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**WORK PLAN #WP92001**  
**PROJECT #004-189-02**

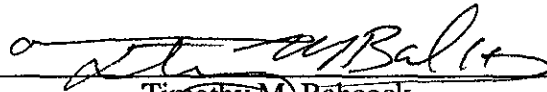
**SAN ANTONIO PUMP STATION**  
**5555 CALAVERAS ROAD**  
**SUNOL, CALIFORNIA**

**Feb. 1992**

**PREPARED BY ENVIRONMENTAL BIO-SYSTEMS, INC.**

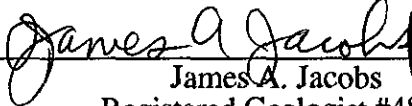
**FOR**

**POWER ENGINEERING CONTRACTORS**  
**1275 NORTH SAN ANTONIO ROAD**  
**PALO ALTO, CALIFORNIA**

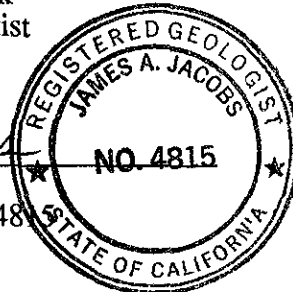


Timothy M. Babcock  
Environmental Scientist

Reviewed by:



James A. Jacobs  
Registered Geologist #4815



**3 February 1992**

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### **1.0) INTRODUCTION**

This document describes proposed subsurface exploration and remediation to be conducted for Power Engineering Contractors (the Client) at the City of San Francisco, San Antonio Pumping Station located at 5555 Calaveras Road in Sunol, California (the Site) by Environmental Bio-Systems, Inc. (EBS).

The site is owned by the City of San Francisco. The principal site contacts are:

**Client Representative** - Mr. Robert Beltramo, Power Engineering,  
1275 North San Antonio Road, Palo Alto, CA 94303-4312,  
(415) 969-9696.

**Property Owner/Representative** - Mr. John Hetzner, City and County  
of San Francisco, Utilities Engineering Bureau, P.O. Box 730, 1000  
El Camino Real, Millbrae, CA 94030, (510) 862-2973. 415-534-0700

**Consultant** - Environmental Bio-Systems, Inc., 30028 Industrial  
Parkway Southwest, Suite C, Hayward, CA 94544,  
(510) 429-9988. Project Manager - Timothy M. Babcock.

### **1.1) Scope of Work**

The scope of work described in this work plan outlines the further excavation of impacted soil, collection and analysis of soil samples, disposal of impacted soil, backfill and compaction of the excavation, and the installation and sampling of groundwater monitoring wells.

## **1.2) Site Description**

The site is located at 5555 Calaveras Road in the City of Sunol and County of Alameda, California. A Site Location Map has been presented as Figure 1. A Site Diagram showing the locations of samples as well as relevant site structures and references, has been included in this report as Figure 2.

The site is located in a rural area. The topography of the site slopes noticeably towards the west. A commercial plant nursery is located to the west of the site.

One building was present on the site as of the date of this work plan. The building houses a water distribution pump station. Diesel powered generators were previously fed by Tanks A and B. Used motor oil was stored in Tank C. A concrete bermed containment area at the southwest corner of the building was observed to contain several drums of both new and used motor oil.

## **1.3) Background**

On 7 November 1991, 3 underground storage tanks (USTs) were excavated and removed from the site. Two 9,600-gallon diesel tanks were found to have been set into a large concrete slab located along the eastern side of the building. Soil samples were not collected from this location at that time. At this time, a 500-gallon waste oil tank was also removed from the western side of the building. Soil samples collected from beneath this tank indicated the presence of constituents related to gasoline and diesel hydrocarbons, oil and grease, and polynuclear aromatic compounds.

Further subsurface explorations were performed from 21 November through 18 December 1991. The observations and results of both the tank removal and subsequent explorations were outlined in EBS report #004-189-01, dated 10 January 1992.

## **2.0) PERMITTING**

Before commencement of work, all necessary permits from regulatory agencies will be obtained. All field work will be performed according to the site safety plan (SSP) prepared specifically for this project addressing the concerns of OSHA and Cal-OSHA. Work will begin following due notification of the Alameda County Health Agency (ACHA) and the Bay Area Air Quality Management District (BAAQMD). Underground service alert will be contacted at least 48 hours prior to work commencement to locate public owned utilities on the site.

## **3.0) EXCAVATION**

Based upon the results of previous subsurface exploration, the anticipated lateral extent of hydrocarbon impact to be removed is shown in Figure 3. Excavation will be performed within the indicated area until the results of confirmation soil samples show residual levels of impacting constituents to be below the clean up targets, or until site limitations prevent further progress. Field screening will be performed to aid in the direction of excavation using a photoionization detector (PID), a portable instrument which measures organic vapors.

The vertical extent of excavation is estimated to be from 10 to 18-feet below grade. Shoring, or other accepted measures will be utilized by the client to prevent collapse and to comply with the guidelines of Cal-OSHA.

The total volume of soil to be excavated is estimated to be between 500 and 1,000-cubic yards, based upon the data and assumptions used in compiling Figure 3. Based upon the same information and assumptions, the total volume of hydrocarbon impacted soil to be removed is anticipated to be between 150 and 550-cubic yards.

**3.1) Targeted Concentrations for Soil Excavation**

The targeted levels for the excavation of impacted soil are greater than 10-parts per million (ppm) of total petroleum hydrocarbons as gas (TPHg) and benzene, toluene, ethylbenzene, and zylenes (BTEX) or total petroleum hydrocarbons as diesel (TPHd), and total oil and grease (TOG). The target for removal of the semi-volatile organic compounds identified by EPA method 8270 is to below limits of detection.

TOG  
TPH-G/D  
BTEX  
8270

**3.2) Confirmation Soil Sample Collection and Analysis**

Soil sample locations will be located in the walls of the excavation at a frequency of 2 per 15-lineal feet of exposed surface. At each location, soil samples will be collected at depths of approximately 10 and 15-feet. The sample locations were chosen to reflect the depths at which impact was detected during earlier explorations. If the maximum vertical depth of excavation exceeds 15-feet, either the sampling depth interval will be increased, or additional samples will be collected.

good!

} yes

The analysis of soil samples will be performed using both the services of an on-site mobile laboratory and a stationary laboratory. On-site analyses to include TOG using standard method 5520, TPHg and BTEX using EPA method 8015, and TPHd using a modified EPA method 8015 will be performed by Mobile Chem Labs, Inc. of Martinez, California (HMTL #1223). Analysis of samples for semi-volatile organic compounds using EPA method 8270 will be performed by Anametrix, Inc. of San Jose, California (HMTL #151). Individual samples collected during the progression of excavation may be run for any or all of the above mentioned constituents. The analyses of confirmation samples denoting the limits of excavation will include all compounds known to have been present at the source, unless previously collected samples have shown containment of an individual constituent(s) within a narrower radius of the source. ok

### **3.3) Soil Storage**

That volume of soil which is suspected to contain concentration of impacting constituents, as indicated through previous exploration, will be placed in a storage pile(s) to be kept segregated from soil anticipated to be clean. Soil which is designated as clean overburden may be re-used as backfill material at the discretion of the client.

### **3.4) Soil Storage Pile Sample Collection and Analysis**

Soil which is designated as being impacted will be sampled according to the analytical protocol requested by the intended disposal facility.

Approximately 1 composite soil sample will be collected and analyzed for those compounds designated by the intended disposal facility for every 150-cubic yards of soil designated for disposal. An additional soil sample will be collected for every 200-cubic yards and analyzed for the following

analytes: reactivity with cyanide, sulfide, and water, corrosivity as pH, and ignitability by closed cup ignitability test (RCI), and the following heavy metals using EPA method 6010: barium (Ba), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), silver (Ag), and zinc (Zn), arsenic (As) using EPA method 7060, mercury (Hg) using EPA method 7470/7471, and Selenium (Se) using EPA method 7740. All samples will be tested at a laboratory certified by the State of California to perform the required analyses.

Soil designated for potential re-use as backfill will be sampled at a frequency of 1 discrete soil sample for every 20-cubic yards or according to the statistical protocol described in EPA #SW846. The soil samples collected will be examined for the following analytes at a laboratory certified by the State of California to perform the methods as stated above: TPHg and BTEX, TPHd, TOG, and semi-volatile organic compounds using those methods described in section 3.2.

The volume of soil shown to contain less than 10-mg/kg of TPHg and BTEX, TPHd, TOG, and less than the stated detection limits for semi-volatile organic compounds will be designated for possible re-use as backfill. All soil found to contain concentrations of impacting constituents in excess of these limits will be designated for disposal.

must be  
ND



### **3.5) Wet Weather Contingency**

To address the possibility of rain, all excavated soil will be placed on visqueen sheeting and covered. The National Weather Service will be accessed 2 days prior to work commencement to determine the likelihood of inclement weather. In the event that rain is forecast for the chosen work dates, an alternate start date may be chosen. The ACHA will be notified of any such alteration of this plan.

### **3.6) Backfill and Compaction**

Following the completion of excavation, the resulting pit will be filled and compacted to grade. Imported engineered backfill material and excavated soil which has been indicated to be clean will be used to replace the removed soil. The backfilled soil will be compacted to 90% relative compaction up to a depth of 3-feet. Above the depth of 3-feet, the soil will be compacted to 95% relative compaction. One compaction test will be taken from backfilled and compacted material below the depth of 3-feet and one will be taken from the finished grade prior to paving.

### **3.7) Paving**

Following completion of backfilling and compaction, the exposed surface of the excavation area will be repaved to conform to the existing structural section and configuration. Excavated areas in which asphalt pavement was removed shall be replaced with new pavement. A 3-inch thick lift of aggregate sub-base consisting of Cal Trans Class II baserock will be applied and compacted before the laying of asphalt. Tack coat oil shall be applied to all vertical surfaces. Paving in these areas shall consist of Type A asphalt

3 February 1992

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San Antonio Pumping Station  
5555 Calaveras Road  
Sunol, CA

applied at a thickness conforming to the existing pavement. All asphaltic materials will conform with Cal Trans Standard Specifications.

**3.8) Transport and Disposal of Impacted Soil**

Soil designated for disposal will be transported by a licensed hauler to a Class II landfill or to a Class III landfill depending upon the concentration of contaminants revealed during analysis. A special non-hazardous waste manifest will be initiated and maintained for each truck load leaving the site. A certificate of destruction will be obtained from the final destination(s) following project completion.

**4.0) GROUNDWATER EXPLORATION**

Following the completion of soil excavation, backfill, and re-pavement, an exploration of the quality of the shallow water bearing layer will be performed. The scope of the exploration will include the installation, development, and sampling of three 4-inch diameter groundwater monitoring wells. Figure 4 shows a typical monitoring well design.

Proposed locations, reflecting the general topography of the site, are shown on figure 5. Discussion with Mr. Scott Seery of the ACHA did not indicate the existence of significant shallow groundwater quality data in the vicinity of the site. Given the rural setting of the site, and lack of structures or improvements noted on adjacent properties, further inquiry was not performed.

#### **4.1) Collection of Soil Samples**

The borings will be drilled with a truck mounted mobile drilling rig equipped with 8-inch diameter hollow stemmed augers. Soil samples will be collected at 5-foot intervals within the borings. To collect the samples, a California-modified split-barrel sampler will be driven into the soil by a 140-pound weight falling 30-inches. The sampler will be driven a total of 18-inches. After the first 6-inches, the number of *blows required to drive it* the remaining 12-inches will be counted as an indicator of the relative density of granular soil and the consistency of cohesive soil.

The samples will be removed from the sampler as soon as it has been opened, and the ends of the brass liners containing soil designated for laboratory analysis will be wrapped with Teflon tape and sealed with plastic caps. The sample tubes will be labelled, stored on ice, and delivered to the certified analytical laboratory. The samples will be maintained and transferred in keeping with chain of custody procedures. The sampler will be washed with a non-phosphate cleaner and rinsed with distilled water between the collection of samples.

#### **4.2) Groundwater Monitoring Well Installation**

After advancing the augers to a depth approximately 15 to 20-feet below that depth at which water is first encountered, 4-inch diameter PVC casing will be inserted through the augers and completed as per currently accepted specifications for the installation of groundwater monitoring wells. The screened interval will be extended to a depth of approximately 5-feet above the depth at which water is encountered within the borings. Completion of the wells will include a filter pack of #3 sand to a depth of 2-feet above the

top of the well screen, 2-foot bentonite clay seal, portland cement seal to grade, traffic box set in concrete, and a well cap fitted with a lock.

#### **4.3) Monitoring Well Development and Sampling**

The wells will be developed after allowing at least 72-hours to elapse after completion of the groundwater monitoring well installations. Development of each well will be performed by evacuating water using a pump (typically, a peristaltic or piston type unit) until the effluent is noted to be free of silt or until at least ten well volumes have been evacuated and the measured parameters of the effluent, including pH, temperature, and conductivity indicate that the well has stabilized.

Sampling of the wells will be performed subsequent to allowing a period of at least 72-hours for stabilization following development. During purging and sampling of the wells, observations of the presence or absence and thickness of free product, presence of sheen or emulsified product, and well recharge rates will be noted on field logs by the sampling technician. A minimum of 4-casing volumes will be purged from each well prior to collection of a sample. Periodic measurements of pH, temperature, and conductivity will be performed and recorded on the field logs. When all three parameters are found to have stabilized, water samples will be collected using a new disposable bailer for each well. If free product is encountered in a well, no sample will be collected for laboratory analysis from that well.

good

If a well fails to recharge sufficiently prior to the purging of at least 4-well casing volumes, a sample will be collected only after that well has recovered to 80% of the initial water level encountered prior to purging.

#### 4.4) Sample Analysis

Soil and water samples will be analyzed for some or all of the following constituents: TPHg and BTEX, TPHd, TOG, volatile organic compounds, semi-volatile organic compounds, and the heavy metals cadmium, chromium (total), nickel, lead, and zinc. Analyses will be performed at Anametrix, Inc., of San Jose, California.

#### 4.5) Containment of Drill Cuttings and Well Purgings

All drill cuttings generated during advancement of soil borings will be placed on visqueen plastic and covered. Water purged from the wells during development and sampling, as well as that generated during the decontamination of equipment used in drilling, developing, and sampling of the wells will be contained and stored on-site within 55-gallon drums. Disposal of drill cuttings and stored water (if necessary) will be arranged for following the receipt of analytical results.

#### 4.6) Groundwater Monitoring Schedule

Sampling and measurement of the wells will be performed for a minimum time period of 1-year on a quarterly basis. The results of the analyses of water samples collected during the performance of quarterly monitoring may present the need to extend or intensify this sampling protocol. Should the results of sampling indicate levels of constituents requiring remediation, a further plan may be drafted to reflect any changes in protocol.

- 1 year monthly  
GW elevations  
- quarterly GW  
sampling

#### **4.7) Evaluation of the Direction of Groundwater Flow**

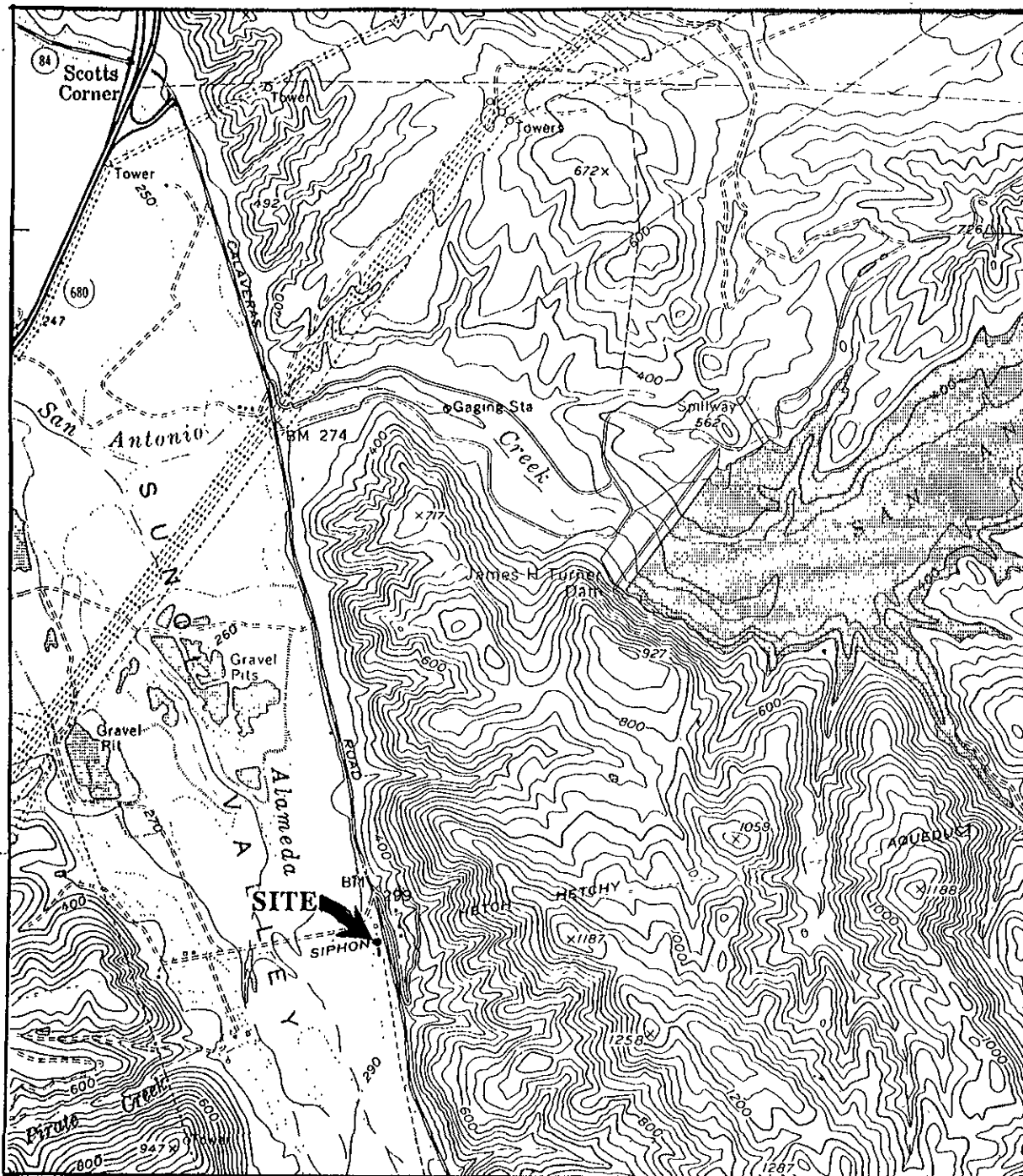
Following the development and sampling of the groundwater wells. The elevations of the well tops will be surveyed. Measurements of the depths to water within the wells will be made to allow calculation of a direction of groundwater flow beneath the site.

#### **5.0) DOCUMENTATION**

A final report documenting the observations, results, conclusions, and recommendations of the project will be prepared and submitted to the client within 30-days of the completion of groundwater sampling and flow direction evaluation. Interpretations of the site conditions and the results of analyses will also be provided. Documentation will include scaled diagrams, logs of soil types encountered, copies of the chain of custody forms, laboratory reports, tabulated data, and interpretative figures as needed. The information obtained during this work will remain confidential and will be released only with the authorization of our client, Power Engineering Contractors. It is the responsibility of the client to submit copies of this work plan and all reports to the following individuals and agencies:

California Regional Water Quality Control Board  
San Francisco Bay Region  
1800 Harrison Street, Suite 3  
Oakland, CA 94559  
ATTN: Mr. Eddy So

Alameda County Health Agency  
Division of Hazardous Materials  
Dept. of Environmental Health  
80 Swan Way, Room 200  
Oakland, CA 94621  
ATTN: Dr. Ravi Arulanantham



Source: USGS Topographic Map, La Costa Valley Quadrangle

SCALE - 1:24,000



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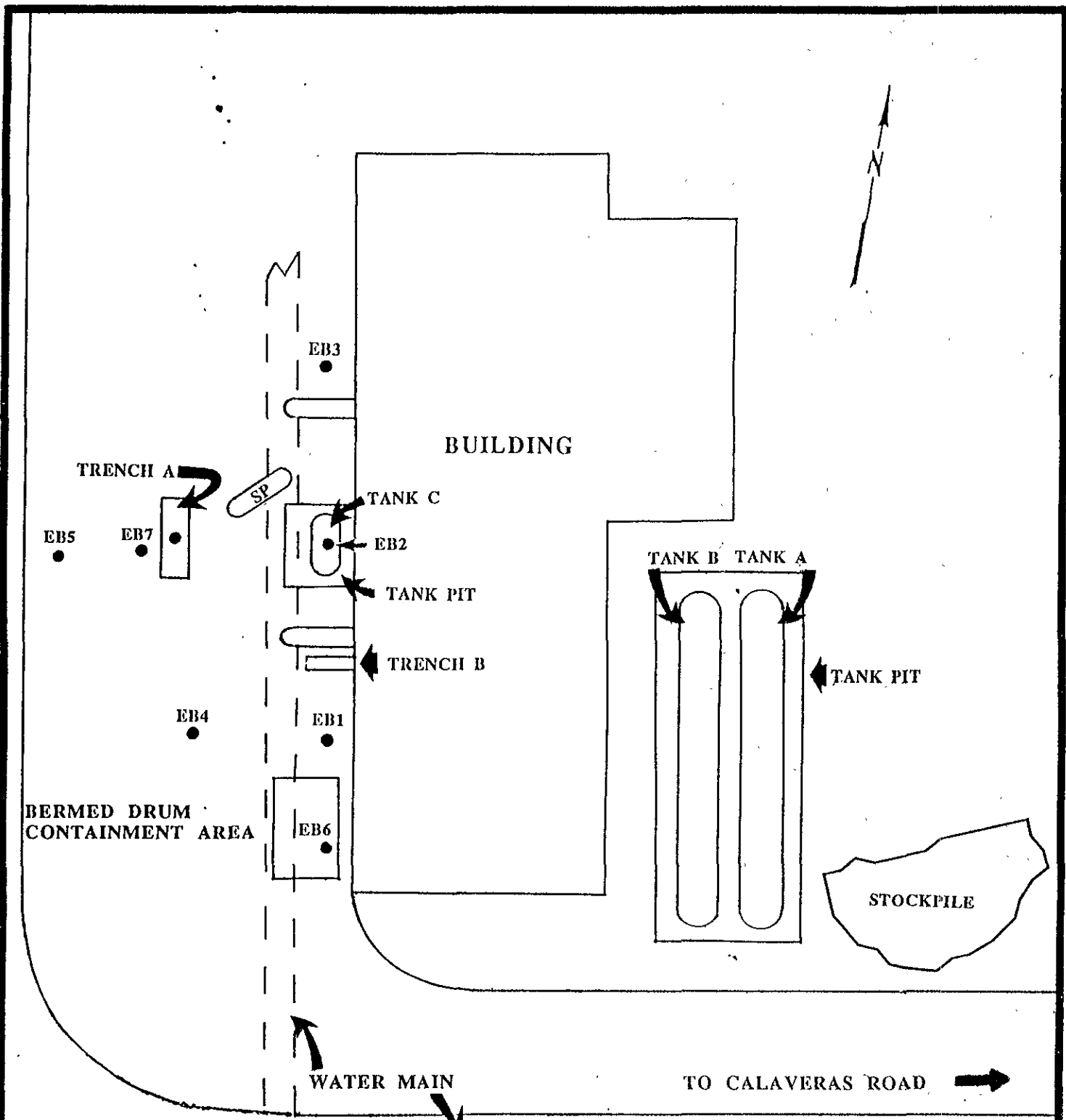
DATE: FEB 1992

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APPRVD: TMB

**FIGURE 1: SITE  
LOCATION MAP**


**SAN ANTONIO PUMP STA.  
555 CALAVERAS ROAD  
SUNOL, CALIFORNIA**



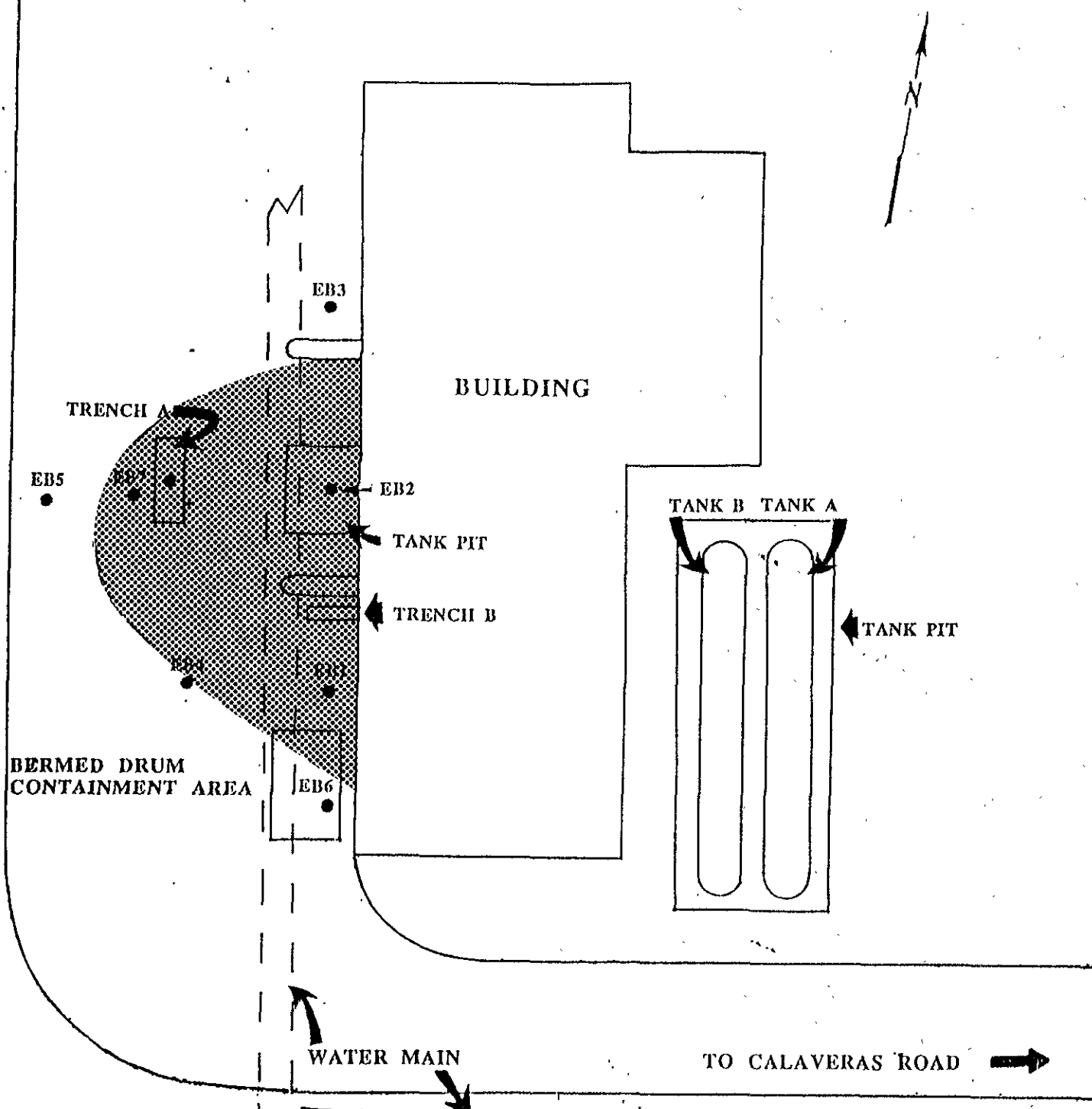
**LEGEND**

EB7 • - SOIL BORING  
 SP - STOCKPILE



SCALE - 1" = 20'

 <p><b>ENVIRONMENTAL BIO-SYSTEMS, INC.</b>          Innovative Solutions for a Better Environment</p> <p>30028 Industrial Pkwy., SW.          Suite C          Hayward, CA 94544</p>	DATE: FEB 1992	<b>FIGURE 2: SITE DIAGRAM</b>  <b>SAN ANTONIO PUMP STA.</b> <b>555 CALAVERAS ROAD</b> <b>SUNOL, CALIFORNIA</b>
	DRWN BY: SLS	
	APPRVD: TMB	





**LEGEND**

-  - Estimated area of excavation
-  - Previously installed soil boring location

SCALE - 1" = 20'



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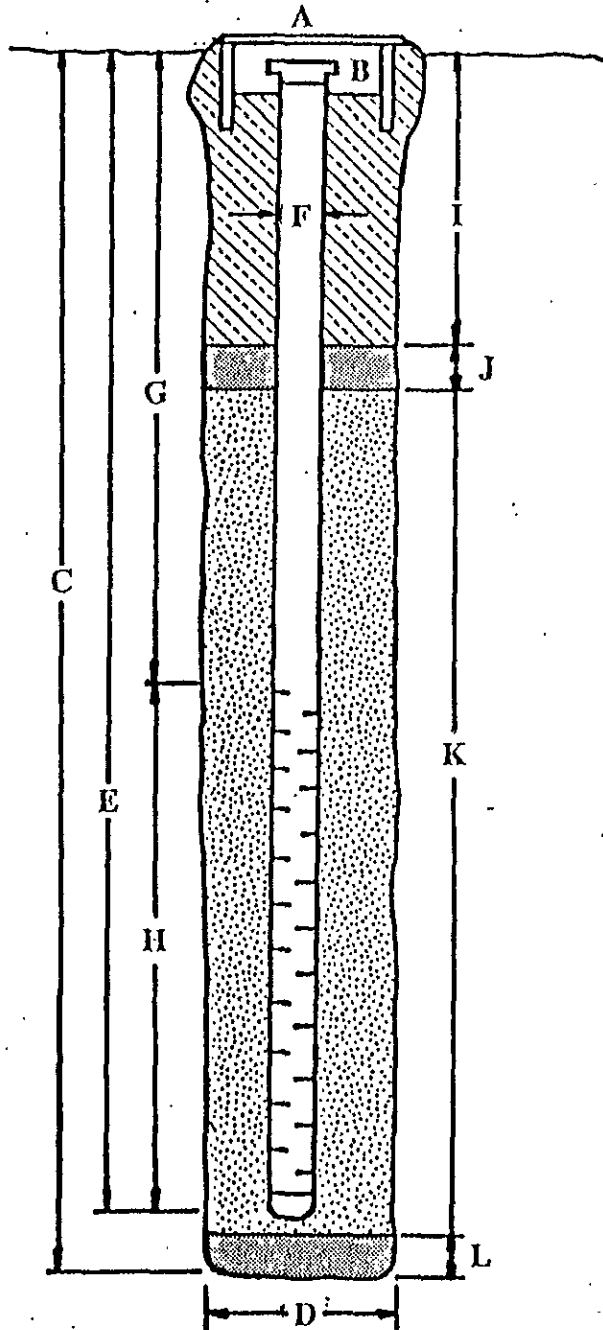
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**Figure 3: Estimated Area Of Excavation**

**SAN ANTONIO PUMP STA.**  
**555 CALAVERAS ROAD**  
**SUNOL, CALIFORNIA**

# TYPICAL MONITORING WELL CONSTRUCTION DETAILS



- A. Traffic Box
- B. Locking Well Cap with Padlock
- C. Total Boring Depth
- D. Boring Diameter
- E. Total Well Depth
- F. Well Casing Diameter
- G. Depth to Perforations
- H. Perforated Interval
- I. Surface Seal
- J. Seal
- K. Filter Pack
- L. Bottom Seal



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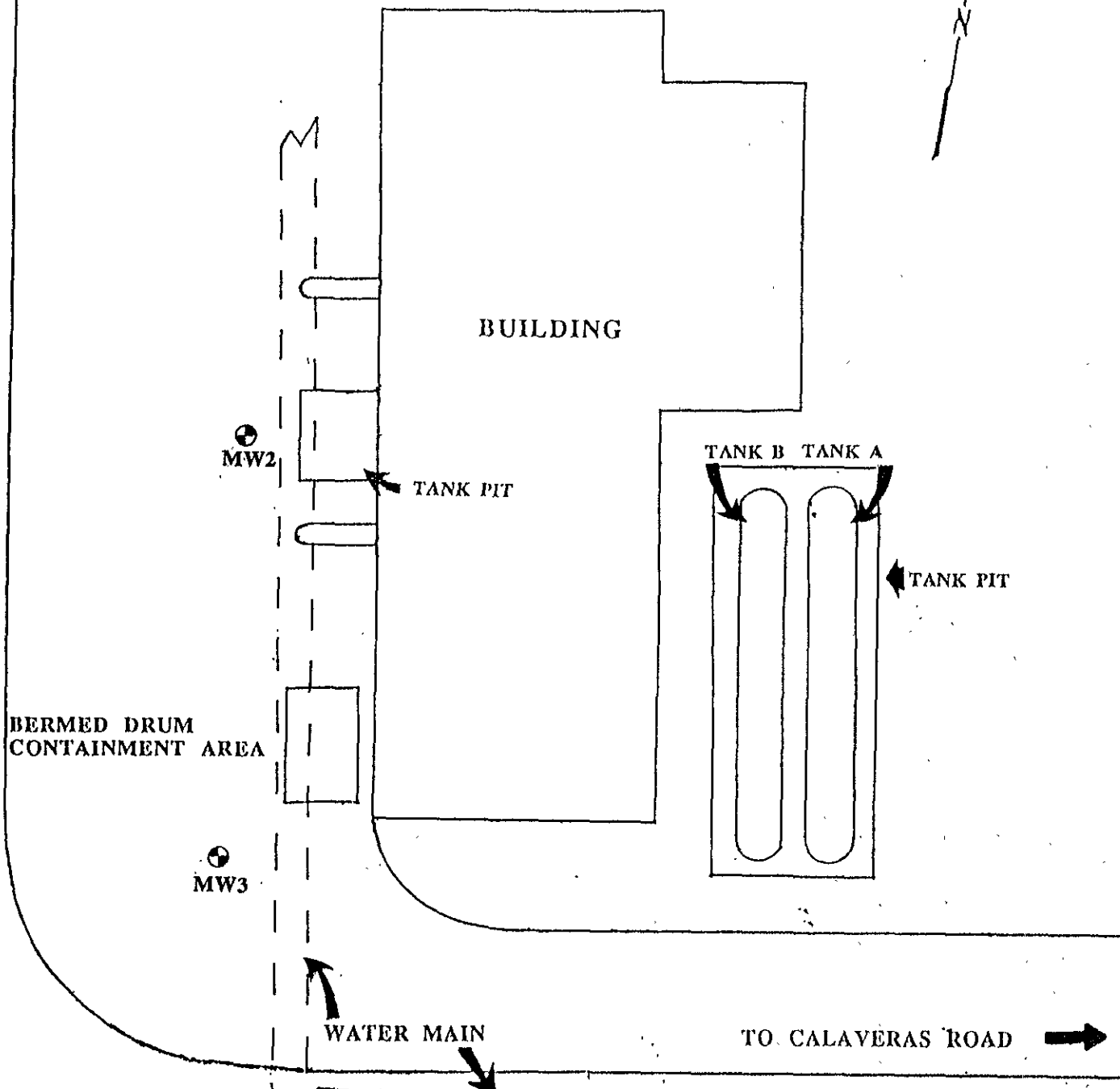
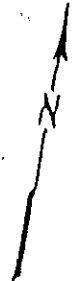
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APPRVD:

**Figure 4: Typical Well  
Construction Detail**



**LEGEND**

⊕ - Proposed groundwater monitoring well location  
MW3

SCALE - 1" = 20'



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**Figure 5: Proposed Well Locations**

**SAN ANTONIO PUMP STA.  
555 CALAVERAS ROAD  
SUNOL, CALIFORNIA**

January 10, 1991

**Power Engineering Contractors**  
San Antonio Pumping Station  
555 Calaveras Road  
Sunol, CA

**APPENDIX A**

**LOGS OF BORINGS**

# SOIL BORING LOG

BORING DESIGNATION: EB1  
 DATE OF DRILLING: 11-21-91  
 CASING TYPE: \_\_\_\_\_  
 LOGGED BY: AMM H. ANAM  
 REGISTRATION: \_\_\_\_\_

MONITORING WELL INSTALLED: \_\_\_\_\_  
 WELL DIAMETER: \_\_\_\_\_  
 SLOT SIZE: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 EXPIRATION: \_\_\_\_\_

DEPTH (FEET)	SAMPLE NO.	BLOW CNT.	P.I.D.	GRAPHIC LOG	SOIL TYPE	WELL CONST.	DESCRIPTION AND REMARKS
-1-							Gravelly Sand with some Silt, light gray, loose, damp, no hydrocarbon odor
-2-							
-3-							
-4-							
-5-							
-6-							
-7-							
-8-							
-9-							
-10-							
-11-							Coarse Sandy Gravel with traces of Clay, light gray to gray, damp, no hydrocarbon odor
-12-	1						
-13-							<div style="position: relative; height: 100px;"> <span style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); font-size: 2em; font-family: cursive;">Siltstone</span> </div> Clayey Silt, gray, massive, very compact, damp, no hydrocarbon odor
-14-							
-15-	2						
-16-							BOTTOM OF BORING AT 15'
-17-							
-18-							
-19-							
-20-							



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DATE DRAWN: JAN 1992  
 JOB NO: 004-189-02  
 DRAWN BY: SLS  
 APP'D BY: TMB

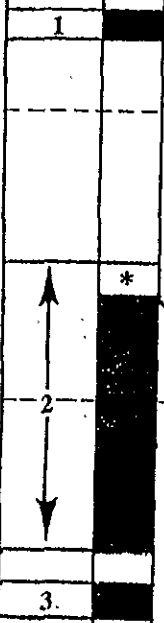
SITE:  
**SAN ANTONIO PUMP STA.**  
**555 CALAVERAS ROAD**  
**SUNOL, CALIFORNIA**

# SOIL BORING LOG

BORING DESIGNATION: EB2  
 DATE OF DRILLING: 11-21-91  
 CASING TYPE: \_\_\_\_\_  
 LOGGED BY: AMM H. ANAM  
 REGISTRATION: \_\_\_\_\_

MONITORING WELL INSTALLED: \_\_\_\_\_  
 WELL DIAMETER: \_\_\_\_\_  
 SLOT SIZE: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 EXPIRATION: \_\_\_\_\_

DEPTH (FEET)	SAMPLE NO.	BLOW CNT.	P.I.D.	GRAPHIC LOG	SOIL TYPE	WELL CONST.	DESCRIPTION AND REMARKS
-1-							
-2-							
-3-							
-4-							
-5-							
-6-							
-7-							
-8-							
-9-							
-10-							
-11-	1						Gravelly Sand with some Silt, light gray, loose, damp, no hydrocarbon odor
-12-							
-13-							
-14-							
-15-				*			Coarse Sandy Gravel with Clay bindings, light gray to gray, damp, no hydrocarbon odor
-16-							
-17-							
-18-							
-19-							
-20-	3						Clayey Silt, gray, massive and compact, damp, no hydrocarbon odor



no sample recovery



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 Sulte C  
 Hayward, CA 94544

DATE DRAWN: JAN 1992  
 JOB NO: 004-189-02  
 DRAWN BY: SLS  
 APP'D BY: TMB

SITE:  
**SAN ANTONIO PUMP STA.**  
**555 CALAVERAS ROAD**  
**SUNOL, CALIFORNIA**

# SOIL BORING LOG

BORING DESIGNATION: EB2      MONITORING WELL INSTALLED: \_\_\_\_\_  
 DATE OF DRILLING: 11-21-91      WELL DIAMETER: \_\_\_\_\_  
 CASING TYPE: \_\_\_\_\_      SLOT SIZE: \_\_\_\_\_  
 LOGGED BY: AMM H. ANAM      SIGNATURE: \_\_\_\_\_  
 REGISTRATION: \_\_\_\_\_      EXPIRATION: \_\_\_\_\_

DEPTH (FEET)	SAMPLE NO.	BLOW CNT.	P.I.D.	GRAPHIC LOG	SOIL TYPE	WELL CONST.	DESCRIPTION AND REMARKS
-21-							
-22-							
-23-	4						Clayey Silt, gray, massive and compact, damp, no hydrocarbon odor
-24-							BOTTOM OF BORING AT 23-1/2'
-25-							
-26-							
-27-							
-28-							
-29-							
-30-							
-31-							
-32-							
-33-							
-34-							
-35-							
-36-							
-37-							
-38-							
-39-							
-40-							



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DATE DRAWN: JAN 1992

JOB NO: 004-189-02

DRAWN BY: SLS

APP'D BY: TMB

SITE:

SAN ANTONIO PUMP STA.  
 555 CALAVERAS ROAD  
 SUNOL, CALIFORNIA

# SOIL BORING LOG

BORING DESIGNATION: EB3  
 DATE OF DRILLING: 11-21-91  
 CASING TYPE: \_\_\_\_\_  
 LOGGED BY: AMM H. ANAM  
 REGISTRATION: \_\_\_\_\_

MONITORING WELL INSTALLED: \_\_\_\_\_  
 WELL DIAMETER: \_\_\_\_\_  
 SLOT SIZE: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 EXPIRATION: \_\_\_\_\_

DEPTH (FEET)	SAMPLE NO.	BLOW CNT.	P.I.D.	GRAPHIC LOG	SOIL TYPE	WELL CONST.	DESCRIPTION AND REMARKS
-1-							Asphalt
-2-							
-3-							
-4-							
-5-							
-6-							
-7-							
-8-							
-9-							
-10-							
-11-							
-12-							Gravelly Silt with Clay, gray to bluish gray, damp, no hydrocarbon odor
-13-	1						
-14-							Clayey Silt with Gravel, bluish gray to pale greenish gray, damp, no hydrocarbon odor
-15-							
-16-	2						
-17-							
-18-							Clayey Silt, gray, massive and compact, damp, no hydrocarbon odor
-19-							
-20-	3						

*Silt stone?*



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 Innovative Solutions for a Better Environment  
 30020 Industrial Pkwy., S.W.  
 Suite C  
 Hayward, CA 94544

DATE DRAWN: JAN 1992  
 JOB NO: 004-189-02  
 DRAWN BY: SLS  
 APP'D BY: TMB

SITE:  
**SAN ANTONIO PUMP STA.**  
 555 CALAVERAS ROAD  
 SUNOL, CALIFORNIA



# SOIL BORING LOG

BORING DESIGNATION: EB3

MONITORING WELL INSTALLED: \_\_\_\_\_

DATE OF DRILLING: 11-21-91

WELL DIAMETER: \_\_\_\_\_

CASING TYPE: \_\_\_\_\_

SLOT SIZE: \_\_\_\_\_

LOGGED BY: AMM H. ANAM

SIGNATURE: \_\_\_\_\_

REGISTRATION: \_\_\_\_\_

EXPIRATION: \_\_\_\_\_

DEPTH (FEET)	SAMPLE NO.	BLOW CNT.	P.I.D.	GRAPHIC LOG	SOIL TYPE	WELL CONST.	DESCRIPTION AND REMARKS
-21-							
-22-							
-23-							
-24-							Clayey Silt, gray, massive and compact, damp, no hydrocarbon odor
-25-	4						
-26-							BOTTOM OF BORING AT 25'
-27-							
-28-							
-29-							
-30-							
-31-							
-32-							
-33-							
-34-							
-35-							
-36-							
-37-							
-38-							
-39-							
-40-							



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DATE DRAWN: JAN 1992  
 JOB NO: 004-189-02  
 DRAWN BY: SLS  
 APP'D BY: TMB

SITE:  
**SAN ANTONIO PUMP STA.**  
**555 CALAVERAS ROAD**  
**SUNOL, CALIFORNIA**

# SOIL BORING LOG

 BORING DESIGNATION: EB4

MONITORING WELL INSTALLED: \_\_\_\_\_

 DATE OF DRILLING: 12-18-91

WELL DIAMETER: \_\_\_\_\_

CASING TYPE: \_\_\_\_\_

SLOT SIZE: \_\_\_\_\_

 LOGGED BY: AMM H. ANAM

SIGNATURE: \_\_\_\_\_

REGISTRATION: \_\_\_\_\_

EXPIRATION: \_\_\_\_\_

DEPTH (FEET)	SAMPLE NO.	BLOW CNT.	P.I.D.	GRAPHIC LOG	SOIL TYPE	WELL CONST.	DESCRIPTION AND REMARKS
-1-							Asphalt
-2-							Clayey Gravel with Sand, Gray, moist, no hydrocarbon odor
-3-							
-4-							
-5-							Sandy Clay, brown, moist, slightly plastic, no hydrocarbon odor
-6-							
-7-							
-8-							
-9-							Silty Sand with Clay, occasional presence of gravel, brownish yellow, damp, no odor
-10-							
-11-	1						
-12-							Gravelly Sand with Clay bindings, occasional presence of boulders, brown to pale reddish brown, damp, no odor
-13-							
-14-							
-15-							
-16-	▽						
-17-							Groundwater at 16-1/2-feet
-18-							
-19-							
-20-							BOTTOM OF BORING AT 18'



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 JOB NO: 004-189-02

 DRAWN BY: SLS

 APP'D BY: TMB

SITE:

**SAN ANTONIO PUMP STA.**  
**555 CALAVERAS ROAD**  
**SUNOL, CALIFORNIA**

# SOIL BORING LOG

BORING DESIGNATION: EB5  
 DATE OF DRILLING: 12-18-91  
 CASING TYPE: \_\_\_\_\_  
 LOGGED BY: AMM H. ANAM  
 REGISTRATION: \_\_\_\_\_

MONITORING WELL INSTALLED: \_\_\_\_\_  
 WELL DIAMETER: \_\_\_\_\_  
 SLOT SIZE: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 EXPIRATION: \_\_\_\_\_

DEPTH (FEET)	SAMPLE NO.	BLOW CNT.	P.I.D.	GRAPHIC LOG	SOIL TYPE	WELL CONST.	DESCRIPTION AND REMARKS
-1-							Asphalt
-2-							Clayey Gravel with Sand, Gray to brown, moist, no hydrocarbon odor
-3-							Sandy Clay with some gravel, brown to dark brown, moist, slightly plastic, no hydrocarbon odor
-4-							
-5-							
-6-							
-7-							
-8-							
-9-							
-10-							
-11-	1						Silty Sand with Clay, light yellowish brown, moist, no odor
-12-							
-13-							
-14-							
-15-							
-16-							
-17-							Gravel with traces of Sand and Clay, dry to wet, no odor
-18-							
-19-	▽						
-20-							Groundwater at 19-1/2-feet
							BOTTOM OF BORING AT 20'



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DATE DRAWN: JAN 1992  
 JOB NO: 004-189-02  
 DRAWN BY: SLS  
 APP'D BY: TMB

SITE:  
**SAN ANTONIO PUMP STA.**  
**555 CALAVERAS ROAD**  
**SUNOL, CALIFORNIA**

# SOIL BORING LOG

BORING DESIGNATION: EB6  
 DATE OF DRILLING: 12-18-91  
 CASING TYPE: \_\_\_\_\_  
 LOGGED BY: AMM H. ANAM  
 REGISTRATION: \_\_\_\_\_

MONITORING WELL INSTALLED: \_\_\_\_\_  
 WELL DIAMETER: \_\_\_\_\_  
 SLOT SIZE: \_\_\_\_\_  
 SIGNATURE: \_\_\_\_\_  
 EXPIRATION: \_\_\_\_\_

DEPTH (FEET)	SAMPLE NO.	BLOW CNT.	P.I.D.	GRAPHIC LOG	SOIL TYPE	WELL CONST.	DESCRIPTION AND REMARKS
-1-							Concrete
-2-	1						Sandy Gravel - Gravelly Sand, yellowish gray to brownish gray, color changes to greenish gray at 7', damp, faint hydrocarbon odor noticed at 5'
-3-							
-4-							
-5-	2						
-6-							
-7-	3						
-8-							
-9-	4						
-10-							
-11-						BOTTOM OF BORING AT 11'	
-12-							
-13-							
-14-							
-15-							
-16-							
-17-							
-18-							
-19-							
-20-							



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DATE DRAWN: JAN 1992  
 JOB NO: 004-189-02  
 DRAWN BY: SLS  
 APP'D BY: TMB

SITE:  
**SAN ANTONIO PUMP STA.**  
**555 CALAVERAS ROAD**  
**SUNOL, CALIFORNIA**

# SOIL BORING LOG

BORING DESIGNATION: EB7      MONITORING WELL INSTALLED: \_\_\_\_\_  
 DATE OF DRILLING: 12-18-91      WELL DIAMETER: \_\_\_\_\_  
 CASING TYPE: \_\_\_\_\_      SLOT SIZE: \_\_\_\_\_  
 LOGGED BY: AMM H. ANAM      SIGNATURE: \_\_\_\_\_  
 REGISTRATION: \_\_\_\_\_      EXPIRATION: \_\_\_\_\_

DEPTH (FEET)	SAMPLE NO.	BLOW CNT.	P.I.D.	GRAPHIC LOG	SOIL TYPE	WELL CONST.	DESCRIPTION AND REMARKS
-1-							Asphalt
-2-							Clayey Silt, dark brown, moist, no hydrocarbon odor
-3-							
-4-							
-5-							
-6-							Gravelly Sand with clay bindings, gets more gravelly with depth, damp, no hydrocarbon odor
-7-							
-8-							
-9-							Gravel with traces of Sand and Clay damp, no odor
-10-	1						
-11-							BOTTOM OF BORING AT 15'
-12-							
-13-							
-14-							
-15-							
-16-							
-17-							
-18-							
-19-							
-20-							



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DATE DRAWN: JAN 1992

JOB NO: 004-189-02

DRAWN BY: SLS

APP'D BY: TMB

SITE:

**SAN ANTONIO PUMP STA.**  
**555 CALAVERAS ROAD**  
**SUNOL, CALIFORNIA**

WASTE OIL UST SAMPLE

TABLE 3 - RESULTS OF ANALYSIS OF SOIL SAMPLE S1-10' (results in mg/kg)

TPHg	TPHg	TOG	VOLATILE ORGANICS	SEMI-VOLATILE ORGANICS
*990	3,800	1,600	**ND	methylnaphthalene - 20.0 phenanthrene - 4.5

\* = Quantity noted by lab to be due to heavier hydrocarbon product, possibly diesel

\*\*ND = Analyte not detected above the stated limits of detection.

Notes:

- For EPA methods 8240 & 8270, only those compounds detected above reporting limits are listed above. See enclosed laboratory reports for the range of compounds included, and their respective detection limits.
- Analysis of sample S1-10' for heavy metals included in Table 4
- Detection limits used - TPH as gasoline = 0.5 mg/kg, TPH as diesel = 100 mg/kg, TOG = 30 mg/kg, see laboratory reports for the detection limits of individual compounds included in EPA methods 8240 & 8270.

TABLE 4 - HEAVY METALS ANALYSIS FOR SOIL SAMPLE S1-10' (results in mg/kg)

METAL	DETECTION LIMIT	SAMPLE SCC1 A-D
CADMIUM (Cd)	0.25	*ND
TOTAL CHROMIUM (Cr)	0.50	48.3
NICKEL (Ni)	2.0	61.7
LEAD (Pb)	2.0	3.2
ZINC (Zn)	1.0	40.3

\*ND = Analyte not detected above the stated limits of detection.

methylnaphthalene - CAS 91-57-6  
 - combustible

phenanthrene - CAS 85-01-8  
 - moderately toxic (mg)  
 - exp. neoplastigen + carcinogen  
 - combustible

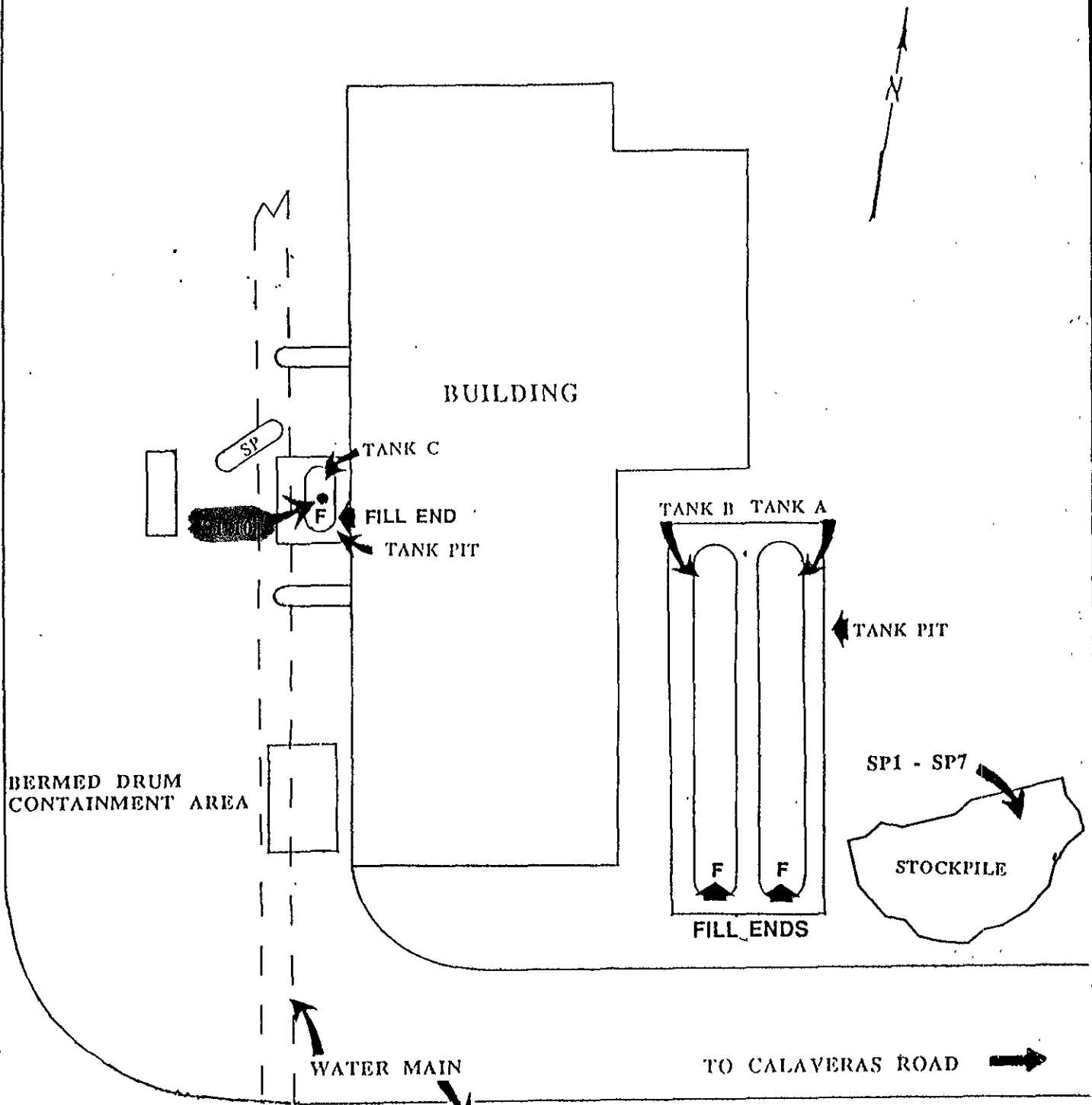
**TABLE 5 - ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM  
BORINGS AND TRENCHES (mg/kg)**

BOREHOLE/ TRENCH #	SAMPLE #	TPHd	TOG
Trench A	TA-10'	*51	--
EB1	EB1-14.5'	*410	--
EB2	EB2-10.5'	**ND	--
EB3	EB3-13.5'	ND	--
EB4	EB4-15-16'	--	ND
EB6	EB6-2'	--	ND
EB6	EB6-5'	--	ND
EB6	EB6-9'	--	ND
EB7	EB7-10'	--	ND

\* = Quantity noted by lab to be due to heavier hydrocarbon product, possibly motor oil

\*\*ND = Analyte not detected above the stated limits of detection.

Note: Detection limits used - TPH as diesel = 10 mg/kg, TOG = 50 mg/kg.



**LEGEND**

SP7 - SOIL SAMPLE FROM STOCKPILE  
 S1-10' - SOIL SAMPLE FROM TANK PIT  
 SP - STOCKPILE

SCALE - 1" = 20'



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DATE: JAN 1991

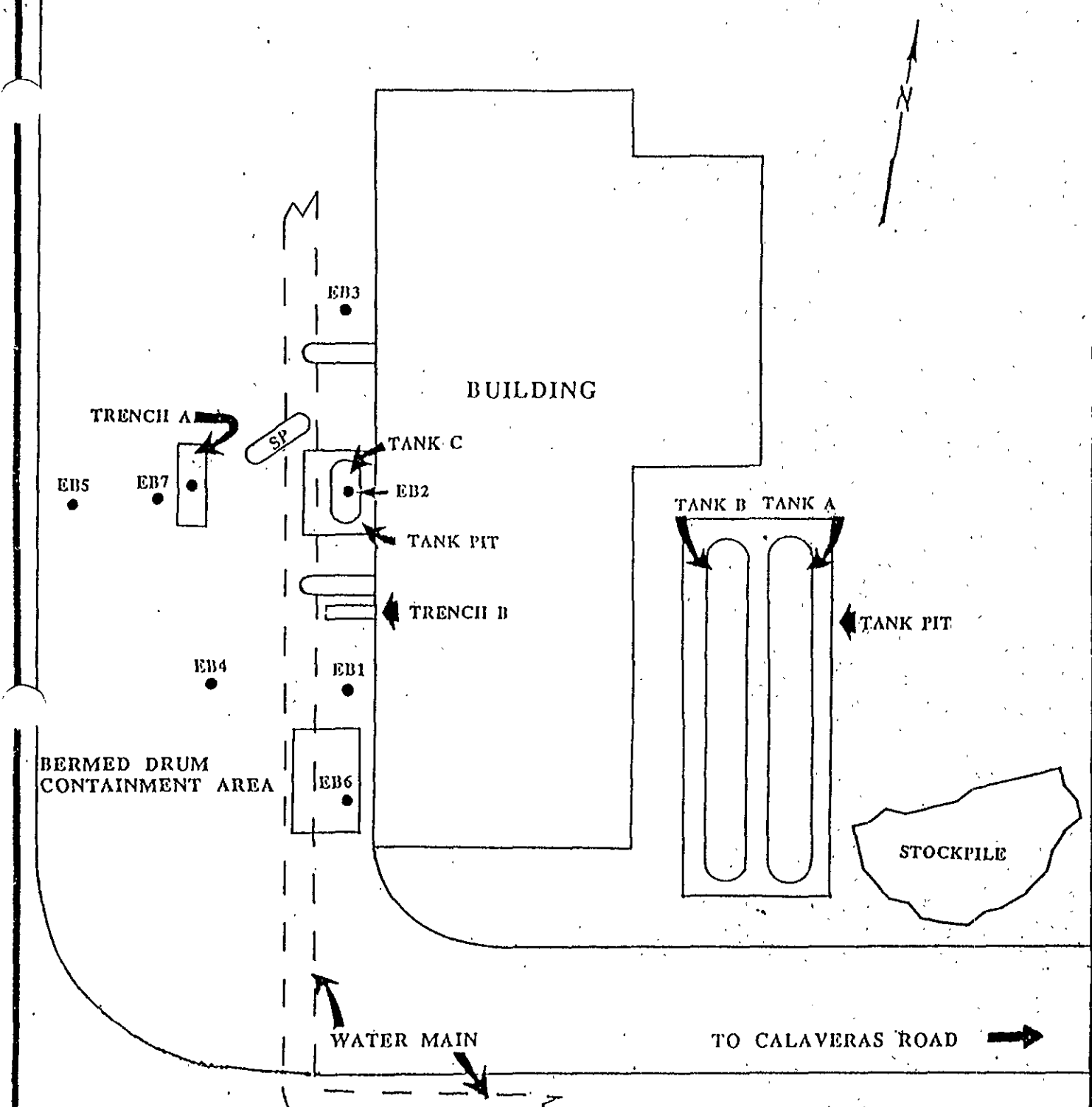
DRWN BY: SLS

APPRVD: TMB

**FIGURE 3: SAMPLE LOCATIONS-NOV. 7, 1991**

**SAN ANTONIO PUMP STA.  
 555 CALAVERAS ROAD  
 SUNOL, CALIFORNIA**





**LEGEND**

EB7 • - SOIL BORING  
 SP - STOCKPILE

SCALE - 1" = 20'



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DATE: FEB 1992  
 DRWN BY: SLS  
 APPRVD: TMB

**FIGURE 2: SITE DIAGRAM**  
 SAN ANTONIO PUMP STA.  
 555 CALAVERAS ROAD  
 SUNOL, CALIFORNIA