Jan. 15, 1993

REPORT ON SOIL AND GROUND WATER INVESTIGATION

at

OLD GRAYSTONE FUELING FACILITY
SANTA RITA CORRECTIONAL FACILITY
DUBLIN, CALIFORNIA

Submitted to:

Alameda County General Services Agency
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Oakland, California 94619

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Project No. 6-92-5454
January 15, 1993

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 located at the Old Graystone Fueling Facility of the Santa Rita Correctional Facility, Dublin, Alameda County, 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 the professional advice in this report.

PREPARED BY:

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JANUARY 22, 1993
Date

UNDER THE PROFESSIONAL REVIEW AND SUPERVISION OF:

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Jan. 22, 1993
Date

PROJECT NO. 6-92-5454

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1.0 INTRODUCTION

This report was prepared by Environmental Science & Engineering, Inc. (ESE) for the Alameda County General Services Agency (GSA) as it pertains to the Old Graystone Fueling Facility (site) located at the Santa Rita Correctional Facility, Dublin, Alameda County, California (see Figure 1 - Location Map). The field activities described herein were conducted by ESE during November, 1992 pursuant to GSA authorization under Purchase Order No. 141-00-1566-0.

The report addresses a soil and ground water investigation associated with petroleum hydrocarbons in the vadose and saturated zone at the site where the GSA formerly owned and operated one 10,000-gallon unleaded gasoline underground storage tank (UST) referred to as UST 2942-11, one 11,000-gallon regular gasoline UST referred to as UST 2942-12, and one 500-gallon waste oil UST referred to as UST 2942-12A (Figure 2 - Vicinity Map).

1.1 Objectives

The objectives of the work described in this report were to:

- Compile and review background data regarding soil and ground water investigations at and proximal to the site, local hydrogeology, and both local land and ground water usage;

- Conduct a soil and Hydropunch® ground water investigation at the site to determine if petroleum hydrocarbons are present in the soil and/or ground water; and

- Determine whether remedial action for soil and/or ground water is recommended.

All activities associated with meeting the project objectives have been completed.

2.0 BACKGROUND

2.1 Site Description

The site is located at the Santa Rita Correctional Facility immediately north of Interstate 550 in Dublin, California (Figure 1 - Location Map). During this investigation all building structures proximal to the UST site were under advanced stages of demolition.

The UST site is best described as a flat, asphalt-covered, rectangular area of approximately 13,000 square feet presently surrounded by a portable fence located at the Old Graystone Area of the Santa Rita Correctional Facility (Figure 2 - Site Map). Two excavations of approximately 15-foot depth were noted to comprise approximately 1,350 square feet of the enclosed rectangular area Figure 3 - Site Plan). The UST site is surrounded by a field of soil which has been graded in preparation for construction activities.

2.2 Background Environmental Conditions

Under permit from the Alameda County Health Care Services Agency (HCSA) and the Doherty Regional Fire Authority (DRFA), ESE removed and disposed of UST's 2942-11 and 2942-12A on May 18, 1992. UST 2942-12 was removed on May 20, 1992. UST 2942-11 was of single wall fiberglass construction and both UST 2942-12 and 2942-12A were of single wall carbon steel construction. A tar-based outer coating was observed on UST 2942-12 only.

ESE submitted a closure report to the HCSA for the three UST's at the site on July 20, 1992. A total of five soil samples were collected by ESE personnel under the direction of a HCSA representative from the bottom of the three UST excavations and submitted for analysis. Laboratory results indicated detectable concentrations of total petroleum hydrocarbons as gasoline (TPH-G) in all samples ranging between 13 to 730 milligrams per kilogram (mg/Kg) using Environmental Protection Agency (EPA) analytical method 8015-modified. Benzene, toluene, ethylbenzene, and xylenes (BTEX) were also detected in all samples analyzed using EPA method 8020.

On November 8th and 9th, 1992 ESE conducted overexcavation activities at the site in order to characterize and excavate soil impacted with petroleum hydrocarbons as documented in a letter report by ESE dated January 07, 1993. During this investigation, ESE observed soil occurring immediately beneath the asphalt pavement to a depth of eight feet below ground surface (bgs) exhibited a green discoloration and an odor. Although not sampled/analyzed, ESE suspected this soil may have been impacted by a fuel spill. The lateral extent of soil exhibiting discoloration/odor was not determined.

Further, soil occurring at a depth of approximately 22 feet bgs in the UST 2942-11 and 2942-12 excavations was demonstrated to be impacted by gasoline constituents and was characterized by a grey discoloration and a strong fuel odor. The lateral extent of the impacted deeper soil was not determined.

No ground water was encountered during overexcavation activities and it remained unknown as to whether ground water had been impacted at the site by petroleum hydrocarbons and, if so, to what extent.

3.0 GEOLOGY AND HYDROLOGY

3.1 Regional Geology

The site is located within the Coast Ranges geomorphic province (Norris and Webb, 1976) at 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, alleviated lowland portion of the Livermore Valley referred to as the Camp Subbasin (Figure 4 - Location of Subbasins and Physiographic Features). 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 (State of California Department of Water Resources, 1974).

The Livermore Valley fill materials are comprised of sediments of Quaternary age and commonly referred to as (from youngest to oldest) alluvium and alluvial fan deposits (Figure 5 - Vicinity Geology). Alluvium of Pleistocene to Holocene age has been deposited in the gently sloping central area of Livermore Valley and adjacent to active streams in the ravines and canyons tributary to Livermore Valley (State of California Department of Water Resources, 1974). 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 (Figure 6 - Geological Cross-Section). 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 cut 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 (Figure 5).

3.2 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 semiconfined 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 Subbasin (Figure 5). Here the various ground waters of the basin commingle and move in a southerly direction into 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 are due to separations between the two water-bearing units, the valley fill materials and the Livermore Formation, within the valley. 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 subbasins is mainly controlled by faulting.

The Camp Subbasin covers an approximate area of 2,850 acres and is the subbasin in which the site is located (State of California Department of Water Resources, 1974). The basin

is drained by the Tassajara Creek and the Cottonwood Creek, which enter from the hills to the north, cross the subbasin along a southerly course, and flow into the Amador Subbasin (Figure 4). Unconfined to semiconfined ground water occurs in varying amounts throughout the subbasin and have a combined potentiometric surface between approximately 10 to 25 feet (bgs). The potentiometric surface has been reported by the State of California Department of Water Resources (1974) to have a southerly gradient at approximately 70 feet per mile. Effects on the ground water potentiometric surface in the Camp subbasin during recent dry conditions are unknown.

Ground water in the Camp Subbasin 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 subbasin has been analyzed by the California Department of Water Resources (1974) and is classified as a sodium carbonate water of irrigation Class II quality.

3.3 Precipitation and Water Usage

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 North 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 at distance of approximately three miles to the west of the site and approximately two miles to the southeast of the site, respectively. Based on a precipitation data collected over a 100-year study period (1870 to 1970) and over a 9-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 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 subbasin where the site is located and estimated that ground water supplies could be obtained from shallow wells nearly everywhere in the subbasin.

4.0 PROCEDURE

All methods and associated standards employed by ESE during this site soil and ground water investigation were consistent with appropriate guidelines established by HCSA and the San Francisco Bay Regional Water Quality Control Board (Regional Board).

All appropriate permitting for this subsurface investigation was secured by ESE through the ACFCWCD - Zone 7.

4.1 Soil Boring and Soil Sample Collection

A total of 21 soil borings were drilled during this investigation. Eleven of these borings were drilled in accordance with ESE Standard Operating Procedure (SOP) No. 1 for Soil Borings and Soil Sampling with Hollow-Stem Augers in Unconsolidated Formations. SOP No. 1 is presented for review in Appendix A - ESE Standard Operating Procedures. Ten of these borings were drilled with solid flight augers. The procedure for these borings is described below.

One boring, G1, was sampled by continuous coring using a one and one half foot long California Modified Split-spoon sampler (sampler) advanced ahead of the augers. Approximately 98 percent core recovery to a depth of 25.5 feet bgs was achieved using the continuous method. This enabled the ESE geologist to visibly examine and describe a continuous, near-surface, stratigraphic section of the site. ESE preserved one soil sample collected immediately above the occurrence of first ground water and four soil samples from the vadose zone at five-foot depth intervals bgs for possible chemical analysis. Nine soil borings, G2 through G10, were sampled at five-foot intervals using a sampler as described in ESE SOP No. 1 (Appendix A). Ten soil borings to a depth of ten feet bgs (G11 through G21 excluding G17) and one boring to a depth of five feet bgs (G17) were drilled using solid-flight augers. The augers were advanced by rotation to a specified depth in the

subsurface and, subsequently, pulled upward to the surface using no rotative action where the ESE geologist could visibly examine and describe the near-surface sediment section adhered to the outer side of the augers.

4.2 Hydropunch® Ground Water Sampling

A total of nine ground water samples were collected from soil borings G1 and G3 through G10 using a Hydropunch® sampler. Each soil boring was drilled to a depth at which water-saturated sediment was detected and the Hydropunch® sampler was driven through the center of the hollow-stem augers into the relatively undisturbed soil beneath the lower extent of the augers. The outer sheath of the Hydropunch® was then retracted approximately 36 inches to expose an unused Teflon® screen. The Teflon® screen was exposed to the subsurface for a period of approximately 15 to 20 minutes after which a clean stainless steel bailer was lowered into the screened interval. Ground water collected was decanted into appropriate laboratory supplied glassware, labeled, and placed in a cooler with ice for transport to a State-Certified laboratory under chain of custody documentation. The stainless steel bailer was washed in an Alconox® and tap water solution followed by a tap water rinse between sampling events in order to prevent cross-contamination.

4.3 Surveying

Concurrent with soil boring and Hydropunch® ground water sampling, ESE surveyed the location of each soil boring and site features to a National Geodetic Survey benchmark number L1257 installed during 1974 and located approximately 1000 feet southeast of the site on a curb at the east end of the bridge crossing Tassajara Creek on the north side of Interstate 580. This benchmark was marked as 353.51 feet above mean sea level. All measurements were recorded to the nearest 0.01 foot thereby enabling ESE to prepare relatively accurate site maps.

4.4 Analytical Methods

Soil samples collected from borings G1 through G10 at depths of 20 feet bgs and immediately above the occurrence of ground water were submitted under chain of custody

for analysis to the Environmental Science and Engineering, Inc. California Department of Health Services-certified laboratory located in Peoria, Illinois (ESE-Peoria). As well, one soil sample collected at G2 at a depth of five feet bgs was also submitted for analysis.

Based on the compounds identified in soil samples collected during previous site activities, the known contents of former UST's, and field observations noted during this investigation the 21 soil samples were analyzed for TPH-G and BTEX using EPA Methods 8015-modified and 8020, respectively. One soil sample collected from boring G2 at a depth of five feet bgs was also analyzed for total petroleum hydrocarbons as diesel fuel (TPH-d), halogenated volatile organic compounds (HVOCs) using EPA Method 8010, semi-volatile organic compounds (SVOCs) using EPA Method 8270, oil and grease (O&G) using EPA Methods 418.1 and 413.1, and total metals (cadmium, chromium, lead, nickel, and zinc) using EPA Method 6010. Additionally, this sample was analyzed for soluble lead and nickel using EPA Method 6010.

Hydropunch® ground water samples were also submitted under chain of custody to ESE-Peoria for analysis for TPH-G using EPA Method 8015-modified and for BTEX using EPA Method 8020. For Quality Assurance/Quality Control (QA/QC) purposes, ESE also submitted a trip (travel) blank supplied by the laboratory to be analyzed for TPH-G and BTEX. Trip blanks consist of deionized water and act as a check on ESE sample handling and transport procedures.

4.5 Drill Cuttings and Rinse Water Storage

As a result of this subsurface investigation, various waste materials were generated. These wastes include soil as drill cuttings from the boring activities and rinseates from decontamination of drilling and sampling equipment. One soil stockpile of approximately five yards volume was placed on plastic sheeting and covered by the at the site. A total of five United States Department of Transportation (DOT) rated steel 55-gallon drums of rinseate water were also generated by ESE during this fieldwork and left at the site pending proper disposal.

5.0 RESULTS

5.1 Soil

Sediments at the site are comprised of a silt unit having an approximate thickness of eight feet. The silt was noted as dry and containing approximately 15 percent medium-sized quartzose sand grains. A clay unit underlies the silt and was observed to extend to a depth of 27 feet bgs. The clay unit was dry and of moderate plasticity. Sand interbeds of 6 to 18-inch thickness were observed in the dominantly clay unit between 20 and 27 feet bgs. The sand was observed to be quartzose in composition and poorly sorted. The clay unit was noted to become saturated at a depth of 24.5 to 25.5 feet bgs. Boring logs documenting geology, sample depths, and, in some cases, depth to water saturation are presented in Appendix B.

All soil samples screened for VOCs using a photoionization detector (PID) were observed to vary in concentration from 2 parts per million (ppm) to 37 ppm. Soil samples comprised of sandy silt collected at a depth of five feet in borings G1, G2, G3, G5, G7, G9, G16, G19, and G20 were noted to have a green discoloration and an odor. Soil samples collected at a depth of ten feet in the abovementioned borings, except G9, were noted to be comprised of brown clay exhibiting no discoloration or odor.

Soil samples collected from boring G9 at depths of 15 and 20 feet were noted to have high PID readings of 35 ppm and 25 ppm, respectively, and exhibited a distinct grey discoloration with a distinguishable gasoline odor.

All laboratory results for soil samples submitted for analysis are presented as Appendix C. One soil sample (G2-5') collected at a five foot depth from boring G2 and noted to have green discoloration and an odor was reported to have a concentration of 90 mg/Kg O&G using EPA Method 418.1 (infrared spectroscopy method). However, this sample was reported to contain concentrations of O&G be below detection limits (10 mg/Kg) when analyzed using EPA Method 413.1 (gravimetric method). No TPH-G, TPH-D, BTEX, or

SVOCs were detected in sample G2-5'. One HVOC compound, methylene chloride, was detected at a concentration of ~~five~~ 40 micrograms per kilogram (µg/Kg) in sample G2-5. Cadmium, chromium, and zinc concentrations in this sample were reported to be less than ten percent of the California Code of Regulations (CCR) Title 26 Total Threshold Limit Concentration (TTLC) values, however, nickel at a reported concentration of 23.4 mg/Kg and lead at a reported concentration of 8.43 mg/Kg exceed the ten percent CCR Title 26 TTLC values. Analysis of this sample for soluble lead and soluble nickel resulted in concentrations of 0.199 and 0.436 milligrams per liter (mg/L) respectively. These concentrations are below the Soluble Threshold Limit Concentrations as presented in CCR Title 26. Analytical results for all soil samples collected at depths of 20 feet and immediately above the occurrence of water saturation, excepting sample G9-20', were reported to be less than method detection limit concentrations for TPH-G and BTEX. Sample G9-20' was reported to have a benzene concentration of 7 µg/Kg.

5.2 Ground Water

Ground water was encountered in borings G1 through G10 at an average depth of approximately 25 feet bgs. Most Hydropunch® ground water samples submitted for analyses were reported to contain gasoline constituents (Table 1 - Hydropunch® Ground Water Sample Analysis Results).

TPH-G concentrations were reported to range between less than method detection limit to 520 micrograms per liter (µg/L) and benzene concentrations were reported to range between less than method detection limit to 69 µg/L. The highest concentration of gasoline constituents was reported to occur in a ground water sample collected from soil boring G9 located immediately to the north of the UST 2942-11 excavation. Methylene chloride was was reported to occur in ground water sample G5-HP at a concentration of 2 µg/L.

TABLE 1 - Hydropunch® Ground Water Sample Analysis Results					
Sample	TPH-G	Benzene	Toluene	E-Benzene	Xylenes
G1-HP	96	<0.5	<0.5	<0.5	0.8
G3-HP	75	2	7	0.9	5
G4-HP	52	<0.5	<0.5	<0.5	<0.5
G5-HP	270	0.8	<0.5	<0.5	<0.5
G6-HP	220	<0.5	<0.5	<0.5	<0.5
G7-HP	93	<0.5	<0.5	<0.5	<0.5
G8-HP	<50	<0.5	<0.5	<0.5	<0.5
G9-HP	520	69	4	20	7
G10-HP	<50	<0.5	<0.5	<0.5	<0.5

NOTE
- *E-Benzene refers to Ethylbenzene*
- *TPH-G refers to Total Petroleum Hydrocarbons as Gasoline*
- *all samples collected by ESE on November 23, 24, and 25, 1992*
- *all results reported in micrograms per liter (µg/L)*

An iso-concentration contour map for TPH-G in ground water shows the highest concentrations to be located directly beneath the former UST site with minor plume migration toward the south-southeast (Figure 7 - TPH-G Concentration in Ground Water). An iso-concentration contour map for benzene in ground water exhibits a similar contour pattern as that for TPH-G and indicates that the highest concentrations are located directly beneath the former UST site (Figure 8 - Benzene Concentration in Ground Water). Benzene concentrations in ground water were reported to be less than method detection limit at six Hydropunch® sample locations surrounding the former UST site (G1, G4, G6, G7, G8, and G10).

6.0 DISCUSSION AND CONCLUSIONS

During the period of November 23 through November 25, 1992, ESE drilled 21 soil borings to depths ranging between 5 to 27.5 feet bgs adjacent to excavations formerly occupied by two gasoline and one waste oil UST at the Old Graystone Area located at the Santa Rita Correctional Facility, Dublin, California. A total of 21 soil samples were collected and submitted for analysis. Hydropunch® ground water samples were collected from nine soil borings and submitted for analysis.

Sediments encountered during soil boring activities are characteristic of Quaternary alluvium described previously (Section 3.1 - Regional Geology). No lithologies representative of the Tassajara Formation or the Livermore Formation were encountered. Depth to ground water was consistent with findings reported by the State of California Department of Water Resources (1974).

Sediments occurring from ground surface to a depth of approximately eight feet over an area of approximately 10,000 square feet at the UST area had green discoloration and an odor. One sample of this material was noted to contain detectable concentrations of O&G (90 mg/Kg) when analyzed by EPA Method 418.1, which is a nonspecific hydrocarbon test. This same sample was analyzed for O&G using the gravimetric method (EPA Method 413.1) which tests more specifically for petroleum hydrocarbons. The 413.1 analysis reported nondetectable results at a detection limit of 10 mg/Kg, which may indicate that the observed staining and odor are unrelated to petroleum fuels and the underground tanks. Additionally, analyses for SVOC and HVOC reported nondetectable results except for methylene chloride. Methylene chloride is a commonly used laboratory solvent and may be reported as a result of laboratory contamination. At ESE's request, the ESE-Peoria laboratory retested sample G2-5' for methylene chloride. Results of the second test indicated 5 μ/Kg methylene chloride (refer to laboratory correspondence included in Appendix D). Additionally, if chlorinated solvents had been stored in the former waste oil

tank, one would expect detection of other chlorinated solvents in addition to methylene chloride.

Based upon the laboratory data from analysis of sample G2-5', it appears that the upper soil zone is not impacted by a release of petroleum hydrocarbons. The source of odor and perceived discoloration in this soil is unknown.

One soil sample collected at boring G9 located to the immediate north of the UST 2946-11 excavation at a depth of 25 feet was noted to have a grey discoloration and a distinct gasoline odor. Analytical results for this sample indicate a 7 μg/Kg concentration of benzene. An earlier investigation by ESE in the area of the USTs reported concentrations of up to 6,600 parts per million TPH-G and 9,600 parts per billion benzene. It is therefore interpreted that hot spots of gasoline exists at this depth in the immediate area of the former tanks and the gasoline has spread laterally along the capillary zone. The drilling appears to have approximately defined the limits of this deeper impacted soil zone.

Ground water was investigated through the use of a Hydropunch in the soil borings. Eight ground water samples were collected and reported concentrations of benzene up to 69 parts per billion. This result may be compared to the drinking water standard for benzene of 1 part per billion. An approximate plume in the ground water is shown on Figures 7 and 8 and indicate that the highest concentrations of gasoline found in the ground water are near the former USTs and concentrations decrease radially outward.

In summary, the results suggest that gasoline may have been released from or in the immediate vicinity of UST 2942-11. Gasoline has reached the underlying ground water table and a contaminant plume is defined beneath the site. Minor plume migration from the apparent source area may possibly be attributed to restricted lateral permeability of the upper water bearing sediments. Soil within and immediately above the capillary zone at depths of 20 to 25 feet bgs has been impacted within the area of the ground water contaminant plume.

7.0 RECOMMENDATIONS

Based on the findings of this site investigation, ESE recommends the following:

- Remediate gasoline impacted soil. This investigation demonstrates that that impacted soil lies immediately beneath the former location of the underground storage tanks and within and above the capillary fringe in the area proximal to the former tank locations. This remediation can be accomplished by a variety of in-situ and ex-situ methods. Excavation of the material will be the most rapid method of clean up. The site is large and there is sufficient available land for on-site treatment of the soil by aeration. In addition, there may be sufficient clean fill soil from various borrow areas on the site.

- If the excavation and on-site treatment of soil option is selected, ESE recommends aggressively dewatering the excavated area to remove ground water containing the highest concentrations of gasoline. This method is suggested because the plume in ground water appears to be limited in extent. In addition to temporary dewatering, construction of monitoring wells and ground water monitoring will likely be required to determine if residual concentrations of gasoline remain in the ground water.

- To initiate the site remediation process, a workplan should be prepared. This plan should include an outline of the remedial action and specific procedures for soil/ground water removal and treatment, and soil/ground water sampling and analysis.

8.0 REFERENCES

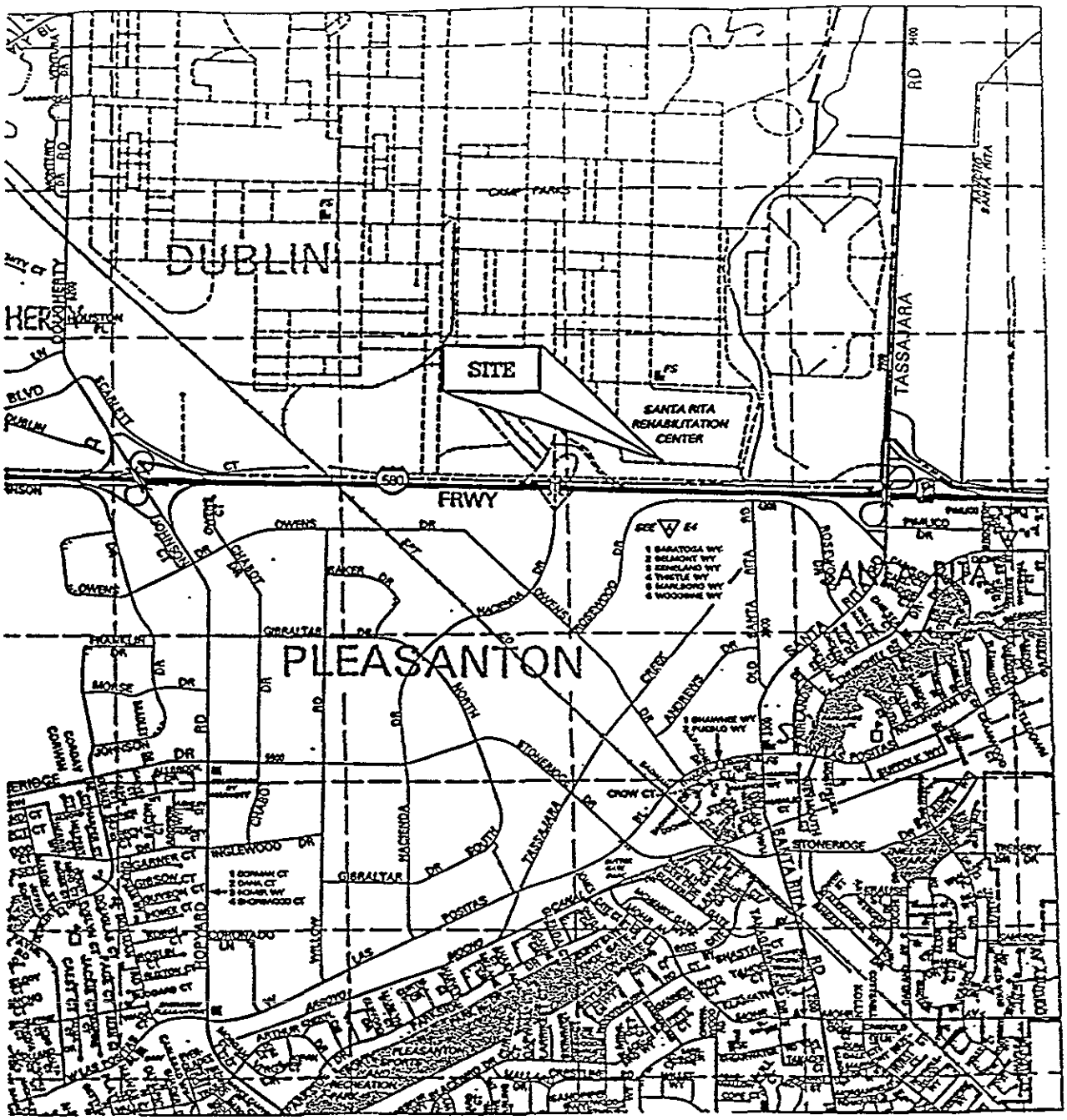
Environmental Science & Engineering, Inc., 1992, Letter Report to the Alameda County General Services Agency Concerning Overexcavation Activities at the Old Graystone Area, Santa Rita Correctional Facility, Dublin, California; dated December 18, 1992.

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, pp.153.

FIGURES



0 .1 .2 .5 1 KILOMETERS
0 ½ 1 MILES

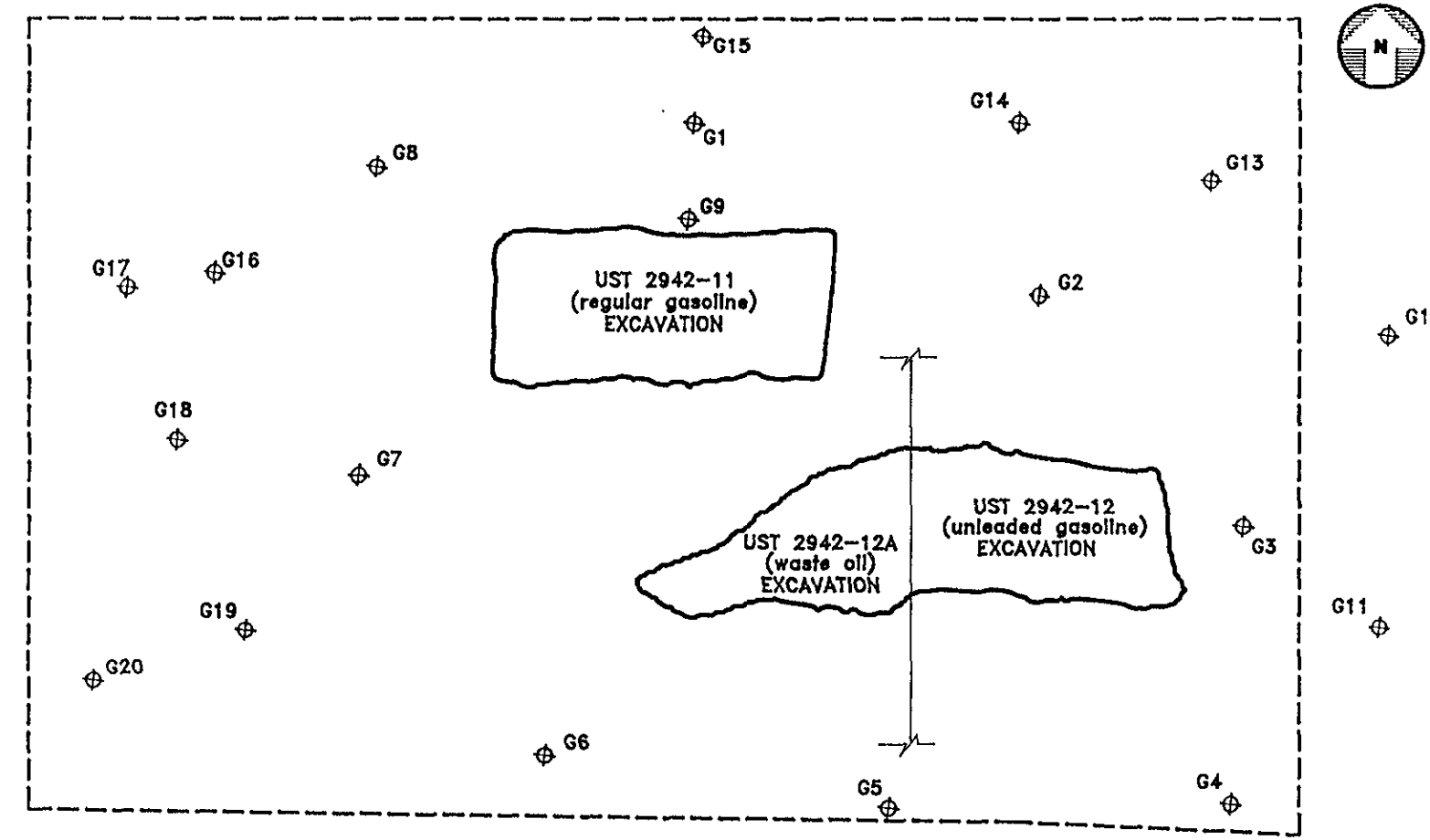
SCALE OF SINGLE MAP PAGES
1 INCH TO 2200 FEET

ESE A CH2M HILL COMPANY
Environmental Science & Engineering, Inc.

ALAMEDA COUNTY GSA
SANTA RITA JAIL FACILITY
DUBLIN, CA

FIGURE 1
LOCATION MAP

DRAWN BY	APPROVED BY	REVISED
RSW		
DATE	FILE NAME	PROJ. NO.
6/25/92		6-92-5442



LEGEND

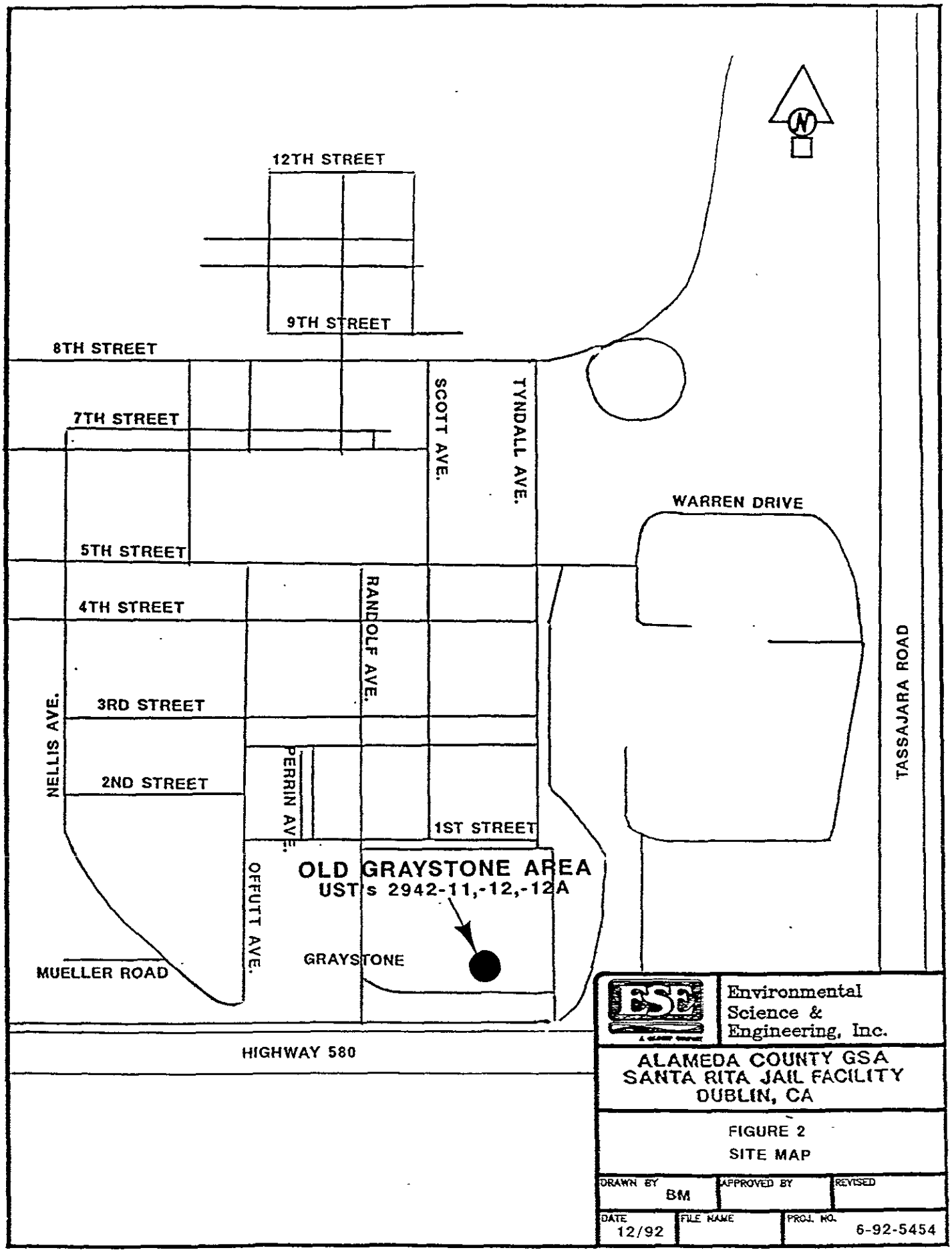
- Soil Boring
- Boundary of Asphalt
- Steel Pipe
- Boundary of Excavation

? G10

SCALE

0 20 FEET

ESE A CILCORP Company Environmental Science & Engineering, Inc.	DATE 12/92	PROJ/PROP 6-92-5454	ALAMEDA COUNTY GSA SANTA RITA JAIL FACILITY DUBLIN, CA
	DRAWN BY DWR	CAD FILE 54542002	
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	APPROVED BY	REVISED	FIGURE 3 SITE PLAN



Environmental Science & Engineering, Inc.

ALAMEDA COUNTY GSA
SANTA RITA JAIL FACILITY
DUBLIN, CA

FIGURE 2
SITE MAP

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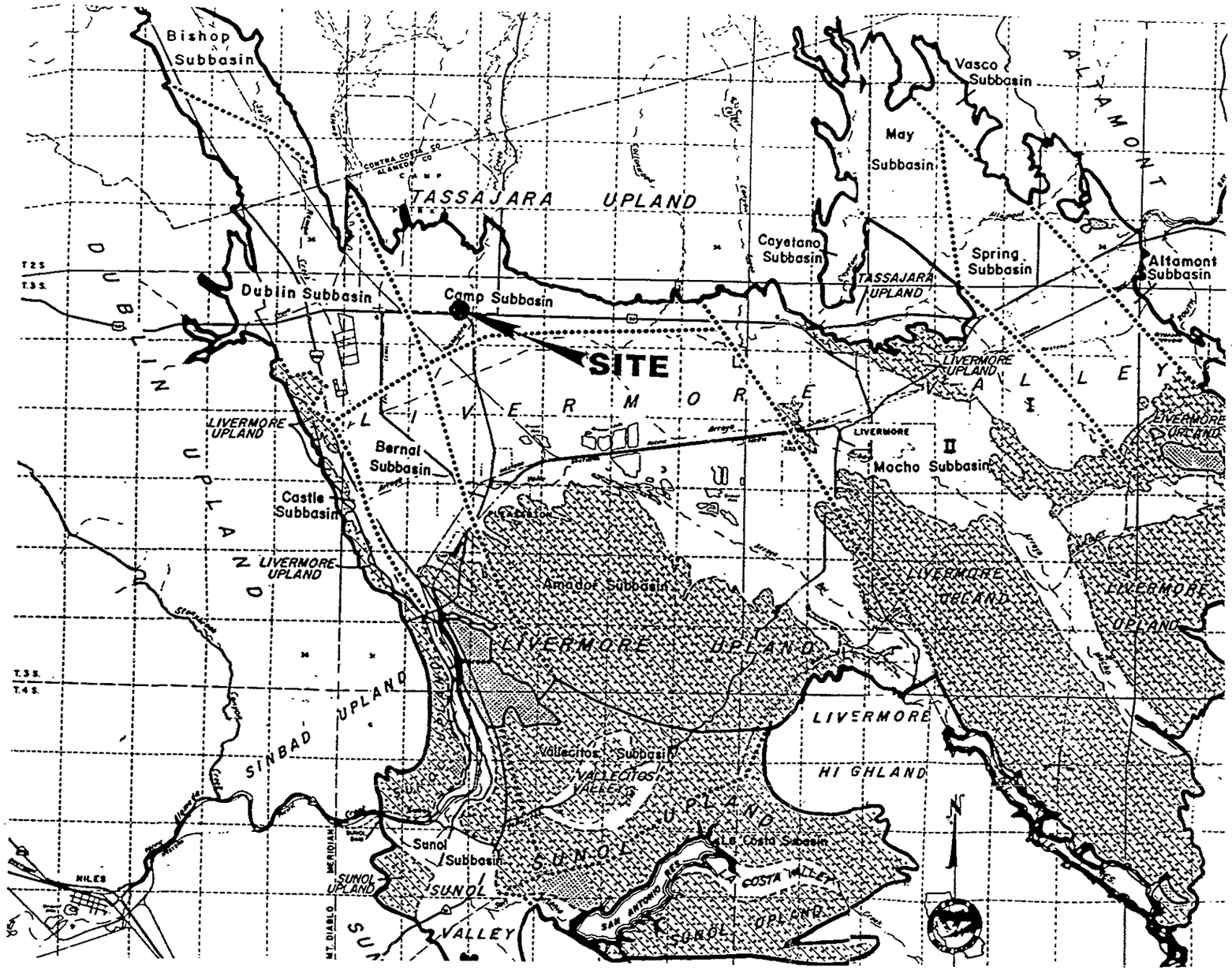
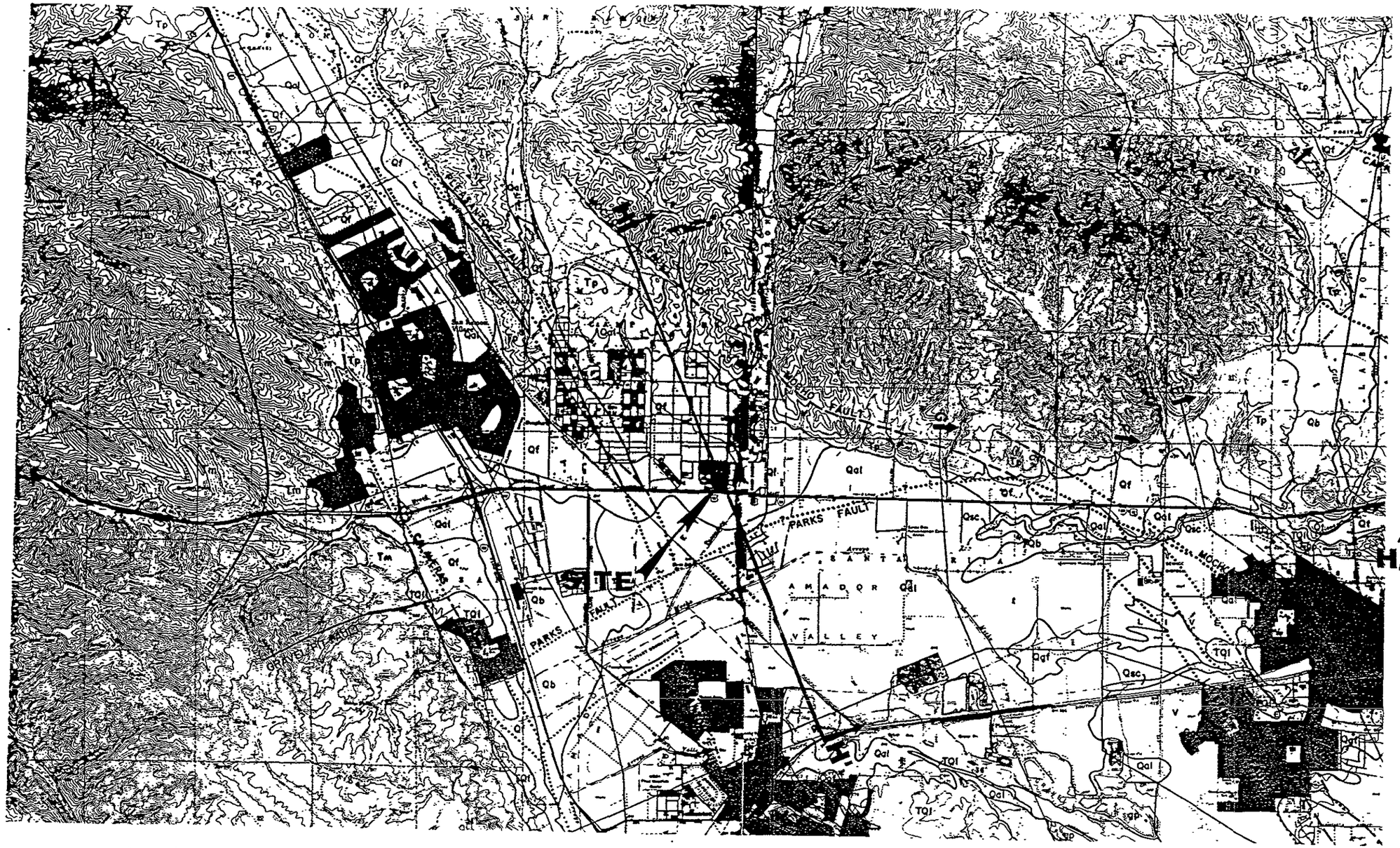
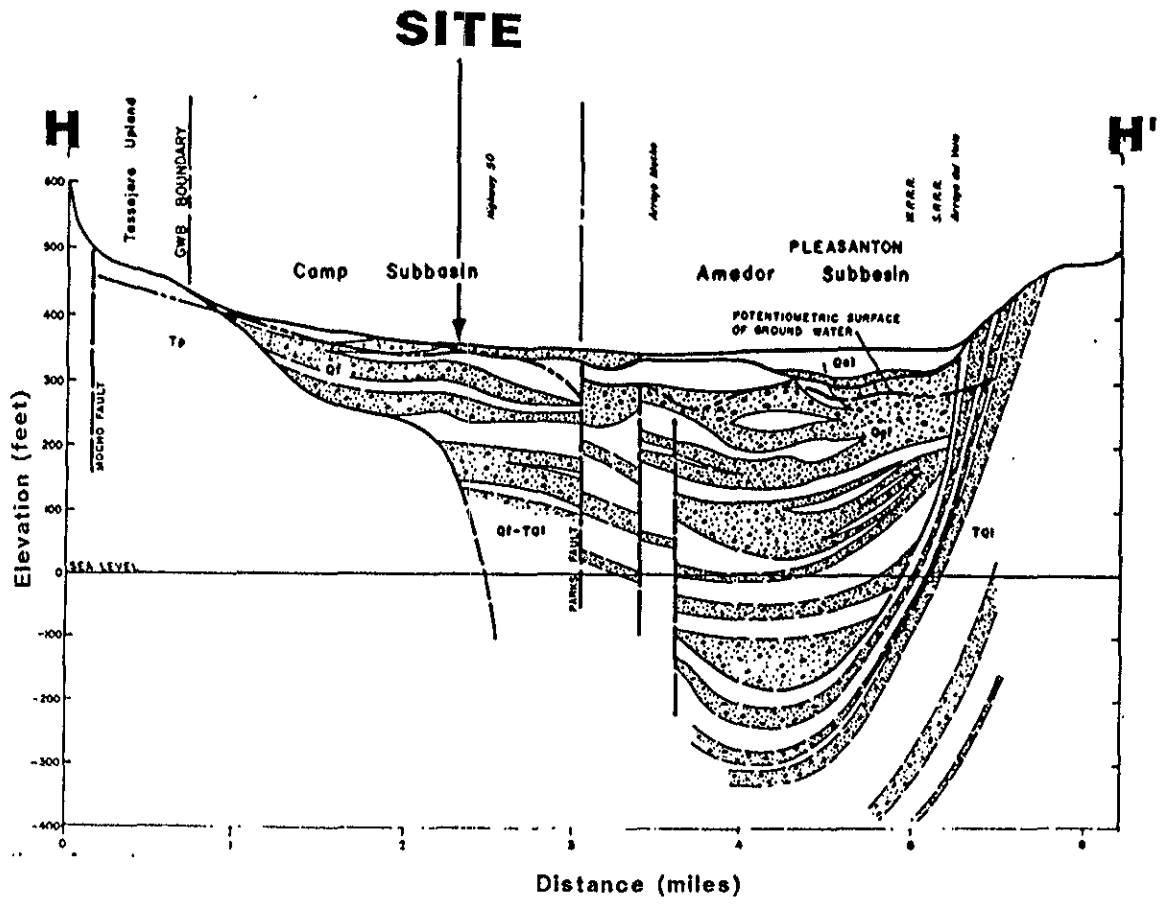
DATE	FILE NAME	PROJ. NO.
12/92		6-92-5454



ESE A CILCORP Company — Environmental Science & Engineering, Inc.	DATE 12/92	PROJ. NO. 6-92-5454	ALAMEDA COUNTY GSA SANTA RITA JAIL FACILITY DUBLIN, CA
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DRAWN BY BSM	CAD FILE 54540000	FIGURE 4 LOCATION OF SUBBASINS AND PHYSIOGRAPHIC FEATURES
	APPROVED BY	REVISED	



ESE A CELCORP Company — Environmental Science & Engineering, Inc. 4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DATE 12/92	PROJ. NO. 6-92-5454	ALAMEDA COUNTY GSA SANTA RITA JAIL FACILITY DUBLIN, CA
	DRAWN BY BSM	CAD FILE 54540000	FIGURE 5 VICINITY GEOLOGY
	APPROVED BY	REVISED	



LEGEND

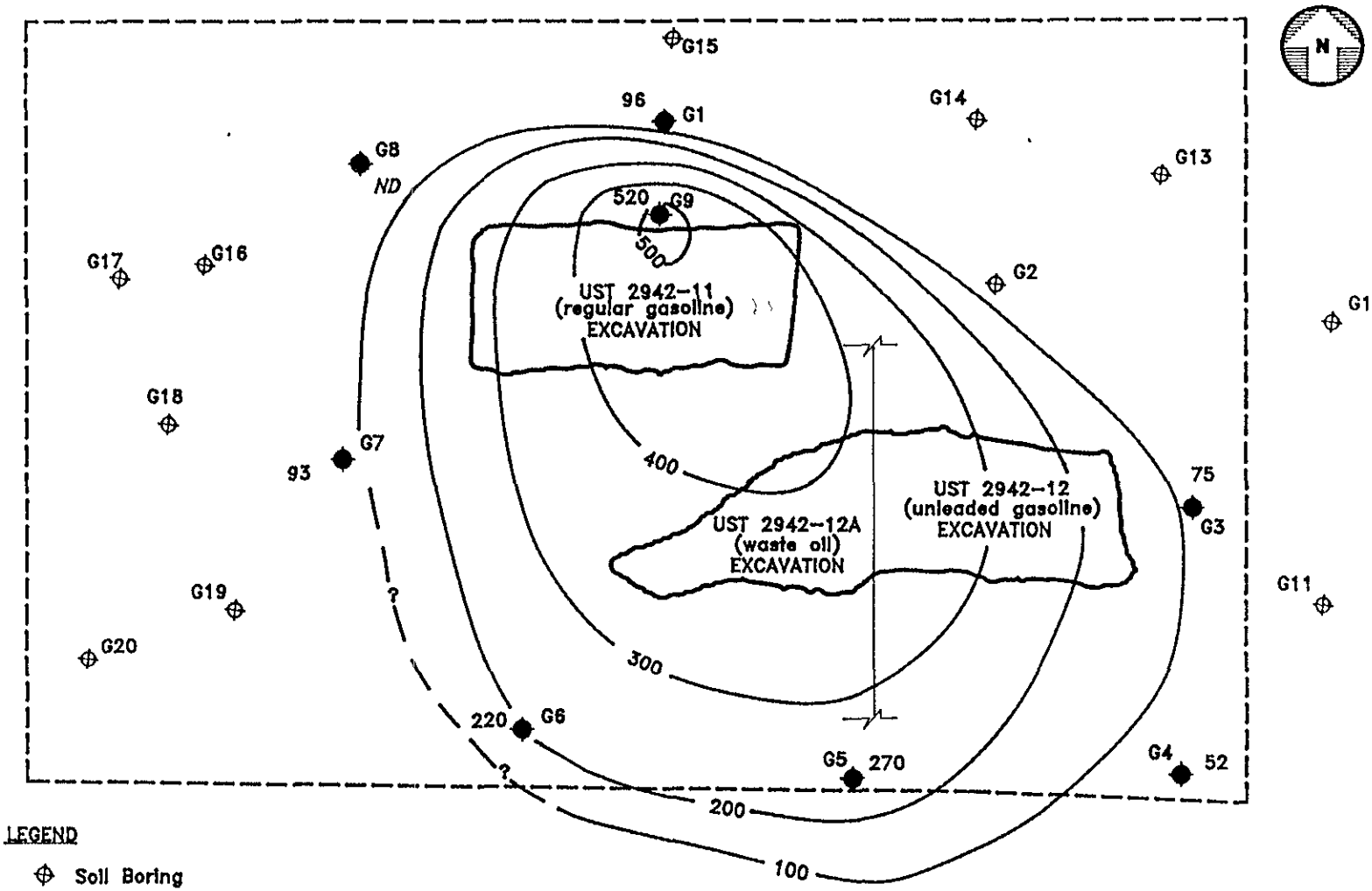
Qal	Alluvium
Qf	Alluvial Fan Deposits
TQl	Livermore Formation
Tp	Tassajara Formation

ESE Environmental Science & Engineering, Inc.

ALAMEDA COUNTY GSA
SANTA RITA JAIL FACILITY
DUBLIN, CA

FIGURE 6
GEOLOGICAL CROSS-SECTON

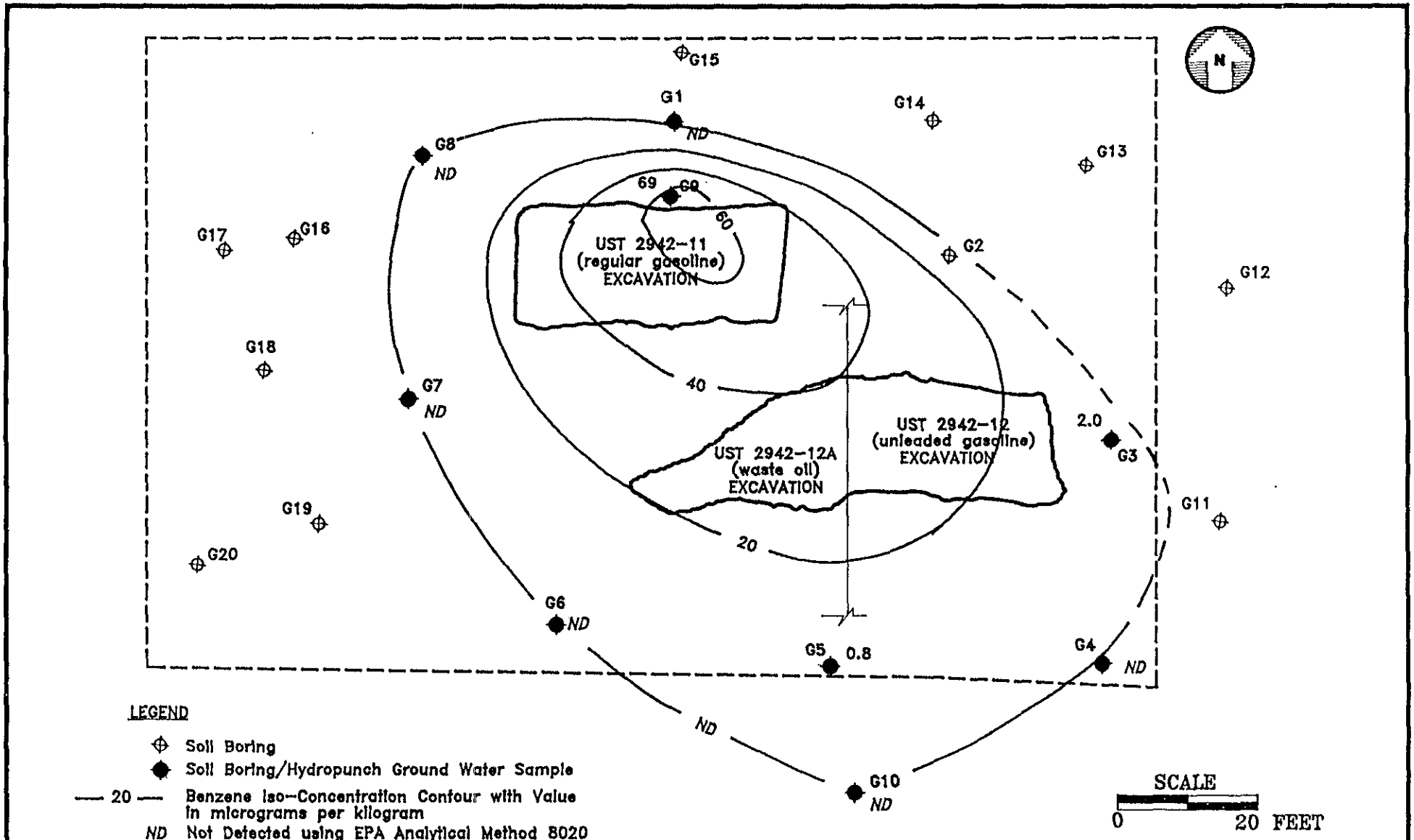
DRAWN BY	APPROVED BY	REVISED
BSM		
DATE	FILE NAME	PROJ. NO.
		6-92-5454



LEGEND

- Soil Boring
- Soil Boring/Hydropunch Ground Water Sample
- —100— TPH-G Iso-Concentration Contour with Value in micrograms per kilogram
- *ND* Not Detected using EPA Analytical Method 8015-modified
- Boundary of Asphalt
- Steel Pipe
- Boundary of Excavation

ESE A CILCORP Company — Environmental Science & Engineering, Inc.	DATE 12/92	PROJ/PROP 6-92-5454	ALAMEDA COUNTY GSA SANTA RITA JAIL FACILITY DUBLIN, CA
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DRAWN BY DWR	CAD FILE 54542007	FIGURE 7 TPH-G CONCENTRATION IN GROUND WATER
	APPROVED BY	REVISED	



Environmental Science & Engineering, Inc. (A CILCORP Company)	DATE 12/92	PROJ/PROP 6-92-5454	ALAMEDA COUNTY GENERAL SERVICES AGENCY SANTA RITA CORRECTIONAL FACILITY DUBLIN, CALIFORNIA
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DRAWN BY DWR	CAD FILE 54542008	FIGURE 8 BENZENE CONCENTRATION IN GROUND WATER
	APPROVED BY	REVISED	

APPENDICES

APPENDIX A

ESE Standard Operating Procedure No. 1

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. 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.

APPENDIX B

Boring Logs

UNIFIED SOIL CLASSIFICATION SYSTEM (USC)

MAJOR DIVISIONS			GROUP SYMBOLS	DESCRIPTION	GRAPHIC LOG
COARSE GRAINED SOILS: 50% or more retained on the No. 200 sieve.	GRAVELS: More than half of coarse fraction retained on the No. 4 sieve.	Clean sands	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.	
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.	
		Gravels with fines	GM	Silty gravels, gravel-sand mixtures.	
			GC	Clayey gravels, gravel-sand-clay mixtures.	
	SANDS: More than half of coarse fraction passing the No. 4 sieve.	Clean sands	SW	Well-graded sands, gravelly sands, little or no fines.	
			SP	Poorly-graded sands, gravelly sands, little or no fines.	
		Sands with fines	SM	Silty sands, sand-silt mixtures.	
			SC	Clayey sands, sand clay mixtures.	
FINE GRAINED SANDS: More than 50% passing the No. 200 sieve.	SILTS AND CLAYS	Liquid Limit below 50%	ML	Inorganic silts and very fine sands.	
			CL	Inorganic clays, gravelly clays, sandy clays, lean clays.	
			OL	Organic silts and organic clays.	
		Liquid Limit 50% and above	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.	
			CH	Inorganic fat clays.	
			OH	Organic clays or organic silts.	
Highly organic soils			Pt	Peat, organic content greater than 60%.	

BEDROCK

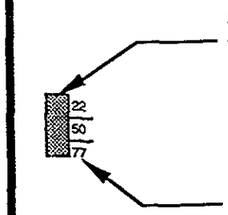
Sandstone		Metamorphics	
Shale		Volcanics	
Siltstone			

WELL INSTALLATION

SYMBOL	DESCRIPTION
	Bentonite/cement grout
	Bentonite Pellets
	Sand
	Screen section of well or piezometer
	Blank section of well or piezometer with centralizer
	Traffic rated well box with locking water-tight cap

See log for details of installation.

LEGEND



Vapor

Field Photoionization detector reading in parts per million (ppm). See remarks on log for background readings and comments.

ESE A CALCORP COMPANY
Environmental Science & Engineering, Inc.
4090 Nelson Avenue, Suite J
Concord, CA 94520
(415) 685-4053

LEGEND TO LOGS

DRAWN BY	DATE	FILE NAME
CVS	3/91	LEGEND

Environmental Science & Engineering, Inc.

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BORING LOG AND WELL COMPLETION SUMMARY

G1

Page 1 of 1

WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Hollow Stem Auger
Hole Diameter: 6 in. Total Depth: 25.5 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-23-92
Finish: 11-23-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
							Start: 8:25
0	Asphalt - 2" Gravel Fill - 4" Native Sediments	ML	14 26 27 4				
	SILT; sandy, green discoloration, low plasticity, medium grained sand lenses, 2-3 inches in thickness with petroleum hydrocarbon odor.	SP ML	4 6 3 4				
5		SP	6 6 8 9			2	Sampled at 5 Feet 8:40
		ML	8 18 24 9				Visual indication of petroleum hydrocarbon impact from below fill to approx. 8.5 feet below grade.
	CLAY; brown with grey zones,slight petroleum hydrocarbon odor at 8 foot depth dissipating to unnoticeable at 9 foot depth, moderate plasticity, dry.	CL	17 20 9 15				
10			19 10 15 21			2	Sampled at 10 Feet 8:52
			13 20 26 13				
15			20 20 13 18			5	Sampled at 15 Feet 9:15
	CLAY; brown, increasing sand content, moderate plasticity dry, no odor.		25 12 17 25				
20	SAND; brown, medium-grained, friable, dry, no odor.	SP	20 18 16 7 10			11	Sampled at 20 Feet 9:30
	CLAYEY SILT; brown, moderate plasticity, dry, no odor.	CL	14 7 11 15				
	SAND; coarse-grained, wet, friable, no odor.	SP	5 10 14				
25	SILTY CLAY; brown, moderate plasticity, wet, no odor.	CL	12 9			7.5	Sampled at 25 Feet 9:45 ← Water at 25.5 Feet during drilling
							Drilled to Depth of 25.5 feet. Hydropunch ground water sample collected. Boring backfilled with Portland cement.
30							
35							

REGISTERED GEOLOGIST
23951
STATE OF CALIFORNIA

Environmental Science & Engineering, Inc.

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BORING LOG AND WELL COMPLETION SUMMARY

G2

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WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen:		
Filter:	**N/A**	
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Hollow Stem Auger
Hole Diameter: 6 in. Total Depth: 27.5 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-23-92
Finish: 11-23-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
							Start: 11:12
0	Asphalt - 2" Gravel Fill - 4" Native Sediments	ML					
	SILT; sandy, green to black grey, discoloration, low plasticity, dry, petroleum hydrocarbon odor.		5 8 7			30	Sampled at 5 Feet 11:20
5							Visual indication of petroleum hydrocarbon impact from below fill to approx. 8.5 feet below grade.
	CLAY; brown, moderate plasticity, dry, slight petroleum hydrocarbon odor.	CL	4 6 8			25	Sampled at 10 Feet 11:23
10							
15			11 14 22			17	Sampled at 15 Feet 11:28
20	SAND; medium-grained, friable, moist, coarse-grained lens at 22.5 foot depth, slight petroleum hydrocarbon odor.	SP CL SP	13 14 15			20	Sampled at 20 Feet 11:35
25	SILTY CLAY; brown, moderate plasticity, wet at 26 feet below grade, no odor.	CL	5 6 12 10 11 14			18	Sampled at 25 Feet 11:43 ← Water at 25.5 Feet during drilling
							Drilled to Depth of 27.5 feet. Hydropunch ground water sample collected. Boring backfilled with Portland cement.
30							
35							

REGISTERED GEOLOGIST
STATE OF CALIFORNIA

Environmental Science & Engineering, Inc.
A CILCORP Company

BORING LOG AND WELL COMPLETION SUMMARY

G3

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WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Hollow-Stem Auger
Hole Diameter: 6 in. Total Depth: 25.5 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-23-92
Finish: 11-23-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks (Water, drilling/completion, summary, sample type)
							START: 13:16
0	Asphalt - 2" Gravel Fill - 4 " Native Sediments SAND; silty, dark grey, low plasticity, dry, some thin sand lenses, petroleum hydrocarbon odor.	ML					
5			10 10 10			15	Sample at 5 Feet 13:19 Visual indication of petroleum hydrocarbon impact. from below fill to approx. 8 feet below grade.
	CLAY; brown, moderate plasticity, dry, becoming slight sandy at 15 feet below grade, no odor.	CL					
10			8 15 20			12	Sample at 10 Feet 13:25
15			7 16 21			13	Sample at 15 Feet 13:30
20	SAND; brown, medium-grained, friable, dry, no odor.	SP	10 15 19			13	Sample at 20 Feet 13:40
	CLAYEY SAND; brown, moderate plasticity, slightly moist, no odor.	CL	6 7 10 18				
25	SANDY CLAY; brown, low plasticity, medium-grained, no odor.	SP	7 9 14			13	Sample at 25 Feet 13:54 ← Water at 25.5 feet during drilling Drilled to depth of 25.5 feet. Hydropunch ground water sample collected

REGISTERED GEOLOGIST
STATE OF CALIFORNIA

Environmental Science & Engineering, Inc.
A CILCORP Company

BORING LOG AND WELL COMPLETION SUMMARY

G4

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WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing.		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Hollow-Stem Auger
Hole Diameter: 6 in. Total Depth: 25.5 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-23-92
Finish: 11-23-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
							START: 14:54
0	Native Sediments						
	SAND; silty, brown, low plasticity, dry, some thin sand lenses, no odor.	ML					
5			2, 2, 4			12	Sample at 5 Feet 14:55
							No visual indication of petroleum hydrocarbon impact.
	CLAY; brown, moderate plasticity, dry, becoming slight sandy at 15 feet below grade, no odor.	CL					
10			7, 13, 16			12	Sample at 10 Feet 15:00
15			12, 14, 19			13	Sample at 15 Feet 15:08
20	SAND; medium-grained, dry, friable, no odor.	SP	13, 14, 20			13	Sample at 20 Feet 15:16
	CLAY; mottled brown, moderate plasticity, moist, no odor.	CL	12, 12, 17, 7, 10, 14, 10, 13, 22				
25						12	Sample at 24 Feet 15:33
							← Water at 24.5 feet during drilling.
							Drilled to depth of 25.5 feet. Hydropunch ground water sample collected.

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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

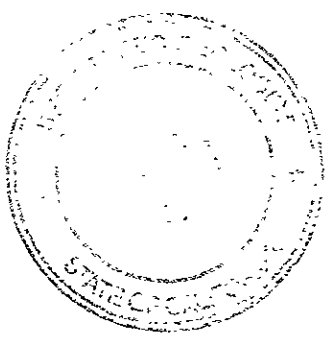
Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Hollow-Stem Auger
Hole Diameter: 6 in. Total Depth: 25 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-24-92
Finish: 11-24-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks (Water, drilling/completion, summary, sample type)
							START: 8:44
0	Asphalt - 2" Gravel Fill - 4" Native Sediments SAND; silty, grey to 3 feet and brown below, low plasticity dry, some thin sand lenses, petroleum hydrocarbon odor associated with grey sediment.	ML					Visual indication of petroleum hydrocarbon impact. from below fill to approx. 3 feet below grade.
5			3 6 10			11	Sample at 5 Feet 9:00
	CLAY; brown, moderate plasticity, dry, becoming slight sandy at 15 feet below grade, no odor.	CL				11	
10			8 15 26				Sample at 10 Feet 9:04
15			10 14 25			15	Sample at 15 Feet 9:10
20	SAND; medium-grained, greenish-brown, friable, dry, slight petroleum hydrocarbon odor.	SP	8 10 11			16	Sample at 20 Feet 9:17
	CLAY; mottled brown, sand and silt stringers, moderate plasticity, moist, no odor.	CL	8 10 17 5 10 16			7	Sample at 24 Feet 9:26 ← Water at 24.5 feet
25							Drilled to depth of 25 feet. Hydropunch ground water sample collected.



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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

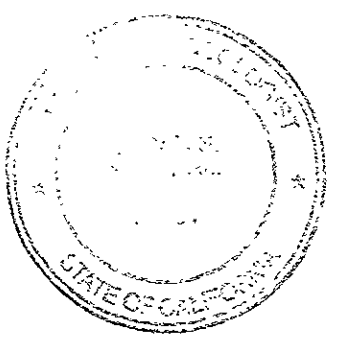
Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Hollow-Stem Auger
Hole Diameter: 6 in. Total Depth: 25 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-24-92
Finish: 11-24-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks (Water, drilling/completion, summary, sample type)
							START: 10:35
0	Asphalt - 2" Gravel Fill - 4" Native Sediments SAND; silty, brown, low plasticity, dry, some thin sand lenses, no odor.	ML					No visual indication of petroleum hydrocarbon impact.
5			5 5 5			11	Sample at 5 Feet 10:40
	CLAY; brown, moderate plasticity, dry, becoming slight sandy at 15 feet below grade, no odor.	CL				11	
10			5 15 17				Sample at 10 Feet 10:44
						13	
15			11 15 19				Sample at 15 Feet 10:51
						15	
20	SAND; medium-grained, greenish-brown, friable, dry, slight petroleum hydrocarbon odor.	SP	11 12 15				Sample at 20 Feet 10:56
	CLAY; mottled brown, sand and silt stringers, moderate plasticity, moist, no odor.	CL	8 10 11 6 11 16			10	Sample at 24 Feet 11:08 ←Water at 24.5 feet during drilling.
25							Drilled to depth of 25 feet. Hydropunch ground water sample collected.



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BORING LOG AND WELL COMPLETION SUMMARY

G7

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WELL COMPLETION

Completion Depth: **N/A**

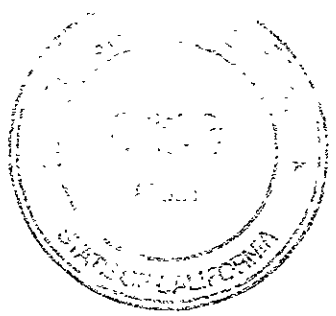
Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No. 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 25 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-24-92
Finish: 11-24-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
							START: 12:55
0	Asphalt - 2 Inches Gravel Fill - 4 Inches Native Sediments SAND; silty, greenish grey, low plasticity, dry, some thin sand lenses, petroleum hydrocarbon odor.	ML					No visual indication of petroleum hydrocarbon impact. from below fill to approx. 8.5 feet below grade.
5			6 9 10			13	Sample at 5 Feet 13:00
	CLAY; brown, moderate plasticity, dry, becoming slight sandy at 15 feet below grade, no odor.	CL					
10			10 15 22			11	Sample at 10 Feet 13:04
15			15 20 22			13	Sample at 15 Feet 13:08
20	SAND; medium-grained, dry, friable, no odor.	SP	15 20 24			15	Sample at 20 Feet 13:15
	CLAY; sand and silt stringers, mottled brown, moderate plasticity, moist, no odor.	CL	12 16 17 6 8 13			14	Sample at 24 Feet 13:23 ← Water at 25 feet during drilling
25							Drilled to depth of 25 feet. Hydropunch ground water sample collected.



Environmental Science & Engineering, Inc.

BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

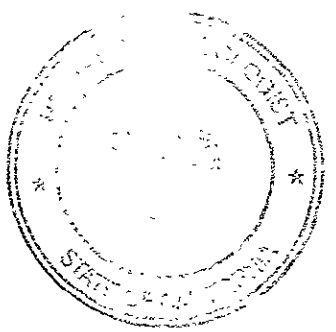
Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name. Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Hollow-Stem Auger
Hole Diameter: 6 in. Total Depth: 25.5 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
							START: 14:00
0	Asphalt - 2" Gravel Fill - 4 " Native Sediments SAND; silty, brown, low plasticity, dry, some thin sand lenses, no odor.	ML					No visual indication of petroleum hydrocarbon impact.
5			10 8 7			12	Sample at 5 Feet 14:05
	CLAY; brown, moderate plasticity, dry, becoming slight sandy at 15 feet below grade, no odor.	CL					
10			7 13 19			10	Sample at 10 Feet 14:19
15			15 21 30			11	Sample at 15 Feet 14:25
20	SAND; brown, medium-grained, friable. dry, no odor.	SP	12 14 17			10	Sample at 20 Feet 14:31
	CLAY; sandy, brown, moderate plasticity, slightly moist, no odor.	CL	9 17 20 10				
25	SANDY CLAY; brown, low plasticity, medium-grained, no odor.	SP	12 19			9	Sample at 25 Feet 14:37 ← Water at 25.5 feet during drilling
							Drilled to depth of 25.5 feet below grade. Hydropunch ground water sample collected.



Environmental Science & Engineering, Inc.

A GILCORP Company

BORING LOG AND WELL COMPLETION SUMMARY

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Page 1 of 1

WELL COMPLETION

Completon Depth: **N/A**

	Size/Type	From	To
Casing:			
Screen.	**N/A**		
Filter:			
Seal:			

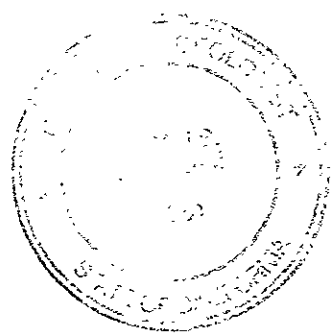
Project Name: Old Graystone Project No: 6-92-5454

Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Hollow-Stem Auger
Hole Diameter: 6 in. Total Depth: 25.5 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
							START: 8:45
0	Asphalt - 2" Gravel Fill - 4 " Native Sediments SAND; silty, brown, low plasticity, dry, some thin sand lenses, no odor.	ML					
5			2 2 5			12	Sample at 5 Feet 8:50
10	CLAY; greenish-brown from 10-16', brown elsewhere, moderate plasticity, dry, becoming slight sandy at 15 feet below grade, petroleum hydrocarbon odor where greenish-brown.	CL	7 14 20			13	Sample at 10 Feet 8:55 Visual indication of petroleum hydrocarbon impact from approx. 10 feet to 16 feet below grade.
15			11 20 30			35	Sample at 15 Feet 9:00
20	SAND; brown, medium-grained, friable, dry, no odor.	SP	10 11 11			25	Sample at 20 Feet 9:10
25	CLAY; brown, sand and silt stringers, moist, mottled, moderate plasticity, no odor.	CL	7 10 16 7 12 16			9	Sample at 25 Feet 9:18 ← Water at 25.5 feet during drilling Drilled to depth of 25.5 feet below grade. Hydropunch ground water sample collected.



Environmental Science & Engineering, Inc.

BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

	Size/Type	From	To
Casing:			
Screen:	**N/A**		
Filter:			
Seal:			

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 25.5 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks (Water, drilling/completion, summary, sample type)
							START: 10:25
0	Native Sediments						
	SAND; silty, brown, low plasticity, dry, some thin sand lenses, no odor.	ML					No visual indication of petroleum hydrocarbon impact.
5			3 4 8			6	Sample at 5 Feet 10:27
	CLAY; brown, moderate plasticity, dry, becoming slight sandy at 15 feet below grade, no odor.	CL					
10			10 15 20			13.5	Sample at 10 Feet 10:31
15			10 25 28			7	Sample at 15 Feet 10:36
20	CLAY; sandy, brown with white calcite precipitation in fractures and on surfaces, moderate plasticity, dry, no odor.		4 5 7			12	Sample at 20 Feet 10:43
			7 10 15 5 15 18				
25	CLAY; wet silt and sand layers, moderate plasticity, no odor.					10	Sample at 25 Feet 10:47 ← Water at 25.5 feet during drilling.
							Drilled to depth of 25.5 feet below grade. Hydropunch ground water sample collected.

Environmental Science & Engineering, Inc.

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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

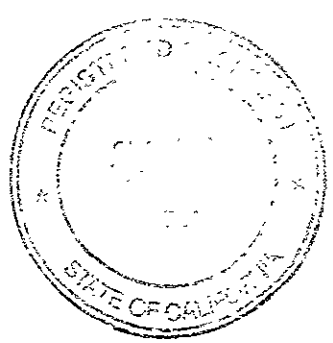
	Size/Type	From	To
Casing:			
Screen:	**N/A**		
Filter:			
Seal:			

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2"						
	Gravel Fill - 4"						
	Native Sediments	ML					
	SILT; sandy, brown, low plasticity, dry, no odor.						No visual indication of petroleum hydrocarbon impact.
5							
	CLAY; brown, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.



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BORING LOG AND WELL COMPLETION SUMMARY

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Page 1 of 1

WELL COMPLETION

Completion Depth: **N/A**

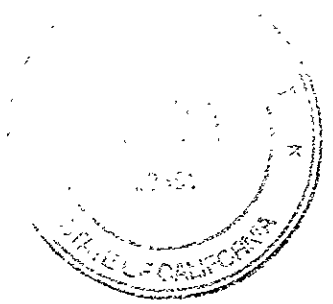
Size/Type	From	To
Casing:		
Screen:		
Filter:	**N/A**	
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2"						No visual indication of petroleum hydrocarbon impact.
	Gravel Fill - 4"						
	Native Sediments	ML					
	SILT; sandy, brown, low plasticity, dry, no odor.						
5							
	CLAY; brown, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.



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BORING LOG AND WELL COMPLETION SUMMARY

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Page 1 of 1

WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2"						
	Gravel Fill - 4"						
	Native Sediments	ML					
	SILT; sandy, brown, low plasticity, dry, no odor.						No visual indication of petroleum hydrocarbon impact.
5							
	CLAY; brown, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.

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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

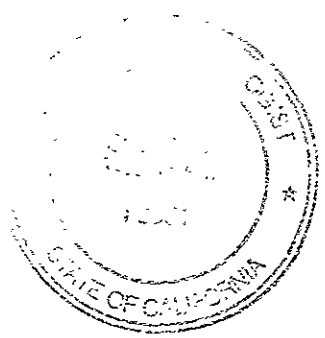
	Size/Type	From	To
Casing:			
Screen:	**N/A**		
Filter:			
Seal:			

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2" Gravel Fill - 4" Native Sediments						
	SILT; sandy, brown, low plasticity, dry, no odor.	ML					No visual indication of petroleum hydrocarbon impact.
5							
	CLAY; brown, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.



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BORING LOG AND WELL COMPLETION SUMMARY

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Page 1 of 1

WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen:		
Filter:	**N/A**	
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2" Gravel Fill - 4" Native Sediments						
	SAND; sandy, brown, low plasticity, dry, no odor.	ML					No visual indication of petroleum hydrocarbon impact.
5							
	CLAY; brown, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.

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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2"						
	Gravel Fill - 4"						
	Native Sediments	ML					
	SILT; sandy, brown, low plasticity, dry, petroleum hydrocarbon odor at 2-3 feet.						Trace petroleum hydrocarbon odor at 2-3 foot depth.
5							
	CLAY; brown with grey zones, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.

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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen:		
Filter:	**N/A**	
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 5 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2"						
	Gravel Fill - 4"						
	Naitve Sediments	ML					No visual indication of petroleum hydrocarbon impact.
	SILT; sandy, brown, low plasticity, dry, no odor.						
5							Drilled to depth of 5 feet. No sample collected. Boring back-filled with Portland cement.
10							

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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454

Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2" Gravel Fill - 4" Native Sediments						
		ML					No visual indication of petroleum hydrocarbon impact.
	SILT; sandy, brown, low plasticity, dry, petroleum hydrocarbon odor at 2-3 feet.						
5							
	CLAY; brown with grey zones, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.

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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

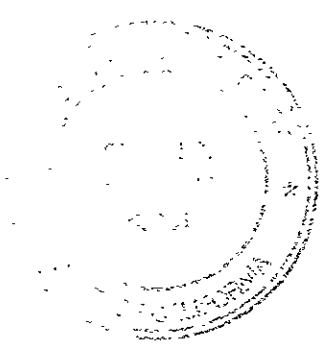
Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2" Gravel Fill - 4" Formational Sediments						
	SILT; sandy, green discoloration, low plasticity, dry, petroleum hydrocarbon odor.	ML					Petroleum hydrocarbon impact from base of fill to approx. 5 feet below grade.
5							
	CLAY; brown, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.



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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Page 1 of 1

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks (Water, drilling/completion, summary, sample type)
0	Asphalt - 2" Gravel Fill - 4" Formational Sediments	ML					
	SILT; sandy, green discoloration, low plasticity, dry, petroleum hydrocarbon odor.						Petroleum hydrocarbon impact from base of fill to approx. 4 feet below grade.
5							
	CLAY; brown, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.

Environmental Science & Engineering, Inc.
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BORING LOG AND WELL COMPLETION SUMMARY

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WELL COMPLETION

Completion Depth: **N/A**

Size/Type	From	To
Casing:		
Screen: **N/A**		
Filter:		
Seal:		

Project Name: Old Graystone Project No: 6-92-5454
Location: Santa Rita Correctional Facility
Dublin, California

Driller: Exploration Geoservices, Inc.
Method: Solid-Flight Auger
Hole Diameter: 6 in. Total Depth: 10 Feet
Ref. Elevations: NA
Logged By: Bart Miller

Dates:
Start: 11-25-92
Finish: 11-25-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Asphalt - 2"						
	Gravel Fill - 4"						
	Formational Sediments						
		ML					
	SILT; sandy, brown, low plasticity, dry, no odor.						No visual indication of petroleum hydrocarbon impact.
5							
	CLAY; brown, moderate plasticity, dry, no odor.	CL					
10							Drilled to depth of 10 feet. No sample collected. Boring back-filled with Portland cement.

APPENDIX C

Analytical Results and Chain of Custody Documentation

Environmental Science & Engineering, Inc.
8901 North Industrial Road Peoria, IL 61615-1589
Phone (309) 692-4422 Lab Fax (309) 692-5232
An IEPA Contract Laboratory

TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10144*1	10144*2	10144*3	10144*4			
SAMPLE DATE		11/23/92	11/23/92	11/23/92	11/23/92			
DESCRIPTION	UNITS	G1-25 SOIL	G2-25 SOIL	G3-25 SOIL	G4-24 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
BENZENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-03-92	SDP
TOLUENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-03-92	SDP
ETHYLBENZENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-03-92	SDP
XYLENES,TOTAL	UG/KG	< 5	< 5	< 5	< 5	8020	12-03-92	SDP
GASOLINE, VOLATILE	UG/KG	< 1,000	< 1,000	< 1,000	< 1,000	8015M	12-02-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

Environmental Science & Engineering, Inc.
8901 North Industrial Road Peoria, IL 61615-1589
Phone (309) 692-4422 Lab Fax (309) 692-5232
An IEPA Contract Laboratory

TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10144*5	10144*6	10144*7	10144*8			
SAMPLE DATE		11/23/92	11/23/92	11/23/92	11/23/92			
DESCRIPTION	UNITS	G1-20 SOIL	G2-20 SOIL	G3-20 SOIL	G4-20 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
BENZENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-03-92	SDP
TOLUENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-03-92	SDP
ETHYLBENZENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-03-92	SDP
XYLENES,TOTAL	UG/KG	< 5	< 5	< 5	< 5	8020	12-03-92	SDP
GASOLINE, VOLATILE	UG/KG	< 1,000	< 1,000	< 1,000	< 1,000	8015M	12-03-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

Environmental Science & Engineering, Inc.
8901 North Industrial Road Peoria, IL 61615-1589
Phone (309) 692-4422 Lab Fax (309) 692-5232
An IEPA Contract Laboratory

TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92 — Chain of custody sig 8 11/24/92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

DESCRIPTION	UNITS	ESE SAMPLE 10144*9 / SAMPLE DATE 11/23/92 G2-5 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
VOLATILE ORGANIC COMPOUNDS					
DICHLORODIFLUOROMETHANE	UG/KG	< 5	8010	12-01-92	SDP
CHLOROMETHANE	UG/KG	< 5	8010	12-01-92	SDP
VINYL CHLORIDE	UG/KG	< 5	8010	12-01-92	SDP
BROMOMETHANE	UG/KG	< 5	8010	12-01-92	SDP
CHLOROETHANE	UG/KG	< 5	8010	12-01-92	SDP
TRICHLOROFLUOROMETHANE	UG/KG	< 5	8010	12-01-92	SDP
1,1-DICHLOROETHENE	UG/KG	< 2	8010	12-01-92	SDP
METHYLENE CHLORIDE	UG/KG	110	8010	12-01-92	SDP
TRANS-1,2-DICHLOROETHENE	UG/KG	< 1	8010	12-01-92	SDP
1,1-DICHLOROETHANE	UG/KG	< 1	8010	12-01-92	SDP
CHLOROFORM	UG/KG	< 1	8010	12-01-92	SDP
1,1,1-TRICHLOROETHANE	UG/KG	< 1	8010	12-01-92	SDP
CARBON TETRACHLORIDE	UG/KG	< 1	8010	12-01-92	SDP
1,2-DICHLOROETHANE	UG/KG	< 1	8010	12-01-92	SDP
TRICHLOROETHENE	UG/KG	< 1	8010	12-01-92	SDP
1,2-DICHLOROPROPANE	UG/KG	< 5	8010	12-01-92	SDP
BROMODICHLOROMETHANE	UG/KG	< 1	8010	12-01-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

ESE Environmental Science & Engineering, Inc.
8901 North Industrial Road Peoria, IL 61615-1589
Phone (309) 692-4422 Lab Fax (309) 692-5232
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TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10144*9			
SAMPLE DATE		11/23/92			
DESCRIPTION	UNITS	G2-5 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
VOLATILE ORGANIC COMPOUNDS (Cont'd)					
2-CHLOROETHYLVINYL ETHER	UG/KG	< 5	8010	12-01-92	SDP
CIS-1,3-DICHLOROPROPENE	UG/KG	< 1	8010	12-01-92	SDP
TRANS-1,3-DICHLOROPROPENE	UG/KG	< 1	8010	12-01-92	SDP
1,1,2-TRICHLOROETHANE	UG/KG	< 1	8010	12-01-92	SDP
TETRACHLOROETHENE	UG/KG	< 1	8010	12-01-92	SDP
DIBROMOCHLOROMETHANE	UG/KG	< 1	8010	12-01-92	SDP
CHLOROBENZENE	UG/KG	< 1	8010	12-01-92	SDP
BROMOFORM	UG/KG	< 5	8010	12-01-92	SDP
1,1,2,2-TETRACHLOROETHANE	UG/KG	< 1	8010	12-01-92	SDP
1,3-DICHLOROBENZENE	UG/KG	< 1	8010	12-01-92	SDP
1,4-DICHLOROBENZENE	UG/KG	< 1	8010	12-01-92	SDP
1,2-DICHLOROBENZENE	UG/KG	< 1	8010	12-01-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

Environmental Science & Engineering, Inc.
8901 North Industrial Road Peoria, IL 61615-1589
Phone (309) 692-4422 Lab Fax (309) 692-5232
An IEPA Contract Laboratory

TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

DESCRIPTION	UNITS	G2-5 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
ESE SAMPLE		10144*9			
SAMPLE DATE		11/23/92			
BASE-NEUTRALS					
BIS(2-CHLOROETHYL) ETHER	UG/KG	< 330	8270	12-03-92	CTT
1,3,DICHLOROBENZENE	UG/KG	< 330	8270	12-03-92	CTT
1,4-DICHLOROBENZENE	UG/KG	< 330	8270	12-03-92	CTT
BENZYL ALCOHOL	UG/KG	< 330	8270	12-03-92	CTT
1,2-DICHLOROBENZENE	UG/KG	< 330	8270	12-03-92	CTT
BIS(2-CHLOROISOPROPYL)ETHER	UG/KG	< 330	8270	12-03-92	CTT
N-NITROSODI-N-PROPYLAMINE	UG/KG	< 330	8270	12-03-92	CTT
HEXACHLOROETHANE	UG/KG	< 330	8270	12-03-92	CTT
NITROBENZENE	UG/KG	< 330	8270	12-03-92	CTT
ISOPHORONE	UG/KG	< 330	8270	12-03-92	CTT
BIS(2-CHLOROETHOXY)METHANE	UG/KG	< 330	8270	12-03-92	CTT
1,2,4-TRICHLOROBENZENE	UG/KG	< 330	8270	12-03-92	CTT
NAPHTHALENE	UG/KG	< 330	8270	12-03-92	CTT
4-CHLOROANILINE	UG/KG	< 330	8270	12-03-92	CTT
HEXACHLOROBUTADIENE	UG/KG	< 330	8270	12-03-92	CTT
2-METHYLNAPHTHALENE	UG/KG	< 330	8270	12-03-92	CTT
HEXACHLOROCYCLOPENTADIENE	UG/KG	< 330	8270	12-03-92	CTT

Report Approved by: Vickie M. Wynkoop
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REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10144*9			
SAMPLE DATE		11/23/92			
DESCRIPTION	UNITS	G2-5 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
BASE-NEUTRALS (Cont'd)					
2-CHLORONAPHTHALENE	UG/KG	< 330	8270	12-03-92	CTT
2-NITROANILINE	UG/KG	< 1,600	8270	12-03-92	CTT
DIMETHYL PHTHALATE	UG/KG	< 330	8270	12-03-92	CTT
ACENAPHTHYLENE	UG/KG	< 330	8270	12-03-92	CTT
2,6-DINITROTOLUENE	UG/KG	< 330	8270	12-03-92	CTT
3-NITROANILINE	UG/KG	< 1,600	8270	12-03-92	CTT
ACENAPHTHENE	UG/KG	< 330	8270	12-03-92	CTT
DIBENZOFURAN	UG/KG	< 330	8270	12-03-92	CTT
2,4-DINITROTOLUENE	UG/KG	< 330	8270	12-03-92	CTT
DIETHYL PHTHALATE	UG/KG	< 330	8270	12-03-92	CTT
4-CHLOROPHENYLPHENYL ETHER	UG/KG	< 330	8270	12-03-92	CTT
FLUORENE	UG/KG	< 330	8270	12-03-92	CTT
4-NITROANILINE	UG/KG	< 1,600	8270	12-03-92	CTT
N-NITROSODIPHENYLAMINE	UG/KG	< 330	8270	12-03-92	CTT
4-BROMOPHENYLPHENYL ETHER	UG/KG	< 330	8270	12-03-92	CTT
HEXACHLOROBENZENE	UG/KG	< 330	8270	12-03-92	CTT
PHENANTHRENE	UG/KG	< 330	8270	12-03-92	CTT

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REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10144*9			
SAMPLE DATE		11/23/92			
DESCRIPTION	UNITS	G2-5 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
BASE-NEUTRALS (Cont'd)					
ANTHRACENE	UG/KG	< 330	8270	12-03-92	CTT
DI-N-BUTYL PHTHALATE	UG/KG	< 330	8270	12-03-92	CTT
FLUORANTHENE	UG/KG	< 330	8270	12-03-92	CTT
PYRENE	UG/KG	< 330	8270	12-03-92	CTT
BUTYL BENZYL PHTHALATE	UG/KG	< 330	8270	12-03-92	CTT
3,3'-DICHLOROBENZIDINE	UG/KG	< 660	8270	12-03-92	CTT
BENZO(A)ANTHRACENE	UG/KG	< 330	8270	12-03-92	CTT
CHRYSENE	UG/KG	< 330	8270	12-03-92	CTT
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	< 330	8270	12-03-92	CTT
DI-N-OCTYL PHTHALATE	UG/KG	< 330	8270	12-03-92	CTT
BENZO(B)FLUORANTHENE	UG/KG	< 330	8270	12-03-92	CTT
BENZO(K)FLUORANTHENE	UG/KG	< 330	8270	12-03-92	CTT
BENZO(A)PYRENE	UG/KG	< 330	8270	12-03-92	CTT
INDENO(1,2,3-CD)PYRENE	UG/KG	< 330	8270	12-03-92	CTT
DIBENZO(A,H)ANTHRACENE	UG/KG	< 330	8270	12-03-92	CTT
BENZO(GHI)PERYLENE	UG/KG	< 330	8270	12-03-92	CTT

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REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

DESCRIPTION	UNITS	ESE SAMPLE 10144*9 / SAMPLE DATE 11/23/92 G2-5 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
ACIDS					
PHENOL	UG/KG	< 330	8270	12-03-92	CTT
2-CHLOROPHENOL	UG/KG	< 330	8270	12-03-92	CTT
2-METHYL PHENOL	UG/KG	< 330	8270	12-03-92	CTT
4-METHYL PHENOL	UG/KG	< 330	8270	12-03-92	CTT
2-NITROPHENOL	UG/KG	< 330	8270	12-03-92	CTT
2,4-DIMETHYLPHENOL	UG/KG	< 330	8270	12-03-92	CTT
BENZOIC ACID	UG/KG	< 1,600	8270	12-03-92	CTT
2,4-DICHLOROPHENOL	UG/KG	< 330	8270	12-03-92	CTT
4-CHLORO-3-METHYL PHENOL	UG/KG	< 330	8270	12-03-92	CTT
2,4,6-TRICHLOROPHENOL	UG/KG	< 330	8270	12-03-92	CTT
2,4,5-TRICHLOROPHENOL	UG/KG	< 330	8270	12-03-92	CTT
2,4-DINITROPHENOL	UG/KG	< 1,600	8270	12-03-92	CTT
4-NITROPHENOL	UG/KG	< 1,600	8270	12-03-92	CTT
2-METHYL-4,6-DINITROPHENOL	UG/KG	< 1,600	8270	12-03-92	CTT
PENTACHLOROPHENOL	UG/KG	< 1,600	8270	12-03-92	CTT

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

Environmental Science & Engineering, Inc.
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REVISED DATE: 12-11-92
REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

O: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
TTN: MR. BART MILLER

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

DESCRIPTION	UNITS	ESE SAMPLE: 10144*9 SAMPLE DATE: 11/23/92 G2-5 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
BENZENE	UG/KG	< 5	8020	12-01-92	SDP
TOLUENE	UG/KG	< 5	8020	12-01-92	SDP
ETHYLBENZENE	UG/KG	< 5	8020	12-01-92	SDP
XYLENES,TOTAL	UG/KG	< 5	8020	12-01-92	SDP
GASOLINE, VOLATILE	UG/KG	< 1,000	8015M	12-03-92	SDP
TPH AS DIESEL	MG/KG	< 1.0	8015M	12-11-92	BAD
OIL&GR,IR	MG/KG	90	418.1	12-08-92	MJM
OIL&GR,GRAV	MG/KG	< 10	413.1	12-09-92	MJM

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

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4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10144*9			
SAMPLE DATE		11/23/92			
DESCRIPTION	UNITS	G2-5 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
CADMIUM	MG/KG	0.760	6010	12-09-92	NMM
CHROMIUM	MG/KG	19.1	6010	12-09-92	NMM
NICKEL	MG/KG	23.4	6010	12-09-92	NMM
LEAD	MG/KG	8.43	6010	12-09-92	NMM
ZINC	MG/KG	50.1	6010	12-09-92	NMM

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

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4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10144*10	10144*11	10144*12	10144*13			
SAMPLE DATE		11/23/92	11/23/92	11/23/92	11/23/92			
DESCRIPTION	UNITS	G1-MP WATER	G3-MP WATER	G4-MP WATER	TRIP WATER	METHOD NO.	DATE ANALYZED	ANALYST
BENZENE	UG/L	< 0.5	2	< 0.5	< 0.5	8020	12-04-92	SDP
TOLUENE	UG/L	< 0.5	7	< 0.5	< 0.5	8020	12-04-92	SDP
ETHYLBENZENE	UG/L	< 0.5	0.9	< 0.5	< 0.5	8020	12-04-92	SDP
XYLENES,TOTAL	UG/L	0.8	5	< 0.5	< 0.5	8020	12-04-92	SDP
GASOLINE, VOLATILE	UG/L	96	75	52	< 50	8015M	12-04-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

Soil Soil

DW 12-9-92

CHAIN OF CUSTODY RECORD

DATE 11/23/92 PAGE 1 OF 1

PROJECT NAME ALAMEDA CO. GENERAL SERVICES

ADDRESS SANTA RITA CORRECTIONAL FACILITY

PROJECT NO. 6-92-5454

SAMPLED BY [signature] BART MILLER

LAB NAME ESE

ESE Environmental Science & Engineering, Inc.

4090 Nelson Avenue
Suite J
Concord, CA 94520

(415) 685-4053

Fax (415) 685-9123

SAMPLE #	DATE	TIME	LOCATION	*TPH-gas 8015m	*BTEX 8020	*TOTAL O&G SMWW5520	*TPH-diesel 8015m	*Title 22 Metals (Cd, Cr, Ni, Pb, Zn)	*8010 (Halogenated VOC's)	*8270 (Semi-volatiles)				MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
				ANALYSES TO BE PERFORMED										MATRIX		
G1-25'	11/23/92	9:45	GRAYSTONE	✓	✓						10144-1			SOIL	1	2" diameter brass sleeve (sealed)
G2-25'	"	11:43	"	✓	✓								-2	"	1	"
G3-25'	"	13:54	"	✓	✓								-3	"	1	"
G4-24'	"	15:33	"	✓	✓								-4	"	1	"
G1-20'	"	9:30	"	✓	✓				A				-5	"	1	"
G2-20'	"	11:35	"	✓	✓								-6	"	1	"
G3-20'	"	13:40	"	✓	✓								-7	"	1	"
G4-20'	"	15:16	"	✓	✓								-8	"	1	"
G2-5'	"	11:20	"	✓	✓	✓	✓	✓	✓	✓	>8		-9	"	1	"

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1. [signature]	[signature]	11-24-92	11:00
2.	SR Reisinger	11-25-92	1000
3.			
4.			
5.			

9 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: BART MILLER

SPECIAL SHIPMENT REQUIREMENTS: COLD TRANSPORT

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):
Normal T.A.T.
Rates as per discussion with V. Wynkoop 11/19/92

SAMPLE RECEIPT

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

CHAIN OF CUSTODY RECORD

DATE 11/23/92 PAGE 1 OF 1

PROJECT NAME ALAMEDA CO. GENERAL SERVICES

ADDRESS SANTA RITA CORRECTIONAL FACILITY

PROJECT NO. 6-92-5454

SAMPLED BY [signature] BART MILLER

LAB NAME ESE

Environmental Science & Engineering, Inc.
4080 Nelson Avenue
Suite I
Concord, CA 94520
(415) 685-4053
Fax (415) 685-5323

SAMPLE #	DATE	TIME	LOCATION	TPH-gas 8015m	BTEX 8020								MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
G1-MP	11/23/92	10:23	GRAYSTONE	✓	✓						10144-10		WATER	3	3x40ml glass vials with HCl
G3-MP	"	14 07	"	✓	✓							-11	"	3	"
G4-MP	"	15·50	"	✓	✓							-12	"	3	"
TRIP	"		"	✓	✓							-13	"	1	

ANALYSES TO BE PERFORMED

MATRIX

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1. [signature]	[signature]	11-24-92	10:00
2.	SR Reinsing	11-25-92	1000
3.			
4.			
5.			

10 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: BART MILLER

SPECIAL SHIPMENT REQUIREMENTS: COLD TRANSPORT

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):

Normal T.A.T.

Rates as per discussion with V. Wynkoop 11/19/92

SAMPLE RECEIPT

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

Environmental Science & Engineering, Inc.
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TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 12-01-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10157*1	10157*2	10157*3	10157*4			
SAMPLE DATE		11/24/92	11/24/92	11/24/92	11/24/92			
DESCRIPTION	UNITS	G5-20' SOIL	G5-24' SOIL	G6-20' SOIL	G6-24' SOIL	METHOD NO.	DATE ANALYZED	ANALYST
BENZENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-05-92	SDP
TOLUENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-05-92	SDP
ETHYLBENZENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-05-92	SDP
XYLENES,TOTAL	UG/KG	< 5	< 5	< 5	< 5	8020	12-05-92	SDP
GASOLINE, VOLATILE	UG/KG	< 1,000	< 1,000	< 1,000	< 1,000	8015M	12-05-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

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CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 12-01-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10157*5	10157*6	10157*7	10157*8			
SAMPLE DATE		11/24/92	11/24/92	11/24/92	11/24/92			
DESCRIPTION	UNITS	G7-20' SOIL	G7-24' SOIL	G8-20' SOIL	G8-25' SOIL	METHOD NO.	DATE ANALYZED	ANALYST
BENZENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-07-92	SDP
TOLUENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-07-92	SDP
ETHYLBENZENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-07-92	SDP
XYLENES, TOTAL	UG/KG	< 5	< 5	< 5	< 5	8020	12-07-92	SDP
GASOLINE, VOLATILE	UG/KG	< 1,000	< 1,000	< 1,000	< 1,000	8015M	12-07-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
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PROJECT NUMBER: 591-5287

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CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10157*11	10157*12	10157*13	10157*14			
SAMPLE DATE		11/25/92	11/25/92	11/25/92	11/25/92			
DESCRIPTION	UNITS	G9-20' SOIL	G9-25' SOIL	G10-20' SOIL	G10-25' SOIL	METHOD NO.	DATE ANALYZED	ANALYST
BENZENE	UG/KG	< 5	7	< 5	< 5	8020	12-08-92	SDP
TOLUENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-08-92	SDP
ETHYLBENZENE	UG/KG	< 5	< 5	< 5	< 5	8020	12-08-92	SDP
XYLENES,TOTAL	UG/KG	< 5	< 5	< 5	< 5	8020	12-08-92	SDP
GASOLINE, VOLATILE	UG/KG	< 1,000	< 1,000	< 1,000	< 1,000	8015M	12-08-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

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REPORT DATE: 12-09-92
DATE RECEIVED: 12-01-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10157*15			
SAMPLE DATE		11/24/92			
DESCRIPTION	UNITS	G5-HP WATER	METHOD NO.	DATE ANALYZED	ANALYST
VOLATILE ORGANIC COMPOUNDS (Cont'd)					
1,2-DICHLOROETHANE	UG/L	< 1	8010	12-03-92	SDP
TRICHLOROETHENE	UG/L	< 1	8010	12-03-92	SDP
1,2-DICHLOROPROPANE	UG/L	< 5	8010	12-03-92	SDP
BROMODICHLOROMETHANE	UG/L	< 1	8010	12-03-92	SDP
2-CHLOROETHYLVINYL ETHER	UG/L	< 5	8010	12-03-92	SDP
CIS-1,3-DICHLOROPROPENE	UG/L	< 1	8010	12-03-92	SDP
TRANS-1,3-DICHLOROPROPENE	UG/L	< 1	8010	12-03-92	SDP
1,1,2-TRICHLOROETHANE	UG/L	< 1	8010	12-03-92	SDP
TETRACHLOROETHENE	UG/L	< 1	8010	12-03-92	SDP
DIBROMOCHLOROMETHANE	UG/L	< 1	8010	12-03-92	SDP
BROMOFORM	UG/L	< 5	8010	12-03-92	SDP
1,1,2,2-TETRACHLOROETHANE	UG/L	< 1	8010	12-03-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

Environmental Science & Engineering, Inc.
8901 North Industrial Road Peoria, IL 61615-1589
Phone (309) 692-4422 Lab Fax (309) 692-5232
An IEPA Contract Laboratory

TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 12-01-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10157*15			
SAMPLE DATE		11/24/92			
DESCRIPTION	UNITS	G5-HP WATER	METHOD NO.	DATE ANALYZED	ANALYST
VOLATILE ORGANIC COMPOUNDS					
CHLOROBENZENE	UG/L	< 1	8010	12-03-92	SDP
1,2-DICHLOROBENZENE	UG/L	< 1	8010	12-03-92	SDP
1,3-DICHLOROBENZENE	UG/L	< 1	8010	12-03-92	SDP
1,4-DICHLOROBENZENE	UG/L	< 1	8010	12-03-92	SDP
DICHLORODIFLUOROMETHANE	UG/L	< 5	8010	12-03-92	SDP
CHLOROMETHANE	UG/L	< 5	8010	12-03-92	SDP
VINYL CHLORIDE	UG/L	< 5	8010	12-03-92	SDP
BROMOMETHANE	UG/L	< 5	8010	12-03-92	SDP
CHLOROETHANE	UG/L	< 5	8010	12-03-92	SDP
TRICHLOROFLUOROMETHANE	UG/L	< 5	8010	12-03-92	SDP
1,1-DICHLOROETHENE	UG/L	< 2	8010	12-03-92	SDP
→ METHYLENE CHLORIDE	UG/L	2	8010	12-03-92	SDP
TRANS-1,2-DICHLOROETHENE	UG/L	< 1	8010	12-03-92	SDP
1,1-DICHLOROETHANE	UG/L	< 1	8010	12-03-92	SDP
CHLOROFORM	UG/L	< 1	8010	12-03-92	SDP
1,1,1-TRICHLOROETHANE	UG/L	< 1	8010	12-03-92	SDP
CARBON TETRACHLORIDE	UG/L	< 1	8010	12-03-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

Environmental Science & Engineering, Inc.
8901 North Industrial Road Peoria, IL 61615-1589
Phone (309) 692-4422 Lab Fax (309) 692-5232
An IEPA Contract Laboratory

TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 12-01-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10157*9	10157*10	10157*15	10157*16			
SAMPLE DATE		11/25/92	11/25/92	11/24/92	11/24/92			
DESCRIPTION	UNITS	G9-HP WATER	G10-HP WATER	G5-HP WATER	G6-HP WATER	METHOD NO.	DATE ANALYZED	ANALYST
BENZENE	UG/L	69	< 0.5	0.8	< 0.5	8020	12-07-92	SDP
TOLUENE	UG/L	4	< 0.5	< 0.5	< 0.5	8020	12-07-92	SDP
ETHYLBENZENE	UG/L	20	< 0.5	< 0.5	< 0.5	8020	12-07-92	SDP
XYLENES,TOTAL	UG/L	7	< 0.5	< 0.5	< 0.5	8020	12-07-92	SDP
GASOLINE, VOLATILE	UG/L	520	< 50	270	220	8015M	12-07-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

Environmental Science & Engineering, Inc.
8901 North Industrial Road Peoria, IL 61615-1589
Phone (309) 692-4422 Lab Fax (309) 692-5232
An IEPA Contract Laboratory

TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 12-09-92
DATE RECEIVED: 12-01-92
PROJECT NUMBER: 591-5287

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10157*17	10157*18	10157*19			
SAMPLE DATE		11/24/92	11/24/92	11/24/92			
DESCRIPTION	UNITS	G7-HP WATER	G8-HP WATER	TRIP BLANK WATER	METHOD NO.	DATE ANALYZED	ANALYST
BENZENE	UG/L	< 0.5	< 0.5	< 0.5	8020	12-07-92	SDP
TOLUENE	UG/L	< 0.5	< 0.5	< 0.5	8020	12-07-92	SDP
ETHYLBENZENE	UG/L	< 0.5	< 0.5	< 0.5	8020	12-07-92	SDP
XYLENES,TOTAL	UG/L	< 0.5	< 0.5	< 0.5	8020	12-07-92	SDP
GASOLINE, VOLATILE	UG/L	93	< 50	< 50	8015M	12-07-92	SDP

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

Environmental Science & Engineering, Inc.
8901 North Industrial Road
Phone (309) 692-4422
Peoria, IL 61615-1589
Lab Fax (309) 692-5232
An IEPA Contract Laboratory

TO: ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVE., SUITE J
CONCORD, CA 94520
ATTN: MR. BART MILLER

REPORT DATE: 01-12-93
DATE RECEIVED: 11-30-92
PROJECT NUMBER: 591-5287

TOTAL P.02

CLIENT PROJECT NAME: ALAMEDA CO. GENERAL SERVICES
CLIENT PROJECT NUMBER: 692-5454

ESE SAMPLE		10144*9			
SAMPLE DATE		11/23/92			
DESCRIPTION	UNITS	G2-5 SOIL	METHOD NO.	DATE ANALYZED	ANALYST
LEAD, WET	MG/L	0.199	6010	01-11-93	NMM
NICKEL, WET	MG/L	0.436	6010	01-11-93	NMM

Report Approved by: Vickie M. Wynkoop
Vickie M. Wynkoop
Project Manager

CHAIN OF CUSTODY RECORD

DATE 11/24/92 PAGE 1 OF 1

PROJECT NAME ALAMEDA CO. GENERAL SERVICES

ADDRESS SANTA RITA CORRECTIONAL FACILITY, DUBLIN, CA

PROJECT NO. 6-92-5454

SAMPLED BY [signature] BART MILLER

LAB NAME ESE

Environmental Science & Engineering, Inc.
A CH CORP company
4090 Nelson Avenue
Suite J
Concord, CA 94520
(415) 685-4053
Fax (415) 685-9321

SAMPLE #	DATE	TIME	LOCATION	ANALYSES TO BE PERFORMED: TPH-gasoline 8015m	BTEX 8020									MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
G5-20'	11/24/92	9:17	Graystone				19157-1							SOIL	1	2" diameter brass sleeve
G5-24'	"	9:26	"				-2							"	1	"
G6-20'	"	10:56	"				-3							"	1	"
G6-24'	"	11:08	"				-4							"	1	"
G7-20'	"	13:15	"				-5							"	1	"
G7-24'	"	13:23	"				-6							"	1	"
G8-20'	"	14:31	"				-7							"	1	"
G8-25'	"	14:37	"				-8							"	1	"

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1. [signature]	James Conyers	12-1-92	10:00 AM
2.	[signature]		
3.			
4.			
5.			

8 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: BART MILLER

SPECIAL SHIPMENT REQUIREMENTS: COLD TRANSPORT

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):
NORMAL T.A.T.

SAMPLE RECEIPT

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

CHAIN OF CUSTODY RECORD

DATE 11/25/92 PAGE 1 OF 1

PROJECT NAME ALAMEDA CO. GENERAL SERVICES

ADDRESS SANTA RITA CORRECTIONAL FACILITY, DUBLIN, CA

PROJECT NO. 6-92-5454

SAMPLED BY BART MILLER

LAB NAME ESE

ESE Environmental Science & Engineering, Inc.
A CH2M HILL company
4090 Nelson Avenue
Suite J
Concord, CA 94520
(415) 685-4053
Fax (415) 685-5323

SAMPLE #	DATE	TIME	LOCATION	ANALYSES TO BE PERFORMED: TPH-gasoline 8015m	ANALYSES TO BE PERFORMED: BTEX 8020/602 TPH	MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
G9-HP	11/25/92	9:55	GRAYSTONE	✓	✓	WATER	3	40 ml glass vials
G10-HP	"	11:35	"	✓	✓	WATER	3	"
G9-20'	"	9:10	"	✓	✓	SOIL	1	2" diameter brass sleeve
G9-25'	"	9:18	"	✓	✓	"	1	"
G10-20'	"	10:43	"	✓	✓	"	1	"
G10-25'	"	10:47	"	✓	✓	"	1	"

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1.			
2.			
3.			
4.			
5.			

10 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: BART MILLER

SPECIAL SHIPMENT REQUIREMENTS: COLD TRANSPORT

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):
NORMAL T.A.T.

SAMPLE RECEIPT

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

CHAIN OF CUSTODY RECORD

DATE 11/24/92 PAGE 1 OF 1

PROJECT NAME ALAMEDA CO. GENERAL SERVICES

ADDRESS SANTA RITA CORRECTIONAL FACILITY, DUBLIN, CA

PROJECT NO. 6-92-5454

SAMPLED BY Bart Miller

LAB NAME ESE

ESE Environmental Science & Engineering, Inc.
A CH2M HILL Company
4090 Nelson Avenue
Suite J
Concord, CA 94520
(415) 685-4053
Fax (415) 685-3323

SAMPLE #	DATE	TIME	LOCATION	TPH-gasoline 8015m	BTEX 8020	HVOC's 8010/8020							MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
													MATRIX		
G5-MP	11/24/92	10:00	GRAYSTONE	✓	✓	✓			101557	-15			WATER	3	40ml glass vials
G6-MP	"	11:25	"	✓	✓					-16			"	3	"
G7-MP	"	13:42	"	✓	✓					-17			"	3	"
G8-MP	"	15:15	"	✓	✓					-18			"	3	"
TRIP BLANK	"			✓	✓					-19			"	1	"

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1. Bart Miller	J Conyers	12-1-92	10:00
2.			
3.			
4.			
5.			

13 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: Bart Miller

SPECIAL SHIPMENT REQUIREMENTS: COLD TRANSPORT

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):
NORMAL T.A.T.

SAMPLE RECEIPT

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

APPENDIX D

Laboratory QA/QC Summary and Correspondence

AME	UNITS	STOR*METH	BATCH	SAMPLE	DATE	FOUND
ENZENE	UG/KG	34030*PFS	P9379	MB*NONE*1	12/02/92	0.0
ENZENE	UG/KG			MB*NONE*2		0.0
ENZENE	UG/KG			MB*NONE*3		0.0
OLUENE	UG/KG	34010*PFS		MB*NONE*1		0.0
OLUENE	UG/KG			MB*NONE*2		0.0
OLUENE	UG/KG			MB*NONE*3		0.0
THYLBENZENE	UG/KG	34371*PFS		MB*NONE*1		0.0
THYLBENZENE	UG/KG			MB*NONE*2		0.0
THYLBENZENE	UG/KG			MB*NONE*3		0.0
YLENES,TOTAL	UG/KG	81551*PFS		MB*NONE*1		0.0
YLENES,TOTAL	UG/KG			MB*NONE*2		0.0
YLENES,TOTAL	UG/KG			MB*NONE*3		0.0
ASOLINE, VOLATILE	UG/KG	97470*PFS	P9383	MB*NONE*1		0.0
ASOLINE, VOLATILE	UG/KG			MB*NONE*2		0.0
PH AS DIESEL	MG/KG	97468*PCS	P9262	MB*NONE*1		0.0
IL&GR,GRAV	MG/L	556*PM	P9418	MB*NONE*1	12/10/92	0.0
ICHLORODIFLUOROMETHANE	UG/KG	34668*PFS	P9378	MB*NONE*1	12/01/92	0.0
HLOROMETHANE	UG/KG	34418*PFS		MB*NONE*1		0.0
INYL CHLORIDE	UG/KG	39175*PFS		MB*NONE*1		0.0
ROMOMETHANE	UG/KG	34413*PFS		MB*NONE*1		0.0
HLOROETHANE	UG/KG	34311*PFS		MB*NONE*1		0.0
RICHLOROFLUOROMETHANE	UG/KG	34488*PFS		MB*NONE*1		0.0
,1-DICHLOROETHENE	UG/KG	34501*PFS		MB*NONE*1		0.0
ETHYLENE CHLORIDE	UG/KG	34423*PFS		MB*NONE*1		0.0011
RANS-1,2-DICHLOROETHENE	UG/KG	34546*PFS		MB*NONE*1		0.0
,1-DICHLOROETHANE	UG/KG	34496*PFS		MB*NONE*1		0.0
HLOROFORM	UG/KG	32106*PFS		MB*NONE*1		0.0
,1,1-TRICHLOROETHANE	UG/KG	34506*PFS		MB*NONE*1		0.0
ARBON TETRACHLORIDE	UG/KG	32102*PFS		MB*NONE*1		0.0
,2-DICHLOROETHANE	UG/KG	34531*PFS		MB*NONE*1		0.0
RICHLOROETHENE	UG/KG	39180*PFS		MB*NONE*1		0.0
,2-DICHLOROPROPANE	UG/KG	34541*PFS		MB*NONE*1		0.0
ROMODICHLOROMETHANE	UG/KG	32101*PFS		MB*NONE*1		0.0
-CHLOROETHYLVINYL ETHER	UG/KG	34576*PFS		MB*NONE*1		0.0
IS-1,3-DICHLOROPROPENE	UG/KG	34704*PFS		MB*NONE*1		0.0
RANS-1,3-DICHLOROPROPENE	UG/KG	34699*PFS		MB*NONE*1		0.0
,1,2-TRICHLOROETHANE	UG/KG	34511*PFS		MB*NONE*1		0.0
ETRACHLOROETHENE	UG/KG	34475*PFS		MB*NONE*1		0.0
IBROMOCHLOROMETHANE	UG/KG	32105*PFS		MB*NONE*1		0.0
HLOROBENZENE	UG/KG	34301*PFS		MB*NONE*1		0.0
ROMOFORM	UG/KG	32104*PFS		MB*NONE*1		0.0
,1,2,2-TETRACHLOROETHANE	UG/KG	34516*PFS		MB*NONE*1		0.0
,3-DICHLOROBENZENE	UG/KG	34566*PFS		MB*NONE*1		0.0
,4-DICHLOROBENZENE	UG/KG	34571*PFS		MB*NONE*1		0.0
,2-DICHLOROBENZENE	UG/KG	34536*PFS		MB*NONE*1		0.0
ADMIUM	MG/KG	1027*PJS	P9393	MB*NONE*1	12/09/92	0.003
HROMIUM	MG/KG	1034*PJS	P9393	MB*NONE*1	12/09/92	0.003
ICKEL	MG/KG	1067*PJS		MB*NONE*1		0.0
EAD	MG/KG	1051*PJS		MB*NONE*1		0.02
INC	MG/KG	1092*PJS		MB*NONE*1		0.01
IS(2-CHLOROETHYL) ETHER	UG/KG	34273*PAS	P9317	MB*NONE*1	12/03/92	0.0
,3,DICHLOROBENZENE	UG/KG	34566*PAS		MB*NONE*1		0.0
,4-DICHLOROBENZENE	UG/KG	34571*PAS		MB*NONE*1		0.0
ENZYL ALCOHOL	UG/KG	77147*PAS		MB*NONE*1		0.0

Environmental
Science &
Engineering, Inc.

December 18, 1992

Mr. Bart Miller
Environmental Science & Engineering, Inc.
4090 Nelson Way, Suite J
Concord, CA 94520

Dear Bart:

We received in the laboratory on November 25, 1992 your sample designated G2-5' from the Santa Rita Correctional Facility. The initial analysis of this sample for volatile compounds gave a concentration of 110 ppb of methylene chloride. The brass tube the sample arrived in was marked for VOC analysis to be done out of one end of the tube while the remainder of the analysis was to be done on sample removed from the other end of the tube. After reviewing this data, you requested that the VOC analysis be repeated due to the high concentration of methylene chloride reported. The analysis was repeated on sample removed from the center of the brass tube. The repeat analysis showed a sample concentration of 5 ppb for methylene chloride. The history of analytical results from this site would indicate that the methylene chloride concentration from the first analysis may have come from outside contamination. from where?

I apologize for any inconvenience this error may have caused you or your client. Thank you for your patience and understanding in this matter. Please call me with any further questions or concerns you may have.

when was it done?
How preserved?
Where are results?

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Vickie M. Wynkoop

Vickie M. Wynkoop
Project Manager

8901 North Industrial Road Peoria, IL 61615 Phone (309) 692-1422 (800) 234-1330 Fax (309) 692-9364

Environmental
Science &
Engineering, Inc.

A CILCORP Company

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

DATE: January 22, 1993

ATTN: Mr. Jeff Shapiro

JOB NUMBER: 6-92-5454

SUBJECT: Alameda County Old Graystone Fueling Station, Santa Rita Correctional Facility, Dublin, California

WE ARE TRANSMITTING THE FOLLOWING:

One bound copy of the Report on Soil and Ground Water Investigation at the subject facility. Please feel free to contact the undersigned with any questions or comments concerning this report at (510) 685-4053.

CC:

DIST:
LB
FILE
ORIGINATOR

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

BY _____

Bart S. Miller
Senior Staff Geologist