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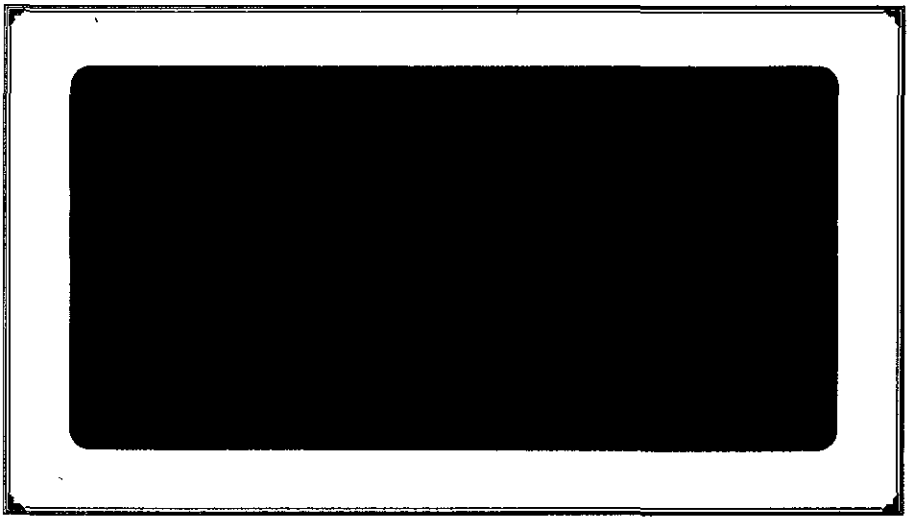

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TANK CLOSURE REPORT
AND
WORKPLAN FOR OVEREXCAVATION OF CONTAMINATED SOIL AND INSTALLATION OF GROUNDWATER MONITORING WELLS

MRS. MARY PETSAS
16035 EAST 14TH STREET
SAN LEANDRO, CA 94578

Submitted By:
TANK PROTECT ENGINEERING
Of Northern California
March 6, 1992

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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 expressed or implied.

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C. CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION
D. HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES
E. WASTE HANDLING AND DECONTAMINATION PROCEDURES
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1.0 INTRODUCTION

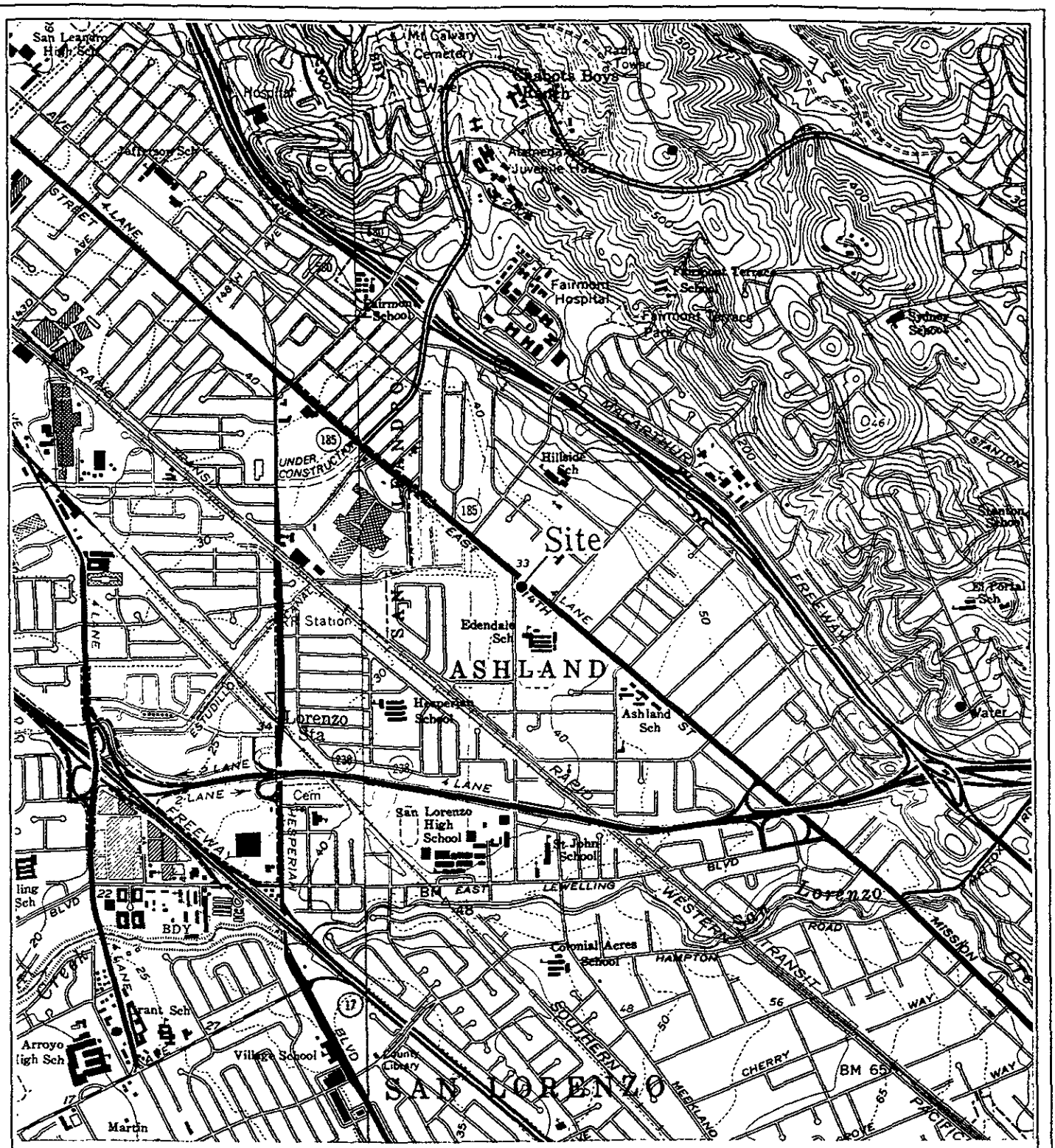
The subject site is located at 16035 East 14th Street in the City of San Leandro in Alameda County, California (see Figure 1). Chemical analyses of soil samples collected during removal of 2 underground, fuel storage tanks and 1 underground waste oil tank at the site indicate the subsurface has experienced a confirmed release of petroleum hydrocarbons that has impacted the soil and potentially the groundwater. This report documents tank closure activities; proposes a workplan to investigate and remediate the horizontal and vertical extent of contaminated vadose zone soil by excavation; recommends on-site remediation of contaminated stockpiled soil, if necessary, and either on-site reuse or disposal of excavated soil to an appropriate landfill; and proposes the installation of up to 3 groundwater monitoring wells as an initial investigation of groundwater contamination, if any.

2.0 SITE HISTORY

The subject site is owned by Mrs. Mary Petsas (Petsas) and her husband who purchased the property in 1972. The site contact person is Mrs. Mary Petsas, telephone number (510) 276-2828. According to Petsas, prior to their purchase of the property and to date, the site has been used as a used automotive sales lot. Also, since about 1975, an automotive repair business has been operating on the property. At the time of purchase of the property Petsas was not aware of the existence of the underground tanks; however, Petsas did remove 2 disconnected and inoperable dispensers from the property in about 1982. About 6 years ago Petsas learned of the waste oil tank and emptied the tank of fluids. Petsas believes the fluids in the waste oil tank originated from the operator of the automotive repair business and asked the operator to discontinue disposal of fluids into the waste oil tank.

3.0 TANK REMOVAL

On February 4, 1992 Tank Protect Engineering (TPE), under contract to Petsas, removed piping and two 1,000-gallon and one 750-gallon, steel, single-walled, underground, unleaded gasoline storage tanks and waste oil tank, respectively, from the



LEGEND

REFERENCE: USGS 7.5 MINUTE
SERIES QUADRANGLE MAPS
SAN LEANDRO AND HAYWARD, CA
PHOTOREVISED 1980

0 2,000
SCALE IN FEET

N

TANK PROTECT ENGINEERING

SITE VICINITY MAP

16035 EAST 14TH STREET
SAN LEANDRO, CA 94578

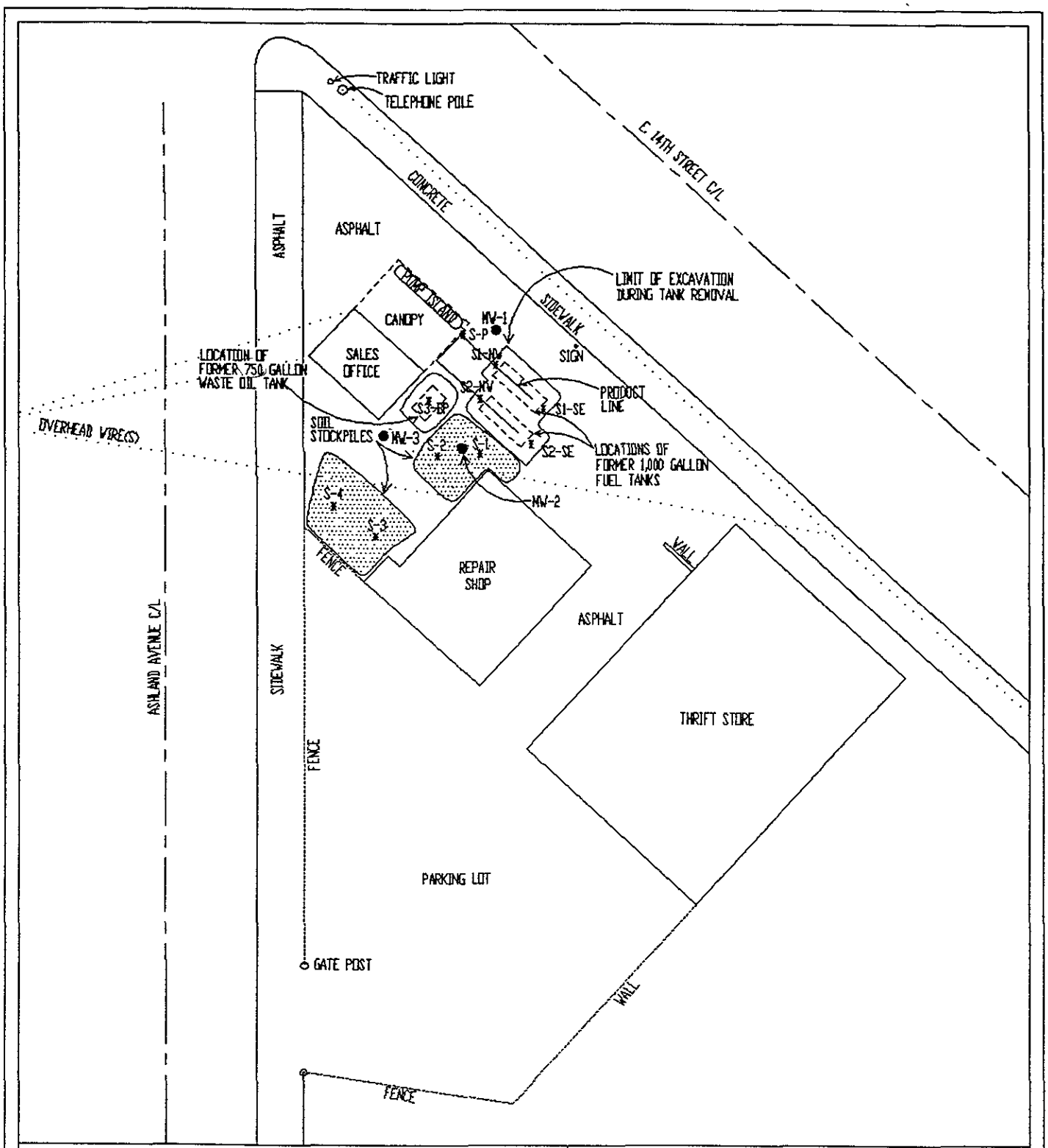
DATE	3/4/92
FIGURE	1
FILE #	218A-6
DRAWN BY	MAC
CHECKED BY	JVM

subject site. As noted in the contract, the size of the tanks were originally believed to be two 500-gallon gasoline tanks and one 500-gallon waste oil tank. The tanks were removed after receiving an acceptance of an Underground Tank Closure Plan from the Alameda County Health Care Services Agency (ACHCSA), Department of Environmental Health, Hazardous Materials Division; a Fire Permit (No. 92-122) from Eden Consolidated Fire Protection District (ECFPD), City of San Lorenzo, California; and notifying the Bay Area Air Quality Management District [BAAQMD (see Appendix A)].

Prior to tank removal activities, about 380 gallons of product and water were removed from the waste oil tank by TPE and stored on site in eight 55-gallon drums. Each tank was purged of flammable vapors by displacement with dry ice as indicated by a combustible gas indicator (Gastech model 1314). After removal, the tanks were transported off site by Erickson, Inc. as hazardous waste under Uniform Hazardous Waste Manifest, State Manifest Document Number 90792061 (see Appendix A) to Erickson, Inc. located at 255 Parr Boulevard in Richmond, California. Tank removals and subsequent soil sampling were conducted in accordance with the California Regional Water Quality Control Board (CRWQCB)-San Francisco Bay Region's "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites", dated August 10, 1990, and under the supervision of representatives of the ACHCSA and/or ECFPD.

The two 1,000-gallon tanks were removed from a common excavation (see Figure 2). About 25 cubic yards (cyd) of soil were excavated from around each tank prior to removal. About 15 cyd of soil was excavated from around the waste oil tank prior to removal. All excavated soil was stockpiled on site in 2 piles (see Figure 2) by placing the soil on top of, and covering the soil with plastic.

The soil type observed in the sidewalls and floor of the excavations was silty clay with some sandy, gravelly seams observed in the southeast wall of the fuel tanks excavation. Soil contamination, as evidenced by stains and odor, was apparent in the excavation sidewalls and floor and in the stockpiled soil. The excavation was left open and protected on 3 sides with a surrounding wire fence.



LEGEND

S1-NW ✱ NAME AND LOCATION OF SOIL SAMPLE

MW-1 ● PROPOSED NAME AND LOCATION OF GROUNDWATER MONITORING WELL

NOTE: HEIGHT OF OVERHEAD WIRES IS APPROXIMATELY 15 FEET.

N

0 30

SCALE IN FEET

TANK PROTECT ENGINEERING

SITE PLAN

16035 EAST 14TH STREET
SAN LEANDRO, CA 94578

DATE	12/18/91
FIGURE	2
FILE #	218A-2
DRAWN BY	MAC
CHECKED BY	JVM

After removal the tanks and piping were visually examined. The representative of the ACHCSA noted that holes were observed along the flanks and/or bottom of each tank and in the piping.

No groundwater was encountered in the excavation during tank removal activities but was observed to be entering the common excavation of the two 1,000-gallon tanks on February 5, 1992 while collecting soil samples.

3.1 Soil Sampling

On February 5, 1992, discrete soil samples were collected for chemical analysis from the native soil beneath each end of the gasoline tanks (S1-SE, S1-NW, S2-SE, and S2-NW), below the center of the waste oil tank (S3-BP), and beneath the piping [(S-P) see Figure 2].

The samples from the excavations were collected about 1 to 2 feet into the native soil by excavating the soil with a backhoe bucket and collecting a soil sample from the bucket in a clean 2-inch diameter by 6-inch long brass tube driven by a slide-hammer corer. After collecting each sample, the brass tube ends were covered with aluminum foil and capped with plastic end-caps which were taped to the brass tubes with duct tape. The tubes were labeled and placed in an iced-cooler for transport to California Department of Health Services (DHS) certified Trace Analysis Laboratory, Inc., (TAL) located in Hayward, California and accompanied by chain-of-custody documentation (see Appendix B for TPE's protocol relative to sample handling procedures).

A composite soil sample consisting of 4 discrete soil samples (S-1 through S-4) was collected from the stockpiled soil (see Figure 2). These samples were collected from the stockpiled soil by removing about 2 feet to 3 feet of soil from the upper surface at the sample location and collecting a sample in a brass tube driven with a slide-hammer corer into the newly exposed surface. The samples were handled as described above.

All soil samples were analyzed by TAL for total petroleum hydrocarbons as gasoline (TPHG), and for benzene, toluene, ethylbenzene, and xylenes (BTEX) by the DHS

Method and United States Environmental Protection Agency (EPA) Method 8020, respectively. Soil sample S3-BP, collected beneath the waste oil tank, was additionally analyzed for total petroleum hydrocarbons as diesel (TPHD), oil and grease (O&G), volatile organics, and selected metals by the DHS Method, Standard Method 5520, EPA Method 8010, and atomic absorption, respectively.

3.1.1 Soil Sample Analytical Results

All soil samples collected from the fuel tanks excavation detected TPHG ranging in concentration from 220 parts per million (ppm) in sample S1-SE to 880 ppm in sample S2-NW; concentrations of toluene, ethylbenzene, and xylenes were detected in all these samples, with the exception of no detectable toluene in sample S2-NW (see Table 1).

Sample S3-BP, collected beneath the waste oil tank (see Figure 2) detected TPHD and TPHG at concentrations of 950 ppm and 1,300 ppm, respectively; all BTEX chemicals were detected with xylenes having the highest concentration of 78 ppm. O&G was detected in sample S3-BP at a concentration of 54 ppm (see Table 1). No volatile organics were detected. Chromium, lead, nickel, and zinc were detected at concentrations of 35 ppm, 10 ppm, 46 ppm, and 57 ppm, respectively (see Table 2).

benzene = 3.2 ppm

Soil sample S-P, collected beneath the piping (see Figure 2), detected TPHG, at a concentration of .72 ppm.

Composite sample, S1-1,2,3,4, collected from the 2 stockpiles (see Figure 2), detected TPHG, ethylbenzene, and xylenes at concentrations of 160 ppm, .87 ppm, and 3.3 ppm, respectively.

Analytical results are summarized in Tables 1 and 2 and documented with a certified analytical report and a chain-of-custody in Appendix C.

Because of the above analytical results, an Underground Storage Tank Unauthorized Release(Leak)/Contamination Site Report was prepared for the ACHCSA (see Appendix A).

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS
FOR METALS
(ppm)

Sample ID Name	Date	Cadmium	Chromium	Lead	Nickel	Zinc
S3-BP	02/05/92	<.250	35	10	46	57

TABLE 1
SUMMARY OF SOIL ANALYTICAL RESULTS
(ppm)

Sample ID Name	Date	Depth (feet)	TPHD	TPHG	Benzene	Toluene	Ethyl-Benzene	Xylenes	Oil & Grease
S1-SE	02/05/92	08.5	[1]NA	220	<.048	.19	1.9	1.1	NA
S2-SE	02/05/92	08.5	NA	330	<.048	.39	1.8	3.6	NA
S1-NW	02/05/92	08.5	NA	660	<.048	.59	9.1	33	NA
S2-NW	02/05/92	08.5	NA	880	<.24	<.66	17	55	NA
S3-BP[2]	02/05/92	08.5	950	1,300	3.2	39	14	78	54
S-P	02/05/92	1.5	NA	.72	<.005	<.0066	<.005	<.03	NA
S1-1, 2, 3, 4	02/05/92	---	NA	160	<.048	<.13	.87	3.3	NA

W.O. Tank

[1] NA = NOT ANALYZED

[2] ALSO ANALYZED FOR VOLATILE ORGANICS BY EPA METHOD 8010; NO CHEMICALS WERE DETECTED.

4.0 PROPOSED REMEDIAL INVESTIGATION AND REMEDIATION OF CONTAMINATED SOIL AND INSTALLATION OF GROUNDWATER MONITORING WELLS

Because soil samples collected at the time of tank removal detected TPHG at concentrations up to 880 ppm and 1,300 ppm in native soil in the fuel tanks excavation and waste oil tank excavation, respectively, Petsas contracted with TPE to conduct overexcavation of contaminated soil in the sidewalls and floors of the excavations to investigate and remediate vadose zone soil contamination and to install up to 3 groundwater monitoring wells to investigate groundwater contamination, if any, as a result of the fuel leaks.

After completing overexcavation, TPE proposes to remediate the stockpiled soil, if necessary, by aeration and/or chemical oxidation and reuse the soil to backfill the excavation (with regulator approval) or dispose of the soil at an appropriate landfill.

4.1 Proposed Scope of Work

As an investigation and remediation of vadose zone soil contamination, and an investigation of groundwater contamination, TPE proposes the following scope of work:

- Conduct a subsurface utility survey to minimize the potential of encountering unexpected utilities and to assist in selecting locations for installing up to 3 groundwater monitoring wells.

- Excavate contaminated soil from the sidewalls and floors of the underground tank excavations to the depth of groundwater or about 12 feet, whichever occurs first.

- After excavating contaminated soil in the above task, collect verification soil samples from the floors and/or sidewalls of the excavations for chemical analysis for TPHG and BTEX in the fuel tanks excavation and additionally for TPHD and O&G in the waste oil tank excavation.

- Remediate the stockpiled soil on site, if appropriate, and collect verification soil samples to characterize the effectiveness of remediation.

- Dispose of the excavated soil to an appropriate landfill or reuse the soil on site for excavation closure (with regulator approval).

- Backfill the excavation with remediated soil and/or clean imported fill.

- Conduct a file review at the CRWQCB to investigate the potential for any documented, off-site contamination to be impacting the subject site and to investigate vicinity and site groundwater flow direction.

- Drill up to 3 soil borings to investigate the horizontal and vertical extent of vadose zone soil contamination and for conversion into groundwater monitoring wells.

- Collect soil samples from each soil boring at approximately 5-foot depth intervals for construction of a boring log and for selection for chemical analysis.

- Analyze vadose zone soil samples from the soil borings for TPHD, TPHG, and BTEX.

- Convert up to 3 borings into groundwater monitoring wells.

- Develop, purge, and sample groundwater from each monitoring well for chemical analysis.

- Analyze up to 3 groundwater samples for TPHD, TPHG, and BTEX.

- If 3 groundwater monitoring wells are installed, survey top-of-casings (TOC) to the nearest .01 foot above Mean Sea Level (MSL).

- If 3 groundwater monitoring wells are installed, construct a potentiometric map showing direction and gradient of groundwater flow.

- Prepare a Preliminary Site Assessment Report.

Details of the proposed scope of work are presented below.

4.1.1 Prefield Activities

Prior to beginning overexcavation activities TPE will notify the BAAQMD and will contract with subsurface locators and conduct an Underground Service Alert location request to minimize the potential of encountering any buried utilities or underground objects during overexcavation.

4.1.2 Overexcavation of Contaminated Soil

TPE proposes to conduct horizontal excavation of contaminated vadose zone soil to a distance of about 2 feet to 15 feet outward from the present position of the sidewalls and vertical excavation to the depth of groundwater or about 12 feet, whichever occurs first. Overexcavation will not be conducted to the extent of endangering buildings, sidewalk areas, utilities, or any other structures or objects. If, after excavating to the above limits, soil contamination is still present in the walls of the excavation and appears to be widespread horizontally, TPE may advise the client to conduct soil borings as a second phase of remedial investigation to assess other remedial options such as vapor extraction.

The extent of overexcavation will be based on the presence of apparent soil contamination as evidenced by visible hydrocarbon stains and odors and by field screening, by head-space analysis, of excavated floor and/or sidewall soil samples for volatile organic compounds using a Gastech Inc. Trace-Techtor.

4.1.3 Verification Soil Sampling

When the horizontal and vertical extent of contaminated vadose zone soil has been reached, based on the above parameters, or the horizontal and vertical limits discussed

above have been reached, verification soil samples will be collected for chemical analysis. As a minimum, soil samples will be collected at about 15-foot intervals both horizontally and vertically or at a depth of about 1 foot above the groundwater surface if groundwater is present at a depth less than 15 feet. Additional soil samples may be collected where contaminated soil may be suspected and in permeable materials that may act as conduits for contaminant transport. Additional excavation may be recommended if all contaminated soil has not been removed, based on results of chemical analyses.

Soil samples will be collected from the floor and/or sidewalls of the excavation by removing about 1 foot of soil to expose a fresh surface and driving a 2-inch diameter by 6-inch long brass tube into the newly exposed surface with a slide-hammer corer. The samples may also be collected by excavating soil with the bucket of a backhoe and collecting a sample in a brass tube from soil in the bucket. After collecting each sample, the brass tube ends will be quickly covered with aluminum foil and capped with plastic end-caps taped to the brass tubes with duct tape. The tubes will be labeled and placed in an iced-cooler for transport to a DHS certified laboratory accompanied by chain-of-custody documentation (see Appendix B for TPE's protocol relative to sample handling procedures).

4.1.3.1 Chemical Analyses

All verification soil samples are proposed to be analyzed for TPHG and BTEX by the DHS Method and EPA Method 8020, respectively. Verification soil samples collected from the waste oil tank overexcavation are proposed to be additionally analyzed for TPHD and O&G by the DHS Method and Standard Method 5520, respectively; at least 1 sample will be analyzed for semi-volatile organics by EPA Method 8270.

4.1.4 Remediation of Stockpiled Soil

Based on concentrations of contaminants and volume of soil excavated, TPE may recommend to the client either disposal of contaminated soil at an appropriate landfill

or on-site treatment of contaminated soil followed by disposal at an appropriate landfill or on-site reuse of the soil with regulator approval.

If stockpiled soil is remediated on site, TPE may recommend treatment by aeration and/or chemical oxidation of the hydrocarbons. Treatment by chemical oxidation will consist of spreading the contaminated soil on a sheet of polyethylene plastic to prevent cross-contamination to the underlying ground surface. The chemical oxidizer will be applied until the soil is moist; no runoff of oxidizer will be allowed. The soil will be turned to expose all surfaces. Aeration and/or chemical oxidation will only be conducted with the approval of the ACHCSA and after notifying the BAAQMD.

After treatment, 1 discrete verification soil sample will be collected for each 20 cyd to confirm an appropriate cleanup level for on-site reuse. If greater than 200 cyd of soil is stockpiled for remediation, TPE may ask the ACHCSA to approve a statistical soil sampling plan to reduce the number and cost of verification soil samples needed to verify soil cleanup. Cleanup levels of less than 10 ppm for TPHG and non-detectable BTEX are recommended by TPE for on-site reuse of remediated soil. If excavated soil is disposed of at a landfill, the cleanup level and number of soil samples for characterization will be determined by the landfill guidelines. yes

4.1.5 Excavation Closure

After overexcavation is completed, TPE will backfill and seal the excavation. Backfill material will consist of the excavated, remediated soil and/or imported clean fill. The fill will be placed in the excavation in 2-foot to 3-foot compacted lifts to final grade.

4.1.6 Predrilling Activities

A representative of TPE will review CRWQCB files to investigate if any documented contaminated sites exist in the area of the subject site. This information may be useful in estimating groundwater depth (if not encountered during overexcavation activities) and gradient beneath the site which will assist TPE in optimally locating up

to 3 groundwater monitoring wells and may indicate if the subject site may be potentially contaminated by upgradient contaminant sources.

If groundwater gradient is believed to be known for the subject site based on nearby contaminant sites found during the file review, TPE will recommend, and with regulator concurrence, install only 1 groundwater monitoring well.

Before commencing drilling activities TPE will obtain well installation permits from the Alameda County Flood Control and Water Conservation District, Water Resources Management Zone 7 and visit the site to select the proposed soil boring locations.

4.1.7 Soil Boring and Sampling Procedures

The vertical and horizontal limits of soil contamination, if any, will be investigated while drilling up to 3 soil borings for the construction of groundwater monitoring wells. The locations of 3 proposed soil borings/monitoring wells are tentatively shown in Figure 2. These locations are estimated to place at least 1 well within 10 feet and in the verified downgradient direction of the former underground tank locations according to recommendations in the CRWQCB's "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites", dated August 10, 1990. These locations are subject to change based on information obtained during the file review discussed above in section 4.1.6 Predrilling Activities.

The exploratory borings for the monitoring wells will be drilled by a State of California licensed water well driller (C-57 Water Well Driller contractor's license) using 8-inch diameter, hollow-stem, auger drilling equipment. The augers will be steam-cleaned before drilling each boring to prevent cross-contamination between borings or the introduction of off-site contamination for the initial boring. Representative soil samples will be collected for chemical analyses in the vadose zone at approximately 5-foot depth intervals below the ground surface by advancing a California split-spoon sampler, equipped with 2-inch diameter by 6-inch long brass tubes, into the undisturbed soil beyond the tip of the augers. The sampling equipment will be cleaned before each sampling event by washing with a trisodium phosphate

solution and rinsing in distilled water. Samples collected for chemical analysis from above the water table will be preserved in the tubes by quickly covering the open ends with aluminum foil capped with plastic end caps taped to the tubes with duct tape. The tubes will be labeled and stored on ice for transport to a State-certified laboratory accompanied by chain-of-custody documentation.

A detailed boring log will be prepared from auger return material and split-spoon samples. The soil will be logged according to the Unified Soil Classification System under the supervision of a California Registered Geologist.

Drill cuttings will be stored on site, contained in plastic or 55-gallon steel drums. The stored cuttings will be labeled to show contents, date stored, suspected contamination, expected date of removal, company name, contact, and telephone number. Disposal of the cuttings is the responsibility of the client. After the cuttings are characterized by chemical analysis, TPE will provide recommendations to the client and, upon their request, assist them in remediation, or disposal of the cuttings, or both in an appropriate manner as an additional work item.

See Appendices D and E for TPE's protocols relative to hollow-stem auger drilling and soil sampling procedures and waste handling and decontamination procedures.

4.1.7.1 Chemical Analyses

Soil samples collected from soil borings for chemical analysis are proposed to be analyzed for TPHG and BTEX by the DHS Method and EPA Method 8020, respectively.

4.2 Groundwater Investigation

The following discussion proposes groundwater monitoring well construction, development, and sampling procedures; and chemical analyses. Appendices F, G, and H document TPE's protocols relative to groundwater monitoring well construction, development, and sampling procedures.

4.2.1 Groundwater Monitoring Well Installation

Based on an estimated depth of 15 feet to groundwater, exploratory borings for up to 3 groundwater monitoring wells are proposed to be drilled to depths of about 25 feet. Each boring will be converted to a monitoring well by installing 2-inch diameter, flush-threaded, schedule 40, polyvinyl chloride (PVC) casing and 0.010-inch machine-slotted screen. Slot size is based on the aquifer material being a silty clay as observed during tank removal activities. The exact depth of each boring and screen length will be determined by the geologic profile and occurrence of groundwater in the boring at each location. The screen is proposed to extend about 5-feet above and about 10-feet below the water table surface. The length of screen below the water table surface may be less than 10 feet if an aquiclude/aquitard is encountered. A sand pack of #2/16 filter sand will be placed in the annular space from the bottom of the boring to a maximum of 2 feet above the top of the screened interval. Approximately 2 feet of bentonite will be placed above the sand pack followed by a sand-cement slurry or concrete surface seal. A traffic rated, bolt-locked, vault box will be set in concrete to protect the well. A locking well cap with lock will be installed on each well casing. If 3 wells are installed, the elevation of the TOC for each well will be surveyed with respect to MSL datum by a professional civil engineer or licensed land surveyor (this information is necessary for construction of a groundwater gradient map).

4.2.2 Groundwater Monitoring Well Development

The newly installed groundwater monitoring well(s) will be developed a minimum of 48 hours after well construction is completed. Before development, depth to water will be measured from the TOC to the nearest 0.01 foot using an electronic Solinst water level meter. A minimum of 3 repetitive measurements will be made for each level determination to ensure accuracy. Each well will be checked for floating product using a dedicated polyethylene bailer. If floating product is present, the thickness of product in the bailer will be measured and recorded to the nearest .05 inch.

The wells will be developed by using a 1.7", positive displacement, PVC hand pump or by bailing with dedicated polyethylene bailers until the well is free of sand, silt, and turbidity or no further improvement is apparent.

If free product is present in any well(s) after development, TPE will advise Petsas to commence free product removal.

Development water will be stored on site in 55-gallon steel drums properly labeled to show contents, date filled, suspected contaminant, company name, contact, and telephone number. Disposal of the drummed water is the responsibility of the client. After the water is characterized by chemical analysis, TPE will provide recommendations to the client and, upon their request, assist them in remediation, or disposal of the fluids, or both in an appropriate manner as an additional work item.

4.2.3 Groundwater Sampling

After a minimum of 48 hours after well development, depth to stabilized water will be measured and recorded as discussed above under section 4.2.2 Groundwater Monitoring Well Development and the well(s) will be sampled.

Prior to sampling, the well(s) will be purged a minimum of 3 wetted well volumes with dedicated polyethylene bailers. Temperature, pH, and electrical conductivity will be monitored and purging will continue until they are stabilized. Since dedicated bailers will be used for each well sampled, no decontamination will be necessary between sampling events. After purging is completed, turbidity will be measured and the water samples will be collected in sterilized glass vials with teflon lined screw caps, immediately sealed in the vials, and labeled to include: date, time, sample location, project number, and sampler. The samples will be immediately stored on ice for transport to a DHS certified laboratory accompanied by chain-of-custody documentation. See Appendices E and I for waste handling and decontamination procedures, and quality assurance and quality control procedures (QA/QC).

Purge water will be stored on site in 55-gallon drums. After the drummed water is characterized by chemical analysis, TPE will provide recommendations to the client and, upon their request, assist them in remediation or disposal of the fluids, or both in an appropriate manner as an additional work item.

4.2.3.1 Chemical Analyses

Water samples will be analyzed for TPHD and TPHG by the DHS Method, and for BTEX by EPA Method 8020.

4.3 Groundwater Gradient Evaluation

The groundwater gradient will be evaluated by triangulation if 3 wells are installed under the subject workplan. The stabilized depth to water in the wells, when subtracted from their respective TOC, will provide the groundwater elevations on the dates measured. From this information, the groundwater gradient and flow direction will be evaluated.

4.4 Preliminary Site Assessment Report

The information collected, analytical results, and TPE's conclusions and recommendations will be summarized in a report. The report will describe the work performed and include: copies of all permits required to complete the work, an area map, a detailed site plan showing limits of overexcavation, locations of verification soil samples and installed monitoring well(s), graphic boring log(s), graphic monitoring well construction detail(s), geologic cross section(s), a groundwater gradient map (if 3 wells are constructed), results of chemical analyses, and other documentation to support the conclusions. Conclusions regarding the extent and type(s) of contamination will be presented within the context of this workplan. Recommendations for feasible remedial alternatives and/or supplemental sampling and analyses will be included.

5.0 SITE SAFETY PLAN

A Site Safety Plan for conducting work under this workplan is included in Appendix J.

6.0 TIME SCHEDULE

The projected time schedule for implementation of the activities described in this workplan is presented below. The schedule reflects a relatively problem-free program. However, delays in the workplan review, permitting, or laboratory analyses could lengthen the project schedule. Access difficulties, adverse weather, and regulator review could also delay the proposed time schedule. TPE will make every effort to adhere to the project schedule.

Week 1: Client Submits Report/Workplan for Regulator Approval.

Week 3: Regulator Approval Received.

Week 4: Subcontracting, Conduct Underground Utility Survey.

Week 5: Conduct Overexcavation and Chemical Analyses of Verification Soil Sampling.

Week 6: Chemical Analyses.

Week 7: Remediate and/or Dispose of Stockpiled Soil.

Week 8: Collect Samples from Stockpiled Soil and Conduct Chemical Analyses.

Week 9: Close Excavation and Conduct File Review.

Week 10: Install 3 Groundwater Monitoring Wells and Submit Soil and Groundwater Samples for Chemical Analyses.

Week 11: Receive Chemical Analyses, Interpret Data and Write a Preliminary Site Assessment Report.

Week 13: Submit a Preliminary Site Assessment Report to Client.

APPENDIX A

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY, DEPARTMENT OF ENVIRONMENTAL HEALTH, HAZARDOUS MATERIALS DIVISION UNDERGROUND TANK CLOSURE PLAN; CITY OF SAN LORENZO, EDEN CONSOLIDATED FIRE PROTECTION DISTRICT FIRE PERMIT; BAY AREA AIR QUALITY MANAGEMENT DISTRICT NOTIFICATION FORM; UNIFORM HAZARDOUS WASTE MANIFEST; AND UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE(LEAK)/CONTAMINATION SITE REPORT

Project Specialist (print) Scott Seery

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
PHONE NO. 415/271-4320

ACCEPTED
DEPARTMENT OF ENVIRONMENTAL HEALTH
470 - 27th Street, Third Floor
Oakland, CA 94612
Telephone: (415) 874-7237

SCS 12/30/91

These plans have been reviewed and found to be acceptable and essentially meet the requirements of State and local health laws. Changes to your plans indicated by this Department are to assure compliance with State and local laws. The project proposed herein is now released for issuance of any required building permits for construction.

One copy of these accepted plans must be on the job and available to all contractors and craftsmen involved with the removal.

Any change or alterations of these plans and specifications must be submitted to this Department and to the Fire and Building Inspection Department to determine if such changes meet the requirements of State and local laws. Notify this Department at least 48 hours prior to the following required inspections:

_____ Removal of Tank and Piping

_____ Sampling

_____ Final Insoection

Issuance of a permit to operate is dependent on compliance with accepted plans and all applicable laws and regulations.

THERE IS A FINANCIAL PENALTY FOR NOT OBTAINING THESE INSPECTIONS.

UNDERGROUND TANK CLOSURE PLAN

*** * * Complete according to attached instructions * * ***

1. Business Name _____

   Business Owner MARY PETSAS

2. Site Address 16035 EAST 14TH

   City SAN LEANDRO CA Zip 94578 Phone (510) 276-2828

3. Mailing Address 16518 TOLEDO STREET

   City SAN LEANDRO, CA Zip 94578 Phone (510) 276-2828

4. Land Owner MARY PETSAS

   Address _____ City, State _____ Zip _____

5. Generator name under which tank will be manifested _____

   MARY PETSAS

   EPA I.D. No. under which tank will be manifested CAC000702440

rev 12/90

EDEN CONSOLIDATED
FIRE PROTECTION DISTRICT

427 PASEO GRANDE • SAN LORENZO, CALIFORNIA 94580
(415) 670-5853

FIRE PERMIT

NO: 92-122
ISSUE DATE: 1-22-92
EXPIRATION DATE: 2-22-92

NAME OF BUSINESS
Tank Protect Engineering

BUSINESS ADDRESS
2821 Whipple Rd. Union City, Ca 94587

THE BUSINESS (AND ITS LOCATION, LISTED ABOVE) PURSUANT TO THE PROVISIONS OF THE ALAMEDA COUNTY FIRE CODE, HAVING MADE APPLICATION IN DUE FORM AND BEING IN COMPLIANCE WITH APPLICABLE CODES AND ORDINANCES, IS HEREBY GRANTED PERMISSION FOR THE FOLLOWING TYPES OF OPERATIONS:

Removal of Three (3) underground storage tanks from the property located at

16035 E. 14th Street, San Leandro, Ca

500 Gal. tanks 2- Gasoline 1- Waste Oil

UPON ACCEPTANCE OF THIS PERMIT, THE PERMITTEE AGREES TO COMPLY WITH ALL ORDINANCE PROVISIONS NOW ADOPTED OR THAT MAY BE HEREAFTER ADOPTED.

THIS PERMIT MUST BE KEPT ON THE PREMISES AT ALL TIMES

FIRE PREVENTION BUREAU

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET
SAN FRANCISCO, CALIFORNIA 94109
(415) 771-6000

REGULATION 8, RULE 40
Aeration of Contaminanted Soil and Removal of Underground Storage Tanks

NOTIFICATION FORM

- [x] Removal or Replacement of Tanks
- [ ] Excavation of Contaminated Soil

R. Lew

SITE INFORMATION

SITE ADDRESS 16035 East 14th
CITY, STATE, ZIP San Leandro, CA, 94578
OWNER NAME MARY PETSAS
SPECIFIC LOCATION OF PROJECT

TANK REMOVAL

SCHEDULED STARTUP DATE 2/8/92

VAPORS REMOVED BY:

- [ ] WATER WASH
- [x] VAPOR FREEING (CO^2)
- [ ] VENTILATION

CONTAMINATED SOIL EXCAVATION

SCHEDULED STARTUP DATE
STOCKPILES WILL BE COVERED? YES ____ NO ____
ALTERNATIVE METHOD OF AERATION (DESCRIBE BELOW):

(MAY REQUIRE PERMIT)

CONTRACTOR INFORMATION

NAME Tank Protect Engineering CONTACT Lyle Travis
ADDRESS 2821 Whipple Rd. PHONE (510) 429-8088
CITY, STATE, ZIP Union City, CA, 94587

CONSULTANT INFORMATION
(IF APPLICABLE)

NAME CONTACT
ADDRESS PHONE ( )
CITY, STATE, ZIP

FOR OFFICE USE ONLY

DATE RECEIVED 1/22/92 BY Blg (INIT.)
CC: INSPECTOR NO. 553 DATE 1/22/92 BY Blg (INIT.)
TELEPHONE UPDATE: CALLER CHANGE MADE
BAAQMD N #

3/89

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-91)
Please print or type. *Form designed for use on elite (12-pitch typewriter).*

77678

See Instructions on Back of Page 6 and Front of Page 7

77678

Department of Health Servic
Toxic Substances Control Divis
Sacramento, Califor

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
CAC000702410	90792061		

3. Generator's Name and Mailing Address
MARY PETSAS 16518 Toledo Street
SAN LEANDRO CALIFORNIA 94578

4. Generator's Phone 510 276-2828

A. State Manifest Document Number: 90792061
B. State Generator's ID:

5. Transporter 1 Company Name: Erickson, Inc.
6. US EPA ID Number: CAD009466392
C. State Transporter's ID: 205166
D. Transporter's Phone: (510) 235-1393

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
Erickson, Inc.
255 Parr Blvd.
Richmond, Ca. 94801
10. US EPA ID Number: CAD009466392
G. State Facility's ID: CAD009466392
H. Facility's Phone: (510) 235-1393

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Waste Empty Storage Tank NON-RCRA Hazardous Waste Solid	003	TP	25100	P	State 512 EPA/Other NONE
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
Qty: 3 Empty Storage Tank (s) #8045, 8046, 8047
___, ___, ___ Tank (s) have been inerted with 15 lbs.
Dry Ice per 1000 Gal. Capacity:
ERICKSON #77678

K. Handling Codes for Wastes Listed Above
a. D1 b. c. d.

15. Special Handling Instructions and Additional Information
Keep away from sources of ignition. Always wear hardhats when working around U.S.T.'s 24 Hr. Contact Name MARY PETSAS & Phone (510) 276-2828

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

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

GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
MARY PETSAS	Mary Petsas	02	04	92

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Rodney G Prowell	Rodney G Prowell	02	04	92

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

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

Printed/Typed Name	Signature	Month	Day	Year
Donald H. Rossow	Donald H. Rossow	02	05	92

Do Not Write Below This Line

DHS 8022 A
EPA 8700—22
(Rev. 6-89) Previous editions are obsolete.

White. TSDF SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

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

90792061

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

REPORT DATE: 02/24/92 (M M D D Y Y)

CASE #:

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I HAVE DISTRIBUTED THIS INFORMATION ACCORDING TO THE DISTRIBUTION SHOWN ON THE INSTRUCTION SHEET ON THE BACK PAGE OF THIS FORM.
SIGNED _____ DATE _____

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: Marc Zomorodi
PHONE: (510) 429-8088
SIGNATURE: Marc Zomorodi
REPRESENTING ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER _____
COMPANY OR AGENCY NAME: Tank Protect Engineering of Northern California
ADDRESS: 2821 Whipple Road (STREET) Union City, (CITY) CA (STATE) 94587 (ZIP)

RESPONSIBLE PARTY

NAME: ☐ UNKNOWN
CONTACT PERSON: Mary Petsas
PHONE: (510) 276-2828
ADDRESS: 16518 Toledo Street (STREET) San Leandro, (CITY) CA (STATE) 94578 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE):
OPERATOR:
PHONE: ( )
ADDRESS: 16035 East 14th (STREET) San Leandro, (CITY) Alameda (COUNTY) 94578 (ZIP)
CROSS STREET:

IMPLEMENTING AGENCIES

LOCAL AGENCY / AGENCY NAME: Alameda County Health Care Services Agency
CONTACT PERSON: Scott Seery
PHONE: (415) 271-4320
REGIONAL BOARD: CRWQCB - S.F. Bay Region
PHONE: ( )

SUBSTANCES INVOLVED

(1) NAME: Petroleum hydrocarbons - see below — QUANTITY LOST (GALLONS): _____ ☐ UNKNOWN
(2) _____ ☐ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 02/04/92 (M M D D Y Y)
HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER _____
DATE DISCHARGE BEGAN: (M M D D Y Y) ☐ UNKNOWN
HAS DISCHARGE BEEN STOPPED? ☐ YES ☐ NO IF YES, DATE (M M D D Y Y)
METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY)
☐ REMOVE CONTENTS ☒ CLOSE TANK & REMOVE ☐ REPAIR PIPING
☐ REPAIR TANK ☐ CLOSE TANK & FILL IN PLACE ☐ CHANGE PROCEDURE
☐ REPLACE TANK ☐ OTHER _____

SOURCE/CAUSE

SOURCE OF DISCHARGE: ☐ TANK LEAK ☒ UNKNOWN ☐ PIPING LEAK ☐ OTHER
CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ SPILL ☐ CORROSION ☐ UNKNOWN ☐ OTHER _____

CASE TYPE

CHECK ONE ONLY
☒ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS

CHECK ONE ONLY
☒ NO ACTION TAKEN ☐ PRELIMINARY SITE ASSESSMENT WORKPLAN SUBMITTED ☐ POLLUTION CHARACTERIZATION
☐ LEAK BEING CONFIRMED ☐ PRELIMINARY SITE ASSESSMENT UNDERWAY ☐ POST CLEANUP MONITORING IN PROGRESS
☐ REMEDIATION PLAN ☐ CASE CLOSED (CLEANUP COMPLETED OR UNNECESSARY) ☐ CLEANUP UNDERWAY

REMEDIAL ACTION

CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
☐ CAP SITE (CD) ☐ EXCAVATE & DISPOSE (ED) ☐ REMOVE FREE PRODUCT (FP) ☐ ENHANCED BIO DEGRADATION (IT)
☐ CONTAINMENT BARRIER (CB) ☐ EXCAVATE & TREAT (ET) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ REPLACE SUPPLY (RS)
☐ VACUUM EXTRACT (VE) ☐ NO ACTION REQUIRED (NA) ☐ TREATMENT AT HOOKUP (HU) ☐ VENT SOIL (VS)
☐ OTHER (OT) _____

COMMENTS

Two 1,000 - gallon gasoline and one 550 - gallon waste oil, underground, storage tanks were removed.

APPENDIX B

SAMPLE HANDLING PROCEDURES

APPENDIX B

SAMPLE HANDLING PROCEDURES

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.

- A chain-of-custody form will be completed for all samples and accompany the sample cooler to the laboratory.

- Ice, blue ice, or dry ice (dry ice will be used for preserving soil samples collected for the Alameda County Water District) 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 site identification, sample identification number, date and time of sample collection, and the collector's initials.

All groundwater sample containers will be precleaned and will be obtained from a 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; 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 completed by the field technician 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: site identification, name of person collecting the samples, date and time 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, site identification, 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 C

CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

February 13, 1992

Mr. Marc Zomorodi
Tank Protect Engineering
2821 Whipple Road
Union City, California 94587

Dear Mr. Zomorodi:

Trace Analysis Laboratory received ten soil samples on February 6, 1992 for your Project No. 218A-020692, 16035 East 14th Street, San Leandro, CA (our custody log number 1768).

These samples were composited and analyzed according to your chain of custody. Our analytical report and the completed chain of custody form are enclosed for your review.

Trace Analysis Laboratory is certified under the California Environmental Laboratory Accreditation Program. Our certification number is 1199.

If you should have any questions or require additional information, please call me.

Sincerely yours,

Jennifer Pekol
Project Specialist

Enclosures

Trace Analysis Laboratory, Inc.
3423 Investment Boulevard, #8 • Hayward, California 94545
Telephone (510) 783-6960
Facsimile (510) 783-1512

TAL

LOG NUMBER: 1768
DATE SAMPLED: 02/05/92
DATE RECEIVED: 02/06/92
DATE EXTRACTED: 02/07/92
DATE ANALYZED: 02/12/92
DATE REPORTED: 02/13/92

CUSTOMER: Tank Protect Engineering

REQUESTER: Marc Zomorodi

PROJECT: No. 218A-020692, 16035 East 14th Street, San Leandro, CA

Sample Type: Soil

Method and Constituent:	Units	S3-BP Concentration	S3-BP Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:					
Total Petroleum Hydrocarbons as Diesel	ug/kg	950,000	8,000	ND	1,000

QC Summary:

% Recovery: 103*
% RPD: 24

Concentrations reported as ND were not detected at or above the reporting limit.

Sample, S3-BP contains compounds eluting earlier than the diesel standard.

* The Recovery is for the Laboratory Control Sample, due to the high concentration in the spiked sample.

LOG NUMBER: 1768
DATE SAMPLED: 02/05/92
DATE RECEIVED: 02/06/92
DATE EXTRACTED: 02/06/92
DATE ANALYZED: 02/11/92
DATE REPORTED: 02/13/92
PAGE: Two

Sample Type: Soil

Method and Constituent:	Units	Composite of S1-1, S1-2, S1-3 and S1-4 Concentration	Composite of S1-1, S1-2, S1-3 and S1-4 Reporting Limit	S1-NW Concentration	S1-NW Reporting Limit	S1-SE Concentration	S1-SE Reporting Limit
DHS Method:							
Total Petroleum Hydrocarbons as Gasoline	ug/kg	160,000	1,300	660,000	1,300	220,000	1,300
EPA Method 8020 for:							
Benzene	ug/kg	ND	48	ND	48	ND	48
Toluene	ug/kg	ND	130	590	130	190	130
Ethylbenzene	ug/kg	870	92	9,100	92	1,900	92
Xylenes	ug/kg	3,300	600	33,000	600	1,100	600

Method and Constituent:	Units	S2-NW Concentration	S2-NW Reporting Limit	S2-SE Concentration	S2-SE Reporting Limit	S3-BP Concentration	S3-BP Reporting Limit
DHS Method:							
Total Petroleum Hydrocarbons as Gasoline	ug/kg	880,000	6,400	330,000	1,300	1,300,000	1,300
EPA Method 8020 for:							
Benzene	ug/kg	ND	240	ND	48	3,200	48
Toluene	ug/kg	ND	660	390	130	39,000	130
Ethylbenzene	ug/kg	17,000	460	1,800	92	14,000	92
Xylenes	ug/kg	55,000	3,000	3,600	600	78,000	600

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 1768
DATE SAMPLED: 02/05/92
DATE RECEIVED: 02/06/92
DATE EXTRACTED: 02/06/92
DATE ANALYZED: 02/11/92
DATE REPORTED: 02/13/92
PAGE: Three

Sample Type: Soil

Method and Constituent:	Units	S-P Concentration	S-P Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
DHS Method:					
Total Petroleum Hydrocarbons as Gasoline	ug/kg	720	500	ND	500
EPA Method 8020 for:					
Benzene	ug/kg	ND	5.0	ND	5.0
Toluene	ug/kg	ND	6.6	5.3	5.0
Ethylbenzene	ug/kg	ND	5.0	ND	5.0
Xylenes	ug/kg	ND	30	ND	15

QC Summary:

% Recovery: 66
% RPD: 9.1

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 1768
DATE SAMPLED: 02/05/92
DATE RECEIVED: 02/06/92
DATE EXTRACTED: 02/10/92
DATE ANALYZED: 02/13/92
DATE REPORTED: 02/13/92
PAGE: Four

Sample Type: Soil

Method and Constituent:	Units	S3-BP Concentration	S3-BP Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
Standard Method 5520 Hydrocarbons:					
Oil and Grease	ug/kg	54,000	50,000	ND	50,000

QC Summary:

% Recovery: 62
% RPD: 7.4

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 1768
DATE SAMPLED: 02/05/92
DATE RECEIVED: 02/06/92
DATE EXTRACTED: 02/07/92
DATE ANALYZED: 02/08/92
DATE REPORTED: 02/13/92
PAGE: Five

Sample Type: Soil

Method and Constituent	Units	S3-BP Concentration	S3-BP Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8010:					
Benzyl Chloride	ug/kg	ND	50	ND	50
Bis (2-Chloroethoxy) Methane	ug/kg	ND	50	ND	50
Bis (2-Chloroisopropyl) Ether	ug/kg	ND	50	ND	50
Bromobenzene	ug/kg	ND	50	ND	50
Bromodichloromethane	ug/kg	ND	50	ND	50
Bromoform	ug/kg	ND	50	ND	50
Bromomethane	ug/kg	ND	50	ND	50
Carbon Tetrachloride	ug/kg	ND	50	ND	50
Chloracetaldehyde	ug/kg	ND	50	ND	50
Chloral	ug/kg	ND	50	ND	50
Chlorobenzene	ug/kg	ND	50	ND	50
Chloroethane	ug/kg	ND	50	ND	50
Chloroform	ug/kg	ND	50	ND	50
1-Chlorohexane	ug/kg	ND	50	ND	50
2-Chloroethyl Vinyl Ether	ug/kg	ND	50	ND	50

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 1768
DATE SAMPLED: 02/05/92
DATE RECEIVED: 02/06/92
DATE EXTRACTED: 02/07/92
DATE ANALYZED: 02/08/92
DATE REPORTED: 02/13/92
PAGE: Six

Sample Type: Soil

Method and Constituent	Units	S3-BP Concentration	S3-BP Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8010 (Continued):					
Chloromethane	ug/kg	ND	50	ND	50
Chloromethyl Methyl Ether	ug/kg	ND	50	ND	50
Chlorotoluene	ug/kg	ND	50	ND	50
Dibromochloromethane	ug/kg	ND	50	ND	50
Dibromomethane	ug/kg	ND	50	ND	50
1,2-Dichlorobenzene	ug/kg	ND	50	ND	50
1,3-Dichlorobenzene	ug/kg	ND	50	ND	50
1,4-Dichlorobenzene	ug/kg	ND	50	ND	50
Dichlorodifluoromethane	ug/kg	ND	50	ND	50
1,1-Dichloroethane	ug/kg	ND	50	ND	50
1,2-Dichloroethane	ug/kg	ND	50	ND	50
1,1-Dichloroethylene	ug/kg	ND	50	ND	50
Trans-1,2-Dichloro-ethylene	ug/kg	ND	50	ND	50
Dichloromethane	ug/kg	ND	50	ND	50
1,2-Dichloropropane	ug/kg	ND	50	ND	50
1,3-Dichloropropylene	ug/kg	ND	50	ND	50
1,1,2,2-Tetrachloro-ethane	ug/kg	ND	50	ND	50

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 1768
DATE SAMPLED: 02/05/92
DATE RECEIVED: 02/06/92
DATE EXTRACTED: 02/07/92
DATE ANALYZED: 02/08/92
DATE REPORTED: 02/13/92
PAGE: Seven

Sample Type: Soil

Method and Constituent	Units	S3-BP Concentration	S3-BP Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit
EPA Method 8010 (Continued):					
1,1,1,2-Tetrachloroethane	ug/kg	ND	50	ND	50
Tetrachloroethylene	ug/kg	ND	50	ND	50
1,1,1-Trichloroethane	ug/kg	ND	50	ND	50
1,1,2-Trichloroethane	ug/kg	ND	50	ND	50
Trichloroethylene	ug/kg	ND	120	ND	120
Trichlorofluoromethane	ug/kg	ND	50	ND	50
Trichloropropane	ug/kg	ND	50	ND	50
Vinyl Chloride	ug/kg	ND	50	ND	50

QC Summary:

% Recovery: 106
% RPD: 25

Concentrations reported as ND were not detected at or above the reporting limit.

LOG NUMBER: 1768
DATE SAMPLED: 02/05/92
DATE RECEIVED: 02/06/92
DATE EXTRACTED: 02/11/92
DATE ANALYZED: 02/11/92 and 02/12/92
DATE REPORTED: 02/13/92
PAGE: Eight

Sample Type: Soil

Method and Constituent:	Units	S3-BP Concentration	S3-BP Reporting Limit	Method Blank Concentration	Method Blank Reporting Limit	QC Summary % Recovery	QC Summary % RPD
EPA Method 7130:							
Cadmium	ug/kg	ND	250	ND	250	82	**
EPA Method 7190:							
Chromium	ug/kg	35,000	1,200	ND	1,200	117	0.7
EPA Method 7420:							
Lead	ug/kg	10,000	2,500	ND	2,500	75*	9.5
EPA Method 7520:							
Nickel	ug/kg	46,000	7,500	ND	7,500	112	2.4
EPA Method 7950:							
Zinc	ug/kg	57,000	1,200	ND	1,200	75	1.0

Concentrations reported as ND were not detected at or above the reporting limit.

* The Recovery is for the Laboratory Control Sample, due to interference in the spiked sample.
** The RPD is not reportable since the sample prepared in duplicate was not detectable.

for

Louis W. DuPuis
Quality Assurance/Quality Control Manager

TANK PROTECT ENGINEERING
Of Northern California
Environmental Management

2821 WHIPPLE ROAD
UNION CITY, CA 94587
(415)429-8088
(800)523-8088
FAX(415)429-8089

LAB: TAL

TURNAROUND: NORMAL

P.O. #: 374

PAGE 1 OF 2

CHAIN OF CUSTODY

1768

PROJECT NO.: 018A-020692

SITE NAME & ADDRESS: 16035 EAST 14th STREET, SAN LEANDRO, CA

SAMPLER NAME, ADDRESS AND TELEPHONE NUMBER:
LYLE THOMAS G. TRAVIS
TANK PROTECT ENGINEERING
2821 WHIPPLE ROAD, UNION CITY, CA 94587 (415) 429-8088

	ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE (OGSF)	VOC SCAN (8010)	OTHER	Art for metals Cd, Cr, Pb, Ni, Zn	
✓	S1-SE	2/5/92	10:18	✓		S1-SE @ 8.5'	BRASS TUBE	✓	✓						
✓	S2-SE	↓	10:30	↓		S2-SE @ 8.5'	↓	↓	↓						
✓	S1-NW		10:43			S1-NW @ 8.5'									
✓	S2-NW		10:55			S2-NW @ 8.5'									
✓	S3-BP		11:10			S3-BP @ 8.5'				✓	✓	✓	✓		
✓	S-P		2:42			S-P @ 1.5'									
✓	S1-1		2:47			@ STOCKPILE #1									4 SAMPLES → COMPOSITE
✓	S1-2		2:51			@ STOCKPILE #1									
✓	S1-3	↓	2:54	↓		@ STOCKPILE #2	↓	↓	↓						COMPOSITE

Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Michael Caso	2/6/92 1:28	Jennifer Pellot			
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: Pick-up 5-day	

soil, 1-btea, on ice, y-1 gr

DATE: 2/6/92

TANK PROTECT ENGINEERING
2821 WHIPPLE ROAD
UNION CITY, CA 94587
(415)429-8088
(800)523-8088
FAX(415)429-8089

LAB: T.A.L.

TURNAROUND: NORMAL

P.O. #: 374

PAGE 2 OF 2

CHAIN OF CUSTODY

PROJECT NO.	SITE NAME & ADDRESS
28A - 0206 92	16035 EAST 14th STREET SAN LEANDRO, CA

SAMPLER NAME, ADDRESS AND TELEPHONE NUMBER
LYLE THOMAS & TRAVIS
TANK PROTECT ENGINEERING
2821 WHIPPLE ROAD, UNION CITY, CA 94587 ~~(415)~~ 510 429-8088

ID NO.	DATE	TIME	SOIL	WATER	SAMPLING LOCATION	(1) TYPE OF CONTAINER	ANALYTES REQUESTED: TOTAL LIGHT HC	AROMATIC HC (BTX)	TOTAL HEAVY HC	OIL & GREASE	VOC SCAN (624's)	OTHER	REMARKS
SI-4	2/5/92	2:57	—		SI-4 @ #2 STOCKPILE	BRASS TUBE	✓						J COMPOSITE W/ OTHER 3 IN PREVIOUS PAGE

Relinquished by : (Signature)	Date / Time	Received by : (Signature)	Relinquished by : (Signature)	Date / Time	Received by : (Signature)
Michael Cowe	2/6/92 1:28				
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: 2/6/92

APPENDIX D

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES

APPENDIX D

HOLLOW-STEM AUGER DRILLING AND SOIL SAMPLING PROCEDURES

Undisturbed soil samples will be recovered from soil without introducing liquids into the borings. Soil samples as core will be taken at 5-feet depth intervals from ground surface to termination depth, or through the aquifer zone of interest for lithologic logging.

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

Soil from all borings will be described in detail using the Unified Soil Classification System and will be logged by a 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 will be noted and accurately logged.

Soil samples will be collected in clean brass or stainless steel sampling tubes in the split-spoon. Sediment traps will be used when unconsolidated sands and gravels fall from the sampler during retrieval. The brass tubes will be cut apart using a clean knife. The ends of the tubes will be covered with a thin sheet of Teflon tape or aluminum foil beneath plastic end caps and sealed with electrical or duct 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 or covered with plastic sheeting. 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 grout.

APPENDIX E

WASTE HANDLING AND DECONTAMINATION PROCEDURES

APPENDIX E

WASTE HANDLING AND DECONTAMINATION PROCEDURES

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 drilling of each well.

All sample equipment, including the split-tube sampler and brass tubes, will be cleaned by washing with tri-sodium phosphate detergent, followed by sequential rinsing with tap water, and deionized water.

Waste Handling: Waste materials generated during site characterization activities will be handled and stored as hazardous waste and will be stored on site in appropriately labeled containers. Waste materials anticipated include drill cuttings, development and purge water, water generated during aquifer testing, water generated during decontamination, and used personnel protection equipment such as gloves and Tyvek. The site owner will be responsible for providing the storage containers and will be responsible for the disposal of the waste materials. Drill cuttings from individual borings will be stored separately in drums or covered by plastic sheeting and the appropriate disposal procedure will be determined by the site owner or TPE following receipt of the soil sample analytical results. Drums or plastic sheeting will be labeled to show material stored, known or suggested contaminant, date stored, expected removal date, company name, contact, and telephone number.

APPENDIX F

GROUNDWATER MONITORING WELL CONSTRUCTION PROCEDURES

APPENDIX F

GROUNDWATER MONITORING WELL CONSTRUCTION PROCEDURES

BOREHOLE DESIGN

Casing Diameter: The minimum diameter of well casings will be 2 inches (nominal).

Borehole Diameter: The diameter of the borehole will be a minimum of 4 inches and a maximum of 12 inches greater than the diameter of the well casing. The minimum annular space will be 2.5 inches as measured from the outside diameter of the casing to the drill hole wall.

Shallow (Unconfined Zone) Wells: When unconfined groundwater is encountered the borehole will be advanced through the aquifer to an underlying clay layer or aquitard. The screened interval will begin a minimum of 5 feet above the saturated zone or above the anticipated seasonal high level of groundwater. The screen will extend the full thickness of the aquifer or no more than 15 feet into the saturated zone, whichever is reached first. The well screen will not extend into the aquitard, nor will the screened interval exceed 20 feet in length.

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

The conductor casing will be installed in the following manner: a large diameter borehole (typically 18 inches) will be drilled until it is determined that the first competent aquitard has been reached. A low carbon steel conductor casing will be placed in
the borehole to the depth drilled. Centralizers will be used to center the casing in the borehole. The annular space between the conductor casing and the formation will be cement-grouted from bottom to top by tremie pipe method. The grout will be allowed to set for a minimum of 72 hours.

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

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

CONSTRUCTION MATERIALS

Casing and Screen Materials: Well casing and screen will be constructed of clean materials that have the least potential for affecting the quality of the sample. 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 will be connected by flush threaded couplers. Organic bonding compounds and solvents will not be used on joints.

Well Screen Slots: Well screen will be factory slotted. The size of the slots will 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 will be secured with stainless steel set screws. No organic solvents or cements will be applied.

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

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

Grout Seal Material: Cement grout will consist of a proper mixture if Type 1/11 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 a minimum of five minutes. When a washer is not available, components shall be cleaned with water and detergent or tri-sodium phosphate, rinsed in clean water, than 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 soil and groundwater.

Drilling Methods: Acceptable drilling methods include solid and hollow-stem auger, percussion, direct circulation mud and air rotary, 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, when necessary, to ensure straightness. Centralizers will be used where necessary to prevent curvature or stress to the casing.

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, will 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: A bentonite seal will be placed above the sand pack 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 will not be less than 1 foot in thickness.

Grout Seal Placement: The cement grout mixture will 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 to a depth of 30 feet. Below a depth of 30 feet grout will be placed by tremie pipe. 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, locking cap will be installed on the well casing. Access to the casing will 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.

Well Identification: Each well will be labeled to show well number, depth, hole and casing diameter, and screened interval.

APPENDIX G

GROUNDWATER MONITORING WELL DEVELOPMENT PROCEDURES

APPENDIX G

GROUNDWATER MONITORING WELL DEVELOPMENT PROCEDURES

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 promote turbidity-free groundwater samples.

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

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 72 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 a high temperature, high pressure washer for a minimum of five minutes. When a washer is not available, components shall be cleaned 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 will be introduced into the well to enhance development.

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

Surging: Care will be exercised when using a surge block to avoid damaging the well screen and casing. When surging wells screened in coarse (sand/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 be required. 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 temporarily contained on site, pending sampling and laboratory analysis. No hazardous development water will be released to the environment. Disposal of development water will be the responsibility of the client

APPENDIX H

GROUNDWATER SAMPLING PROCEDURES

APPENDIX H

GROUNDWATER SAMPLING PROCEDURES

Groundwater monitoring wells will not be sampled until at least 72 hours after well development. Groundwater samples will be obtained using either a bladder pump, clear Teflon bailer, or dedicated polyethylene bailer. Prior to collecting samples, the 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 4 to 10 wetted casing volumes of groundwater have been evacuated and pH, electrical conductivity, and temperature have stabilized as measured with a Hydac Digital Tester. If the well is emptied before 4 to 10 well volumes are removed, the sample will be taken when the water level in the well recovers to 80% of its initial water level or more.

When a water sample is collected, turbidity of the water will be measured and recorded with a digital turbidimeter. Degree of turbidity will be measured and recorded in Nephelometric turbidity units (NTU).

Tank Protect Engineering will also measure the thickness of any floating product in the monitoring wells using a probe, clear Teflon, or polyethylene bailer. The floating product will be measured after well development but prior to the collection of groundwater samples. If floating product is present in the well, TPE will recommend to the client that product removal be commenced immediately and reported to the appropriate regulatory agency.

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.

MEASUREMENTS

Purged Water Parameter: During purging, discharged water will be measured for the following parameters.

Parameter	Units of Measurement
pH	None
Electrical Conductivity	Micromhos
Temperature	Degrees F or C
Depth to Water	Feet/Tenths
Volume of Water Discharged	Gallons
Turbidity	NTU

Documentation: All parameter measurements shall be documented in writing on TPE development logs.

APPENDIX I

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

APPENDIX I

QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

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 may 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.

Tank Protect Engineering 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 that may be collected are trip samples, field blanks, and duplicate samples.

Trip blanks are a check for cross-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 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 are identical sample pairs (collected in the same place and at the same time), 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 duplicates 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 preforming QC test 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 record keeping, and the observance of good laboratory practices.

APPENDIX J

SITE SAFETY PLAN

TPE SITE SAFETY PLAN

TANK PROTECT ENGINEERING OF NORTHERN CALIFORNIA, INC.
SITE SAFETY PLAN

Site **Mary Petsas**
16035 E. 14th Street
San Leandro, CA 94578

Project Number **218**

Original Site Safety Plan: Yes (X) No ( )

Revision Number

Plan Prepared by **John Mrakovich** Date **2/28/92**

Plan Approved by **Michael Casso** Date **2/28/92**

Please respond to each item as completely as possible. Where an item is not applicable, please mark "N/A".

1. KEY PERSONNEL AND RESPONSIBILITIES

Project Manager	**John Mrakovich**	**(510) 429-8088**
Site Safety Manager	**Michael Casso**	**(510) 429-8088**
Alternate Site Safety Manager	**N/A**	
Field Team Members	**N/A**	

Agency Reps: [Please specify by one of the following symbols: Federal: (F), State: (S), Local: (L), Contractor(s): (C)

(L) Alameda County Health Care Services Agency (ACHCSA) Scott Seery (510) 271-4320

TPE SITE SAFETY PLAN

2. JOB HAZARD ANALYSIS

2.1 OVERALL HAZARD EVALUATION

Hazard Level:	High ( )	Moderate ( )	Low (X)	Unknown ( )
Hazard Type:	Liquid (X)	Solid ( )	Sludge ( )	Vapor/Gas (X)

Known or suspected hazardous materials present on site

Benzene, Toluene, Ethyl-Benzene, Xylenes, (BTEX)

Characteristics of hazardous materials included above (complete for each chemical presents):

MATERIAL #1

Corrosive ( )	Ignitable (X)	Toxic (X)	Reactive ( )
Volatile (X)	Radioactive ( )	Biological Agent ( )	
Exposure Routes:	Inhalation (X)	Ingestion (X)	Contact (X)

MATERIAL #2

Corrosive ( )	Ignitable ( )	Toxic ( )	Reactive ( )
Volatile ( )	Radioactive ( )	Biological Agent ( )	
Exposure Routes:	Inhalation ( )	Ingestion ( )	Contact ( )

MATERIAL #3

Corrosive ( )	Ignitable ( )	Toxic ( )	Reactive ( )
Volatile ( )	Radioactive ( )	Biological Agent ( )	
Exposure Routes:	Inhalation ( )	Ingestion ( )	Contact ( )

MATERIAL #4

Corrosive ( )	Ignitable ( )	Toxic ( )	Reactive ( )
Volatile ( )	Radioactive ( )	Biological Agent ( )	
Exposure Routes:	Inhalation ( )	Ingestion ( )	Contact ( )

2.2 JOB-SPECIFIC HAZARDS

For each labor category specify the possible hazards based on information available (i.e., Task-driller, Hazards-trauma from drill rig accidents, etc.) For each hazard, indicate steps to be taken to minimize the hazard.

Driller/Helper/Geologist-Trauma from drilling rig accidents-wear hard hat, gloves, steel-toed boots.

The following additional hazards are expected on site (i.e., snake infested area, extreme heat, etc.):

Temporary open bore holes

Measures to minimize the effects of the additional hazards are:

Cone unattended bore holes

3. MONITORING PLAN

3.1 (a) Air Monitoring Plan

Action levels for implementation of air monitoring. Action levels should be based on published data available on contaminants of concern. Action levels should be set by persons experienced in industrial hygiene.

Level (i.e.,.5 ppm)	Action Taken (i.e., commence perimeter monitoring)
5 ppm	**Commence perimeter monitoring**

(b) Air Monitoring Equipment

Outline the specific equipment to be used, calibration method, frequency of monitoring, locations to be monitored, and analysis of samples (if applicable).

Gastech, Inc. Trace-Techtor, hexane Calibration. Monitor at borehole during each sampling event if vapors detected.

If air monitoring is not to be implemented for this site, explain why:

N/A

3.2 Personnel Monitoring

(Include hierarchy of responsibilities decision making on the site)

Site safety manager to make decision.

3.3 Sampling Monitoring

(a) Techniques used for sampling: **Sample air at borehole with Gastech, Inc., Trace-Techtor**

(b) Equipments used for sampling: **Gastech, Inc., Trace-Techtor**

(c) Maintenance and calibration of equipments: **Calibrate to hexane prior to operation.**

4. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Equipment used by employees for the site tasks and operations being conducted. Be Specific (i.e., hard hat, impact resistance goggles, other protective glove, etc.).

Hard hat, protective gloves (when necessary), steel-toed boots

5. SITE CONTROL AND SECURITY MEASURES

The following general work zone security guidelines should be implemented:

- Work zone shall be barricaded and caution tape used.
- Excavations shall be closed when drilling and sampling activities are not actually taking place.
- No excavations shall be left unattended. Visitors will not enter the work zone unless they have attended a project safety briefing.

6. DECONTAMINATION PROCEDURE

List the procedures and specific steps to be taken to decontaminate equipment and PPE.

Wash equipment with trisodium phosphate solution and rinse with clean potable water.

7. TRAINING REQUIREMENTS

Prior to mobilization at the job site, employees will attend a safety briefing. The briefing will include the nature of the wastes and the site, donning personal protection equipment, decontamination procedures and emergency procedures.

8. MEDICAL SURVEILLANCE REQUIREMENTS

If any task requires a very high personnel protection level, personnel shall provide assurances that they have received a physical examination and they are fit to do the task. Also personnel will be instructed to look for any symptom of heat stress, heat stroke, heat exhaustion or any other unusual symptom. If there is any report of that kind it will be immediately followed through, and appropriate action will be taken.

9. STANDARD OPERATION PROCEDURES

Tank Protect Engineering of Northern California, Inc. (TPE) is responsible for the safety of all TPE employees on site. Each contractor shall provide all the equipment necessary to meet safe operation practices and procedures for their personnel on site and be responsible for the safety of their workers.

A "Three Warning" system is utilized to enforce compliance with Health and Safety procedures practices which will be implemented at the site for worker safety:

* Eating, drinking, chewing gum or tobacco, and smoking will be allowed only in designated areas.
* Wash facilities will be utilized by workers in the work areas before eating, drinking, or use of the toilet facilities.
* Containers will be labeled identifying them as waste, debris or contaminated clothing.
* All Excavation/drilling work will comply with regulatory agencies requirement.
* All site personnel will be required to wear hard hats and advised to take adequate measures for self protection.
* Any other action which is determined to be unsafe by the site safety officer.

10. CONFINED SPACE ENTRY PROCEDURES

No one is allowed to enter any confined space operation without proper safety measures. Specifically in case of an excavated Tank Pit no one should enter at no time.

11. EMERGENCY RESPONSE PLAN

Fire extinguisher(s) will be on site prior to excavation. Relevant phone numbers:

Person	Title	Phone No.
John V. Mrakovich	Project Manager	(510) 429-8088
_____	Fire	911 or_____
_____	Police	911 or_____
_____	Ambulance	911 or_____
_____	Poison Control Center	(800)523-2222
_____	Site Phone	_____
_____	Nearest off-site no.	_____
_____	Medical Advisor	_____
Mary Petsas	Client Contact	(510) 588-3088

U.S EPA - ERT		(201) 321-6660
Chemtrec		(800) 424-9300
Centers for Disease Control	Day	(404) 329-3311
	Night	(404) 329-2888
National Response Center		(800) 424-8802
Superfund/RCRA Hotline		(800) 424-8802
TSCA Hotline		(800) 424-9065
National Pesticide Information Services		(800) 845-7633
Bureau of Alcohol, Tobacco, and Firearms		(800) 424-9555

TPE SITE SAFETY PLAN

HEALTH AND SAFETY COMPLIANCE STATEMENT

I, _____, have received and read a copy of the project Health and Safety Plan.

I understand that I am required to have read the aforementioned document and have received proper training under the occupational Safety and Health Act (29 CFR, Part 1910.120) prior to conducting site activities at the site.

_____ _____

Signature Date

Humana Hospital
13855 E. 14th Street
San Leandro, CA 94578
Emergency # (510) 667-4545
Gen. Info # (510) 357-6500

From site go North on E. 14th Street; the hospital will be on the left hand side.