PRELIMINARY TEST PIT RESULTS - TANK 23

Environmental
Science &
Engineering, Inc.

A CILCORP Company

January 7, 1993

Project No. 6-92-5423

Mr. Jim de Vos
Buildings Manager
Alameda County General Services Agency
4400 MacArthur Boulevard
Oakland, CA 94619

Tank 23

**SUBJECT: Engineer's Hill, Santa Rita Correctional Facility, Dublin, California**

Dear Mr. de Vos:

This report documents the results of overexcavation activities conducted by Environmental Science & Engineering, Inc. (ESE) on November 8th, 1992 at the subject facility. A workplan dated September 18, 1992 describing the proposed work to be conducted at a former underground storage tank (UST) location at the subject facility, commonly referred to as Engineer's Hill, was submitted to the Alameda County General Services Agency (GSA) and the Alameda County Health Care Services Agency (HCSA). The purpose of the proposed activities was to characterize and excavate soil containing petroleum hydrocarbons.

**SITE BACKGROUND**

The Santa Rita Correctional Facility, owned by GSA, is located along Interstate 580 in Dublin, California (Figure 1 - Location Map). GSA owned and operated one 1,000-gallon diesel fuel UST at Engineer's Hill located at the northern portion of the property (Figure 2 - Site Map). The UST fueled a boiler located in a building adjacent to the UST and was of single wall, carbon steel construction. The installation date of the UST is unknown. Under permit from the HCSA and the Doherty Regional Fire Authority (DRFA), ESE removed and disposed of the UST, identified as UST No. 2942-23, on May 18, 1992. The HCSA and the DRFA witnessed the UST removal activities and subsequent soil sampling. No fluids were found in the UST prior to removal.

ESE submitted a closure report for the UST at Engineer's Hill to the HCSA on June 25, 1992. One soil sample (23W) was collected by ESE personnel under the direction of a HCSA representative from the west end of the UST excavation and submitted for analysis (Figure 3 - UST 2942-23 Former Plan). Laboratory results reported a concentration of 190 milligrams per kilogram (mg/Kg) of total petroleum hydrocarbons as diesel fuel (TPH-D) using Environmental Protection Agency (EPA) method 8015-modified. No detectable concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) and total oil and

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grease (O&G) were reported in the soil sample using EPA method 8020 and California Standard Methods for Water and Wastewater (SMWW) method 5520, respectively. In view of the relatively low concentration of TPH-D detected in the soil sample collected during UST removal and the lack of visible fuel release the site, ESE anticipated that limited excavation would provide effective removal of diesel-impacted soil.

## SITE ACTIVITIES, SAMPLING PROCEDURES, AND RESULTS

In lieu of soil borings, ESE characterized and excavated soils impacted with diesel fuel from the UST 2492-23 excavation located at Engineer's Hill. Using an excavator provided and operated by Golden West Environmental, Inc. of Livermore, California, ESE personnel observed a 22-foot deep vertical cross-section of soil extending from the original UST excavation downward to the bottom of a test pit (Test Pit 1) excavated in the UST excavation (Figure 4 - UST 2942-23 Excavations). Sediments were noted to be comprised of a six-inch thick organic soil layer overlying a nine-foot thick silt layer. The silt contains approximately 15 percent medium-sized sand grains and was noted to be dry. The silt is underlain by a sand unit which was noted to extend to the bottom of Test Pit 1 (22-foot depth). The underlying sand unit is dominantly comprised of quartzose sand grains of medium size and contains approximately 10 percent sub-rounded to rounded pebbles of low sphericity. The sand unit was noted as dry and friable with no visible grading.

At a depth of nine feet below ground surface, the sand unit was noted to be discolored grey and had a diesel fuel odor. Soil at the bottom of [redacted] also noted to be impacted with diesel fuel. ESE collected one soil sample (T23-1-SP) from an excavator bucket containing soil from the bottom of Test Pit 1 using a slide hammer with a sample collection barrel fitted with a two-inch diameter brass ring. The brass sampling ring ends were covered with Teflon® tape and plastic end caps and sealed with duct tape. The sample was labeled and placed in a cooler with ice and maintained chilled during transport to Chromalab, Inc. (a State-Certified Laboratory) under Chain of Custody documentation. The soil sample was analyzed for TPH-D using EPA method 8015-modified and BTEX using EPA method 8020. Analytical results for soil sample T23-1-SP indicate 1,400 mg/Kg TPH-D and minor detectable BTEX constituents (Attachment 1 - Analytical Results).

9' BG

In order to estimate the potential size of the diesel fuel plume in soil at this location, ESE proceeded to excavate Test Pit 2 located 15 feet to the west of the UST excavation, Test Pit 3 located 25 feet south of the UST excavation on the opposite of the boiler room, and Test Pit 4 located 10 feet to the east of the UST excavation (Figure 4). Test Pits 2, 3, and 4 were excavated to a depth of 22 feet and no diesel fuel discoloration or odors were noted on the sides or at the bottoms. ESE did not collect any samples from [redacted] because soil discoloration and diesel fuel odor was not observed and because the porous nature of the vadose sand unit into which the diesel fuel was released suggests vertical rather than lateral migration of the contaminant plume.

No ground water was encountered in any of the test pits or trenches at a maximum depth of 22 feet. Upon completion of field observations and sampling, ESE backfilled all test pits with excavated material and sloped the UST 2942-23 excavation for safety purposes under the direction of a representative of the GSA.

**SUMMARY**

In summary, it appears that petroleum hydrocarbons characterized as diesel fuel were released from the former UST at Engineer's Hill and have migrated downward into an underlying pebbly sand unit. The lack of detectable diesel fuel discoloration and odor in Test Pits 2, 3, and 4 surrounding the UST excavation and the visibly porous nature of the sand unit suggest that the plume may be of near-vertical orientation. No ground water was found during these excavation activities and it remains unknown as to whether ground water has been impacted by the diesel fuel release.

Based on these findings, ESE recommends that a subsurface investigation be conducted at the site. The investigation should focus on determining the vertical and lateral extent of contaminant migration in the vadose zone and whether ground water has been impacted.

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Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other hydrogeologists and engineers practicing in this field. No other warranty, express or implied, is made as to the professional advice in this report.

If you have any questions regarding the material presented in this report, please do not hesitate to contact Bart Miller at (510) 685-4053.

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Bart S. Miller
Senior Staff Geologist

Susan S. Wickham, RG 3851
Senior Geologist

BSM/SSW:gm

Attachments (5)

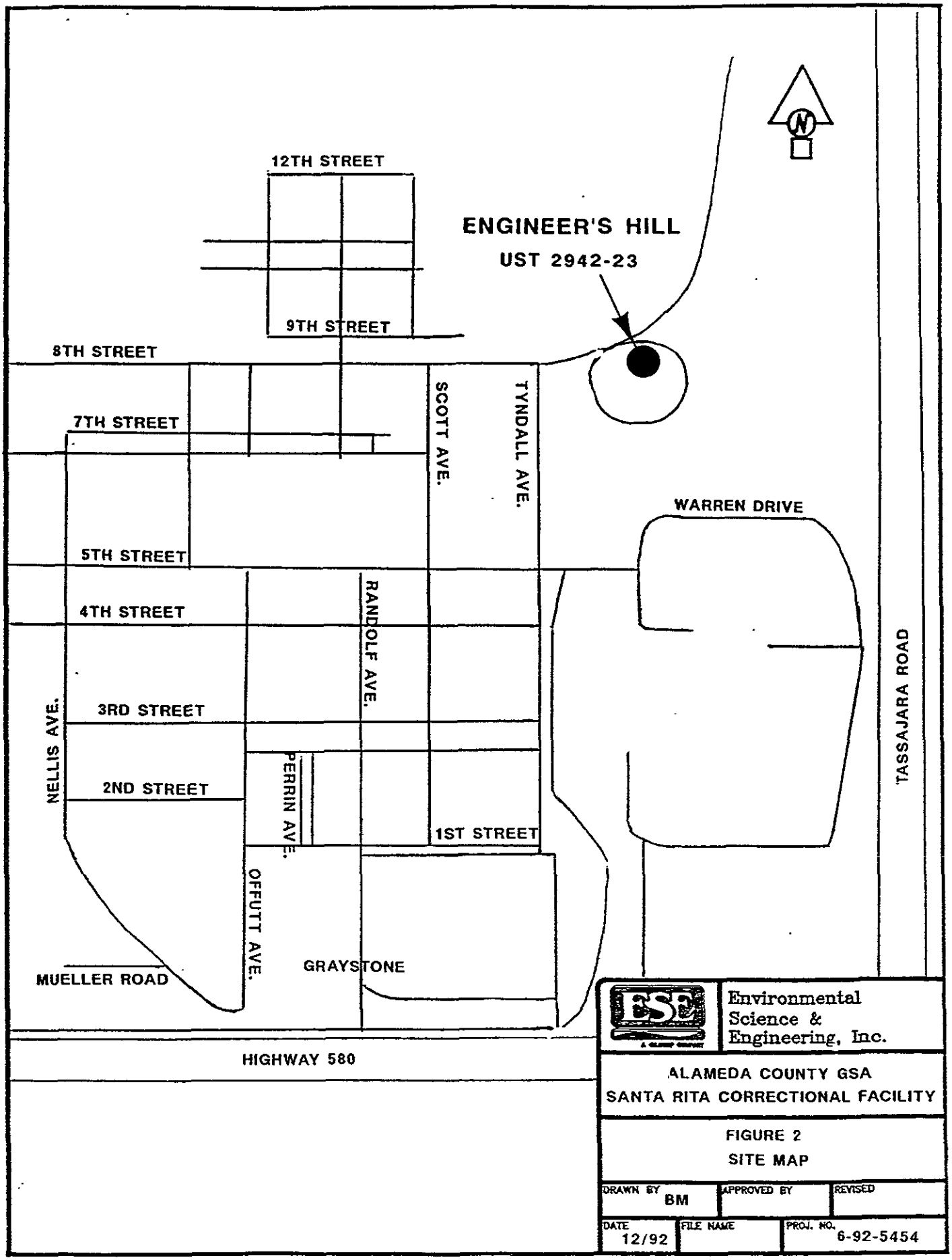
F:\..\5423\121892.RPT

# FIGURES


0 1/4 1/2 3/4 1 MILES
0 1 2 3 4 KILOMETERS

SCALE OF SINGLE MAP PAGES
1 INCH TO 2200 FEET

| | |
|---|---|
| ESE A CLEARY COMPANY | Environmental Science & Engineering, Inc. |
| ALAMEDA COUNTY GSA<br>SANTA RITA JAIL FACILITY<br>DUBLIN, CA | |
| FIGURE 1<br>LOCATION MAP | |
| DRAWN BY: RSW | APPROVED BY: |
| REVISED: | |
| DATE: 6/25/92 | FILE NAME: |
| PROJ. NO.: 6-92-5423 | |



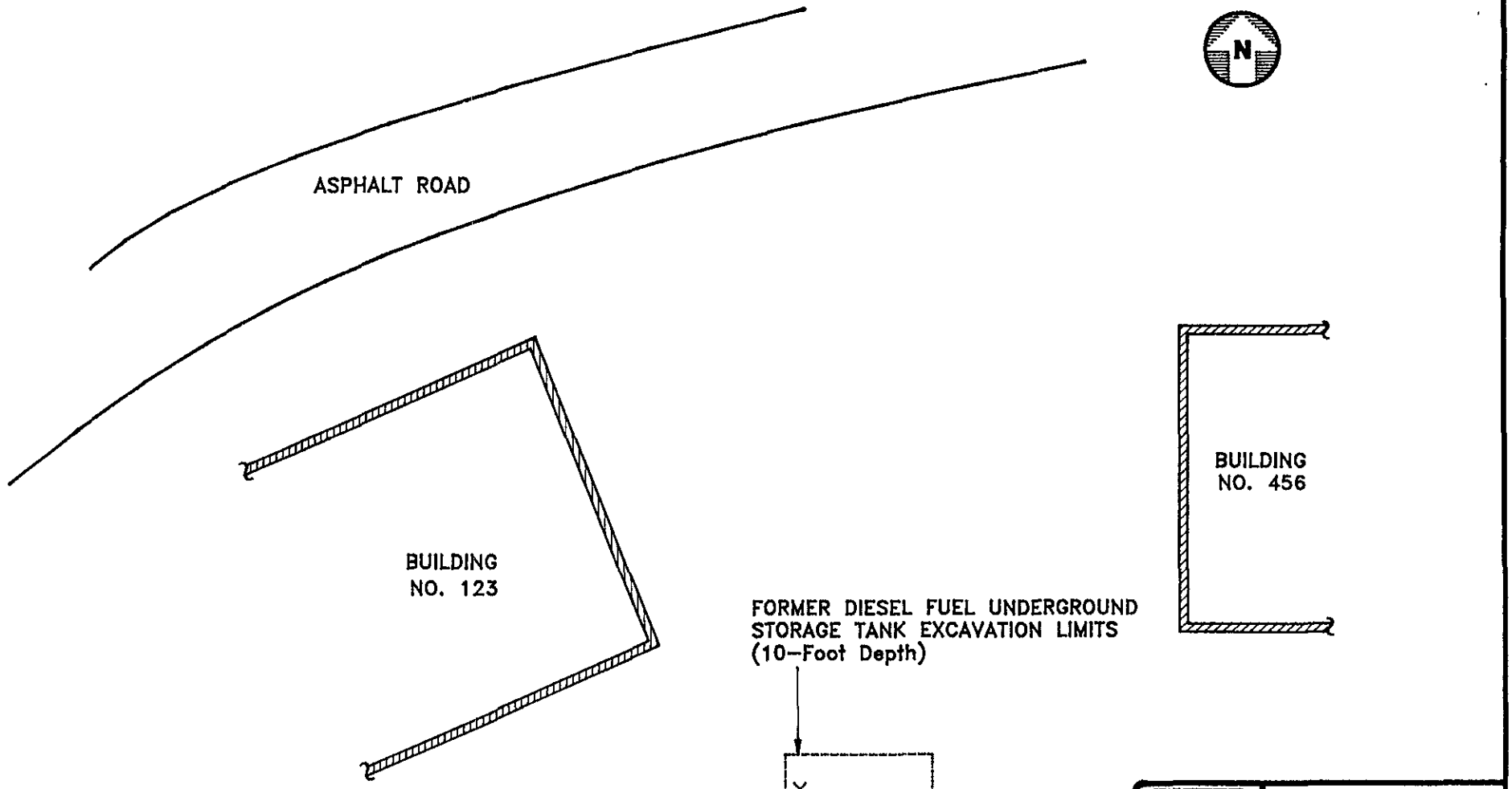

Environmental Science & Engineering, Inc.

ALAMEDA COUNTY GSA
SANTA RITA CORRECTIONAL FACILITY

FIGURE 2
SITE MAP

| DRAWN BY | APPROVED BY | REVISED |
|---|---|---|
| BM | | |

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




ESE A CH2M HILL COMPANY

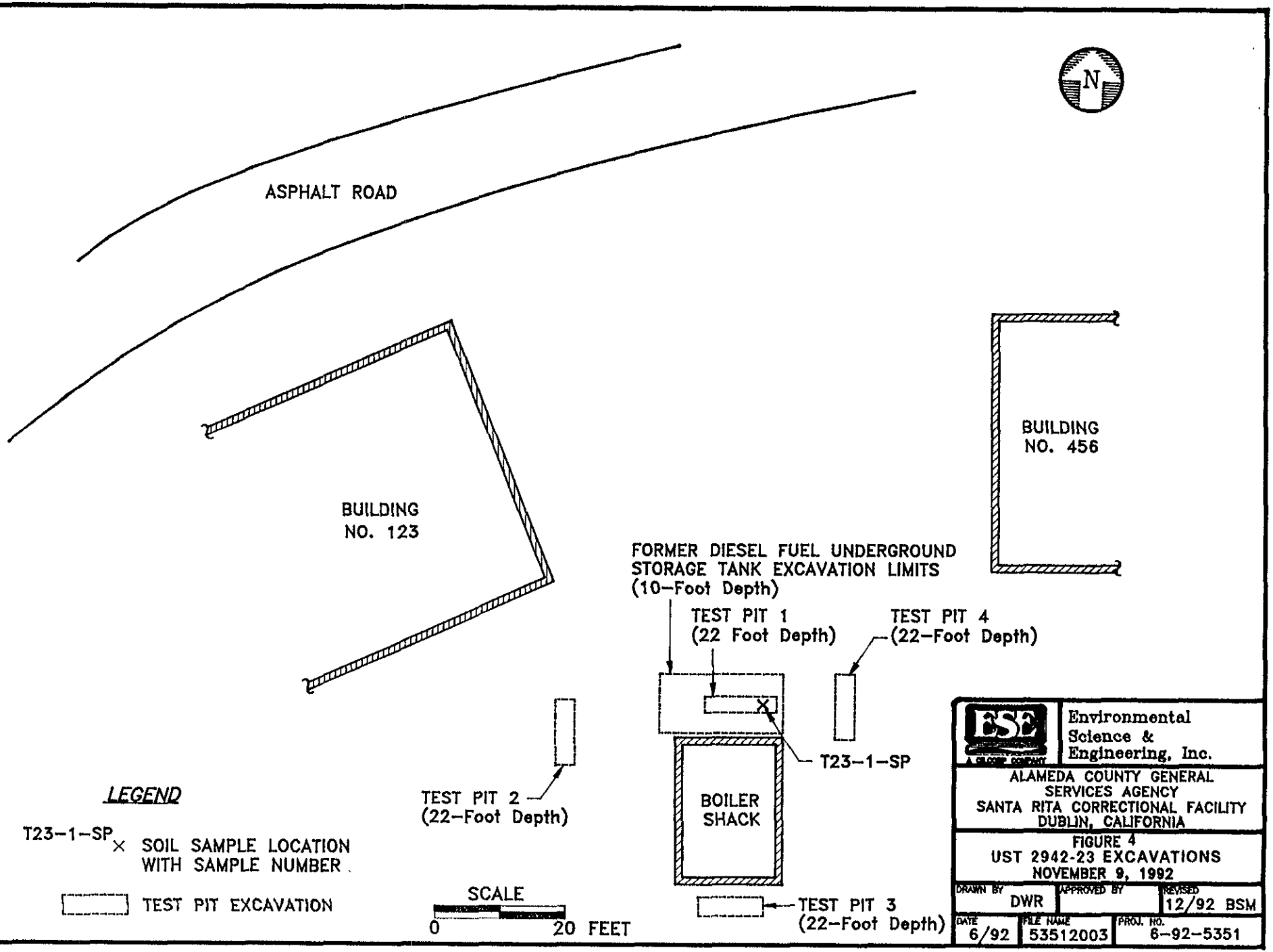
Environmental Science & Engineering, Inc.

ALAMEDA COUNTY GENERAL SERVICES AGENCY
SANTA RITA CORRECTIONAL FACILITY
DUBLIN, CALIFORNIA

FIGURE 3
UST 2942-23 FORMER PLAN

| DRAWN BY | APPROVED BY | REVISED |
|---|---|---|
| DWR | | 12/92 BSM |

| DATE | FILE NAME | PROJ. NO. |
|---|---|---|
| 6/92 | 53512004 | 6-92-5351 |


N
ASPHALT ROAD
BUILDING NO. 123
BUILDING NO. 456
FORMER DIESEL FUEL UNDERGROUND STORAGE TANK EXCAVATION LIMITS (10-Foot Depth)
TEST PIT 1 (22 Foot Depth)
TEST PIT 4 (22-Foot Depth)
T23-1-SP
BOILER SHACK
TEST PIT 2 (22-Foot Depth)
TEST PIT 3 (22-Foot Depth)
LEGEND
T23-1-SP × SOIL SAMPLE LOCATION WITH SAMPLE NUMBER
TEST PIT EXCAVATION
SCALE
0
20 FEET
ESE
A GALGER COMPANY
Environmental Science & Engineering, Inc.
ALAMEDA COUNTY GENERAL SERVICES AGENCY
SANTA RITA CORRECTIONAL FACILITY
DUBLIN, CALIFORNIA
FIGURE 4
UST 2942-23 EXCAVATIONS
NOVEMBER 9, 1992
DRAWN BY DWR
APPROVED BY
REVISED 12/92 BSM
DATE 6/92
FILE NAME 53512003
PROJ. NO. 6-92-5351

# ATTACHMENT 1

## Analytical Results and Chain of Custody Documentation

# CHROMALAB, INC.

Environmental Laboratory (1094)


no. 25

5 DAYS TURNAROUND

November 17, 1992 ChromaLab File No.: 1192066

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Attn: Pat Galvin

RE: One soil sample for BTEX analysis

Project Name: ALAMEDA COUNTY - SANTA RITA JAIL
Project Number: 6-92-5423
Date Sampled: Nov. 9, 1992 Date Submitted: Nov. 9, 1992
Date Analyzed: Nov. 13, 1992

RESULTS:

| Sample I.D. | Benzene (µg/Kg) | Toluene (µg/Kg) | Ethyl Benzene (µg/Kg) | Total Xylenes (µg/Kg) |
|---|---|---|---|---|
| T23-1-SP | N.D. | N.D. | 17 | 45 |
| BLANK | N.D. | N.D. | N.D. | N.D. |
| SPIKE RECOVERY | 115% | 118% | 118% | 100% |
| DUP SPIKE RECOVERY | 107% | 106% | 93% | 97% |
| DETECTION LIMIT | 5.0 | 5.0 | 5.0 | 5.0 |
| METHOD OF ANALYSIS | 8020 | 8020 | 8020 | 8020 |

ChromaLab, Inc.

Billy Thach
Analytical Chemist

Eric Tam
Laboratory Director

do


2239 Omega Road,#1 • San Ramon, California 94583
(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

# CHROMALAB, INC.

Environmental Laboratory (1094)


5 DAYS TURNAROUND

November 14, 1992 ChromaLab File No.: 1192066

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Attn: Pat Galvin

RE: One soil sample for Diesel analysis

Project Name: ALAMEDA COUNTY - SANTA RITA JAIL
Project Number: 6-92-5423
Date Sampled: Nov. 9, 1992 Date Submitted: Nov. 9, 1992
Date Extracted: Nov. 12, 1992 Date Analyzed: Nov. 12, 1992

RESULTS:

| Sample I.D. | Diesel (mg/Kg) |
|---|---|
| T23-1-SP | 1400 |
| BLANK | N.D. |
| SPIKE RECOVERY | 83% |
| DUP SPIKE RECOVERY | 84% |
| DETECTION LIMIT | 1.0 |
| METHOD OF ANALYSIS | 3550/8015 |

ChromaLab Inc.,

Yiu Tam
Analytical Chemist

Eric Tam
Laboratory Director

cc


2239 Omega Road,#1 • San Ramon, California 94583
(510) 831-1788 • Facsimile (510) 831-8798
Federal ID #68-0140157

CHROMALAB FILE # 1192066
ORDER # #8453

# CHAIN OF CUSTODY RECORD

DATE 11/09/92 PAGE 1 OF 1

PROJECT NAME ALAMEDA COUNTY

ADDRESS SANTA RITA JAIL
ENGINEER'S HILL

PROJECT NO. 6-92-5423

SAMPLED BY [signature] BART MILLER

LAB NAME CHROMA LAB


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 | TPH-d (8015D)/BTEX | [illegible] | TVH-g (8015G)/BTEX | EPA 418.1 | EPA 8010 | LUFT 5 metals | 8270 | ORG (5520 E+F) | | | MATRIX | NUMBER OF CONTAINERS | REMARKS (CONTAINER, SIZE, ETC.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ANALYSES TO BE PERFORMED | | | | | | | | | | MATRIX | | |
| T23-1-SP | 11/9/92 | 9:20 | TANK 23 | ✓ | | | | | | | | | | SOIL | 1 | 2" diameter brass sleeve |
| T11-1-22' | 11/9/92 | 14:20 | TANK 11 | | | ✓ | ✓ | | | | | | | SOIL | 1 | " |
| T12-1-22' | 11/9/92 | 14:25 | TANK 12 | | | ✓ | ✓ | | | | | | | SOIL | 1 | " |
| T12A-1-22' | 11/9/92 | 14:30 | TANK 12 A | | | ✓ | ✓ | X | X | X | X | | | SOIL | 1 | " |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |

| RELINQUISHED BY: (signature) | RECEIVED BY: (signature) | date | time |
|---|---|---|---|
| 1. [signature] | [signature] | 11/09/92 | 15:00 |
| 2. [signature] | [signature] | 11/9/92 | 16:02 |
| 3. [signature] | [signature] | 11/9/92 | 16:49 |
| 4. [signature] | | | |
| 5. | | | |

4 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: PAT GALVIN

SPECIAL SHIPMENT REQUIREMENTS: COLD TRANSPORT

SAMPLE RECEIPT

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

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