R02440

APEX ENVIROTECH, INC.

11244 Pyrites Way • Gold River, CA 95670
Phone 916.851.0174 • Fax 916.851.0177 • Toll Free 1.800.242.5249

October 7, 2005

Mr. Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: **Workplan for Monitoring Well Installation and Letter Response**
Bernard's Gas
1051 Airway Blvd
Livermore, California
Apex Project No. NWP01.001

Dear Mr. Wickham,

Apex Envirotech, Inc. (Apex), has been authorized by New West Stations (New West) to provide this workplan for the installation of six monitoring wells at the subject site (Figure 1) and to address items requested in a Alameda County Environmental Health (ACEH) letter dated June 14, 2005, included as Appendix A. The site is located along the eastern side of Airway Boulevard, in Livermore, California and is an active retail fuel station and mini market that retails all three grades of unleaded gasoline and diesel fuel (Figure 2).

This report is based, in part, on information obtained from New West and Grayland Environmental (Grayland) and is subject to modification as newly acquired information may warrant.

BACKGROUND

June 2001 - Six fuel dispensers and associated product lines were removed by Walton Engineering, Inc. of West Sacramento, California. Soil samples were collected beneath of the former dispensers and product lines. Laboratory results indicated detectable concentrations of total petroleum hydrocarbons as gas (TPHg), TPH as diesel (TPHd), benzene, toluene, ethylbenzene and total xylenes (BTEX) and methyl tertiary butyl ether (MTBE) compounds.

January 18, 2002 - Grayland submitted the *Site Contamination Work Plan* to evaluate the spatial extent of soil contamination beneath the site and to determine if groundwater had been impacted by residual hydrocarbons.

June 12, 2002 – Apex supervised the installation of four soil boring at the subject site. Soil results showed contamination from 3 to 5 feet below ground surface (bgs) and no contamination at 24 feet bgs. Groundwater results showed detections of MTBE only in low to moderate concentrations. Results were documented in the report, *Soil Boring and Groundwater Sample Collection Results Report,* dated August 6, 2002.

August 30, 2002 - The ACEH issued a letter requesting a site conceptual model (SCM) for the site.

December 19, 2002 – Apex submitted a *Site Conceptual Model.* Although no recommendations were made in the SCM, no response was made by the ACEH.

March through June 2005 – Apex made several attempts to contact ACEH to respond to the SCM but no response was made.

June 14, 2005 – The ACEH issued a letter requesting a workplan to vertically and horizontally define the plume and address technical comments (Appendix A).

TECHNICAL COMMENTS

Soil Boring Logs

The ACEH letter requested boring logs for GP-3 and GP-4. No soil samples were recovered for these boring during the investigation due to adverse drilling conditions, therefore boring logs were not generated.

Regional Geologic and Hydrogeologic Setting

In their 1981 report, Geology of the Southeastern Livermore Valley, Alameda County, California, J.J. Sweeny and J.E. Springer note that regionally the rock units in the area of Livermore, Alameda County, California, are of the Franciscan Assemblage, Great Valley Sequence, and Tertiary to Quaternary age marine and nonmarine sediments. In addition, they note that the area has been "extensively folded and faulted". The Livermore Valley itself is a structural depression within the Diablo Range. The floor of the valley is covered with alluvial, lake and swamp deposits, consisting of gravels, sands, silts and clays.

Regionally groundwater flow is south westerly.

GROUNDWATER MONITORING WELL INSTALLATION

Apex proposes installing six shallow groundwater monitoring wells and one deep monitoring well (Figure 3). Depth to groundwater is approximately 27 feet-bgs. The proposed wells will be installed utilizing a hollow stem auger rig and completed as 2-inch diameter monitoring wells using Schedule 40 PVC and screened with 0.020-inch slotted screen. Shallow zone wells MW-

1, MW-2, MW-3, MW-4, MW-6, and MW-7 will be completed to 35-feet bgs and screened from 20 to 35 feet bgs. Wells MW-2, MW-3, MW-6, and MW-7 are located on-site. The location of wells MW-1 and MW-4 is proposed in the center divide non-traffic area of Airway Boulevard as shown on Figure 3. Well MW-5 will be installed as a deep well to an unknown depth to be determined in the field. Total depth of deep well MW-5 will be determined in the field pending subsurface conditions and the well will utilize a 5-feet screened interval. Subsurface conditions will be determined by continuously coring the bore hole from 35-feet until a viable second aquifer zone is determined.

All wells annular space will be backfilled with #3 Monterey sand pack from total depth to 2-feet above the screened interval, followed by 2-feet of hydrated bentonite and Portland cement to the surface. The well casings will be protected with locking expansion caps and traffic-rated vault boxes. Offsite wells MW-1 and MW-4 will require an encroachment permit.

Monitoring well installation permits, encroachment permits and/or right-of-entry agreements will be obtained prior to the well installations. A California-licensed drilling contractor will perform the monitoring well installations using hollow-stem auger drilling techniques and a truck-mounted drill rig. All work will be conducted in accordance with the Apex standard operating procedures (SOP) included in Appendix B. Underground Services Alert will be contacted at least 48-hours before drilling to locate underground utilities in the vicinity and adjacent public right-of-ways. As a further precaution, the first five feet of each boring will be hand-augured to avoid striking underground utilities.

Soil Sampling

Soil samples will be collected at five-foot intervals for logging purposes and the sample collected at the 24-foot interval and at obvious lithologic changes above first groundwater will be submitted for chemical analysis. All soil samples will be screened in the field with the use of a photo ionization detector (PID). The soil sample with the highest PID reading or the sample collected at the 24-foot interval from the boring will also be submitted for analysis.

Soil samples will be analyzed for the following analysis:

Analysis	Abbreviation	Designation	USEPA Method No.
Total Petroleum Hydrocarbons as Gasoline	TPHg	Gas/Diesel Range Hydrocarbons	8015 Modified
Total Petroleum Hydrocarbons as Diesel	TPHd		
Benzene	BTEX	Aromatic Volatile Organics	8021B
Toluene			
Ethylbenzene			
Xylenes (Total)			
Tertiary Butyl Alcohol	TBA	Five Fuel Oxygenates	8260B
Methyl Tertiary Butyl Ether	MTBE		
Di-isopropyl Ether	DIPE		
Ethyl Tertiary Butyl Ether	ETBE		
Tertiary Amyl Methyl Ether	TAME		
1,2-Dichloroethane	1,2-DCA	Lead Scavengers	
Ethylene Dibromide	EDB		

Historical soil and groundwater analytical results are summarized in Tables 1 and 2, respectively. All drill cuttings will be temporarily stored on and under visqueen, pending receipt of the analytical results. A stockpile sample will also be collected for disposal purposes and analyzed for total lead by EPA Method 6010 in addition to the above constituents.

Groundwater Sampling

The new groundwater monitoring wells will be developed, and the top of casing elevation will be surveyed and referenced to mean sea level according to Apex SOP included in Appendix B.

All groundwater samples will be submitted under COC documentation to a state-certified laboratory for analysis as listed above. Once the laboratory analytical data from the groundwater sampling have been received, a results report will be prepared.

Site Specific Health and Safety Plan

A site specific Health and Safety Plan (HASP) will be prepared and will be on site during all field activities. All on-site work will be conducted according to the HASP. The HASP will contain information on the properties of the hazardous materials known to be on the site. This information is equivalent to that contained within Material Safety Data Sheets.

SCHEDULE

Upon approval of this workplan by the ACEH, well installation permitting with the ACEH and an encroachment permit with the City of Livermore will be obtained for the installation of the proposed monitoring wells. Once the permits are approved, drilling activities will be scheduled.

REPORT DISTRIBUTION

A copy of this report was submitted to:

Regulatory Agency: Mr. Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6700
(510) 567-6791

Responsible Party: Mr. Gil Moore
New West Stations.
1831 16th Street
Sacramento, California 95814
(916) 443-0890

REMARKS/SIGNATURES

The information contained within this report reflects our professional opinions and was developed in accordance with currently available information, and accepted hydrogeologic and engineering practices.

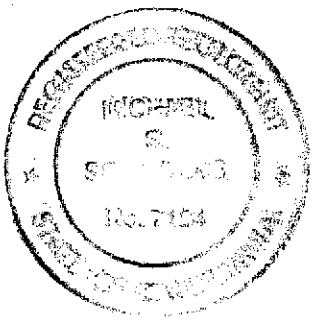
The work described above was performed under the direct supervision of the professional geologists, registered with the State of California, whose signatures appear below.

We appreciate the opportunity to provide you geologic, engineering and environmental consulting services, and trust this report meets your needs. If you have any questions or comments, please call us at (916) 851-0174.

Sincerely,

APEX ENVIROTECH INC.

Jennifer Worsley
Project Manager

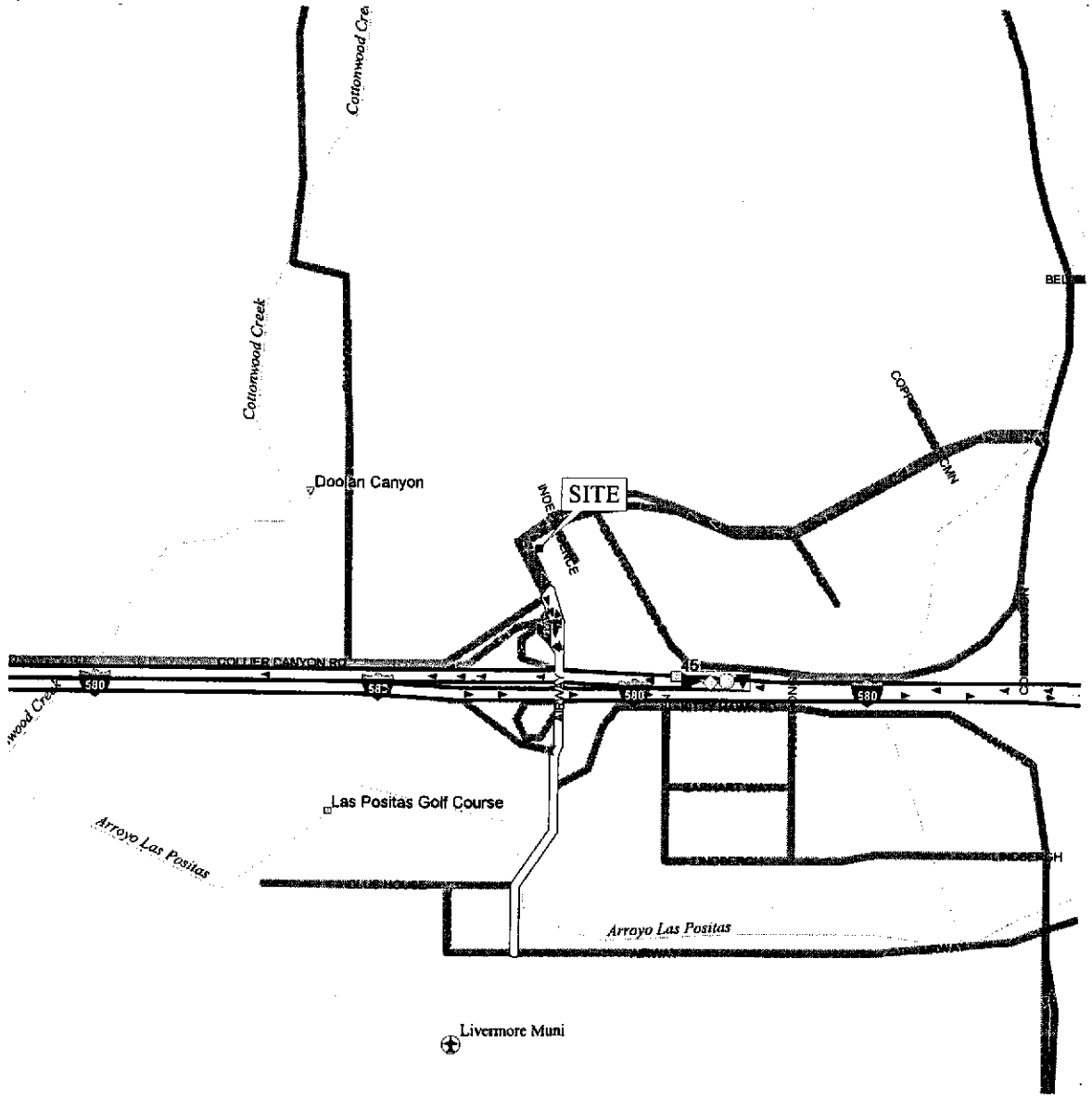


Michael S. Sgourakis, R.G.
Senior Geologist
CRG No. 7194

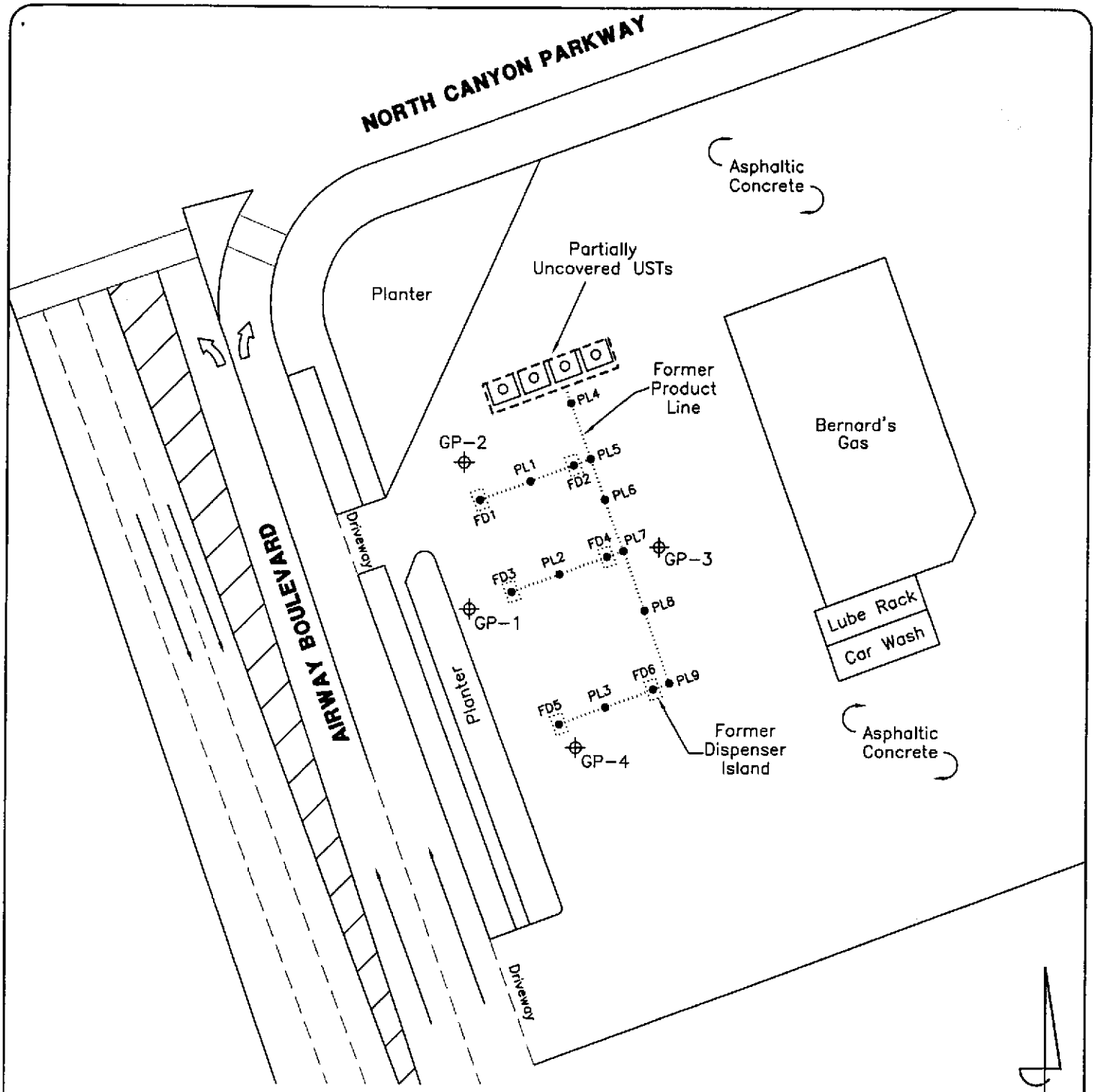
FIGURES:

TABLES:

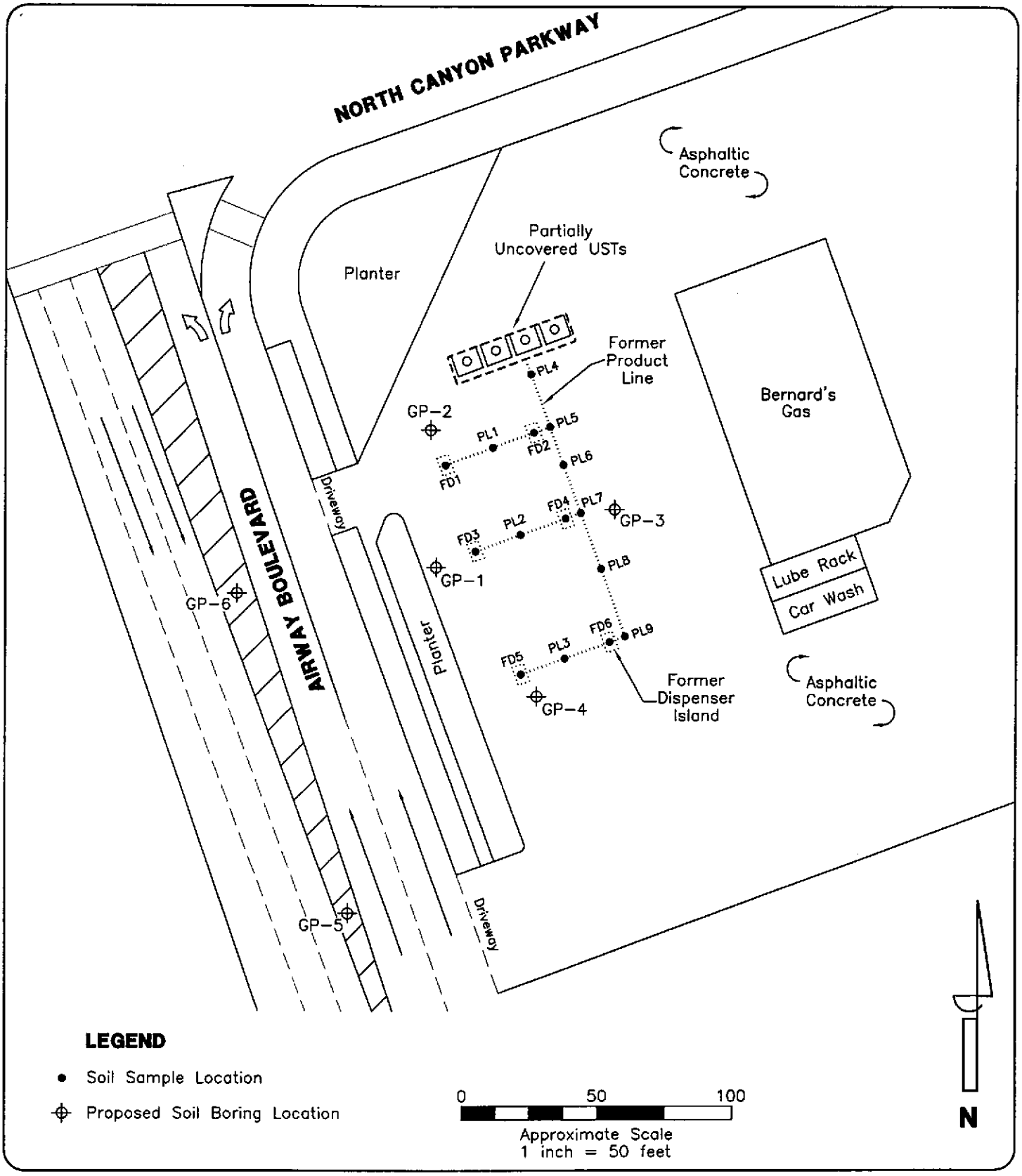
APPENDICES:



APEX ENVIROTECH, INC.	DRAWN BY: D. Alston DATE: 07/17/02 REVISIONS	**SITE VICINITY MAP** Bernard's Gas 1051 Airway Boulevard Livermore, California	FIGURE **1** PROJECT NUMBER: NWP01.001



APEX ENVIROTECH, INC.	DRAWN BY: J. Curry DATE: 10/04/05 REVISIONS	**SITE PLAN MAP** Bernard's Gas 1051 Airway Boulevard Livermore, California	FIGURE **2** PROJECT NUMBER: NWP01.001



APEX ENVIROTECH, INC.	DRAWN BY: J. Curry DATE: 10/04/05 REVISIONS	**PROPOSED SOIL BORING LOCATION MAP** Bernard's Gas 1051 Airway Boulevard Livermore, California	FIGURE **3** PROJECT NUMBER: NWP01.001

TABLE 2
GROUNDWATER ANALYTICAL DATA
New West Petroleum
1051 Airway Blvd
Livermore, California

Sample ID	Date	TPH as Gasoline (ug/L)	TPH as Diesel (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl benzene (ug/L)	Total Xylenes (ug/L)	EPA Method 8260					
								DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2 DCA (ug/L)
GP-1	6/12/2002	<50	<50	<0.50	<0.50	<0.50	<1.0	<5.0	<5.0	110	<5.0	<50	<5.0
GP-2	6/12/2002	<50	<50	<0.50	<0.50	<0.50	<1.0	<5.0	<5.0	100	<5.0	<50	<5.0
GP-3	6/12/2002	<50	NA	<0.50	<0.50	<0.50	<1.0	<5.0	<5.0	280	6.5	<50	<5.0
GP-4	6/12/2002	<50	NA	<0.50	<0.50	<0.50	<1.0	<2.0	<2.0	4.3	<2.0	<30	<2.0

NOTES:

TPH - Total Petroleum Hydrocarbons
DIPE - Di-isopropyl ether
ETBE - Ethyl Tertiary Butyl Ether
MTBE - Methyl Tertiary Butyl Ether
TAME - Tertiary Amyl Methyl Ether
TBA - Tertiary Butyl Alcohol
1,2 DCA 1,2 -Dichloroethane
ug/L - micrograms per kilogram

TABLE 1
SOIL ANALYTICAL DATA
New West Petroleum
1051 Airway Blvd
Livermore, California

Sample ID	Date	Sample Depth (feet bgs)	TPH as Gasoline (mg/kg)	TPH as Diesel (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Total Xylenes (mg/kg)	EPA Method 8260					Total Lead (mg/kg)
									DIPE (ug/kg)	ETBE (ug/kg)	MTBE (ug/kg)	TAME (ug/kg)	TBA (ug/kg)	
S-3-FD1	6/19/2001	3	760	830	0.13	<0.10	3.9	28	---	---	5,600	---	---	
S-4-FD2	6/19/2001	4	890	6,800	<0.25	<0.25	2.9	4.0	---	---	1,800	---	---	
S-3-FD3	6/19/2001	3	28	---	<0.050	0.36	0.24	2.7	---	---	970	---	---	
S-3-FD4	6/19/2001	3	3.5	---	0.0061	<0.0050	0.032	0.11	---	---	810	---	---	
S-1-FD5	6/19/2001	1	2,800	---	0.59	29	32	190	---	---	3,600	---	---	
S-2-FD6	6/19/2001	2	29	---	<0.010	<0.010	0.11	0.021	---	---	0.066	---	---	
S-4-PL1	6/19/2001	4	<5.0	10	<0.050	<0.050	<0.050	<0.10	---	---	7,500	---	---	
S-3-PL2	6/19/2001	3	2.9	---	<0.0050	0.052	0.036	0.40	---	---	2,700	---	---	
S-3-PL3	6/19/2001	3	<1.0	---	<0.0050	0.016	0.014	0.10	---	---	92	---	---	
S-5-PL4	6/19/2001	5	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	7.6	---	---	
S-5-PL5	6/19/2001	5	270	9,500	<0.25	0.31	0.80	4.1	---	---	<250	---	---	
S-4-PL6	6/19/2001	4	<1.0	---	<0.0050	<0.0050	<0.0050	0.024	---	---	140	---	---	
S-3-PL7	6/19/2001	3	1,100	---	<0.10	<0.10	7.8	44	---	---	1,400	---	---	
S-3-PL8	6/19/2001	3	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	---	---	17	---	---	
S-3-PL9	6/19/2001	3	<1.0	---	<0.0050	<0.0050	<0.0050	0.0083	---	---	390	---	---	
GP-1	6/12/2002	24	<1.0	<1.0	<0.005	<0.005	<0.005	<0.01	<5.0	<5.0	<5.0	<5.0	<50	---
GP-2	6/12/2002	24	<1.0	<1.0	<0.005	<0.005	<0.005	<0.01	<5.0	<5.0	<5.0	<5.0	<50	---
GP-3	6/12/2002	24	<1.0	<1.0	<0.005	<0.005	<0.005	<0.01	<5.0	<5.0	<5.0	<5.0	<50	---
GP-4	6/12/2002	24	<1.0	<1.0	<0.005	<0.005	<0.005	<0.01	<5.0	<5.0	<5.0	<5.0	<50	---

NOTES:

TPH - Total Petroleum Hydrocarbons
DIPE - Di-isopropyl ether
ETBE - Ethyl Tertiary Butyl Ether
MTBE - Methyl Tertiary Butyl Ether
TAME - Tertiary Amyl Methyl Ether
TBA - Tertiary Butyl Alcohol
ug/kg - micrograms per kilogram
--- - Not Analyzed

APPENDIX A

ACEH LETTER

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

NWP01.001
RECEIVED
2005 JUN 17 AM 9:

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

June 14, 2005

FILE COPY

Gil Moore
New West Stations, Inc.
1831 16th Street
Sacramento, CA 95814

Dear Mr. Moore:

Subject: Fuel Leak Case No. RO0002440, Bernard's Gas, 1051 Airway Blvd., Livermore, CA – Request for Work Plan

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the subject site and the report entitled, "Sensitive Survey Results and Site Conceptual Model," dated December 19, 2002, prepared on behalf of New West Petroleum, Inc. by Apex Envirotech, Inc. During fuel dispenser and line removal in June 2001, field evidence of soil contamination was observed beneath several former fuel dispensers and product line couplings. The concentration of total petroleum hydrocarbons as gasoline (TPHg) was up to 2,800 milligrams per kilogram (mg/kg) and the concentration of TPH as diesel (TPHd) was up to 9,500 mg/kg in soil samples collected beneath the dispensers and lines. Methyl tert butyl ether (MTBE) was detected in 16 of the 17 soil samples analyzed at concentrations up to 5.6 mg/kg. MTBE was detected in four groundwater samples collected on June 12, 2002.

This letter presents a request for full three-dimensional definition and investigation of soil and groundwater contamination from the unauthorized release at your site. You are hereby required to complete a soil and groundwater investigation in accordance with California Code of Regulations 23 CCR, Section 2720 – 2728; State Water Resources Control Board Resolution 92-49, "Policies and Procedures for Investigation, Cleanup and Abatement of discharges Under Water Code Section 13304"; and within the Regional Water Quality Control Board (Water Board) Water Quality Control Plan for the basin. The following technical comments address investigation and cleanup performance objectives that shall be considered as part of the required soil and groundwater investigation. **We request that you prepare and submit a work plan for the soil and groundwater investigation by August 30, 2005, that addresses each of the following technical directives.**

Based on ACEH staff review of the documents referenced above, we request that you address the following technical comments, perform the proposed work, and send us the reports described below.

TECHNICAL COMMENTS

1. Soil Boring Logs.

Previous reports submitted to date for this site have included soil boring logs for borings GP-1 and GP-2 only. Please submit soil boring logs for borings GP-3 and GP-4 in the Work Plan requested below.

2. Regional Geologic and Hydrogeologic Setting

We request that you provide information on the regional geologic and hydrogeologic setting of your site by reviewing the available technical literature for the area. Background information for your review includes but is not limited to regional geologic maps, United States Geological Survey (USGS) technical reports and documents, Department of Water Resources (DWR) Bulletins, Regional Water Quality Control Board reports on the groundwater basin, data from contaminant investigations in the area, etc.

Provide a narrative discussion of the regional geologic and hydrogeologic setting obtained from your background study. Use photocopies of regional geologic maps, groundwater contours, cross-sections, etc., to illustrate your results and include a list of technical references you reviewed. Report your results in the Work Plan requested below.

3. Characterization of Lateral and Vertical Extent of Contamination.

The three-dimensional extent of soil and groundwater contamination at your site has not been defined. The results of groundwater sampling at the site indicate the presence of methyl tert-butyl ether (MTBE) in groundwater at your site. We request that you perform a detailed, expedited site assessment using depth discrete sampling techniques on borings installed along transects, to the extent practicable, to define and quantify the full three-dimensional extent of fuel contamination in soil and groundwater. The on-site investigation should include additional characterization of the source area.

The chemical and physical properties of MTBE should be considered in planning the subsurface investigation. MTBE is highly soluble, very mobile in groundwater, and is not readily biodegradable. MTBE plumes can be long, narrow, and erratic (meandering). Thus, the positioning of typical monitoring well networks for UST releases can miss the MTBE plume core, and the monitoring well's design can incorrectly reflect the severity of the release.

A substantial portion of the soil and groundwater contamination should be defined during one mobilization by using expedited site assessment techniques at your site. The appropriately-qualified professionals performing field work at your site should use the data obtained from the field work to refine the initial three-dimensional conceptual model of site conditions developed from existing site information. Using expedited site assessment techniques, the appropriately-qualified professionals are to analyze the field data as it is collected, refine the conceptual model as new data is produced and evaluated, and modify the sampling and analysis program as needed to fill data gaps and resolve anomalies prior to demobilization.

Expedited site assessment tools and methods are a scientifically valid and cost-effective approach to fully define the three-dimensional extent of the plume. Technical protocol for

expedited site assessments are provided in the U.S. Environmental Protection Agency's (EPA) "Expedited Site Assessment Tools for Underground Storage Tank Sites: A Guide for Regulators" (EPA 510-B-97-001), dated March 1997.

Please submit a detailed work plan detailing your proposal to fully characterize the lateral and vertical extent of soil and groundwater contamination. The Work Plan should be prepared by a qualified professional and must fully describe the proposed scope and methods for the soil and groundwater investigation.

4. Characterization of Local Hydrogeology and Groundwater Flow Conditions.

The purpose of this characterization is to understand the physical and geochemical characteristics of the subsurface, which may affect groundwater flow, the breakdown (fate), migration (transport), and the distribution of contaminants through the subsurface. Additionally, factors such as water level fluctuations, gradient changes, local hydrogeology, groundwater extraction, and groundwater recharge activities (natural and artificial) can significantly alter groundwater flow conditions.

The local hydrogeology and hydraulic gradient have not been sufficiently defined at the site. Therefore, we request that you collect detailed lithologic information using soil borings, direct push sampling, and/or cone penetrometer together with other methods to understand the hydrogeology of your site. The use of additional methods to understand the hydrogeology, such as pumping tests, geophysical methods, etc. may be proposed.

Monitoring wells will be needed to provide groundwater elevation data to be used in estimating the direction and magnitude of the hydraulic gradient. The monitoring wells should be installed as part of or following the expedited site assessment described in item 1 above. Please see the discussion in item 6 regarding the requirements for contaminant plume monitoring and monitoring well design.

We require that detailed boring logs, cross sections, and rose diagrams for hydraulic gradient be prepared and presented in the Soil and Groundwater Investigation Report. Rose diagrams showing the variations in hydraulic gradient shall be plotted on groundwater contour maps and updated in all future reports submitted for your site. Include plots of the contaminant plumes on your maps, cross sections, and diagrams. Structural contours, isopachs, and fence diagrams should be presented where necessary, to illustrate the three-dimensional distribution of contaminants in the subsurface.

The results of the subsurface investigation, including the expedited site assessment, should be presented in the Soil and Groundwater Investigation Report, which is requested below.

5. Date of Unauthorized Release

The purpose of dating the unauthorized release is to assist in the determination of the rate of transport of MTBE and other petroleum hydrocarbons in groundwater. Please determine the approximate time frame of the MTBE release first occurring at your site, the history of MTBE use at your site, and the history of all unauthorized releases and spills at your site. Report your findings in the Soil and Groundwater Investigation Report requested below.

6. Groundwater Contaminant Plume Monitoring

The purpose of groundwater contaminant plume monitoring is to determine the three-dimensional movement of the plume, the rate of plume growth, and the effectiveness of remediation activities.

Once the extent of the plume(s) is defined, we request that you install permanent monitoring wells capable of monitoring depth discrete zones and/or monitoring well clusters (screened at appropriate discrete depths with appropriate length of screen) and piezometers to monitor the three-dimensional movement of the plume. We request that you use the detailed cross sections, structural contours, isopachs, and rose diagrams for groundwater gradient developed for Technical Comment 4 above, to determine the appropriate locations and designs for monitoring wells/well clusters and piezometers that are needed to appropriately monitor the three-dimensional movement of the plume. To appropriately evaluate your site, your monitoring wells/well clusters will need to be screened in the permeable zones with screen lengths that match the stratigraphic sequence. Sand pack for submerged screened intervals will not be greater than 5 feet in length. The number of piezometer/wells should be sufficient to evaluate all permeable zones.

Include your proposal for the installation of wells/piezometers in the work plan requested below. We request that wells be installed in transects. Please refer to the guidance document by API Publication No. 4730 referenced above regarding transects. We recommend that you submit your proposal for the installation of monitoring wells/well clusters and piezometers to ACEH for comment prior to installation. Report on the installation of wells/piezometers in the Soil and Groundwater Investigation Report.

We request that you monitor the groundwater contaminant plumes on a quarterly basis. Additional wells will be required to define the downgradient extent of the plume if it continues to migrate. Discuss the results of your plume monitoring in the Quarterly Reports requested below. Please compile your monitoring data on cross-sections, include groundwater contours, and rose diagrams for groundwater gradient. We require that Quarterly Reports contain a discussion of the results of your plume monitoring, in particular whether the results are consistent with the SCM. Be sure to point out any anomalies in the data, and include recommended activities to investigate and resolve those data anomalies.

We request that you perform an EPA Method 8260 analysis for BTEX, MTBE, TAME, ETBE, DIPE, TBA, EDB, and EDC on groundwater samples from all monitoring wells for the first two quarters, at a minimum. Include cumulative analytical data tables for these compounds (columns for both EPA Method 8020/21 and 8260 results) in your Quarterly Reports with ND results reported as a less than (<) the detection limit value. We request that you review the results of your analysis after the two quarters of monitoring and if any of the above compounds are detected at your site and are judged to be of concern (pose a risk to human health, the environment, or water resources), provide recommendations for incorporating these compounds into your regular monitoring schedule. Also, we request that site maps included in future reports for the site show the locations of all current and former USTs, dispenser islands, monitoring wells, and soil borings.

7. GeoTracker EDF Submittals

A review of the case file and the State Water Resources Control Board's (SWRCB) GeoTracker website indicate that electronic copies of analytical data have not been submitted for your site. Pursuant to CCR Sections 2729 and 2729.1, beginning September 1, 2001, all analytical data, including monitoring well samples, submitted in a report to a regulatory agency as part of the LUFT program, must be transmitted electronically to the SWRCB GeoTracker system via the internet. Additionally, beginning January 1, 2002, all permanent monitoring points utilized to collected groundwater samples (i.e. monitoring wells) and submitted in a report to a regulatory agency, must be surveyed (top of casing) to mean sea level and latitude and longitude to sub-meter accuracy, using NAD 83, and transmitted electronically to the SWRCB GeoTracker system via the internet.

In order to remain in regulatory compliance, please upload all analytical data (collected on or after September 1, 2001), to the SWRCB's GeoTracker database website in accordance with the above-cited regulation. **Please perform the electronic submittals for applicable data and submit verification to this Agency by August 15, 2005.**

TECHNICAL REPORT REQUEST

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

- **August 30, 2005** - Work Plan for Soil and Groundwater Investigation
- **120 days after ACEH approval of Work Plan** – Soil and Groundwater Investigation Report
- **December 30, 2005** - Quarterly Groundwater Monitoring Report for the Fourth Quarter 2005

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.

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.

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

Sincerely,

Jerry Wickham, P.G.
Hazardous Materials Specialist

cc: Ms. Jennifer Worsley
Apex Envirotech, Inc.
11244 Pyrites Way
Gold River, CA 95670

Donna Drogos, ACEH
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File

APPENDIX B

APEX STANDARD OPERATING PROCEDURES

APEX ENVIROTECH, INC.

STANDARD OPERATING PROCEDURE

Monitoring Wells

SOP - 1
SOIL BORING SAMPLING

During drilling, soil samples for chemical analysis are collected in thin-walled brass tubes, of varying diameters and lengths (e.g., 4 or 6 inches long by 2 inches outside diameter). Three or four of the selected tubes, plus a spacer tube, are set in an 18-inch long split-barrel sampler of the appropriate inside-diameter.

Where possible, the split-barrel sampler is driven its entire length either hydraulically or using a 140-pound drop hammer. The sampler is extracted from the borehole and the brass tubes, containing the soil samples, are removed. Upon removal from the sampler, the selected brass tubes are either immediately trimmed and capped with aluminum foil or "Teflon" sheets and plastic caps or the samples are extruded from the tubes and sealed within other appropriate, cleaned sample containers. The samples are then hermetically sealed, labeled, and refrigerated for delivery, under strict chain-of-custody, to the analytical laboratory. These procedures minimize the potential for cross-contamination and volatilization of volatile organic compounds (VOC) prior to chemical analysis.

One soil sample collected at each sampling interval is analyzed in the field using either a portable photoionization detector (PID), flame ionization detector, organic vapor analyzer, catalytic gas detector, or an explosimeter. The purpose of this field analysis is to qualitatively determine the presence or absence of hydrocarbons, and the samples to be analyzed at the laboratory. The soil sample is sealed in either a brass tube, glass jar, or plastic bag to allow for some volatilization of VOC. The PID is then used to measure the concentrations of hydrocarbons within the containers's headspace. The data is recorded on both field notes and the boring logs at the depth corresponding to the sampling point.

Other soil samples are collected to document the soil and/or stratigraphic profile beneath the project site, and estimate the relative permeability of the subsurface materials. All drilling and sampling equipment are either steam cleaned or washed in solution and doubly rinsed in deionized water prior to use at each site and between boreholes to minimize the potential for cross-contamination.

In the event the soil samples cannot be submitted to the analytical laboratory on the same day they are collected (e.g., due to weekends or holidays), the samples are temporarily stored until the first opportunity for submittal either on ice in a cooler, such as when in the field, or in a refrigerator at Apex's office.

SOP - 3
SOIL CLASSIFICATION

Soil samples are classified according to the Unified Soil Classification System. Representative portions of the samples may be submitted, under strict chain-of-custody, to an analytical laboratory for further examination and verification of the in-field classification and analysis of soil mechanical and/or petrophysical properties. The soil types are indicated on logs of either excavations or borings together with depths corresponding to the sampling points and other pertinent information.

SOP - 4
SAMPLE IDENTIFICATION AND CHAIN-OF-CUSTODY PROCEDURES

Sample identification and chain-of-custody procedures ensure sample integrity as well as document sample possession from the time of collection to ultimate disposal. Each sample container submitted for analysis is labeled to identify the job number, date, time of sample collection, a sample number unique to the sample, any in-field measurements made, sampling methodology, name(s) of on-site personnel, and any other pertinent field observations also recorded on the field excavation or boring log.

Chain-of-custody forms are used to record possession of the sample from time of collection to arrival at the laboratory. During shipment, the person with custody of the samples will relinquish them to the next person by signing the chain-of-custody form(s) and noting the date and time. The sample-control officer at the laboratory will verify sample integrity, correct preservation, confirm collection in the proper container(s), and ensure adequate volume for analysis.

If these conditions are met, the samples will be assigned unique laboratory log numbers for identification throughout analysis and reporting. The log numbers will be recorded on the chain-of-custody forms and in the legally-required log book maintained in the laboratory. The sample description, date received, client's name, and any other relevant information will also be recorded.

SOP - 5
LABORATORY ANALYTICAL QUALITY ASSURANCE AND CONTROL

In addition to routine instrument calibration, replicates, spikes, blanks, spiked blanks, and certified reference materials are routinely analyzed at method-specific frequencies to monitor precision and bias. Additional components of the laboratory Quality Assurance/Quality Control program include:

1. Participation in state and federal laboratory accreditation/certification programs;
2. Participation in both U.S. EPA Performance Evaluation studies (WS and WP studies) and inter-laboratory performance evaluation programs;
3. Standard operating procedures describing routine and periodic instrument maintenance;
4. "Out-of-Control"/Corrective Action documentation procedures; and,
5. Multi-level review of raw data and client reports.

SOP - 6
HOLLOW-STEM AUGER MONITORING WELL INSTALLATION AND DEVELOPMENT

Boreholes for monitoring wells are drilled using a truck-mounted, hollow-stem auger drill rig. The borehole diameter will be a minimum of 4 inches larger than the outside diameter of the casing when installing well screen. The hollow-stem auger provides minimal interruption of drilling while permitting

soil sampling at desired intervals. Soil samples are collected by either hammering (with a 140-pound drop hammer) or hydraulically pushing a conventional split-barrel sampler containing pre-cleaned 2-inch-diameter brass tubes. A geologist or engineer from Apex Envirotech, Inc., continuously logs each borehole during drilling and constantly checks drill cuttings for indications of both the first recognizable occurrence of groundwater and volatile hydrocarbons using either a portable photoionization detector, flame ionization detector, or an explosimeter. The sampler is rinsed between samples and either steam cleaned or washed with all other drilling equipment between borings to minimize the potential for cross-contamination.

Monitoring wells are cased with threaded, factory-perforated and blank Schedule 40 PVC. The perforated interval consists of slotted casing, generally with 0.020-inch wide by 1.5-inch long slots, with 42 slots per foot. A PVC cap may be secured to the bottom of the casing with stainless steel screws; no solvents or cements are used. Centering devices may be fastened to the casing to ensure even distribution of filter material and grout within the borehole annulus. The well casing is thoroughly washed and/or steam cleaned, or may be purchased as pre-cleaned, prior to installation.

After setting the casing inside the hollow-stem auger, sand or gravel filter material is poured into the annular space to fill from boring bottom to generally 1 foot above the perforated interval. A 1- to 2-foot thick bentonite plug is set above this filter material to prevent grout from infiltrating the filter pack. Either neat cement, containing about 5 percent bentonite, or sand-cement grout is then tremmied into the annular space from the top of the bentonite plug to near surface. A traffic-rated vault is installed around each wellhead for wells located in parking lots or driveways, while steel "stovepipes" are usually set over wellheads in landscaped areas.

After installation, the wells are thoroughly developed to remove residual drilling materials from the wellbore, and to improve well performance by removing fine material from the filter pack that may pass into the well. Well development techniques used may include pumping, surging, bailing, swabbing, jetting, flushing, and air-lifting. All development water is collected either in drums or tanks for temporary storage, and properly disposed of depending on laboratory analytical results. To minimize the potential for cross-contamination between wells, all development equipment is either steam cleaned or properly washed prior to use. Following development, the well is allowed to stand undisturbed for a minimum of 24 hours before its first sampling.

SOP - 7
GROUNDWATER PURGING AND SAMPLING

Prior to water sampling, each well is purged by evacuating a minimum of three wetted well-casing volumes of groundwater. When required, purging will continue until either the discharge water temperature, conductivity, or pH stabilize, a maximum of ten wetted-casing volumes of groundwater have been recovered, or the well is bailed dry. When practical, the groundwater sample should be collected when the water level in the well recovers to at least 80 percent of its static level.

The sampling equipment consists of either a "Teflon" bailer, PVC bailer, or stainless steel bladder pump with a "Teflon" bladder. If the sampling system is dedicated to the well, then the bailer is usually "Teflon," but the bladder pump is PVC with a polypropylene bladder. In general and depending on the intended laboratory analysis, 40-milliliter glass, volatile organic analysis (VOA) vials, with "Teflon" septa, are used as sample containers.

The groundwater sample is decanted into each VOA vial in such a manner that there is no meniscus at the top of the vial. A cap is quickly secured to the top of the vial. The vial is then inverted and gently tapped to see if air bubbles are present. If none are present, the vial is labeled and refrigerated for delivery, under strict chain-of-custody, to the analytical laboratory. Label information should include a unique sample identification number, job identification number, date, time, type of analysis requested, and the sampler's name.

For quality control purposes, a duplicate water sample is collected from each well. This sample may also be analyzed or put on hold at the laboratory. When required, a trip blank, prepared at the laboratory, is placed in the transport cooler. It is labeled similar to the well samples, remains in the cooler during transport, and is analyzed by the laboratory along with the groundwater samples. In addition, a field blank may be prepared in the field when sampling equipment is not dedicated. The field blank is prepared after a pump or bailer has been either steam cleaned or properly washed, prior to use in the next well, and is analyzed along with the other samples. The field blank analysis demonstrates the effectiveness of the in-field cleaning procedures to prevent cross-contamination.

To minimize the potential for cross-contamination between wells, all well development and water sampling equipment not dedicated to a well is either steam cleaned or properly washed between use. As a secondary precautionary measure, wells are sampled in order of least to highest concentrations as established by available previous analytical data.

In the event the water samples cannot be submitted to the analytical laboratory on the same day they are collected (e.g., due to weekends or holidays), the samples are temporarily stored until the first opportunity for submittal either on water ice in a cooler, such as when in the field, or in refrigerator at Apex's office.

SOP - 12
MEASURING LIQUID LEVELS USING WATER LEVEL METER OR INTERFACE PROBE

Field equipment used for liquid-level gauging typically includes the measuring instrument (water-level meter or interface probe) and product bailer(s). The field kit also includes cleaning supplies (buckets, solution, spray bottles, and deionized water) to be used in cleaning the equipment between wells.

Prior to measurement, the instrument tip is lowered into the well until it touches bottom. Using the previously established top-of-casing or top-of-box (i.e., wellhead vault) point, the probe cord (or halyard) is marked and a measuring tape (graduated in hundredths of a foot) is used to determine the distance between the probe end and the marking on the cord. This measurement is then recorded on the liquid-level data sheet as the "Measured Total Depth" of the well.

When necessary in using the interface probe to measure liquid levels, the probe is first electrically grounded to either the metal stove pipe or another metal object nearby. When no ground is available, reproducible measurements can be obtained by clipping the ground lead to the handle of the interface probe case.

The probe tip is then lowered into the well and submerged in the groundwater. An oscillating (beeping) tone indicates the probe is in water. The probe is slowly raised until either the oscillating tone ceases or becomes a steady tone. In either case, this is the depth-to-water (DTW) indication and the DTW measurement is made accordingly. The steady tone indicates floating liquid hydrocarbons (FLH). In this case, the probe is slowly raised until the steady tone ceases. This is the depth-to-product (DTP) indication and the DTP measurement is made accordingly.

The process of lowering and raising the probe must be repeated several times to ensure accurate measurements. The DTW and DTP measurements are recorded on the liquid-level data sheet. When FLH are indicated by the probe's response, a product bailer is lowered partially through the FLH-water interface to confirm the FLH on the water surface and as further indication of the FLH thickness, particularly in cases where the FLH layer is quite thin. This measurement is recorded on the data sheet as "FLH thickness."

In order to avoid cross-contamination of wells during the liquid-level measurement process, wells are measured in the order of "clean" to "dirty" (where such information is available). In addition, all measurement equipment is cleaned with solution and thoroughly rinsed with deionized water before use, between measurements in respective wells, and at the completion of the day's use.