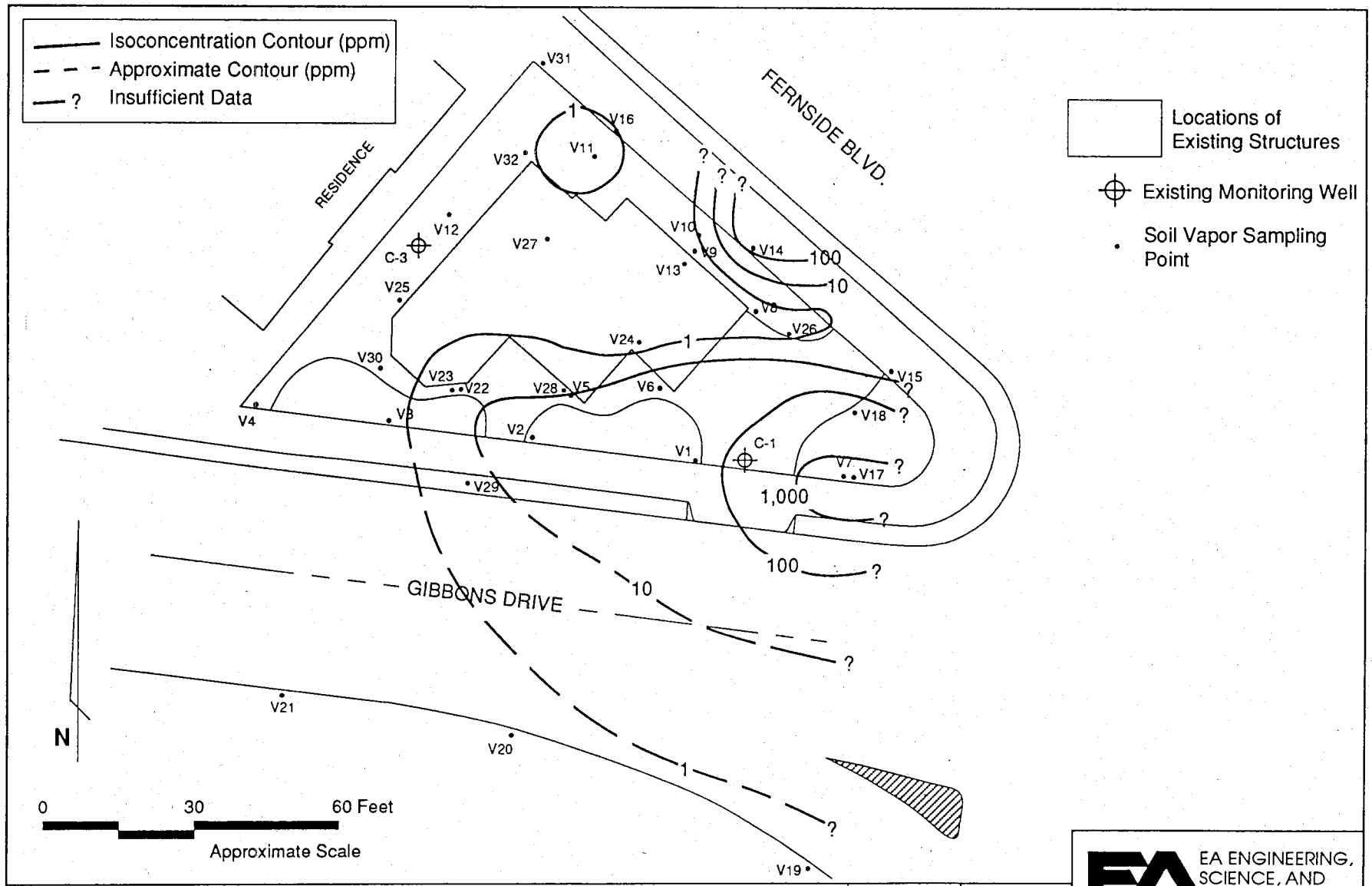

Figure 6. Isoconcentration contours (ppm) of benzene in the shallow soil gas at depths between 2 and 4.5 feet, former Chevron SS 9-1153, Alameda, California, May 1989.

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2.4 SOIL AND GROUNDWATER SAMPLING

On 27, 28, and 29 July 1989, soil samples were collected for analysis from five soil borings on the site and from three soil borings off the site in Gibbons Drive; groundwater that accumulated in the bottom of the soil borings was also sampled. All soil and groundwater samples were analyzed for total petroleum hydrocarbons and for benzene, toluene, ethylbenzene, and xylenes (Table 3). High concentrations of petroleum hydrocarbons were detected in the soils and groundwater (Figures 7 through 10) in the eastern portion of the site (SB1, SB2, SB5). Concentrations of petroleum hydrocarbons in the groundwater extended off the site into Gibbons Drive (SB6 and SB7) but did not extend upgradient of the former station facilities (SB4).

The following conclusions may be derived from the subsurface investigations:

1. Residual petroleum hydrocarbons are locally concentrated in the soils above shallow groundwater; petroleum hydrocarbons appear to have been dispersed through the soils with shallow groundwater that flows to the southeast.

2. Dissolved petroleum hydrocarbons in the groundwater have concentrated in the southeast portion of the site and have dispersed into Gibbons Drive.

3. The concentrations of petroleum hydrocarbons in the groundwater have increased since they were sampled in 1987; the increase may be the result of increased percolation through the soils, perhaps because of irrigation of landscaping on the site.

Chevron has requested that a groundwater remediation plan be prepared to control the petroleum hydrocarbons in the soil and groundwater at former Chevron SS 9-6157. This plan consists of

TABLE 3 CONCENTRATIONS OF PETROLEUM HYDROCARBON CONSTITUENTS IN SOIL AND GROUNDWATER SAMPLES FROM THE VICINITY OF FORMER CHEVRON SS 9-1153, 3126 FERNSIDE BOULEVARD, ALAMEDA, CALIFORNIA, JUNE 1989

Soil Concentrations (mg/kg = ppm)

Well No.	Date	Depth (feet)	Benzene	Toluene	Ethyl-Benzene	Xylenes	Total Petroleum Hydrocarbons
SB1	6-27-89	1	0.002	<0.001	0.001	0.008	0.43
SB1 (replicate)	6-27-89	1	0.001	<0.001	<0.001	0.008	-
SB1	6-27-89	4.5	18	111	37	149	5,500
SB1	6-27-89	6	1	2.200	0.540	1.930	65
SB1	6-27-89	9.5	0.170	0.460	0.140	0.530	10
SB2	6-27-89	1	0.009	0.024	0.010	0.026	<0.05
SB2 (replicate)	6-27-89	1	-	-	-	-	<0.05
SB2	6-27-89	4	45	230	78	283	1,500
SB2	6-27-89	6	0.470	1.300	0.310	1.120	4.7
SB3	6-27-89	0.5	<0.001	<0.001	<0.001	<0.001	0.07
SB3	6-27-89	3.5	2.400	3.200	5.300	17.8	850
SB4	6-29-89	1	<0.001	<0.001	<0.001	<0.001	<0.05
SB4 (replicate)	6-29-89	1	-	-	-	-	<0.05
SB4	6-29-89	4	<0.001	<0.001	<0.001	<0.001	<0.05
SB4	6-29-89	7	<0.001	<0.001	<0.001	<0.001	<0.05
SB5	6-29-89	0.5	0.019	0.017	0.019	0.153	0.25
SB5 (replicate)	6-29-89	0.5	0.020	0.021	0.023	0.178	-
SB5	6-29-89	4	15	81	30	108	1,700
SB5 (replicate)	6-29-89	4	-	-	-	-	1,600
SB5	6-29-89	6	0.260	1.900	1.400	5.200	470
SB6	6-28-89	3.5	0.026	0.100	0.160	0.370	15
SB7	6-28-89	4	0.002	<0.001	<0.001	<0.001	<0.05
SB7 (replicate)	6-28-89	4	0.002	<0.001	<0.001	<0.001	-
SB8	6-29-89	3	<0.001	<0.001	<0.001	<0.001	<0.05

TABLE 3 (CONT.)

Groundwater Concentrations (ug/L [ppb])

Well No.	Date		Benzene	Toluene	Ethyl-Benzene	Xylenes	Total Petroleum Hydrocarbons
SB1	6-27-89	Water	52,000	64,000	6,700	23,700	110,000
SB2	6-28-89	Water	30,000	59,000	6,600	26,200	160,000
SB4	6-29-89	Water	<1	<1	<1	<1	<50
SB4 (replicate)	6-29-89	Water	<1	<1	<1	<1	<50
SB5	6-29-89	Water	27,000	22,000	4,600	13,400	110,000
SB6	6-27-89	Water	12,000	7,400	2,500	7,100	74,000
SB7	6-28-89	Water	14,000	6,800	3,300	8,200	50,000
SB8	6-29-89	Water	<1	<1	<1	<1	<50
SB8 (replicate)	6-29-89	Water	-	-	-	-	<50
Rinsate	6-29-89	Water	1	<1	<1	<1	<50

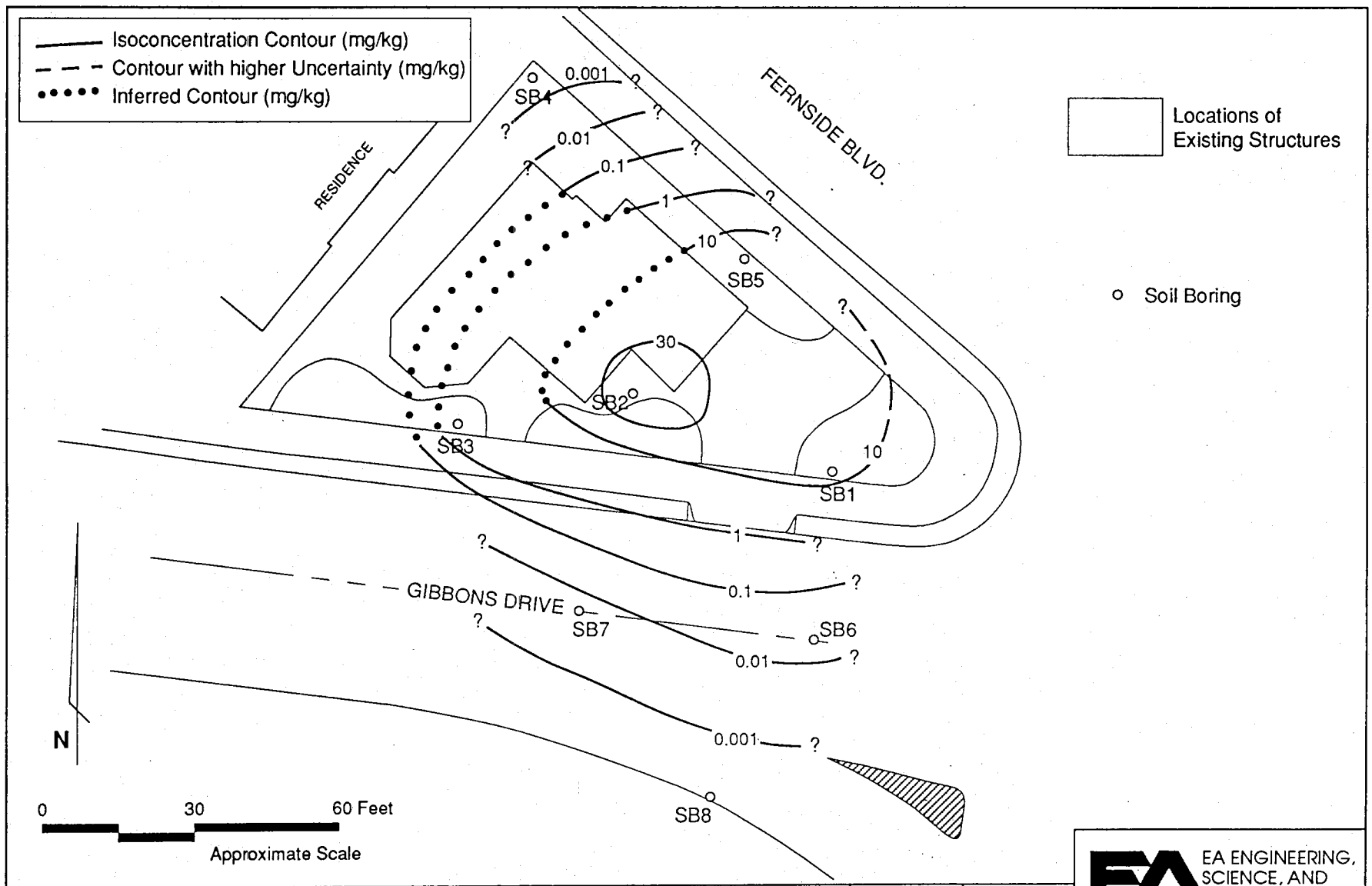

Figure 7. Distribution of benzene (mg/kg) in the soil at 3.5 to 4.5 feet beneath the ground surface, former Chevron SS 9-1153, Alameda, California, June 1989.

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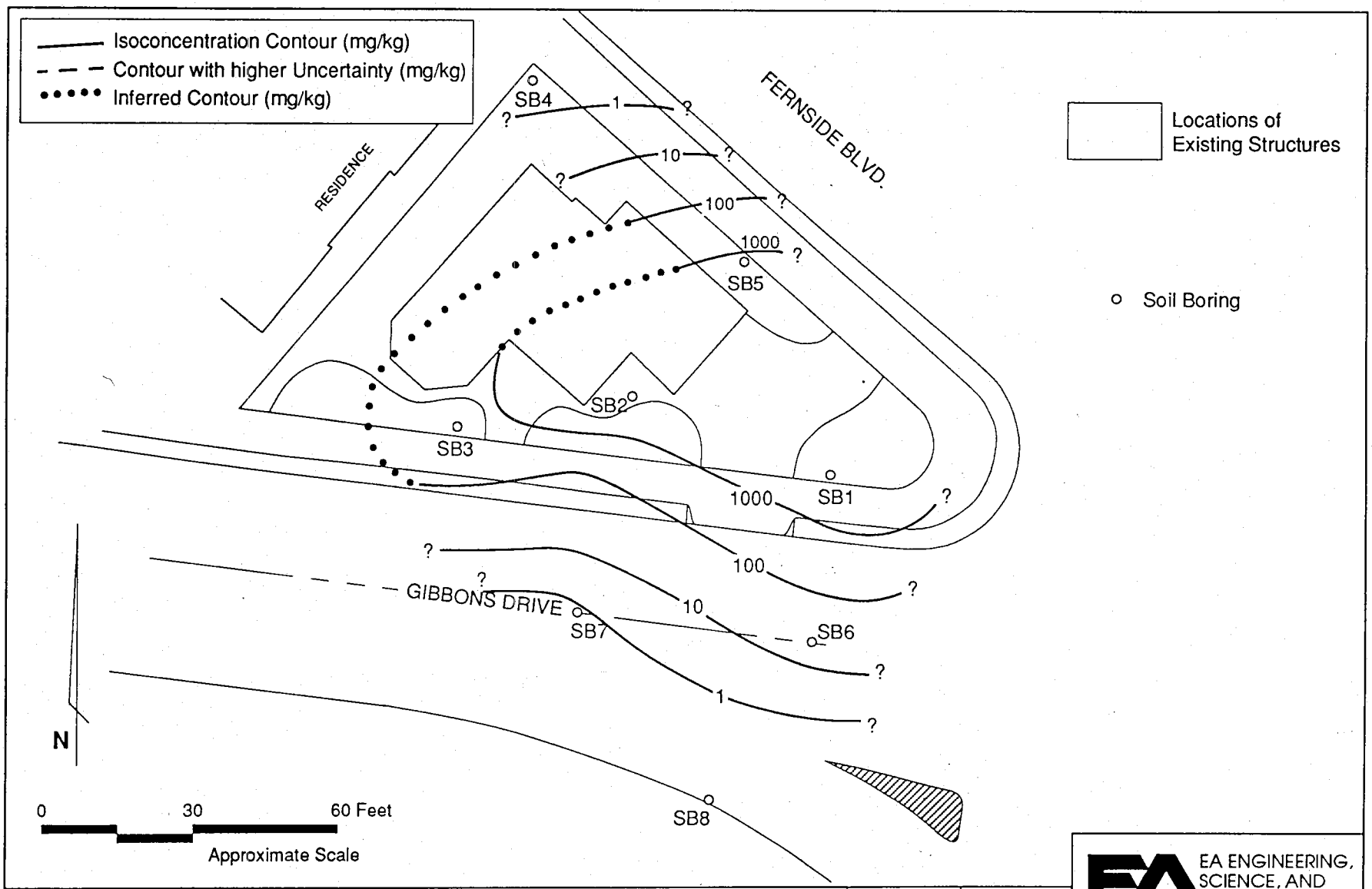

Figure 8. Distribution of TPH (mg/kg) in the soil at 3.5 to 4.5 feet beneath the ground surface, former Chevron SS 9-1153, Alameda, California, June 1989.

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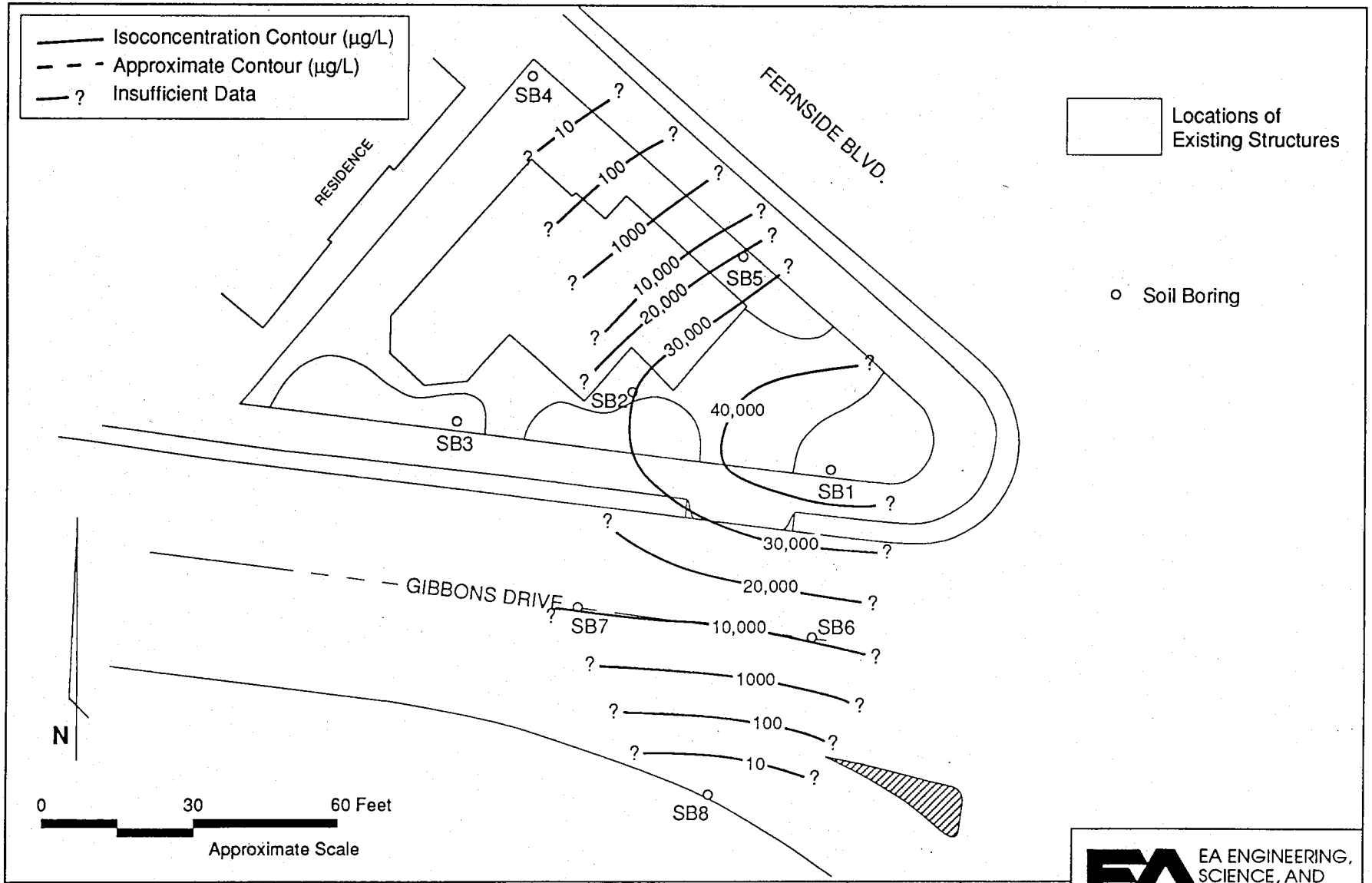

Figure 9. Isoconcentration contours (µg/L) of benzene in the groundwater, former Chevron SS 9-1153, Alameda, California, June 1989.

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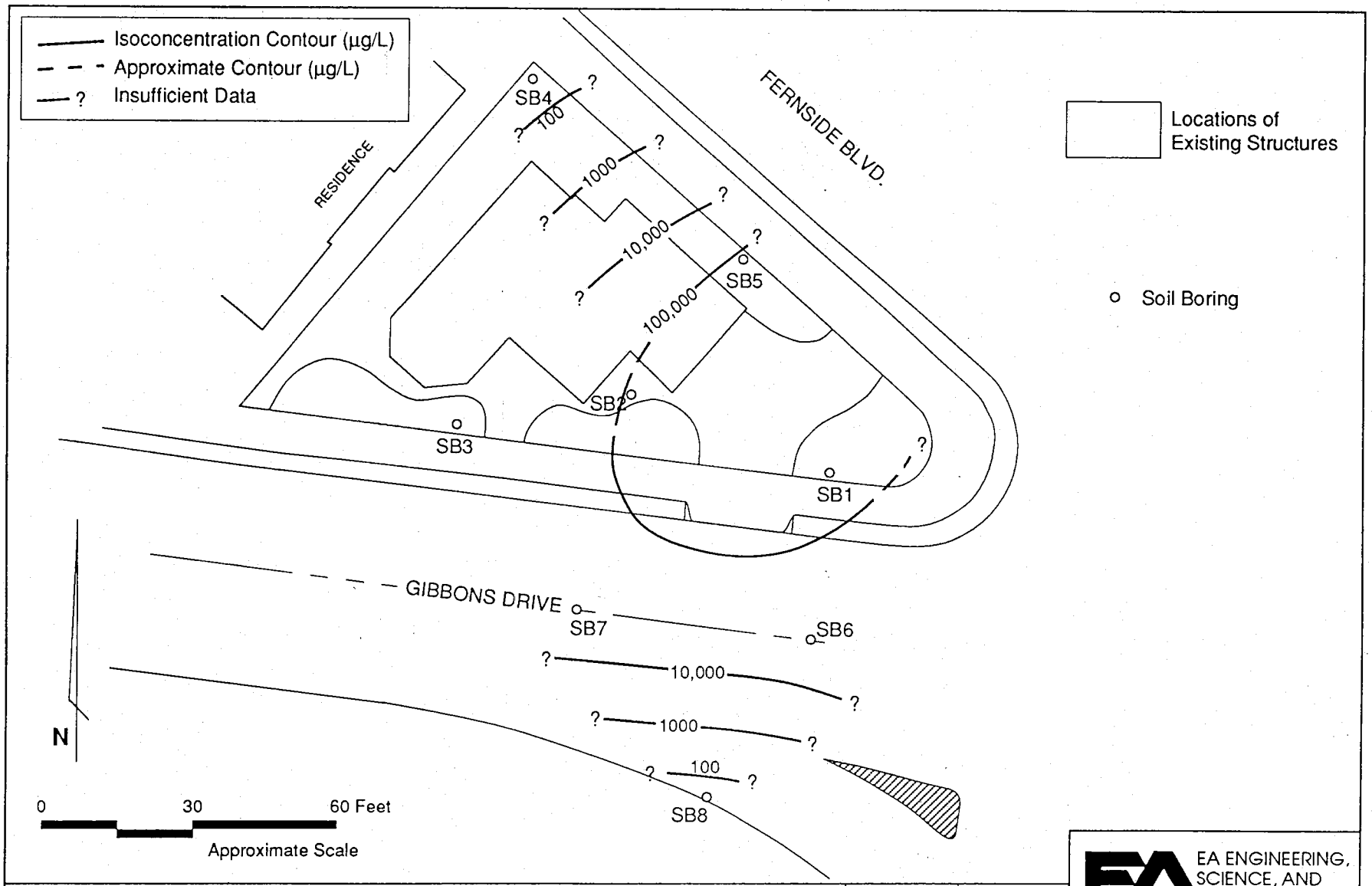

Figure 10. Isoconcentration contours (µg/L) of TPH in the groundwater, former Chevron SS 9-1153, Alameda, California, June 1989.

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obtaining necessary permits, including approval of the general plan, design of a groundwater pump-and-treat system, construction and installation of the system, and startup, operation, and maintenance.

3. SCOPE OF PROPOSED WORK

The work plan includes installing a groundwater and soil remediation system based on a pump-and-treat process (Figures 11 and 12). Extracted groundwater will be pumped from a trench through three activated-carbon filters in series prior to discharge to the sanitary sewer for final disposal.

Because of the high water table and the low yield of the aquifer at this site, a 25-foot recovery trench is proposed to be installed about 2 feet below the water table along the east side of the driveway (Figures 11 and 13). This trench will increase the yield of water and improve capture of the contaminant plume. One monitoring/recovery well is proposed to be installed in the side (north side) yard of the house to allow more comprehensive monitoring of hydrocarbon levels at the site.

The treated groundwater will be discharged to the sanitary sewer. The concentrations of certain contaminants, including lead and BTEX, are specifically limited by EBMUD for wastewater discharged into their system. Frequent monitoring of the treated groundwater will be required to ensure compliance with these limits. The soil and groundwater will be monitored to assess the effectiveness of the pump-and-treat process, and the monitoring will be reported to regulating agencies.

Concentrations of petroleum hydrocarbons in the soils will be investigated with soil borings and by collecting samples after the groundwater system has operated for six months. The impact that groundwater treatment and irrigation may have had on diminishing the levels of hydrocarbons in the soils will be assessed then. If the levels have not dropped measurably, additional treatment of soils will be pursued and attendant alterations in the treatment system made.

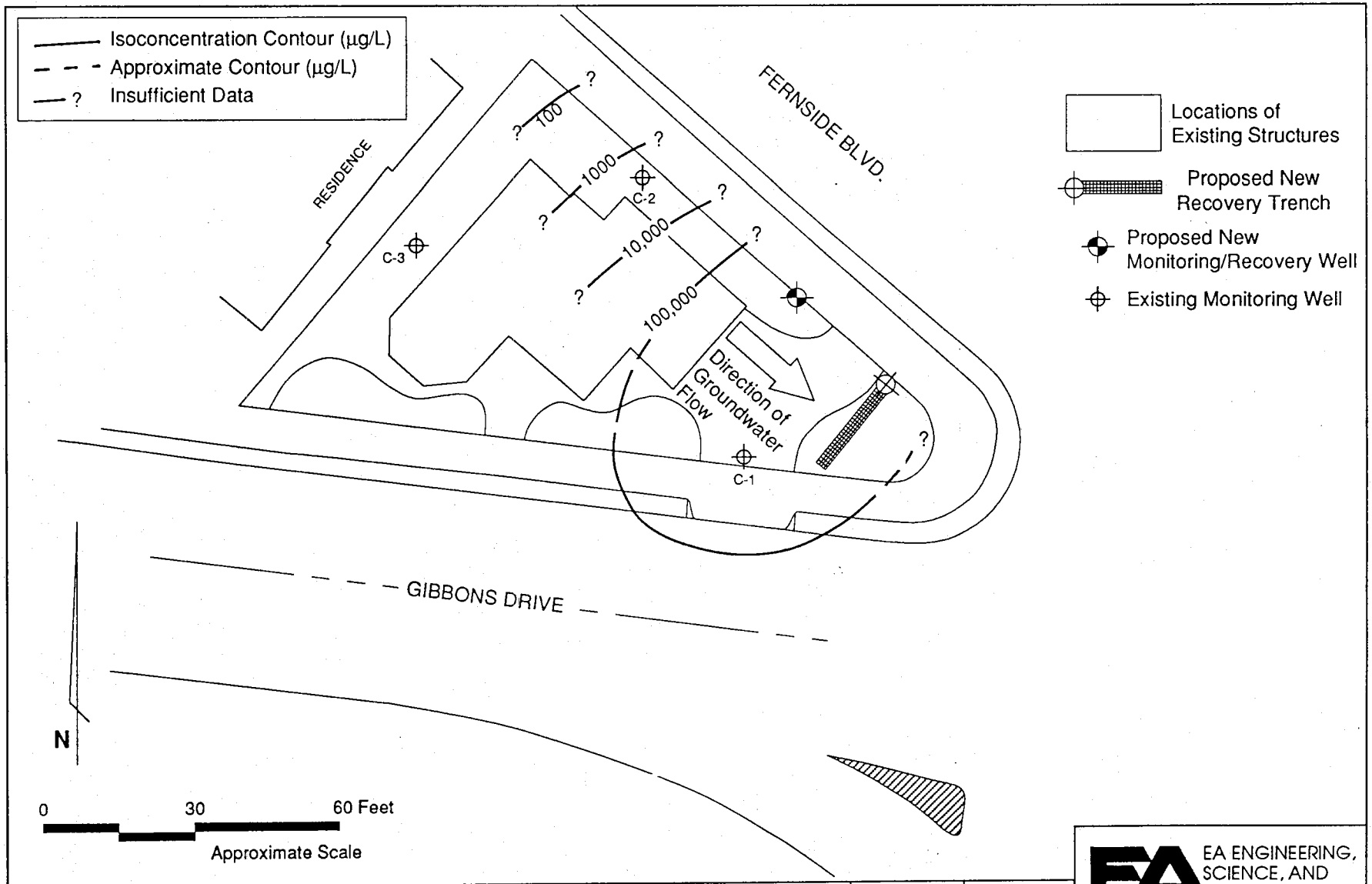

Figure 11. Monitoring/recovery well and recovery trench location, groundwater flow, and isoconcentration contours (µg/L) of TPH in the groundwater, former Chevron SS 9-1153, Alameda, California, June 1989.

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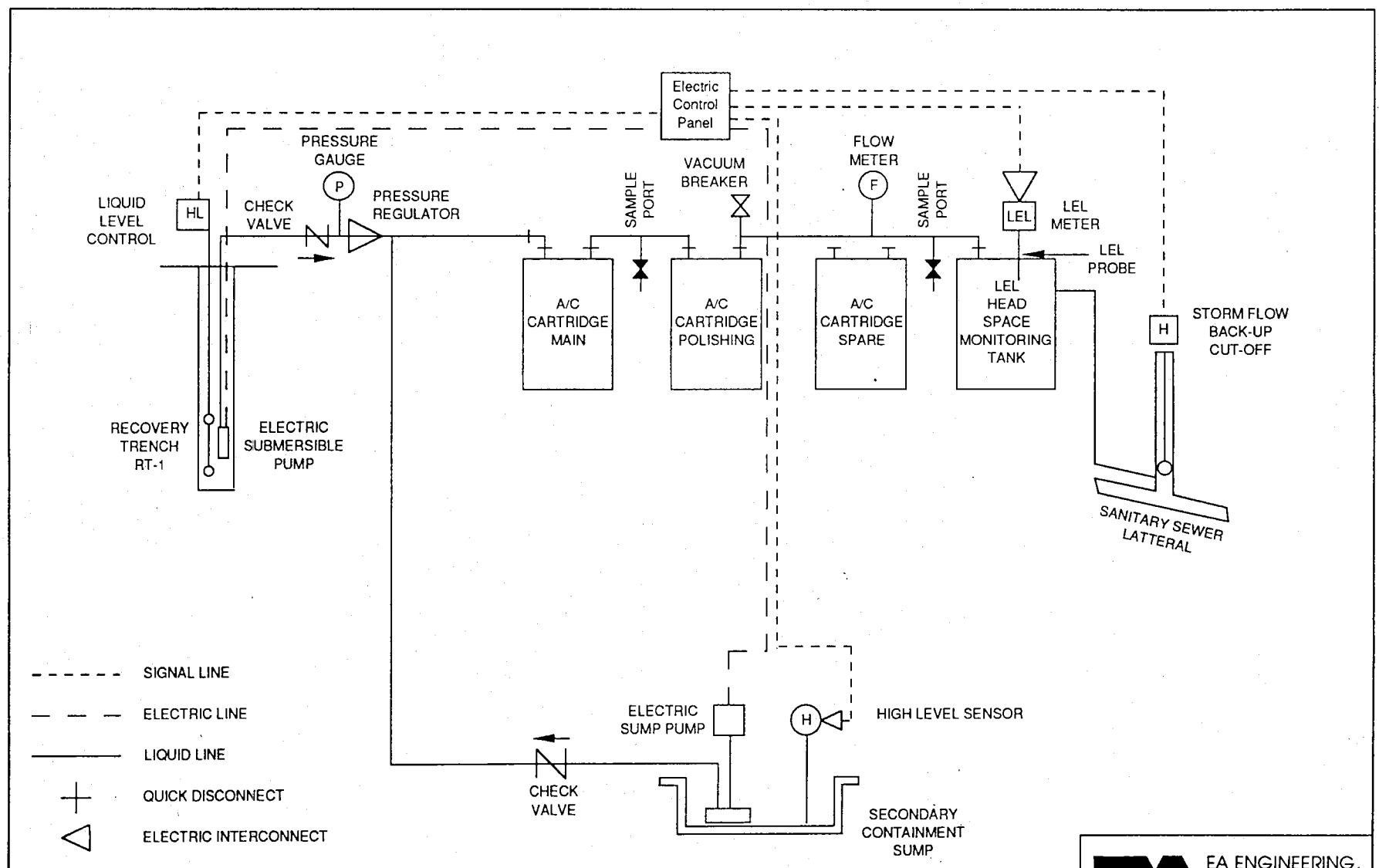

Figure 12. Process and Instumentation Diagram, former Chevron SS 9-1153, Alameda, California.

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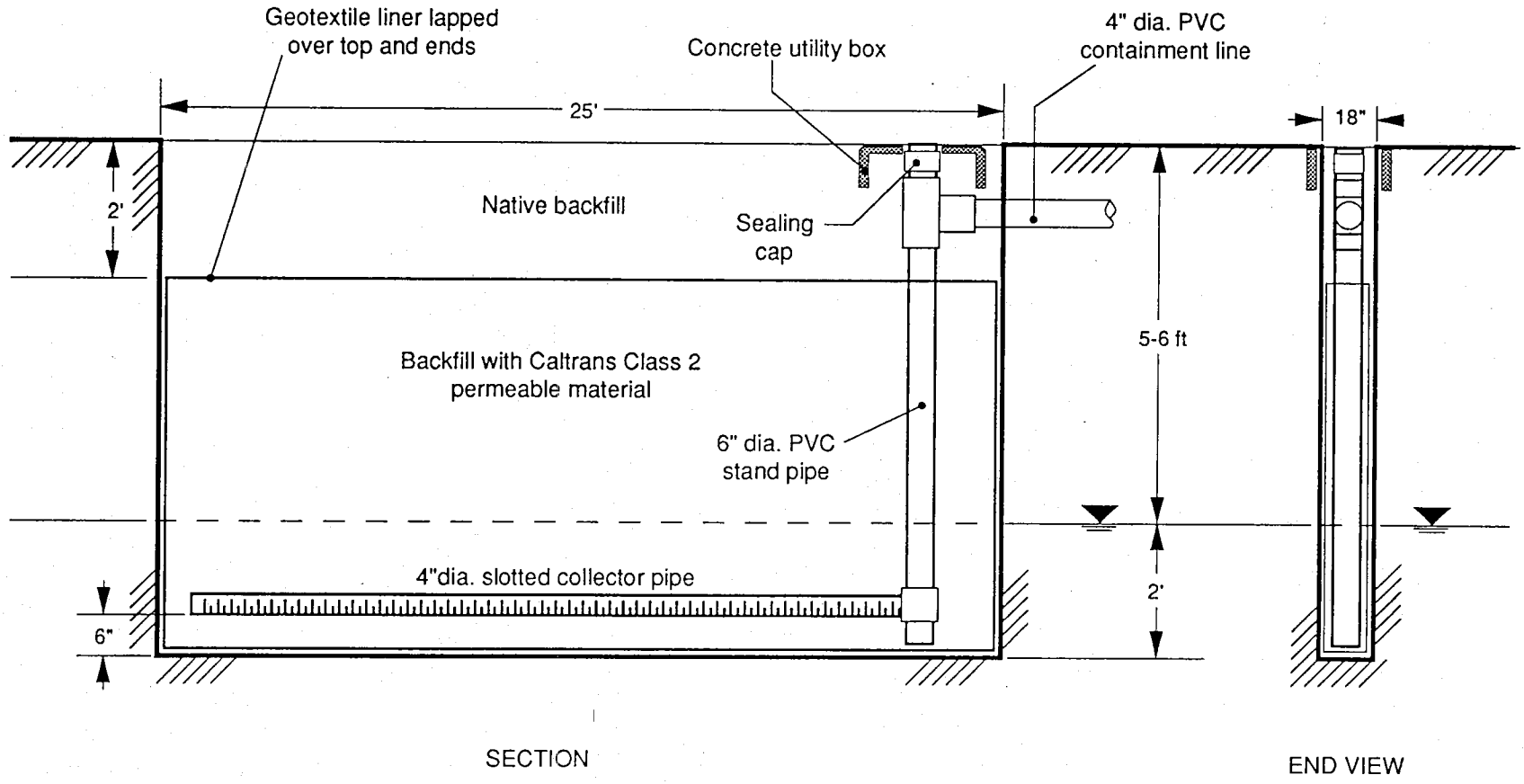

Figure 13. Detail of proposed recovery trench, former Chevron SS 9-1153, Alameda, California.

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Among the primary concerns in installing a groundwater and soil remediation system on the site would be minimizing the impacts of construction, soil removal, and system operation on the residence and its occupants. These impacts would include noise, dust, debris accumulation, and constraints on use of portions of the property. Since most of these impacts are short-term in nature, care must be exercised in prompt cleanup of construction debris, coordination with the owner where construction phases might interfere with his use of the property, and maintenance of tight construction schedules.

The groundwater extraction system uses an electric submersible pump to pump the contaminated water to and through the treatment system. Because of the hazards of pumping potentially explosive mixtures of water and volatile hydrocarbons, an electrically driven pump and control panel will be used within explosion-proof enclosures.

The installation and operation of the pump-and-treat system will include five tasks:

3.1 TASK 1 - INSTALLATION OF GROUNDWATER RECOVERY TRENCH AND WELLS

Bail tests in wells C-1 and C-3 estimated transmissivities (T) of 3.6 ft^2/day and 11.6 ft^2/day, respectively. Hydraulic conductivities (K) calculated from these estimates are 0.23 ft/day (8.1×10^{-2} in/sec) and 0.73 ft/day (2.6×10^{-6} m/sec); these are hydraulic conductivities quite typical of fine grained silts. Maximum yield (Q) and radius of influence (R) using these estimates were 0.7 gpm and 21 feet, respectively.

Because of limited yield predicted for recovery wells at the site, a recovery trench, RT1 (Figures 11 and 13), is proposed to capture the plume. The trench will be located to maximize the recovery of the contaminants in the groundwater and to increase the yield from this low-porosity aquifer.

A monitoring well will also be installed at the north side of the site as indicated on Figures 11 and 14. The well will be completed with nominal 4-inch Schedule 40 PVC. The well can then be used later if necessary as a recovery well to supplement groundwater extraction from the trench.

In sizing the system, the assumption has been made that the recovery trench can yield 7,200 gallons per day (gpd), or 5 gallons per minute (gpm), and the recovery well can yield 2,160 gpd, or 1 gpm, for a total potential flow of 8,640 gpd (6 gpm).

The recovery trench will be installed to a depth of two feet below mean low water level (Figure 13), is lined with a nondegrading geotextile material to filter out the fine soil particles, and backfilled with CALTRANS Class II Permeable Material. Water will be collected in the recovery trench with a 4-inch diameter horizontal, screened PVC collector pipe connected to a 6-inch diameter vertical standpipe (Figure 13). Groundwater will be pumped from the standpipe, and, if needed, from the recovery well, by an electric submersible pump.

3.2 TASK II - SYSTEM PERMITTING AND DESIGN

Task II consists of acquisition of necessary permits for the work from the appropriate agencies and final design of the remediation system. The following permits will be applied for through the noted agencies:

- Alameda County Environmental Health Department Hazardous Waste Division, approval of work plan, HMMP
- Regional Water Quality Control Board, San Francisco Bay Region, notification, review of work plan
- Alameda County Flood Control District, Zone 7, permit for recovery wells
- Bay Area Air Quality Management District, permit to construct, permit to operate
- City of Alameda, building permit
- California Department of Health Services, notification of installation
- East Bay Municipal Utility District, discharge permit

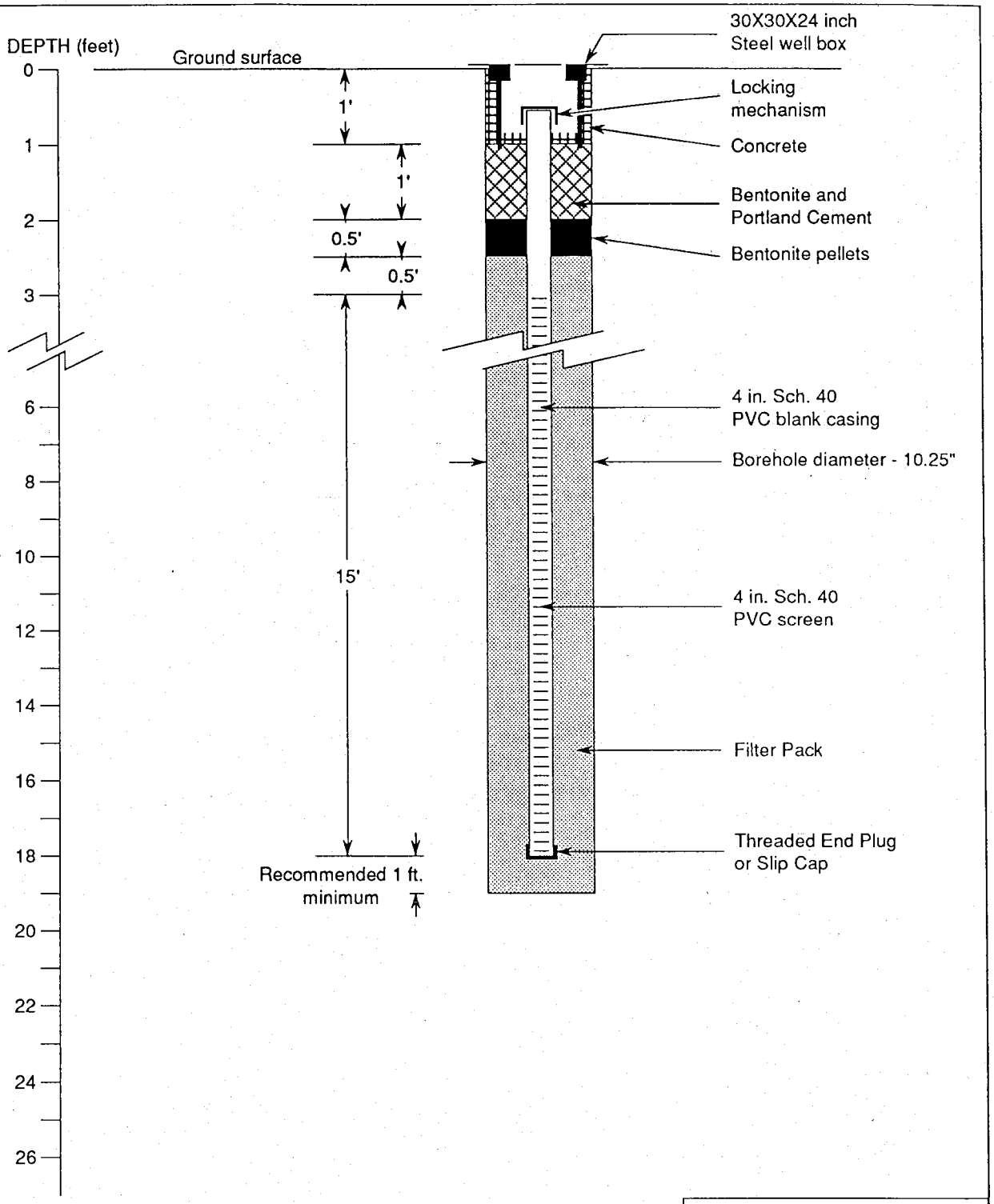

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Figure 14. Representative details of proposed monitoring/recovery well, Chevron SS 9-1153, Alameda, California.

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As the appropriate permits are acquired, the remediation system will be designed. The system design will consist of the following elements:

- process flow diagram
- piping and instrumentation diagram
- equipment layout
- site layout
- design of landscaping
- construction specifications
- bill of materials.

3.3 TASK III - CONSTRUCTION AND INSTALLATION OF THE SYSTEM

Task III consists of actual assembly of the system components and installation at the site:

- procurement of equipment
- fabrication of enclosure and the secondary containment
- site mobilization, electrical hook up
- installation of piping
- installation of enclosure on the site
- installation of pumps.

3.4 TASK IV - SYSTEM STARTUP, OPERATION, AND MAINTENANCE

Task IV consists of initiating operation and maintaining the system:

- system startup
- operation troubleshooting
- development of operation and maintenance (O&M) procedures
- treatment system O&M for six months
- effluent sampling and monitoring
- regulatory reporting and communication.

Groundwater from the newly installed recovery trench, the new monitoring/recovery well, and two existing monitoring wells will be sampled and analyzed quarterly according to standard protocols (Appendix A). Samples of groundwater will be analyzed for TPH gasoline by DHS-modified EPA Method 8015 and for BTEX by EPA Method 8020. The groundwater in the wells and trench will be sampled on a March-June-September-December rotation, and analytical results will be reported to Alameda County Environmental Health and RWQCB within four weeks of sampling.

4. TECHNICAL APPROACH

This chapter presents EA's technical approach to Tasks II and IV, the remediation portion of this proposed work plan. The protocols for Task I are described in Appendix A.

4.1 TASK II - SYSTEM PERMITTING AND DESIGN

The first permit (or authorization) to be obtained will be from the Alameda County Environmental Health Department, Hazardous Wastes Division, for a groundwater remediation system installation and startup at Chevron SS 9-1153. This will be completed through a work plan describing the system's approach to groundwater remediation. Other agencies that will be contacted through permit applications include East Bay Municipal Utility District, Zone 7, Alameda County Flood Control District, the Regional Water Quality Control Board, San Francisco Bay Region, the Bay Area Air Quality Management District, and various City of Alameda departments. Any unexpected or additional work at this stage would include correspondence and meetings to address any needs or requests by these agencies.

Designs for the groundwater recovery and treatment system will be generated entirely by EA engineers and geologists and their consulting subcontractor, and reproduced as high-quality drawings made with the AutoCAD computer-assisted drafting program. If advanced electrical schematics are necessary, outside contractors (EA Mueller or a local engineer) will be contracted to supply the necessary work. Once completed, blueline drawings will be supplied to Chevron and to the City of Alameda Planning Department.

4.2 TASK III - SYSTEM CONSTRUCTION AND INSTALLATION

The new recovery trench, RT1 (and, if needed, the new monitoring recovery well MRW1 [Figure 11]) will be used to extract contaminated groundwater. The objective is to create a zone of capture

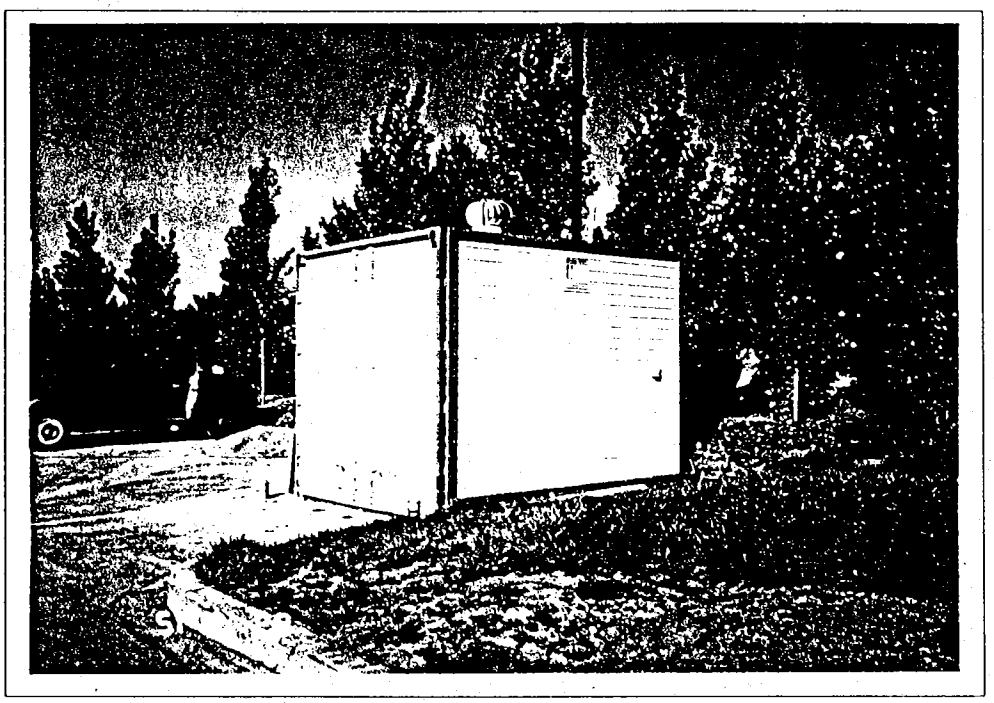
that will contain the contaminant plume. In sizing this system, a total system flow of 8,640 gpd (6 gpm) has been assumed. The monitoring/recovery well wellhead will be designed to prevent surface water infiltration into the well.

The groundwater recovery system will consist of one total-fluid depression pump (Figure 12), which will be electrically controlled and operated. The system will come complete with a down-well submersible pump, hydrocarbon-resistant hosing, and an electric control box.

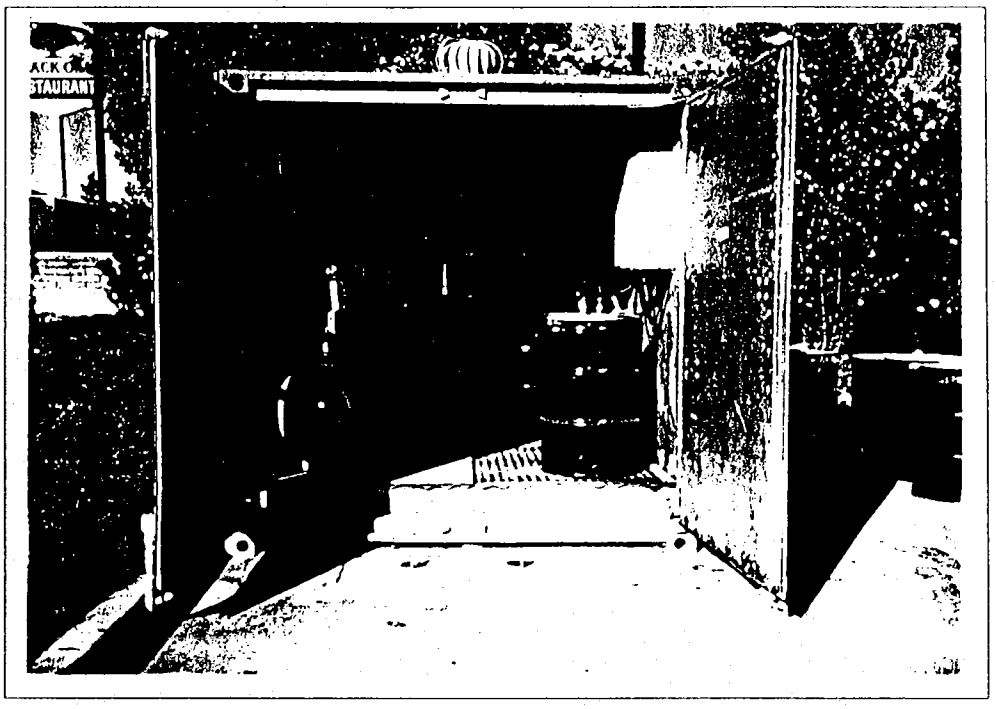
The groundwater treatment system will consist of three canisters of activated carbon and a vapor monitoring unit.

The well pump, controlled by float switches, pumps the groundwater through three activated carbon canisters in series. Dissolved hydrocarbons are removed from the groundwater by adsorption to the carbon surfaces. The last stage of treatment consists of monitoring the percentage of the lower explosive limit (LEL) of hydrocarbons in a headspace above the water. Monitoring for hydrocarbon vapors at the outlet will prevent breakthrough in the activated carbon filter. Treated water will flow by gravity into the sanitary sewer. Figures 15 and 16 are photographs of a typical temporary groundwater treatment system currently operating under EA's direction.

The entire system, including piping, hose, and equipment, will be secondarily contained in a secure container. Four-inch PVC piping will be trenched from recovery trench RT1 and, if it is needed, from monitoring/recovery well MRW1 to the base of the treatment system to act as a duct and secondary containment for the well pump hose. The treatment system itself will be placed within a container, with the fluid-tight flooring extended upward to create secondary containment equal to at least 150 percent of the largest volume contained (Figure 15). Because of proximity to the residence, the container will be constructed with appro-



Exterior view with turbine, vent, and emergency shutdown switch.



Front view of air compressor and carbon canisters resting on secondary containment grating.

Figure 15.

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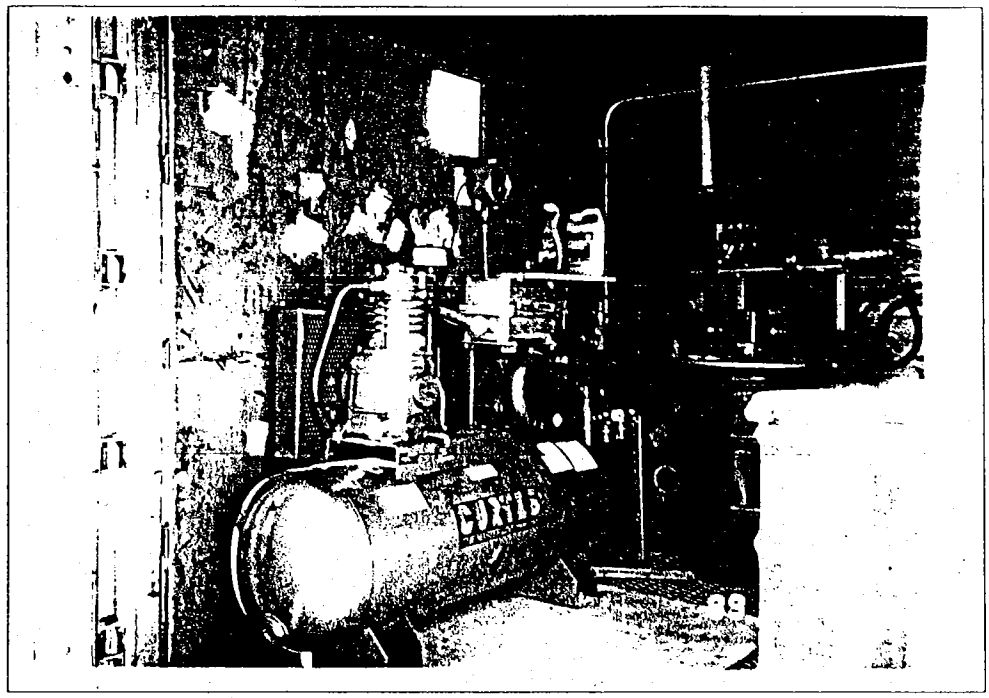
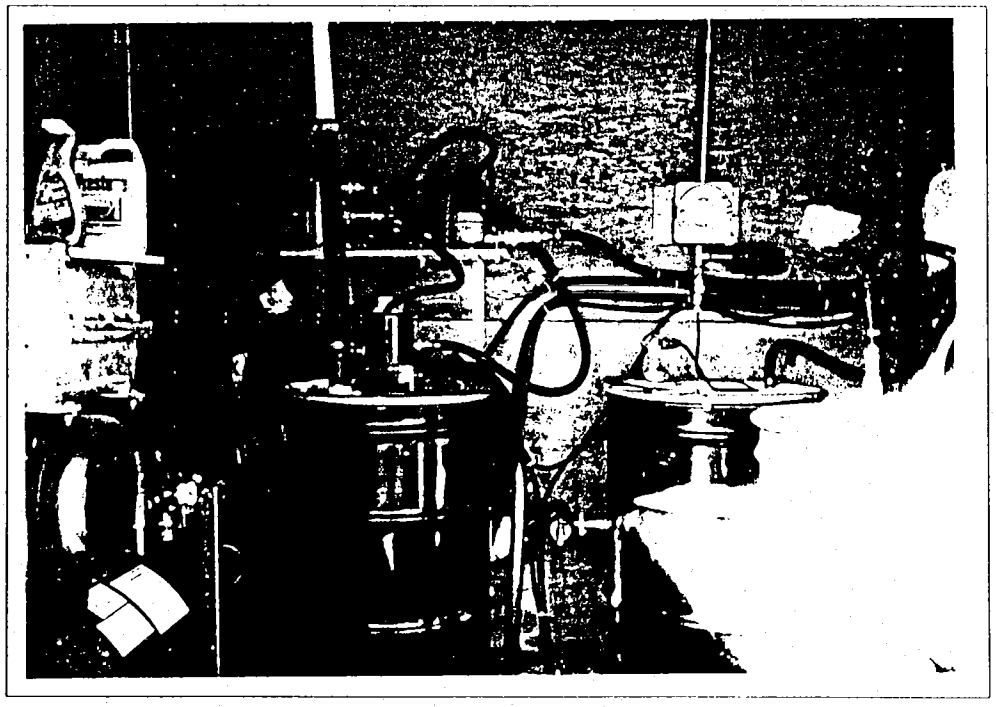


Explosion-proof air compressor - operates Ejector system recovery pumps.



Surge tank and LEL headspace monitoring tanks.

Figure 16.

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

priate fire walls and fire and noise suppression mechanisms. The container will also be appropriately marked with 15-inch-square Uniform Fire Code (UFC) and National Fire Protection Association (NFPA) approved hazardous materials storage signs.

The treatment system will be located and made as inconspicuous as possible and will be located with approval and consent of the property owners. The exterior of the container itself will be painted and/or stuccoed to match the house.

EA will retain a certified hazardous waste contractor to construct and install the described system. Equipment fabrication, hookup, and piping and electrical runs will be conducted at the contractor's site, and, once complete, the preassembled equipment will be shipped to the site for final sanitary and electrical hookup. The treatment system will be designed and constructed according to specifications described in Appendix B.

4.3 TASK IV - SYSTEM STARTUP, OPERATION, AND MAINTENANCE

After the treatment system is installed, the system will be brought online over a three-day period. This startup will include the adjustment of the recovery pumps and measurement of water flow and the quality of treated effluent.

After the treatment system is brought online, it will be monitored and the effluent will be sampled to ensure that it is functioning properly and meeting discharge standards.

All data collected during monitoring and inspection will be recorded in a logbook and filed on the site; copies of the logbook will be kept in EA's files. Prior to submission of the quarterly reports required by the Regional Board, groundwater from all existing wells will be sampled and analyzed. The proposed monitoring and sampling schedule is as follows:

Week 1 daily monitoring (5 days)

Weeks 1-4	sampling and analysis of effluent water
Weeks 2-4	monitoring twice per week for system adjustment and troubleshooting
Weeks 5-26	monitoring one day per week for system adjustment and data logging; quarterly groundwater and effluent sampling and analysis.

EA will prepare a report for Chevron on the system's installation and operation after one month of operation. The report will include figures, photos, and as-built drawings of the groundwater treatment system and the associated plumbing and construction layout. A second report will be prepared after six months of operation.

5. ASSUMPTIONS AND LIMITATIONS

The proposed work plan is based on the following assumptions and limitations:

- The groundwater contaminant is gasoline, in dissolved and possibly liquid phases.
- The total groundwater/product recovery will be less than 8,640 gallons per day.
- All necessary permits will be readily attainable. All permits will be issued in Chevron's name, except those required to be obtained by the installation contractor or engineer.
- All underground utilities will be identified.
- This proposal covers treatment system installation and operation for six months. Quarterly sampling and report writing is included in the proposal.
- Suitable access will be permitted for system installation and maintenance.

APPENDIX A

Protocols for the Installation of Monitoring Well

APPENDIX A: PROTOCOLS FOR THE INSTALLATION OF MONITORING WELL

1. DRILLING

The borehole will be drilled with a truck-mounted or trailer-mounted rotary drill using 10-1/4-inch outside-diameter hollow-stem augers. The borehole will be drilled to a depth 10 feet below static water, but the boreholes will not penetrate through laterally persistent clay layers greater than 5 feet thick. All drill augers, rods, and sampling and downhole equipment will be steam cleaned before drilling at the site. A log of the soil boring will be recorded by an EA geologist overseeing the drilling operations. The boring log will be signed and dated and will contain detailed geologic information, describing soils classified according to the Unified Soil Classification System. The drill cuttings and soil samples will be monitored with a field instrument with a flame ionization detector for the presence of hydrocarbons. The moisture content of the soil samples and the initial and static water levels will be noted on the logs.

All drill cuttings will be contained onsite in sealed 55-gallon drums. The drums will be labeled with the borehole number, owner's name, depth interval of soil contents, date, and monitoring equipment readings. The drill cuttings will be disposed of at proper facilities after soil sample analysis.

2. SOIL SAMPLING

Soil samples will be collected at 18-inch intervals, beginning at ground surface, with a 2-inch diameter, 18-inch long split-spoon drive sampler. The sampling intervals will be adjusted to permit collection of a soil sample at the water table. The sampler will be lined with three clean 2-inch diameter, 6-inch brass tubes. The sampler and liners will be steam cleaned before use in each hole or scrubbed with trisodium phosphate detergent and rinsed

with deionized water. Soil samples will be collected to a depth of approximately 20 feet in each borehole RW1 and RW2 and at the water table (expected at 5 feet). The sampler will be driven 18 inches ahead of the drill augers into undisturbed soil. The ends of one of the three brass liners filled with soil, typically the lowermost, will be covered with aluminum foil and sealed with plastic caps, and the plastic caps will be sealed to the brass liner with plastic tape. The soil samples will be labeled with the sample number, location, date, drill depth, sampler, and client. These samples will be placed in individual zip-lock plastic bags and stored in an ice chest containing ice.

Soil samples will be delivered, under chain of custody, to Pace Laboratories. Pace is certified by the California Department of Health Services Hazardous Materials Laboratory to analyze for metals and organic and inorganic compounds. The samples will be analyzed for total petroleum hydrocarbons by DHS-modified EPA Method 8015 and for benzene, toluene, ethylbenzene, and xylenes by EPA Method 8020.

3. GROUNDWATER MONITORING WELL INSTALLATION

The well will be constructed of 4-inch diameter Schedule 40 PVC flushing-threaded casing. The screened interval will consist of 0.010-inch slotted casing, placed from 2 feet above the water table (about 2.5 feet below ground surface) to 13 feet below the water table. A threaded end plug or slip cap secured with a stainless steel screw will be placed on the bottom of the well, and a locking well cap will secure the top of the well from unauthorized entry.

A gravel pack of No. 2/16 Lonestar, or equivalent, sand will be placed in the annular space around the well screen to approximately 2 feet above the top of the screen. The sand pack will be sealed with Bentonite pellets 1 foot thick that have been hydrated with deionized water. The well will then be sealed to the surface using a grout mix containing 1-2 percent Bentonite.

The Zone 7 office of the Alameda County Water Conservation District will be notified before each well seal is emplaced, so that an inspector can be on the site to witness the mixing and placement of the grout seal.

The well will be completed on the surface in slightly raised 30x30x24 traffic-rated watertight steel well box. The well box will be set in concrete. Figure A-1 is a generalized well construction diagram of the well to be installed at the site.

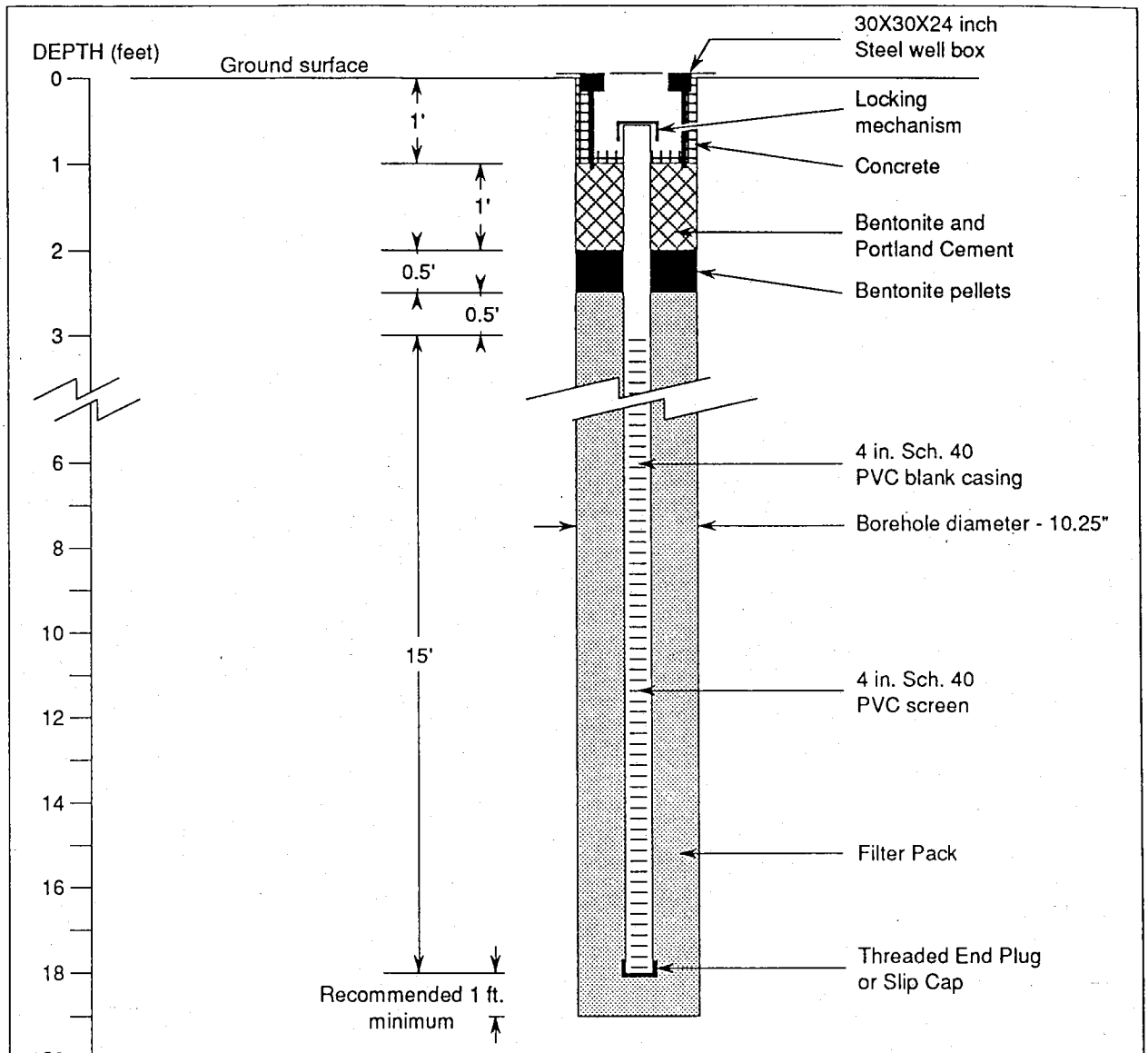
4. WELL SURVEYING

The elevation of the top of each well casing and each soil boring will be surveyed to a datum on the site and referenced to mean sea level. The elevation will be surveyed with a Lietz Model C3E automatic level and stadia rod. A loop will be closed to $\pm$0.01 feet, beginning at the onsite datum, proceeding between each well, and returning to the datum. A small notch will be cut in the top of each well casing to mark the survey point and ensure that this points is surveyed and subsequently used for all water level measurements.

5. WELL DEVELOPMENT

The groundwater monitoring well will be developed 72 hours after installation. Development will consist of surging the screened interval of the well with a 4-inch flapper valve surge block for approximately 15 minutes. Between two and four casing volumes of water will then be purged from the well with a submersible electric pump. The surging and pumping procedure will be repeated until the water is free of silt and turbid sediments, for a maximum of 4 hours.

A record of the purging methods and volumes of water purged will be maintained for each well. All purge water will be contained onsite in properly labeled 55-gallon drums. Purged water will be



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Lafayette, CA. 94549

Figure A-1. Representative details of proposed monitoring/recovery wells, Chevron SS 9-1153, Alameda, California.

Drawn	Date
Reviewed TPW	Date 8/20/90 TD

disposed of at an appropriate facility on the basis of laboratory analytical results.

6. GROUNDWATER SAMPLING

6.1 Sampling Equipment Preparation

All well measurement and sampling equipment used will be constructed of inert material whenever possible. Sampling bailers will be constructed of Teflon. Stainless steel pumps will be used to purge the well prior to sampling. All sampling equipment will be decontaminated in the following manner prior to introduction into each well:

1. Bailers, pumps, suspension ropes and lines, and well sounding tapes will be rinsed thoroughly before use with clean, fresh water to remove dust and dirt.

2. All equipment will be thoroughly steam cleaned or scrubbed with Alconox detergent inside and out. The equipment may be steam cleaned or washed offsite and stored and transported in steam-cleaned and protected inert containers.

3. All equipment will be thoroughly rinsed with deionized water immediately after steam cleaning or washing.

4. All equipment will be thoroughly rinsed with deionized water twice before insertion into a well.

5. Bailers and pumps will be suspended on either new polypropylene rope that has been rinsed with DI water or on Teflon-coated stainless-steel wire that has been cleaned by steam or detergent and rinsed thoroughly with DI water. If polypropylene rope is used, it will be discarded after each use.

6. Nitrile gloves will be worn at all times during sample equipment cleaning, handling, and sample collection.

6.2 Presampling Measurements

Prior to the purging and sampling of each well, the depth to standing water will be measured with a decontaminated electronic optical interface probe; the total depth of the well will be measured by allowing the probe to descend to the bottom of the well. A clear acrylic bailer will then be inserted into the well to just below the static water level and removed and examined to confirm the presence or absence of any floating product. These presample measurement data will be recorded on a Record of Well Gauging and Purging form and used to calculate the volume of standing water in the well (one well casing volume). Measurements will be made to the nearest 0.01 foot and referenced to a permanent surveyed reference point on the well casing.

6.3 Well Purging

Prior to sampling, standing water in the well and the surrounding sand pack will be purged. Between four and six casing volumes of well water will be purged to ensure that all stagnant water has been removed. The well will be purged using either a stainless steel Gould submersible pump, an air-lift pump, or a centrifuge pump, decontaminated as discussed above in Section 6-2. The pump will be placed below the water table just far enough to obtain a sustainable pump yield, to ensure that water from the formation moves upward in the well screen. The pump will be suspended on a clean 1/4-inch polypropylene rope. Clean garden hose will be used as the discharge line on the Gould pump; clean Teflon tubing is used on the air lift pump; polypropylene tubing will be dedicated to singular use in each individual well with the centrifuge pump.

If the well pumps dry after the initial purging, the pump will be turned off and the well allowed to recover for continued pumping to obtain the desired purge volume.

Field parameters of pH, temperature, and electrical conductance will be measured during each well purging. The parameters will be measured and recorded approximately every 5 gallons. If any of the three field parameters have not stabilized by the time the 4-6 casing volumes have been purged, additional well water will be pumped until the parameters have stabilized. "Stabilized" is defined as a reading within 15 percent of two previous readings.

All purge water will be contained in 55-gallon drums labeled with well number, date, contents, and facility name. After the well has been purged of the required volume of water, the pump will be removed. A clean Teflon sampling bailer will be used to collect four separate samples for presample field parameters to ensure that the parameters are stable and, therefore, that the aquifer samples obtained will represent water in the aquifer.

6.4 Well Sampling

All samples will be collected with a Teflon bailer cleaned as discussed in Section 6.1. The bailer will be operated by hand on either new 1/4-inch polypropylene rope or on a clean Teflon-coated stainless steel wire. The sampling personnel will wear clean Nitrile gloves during sampling operations and subsequent handling of sample bottles.

The collected groundwater samples will be emptied from the bailer with a bottom-emptying device directly into the sample bottles. The samples will be collected in 40-ml glass VOA vials with Teflon-septum-lined caps. The VOA vials will contain hydrochloric acid as a preservative. The vials will be filled so that no free headspace remains after the vials have been sealed.

The vials containing the samples will be labeled with indelible ink. The sample labels, showing the well number, date, location, sampler's initials, and preservative, will then be covered with clear waterproof tape.

The sample vials will be placed in an ice-filled cooler (at approximately 4 C) for delivery under chain of custody to Pace Laboratories, which is certified by the California Department of Health Services.

6.5 Blanks

In addition to the groundwater samples, a trip blank and a decontamination blank will be analyzed with each sampling round. A 40-ml glass VOA vial with a Teflon-septum lid, filled with DI water at the laboratory, will function as a trip blank. This trip blank will travel with the sample kit from the lab to the facility and back to the lab again in the cooler containing the samples. The blank will be analyzed for the same parameters as the samples collected from the wells and will indicate if the samples have been contaminated, from whatever source, during transport.

A decontamination blank will be prepared in the field during well sampling. After the first well is sampled, DI water will poured into the clean, rinsed sampling bailer to be used for sampling the next well. This DI water will then be emptied, as a sample, into a preserved 40-ml VOA bottle for comparable analysis with the samples and trip blank. The decontamination blank will indicate if any of the samples are contaminated from the sampling equipment.

6.6 Sample Analysis

The groundwater samples, the trip blank, and the decontamination blank will be sent under chain of custody to a California Department of Health Services (DHS) certified laboratory and analyzed for total petroleum hydrocarbons (TPH) by DHS-modified EPA Method 8015, for aromatic hydrocarbons, benzene, toluene, xylenes, and ethylbenzene (BTXE), by DHS Method 8020, for evidence of leaded gasoline by the LUFT method, and for ethylene dibromide by EPA Method 504.

7. REPORTING

A summary report of the well installation will be prepared following receipt of analytical results. The report will include the following:

- introduction, site history, and location (including a map a of the location)
- well and soil boring location and site map
- borehole drilling and sampling procedures
- well completion diagrams and descriptions
- monitoring, health and safety, and decontamination procedures
- analytical methods and results of chemical analysis of soil and groundwater samples
- calculation of groundwater gradient
- survey of wells within one-half mile of the site
- contour map of concentrations of dissolved petroleum hydrocarbons, including free product plume if present
- geologic cross-sections across the site
- interpretation of all data
- report cover letter with recommendations.

APPENDIX B

Proposed Recovery System Specifications for Chevron U.S.A. Inc.
at Former Chevron SS 9-1153

APPENDIX B: PROPOSED RECOVERY SYSTEM SPECIFICATIONS FOR CHEVRON U.S.A. INC. AT FORMER CHEVRON SS 9-1153

1. GENERAL

The recovery system consists of a recovery trench, using a standpipe well installed in the trench (Figure 13 in text). The standpipe is equipped with an electric submersible pump that pumps total product from the groundwater.

Work is to be done at an occupied residence in a residential neighborhood. The contractor is to perform all work in accordance with all applicable city codes and standards, and all Chevron safety and fire regulations.

The Contractor is not to block access to the driveway to the garage and must fully coordinate the work with the property owner.

If the work interferes with the movement on the driveway, the contractor shall install street plates over any obstruction trench or remove any surface obstruction caused by the contractor

2. TRENCH EXCAVATION, MATERIAL STOCKPILING, AND SHORING

Contractor is to install temporary shoring along the length of the trench, dewater the trench if needed, and store on the site any excavated material that can be reused and haul away the rest to an appropriate disposal facility.

All dewatering water is to go through the treatment system before being discharged to the sanitary sewer.

3. TRENCH BACKFILL AND SITE RESTORATION

Trench backfill is to meet CALTRANS standard specifications, July 1984, Section 68-1.025 Permeable Material, Class 2.

During recovery trench installation the soil shall be compacted around the underdrain, and the underdrain connected to the standpipe well in such a manner as to prevent shearing of the underdrain pipe, the standpipe, or the connection.

All surface landscaping is to be restored to equal or exceed the original surface landscaping.

4. UNDERDRAINS AND STANDPIPES

All underdrain and standpipes are to be made of 4-inch Schedule 40 PVC (4.5 inch O.D.), with metal, screw-on, cap and concrete, surface boxes. The elbows and fittings are to be solid. The tees are 4 inch diameter connecting the horizontal and vertical sections. The horizontal sections of the underdrain and vertical sections of the recovery wells, are to be 4-inch well screen with 0.020 inch slots. No solvent glues are to be used in any section below ground. Fittings and pipe sections to have screw-on connections. The filter pack for the underdrain and standpipe wells shall be Lapis Lustre #3 sand or an equivalent.

5. RECOVERY SYSTEM

The total product recovery system shall consist of electric submersible recovery pumps controlled by a float switch in each well and standpipe well, and a central electric control panel mounted near the treatment unit.

A flow meter shall be installed on the LEL monitoring tank discharge line to record the total volume of fluids pumped out of the system.

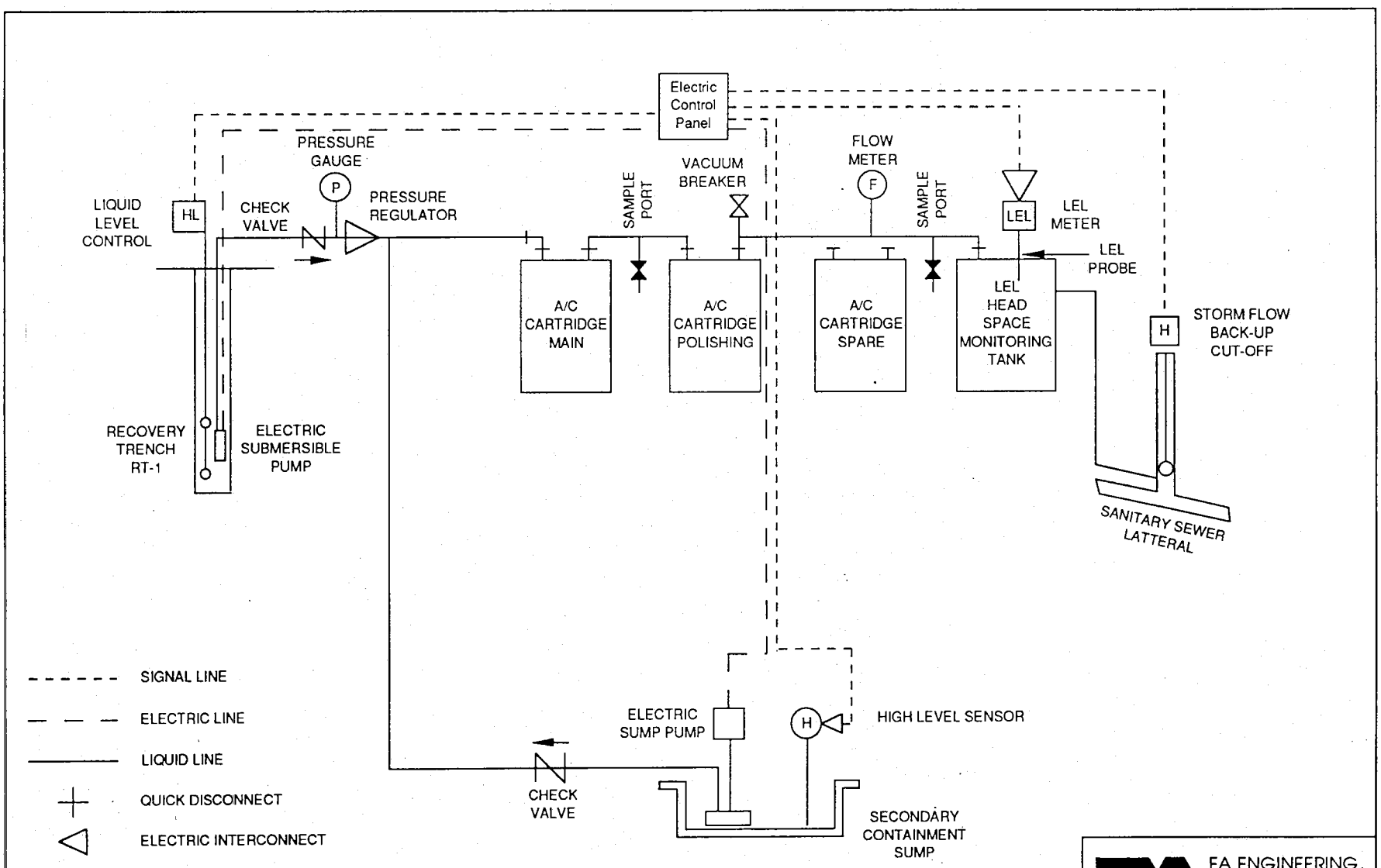

Figure 12. Process and Instumentation Diagram, former Chevron SS 9-1153, Alameda, California.

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Reviewed 9/B	Date 3-5-90

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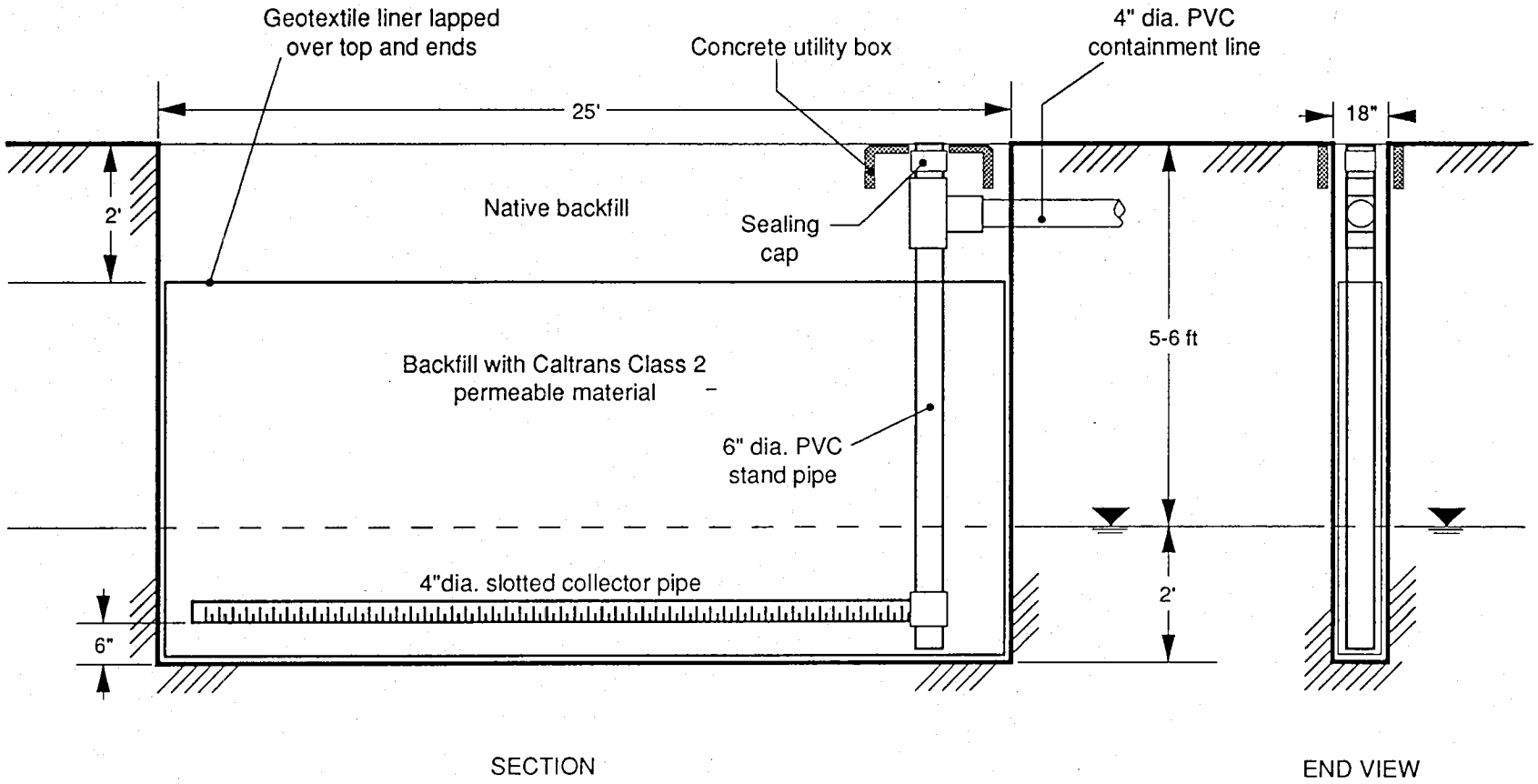

Figure 13. Detail of proposed recovery trench, former Chevron SS 9-1153, Alameda, California.

Drawn	Date
Reviewed	Date 07 Feb 10

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Lafayette, CA. 94549

#91153

EAST BAY
MUNICIPAL UTILITY DISTRICT

CERTIFIED MAIL
(Return Receipt Requested)
No. P 790 282 424

September 15, 1992

Ms. Nancy Vukelich
Chevron USA - No. 9-1153
2410 Camino Ramon
San Ramon, CA 94583

Dear Ms. Vukelich:

Re: Wastewater Discharge Permit (Account No. 502-38411)

Enclosed is the Wastewater Discharge Permit for your facility, effective September 23, 1992 through September 22, 1993. Please read the Permit Terms and Conditions and the attached Standard Provisions and Reporting Requirements. You are responsible for complying with all Permit conditions and requirements.

Your account has been credited $7,144.89 due to initial flow estimates that never occurred.

Chevron USA shall report to the Source Control Division any changes, either permanent or temporary, to the premise or operation that significantly affect either the volume or quality of wastewater discharged or deviate from the Terms and Conditions under which this Permit is granted.

If you have any questions regarding this matter, please contact Ardy Assadi-Rad of the Source Control Division at (510) 287-1621.

Sincerely,

JOSEPH G. DAMAS
Manager of Source Control

JGD:AAR:llg

sc2a.59_112

Enclosures

cc: Kristina Koltavary

2130 ADELINE STREET . OAKLAND . CA 94607 . (415) 835-3000
BOARD OF DIRECTORS NANCY J. NADEL . KENNETH H. SIMMONS . ANDREW COHEN
JOHN A. COLEMAN . STUART FLASHMAN . JOHN M. GIOIA . KATHERINE McKENNEY

WASTEWATER DISCHARGE PERMIT APPLICATION

EBMUD

PERMIT NUMBER
502-38411

APPLICANT BUSINESS NAME
Chevron USA Products Company

ADDRESS OF PREMISE DISCHARGING WASTEWATER	BUSINESS MAILING ADDRESS
3126 Fernside Blvd. (STREET ADDRESS)	P.O. Box 5004 (STREET ADDRESS)
Alameda (CITY) 94501 (ZIP CODE)	San Ramon (CITY) 94583 (ZIP CODE)

CHIEF EXECUTIVE OFFICER

Ms. Nancy Vukelich (NAME)	Engineer (TITLE)
2410 Camino Ramon (STREET ADDRESS)	San Ramon (CITY) 94583 (ZIP CODE)

PERSON TO BE CONTACTED ABOUT THIS APPLICATION	PERSON TO BE CONTACTED IN EVENT OF EMERGENCY
Mr. Thomas Berry/Weiss Associates (NAME)	Chevron Maintenance Dispatch (NAME)
Project Geologist (TITLE) (510) 547-5420 (PHONE)	(800) 772-3301 (DAY PHONE) (800) 772-2415 (NIGHT PHONE)

DOCUMENTATION TO BE RETURNED WITH THE PERMIT APPLICATION:

- ☒ PROCESS DESCRIPTION
- ☒ WATER BALANCE CALCULATIONS
- ☐ WASTEWATER STRENGTH DATA BASE
- ☒ SCHEMATIC FLOW DIAGRAM
- ☐ BUILDING LAYOUT PLAN
- ☒ DESCRIPTION OF TREATMENT SYSTEM
- ☒ SELF-MONITORING METHOD
- ☒ SPILL PREVENTION AND CONTAINMENT PLAN
- ☒ A LIST OF ALL ENVIRONMENTAL PERMITS (E.G. Air, Hazardous Waste)
- ☐ OTHER _____ (SPECIFY)

PROVISIONS

Applicant will comply with the EBMUD Wastewater Control Ordinance and all applicable rules and regulations.

Applicant will report to EBMUD, Wastewater Department any changes, permanent or temporary, to the premise or operations that significantly change the quality or volume of the wastewater discharge or deviation from the terms and conditions under which this permit is granted.

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that the qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NANCY VUKELICH
NAME (See certification requirements on reverse)

SIGNATURE

SITE ASSESSMENT & REMEDIATION ENGINEER
TITLE

6/30/92
DATE

SD-30.1 2/91 N

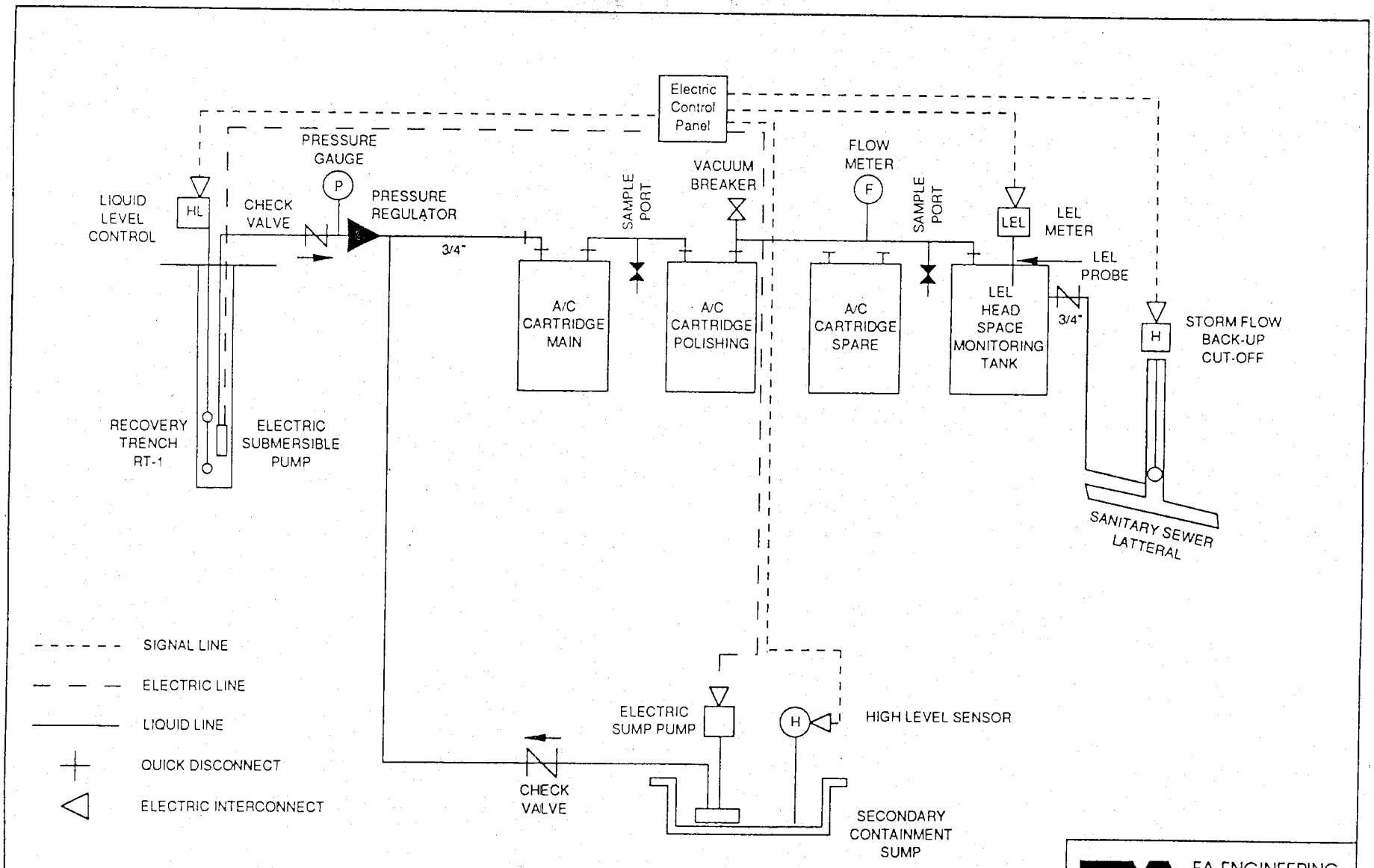

Figure 1. Process and Instrumentation Diagram, former Chevron SS 9-1153, Alameda, California.

Drawn	Date
Reviewed TRW	Date 22 Jan 90

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41 Lafayette Circle
Lafayette, CA. 94549

Permit #502-38411

EBMUD

Business Name Chevron USA Products Company

Water Balance / Strength Summary

PURPOSE: This information will enable EBMUD to evaluate the volumes, source(s) and strengths of wastewater discharged to the community sewer.

Permit Number 502-38411

WATER USE AND DISPOSITION: Show on a separate sheet the method and calculations used to determine the quantities shown in the table.

Figures are: ☒ gallons per calendar day ☐ gallons per working day Number of working days per year _____

WATER USE	WATER SUPPLY FROM:			WASTEWATER DISCHARGED TO:					
	EBMUD	OTHER (1)		SIDE SEWER (gal/day)				OTHER (2)	
	gal/day	gal/day	CODE	No.1	No. ____	No. ____	No. ____	gal/day	CODE
Sanitary									
Processes									
Boiler									
Cooling									
Washing									
Irrigation									
Product									
Stormwater									
Other (3)		133	a	133					
Subtotal									

EBMUD AND OTHER SUPPLY TOTAL 133 **ALL SIDE SEWERS TOTAL** 133

NOTES:

1. Enter the quantity and the appropriate code letter indicating the source:
   a. Well **b.** Creek **c.** Stormwater **d.** Reclaimed Water **e.** Raw Materials.
2. Enter the quantity and appropriate code letter indicating the discharge point:
   a. Stormdrain **b.** Rail, Truck, Barge **c.** Evaporation **d.** Product
3. Describe Other: Ground water extraction from Recovery Trench RT-1 and french drain as shown in Figure 1.

SANITARY DISCHARGE: Please use the following data from the Uniform Plumbing Code, 1985, to determine sanitary wastewater volumes.

Field service employees - 5 gallons per employee per day
Office employees - 20 gallons per employee per day
Production employees - 25 gallons per employee per day
Production employees with showers - 35 gallons per employee per day

Include the effect that seasonal and weekend staffing changes may have on determining average volumes.

AVERAGE WASTEWATER STRENGTH: Data base must be attached, average self-monitoring and EBMUD data.

Not required by discharge permit

SIDE SEWER (mg/L)

	No. 1	No. ____	No. ____	No. ____
CODF				
TSS				

WASTEWATER DISCHARGE PERMIT

Terms and Conditions

GENERAL CONDITION

Chevron USA No. 9-1153, located on 3135 Gibbons Blvd. in Alameda, shall comply with all items of the attached STANDARD PROVISIONS AND REPORTING REQUIREMENTS, 02/92 Revision.

COMPLIANCE REQUIREMENTS

Chevron USA No. 9-1153 shall immediately discontinue the discharge of any treated wastewater that is known to be, or suspected of, violating wastewater discharge limitations. This violation shall be reported, in accordance with Section B, Paragraph II of the STANDARD PROVISIONS AND REPORTING REQUIREMENTS, 02/92 Revision.

REPORTING REQUIREMENTS

Chevron USA No. 9-1153 shall:

- Collect samples per the schedule found on Page 3 of this permit, Self-Monitoring and Reporting Requirements Section IV.
- Submit quarterly reports due October 15, 1992 (for the 3rd calendar quarter), January 15, 1993 (for the 4th calendar quarter), April 15 1993 (for the 1st calendar quarter), and July 15, 1993 (for the 2nd calendar quarter). Each report shall consist of:
  1. A summary of the treatment unit self-monitoring results, any other monitoring, and well sample results that occurred during the reporting period.
  2. The estimated date that the primary carbon canister breakthrough will occur, using current loading data.
  3. Copies of the Facility Inspection Log. This log must include flow totalizer readings from each sample date, maintenance activities performed, description of operational changes, visual observations of the unit for leaks or fouling, and offhaul of hazardous wastes.
- Submit a report updating the Process and Instrumentation Diagram Drawing, Figure 1, dated June 22, 1990. The drawing shall indicate the location of sampling ports, the flow totalizer, and Carbon Polishing Cartridges. All lines shall be identified by size, commodity, and construction material. The drawing is due by November 30, 1992.

WASTEWATER DISCHARGE PERMIT

Terms and Conditions

Chevron USA No. 9-1153
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WASTEWATER DISCHARGE LIMITATIONS

REGULATED PARAMETER	DAILY MAXIMUM, mg/L	
Arsenic	2	mg/L
Cadmium	1	mg/L
Chlorinated Hydrocarbons (Total Identifiable)	0.5	mg/L
Chromium	2	mg/L
Copper	5	mg/L
Cyanide	5	mg/L
Iron	100	mg/L
Lead	2	mg/L
Mercury	0.05	mg/L
Nickel	5	mg/L
Oil and Grease	100	mg/L
Phenolic compounds	100	mg/L
Silver	1	mg/L
Zinc	5	mg/L
pH (not less than)	5.5	S.U.
Temperature	150	°F
Benzene	0.005	mg/L
Toluene	0.012	mg/L
Ethylbenzene	0.005	mg/L
Xylenes	0.011	mg/L
Naphthalene	0.005	mg/L
2-Methylnaphthalene	0.005	mg/L
Methyl Isobutyl Ketone	0.005	mg/L

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SELF-MONITORING REPORTING REQUIREMENTS

I. Chevron USA No. 9-1153 shall obtain representative samples of the wastewater discharge. The sampling shall be performed according to the frequency and methods outlined below and according to the methods and requirements found in STANDARD PROVISIONS AND REPORTING REQUIREMENTS, 02/92 Revision.

II. Self-monitoring Reports shall contain:

1. The laboratory results.
2. The chain-of-custody documentation.

III. Sample location "A", also known as side sewer no. 1, shall be the sample tap located on the effluent side of the third (final) carbon vessel. Sample location "B" shall be the sample tap located intermediate of carbon vessels two and three. Sample location "C" shall be the sample tap located on the influent side of the first carbon vessel.

IV. Collect a grab sample for analysis from locations A, B, and C once per month.

V. Parameters to be monitored and sample types:

EPA 8020, BTEX - grab sample.

VI. All samples must be obtained using containers, collection methods, preservation techniques, holding times and analytical methods set forth in 40 CFR Part 136, except for the 8000 series methods, which are found in U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Test Methods for Evaluating Solid Waste, SW-846.

WASTEWATER DISCHARGE PERMIT

Terms and Conditions

CHEVRON NO. 9-1153
Account No. 502-38411

MONITORING and TESTING CHARGES

Total EBMUD Inspections Per Year: 4 @ $510.00 each = $2,040.00 /year

Total Analyses Per Year:

Parameter	Tests per year	Charge per test	Total Charge per year
EPA 624	4	$156.00	$624.00
EPA 625	1	$199.00	$199.00
Metals	1	$111.00	$111.00
			==========
	Monitoring and Testing Charge =		$2,974.00 /year
			$247.83 /month

WASTEWATER DISPOSAL CHARGE

All wastewater discharged will be charged for treatment and disposal service at the unit rate measured for other carbon treated groundwater discharges.
Current unit rate: $0.32 /Ccf

Volume discharged in Ccf/month = 6 $1.92 /month

WASTEWATER CAPACITY FEE

The capacity fee is calculated by multiplying the monthly wastewater discharge volume by the applicable fee in effect at start-up. Each month, 1/36 of the capacity fee will be charged, until the entire fee has been paid in 3 years.

Discharge volume = 4045 gallons per month
Capacity fee rate = $46.72 /Ccf-month
Capacity fee = $252.65 or $7.02 /month

WASTEWATER DISCHARGE PERMIT

Terms and Conditions

CHEVRON NO. 9-1153
Account No. 502-38411

FEES AND WASTEWATER CHARGES

The following fees and charges are due when billed by the District:

Permit Fee	$2,260.00
Monthly Monitoring Charges	$247.83
Monthly Wastewater Disposal Charge	$1.92
Monthly Wastewater Capacity Fee	$7.02
Total Monthly Charges =	$256.77

This Permit may be amended to include changes to rates and charges which may be established by the District during the term of this Permit.

AVERAGE WASTEWATER DISCHARGE *

LAST 12 MONTHS	PRECEDING 12 - 24 MONTHS
133	0

* Gallons per calendar day.

AUTHORIZATION

The above named Applicant is hereby authorized to discharge wastewater to the community sewer, subject to said Applicant's compliance with EBMUD Wastewater Control Ordinance, compliance conditions, reporting requirements and billing conditions.

Effective Date: September 23, 1992

Expiration Date: September 22, 1993

Michael J. Walker — MANAGER, WASTEWATER DEPARTMENT

9/22/92 — DATE

SD-30.2 2/91

STANDARD PROVISIONS AND REPORTING REQUIREMENTS

met by the District.

k. "Permit Holder" - Any person issued a Wastewater Discharge Permit.

l. "Person" - Any Permit Holder, individual, partnership, firm, association, corporation, or public agency, including the State of California and the United States of America.

m. "Pollution" - An alteration of the quality of the waters of the State by waste to a degree which unreasonably affects (1) such waters for beneficial use or (2) facilities which serve such beneficial uses.

n. "RCRA" - Resource Conservation and Recovery Act.

o. "RCRA Hazardous Waste" - Listed and characterized wastes under the Section 3001 of the Resource Conservation and Recovery Act as described in the Code of Federal Regulations (40 CFR Part 261).

p. "Slug Discharge" - Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge.

q. "Time composite sample" - A sample composed of discrete aliquots collected at constant time intervals providing representative samples irrespective of stream flow.

r. "Wastewater" - All sewage, industrial, and other wastes and waters, whether treated or untreated, discharged into or permitted to enter a community sewer system connected to a District interceptor, for treatment in wastewater disposal facilities of a special district. As used in this Permit and in District Ordinance No. 311, unless the text specifically indicates otherwise, "wastewater" shall mean sewage, industrial, and other wastes discharged to a community sewer system.

s. "Wastewater Control Ordinance" - Ordinance No. 311 enacted by the Board of Directors of EAST BAY MUNICIPAL UTILITY DISTRICT. An Ordinance establishing regulations for the interception, treatment, and disposal of wastewater and industrial wastes and the control of wastewater, requiring charges to be made therefor, and fixing penalties for the violation of said regulations.

II. Prohibited Discharges

a. No Person shall discharge wastewater into a community sewer which will result in contamination, pollution, or a nuisance.

b. No Person shall discharge wastewater into a community sewer if it contains substances or has characteristics which, either alone or by interaction with other wastewaters, cause or threaten to cause:

1. Damage to District facilities.

III. Severability

If any provision of this Permit or Ordinance No. 311, or the application thereof to any person or circumstance, is held invalid, the remainder of the Permit or Ordinance No. 311, or the application of such provision to other persons or circumstances, shall not be affected thereby.

IV. Terms and Conditions of Permit

All wastewater discharge permits shall be expressly subject to all provisions of Ordinance No. 311 and all rates and charges established by the District. Applications for permit renewal shall be submitted to the District at a minimum of 60 days prior to expiration.

V. Confidential Information

All information and data obtained from a discharger in connection with Federal Pretreatment Standards shall be available to the public or other governmental agencies without restriction unless the discharger specifies that the release of such information would divulge information, processes or methods of production entitled to protection as trade secrets. When requested by the Person furnishing a report or permit application or questionnaire, the portions of the report, or other document, which might disclose trade secrets or secret processes shall not be made available for inspection by the public but shall be made available to governmental agencies for use in making studies; provided, however, that such portions of a report, or other document, shall be available for use by the District or the State or any State agency in judicial review or enforcement proceedings involving the Person furnishing the report. Wastewater constituents and characteristics will not be recognized as confidential information.

VI. Change of Permit Terms and Conditions

The District may change the terms and conditions of a wastewater discharge permit, including changing the average limits on the elements of wastewater strength, from time to time as circumstances may require.

VII. Transfer of Permit Prohibited

A wastewater discharge permit shall not be assigned or transferred.

VIII. Disposal of Hazardous Waste

The disposal of hazardous waste generated by the Permit Holder shall be in accordance with all State and Federal laws and regulations applicable to such matters.

IX. Bypass of Pretreatment Facilities

The Permit Holder shall not bypass (the intentional diversion of wastestreams from any portion of a treatment facility) and the District may take enforcement action unless:

The report shall include the following:

1. Date of proposed work or production stoppage.
2. Date of proposed final closure (after cleaning and demobilizing activities are complete).
3. All chemical and container consolidation activities and raw material and waste inventory. The inventory shall include, but is not limited to all barrels, plating tanks, and miscellaneous chemicals and containers. Consolidation activities include, but are not limited to container marking, chemical sampling and analysis, and waste treatment.
4. Description of cleaning activities involving hazardous materials.
5. Description of methods of disposing of all inventoried items.

The District may revise Permit conditions and conduct inspections during closure.

XIII. Hazardous Waste Notification

All persons shall provide written notification of any release of RCRA Hazardous Waste to the community sewer system to the District, the EPA Region IX Waste Management Division Director, and the California Waste Management Board Chief Deputy Executive Officer using the form provided by the District. If new regulations under Section 3001 of RCRA identifying new RCRA Hazardous Waste are adopted, the notification must be submitted within 90 days of the effective date of such regulations.

Pollutants already reported as part of Self-monitoring Reporting Requirements of a Permit Holder are not subject to this notification requirement.

SECTION B. MONITORING, REPORTING AND RECORDKEEPING

I. Spill or Slug Discharge Notification

The Permit Holder shall notify EBMUD Source Control Division at (510) 287-1500 immediately upon discovering any spill or slug discharge to the sanitary sewer. Formal written notification describing the circumstances and remedies must be submitted to EBMUD within 5 days of the occurrence.

II. Twenty-four Hour Violation Reporting

The Permit Holder shall report any violation within 24 hours from the time the Permit Holder becomes aware of, or should have become aware of, the situation. A written report shall also be submitted within five working days of the time the Permit Holder becomes aware of the circumstances. The written report shall contain a description of the violation and its cause; the period of violation, including exact dates and times and, if the violation has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the violation.

All applications, reports, or information requested by the District must contain the following certification statement and be signed as required in sections (a), (b), (c), or (d) below:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

a. By a responsible corporate officer, if the Permit Holder submitting the reports is a corporation. For the purpose of this paragraph, a responsible corporate officer means:

   1. A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy - or decision-making functions for the corporation, or;

   2. The manager of one or more manufacturing, production, or operation facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

b. By a general partner or proprietor if the Permit Holder submitting the reports is a partnership or sole proprietorship respectively.

c. By a duly authorized representative of the individual designated in paragraph (a) or (b) of this section if:

   1. The authorization is made in writing by the individual described in paragraph (a) or (b);
   2. The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the wastewater discharge originates, such as the position of plant manager, a field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and

   3. The written authorization is submitted to the District.

d. If an authorization under paragraph (c) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for the environmental matters for the

documentation.

Failure to provide complete Chain of Custody documentation with each Self-monitoring Report will constitute an incomplete Self-monitoring Report and the required sampling shall be repeated in accordance with Permit reporting requirements.

III. Laboratory Results

The laboratory reports of analyses required in the Self-monitoring Reporting Requirements shall include:

a. The name and address of the Laboratory performing the analysis.

b. Laboratory number (to cross reference with the Laboratory number on the Chain of Custody).

c. For each parameter analyzed:

1. The Standard Method or EPA Method used for analysis.

2. The date of sampling, the date the sample was received at the laboratory, and the date of analysis.

3. The detection limit.

d. A signature of an authorized representative of the Laboratory, with the name and title printed below, who reviewed the laboratory results.

e. Analyses performed in the Field shall be indicated as such (pH - field test).

IV. Split Sample

A portion of a sample collected by EBMUD personnel will be provided to the Permit Holder upon request. The Permit Holder shall provide proper sample containers to EBMUD, chain of custody forms as specified herein, and qualified personnel authorized by Permit Holder to receive, handle, preserve, and transmit the samples.

V. Sampling Methods, Sample Preservation, and Analytical Methods

Sampling methods, sample preservation, and analytical methods for each parameter shall be in accordance with applicable sections of Standard Methods of Water and Wastewater Analysis, 17th Edition or EPA 40 CFR Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, latest edition, unless the permit specifies otherwise.

g. Any other violation or group of violations of discharge prohibitions of Section A, II of these Standard Provisions and Reporting Requirements.

III. Penalties for Violations of Permit Conditions

a. Violation Follow-up

When a violation occurs, the District will mail a violation notice to the Permit Holder. A written response shall be submitted within five days describing the cause of the violation, the corrective actions taken or planned to be taken to prevent recurrence, and the date planned corrective actions will be completed.

The District will conduct a violation follow-up inspection and a fee will be assessed.

b. Submit Schedule of Remedial or Preventative Measures

When the Manager finds that a discharge of wastewater is taking place or threatening to take place that violates or will violate prohibitions or limits prescribed by District Ordinance No. 311 or wastewater source control requirements or the provisions of a wastewater discharge permit, the Manager may require the discharger to submit for approval of the Manager, with such modifications as he deems necessary, a detailed time schedule of specific actions the discharger shall take in order to correct or prevent a violation of requirements.

c. Cease and Desist Orders

When the Manager finds that a discharge of wastewater is taking place or threatening to take place in violation of prohibitions or limits of District Ordinance No. 311 or wastewater source control requirements or provisions of a wastewater discharge permit, the Manager may issue an order to cease and desist and direct that those persons not complying with such prohibitions, limits, requirements, or provisions (1) comply forthwith, (2) comply in accordance with a time schedule set by the Manager, or (3) in the event of a threatened violation, take appropriate remedial or preventative action.

IV. Civil and Criminal Liability

a. Administrative Civil Liability

The Manager may issue a complaint to any person on whom civil liability may be imposed pursuant to Section 13575.5 of the Public Utilities Code. The complaint shall allege the act or failure to act that constitutes a violation of law, the provision of law authorizing civil liability to be imposed pursuant to Section 13575.5, and the proposed civil liability.

Any person or Permit Holder who knowingly makes any false statement or representation in any record, report, plan, or other document file with the District, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required by the District, shall be punished by a fine of not more than twenty-five thousand dollars ($25,000) or by imprisonment in the county jail for not more than six months, or by both.

VII. Damage to Facilities

When the discharge of wastewater causes an obstruction, damage, or other impairment to District disposal facilities, the Manager may recover costs from the discharger to correct the problem caused by the discharger.

Weiss Associates Environmental and Geologic Services

5500 Shellmound Street, Emeryville, CA 94608-2411 Fax: 510-547-5043 Phone: **510-450-6000**

July 22, 1994

Mirtha Ninayahuar
Source Control Division
EBMUD - Mail Slot #702
P.O. Box 24055
Oakland, CA 94623-1055

FILE

Re: Semi-Annual Monitoring Report
Former Chevron Service Station #9-1153
3126 Fernside Drive
Alameda, California
WA Job #4-630-53
EBMUD Acct. #502-38411

Dear Ms. Ninayahuar:

This letter reports the data and analytical results from semi-annual monitoring activities performed by Weiss Associates (WA) on the ground water treatment system at the above referenced site during the FIRST half of 1994. WA submits this information on behalf of Chevron U.S.A. Products Company. Ground water is extracted from a French drain using an electric pump. Ground water is treated by two, 200 lb aqueous-phase carbon vessels connected in series and then flows through a transfer tank before discharging to the sanitary sewer. As required, the air in the transfer tank is monitored with a Lower Explosive Limit meter.

On May 31, 1994, the treatment system was shut off and discharge ceased. Between March 22 and May 31, 1994, the system treated 5,828 gallons of ground water, bringing the total amount of ground water treated by the system to 99,850 gallons. The average flow rate for this period ranged from 0.05 to 0.08 gallons per minute (gpm). Table 1 presents a performance summary including flow meter readings, average flow rates and comments pertaining to the system operation. Field inspection forms are included as Attachment A.

No samples were collected since the March 22, 1994 sampling event. These samples indicate that the discharge is in compliance with the permit limits. System influent, carbon midpoint and effluent samples will be collected when and if discharge resumes.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including

the possibility of fine and imprisonment for knowing violations.

Sincerely,
Weiss Associates

Michael Cooke
Project Geologist

MC:mc

J:\HC_ENG\CHEVRON\ALAMEDA\630L1JY4.WP

Attachments: Table 1. Performance Summary
Table 2. Summary of Analytic Results
A - Field Inspection Forms

cc: Mark Miller, Chevron USA Products Company

Table 1. Performance Summary, Chevron Service Station #9-1153, 3126 Fernside Drive, Alameda, California

DATE SAMPLED	TOTAL FLOW (gallons)	FLOW BETWEEN READINGS	DAYS BETWEEN READINGS	AVERAGE FLOW (gpm)	NOTES
10/03/91 a	659	0	0	-	
10/07/91	821	162	4	0.03	
10/18/91	1,051	230	11	0.01	
10/28/91	2,017	966	10	0.07	
11/05/91	2,698	681	8	0.06	
11/15/91	3,546	848	10	0.06	
11/21/91	4,234	688	6	0.08	
12/05/91	5,130	896	14	0.04	
01/06/92	7,788	2,658	32	0.06	
01/28/92	8,961	1,173	22	0.04	
02/10/92	10,597	1,636	13	0.09	
02/18/92	15,181	4,584	8	0.40	
03/06/92	18,157	2,976	17	0.12	
03/13/92	18,991	834	7	0.08	
03/18/92	NM	NM	5	-	
03/24/92	21,042	2,051	6	0.24	
04/29/92	25,392	4,350	36	0.08	
05/12/92	29,862	4,470	13	0.24	
06/09/92	36,730	6,868	28	0.17	
07/14/92	39,950	3,220	35	0.06	
08/11/92	41,880	1,930	28	0.05	
09/09/92	44,043	2,163	29	0.05	
10/07/92	45,840	1,797	28	0.04	
11/10/92	48,742	2,902	34	0.06	
12/30/92	55,797	7,055	50	0.10	
01/12/93	59,091	3,294	13	0.18	
02/10/93	66,506	7,415	29	0.18	
03/09/93	70,412	3,906	27	0.10	
04/22/93	75,176	4,764	44	0.08	
05/10/93	76,443	1,267	18	0.05	
06/21/93	76,460	17	42	0.00	Discharge line found clogged. Cleaned and restarted
07/14/93	78,552	2,092	23	0.06	Pressure regulator repaired. System operational
08/19/93	79,848	1,296	36	0.03	
09/09/93	80,514	666	21	0.02	Carbon drum #1 changed out.
09/17/93	80,722	208	8	0.02	
10/15/93	81,160	438	28	0.01	
10/19/93	81,242	82	4	0.01	Autodialer installed.
10/28/93	82,019	777	9	0.06	Autodialer indicated system off on 11/29/93.
12/07/93	84,316	2,297	40	0.04	System operational when inspected.
03/22/94	94,022	9,706	105	0.06	
04/13/94	95,922	1,900	22	0.06	
04/26/94	97,331	1,409	13	0.08	
05/31/94	99,850	2,519	35	0.05	System shut off indefinitely.

Notes:
a = Values for 10/3/91 thru 2/18/92 based on data collected by EA Engineering, Science, and Technology, Lafayette, CA
gpm = gallons per minute

Table 2. Summary of Analytic Results, Chevron Service Station #9-1153, 3126 Fernside Drive, Alameda, California

DATE SAMPLED	LAB	SYSTEM INFLUENT TPH-G	B	E	T	X	SYSTEM MIDPOINT First Carbon Effluent TPH-G	B	E	T	X	SYSTEM EFFLUENT Second Carbon Effluent TPH-G	B	E	T	X
		<-----parts per billion (ppb)----->														
10/03/91 a	SPA	47,000	7,100	1,300	4,100	4,900	<50	2.1	0.5	1.3	1.7	<50	<0.5	<0.5	<0.5	<0.5
10/07/91	SPA	29,000	57,000	1,000	4,100	4,800	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
10/18/91	SPA	40,000	4,600	660	2,300	2,700	<50	<1	<3	<3	<3	<50	<1	<3	<3	<3
10/28/91	SPA	9,500	900	190	790	1,000	<50	<0.5	<0.5	1.4	<0.5	<50	<0.5	<0.5	1.4	<0.5
11/05/91	SPA	14,000	2,700	330	1,600	1,500	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
11/15/91	SPA	12,000	3,700	300	1,700	1,300	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
11/21/91	SPA	15,000	4,000	360	2,600	1,800	NA	NA	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5
12/05/91	SPA	15,000	3,200	290	1,800	1,400	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
01/06/92	SPA	2,000	340	35	190	170	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
01/28/92	SPA	5,300	1,600	100	730	490	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
02/10/92	SPA	27,000	8,700	520	2,800	1,500	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
02/18/92	SPA	22,000	5,700	420	2,800	1,500	88	25	1.5	11	5.6	<50	<0.5	<0.5	<0.5	<0.5
03/06/92	SPA	16,000	2,700	150	940	640	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
03/13/92	SPA	33,000	9,200	520	4,300	2,600	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
03/18/92	SPA	42,000	17,000	720	5,200	2,700	<50	1.4	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
03/24/92	SPA	5,800	5,500	250	1,600	870	<50	1.0	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
04/29/92	SPA	24,000	3,400	260	1,300	1,100	<50	0.7	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
05/12/92	SPA	11,000	1,400	120	600	680	<50	1.2	0.6	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
06/09/92	SPA	48,000	8,600	820	4,500	3,700	<50	1.0	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
07/14/92	SPA	66,000	9,900	1,300	7,400	6,800	<50	0.9	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
08/11/92	SPA	85,000	11,000	1,600	7,500	7,400	<50	1.3	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
09/09/92	SPA	3,400	840	<5	34	220	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
10/07/92	SPA	52,000	9,100	1,100	4,800	5,000	51	2.1	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
11/07/92	SPA	60,000	13,000	920	5,000	4,500	59	3.9	<0.5	0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
12/30/92	SPA	17,000	1,600	150	800	1,200	78	14	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5

-- Table 2 continues on next page --

Table 2. Summary of Analytic Results, Chevron Service Station #9-1153, 3126 Fernside Drive, Alameda, California (continued)

		SYSTEM INFLUENT					SYSTEM MIDPOINT First Carbon Effulent					SYSTEM EFFLUENT Second Carbon Effluent				
DATE SAMPLED	LAB	TPH-G	B	E	T	X	TPH-G	B	E	T	X	TPH-G	B	E	T	X
		<----------parts per billion (ppb)---------->														
01/19/93	SPA	110,000	16,000	1,300	12,000	6,000	99	25	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
02/10/93	SPA	89,000	6,900	1,300	11,000	7,700	150	32	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
03/09/93	SPA	110,000	18,000	570	13,000	6,500	220	57	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<0.5
04/22/93	SPA	190,000	17,000	2,700	20,000	14,000	910	180	18	22	4.9	<50	<0.5	<0.5	<0.5	<1.5
05/10/93	SPA	150,000	19,000	2,500	18,000	14,000	440	180	<0.5	0.9	<1.5	<50	<0.5	<0.5	<0.5	<1.5
06/21/93	SPA	58,000	7,500	1,800	15,000	11,000	510	160	<0.5	1.2	2.1	<50	<0.5	<0.5	<0.5	<1.5
07/14/93	SPA	67,000	6,600	1,700	7,800	14,000	400	250	<0.5	1.8	<1.5	<50	<0.5	<0.5	<0.5	<1.5
08/19/93	SPA	82,000	8,400	1,200	4,300	9,000	640	210	<0.5	1.2	<1.5	<50	<0.5	<0.5	<0.5	<1.5
09/17/93	SPA	53,000	6,700	940	3,000	6,200	<50	<0.5	<0.5	<0.5	<0.5	<50	<0.5	<0.5	<0.5	<1.5
03/22/94	SPA	71,000	17,000	1,100	10,000	6,100	<50	1.6	<0.5	0.6	<0.5	<50	<0.5	<0.5	<0.5	<0.5

Abbreviations:
a = Values for 10/3/91 thru 2/18/92 based on data collected by EA Engineering, science, and Technology, Lafayette, CA
NA = Not Available
TPH-G = Total petroleum hydrocarbons as gasoline by modified EPA Method 8015
B = Benzene By EPA Method 8020
E = Ethlybenzene by EPA Method 8020
T = Tolueneby EPA Method 8020
X = Xylenes by EPA Method 8020
<n = Not detected at detection limit of n ppb
SPA = Superior Precision Analytical Lab, San Francisco, California

ATTACHMENT A

FIELD INSPECTION FORMS

FICE/FIELD REPORT (circle one)

ject Name Chevron-Alameda

ject # 4-630-54E Project Manager SV/MC

me Paul Cardoza

ing Period 5/21/94-6/3/94 Total Hrs. Billed 9.75

Vehicle (Field Use):
WA ✓
Personal ____
Rental ____
Odometer in 67521
Odometer out 67503
Mileage 18

Requested Work Summary

Activity Code	Hours Billed	Activity Code	Hours Billed

Extra Scope of Work (ESOW) Summary

Activity Code	Hours Billed

te/ me	Activity Description	Activity Code	Hours	ESOW
/31/94				
5:45	Arrive Weiss. Office.	150	1.25	
		102	.5	
7:00	Talked w. JAN about scan mtce	102	1.0	
8:30	ESOW - Pull files/records.	18E	.25	
9:30	Mtce	25E	.25	
9:45	Leave for Alameda			
0:00	Arrive Alameda.	9E	1.25	
	- Met with Joe from Westates.	14E	2.25	
	- ESOW (See work log)			
		25E	.5	
3:30	Leave for Weiss			
4:00	Arrive Weiss			
	- Talk w. MC re. Alameda. MC said we may not do the ESOW because we're going to petition to have the system shut off.			
	- Talked w. MC about Chev. ESOW	102	1.0	
14:45	Sonoma protocol update	102	.75	
15:45	Loop binder update			
16:30	Off.			
	* Alameda Totalizer @ 0099850.3			

REMEDIATION SYSTEM WORK LOG

Client: Chevron WA Job #: 4-630-54E Date This Visit: 5/3/94

Site Location: Alameda Site #: 9-6607 Initials: PC

TIME	ACTIVITY DESCRIPTION	CODE	HOURS
10:00	Met Joe of Westates. Not enough water had been drained from carbon drum so we had to drain more water. Joe took spent carbon drum.		
11:15	- Both system carbon drums had bulged, espicially the lids. I turned the system on + everything worked fine. There was no evidence of blockage or high pressure. Water flowed freely through the system + pressure was only 8psi. High level switch in transfer drum + secondary worked.		
	- Discharge drum is draining very slow.		
	- Totalizer after discharge drum not working.		
	- LEL sensor got wet while pumping water from secondary containment to discharge drum. This caused needle (LEL) to peg. It should return to normal after drying.		
	- I'm not sure of the cause of the over-pressure condition of the drums. This was also the site of the "expanding drum" where the lid blew off. Perhaps there's a lot of gas in the water. Other possibilities: 1) bad anti siphon value 2) bad pressure gauge 3) bad pressure regulator 4) bad pressure relief value		
	- Attempted to unplug discharge line @ so I could pump secondary containment water. Was not able to get it cleared.		

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-94)
Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

A. State Manifest Document Number: 92812977

B. State Generator's ID: HYH3560274833

5. Transporter 1 Company Name: U.S.A. Carbon Inc. | 6. US EPA ID Number: CAD1[illegible]

C. State Transporter's ID: 403601

D. Transporter's Phone: 510[illegible]

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address | 10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone: (602) 464-5153

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a.				P	State 581 EPA/Other 1518
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above: [illegible] FILE 1403511 EEG 31

K. Handling Codes for Wastes Listed Above: a. | b. | c. | d.

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable federal, state and international laws.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Month 05 Day 14 Year 94

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month 05 Day 14 Year 94

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name | Signature | Month | Day | Year

DO NOT WRITE BELOW THIS LINE.

OFFICE FIELD REPORT (circle one)

5) Chev-Alameda

Project Name 1) Chev-San Bruno 2) Chev-Castro Valley 3) Chev-San Leandro 4) Chev-Oak-2
2) 4-552-54 3) 4-641-54 4) 4-668-54 5) 4-630-54

Project # 4-633-54 Project Manager MC

Name Paul Cardoza

Billing Period 4/9/94-4/22/94 Total Hrs. Billed _____

Vehicle (Field Use):
WA _____ Odometer in 65464
Personal _____ Odometer out 65384
Rental _____ Mileage 80

Requested Work Summary

Activity Code	Hours Billed	Activity Code	Hours Billed
22 (4-633-54)	.25	@~~24~~25 (4-641-54)	.25
19	3.25	13	1.25
		18	.25
25 (4-552-54)	1.0	25 (4-668-54)	.75
13	.25	13	.75
		18	.25

Extra Scope of Work (ESOW) Summary

Activity Code	Hours Billed
19E (4-630-54)	.25
18 (4-334-54)	.25

Date/ Time	Activity Description	Activity Code	Hours	ESOW
4/13/94				
06:15	Leave for site	@ ~~22~~25	.25	4-633-54
06:30	Arrive site.			
	- Water level @ 14.53, "Reset" Timemark. Shut it off. Decreased underload a small amount.	"Underload" very, very 19	.75	4-633-54
	Pump on @ 06:52 Ran until water level dropped below top of pump. Could hear pump vibrating in well. Increased pump "underload" so it would shut off sooner. Monitored pump. Seems ok now.			
07:15	Leave for Castro Valley			
08:15	Arrive Castro Valley	25	1.0	4-552-54
	Contractors on site. TRB had stopped by on his way to work & let them in.	13	.25	
	- Called Susan Keach @ Oro Loma Sanitary. Checked with her on sampling today. OK by her.			
08:30	Arrive San Leandro	25	.25	4-641-54
	O+M	13	1.25	
09:45	Leave for Oak 2	25	.25	
10:15	Arrive Oak 2. O+M	25	.25	4-668-54
11:00	Leave for West (65459) Alameda	13	.75	
	Stop by to check on auto dialer call in system OK. Totalizer = 0095921.8	13	.25	4-630-54

FICE/FIELD REPORT (circle one) Page 1 of 2

oject Name 1/Chev - Oak. 2 2/Chev - Alameda

oject # 2/4-630-54 1146616-54 Project Manager MC/CV

me Paul Carlson

ling Period 4/23/91 - 5/9/91 Total Hrs. Billed _____

Vehicle (Field Use):
WA _____ Odometer in 65565
Personal _____ Odometer out 65636
Rental _____ Mileage 39

Requested Work Summary

Activity Code	Hours Billed	Activity Code	Hours Billed

Extra Scope of Work (ESOW) Summary

Activity Code	Hours Billed

te/ me 4/24/91	Activity Description	Activity Code	Hours	ESOW
0530	Arrive Chevron			
	- Manual - Troubleshooting Update			
0545	- Bay Loop binder			
0700	- Packed pump motor from Chev- San Bruno F-1 Model #79952101; #9339. Given to Mike for mailing.			
	- Packed 3" jet sub pump from San Lorenzo Ser # 9310 Type TSO7-03			
0715	- Troubleshooting guide.			
0800	- Demobe - San Lorenzo			
0830	- Prep Oak 140 with PN			
0845	Make PID/FID calibration			
0945	Leave for Fischer Photo			
1000	Leave for Grainger			
1015	Arrive Grainger			
	- P/M air regulator			
1030	Leave for Oak 2 ~~C65654~~ PO			
1045	Arrive Oak 2 C65654			
	O+M			
1145	Leave for Alameda			
1153	Arrive Alameda.			
	- Site OK. Call-in from auto dialer 4/12 Total liter = 0047331.2 Probable high level in storm sewer drain.			

ALL\ADMIN\FORMS\TRBFORM.WP 8/3/89

Chev-Alameda PC

FIXED FEE O&M

WORK LOG

A ☐ Carbon Changeout this visit B ☐ System repairs this visit
B ☐ System was shut down this visit C ☐ System was restarted

List work performed, work to be completed and estimated field time required for the repair.

Work Performed: We received an auto dialer call from Chev. Alameda on Sat. 4/23. I stopped by the site on 4/26/94 while doing OfM @ Oak 2nd & Oak-14th Sts. Everything was running - all ok. There were heavy rains on Sat 4/23 so the cause of the call-in was high water levels in the sewer. During heavy rains, city sewers back up, & there's a high level ~~switch~~ switch @ the effluent drain which shuts the system down.

ESDW = 0.5$

Work to be completed: