**Fuller Excavating & Demolition, Inc.**

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License No. 505228

REPORT for the

*PRELIMINARY SITE ASSESSMENT INVESTIGATION

at

Former Minami Nursery Site

Penny Lane

San Lorenzo, California

Project No. 5107

June PSA 96

Ken Mateik

Registered Geologist

C.E.G. No. 1935

June 14, 1996

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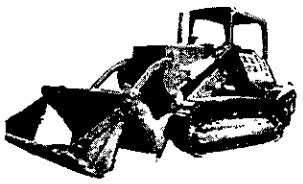

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PRELIMINARY SITE ASSESSMENT INVESTIGATION
at
Former Minami Nursery Site
Penny Lane
San Lorenzo, California

## INTRODUCTION

At the request of Mr. Jay Woidtke, attorney for the estate of Mr. George Minami, Jr., this report summarizes work performed by Fuller Excavating and Demolition, Inc. to evaluate for the presence of petroleum hydrocarbons in the soil and groundwater beneath the site in the area of one former 1,000-gallon gasoline underground storage tank (Tank #1) and one former 2,000-gallon fuel oil underground storage tank (Tank #2) at the above-referenced property. This work was performed in accordance with the Work Plan (ESI, October 1993) submitted to the Environmental Protection Division of the Department of Environmental Health of the Alameda County Health Care Services Agency (ACHCSA).

The present investigation included drilling three soil borings in May 1996, installing three 2-inch-diameter groundwater monitoring wells (MW-1, MW-2, and MW-3) in the borings, performing laboratory analyses on selected soil samples collected from the borings and water samples collected from the wells, surveying wellhead elevations, measuring groundwater levels in the wells, and evaluating the local groundwater gradient. This report describes the work performed, summarizes the analytical test results, and presents our conclusions.

## SITE DESCRIPTION

The former Minami Nursery site is currently located on Penny Lane in San Lorenzo, California, as shown on the Site Vicinity Map (Figure No. 1). The site is currently a vacant lot that was originally a portion of the Minami Nursery property, which has been largely developed as a residential subdivision, as shown on the Site Location Map (Figure No. 2). The site is relatively flat and lies at an elevation of approximately 40 feet above Mean Sea Level. The site is presently occupied by a large stockpile of soil. Residential properties are located to the north, south, and east of the site, while commercial businesses are located to the west of the site. The site boundaries and approximate locations of selected features on the site are shown on the Generalized Site Plan (Figure No. 3).

## REGIONAL AND LOCAL HYDROGEOLOGY

The site lies on the East Bay Plain between San Francisco Bay to the north and west, the Hayward Fault and foothills of the Diablo Range to the east, and the city limit of Hayward to the south. The East Bay Plain lies within the Coast Range geomorphic province and is characterized by broad alluvial fans deposited at the foot of the Diablo Range to the east. The broad alluvial fans slope westward to San Francisco Bay.

Within the East Bay Plain, the site is located in the west-central portion of the hydrogeologic zone known locally as San Lorenzo Cone (Hickenbottom and Muir, 1988). This cone consists of unconsolidated deposits in an alluvial fan formed by nearby San Lorenzo Creek (Muir, 1993). Interbedded fluvial deposits of the San Lorenzo Cone, including silt, sand, gravel, and clay, underlie the site (Helley et al., 1979). The soils encountered in previous borings at the site consisted primarily of silty clay and clayey sand.

The framework of the hydrogeologic deposits in the site area consist of random continuous and discontinuous sequences of saturated coarse-grained zones that form aquifers in the site area (Muir, 1993). These aquifers are (from shallowest to deepest) the upper aquifer, the Newark Aquifer, the Centerville Equivalent Aquifer, the Fremont Aquifer and the Deeper Aquifer. The depths of these aquifers are estimated to range from the ground surface to 50 feet, 30 to 75 feet, 130 to 220 feet, 250 to 400 feet, and greater than 400 feet deep, respectively. These aquifers generally slope to the west (Maslonkowski, 1984). The Holocene-age unconsolidated alluvium of the upper aquifer yields small amounts of groundwater to wells sufficient only for local usage, since most of this younger alluvium lies above the regional zone of saturation (Muir, 1993).

The site is located approximately 3,000 feet north of Ward Creek, one mile east of Sulphur Creek, one mile south of San Lorenzo Creek, and two miles east of the eastern shoreline of San Francisco Bay. The active Hayward Fault is approximately two miles east of the site.

Groundwater levels encountered in previous work at the site suggest the depth to groundwater at the site is approximately 20 feet below grade. On the basis of information from Maslonkowski (1984) and from observation of local and regional topography, the inferred groundwater flow direction is believed to be towards the west-southwest.

## PREVIOUS ENVIRONMENTAL WORK

### Preliminary Subsurface Assessment

In August and September 1988, Emcon Associates performed a Preliminary Soil and Groundwater Assessment at the site for Kaufman and Broad South Bay, Inc. (Emcon, December 1988). The purpose of this investigation was to evaluate potential adverse environmental impacts at the entire Minami Nursery site due to historic fuel underground storage tank (UST) practices, and to characterize the extent and magnitude of any contamination detected. The investigation consisted of three phases of work:

Phase I: The purpose of this phase of investigation was to collect subsurface soil and water samples to evaluate the potential for onsite soil and / or groundwater contamination as a result of leakage from three fuel USTs at the site. The three USTs were a 1,000-gallon gasoline UST (Tank #1), a 2,000-gallon fuel oil UST (Tank #2), and an estimated 1,000-gallon fuel oil UST (Tank #3). Five soil borings were drilled and sampled at the site. Results of laboratory chemical analyses indicated that both the soil and groundwater were contaminated in the area of Tank #1 and Tank #2. No evidence of contamination was detected in the soil and / or groundwater in the vicinity of Tank #3.

Phase II: The purpose of this phase of investigation was to collect subsurface "grab" water samples to further evaluate the lateral extent of groundwater contamination in the vicinity of the 1,000-gallon gasoline UST (Tank #1) at the site. Six additional soil borings were drilled and sampled at the site. Results of laboratory chemical analyses approximated the extent of contaminated groundwater in the area of Tank #1.

Phase III: The purpose of this phase of investigation was to collect additional subsurface "grab" water samples to further evaluate the lateral extent of groundwater contamination in the vicinity of the 1,000-gallon gasoline UST (Tank #1) at the site. Ten additional soil borings were drilled and sampled at the site. Results of laboratory chemical analyses further approximated the extent of contaminated groundwater in the area of Tank #1.

## Tank Removals

In November 1989, Engineering-Science Inc. (ESI) excavated and removed Tank #1 and Tank #2 from the site (ESI, August 1990). According to ESI, the gasoline UST (tank #1) was observed to be sound. Two holes were observed in the side and bottom of the fuel oil UST (Tank #2) upon its removal. Soil samples were collected from beneath the ends of each UST. Results of the laboratory analyses of these four soil samples indicated that leakage had occurred from the west end of the gasoline UST (Tank #1).

## Soil Excavations

In November and December 1989, ESI excavated and stockpiled contaminated soil at the site (ESI, August 1990). Contaminated soil in the excavations was evaluated with a photoionization detector (PID). The highest PID readings were correlated with a blue-green clay layer between the depths of approximately 12½ feet and 18 feet. When the PID readings were relatively low, confirmatory soil samples were collected. Results of the laboratory analyses of seven confirmatory soil samples indicated nondetectable quantities of gasoline hydrocarbons along the perimeter of the Tank #1 excavation. Results of the laboratory analyses of four confirmatory soil samples indicated detectable quantities of diesel hydrocarbons along the northern perimeter of the Tank #2 excavation. The Tank #2 excavation was expanded 15 feet to the north, and a subsequent confirmatory soil sample was collected from the northern-most limit of the excavation. Results of the laboratory analyses of this confirmatory soil sample indicated nondetectable quantities of petroleum hydrocarbons along the perimeter of the Tank #2 excavation. All of the excavated soil was stockpiled onsite.

## Backfilling of Excavations

Between January and March 1990, ESI backfilled the two excavations with approximately 1,820 cubic yards of clean fill. The backfilled material was compacted to a relative compaction of at least 90 percent in both excavations (ESI, August 1990).

Workplan for Preliminary Site Assessment

In October 1993, a Workplan for a Preliminary Site Assessment was prepared by ESI and submitted to the ACHCSA (ESI, October 1993). Figures showing the locations of the three USTs, the two excavations and the confirmatory soil samples, and the borings drilled by Emcon Associates are included in the ESI Workplan. Tables summarizing the results of the laboratory chemical analyses conducted by Emcon and ESI are also included in the ESI Workplan.

The work plan proposed to evaluate the level of contamination residing in the stockpiled soil and the soil materials underlying the stockpiled soil, and to characterize the lateral extent of groundwater contamination beneath the site. The Workplan described procedures for evaluating the stockpiled contaminated soil, the drilling of three soil borings, the installation of three 2-inch groundwater monitoring wells in the borings, the collection of water samples, the evaluation of the local groundwater gradient, the analysis of soil and groundwater samples, and the preparation of a summary report.

The work plan also proposed implementing a Quarterly Groundwater Sampling program and the preparation of Quarterly Monitoring reports for a period of one year at the site. The Workplan was approved by the ACHCSA in October 1993.

## FIELD WORK - Stockpiled Soil

Sampling of Stockpiled Soil

Soil excavated during the removal of the USTs has been stockpiled at the site since November 1989. In the Workplan for the Preliminary Site Assessment, ESI estimated that approximately 1,700 cubic yards of soil had been removed from the excavations. Of the 1,700 cubic yards of soil excavated at the site, ESI estimated that approximately 1,255 cubic yards of soil remained stockpiled at the site. Since December 1989, residential development has occurred at the site.

On February 9, 1996, Fuller Excavating and Demolition, Inc. (FE&DI) personnel visited the site to examine the stockpiled soil. Field measurements suggested that as much as 2,500 cubic yards of soil was actually stockpiled at the site. The source of this additional soil is unknown, but it is likely that excess soil generated during the residential development of the remainder of the Minami Nursery property may have been discarded at the site.

On May 4, 1996, FE&DI's Project Geologist collected nine composite soil samples from various areas of the **stockpiled** soil at the site. Each composite soil sample consisted of four discreet samples. Composite soil samples CS-#1(A,B,C,D) through CS-#9(A,B,C,D) were collected from the stockpiled soil by using a steel-tracked excavator and a hand-held percussion-driven sampling tool equipped with brass sampling sleeves. The excavator was used to excavate access slots into areas of the stockpiled soil.

During excavation of eight access slots into the stockpiled soil, two layers of black visquine plastic sheeting was observed. The soil "sandwiched" by the two layers of plastic sheeting averaged between 4 to 7 feet in thickness in the majority of the stockpile. On top of the upper black plastic sheeting, additional soil had been stockpiled. This additional soil averaged between 6 to 8 feet in thickness in the majority of the stockpile. Composite soil samples CS-#1(A,B,C,D), CS-#3(A,B,C,D), CS-#5(A,B,C,D), and CS-#7(A,B,C,D) were collected from the stockpiled soil "sandwiched" between the two layers of plastic sheeting. Composite soil samples CS-#2(A,B,C,D), CS-#4(A,B,C,D), CS-#6(A,B,C,D), and CS-#8(A,B,C,D) were collected from the stockpiled soil above the upper layer of plastic sheeting. Composite soil sample CS-#9(A,B,C,D) was collected from a discolored area of soil observed on the northeastern flank of the stockpiled soil.

On May 21, 1996, FE&DI's Project Geologist collected one additional composite soil sample from the northeastern flank of the stockpiled soil at the site. Composite soil sample CS-#10(A,B,C,D) was collected from the stockpiled soil by using the steel-tracked excavator onsite and a hand-held percussion-driven sampling tool equipped with brass sampling sleeves. The excavator was used to excavate approximately three feet into the northeastern flank of the stockpiled soil. Composite soil sample CS-#10(A,B,C,D) was collected from above the upper layer of plastic sheeting.

A summary of the field procedures utilized by FE&DI to collect composite soil samples is included in Appendix A. The composite soil samples were sealed in the brass sampling sleeves using aluminum foil, plastic caps, and aluminized duct tape; labeled; and promptly placed in iced storage for transport to the selected State-certified laboratory. A Chain-of-Custody Records were initiated on a daily basis in the field by the Project Geologist for the samples collected and accompanied the samples to the State-certified laboratory. Copies of the Chain-of-Custody Records are included in Appendix B.

## LABORATORY ANALYSES

### Analytical Methods for Composite Soil Samples

The composite soil samples collected from the stockpiled soil were submitted with a Chain-of-Custody Record to the Priority Environmental Laboratory in Milpitas, California (Environmental Laboratory Accreditation Program [ELAP] No. 1708). The composite soil samples were analyzed for the following petroleum fuel compounds, as requested by the ACHCSA:

1) Total Petroleum Hydrocarbons as gasoline (TPHg) by GCFID (LUFT Method) following sample purge and trap by EPA Method 5030;
2) the volatile hydrocarbon constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Test Method 8020 / 602;
3) Total Petroleum Hydrocarbons as diesel (TPHd) using Environmental Protection Agency (EPA) Methods 3550 and modified 8015; and
4) Total Oil and Grease (TOG) by EPA Standard Method 5520 C, D, and F.

### Laboratory Results for Composite Soil Samples

Laboratory results of the nine composite soil samples collected on May 4, 1996 from the stockpiled soil indicated the following:

1) Nondetectable concentrations of TPHg (less than 1.0 part per million [ppm]);
2) Nondetectable concentrations of BTEX (less than 0.005 ppm);
3) Nondetectable concentrations of TPHd (less than 1.0 ppm); and
4) Nondetectable concentrations of TOG (less than 10 ppm), except for 13 ppm of TOG in composite soil sample CS-#8(A,B,C,D) and 100 ppm of TOG in composite soil sample CS-#9(A,B,C,D).

Laboratory results of the one composite soil sample collected on May 21, 1996 from the stockpiled soil indicated the following:

1) Nondetectable concentrations of TPHg, BTEX, and TPHd; and
2) A detectable concentration of 44 ppm of TOG.

The results of the laboratory analyses of the composite soil samples are shown in Table 1, and the Laboratory Data Sheets and the Chain-of-Custody Records are included in Appendix B.

TABLE 1
RESULTS OF LABORATORY ANALYSES OF
COMPOSITE SOIL SAMPLES
FROM STOCKPILED SOIL
Former Minami Nursery Site
Penny Lane
San Lorenzo, California

| Sample Identification | TPHd | TPHg | Benzene | Toluene | Ethyl-benzene | Total Xylenes | TOG |
|---|---|---|---|---|---|---|---|
| May 4, 1996 | | | | | | | |
| CS-#1(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <10 |
| CS-#2(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <10 |
| CS-#3(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <10 |
| CS-#4(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <10 |
| CS-#5(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <10 |
| CS-#6(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <10 |
| CS-#7(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | <10 |
| CS-#8(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | 13 |
| CS-#9(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | 100 |
| May 21, 1996 | | | | | | | |
| CS-#10(A,B,C,D) | <1.0 | <1.0 | <0.005 | <0.005 | <0.005 | <0.005 | 44 |

Measurements are in parts per million (ppm).
TPHd: Total Petroleum Hydrocarbons as diesel analyzed by EPA Methods 3550 and modified 8015.
TPHg: Total Petroleum Hydrocarbons as gasoline analyzed by EPA Methods 5330 and modified 8015.
Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Methods 5030 and modified 8020.
TOG: Total Oil and Grease analyzed by EPA Standard Method 5520 C, D, and F.

<: Less than the laboratory detection limit = NonDetectable.

Because of the nondetectable results of laboratory analyses for composite soil samples CS-#1(A,B,C,D) through CS-#7(A,B,C,D), approximately 300 cubic yards of soil were excavated, loaded, and transported from the site in May 1996 to the West Winton Landfill in Hayward, California.

## FIELD WORK - Soil Borings and Monitoring Wells

### Drilling of Borings

Prior to drilling, a Well Construction permit was acquired from Zone 7 of the Alameda County Flood Control and Water Conservation District in Pleasanton, California. A copy of the permit is included in Appendix C. On May 28, 1996, the FE&DI Project Geologist was onsite to observe the drilling of three exploratory soil borings (MW-1, MW-2, and MW-3) at the approximate locations proposed by ESI in Figure 8 of the ESI Workplan (ESI, October 1993). The borings were drilled with a Mobil B-61 truck-mounted drill rig operated by Exploration GeoServices, Inc. of San Jose, California. The truck-mounted drill rig was equipped with 8-inch-diameter, hollow-stem, continuous flight augers.

Soil Boring MW-1 was located within the former gasoline UST excavation to evaluate the soil and groundwater in the immediate area of former Tank #1 and in the inferred downgradient direction from the former fuel oil UST (Tank #2). Soil Borings MW-2 and MW-3 were located along the western property boundary to evaluate the soil and groundwater in the inferred downgradient direction from the two former USTs. A summary of the field procedures employed by FE&DI are included in Appendix A. The work performed for this investigation was performed in accordance with the work proposed in the Work Plan (ESI, October 1993) and the Site Safety Plan (FE&DI, May 1996).

The three borings were drilled to the approximate depths of 25 feet, 31½ feet, and 25 feet, respectively, in the first-encountered water-bearing zone. Groundwater monitoring wells (MW-1, MW-2, and MW-3) were installed in the borings to evaluate the presence of petroleum fuel hydrocarbons in the first-encountered groundwater beneath the site. The locations of the groundwater monitoring wells are shown on the Generalized Site Plan (Figure No. 3).

### Soil Sampling

Soil samples were collected from the soil borings during drilling and described in accordance with the Unified Soil Classification System, Figure No. 4, and as indicated on the Logs of Borings, Figure Nos. 5, 6, and 7. Soil samples were collected from the borings at a maximum of five-foot intervals to the total depths of approximately 25 feet, 31½ feet, and 25 feet, respectively. As mentioned earlier, a summary of the field procedures employed by FE&DI are included in Appendix A.

Description of Soils

The earth materials encountered beneath the site in the three soil borings consist primarily of fine-grained soils. The surface soil in each of the three soil borings consisted of approximately one-half to one foot of fill materials composed of brown Clayey to Sandy Silt similar to the stockpiled soils.

In Boring MW-1, which was located within the former gasoline UST excavation, fill materials were encountered to a depth of approximately 17½ feet. Between the depths of approximately 1 foot to 5 feet, the fill materials consisted of a moist, very stiff (compacted) brown Sandy Silt with low estimated plasticity. Between the depths of approximately 5 feet to 17½ feet, the fill materials consisted of a moist to wet, very stiff to firm, black mottled with brown Sandy Clay with high estimated plasticity. Below the approximate depth of 17½ feet, "native" soil materials were encountered in Boring MW-1. Between the depths of approximately 17½ feet to 23½ feet, the soil materials consisted of a saturated, medium dense, brown Silty Sand. Between the depths of approximately 23½ feet to the bottom of the boring at 25 feet, the soil materials consisted of a moist, very stiff, brown Clayey Silt with medium estimated plasticity.

In Borings MW-2 and MW-3, which were located along the western property boundary outside of the former excavations, no materials were encountered, except for the surface soils described earlier. Between the depths of approximately 1 foot to 6 feet, the soil materials consisted of a moist, very stiff, dark brown to black Silty Clay with high estimated plasticity. Between the depths of approximately 6 feet to 12½ feet, the soil materials consisted of a moist, stiff, brown Clayey to Sandy Silt with low estimated plasticity. Between the depths of approximately 12½ feet to 23 feet, the soil materials consisted of a moist to saturated, medium dense, brown Silty Sand. In Boring MW-3, between the depths of approximately 23 feet to the bottom of the boring at 25 feet, the soil materials consisted of a moist, hard, brown Clayey Silt with medium estimated plasticity. However, in Boring MW-2, between the depths of approximately 22 feet to 27 feet, the soil materials consisted of a saturated, medium dense, brown, well-graded, fine-grained to coarse-grained Sand that may indicate channel deposits from an old streambed. Between the depths of approximately 27 feet to 29½ feet, the soil materials consisted of a saturated, medium dense, brown Silty Sand. In Boring MW-2, between the depths of approximately 29½ feet to the bottom of the boring at 31½ feet, the soil materials consisted of a moist, hard, brown Clayey Silt with low to medium estimated plasticity.

The subsurface soil stratigraphy is graphically shown on the Logs of the Borings in Figure Nos. 5, 6, and 7. Groundwater was encountered during drilling at a depth of approximately 15½ feet below the ground surface (bgs) in each of the borings, and rose slightly to a depth of approximately 14 feet bgs.

## Monitoring Well Construction and Development

On May 28, 1996, groundwater monitoring wells MW-1, MW-2, and MW-3 were constructed in the boreholes. The wells were completed with 2-inch-diameter, schedule 40, threaded polyvinyl chloride (PVC) casing. Well casings were set in the wells to depths ranging between approximately 25 and 30 feet bgs. The screened casings for the monitoring wells consist of 2-inch-diameter, 0.010-inch machine-slotted PVC. Blank PVC casing was set from the top of the screened casing to near the ground surface. Because the site is currently undergoing soil stockpile removal, and there will be heavy construction equipment and trucks traversing the site, the blank PVC casing was extended approximately 3 feet above the surrounding ground surface. A 4-foot aluminum "stovepipe" cover and lid was placed over each wellhead and set in concrete to reduce the possibility of accidental disturbance of the wells.

On May 31, 1996, the FE&DI Project Geologist supervised the initial well development at the site by Exploration GeoServices, Inc. Monitoring wells MW-1, MW-2, and MW-3 were developed by surge block and bailing techniques. Approximately 20 gallons of water were removed from each well during the development procedures. The well development water from each monitoring well has been temporarily stored in Department of Transportation (DOT) approved 55-gallon metal drums at the site. The Well Development Data Sheets are included in Appendix D.

## Groundwater Sampling

On June 4, 1996, the FE&DI Project Geologist purged and sampled each of the three groundwater monitoring wells at the site. The field work consisted of measuring the static depth-to-water (DTW) level in each monitoring well, subjectively evaluating groundwater from each monitoring well for the presence of petroleum fuel hydrocarbons, the purging of groundwater from each monitoring well, and the sampling of groundwater from each monitoring well for laboratory analysis. Field methods used during the purging and sampling are described in Appendix A of this report.

No evidence of measurable floating product was observed in any of the three wells. No evidence of hydrocarbon vapor was noted in the water samples collected from monitoring wells MW-2 and MW-3; however, a noticeable odor was detected in the water samples collected from monitoring well MW-1. Each of the three monitoring wells were purged and sampled in accordance with the attached groundwater sampling protocol in Appendix A. Well Purge Data Sheets with the parameters monitored from the wells are included in Appendix D.

Approximately 20 gallons of water were purged from each monitoring well prior to sampling, and has been temporarily stored in DOT-approved 55-gallon metal drums at the site. The purge water remains the responsibility of the Property Owner. If necessary, FE&DI can arrange to have the water-filled drums removed to an appropriate disposal facility with the Property Owner's authorization.

## LABORATORY ANALYSES

Analytical Methods for Soil Samples

Thirteen of the 19 soil samples collected from borings MW-1, MW-2, and MW-3 were submitted with a Chain-of-Custody Record to the Priority Environmental Laboratory in Milpitas, California (ELAP No. 1708). The soil samples were analyzed for the following petroleum fuel compounds, as requested by the ACHCSA:

1) TPHg by GCFID (LUFT Method) following sample purge and trap by EPA Method 5030;
2) the volatile hydrocarbon constituents BTEX by EPA Test Method 8020 / 602; and
3) TPHd using EPA Methods 3550 and modified 8015.

These soil samples were selected for laboratory analyses based on:

- location above first-encountered groundwater;
- location in a potential confining or perching layer above or below first-encountered groundwater; and
- 5-foot intervals or changes in stratigraphic units as recommended by the ACHCSA for definition of hydrocarbons in soil.

Analytical Methods for Groundwater Samples

Groundwater samples collected from wells MW-1, MW-2, and MW-3 were also submitted with a Chain-of-Custody Record to the Priority Environmental Laboratory in Milpitas, California (ELAP No. 1708). The groundwater samples were analyzed for the following petroleum fuel compounds, as requested by the ACHCSA:

1) TPHg by GCFID (LUFT Method) following sample purge and trap by EPA Method 5030;
2) the volatile hydrocarbon constituents BTEX by EPA Test Method 602;
3) the fuel oxygenate compound Methyl Tertiary Butyl Ether (MTBE) also by EPA Test Method 602;
4) TPHd using EPA Methods 3550 and modified 8015; and
5) TOG by EPA Standard Method 5520 C, D, and F.

Laboratory Results for Soil Samples

Laboratory results of the soil samples collected from the soil borings on May 28, 1996, indicated the following:

1) Nondetectable concentrations of TPHg (less than 1.0 ppm);
2) Nondetectable concentrations of BTEX (less than 0.005 ppm); and
3) Nondetectable concentrations of TPHd (less than 1.0 ppm).

The results of the laboratory analyses of the soil samples collected from the soil borings are shown in Table 2, and the Laboratory Data Sheet is included in Appendix B.

Laboratory Results for Groundwater Samples

Laboratory results of the water samples collected from the monitoring wells on June 4, 1996, indicated the following:

(1) In monitoring well MW-1, an elevated concentration of 4,100 parts per billion (ppb) of TPHg, a detectable concentration of 1,800 ppb of TOG, detectable concentrations of the gasoline constituents benzene (4.2 ppb), toluene (4.2 ppb), ethylbenzene (6.0 ppb), and total xylene isomers (36 ppb), and

nondetectable concentrations of TPHd (less than 50 ppb) and MTBE (less than 0.5 ppb) were measured in the groundwater samples.

(2) In monitoring wells MW-2 and MW-3, nondetectable concentrations (less than 500 ppb) of TOG, nondetectable concentrations (less than 50 ppb) of TPHd, nondetectable concentrations (less than 50 ppb) of TPHg, nondetectable concentrations (less than 0.5 ppb) of BTEX, and nondetectable concentrations (less than 0.5 ppb) of MTBE were measured in the groundwater samples.

The results of the laboratory analyses of the groundwater samples are shown in Table 3, and the Laboratory Data Sheet is included in Appendix B.

## GROUNDWATER GRADIENT EVALUATION

On June 4, 1996, the wellhead elevations were surveyed by Ron Archer, Civil Engineer, Inc., of Pleasanton, California, a licensed land surveyor. The results of this wellhead survey are included in Appendix E, Wellhead Survey. The groundwater elevations for each well on May 31 and June 4, 1996 were calculated by subtracting the depth-to-water (DTW) measurements from the surveyed elevation of the top of the well casing. The DTW measurements, wellhead elevations, and groundwater elevations are presented in Table 4, Cumulative Groundwater Monitoring Data.

Based on the groundwater elevations obtained on May 31 and June 4, 1996, a local groundwater gradient of approximately 0.005 foot per foot to the west-northwest was interpreted for the site. The Groundwater Gradient Maps (Figure Nos. 11 and 12) are graphic interpretations of the groundwater gradient based on the May 31 and June 4, 1996 groundwater monitoring data, respectively.

## WELL RESEARCH

A cursory survey of active, inactive, and destroyed water supply wells and groundwater monitoring wells listed with the Department of Water Resources of the Alameda County Public Works Agency (ACPWA) within a one-half mile radius of the site was performed as part of this environmental investigation. According to ACPWA records as of May 31, 1996, the nearest wells to the site in the downgradient direction (to the west-northwest) are four groundwater monitoring wells located at the BP Oil gasoline station site at 18560l Hesperian Boulevard in San Lorenzo, California.

TABLE 2
RESULTS OF LABORATORY ANALYSES OF
SOIL SAMPLES FROM SOIL BORINGS
Former Minami Nursery Site
Penny Lane
San Lorenzo, California

| Sample Identification | TPHd | TPHg | Benzene | Toluene | Ethyl-benzene | Total Xylenes |
|---|---|---|---|---|---|---|
| May 28, 1996 | | | | | | |
| S- 4½-MW1 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S- 9½-MW1 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S-14½-MW1 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S-24½-MW1 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S- 4½-MW2 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S- 9½-MW2 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S-14 -MW2 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S-15 -MW2 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S-31 -MW2 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S- 4½-MW3 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S- 9½-MW3 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S-14½-MW3 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| S-24 -MW3 | <1.0 | <1.0 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |

Measurements are in parts per million (ppm).

TPHd: Total Petroleum Hydrocarbons as diesel analyzed by EPA Methods 3550 and modified 8015.

TPHg: Total Petroleum Hydrocarbons as gasoline analyzed by EPA Methods 5330 and modified 8015.

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Methods 5030 and modified 8020.

<: Less than the laboratory detection limit = NonDetectable.

TABLE 3
RESULTS OF LABORATORY ANALYSES OF
WATER SAMPLES FROM MONITORING WELLS
Former Minami Nursery Site
Penny Lane
San Lorenzo, California

| Sample Identification | TOG | TPHd | TPHg | B | T | E | X | MTBE |
|---|---|---|---|---|---|---|---|---|
| June 4, 1996 | 1,000 | | 4,100 | .04 | Highest MAX TAGLE C | REGIONAL BOARD | | |
| W-17-MW1 | 1,800 | <50 | 4,100 | 4.2 | 4.2 | 6.0 | 36 | <0.5 |
| W-17-MW2 | <500 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| W-17-MW3 | <500 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Field Blank | <500 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |

Measurements are in parts per billion (ppb).

TPHd: Total Petroleum Hydrocarbons as diesel analyzed by EPA Methods 3550 and modified 8015.

TPHg: Total Petroleum Hydrocarbons as gasoline analyzed by EPA Methods 5330 and modified 8015.

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Methods 5030 and modified 602.

MTBE: Methyl Tertiary Butyl Ether analyzed by modified EPA Method 602.

TOG: Total Oil and Grease analyzed by EPA Standard Method 5520 C, D, and F.

TABLE 4
CUMULATIVE GROUNDWATER MONITORING DATA
Former Minami Nursery Site
Penny Lane
San Lorenzo, California

| Well<br>Date | Elevation of Wellhead | Depth to Water | Elevation of Groundwater | Field Observations |
|---|---|---|---|---|
| MW-1 | | | | |
| 05/31/96 | 42.57 | 16.89 | 25.68 | Odor |
| 06/04/96 | | 16.92 | 25.65 | Odor |
| MW-2 | | | | |
| 05/31/96 | 42.17 | 16.69 | 25.48 | Odor |
| 06/04/96 | | 16.65 | 25.52 | Odor |
| MW-3 | | | | |
| 05/31/96 | 43.01 | 17.75 | 25.26 | Odor |
| 06/04/96 | | 17.77 | 25.24 | Odor |

Wellhead Elevation based on benchmark: "HESP-BAR" a brass disc at the south end of the return on the southeast corner of the intersection of Hesperian Boulevard and Bartlett Avenue. Elevation taken as 43.73 feet above Mean Sea Level, City of San Lorenzo datum.
Depths in feet.
Elevations in feet above mean sea level.

## CONCLUSIONS

Based on the finding of this investigation and previous work performed at the site, FE&DI concludes the following:

**Hydrocarbons in Soil**

The nondetectable soil samples collected from the borings verify that the petroleum hydrocarbon-impacted soil associated with the former USTs at the site was delineated and removed during the tank removal and excavation operations in November and December 1989.

**Hydrocarbons in Shallow Groundwater**

o The groundwater samples collected from wells MW-2 and MW-3 indicate that groundwater has not been impacted by petroleum hydrocarbons in the area downgradient of the former USTs.

o The groundwater samples collected from well MW-1 indicate that groundwater has been impacted by petroleum hydrocarbons (TPHg, BTEX, and TOG) in the immediate area of the former USTs.

These findings are consistent with the results of laboratory analyses of "grab" groundwater samples collected by Emcon Associates in August and September 1988 during their Phase II and III assessments. The nondetectable results measured in the groundwater samples from wells MW-2 and MW-3 suggests that the groundwater contamination detected in the immediate area of the former USTs appears to not have migrated the short distances (less than 100 feet) to these wells, especially well MW-3 which is located directly downgradient from well MW-1. This could be the result of the petroleum contaminants effectively being trapped along the asymmetrical stratigraphic contact of the water-bearing materials with the backfilled excavation materials adjacent to the water table level.

**Groundwater Gradient**

The groundwater gradient appears to be approximately 0.005 to the west-northwest. This direction of groundwater flow is similar to the inferred direction of groundwater flow, based on the local topography.

## RECOMMENDATIONS

The Environmental Protection Division of the Department of Environmental Health of the Alameda County Health Care Services Agency (ACHCSA) is the local implementing agency (LIA) for overseeing investigation and remediation of soil and groundwater contamination from USTs in the site area. The ACHCSA usually requires additional environmental investigations at UST sites with petroleum fuel-impacted soils and groundwater. The shallow depth to first groundwater, and the fact that the groundwater has been impacted beneath the site suggest that additional subsurface environmental investigations and / or quarterly groundwater monitoring likely will be required for the site by the ACHCSA.

Based upon the above conclusions, to approach closure at this site, FE&DI recommends the following work:

- Conduct quarterly sampling of the wells for a period of one year to evaluate trends in gasoline and fuel oil hydrocarbon concentrations in the groundwater beneath the site.

- Conduct monthly monitoring of the wells for a period of one year to evaluate trends in the direction of groundwater flow beneath the site.

## REPORT DISTRIBUTION

FE&DI recommends that copies of this report be forwarded to the following agencies and representatives:

Ms. Amy Leech, REHS
Hazardous Materials Specialist
Environmental Protection Division
Department of Environmental Health
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite #250
Alameda, California 94502-6577

## LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental, geological, and engineering practice in California at the time investigation. The investigation was conducted solely to evaluate environmental conditions of the soil for gasoline and fuel oil hydrocarbons at the site in the area of two former USTs. No soil engineering or geotechnical implications are stated or should be inferred. Evaluation of the geologic conditions at the site for the purpose of this investigation is made from a limited number of observation points. Further investigation, including subsurface exploration and laboratory testing of soil and groundwater samples at the site, can aid in evaluating subsurface environmental conditions and reduce the inherent uncertainties associated with this type of limited investigation. Subsurface conditions may vary away from the data points available.

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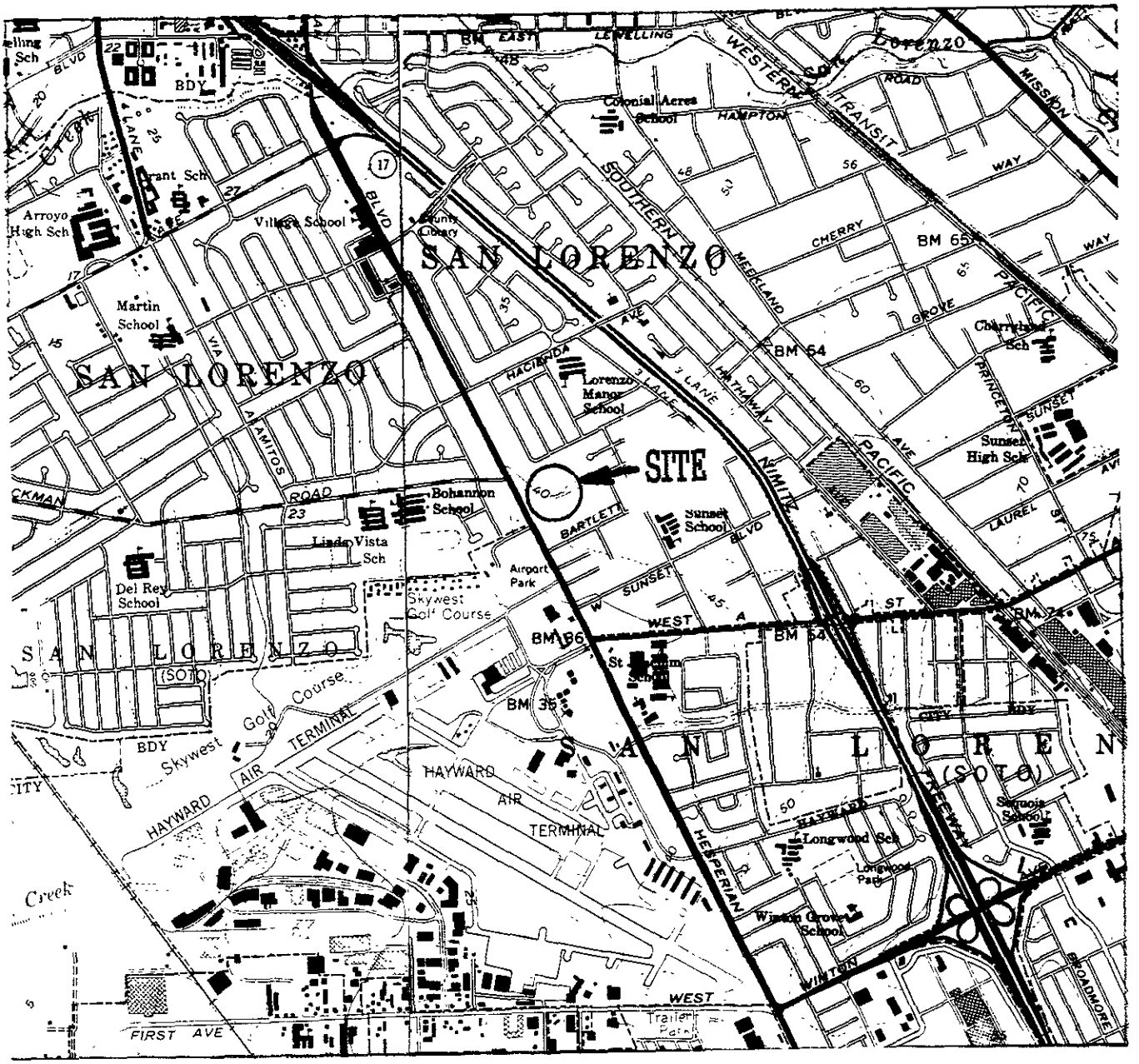
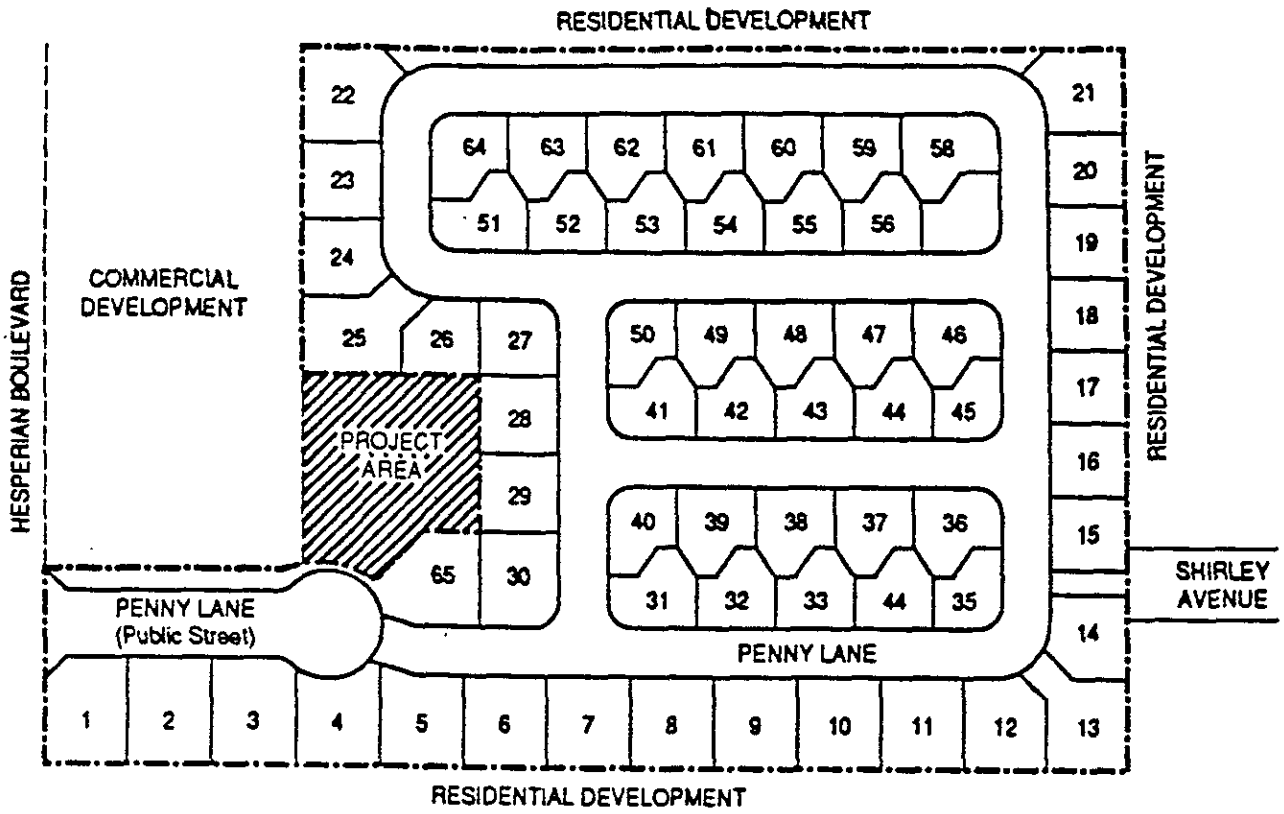


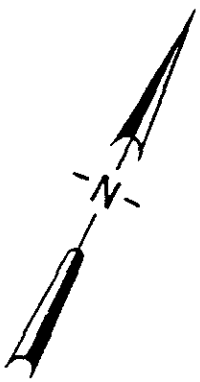

Base Map: United States Geological Survey 7.5-minute Topographic Quadrangle Maps, Hayward and San Leandro Maps. Photorevised 1980.

-N-

Map Scale: 1 inch = 2,000 feet

| | | |
|---|---|---|
| **FULLER** EXCAVATING & DEMOLITION, Inc. | SITE VICINITY MAP | FIGURE NO. |
| Project No. 5107 | Former Minami Nursery Site<br>San Lorenzo, California | 1 |

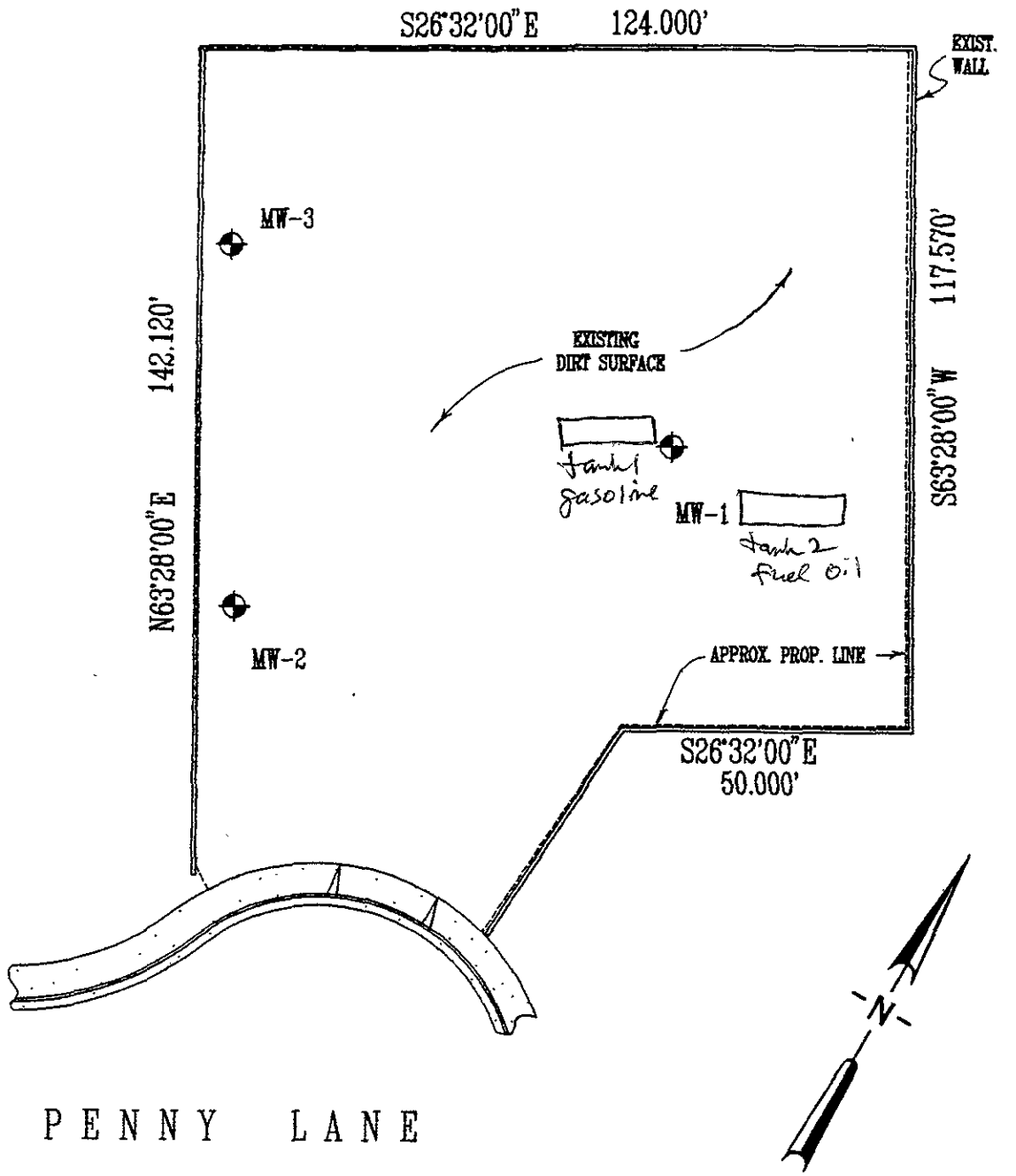



Base Map: Post - Redevelopment Site Plan for the Minami Nursery Property in Hayward, California. (ESI, 1993).

**Map Scale: 1 inch = 150 feet**

| | | |
|---|---|---|
| **FULLER** EXCAVATING & DEMOLITION, Inc. | SITE LOCATION MAP | FIGURE NO. |
| Project No. 5107 | Former Minami Nursery Site<br>San Lorenzo, California | 2 |




Map Scale: 1 inch = 30 feet

Base Map: Site Survey Plat Map for the Former Minami Nursery Property in San Lorenzo, California. (Ron Archer Civil Engineering, 1996).

| | | |
|---|---|---|
| **FULLER** EXCAVATING & DEMOLITION, Inc. | GENERALIZED SITE PLAN | FIGURE NO. |
| Project No. 5107 | Former Minami Nursery Site<br>San Lorenzo, California | 3 |

# UNIFIED SOIL CLASSIFICATION SYSTEM

| MAJOR DIVISION | | LTR | DESCRIPTION | MAJOR DIVISION | | LTR | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| COARSE-GRAINED SOILS | GRAVEL AND GRAVELLY SOILS | GW | Well-graded Gravels or Gravel-Sand mixtures, little or no fines. | FINE-GRAINED SOILS | SILTS AND CLAYS LL<50 | ML | Inorganic Silts and very fine sands, rock flour, Silty or Clayey fine Sands, or Clayey Silts with slight plasticity. |
| | | GP | Poorly-graded Gravels or Gravel-Sand mixtures, little or no fines. | | | CL | Inorganic Clays of low to medium plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays. |
| | | GM | Silty Gravels, Gravel-Sand-Silt mixtures. | | | OL | Organic Silts and Organic Silt-Clays of low plasticity. |
| | | GC | Clayey Gravel, Gravel-Sand-Clay mixtures. | | SILTS AND CLAYS LL>50 | MH | Inorganic Silts, micaceous or diatomaceous fine Sandy or Silty Soils, Elastic Silts. |
| | SAND AND SANDY SOILS | SW | Well-graded Sand or Gravelly Sands, little or no fines. | | | CH | Inorganic Clays of high plasticity, fat Clays. |
| | | SP | Poorly-graded Sands or Gravelly Sands, little or no fines. | | | OH | Organic Clays of medium to high plasticity, organic Silts. |
| | | SM | Silty Sands, Sand-Silt mixtures. | HIGHLY ORGANIC SOILS | | PT | Peat and other highly Organic Soils. |
| | | SC | Clayey Sands, Sand-Clay mixtures. | | | | |

Depth through which sampler is driven

Relatively undisturbed sample

No sample recovered

Static water level observed in well/boring

Initial water level observed in boring

S-10 Sample number

Sand pack

Bentonite

Neat cement

Caved native soil

Blank PVC

Machine-slotted PVC

P.I.D. Photoionization detector

BLOWS REPRESENT THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH EACH 6 INCHES OF AN 18-INCH PENETRATION.

DASHED LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.

| | | |
|---|---|---|
| FULLER EXCAVATING & DEMOLITION, Inc. | KEY TO BORING LOGS | FIGURE NO. |
| | Former Minami Nursery Site | 4 |
| Project No. 5107 | San Lorenzo, California | |

**Boring Number: MW-1**

Job Number: 612-2
Site Location: Former Minami Nursery, Hayward, CA
Drilling Company: Exploration GeoServices
Drilled By: Dan, Danny, & Mike
Date Drilled: 5/28/96
Logged By: K. Mateik

**FULLER**

**EXCAVATING & DEMOLITION, Inc.**

Drilling Method: 8-inch Hollow Stem Auger
Sampling Method: Split-Spoon Sampler
Total Depth: 25 Feet
Depth To Groundwater: 15.5 Feet

| Depth In Feet | Sample Number | Blow Count | Inches Driven | Inches Recovered | PID Reading In PPM | Sampling Interval | Soil Description | USCS Classification | Graphic Representation | Well Construction | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 1 | CLAYEY SILT, brown, dry, low plasticity, firm: FILL. | ML | | | 2-inch diameter PVC casing |
| 2 | | | | | | 2 | | | | | 0.010-inch screen |
| 3 | | | | | | 3 | SANDY SILT, brown, moist, low plasticity, very stiff: FILL. | | | | 2x12 sand |
| 4 | S-4 1/2-MW1 | 6 | | | | 4 | | | | | |
| 5 | | 10 | 18 | 18 | 0 | 5 | Color change to brown mottled with black, some glass and rock fragments. | | | | |
| 6 | | 13 | | | | 6 | SANDY CLAY, black, moist, high plasticity, very stiff: FILL. | CH | | | |
| 7 | | | | | | 7 | | | | | |
| 8 | | | | | | 8 | | | | | |
| 9 | S-9 1/2-MW1 | 3 | | | | 9 | | | | | |
| 10 | | 4 | 18 | 17 | 0 | 10 | Color change to black mottled with brown, firm: FILL. | | | | |
| 11 | | 5 | | | | 11 | | | | | |
| 12 | | | | | | 12 | | | | | |
| 13 | | | | | | 13 | | | | | |
| 14 | S-14 1/2-MW1 | 3 | | | | 14 | | | | | |
| 15 | | 4 | 18 | 18 | 0 | 15 | Increasing moisture content. | | | | |
| 16 | | 5 | | | | 16 | Water at 15.5 feet. | ▽ | | | |
| 17 | S-16-MW1 | 4 | 18 | 15 | 0 | 17 | Bottom of fill materials. | | | | |
| 18 | | 4 | | | | 18 | Stiffer drilling at 17.5 feet. | | | | |
| 19 | | 4 | | | | 19 | | | | | |
| 20 | S-19 1/2-MW1 | 7 | | | | 20 | SILTY SAND, brown, wet, medium dense: native soil. | SM | | | |
| 21 | | 10 | 18 | 17 | 0 | 21 | | | | | |
| 22 | | 13 | | | | 22 | | | | | |
| 23 | | | | | | 23 | | | | | |
| 24 | S-24 1/2-MW1 | 12 | | | | 24 | CLAYEY SILT, brown, moist, medium plasticity, very stiff | ML | | | |
| 25 | | 10 | 18 | 18 | 0 | 25 | | | | | |
| 26 | | 11 | | | | 26 | Boring terminated at 25 feet | | | | |
| 27 | | | | | | 27 | | | | | |
| 28 | | | | | | 28 | | | | | |
| 29 | | | | | | 29 | | | | | |
| 30 | | | | | | 30 | | | | | |

FIGURE NO.

5

## Boring Number: MW-2

Job Number: 612-2
Site Location: Former Minami Nursery, Hayward, CA
Drilling Company: Exploration GeoServices
Drilled By: Dan, Danny, & Mike
Date Drilled: 5/28/96
Logged By: K. Mateik

**FULLER**

**EXCAVATING & DEMOLITION, Inc.**

Drilling Method: 8-inch Hollow Stem Auger
Sampling Method: Split-Spoon Sampler
Total Depth: 31.5 Feet
Depth To Groundwater: 15.5 Feet

| Depth In Feet | Sample Number | Blow Count | Inches Driven | Inches Recovered | PID Reading In PPM | Sampling Interval | Soil Description | USCS Classification | Graphic Representation | Well Construction | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 1 | CLAYEY SILT, light brown mottled with black, damp, medium plasticity, firm: FILL. | ML | | | |
| 2 | | | | | | 2 | SILTY CLAY, dark brown to black, moist, high plasticity. | | | | 2-inch diameter PVC casing |
| 3 | | | | | | 3 | | | | | 0.010-inch screen |
| 4 | | | | | | 4 | | CH | | | 2x12 sand |
| 5 | S-4 1/2-MW2 | 9 16 16 | 18 | 18 | 0 | 5 | Color change to brown. | | | | |
| 6 | | | | | | 6 | Lower plasticity in cuttings at 6 feet. | | | | |
| 7 | | | | | | 7 | | | | | |
| 8 | | | | | | 8 | | | | | |
| 9 | | | | | | 9 | | | | | |
| 10 | S-9 1/2-MW2 | 4 5 6 | 18 | 18 | 0 | 10 | SANDY SILT, brown, some clay, fine-grained sand, moist, low plasticity, stiff. | ML | | | |
| 11 | | | | | | 11 | | | | | |
| 12 | | | | | | 12 | | | | | |
| 13 | | | | | | 13 | | | | | |
| 14 | S-14-MW2 | 7 8 10 | 18 | 14 | 0 | 14 | SILTY SAND, fine-grained sand, brown, moist, medium dense. | SM | | | |
| 15 | S-15-MW2 | 5 4 5 | 18 | 17 | 0 | 15 | | | | | |
| 16 | | | | | | 16 | Fine- to medium-grained sand, well rounded. | | | | |
| 17 | | | | | | 17 | | | | | |
| 18 | | | | | | 18 | | | | | |
| 19 | | | | | | 19 | | | | | |
| 20 | S-19 1/2-MW2 | 8 7 8 | 18 | 18 | 0 | 20 | Predominantly medium-grained sand. | | | | |
| 21 | | | | | | 21 | | | | | |
| 22 | | | | | | 22 | Rougher drilling at 22 feet. | | | | |
| 23 | | | | | | 23 | | | | | |
| 24 | | | | | | 24 | | | | | |
| 25 | S-24 1/2-MW2 | 17 23 27 | 18 | 18 | 0 | 25 | SAND, fine- to coarse-grained, brown, wet, medium dense | SW | | | |
| 26 | | | | | | 26 | Some subangular fine gravel | | | | |
| 27 | | | | | | 27 | Easier drilling at 27 feet | | | | |
| 28 | | | | | | 28 | | | | | |
| 29 | S-29 1/2-MW2 | 6 8 11 | 18 | 16 | 0 | 29 | SILTY SAND, brown, wet, medium dense, fine-grained sand | SM | | | |
| 30 | | | | | | 30 | CLAYEY SILT, brown, moist, low to medium plasticity, hard | ML | | | |

FIGURE NO.

6

(Boring Continued On Next Page)

**Boring Number: MW-2**

Job Number: 612–2
Site Location: Former Minami Nursery, Hayward, CA
Drilling Company: Exploration GeoServices
Drilled By: Dan, Danny, & Mike
Date Drilled: 5/28/96
Logged By: K. Mateik

**FULLER**

**EXCAVATING & DEMOLITION, Inc.**

Drilling Method: 8–inch Hollow Stem Auger
Sampling Method: Split–Spoon Sampler
Total Depth: 31.5 Feet
Depth To Groundwater: 15.5 Feet

| Depth In Feet | Sample Number | Blow Count | Inches Driven | Inches Recovered | PID Reading In PPM | Sampling Interval | Soil Description | USCS Classification | Graphic Representation | Well Construction | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | S–31–MW2 | 12<br>17<br>18 | 18 | 18 | 0 | 31 | CLAYEY SILT, brown, moist, low to medium plasticity, hard. | ML | | | |
| | | | | | | | Boring terminated at 31.5 feet. | | | | |

FIGURE NO.

6

## Boring Number: MW-3

Job Number: 612–2
Site Location: Former Minami Nursery, Hayward, CA
Drilling Company: Exploration GeoServices
Drilled By: Dan, Danny, & Mike
Date Drilled: 5/28/96
Logged By: K. Mateik

**FULLER**

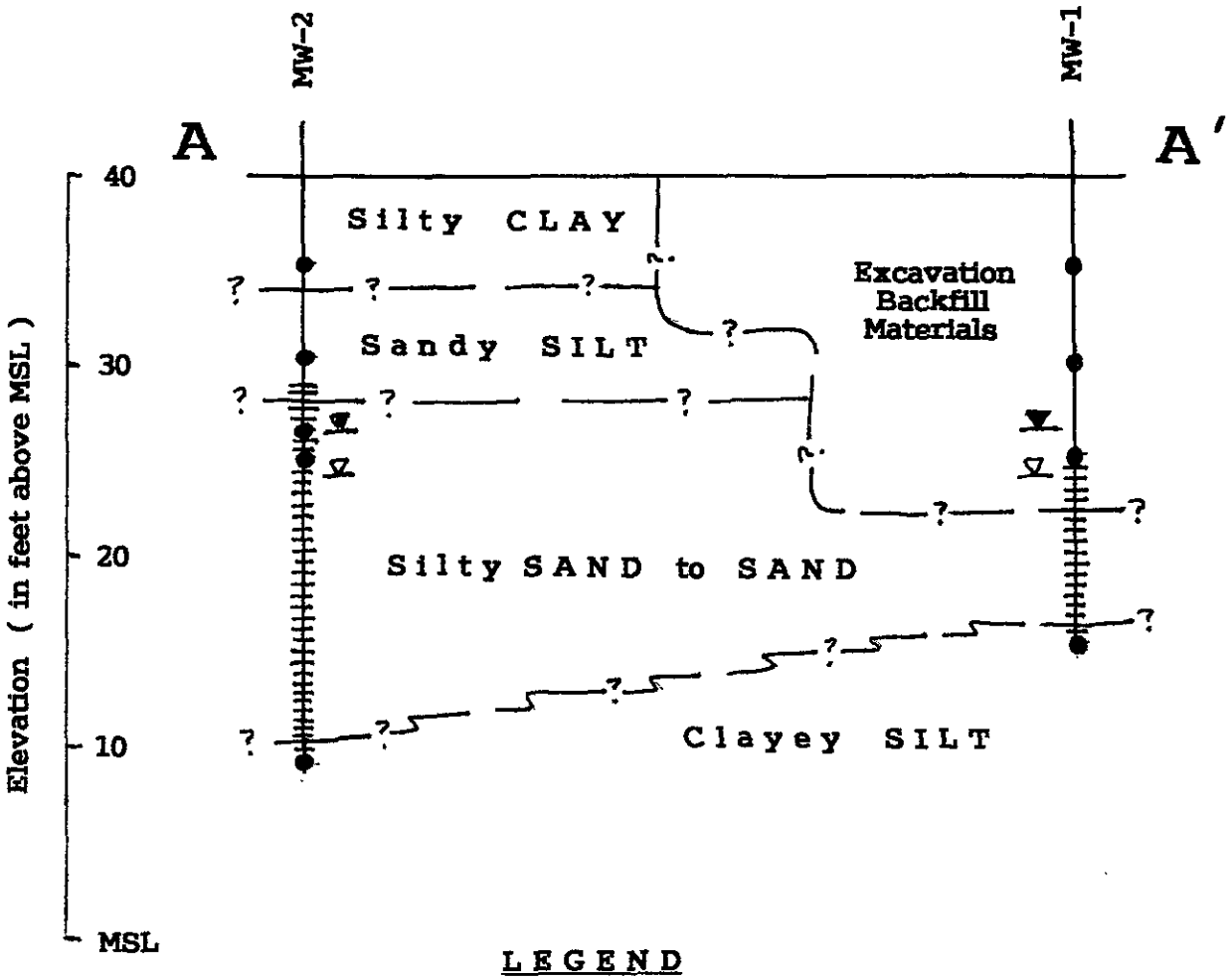
**EXCAVATING & DEMOLITION, Inc.**

Drilling Method: 8–inch Hollow Stem Auger
Sampling Method: Split–Spoon Sampler
Total Depth: 25 Feet
Depth To Groundwater: 15.5 Feet

| Depth In Feet | Sample Number | Blow Count | Inches Driven | Inches Recovered | PID Reading In PPM | Sampling Interval | Soil Description | USCS Classification | Graphic Representation | Well Construction | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | SANDY SILT, light brown, damp, low plasticity, firm: FILL | ML | | | |
| 1–4 | | | | | | | SILTY CLAY, dark brown–black, moist, high plasticity, very stiff. | CH | | | 2–inch diameter PVC casing<br>0.010–inch screen<br>2x12 sand |
| 5 | S–4 1/2–MW3 | 4<br>12<br>15 | 18 | 18 | 0 | | Color change to brown. | | | | |
| 6 | | | | | | | Cuttings change at 6 feet. | | | | |
| 7–8 | | | | | | | | | | | |
| 9 | S–9 1/2–MW3 | 5<br>7<br>8 | 18 | 18 | 0 | | SANDY SILT, fine–grained sand, some clay, brown, moist, medium plasticity, stiff. | ML | | | |
| 10–11 | | | | | | | Increasing moisture content. | | | | |
| 12–13 | | | | | | | | | | | |
| 14 | S–14 1/2–MW3 | 4<br>6<br>10 | 18 | 18 | 0 | | SILTY SAND, fine– to medium–grained, brown, very moist, medium dense. | SM | | | |
| 15 | | | | | | | Water at approximately 15.5 feet. | | | | |
| 16–17 | | | | | | | | | | | |
| 18 | S–18 1/2–MW3 | 8<br>11<br>12 | 18 | 13 | 0 | | | | | | |
| 19–22 | | | | | | | | | | | |
| 23 | | | | | | | Stiffer drilling at 23 feet. | | | | |
| 24 | S–24–MW3 | 10<br>15<br>18 | 18 | 18 | 0 | | CLAYEY SILT, light brown mottled with gray, moist, medium plasticity, hard | ML | | | |
| 25 | | | | | | | Boring terminated at 25 feet. | | | | |
| 26–30 | | | | | | | | | | | |

FIGURE NO.

7




**LEGEND**

—?— = Stratigraphic Contact (approximate)

● = Soil sample location

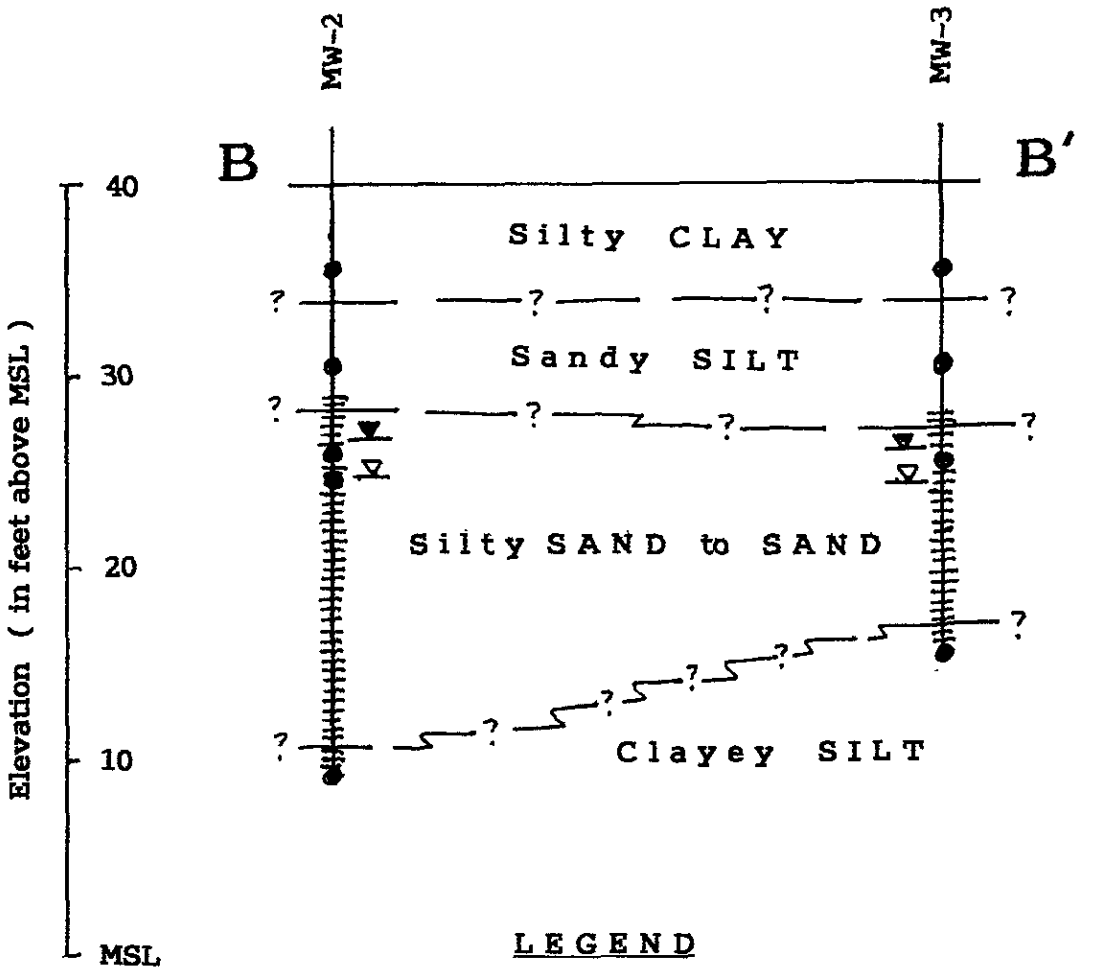
▽ = Initial Water Level in boring

▼ = Stabilized Water Level in monitoring well

**Horizontal Scale : 1 inch = 20 feet**

Vertical Scale : 1 inch = 10 feet

| | | |
|---|---|---|
| **FULLER** EXCAVATING & DEMOLITION, Inc. | GEOLOGIC CROSS - SECTION A - A' | FIGURE NO. |
| Project No. 5107 | Former Minami Nursery Site<br>San Lorenzo, California | 8 |




**LEGEND**

—?— = Stratigraphic Contact (approximate)

● = Soil sample location

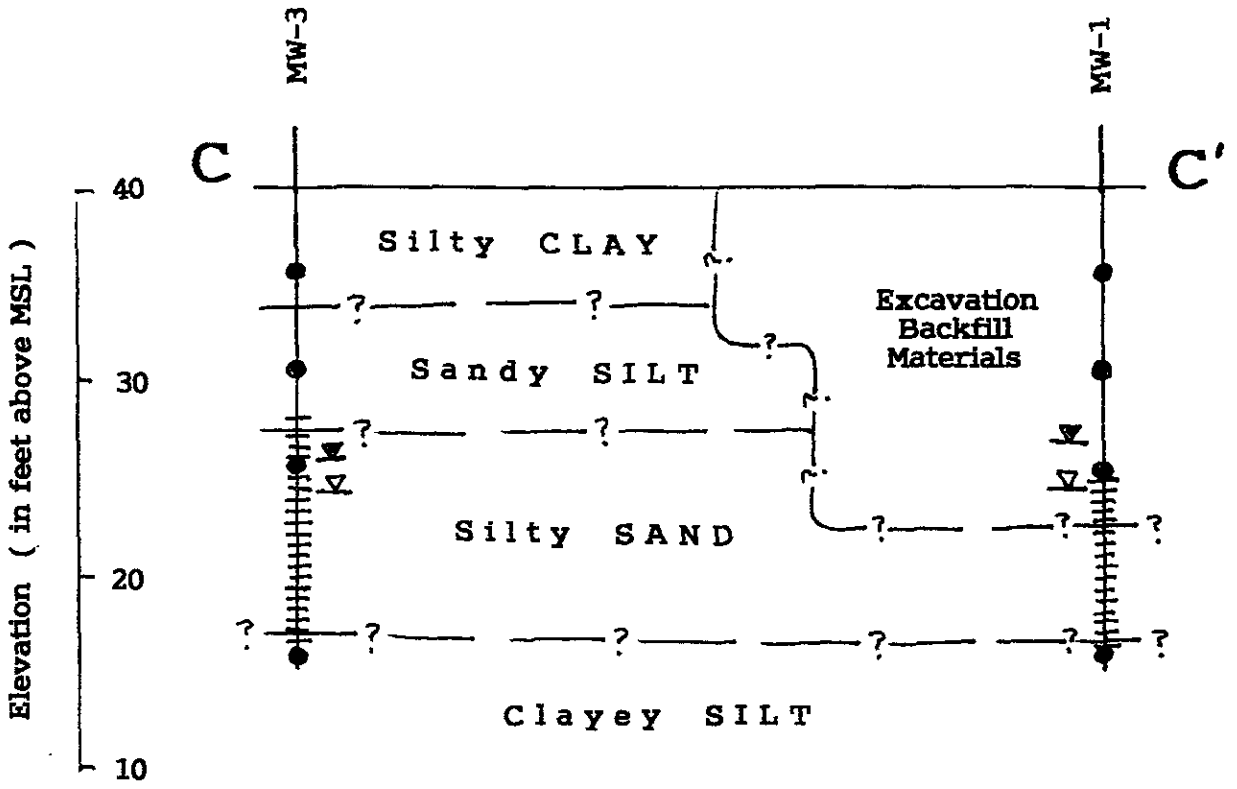
▽ = Initial Water Level in boring

▼ = Stabilized Water Level in monitoring well

**Horizontal Scale : 1 inch = 20 feet**

Vertical Scale : 1 inch = 10 feet

| | | |
|---|---|---|
| FULLER EXCAVATING & DEMOLITION, Inc. | GEOLOGIC CROSS SECTION B - B' | FIGURE NO. |
| | Former Minami Nursery Site | 9 |
| Project No. 5107 | San Lorenzo, California | |




**LEGEND**

—?— = **Stratigraphic Contact (approximate)**

● = **Soil sample location**

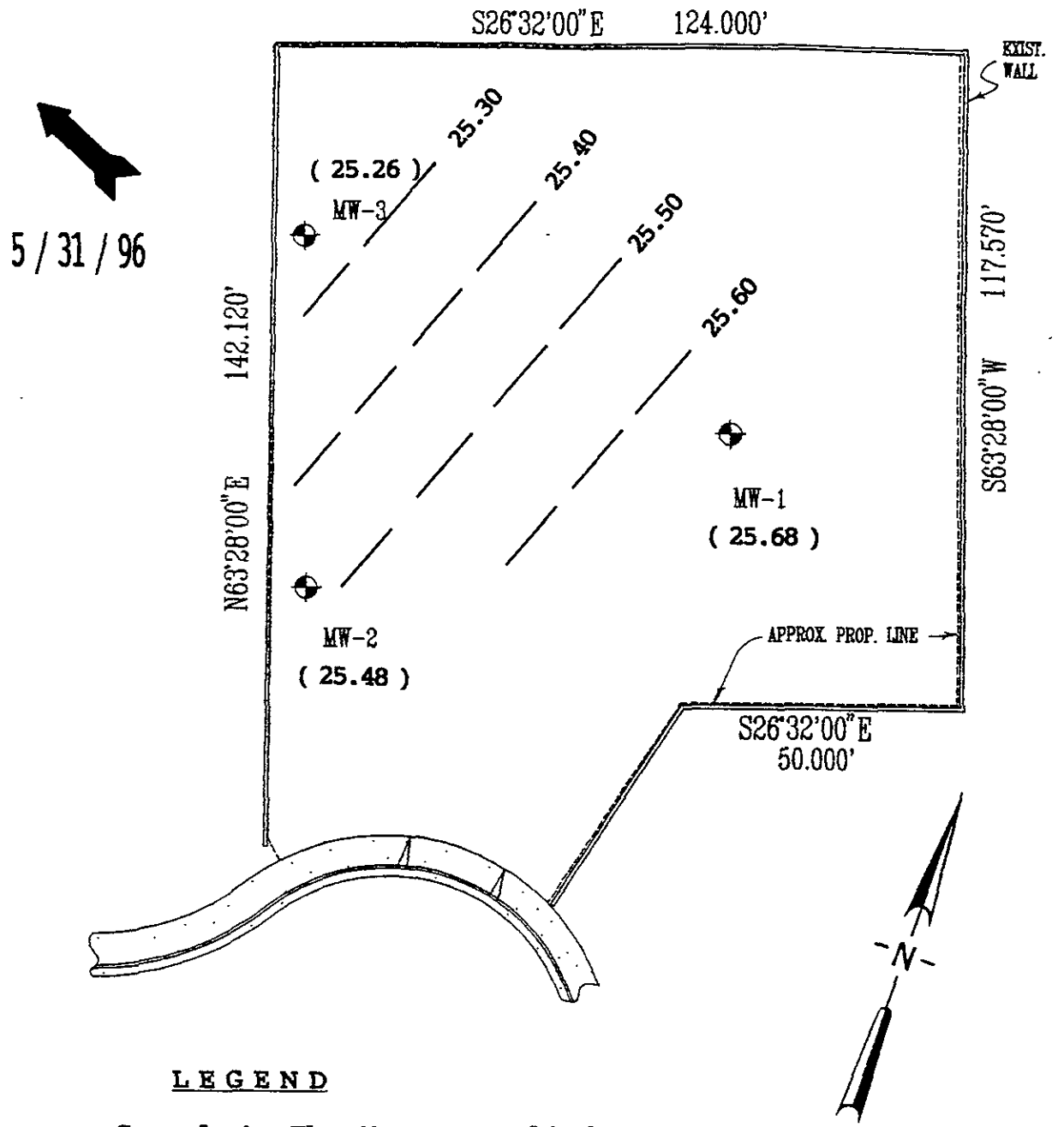
▽ = **Initial Water Level in boring**

▼ = **Stabilized Water Level in monitoring well**

**Horizontal Scale : 1 inch = 20 feet**

Vertical Scale : 1 inch = 10 feet

| | | |
|---|---|---|
| **FULLER** EXCAVATING & DEMOLITION, Inc. | GEOLOGIC CROSS - SECTION C - C' | FIGURE NO. |
| | Former Minami Nursery Site | 10 |
| Project No. 5107 | San Lorenzo, California | |




**LEGEND**

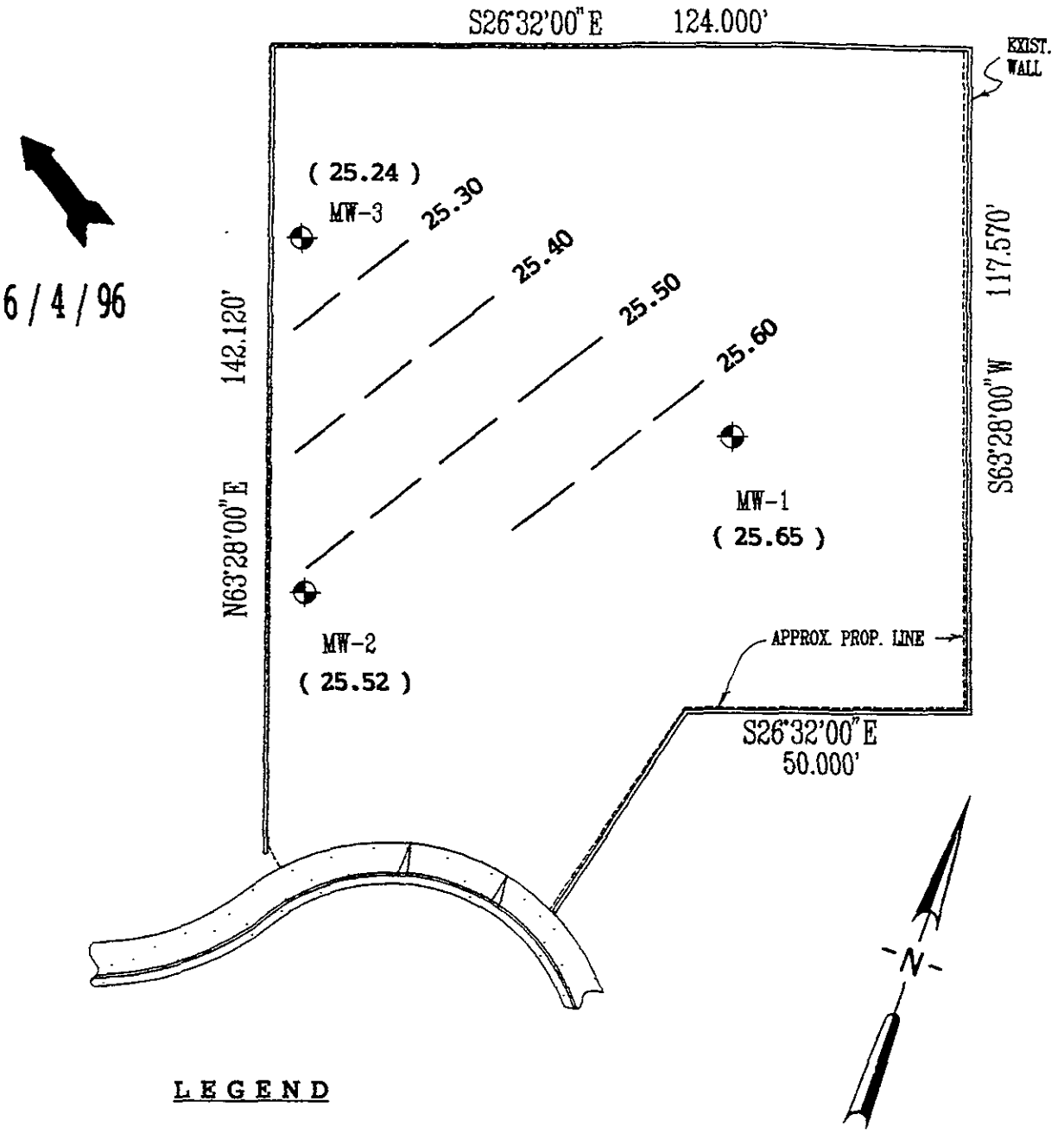
( 25.68 ) = **Groundwater Elevation measured in feet; Datum is Mean Sea Level**

= **Line of Equal Elevation of Groundwater measured in feet; Datum is Mean Sea Level**

= Direction of Groundwater Flow

**1 inch = 30 feet**

| | | |
|---|---|---|
| **FULLER** EXCAVATING & DEMOLITION, Inc. | GROUNDWATER GRADIENT MAP | FIGURE NO. |
| Project No. 5107 | Former Minami Nursery Site<br>San Lorenzo, California | 11 |




**LEGEND**

**( 25.65 )** = **Groundwater Elevation measured in feet; Datum is Mean Sea Level**

= **Line of Equal Elevation of Groundwater measured in feet; Datum is Mean Sea Level**

= Direction of Groundwater Flow

**1 inch = 30 feet**

| | | |
|---|---|---|
| **FULLER** EXCAVATING & DEMOLITION, Inc. | GROUNDWATER GRADIENT MAP | FIGURE NO. |
| | Former Minami Nursery Site | 12 |
| Project No. 5107 | San Lorenzo, California | |

# APPENDIX A

## Field Protocol

## Well Purge Data Sheets (3)

## FIELD PROTOCOL

The following presents Fuller Excavating & Demolition, Inc.'s protocol for a typical site investigation involving gasoline or diesel hydrocarbon-impacted soil and / or groundwater.

### Site Safety Plan

The Site Safety Plan describes the safety requirements for the evaluation of gasoline or diesel hydrocarbons in soil, groundwater, and the vadose-zone at the site. The site Safety Plan is applicable to personnel of Fuller Excavating & Demolition, Inc. and its subcontractors. Fuller Excavating & Demolition, Inc. personnel, and subcontractors of Fuller Excavating & Demolition, Inc. scheduled to perform the work at the site are briefed on the contents of the Site Safety Plan before work begins. A copy of the Site Safety Plan is available for reference by appropriate parties during the work. A site Safety Officer is assigned to the project.

### Soil Excavation

Excavated soil is subjectively evaluated using odor and discoloration. This evaluation is done upon arrival of the soil at the ground surface in the excavator bucket.

### Sampling of Stockpiled Soil

Composite soil samples are collected by subjectively evaluating relatively high, average, and low areas of hydrocarbon concentration by digging approximately one to two feet into the stockpile and placing the intake probe of a field calibrated OVM against the surface of the soil; and then collecting one sample from the "high" reading area, and three samples from the "average" areas. Samples are collected by removing the top six to twelve inches of soil, then driving laboratory-cleaned brass sleeves into the soil. The samples are sealed in the sleeves using aluminum foil, plastic caps, and aluminized duct tape; labeled; and promptly placed in iced storage for transport to the laboratory, where compositing is performed.

### Soil Borings

Prior to the drilling of borings and construction of monitoring wells, permits are acquired from the appropriate regulatory agency. In addition to the above-mentioned permits, encroachment permits from the City or State are acquired if drilling of borings offsite on City or State property is necessary. Copies of the permits are included in the appendix of the project report. Prior to drilling, Underground Services Alert is notified of our intent to drill, and known underground utility lines and structures are approximately marked.

The borings are drilled by a truck-mounted drill rig equipped with 8- or 10-inch-diameter, hollow-stem augers. The augers are steam-cleaned prior to drilling each boring to minimize the possibility of cross-contamination. After drilling the borings, monitoring wells are constructed in the borings, or neat-cement grout with bentonite is used to backfill the borings to the ground surface.

Borings for groundwater monitoring wells are drilled to a depth of no more than 20 feet below the depth at which a saturated zone is first encountered, or a short distance into a stratum beneath the saturated zone which is of sufficient moisture and consistency to be judged as a perching layer by the field geologist, whichever is shallower. Drilling into the deeper water-bearing Zone B below the shallower water-bearing Zone A is begun only after a steel conductor casing is properly installed, grouted, and allowed to set, to seal the shallower water-bearing zone.

Drill Cuttings

Drill cuttings subjectively evaluated as containing hydrocarbons at levels greater than 100 parts per million (ppm) are separated from those subjectively evaluated as containing hydrocarbons at levels less than 100 ppm. Evaluation is based either on subjective evidence of soil discoloration, or on measurements made using a field calibrated OVM. Readings are taken by placing a soil sample into a ziplock-type plastic bag and allowing volatilization to occur. The intake probe of the OVM is then inserted into the headspace created in the plastic bag immediately after opening it. The drill cuttings from the borings are placed in labeled 55-gallon drums approved by the Department of Transportation, or on plastic at the site, and covered with plastic. The cuttings remain the responsibility of the client.

Soil Sampling in Borings

Soil samples are collected at no greater than 5-foot intervals from the ground surface to the total depth of the borings. The soil samples are collected by advancing the boring to a point immediately above the sampling depth, and then driving a California-modified, split-spoon sampler containing brass sleeves through the hollow center of the auger into the soil. The sampler and brass sleeves are laboratory-cleaned, steam-cleaned, or washed thoroughly with Alconox® and water, prior to each use. The sampler is driven with a standard 140-pound hammer repeatedly dropped 30 inches. The number of blows to drive the sampler each successive six inches are counted and recorded to evaluate the relative consistency of the soil.

The samples selected for laboratory analysis are removed from the sampler and quickly sealed in their brass sleeves with aluminum foil, plastic caps, and aluminized duct tape. The samples are then labeled, promptly placed in iced storage, and delivered to a laboratory certified by the State of California to perform the analyses requested.

One of the samples in brass sleeves not selected for laboratory analysis at each sampling interval is tested in the field using an OVM that is field calibrated at the beginning of each day it is used. This testing is performed by inserting the intake probe of the OVM into the headspace in the plastic bag containing the soil sample as described in the Drill Cuttings section above. The OVM readings are presented in Logs of Borings included in the project report.

Logging of Borings

A geologist is present to log the soil cuttings and samples using the Unified Soil Classification System. Samples not selected for chemical analysis, and the soil in the sampler shoe, are extruded in the field for inspection. Logs include texture, color, moisture, plasticity, consistency, blow counts, and any other characteristics noted. Logs also include subjective evidence for the presence of hydrocarbons, such as soil staining, noticeable or obvious product odor, and OVM readings.

Monitoring Well Construction

Monitoring wells are constructed in selected borings using clean 2- or 4-inch-diameter, thread-jointed, Schedule 40 polyvinyl chloride (PVC) casing. No chemical cements, glues, or solvents are used in well construction. Each casing bottom is sealed with a threaded end-plug, and each casing top with a locking plug. The screened portions of the wells are constructed of machine-slotted PVC casing with 0.010-inch-wide or 0.020-inch-wide (typical) slots for initial site wells. Slot size for subsequent wells may be based on sieve analysis and / or well development data. The screened sections in groundwater monitoring wells are placed to allow monitoring during seasonal fluctuations of groundwater levels.

The annular space of each well is backfilled with No. 2 by 12 sand, or similar sorted sand, to approximately two feet above the top of the screened casing for initial site wells. The sand pack grain size for subsequent wells may be based on sieve analysis and/or well development data. A 1- to 2-foot-thick bentonite plug is placed above the sand as a seal against cement entering the filter pack. The remaining annulus is then backfilled with a slurry of water, neat cement, and bentonite to approximately one foot below the ground surface.

An aluminum utility box with a PVC apron is placed over each wellhead and set in concrete placed flush with the surrounding ground surface. Each wellhead cover has a seal to protect the monitoring well against surface-water infiltration and requires a special wrench to open. The design discourages vandalism and reduces the possibility of accidental disturbance of the well.

Groundwater Monitoring Well Development

The monitoring wells are developed by bailing or over-pumping and surge-block techniques. The wells are either bailed or pumped, allowed to recharge, and bailed or pumped again until the water removed from the wells is determined to be clear. The wells are allowed to equilibrate for at least 48 hours after development prior to sampling. Water generated by well development is stored in 17E Department of Transportation (DOT) 55-gallon drums on site, and remains the responsibility of the client.

Groundwater Sampling

The static water level in each well is measured to the nearest 0.01-foot using a Solinst® electric water-level sounder or oil/water interface probe (if the wells contain floating product) cleaned with Alconox® and water before use in each well. The liquid in the wells is examined for visual evidence of hydrocarbons by gently lowering approximately half the length of a Teflon® bailer (cleaned with Alconox® and water) past the air/water interface. The sample is then retrieved and inspected for floating product, sheen, emulsion, color, and clarity. If floating product is present in the well, the thickness of floating product is measured using an oil/water interface probe and is recorded to the nearest 0.01 foot. Floating product is removed from wells on site visits.

Wells which do not contain floating product are purged using a submersible pump. The pump, cables, and hoses are cleaned with Alconox® and water prior to use in each well. The wells are purged until withdrawal is of sufficient duration to result in stabilized pH, temperature, and electrical conductivity of the water. The groundwater parameters were monitored with a Hydac® Model 910 Conductivity, pH, and Temperature Meter, along with a ICM® Model 11520 Field Turbidimeter. These portable meters were calibrated to a standard buffer and conductivity standard. If the well becomes dewatered, the water level is allowed to recover to at least 80 percent of the initial water level. The wells are allowed to recover to static water-level conditions before sampling.

The quantity of water purged from each well was calculated as followed:

1 well casing volume = $\pi r^2 h$ (7.48) where:
r = radius of the well casing in feet
h = column of water in the well in feet (well depth - depth to water)
7.48 = conversion constant from cubic feet to gallons

Gallons of water purged / gallons in one well casing volume = well casing volumes removed.

Prior to the collection of each groundwater sample, the Teflon® bailer is cleaned with Alconox® and rinsed with tap water and deionized water, and the latex gloves worn by the sampler changed. Hydrochloric acid is added to the sample vials as a preservative (when applicable).

A sample method blank is collected by pouring distilled water into the bailer and then into sample vials. A sample of the formation water is then collected from the surface of the water in each of the wells using the Teflon® bailer. The water samples are then gently poured into laboratory-cleaned, 40-milliliter (ml) glass vials, 500 ml plastic bottles or 1-liter glass bottles (as required for specific laboratory analysis) and sealed with Teflon®-lined caps, and inspected for air bubbles to check for headspace, which would allow volatilization to occur. The samples are then labeled and promptly placed in iced storage. A field log of well evacuation procedures and parameter monitoring is maintained. Water generated by the purging of wells is stored in 17E DOT 55-gallon drums, and floating product bailed from the wells is stored in double containment onsite; this water and product remains the responsibility of the client.

Sample Labeling and Handling

Sample containers are labeled in the field with the job number, sample location and depth, and date, and promptly placed in iced storage for transport to the laboratory. A Chain of Custody Record is initiated by the field geologist and updated throughout handling of the samples, and accompanies the samples to a laboratory certified by the State of California for the analyses requested. Samples are transported to the laboratory promptly to help ensure that recommended sample holding times are not exceeded. Samples are properly disposed of after their useful life has expired.

# APPENDIX B

Chain - of - Custody Records ( 4 )

Laboratory Data Sheets ( 4 )

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

May 07, 1996

PEL # 9605009

FULLER EXCAVATING

Attn: Pat Fuller

Re: Nine composited soil samples for Gasoline/BTEX, Diesel, and Oil & Grease analyses.

Date sampled: May 04, 1996
Date extracted: May 06-07, 1996

Date submitted: May 06, 1996
Date analyzed: May 06-07, 1996

RESULTS:

| SAMPLE I.D. | Gasoline (mg/Kg) | Diesel (mg/Kg) | Benzene (ug/Kg) | Toluene (ug/Kg) | Ethyl Benzene (ug/Kg) | Total Xylene (ug/Kg) | Oil & Grease (mg/Kg) |
|---|---|---|---|---|---|---|---|
| CS #1(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| CS #2(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| CS #3(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| CS #4(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| CS #5(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| CS #6(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| CD #7(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| CS #8(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | 13 |
| CS #9(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | 100 |
| Blank | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| Spiked Recovery | 84.5% | 87.9% | 90.8% | 88.0% | 86.4% | 111.3% | --- |
| Detection limit | 1.0 | 1.0 | 5.0 | 5.0 | 5.0 | 5.0 | 10 |
| Method of Analysis | 5030 / 8015 | 3550 / 8015 | 8020 | 8020 | 8020 | 8020 | 5520 D & F |

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA 95035 Tel: 408-946-9636 Fax: 408-946-9663

# PRIORITY ENVIRONMENTAL LABS

**Chain of Custody**

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 05/04/96 PAGE: 1 OF 1

PROJECT MGR PAT FULLER
COMPANY FULLER EXCAVATING
ADDRESS P.O. Box 6595
San Jose, CA 95150
PHONE 408-275-1797 FAX: 408-275-9098
SIGNATURE:

**ANALYSIS REPORT**

**PEL #** 9605009

**INV #** 26971

| SAMPLE ID | DATE | TIME | MATRIX | TPH-Gasoline (EPA 5030,8015) | TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020) | TPH-Diesel (EPA 3510/3550,8015) | PURGEABLE AROMATICS BTEX (EPA 602,8020) | TOTAL OIL & GREASE (EPA 5520 C,D&F) | PESTICIDES/PCB (EPA 608,8080) | TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1) | CHLORINATED HYDROCARBONS (EPA 601,8010) | NUMBER OF CONTAINERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CS-#1(A,B,C,D) | 5/4/96 | | Soil | X | X | | | X | | | | 4 |
| CS-#2(A,B,C,D) | | | | X | X | | | X | | | | 4 |
| CS-#3(A,B,C,D) | | | | X | X | | | X | | | | 4 |
| CS-#4(A,B,C,D) | | | | X | X | | | X | | | | 4 |
| CS-#5(A,B,C,D) | | | | X | X | | | X | | | | 4 |
| CS-#6(A,B,C,D) | | | | X | X | | | X | | | | 4 |
| CS-#7(A,B,C,D) | | | | X | X | | | X | | | | 4 |
| CS-#8(A,B,C,D) | | | | X | X | | | X | | | | 4 |
| CS-#9(A,B,C,D) | | | | X | X | | | X | | | | 4 |

**PROJECT INFORMATION**

PROJECT NAME:
PROJECT NUMBER:

**SAMPLE RECEIPT**

TOTAL # OF CONTAINERS:
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS:
24-hour RUSH on CS-#9(A,B,C,D)

| RELINQUISHED BY: 1 | RECEIVED BY: 1 | RELINQUISHED BY: 2 | RECEIVED BY: 2 |
|---|---|---|---|
| KEN MATEIK | VICTOR DUONG | | |
| SIGNATURE: Ken Mateik | SIGNATURE: | SIGNATURE: | SIGNATURE: |
| Date: 5/6/96 Time: 10:51 | Date: 5/6/96 Time: 1051 | Date: Time: | Date: Time: |
| COMPANY: GEOMATIK | COMPANY: PEL | COMPANY: | COMPANY: |

# PRIORITY ENVIRONMENTAL LABS

Precision Environmental Analytical Laboratory


May 24, 1996 PEL # 9605042

FULLER EXCAVATING

Attn: Pat Fuller

Re: One composited soil sample for Gasoline/BTEX, Diesel, and Oil & Grease analyses.

Project name: Hayward

Date sampled: May 21, 1996 Date submitted: May 21, 1996
Date extracted: May 21-23, 1996 Date analyzed: May 21-23, 1996

RESULTS:

| SAMPLE I.D. | Gasoline (mg/Kg) | Diesel (mg/Kg) | Benzene (ug/Kg) | Toluene (ug/Kg) | Ethyl Benzene (ug/Kg) | Total Xylene (ug/Kg) | Oil & Grease (mg/Kg) |
|---|---|---|---|---|---|---|---|
| CS-#10(A,B,C,D) | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | 44 |
| Blank | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| Spiked Recovery | 95.6% | 81.2% | 88.2% | 113.1% | 105.0% | 94.7% | --- |
| Detection limit | 1.0 | 1.0 | 5.0 | 5.0 | 5.0 | 5.0 | 10 |
| Method of Analysis | 5030 / 8015 | 3550 / 8015 | 8020 | 8020 | 8020 | 8020 | 5520 D & F |

David Duong
Laboratory Director


1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

# PRIORITY ENVIRONMENTAL LABS

## Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 05/21/96 PAGE: 1 OF 1

PROJECT MGR PAT FULLER
COMPANY FULLER EXCAVATING
ADDRESS P.O. BOX 6595
San Jose, CA 95150
PHONE 408-275-1797 FAX 408-275-9098
SIGNATURE

PEL # 9605042
INV # 27004

| SAMPLE ID | DATE | TIME | MATRIX | TPH-Gasoline (EPA 5030.8015) | TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020) | TPH-Diesel (EPA 3510/3550.8015) | PURGEABLE AROMATICS BTEX (EPA 602.8020) | TOTAL OIL & GREASE (EPA 5520 C.D&F) | PESTICIDES/PCB (EPA 608.8080) | TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1) | CHLORINATED HYDROCARBONS (EPA 601.8010) | | | NUMBER OF CONTAINERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CS-#10(A,B,C,D) | 5/21/96 | | Soil | | X | X | | X | | | | Composite | Sample | 4 |

**PROJECT INFORMATION**
PROJECT NAME HAYWARD
PROJECT NUMBER

**SAMPLE RECEIPT**
TOTAL # OF CONTAINERS 4
RECD. GOOD COND./COLD

INSTRUCTIONS & COMMENTS
Standard Turn Around

| RELINQUISHED BY: 1 | RECEIVED BY: 1 | RELINQUISHED BY: 2 | RECEIVED BY: 2 |
|---|---|---|---|
| KEN MATEIK | DAVID DUONG | | |
| SIGNATURE: Ken Mateik | SIGNATURE: | SIGNATURE: | SIGNATURE: |
| Date: 5/21/96 Time: 3:30 PM | Date: 5/21/96 Time: 3:30 PM | Date: Time: | Date: Time: |
| COMPANY: GEOMATIK | COMPANY: PEL | COMPANY: | COMPANY: |

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

June 01, 1996 PEL # 9605068

FULLER EXCAVATING Attn: Pat Fuller

Re: Thirteen soil samples for Gasoline/BTEX and Diesel analyses.

Project name: Hayward

Date sampled: May 28, 1996 Date submitted: May 30, 1996
Date extracted: May 30-Jun 01,1996 Date analyzed: May 30-Jun 01,1996

RESULTS:

| SAMPLE I.D. | Gasoline (mg/Kg) | Diesel (mg/Kg) | Benzene (ug/Kg) | Toluene (ug/Kg) | Ethyl Benzene (ug/Kg) | Total Xylene (ug/Kg) |
|---|---|---|---|---|---|---|
| S-4 1/2-MW1 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-4 1/2-MW2 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-4 1/2-MW3 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-9 1/2-MW1 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-9 1/2-MW2 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-9 1/2-MW3 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-14 1/2-MW1 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-14-MW2 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-14 1/2-MW3 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-15-MW2 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-24 1/2-MW1 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-24-MW3 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| S-31-MW2 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| Blank | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| Spiked Recovery | 82.4% | 81.8% | 88.2% | 92.9% | 99.8% | 102.2% |
| Detection limit | 1.0 | 1.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Method of Analysis | 5030 / 8015 | 3550 / 8015 | 8020 | 8020 | 8020 | 8020 |

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-7663

# PRIORITY ENVIRONMENTAL LABS

**Chain of Custody**

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 5/30/96 PAGE: 1 OF 2

PROJECT MGR: PAT FULLER
COMPANY: FULLER EXCAVATING
ADDRESS: P.O. BOX 6595
SAN JOSE 95150
PHONE 408-275-1797 FAX. 408-275-9098
SIGNATURE:

**ANALYSIS REPORT** 1/2

**PEL #** 9605068

**INV #** 27030

| SAMPLE ID | DATE | TIME | MATRIX | TPH-Gasoline (EPA 5030.8015) | TPH-Gasoline(5030.8015) w/BTEX(EPA 602.8020) | TPH-Diesel (EPA 3510/3550.8015) | PURGEABLE AROMATICS BTEX (EPA 602.8020) | TOTAL OIL & GREASE (EPA 5520 C.D&F) | PESTICIDES/PCB (EPA 608.8080) | TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1) | CHLORINATED HYDROCARBONS (EPA 601.8010) | NUMBER OF CONTAINERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S-4½-MW1 | 5/28/96 | | Soil | | X | X | | | | | | 1 |
| S-9½-MW1 | | | | | X | X | | | | | | 1 |
| S-14½-MW1 | | | | | X | X | | | | | | 1 |
| S-24½-MW1 | | | | | X | X | | | | | | 1 |
| S-4½-MW2 | | | | | X | X | | | | | | 1 |
| S-9½-MW2 | | | | | X | X | | | | | | 1 |
| S-14-MW2 | | | | | X | X | | | | | | 1 |
| S-31-MW2 | | | | | X | X | | | | | | 1 |
| S-4½-MW3 | | | | | X | X | | | | | | 1 |
| S-9½-MW3 | | | | | X | X | | | | | | 1 |
| S-14½-MW3 | | | | | X | X | | | | | | 1 |
| S-24-MW3 | | | | | X | X | | | | | | 1 |

**PROJECT INFORMATION**

PROJECT NAME: HAYWARD
PROJECT NUMBER:

**SAMPLE RECEIPT**

TOTAL # OF CONTAINERS: 13
RECD. GOOD COND./COLD: Yes

INSTRUCTIONS & COMMENTS: Standard TAT
Fax copy of results to KEN at GEOMATIK at 279-2048

| RELINQUISHED BY: 1 | RECEIVED BY: 1 | RELINQUISHED BY: 2 | RECEIVED BY: 2 |
|---|---|---|---|
| KEN MATEIK | DAVID DUONG | | |
| SIGNATURE: Ken Mateik | SIGNATURE: | SIGNATURE: | SIGNATURE: |
| Date: 5/30/96 Time: 2:51pm | Date: 5/30/96 Time: 3:00 PM | Date: Time: | Date: Time: |
| COMPANY: GEOMATIK | COMPANY: PEL | COMPANY: | COMPANY: |

ICC # 9605068 42

# PRIORITY ENVIRONMENTAL LABS

## Chain of Custody

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 5/30/96 PAGE: 2 OF 2

PROJECT MGR: PAT FULLER
COMPANY: FULLER EXCAVATING
ADDRESS: P.O. Box 6595
SAN JOSE 95150
PHONE: 408-275-1797 FAX: 408-275-9098
SIGNATURE:

| SAMPLE ID | DATE | TIME | MATRIX | TPH-Gasoline (EPA 5030,8015) | TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020) | TPH-Diesel (EPA 3510/3550,8015) | PURGEABLE AROMATICS BTEX (EPA 602,8020) | TOTAL OIL & GREASE (EPA 5520 C,D&F) | PESTICIDES/PCB (EPA 608,8080) | TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1) | CHLORINATED HYDROCARBONS (EPA 601,8010) | NUMBER OF CONTAINERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S-15-MW2 | 5/28/96 | | Soil | | X | X | | | | | | 1 |

ANALYSIS REPORT

**PROJECT INFORMATION**

PROJECT NAME: HAYWARD
PROJECT NUMBER:

**SAMPLE RECEIPT**

TOTAL # OF CONTAINERS: 13
RECD. GOOD COND./COLD: yes

INSTRUCTIONS & COMMENTS: Standard TAT
Fax copy of results to KEN at GEOMATIK at 279-2048

| RELINQUISHED BY: 1 | RECEIVED BY: 1 | RELINQUISHED BY: 2 | RECEIVED BY: 2 |
|---|---|---|---|
| KEN MATEIK | DAVID DUONG | | |
| SIGNATURE: Ken Mateik | SIGNATURE: | SIGNATURE: | SIGNATURE: |
| Date: 5/30/96 Time: 3:00pm | Date: 5/30/96 Time: 3:00 PM | Date: Time: | Date: Time: |
| COMPANY: GEOMATIK | COMPANY: PEL | COMPANY: | COMPANY: |

PRIORITY ENVIRONMENTAL LABS
Precision Environmental Analytical Laboratory

PEL # 9606011

June 07, 1996

FULLER EXCAVATING

Attn: Pat Fuller

Re: Four water samples for Gasoline/BTEX with MTBE, Diesel, and Oil & Grease analyses.

Project name: Hayward

Date sampled: Jun 04, 1996
Date extracted: Jun 05-07, 1996

Date submitted: Jun 05, 1996
Date analyzed: Jun 05-07, 1996

RESULTS:

| SAMPLE I.D. | MTBE (ug/L) | Gasoline (ug/L) | Diesel (ug/L) | Benzene (ug/L) | Toluene (ug/L) | Ethyl Benzene (ug/L) | Total Xylene (ug/L) | Oil & Grease (mg/L) |
|---|---|---|---|---|---|---|---|---|
| Field Blank | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| W-17-MW-1 | N.D. | 4100 | N.D. | 4.2 | 4.2 | 6.0 | 36 | 1.8 |
| W-17-MW-2 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| W-18-MW-3 | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| Blank | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. | N.D. |
| Spiked Recovery | --- | 102.7% | 81.8% | 83.4% | 87.0% | 94.1% | 88.3% | --- |
| Detection limit | 0.5 | 50 | 50 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Method of Analysis | 602 | 5030 / 8015 | 3510 / 8015 | 602 | 602 | 602 | 602 | 5520 C & F |

David Duong
Laboratory Director

1764 Houret Court Milpitas, CA. 95035 Tel: 408-946-9636 Fax: 408-946-9663

# PRIORITY ENVIRONMENTAL LABS

**Chain of Custody**

1764 Houret Ct. Milpitas,CA.95035 Tel:408-946-9636 Fax:408-946-9663

DATE: 06/04/96 PAGE: 1 OF 1

PROJECT MGR.: PAT FULLER
COMPANY: FULLER Excavating
ADDRESS: P.O. Box 6595
San Jose 95150
PHONE: 408-265-2629 FAX: 408-265-4335
SIGNATURE: Ken Matuk

**ANALYSIS REPORT**

**PEL #** 9606011
**INV #** 27048

| SAMPLE ID | DATE | TIME | MATRIX | TPH-Gasoline (EPA 5030,8015) | TPH-Gasoline(5030,8015) w/BTEX(EPA 602,8020) | TPH-Diesel (EPA 3510/3550,8015) | PURGEABLE AROMATICS BTEX (EPA 602,8020) | TOTAL OIL & GREASE (EPA 5520 C,D&F) | PESTICIDES/PCB (EPA 608,8080) | TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1) | CHLORINATED HYDROCARBONS (EPA 601,8010) | | MTBE | NUMBER OF CONTAINERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIELD BLANK | 6/4/96 | 9:13am | Water | | X | | | | | | | | X | 4 |
| | | 9:17am | | | | X | | | | | | | | 1 |
| | | 9:19am | | | | | | X | | | | | | 1 |
| W-18-MW3 | | 11:07am | | | | X | | | | | | | | 1 |
| | | 11:08am | | | | | | X | | | | | | 1 |
| | | 11:11am | | | X | | | | | | | | X | 4 |
| W-17-MW2 | | 12:57pm | | | | X | | | | | | | | 1 |
| | | 12:59pm | | | | | | X | | | | | | 1 |
| | | 13:02pm | | | X | | | | | | | | X | 4 |
| W-17-MW1 | | 3:23pm | | | X | | | | | | | | X | 4 |
| | | 3:27pm | | | | X | | | | | | | | 1 |
| | | 3:29pm | | | | | | X | | | | | | 1 |

**PROJECT INFORMATION**
PROJECT NAME: HAYWARD
PROJECT NUMBER:

**SAMPLE RECEIPT**
TOTAL # OF CONTAINERS: 24
RECD. GOOD COND./COLD:

INSTRUCTIONS & COMMENTS: Standard TAT
Please FAX Copy of results to KEN MATEIK @ 408-279-2048

| RELINQUISHED BY: 1 | RECEIVED BY: 1 | RELINQUISHED BY: 2 | RECEIVED BY: 2 |
|---|---|---|---|
| KEN MATEIK | VICTOR DUONG | | |
| SIGNATURE: Ken Mateik | SIGNATURE: Victor Duong | SIGNATURE: | SIGNATURE: |
| Date: 6/5/96 Time: 12:45pm | Date: 6/5/96 Time: 12:45 | Date: Time: | Date: Time: |
| COMPANY: GEOMATIK | COMPANY: PEL | COMPANY: | COMPANY: |

# APPENDIX C

## Well Construction Permit (1)

# ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

## DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Former Minami Nursery
North side of Penny Lane
Hayward, California 94541

CLIENT
Name Ms. Janet K. Mitobe
Address 29640 Vanderbilt Avenue
City Hayward, CA Zip 94544

APPLICANT
Name GEOMATIK / KEN MATEIK, R.G. Fax 408-279-2048
Address 554 N. 14th Street Voice 408-279-2071
City San Jose, CA Zip 95112

TYPE OF PROJECT

| Well Construction | | Geotechnical Investigation | |
|---|---|---|---|
| Cathodic Protection | | General | |
| Water Supply | | Contamination | |
| Monitoring | X | Well Destruction | |

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. Exploration GeoServices C-57 # 484288

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 40 ft
Surface Seal Depth ≈ 15 ft Number 3

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in Depth ___ ft

ESTIMATED STARTING DATE 05/23/96
ESTIMATED COMPLETION DATE 05/24/96

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No 73-68

APPLICANT'S SIGNATURE Ken Mateik Date 5/13/96

FOR OFFICE USE

PERMIT NUMBER 96363
LOCATION NUMBER

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 16 May 96
Wyman Hong

91992

# APPENDIX D

## Well Purge Data Sheets (3)

## WELL PURGE DATA SHEET

Project Name: Former Minami Nursery — Project No. 5107

Project Location: Penny Lane, San Lorenzo — Date: June 4, 1996

Monitoring Well No. MW-1 — Page 1 of 1

| Time (hr) | Gallons (cum.) | pH | Temp. (F) | Conduct. (micromoh) | Turbidity (NTU) |
|---|---|---|---|---|---|
| 13:49 | Begin purging Monitoring Well No. MW-1 | | | | |
| 13:49 | 0 | 6.02 | 69.3 | 8.68 | 54 |
| 13:54 | 2½ | 6.07 | 67.4 | 8.47 | 870 |
| 14:02 | 5 | 6.08 | 65.7 | 7.65 | >1,000 |
| 14:10 | 7½ | 6.10 | 65.6 | 7.63 | >1,000 |
| 14:19 | 10 | 6.09 | 65.7 | 7.69 | >1,000 |
| 14:32 | 12½ | 6.11 | 65.7 | 7.57 | >1,000 |
| 14:43 | 15 | 6.11 | 65.2 | 7.53 | >1,000 |
| 14:57 | 17½ | 6.13 | 65.5 | 7.54 | >1,000 |
| 15:11 | 20 | 6.12 | 65.3 | 7.54 | >1,000 |
| | Stop purging Monitoring Well No. MW-1 | | | | |
| 15:23 | SAMPLE: | 6.13 | 65.4 | 7.54 | 534 |

Notes:

| | |
|---|---|
| Depth to Bottom (feet) : | 28.0 |
| Depth to Water - initial (feet) : | 16.92 |
| Depth to Water - final (feet) : | 17.04 |
| % recovery : | 98.9% |
| Time Sampled : | 15:23 |
| Gallons per Well Casing Volume : | 1.77 |
| Gallons Purged : | 20 |
| Well Casing Volumes Purged : | 11.30 |
| Approximate Pumping Rate (gpm) : | N/A |

## WELL PURGE DATA SHEET

Project Name: Former Minami Nursery — Project No. 5107

Project Location: Penny Lane, San Lorenzo — Date: June 4, 1996

Monitoring Well No. MW-2 — Page 1 of 1

| Time (hr) | Gallons (cum.) | pH | Temp. (F) | Conduct. (micromoh) | Turbidity (NTU) |
|---|---|---|---|---|---|
| 11:22 | Begin purging Monitoring Well No. MW-2 | | | | |
| 11:22 | 0 | 6.24 | 68.3 | 6.27 | 139 |
| 11:28 | 2½ | 6.05 | 66.8 | 6.18 | >1,000 |
| 11:37 | 5 | 6.04 | 66.2 | 6.14 | >1,000 |
| 11:50 | 7½ | 5.96 | 65.4 | 6.10 | 970 |
| 12:07 | 10 | 5.82 | 65.3 | 6.07 | 984 |
| 12:18 | 12½ | 5.77 | 64.9 | 6.09 | >1,000 |
| 12:30 | 15 | 5.75 | 65.0 | 6.20 | >1,000 |
| 12:43 | 17½ | 5.73 | 64.7 | 6.25 | >1,000 |
| 12:54 | 20 | 5.74 | 64.8 | 6.24 | 969 |
| | Stop purging Monitoring Well No. MW-2 | | | | |
| 12:57 | SAMPLE: | 5.75 | 64.9 | 6.24 | 817 |

Notes:

| | |
|---|---|
| Depth to Bottom (feet) : | 33.0 |
| Depth to Water - initial (feet) : | 16.65 |
| Depth to Water - final (feet) : | 16.74 |
| % recovery : | 99.4% |
| Time Sampled : | 12:57 |
| Gallons per Well Casing Volume : | 2.62 |
| Gallons Purged : | 20 |
| Well Casing Volumes Purged : | 7.63 |
| Approximate Pumping Rate (gpm) : | N/A |

## WELL PURGE DATA SHEET

Project Name: Former Minami Nursery — Project No. 5107

Project Location: Penny Lane, San Lorenzo — Date: June 4, 1996

Monitoring Well No. MW-3 — Page 1 of 1

| Time (hr) | Gallons (cum.) | pH | Temp. (F) | Conduct. (micromoh) | Turbidity (NTU) |
|---|---|---|---|---|---|
| 09:34 | Begin purging Monitoring Well No. MW-3 | | | | |
| 09:34 | 0 | 6.28 | 68.9 | 9.27 | 72 |
| 09:41 | 2½ | 6.25 | 68.8 | 9.22 | 649 |
| 09:52 | 5 | 6.18 | 68.2 | 9.18 | 547 |
| 10:01 | 7½ | 6.13 | 68.2 | 9.15 | 610 |
| 10:13 | 10 | 6.09 | 65.3 | 8.99 | 493 |
| 10:25 | 12½ | 6.04 | 64.6 | 8.96 | 554 |
| 10:36 | 15 | 6.02 | 64.9 | 8.97 | 505 |
| 10:49 | 17½ | 6.01 | 64.8 | 8.94 | 584 |
| 11:00 | 20 | 5.99 | 64.6 | 8.95 | 527 |
| | Stop purging Monitoring Well No. MW-3 | | | | |
| 11:07 | SAMPLE: | 6.00 | 64.5 | 8.95 | 213 |

Notes:

| | |
|---|---|
| Depth to Bottom (feet) : | 28.5 |
| Depth to Water - initial (feet) : | 17.77 |
| Depth to Water - final (feet) : | 17.84 |
| % recovery : | 99.3% |
| Time Sampled : | 11:07 |
| Gallons per Well Casing Volume : | 1.72 |
| Gallons Purged : | 20 |
| Well Casing Volumes Purged : | 11.63 |
| Approximate Pumping Rate (gpm) : | N/A |

# APPENDIX E

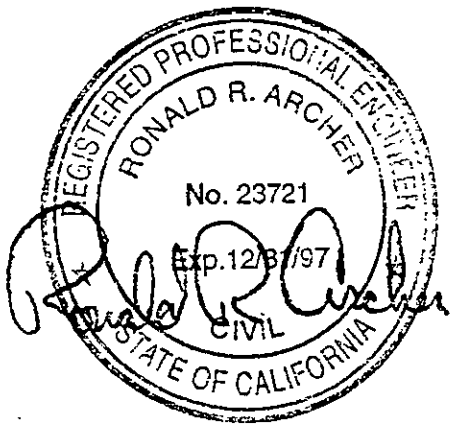
## Wellhead Survey (3)

# RON ARCHER

**CIVIL ENGINEER INC.**

CONSULTING • PLANNING • DESIGN • SURVEYING

4133 Mohr Ave., Suite E • Pleasanton, CA 94566
Phone: (510) 462-9372 Fax: (510) 462-4454


JUNE 4, 1996 JOB NO 2417

ELEVATIONS OF MONITORING WELLS AT THE FORMER MINAMI NURSERY SITE NOW PARCEL 3, PARCEL MAP 5548, (A VACANT LOT) LOCATED ON PENNY LANE ALAMEDA COUNTY, CALIFORNIA

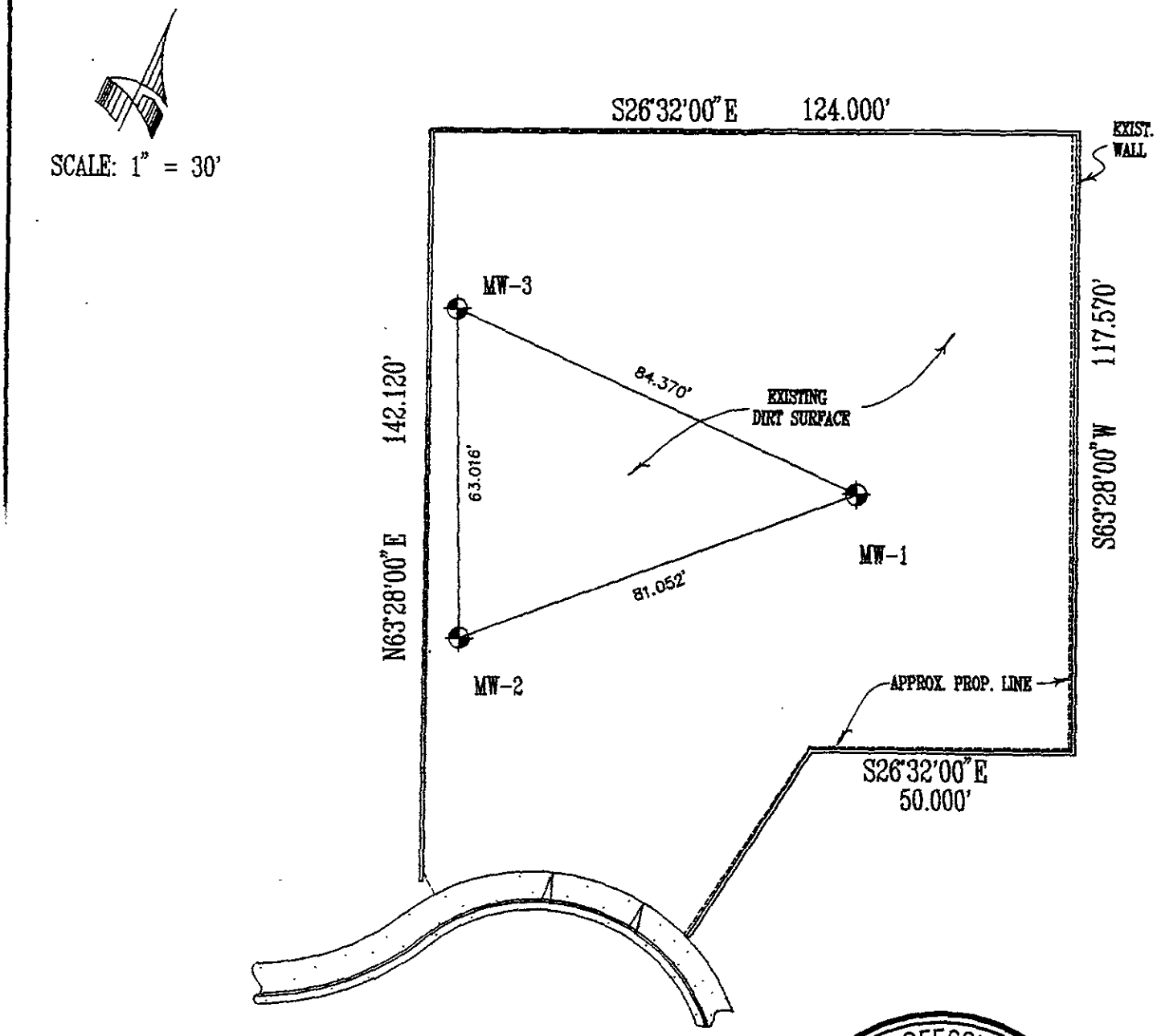
FOR: *GEOMATIC / GEOLOGICAL CONSULTING SERVICES*

## BENCHMARK: "HESP-BAR"

A FOUND BRASS DISC STAMPED "HESP-BAR" AT THE SOUTH END OF RETURN OF THE SOUTHEAST CORNER OF INTERSECTION OF HESPERIAN BOULEVARD AND BARTLETT AVENUE. ELEVATION TAKEN AS 43.732 M.S.L. (N.G.V.D.)

## MONITORING WELL DATA TABLE

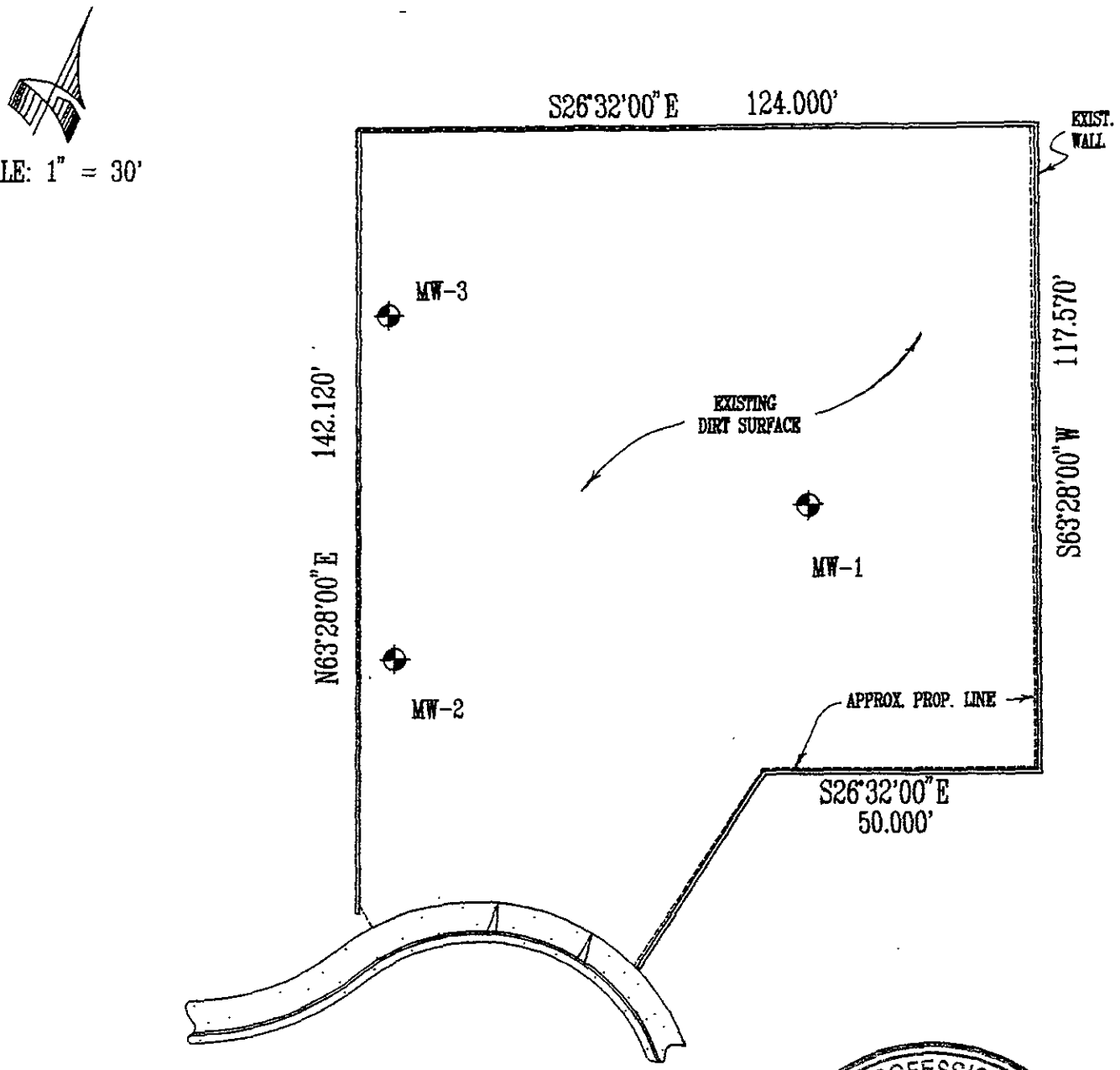
| WELL DESIGNATION | TOP OF CASING ELEVATION | GROUND ELEVATION |
|---|---|---|
| MW-1 | 42.57 | 39.74 |
| MW-2 | 42.17 | 39.20 |
| MW-3 | 43 01 | 40.04 |




REGISTERED PROFESSIONAL ENGINEER
RONALD R. ARCHER
No. 23721
Exp 12/31/97
CIVIL
STATE OF CALIF.

PLAT SHOWING MONITORING WELLS AT THE FORMER MINAMI NURSERY SITE, PARCEL 3, PARCEL MAP 5548, SAN LORENZO, ALAMEDA COUNTY, CALIFORNIA.
FOR: GEOLOGICAL CONSULTING SERVICES

| | | |
|---|---|---|
| RON ARCHER CIVIL ENGINEER INC. • 4133 MOHR AVE. SUITE E • PLEASANTON CA. 94566 | DATE: JUNE 4, 1996 | JOB NO 2417 |




REGISTERED PROFESSIONAL ENGINEER
RONALD R. ARCHER
No. 23721
Exp. 12/31/97
STATE OF CALIFORNIA

PLAT SHOWING MONITORING WELLS AT THE FORMER MINAMI NURSERY SITE, PARCEL 3, PARCEL MAP 5548, SAN LORENZO, ALAMEDA COUNTY, CALIFORNIA.
FOR: GEOLOGICAL CONSULTING SERVICES

RON ARCHER CIVIL ENGINEER INC. * 4133 MOHR AVE. SUITE E * PLEASANTON CA. 94566 | DATE: JUNE 4, 1996 | JOB NO 24