TANK PROTECT ENGINEERING
Of Northern California

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March 6, 1990

Mr. Mohammad H. Mehdizadeh
150 Random Way
Pleasant Hill, CA 94523

Subject: Work Plan
5175 Broadway
Oakland, CA 94611

Dear Mr. Mehdizadeh

Enclosed for your review is a copy of the Work Plan for Soil and Groundwater investigation at the subjet site. This Work Plan specifies the site history and detail scope of boring and well installations and related procedures which are consistent with current RWQCB Guidelines.

This Work Plan is submitted per your quest and will be implemented by the given work schedule in this plan.

If there is any further question with regard to this Work Plan please contact our office at your convenience.

Thanks,

TANK PROTECT ENGINEERING

TPE:wpc

Enclosure

cc: Dept. of Environmental Health
RWQCB

2821 Whipple Road • Union City, California • 94587

work plan

Mohammad H. Mehdizadeh
5175 Broadway
Oakland, CA 94611

March 2, 1990

Zuhayr N. Aldine, Ph. D.
Licensed Civil and
Soil Engineer

This report has been prepared by the staff of **Tank protect Engineering** under supervision of Engineer and/or Geologist whose seal(s) and signature(s) appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the Client, after being prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either express or implied.

WORK PLAN

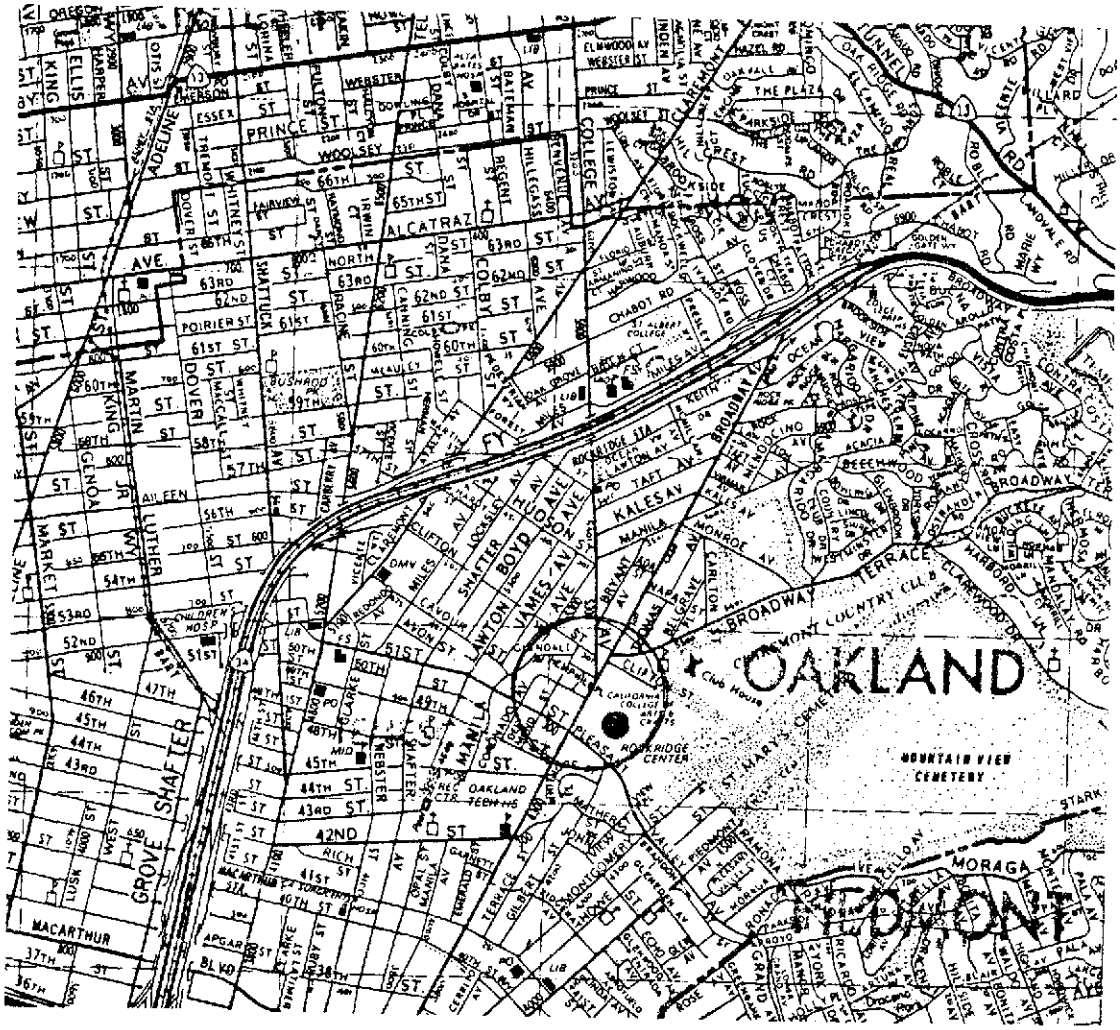
February 16, 1990

MOHAMMAD HASSAN MEHDIZADEH
5175 Broadway
Oakland, California 94611

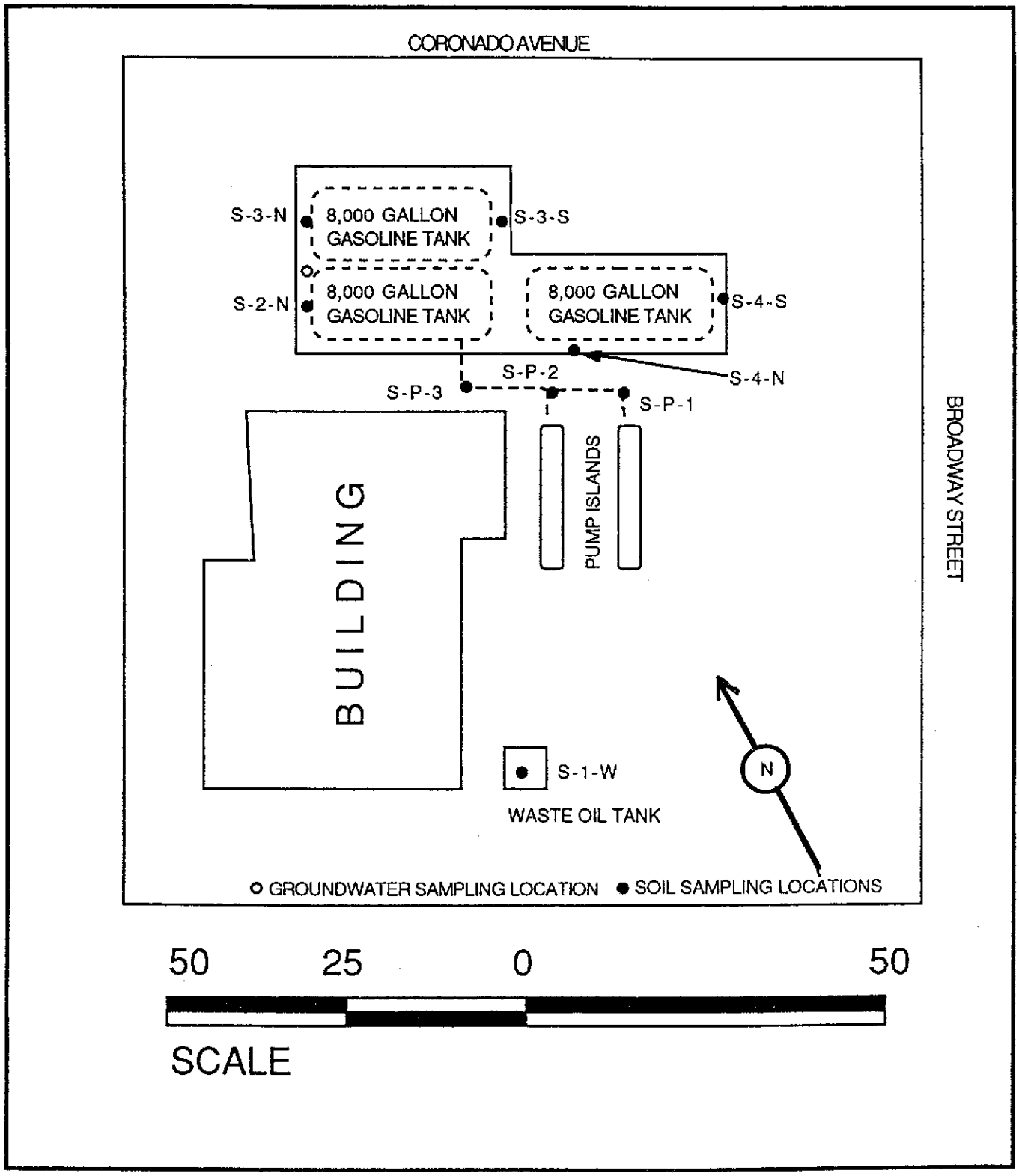
Site History

The subject property is located at the corner of Broadway and Coronado Avenue in Oakland, California (Plate 2, Site Plan). The site is inactive and managed by Mr. Mohammad Mehdizadeh. The site is vacant except four underground tanks and one building which was used as an office and also for car servicing. According to the information provided by the current site owner, he purchased the property from Exxon U.S.A. in 1979 which used the property for their service station operations. The site has been inactive since 1979.

In January, 1990, a total of four underground storage tanks (3-8,000 gallon gasoline and 1-500 gallon Waste Oil tank) were removed by the Tank Protect Engineering, Inc. **(TPE)**. During the three **gasoline** tank removal, groundwater was encountered in the tank excavation and also holes were observed in all of the three tanks. Four water samples were collected from the groundwater encountered in the tank excavation. Five soil samples were collected from the wall near the ends of each gasoline tank. Four water samples were collected from the excavation. Three soil samples were collected from under the associated pipes at every 20 lineal feet. One soil sample was collected from underneath the Waste Oil tank. No groundwater was encountered during the removal of Waste Oil Tank. All the samples were collected under the supervision of a representative of the Alameda County Health Agency (ACHA).



TANK PROTECT ENGINEERING OF NORTHERN CALIFORNIA	DRAWN BY: CHECKED BY: APPROVED BY:	SITE VICINITY MAP 5175 BROADWAY OAKLAND CALIFORNIA	PLATE 1



TANK PROTECT ENGINEERING *OF NORTHERN CALIFORNIA*	PREPARED BY: CHECKED BY: APPROVED BY:	**SITE PLAN** 5175 BROADWAY OAKLAND	PLATE 2

All the samples were analyzed by the California Department of Health Services certified analytical laboratory (Anametrix, Inc.). All the laboratory testing procedures followed San Francisco Regional Water Quality Control Board recommended and California Department of Health Services approved methods. Water sample taken from the tank excavation was found to be containing 6,900 ppb TPH as gasoline, 53 ppb benzene, and 810 ppb total xylenes. Soil sample taken from underneath the Waste Oil Tank contained non-detectable amounts of TPH as gasoline and Diesel, Oil and Grease and BTEX and trace amount of methylene chloride (1.3 ppb). Soil samples taken from the walls near the gasoline tanks were found to be containing TPH as gasoline ranging from 12 ppm to 970 ppm, non-detectable amounts of benzene and toluene, ethylbenzene ranging from non-detectable to 13 ppm, and Total Xylenes ranging from non-detectable to 15 ppm. Also one of the samples taken from underneath the associated pipes was found to be containing 34 ppm TPH as gasoline and non-detectable amounts of BTEX.

Site Characterization

This section presents **TPE**'s approach to the soil and groundwater characterization at the gasoline tank area. The initial task will include subsurface geophysics. This task will be followed by the drilling of three or more soil boring and converting them to groundwater monitoring wells.

This section describes the overall study, the analytical approach, and the field methods (geophysics, soil borings, monitoring wells, and hydrogeologic assessment) that will be used. Waste handling and decontamination procedures are discussed in Appendix F.

Geophysical assessment:

The geophysical survey will be performed to help determine whether there are any buried obstructions in the area. This will include dry wells, sewed lines, drains, sumps, and other drainage system that could provide conduits for the movement of contamination. A review of RWQCB files on

documented contaminated sites in the area of the subject site shall be conducted. Present and previous site owners and utility companies will be contacted to determine the presence of any underground objects, conduits, etc.

Soil Boring and Sampling Procedures:

The definition of the vertical and horizontal limits of the soil contamination plume as well as site geology will be achieved by the means of a subsurface investigation. The principal method of defining the subsurface conditions at a site is the use of soil boring and soil sampling.

Three soil borings will be strategically located approximately downgradient of the suspected previously leaking pipeline locations. The groundwater gradient direction across the site will be estimated from available published and unpublished information. The soil borings shall later be converted to groundwater monitoring wells as described below. In accordance with RWQCB and ACHD requirements, one well shall be located with in 10 feet of the suspected leaky pipeline locations in the downgradient direction. One well shall be conveniently located to define groundwater gradient with the help of other two wells. At least one well shall be located upgradient of the former gasoline tanks.

Each soil boring shall be drilled using an 8-inch diameter truck-mounted hollow-stem auger drill rig. Soil samples shall be taken at approximately five foot intervals. All bore holes will be logged by a qualified geologist or engineer in accordance with the QA/QC protocols outlined in Appendices A, B, and C.

Soil samples will be analyzed for TPH as gasoline using EPA Method 8015 (modified). Results of soil borings and analysis will be reported to the regulatory agencies in the Site Investigation Report or Quarterly Progress Report.

Groundwater Monitoring Well Installation:

Each of three soil borings shall be completed and converted to groundwater monitoring wells. The monitoring well design, construction, and field oversight shall be supervised by a civil engineer, geologist, or engineering geologist registered or certified in the State of California. Monitoring wells will be drilled under the direction of a drilling contractor licensed in California. Monitoring well permits will be obtained from appropriate agencies. The monitoring wells will be installed, developed, and sampled in accordance with the applicable TPE QA/QC protocols (see Appendices A through D).

Up on the completion of well installation, the elevation of the top of the PVC casing each well will be shot with respect to USGS Mean Sea Level Datum. This survey shall be performed by a TPE field engineer or geologist. Each monitoring well be developed surging, bailing, and/or pumping to remove loose materials from with in the well casing (see Appendix C).

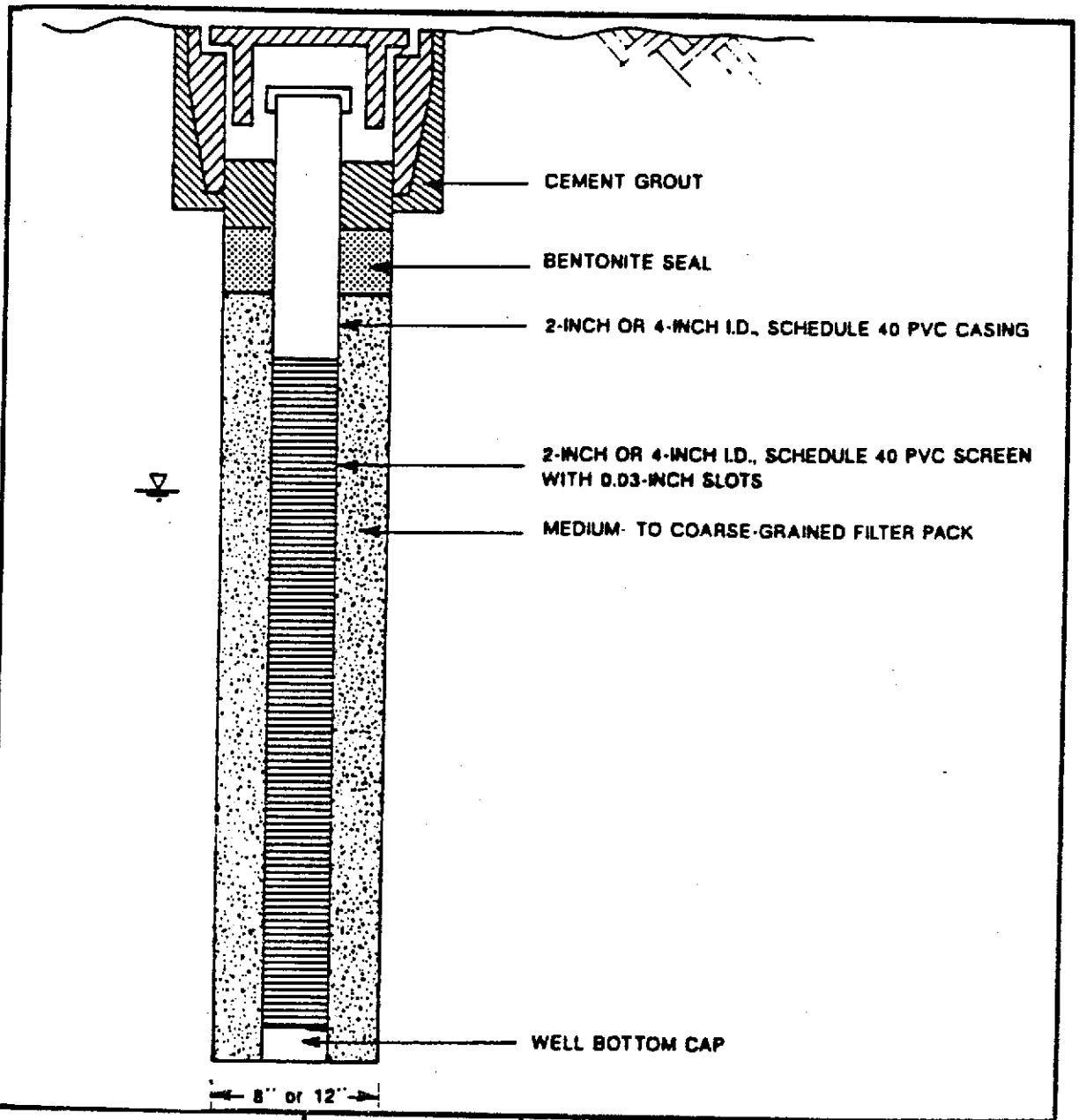
Gradient Evaluation:

The groundwater gradient at the site shall be evaluated by triangulation. The elevations of the tops of the well casing shall be measured with respect to a chosen datum. The stabilized depth of water in the wells shall then provide the groundwater elevations on the dates measured. From this information, the groundwater gradient and direction shall be evaluated.

Soil and Water Waste:

Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on-site. Waste materials anticipated include drill cuttings, development water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek.

Waste soils, drill cuttings, produced fluids, equipment rinsate, and contaminated disposal equipment shall be containerized on-site until



TANK PROTECT ENGINEERING *OF NORTHERN CALIFORNIA*	DRAWN BY: CHECKED BY: APPROVED BY: DATE: 3/3/90	PROPOSED GROUNDWATER MONITORING WELL CONSTRUCTION DIAGRAM 5175 BROADWAY OAKLAND CALIFORNIA	PLATE 3

demonstrated to be nonhazardous or proper treatment and disposal approved. Drums containing potentially contaminated soil and water shall be labeled. The on-site location for temporary storage of wastes will be determined by the current site owner(s). Waste disposal, if it is necessary, shall be responsibility of the client; TPE can assist in coordinating disposal activities as an additional work item. The cost of waste disposal and coordination will be dependent on reported concentrations, amounts and type of waste encountered. Transportation of hazardous materials off-site requires EPA manifest and removal to a class -I hazardous waste facility.

Chemical Analyses:

The soil samples shall be screened for volatile organic compounds (VOCs) with portable OVA. Selected soil samples that show elevated concentrations of volatile organics and all water samples shall be transported to a State-certified laboratory for analysis. Soil sampling and contamination characterization will be consistent with the RWQCB and ACHD requirements.

A table summarizing analytical results of the soil samples taken from each soil boring, sample depth, depth to groundwater/free product, product thickness measurements with water and well head elevations, and analytical results of the water samples will be included in the Site Investigation report and subsequent quarterly monitoring reports.

Site Investigation Report:

The information collected, analytical results and TPE's conclusions and recommendations shall be summarized in a report. The report will describe the work performed. The report shall include vicinity map, a detailed site plan, graphic boring logs, and graphic monitoring well details and other documentation to support the conclusions. TPE's conclusions regarding the extent and type(s) of contamination shall be presented within the context of the preliminary assessment. Recommendations for

feasible remedial alternatives and for supplemental sampling and analyses shall be included.

Time Schedule:

The projected schedule for implementation of the activities described in this work plan has been prepared as shown below. The schedule reflects a relatively problem-free program. However, delays in the work plan review, permitting, or laboratory analyses could lengthen the project schedule. Access difficulties and adverse weather conditions could also delay the proposed time schedule. TPE will make every effort to adhere to the project schedule.

Week 1:	Work Plan Review Application of Monitoring Well Permit
Week 2:	Work Plan Review Completed
Week 3:	Subcontracting
Week 4:	Monitoring Well Permit Granted Subcontracting Completed
Week 5:	Field Sampling Chemical Analysis
Week 6:	Chemical Analysis
Week 7:	Chemical Analysis Data Interpretation
Week 8:	Site Characterization Report Preparation
Week 9:	Report Completed

APPENDIX A

HOLLOW -STEM AUGER DRILLING AND SOIL SAMPLING

Undisturbed soil samples shall be recovered from soil borings without introducing liquids into the borings. Soil samples as core or cuttings shall be taken continuously from ground surface to termination depth, or through the aquifer zone of interest for lithologic logging.

Borings shall be drilled with a hollow-stem auger and sampled with a modified California-type split-spoon sampler. Soil samples shall be of sufficient volume to perform the analyses which may be required, including replicate analyses.

Soils from all borings shall be described in detail using the Unified Soil Classification System and shall be logged by a professional geologist, civil engineer, or engineering geologist who is registered or certified by the State of California and is experienced in the use of the Unified Soil Classification System. All wet zones above the free water zone shall be noted and accurately logged.

Soil samples shall be taken in decontaminated brass sampling tubes in the split-spoon. Sediment traps will be used to prevent unconsolidated sands and gravels from falling from the sampler during retrieval. The brass sleeves will be cut apart using a clean knife. The ends of the sleeve will be covered with a thin sheet of Teflon and plastic cap and sealed with electrical tape and properly labeled. The samples will be stored on ice at a temperature of 4 degrees Celsius.

Drill cuttings will be stored on-site in 55-gallon drums. Analytical results will be submitted immediately to the site owner for determination of appropriate disposal procedures. The soil borings not completed as wells will be backfilled with a cement-bentonite grout.

Sand Pack Installation: The sand pack will be installed so as to avoid bridging and the creation of void spaces. The Tremie pipe method will be used where installation conditions or local regulations require. Drilling mud, when used, must be thinned prior to pack placement. The sand pack shall cover the entire screened interval and rise a minimum of two feet above the highest perforation.

Bentonite Seal Placement: The bentonite seal will be placed by a method that prevents bridging. Bentonite pellets can be placed by free fall if proper sinking through annular water can be assured. Bentonite slurry will be placed by the tremie pipe method from the bottom upward. The bentonite seal should not be less than 1 foot in thickness above the sand pack.

Grout Seal Placement: The cement grout mixture shall be hydrated with clean water and thoroughly mixed prior to placement. If substantial groundwater exists in the bore hole, the grout shall be placed by tremie pipe method from the bottom upward. In a dry borehole, the grout may be surface poured. Grout will be placed in one continuous lift and will extend to the surface or to the well vault if the wellhead is completed below grade. A minimum of 5 feet of grout seal will be installed, unless impractical due to the shallow nature of the well.

Surface Completion: The wellhead will be protected from fluid entry, accidental damage, unauthorized access, and vandalism. A watertight cap shall be installed on the of the well casing. Access to the casing should be controlled by a keyed lock.

Wellheads Completed below grade will be completed in a concrete and/or steel vault, installed to drain surface runoff away from the vault opening.

Well Identification: Each well be identified by well number, owner, and type of installation. Construction data, including depth, hole and casing diameter and screened interval will be noted.

Filter Pack Material: Filter envelope materials shall be durable, waterworn, and washed clean of silt, dirt, and foreign matter. Sand size particles shall be screened silica sand. Particles shall be well rounded and graded to an appropriate size for retention of aquifer materials.

Bentonite Seal Material: Bentonite shall be pure and free of additives that may effect groundwater quality. Bentonite shall be hydrated with clean water.

Grout Seal Material: Cement grout shall consist of a proper mixture if Type I/II Portland cement, hydrated with clean water. Up to 3% bentonite may be added to the mixture to control shrinkage.

CONSTRUCTION PROCEDURES

Decontamination: All downhole tools, well casings, casing fittings, screens, and all other components that are installed in the well shall be thoroughly cleaned immediately before starting each well installation. When available, each component shall be cleaned with a high temperature, high pressure washer for minimum of five minutes. When a washer is not available, components shall be cleaned with clean water and detergent or tri-sodium phosphate, rinsed in clean water, then rinsed in distilled water.

Soil and water sampling equipment and material used to construct the wells shall not donate to, capture, mask, nor alter the chemical composition of the soils and groundwater.

Drilling Methods: Acceptable drilling methods include solid and hollow stem auger, percussion, direct circulation (mud) rotary, air circulation direct, and reverse rotary. The best alternative is that which minimizes the introduction of foreign materials or fluids. If drilling fluid is employed, drilling fluid additives shall be limited to inorganic and non-hazardous compounds. Compressed air introduced to the borehole shall be adequately filtered to remove oil and particulates.

Casing Installation: The casing will be set under tension to ensure straightness. Centralizers should be used where necessary curvature or stress to the casing.

APPENDIX B

GROUNDWATER MONITORING WELL CONSTRUCTION

BOREHOLE DESIGN

Casing Diameter: The minimum diameter of well casings shall be 2 inches (nominal). Four-inch diameter well shall be preferred.

Borehole Diameter: The diameter of the borehole shall be a minimum of 4 inches and a maximum of 12 inches greater than the diameter of the well casing.

Shallow (Unconfined) Zone Wells: When groundwater is encountered or known to be within 45 feet of the ground surface, the borehole will be advanced through the aquifer to a competent aquitard. A competent aquitard is defined as being greater than 5 feet thick. To test the competency of the aquitard, the borehole will be drilled five feet into it. Once confirmed, the excess borehole shall be sealed with bentonite, concrete, or cement. The screened interval will will begin 5 feet above the saturated zone and extend the full thickness of the aquifer or 20 feet into the saturated, whichever is reached first. The well screen will not extend into the aquitard, nor shall the screened interval exceed 25 feet in length.

If an aquitard is found to be less than 5 feet thick, it is assumed to represent a local lens. If the aquifer is greater than 20 feet thick and no competent aqutard is present, the well screen will be placed in the interval of 5 feet above and not more than 20 feet below the top of the saturated zone.

Deep (Confined) Zone Wells: Any monitoring well to be screened below the upper aquifer shall be installed as double-cased well. A steel conductor casing shall be placed through the upper water-bearing zone to prevent aquifer cross-contamination.

The conductor casing shall be installed in the following manner: a large diameter borehole (typically 18 inches) shall be drilled until it is determined that the first competent aquitard has been reached. A low

carbon steel conductor casing shall be placed in the borehole to the depth drilled. Centralizers shall be used to center the casing in the borehole. The annular space between the conductor casing and the formation shall be cement-grouted from bottom to top by tremie pipe method. The grout shall be allowed to set for a minimum of 72 hours.

Drilling may continue inside the conductor casing, with a drill bit of smaller diagram than the conductor casing. If additional known aquifers are to be fully penetrated, the procedure can be repeated with successively small diameter conductor casings.

The bottom of the well screen in a confined aquifer shall be determined by presence or lack of competent (5 foot) aquitard as described above. The screened interval in a confined zone shall extend across the entire saturated zone of the aquifer or to a length of 20 feet, which ever is less. The screened zone and filter pack shall not cross connect to another aquifer.

CONSTRUCTION MATERIALS

Casing Materials: Well casing shall be constructed of materials that have the least potential for affecting the quality of the sample. , have sufficient length, and resist rapid deterioration from corrosion. The most suitable material for a particular installation will depend upon the parameters to be monitored. Acceptable materials include PVC, stainless steel, or low carbon steel.

Casing Joints: Joints shall be connected by flush threaded couplers. Organic bonding compounds and solvents will not be used on joints.

Well Screen Slots: Well screen shall be factory slotted. The size of the slots shall be selected to allow sufficient groundwater flow to the well for sampling, minimize the passage of formation materials into the well, and ensure sufficient structural integrity to prevent the collapse of the intake structure.

Casing Bottom Plug: The bottom of the well casing will be permanently plugged, either by flush threaded screw-on or friction cap. Friction caps shall be secured with stainless steel set screws. No organic solvents or cements will be applied.

APPENDIX C

WELL DEVELOPMENT

INTRODUCTION

Newly installed groundwater monitoring wells will be developed to restore natural hydraulic conductivity of the formation, remove sediments from well casing and filter pack, stabilize the filter pack and aquifer material, and ensure turbidity-free groundwater samples.

Wells may be developed by bailing, mechanical pumping, air lift, pumping, surging, swabbing, or an effective combination of methods. Wells will be developed until the well is free of sand, silt, and turbidity.

In some cases where low permeability formations are involved or the drilling mud used fails to respond to cleanup, initial development pumping may immediately dewater the well casing and thereby inhibit development. When this occurs, clean, potable grade water may be introduced into the well, followed by surging of the introduced waters with a surge block. This operation will be followed by pumping. The procedure may be repeated as required to establish full development.

METHODOLOGY

Seal Stabilization: Cement and bentonite annular seals shall set and cure not less then 24 hours prior to well development.

Decontamination: All well development tools and equipment shall be thoroughly cleaned immediately before starting each well installation. When available, each component shall be cleaned with high temperature, high pressure washer for a minimum of five minutes. When a washer is not available, components shall be cleaned with clean water and detergent or tri-sodium phosphate, rinsed with clean water, then rinsed with distilled water.

Development equipment shall not donate to, capture, mask, nor alter the chemical composition of the soils and groundwater.

Introduction of Water: Initial development of wells in low permeability formations may dewater the casing and filter pack. When this occurs, clean, potable water can be introduced in to the well to enhance development.

Bailing: Development will begin by bailing to remove heavy sediments from the well casing. Care shall be taken to not damage the well bottom cap during lowering of the bailer.

Surging: Care shall be exercised when using surge block to avoid damaging the well screen and casing. When surging wells screened in coarse (sandy/gravelly) aquifers, the rate of surge block lifting shall be slow and constant. When surging wells screened in fine (silty) aquifers, more vigorous lifting may require. Between surging episodes, wells will be bailed to remove accumulated sediments.

Pumping: Development pumping rates shall be less than the recharge rate of the well in order to avoid de-watering.

Discharged Water Containment and Disposal: All water and sediment generated by well development shall be collected in 55-gallon steel drums. Development water will be temperorily contained onsite, pending sampling and laboratory analysis. All development water will be transported offsite by a licensed transporter to a hazardous waste disposal or treatment facility. No development water shall be released to the environment.

MEASUREMENTS

Discharged Water Parameters: During development, discharged water shall be measured for the following parameters.

Parameter	Units of Measurement
pH	Unite
Electrical Conductivity	u Ohms

Temperature	Degrees F or C
Turbidity	Nephelometric Turbidity Units (NTU's)
Depth to Water	Feet/Tenths
Volume of water discharged	Gallons

Documentation: All parameter measurements shall be documented in writing on TPE Development Logs.

APPENDIX D

GROUNDWATER SAMPLING

Groundwater samples will be obtained using either a bladder pump or a bailer, depending upon the flow rate that the well produces. Prior to sampling, sampling equipment will be thoroughly decontaminated to prevent introduction of contaminants into the well and to avoid cross-contamination. Monitoring wells will be sampled after three to five wetted casing volumes of groundwater have been evacuated and after the TPE sampling team leader determines that water representative of the formation is being obtained. The well will be purged until conductivity has been stabilized (three consecutive conductivity reading within 15% of one another). If well is emptied before four to ten well volumes are removed, the sample shall be taken when the water level in the well recovers to 80% of its initial water level or better.

After evacuation of the necessary volume of groundwater, samples will be obtained using a clear Teflon bailer. Groundwater will be transferred directly from the bailer to the sample container. The bailer will be decontaminated after each well (or separate bailer used) and the cord for raising and lowering bailer will be discarded.

TPE will also measure the thickness of any floating product in the monitoring wells using a probe. The floating product will be measured after well development but prior to the collection of groundwater samples.

Unless specifically waived or changed by the local, prevailing regulatory agency, water samples shall be handled and preserved according to the latest EPA methods as described in the Federal Register (Volume 44, No. 233, Page 69544, Table II) for the type of analysis to be performed.

APPENDIX E

SAMPLE HANDLING TECHNIQUES

Soil and groundwater samples will be packaged carefully to avoid breakage or contamination, and will be delivered to the laboratory at proper storage temperatures. The following sample packaging requirements will be followed:

* Sample bottle/sleeve lids will not be mixed. All sample lids will stay with the original containers and have custody seals affixed to them.

* Samples will be secured in coolers to maintain custody, control temperature, and prevent breakage during transportation to the laboratory.

* The original chain-of-custody form and one copy will be placed in a plastic bag and taped to the inside of the cooler lid.

* Ice will be used to keep samples at a constant temperature during transport to the laboratory.

* Each sample will be identified by affixing a pressure sensitive, gummed label, or standardized tag on the container(s). This label will contain the sample identification number, date and time of sample collection, and the collector's initials.

All sample containers will be precleaned and will be obtained at I-Chem Research in Hayward, California, or from the State Department of Health Services certified analytical laboratory.

Sample Control/Chain-of-Custody: All field personnel will refer to this work plan to verify the methods to be employed during sample collection. All sample gathering activities will be recorded in the site logbook; all sample transfers will be documented in the site logbook; all samples are to be identified with TPE labels and all sample bottles are to be custody-sealed. All information is to be recorded in waterproof ink. All

TPE field personnel are personally responsible for sample collection and the care and custody of collected samples until the samples are transferred or properly dispatched.

The custody record will be fully completed by the field technical who has been designated by the TPE project manager as being responsible for sample shipment to the appropriate laboratory. The custody record will include, among other things, the following information: name of person collecting the samples; date samples were collected; type of sampling conducted (composite/grab); location of sampling station; number and type of containers used; and signature of the TPE person relinquishing samples to a non-TPE person, with the date and time of transfer noted. The relinquishing individual will also put all the specific shipping data on the custody record.

Site log books will be maintained by a designated TPE field employee to record, for each sample, sampling locations, station numbers, dates, times, sampler's name, designation of the samples as a grab or composite, notation of the type of sample (e.g., groundwater, soil boring, etc.), preservatives used, on-site measurement data, and other observations or remarks.

APPENDIX F

WASTE HANDLING AND DECONTAMINATION

Decontamination: Any drilling, sampling, or field measurement equipment that comes into contact with soils or groundwater will be properly decontaminated prior to its use at the site and after each incident of contact with the soils or groundwater being investigated. Proper decontamination is essential to obtain samples that are representative of environmental conditions and to accurately characterize the extent of soil and groundwater contamination. Hollow-stem auger flights and the drill bit will be steam-cleaned between the sampling of each well.

All sampling equipment, including the split-tube drive sampler and brass liners, will be cleaned by washing with phosphate-free detergent, followed by sequential rinsing with tap water, and deionized water.

Waste Handling: Waste materials generated during site characterization activities be handled and stored as hazardous waste and will be stored on-site in appropriately labeled containers. Waste materials anticipated include drill cuttings, development water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek. Site owner will be responsible for providing the storage containers and will be responsible for the disposal of of the waste materials. Drill cuttings from individual borings will be stored separately in drums, and the appropriate disposal procedure procedure will be determined by the site owner or TPE following receipt of the soil sample analytical results.

APPENDIX G

QUALITY ASSURANCE AND QUALITY CONTROL

The overall objectives of the field sampling program include generation of reliable data that will support development of a remedial action plan. Sample quality will be checked by the use of proper sampling, handling, and testing methods. Additional sample quality control methods include the use of background samples, equipment rinsate samples, and trip and field blanks. Chain-of-custody forms, use of a qualified laboratory, acceptable detection limits, and proper sample preservation and holding times also provide assurance of accurate analytical data.

TPE will follow a QA/QC program in the field to ensure that all samples collected and field measurements taken are representative of actual field and environmental conditions and that data obtained are accurate and reproducible. These activities and laboratory QA/QC procedures are described below.

Field Samples: Additional samples taken in the field are used to evaluate both sampling and analytical methods. Three basic categories of QA/QC samples to be collected are trip and field blanks, duplicates, and background samples.

Sample blanks are a check for cress-contamination during sample collection, shipment, and in the laboratory. Analytically confirmed organic-free water shall be used for organic parameters and deionized water for metal parameters. Blanks will be prepared by the laboratory supplying the sample containers. The blank shall be numbered, packaged, and sealed in the same manner as the other samples.

One trip blank will be used for each sample set of less than 20 samples. At least 5% blanks will be used for sets greater than 20 samples. The trip blank is a water sample that remains with the collected samples during transportation and is analyzed along with the field samples to check for residual contamination. The trip blank is not to be opened by either the

sample collectors or the sample handlers.

The field blank is a water sample that is taken into the field and is opened and exposed at the sampling point to detect contamination from air exposure. The water sample is poured into appropriate containers to simulate actual sampling conditions. Contamination for air exposure can vary considerably from site to site.

The laboratory will not be informed about the presence of field and trip blanks and a false identifying number will be put on the label. Full documentation of these collection and decoy procedure will be made in the site logbook.

Duplicate Samples: In this QC procedure, identical sample pairs (collected in the same place and at the same time), are placed in identical containers. For soils, adjacent sample liners will be analyzed. For the purpose of data reporting, one is arbitrarily designated the sample, and the other is designated as a duplicate sample. Both sets of results are reported to give an indication of the precision of sampling and analytical methods.

The laboratory 's precision will be assessed without the laboratory's knowledge by labeling one of the duplicate with false identifying information. Data quality will be evaluated on the basis of the duplicate results.

Laboratory QA/QC: Execution of a strict QA/QC program is an essential ingredient in high-quality analytical results. By using accredited laboratory techniques and analytical procedures, estimates of the experimental values can be very close to the actual value of the environmental sample. The experimental value is monitored for its precision and accuracy by performing QC tests designed to measure the amount of random and systematic errors and to signal when correction of these errors is needed.

The QA/QC program describes methods for performing QC tests. These methods involve analyzing method blanks, calibration standards, check standards (both independent and EPA-certified standards), duplicates,

replicates, and sample spikes. Internal QC also requires adherence to written methods, procedural documentation, and recordkeeping, and the observance of good laboratory practices.

white -env.health
yellow -facility
pink -files

ALAMEDA COUNTY, DEPARTMENT OF ENVIRONMENTAL HEALTH

80 Swan Way, #200
Oakland, CA 94621
(415) 271-4320

Hazardous Materials Inspection Form

II,III

Site ID # ____ Site Name MEHDIZADEH Today's Date 1/10/90

Site Address 5175 Broadway

City Oakland Zip 94611 Phone ________

____ MAX AMT stored > 500 lbs, 55 gal., 200 cft.?

Inspection Categories:

____ I. Haz. Mat/Waste GENERATOR/TRANSPORTER
__✓_ II. Business Plans, Acute Hazardous Materials
__✓_ III. Underground Tanks

* Calif. Administration Code (CAC) or the Health & Safety Code (HS&C)

BUSINESS PLANS (Title 19)

___	1. Immediate Reporting	2703
___	2. Bus. Plan Stds.	25503(b)
___	3. RR Cars > 30 days	25503.7
___	4. Inventory Information	25504(a)
___	5. Inventory Complete	2730
___	6. Emergency Response	25504(b)
___	7. Training	25504(c)
___	8. Deficiency	25505(a)
___	9. Modification	25505(b)

ACUTELY HAZ. MAT'LS

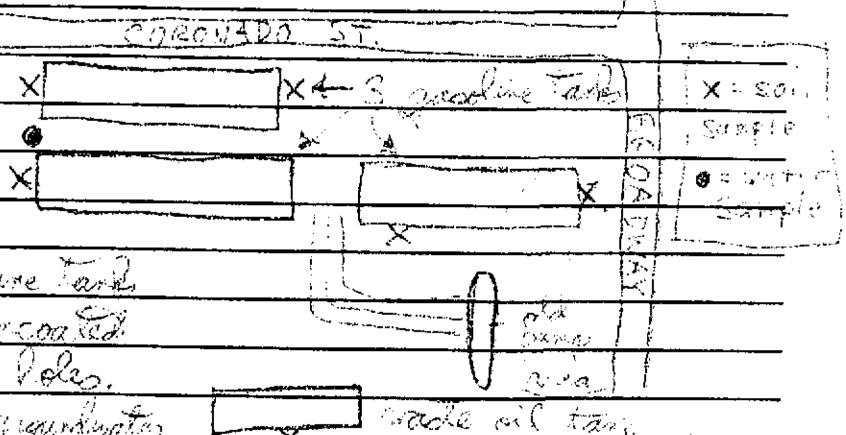
___	10. Registration Form Filed	25533(a)
___	11. Form Complete	25533(b)
___	12. RMPP Contents	25534(c)
___	13. Implement Sch. Req'd? (Y/N)	___
___	14. OffSite Conseq. Assess.	25524(c)
___	15. Probable Risk Assessment	25534(d)
___	16. Persons Responsible	25534(g)
___	17. Certification	25534(f)
___	18. Exemption Request? (Y/N)	25536(b)
___	19. Trade Secret Requested?	25538

UNDERGROUND TANKS (Title 23)

___	1. Permit Application	25284 (H&S)
___	2. Pipeline Leak Detection	25292 (H&S)
___	3. Records Maintenance	2712
___	4. Release Report	2651
___	5. Closure Plans	2670
___	6. Method	
	1) Monthly Test	
	2) Daily Vadose Semi-annual gndwater One time soils	
	3) Daily Vadose One time soils Annual tank test	
	4) Monthly Gndwater One time soils	
	5) Daily inventory Annual tank testing Cont pipe leak det Vadose/gndwater mon.	
	6) Daily inventory Annual tank testing Cont pipe leak det	
	7) Weekly Tank Gauge Annual tank tstng	
	8) Annual Tank Testing Daily inventory	
	9) Other ________	
___	7. Precis Tank Test Date: ________	2643
___	8. Inventory Rec.	2644
___	9. Soil Testing.	2646
___	10. Ground Water.	2647
___	11. Monitor Plan	2632
___	12. Access. Secure	2634
___	13. Plans Submit Date: ________	2711
___	14. As Built Date: ________	2635

Comments:

Removal of 4 tanks from old Union station that has been vacant for at least 11 years; owner purchased site from Union in 1979 at which time the site had ceased pumping gas.



All gasoline tanks are old uncoated steel with holes. Soil and groundwater (standing at about 11 feet) are obviously contaminated. Waste oil tank also has at least one hole visible on side of tank.

Soil samples and water samples taken [illegible] waste oil tank.

[illegible]

II, III

Contact: [illegible]

Title: [illegible]

Signature: ________

Inspector: [illegible]

Signature: [illegible]

TANK PROTECT ENGINEERING
Of Northern California
2821 WHIPPLE ROAD
UNION CITY, CA. 94587
PHONE #(415) 429-8088
(800) 523-8088
FAX: #(415) 429-8089

CHAIN OF CUSTODY

PROJECT NO.	SITE NAME & ADDRESS
0110701	5175 Broadway Oakland

SAMPLERS--NAME, ADDRESS AND TELEPHONE NUMBER: Marc Zomorodi 2821 Whipple Rd Union City 94587

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	VOC SCAN (624's)	OTHER	REMARKS
L1	1/10/90	4:15		✓	Bottom of Trench	40 ml vial							TPH Gasoline & BTXE
L2	1/10/90	4:16		✓	" " " "	40 ml vial		All are					" " " " "
L3	"	4:18		✓	" " " "	1 liter		The Same					" " " " "
L4	"	4:20		✓	" "	1 liter							" " " " "
S-1-W	"	4:55	✓		[illegible]	[illegible]							TPH-G, TPH-D, O&G, BTXE CL HC
S-2-N	"	5:10	✓		Tank (N)								TPH-G & BTXE
S-3-N	"	5:13	✓		wall of Tank 3 (N)								" "
S-3-S	"	5:16	✓		" " 3 (S)								" "
S-4-N	"	5:20	✓		" " 4 (N)								" "
S-4-S	"	5:25	✓		" " 4 (S)								" "

☆ Note: You may not need all samples. Only use what you need. The rest is back-up samples.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Marc Zomorodi	1/11/90 10:34	William Kafai	William Kafai	1-11-1990 13:35	[illegible signature]
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks

DATE. 1-11-90

REPORT SUMMARY
ANAMETRIX, INC. (408) 432-8192

ient : Tank Protect Engineering
dress : 2821 Whipple Road

ty : Union City, CA 94587
tn. : Marc Zomorodi

Anametrix W.O.#: 9001082
Date Received : 01/11/90
Purchase Order#: N/A
Project No. : 0110901
Date Released : 01/22/90

nametrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
RESULTS							
001082-01	L1,2,3,4	WATER	01/10/90	TPH		01/12/90	N/A
001082-02	S-1-W	SOIL	01/10/90	TPH	01/11/90	01/18/90	N/A
001082-03	S-2-N	SOIL	01/10/90	TPH		01/12/90	N/A
001082-04	S-3-N	SOIL	01/10/90	TPH		01/12/90	N/A
001082-05	S-3-S	SOIL	01/10/90	TPH		01/12/90	N/A
001082-06	S-4-N	SOIL	01/10/90	TPH		01/12/90	N/A
001082-07	S-4-S	SOIL	01/10/90	TPH		01/16/90	N/A
001082-02	S-1-W	SOIL	01/10/90	8010		01/17/90	HP15
QUALITY ASSURANCE (QA)							
5B0117H01	METHOD BLANK	SOIL	N/A	8010		01/17/90	HP15
001082-02	S-1-W	SOIL	01/10/90	SPIKE	01/11/90	01/18/90	N/A

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

ample I.D. : 0110901 L1,2,3,4
atrix : WATER
ate sampled : 01/10/90
ate anl.TPHg: 01/12/90
ate ext.TPHd: N/A
ate anl.TPHd: N/A

Anametrix I.D. : 9001082-01
Analyst : CB
Supervisor : TC
Date released : 01/22/90
Date ext. TOG : N/A
Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/l)	Amount Found (ug/l)
71-43-2	Benzene	50	53
108-88-3	Toluene	50	ND
100-41-4	Ethylbenzene	50	ND
1330-20-7	Total Xylenes	100	810
	TPH as Gasoline	2500	6900

D - Below reporting limit.
PHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

ample I.D. : 0110901 S-1-W
atrix : SOIL
ate sampled : 01/10/90
ate anl.TPHg: 01/12/90
ate ext.TPHd: 01/11/90
ate anl.TPHd: 01/18/90

Anametrix I.D. : 9001082-02
Analyst : CB
Supervisor : TC
Date released : 01/22/90
Date ext. TOG : 01/11/90
Date anl. TOG : 01/11/90

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	ND
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Gasoline	1000	ND
	TPH as Diesel	10000	ND
	Total Oil & Grease	30000	ND

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
TOG - Total Oil & Grease is determined by Standard Method 503E.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 0110901 S-2-N	Anametrix I.D.	: 9001082-03
Matrix	: SOIL	Analyst	: CB
Date sampled	: 01/10/90	Supervisor	: TC
Date anl.TPHg	: 01/12/90	Date released	: 01/22/90
Date ext.TPHd	: N/A	Date ext. TOG	: N/A
Date anl.TPHd	: N/A	Date anl. TOG	: N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5000	ND
108-88-3	Toluene	5000	ND
100-41-4	Ethylbenzene	5000	13000
1330-20-7	Total Xylenes	5000	15000
	TPH as Gasoline	100000	970000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

mple I.D. : 0110901 S-3-N
trix : SOIL
te sampled : 01/10/90
te anl.TPHg: 01/12/90
te ext.TPHd: N/A
te anl.TPHd: N/A

Anametrix I.D. : 9001082-04
Analyst : CO
Supervisor : TC
Date released : 01/22/90
Date ext. TOG : N/A
Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	1000	ND
108-88-3	Toluene	1000	ND
100-41-4	Ethylbenzene	1000	ND
1330-20-7	Total Xylenes	1000	ND
	TPH as Gasoline	20000	120000

D - Not detected at or above the practical quantitation limit for the method.
PHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
TEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D.	: 0110901 S-3-S	Anametrix I.D.	: 9001082-05
Matrix	: SOIL	Analyst	: CB
Date sampled	: 01/10/90	Supervisor	: TC
Date anl.TPHg	: 01/12/90	Date released	: 01/22/90
Date ext.TPHd	: N/A	Date ext. TOG	: N/A
Date anl.TPHd	: N/A	Date anl. TOG	: N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5000	ND
108-88-3	Toluene	5000	ND
100-41-4	Ethylbenzene	5000	ND
1330-20-7	Total Xylenes	5000	14000
	TPH as Gasoline	100000	930000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

I.D. : 0110901 S-4-N
: SOIL
ampled : 01/10/90
nl.TPHg: 01/12/90
xt.TPHd: N/A
nl.TPHd: N/A

Anametrix I.D. : 9001082-06
Analyst : CA
Supervisor : TC
Date released : 01/22/90
Date ext. TOG : N/A
Date anl. TOG : N/A

AS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
3-2	Benzene	50	ND
88-3	Toluene	50	ND
41-4	Ethylbenzene	50	ND
-20-7	Total Xylenes	50	130
	TPH as Gasoline	1000	12000

Not detected at or above the practical quantitation limit for the method.
Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 0110901 S-4-S
Matrix : SOIL
Date sampled : 01/12/90
Date anl.TPHg: 01/16/90
Date ext.TPHd: N/A
Date anl.TPHd: N/A

Anametrix I.D. : 90Q1082-07
Analyst : MK
Supervisor : TC
Date released : 01/22/90
Date ext. TOG : N/A
Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	200	ND
108-88-3	Toluene	200	ND
100-41-4	Ethylbenzene	200	ND
1330-20-7	Total Xylenes	200	800
	TPH as Gasoline	4000	55000

ND - Not detected at or above the practical quantitation limit for the method.
TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 0110901 S-1-W
Matrix : SOIL
Date sampled : 01/10/90
Date analyzed: 01/17/90
Dilution : NONE

Anametrix I.D. : 9001082-02
Analyst : ARL
Supervisor : CF
Date released : 01/22/90
Instrument ID : HP15

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1	ND
74-83-9	* Bromomethane	0.5	ND
75-71-8	* Dichlorodifluoromethane	1	ND
75-01-4	* Vinyl Chloride	0.5	ND
75-00-3	* Chloroethane	0.5	ND
75-09-2	* Methylene Chloride	0.5	ND
79-69-4	* Trichlorofluoromethane	0.5	ND
75-35-4	* 1,1-Dichloroethene	0.5	ND
75-34-3	* 1,1-Dichloroethane	0.5	ND
156-59-2	# Cis-1,2-Dichloroethene	0.5	ND
156-60-5	* Trans-1,2-Dichloroethene	0.5	ND
67-66-3	* Chloroform	0.5	ND
76-13-1	# Trichlorotrifluoroethane	0.5	ND
107-06-2	* 1,2-Dichloroethane	0.5	ND
71-55-6	* 1,1,1-Trichloroethane	0.5	ND
56-23-5	* Carbon Tetrachloride	0.5	ND
75-27-4	* Bromodichloromethane	0.5	ND
78-87-5	* 1,2-Dichloropropane	0.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	0.5	ND
79-01-6	* Trichloroethene	0.5	ND
124-48-1	* Dibromochloromethane	0.5	ND
79-00-5	* 1,1,2-Trichloroethane	0.5	ND
10061-01-5	* cis-1,3-Dichloropropene	0.5	ND
110-75-8	* 2-Chloroethylvinylether	1	ND
75-25-2	* Bromoform	0.5	ND
127-18-4	* Tetrachloroethene	0.5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	0.5	ND
108-90-7	* Chlorobenzene	0.5	ND
95-50-1	* 1,2-Dichlorobenzene	1	ND
541-73-1	* 1,3-Dichlorobenzene	1	ND
106-46-7	* 1,4-Dichlorobenzene	1	ND
	% Surrogate Recovery	33-134%	62%

ND : Not detected at or above the practical quantitation limit for the method.
* A 601/8010 approved compound (Federal Register, 10/26/84).
\# A compound added by Anametrix, Inc.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : METHOD BLANK
Matrix : SOIL
Date sampled : N/A
Date analyzed: 01/17/90
Dilution : NONE

Anametrix I.D. : 15B0117H01
Analyst : ARL
Supervisor : CL
Date released : 01/22/90
Instrument ID : HP15

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1	ND
74-83-9	* Bromomethane	0.5	ND
75-71-8	* Dichlorodifluoromethane	1	ND
75-01-4	* Vinyl Chloride	0.5	ND
75-00-3	* Chloroethane	0.5	ND
75-09-2	* Methylene Chloride	0.5	1.3
79-69-4	* Trichlorofluoromethane	0.5	ND
75-35-4	* 1,1-Dichloroethene	0.5	ND
75-34-3	* 1,1-Dichloroethane	0.5	ND
156-59-2	# Cis-1,2-Dichloroethene	0.5	ND
156-60-5	* Trans-1,2-Dichloroethene	0.5	ND
67-66-3	* Chloroform	0.5	ND
76-13-1	# Trichlorotrifluoroethane	0.5	ND
107-06-2	* 1,2-Dichloroethane	0.5	ND
71-55-6	* 1,1,1-Trichloroethane	0.5	ND
56-23-5	* Carbon Tetrachloride	0.5	ND
75-27-4	* Bromodichloromethane	0.5	ND
78-87-5	* 1,2-Dichloropropane	0.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	0.5	ND
79-01-6	* Trichloroethene	0.5	ND
124-48-1	* Dibromochloromethane	0.5	ND
79-00-5	* 1,1,2-Trichloroethane	0.5	ND
10061-01-5	* cis-1,3-Dichloropropene	0.5	ND
110-75-8	* 2-Chloroethylvinylether	1	ND
75-25-2	* Bromoform	0.5	ND
127-18-4	* Tetrachloroethene	0.5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	0.5	ND
108-90-7	* Chlorobenzene	0.5	ND
95-50-1	* 1,2-Dichlorobenzene	1	ND
541-73-1	* 1,3-Dichlorobenzene	1	ND
106-46-7	* 1,4-Dichlorobenzene	1	ND
	% Surrogate Recovery	33-134%	90%

ND : Not detected at or above the practical quantitation limit for the method.
* A 601/8010 approved compound (Federal Register, 10/26/84).
# A compound added by Anametrix, Inc.

TOTAL EXTRACTABLE HYDROCARBON MATRIX SPIKE REPORT
EPA METHOD 3510 WITH GC/FID
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 0110901 S-1-W
Matrix : SOIL
Date sampled : 01/10/90
Date extracted: 01/11/90
Date analyzed : 01/18/90

Anametrix I.D. : 9001082-02
Analyst : CB
Supervisor : TC
Date Released : 01/22/90

COMPOUND	SPIKE AMT. (UG/G)	MS (UG/G)	%REC MS	MSD (UG/G)	%REC MSD	RPD	%REC LIMITS
Diesel	83	73	88%	58	70%	23%	32-93

* Limits established by Anametrix, Inc.

TANK PROTECT ENGINEERING
Of Northern California

2821 WHIPPLE ROAD
UNION CITY, CA. 94587
PHONE #(415) 429-8088
(800) 523-8088

FAX:#(415) 4

CHAIN OF CUSTODY

PROJECT NO.

SITE NAME & ADDRESS: 5175 Broadway Oakland, CA.

SAMPLERS--NAME, ADDRESS AND TELEPHONE NUMBER: Tank Protect Engineering 2821 Whipple Rd. Union City, CA (1)

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	ANALYSES REQUESTED: TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	VOC SCAN (624's)	OTHER	TPH-G	BTEX	REMARKS
S-P-1	1-31 1990	11:30	✓		below the Pipeline	Brass sleeve							✓	✓	
S-P-2	1-31	11:36	✓		" "	"							✓	✓	
S-P-3	1-31	11:45	✓		" "	"							✓	✓	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
[signature]	1990 2-1 12:00	[signature]	[signature]	2/2 3:00	[signature]
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
			[signature]	2/3/90 12:30	
Relinquished by: (Signature) [signature]	Date/Time 2/1/90 1:45 P.M.	Received for Laboratory by: (Signature) [signature]	Date/Time	Remarks	

Tank Protect Engineering authorizes Carter Analytical Labratories for designated analysis.

Signature: [signature] DATE. 2-1-90

ANALYSIS REPORT
FOR

Tank Protect Engineering
2821 Whipple Rd.
Union City, CA 94587

CONTACT: Mr. Marc Zomorodi

DATE: 2/08/90

CHAIN OF CUSTODY ID NO: none

ORDER NO: 8977

P.O. NO: 8977

SITE DESCRIPTION: 5175 Broadway
Oakland, Ca

SAMPLE DESCRIPTION:

Three soil samples labeled S-P-1, S-P-2, S-P-3). These were identified by Carter Analytical Laboratory as L1, L2 and L3 respectively.

REQUESTED ANALYSIS:

The three samples were analyzed for BTX and E (benzene, toluene, xylenes and ethyl benzene) by EPA method 8020 and for total petroleum hydrocarbons as gasoline.

The analyses reported are considered accurate. Should you wish further support for the reported data, submit your requirements in writing within 10 days. It is Carter Analytical Labs intent to give you complete satisfaction. Please reference the order number when communicating with us. The invoice is due and payable within 30 days from invoice date.

Hazardous Materials Certification No: 304 • Drinking Water Certification No: 953
from the
State of California • Department of Health Services

CARTER ANALYTICAL LABORTORY, INC.

95 LOST LAKE LANE • CAMPBELL, CA 95008 • (408) 866-1600 • FAX (408) 866-0319

he samples were identified as follows:

arter I.D.	Customer I.D.	Date Sampled	Date Extracted	Date Analyzed	EPA Method
1	S-P-1	1/31/90	2/05/90	2/06/90	8020,TPH
2	S-P-2	1/31/90	2/05/90	2/06/90	8020,TPH
3	S-P-3	1/31/90	2/05/90	2/06/90	8020,TPH

BTEX (EPA 8020) Analysis

Samples S-P-1, S-P-2, and S-P-3 were analyzed for benzene, toluene, ethyl benzene and xylenes (BTEX) following EPA method 8020 using an Nicolet model 9630/GC gas chromatograph (GC) and for total petroleum hydrocarbons as gasoline. A 5.00 gram portion of each sample was placed into a clean, glass vial. After adding 5.00 grams of nanograde methanol to the vials, the vials were shaken for 2 minutes. The resulting mixtures were allowed to settle for 30 minutes at 4 degrees Celsius. The clear, colorless methanol extracts were pipetted out of each vial and into separate 4 ml vials. The vials were labeled and maintained at 4 degrees Celsius until the time of analysis.

A 200 microliter (ul) portion of each extract was purged along with 5 ml of distilled water for 10 minutes at a rate of 25 ml per minute in a Tekmar liquid sample concentrator. The purged gases were trapped, concentrated, and automatically desorbed onto the GC. Separation was achieved on a packed, glass column with a stationary phase of 5% SP-1200/1.75% Bentone-34 on Supelcoport. The eluted components were detected by a photo ionization detector (PID) followed by a flame ionization detector (FID). The results of this analysis are reported in parts per million (ppm) as follows.

Compound	L1 (ppm)	L2 (ppm)	Detection Limit (ppm)
benzene	< 0.05.	< 0.05	0.05.
toluene	< 0.05.	< 0.05	0.05.
ethyl benzene	< 0.05.	< 0.05	0.05.
xylenes	< 0.05.	< 0.05	0.05.
gasoline	< 5.00	< 5.00	5.00.

Compound	L3 (ppm)	Detection Limit (ppm)
benzene	< 0.05.	0.05.
toluene	< 0.05.	0.05.
ethyl benzene	< 0.05.	0.05.
xylenes	< 0.05.	0.05.
gasoline	34.00	5.00

Gasoline was found only in sample L3. Any gasoline present in samples L2 and L3 was below the detection limit. No BTE and X was detected in any of the samples.

Samples submitted for analyses must be collected within a two week period following the completion of the analyses. Any samples remaining after the designated period of time will be discarded.

Should you have any questions please call. We look forward to serving you again in the near future.

M.R. Pixton, Supervisor 02-08-90
M.R. Pixton Date