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June 8, 1993

Ms. Juliet Shin
Alameda County Dept. of Environmental Health
Hazardous Materials Division
80 Swan Way, Suite 200
Oakland, CA 94621

Subject: Work Plan and Health and Safety Plan for Site Investigation at Organizational Maintenance Shop No. 35 (OMS #35), 16501 Ashland Avenue, San Lorenzo, CA
TC 9410-01

Dear Ms. Shin:

Enclosed find one copy each of the draft Work Plan and draft Health and Safety Plan for the Site Investigation at Organizational Maintenance Shop No. 35 (OMS #35) in San Lorenzo, CA.

If you have any questions regarding the Work Plan or Health and Safety Plan, or if I may otherwise be of assistance, please call me at (415) 974-1221.

Very truly yours,

Mike Wopat, RG
Senior Geologist

MW/jth

TC 9410-01

SITE INVESTIGATION

ORGANIZATIONAL MAINTENANCE SHOP(OMS) NO. 35 16501 ASHLAND AVENUE SAN LORENZO, CALIFORNIA

DRAFT WORK PLAN

Standard Agreement No. UT 048R
Work Order MAR 112
Assignment Numbers 1 and 2

Prepared for:

OFFICE OF THE STATE ARCHITECT
c/o Special Projects
400 P Street, 5th Floor
Sacramento, California 95814

Prepared by:

TETRA TECH
180 Howard Street, Suite 250
San Francisco, CA 94105

June 1993

TETRA TECH

TETRA TECH, INC.
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San Francisco, CA 94105
Telephone (415) 974-1221

June 10, 1993

Mr. Mike Golden
Office of the State Architect
Special Projects
400 P Street, 5th Floor
Sacramento, CA 95814

Subject: Work Plan and Health and Safety Plan for Site Investigation at Organizational Maintenance Shop No. 35 (OMS #35), 16501 Ashland Avenue, San Lorenzo, CA
TC 9410-01

Dear Mr. Golden:

Enclosed find two copies of the draft Work Plan and draft Health and Safety Plan for the Site Investigation at Organizational Maintenance Shop No. 35 (OMS #35) in San Lorenzo, CA. A copy of the draft Work Plan and the draft Health and Safety Plan has also been submitted to Ms. Juliet Shin of Alameda County Department of Environmental Health, Hazardous Materials Division, for her review and approval.

If you have any questions regarding the Work Plan, or if I may otherwise be of assistance, please call me at (415) 974-1221.

Very truly yours,

Mike Wopat, RG
Senior Geologist

MW/jth

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1.0 INTRODUCTION

This Work Plan has been prepared as guidance for conducting a site investigation at the Organizational Maintenance Station No. 35 (OMS #35) at 16501 Ashland Avenue, San Lorenzo, California. The work plan addresses the contamination of soil and ground water by gasoline observed adjacent to a 2,000 gallon underground gasoline storage tank during a piping retrofit in 1989 and during removal of the tank in April 1993.

This work plan is organized as follows: Presented first is the general purpose of the project, followed by a description of the site, including geology and hydrogeology, followed by the site history. The descriptive material is followed by the Project Approach section in which the proposed investigation, methods, and schedule are presented.

1.1 PURPOSE

The site investigation described below is intended to obtain information needed to accomplish the following objectives:

- Determine vertical and horizontal extent of soil contamination at the site;
- Determine degree and extent of ground water contamination;
- Conduct feasibility study for remediation of the soil and ground water; and
- Determine available options to allow existing 5,000 gallon diesel tank to remain in place and be permitted by the County.

1.2 SITE DESCRIPTION

The OMS #35 site is at 16501 Ashland Avenue, San Lorenzo, CA. The site is located on a 2-acre parcel of land west of Ashland Avenue immediately south of Interstate Highway 238 (Figures 1A and 1B). The land and underground storage tanks are owned by the State of California. Contact person at the site is Captain Charles Kahoutek, telephone (510) 278-4353.

The site contains two major buildings, a California National Guard armory located next to Ashland Avenue, and the U.S. Army OMS shop located in the southwest corner of the site. The fuel island, the remaining 5,000 gallon diesel underground storage tank (UST), and the excavation from the April 1993 removal of the 2,000 gallon gasoline UST are about 100 ft north of the OMS shop (Figure 2). The rest of the site is an asphalt-paved lot mostly used for parking of military vehicles.

The land surface in the vicinity of the site is at an approximate elevation of 40 feet above mean sea level. The surface is essentially flat in the vicinity of the site. Regionally, the land slopes very gently west-southwest towards San Francisco Bay, 2.7 miles away.

1.2.1 Land Use

Land use in the vicinity of the site is mostly residential. San Lorenzo High School bounds the property to the south and west. Interstate 238 forms the north boundary. Small businesses are located along East Lewelling Boulevard which runs east-west 750 ft south of the site.

1.2.2 Geologic Setting

San Lorenzo is located on the alluvial plain that lies between the Oakland Hills to the east and San Francisco Bay to the west. The subject site is located upon Holocene alluvial fan sediments deposited by westward flowing streams flowing from the uplands. The sediments are mapped as Holocene coarse-grained alluvium by Helley and others (1979), and are described as consisting of loose, well-drained, moderately sorted sand and gravel that locally contains beds of well-sorted silt. The coarse-grained

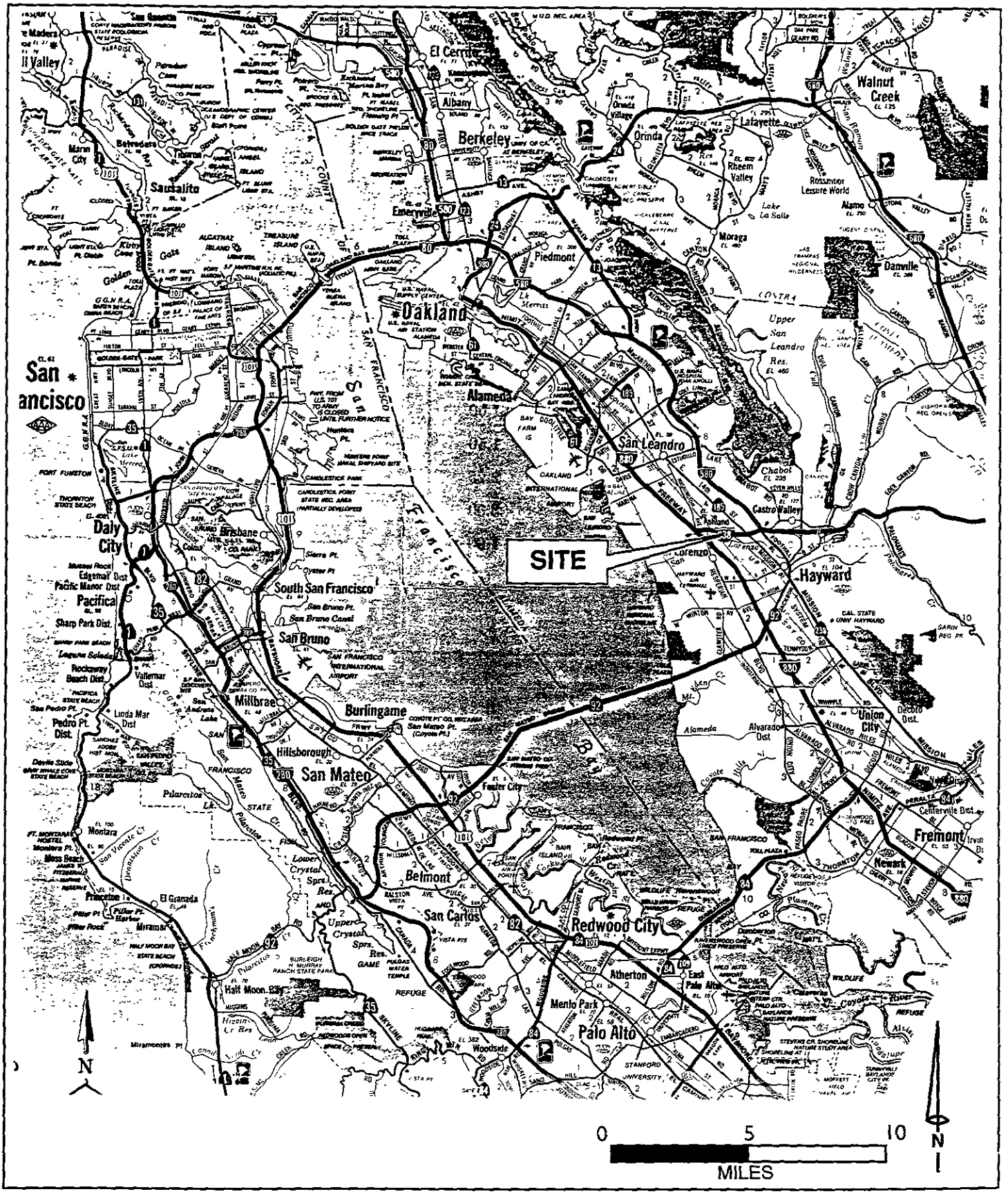

Figure 1A Regional Site Location Map

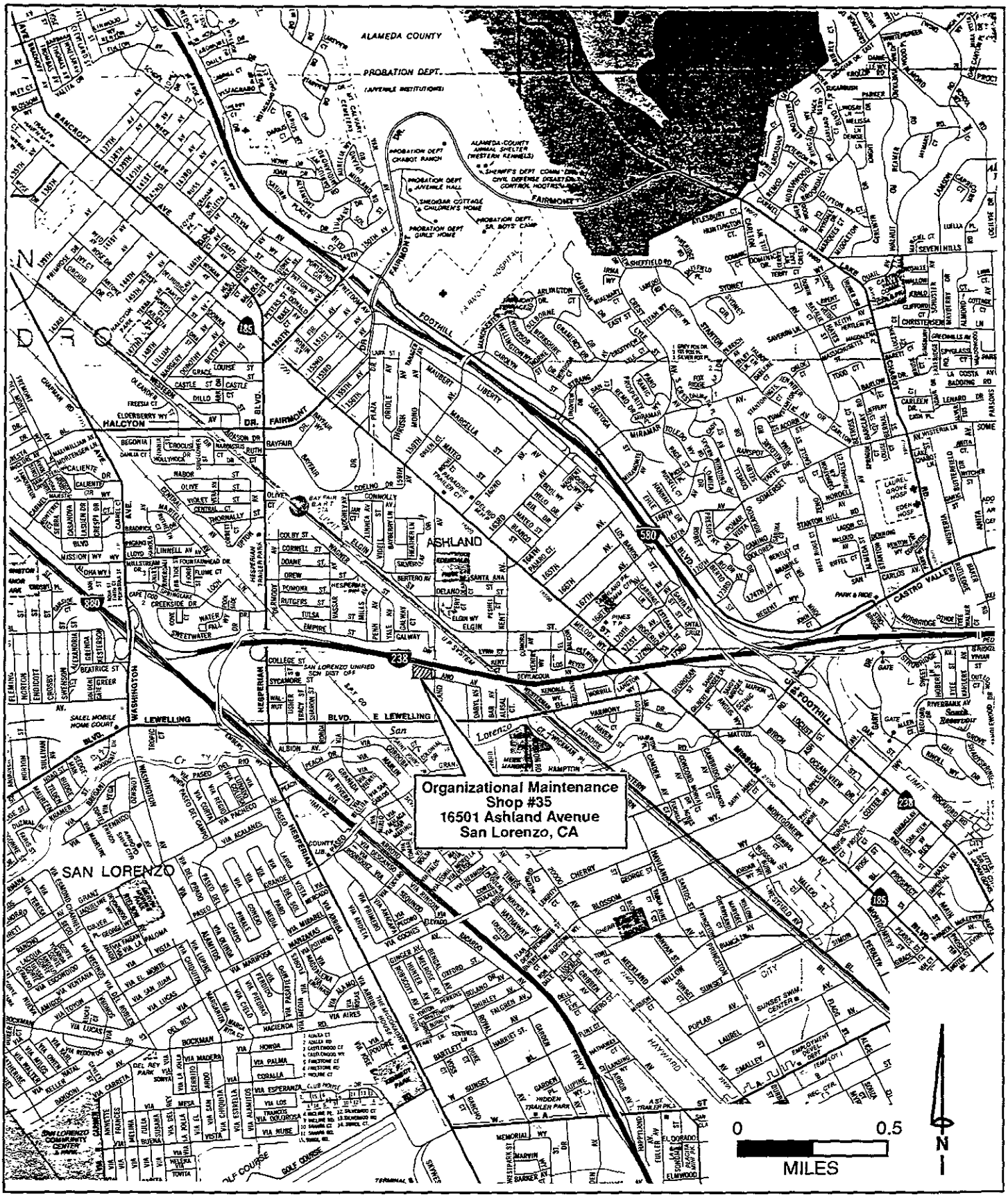

Figure 1B **Site Location Map**

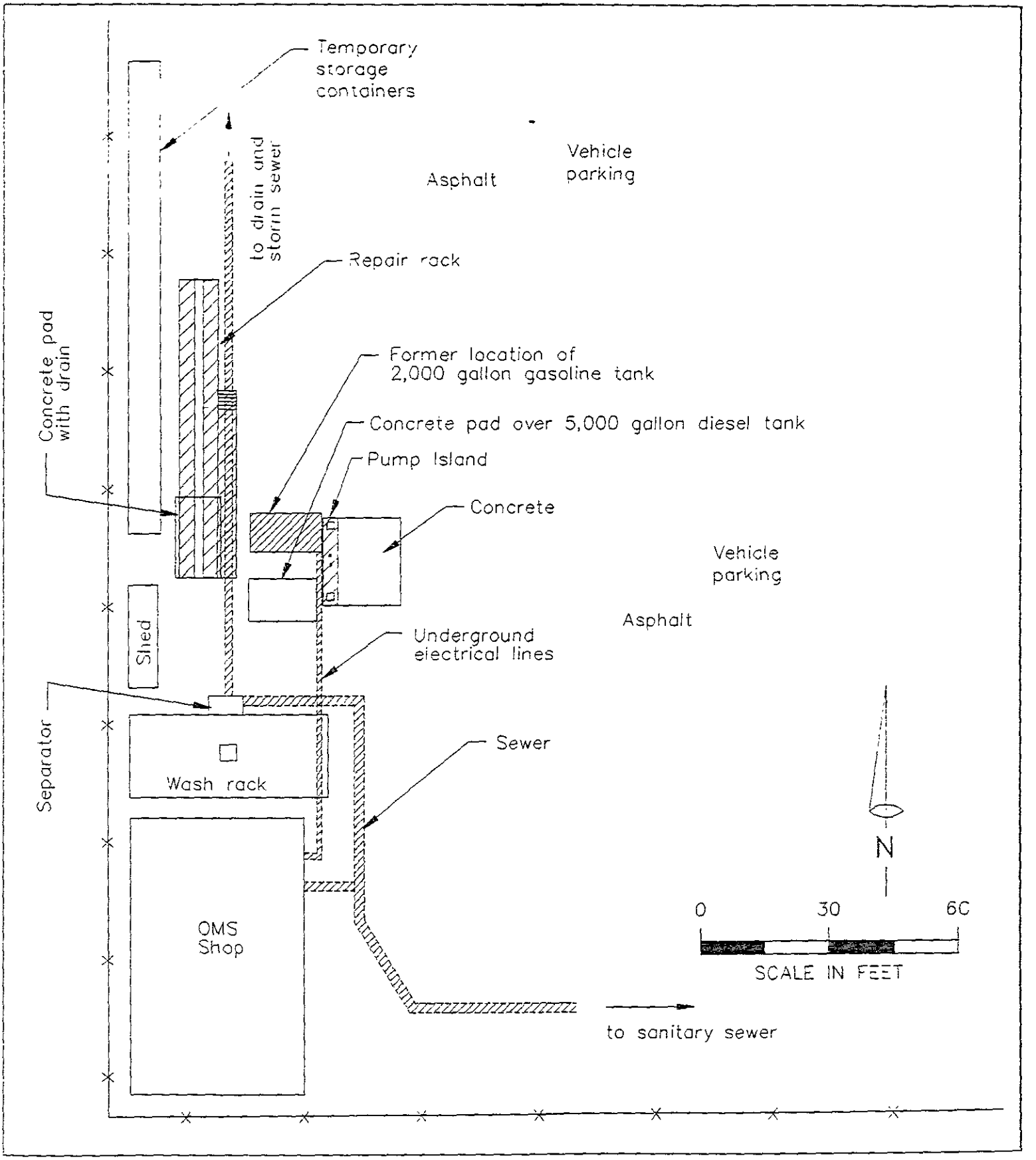

Figure 2 Site Map

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alluvium interfingers with and grades into Holocene medium-grained alluvium. The Holocene alluvium overlies late Pleistocene alluvial fan deposits. Thickness of the coarse-grained alluvium ranges from 50 ft near fan heads to 20 ft where it grades into medium-grained alluvium.

Sediments at the site appear to be finer than those described above. West and Hansen (1989b) describe the soil underlying the site to be "dense adobe clay". Soil removed from the excavation during removal of the tank consists of clay, silty clay, and fine micaceous sand. No coarse sediments were observed.

The subject site is located 0.9 miles west of the trace of the Hayward fault, which trends north-northwest along the base of the Oakland Hills at the eastern edge of the alluvial plain.

1.2.3 Hydrogeology

Depth to static ground water has varied from 11 feet below ground surface (bgs), in late 1989 (West and Hansen, 1989b) to about 7 ft bgs in April 1993. Regional ground water flow is to the west-southwest towards San Francisco Bay.

The nearest surface water is westward-flowing San Lorenzo Creek located about 1,000 ft south of the site and immediately south of East Lewelling Boulevard. The proximity of the creek may cause the regional ground water flow direction in the vicinity of the site to be deflected southwards towards the creek.

1.3 SITE HISTORY

The site has been a military staging depot since the Korean War era. The property is owned by the State of California and contains the National Guard Armory and the U.S. Army Organizational Maintenance Station (OMS #35) that maintains the National Guard vehicles.

The 2,000 gallon underground gasoline tank was installed in 1951 (Sgt. Burns, 1993, personal communication). The area immediately surrounding the tank site has been used for military vehicle parking for the entire lifetime of the tank and will continue to be used for that purpose indefinitely.

Other potentially hazardous material used onsite are lube oils, solvents, brake fluid and paint. These materials are stored and used in small quantities. There have been no recorded spills.

The excavated gasoline tank was used intermittently at the site. At one point it was dormant for 6 years (1981-1986). In an attempt to upgrade fueling capability at the OMS, a project to rehabilitate the gasoline tank and add a 5,000 gallon diesel tank was undertaken in late 1989. During excavation for the tank upgrade project contamination was discovered.

The gasoline tank had undergone precision testing yearly since November 1986. The most recent test was April 5, 1991. The system has passed on all test dates. Both the tank and piping were tested. OMS personnel reported no noticeable problems dispensing fuel with the suction type pump. There was also no significant loss of product noted based on inventory records.

It was obvious from the condition of the product piping upon removal in 1989 that gasoline had leaked through large corrosion holes. Although surface spillage undoubtedly occurred both from filling and dispensing, it is believed the majority of contamination resulted from product line leaks.

The gasoline tank was single wall steel, 2,000 gallon capacity. Piping was single wall steel but was replaced in ~~1986~~ 1989 with new double-wall fiberglass piping. The tank was initially used to store regular, leaded gas, but more recently has contained unleaded gasoline. There was no other known product stored. There is no accurate estimate of the quantity product released. A copy of the unauthorized release report is in Appendix A.

Investigations undertaken during retrofit of the piping showed the backfill around the tank to be wet with gasoline (West and Hansen, 1989a) and product to be floating on the ground water surface in hand-augured borings in the backfill (West and Hansen, 1989b).

In April 1993, the gasoline tank was removed by ATR Enterprises of Los Angeles, CA and disposed of at Erickson, Inc., Richmond, CA. The steel gasoline tank and double-wall fiberglass piping appeared to be in good condition. A copy of the Alameda County Department of Environmental Health representative's report on the tank removal is in Appendix B.

Backfill and native soil exposed during the removal of the gasoline tank were discolored due to reduction of iron in the soil by the gasoline and the soil exhibited a strong odor of gasoline. Backfill locally was saturated with gasoline. Discoloration in the sediments extended almost the entire vertical extent of the east end of the pit, but discoloration at the west end of the pit did not extend above a depth of 5 feet. Ground water was encountered in the tank pit at a depth of 7 ft. A thin layer of floating product covered the ground water in the pit.

Results of analyses of the ground water and of soil samples collected at the east and west ends of the excavation are presented in Table 1.

At present, the tank excavation is still open, and the excavated soil is stockpiled north of the pit. According to ATR Enterprises, the water in the pit will be pumped out and properly disposed of with the excavated soil.

Table 1
Analytical Results for Ground Water and Soil Samples Collected April 22, 1993 from the Tank Removal Excavation at OMS #35 16501 Ashland Avenue, San Lorenzo, CA

Sample No.	Sample type and location	Depth (ft)	TPH-g (ppm)[1]	Benzene (ppb)[2]	Ethyl benzene (ppb)[2]	Toluene (ppb)[2]	Xylenes (ppb)[2]
SL-1	stockpiled soil	not applicable	297	450	5,790	6,420	35,800
SL-2	ground water from the excavation	~7	51.4	7,210	2,680	13,500	12,000
SL-3	soil, E sidewall	~5	73	438	1,700	3,410	10,400
SL-4	soil, W sidewall	~6.5	ND<1.0	ND<5	ND<5	ND<5	ND<15
SL-5	soil, W sidewall	between 6.5 and 7.5	ND<1.0	ND<5	ND<5	ND<5	23

(1) ppm = parts per million = mg/l for water, mg/kg for soil
(2) ppb = parts per billion = µg/l for water, µg/kg for soil

Lab Analytical Reports not included w/this report.

2.0 PROJECT APPROACH

The scope of the field work consists of drilling and sampling of several exploratory borings and installing three to four monitoring wells. A description of the location of the borings and samples, and a description of the procedures that will be implemented to complete the work are described below.

2.1 DRILLING AND SOIL SAMPLING

The purpose of the soil boring and soil sampling is to determine the vertical and horizontal extent of soil contamination and to allow collection of grab ground water samples to allow determination of the extent of ground water contamination. Proposed locations of the soil borings and the upgradient monitoring well are shown in Figure 3.

After the boring locations are marked in white paint, Tetra Tech will contact Underground Service Alert (USA) so underground utilities can be located and marked so contact with them during drilling can be avoided. A pipe locator may be employed if needed.

Soil borings will be 15 ft deep. Soil borings will be sampled at five-foot intervals, beginning at 5 fbg until ground water is encountered. Two or more of the borings will be continuously cored to allow complete logging of the stratigraphy.

The soil borings will be drilled in approximately the order of their boring number (Figure 3). Results of TPH and BTEX analyses obtained from the onsite laboratory (see soil and ground water analyses, below) will be used to determine which soil borings will be drilled in addition to borings B-1 through B-3. Borings will be drilled and soil samples collected until the extent of soil contamination is determined. If grab ground water samples collected from a boring with clean soil show the ground water to be contaminated, additional borings will be drilled in the down-gradient direction until the boundary of the ground water contamination is defined. In these borings, drilled to obtain grab groundwater samples outside the area of soil contamination, soil samples will be collected for lithologic control only

Only 1 MW proposed?
at B-2 -
which D.G. Bridgwell
be converted to MW.

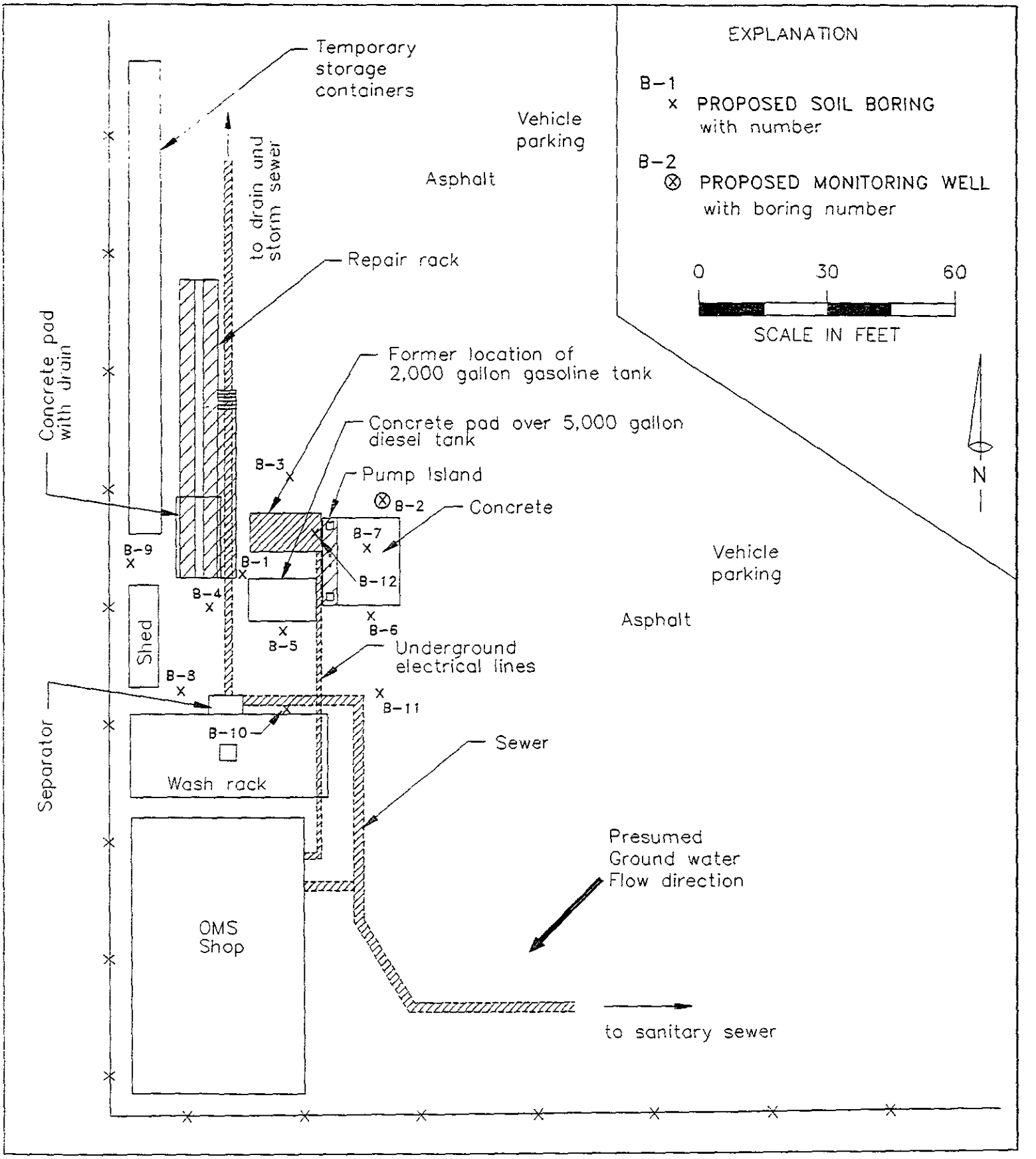

Figure 3 Site Map with Boring and Monitoring Well Locations

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and will not be submitted for analyses, unless evidence of contamination such as odor or elevated PID readings is discerned.

Please note that all the borings shown may not be drilled, depending on the extent of contamination. Note also, that if groundwater contamination extends beyond the extent of the borings shown in Figure 2, additional borings may be appropriate, possibly including borings on the adjacent San Lorenzo High School property. Borings in addition to those shown in Figure 2 will only be drilled upon obtaining approval from the Office of the State Architect.

Borings will be drilled using a hollow-stem auger drill rig with eight-inch outer-diameter augers. Soil samples will be collected with an 18-inch (or 24-inch) split-spoon sampler containing three (or four) 2 x 6 inch brass sample liners. Samples will be obtained by driving the sampler into undisturbed soil ahead of the augers. After the sampler is recovered, the bottom two sample sleeves will be removed and prepared for shipment to the analytical laboratory and delivery to the onsite laboratory, respectively, by placing teflon film over both ends of the sample liner, capping the liner with plastic caps, taping the caps with duct tape, and labeling the liner. Samples to be shipped to the offsite laboratory will then be sealed inside a plastic bag and immediately placed in a cooler containing sufficient ice or blue ice to preserve the sample at 4 degrees Celsius until delivered to the laboratory. Samples for the onsite laboratory will be hand-delivered to the laboratory for analysis. The field geologist will then record the lithological description of the sample according to the Unified Soil Classification System (USCS).

Soil from the drilling will be put in labelled 55 gallon DOT drums for storage in a secure location onsite pending receipt of analytical results. The drummed soil will be disposed of appropriately once the analytical results have been received and reviewed.

2.1.1 *Surface Repair*

Borings will be abandoned by backfilling the boring with neat cement. All borings in asphalt pavement will be finished with a one foot cap of asphalt patch.

2.1.2 *Decontamination*

All auger flights will be decontaminated prior to and between borings using a steam cleaner. Decontamination water will be drummed and stored in a secure location on site pending sample analysis. Soil sampling equipment will be cleaned before and between each sampling event by scrubbing with a brush and laboratory-grade detergent, then triple rinsing with tap water, and allowing to air dry.

2.1.3 *Soil Sample Analysis*

Each sample will be labelled and a chain of custody form identifying the samples and analyses to be performed will accompany each sample shipment to the laboratory. All samples will be analyzed by the following methods:

- EPA Method 8015 modified, for Total Purgeable Hydrocarbons as gasoline (TPHg);
- EPA Method 8020, for Benzene, Toluene, Xylene, and Ethylbenzene (BTEX); and,
- EPA Method 418.1 for Total Recoverable Petroleum Hydrocarbons (TRPH).

Selected samples will be submitted for:

- EPA Method 8015 modified, for Total Extractable Hydrocarbons as diesel (TPHd);
- EPA Method 6010 for Total Lead; and,
- LUFT Method for Organic Lead.

The soil samples to be analyzed for TPHd and Total and organic lead will be selected as follows: (a) the soil sample containing the largest concentration of TPHg from each boring will be analyzed for TPHd, total lead, and soluble lead, and (b) all soil samples from borings B-1, B-2, B-4, and B-5 will be analyzed for TPHd.

Analyses for petroleum hydrocarbons and BTEX will be performed by the onsite mobile laboratory; duplicate samples will be collected for total and organic lead analyses and will be shipped to an offsite laboratory. Each laboratory will be required to perform the appropriate QA/QC procedures for each analytical method used. If the particular method does not specify a QA/QC procedure, then the lab will perform analysis on one spiked sample for each 10 samples analyzed, and will do a percent recovery on at least one out of every ten samples analyzed.

2.2. MONITORING WELLS

2.2.1 *Number and Location of Monitoring Wells*

Three or four monitoring wells will be installed in borings shown on Figure 3. Final locations of monitoring wells will be determined upon review of analytical results from soil and grab ground water samples collected from the borings. Tetra Tech recommends that monitoring wells not be installed in contaminated soil unless the well is going to be used to remediate the soil. Contaminated soil is commonly remediated by excavation, and any monitoring well installed in soil that is later excavated will be destroyed during excavation.

An initial estimate of ground water gradient will be made by measuring the depth to ground water in at least three borings. Several successive measurements will be made in each boring to demonstrate that the depth to water has stabilized. Elevations of the asphalt at the edges of several borings will have already been determined by surveying prior to drilling, so relative elevations of the ground water can be calculated for each of the borings and used to determine the ground water gradient. The resulting gradient will be used to help determine the order of drilling of the borings and the most likely location for the down-gradient monitoring wells.

A single up-gradient monitoring well will be installed in Boring B-2 if the soil and ground water in the boring show no sign of contamination. The other three monitoring wells will be installed in soil borings down-gradient and possibly cross-gradient from the location of the soil contamination around the excavated tank. Two or three down-gradient wells will be installed. One of these will be a proximal well, close to the contaminated soil. The other two will be distal wells, located downgradient to define the edge of the ground water contamination plume. The proximal monitoring well will be installed in boring B-1, i.e., within 10 feet of the former location of the excavated tank. If the soil at the location of boring B-1 is contaminated, the proximal downgradient monitoring well will be installed in boring B-4, approximately 10 ft down gradient from boring B-1. Candidate borings for installation of distal downgradient monitoring wells include B-5, B-8, B-9, and B-10. If grab groundwater samples from all of these borings exhibit petroleum hydrocarbon contamination, then additional down-gradient soil borings will be recommended to define the down-gradient boundary of the ground water plume. The wells will be placed to allow accurate computation of the ground water gradient from ground water elevations.

2.2.2 Well Permitting

The Alameda County Flood Control and Water Conservation District — Zone 7 is the permitting agency for monitoring wells at this location. A permit application will be filed with Zone 7 at least 5 days prior to initiation of drilling. This will allow adequate time for review of the application and issuance of the permit prior to start of field work.

2.2.3 Well Construction

The monitoring wells will be constructed as shown in Figure 4. Water levels were about 11 ft bgs in late 1989 and had risen to 7 ft bgs by April 1993. We propose to screen the wells from 4.5 ft bgs to 24.5 ft bgs.

The wells will be constructed using 2-inch inner diameter (ID) Schedule 40 PVC casing and factory-slotted 0.01-inch screen, with 16 slots per inch. Wells that may be used for ground water extraction, in addition to monitoring, will be constructed of 4-inch ID Schedule 40 PVC casing. Borings

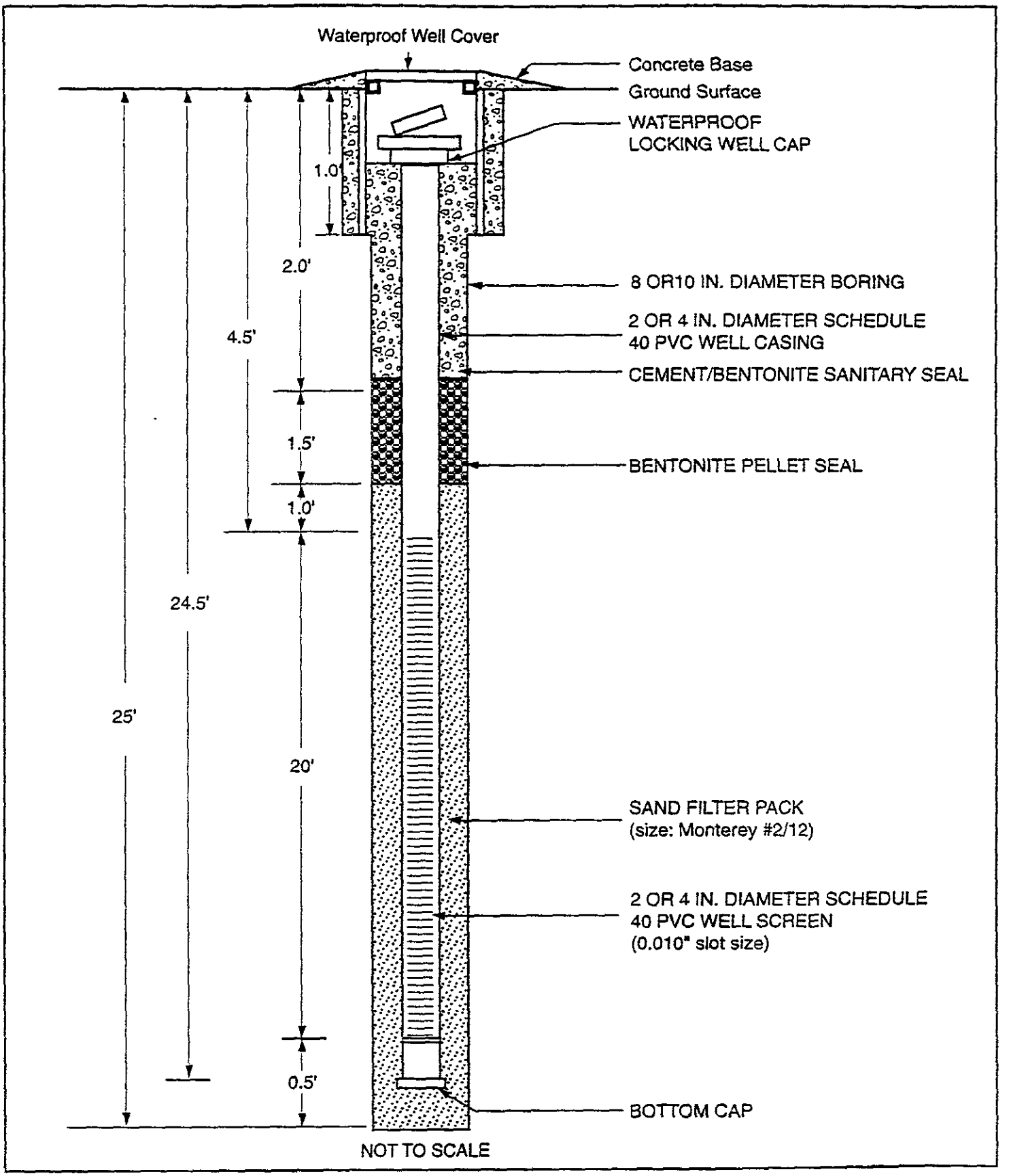

Figure 4 **Monitoring Well Construction Diagram**

in which the 4-inch ID wells are installed will be reamed out with 10-inch outer diameter (OD) hollow-stem augers. The larger augers are needed to provide sufficient space for installation of the filter pack around the 4.5-inch OD casing. A filter pack of No. 2/12 Monterey or equivalent sand will be used.

It is possible that during the installation of the well, the formation may tend to cave (flowing sands). The approach usually used to counter this occurrence is to add water inside the hollow stem auger to decrease the hydrostatic pressure differential that causes the sand to flow into the hollow stem. If this occurs, only distilled water will be added to the well.

Cement-bentonite grout will be installed in the annular space around the blank casing to make the sanitary seal. Traffic-proof, flush-mounted, water-proof well covers will be used at the ground surface to complete the wells. Locking well plugs will be installed. The identification number of the well will be marked permanently on the well box, or on the cement seal.

2.2.4 *Well Development*

The wells will be developed after a minimum of 24 hours has passed to allow the grout to cure. Development will be performed by gentle surging with a vented surge block, followed by pumping or mechanical bailing to remove sediment. Development will continue until low turbidity water is obtained or for four hours, whichever is achieved first. Development water will be drummed, as described for drill cuttings, pending receipt of ground water sample analytical results.

2.2.5 *Well Survey*

The elevation and location of the wells will be surveyed by a state-certified surveyor. Elevations will be to an accuracy of 0.01 ft. Horizontal control will be to an accuracy of 0.1 ft. Elevations will be reported relative to mean sea level and will be measured both to a permanent notch made on the top of the casing.

2.3 GROUND WATER SAMPLING

2.3.1 Ground Water Sampling Protocol

2.3.1.1 Grab Ground Water Samples

Grab ground water samples will be collected from all soil borings except those containing floating product, using a teflon bailer lowered through the hollow stem auger. If floating product is present, its thickness will be measured with an electronic interface probe.

Ground water samples will be placed in appropriate containers, labelled with the sample I.D., date, and time collected, and hand-delivered to the onsite mobile lab for analyses for petroleum hydrocarbons. Samples to be sent to an offsite laboratory for analysis for total and organic lead will be handled as above, and stored in a cooler on ice (to maintain a temperature of about 4 degrees Celsius) for shipment under chain-of-custody to the state-certified laboratory.

2.3.1.2 Ground Water Samples from Monitoring Wells

Ground water samples will be collected from monitoring wells at least 24 hours after well development is completed to enable equilibrium to be established in the well and surrounding aquifer. Sampling protocol will be as follows:

- Prior to sampling, water levels will be measured in all wells. Water levels and levels of any free product will be measured from the well datum using an electronic interface tape calibrated to 0.01 ft. The time, date, depth to the nearest 0.01 ft to product and/or water, and other observations will be recorded on well monitoring forms.

- For those wells from which ground water samples are collected (wells without free product), at least three well volumes will be purged, and the indicator parameters of temperature, pH, and conductivity will be measured and recorded

to verify that they have stabilized before samples are collected. If a well is sufficiently low-yield that it pumps dry, the water sample will be collected only after the well has recovered to 80 percent of its static water volume or after one hour of recovery, whichever occurs first. Wells will be purged with either a new disposable polyethylene bailer, or a pump that can be decontaminated between wells so as not to introduce contamination. Purge water will be put in DOT-17 drums and stored in a secure location on site pending receipt of ground water sample analytical results.

- Water samples will be collected from wells that do not contain floating product, using a Teflon bailer equipped with a bottom-emptying device. The bailer will be decontaminated before and between all sampling events by scrubbing with a brush and laboratory-grade detergent, then rinsed in potable water, final rinsed in distilled water, and air dried.

- Product samples, if necessary, will be collected with a disposable Teflon bailer and placed in 40 ml VOA bottles.

- Ground water samples will be placed in appropriate containers, labelled with the sample I.D., date, and time collected, and stored in coolers on ice (to maintain a temperature of about 4 degrees Celsius) for shipment under chain-of-custody to the state-certified laboratory.

- Water sampling equipment will be cleaned before and between each sampling event by scrubbing with a brush and laboratory-grade detergent, then triple rinsing with tap water, followed by a distilled water rinse.

2.3.2 Ground Water Sample Analysis

Each sample will be labelled and a chain of custody form identifying the samples and analyses to be performed will accompany each sample shipment to the laboratory. All samples will be analyzed by the following methods:

- EPA Method 8015 modified, for Total Purgeable Hydrocarbons as gasoline;
- EPA Method 8015 modified, for Total Extractable Hydrocarbons as diesel (TPHd);
- EPA Method 602, for Benzene, Toluene, Xylene, and Ethylbenzene (BTEX); and,
- EPA Method 418.1 for Total Recoverable Petroleum Hydrocarbons (TRPH).

Selected samples will be submitted for:

- EPA Method 7421 for Total Lead; and,
- LUFT Method for Organic Lead.

The ground water samples to be analyzed for lead will be selected as follows: all ground water samples in which TPHg is detected will be analyzed for total dissolved lead and for organic lead. Additional down-gradient ground water samples may be analyzed for total lead or organic lead depending upon the results of the first set of analyses.

Analyses for petroleum hydrocarbons and BTEX will be performed by the onsite mobile laboratory; duplicate samples will be collected for lead analyses and will be shipped to an offsite laboratory. Each laboratory will be required to perform the appropriate QA/QC procedures for each method used. If the particular method does not specify a QA/QC procedure, then the lab will perform analysis on one spiked sample for each 10 samples analyzed, and will do a percent recovery on at least one out of every ten samples analyzed. A laboratory-prepared trip blank will be shipped with each

individual group of samples sent to the off-site laboratory. One trip blank will also be submitted to the onsite mobile lab during each day of drilling and sampling.

2.4 ACCESS

Prior to starting field work, a request will be submitted to San Lorenzo High School for access to the school grounds adjacent to the subject site should it be needed. The purpose of such a request is to get permission to drill soil borings on the school grounds should it be demonstrated that ground water contamination extends off the site.

2.5 REPORT PREPARATION

Tetra Tech will prepare a Site Investigation Report that meets the recommendations of the Tri-Regional Water Quality Control Board staff (1990, 1991). The report will summarize all methodologies used during the course of site work as well as all analytical results. Copies of appropriate documentation will be included as appendices and all reference materials used in preparation of the report will be listed. The report will evaluate and discuss the analytical results and will present conclusions and recommendations. Nine copies of the report will be submitted to OSA.

Following submission of the Site Investigation Report, Tetra Tech will conduct a feasibility study for remediation of the soil and ground water and review available options to allow the diesel tank to remain in place and be permitted by the County. Tetra Tech will then prepare a report of the findings of the feasibility study and the review of options for the tank. Nine copies of the Feasibility Study and Tank Options Report will be submitted to OSA.

2.6 DISPOSAL OF DRILL CUTTINGS AND WASTE, RINSATE, AND PURGE WATER

The drummed drill cuttings and water from washing the augers and sampling equipment and purging of the monitoring wells will be disposed of within 90 days of their generation. To facilitate characterization of the soil, all soil samples collected from soil borings will be composited by the laboratory and analyzed as a single composite sample for Volatile Organics using EPA Method 8240, for 10 metals (As, Ba, Cd, Cr, Co, Cu, Pb, Ni, Hg, and Zn) using EPA Method 6010, and if needed, Semi-volatile Organics using EPA Method 8270. If the soil is fairly clean, the above analyses will be sufficient, in addition to the analyses already performed on the soil samples, to characterize the soil for disposal at Forward, Incorporated, a Class II disposal facility near Stockton, CA. To minimize disposal costs, the soil may be bulked into a roll-off container for transportation to the Forward facility. If concentrations of hydrocarbons in the cuttings exceed 100 mg/kg, additional analyses may be required to adequately profile the soil.

Rinsate water will be characterized by collection of a single composite sample from the various drums and analyzing the water for TPHg, BTEX, TPHd, TRPH, and Total Lead using the same methods used for ground water samples. The water from well development and purging will be characterized using the analytical results from the ground water samples. The water will be disposed of appropriately, with the disposal method being dependent upon degree of contamination.

2.7 TENTATIVE SCHEDULE

The following schedule is proposed to accomplish the work described above:

ITEM	DESCRIPTION	DELIVERY DATE*
1	Submit Work Plan, Health and Safety Plan to OSA and Alameda County Department of Environmental Services (DES)	June 11, 1993
2	Obtain approval of work plan from Alameda County DES and approval of drilling permit from Alameda County Flood Control and Water Conservation District - Zone 7	June 25, 1993
3*	Start Work	June 28, 1993
4*	Complete work	June 30, 1993
5*	Draft Site Investigation Report	July 16, 1993
6*	Dispose of contaminated materials and containers.	Before September 28, 1993
7*	Final Site Investigation Report	August 6, 1993
8*	Draft Feasibility Study and Tank Options Report	September 3, 1993
9*	Final Feasibility Study and Tank Options Report	September 24, 1993

* Final schedule for items 3-9 is contingent upon work plan approval by Alameda County DES, issuance of well permit by Alameda County Flood Control and Water Conservation District - Zone 7, and completion of backfilling and paving of the gasoline-tank excavation by ATR Enterprises.

3.0 REFERENCES CITED

Helley, E.J., K.R. Lajoie, W.E. Spangle, and M.L. Blair. 1979. Flatland deposits of the San Francisco Bay Region, California -- their geology and engineering projects, and their importance to comprehensive planning. US Geological Survey Professional Paper 943. 88 pages. 3 Plates, scale 1:125,000.

State of California Water Quality Control Board, Tri-Regional Board Staff*. 1990. Recommendations for Preliminary Evaluation and Investigation of Underground Storage Tank Sites, 21 p. (10 August 1990).

_____*. 1991. Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites, Appendix A - Reports, 15 p. (30 August 1991).

West and Hansen Engineers, Inc., 1989a. OMS #35, San Lorenzo UGT and Oakland State Garage UGT, 3 p. (18 December 1989).

_____*. 1989b. Report of Findings, Informal Site Investigations, OMS #35, San Lorenzo, 1 p., map (no scale).

* Tri-Regional Board Staff composed of the staff of North Coast Regional Water Quality Control Board, San Francisco Bay Regional Water Quality Control Board, Central Valley Regional Water Quality Control Board.

APPENDIX A

AUTHORIZED RELEASE REPORT

APPENDIX A

Unauthorized Release Report

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: m m d d y y | CASE #:

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFTY CODE.
SIGNED _____ DATE _____

REPORTED BY

NAME OF INDIVIDUAL FILING REPORT: Scott G. Hilyard | PHONE: (916) 973-3340 | SIGNATURE: Scott Hilyard

REPRESENTING ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER _____ | COMPANY OR AGENCY NAME: State Military Department

ADDRESS: 2829 Watt Avenue (STREET) | Sacramento (CITY), California (STATE) 95821 (ZIP)

RESPONSIBLE PARTY

NAME: State Military Department ☐ UNKNOWN | CONTACT PERSON: Scott G. Hilyard | PHONE: (916) 973-3340

ADDRESS: 2829 Watt Avenue (STREET) | Sacramento (CITY) CA (STATE) 95821 (ZIP)

SITE LOCATION

FACILITY NAME (IF APPLICABLE): OMS #35 | OPERATOR: State Maintenance Directorate | PHONE: (415) 278-4353

ADDRESS: 16501 Ashland Avenue (STREET) | San Lorenzo (CITY), Alameda (COUNTY) 94580 (ZIP)

CROSS STREET: Lewelling Blvd. | TYPE OF AREA ☒ COMMERCIAL ☐ INDUSTRIAL ☐ RURAL ☐ RESIDENTIAL ☐ OTHER _____ | TYPE OF BUSINESS ☐ RETAIL FUEL STATION ☐ FARM ☒ OTHER Military

IMPLEMENTING AGENCIES

LOCAL AGENCY / AGENCY NAME: Alameda County Health Services | CONTACT PERSON: Katherine Chesick | PHONE: (415) 271-4320

REGIONAL BOARD: San Francisco Bay Region | Lester Feldman | PHONE: (415) 464-1255

SUBSTANCES INVOLVED

(1) NAME: Unleaded fuel | QUANTITY LOST (GALLONS): _____ ☒ UNKNOWN

(2) _____ ☐ UNKNOWN

DISCOVERY/ABATEMENT

DATE DISCOVERED: 12 / 01 / 89 | HOW DISCOVERED ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☐ TANK REMOVAL ☒ OTHER Piping upgrade

DATE DISCHARGE BEGAN: m m d d y y ☐ UNKNOWN

HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE 12 / 01 / 89

METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY) ☐ REMOVE CONTENTS ☐ REPLACE TANK ☐ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☒ OTHER Not pumping fuel

SOURCE/CAUSE

SOURCE OF DISCHARGE: ☐ TANK LEAK ☐ UNKNOWN ☒ PIPING LEAK ☐ OTHER

TANKS ONLY/CAPACITY: _____ GAL | AGE _____ YRS ☐ UNKNOWN

MATERIAL: ☐ FIBERGLASS ☐ STEEL ☐ OTHER _____

CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ CORROSION ☐ UNKNOWN ☐ SPILL ☐ 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: ☐ SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) ☐ CLEANUP IN PROGRESS ☐ SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) ☒ NO ACTION TAKEN ☐ POST CLEANUP MONITORING IN PROGRESS ☐ NO FUNDS AVAILABLE TO PROCEED ☐ EVALUATING CLEANUP ALTERNATIVES

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)
☐ TREATMENT AT HOOKUP (HU) ☐ NO ACTION REQUIRED (NA) ☒ OTHER (OT) Site evaluation required

COMMENTS

The Military Department is currently negotiating with the Office of the State Architect for a site assessment to determine the extent of contamination.

APPENDIX B

ALAMEDA COUNTY TANK REMOVAL REPORT

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 # 2690 Site Name Calif. Nat'l Guard Today's Date 4/22/93

Site Address 16501 Ashland Ave

City San Lorenzo Zip 94580 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)

II.A 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)

II.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

III. UNDERGROUND TANKS (Title 23)

General

___	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

Monitoring for Existing Tanks

___ 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 ___

According to Mr. Soto of Erickson Inc.

___ 7. Precis Tank Test Date: ___ 2643
___ 8. Inventory Rec. 2644
___ 9. Soil Testing. 2646
___ 10. Ground Water. 2647

New Tanks

___	11. Monitor Plan	2632
___	12. Access. Secure	2634
___	13. Plans Submit Date: ___	2711
___	14. As Built Date: ___	2635

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Comments:

Arrived on site, for the second time at 1:15pm. According to Mr. Smith, the tank was already pumped of its contents and inerted w/ LEL < 10% and O_2 = 0. A representative of Erickson monitored the LEL and O_2 in the tank again while I was at site and got a reading of 13% LEL and 0.1 O_2, so additional dry ice was placed in tank. Doug Johnson, Eden Consolidated Fire Dept., and Kevin McNamara, Tetra Tech, was also out at site. According to Mr. McNamara, 50lbs of dry ice had already been placed in tank. 400 gallons of groundwater was pumped from the tank pit along w/ ~25 gallons of fuel from inside the tank by Erickson. Charles Aldrich, Aldrich Biotechnical, went ahead and collected 11 discrete & stockpiled soil samples while we waited for additional dry ice.

Contact: Willie Smith, ATR

Title: ___

Signature: Kevin M. McNamara

Inspector: Juliet Shin

Signature: Juliet Shin

II, III

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 #2690 Site Name Calif Nat'l Guard Today's Date 4/22/93

Site Address 16501 Ashland Ave

City San Lorenzo Zip 94580 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)

II.A BUSINESS PLANS (Title 19)

___	1. Immediate Reporting	2705
___	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)

II.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 Consea. 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)
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Monitoring for Existing Tanks

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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 sting
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

New Tanks

___	11. Monitor Plan	2632
___	12. Access. Secure	2634
___	13. Plans Submit Date: _____	2711
___	14. As Built Date: _____	2635

Rev 6/88

Comments:

Strong odor was observed to be coming from tank (petroleum odor). Additionally, floating product was observed to be floating on groundwater in the tank pit. 30 additional pounds of dry ice was placed into tank. Another gastech reading identified 10% LEL, 5% O2 and 8ppm. Tank was pulled. Stained soil was observed at capillary fringe of side walls. No holes were observed on tank. Tank was in pretty good condition. Stained soil also observed from piping down to bottom of tank pit. (Note: Stockpiled piled soil sample, collected earlier, was placed in glass jar). The pit is ~ 7½-8 feet deep. One groundwater sample was collected from tank pit and one soil sample was collected from the fill end of tank pit via brass tube at a depth of ~ 7½' bgs. I had to leave before other end of tank was sampled. Kevin Mahanna would stay on to possibly collect additional samples. Left site at 3:50 p.m.

II, III

Contact: Kevin

Title: _____ Inspector: Juliet Shin

Signature: _____ Signature: Juliet Shin