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**SITE ASSESSMENT REPORT**  
**OLD GRAYSTONE FUELING AREA**  
**SANTA RITA CORRECTIONAL FACILITY**  
**DUBLIN, CALIFORNIA**

**ESE PROJECT #6-93-5074**

**PRESENTED TO:**

**ALAMEDA COUNTY GENERAL SERVICES AGENCY**  
**4400 MACARTHUR BOULEVARD**  
**OAKLAND, CALIFORNIA 94619**

**PREPARED BY:**

**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.**  
**4090 NELSON AVENUE, SUITE J**  
**CONCORD, CALIFORNIA 94520**  
**(510) 685-4053**

**FEBRUARY 21, 1994**



Environmental  
Science &  
Engineering, Inc.

ALCO  
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TO: Alameda County Health Care Services Agency  
Department of Environmental Health  
80 Swan Way, Room 350  
Oakland, CA 94621

DATE: February 24, 1994

ATTN: Mr. Scott Seery

JOB NUMBER: 6-93-5074

SUBJECT: Old Graystone Fueling Area, Santa Rita Correctional Facility, Dublin,  
California

WE ARE TRANSMITTING THE FOLLOWING:

One Site Assessment Report for the subject property. Quarterly ground water monitoring is on schedule and a report for the First Quarter, 1994 will be forwarded within the next week or two.

Sincerely,

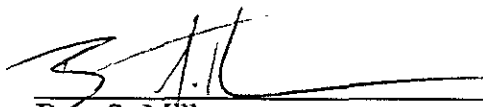
DIST:  
LB  
FILE  
ORIGINATOR

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

BY   
Bart S. Miller  
Project Geologist


This report has been prepared by Environmental Science & Engineering, Inc. for the exclusive use of the Alameda County General Services Agency as it pertains to their site referred to as the Old Graystone Fueling Area located at the Santa Rita Correctional Facility in Dublin, California. Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other geologists and engineers practicing in this field. No other warranty, express or implied, is made as to professional advice in this report.

REPORT PREPARED BY:

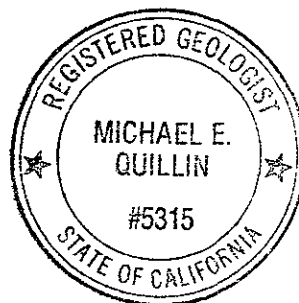
  
\_\_\_\_\_  
Bart S. Miller  
Project Geologist

FEBRUARY 23, 1994  
DATE

UNDER THE PROFESSIONAL SUPERVISION OF:

  
\_\_\_\_\_  
Michael E. Quillin  
Senior Hydrogeologist  
California Registered Geologist No. 5315

FEBRUARY 23, 1994  
DATE



PROJECT NO. 6-93-5074

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**SITE ASSESSMENT REPORT  
OLD GRAYSTONE FUELING AREA, SANTA RITA CORRECTIONAL FACILITY  
DUBLIN, CALIFORNIA**

**1.0 INTRODUCTION**

This report presents the results of a site assessment conducted by Environmental Science & Engineering, Inc. (ESE) for the Alameda County General Services Agency (GSA) at the Old Graystone fueling area on November 4 and 5, 1993. ESE submitted a workplan to the GSA and the Alameda County Health Care Services Agency (HCSA) describing the tasks to be performed during this site assessment on July 21, 1993 (ESE, 1993e). The objectives of the site assessment were to determine whether petroleum hydrocarbons occur in formational soil adjacent to a former underground storage tank (UST) excavation, to measure the depth to ground water, and determine if petroleum hydrocarbons have migrated downgradient from the former UST excavation area, and to identify potential product migration routes in the sedimentary stratigraphy of the unsaturated zone.

All activities described in this report were conducted in response to written authorization from the GSA. Site assessment procedures were conducted in accordance with HCSA guidelines, and follow California Regional Water Quality Control Board Tri-Regional Board recommendations (RWQCB, 1990).

**1.1 SITE HISTORY**

The Old Graystone fueling area is located within the Santa Rita Correctional Facility property boundary approximately ½-mile west-northwest of the California Interstate 580 intersection with Tassajara Road at Dublin, California (Figure 1 - Location Map). The site is owned and managed by the GSA. At the site, the GSA formerly operated one 10,000-gallon-capacity unleaded gasoline UST, one 11,000-gallon-capacity regular gasoline UST, and one 500-gallon-capacity waste oil UST (Figure 2 - Site Plan). The UST for unleaded gasoline was constructed of fiberglass and the USTs for regular gasoline and waste oil were constructed of single-walled carbon-steel. The USTs were part of a County vehicle fueling and servicing area. The installation dates of the USTs are unknown.

Under permit from the HCSA and the Dougherty Regional Fire Authority (DRFA), ESE removed and disposed of the three USTs between May 18 and May 20, 1992. ESE submitted a closure report to the GSA and the HCSA for the three USTs on July 20, 1992 (ESE, 1992a). ESE also submitted an Underground Storage Tank Unauthorized Release (Leak) / Contamination Site Report to the HCSA on November 19, 1992.

Under the direction of a HCSA representative, a total of five soil samples were collected by ESE personnel from the bottom of the three UST excavations and submitted for analysis. Laboratory results reported detectable concentrations of total petroleum hydrocarbons as gasoline (TPH-G) in all samples ranging between 13 to 730 milligrams per kilogram (mg/Kg) using EPA Method 8015 (modified per CA LUFT). Benzene, toluene, ethylbenzene, and total xylenes (BTEX) were also detected in all samples analyzed using EPA Method 8020.

On November 8, 1992, ESE conducted limited overexcavation and trench sampling at the site to characterize and excavate soil impacted with petroleum hydrocarbons. Soil occurring at a depth of approximately 22-feet below grade in the gasoline UST excavations was noted to be impacted with gasoline and was characterized by a grey discoloration and a strong fuel odor. No ground water was encountered during these overexcavation activities. ESE documented all findings in a letter submitted to the GSA and the HCSA on January 8, 1993 (ESE, 1993a).

On November 18, 1992, ESE submitted a workplan to the GSA and the HCSA describing a subsurface investigation consisting of the collection of soil samples in borings and the collection of ground water samples in selected borings using a Hydropunch® (ESE, 1992b). The work was implemented on November 23, 1992. Detectable TPH-G and BTEX concentrations were reported to occur in one soil sample collected at a depth of 25 feet below grade from a boring located approximately 10 feet north of the former unleaded gasoline fiberglass UST. In addition, detectable concentrations of TPH-G and BTEX were

reported in ground water samples collected near the former UST locations with the reported concentrations in ground water decreasing radially outward from the site. ESE submitted a report documenting these findings to the GSA and the HCSA on January 15, 1993 and recommended that the impacted soil at the site be excavated and, subsequently, a ground water investigation be performed (ESE, 1993b).

A Corrective Action Plan for the excavation work was submitted by ESE to the GSA and the HCSA on February 1, 1993 (ESE, 1993c). During the period of February 17 through March 2, 1993, ESE supervised the excavation of soil impacted with petroleum hydrocarbons at the site. Impacted soil was identified and excavated to the depth of water saturation at approximately 24 feet below grade. ESE estimated the total volume of soil excavated at the site to be 6,500 cubic yards. Of this volume, ESE initially estimated approximately 5,000 cubic yards of soil to be impacted with petroleum hydrocarbons. All findings were documented in a Corrective Action Report submitted to the GSA and the HCSA on April 28, 1993 (ESE, 1993d).

## 1.2 REGIONAL GEOLOGY

The site is located within the Coast Ranges geomorphic province (Norris and Webb, 1976) at the northern boundary of the Livermore Valley depression, located midway between the southern part of San Francisco Bay and the San Joaquin Valley. The Livermore Valley is approximately 13 miles long in an east-west direction and approximately 4 miles wide and is completely surrounded by hills of the Diablo Range.

The site is situated within a relatively flat, alluviated lowland portion of the Livermore Valley referred to as the Camp Sub-basin (State of California Department of Water Resources, 1974). Unconsolidated alluvial sediments, also referred to as valley fill materials, in this basin are reported to be greater than 500 feet in thickness and are underlain by semi-consolidated to consolidated sedimentary rocks of Tertiary age.



The Livermore Valley fill materials are comprised of alluvial sediments of Quaternary age (State of California Department of Water Resources, 1974). Alluvium of Pleistocene to Holocene age has been deposited in the gently sloping central area of the Livermore Valley and adjacent to active streams in the ravines and canyons tributary to Livermore Valley. The alluvium consists of unconsolidated deposits of interbedded clay, silt, fine sand, and lenses of clayey gravel. These sediments are approximated to be up to 200 feet in thickness and overlie sedimentary rocks of the Livermore Formation and the Tassajara Formation. Fine-grained alluvial fan deposits occur along the northern side of the Livermore Valley. These deposits consist of stratified beds of clay, silt, and sand, and were formed by deposition from streams draining upland areas composed of sandstone and shale of the Tassajara Formation.

The Livermore Valley is bisected by six major faults or fault groups and at least five other faults of a more local nature (State of California Department of Water Resources, 1974). The major faults are the Carnegie, Tesla, Mocho, Livermore, Pleasanton, and Calaveras Faults. The minor faults include the Parks, Verona, and several unnamed faults. The site is located on a downdropped block of land bounded by the Mocho Fault to the north, the Parks Fault to the south, and the Pleasanton Fault to the east.

### 1.3 REGIONAL HYDROLOGY

The water-bearing sediment series in the Livermore Valley can be described as multi-layered systems having an unconfined upper aquifer over a sequence of leaky or semi-confined aquifers (State of California Department of Water Resources, 1974). Ground water in the valley moves downslope toward the longitudinal axis of the valley and then in a generally westerly direction toward the Bernal sub-basin. Here the various ground waters of the basin commingle and move in a southerly direction into the Sunol Valley ground water basin. The central and western portions of the Livermore Valley contain the greatest amount of valley fill materials and produce the largest quantities of water.

Faults and lateral variations in thickness and permeability of aquifer materials cause restrictions to the horizontal movement of ground water (State of California Department of Water Resources, 1974). Restrictions to the vertical movement of ground water within the valley are due to separations between the two water-bearing units, the valley fill materials and the Livermore Formation. Each formation has different permeabilities and internal stratification within each unit. Hydraulic continuity between the two water-bearing units is limited to areas where the Livermore Formation is in direct contact with overlying stream channel deposits and where wells penetrate both the valley fill materials and the Livermore Formation, thereby allowing some degree of interconnection. The degree of hydraulic continuity between sub-basins is mainly controlled by faulting.

The Camp Sub-basin covers an approximate area of 2,850 acres and is the sub-basin in which the site is located (State of California Department of Water Resources, 1974). The sub-basin is drained by the Tassajara Creek and the Cottonwood Creek, which enter from the hills to the north, cross the sub-basin along a southerly course, and flow into the Amador Sub-basin. Unconfined to semi-confined ground waters occur in varying amounts throughout the Camp Sub-basin and have a combined potentiometric surface between approximately 10 to 25 feet below grade. The potentiometric surface has been reported by the State of California Department of Water Resources (1974) to slope in a southerly direction with a gradient of approximately 70 feet per mile.

Ground water in the Camp Sub-basin occurs in beds of sandy clay and sandy gravel which overlie the Tassajara Formation (State of California Department of Water Resources, 1974). These water-bearing zones dip gently to the south at an angle of approximately three degrees. Ground water in this sub-basin has been analyzed by the California Department of Water Resources (1974) and is classified as a sodium carbonate water of irrigation Class II quality.

#### 1.4 PRECIPITATION AND WATER USEAGE

Alameda County exhibits a Mediterranean type of climate characterized by winter rains and summer dryness (Hickenbottom and Muir, 1988). Winter rains are caused by frontal storms generated in the northern Pacific Ocean and the majority of this rainfall occurs during the months of November through March. The Alameda County Flood Control and Water Conservation District (ACFCWCD) collects rainfall data from at least 67 stations within Alameda County. Two ACFCWCD stations, E50-2525 and E50-6991-06, are located at a distance of approximately three miles to the west of the site and approximately two miles to the southeast of the site, respectively. Based on precipitation data collected over a 100-year study period (1870-1970) and over a nine-year study period (1961-1970) the mean annual precipitation is reported to range between 14.27 to 14.58 inches.

All of the agriculture in the Livermore Valley is irrigated from ground water (State of California Department of Water Resources, 1974). As well, ground water is pumped for municipal and industrial uses. During the period of 1961 through 1970 the average total volume of ground water pumped for irrigated agricultural, municipal, and industrial activities was documented to be 23,900 acre-feet. Of this total volume it was estimated that 80 percent of the average total volume of ground water (approximately 19,440 acre-feet) was pumped from the valley fill alluvial sediments and the remaining 20 percent (approximately 4,460 acre-feet) was pumped from the deeper Tassajara and Livermore Formations.

The State of California Department of Water Resources (1974) has reported that there is no data available concerning ground water production in the Camp Sub-basin where the site is located and has estimated that ground water supplies could be obtained from shallow wells nearly everywhere in the sub-basin.

## 2.0 FIELD METHODOLOGY

### 2.1 SOIL SAMPLING AND ANALYSIS

ESE supervised the drilling and sampling of four soil borings (OG1, OG2, OG3, and OG4; Figure 2) during this site assessment. All appropriate permits for this subsurface investigation were obtained from the Alameda County Zone 7 Water Agency. Drilling activities were performed by Exploration Geoservices, Inc. (EGI) of San Jose, California using a mobile B-61 hollow-stem auger drill rig. Soil samples were collected from all borings at five-foot intervals, at distinct lithologic contacts, and at zones of obvious petroleum hydrocarbon impact. This soil boring and sampling was conducted in accordance with ESE Standard Operating Procedure (SOP) No. 1 for soil borings and soil sampling with hollow-stem augers in unconsolidated formations (Appendix A - ESE Standard Operating Procedure No. 1).

Borings OG1, OG2, OG3, and OG4 were drilled to a total depth of 20 feet below grade and soil samples were collected at five-foot intervals. Water saturation was observed at a depth of 20 feet below grade in all borings.

A total of 16 soil samples were placed in a cooler with ice and transported under chain of custody documentation to McCampbell Analytical (a California-certified laboratory) of Pacheco, California. Since preliminary screening of the soil samples with a photoionization detector (PID) indicated no detectable concentrations of volatile organic compounds (VOCs), only samples collected at the soil-ground water interface (OG1-20', OG2-20', OG3-20', and OG4-20') were analyzed for TPH-G using EPA Method 8015 (modified per CA LUFT) and BTEX using EPA Method 8020.

## 2.2 GROUND WATER SAMPLING AND ANALYSIS

ESE installed a total of four, four-inch diameter ground water monitoring wells (OG1, OG2, OG3, and OG4) in the soil borings at the site after advancing each to a depth of 35 feet (Figure 2). The installation and development of the wells was conducted in accordance with ESE SOP No. 2 for monitoring well installation and development (Appendix A).

Utilizing the nearest benchmark, surveyors from the Alameda County Surveying Department conducted a horizontal and vertical survey of the UST sites. The survey recorded top of well casing elevations relative to mean sea level and the location of other site features, as requested by ESE. This survey provided ESE the information required to generate accurate site maps, calculate ground water elevations relative to mean sea level, and accurately estimate ground water flow direction and gradient.

ESE monitored ground water levels in all wells at the site (OG1, OG2, OG3, and OG4). Ground water samples were collected from the site wells in accordance with ESE SOP No. 3 for ground water monitoring and sampling from monitoring wells (Appendix A).

The ground water samples collected from the site wells were placed in a cooler with ice and transported to McCampbell Analytical under chain of custody. All samples were analyzed for TPH-G and BTEX. Pursuant to the HCSA written request of August 10, 1993, the ground water sample collected from downgradient well OG3 was also analyzed for total petroleum hydrocarbons as diesel (TPH-D) using EPA Method 8015 (modified per CA LUFT), halogenated volatile organic compounds (HVOCs) using EPA Method 8010, semi-volatile organic compounds (SVOCs) using EPA Method 8270, total lead using EPA Method 7420, total cadmium using EPA Method 7130, total chromium using EPA Method 7190, total nickel using EPA Method 7520, and total zinc using EPA Method 7950.

TPH-G  
BTEX

TPH-D  
HVOC  
SVOC  
metals

One duplicate ground water sample (DUP) was collected from well OG3 for Quality Assurance/Quality Control (QA/QC) purposes. The duplicate was submitted to the laboratory as a blind sample for BTEX analysis, and serves as a check on ESE's sample collection procedures and the laboratory's analytical methods.

### 2.3 WASTE MANAGEMENT

All decontamination rinseates and purge water were placed in appropriately labeled 55-gallon capacity Department of Transportation (DOT) - approved drums for temporary storage at the site. Each drum of rinseate and purge water was labeled according to source location. Integrated Wastestream Management (IWM) of Milpitas, California transported the drummed rinseate and purge water as non-hazardous waste using a licensed hauler to the Gibson Environmental Liquid Treatment and Recycling Facility located at Redwood City, California for recycling. As requested by the GSA, all soil drill cuttings were stockpiled at the site on and under plastic sheeting. ESE has been advised by the GSA that this soil was spread out on native soil at the site.

### 3.0 RESULTS

#### 3.1 SOIL

Subsurface investigation at the Old Graystone fueling area indicated soil comprised mostly of clay, clayey sands and sandy silts. Geologic logs for borings OG1, OG2, OG3, and OG4 are presented in Appendix B.

Preliminary screening results of the 16 soil samples collected at the site using a PID indicated no detectable concentrations of VOCs. All four soil samples collected at the approximate soil-ground water interface (OG1-20', OG2-20', OG3-20', and OG4-20') and submitted to the laboratory for analysis were reported not to contain any detectable concentrations of TPH-G and BTEX (Table 1 - Analytical Results of Soil Samples Collected From Borings). Based on these findings, the GSA spread the stockpiled drill cuttings on native soil at the site. Analytical reports and chain of custody documents are presented in Appendix C.

#### 3.2 GROUND WATER

Water-saturated soil was encountered in borings OG1, OG2, OG3, and OG4 at a depth of approximately 20 feet below grade. Ground water was not observed to rise vertically during the installation of monitoring wells in these borings. Depth to water measurements and ground water elevation for the site wells are presented in Table 2 (Ground Water Elevation Data 11/05/93) and Appendix D (Sample Collection Logs).

Ground water flow direction was estimated to be toward the southeast with a gradient of approximately 0.002 foot per foot (Figure 3 - Ground Water Elevation Map 11/05/93). The direction of ground water flow is consistent with local topographic slope toward the southeast and the ground water flow direction reported by the State of California Department of Water Resources (1974).

No detectable concentrations of TPH-G and BTEX were reported in any of the ground water samples collected at the site (Table 3 - Analytical Results of Ground Water Samples Collected From Monitoring Wells 11/05/93). Ground water sample OG3 was reported to contain a TPH-D concentration of 75 micrograms per liter ( $\mu\text{g/L}$ ). However, sample OG3 was reported to contain no detectable concentrations of HVOCs, SVOCs, total lead, total cadmium, total chromium, and total nickel. A total zinc concentration of 0.089 milligrams per liter ( $\text{mg/L}$ ) was reported to occur in sample OG3. This zinc concentration is less than the current State of California Department of Health Services (DHS) Secondary Maximum Contaminant Level (MCL) of 5  $\text{mg/L}$  for drinking water. Analytical results for ground water samples collected at the site are shown in Figure 4 - Analytical Results Of Ground Water Samples 11/05/93).



#### 4.0 SUMMARY

Analytical results for soil samples collected during this site assessment indicate that the excavation activities supervised by ESE during February 17 through March 2, 1993 were effective in removing all soil in the unsaturated zone impacted with petroleum hydrocarbons in the gasoline range.

Ground water was observed under unconfined conditions at a depth of 20 feet below grade in all monitoring wells at the site. Ground water flow direction was observed to be toward the southeast with a gradient of approximately 0.002 foot per foot. One ground water sample collected at well OG3 was reported to contain a TPH-D concentration of 75  $\mu\text{g/L}$ . No detectable concentrations of HVOCs, SVOCs, total lead, total cadmium, total chromium, and total nickel were reported to occur in sample OG3. A total zinc concentration of 0.089 mg/L was reported to occur in sample OG3. This concentration is less than the State of California DHS Current Drinking Water Secondary MCL for zinc of 5 mg/L.

## 5.0 RECOMMENDATIONS

Based upon the conclusions derived from this site assessment at the Old Graystone Fueling Area, ESE recommends the following:

- Quarterly ground water monitoring and sampling be performed at the site. Due to the reported detectable concentration of TPH-D in ground water sample OG3 during this site assessment, all ground water samples collected during future events should be analyzed for TPH-D in addition to the TPH-G and BTEX analyses requested by the HCSA.

## 6.0 REFERENCES

- Environmental Science & Engineering, Inc. (ESE), 1992a. Unpublished Underground Storage Tank Closure Report for Old Graystone Fueling Area, Santa Rita Correctional Facility, Dublin, California; submitted to Alameda County Health Care Services Agency on July 20, 1992.
- Environmental Science & Engineering, Inc. (ESE), 1992b. Unpublished Letter Workplan for a Subsurface Investigation at the Old Graystone Fueling Area, Santa Rita Correctional Facility, Dublin, California; submitted to Alameda County Health Care Services Agency on November 18, 1992.
- Environmental Science & Engineering, Inc. (ESE), 1993a. Unpublished Letter Report of Overexcavation Activities at the Old Graystone Fueling Area, Santa Rita Correctional Facility, Dublin, California; submitted to Alameda County Health Care Services Agency on January 7, 1993.
- Environmental Science & Engineering, Inc. (ESE), 1993b. Unpublished Report on Soil and Ground Water Investigation at the Old Graystone Fueling Area, Santa Rita Correctional Facility, Dublin, California; submitted to Alameda County Health Care Services Agency on January 15, 1993.
- Environmental Science & Engineering, Inc. (ESE), 1993c. Unpublished Corrective Action Plan for the Old Graystone Fueling Area, Santa Rita Correctional Facility, Dublin, California; submitted to Alameda County Health Care Services Agency on February 1, 1993.

Environmental Science & Engineering, Inc. (ESE), 1993d. Unpublished Corrective Action Report for the Old Graystone Fueling Area, Santa Rita Correctional Facility, Dublin, California; submitted to Alameda County Health Care Services Agency on April 27, 1991.

Environmental Science and Engineering, Inc. (ESE), 1993e. Unpublished Workplan For a Site Investigation at the Old Graystone Fueling Area, Santa Rita Correctional Facility, Dublin, California; submitted to Alameda County Health Care Services Agency on July 21, 1993.

Hickenbottom, K., and Muir, K., 1988. Geohydrology and Ground Water Quality Overview of the East Bay Plain Area, Alameda County, California; Alameda County Flood Control and Water Conservation District Report 205 (J), 83pp.

Norris, R.M., and Webb, R.W., 1976. Geology of California; John Wiley & Sons, Inc., New York. 365 pp.

State of California Department of Water Resources, 1974. Evaluation of Ground Water Resources: Livermore and Sunol Valleys; Bull. 118-2, 153 pp.

State of California Regional Water Quality Control Board (RWQCB), 1990. Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Site; August 10, 1990.

**TABLES**

**TABLE 1**  
**ANALYTICAL RESULTS OF SOIL SAMPLES**  
**COLLECTED FROM BORINGS**  
**(11/05/93)**

Sample No.	Depth (feet)	TPH-G (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)
OG1-20'	20	ND	ND	ND	ND	ND
OG2-20'	20	ND	ND	ND	ND	ND
OG3-20'	20	ND	ND	ND	ND	ND
OG4-20'	20	ND	ND	ND	ND	ND

**NOTES:**

TPH-G refers to Total Petroleum Hydrocarbons as Gasoline  
 ND refers to not detected at method detection limit  
 mg/Kg refers to milligrams per kilogram

**TABLE 2**  
**GROUND WATER ELEVATION DATA**  
**(11/05/93)**

Well No.	Depth to Water (feet)	Top of Casing Elevation (feet AMSL)	Ground Water Elevation (feet AMSL)
OG1	23.56	351.90	328.34
OG2	22.48	350.53	328.05
OG3	22.75	350.75	328.00
OG4	22.24	350.26	328.02

**NOTES:**

AMSL refers to Above Mean Sea Level

TABLE 3

ANALYTICAL RESULTS OF GROUND WATER  
 SAMPLES COLLECTED FROM MONITORING WELLS  
 (11/05/93)

Sample No.	TPH-G ( <del>mg/Kg</del> )	TPH-D ( <del>mg/Kg</del> )	Benzene ( <del>mg/Kg</del> )	Toluene ( <del>mg/Kg</del> )	Ethylbenzene ( <del>mg/Kg</del> )	Total Xylenes ( <del>mg/Kg</del> )
OG1	ND	--	ND	ND	ND	ND
OG2	ND	--	ND	ND	ND	ND
OG3	ND	75	ND	ND	ND	ND
OG4	ND	--	ND	ND	ND	ND

NOTES:

~~mg/Kg~~ refers to <sup>micrograms / liter</sup> milligrams per kilogram

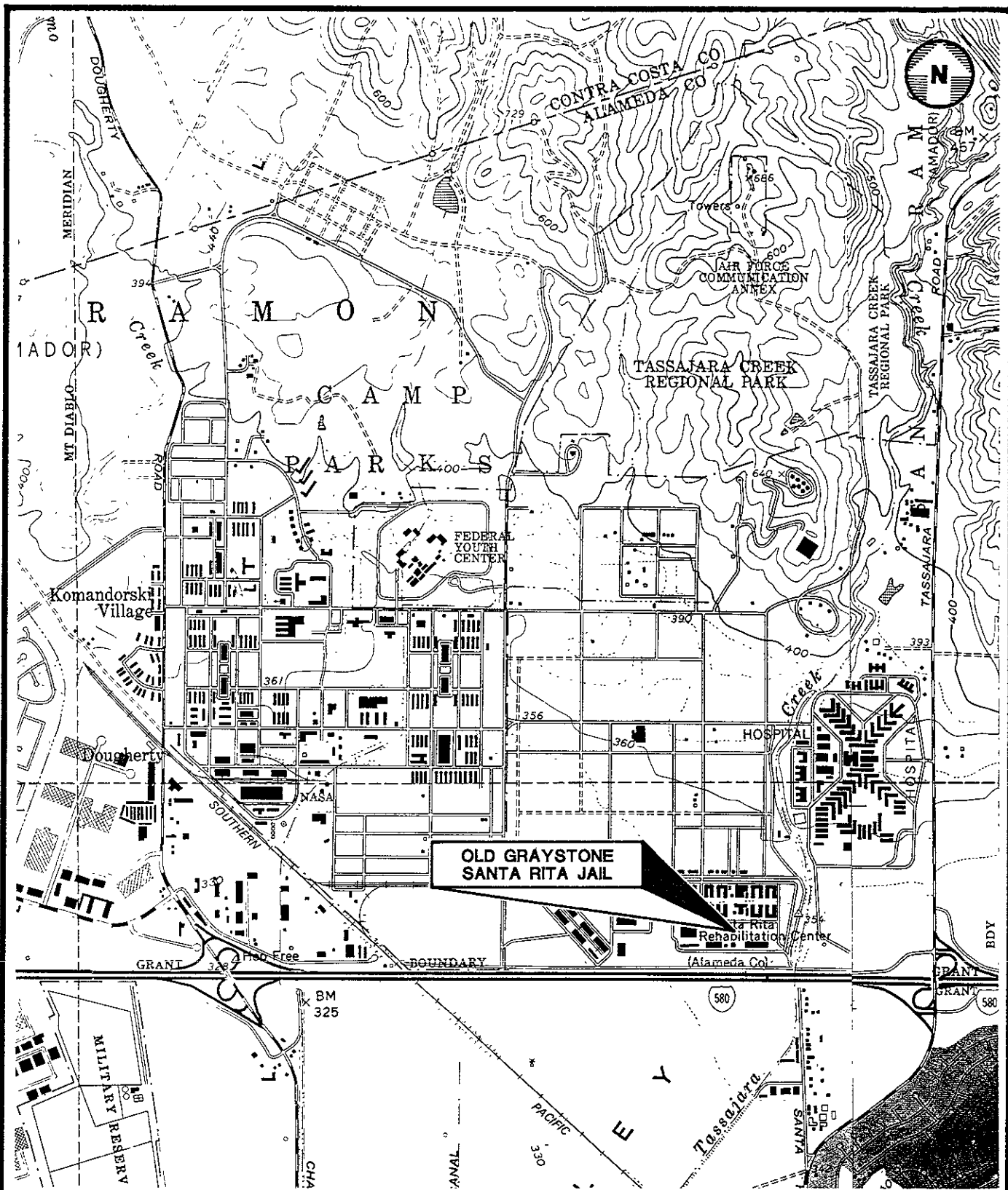
TPH-G refers to Total Petroleum Hydrocarbons as Gasoline

TPH-D refers to Total Petroleum Hydrocarbons as Diesel

ND refers to not detected at analytical method detection limit

**FIGURES**





ADAPTED FROM U.S.G.S. DUBLIN AND LIVERMORE 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAPS, 1980.



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CONCORD, CA 94520

DATE  
2/94

REVISED

CAD FILE  
50741004

**LOCATION MAP**

ALAMEDA COUNTY GENERAL SERVICES AGENCY  
OLD GRAYSTONE FUELING AREA  
SANTA RITA CORRECTIONAL FACILITY

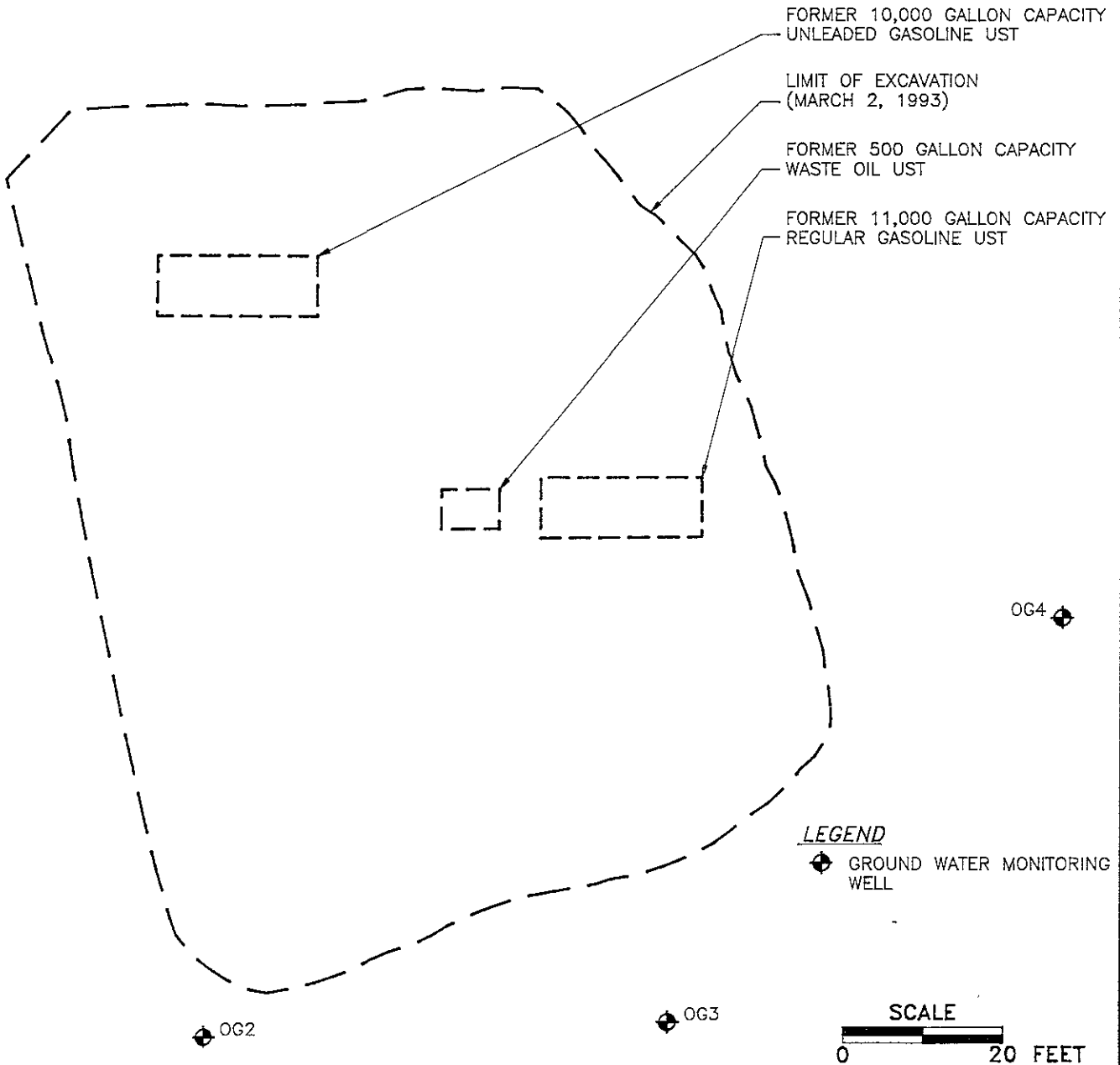
FIGURE NO.

**1**

PROJ. NO.

6-93-5074

OG1



LEGEND

◆ GROUND WATER MONITORING WELL

SCALE

0 20 FEET



**Environmental  
Science &  
Engineering, Inc.**

DATE  
2/94

REVISED

CAD FILE  
50742001

**SITE PLAN**

ALAMEDA COUNTY GENERAL SERVICES AGENCY  
OLD GRAYSTONE FUELING AREA  
SANTA RITA CORRECTIONAL FACILITY

FIGURE NO.

**2**

PROJ. NO.  
6-93-5074

4090 NELSON AVENUE, SUITE J  
CONCORD, CA 94520



OG1  
328.34

328.3

FORMER 10,000 GALLON CAPACITY  
UNLEADED GASOLINE UST

LIMIT OF EXCAVATION  
(MARCH 2, 1993)

FORMER 500 GALLON CAPACITY  
WASTE OIL UST

FORMER 11,000 GALLON CAPACITY  
REGULAR GASOLINE UST

328.2



OG4  
328.02

328.1

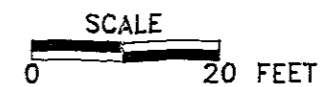
OG2  
328.05

OG3  
328.00

328.0

LEGEND

- GROUND WATER MONITORING WELL
- 328.00 GROUND WATER ELEVATION IN FEET ABOVE MEAN SEAL LEVEL (MSL)
- 328.0 - - - GROUND WATER ELEVATION CONTOUR IN FEET MSL
- DIRECTION OF GROUND WATER FLOW

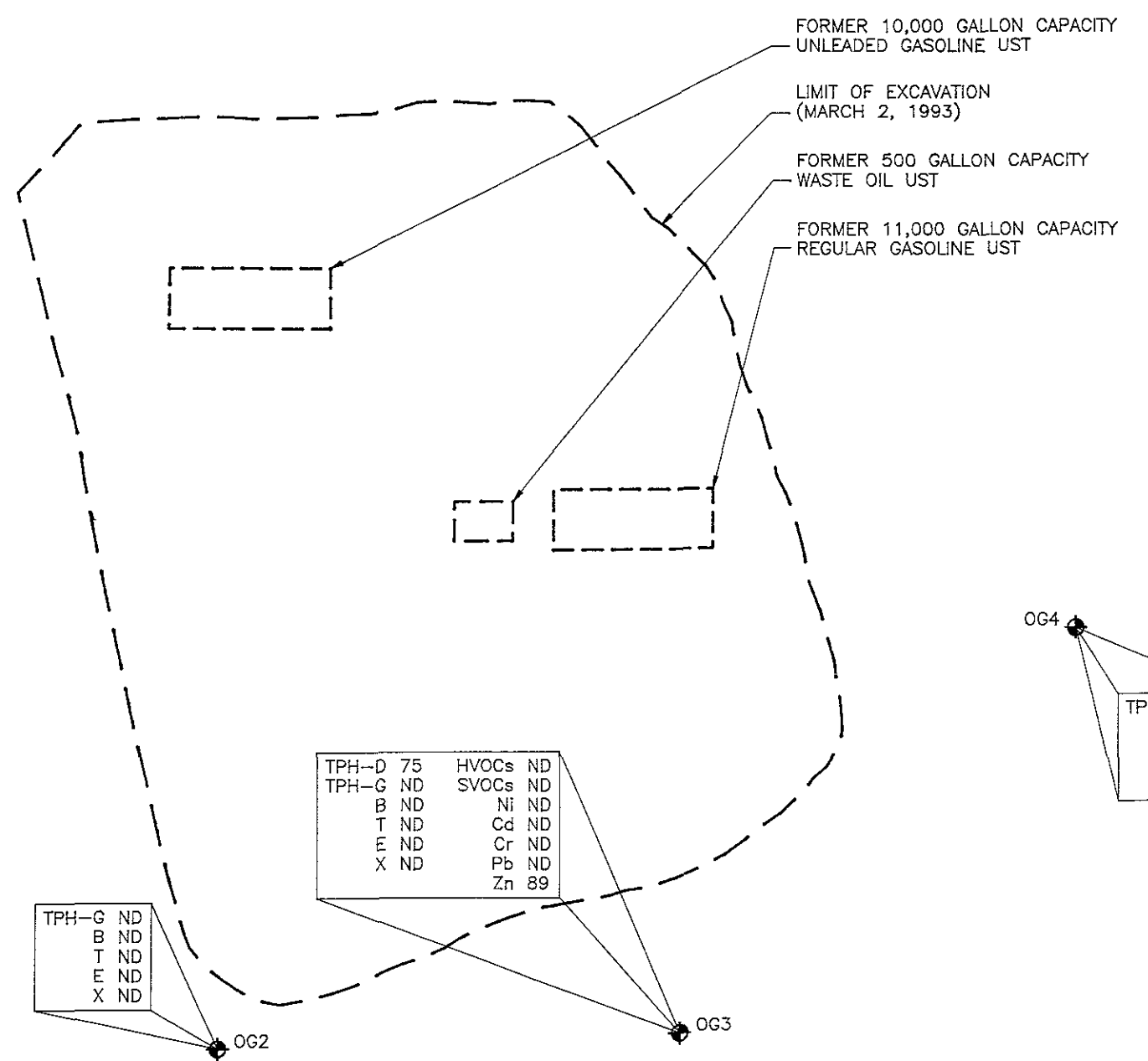


	DATE 2/94	<b>GROUND WATER ELEVATION MAP</b> NOVEMBER 5, 1993	FIGURE NO. <b>3</b>
	REVISD		ALAMEDA COUNTY GENERAL SERVICES AGENCY OLD GRAYSTONE FUELING AREA SANTA RITA CORRECTIONAL FACILITY
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520		CAD FILE 50742002	



OG1

TPH-G	ND
B	ND
T	ND
E	ND
X	ND



FORMER 10,000 GALLON CAPACITY UNLEADED GASOLINE UST

LIMIT OF EXCAVATION (MARCH 2, 1993)

FORMER 500 GALLON CAPACITY WASTE OIL UST

FORMER 11,000 GALLON CAPACITY REGULAR GASOLINE UST

**LEGEND**

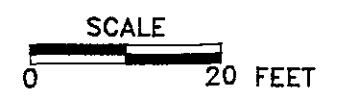
- ⊕ GROUND WATER MONITORING WELL
- TPH-D TOTAL PETROLEUM HYDROCARBONS AS DIESEL
- TPH-G TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X TOTAL XYLENES
- HVOCs HALOGENATED VOLATILE ORGANIC COMPOUNDS
- SVOCs SEMI-VOLATILE ORGANIC COMPOUNDS
- Ni NICKEL
- Cd CADMIUM
- Cr CHROMIUM
- Pb LEAD
- Zn ZINC
- ND NOT DETECTED AT METHOD DETECTION LIMIT

OG4

TPH-G	ND
B	ND
T	ND
E	ND
X	ND

TPH-D	75	HVOCs	ND
TPH-G	ND	SVOCs	ND
B	ND	Ni	ND
T	ND	Cd	ND
E	ND	Cr	ND
X	ND	Pb	ND
		Zn	89

TPH-G	ND
B	ND
T	ND
E	ND
X	ND



ALL CONCENTRATIONS IN MICROGRAMS PER LITER (ug/L)

	DATE	2/94	<b>ANALYTICAL RESULTS OF GROUND WATER SAMPLES</b> NOVEMBER 5, 1993	FIGURE NO. <b>4</b>
	REVISED			
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	CAD FILE	50742003	ALAMEDA COUNTY GENERAL SERVICES AGENCY OLD GRAYSTONE FUELING AREA SANTA RITA CORRECTIONAL FACILITY	PROJ. NO. 6-93-5074

**APPENDIX A**  
**ESE STANDARD OPERATING PROCEDURES**

**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.  
CONCORD, CALIFORNIA OFFICE**

**STANDARD OPERATING PROCEDURE NO. 1  
FOR SOIL BORINGS AND SOIL SAMPLING WITH HOLLOW-STEM AUGERS  
IN UNCONSOLIDATED FORMATIONS**

Environmental Science & Engineering, Inc. (ESE) typically drills soil borings using a truck-mounted, continuous-flight, hollow-stem auger drill rig. The drill rig is owned and operated by a drilling company possessing a valid State of California C-57 license. The soil borings are conducted under the direct supervision and guidance of an experienced ESE geologist. Prior to drilling, the ESE geologist will clear the borehole location with a hand auger to a depth of five feet. The ESE geologist logs each borehole during drilling in accordance with the Unified Soil Classification System (USCS). Additionally, the ESE geologist observes and notes the soil color, relative density or stiffness, moisture content, odor (if obvious) and organic content (if present). The ESE geologist will record all observations on geologic boring logs.

Soil samples are collected during drilling at a minimum of five-foot intervals by driving an 18-inch long Modified California Split-spoon sampler (sampler), lined with new, thin-wall brass sleeves, through the center of and ahead of the hollow stem augers, thus collecting a relatively undisturbed soil sample core. The brass sleeves are typically 2-inches in diameter and 6-inches in length. The sampler is driven by dropping a 140-pound hammer 30-inches onto rods attached to the top of the sampler. Soil sample depth intervals and the number of hammer blows required to advance the sampler each six-inch interval are recorded by the ESE geologist on geologic boring logs. The ends of one brass sleeve are covered with Teflon sheeting, then covered with plastic end caps. The end caps are sealed to the brass sleeve using duct tape. Each sample is then labeled and placed on ice in a cooler for transport under chain of custody documentation to the designated analytical laboratory. A portion of the remaining soil in the sampler is placed in either a new Ziploc® bag or a clean Mason Jar® and set in direct sunlight to enhance the volatilization of any Volatile Organic Compounds (VOCs) present in the soil. After approximately 15-minutes that sample is screened for VOCs using a photoionization detector (PID). The PID measurements will be noted on the geologic boring logs. The PID provides qualitative data for use in selecting samples for laboratory analysis. Soil samples from the saturated zone (beneath the ground-water table) are collected as described above, are not screened with the PID, and are not submitted to the analytical laboratory. The samples from the saturated zone are used for descriptive purposes. Soil samples from the saturated zone may be retained as described above for physical analyses (grain size, permeability and porosity testing).

If the soil boring is not going to be completed as a well, then the boring is typically terminated upon penetrating the saturated soil horizon or until a predetermined interval of soil containing no evidence of contamination is penetrated. This predetermined interval is typically based upon site specific regulatory or client guidelines. The boring is then backfilled using either neat cement, neat cement and bentonite powder mixture (not exceeding 5% bentonite), bentonite pellets, or a sand and cement mixture (not exceeding a 2:1 ratio of sand to cement). However, if the boring is to be completed as a monitoring well, then the boring is continued until either a competent, low estimated-permeability, lower confining soil layer is found or 10 to 15-feet of the saturated soil horizon is penetrated, whichever occurs first. If a low estimated-permeability soil layer is found, the soil boring will be advanced approximately five-feet into that layer to evaluate its competence as a lower confining layer, prior to the termination of that boring.

All soil sampling equipment is cleaned between each sample collection event using an Alconox® detergent and tap water solution followed by a tap water rinse. Additionally, all drilling equipment and soil sampling equipment is cleaned between borings, using a high pressure steam cleaner, to prevent cross-contamination. All wash and rinse-water is collected and contained onsite in Department of Transportation approved containers (typically 55-gallon drums) pending laboratory analysis and proper disposal/recycling.

**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.  
CONCORD, CALIFORNIA OFFICE**

**STANDARD OPERATING PROCEDURE NO. 2  
FOR MONITORING WELL INSTALLATION AND DEVELOPMENT  
PAGE 1**

Environmental Science & Engineering, Inc. (ESE) typically installs ground-water monitoring wells in unconsolidated sediments drilled using a truck-mounted hollow-stem auger drill rig. The design and installation of all monitoring wells is performed and supervised by an experienced ESE geologist. Figure A - Typical ESE Monitoring Well Construction Diagram (attached) graphically displays a typical ESE well completion. Prior to the construction of the well, the portion of the borehole that penetrates a lower confining layer (if any) is filled with bentonite pellets. The monitoring well is then constructed by inserting polyvinylchloride (PVC) pipe through the center of the hollow stem augers. The pipe (well-casing) is fastened together by joining the factory threaded pipe ends. ESE typically uses two-inch or four-inch diameter pipe for ground-water monitoring wells. The diameter of the borehole is typically 6-inches greater than that of the diameter of the well-casing, but is at least four-inches greater than that of the well casing. The lowermost portion of the well-casing will be factory perforated (typically having slot widths of 0.010-inch or 0.020-inch). The slotted portion of the well-casing will extend from the bottom of the boring up to approximately five-feet above the occurrence of ground water. A PVC slip or threaded cap will be placed at the bottom end of the well-casing, and a locking expandable well cap will be placed over the top (or surface) end of the well-casing. A sand pack (typically No. 2/12 or No. 3 Monterey sand) will be placed in the borehole annulus, from the bottom of the well-casing up to one to two-feet above the top of the slotted portion, by pouring the clean sand through the hollow stem augers. One to two-feet of bentonite pellets will be placed on top of the sand pack. The bentonite pellets will then be hydrated with three to four-gallons of potable water, to protect the sand pack from intrusion during the placement of the sanitary seal. The sanitary seal (grout) will consist of either neat cement, a neat cement and bentonite powder mixture (containing no more than 5% bentonite), or a neat cement and sand mixture (containing no more than a 2:1 sand to cement ratio). If the grout seal is to be greater than 30-feet in depth or if standing water is present in the boring on top of the bentonite pellet seal, then the grout mixture will be tremied into the boring from the top of the bentonite seal using either a hose, pipe or the hollow-stem augers, which serve as a tremie. The well will be protected at the surface by a water tight utility box. The utility box will be set into the grout mixture so that it is less than 0.1-foot above grade, to prevent the collection of surface water at the well head. If the well is set within the public right of way, then the utility box will be Department of Transportation (DOT) traffic rated, and the top of the box will be set flush to grade. If the well is constructed in a vacant field a brightly painted metal standpipe may be used to protect the well from traffic. If a standpipe is used, it will be held in place with a grout mixture and will extend one to two-feet above ground surface. All well completion details will be recorded by the ESE geologist on the geologic boring logs.

Subsequent to the solidification of the sanitary seal of the well (a minimum of 72 hours), the new well will be developed by an ESE geologist or field technician. Well development will be performed using surging, bailing and overpumping techniques. Surging is performed by raising and lowering a surge block through the water column within the slotted interval of the well casing. The surge block utilized has a diameter just smaller than that of the well casing, thus, forcing water flow through the sand pack due to displacement and vacuum caused by the movement of the surge block. Bailing is performed by lowering a bailer to the bottom of the well and gently bouncing the bailer off of the well end cap, then removing the full bailer and repeating the procedure. This will bring any material (soil or PVC fragments) that may have accumulated in the well into suspension for removal. Overpumping is performed by lowering a submersible pump to the bottom of each well and pumping at the highest sustainable rate without completely evacuating the well casing. Effective well development will settle the sand pack surrounding the well-casing, which will improve the filtering properties of the sand pack and allow water to flow more easily through the sand pack; improve the communication between the aquifer and the well by aiding the removal of any smearing of fine sediments along the borehole penetrating the aquifer; and, remove fine sediments and any foreign objects (PVC fragments) from the well casing. The ESE geologist or

**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.  
CONCORD, CALIFORNIA OFFICE**

**STANDARD OPERATING PROCEDURE NO. 2  
FOR MONITORING WELL INSTALLATION AND DEVELOPMENT  
PAGE 2**

technician will monitor the ground water purged from the well during development for clarity, temperature, Ph and conductivity. Development of the well will proceed until the well produces relatively clear, sand-free water with stable temperature, Ph and conductivity measurements. At a minimum, 10 well-casing volumes of ground water will be removed during the development process. Measurements of temperature, conductivity, Ph and volume of the purged water and observations of purge water clarity and sediment content will be recorded on the ESE Well Development Data Forms. All equipment used during the well development procedure will be cleaned using an Alconox® detergent and tap water solution followed by a tap water rinse prior to use in each well. All ground water purged during the well development process and all equipment rinse water will be collected and contained onsite in DOT approved containers (typically 55-gallon drums) pending analytical results and proper disposal or recycling.



**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.**  
**CONCORD, CALIFORNIA OFFICE**

**STANDARD OPERATING PROCEDURE NO. 3**  
**FOR GROUND-WATER MONITORING AND SAMPLING FROM MONITORING WELLS**

Environmental Science & Engineering, Inc. (ESE) typically performs ground-water monitoring at project sites on a quarterly basis. As part of the monitoring program an ESE staff member will first gauge the depth to water and free product (if present) in each well, then collect ground-water samples from each well. Depth to water measurements are taken by lowering an electric fiberglass tape measure into the well and recording the occurrence of water in feet below a fixed datum set on the top of the well-casing. If free-phase liquid hydrocarbons (free product) are known or suspected to be present in the well, then an electric oil/water interface probe is used to determine the depth to the occurrence of ground-water and the free product in feet below the fixed datum on the top of the well-casing. Depth to water and depth to product measurements are measured and recorded within an accuracy of 0.005-foot. The electric tape and the electric oil/water interface probe are washed with an Alconox® detergent and tap water solution then rinsed with tap water between uses in different wells.

Ground-water samples are collected from a well subsequent to purging a minimum of three to four well-casing volumes of ground water from the well, if the well bails dry prior to the removal of the required minimum volume, then the samples are collected upon the recovery of the ground water in that well to 80% of its initial static level. Ground water is typically purged from monitoring wells using either a hand-operated positive displacement pump, constructed of polyvinylchloride (PVC); a new (precleaned), disposable polyethylene bailer; or, a variable-flow submersible pump, constructed of stainless steel and Teflon®. The hand pumps and the submersible pumps are cleaned between each use with an Alconox® detergent and tap water solution followed by a tap water rinse. During the well purging process the conductivity, Ph and temperature of the ground water are monitored by the ESE staff member. Ground-water samples are collected from the well subsequent to the stabilization of the of the conductivity, Ph and temperature of the purge water, and the removal of four well-casing volumes of ground-water (unless the well bails dry). The parameters are deemed to have stabilized when two consecutive measurements are within 10% of each other, for each respective parameter. The temperature, Ph, conductivity and purge volume measurements, and observations of water clarity and sediment content will be documented by the ESE staff member on ESE Ground-Water Sampling Data Forms.

Ground-water samples are collected by lowering a new (precleaned), disposable polyethylene bailer into the well using new, disposable nylon cord. The filled bailer is retrieved, emptied, then filled again. The ground water from this bailer is decanted into appropriate laboratory supplied glassware and/or plastic containers (if sample preservatives are required, they are added to the empty containers at the laboratory prior to the sampling event). The containers are filled carefully so that no headspace is present to avoid volatilization of the sample. The filled sample containers are then labeled and placed in a cooler with ice for transport under chain of custody documentation to the designated analytical laboratory. The ESE staff member will document the time and method of sample collection, and the type of sample containers and preservatives (if any) used. These facts will appear on the ESE Ground-Water Sampling Data Forms. ESE will collect a duplicate ground-water sample from one well for every ten wells sampled at each site. The duplicate will be a blind sample (its well designation will be unknown to the laboratory). The duplicate sample is for Quality Assurance and Quality Control (QA/QC) purposes, and provides a check on ESE sampling procedures and laboratory sample handling procedures. When VOCs are included in the laboratory analyses, ESE will include a trip blank, if required, in the cooler with the ground-water samples for analysis for the identical VOCs. The trip blank is supplied by the laboratory and consists of deionized water. The trip blank is for QA/QC purposes and provides a check on both ESE and laboratory sample handling and storage procedures. Since disposable bailers are used for sample collection, and are not reused, no equipment blank (rinsate) samples are collected.

**APPENDIX B**  
**BORING LOGS**



**Environmental  
Science &  
Engineering, Inc.**

## BORING LOG AND WELL COMPLETION SUMMARY

OG1

### WELL COMPLETION

Completion Depth: 22.5 Feet

Size/Type	From	To
Casing: 4" Diam Blank PVC	0 Feet	15.0 Feet
Screen: 4" Diam Slotted (0.010") PVC	15.0 Feet	35.0 Feet
Filter: #2/12 Sand	13.0 Feet	35.0 Feet
Seal: Bentonite Pellets	11.5 Feet	13.0 Feet
Cement	0 Feet	11.5 Feet

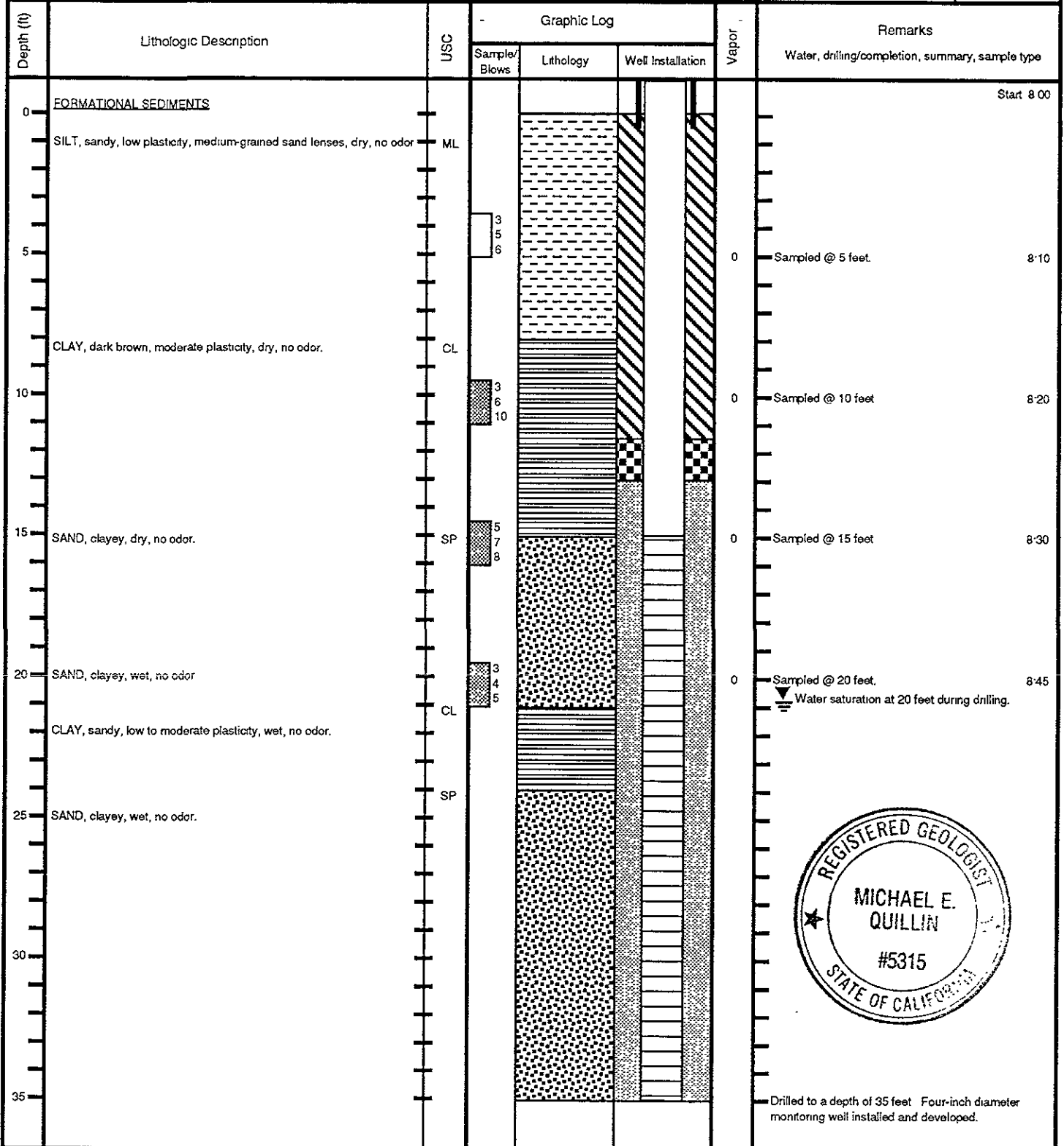
Well Cap or Box: Longyear 5-Foot Monument

Project Name: Alameda County GSA Project No: 6-93-5074  
Location: Old Graystone Fueling Area  
Santa Rita Correctional Facility  
Dublin, California

Driller: Exploration Geoservices, Inc.  
Method: Mobile B-61 Hollow-Stem Auger  
Hole Diameter: 11 Inches Total Depth: 35 Feet  
Ref. Elevations:  
Logged By: Bart Miller

Page 1 of 1

Dates:  
Start: 11-4-93  
Finish: 11-4-93





Environmental  
Science &  
Engineering, Inc.

# BORING LOG AND WELL COMPLETION SUMMARY

OG2

**WELL COMPLETION**

Completion Depth: 22.5 Feet

Size/Type	From	To
Casing: 4" Diam. Blank PVC	0 Feet	15.0 Feet
Screen: 4" Diam. Slotted (0.010") PVC	15.0 Feet	35.0 Feet
Filter: #2/12 Sand	13.0 Feet	35.0 Feet
Seal: Bentonite Pellets	11.5 Feet	13.0 Feet
Cement	0 Feet	11.5 Feet

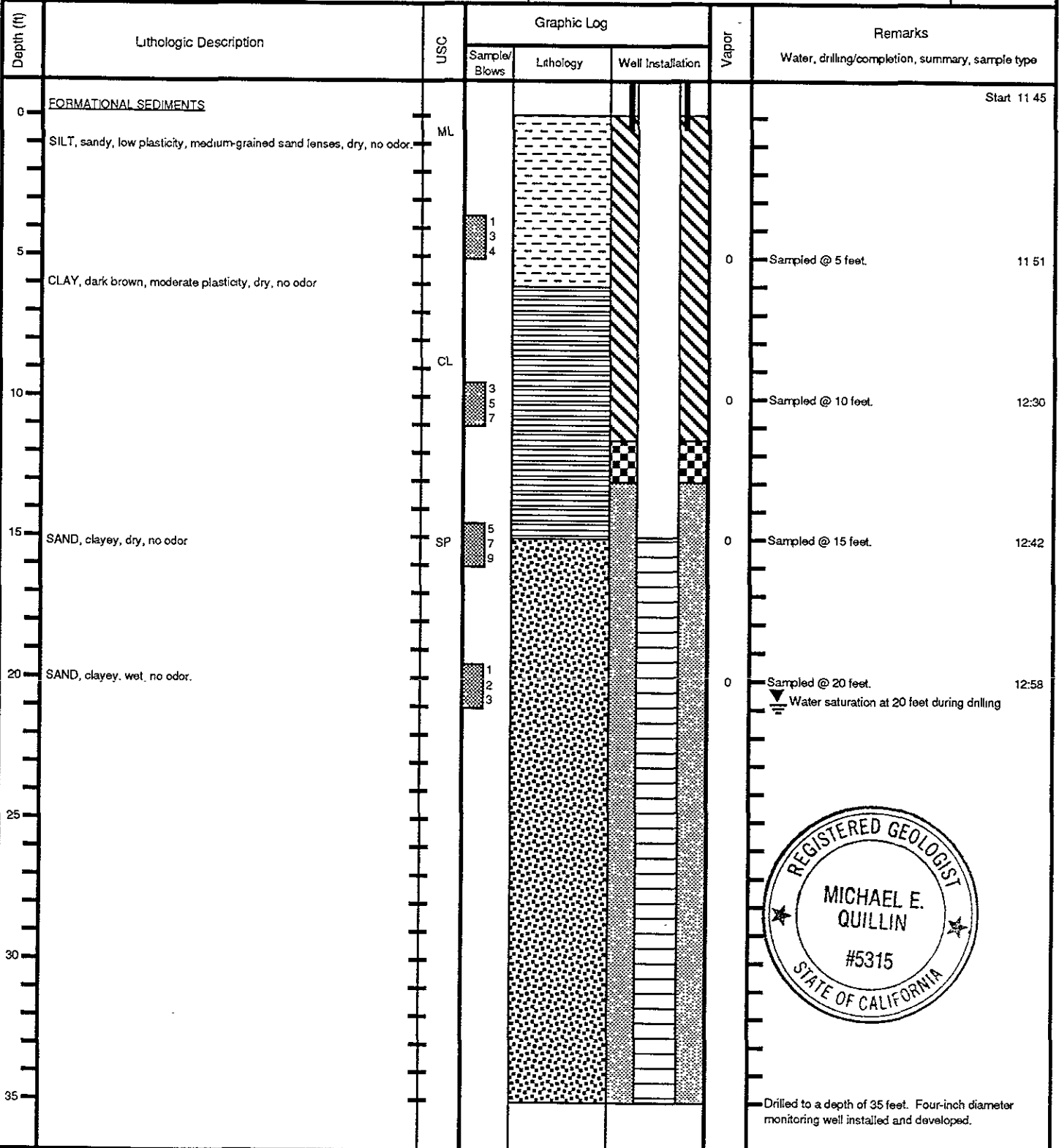
Well Cap or Box: Longyear 5-Foot Monument

Project Name: Alameda County GSA Project No: 6-93-5074  
Location: Old Graystone Fueling Area  
Santa Rita Correctional Facility  
Dublin, California

Driller: Exploration Geoservices, Inc.  
Method: Mobile B-61 Hollow-Stem Auger  
Hole Diameter: 11 Inches Total Depth: 35 Feet  
Ref. Elevations:  
Logged By: Bart Miller

Page 1 of 1

Dates:  
Start: 11-4-93  
Finish: 11-4-93





Environmental  
Science &  
Engineering, Inc.

# BORING LOG AND WELL COMPLETION SUMMARY

OG3

## WELL COMPLETION

Completion Depth: 22.5 Feet

Size/Type	From	To
Casing: 4" Diam Blank PVC	0 Feet	15.0 Feet
Screen: 4" Diam Slotted (0.010") PVC	15.0 Feet	35.0 Feet
Filter: #2/12 Sand	13.0 Feet	35.0 Feet
Seal: Bentonite Pellets	11.5 Feet	13.0 Feet
Cement	0 Feet	11.5 Feet

Well Cap or Box: Longyear 5-Foot Monument

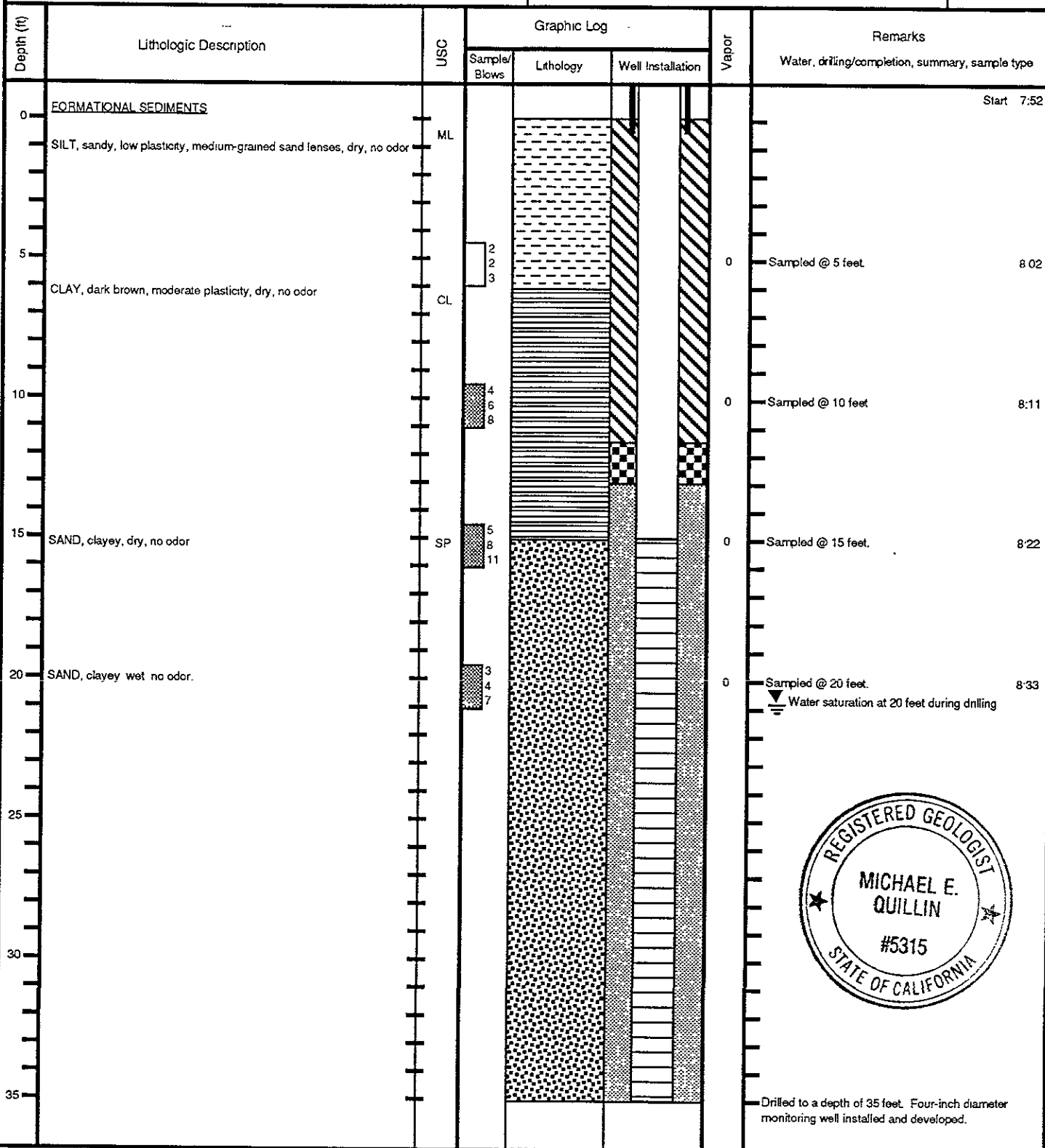
Project Name: Alameda County GSA Project No: 6-93-5074

Location: Old Graystone Fueling Area  
Santa Rita Correctional Facility  
Dublin, California

Driller: Exploration Geoservices, Inc.  
Method: Mobile B-61 Hollow-Stem Auger  
Hole Diameter: 11 inches Total Depth: 35 Feet  
Ref. Elevations:  
Logged By: Bart Miller

Page 1 of 1

Dates:  
Start: 11-5-93  
Finish: 11-5-93





Environmental  
Science &  
Engineering, Inc.

# BORING LOG AND WELL COMPLETION SUMMARY

OG4

## WELL COMPLETION

Completion Depth: 22.5 Feet

Size/Type	From	To
Casing: 4" Diam. Blank PVC	0 Feet	15.0 Feet
Screen: 4" Diam. Slotted (0.010") PVC	15.0 Feet	35.0 Feet
Filter: #2/12 Sand	13.0 Feet	35.0 Feet
Seal: Bentonite Pellets	11.5 Feet	13.0 Feet
Cement	0 Feet	11.5 Feet

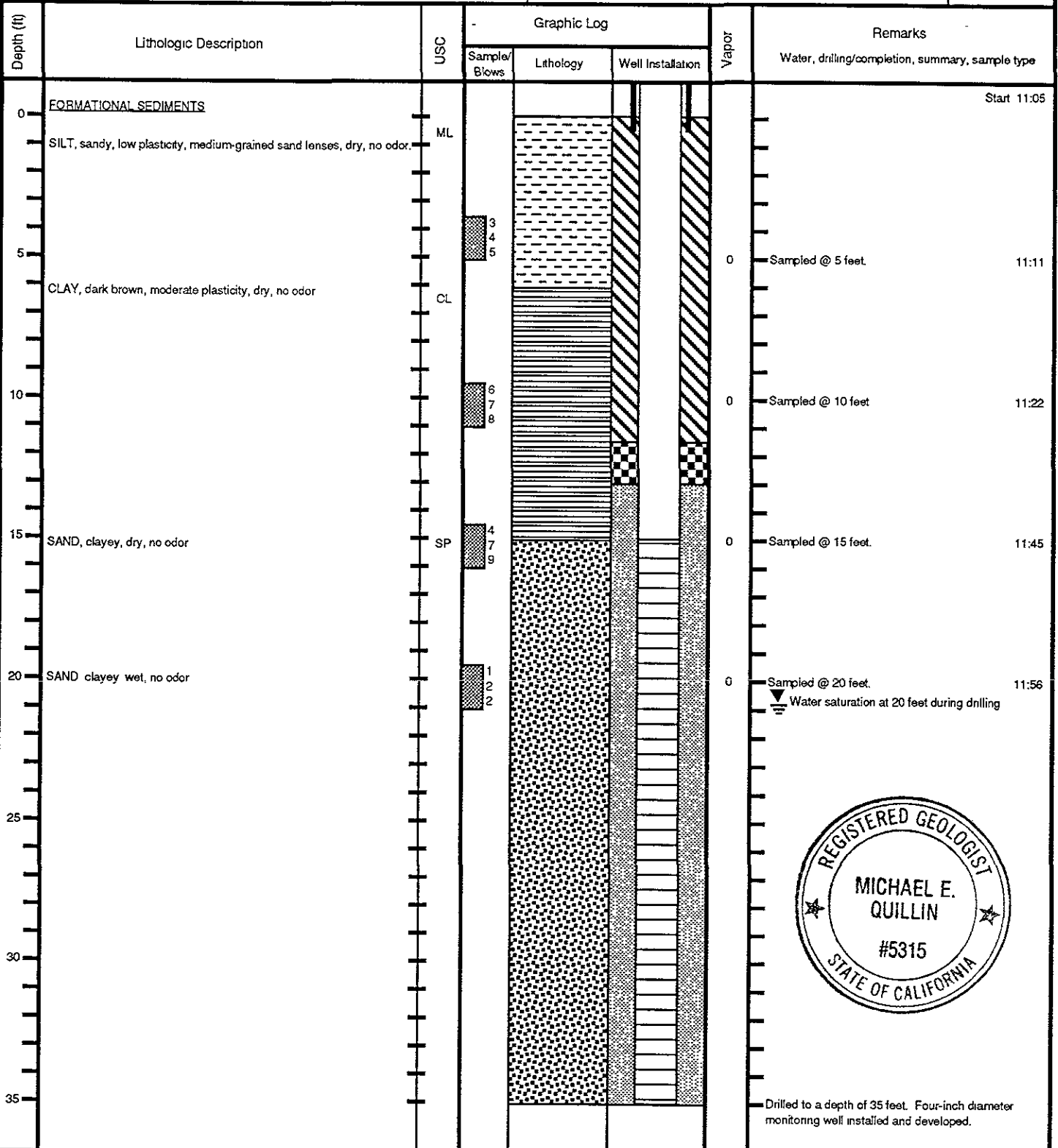
Well Cap or Box: Longyear 5-Foot Monument

Project Name: Alameda County GSA Project No: 6-93-5074  
Location: Old Graystone Fueling Area  
Santa Rita Correctional Facility  
Dublin, California

Driller: Exploration Geoservices, Inc  
Method: Mobile B-61 Hollow-Stem Auger  
Hole Diameter: 11 Inches Total Depth: 35 Feet  
Ref. Elevations:  
Logged By: Bart Miller

Page 1 of 1

Dates:  
Start: 11-5-93  
Finish: 11-5-93



**APPENDIX C**  
**LABORATORY RESULTS WITH CHAIN OF CUSTODY DOCUMENTATION**

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553

Tele: 510-798-1620 Fax 510-798-1622

11/15/93

Dear Bart:

Enclosed are:

- 1). the results of 5 samples from your # 6-93-5074; Alameda County GSA, Santa Rita Correctional Facility, Old Graystone project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,



Edward Hamilton



Environmental Science & Eng. 4090 Nelson Avenue, Suite J Concord, CA 94520	Client Project ID: # 6-93-5074; Alameda County GSA, Santa Rita Correctional Facility, Old Graystone	Date Sampled: 11/05/93
	Client Contact: Bart Miller	Date Received: 11/08/93
	Client P.O.: # 141-0-7925-00	Date Extracted: 11/08-11/10/93
		Date Analyzed: 11/08-11/10/93

**Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline\*, with BTEX\***

EPA methods 5030, modified 8015, and 8020 or 602, California RWOCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g) <sup>†</sup>	Benzene	Toluene	Ethylbenzene	Xylenes	% Rec. Surrogate
32969	OG1	W	ND	ND	ND	ND	ND	91
32970	OG2	W	ND	ND	ND	ND	ND	92
32971	OG3	W	ND	ND	ND	ND	ND	91
32972	OG4	W	ND	ND	ND	ND	ND	93
32973	DUP	W	---	ND	ND	ND	ND	92
32986	OG1-20	S	ND	ND	ND	ND	ND	91
32990	OG2-20	S	ND	ND	ND	ND	ND	92
32993	OG3-20	S	ND	ND	ND	ND	ND	95
32997	OG4-20	S	ND	ND	ND	ND	ND	88
Detection Limit unless otherwise stated; ND means Not Detected		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

\*water samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

# cluttered chromatogram; sample peak co-elutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds are significant; no recognizable pattern; e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible phase is present.

Environmental Science & Eng. 4090 Nelson Avenue, Suite J Concord, CA 94520	Client Project ID: # 6-93-5074; Alameda County GSA, Santa Rita Correctional Facility, Old Graystone	Date Sampled: 11/05/93
	Client Contact: Bart Miller	Date Received: 11/08/93
	Client P.O: # 141-0-7925-00	Date Extracted: 11/11/93
		Date Analyzed: 11/11/93

**Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel \***

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d) <sup>+</sup>	% Recovery Surrogate
32971	OG3	W	75,b	88
Detection Limit unless otherwise stated; ND means Not Detected	W		50 ug/L	
	S		10 mg/kg	

\*water samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

# cluttered chromatogram; surrogate and sample peaks co-elute or surrogate peak is on elevated baseline

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant; b) diesel range compounds are significant; no recognizable pattern; c) modified diesel?; light(CL) or heavy(CH) diesel compounds are significant; d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel(?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible phase is present.

Environmental Science & Eng. 4090 Nelson Avenue, Suite J Concord, CA 94520	Client Project ID: # 6-93-5074; Alameda County GSA, Santa Rita Correctional Facility, Old Graystone	Date Sampled: 11/05/93
	Client Contact: Bart Miller	Date Received: 11/08/93
	Client P.O.: # 141-0-7925-00	Date Extracted: 11/11-11/16/93
		Date Analyzed: 11/11-11/16/93

## Volatile Halocarbons

EPA method 601 or 8010

Lab ID	32971			
Client ID	OG3			
Matrix	W			
Compound <sup>(1)</sup>	Concentration*	Concentration*	Concentration*	Concentration*
Bromodichloromethane	ND			
Bromoform <sup>(2)</sup>	ND			
Bromomethane	ND			
Carbon Tetrachloride <sup>(3)</sup>	ND			
Chlorobenzene	ND			
Chloroethane	ND			
2-Chloroethyl Vinyl Ether <sup>(4)</sup>	ND			
Chloroform <sup>(5)</sup>	ND			
Chloromethane	ND			
Dibromochloromethane	ND			
1,2-Dichlorobenzene	ND			
1,3-Dichlorobenzene	ND			
1,4-Dichlorobenzene	ND			
1,1-Dichloroethane	ND			
1,2-Dichloroethane	ND			
1,1-Dichloroethene	ND			
cis 1,2-Dichloroethene	ND			
trans 1,2-Dichloroethene	ND			
1,2-Dichloropropane	ND			
cis 1,3-Dichloropropene	ND			
trans 1,3-Dichloropropene	ND			
Methylene Chloride <sup>(6)</sup>	ND			
1,1,1,2-Tetrachloroethane	ND			
Tetrachloroethene <sup>(7)</sup>	ND			
1,1,1-Trichloroethane	ND			
1,1,2-Trichloroethane	ND			
Trichloroethene	ND			
Trichlorofluoromethane	ND			
Vinyl Chloride <sup>(8)</sup>	ND			
% Recovery Surrogate	85			
Comments				

Detection limit unless otherwise stated: water, ND &lt; 0.5ug/L; soil, ND &lt; 10ug/kg.

\* water samples are reported in ug/L, soil samples in ug/kg and all TCLP extracts in ug/L.

(1) IUPAC allows "ylene" or "ene", ex ethylene or ethene; (2) tribromomethane; (3) tetrachloromethane; (4) (2-chloroethoxy) ethene; (5) trichloromethane; (6) dichloromethane; (7) perchlorethylene, PCE or perclor; (8) chloroethene; (9) unidentified peak(s) present.

Environmental Science & Eng. 4090 Nelson Avenue, Suite J Concord, CA 94520	Client Project ID: # 6-93-5074; Alameda County GSA, Santa Rita Correctional Facility, Old Graystone	Date Sampled: 11/05/93
	Client Contact: Bart Miller	Date Received: 11/08/93
	Client P.O.: # 141-0-7925-00	Date Extracted: 11/09/93
		Date Analyzed: 11/09-11/10/93

**LUFT Metals\***

EPA analytical methods	239.2,7420*	213.1,7130	218.1,7190	249.1,7520	289.1,7950
------------------------	-------------	------------	------------	------------	------------

Lab ID	Client ID	Matrix	Extraction <sup>o</sup>	Lead*	Cadmium*	Chromium*	Nickel*	Zinc*
32971	OG3	W	TTLC	ND	ND	ND	ND	.089

Detection Limit unless otherwise stated; ND means Not Detected	W	TTLC	0.005mg/L	0.05	0.25	0.10	0.05
	S	TTLC	4.0 mg/kg	1.0	5.0	2.0	1.0
	--	STLC,TCLP	0.20 mg/L	0.05	0.25	0.10	0.05

\* soil samples are reported in mg/kg, and water samples and all STLC & TCLP extracts in mg/L  
 + Lead is analysed using EPA method 7420 (AA Flame) for soils, STLC & TCLP extracts and method 239.2 (AA Furnace) for water samples  
<sup>o</sup> EPA extraction methods 1311(TCLP), 3010/3020(water,TTLC), 3040(organic matrices,TTLC), 3050(solids,TTLC); STLC from CA Title 22

## QC REPORT FOR HYDROCARBON ANALYSES

Date: 11/10/93

Matrix: Soil

Analyte	Concentration (mg/kg)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
TPH (gas)	0.000	1.738	1.791	2.03	86	88	3.0
Benzene	0.000	0.178	0.180	0.2	89	90	1.1
Toluene	0.000	0.180	0.182	0.2	90	91	1.1
Ethylbenzene	0.000	0.176	0.178	0.2	88	89	1.1
Xylenes	0.000	0.550	0.558	0.6	92	93	1.4
TPH (diesel)	0	288	295	300	96	98	2.5
TRPH (oil & grease)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

## QC REPORT FOR HYDROCARBON ANALYSES

Date: 11/10-11/11/93

Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
TPH (gas)	0.0	108.8	108.3	100	108.8	108.3	0.4
Benzene	0	10.3	10.1	10	103.0	101.0	2.0
Toluene	0	10.6	10.3	10	106.0	103.0	2.9
Ethyl Benzene	0	10.2	10	10	102.0	100.0	2.0
Xylenes	0	32.4	32	30	108.0	106.7	1.2
TPH (diesel)	0	128	134	150 *	86	89	4.0
TRPH (oil & grease)	6500	39200	39500	29600	110	111	0.8

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553  
 Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR EPA 8010/8020/EDB

Date: 11/16/93

Matrix: Water

Analyte	Concentration (ug/L)				% Recovery		
	Sample	MS	MSD	Amount Spiked	MS	MSD	RPD
1,1-DCE	0.0	4.6	4.8	5.0	92	96	4.3
Trichloroethene	0.0	4.6	4.4	5.0	92	88	4.4
EDB	0.0	4.3	4.3	5.0	86	86	0.0
Chlorobenzene	0.0	5.2	5.1	5.0	104	102	1.9
Benzene	NA	NA	NA	NA	NA	NA	NA
Toluene	NA	NA	NA	NA	NA	NA	NA
Chlorobz (PID)	NA	NA	NA	NA	NA	NA	NA

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553

Tele: 510-798-1620 Fax: 510-798-1622

## QC REPORT FOR AA METALS

Date: 11/09-11/10/93

Matrix: Water

Analyte	Concentration (mg/L)			Amount Spiked	% Recovery		
	Sample	MS	MSD		MS	MSD	RPD
Total Lead	0.00	1.13	1.04	1.00	113	104	8.3
Total Cadmium	0.00	1.05	1.12	1.00	105	112	6.5
Total Chromium	0.00	2.76	2.70	3.00	92	90	2.2
Total Nickel	0.00	1.02	1.07	1.00	102	107	4.8
Total Zinc	0.09	3.12	3.37	3.00	101	109	7.7
STLC/TCLP Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Organic Lead	N/A	N/A	N/A	N/A	N/A	N/A	N/A

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$




# 1484  
A-56-17

CHAIN OF CUSTODY RECORD

DATE NOVEMBER 5, 1993 PAGE 1 OF 1

PROJECT NAME ALAMEDA CO. GSA  
 ADDRESS SANTA RITA CORRECTIONAL FACILITY  
OLD GRAYSTONE  
DUBLIN, CALIFORNIA  
 PROJECT NO. 6-93-5074  
 SAMPLED BY [Signature] BART MILLER  
 LAB NAME MCCAMPBELL

ANALYSES TO BE PERFORMED



Environmental Science & Engineering, Inc.

1064 Nelson Avenue  
Suite J  
Concord, CA 94530

Phone (510) 685-4053  
Fax (510) 685-5373

SAMPLE #	DATE	TIME	LOCATION	ANALYSES TO BE PERFORMED						MATRIX	CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)	
				TPH-G/BTEX (8015/8020)	TPH-D (8015)	MVOCs (8010)	SVOCs (8270)	METALS Ni, Cd, Cr, Pb, Zn	BTEX only (8020)				
OG1	11/05/93	18:22		✓						WATER	3	40ml VOA's	
OG2	"	18:08		✓						"	3	"	
OG3	"	17:40		✓	✓	✓	✓	✓		"	9	6x 40ml VOA's + 3x liter Amber	
OG4	"	17:23		✓						"	3	40ml VOA's	
DUP	"								✓	"	3	"	
				32969									
				32970									
				32971									
				32972									
				32973									

REMARKS (CONTAINER, SIZE, ETC.)

NOTE: water samples noted to effervesce when placed in VOA vials. no headspace in field. Some bubbles detected just prior to shipping

RELINQUISHED BY: (signature) [Signature] RECEIVED BY: (signature) [Signature] date 11/8/93 time 10:10

1. [Signature]

2. [Signature]

3. [Signature]

4. [Signature]

5. [Signature]

16FT GOOD CONDITION HEAD SPACE ABSENT

PRESERVATIVE APPROPRIATE CONTAINERS ✓

VOAS O&G METALS OTHER

REPORT RESULTS TO: BART MILLER  
ESE

SPECIAL SHIPMENT REQUIREMENTS: COLD TRANSPORT

TOTAL NUMBER OF CONTAINERS: 21

SAMPLE RECEIPT

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):  
Normal T.A.T. Invoice directly to Alameda Co. GSA.  
[u. slight headspace]

CHAIN OF CUSTODY SEALS

REC'D GOOD COND'TN/COLD ✓

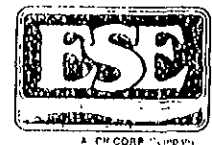
CONFORMS TO RECORD ✓

# 1706 AK2451

CHAIN OF CUSTODY RECORD

DATE NOVEMBER 4, 1993 PAGE 1 OF 1

PROJECT NAME ALAMEDA CO. GSA  
 ADDRESS SANTA RITA CORRECTIONAL FACILITY  
OLD GRANSTONE  
DUBLIN, CALIFORNIA  
 PROJECT NO. 6-93-5074  
 SAMPLED BY [Signature] BART MILLER  
 LAB NAME McCAMPBELL



Environmental Science & Engineering, Inc.  
 1054 Nelson Avenue  
 Suite 1  
 Concord, CA 94530  
 Phone (510) 685-4033  
 Fax (510) 685-4123

ANALYSES TO BE PERFORMED										MATRIX	CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)		
1	2	3	4	5	6	7	8	9	10	MATRIX				
										SOIL	1	} HOLD *	32984	
										"	1		} HOLD *	32985
										"	1	} HOLD *	32986	
										"	1		} HOLD *	32987
										"	1		} HOLD *	32988
													32989	
													32990	

RELINQUISHED BY: (signature) [Signature] RECEIVED BY: (signature) [Signature]  
 1. date 11/2/93 time 10:10  
 2.  
 3. **IGERT**   
**GOOD CONDITION**  
 4. **HEAD SPACE ABSENT**   
 5. **PRESERVATIVE APPROPRIATE**   
**CONTAINERS**   
 VOAS  O&G  METALS  OTHER

7 TOTAL NUMBER OF CONTAINERS  
 REPORT RESULTS TO: BART MILLER  
ESE  
 SPECIAL SHIPMENT REQUIREMENTS  
COLD TRANSPORT  
 SAMPLE RECEIPT

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):  
Normal T.A.T. Invoice directly to Alameda Co. GSA

CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDTN/COLD	<input checked="" type="checkbox"/>
CONFORMS TO RECORD	<input checked="" type="checkbox"/>

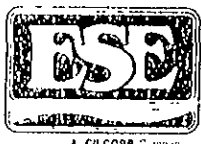
Inv. # 1664  
AG 115x

CHAIN OF CUSTODY RECORD

DATE NOVEMBER 5, 1993 PAGE 1 OF 1

PROJECT NAME ALAMEDA CO. GSA  
 ADDRESS SANTA RITA CORRECTIONAL FACILITY  
OLD GRAYSTONE BLVD., CALIFORNIA  
 PROJECT NO. 6-93-5074  
 SAMPLED BY [Signature] BART MILLER  
 LAB NAME McCAMBER

ANALYSES TO BE PERFORMED										MATRIX	MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
OG3-10'	11/05/93	8:11									SOIL	1	HOLD *
OG3-15'	"	8:22								32991	"	1	HOLD *
OG3-20'	"	8:33								32992	"	1	
OG4-5'	"	11:11								32993	"	1	HOLD *
OG4-10'	"	11:22								32994	"	1	HOLD *
OG4-15'	"	11:45								32995	"	1	HOLD *
OG4-20'	"	11:56								32996	"	1	
										32997			



Environmental Science & Engineering, Inc  
 10315 Esch Avenue  
 Suite 1  
 Concord, CA 94521  
 Phone (510) 685-1053  
 Fax (510) 685-5123

RELINQUISHED BY: (signature) [Signature]  
 RECEIVED BY: (signature) [Signature]  
 date 11/8/93 time 10:10

ICE/T GOOD CONDITION  
 HEAD SPACE ABSENT

PRESERVATIVE APPROPRIATE CONTAINERS

VOAS    O & G    METALS    OTHER   

7 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: BART MILLER  
ESE

SPECIAL SHIPMENT REQUIREMENTS  
COLD TRANSPORT

SAMPLE RECEIPT

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):  
NORMAL T.A.T. Invoice directly to Alameda Co. GSA

CHAIN OF CUSTODY SEALS     
 REC'D GOOD CONDTN/COLD     
 CONFORMS TO RECORD

# American Environmental Network

## Certificate of Analysis

DOHS Certification: 1172

AIHA Accreditation: 94523-001

PAGE 1

McCAMPBELL ANALYTICAL  
110 2ND AVENUE, #D7  
PACHECO, CA 94553

ATTN: EDWARD HAMILTON

CLIENT PROJ. ID: 1786  
PROJ. NAME: E/OG

REPORT DATE: 11/22/93

DATE SAMPLED: 11/05/93

DATE RECEIVED: 11/08/93

AEN JOB NO: 9311094

### PROJECT SUMMARY:

On November 8, 1993, this laboratory received one (1) water sample.

Client requested the sample be analyzed for Semi-Volatile Organic Compounds by EPA Method 8270. Sample identification, results and dates analyzed are summarized on the following pages.

All laboratory quality control parameters were found to be within established limits. Batch QC data is included at the end of this report.

If you have any questions, please contact Client Services at (510) 930-9090.

  
Larry Klein  
General Manager

Results FAXed 11/16/93

## McCAMPBELL ANALYTICAL

SAMPLE ID: OG3  
 AEN LAB NO: 9311094-01  
 AEN WORK ORDER: 9311094  
 CLIENT PROJ. ID: 1786

DATE SAMPLED: 11/05/93  
 DATE RECEIVED: 11/08/93  
 REPORT DATE: 11/22/93

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
#Extraction for BNAs	EPA 3520	-		Extrn Date	11/09/93
EPA 8270 - Water Matrix	EPA 8270				
Acenaphthene	83-32-9	ND	10	ug/L	11/13/93
Acenaphthylene	208-96-8	ND	10	ug/L	11/13/93
Anthracene	120-12-7	ND	10	ug/L	11/13/93
Benzidine	92-87-5	ND	50	ug/L	11/13/93
Benzoic Acid	65-85-0	ND	50	ug/L	11/13/93
Benzo(a)anthracene	56-55-3	ND	10	ug/L	11/13/93
Benzo(b)fluoranthene	205-99-2	ND	10	ug/L	11/13/93
Benzo(k)fluoranthene	207-08-9	ND	10	ug/L	11/13/93
Benzo(g,h,i)perylene	191-24-2	ND	10	ug/L	11/13/93
Benzo(a)pyrene	50-32-8	ND	10	ug/L	11/13/93
Benzyl Alcohol	100-51-6	ND	20	ug/L	11/13/93
Bis(2-chloroethoxy)methane	111-91-1	ND	10	ug/L	11/13/93
Bis(2-chloroethyl) Ether	111-44-4	ND	10	ug/L	11/13/93
Bis(2-chloroisopropyl) Ether	108-60-1	ND	10	ug/L	11/13/93
Bis(2-ethylhexyl) Phthalate	117-81-7	ND	10	ug/L	11/13/93
4-Bromophenyl Phenyl Ether	101-55-3	ND	10	ug/L	11/13/93
Butylbenzyl Phthalate	85-68-7	ND	10	ug/L	11/13/93
4-Chloroaniline	106-47-8	ND	20	ug/L	11/13/93
2-Chloronaphthalene	91-58-7	ND	10	ug/L	11/13/93
4-Chlorophenyl Phenyl Ether	7005-72-3	ND	10	ug/L	11/13/93
Chrysene	218-01-9	ND	10	ug/L	11/13/93
Dibenzo(a,h)anthracene	53-70-3	ND	10	ug/L	11/13/93
Dibenzofuran	132-64-9	ND	10	ug/L	11/13/93
D-n-butyl Phthalate	84-74-2	ND	10	ug/L	11/13/93
1,2-Dichlorobenzene	95-50-1	ND	10	ug/L	11/13/93
1,3-Dichlorobenzene	541-73-1	ND	10	ug/L	11/13/93
1,4-Dichlorobenzene	106-46-7	ND	10	ug/L	11/13/93
3,3'-Dichlorobenzidine	91-94-1	ND	20	ug/L	11/13/93
Diethyl Phthalate	84-66-2	ND	10	ug/L	11/13/93
Dimethyl Phthalate	131-11-3	ND	10	ug/L	11/13/93
2,4-Dinitrotoluene	121-14-2	ND	10	ug/L	11/13/93
2,6-Dinitrotoluene	606-20-2	ND	10	ug/L	11/13/93
D-n-octyl Phthalate	117-84-0	ND	10	ug/L	11/13/93
1,2-Diphenylhydrazine	122-66-7	ND	10	ug/L	11/13/93
Fluoranthene	206-44-0	ND	10	ug/L	11/13/93
Fluorene	86-73-7	ND	10	ug/L	11/13/93
Hexachlorobenzene	118-74-1	ND	10	ug/L	11/13/93
Hexachlorobutadiene	87-68-3	ND	10	ug/L	11/13/93
Hexachlorocyclopentadiene	77-47-4	ND	10	ug/L	11/13/93

## McCAMPBELL ANALYTICAL

SAMPLE ID: OG3  
 AEN LAB NO: 9311094.01  
 AEN WORK ORDER: 9311094  
 CLIENT PROJ. ID: 1786

DATE SAMPLED: 11/05/93  
 DATE RECEIVED: 11/08/93  
 REPORT DATE: 11/22/93

ANALYTE	METHOD/ CAS#	RESULT	REPORTING LIMIT	UNITS	DATE ANALYZED
Hexachloroethane	67-72-1	ND	10	ug/L	11/13/93
Indeno(1,2,3-cd)pyrene	193-39-5	ND	10	ug/L	11/13/93
Isophorone	78-59-1	ND	10	ug/L	11/13/93
2-Methylnaphthalene	91-57-6	ND	10	ug/L	11/13/93
Naphthalene	91-20-3	ND	10	ug/L	11/13/93
2-Nitroaniline	88-74-4	ND	50	ug/L	11/13/93
3-Nitroaniline	99-09-2	ND	50	ug/L	11/13/93
4-Nitroaniline	100-01-6	ND	50	ug/L	11/13/93
Nitrobenzene	98-95-3	ND	10	ug/L	11/13/93
N-Nitrosodimethylamine	62-75-9	ND	10	ug/L	11/13/93
N-Nitrosodiphenylamine	86-30-6	ND	10	ug/L	11/13/93
N-Nitrosodi-n-propylamine	621-64-7	ND	10	ug/L	11/13/93
Phenanthrene	85-01-8	ND	10	ug/L	11/13/93
Pyrene	129-00-0	ND	10	ug/L	11/13/93
1,2,4-Trichlorobenzene	120-82-1	ND	10	ug/L	11/13/93
4-Chloro-3-methylphenol	59-50-7	ND	10	ug/L	11/13/93
2-Chlorophenol	95-57-8	ND	10	ug/L	11/13/93
2,4-Dichlorophenol	120-83-2	ND	10	ug/L	11/13/93
2,4-Dimethylphenol	105-67-9	ND	10	ug/L	11/13/93
4,6-Dinitro-2-methylphenol	534-52-1	ND	50	ug/L	11/13/93
2,4-Dinitrophenol	51-28-5	ND	50	ug/L	11/13/93
2-Methylphenol	95-48-7	ND	10	ug/L	11/13/93
4-Methylphenol	106-44-5	ND	10	ug/L	11/13/93
2-Nitrophenol	88-75-5	ND	10	ug/L	11/13/93
4-Nitrophenol	100-02-7	ND	50	ug/L	11/13/93
Pentachlorophenol	87-86-5	ND	50	ug/L	11/13/93
Phenol	108-95-2	ND	10	ug/L	11/13/93
2,4,5-Trichlorophenol	95-95-4	ND	10	ug/L	11/13/93
2,4,6-Trichlorophenol	88-06-2	ND	10	ug/L	11/13/93

ND = Not detected

\* = Indicates value above reporting limit

QUALITY CONTROL DATA

DATE EXTRACTED: 11/09/93

AEN JOB NO: 9311094

CLIENT PROJ. ID: 1786

INSTRUMENT: 11

SURROGATE STANDARD RECOVERY SUMMARY  
 METHOD: EPA 8270  
 (WATER MATRIX)

SAMPLE IDENTIFICATION			SURROGATE			RECOVERY (PERCENT)		
Date Analyzed	Sample Id.	Lab Id.	Nitro-benzene-d <sub>5</sub>	2-Fluoro-biphenyl	Terphenyl-d <sub>14</sub>	Phenol-d <sub>5</sub>	2-Fluoro-phenol	2,4,6-Tribromo-phenol
11/13/93	063	01A	82.4	94.6	66.7	85.6	75.9	113.0

QC LIMITS (Revised 01/08/92)

<u>ANALYTE</u>	<u>PERCENT RECOVERY</u>
Nitrobenzene-d <sub>5</sub>	(47-104)
2-Fluorobiphenyl	(49-106)
Terphenyl-d <sub>14</sub>	(36-138)
Phenol-d <sub>5</sub>	(46-105)
2-Fluorophenol	(40- 97)
2,4,6-Tribromophenol	(37-145)

DATE EXTRACTED: 11/09/93  
 DATE ANALYZED: 11/13/93  
 CLIENT PROJ. ID: 1786

AEN JOB NO: 9311094  
 SAMPLE SPIKED: D.I. WATER  
 INSTRUMENT: 11

MATRIX SPIKE RECOVERY SUMMARY  
 METHOD: EPA 8270  
 (WATER MATRIX)

ANALYTE	Spike Conc. (ug/L)	Sample Result (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	Average Percent Recovery	RPD
Phenol	200	ND	168	178	86.5	5.8
2-Chlorophenol	200	ND	177	166	85.8	6.4
1,4-Dichlorobenzene	204	ND	149	145	72.1	2.7
N-Nitroso-di-n-propylamine	199	ND	184	174	89.9	5.6
1,2,4-Trichlorobenzene	200	ND	145	136	70.3	6.4
4-Chloro-3-methylphenol	196	ND	172	175	88.5	1.7
Acenaphthene	200	ND	193	181	93.5	6.4
4-Nitrophenol	198	ND	145	143	72.7	1.4
2,4-Dinitrotoluene	200	ND	174	154	82.0	12.2
Pentachlorophenol	203	ND	192	185	92.9	3.7
Pyrene	199	ND	158	141	75.1	11.4

QC LIMITS (Revised 01/08/92)

Analyte	Percent Recovery	RPD
Phenol	(12-110)	42
2-Chlorophenol	(27-123)	40
1,4-Dichlorobenzene	(36- 97)	28
N-Nitroso-di-n-propylamine	(41-116)	38
1,2,4-Trichlorobenzene	(39- 98)	28
4-Chloro-3-methylphenol	(23- 97)	42
Acenaphthene	(46-118)	31
4-Nitrophenol	(10- 80)	50
2,4-Dinitrotoluene	(24- 96)	38
Pentachlorophenol	( 9-103)	50
Pyrene	(26-127)	31

MS = Matrix Spike  
 MSD = Matrix Spike Duplicate  
 RPD = Relative Percent Difference  
 ND = Not Detected

\*\*\* END OF REPORT \*\*\*



R-7, S-A

9311094

# CHAIN OF CUSTODY RECORD

## McCAMPBELL ANALYTICAL

110 2nd AVENUE, # D7

PACHECO, CA 94553

(510) 798-1620

FAX (510) 798-1622

TURN AROUND TIME:

RUSH

24 HOUR

48 HOUR

5 DAY

REPORT TO:

E.H. - MAT

BILL TO:

MAT

PROJECT NUMBER:

1786

PROJECT NAME:

E/OG

PROJECT LOCATION:

SAMPLER SIGNATURE:

### ANALYSIS REQUEST

### OTHER

BTEX & TPH as Gasoline (602/8020 & 8015)	
TPH as Diesel (8015)	
Total Petroleum Oil & Grease (5520 EMF/5520 BAF)	
Total Petroleum Hydrocarbons (418.1)	
EPA 601/8010	
EPA 602/8020	
EPA 608/8080	
EPA 608/8080 - PCBs Only	
EPA 624/8240/8260	
EPA 8260 (8270)	<input checked="" type="checkbox"/>
CAH - 17 Metals	
EPA - Priority Pollutant Metals	
LEAD (7240/7421/239.2/6010)	
ORGANIC LEAD	
RCI	

COMMENTS

2971

SAMPLE ID	LOCATION	SAMPLING		# CONTAINERS	TYPE CONTAINERS	MATRIX					METHOD PRESERVED								
		DATE	TIME			WATER	SOIL	AIR	SLUDGE	OTHER	HCL	HNO <sub>3</sub>	OTHER						
OG 3	DIA	11/5/93	1740	1	LR	X													

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
<i>[Signature]</i>	11/8/93	520	<i>[Signature]</i>
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
<i>[Signature]</i>	11/8/93	540	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY:
	11/8/93	1740	<i>[Signature]</i>

REMARKS:

### CHAIN OF CUSTODY RECORD

DATE NOVEMBER 5, 1993 PAGE 1 OF 1

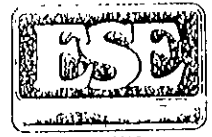
PROJECT NAME ALAMEDA CO. GSA

ADDRESS SANTA RITA CORRECTIONAL FACILITY  
OLD GRAYSTONE  
DUBLIN, CALIFORNIA

PROJECT NO. 6-93-5074

SAMPLED BY [Signature] BART MILLER

LAB NAME Mc CAMPBELL



Environmental Science & Engineering, Inc

1050 S. Bascom Ave. Suite 100  
San Jose, CA 95128

Phone (510) 685-4073  
Fax (510) 685-3323

**ANALYSES TO BE PERFORMED**

**MATRIX**

CONTAINERS  
NUMBER OF

M  
A  
T  
R  
I  
X

REMARKS  
(CONTAINER, SIZE, ETC.)

SAMPLE #	DATE	TIME	LOCATION
OG1	11/05/93	18:22	
OG2	"	18:08	
OG3	"	17:40	
OG4	"	17:23	
DUP	"		

TPM-G/BTEX (8015/8020)	TPM-D (8015)	MVOCs (8010)	SVOCs (8270)	METALS Ni, Cd, Cr, Pb, Zn	BTEX Only (8020)	MATRIX
✓						WATER
✓						"
✓	✓	✓	✓	✓		"
✓					✓	"

3  
3  
9  
3  
3

40ml VOA's  
"  
6x 40ml VOA's + 3x liter Amber  
40ml VOA's  
"  
  
NOTE: water samples noted to effervesce when placed in VOA vials no headspace in field. Some bubbles detected just prior to shipping.

32969  
32970  
32971  
32972  
32973

RELINQUISHED BY: (signature)  
1. [Signature]  
2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. ICE/PT  
GOOD CONDITION  
HEAD SPACE ABSENT

RECEIVED BY: (signature)  
[Signature]  
PRESERVATIVE APPROPRIATE CONTAINERS ✓  
VOAS O&G METALS OTHER

date time  
11/8/93 10:10

REPORT RESULTS TO:  
Bart Miller  
ESE

TOTAL NUMBER OF CONTAINERS		21
SPECIAL SHIPMENT REQUIREMENTS		↓ COLD TRANSPORT
SAMPLE RECEIPT		
CHAIN OF CUSTODY SEALS		
REC'D GOOD COND'TN/COLD		✓
CONFORMS TO RECORD		✓

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):  
Normal T.A.T. Invoice directly to Alameda Co. GSA.  
{u. slight headspace}

**APPENDIX D**  
**SAMPLE COLLECTION LOGS**



Environmental  
Science &  
Engineering, Inc.

**SAMPLE COLLECTION LOG**

PROJECT NAME: ALAMEDA CO. GSA - OLD GRAYSTONE  
PROJECT NO.: 6-93-5074  
DATE: 11/05/93

SAMPLE LOCATION I.D.: OG1  
SAMPLER: BART MILLER  
PROJECT MANAGER: BART MILLER

**CASING DIAMETER**

2" \_\_\_\_\_  
4"  \_\_\_\_\_  
Other \_\_\_\_\_

**SAMPLE TYPE**

Ground Water   
Surface Water \_\_\_\_\_  
Treat. Influent \_\_\_\_\_  
Treat. Effluent \_\_\_\_\_  
Other \_\_\_\_\_

**WELL VOLUMES PER UNIT**

Well Casing I.D. (inches)	Gal/Ft
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: \_\_\_\_\_ (ft.) PRODUCT THICKNESS: \_\_\_\_\_ (ft.) MINIMUM PURGE VOLUME  
DEPTH TO WATER: 23.56 (ft.) WATER COLUMN: \_\_\_\_\_ (ft.) (3 or 4 WCV): \_\_\_\_\_ (gal)  
DEPTH OF WELL: 37.85 (ft.) WELL CASING VOLUME: \_\_\_\_\_ (gal) ACTUAL VOLUME PURGED: \_\_\_\_\_ (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
<u>16:18</u>	<u>20</u>	<u>7.53</u>	<u>2960</u>	<u>70.2</u>	_____	<u>CLOUDY, BROWN</u>
<u>16:21</u>	<u>30</u>	<u>7.54</u>	<u>2990</u>	<u>69.7</u>	_____	<u>"</u>
<u>16:23</u>	<u>35</u>	<u>7.54</u>	<u>3240</u>	<u>69.4</u>	_____	<u>TRANSLUCENT</u>
<u>16:26</u>	<u>40</u>	<u>7.43</u>	<u>3270</u>	<u>69.2</u>	_____	<u>"</u>
<u>WELL BAILED DRY AT 40 GALLONS</u>						

**INSTRUMENT CALIBRATION**

pH/COND./TEMP.: TYPE H/DAC UNIT# 9308B DATE: 11/01/93 TIME: \_\_\_\_\_ BY: CV  
TURBIDITY: TYPE \_\_\_\_\_ UNIT# \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ BY: \_\_\_\_\_

**PURGE METHOD**

Displacement Pump \_\_\_\_\_ Other \_\_\_\_\_  
 Bailer (Teflon/PVC/SS) \_\_\_\_\_ Submersible Pump \_\_\_\_\_

**SAMPLE METHOD**

Bailer (Teflon/PVC/SS) \_\_\_\_\_ Dedicated \_\_\_\_\_  
 Bailer (Disposable) \_\_\_\_\_ Other \_\_\_\_\_

**SAMPLES COLLECTED**

SAMPLE	ID	TIME	DATE	LAB	ANALYSES
DUPLICATE	<u>OG1</u>	<u>18:22</u>	<u>11/05/93</u>	<u>MCCAMPBELL</u>	<u>TPH-G/BTEX</u>
SPLIT	_____	_____	_____	_____	_____
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

SAMPLER: [Signature]  
4090 Nelson Avenue, Suite J  
Concord, CA 94520

PROJECT MANAGER: [Signature]  
Phone (510) 685-4053 Fax (510) 685-5323



Environmental  
Science &  
Engineering, Inc.

**SAMPLE COLLECTION LOG**

PROJECT NAME: ALAMEDA Co. GSA - OLD GRAYSTONE  
PROJECT NO.: 6-93-5074  
DATE: 11/05/93

SAMPLE LOCATION I.D.: OG2  
SAMPLER: BART MILLER  
PROJECT MANAGER: BART MILLER

**CASING DIAMETER**

2" \_\_\_\_\_  
4"  \_\_\_\_\_  
Other \_\_\_\_\_

**SAMPLE TYPE**

Ground Water   
Surface Water \_\_\_\_\_  
Treat. Influent \_\_\_\_\_  
Treat. Effluent \_\_\_\_\_  
Other \_\_\_\_\_

**WELL VOLUMES PER UNIT**

Well Casing	
I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: \_\_\_\_\_ (ft.) PRODUCT THICKNESS: \_\_\_\_\_ (ft.) MINIMUM PURGE VOLUME  
DEPTH TO WATER: 22.40 (ft.) WATER COLUMN: \_\_\_\_\_ (ft.) (3 or 4 WCV): \_\_\_\_\_ (gal)  
DEPTH OF WELL: 37.43 (ft.) WELL CASING VOLUME: \_\_\_\_\_ (gal) ACTUAL VOLUME PURGED: \_\_\_\_\_ (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
<u>15:45</u>	<u>20</u>	<u>7.34</u>	<u>3280</u>	<u>68.3</u>	_____	<u>Brown, cloudy</u>
<u>15:52</u>	<u>40</u>	<u>7.24</u>	<u>3200</u>	<u>68.6</u>	_____	<u>TRANSPARENT</u>
<u>15:55</u>	<u>55</u>	<u>7.25</u>	<u>3250</u>	<u>67.8</u>	_____	<u>"</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

**INSTRUMENT CALIBRATION**

pH/COND./TEMP.: TYPE HYDAC UNIT# 93088 DATE: 11/01/93 TIME: \_\_\_\_\_ BY: CV  
TURBIDITY: TYPE \_\_\_\_\_ UNIT# \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ BY: \_\_\_\_\_

**PURGE METHOD**

Displacement Pump \_\_\_\_\_ Other \_\_\_\_\_  
 Bailer (Teflon/PVC/SS) \_\_\_\_\_ Submersible Pump \_\_\_\_\_

**SAMPLE METHOD**

\_\_\_\_\_ Bailer (Teflon/PVC/SS) \_\_\_\_\_ Dedicated \_\_\_\_\_  
 Bailer (Disposable) \_\_\_\_\_ Other \_\_\_\_\_

**SAMPLES COLLECTED**

SAMPLE	ID	TIME	DATE	LAB	ANALYSES
DUPLICATE	<u>OG2</u>	<u>18:08</u>	<u>11/05/93</u>	<u>McCAMPBELL</u>	<u>TPH-G/BTEX</u>
SPLIT	_____	_____	_____	_____	_____
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: \_\_\_\_\_

SAMPLER: B Miller

PROJECT MANAGER B Miller

4090 Nelson Avenue, Suite J

Concord, CA 94520

Phone (510) 685-4053

Fax (510) 685-5323



Environmental  
Science &  
Engineering, Inc.

**SAMPLE COLLECTION LOG**

PROJECT NAME: ALAMEDA Co. GSA - OLD GRAYSTONE  
PROJECT NO.: 6-93-5074  
DATE: 11/05/93

SAMPLE LOCATION I.D.: OG3  
SAMPLER: BART MILLER  
PROJECT MANAGER: BART MILLER

**CASING DIAMETER**

2" \_\_\_\_\_  
4"  \_\_\_\_\_  
Other \_\_\_\_\_

**SAMPLE TYPE**

Ground Water   
Surface Water \_\_\_\_\_  
Treat. Influent \_\_\_\_\_  
Treat. Effluent \_\_\_\_\_  
Other \_\_\_\_\_

**WELL VOLUMES PER UNIT**

Well Casing I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: \_\_\_\_\_ (ft.) PRODUCT THICKNESS: \_\_\_\_\_ (ft.) MINIMUM PURGE VOLUME  
DEPTH TO WATER: 22.74 (ft.) WATER COLUMN: \_\_\_\_\_ (ft.) (3 or 4 WCV): \_\_\_\_\_ (gal)  
DEPTH OF WELL: 37.68 (ft.) WELL CASING VOLUME: \_\_\_\_\_ (gal) ACTUAL VOLUME PURGED: \_\_\_\_\_ (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
<u>15:00</u>	<u>20</u>	<u>7.31</u>	<u>3690</u>	<u>69.9</u>	_____	<u>BROWN, CLOUDY</u>
<u>15:09</u>	<u>40</u>	<u>7.22</u>	<u>3530</u>	<u>67.4</u>	_____	<u>TRANSLUCENT</u>
<u>15:13</u>	<u>45</u>	<u>7.24</u>	<u>3480</u>	<u>66.1</u>	_____	"
<u>15:14</u>	<u>55</u>	<u>7.26</u>	<u>3490</u>	<u>66.9</u>	_____	"

**INSTRUMENT CALIBRATION**

pH/COND./TEMP.: TYPE HYDAC UNIT# 9308B DATE: 11/01/93 TIME: \_\_\_\_\_ BY: CV  
TURBIDITY: TYPE \_\_\_\_\_ UNIT# \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ BY: \_\_\_\_\_

**PURGE METHOD**

Displacement Pump  Other  
 Bailer (Teflon/PVC/SS)  Submersible Pump

**SAMPLE METHOD**

Bailer (Teflon/PVC/SS)  Dedicated  
 Bailer (Disposable)  Other

**SAMPLES COLLECTED**

SAMPLE	ID	TIME	DATE	LAB	ANALYSES
DUPPLICATE	<u>OG3</u>	<u>17:40</u>	<u>11/05/93</u>	<u>McCAMPBELL</u>	<u>TPH-G/TPH-D/HVOCs/SVOCs/BTEX/Cd,Cr,Pb,</u>
SPLIT	<u>DUP</u>	_____	<u>11/05/93</u>	"	<u>BTEX</u>
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: \_\_\_\_\_

SAMPLER: [Signature]  
4090 Nelson Avenue, Suite 1

PROJECT MANAGER: [Signature]  
Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323



Environmental  
Science &  
Engineering, Inc.

**SAMPLE COLLECTION LOG**

PROJECT NAME: ALAMEDA CO. GSA - OLD GRAYSTONE  
PROJECT NO.: 6-93-5074  
DATE: 11/05/93

SAMPLE LOCATION I.D.: 064  
SAMPLER: BART MILLER  
PROJECT MANAGER: BART MILLER

**CASING DIAMETER**

2" \_\_\_\_\_  
4"  \_\_\_\_\_  
Other \_\_\_\_\_

**SAMPLE TYPE**

Ground Water   
Surface Water \_\_\_\_\_  
Treat. Influent \_\_\_\_\_  
Treat. Effluent \_\_\_\_\_  
Other \_\_\_\_\_

**WELL VOLUMES PER UNIT**

Well Casing	
I.D. (inches)	Gal/Ft.
2.0	0.1632
4.0	0.6528
6.0	1.4690

DEPTH TO PRODUCT: \_\_\_\_\_ (ft.) PRODUCT THICKNESS: \_\_\_\_\_ (ft.) MINIMUM PURGE VOLUME  
DEPTH TO WATER: 22.24 (ft.) WATER COLUMN: \_\_\_\_\_ (ft.) (3 or 4 WCV): \_\_\_\_\_ (gal)  
DEPTH OF WELL: 37.10 (ft.) WELL CASING VOLUME: \_\_\_\_\_ (gal) ACTUAL VOLUME PURGED: \_\_\_\_\_ (gal)

TIME	Volume (GAL)	pH (Units)	E.C. (Micromhos)	Temperature (F°)	Turbid. (NTU)	Other
<u>14:27</u>	<u>5</u>	<u>7.55</u>	<u>4150</u>	<u>71.6</u>	_____	<u>CLOUDY BROWN</u>
<u>14:32</u>	<u>20</u>	<u>7.39</u>	<u>3840</u>	<u>71.0</u>	_____	<u>"</u>
<u>14:37</u>	<u>30</u>	<u>7.51</u>	<u>3210</u>	<u>70.4</u>	_____	<u>"</u>
<u>14:40</u>	<u>40</u>	<u>7.36</u>	<u>3790</u>	<u>70.1</u>	_____	<u>"</u>
<u>14:46</u>	<u>55</u>	<u>7.54</u>	<u>3820</u>	<u>69.7</u>	_____	<u>TRANSLUCENT</u>

**INSTRUMENT CALIBRATION**

pH/COND./TEMP.: TYPE HYOAC UNIT# 93088 DATE: 11/01/93 TIME: \_\_\_\_\_ BY: CV  
TURBIDITY: TYPE \_\_\_\_\_ UNIT# \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ BY: \_\_\_\_\_

**PURGE METHOD**

**SAMPLE METHOD**

Displacement Pump  Other  
 Bailer (Teflon/PVC/SS)  Submersible Pump

Bailer (Teflon/PVC/SS)  Dedicated  
 Bailer (Disposable)  Other

**SAMPLES COLLECTED**

SAMPLE	ID	TIME	DATE	LAB	ANALYSES
DUPLICATE	<u>064</u>	<u>17:23</u>	<u>11/05/93</u>	<u>McCAMPBELL</u>	<u>TPH-G/PTX</u>
SPLIT	_____	_____	_____	_____	_____
FIELD BLANK	_____	_____	_____	_____	_____

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

SAMPLER: [Signature] PROJECT MANAGER: [Signature]  
4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323