

STATE OF CALIFORNIA

PETE WILSON Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

2101 WEBSTER STREET, SUITE 400

OAKLAND, CA 94612

(510) 286-1255



AUG 11 93

RECEIVED

Mr. A. Johnson  
Federal Express  
8950 Cal Center Dr.  
Sacramento, CA 95826

File: 01-0615  
E 2198.17

AUG 12 1993

WESTERN REGION  
PROPERTIES

RE: Case Closure for Underground Storage Tank Site,  
8455 Pardee Drive, Oakland, Alameda County

Dear Mr. Johnson,

The Alameda County Department of Environmental Health (ACHD) has submitted a letter which recommends the closure for your site involving the removal of one 8,000 gallon gasoline tank, one 300 gallon waste oil tank and one 50 gallon hydraulic lift. Regional Board staff have reviewed the County file for your site and concur with this recommendation. Therefore based on the available information for the above site, it appears that further investigation and cleanup of petroleum hydrocarbons are not necessary. Further work could be required if conditions change or a water quality threat is discovered at the site.

Please contact Richard Hiett from my staff at (510) 286-4359 if you have any questions regarding the contents of this letter.

Sincerely,

Steven R. Ritchie  
Executive Officer

cc: ACHD, 80 Swan Way, Suite 200, Oakland, CA 94621  
Attn: Mr. Barney Chan

Mr. W. Harris, Knoll Co., 5976 West Las Positas Blvd., Suite  
208, Pleasanton, CA 94588

ALAMEDA COUNTY  
HEALTH CARE SERVICES  
AGENCY

DAVID J. KEARS, Agency Director



APR 05 1993

Martinez Engineering

RAFAT A. SHAHID, ASST. AGENCY DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH  
State Water Resources Control Board  
Division of Clean Water Programs  
UST Local Oversight Program  
80 Swan Way, Rm 200  
Oakland, CA 94621  
(510) 271-4530

April 5, 1993  
StID # 545

Mr. Rich Hiatt  
Regional Water Quality Control Board  
2101 Webster St., Suite 400  
Oakland CA 94612

Re: Recommendation for Case Closure for Federal Express, 8455  
Pardee Drive, Oakland CA 94621

Dear Rich:

Recall during our April 2, 1993 meeting, we discussed the above referenced site and it's eligibility for case sign-off. After considering your concerns and review of the January 1992 and February 1993 reports from IT Corp., it is our office's opinion, with the provision that the information provided to our office was accurate and representative of existing conditions, no further work should be required at this time. This case is referred to your office for either recommendation for closure or for the Board's request for additional investigation. This office also requests notification of final site status. It is also understood should additional information be presented which indicate groundwater impact, further investigation will be required.

Two underground tanks and one hydraulic lift was removed from this site. In summary, a 8,000 gallon gasoline underground storage tank was removed from the east side of the site in September of 1989. Because groundwater was encountered in the pit, sidewall samples were taken at the soil/groundwater interface on the east and west walls. These samples were non-detectable for TPHg and BTEX. A soil sample from the west end under the piping at a depth of 2.0 feet, however, exhibited 1500 ppm TPHg and 3,11,4 and 220 ppm BTEX respectively. Overexcavation in the affected area and soil sampling at 11.0 feet yielded non-detectable TPHg and BTEX. A grab water sample collected at 8 feet from the pit contained elevated levels of TPHg and BTEX. Monitoring wells MW-3 and MW-5 were installed in January and July 1990 on the northwest and southeast sides of the former tank pit within 25 feet. After four and six consecutive quarters of ND for TPHg and BTEX at MW-3 and MW-5 respectively, our office approved the discontinuation of sampling and analysis of these wells in January of 1992.

## CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

2101 WEBSTER STREET, SUITE 500

OAKLAND, CA 94612

(510) 286-1255



AUG 11 93

Mr. A. Johnson  
Federal Express  
8950 Cal Center Dr.  
Sacramento, CA 95826

File: 01-0615  
& 2198.17

RE: **Case Closure for Underground Storage Tank Site,  
8455 Pardee Drive, Oakland, Alameda County**

Dear Mr. Johnson,

The Alameda County Department of Environmental Health (ACHD) has submitted a letter which recommends the closure for your site involving the removal of one 8,000 gallon gasoline tank, one 300 gallon waste oil tank and one 50 gallon hydraulic lift. Regional Board staff have reviewed the County file for your site and concur with this recommendation. Therefore based on the available information for the above site, it appears that further investigation and cleanup of petroleum hydrocarbons are not necessary. Further work could be required if conditions change or a water quality threat is discovered at the site.

Please contact Richard Hiett from my staff at (510) 286-4359 if you have any questions regarding the contents of this letter.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Ritchie", is written over a circular stamp or seal.

Steven R. Ritchie  
Executive Officer

cc: ACHD, 80 Swan Way, Suite 200, Oakland, CA 94621  
Attn: Mr. Barney Chan

Mr. W. Harris, Knoll Co., 5976 West Las Positas Blvd., Suite  
208, Pleasanton, CA 94588

## ***Executive Summary***

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IT Corporation (IT) was retained by Federal Express Corporation to support tank removal activities and conduct sampling investigation and remedial actions for three underground storage tanks, located on their property at 8455 Pardee Drive in Oakland, California.

A gasoline tank was removed in September 1989. Upon removal, petroleum hydrocarbons were encountered in the soil beneath the former piping and in the groundwater recharge in the tank excavation. The area of impacted soil was overexcavated and a soil sample collected following overexcavation revealed no detectable levels of petroleum hydrocarbons. The groundwater recharge in the tank excavation was evacuated twice prior to backfill operations. Analysis of soil and groundwater samples, collected from wells MW-3 and MW-5 (immediately adjacent to the former tank field), revealed no detectable petroleum hydrocarbons for four consecutive quarters.

A used oil tank was removed in March 1990. Upon removal, petroleum hydrocarbons were encountered in a sample of the groundwater recharge in the tank excavation. No detectable hydrocarbons were encountered in a soil sample collected from the excavation sidewall. The groundwater recharge was evacuated prior to backfill operations. Analysis of soil and groundwater samples, collected from well MW-6 (adjacent to the former used oil tank location), revealed no detectable petroleum hydrocarbons for four consecutive quarters.

An hydraulic lift system was removed in March 1990. Upon removal, petroleum hydrocarbons were encountered in the soil and groundwater samples collected from the excavation. A series of investigative borings were drilled surrounding the former hydraulic lift system location to facilitate sample collection. Sample analysis revealed no detectable hydrocarbons in soils above or below the water table, thus indicating a highly localized area of impact. All accessible impacted soils were overexcavated in the area surrounding the former lift system location. An extraction well was installed in the backfill in order to access residual hydrocarbons which could not be excavated. This well was vacuumed on four occasions with groundwater samples collected subsequent to the pumping events. Analysis of soil and groundwater samples, collected from well MW-6 (adjacent to the former hydraulic lift system location) revealed no detectable petroleum hydrocarbons for four consecutive quarters.

appears that no further action is required at this site since all accessible petroleum hydrocarbons have been removed (through excavation and vacuuming procedures as indicated in the report). Four consecutive quarters of monitoring well sample analytical results below detection limit, and three of four post extraction well sample analytical results below detection limits.

It is recommended that the Regional Water Quality Control Board consider this site for case closure.

## 2.0 Site Background

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The site is located at 8455 Pardee Drive in Oakland, California, adjacent to the Metropolitan Oakland Airport. The surrounding area is mainly commercial/industrial in nature, and is bounded on the east by Highway 880. The southern boundary of the airport channel lies approximately 800 feet west of the site, with the southeasterly flowing San Leandro creek crossing approximately 1,400 feet to the east (Figure 1). The site is located at approximately 10 feet above mean sea level. Two irrigation wells are located at 98th street and the flood control channel. Five known hazardous waste investigation sites (containing borings/monitoring wells) are located within a 2,000 foot radius of the site.

The site property is leased to Federal Express by the Koll Real Estate Company. The present warehouse was built in 1979 for Westinghouse, who operated the facility until mid 1984 when Federal Express took over the site.

The site contained three UST's (Figure 2):

- One 8,000 gallon unleaded gasoline tank
- One 300 gallon used oil tank
- One 50 gallon hydraulic fuel tank

Average monthly inventory consumption from the gasoline tank was approximately 4,000 gallons (based on inventory records from November 1988 thru March 1989). The gas tank was permitted for not more than 60,000 gallon throughput per annum. The tank system failed an integrity test on December 30, 1988. The system was repaired and a subsequent tightness test was conducted on January 20, 1989 which revealed the system required further repairs. A final integrity test was conducted on March 13, 1989 which yielded inconclusive results. The tank was taken out of service at that point.

The gasoline tank was removed in September 1989 and the two remaining tanks were removed in March 1990. Sections 3.0, 4.0, 5.0, and 6.0 of this report describe tank removal/sampling, soil and groundwater investigation, corrective actions and verification monitoring.

## **3.0 Former Gasoline Tank**

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### **3.1 Gasoline Tank Removal**

The former gasoline tank was located in the southern parking lot near the property boundary (Figure 2). The tank was removed on September 15, 1990 by representatives of Pearson Equipment and Maintenance Company. Petroleum hydrocarbon concentrations of greater than 100 ppm, as detected with a photoionization detector, were encountered in the soil immediately above the tank, approximately 5.0 feet below grade. Upon removal, the tank appeared sound, however, several pipes were found to be loosely connected in the location of the former dispenser island. Although, no product stains were noted in the excavation, petroleum odor was encountered. The tank and associated piping were removed by H & H Ship Service Company and transported to their facility in San Francisco for disposal. All excavated soils were stockpiled on visqueen for future disposal.

Subsequent to excavation activities, groundwater recharge started to fill the excavation. The water exhibited a slight sheen. The tank pit was evacuated on September 18, 1990, by representatives of Refineries Service, using a vacuum truck. A groundwater sample was collected from the excavation following completion of vacuum procedures. The vacuumed groundwater was transported by a Refineries Service representative to their facility in Patterson, California for recycling. Copies of the manifests for the tank, piping and vacuumed water are included in Appendix A.

### **3.2 Gasoline Tank Excavation Sampling**

Two soil samples were collected from the tank excavation (one at the vent end, one at the fill end) at the soil/water interface. Laboratory analysis of these samples revealed no detectable petroleum hydrocarbons. Detectable concentrations were encountered in the soil sample collected beneath the former piping (Table 1A). High concentrations of hydrocarbons were encountered in the groundwater sample collected from the excavation following tank pit evacuation (Table 1B). Sample collection locations are shown on a field sketch in Appendix B.

### **3.3 Soil and Groundwater Investigation - Former Gas Tank Location**

On January 11, 1990, three monitoring wells (MW-1, MW-2 and MW-3) were installed on the site property by IT Corporation (Figure 3). Soil samples, collected during drilling, revealed no detectable levels of petroleum hydrocarbons (Table 2A). Groundwater samples, collected following well development, revealed a minor amount of benzene in well MW-3, installed closest to the former tank field (Table 2B).

On July 23, 1990 three additional monitoring wells (MW-4, MW-5 and MW-6) were installed by IT Corporation (Figure 3). Upon analysis, soil and groundwater samples collected from MW-5, one of the additional wells installed immediately downgradient of the former gas tank location, revealed no detectable petroleum hydrocarbons (Tables 2A and 2B).

### **3.4 Corrective Action - Former Gas Tank Location**

On April 4, 1990, a plan to overexcavate impacted soils exhibiting hydrocarbon concentrations greater than 100 ppm, and to vacuum the groundwater recharge from the tank excavation was approved by Ariu Levy of the Alameda County Health Care Services - Hazardous Materials Division. The work was completed on April 26, 1990.

A sidewall soil sample was obtained from the west wall of the excavated area to ensure that all impacted soil had been removed. A field sketch of sample collection locations is included in Appendix B. Analytical results revealed no detectable levels of petroleum hydrocarbons (Table 1A). On April 26 and May 7, 1990, the groundwater was vacuumed from the excavation by a representative of Refineries Service and removed to their facility in Patterson, California for recycling (Appendix C).

On May 7, 1990, the excavation was backfilled by Pearson Equipment and Maintenance Company and stockpiled soils were removed to the Laidlaw facility in Buttonwillow, California for disposal. Copies of the soil disposal manifests are included in Appendix D.



## **4.0 Former Used Oil Tank**

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### **4.1 Used Oil Tank Removal**

The former used oil tank was located near the northwest corner of the onsite warehouse adjacent to the maintenance shop and vehicle wash areas (Figure 2). The tank was removed on March 20, 1990 by representatives of Pearson Equipment and Maintenance Company. No visually apparent leaks, stains or separate phase hydrocarbons were encountered upon removal of the tank. The tank and associated piping appeared sound. The tank was removed from the site by H & H Ship Service and was transported to their facility in San Francisco for disposal. A copy of the manifest is included in Appendix E. All excavated soils were stockpiled for future disposal.

Groundwater began to enter the excavation once the tank had been removed. The water appeared brown and foamy, but no sheen or petroleum odor were noted.

### **4.2 Used Oil Tank Excavation Sampling**

One soil sample was collected from the north wall of the excavation at the soil/water interface. Analysis of the sample revealed no detectable levels of petroleum hydrocarbons (Table 3A).

One groundwater sample was collected from the excavation which, upon analysis, revealed high concentrations of petroleum hydrocarbons (Table 3B). Sample collection locations are shown on a map in Appendix F.

### **4.3 Soil and Groundwater Investigation - Former Used Oil Tank Location**

On July 23, 1990, three additional monitoring wells (MW-4, MW-5 and MW-6) were installed to address the potential migration of petroleum hydrocarbons in groundwater, encountered upon removal of the used oil tank (Figure 3).

Analysis of soil samples collected during drilling revealed no detectable levels of petroleum hydrocarbons (Table 2A). Analysis of groundwater samples collected following well development revealed the presence of petroleum hydrocarbons in the sample collected from

well MW-6 only (Table 2B). Well MW-6 is located <sup>not really!</sup> immediately downgradient of the former used oil and hydraulic fuel tanks (Figure 3).

#### **4.4 Corrective Action - Former Used Oil Tank Location**

On April 26 and May 7, 1990, the used oil tank excavation was dewatered by representatives of Refineries Service. The water was then removed to their facility in Patterson, California for recycling. Copies of the manifests are included in Appendix C.

On May 7, 1990, the excavation was backfilled by Pearson Equipment Maintenance and Construction Company and stockpiled soils were removed to the Laidlaw facility in Buttonwillow, California for disposal. Manifest copies are included in Appendix D.

## 9.0 Summary

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The site contained three underground storage tanks:

- 1 - 8,000 gallon gasoline
- 1 - 300 gallon used oil
- 1 - 50 gallon hydraulic fuel

The gasoline tank was removed in September 1989. Upon removal, petroleum hydrocarbons were encountered in the soil beneath the former piping and in the groundwater recharge in the tank excavation. The area of impacted soil was overexcavated and a soil sample collected following overexcavation revealed no detectable levels of petroleum hydrocarbons. The groundwater recharge in the tank excavation was evacuated twice prior to backfill operations. Analysis of soil and groundwater samples, collected from wells MW-3 and MW-5 (immediately adjacent to the former tank field), revealed no detectable petroleum hydrocarbon for four consecutive quarters.

The used oil tank was removed in March 1990. Upon removal, petroleum hydrocarbons were encountered in a sample of the groundwater recharge in the tank excavation. No detectable hydrocarbons were encountered in a soil sample collected from the excavation sidewall. The groundwater recharge was evacuated prior to backfill operations. Analysis of soil and groundwater samples, collected from well MW-6 (adjacent to the former used oil tank location), revealed no detectable petroleum hydrocarbons for four consecutive quarters.

The hydraulic lift system was removed in March 1990. Upon removal, petroleum hydrocarbons were encountered in the soil and groundwater samples collected from the excavation. A series of investigative borings were drilled surrounding the former hydraulic lift system location to facilitate sample collection. Sample analysis revealed no detectable hydrocarbons in soils above or below the water table, thus indicating a highly localized area of impact. All accessible impacted soils were overexcavated in the area surrounding the former lift system location. An extraction well was installed in the backfill in order to access residual hydrocarbons which could not be excavated. This well was vacuumed on four occasions with groundwater samples collected subsequent to the pumping events. Analysis of

soil and groundwater samples, collected from well MW-6 (adjacent to the former hydraulic lift system location) revealed no detectable petroleum hydrocarbons for four consecutive quarters.

All tanks, piping, excavated soils, groundwater recharge, drill cuttings and purge water (except for 4 drums of purge water from August and November 1991) have been disposed of at this time (Appendix J). Copies of all analytical reports are enclosed in Appendix L.

## 10.0 Discussion

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- Soil impact appears to have been concentrated in the upper fill layer which underlies the site.
- All impacted soils have been excavated and disposed with the exception of a limited zone of soil near the former hydraulic fuel tank which was inaccessible.
- Remaining hydrocarbons were highly localized as established by investigative efforts in the hydraulic lift area. The hydrocarbons are highly viscous and were contained in medium to low permeability clays, so migration is unlikely.
- Groundwater recharge was vacuumed from tank excavations and recycled.
- Although groundwater flow direction is highly variable, monitoring wells are situated surrounding the site; therefore, any hydrocarbon migration from the former tank locations should be detected in the monitoring wells.
- Groundwater samples collected from the onsite monitoring wells have revealed no detectable petroleum hydrocarbons for four consecutive quarters.
- Groundwater was pumped, on four occasions, from the onsite extraction well (near the former hydraulic tank location, where minor amounts of impacted soils remained in place. Analysis of verification samples collected following each pumping event revealed no detectable levels of petroleum hydrocarbons in three of the four samples.

**Table 1A**  
**Gas Tank Excavation**  
**Soil Sample Analyses**  
**(Results in ppm)**

Sample #	Location	Date	Collection Depth (ft)	TPH Gasoline	B	T	E	X
0915SS1	South wall west end (vent)	9/15/89	5.5	ND <sub>5</sub>	ND <sub>.05</sub>	ND <sub>.1</sub>	ND <sub>.1</sub>	ND <sub>.3</sub>
0915SS2	East Wall (fill)	9/15/89	5.5	ND <sub>5</sub>	ND <sub>.05</sub>	ND <sub>.1</sub>	ND <sub>.1</sub>	ND <sub>.3</sub>
0918SS3	West end under piping	9/18/89	2.0	1,500 <sub>150</sub>	3 <sub>1</sub>	11 <sub>3</sub>	4 <sub>3</sub>	220 <sub>9</sub>
042690SS1	West end following over excavation	4/26/90	11.0	ND <sub>5</sub>	ND <sub>.015</sub>	ND <sub>.015</sub>	ND <sub>.015</sub>	ND <sub>.045</sub>

**Table 1B**  
**Gas Tank Excavation**  
**Water Sample Analyses**  
**(Results in ppm)**

Sample #	Location	Date	Collection Depth (ft)	TPH Gasoline	B	T	E	X
0918WS1	Tank excavation bottom	9/18/89	8.0	65,000 <sub>5000</sub>	1,300 <sub>50</sub>	8,400 <sub>100</sub>	2,000 <sub>100</sub>	17,000 <sub>300</sub>

- ppm = parts per million
- ppb = parts per billion
- TPH = total petroleum hydrocarbons
- B = benzene
- T = toluene
- E = ethylbenzene
- X = xylene
- ND = none detected above method detection limits
- 1500<sub>x</sub> = concentration detected at x method detection limit
- ND<sub>x</sub> = none detected above x method detection limit

**Table 2A**  
**Monitoring Well**  
**Soil Sample Analyses**  
**(Results in ppm)**

Well Number	Date	Depth (ft)	TPH Gas	TPH Oil	Oil & Grease	B	T	E	X
MW-1	1/11/90	4.0-4.5	ND <sub>2.5</sub>	NA	NA	ND <sub>0.025</sub>	ND <sub>0.025</sub>	ND <sub>0.025</sub>	ND <sub>0.05</sub>
MW-2	1/11/90	4.0-4.5	ND <sub>2.5</sub>	NA	NA	ND <sub>0.025</sub>	ND <sub>0.025</sub>	ND <sub>0.025</sub>	ND <sub>0.05</sub>
MW-3	1/11/90	4.0-4.5	ND <sub>2.5</sub>	NA	NA	ND <sub>0.025</sub>	ND <sub>0.025</sub>	ND <sub>0.025</sub>	ND <sub>0.05</sub>
MW-4	7/23/90	4.0-4.5	ND <sub>1.0</sub>	NA	NA	ND <sub>0.005</sub>	ND <sub>0.005</sub>	ND <sub>0.005</sub>	ND <sub>0.005</sub>
MW-5	7/23/90	4.0-4.5	ND <sub>1.0</sub>	NA	NA	ND <sub>0.005</sub>	ND <sub>0.005</sub>	ND <sub>0.005</sub>	ND <sub>0.005</sub>
MW-6	7/23/90	4.0-4.5	ND <sub>1.0</sub>	ND <sub>500</sub>	ND <sub>5000</sub>	ND <sub>0.005</sub>	ND <sub>0.005</sub>	ND <sub>0.005</sub>	ND <sub>0.005</sub>

TPH = total petroleum hydrocarbons

B = benzene

T = toluene

E = ethylbenzene

X = xylene

NA = not analyzed

ND<sub>x</sub> = not detected at x method detection limit

\* = As part of laboratory QA/QC, the sample collected from monitoring well MW-6 was selected to be analyzed as a matrix spike and matrix spike duplicate. These additional testings revealed the presence of petroleum hydrocarbons, as indicated in the laboratory report (Appendix D).

Table 2B  
Monitoring Well  
Groundwater Sample Analyses  
(Results in ppb)

WELL NUMBER	DATE	TPH GAS	TPH OIL	TPH D	OIL & GREASE	B	T	E	X
MW-1	01/16/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-1	06/23/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-1	11/05/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-1	02/06/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-1	05/07/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-1	08/14/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-1	11/18/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-2	01/16/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-2	06/23/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-2	11/05/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-2	02/06/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-2	05/07/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-2	08/14/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-2	11/18/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-3	01/16/90	BDL <sub>50</sub>	NA	NA	NA	1.3	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-3	06/23/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-3	11/05/90	BDL <sub>50</sub>	NA	NA	NA	1.5	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-3	02/06/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-3	05/07/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-3	08/14/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-3	11/18/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-4	07/27/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-4	11/05/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-4	02/06/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-4	05/07/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-4	08/14/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-4	11/18/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
FB	07/27/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
FB	11/05/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
FB	02/06/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
FB	05/07/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
FB	08/14/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
FB	11/18/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-5	08/01/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-5	11/05/90	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-5	02/06/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-5	05/07/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-5	08/14/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-5	11/18/91	BDL <sub>50</sub>	NA	NA	NA	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>



**Table 2B**  
**Monitoring Well**  
**Groundwater Sample Analyses**  
**(Results in ppb)**

WELL NUMBER	DATE	TPH GAS	TPH OIL	TPH D	OIL & GREASE	B	T	E	X
MW-6	07/30/90	BDL <sub>50</sub>	BDL <sub>500</sub>	120	BDL <sub>500</sub>	EDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-6	11/05/90	BDL <sub>50</sub>	BDL <sub>500</sub>	BDL <sub>50</sub>	BDL <sub>5000</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-6	02/06/91	BDL <sub>50</sub>	BDL <sub>500</sub>	BDL <sub>50</sub>	BDL <sub>500</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-6	05/07/91	BDL <sub>50</sub>	BDL <sub>500</sub>	BDL <sub>50</sub>	BDL <sub>5000</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-6	08/14/91	BDL <sub>50</sub>	BDL <sub>500</sub>	BDL <sub>50</sub>	BDL <sub>5000</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>
MW-6	11/18/91	BDL <sub>50</sub>	BDL <sub>500</sub>	BDL <sub>50</sub>	BDL <sub>5000</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>	BDL <sub>0.5</sub>

- PPB = parts per billion
- TPH = total petroleum hydrocarbons
- D = diesel
- B = benzene
- T = toluene
- E = ethylbenzene
- X = xylene
- BDL = below detection limits
- NA = not analyzed
- FB = field blank
- BDL<sub>x</sub> = not detected at x method detection limit

**Table 3A**

**Used Oil Tank Excavation  
Soil Sample Analyses  
(Results in ppm)**

Parameter:	Soil Sample #032090SS1
TPH as Waste Oil	BDL <sub>10</sub>
Oil and Grease	BDL <sub>20</sub>
Gasoline	BDL <sub>5</sub>
TPH as Diesel	BDL <sub>10</sub>
Dichlorodifluoromethane	BDL <sub>.015</sub>
Trichlorofluoromethane	BDL <sub>.015</sub>
Freon 113	BDL <sub>.015</sub>
Methylene chloride	BDL <sub>5</sub>
1,1-dichloroethene	BDL <sub>.015</sub>
1,1-dichloroethane	BDL <sub>.015</sub>
Trans-1,2-dichloroethene	BDL <sub>.015</sub>
Chloroform	BDL <sub>.015</sub>
1,2-dichloroethane	BDL <sub>.015</sub>
1,1,1-trichloroethane	BDL <sub>.015</sub>
Carbon tetrachloride	BDL <sub>.015</sub>
Bromodichloromethane	BDL <sub>.015</sub>
1,2-dichloropropane	BDL <sub>.015</sub>
Trichloroethene	BDL <sub>.015</sub>
Dibromochloromethane	BDL <sub>.015</sub>
1,1,2-trichloroethane	BDL <sub>.015</sub>
Trans 1,3 trichloropropene	BDL <sub>.015</sub>
2-chloroethyl vinyl ether	BDL <sub>.015</sub>
Bromoform	BDL <sub>.015</sub>
Tetrachloroethene	BDL <sub>.015</sub>
1,1,2,2-tetrachloroethane	BDL <sub>.015</sub>
Chlorobenzene	BDL <sub>.015</sub>
1,3 Dichlorobenzene	BDL <sub>.015</sub>
1,4 Dichlorobenzene	BDL <sub>.015</sub>
1,2 Dichlorobenzene	BDL <sub>.015</sub>

**Table 3A**

**Used Oil Tank Excavation  
Soil Sample Analyses  
(Results in ppm)  
(Continued)**

Parameter:	Soil Sample #032090SS1:
Cis-1,2 dichloroethane	NA
Benzene	BDL <sub>.015</sub>
Toluene	0.017 <sub>.015</sub>
Ethyl-benzene	BDL <sub>.015</sub>
Xylene	0.048 <sub>.045</sub>
Zinc	12.6 <sub>.15</sub>
Cadmium	0.86 <sub>.30</sub>
Lead	3.74 <sub>1.1</sub>
Chromium	12.0 <sub>.15</sub>
Polychlorinated Biphenyls	BDL <sub>1</sub>
Pentachlorophenol	BDL <sub>.5</sub>
Poly nuclear aromatic hydrocarbons	BDL <sub>1</sub>

BDL = below detection limits  
 NA = not analyzed  
 12.6<sub>x</sub> = concentration detected at x method detection limit  
 BDL<sub>x</sub> = none detected above x method detection limit

**Table 3B**

**Used Oil Tank Excavation  
Groundwater Sample Analyses  
(Results in ppb)**

Parameter:	Groundwater Sample #030290W01
TPH as Waste Oil	15,000 <sub>500</sub>
Oil and Grease	48,000 <sub>2000</sub>
Gasoline	400 <sub>50</sub>
TPH as Diesel	NA
Dichlorodifluoromethane	BDL <sub>3</sub>
Trichlorofluoromethane	BDL <sub>3</sub>
Freon 113	BDL <sub>3</sub>
Methylene chloride	BDL <sub>3</sub>
1,1-dichloroethene	BDL <sub>3</sub>
1,1-dichloroethane	17 <sub>3</sub>
Trans-1,2-dichloroethene	BDL <sub>3</sub>
Chloroform	BDL <sub>3</sub>
1,2-dichloroethane	BDL <sub>3</sub>
1,1,1-trichloroethane	12 <sub>3</sub>
Carbon tetrachloride	BDL <sub>3</sub>
Bromodichloromethane	BDL <sub>3</sub>
1,2-dichloropropane	BDL <sub>3</sub>
Trichloroethene	BDL <sub>3</sub>
Dibromochloromethane	BDL <sub>3</sub>
1,1,2-trichloroethane	BDL <sub>3</sub>
Trans 1,3-trichloropropene	BDL <sub>3</sub>
2-chloroethyl vinyl ether	BDL <sub>3</sub>
Bromoform	BDL <sub>3</sub>
Tetrachloroethene	1.1 <sub>3</sub>
1,1,2,2-tetrachloroethane	BDL <sub>3</sub>
Chlorobenzene	BDL <sub>3</sub>
1,3-Dichlorobenzene	BDL <sub>3</sub>
1,4-Dichlorobenzene	BDL <sub>3</sub>
1,2-Dichlorobenzene	BDL <sub>3</sub>

**Table 3B**  
**Used Oil Tank Excavation**  
**Groundwater Sample Analyses**  
**(Results in ppb)**  
**(Continued)**

Parameter:	Groundwater Sample #030290W01
Cis-1,2 dichloroethane	6.5 <sub>3</sub>
Benzene	BDL <sub>3</sub>
Toluene	70 <sub>3</sub>
Ethyl-benzene	2.3 <sub>3</sub>
Xylene	26 <sub>6</sub>
Zinc	700 <sub>6</sub>
Cadmium	BDL <sub>12</sub>
Lead	160 <sub>44</sub>
Chromium	70 <sub>6</sub>
Polychlorinated Biphenyls	BDL <sub>1</sub>
Pentachlorophenol	BDL <sub>500</sub>
Acenaphthylene	100 <sub>100</sub>

BDL = below detection limits  
 NA = not analyzed  
 70<sub>x</sub> = concentration detected at x method detection limit  
 BDL<sub>x</sub> = none detected above x method detection limit

**Table 4**  
**Hydraulic Tank Excavation**  
**Soil and Groundwater Sample Analyses**  
**(Results in ppm)**

Sample #	Medium	Location	Date Sampled	Sample Depth (ft)	TPH as Oil	TPH as Diesel	Oil & Grease
032090SS2	Soil	Original Hydraulic Tank Excavation	3/20/90	2.5	33,000 <sub>10</sub>	NA	67,930 <sub>20</sub>
032090HL1	Water	Composite from 2 Machinery Holes	3/20/90	3.0	5.3 <sub>5</sub>	NA	2.8 <sub>2</sub>
102690NW1	Soil	Overexcavation North wall ✓	10/26/90	4.0	ND <sub>50</sub>	ND <sub>5</sub>	ND <sub>50</sub>
102690SW1	Soil	Overexcavation South wall ✓	10/26/90	4.0	ND <sub>50</sub>	ND <sub>5</sub>	ND <sub>50</sub>
102690EW1	Soil	Overexcavation east wall ✓	10/26/90	3.5	ND <sub>50</sub>	ND <sub>5</sub>	ND <sub>50</sub>
102690WW1	Soil	Overexcavation west wall ✓	10/26/90	3.5	ND <sub>50</sub>	ND <sub>5</sub>	ND <sub>50</sub>
102690EF1	Soil	Overexcavation floor ✓	10/26/90	4.2	ND <sub>50</sub>	ND <sub>5</sub>	ND <sub>50</sub>
102690EF2	Soil	Overexcavation floor	10/26/90	9.0	ND <sub>50</sub>	ND <sub>5</sub>	ND <sub>50</sub>
102690NW2	Soil	Overexcavation north wall tank location floor	10/26/90	9.0	1,700 <sub>50</sub>	7.3 <sub>5</sub>	1,400 <sub>50</sub>

PPM = parts per million  
 TPH = total petroleum hydrocarbons  
 ND<sub>x</sub> = none detected at x limit of detection  
 5.3<sub>x</sub> = amount detected at x limit of detection  
 NA = not analyzed

Table 5

Former Hydraulic Lift System Vicinity - Soil Boring Sample Analyses  
(Results in ppm)

Boring Number/ Location	Medium	Sample #	Date Sampled	Sample Depth (ft)	TPH as Oil	TPH as Diesel	Oil & Grease
HB-1	Soil	032990SS1	3/29/90	2.5	ND <sub>10</sub>	ND <sub>10</sub>	2920 <sub>20</sub>
HB-2	Soil	032990SS2	3/29/90	2.5	26 <sub>10</sub>	ND <sub>10</sub>	2200 <sub>20</sub>
SB-1	Soil	082490SB1-1	8/24/90	2.5	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-1	Soil	082490SB1-2	8/24/90	5.0	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-1	Soil	082490SB1-3	8/24/90	7.5*	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-2	Soil	082490SB2-1	8/24/90	2.5	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-2	Soil	082490SB2-2	8/24/90	5.0	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-2	Soil	082490SB2-3	8/24/90	7.5*	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-4	Soil	082490SB4-1	8/24/90	2.5	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-4	Soil	082490SB4-2	8/24/90	5.0	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-4	Soil	082490SB4-3	8/24/90	7.5*	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-5	Soil	082490SB5-1	8/24/90	2.5	ND <sub>50</sub>	NA	ND <sub>50</sub>
SB-6	Soil	082490SB6-1	8/24/90	2.5	ND <sub>50</sub>	NA	ND <sub>50</sub>

- PPM = parts per million
- TPH = total petroleum hydrocarbons
- ND<sub>x</sub> = none detected at x limit of detection
- 5.3<sub>x</sub> = amount detected at x limit of detection
- \* = These soil samples were collected below the water table and are anticipated to provide general groundwater quality data.
- NA = not analyzed

Table 6  
 Extraction Well EW-1  
 Groundwater Analyses  
 (Results in ppb)

Sample #	Location	Date	Oil & Grease	Detection Limit
011691EW-1	EW-1	01/16/91	BDL	5000
022091EW-1	EW-1	02/20/91	BDL	5000
052491EW-1	EW-1	05/24/91	8800 <i>S.S.P.</i>	5000
062491MWEX	EW-1	06/24/91	BDL	5000

ppb = parts per billion  
 BDL = below detection limits

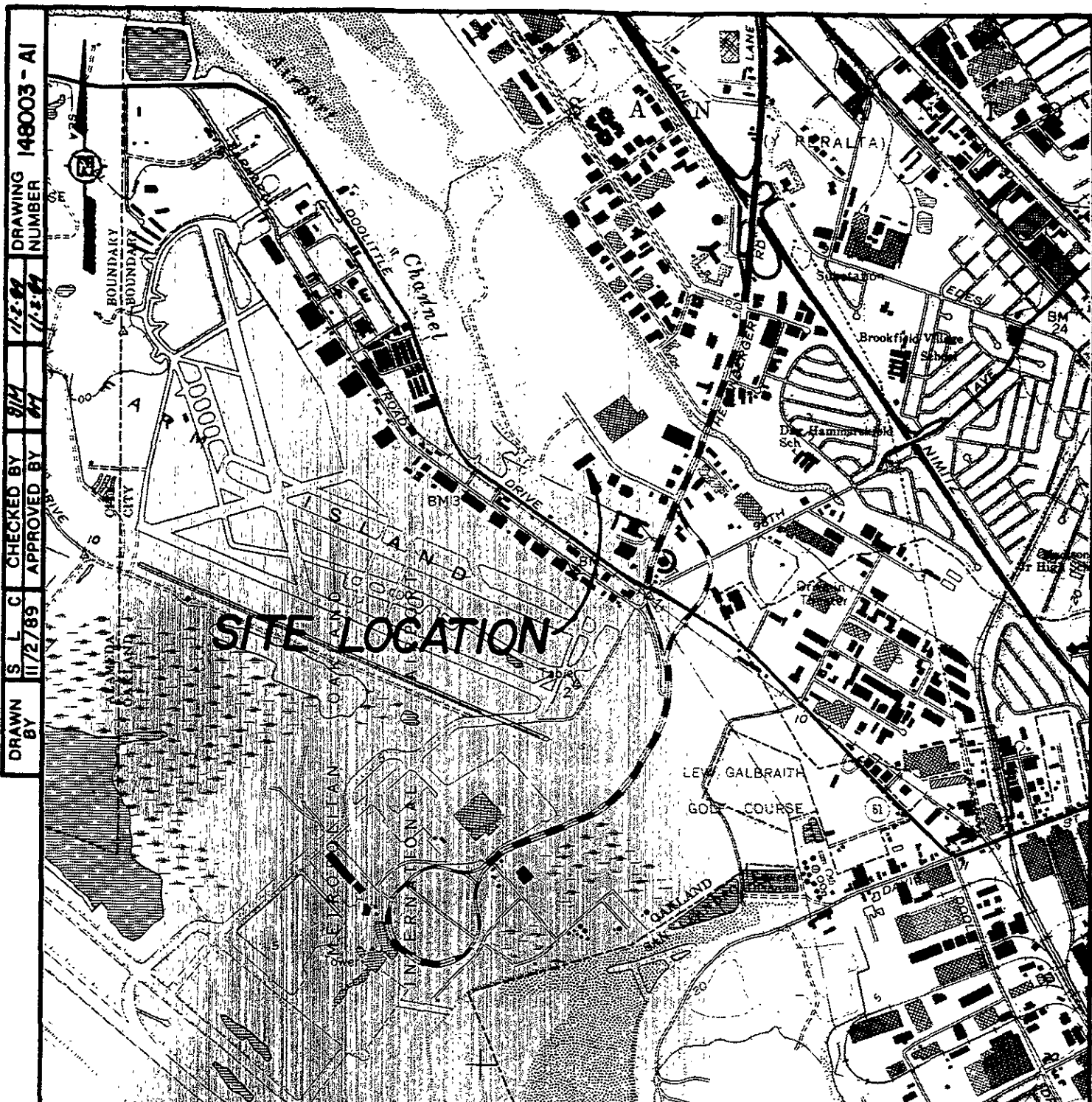


**Table 7**  
Water Level Data

Well Number	Date	PVC Rim Elevation <sup>1</sup> (ft/msl)	Depth to Water (ft)	Water Elevation (ft/msl)
MW-1	1/16/90	10.09	4.85	
MW-1	6/23/90	10.09	4.20	5.24
MW-1	8/08/90	10.09	4.81	6.55
MW-1	11/05/90	10.09	5.52	5.28
MW-1	2/06/91	10.09	4.82	4.57
MW-1	5/07/91	10.09	3.82	5.27
MW-1	8/14/91	10.09	5.10	6.27
MW-1	11/18/91	10.09	5.58	4.99
				4.51
MW-2	1/16/90	9.62	4.05	
MW-2	6/23/90	9.62	4.80	5.57
MW-2	8/08/90	9.62	5.08	4.82
MW-2	11/05/90	9.62	5.40	4.54
MW-2	2/06/91	9.62	4.78	4.22
MW-2	5/07/91	9.26	4.18	4.84
MW-2	8/14/91	9.26	5.23	5.44
MW-2	11/18/91	9.26	5.41	4.39
				4.21
MW-3	1/16/90	8.01	2.62	
MW-3	6/23/90	8.01	3.20	5.39
MW-3	8/08/90	8.01	3.36	4.81
MW-3	11/05/90	8.01	3.50	4.65
MW-3	2/06/91	8.01	2.84	4.51
MW-3	5/07/91	8.01	2.52	5.17
MW-3	8/14/91	8.01	3.38	5.49
MW-3	11/18/91	8.01	3.67	4.63
				4.34
MW-4	7/26/90	9.35	4.39	
MW-4	8/08/90	9.35	4.43	4.96
MW-4	11/05/90	9.35	4.35	4.92
MW-4	2/06/91	9.35	2.98	5.00
MW-4	5/07/91	9.35	4.20	6.37
MW-4	8/14/91	9.35	5.00	5.15
MW-4	11/18/91	9.35	4.97	4.35
				4.38
MW-5	7/26/90	8.87	12.00	
MW-5	8/08/90	8.87	10.92	-3.13
MW-5	11/05/90	8.87	6.39	-2.05
MW-5	2/06/91	8.87	4.98	2.48
MW-5	5/07/91	8.87	3.25	3.89
MW-5	8/14/91	8.87	4.63	5.62
MW-5	11/18/91	8.87	6.29	4.24
				2.58
MW-6	7/26/90	10.00	12.26	
MW-6	8/08/90	10.00	10.71	-2.26
MW-6	11/05/90	10.00	5.03	-0.71
MW-6	2/06/91	10.00	3.94	4.97
MW-6	5/07/91	10.00	3.72	6.06
MW-6	8/14/91	10.00	4.87	6.28
MW-6	11/18/91	10.00	5.57	5.13
				4.43

Based on survey report prepared by Earl L. Gray Surveying Company dated July 28, 1990.

ft/msl = feet mean sea level



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 CHECKED BY 9/14  
 APPROVED BY 7/2/89  
 DRAWING NUMBER 148003 - A1

**SITE LOCATION**

**FIGURE I**

**SITE LOCATION MAP**  
**FEDERAL EXPRESS**  
**8455 PARDEE DRIVE**  
**OAKLAND, CALIFORNIA**

PREPARED FOR  
**FEDERAL EXPRESS**  
**SACRAMENTO, CALIFORNIA**

SCALE  
 0 2000 4000 FEET

**REFERENCE**  
 USGS 7.5' TOPOGRAPHIC QUADRANGLE  
 OF SAN LEANDRO, CALIFORNIA  
 DATE - 1959, PHOTOREVISED - 1980  
 SCALE - 1: 24,000  
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9-5-90 APPROVED BY S.J.G. 9-24-90 9-24-90

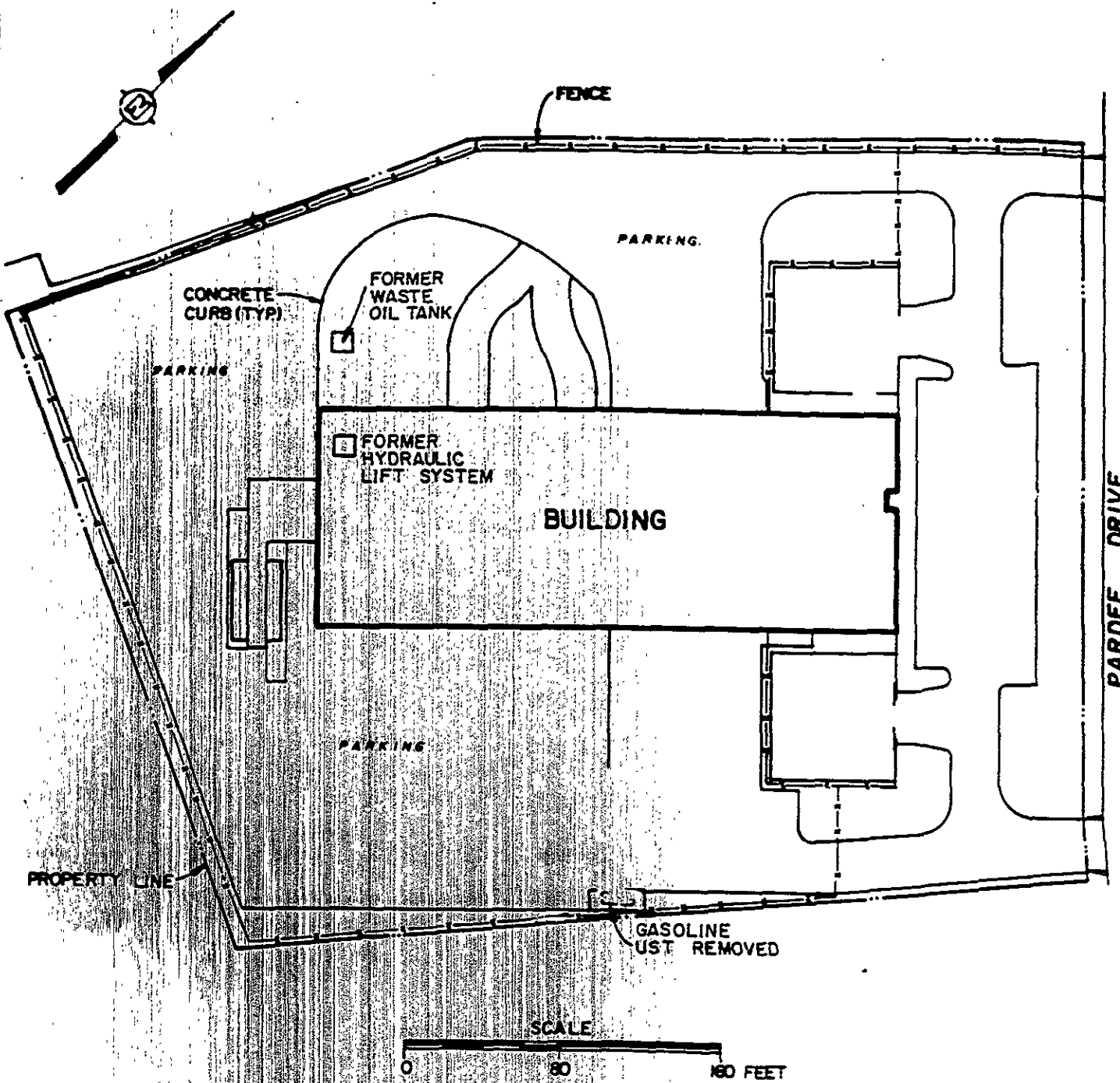
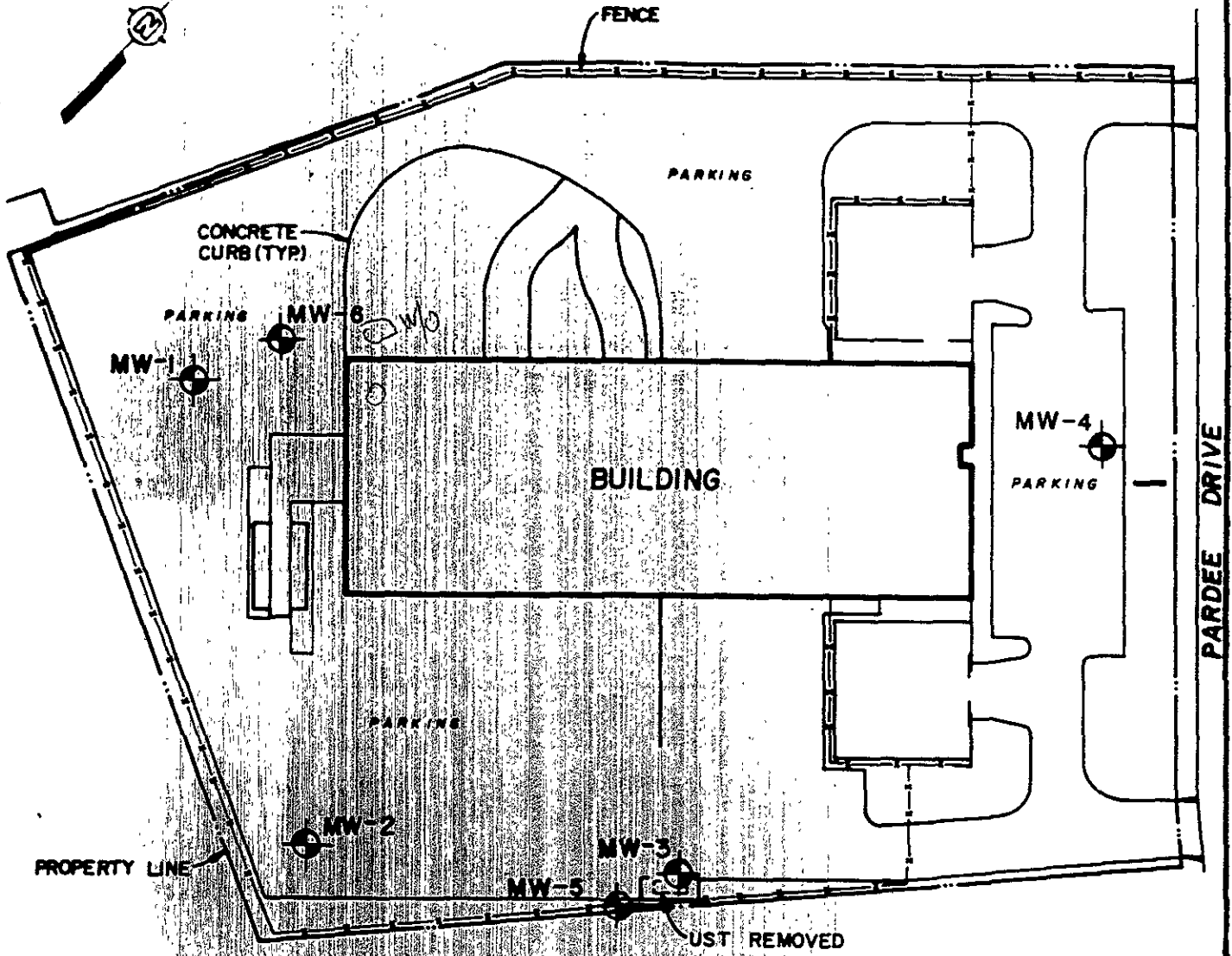


FIGURE 2  
SITE PLAN  
FEDERAL EXPRESS  
8455 PARDEE DRIVE  
OAKLAND, CALIFORNIA  
PREPARED FOR  
FEDERAL EXPRESS  
SACRAMENTO, CALIFORNIA

REFERENCE:  
JORDAN, CASPER, WOODSON, DOBSON  
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DATE - 5/29/84 SCALE - 1" = 20'



**LEGEND**

 MW-2  
**MONITORING WELL**

**REFERENCE:**

JORDAN, CASPER, WOODSON, DOBSON  
 DRAWING NO. W84071 SHT. 1  
 DATE - 5/29/84 SCALE - 1" = 20'

**FIGURE 3**

**MONITORING WELLS 1-6**  
**FEDERAL EXPRESS**  
**8455 PARDEE DRIVE**  
**OAKLAND, CALIFORNIA**

PREPARED FOR

**FEDERAL EXPRESS**  
**SACRAMENTO, CALIFORNIA**

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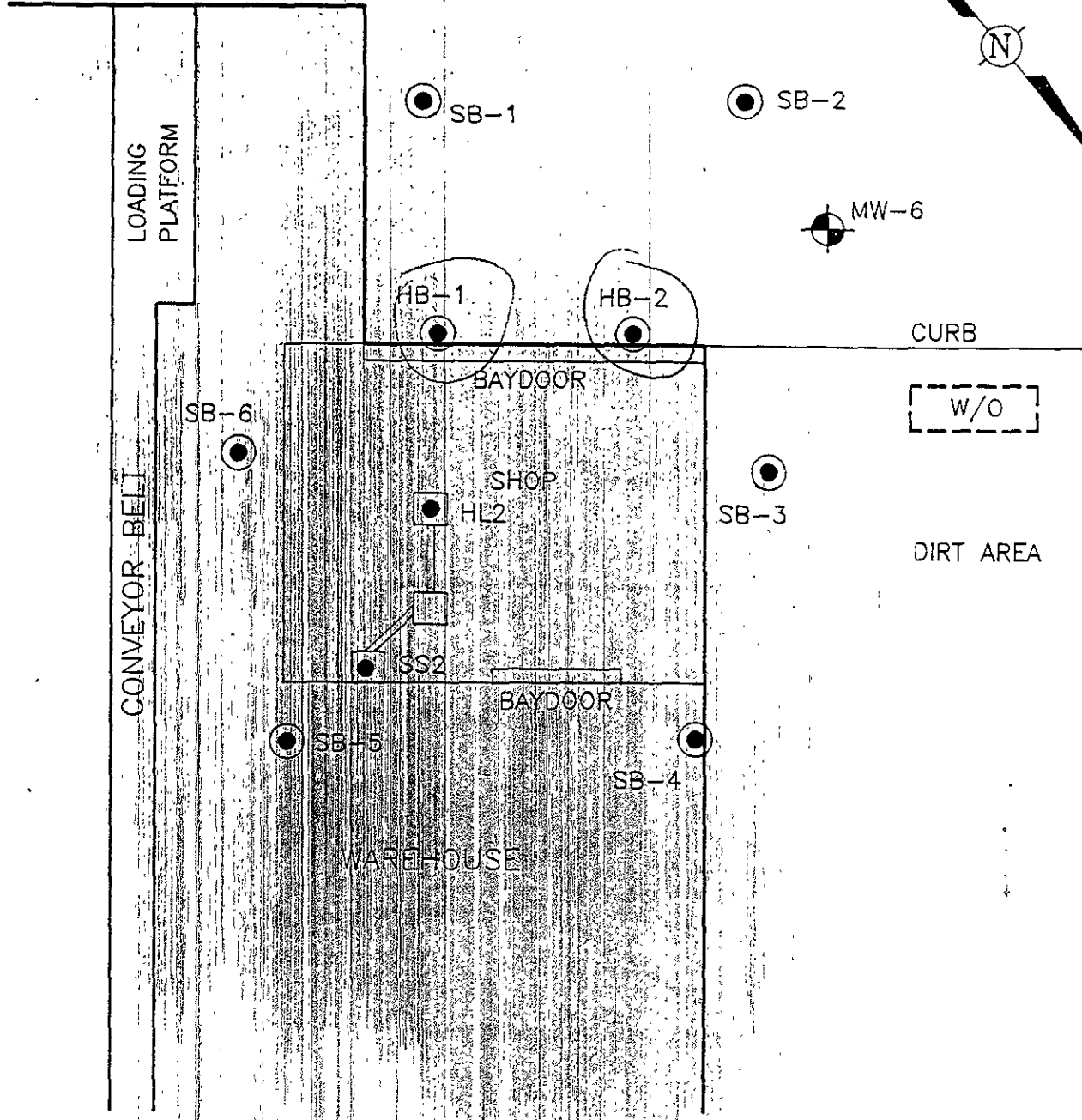
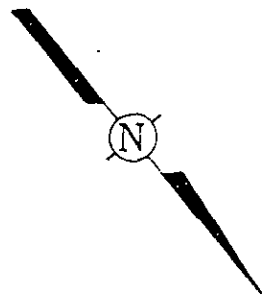
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T.R.S. 9-10-90

APPROVED BY

1 9-26-90 TRS REV. LEGEND, ADD HB-1, HB-2, AND SAMPLE LOCATIONS

PARKING LOT



LEGEND

- WELL LOCATION
- SAMPLING LOCATION
- BOREHOLE LOCATION (GROUT TO SURFACE)
- W/O WASTE OIL TANK (REMOVED)
- HYDRAULIC LIFT SYSTEM (REMOVED)

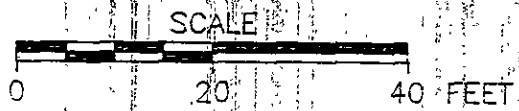


FIGURE 4

BOREHOLE LOCATIONS

FEDERAL EXPRESS  
8455 PARDEE DRIVE  
OAKLAND, CALIFORNIA

PREPARED FOR

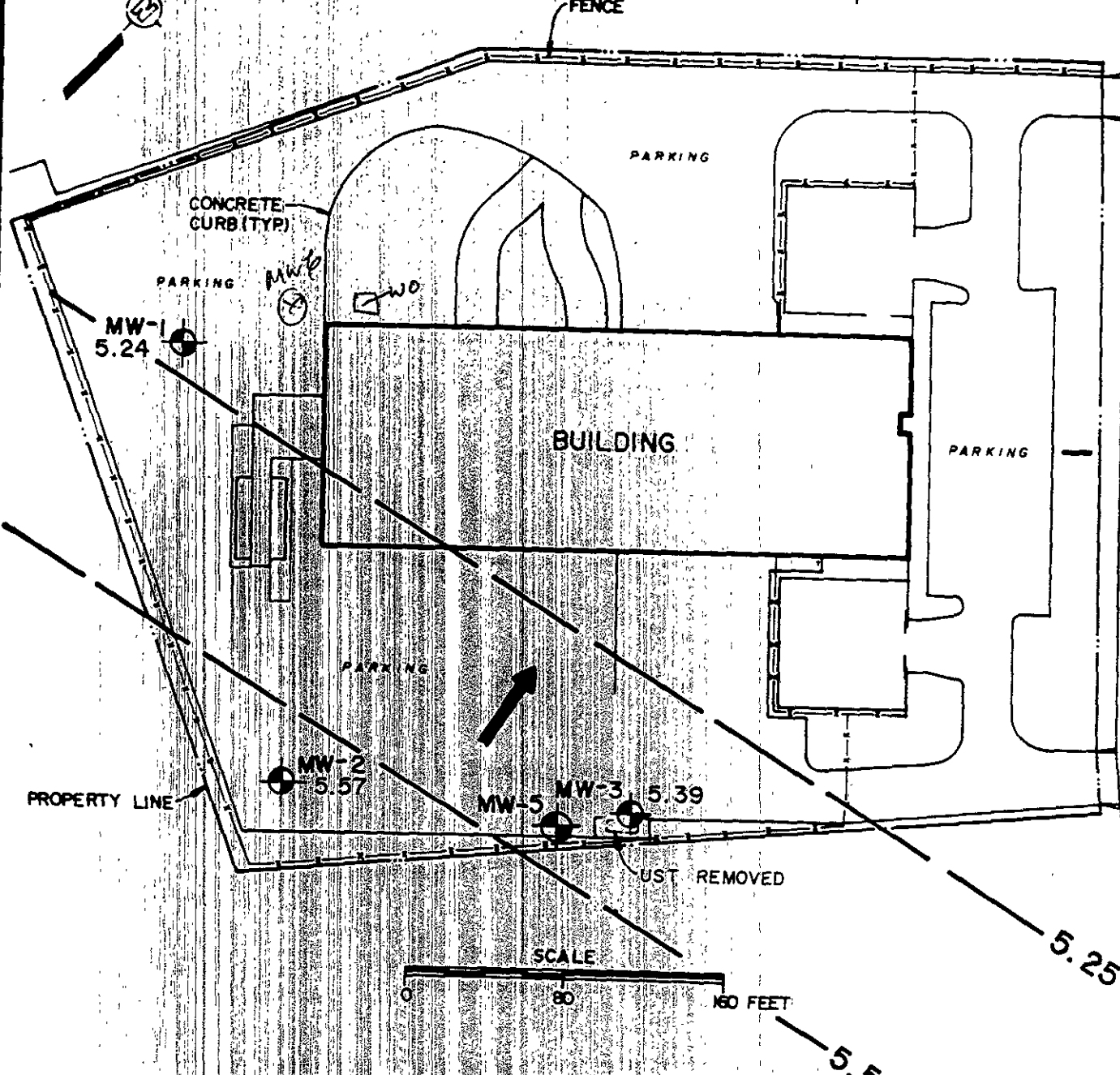
FEDERAL EXPRESS  
SACRAMENTO, CALIFORNIA






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 9-18-90 APPROVED BY [Signature]

Grad N



**LEGEND**

-  GROUNDWATER FLOW DIRECTION
-  MW-2 MONITORING WELL
-  POTENTIOMETRIC SURFACE CONTOUR IN FEET
- 5.24 GROUNDWATER ELEVATION

**FIGURE 5A**  
 GROUNDWATER GRADIENT MAP  
 JANUARY 16, 1990  
 FEDERAL EXPRESS  
 8455 PARDEE DRIVE  
 OAKLAND, CALIFORNIA

PREPARED FOR  
 FEDERAL EXPRESS  
 SACRAMENTO, CALIFORNIA

REFERENCE:  
 JORDAN, CASPER, WOODSON, DOBSON  
 DRAWING NO. W84071 SHT 1  
 DATE - 5/29/84 SCALE - 1" = 20'



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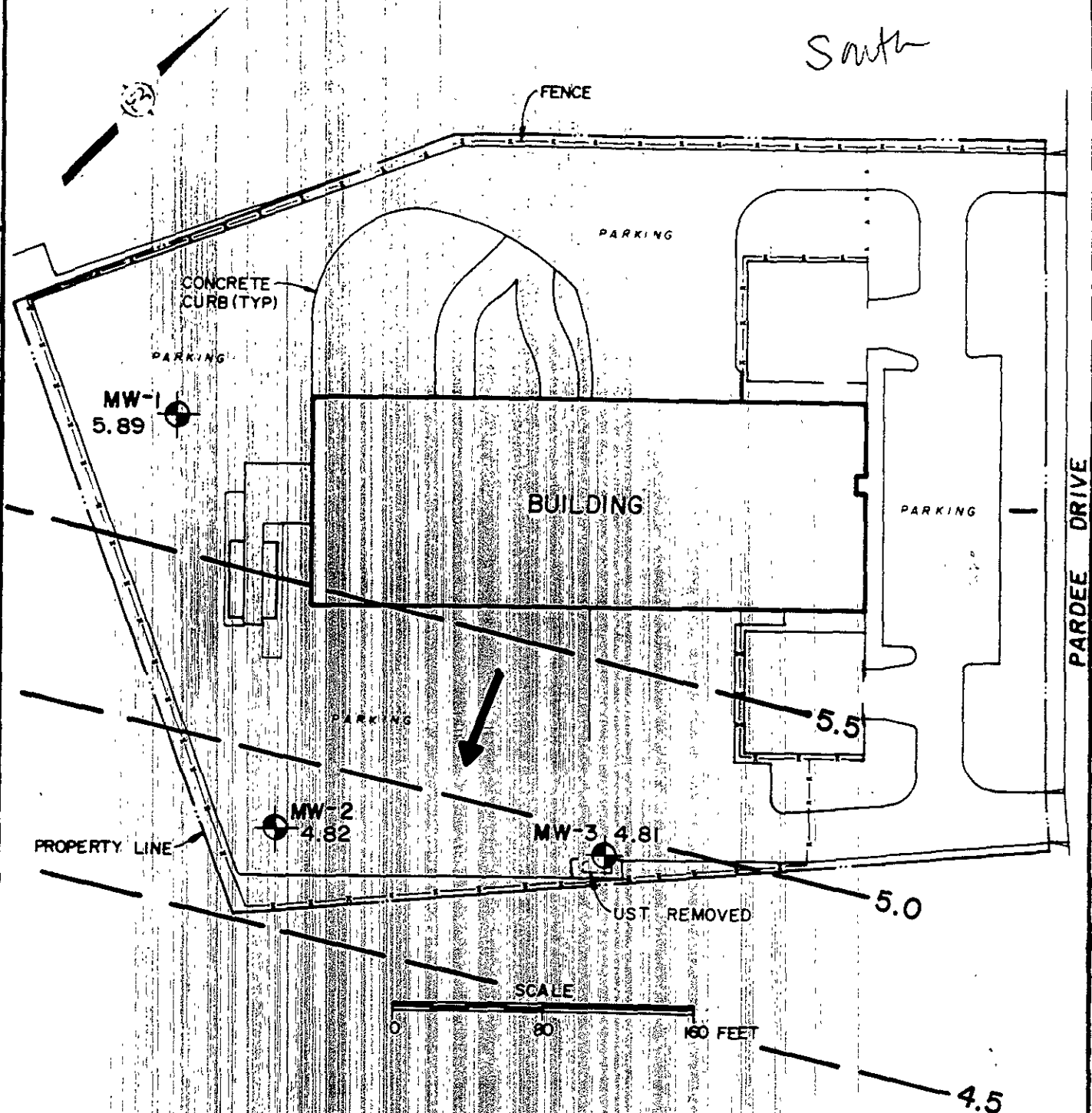
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South



LEGEND

-  GROUNDWATER FLOW DIRECTION
-  MW-2 MONITORING WELL
-  POTENTIOMETRIC SURFACE CONTOUR IN FEET
- 5.89 GROUNDWATER ELEVATION IN FEET

REFERENCE:  
 JORDAN, CASPER, WOODSON, DOBSON  
 DRAWING NO. W84071 SHT. 1  
 DATE - 5/29/84 SCALE - 1" = 20'

FIGURE 5B  
 GROUNDWATER GRADIENT MAP  
 JUNE 23, 1990  
 FEDERAL EXPRESS  
 8455 PARDEE DRIVE  
 OAKLAND, CALIFORNIA

PREPARED FOR  
 FEDERAL EXPRESS  
 SACRAMENTO, CALIFORNIA

144484

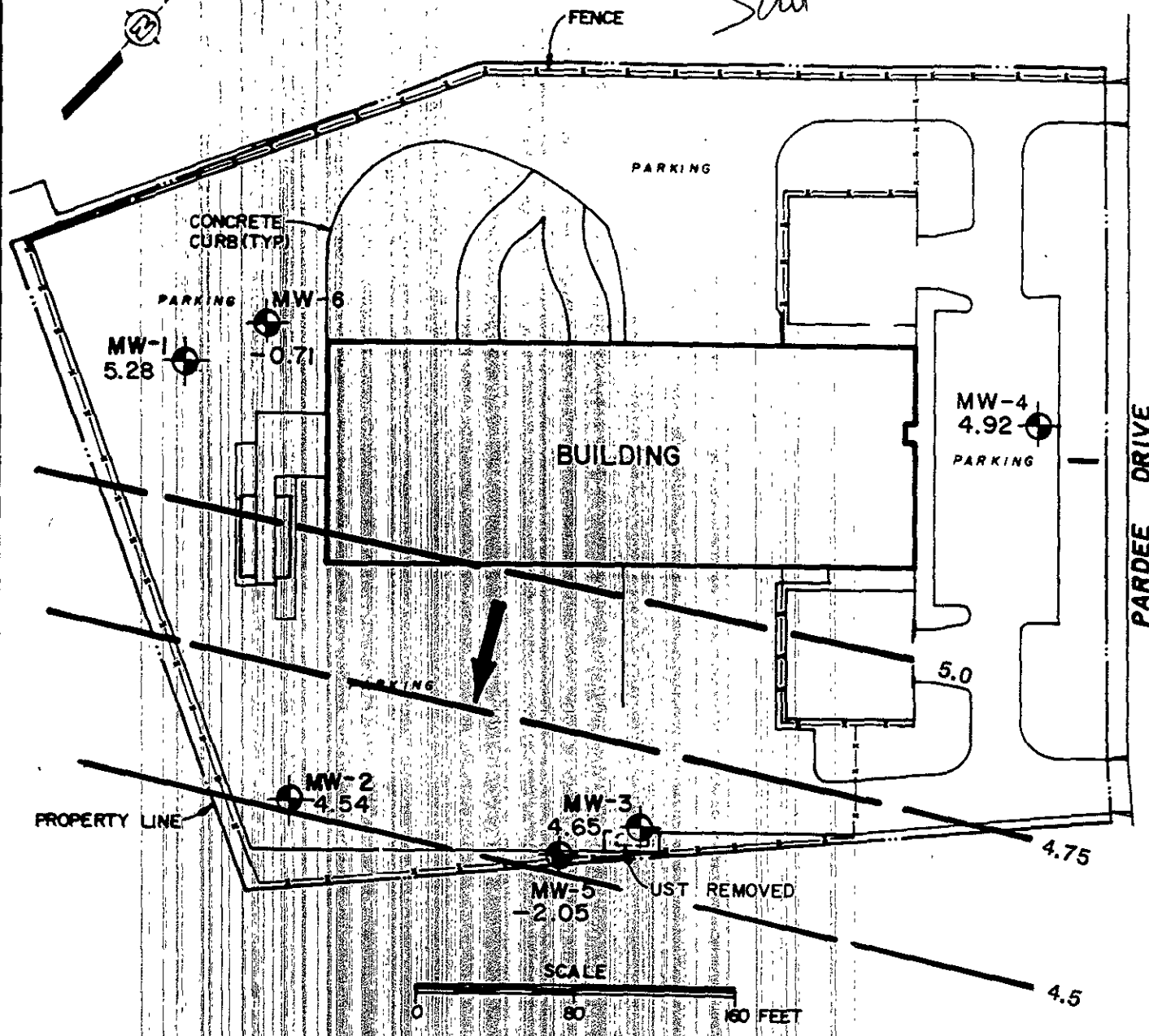
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

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DRAWN BY T R S CHECKED BY S/H 10-3-90 DRAWING 190646-A3  
 9-5-90 APPROVED BY BR 10-3-90 NUMBER

*Saw*



**LEGEND**

-  MW-2 MONITORING WELL
-  FLOW DIRECTION
-  GROUNDWATER CONTOUR
- 4.92 WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL

REFERENCE:  
 JORDAN, CASPER, WOODSON, DOBSON  
 DRAWING NO. W84071 SHT. 1  
 DATE 5/29/84 SCALE 1" = 20'

**FIGURE 5C**  
 GROUNDWATER GRADIENT MAP  
 AUGUST 8, 1990  
 FEDERAL EXPRESS  
 8455 PARDEE DRIVE  
 OAKLAND, CALIFORNIA

PREPARED FOR  
 FEDERAL EXPRESS  
 SACRAMENTO, CALIFORNIA

148494

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Do Not Scale This Drawing



2011/11

DRAWN BY	T R S	CHECKED BY	DATE	DRAWING NUMBER
		APPROVED BY	1-7-91	

190646-A18

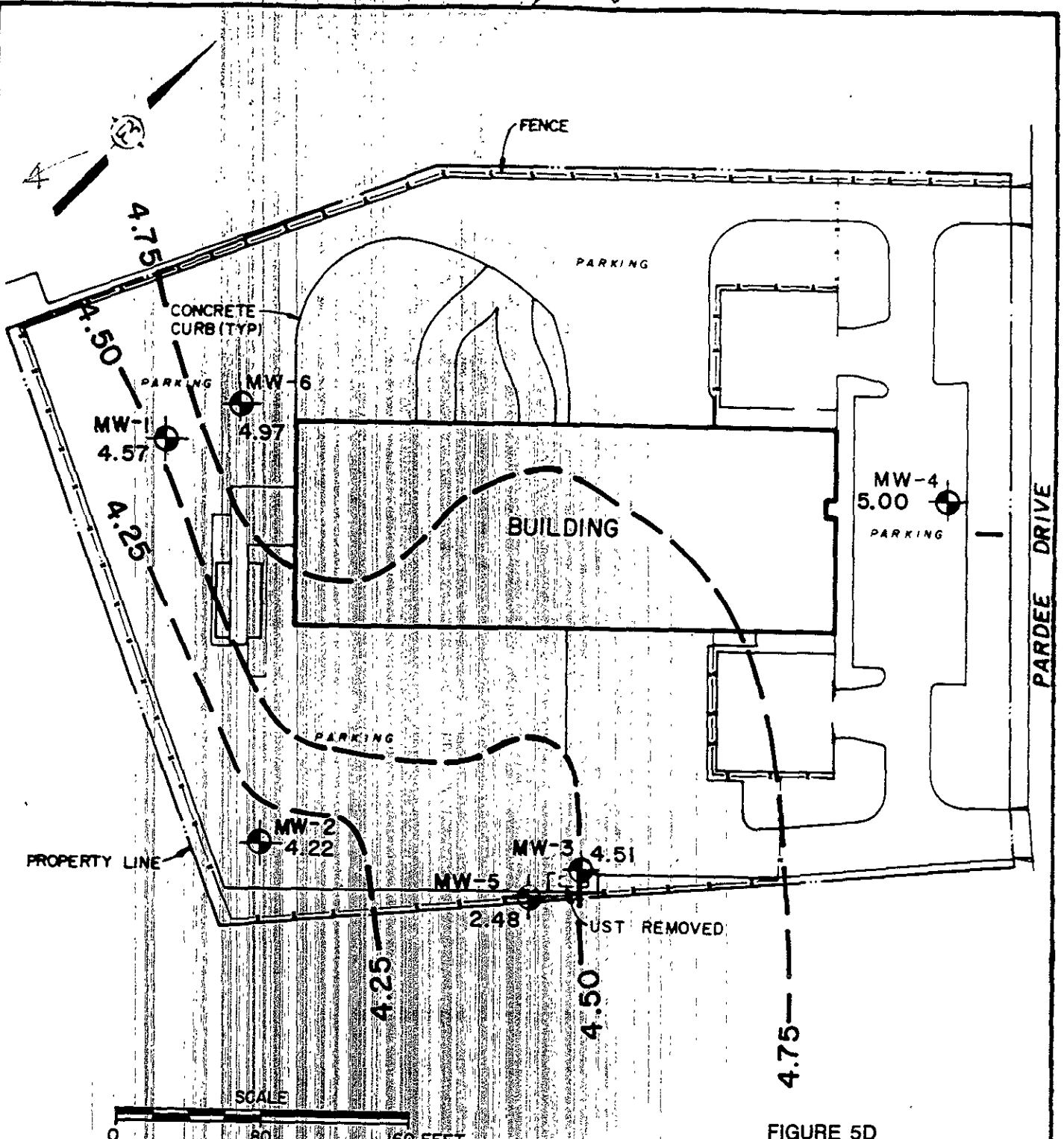


FIGURE 5D

GROUNDWATER GRADIENT MAP  
 NOVEMBER 5, 1990  
 FEDERAL EXPRESS  
 8455 PARDEE DRIVE  
 OAKLAND, CALIFORNIA

PREPARED FOR

FEDERAL EXPRESS  
 SACRAMENTO, CALIFORNIA

LEGEND

- MW-2  
4.22  
MONITORING WELL  
WATER TABLE ELEVATION (FT. MSL)
- POTENTIOMETRIC SURFACE CONTOUR  
FLOW DIRECTION IS PERPENDICULAR TO  
CONTOUR LINES

REFERENCE:  
 JORDAN, CASPER, WOODSON, DOBSON  
 DRAWING NO. W84071-SHT  
 DATE: 5-29-84; SCALE: 1" = 20'  
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DRAWING NUMBER 190646 - A19  
 APPROVED BY 3-6-91  
 BY 3-6-91

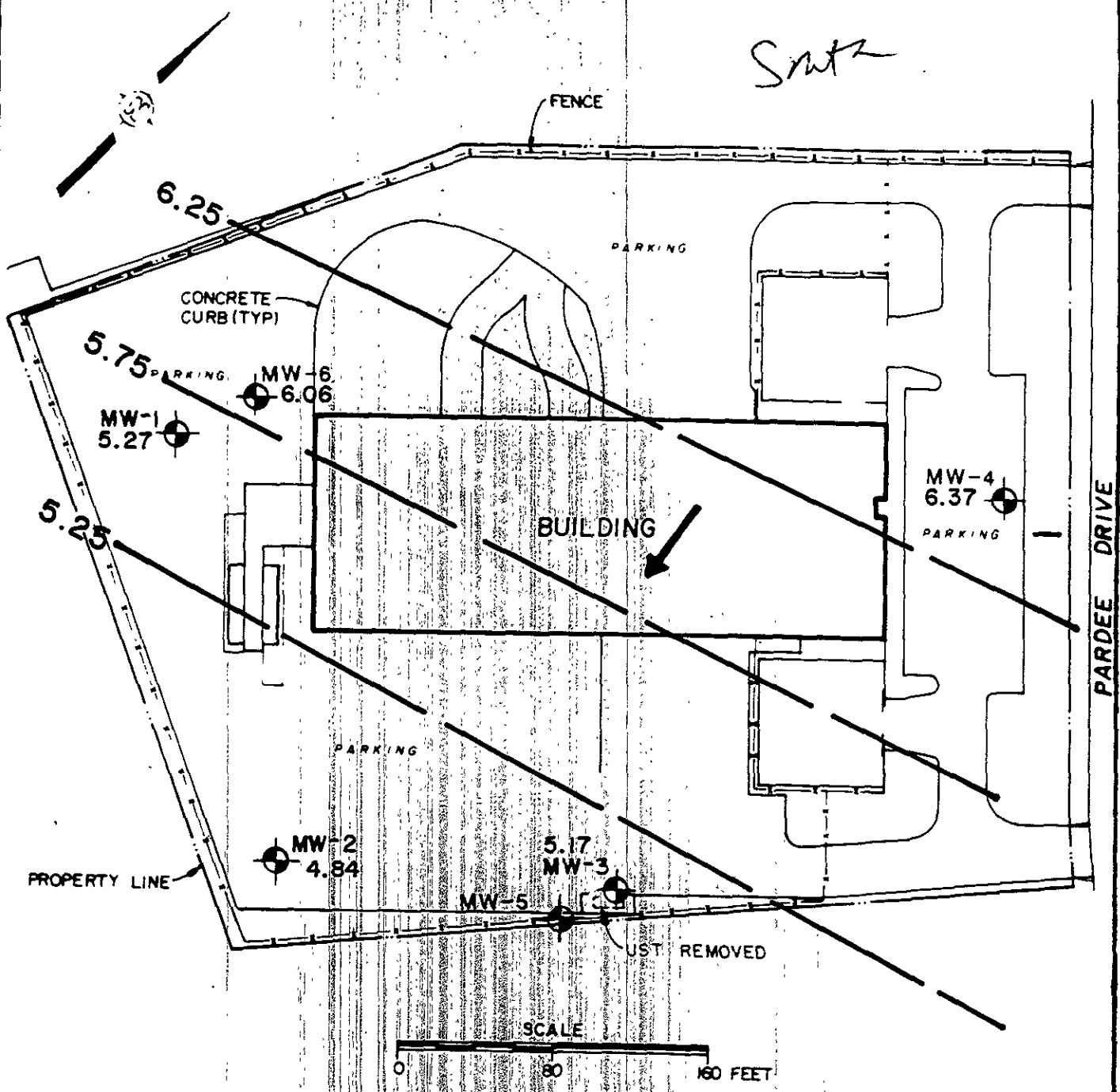




FIGURE 5E

**LEGEND**

-  MW-2 MONITORING WELL
- 5.17 WATER TABLE ELEVATION (FT. MSL)
-  POTENTIOMETRIC SURFACE CONTOUR  
FLOW DIRECTION IS PERPENDICULAR TO CONTOUR LINES

REFERENCE:  
 JORDAN, CASPER, WOODSON, DOBSON  
 DRAWING NO. W84071 SHT. 1  
 DATE: 5-29-84 SCALE: 1" = 20'  
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GROUNDWATER GRADIENT MAP  
 FEBRUARY 6, 1991  
 FEDERAL EXPRESS  
 8455 PARDEE DRIVE  
 OAKLAND, CALIFORNIA

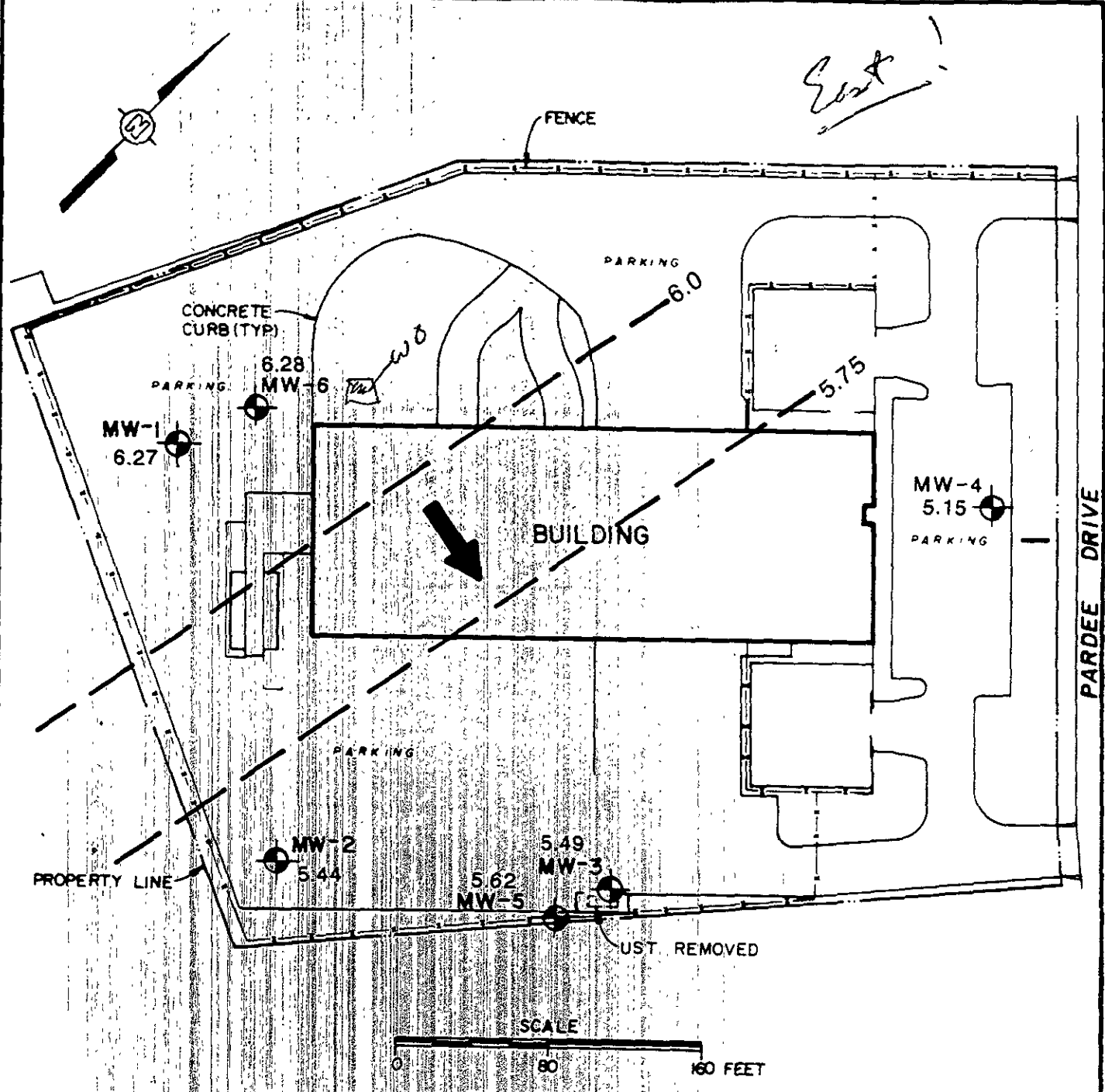
PREPARED FOR  
 FEDERAL EXPRESS  
 SACRAMENTO, CALIFORNIA



148494

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DRAWN BY: SJZ 6-13-91  
 CHECKED BY: JMN 9-11-91  
 APPROVED BY: S/M 9-17-91  
 DRAWING NUMBER: 190646-A20



**LEGEND**

- MW-2 5.75 MONITORING WELL
- WATER TABLE ELEVATION (FT. MSL)
- POTENTIOMETRIC SURFACE CONTOUR
- FLOW DIRECTION IS PERPENDICULAR TO CONTOUR LINES

REFERENCE  
 JORDAN, CASPER, WOODSON, DOBSON  
 DRAWING NO. W84071 SHEET  
 DATE: 5/29/84. SCALE: 1"=20'

FIGURE 5F  
 GROUNDWATER GRADIENT MAP  
 MAY 7, 1991

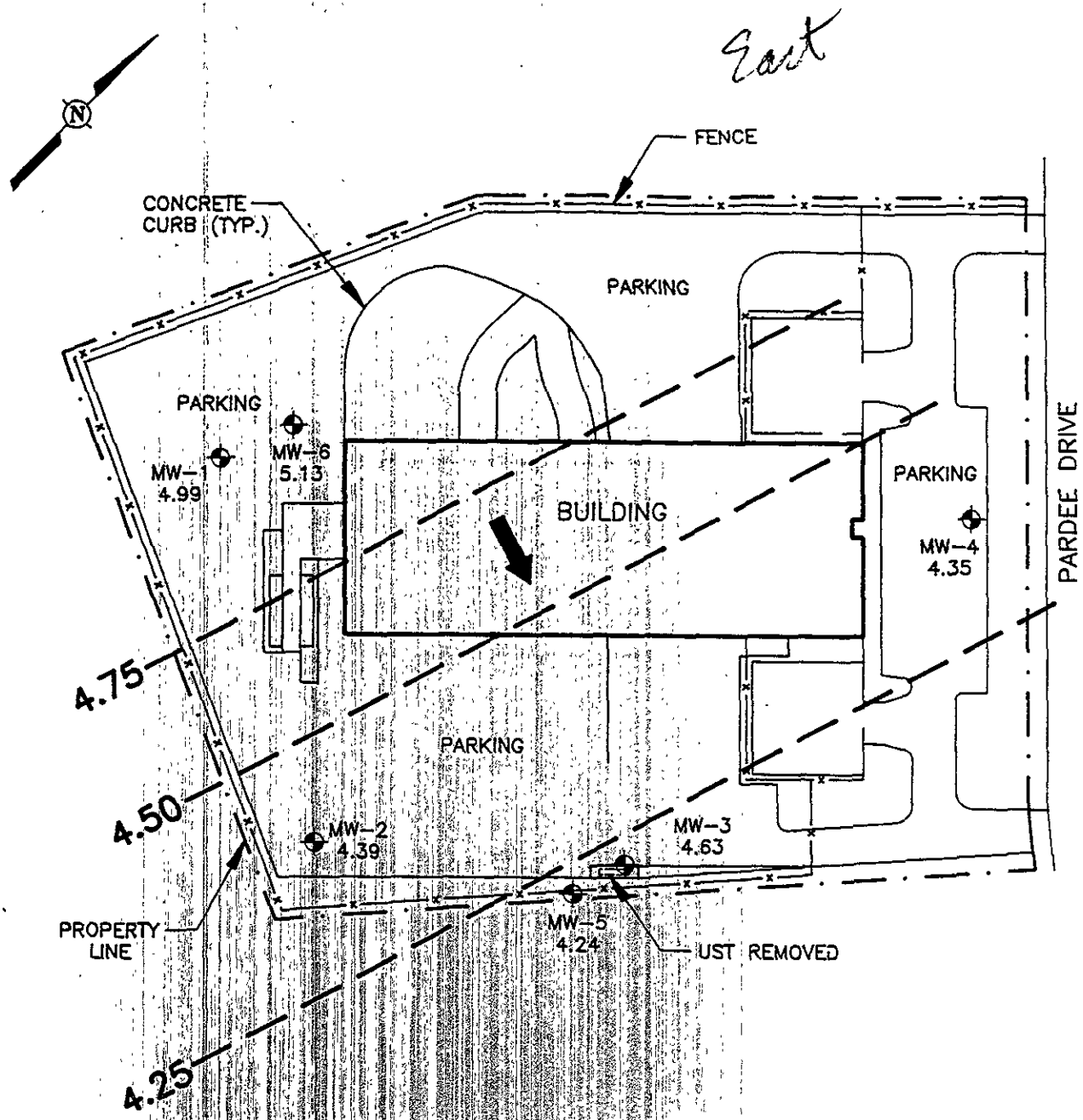
FEDERAL EXPRESS  
 8455 PARDEE DRIVE  
 OAKLAND, CALIFORNIA  
 PREPARED FOR

FEDERAL EXPRESS  
 SACRAMENTO, CALIFORNIA



148494

190646-A21  
 DRAWING NUMBER  
 9-9-91  
 9-9-91  
 CHECKED BY: S/17  
 APPROVED BY: MN  
 J. BERA  
 9-6-91  
 DRAWN BY:



LEGEND:

- MW-2 MONITORING WELL
- 4.99 WATER TABLE ELEVATION (FT. MSL)
- POTENTIOMETRIC SURFACE CONTOUR
- FLOW DIRECTION IS PERPENDICULAR TO CONTOUR LINES

REFERENCE:

JORDAN, CASPER, WOODSON, DOBSON  
 DRAWING NO. W84071 SHT. 1  
 DATE: 5-29-84 SCALE: 1"=20'



FIGURE 5G

GROUNDWATER GRADIENT MAP  
 AUGUST 14, 1991

8455 PARDEE DRIVE  
 OAKLAND, CALIFORNIA

PREPARED FOR  
 FEDERAL EXPRESS  
 SACRAMENTO, CALIFORNIA



190646-A22

DRAWING NUMBER

5/17

5/17

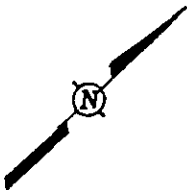
CHECKED BY

APPROVED BY

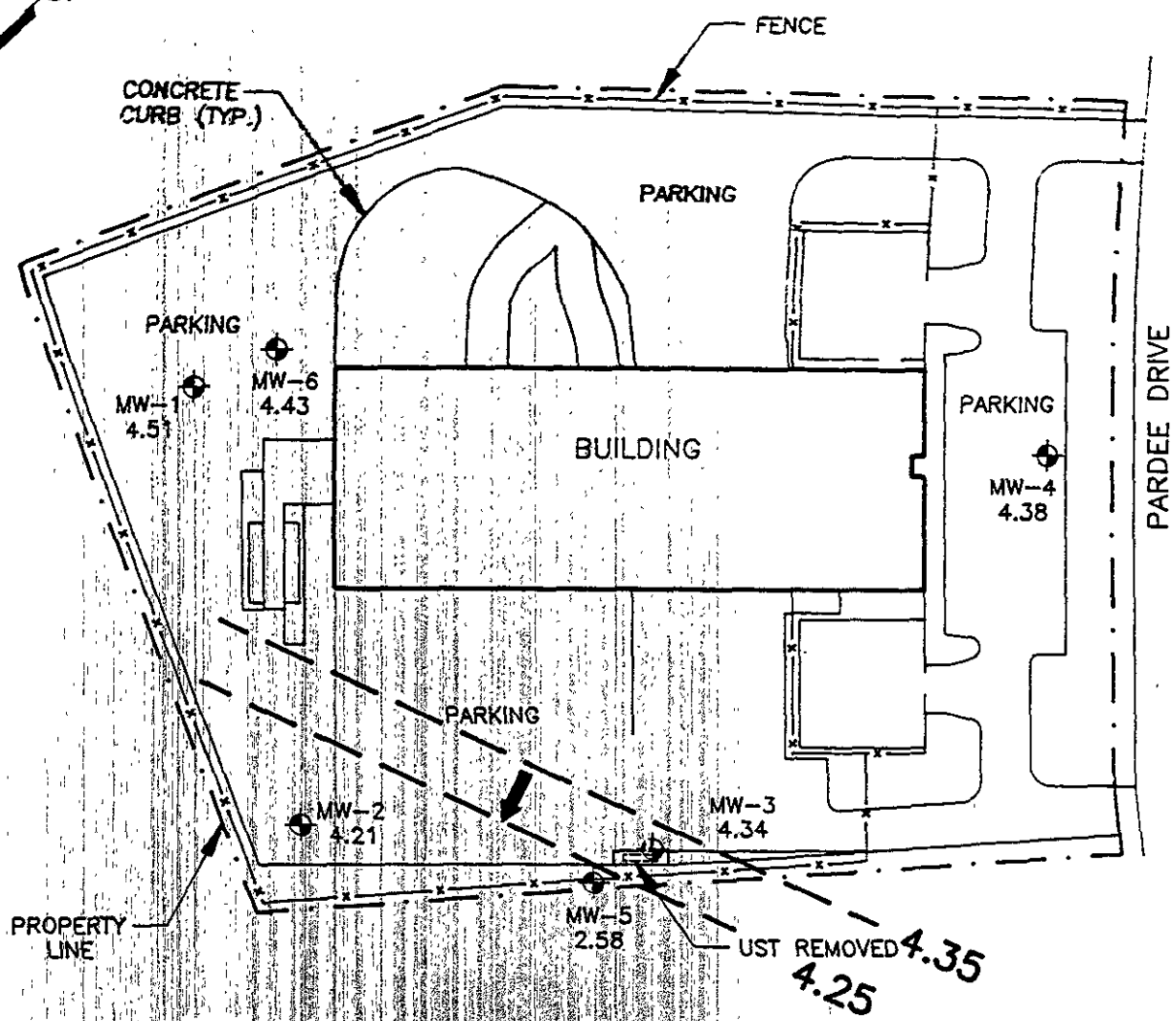
T.R.S.

12-16-91

DRAWN BY



South



LEGEND

- MW-2 MONITORING WELL
- 4.21 GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- POTENTIOMETRIC SURFACE CONTOUR
- FLOW DIRECTION IS PERPENDICULAR TO CONTOUR LINES

REFERENCE:

JORDAN, CASPER, WOODSON, DOBSON  
 DRAWING NO. W84071 SHT. 1  
 DATE: 5-29-84 SCALE: 1"=20'

SCALE

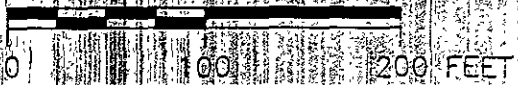


FIGURE 5H

GROUNDWATER GRADIENT MAP  
 NOVEMBER 18, 1991

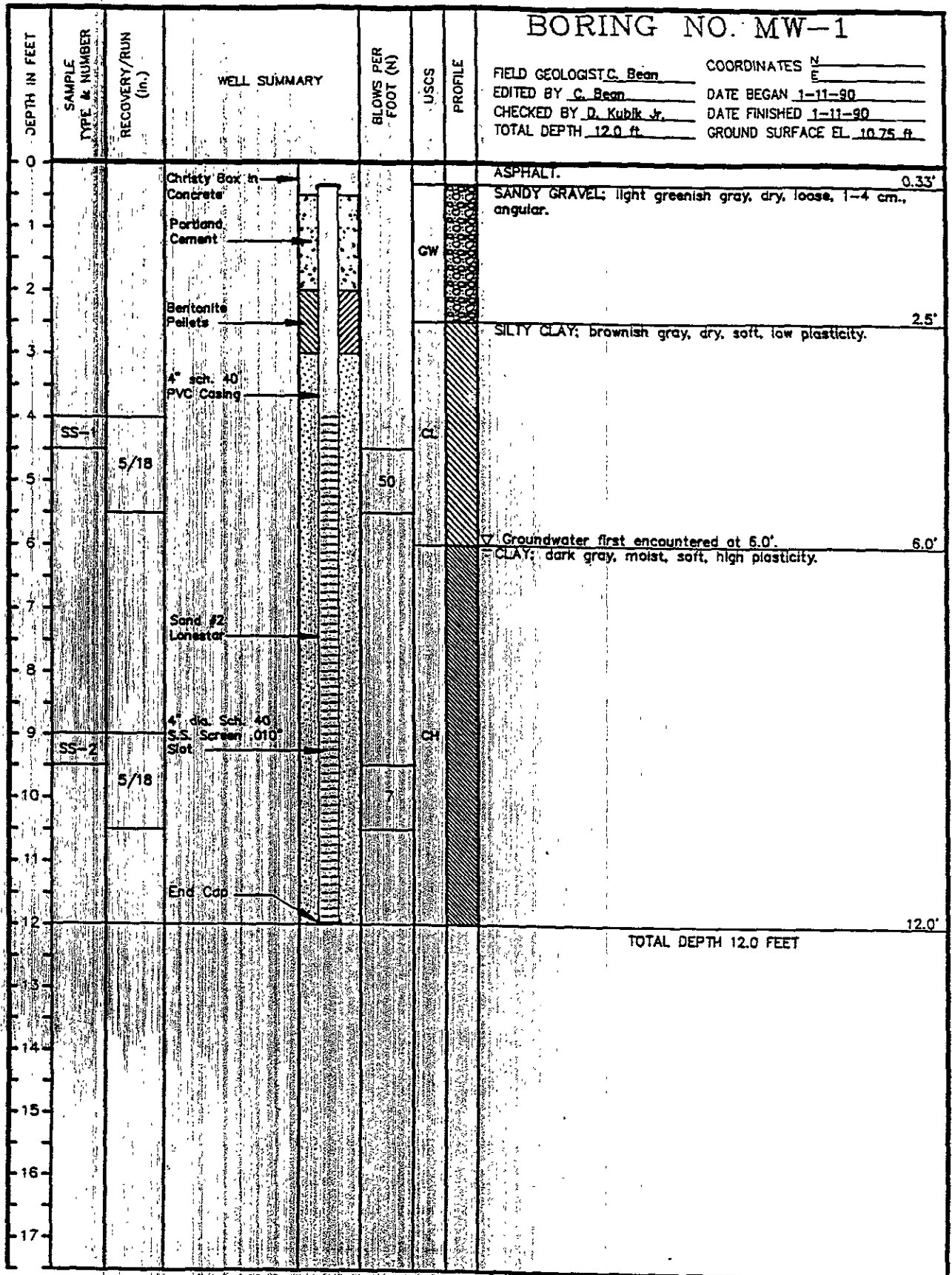
8455 PARDEE DRIVE  
 OAKLAND, CALIFORNIA

PREPARED FOR

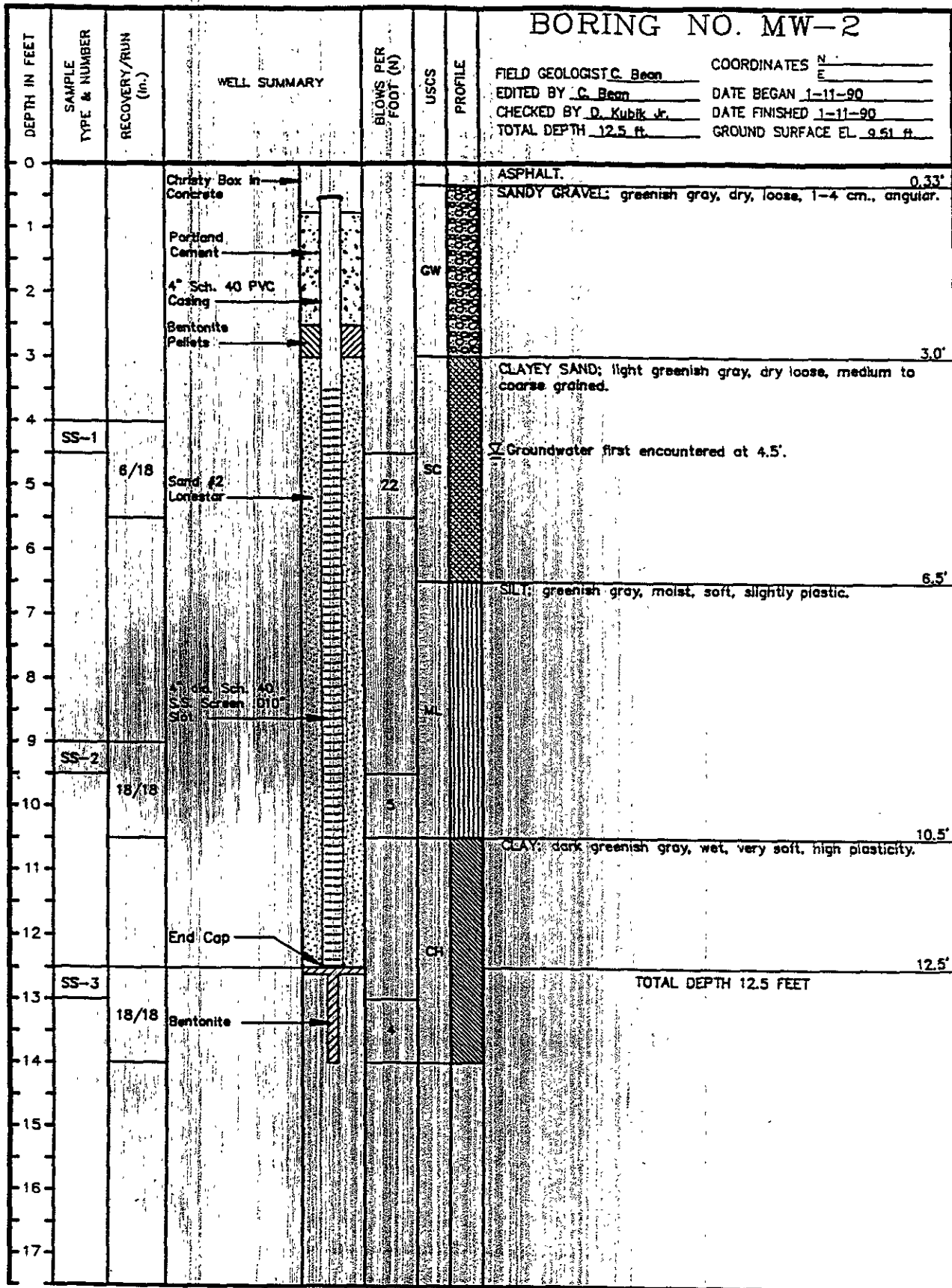
FEDERAL EXPRESS  
 SACRAMENTO, CALIFORNIA



INTERNATIONAL  
 TECHNOLOGY  
 CORPORATION



DRILLING CO.: Kvithaug Well Drilling & Pump Company, Inc.  
 DRILL METHOD: Hollow Stem Auger Mobile B-61  
 SAMPLING METHOD: Split Spoon Sampler  
 PROJECT NO.: 148003-04  
 CLIENT: Federal Express Corporation  
 LOCATION: 8455 Pardee Drive



DRILLING CO.: Kvihaug Well Drilling & Pump Company, Inc.

PAGE 1 OF 1

DRILL METHOD: Hollow Stem Auger, Mobile B-61

SAMPLING METHOD: Split Spoon Sampler

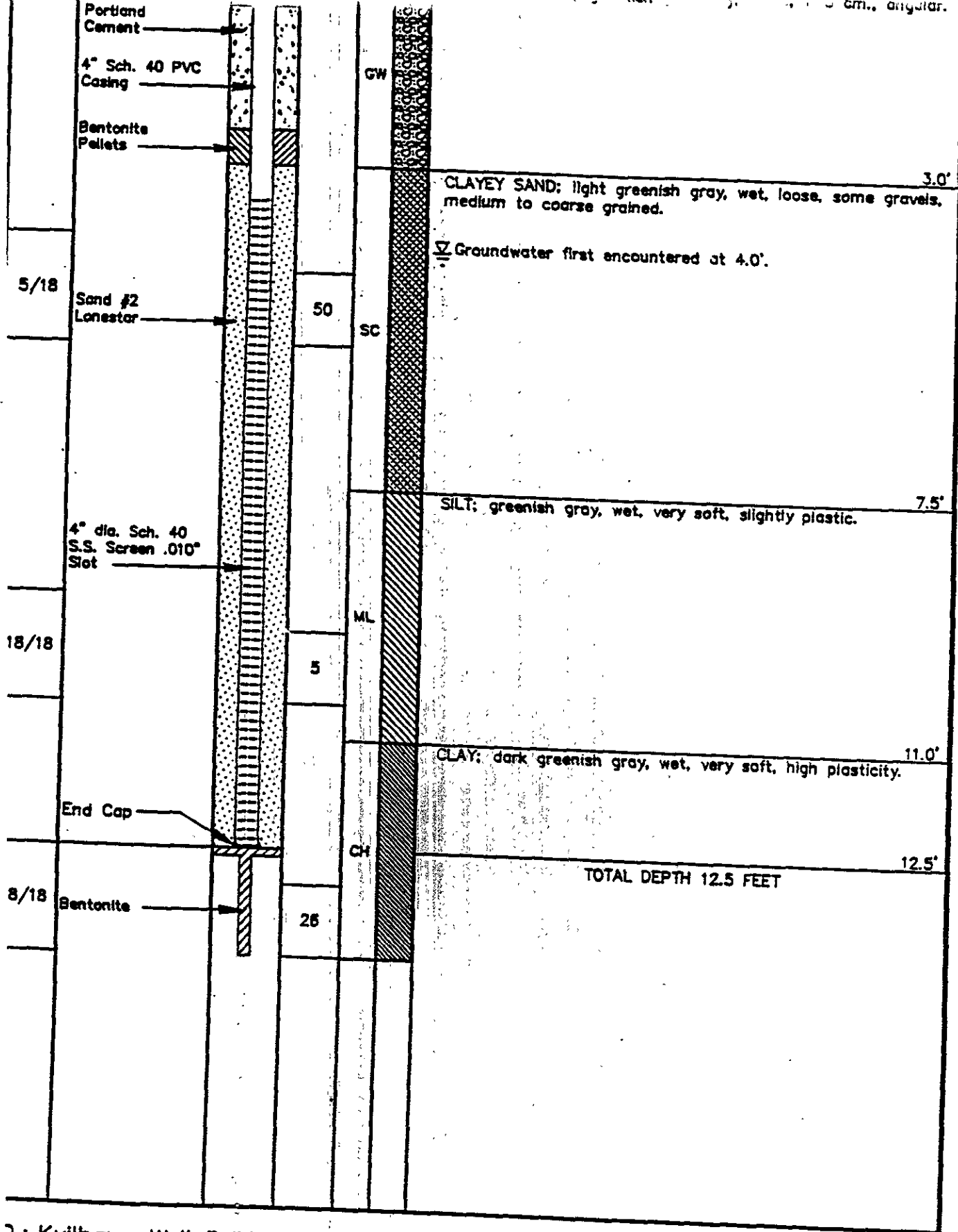
PROJECT NO.: 148003.04

CLIENT: Federal Express Corporation

LOCATION: 8455 Pardee Drive

Oakland, California

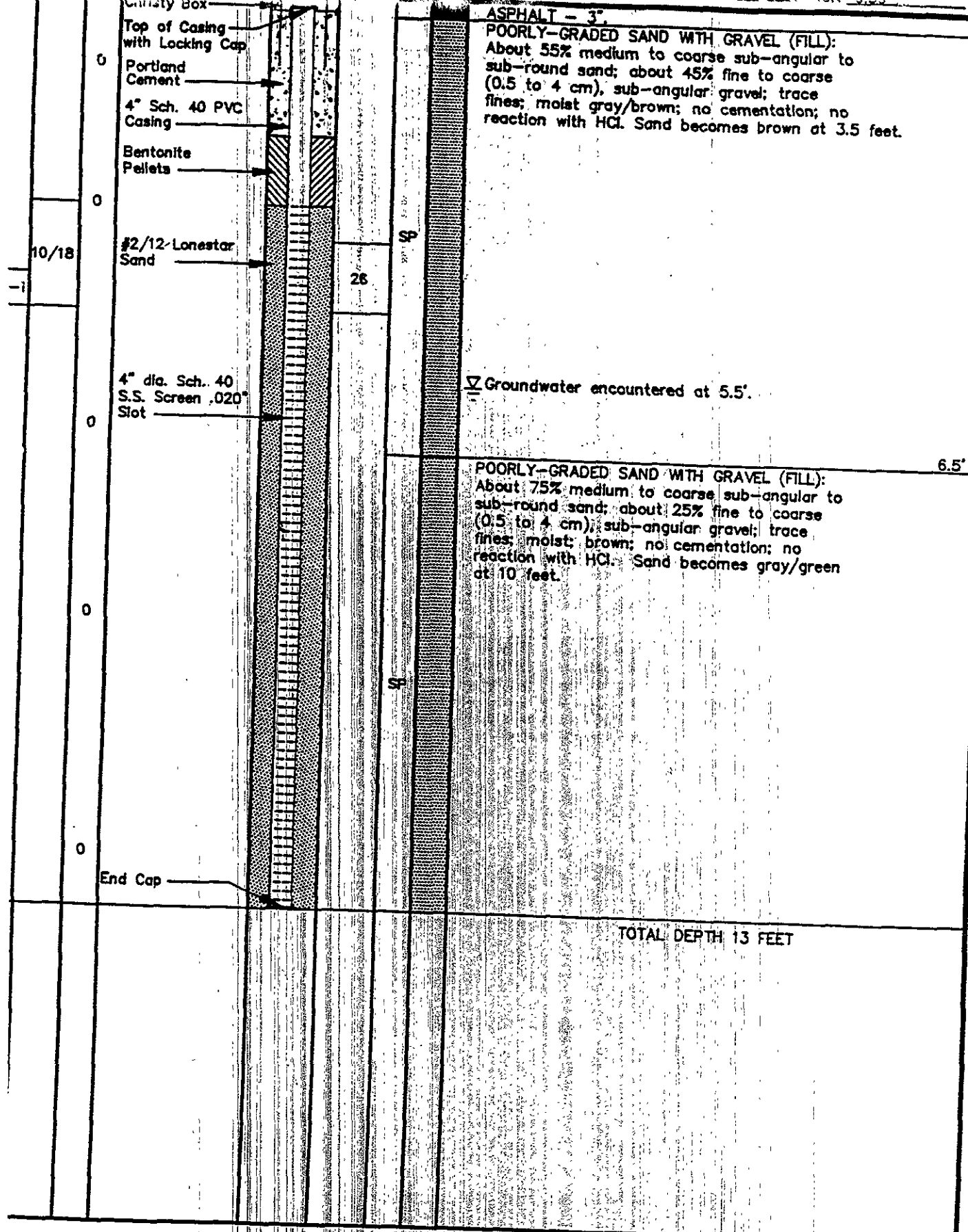
INTERNATIONAL



J.: Kvilhaug Well Drilling & Pump Company, Inc.  
 OD: Hollow Stem Auger; Mobile B-61  
 METHOD: Split Spoon Sampler  
 J.: 148003.04  
 eral Express Corporation  
 3455 Pardee Drive  
 Oakland, California



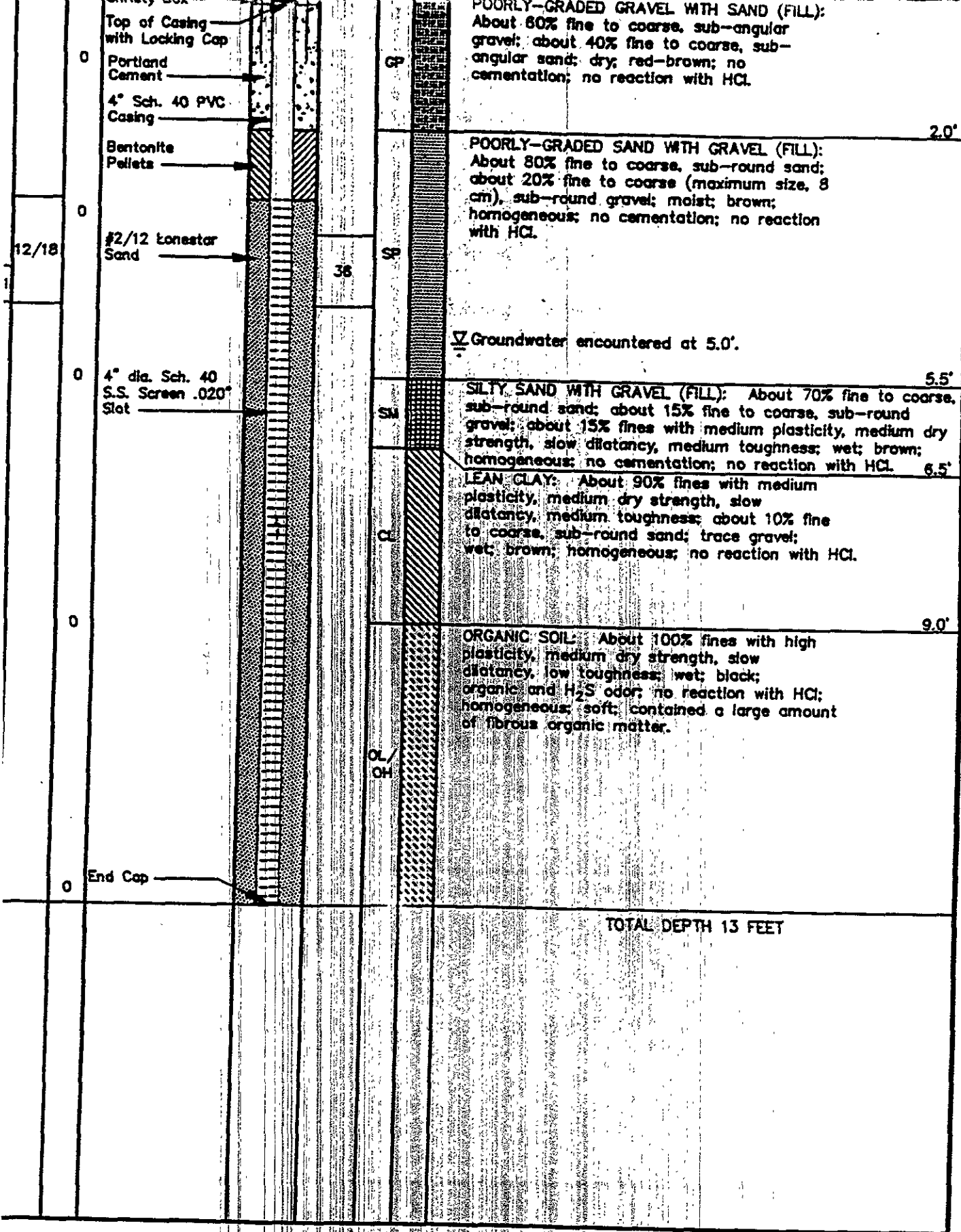




CO.: Sierra Pacific Exploration  
 METHOD: Hollow Stem Auger - Mobile B-53  
 LOG METHOD: Split Spoon Sampler  
 NO.: 190646.6  
 Federal Express  
 8455 Pardee Drive  
 Oakland, California  
 (2)

SEE LEGEND FOR LOGS AND TEST PITS FOR EXPLANATION OF SYMBOLS AND TERMS

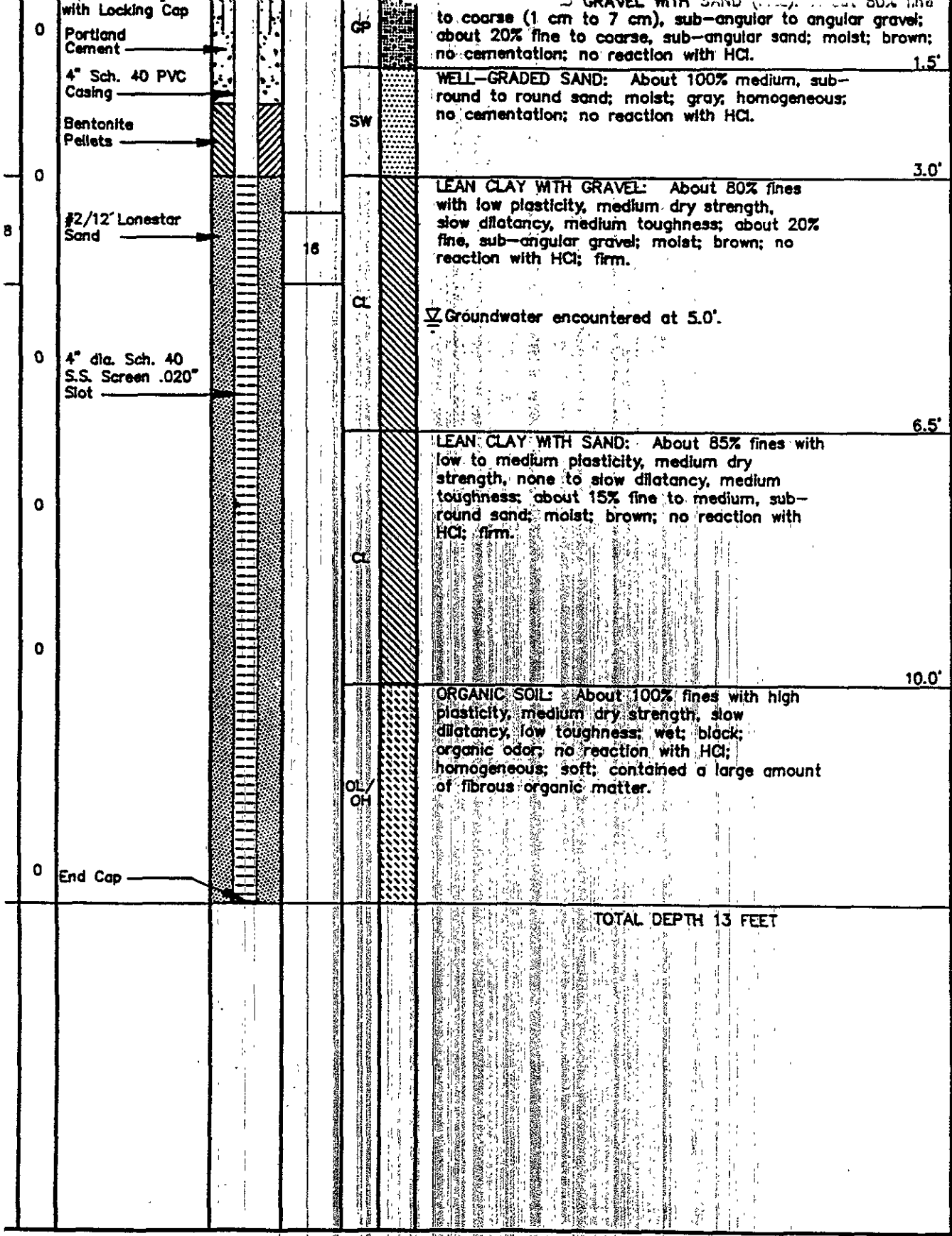




CO.: Sierra Pacific Exploration  
 METHOD: Hollow Stem Auger - Mobile B-53  
 METHOD: Split Spoon Sampler  
 NO.: 190646.6  
 Federal Express  
 1: 8455 Pardee Drive  
 Oakland, California

SEE LEGEND FOR LOGS AND TEST PITS  
 FOR EXPLANATION OF SYMBOLS AND TERMS



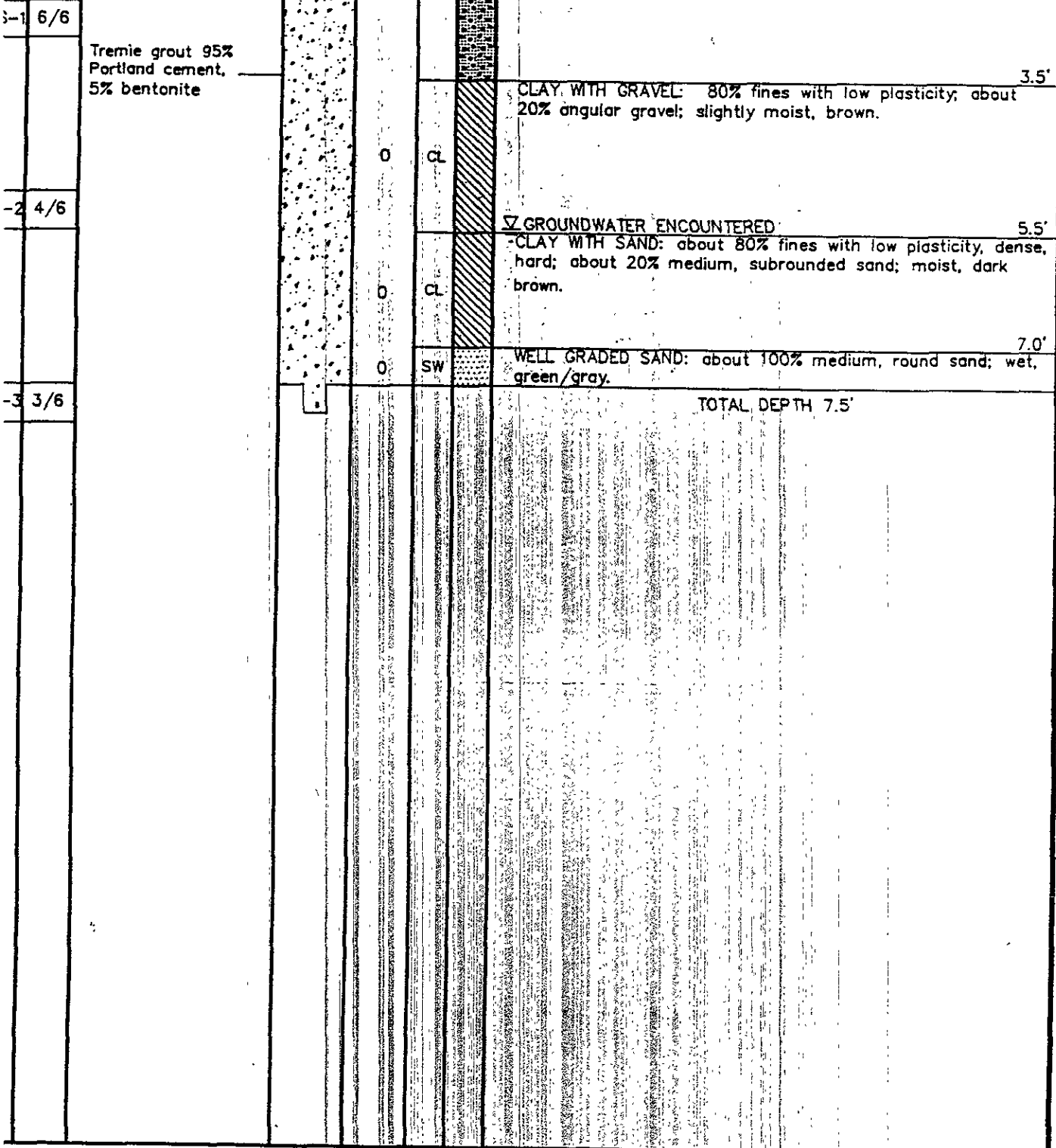


O.: Sierra Pacific Exploration  
 HOD: Hollow Stem Auger - Mobile B-53  
 METHOD: Split Spoon Sampler  
 IO.: 190646.6  
 deral Express  
 8455 Pardee Drive  
 Oakland, California

SEE LEGEND FOR LOGS AND TEST PITS FOR EXPLANATION OF SYMBOLS AND TERMS



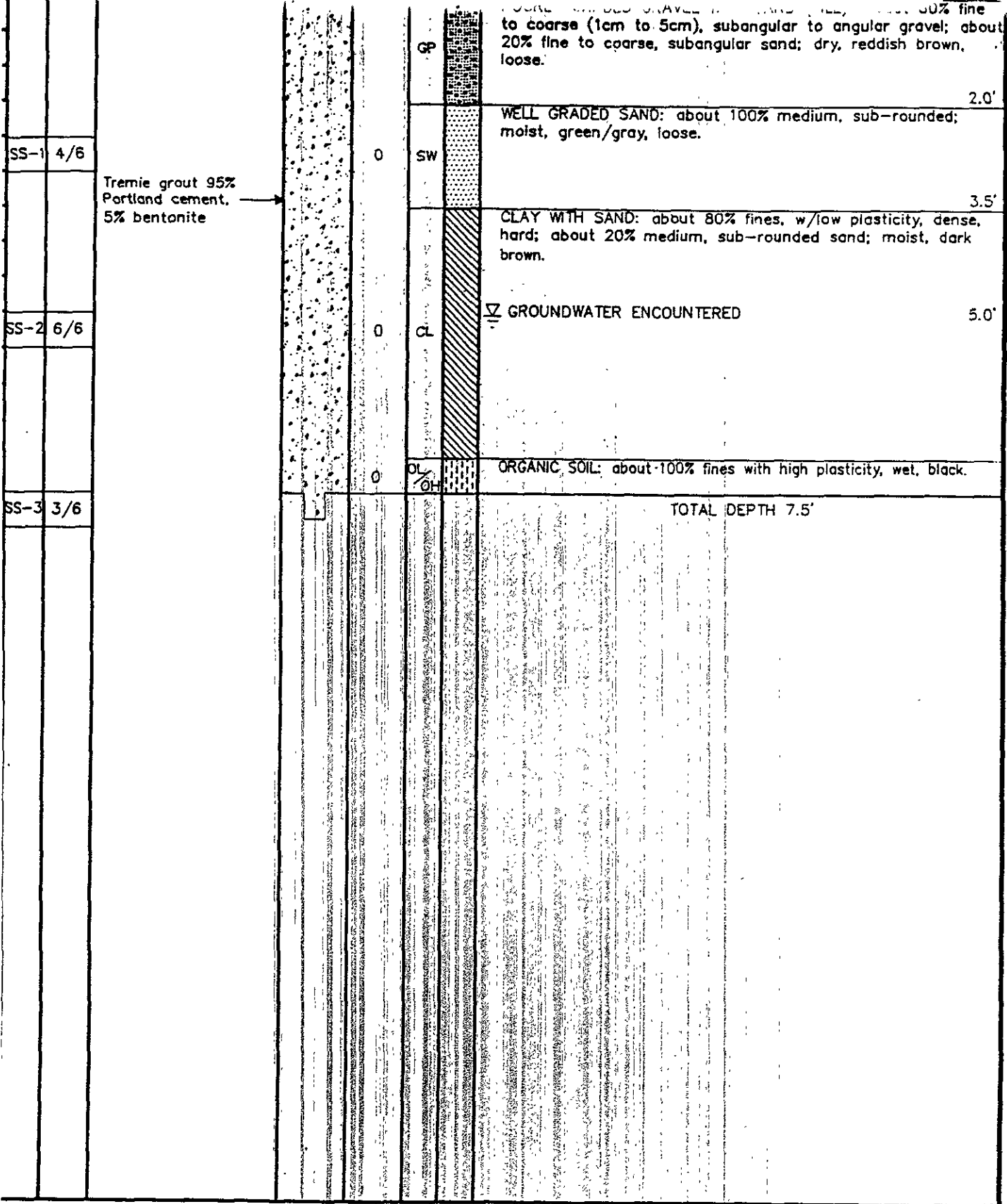
to coarse (1cm to 5cm), subangular to angular gravel; about 20% fine to coarse, subangular sand; dry, reddish brown, loose.



G CO.: Kvilhaug Well Drilling & Pump Company, Inc.  
 METHOD: Hollow Stem Auger, Mobile B-24  
 LOGGING METHOD: Split Spoon Sampler  
 LOG NO.: 190646.3  
 Federal Express Corporation  
 P.O. Box 8455 Pardee Drive; Oakland, California

SEE LEGEND FOR LOGS AND TEST PITS FOR EXPLANATION OF SYMBOLS AND TERMS





DRILLING CO.: Kvilhaug Well Drilling & Pump Company, Inc.  
 DRILLING METHOD: Hollow Stem Auger, Mobile B-24  
 SAMPLING METHOD: Split Spoon Sampler  
 PROJECT NO.: 190646.3  
 CLIENT: Federal Express Corporation  
 ADDRESS: 8455 Pardee Drive, Oakland, California

SEE LEGEND FOR LOGS AND TEST PITS FOR EXPLANATION OF SYMBOLS AND TERMS



Tremie grout 95%  
Portland cement,  
5% bentonite

about 50% angular gravel with cement chunks; dry, medium brown.

O CL

AUGER REFUSAL

TOTAL DEPTH 2.0'

1  
2  
3  
4  
5  
6  
7  
3  
9  
0  
1  
2  
3  
4  
5  
3  
7

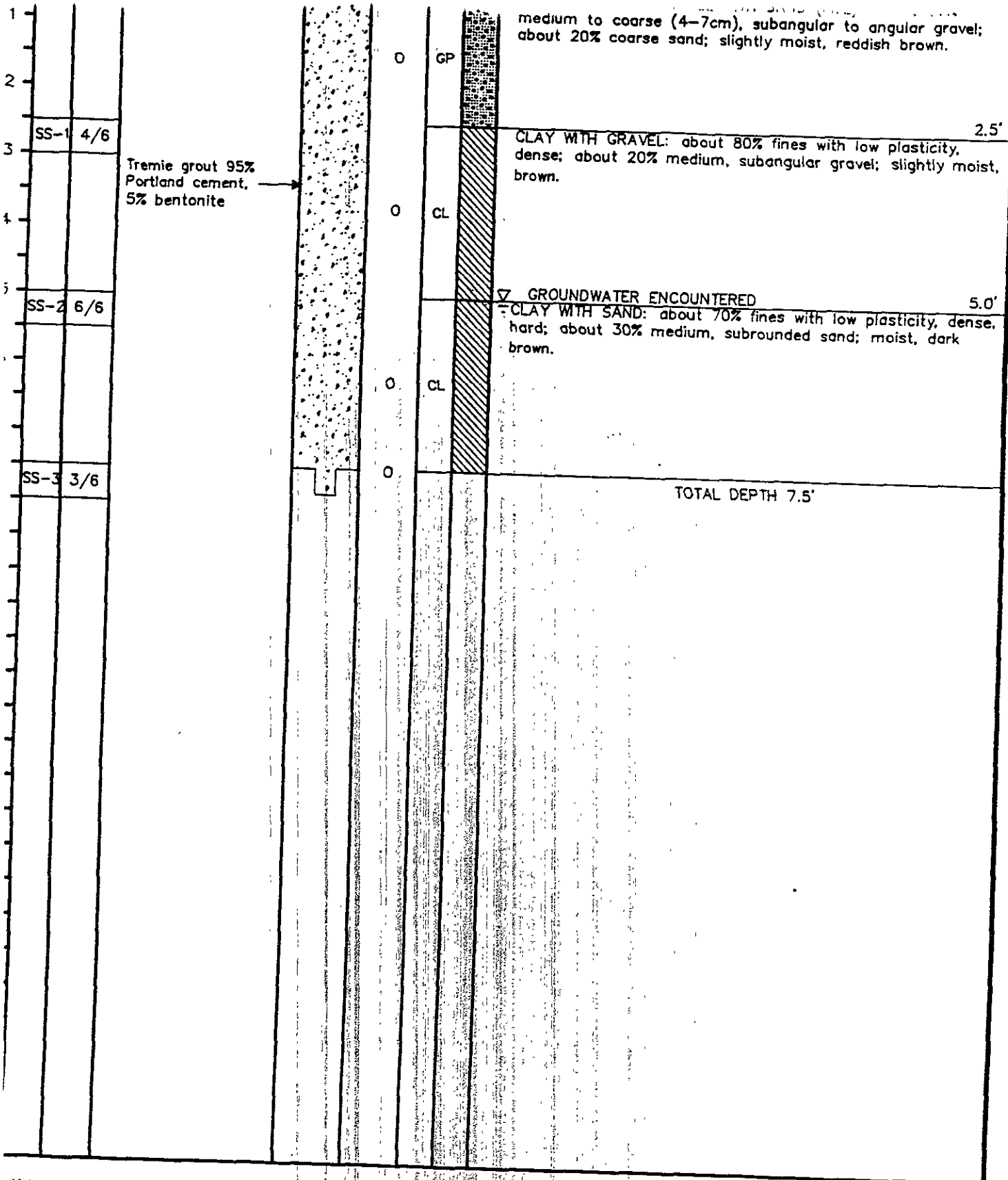
ILLING CO.: Kvilhaug Well Drilling & Pump Company Inc.  
ILL METHOD: Hollow Stem Auger, Mobile B-24  
AMPLING METHOD: Split Spoon Sampler  
OBJECT NO.: 190646.3  
CLIENT: Federal Express Corporation  
LOCATION: 8455 Pardee Drive, Oakland, California

SEE LEGEND FOR LOGS AND TEST PITS  
FOR EXPLANATION OF SYMBOLS AND TERMS

3LG3(FX3)



INTERNATIONAL  
TECHNOLOGY  
CORPORATION

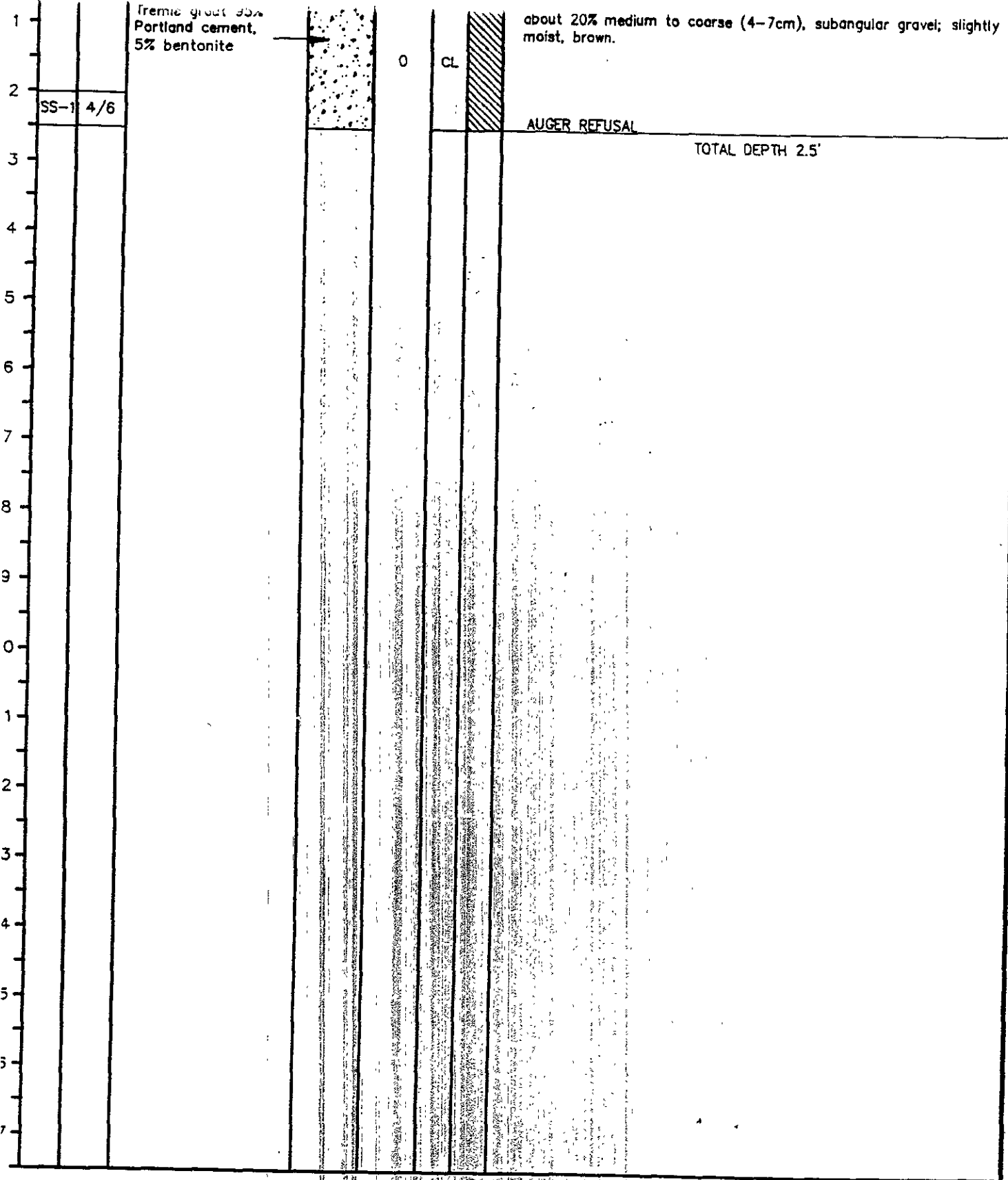


ING CO.: Kvilhaug Well Drilling & Pump Company, Inc.  
 METHOD: Hollow Stem Auger, Mobile B-24  
 DRILLING METHOD: Split Spoon Sampler  
 PROJECT NO.: 190646.3  
 CLIENT: Federal Express Corporation  
 ADDRESS: 8455 Pardee Drive, Oakland, California

SEE LEGEND FOR LOGS AND TEST PITS FOR EXPLANATION OF SYMBOLS AND TERMS

4(FX3)





ILLING CO.: Kvilhaug Well Drilling & Pump Company, Inc.

ILL METHOD: Hollow Stem Auger, Mobile B-24

AMPLING METHOD: Split Spoon Sampler

OBJECT NO.: 190646.3

SEE LEGEND FOR LOGS AND TEST PITS FOR EXPLANATION OF SYMBOLS AND TERMS

CLIENT: Federal Express Corporation  
 LOCATION: 8455 Pardee Drive; Oakland, California

LOGS(FX3)





Portland cement,  
5% bentonite

about 20% medium to coarse (4-7cm), subangular gravel; slightly moist, brown.

0 CL

SS-1 6/6

AUGER REFUSAL

TOTAL DEPTH 2.5'

ING CO.: Kvilhaug Well Drilling & Pump Company, Inc.

PAGE 6 OF 6

METHOD: Hollow Stem Auger, Mobile B-24

DRILLING METHOD: Split Spoon Sampler

PROJECT NO.: 190646.3

SEE LEGEND FOR LOGS AND TEST PITS  
FOR EXPLANATION OF SYMBOLS AND TERMS

CLIENT: Federal Express Corporation  
ADDRESS: 8455 Pardee Drive, Oakland, California

(FX3)



ALAMEDA COUNTY  
HEALTH CARE SERVICES



AGENCY

DAVID J. KEARS, Agency Director

RAFAT A. SHAHID, Assistant Agency Director

May 13, 1992  
STID # 545

DEPARTMENT OF ENVIRONMENTAL HEALTH  
Hazardous Materials Division  
80 Swan Way, Rm. 200  
Oakland, CA 94621  
(510) 271-4320

Federal Express Corporation  
Mr. Alan Johnson  
8950 Cal Center Drive  
Sacramento, CA 95826

Re: Recommendation for Site Closure at Federal Express, 8455 Pardee  
Oakland CA 94621

Dear Mr. Johnson:

Our office has received and reviewed the May 1992 report recording the sampling of monitoring wells MW-1 and MW-6 at the above site prepared by IT Corporation. Their recommendation was that no further work be done at this site. Please be advised that the County remains insistent that four quarters of groundwater sampling and groundwater gradient measurement occur prior to consideration for recommendation for site closure. The groundwater samples should be analyzed for total oil and grease and chlorinated solvents as performed in the latest April sampling.

You may contact me at (510) 271-4320 should you have any questions.

Sincerely,

Barney M. Chan  
Hazardous Materials Specialist

cc: M. Thomson, Alameda County D. A. Office  
R. Hiatt, RWQCB  
S. Mills, IT Corp., 4585 Pacheco Blvd., Martinez, CA 94553  
Ms. B. Howell, Koll Co., 5976 West Las Positas Blvd., Suite 208

S08455Pardee

Pleasanton, CA 94588

*File*