



June 4, 1993

Alameda County Health Care Services Agency  
Department of Environmental Health  
80 Swan Way, Suite 200  
Oakland, Ca. 94621  
Attn.: Ms. Eva Chu, Hazardous Materials Specialist

94609

Dear Ms. Chu,

Enclosed you will find the Preliminary Site Assessment workplan for the second phase of the underground storage tank removal project at Hendrick Chevrolet (formerly Val Strough Chevrolet) located at 327, 34th Street in Oakland. 94609

Per your April 30, 1993 letter, the PSA has been written in accordance with the appropriate guidelines to include the Appendix A you mentioned.

My company, Kip Prah Associates, consults for Hendrick Chevrolet and will be overseeing the project. Please feel free to contact me directly if there are any questions. If I can not answer your questions, I can ask KTW, the contractor, for the clarification that you need.

I assure you that Hendrick Chevrolet intends to take all the necessary steps to complete this project according to regulations. The dealership would appreciate your prompt review of the plan so that we may begin work as soon as possible.

Best regards,

A handwritten signature in cursive script that reads 'Terry Williamson'.

Terry Williamson  
Engineer  
KPA

June 2, 1993

Mr. Ron Tye  
Val Strough  
3330 Broadway  
Oakland, California 94611

Subject: Work Plan for Installation of Two Monitoring Wells at  
Val Strough Chevrolet, 327 34th Street, Oakland, CA

K.T.W. & Associates and Geo Plexus, Incorporated are pleased to submit the attached Work Plan and Health & Safety Plan for advancing two exploratory borings for installation of ground water monitoring wells at the subject site.

This Work Plan describes the proposed site investigation activities for a preliminary assessment of the ground water resources at the subject property. Copies of this Work Plan should be submitted to

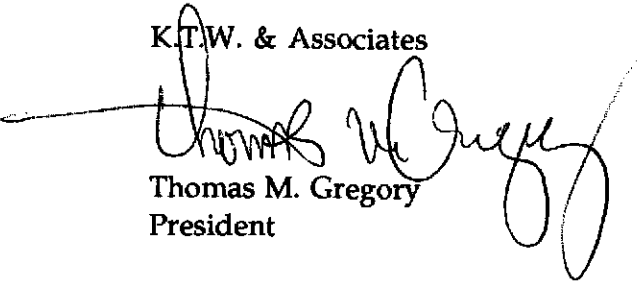
Alameda County Health Care Services  
Department of Environmental Health  
80 Swan Way, Room 200  
Oakland, CA 94621

Regional Water Quality Control Board  
San Francisco Bay Region  
2101 Webster Street, Room 500  
Oakland, CA 94612

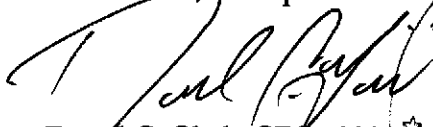
An application for Ground Water Monitoring Well Permits will need to be submitted to Alameda County Flood Control and Water Conservation District - Zone 7 for approval. Should you have questions regarding the attached Work Plan, please contact our office.

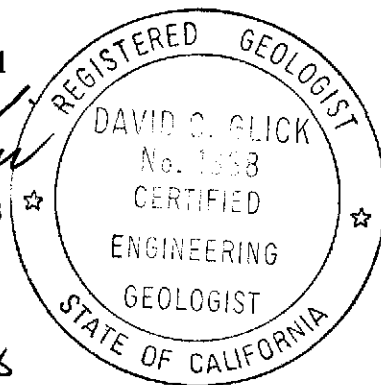
Respectfully submitted,

K.T.W. & Associates

  
Thomas M. Gregory  
President

Geo Plexus, Incorporated

  
David C. Glick, CEG 1338  
Director, Geological and  
Environmental Services



Attachments: (1) Work Plan  
(2) Health & Safety Plan

(408) ~~287-8588~~  
987-0210

Work Plan for  
Ground Water Monitoring Well Installation  
at  
Val Strough Chevrolet  
327 34th Street, Oakland, CA

INTRODUCTION

The project site is located at 327 34th Street, in the city of Oakland, Alameda County, California as indicated on Figure 1. The site is the location of an automobile dealership and service center.

It is understood that two (2) underground storage tanks were removed from the site in March, 1992<sup>3</sup> by Subsurface Environmental Corporation. The tanks reportedly included: (1) 1,000 gallon gasoline tank and (1) 550 gallon waste oil tank and were located as indicated on Figure 2.

Soil samples were reportedly obtained during the tank removal activities and submitted for analytical testing. The soil samples contained detectable concentrations of Total Petroleum Hydrocarbons as gasoline (5-120 parts per million), Total Petroleum Hydrocarbons as diesel (7-96 parts per million), and Volatile Aromatic Compounds (Toluene, Ethylbenzene, and Xylenes). Benzene and Oil and Grease compounds were not detected.

SCOPE OF WORK

The proposed scope of work includes:

- (1) installation of two open-standpipe monitoring wells;
- (2) development of the monitoring wells and collection of water samples for analytical testing;
- (3) performing analytical testing on the ground water samples; and
- (4) preparation of a report documenting the findings of the investigation and presenting the results of the analytical testing.

Details of the proposed work are described in the following sections of this Work Plan.

### GROUND WATER GRADIENT DATA

Ground water data, specifically direction of ground water flow, has been based on topographic and ground water flow in the vicinity of the project site. Based on this information, it has been determined that ground water should be encountered (stabilized) at a depth of 25-29 feet below the ground surface and should flow beneath the subject site in a southwesterly direction (subparallel to Broadway) as indicated on Figure 3.

### MONITORING WELL INSTALLATION

#### Subsurface Borings

It is anticipated that ~~two~~ subsurface exploration borings would be advanced at the project site to facilitate installation of the monitoring wells in the reported down-gradient direction. The boring would be drilled by a State of California Licensed Drilling Contractor and would be logged under the supervision of a State of California Certified Engineering Geologist.

The soil borings would be advanced using an eight-inch, nominal diameter, continuous flight hollow stem auger. Drilling equipment used for advancing the exploratory boring would be thoroughly steam cleaned before drilling begins to prevent the introduction of off-site contamination.

It is intended that the borings would be advanced a minimum of 10 feet into the saturated zone (estimated total boring depth of 35 feet) unless a low permeable material is encountered prior to achieving this depth. Should a low permeable zone be encountered prior to achieving the 10 foot depth, the screened interval of the well would be reduced such that the low permeable zone is not penetrated to protect underlying aquifers.

Soil samples would be obtained at five (5) foot intervals throughout the borings, at changes in lithology, and where obvious soil contamination exists through the use of a 2 inch I.D. split-barrel sampler advanced into the undisturbed soil by a 140 pound hammer repeatedly falling 30 inches. Sand catchers would be used as necessary to retain the samples. A split-barrel, standard penetration sampler would be used should the 2 inch sampler prove ineffective at obtaining the samples. The soil samples which indicate a potential for contamination in the field (e.g. soil discoloration, odor, PID readings, etc.) would be immediately sealed in the liners using aluminum foil and plastic caps and properly labeled including: the date, time, sample location, and project number. The samples would be placed on ice immediately for transport to the laboratory under chain-of-custody documentation.

The drilling and sampling equipment would be steam cleaned subsequent to completion of the filed activities. Soil cuttings and rinsate waters derived from the borings/cleaning would be retained in 55-gallon containers and stored on-site during the drilling pending results of the analytical testing.

#### Monitoring Well Construction

The monitoring wells would be constructed in accordance with Alameda County Monitoring Well Construction Guidelines by installing a 2-inch diameter polyvinyl chloride (PVC) flush-threaded casing and slotted pipe directly through the hollow stem auger. The slotted section of the PVC pipe installed through the saturated zone would have 0.020 inch factory perforations (see Typical Well Detail included as Figure 4). The slotted pipe would extend a minimum of two feet above the current ground water level to monitor fluctuations in the ground water level. Materials used in the well construction would be thoroughly cleaned prior to introduction into the boring.

The monitoring wells would be filter-packed with clean monterey silica sand throughout the screened interval. The filter material would be determined based on lithology encountered during drilling and would likely consist of No. 2/12 Lonestar Sand. The filter-pack material would be installed in the annular spacing between the piezometer pipe and the auger as the auger is removed and would extend a minimum of two feet above the top of the screened interval. To assure continuity and integrity of the filter material, and to prevent the bore hole from caving, no more than five foot of auger would be removed at a time.

A one foot thick layer of bentonite pellets would be placed above the filter material to provide an annular seal and the remainder of the boring would be filled with an 11-sack sand-cement slurry to within one foot of grade under direct observation of Alameda County inspection personnel. Should ground water exist in the borings/wells in excess of two feet above the bentonite seal, the cement slurry would be placed using the tremmie-method. The well casing would have a locking cap and will be enclosed inside a watertight traffic box installed in concrete flush with the surface.

#### Monitoring Well Development and Sampling

The monitoring wells would be allowed to stabilize for a minimum of 72 hours following construction prior to development activities. The initial well development would be through the use of a 1.7 inch Brainard-Kilman mechanical lift hand pump, an air-lift or nitrogen-lift pump, or a positive displacement bladder pump dependent on the depth to ground water and the screened interval. The wells would be developed until a minimum of four well volumes have been purged and the discharged water appears clear of sediment. Electrical conductivity, temperature, and pH of the ground water would be recorded throughout the development process. The well development would continue until the electrical conductivity, temperature, and pH of

the discharged water have stabilized. Depth to water measurements would be recorded prior to and following the well development activities.

The wells would be allowed to recover for a minimum of 72 hours between development and sampling activities. Free product measurements would be obtained utilizing a product/ground water interface probe or through the use of an acrylic or teflon bailer lowered into the well to obtain a surface water sample. The teflon bailer would be used to collect a surface water sample to observe the presence of hydrocarbon odors, visible sheen, or free product. Depth to water measurements would also be recorded at this time using an electronic water level probe.

Prior to sampling, a minimum of four well volumes would be purged from the wells through the use of a positive displacement bladder pump or teflon bailer. Electrical conductivity, temperature, and pH of the ground water would be recorded throughout the purging process. The purging activities would continue until the electrical conductivity, temperature, and pH of the discharged water have stabilized. Water samples for analytical testing would be obtained through the use of the bladder pump or teflon bailer. The water developed from the monitoring well would be contained on-site pending receipt of the laboratory test results.

The water samples would be collected in sterilized glass with Teflon lined screw caps. The samples would be immediately sealed in the vials and properly labeled including: the date, time, sample location, project number, and indication of any preservatives added to the sample. The samples would be placed on ice immediately for transport to the laboratory under chain-of-custody documentation. Travel blanks or duplicate field blanks are not anticipated to be carried or collected.

#### Analytical Testing

The soil and ground water samples would be submitted to and tested by a State of California, Department of Health Services certified testing laboratory. Analytical testing would be scheduled and performed in accordance with the State of California, Regional Water Quality Control Board and Alameda County Guidelines.

The soil and ground water samples would be tested for Total Petroleum Hydrocarbons as gasoline by RWQCB Method GCFID (8015/5030), Total Petroleum Hydrocarbons as diesel by RWQCB Method GCFID (3550/8015), Oil & Grease by Method 5520 B&F and Volatile Aromatics by EPA Method 8020/5030 (Modified for BTEX Distinction).

#### Report

A report documenting the findings and observations of the investigation and the results of the analytical laboratory testing would be prepared to include: the findings and boring logs for the subsurface investigation, water level recordings, analytical test data, chain-of-custody records, along with other pertinent information obtained throughout the investigative process.

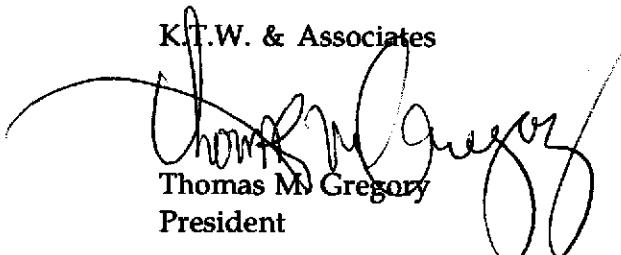
SCHEDULE

The field investigation has been tentatively scheduled to begin within two weeks following review and approval of this Work Plan by Alameda County Department of Environmental Health personnel and receipt of the well permit.

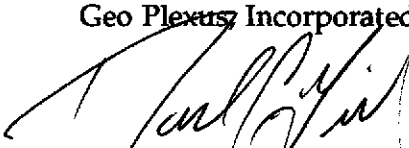
The subsurface investigation and installation of the monitoring wells are anticipated to be accomplished in one day. It is estimated that the well developed, well purging and sampling would be accomplished during the following week. Standard analytical testing turnaround time of two (2) weeks is anticipated to be used unless directed otherwise. The final report would be submitted within two weeks following receipt of the analytical test data for the ground water samples.

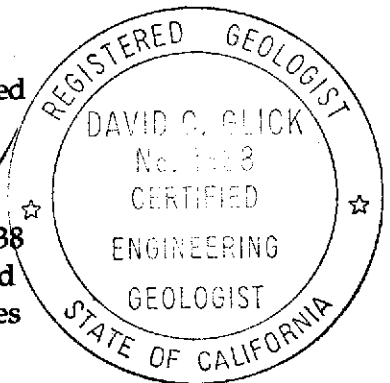
Respectfully Submitted,

K.T.W. & Associates

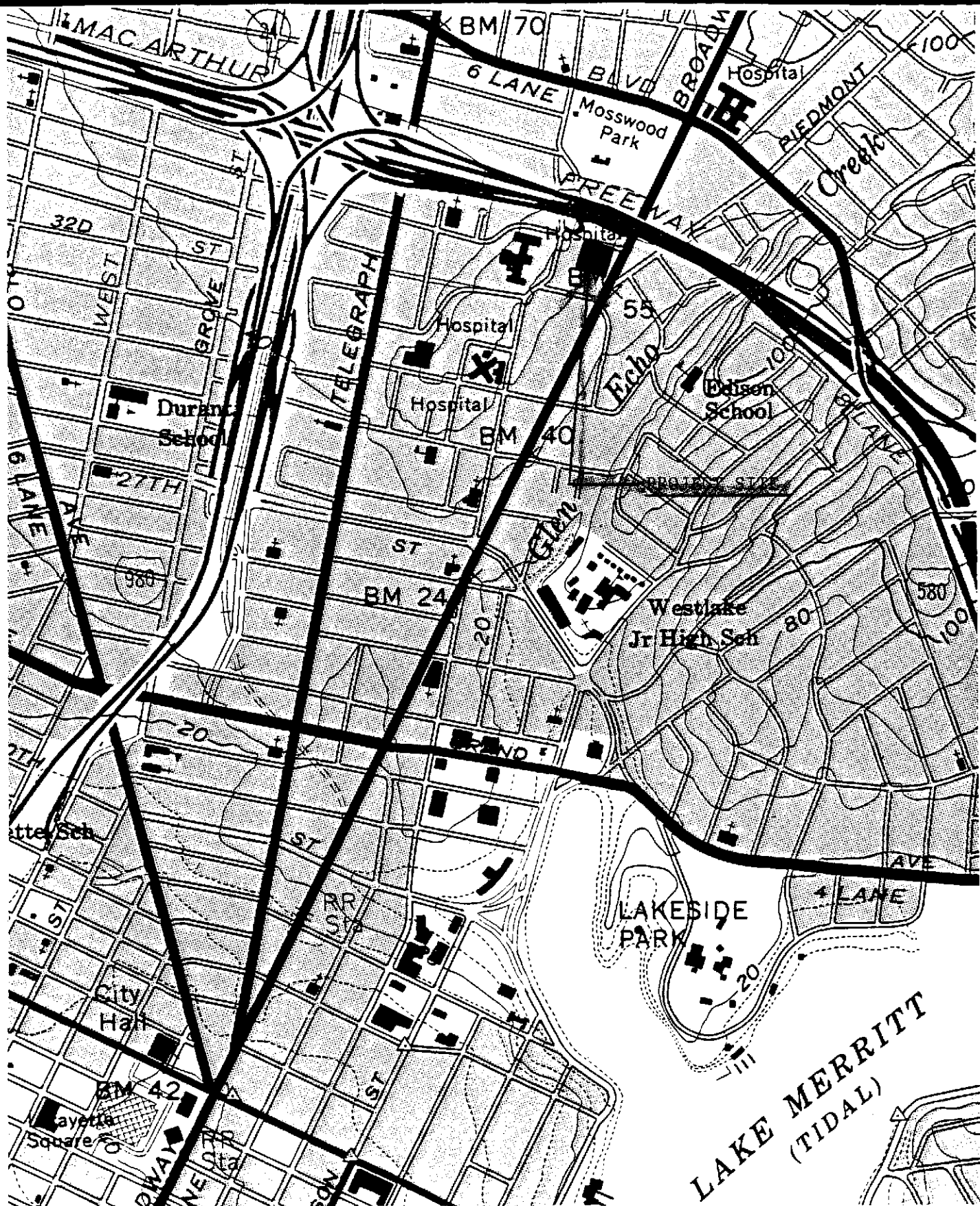
  
Thomas M. Gregory  
President

Geo Plexus Incorporated

  
David C. Glick/CEG 1338  
Director, Geological and  
Environmental Services



DCG/cls



VAL STROUGH CHEVROLET		
DATE 6-1-93	SCALE 1"=1000'	DRAWN BY dcg
VICININTY MAP		
		Figure 1



34TH STREET

FORMER  
GASOLINE TANK



FORMER WASTE OIL  
TANK



PROPOSED  
MONITORING  
WELL



PROPOSED  
MONITORING  
WELL



BROADWAY



REPORTED DIRECTION OF  
GROUND WATER FLOW  
(also see Figure 3)

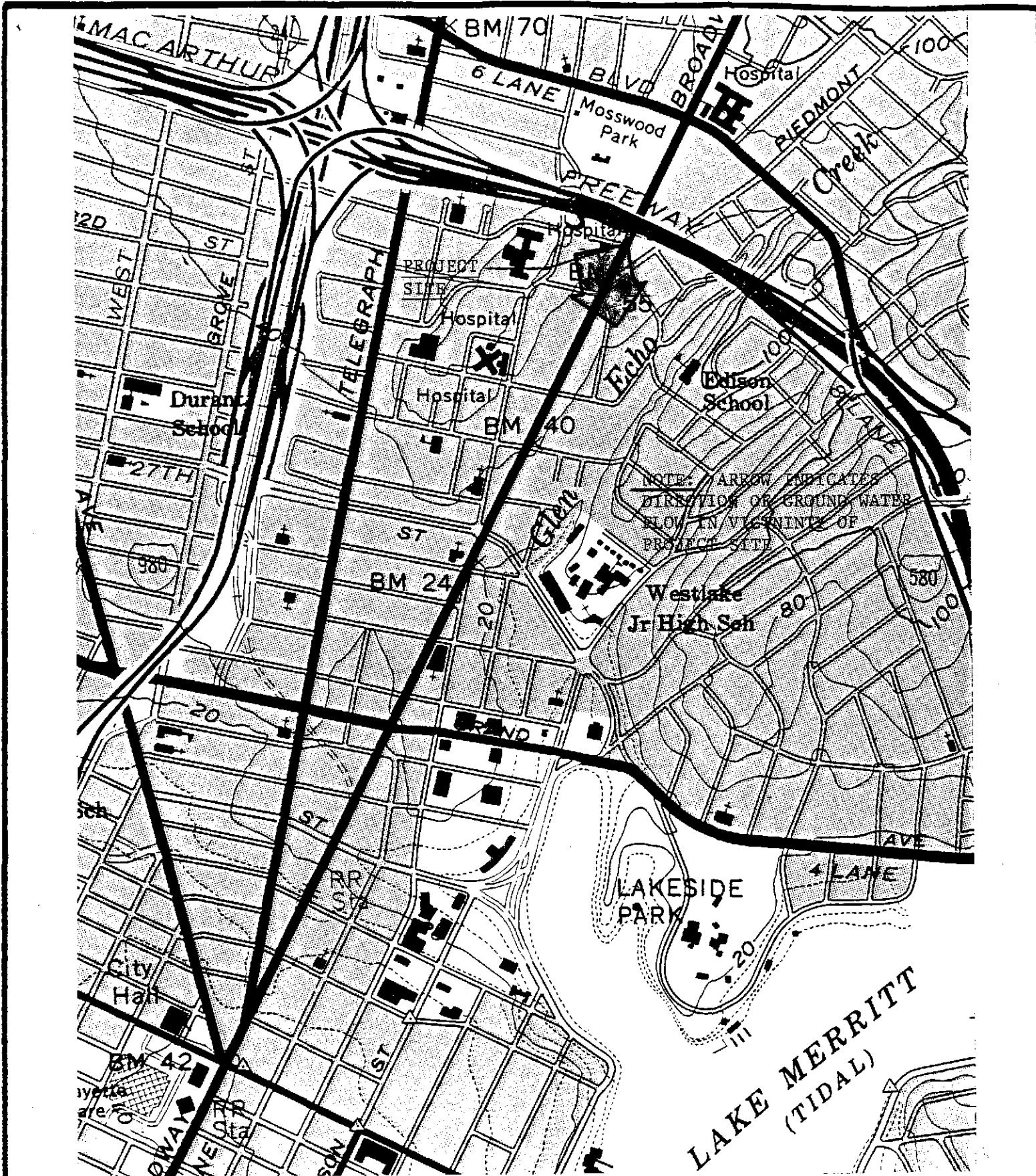
VAL STROUGH CHEVROLET

DATE  
6-1-93

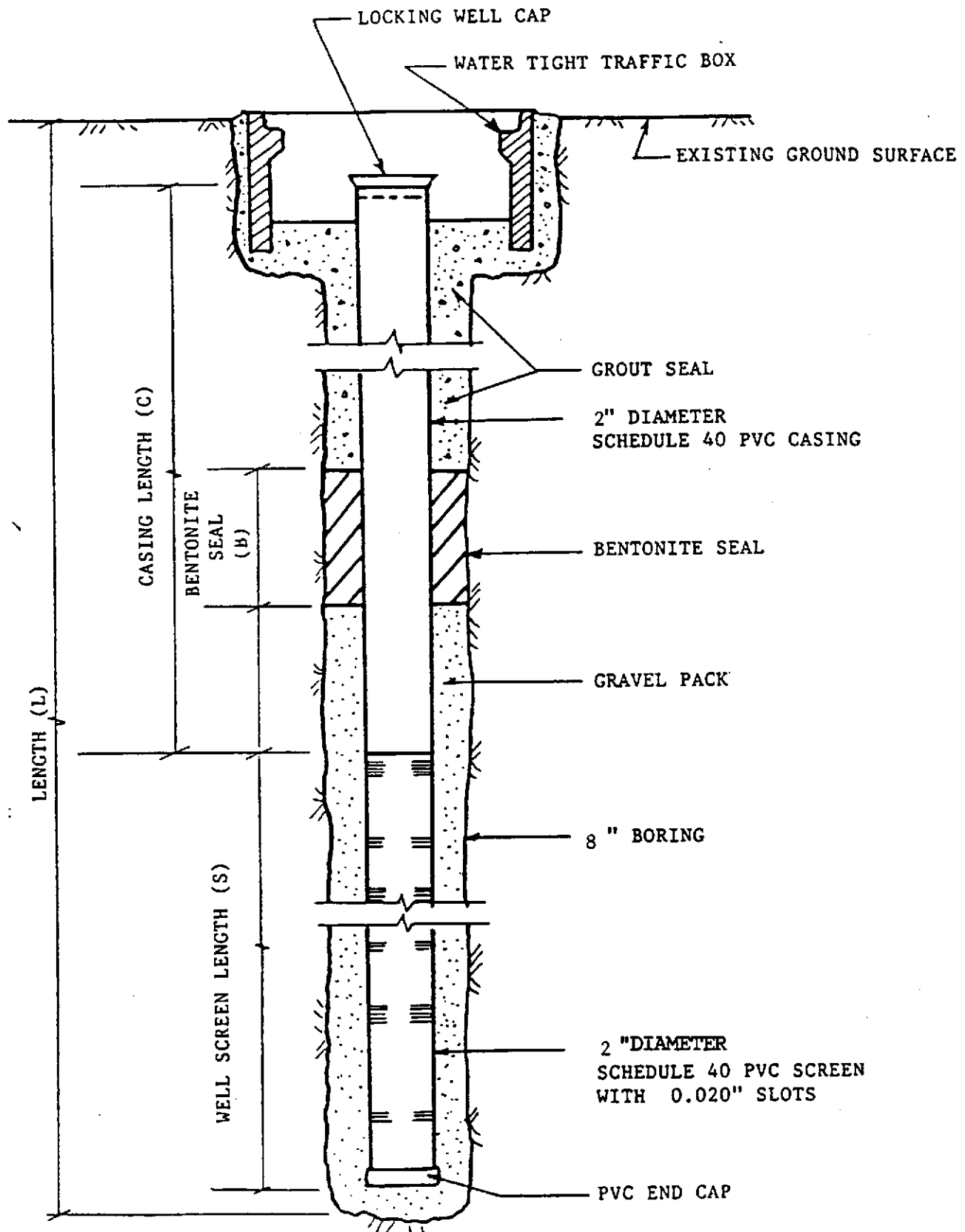
SCALE  
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dcg

PROPOSED WELL LOCATION PLAN



VAL STROUGH CHEVROLET		
DATE 6-1-93	SCALE 1"=1000'	DRAWN BY deg
GROUND WATER FLOW DIRECTION MAP		
		Figure 3



L=  
S=  
C=  
B=

TYPICAL WELL DETAIL		
DATE	SCALE	DRAWN BY
6-1-93	n/a	dcg
		Figure 4

### CORPORATE PROFILE

Geo Plexus, Incorporated (Geo Plexus) is a multi-discipline engineering geology and environmental management consulting firm providing comprehensive professional consulting services and Federal health and safety training to commercial, industrial, and government clients.

Geo Plexus provides diversified experience in engineering geology, hydrology, and environmental management services (including hazardous materials investigation, classification, and remediation services.). The Geo Plexus staff has extensive experience in performing geologic investigations, seismic hazard/risk assessments, and environmental site assessment investigations encompassing nearly all physiographic provinces of Northern California.

The Geological and Environmental Services provided by Geo Plexus include a full range of engineering geology and environmental management services including:

- Property Development Feasibility Studies
- Fault Hazard Investigations and Seismic Risk Assessments
- Preacquisition/Property Transfer Site Assessments
- Hazardous Materials Site Assessments
- Leaking Underground Storage Tank Assessments
- Soil and Ground Water Contamination Investigations
- Development and Implementation of Remedial Action Programs

## PERSONAL PROFILE

David Glick

President/CEO  
Director, Geological and Environmental Services

## REGISTRATION

Registered Geologist #4139: California  
Certified Engineering Geologist #1338: California  
Registered Environmental Assessor #01246: California

## EDUCATION

B.S., Geology, San Diego State University, 1980

## PROFESSIONAL AFFILIATIONS

Association of Engineering Geologist  
Earthquake Engineering Research Institute  
Seismological Society of America  
National Water Well Association

## PROFESSIONAL EXPERIENCE AND BACKGROUND

Mr. Glick has been responsible for the management and execution of preliminary environmental site (Phase I and II) assessments, geologic studies, and hydrogeologic investigations throughout California for the assessment of leaking surface and underground storage tanks, electroplating surface impoundment closures, and landfill investigations. Specific project requirements have included performing subsurface investigations, ground water monitoring, determination of soil properties and hydraulic characteristics, and the assessment of contaminant migration. These investigations have resulted in the evaluation of soil and ground water remediation technologies, preparation of remediation feasibility studies, and the design of site specific remedial action plans.

Mr. Glick has recently completed geologic hazard and seismic risk assessment investigations throughout the San Francisco Bay Area and San Joaquin Valley for residential and commercial developments. These investigations included extensive subsurface exploration augmented with photogeologic interpretation, geologic mapping, and soil stratigraphic analysis to define the nature and extent of faulting and to evaluate the potential hazards associated with faulting and earthquake activity.

From 1980 through 1988, Mr. Glick served as an engineering geologist for the Western Division, Naval Facilities Engineering Command and was responsible for performing geologic, geotechnical engineering, and hydrologic investigations throughout the western United States. Mr. Glick has performed environmental hazard assessment and hydrogeologic investigations for leaking underground and surface fuel tanks and hazardous materials at various Navy and Marine Corps facilities. He was responsible for the selection, negotiations, and direct management of government consultant contracts for investigation and preparation of remedial action construction contracts. His work included managing extensive geotechnical investigations and environmental evaluations for the dredging and disposal of contaminated sediments related to the Navy's west coast Homeporting projects.

REPRESENTATIVE PROJECT SUMMARY

The following is a brief list of local projects performed which were related to fuel leak/tank removal projects or compliance monitoring:

Tank Closure Monitoring  
Private Residence, Alameda, CA

Geo Plexus, Incorporated was retained to perform a preliminary site characterization investigation to investigate the potential impacts to the underlying soils and ground water resources resulting from a former underground diesel fuel storage tank. The site investigation included installation of one ground water monitoring well to assess the presence of fuel products in the soil and ground water. Site closure was obtained within 3-months following site investigation.

Tank Closure Monitoring  
Clementina Equipment Rental Site, Emeryville, CA

Geo Plexus, Incorporated has been retained to perform a preliminary site characterization investigation to investigate the potential impacts to the underlying soil and ground water resources resulting from former underground gasoline and diesel fuel storage tanks. The site investigation included installation of one ground water monitoring well to assess the presence of fuel products in the soil and ground water. Quarterly monitoring is currently being performed for site closure.

Tank Closure Monitoring  
Wilkinson Equipment Rental Site, Albany, CA

Geo Plexus, Incorporated has been retained to perform a preliminary site characterization investigation to investigate the potential impacts to the underlying soil and ground water resources resulting from former underground gasoline and diesel fuel storage tanks. The site investigation included installation of one ground water monitoring well to assess the presence of fuel products in the soil and ground water. Quarterly monitoring is currently being performed for site closure.

Post Closure Monitoring  
Good Chevrolet, Alameda, CA

Mr. Glick was retained to perform quarterly monitoring of ground water will to evaluate/monitor the potential impacts to the underlying soils and ground water resources resulting from a former underground diesel fuel storage tank.

**Tank Verification Monitoring**  
Right Away Redi Mix, Oakland, CA

Mr. Glick was retained to perform a preliminary site characterization investigation to investigate the potential impacts to the underlying soils and ground water resources resulting from an existing underground diesel fuel storage tank. The site investigation included advancing exploration borings and installation of ground water monitoring wells to assess the presence and extent of fuel products in the soils and ground water at the site.

**Tank Closure Monitoring**  
Pioneer Packing, Oakland, CA

Geo Plexus, Incorporated has been retained to perform a preliminary site characterization investigation to investigate the potential impacts to the underlying soil and ground water resources resulting from former underground gasoline and diesel fuel storage tanks. The site investigation included installation of ground water monitoring wells to assess the presence of fuel products in the soil and ground water. Quarterly monitoring is currently being performed for site closure and subsequent investigations are pending.

**Tank Removal and Remediation of Soil and Ground Water Resources**  
Select Foods, 22885 Amador Street, Hayward, CA

K.T.W. & Associates, in conjunction with David Glick, removed two underground gasoline storage tanks and 500 yards of diesel fuel contaminated soils at the site. The tank removal generated approximately 1,200 yards of gasoline contaminated soils. The diesel fuel and gasoline contaminated soils were treated on-site through enhanced aeration in combination with bioremediation/composting to reduce the concentration of hydrocarbon products in the soil to concentrations below the State action levels. The remediated soils were disposed of to local landfills.

Site characterization included advancing exploratory borings and installation of ground water monitoring wells. The remedial action plan also included an evaluation of using vapor extraction systems to remove low concentrations of hydrocarbon impacted soils which remained in the ground which were not able to be excavated. This project has been recommended for closure.





43289 Osgood Road, Fremont, Calif. 94539  
(510) 623-0480  
Cal. State Cont. Lic. # 572427

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**Health & Safety Plan  
Ground Water Monitoring Well Installation  
at  
Val Strough Chevrolet  
327 34th Street, Oakland, CA**

**INTRODUCTION**

This Health & Safety Plan (HSP) has been prepared in conjunction with K.T.W. & Associates, for the subsurface investigation work to be performed at 327 34th Street, in the city of Oakland, Alameda County, California. The site is the location of an automobile dealership and service center.

The HSP establishes safety procedures to be followed to alert field personnel and others at the investigation site to potential hazards that could be encountered while conducting the subsurface investigation work and identifies the personal protective equipment required for the specific field activities.

This HSP generally complies with Federal Health and Safety regulations (20 CFR 1910 and 1926), California Health and Safety regulations as set forth in Title 8 of the California Administrative Code, and guidance established by the California Department of Health Services. This plan is to be used by Geo Plexus, Inc. personnel as a supplement to presented regulations and guidance. Geo Plexus, Inc. personnel do not accept responsibility for subcontractor employee or property owner actions on any site.

**APPLICABLE CODES, STANDARDS, AND REGULATIONS**

California Health and Safety Code  
Title 22, California Code of Regulations  
California State Industrial Safety Orders  
29 CFR (Code of Federal Regulations)  
40 CFR (Code of Federal Regulations)  
California Leaking Underground Fuel Tank (LUST) Manual

### PERSONNEL

The field exploration work would be performed under the direction of Mr. David C. Glick, Certified Engineering Geologist. The Project Manager for this project is Mr. Mark Borch-Jensen (K. T. W. & Associates). Mr. Glick will serve as the Site Safety Officer (SSO) for the field exploration and will perform on-site inspection and monitoring during the drilling. Mr. Dave Yeager (Exploration Geoservices), or assigned driller if Mr. Yeager is not assigned to the project, will be the drilling supervisor during the field investigation and would be responsible for operating the drill rig and coordinating the drilling activities. Grouting activities will be performed under the direction and coordination of Mr. Glick.

The SSO must be on-site whenever work is being performed unless an alternate SSO, assigned during the tailgate safety meeting, has been delegated to be acting and all field personnel notified of the change in personnel responsibility. The SSO or any other employee of Geo Plexus, Inc. working within the project area is authorized to suspend work when working conditions become too hazardous and to remove from the site any employee of Geo Plexus, Inc. or subcontractor employee whose conduct endangers the health and safety of the employee or of others.

The SSO has the responsibility for performing air monitoring for compliance with this SSP and to ensure that the required work practices are employed and correcting work practices that may result in injury or potential exposure to hazardous substances.

Geo Plexus, Inc. and subcontractor personnel assigned to perform field activities covered by this plan must have active health and safety clearance statuses, which mean that during the past 12 months, they have been cleared to wear respirators perform their field assignments and have satisfied health and safety training requirements specified in 29 CFR 1910.120 (e).

Visitors to the project site would be subjected to comply with all regulations, including OSHA 29 CFR 1910.134 (Respiratory Protection) and 29 CFR 1910.120 (Hazardous Waste Operations).

### DESCRIPTION OF WORK

The work to be performed consists of advancing two (2) soil borings to a maximum of 15 feet below first ground water level, estimated depth of 35 feet below the ground surface, using an eight (8) inch, nominal diameter, continuous flight hollow stem auger and construction of two ground water monitoring wells. Soil samples would be obtained at five (5) foot intervals throughout the borings, at changes in lithology, and where obvious soil contamination exists through the use of a 2 inch I.D. split-barrel sampler advanced into the undisturbed soil by a 140 pound hammer repeatedly falling 30 inches.

Drilling and sampling equipment would be thoroughly steam cleaned before drilling begins on each boring to prevent the introduction of off-site contamination and cross contamination between borings. Sampling equipment would be cleaned in a hot water bath with a non-phosphate detergent and then rinsed in a hot water bath or steam cleaned between sample events to prevent cross contamination. Pre-cleaned stainless steel (or brass) liners would be placed in the sampler to retain the soil. The drilling and sampling equipment would be steam cleaned subsequent to completion of the field activities.

The drill cuttings and soil samples would be monitored in the field by the SSO for evidence of hydrocarbon content through the use of a portable photo-ionization detector (PID), organic vapor meter (OVM), or similar device.

The annular space between the monitoring well casing and the sidewalls of the boring will be filled with a cement slurry to within one foot of grade. Should ground water exist in the boring/well in excess of two feet above the bentonite seal, the cement slurry would be placed using the tremmie-method.

#### JOB HAZARD ANALYSIS

Site hazards identified with the subsurface exploration and well construction activities include those encountered when operating mechanical equipment along those hazards associated with Portland Cement, grout mixing equipment, and grouting processes.

Site specific hazards exist due to the physical location of the proposed borings include: overhead transmission lines, underground pipelines, vehicle traffic around the existing facility, pedestrian traffic, and potential for hazardous materials (defined below) to exist in the soils and ground water encountered by borings.

Since the investigation is located in the vicinity of former underground waste oil tanks, volatile organic compounds associated with halogenated hydrocarbon compounds, chlorinated hydrocarbon compounds and aromatic hydrocarbon compounds have the potential to be present at the site.

It is anticipated that potential chemical exposure to site personnel could exist for short periods of time (intermittent for one field day). However if a site is unknown or not fully characterized, then the potential for exposure to elevated concentrations of fuel products could occur. Therefore, a brief overview of potential hazards associated with gasoline (highest probable constituent) is presented below:

Cal-OSHA Permissible Exposure Limit (PEL): 300 ppm  
ACGIH Threshold Limit Value (TLV): 300 ppm  
ACGIH Short Term Exposure Limit (STEL): 500 ppm

### GENERAL SAFE WORK PRACTICES

Field personnel, equipment operators, and visitors to the site would be briefed each day in a "tailgate" safety meeting at which time specific daily objectives are discussed and equipment to be used on-site are identified. Potential contaminants which could be encountered during the investigation and risks from exposure and emergency procedures would also be reviewed. All personnel entering the project area (defined as 75 feet from the drill rig) would be required to sign the tailgate safety meeting form documenting their understanding of the HSP. A copy of this HSP and the Work Plan would be available at the job site at a location identified during the tailgate safety meeting.

A regulated project area shall be established as 75 feet from the drill rig. Within the project area, safety equipment shall be worn and smoking, eating, drinking, and use of tobacco products shall be prohibited. The work area defined in this plan includes 20 feet from the drill rig. The project area includes 75 feet from the drill rig. The project area would be marked with barricades and yellow "Caution" flagging to inhibit access to the area.

All field personnel working within the project area will be required to wear personal protection equipment (defined later in this safety plan) as directed by the SSO during the tailgate safety meeting or as directed by the SSO during the field investigation activities.

All personnel assigned to this project shall have been trained and fitted for use of respiratory protective equipment required for this project and any other protective equipment assigned to them.

The drilling and well installation is anticipated to be accomplished during one working day. As such, fencing or additional site control measures would not be required. Barricades would be left in-place overnight over the completed monitoring wells to allow the concrete seal to cure. Temporary fencing would be installed around the drums containing the drill cuttings and rinsate water.

### EXPOSURE MONITORING

Permissible Exposure Levels (PEL) established by the California Code of Regulations or 29 CFR 1900.1000 Standards shall be adopted for the site.

Air monitoring shall be conducted on a continuous basis to monitor ambient air conditions within the project area to detect the presence of volatile organic vapors. The monitoring would be performed through the use of a Thermo Environmental 580A Organic Vapor Meter (OVM) or Photovac Photo-Ionization Detector (PID). Samples of the soil materials derived from the borings would be visually inspected and monitored with the OVM or PID to detect emission of volatile organic vapors to detect the presence of hydrocarbon contamination (as gasoline and/or diesel).

During drilling operations, vapor emissions from the boreholes will be measured through the use of the OVM or PID as the cuttings are generated from the borehole, when the auger is extracted from the boring, and during backfilling of the boring. The vapor measurements will be made at a minimum of two zones: approximately 12 inches above ground level adjacent to the auger; and with the breathing zone of the field personnel.

Should the vapor concentrations detected at the ground level zone exceed 500 ppm (level of audible alarm) or exceed the PEL within the breathing zone, operations would be suspended, the drill rig motor shut off, and personnel would be directed to remove themselves from the immediate area of the drill rig. The OVM would be removed from the drilling area with the field personnel to continue monitoring the ambient air conditions. Re-entry into the drilling areas (20 feet from the drill rig) would be permitted upon reduced volatile concentrations (as determined by the audible alarm shutting off and a minimum 30-minute air monitoring period of readings below the PEL) or by personnel equipped with respirators equipped with appropriate organic cartridges.

Work would not resume until an assessment has been made by the SSO and appropriate procedures, which include engineering control measures (i.e. increased ventilation or air circulation, etc), each personnel wearing respirators with appropriate organic cartridges, or each individual wearing supplied air or self contained breathing apparatus equipment and the SSO authorizes continuation of work.

#### PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment to be worn by all field personnel in the work area shall consist of neoprene or butyl steel toed boots (calf-length), hard hats, hearing protection, and work gloves. During operations involving eye hazards, safety goggles or glasses shall be worn.

Should inclement weather arise during the field activities, rain gear shall be worn at the discretion of the employee. Rain gear will not be used to replace required protective gear as required by the SSO.

Protective clothing such as polyethylene coated Tyvek coveralls could be worn as an option of the employee. Uncoated Tyvek coverall may be worn withing the work area in general use.

Nitrile, butyl or neoprene gloves must be worn when handling contaminated soil or water encountered during drilling. Surgical vinyl or latex inner gloves are recommend to be worn.

NIOSH- approved respiratory protection shall be worn by personnel potentially exposed to dust during the excavation and shall consist of, a minimum, fitted half-face respirators equipped with air-purifying (particulate) cartridges.

NIOSH-approved respiratory protection shall be worn when organic vapors are determined to be present within the excavation at concentrations exceeding the PEL as indicated by the field monitoring equipment (OVM or PID). Respiratory protection shall include, as a minimum, fitted half-face air-purifying respirators equipped with organic vapor cartridges. Should concentrations exceed 2xPEL, as determined by the OVM or PID, the investigation activities shall be halted and field personnel shall be required to exit the work area. Personnel re-entering the work area shall be required to be fitted with positive pressure self-contained breathing apparatus (SCBA's). SCBA's shall be required until the concentrations diminish below 2xPEL. Atmospheres greater than 10% LEL, or less than 20% oxygen shall not be entered until the area is properly ventilated and the excavation is determined to be safe to enter by the SSO.

#### DECONTAMINATION

Decontamination of field equipment is required through steam cleaning and use of phosphate-free detergents as set forth in the work plan for the project. Field decontamination of personnel is not required except when contamination is obvious (visually, by odor, irritation, etc.). Petroleum hydrocarbon products should be removed from skin using a mild detergent and water. Hot water is more effective than cold water. The on-site steam cleaner would be a source of hot water if required. Liquid dish washing detergent is more effective than hand soap.

#### CONTINGENCY PLANS

Limited first-aid equipment (band aides, aetispectic wipes, cold packs, etc) would be available at the construction site at a location specified during the tailgate safety meeting.

A fire extinguisher will be available along with the drill rig and the location will be identified during the tailgate safety meeting.

Two gallons of deionized or distilled water will be available with the first aid equipment should water be required for flushing eyes for dislodging foreign particles or as necessary for first aid applications.

Directions to emergency phone access would be provide during the tailgate safety meeting. A portable cellular phone will be available at the project site and is located in the SSO's vehicle. Field personnel would be instructed about the location and operation of the phone during the tailgate safety meeting.

An alternate SSO would be identified during the tailgate safety meeting to function as SSO in the event the SSO becomes injured and is not capable of performing or coordination of emergency activities.

The SSO will notify the PM of any emergency conditions which encountered during the investigation. If the SSO is incapacitated or absent from the site the designated alternate SSO will perform this notification.

In the event of accident, injury, or other emergency the SSO would notify appropriate government agencies or individuals as follows:

Police, Fire, or Ambulance emergency: 911

K.T.W. & Associates: (510) 623-0480

Geo Plexus, Incorporated: (408) 987-0210

Exploration Geoservices: (408) 280-6822

Nearest Emergency Hospital:

Merritt Hospital  
Hawthorn & Webster, Oakland  
(510) 655-4000  
(see Thomas Brothers Map posted during Tailgate  
Safety Meeting)