



ENGINEERING INC.

RCE #27011 LIC. #537901

STD 4247

**QUARTERLY STATUS REPORT**

**5714 SAN PABLO AVENUE  
OAKLAND, CALIFORNIA**

**JUNE 1993**

**PREPARED FOR:**

**CHIEF AUTO PARTS, INC.  
15303 DALLAS PARKWAY, SUITE 800  
DALLAS, TEXAS**

**PREPARED BY:**

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## INTRODUCTION

GHH Engineering, Inc. (GHH) has prepared this Quarterly Status Report (QSR) to provide Chief Auto Parts, Inc. with the status of the soil remediation and groundwater monitoring effort being conducted at the 5714 San Pablo Avenue site. The site is located at the southeast corner of the San Pablo-Stanford Avenue intersection in Oakland, California. A vicinity map and site plan for the subject property are shown on Figures 1 and 2, respectively.

This QSR is a summary of the additional work completed and the information obtained since July 1992. The tasks completed consists of:

- o Drilling and sampling three soil borings in 57th Avenue
- o Sampling four of the on-site monitoring wells
- o Excavating petroleum hydrocarbon impacted soil from the product piping area
- o Collecting verification samples from the excavation
- o Backfilling the excavation
- o Disposing of the excavated soil

Verification soil samples from the excavations indicated that the petroleum hydrocarbon impacted soils have been removed.

During completion of this work, GHH encountered polynuclear aromatic compounds (PNA's) in the site soils as part of the characterization sampling that was required by the landfill prior to accepting the soil. The PNA's were reported to the Alameda County Hazardous Materials Division (the County) in a letter dated March 4, 1993, which is included with all related correspondence in Appendix A. Verification soil samples were collected in the soil zones that appeared to contain the PNA's. The PNA concentrations detected were below the action limits specified by the County.

## PREVIOUS SITE WORK

The reader is referred to the following documents for additional information regarding work completed at the site.

- o Additional Work Schedule dated January 4, 1993;
- o Soil Remediation and Preliminary Investigation and Evaluation Report (SR/PIER) dated July 30, 1992;
- o Soil Remediation/Groundwater Investigation Workplan (workplan) dated July 19, 1991;
- o "Report on Soil and Groundwater Investigation, Former Tank Area, 5714 San Pablo Avenue, Oakland, California prepared by Levine-Fricke, Inc. (L-F), dated August 27, 1990; and
- o Preliminary Soil Testing Program, Stanford-San Pablo Avenue Site, Oakland, California, prepared by Kaldveer Associates Geoscience Consultants, dated March 9, 1989.

Copies of these reports may be obtained from this office if necessary to assist the reader in reviewing the project.

# SAN PABLO QUARTERLY STATUS REPORT JUNE 1993

## FIELD INVESTIGATIONS

### Soil Investigation

On January 21, 1993, soil borings SB-4, SB-5, and SB-6 were drilled, as shown on Figure 3. The soil borings were completed from 5 to 11 feet below grade. Groundwater was encountered at approximately 10 feet below grade in soil boring SB-4. The soil boring logs are contained in Appendix B. Soil samples were collected every 5 feet in accordance with the sampling protocol contained in the July 19, 1991 Workplan, and transported to Western Environmental Science and Technology, Inc. (WEST) a California certified laboratory. A total of four samples were analyzed for TPH as gasoline (TPH G; EPA Method 8015 modified), TPH as diesel (TPH D EPA Method 8015 modified), TPH as motor oil (TPH M; EPA Method 8015 modified), benzene, toluene, ethylbenzene, xylenes, (BTEX; EPA Method 8020), halogenated volatile organic compounds (HVOC; EPA Method 8010) the metals cadmium, chromium, lead, nickel, and zinc (EPA Methods 7000/6010/200.7). The results are summarized in Table 1, and the laboratory reports and chain-of-custody documentation are contained in Appendix C.

BTEX and TPH M were not detected in the soil samples, with the exception of a very low xylene concentration in the sample from SB-6. TPH G was detected at low concentrations in two of the samples, but the concentrations did not exceed the 10 parts per million (ppm) clean up level specified in the workplan as approved by the County.

The samples collected in soil boring SB-4 contained TPH G at 0.73 ppm 5 feet below grade and TPH D at 46 ppm 10 feet below grade. Soil boring SB-5, southeast of the former excavation, did not contain detectable petroleum hydrocarbons concentrations. Soil boring SB-6 contained TPH D at 17 ppm and TPH G at 3.7 ppm. The TPH G detected in SB-6 was not typical of the gasoline standard and was probably due to the light fraction of hydrocarbons from diesel.

The metals concentrations are all below the California Department of Health Services Total Threshold Limit Concentration (TTLC) and approximated background in all samples except the zinc in SB-4, as shown in Table 2. No HVOC's were detected in the soil borings.

A preliminary investigation of the PNA's detected in characterization sample CS-15 was conducted. Preliminary review of the chemical literature indicated that the PNA's detected are derivatives of coal tar and have low solubility in water. The most likely sources of the PNA's are discrete black colored soil zones that had been noted on drill logs and were visible in the product piping excavations. These black soil zones had been sampled in the previous verification and characterization samples with negative results.

## **SAN PABLO QUARTERLY STATUS REPORT JUNE 1993**

In the excavation the black soil forms a single continuous zone approximately 2 feet below grade and varying in thickness from less than an inch to approximately 3 feet. It is not clear if the zones noted in the drill logs are part of the same single zone or multiple zones. Pre-existing structure locations were surveyed for Shell Oil Company in November 1969 prior to construction of the gasoline station. The black soil zone is present under concrete from the previous coal storage area and garage on the eastern boundary of the site. The known extent of the black soils at the site, and the pre-existing structures are shown in Figure 4.

On February 10, 1993, verification sample TS-13 was collected from the black soil zone at the center of site, as shown in Figure 5. The sample was submitted to WEST for a SVOC analyses and a tentatively identified compound scan (TIC).

A TIC is a scan of approximately 49,000 compounds used to indicate unknown constituents. The sample was collected to confirm the location of the PNA's, to indicate PNA concentrations, and to determine the compounds that are present. The SVOC compounds reported in TS-13 were PNA's very similar to those found in CS-15. The concentrations were higher. The TIC scan tentatively identified an additional 14 compounds, all of which are PNA's or compounds of similar chemistry and origin. The laboratory reports are contained in Appendix D.

To determine the distribution and concentration of the PNA's across the site, four verification soil samples TS15-1, TS15-2, TS15-3, and TS15-4 were collected on March 24, 1993, as shown on Figure 5. The samples were transported to WEST, composited in the laboratory into a single sample and analyzed for SVOC's. No SVOC's were detected.

### **Groundwater Investigation**

On January 8, 1993, groundwater samples were collected from monitoring wells MW-2 through MW-5, located as shown on Figure 2. The samples were submitted to WEST for TPH G, TPH D, TPH M, and BTEX analyses. In addition, a HVOC analysis was conducted on the sample collected from the down gradient monitoring well MW-4. A total of 4 samples were submitted for analyses and the analytical results are summarized in Table 3. The laboratory reports and chain-of-custody documentation are contained in Appendix E.

No benzene, ethylbenzene, TPH G, TPH D, or HVOC's were detected in any of the groundwater samples. No constituents were detected in monitoring well MW-2. The only constituent detected in monitoring well MW-3 was TPH M at 65 ppb. The sample from monitoring well MW-4 contained toluene and xylenes, in addition to TPH M. The concentrations of these constituents were similar to the previous results, and below the state action levels (SAL's) for drinking water.

## **SAN PABLO QUARTERLY STATUS REPORT JUNE 1993**

The analyses for monitoring well MW-5 were reported to contain toluene, xylenes, and TPH M. The May 27, 1992, MW-5 analyses did not contain petroleum hydrocarbons. Therefore, confirmation analyses were conducted on the January 8, 1993 samples, and only xylenes at 0.58 parts per billion (ppb) was reported. The reporting limit for xylenes is 0.50 ppb. The positive detections in MW-5 may have been due to errors in laboratory procedures. The May 1993, MW-5 analyses will be monitored to determine if petroleum hydrocarbons are present.

### **SITE CONDITIONS**

#### **Geology**

The geology encountered during the drilling in 57th Street is shown on the soil boring logs contained in Appendix B. The soil consisted of clay and clayey to gravelly sand. The sand zones were coarser than soils encountered during the previous drilling on the site.

#### **Groundwater Levels**

Static water level measurements (SWL's) have been taken monthly since December 1992, with the exception of April 1993. In April 1993, SWL's were not measured due to heavy use of the site as a parking lot by the SYDA Foundation for a month long series of meetings. Monthly SWL measurements will be resumed in May 1993. The SWL's were generally 1 to 5 feet below grade from December to March, as shown in Table 4. The water levels rose in the winter months and began to drop in March.

The groundwater gradient direction and magnitude were calculated from monitoring wells MW-1, MW-3, and MW-5, as shown in Table 5 and Figure 6. Monitoring wells MW-1, MW-3, and MW-5 are located outside the remedial excavation. Monitoring wells MW-2 and MW-4 are within the excavations, and provide anomalous groundwater gradient data. The groundwater gradient has varied from 0.0583 to 0.1344. The groundwater flow direction has varied from S5E to S17W.

### **SOIL REMEDIATION**

Between January 19 and 21, 1993, GHH excavated approximately 120 cubic yards (cy) of additional impacted soil from the vicinity of verification sample TS-4 and north of the center pump island in accordance with the SR/PIER, as shown on Figure 5. The soil in the center pump island area contained petroleum hydrocarbons, and TS-4 contained trichloroethane (TCE).

## **SAN PABLO QUARTERLY STATUS REPORT JUNE 1993**

Three verification soil samples (TS10 through TS12) were collected from the excavations on January 21, 1993. The verification sample locations are shown on Figure 5. Samples were collected in clean brass tubes which were capped, sealed, iced, and transported to Western Environmental Science and Technology, Inc. (WEST) a California certified laboratory.

The samples were analyzed for TPH G, TPH D, TPH M, BTEX, oil and grease (O&G; ASTM Method 5520 E,F), HVOC, and the metals cadmium, chromium, lead, nickel and zinc. The petroleum hydrocarbon and metals results are summarized in Tables 6 and 7, respectively. The laboratory reports and chain-of-custody documentation are contained in Appendix F. No petroleum hydrocarbons or HVOC's were detected in the verification samples. The reported metals concentrations approximated background and were well below the TTLC.

### **DISPOSAL OF IMPACTED MATERIALS**

#### **Soil**

The soil was stockpiled on the northern portion of the site and covered by 6 ml polyethylene. Characterization sampling was accomplished by collecting four soil samples from discrete locations on the stockpile. The samples were composited at the laboratory to form one sample for laboratory analyses. The composite samples were analyzed for TPH G, TPH D, TPH M, BTEX, volatile organic priority pollutants (VOC; EPA Method 8240), semi-volatile organic priority pollutants (SVOC; EPA Method 8270), California Code of Regulations Title 22 Metals (CAM 17) with Soluble Threshold Limit Concentration (STLC) procedure, reactivity, corrosivity, and ignitability (RCI). The petroleum hydrocarbon results are summarized in Table 8, and the laboratory reports and chain-of-custody documentation are contained in Appendix F.

The characterization results were then submitted to Remco Inc. and approved for disposal at their facility in Richmond, California. The Remco disposal process consists of encapsulating non-hazardous wastes, and disposing of the encapsulated material as road base. The method is certified by the Contra Costa County Development Department and the road base meets California Department of Transportation specifications. The 120 cubic yards (cy) of material was hauled to the REMCO facility on March 25 1993, under non-hazardous manifest. Copies of the certificate of remediation are contained in Appendix G.

## **SAN PABLO QUARTERLY STATUS REPORT JUNE 1993**

### **Groundwater**

Groundwater was removed from the excavation and stored on-site in a 6,500 gallon tank. A one time exemption NPDES permit for release of the groundwater was obtained from the San Francisco Bay Regional Water Quality Control Board (Regional Board). The groundwater was treated with activated carbon and discharged to the Oakland city storm drain. Verification sample T-4 was collected after an initial release on March 23, 1993. Analytical results confirmed that the water treatment was effective. The remaining groundwater was released on March 25, 1993. A copy of the Regional Board Exemption and the analytical laboratory reports are contained in Appendix H and I, respectively.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Soil**

Approximately 120 cy of petroleum hydrocarbon impacted soil was excavated and disposed of at the REMCO facility in Richmond, California. The soil remediation measures appear to have mitigated the petroleum hydrocarbon and the TCE impacted soil at the site. Based on the soil sample results from the three soil borings low concentrations of TPH-D, TPH-G, and xylenes exist beneath 57th Street. The TPH G concentrations were below the cleanup level of 10 ppm defined in the workplan. It is our opinion that no further excavation should be required for the petroleum hydrocarbon impacted soil and we request closure for the site soils.

The PNA concentrations encountered at the site are below the hazardous levels defined by the County and confirmed in the letters from GHH to the County dated March 29, 1993, and April 23, 1993. The PNA's appear to occur in a black soil zone, and do not appear to be related to the gas station activities. The black soil zone(s) appears to predate the gasoline station structures; predate the structures on the site prior to the gasoline station; and to extend off the site.

### **Groundwater**

The groundwater gradient direction calculated from the SWL's is consistent with the gradient direction indicated by the petroleum hydrocarbon impacted soil excavated in the former underground tank area. The impacted soil extended south-southwest out of the former tank area. The petroleum hydrocarbons would have migrated in the direction of the groundwater gradient. The measured groundwater gradient is to the south. The data supports a generally southward groundwater gradient.

**SAN PABLO QUARTERLY STATUS REPORT  
JUNE 1993**

The groundwater samples collected on January 8, 1993, contain constituent concentrations similar to the samples collected on May 27, 1992. To test for PNA's, an SVOC (Method 625) analyses will be performed on samples from monitoring wells MW-2, MW-4, and MW-5. If the PNA concentrations are lower than the 20 ppb action levels defined by the County, we will recommend closure with regard to soil. Quarterly groundwater samples were collected in May 1993, for the July 30, 1993 QSR.



TABLE 1

SOIL BORING SAMPLE DATA  
5714 SAN PABLO AVENUE  
OAKLAND, CALIFORNIA

TOTAL PETROLEUM HYDROCARBON

*Handwritten:* Total petroleum  
VOC

Sample ID	Date	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	TPH G (ppm)	TPH D (ppm)	TPH M (ppm)
SB-4 5'	01-21-93	<.0050	<.0050	<.0050	<.0050	.73	<10	<10
SB-4 11.5'		<.0050	<.0050	<.0050	<.0050	<.50	<del>46</del>	<10
SB-5 5'	01-21-93	<.0050	<.0050	<.0050	<.0050	<.50	<10	<10
SB-6 5'	01-21-93	<.0050	<.0050	<.0050	.0058	3.7*	<del>17</del>	<10

*Handwritten:* P20  
ND  
ND  
ND

TPH G Total petroleum hydrocarbon as gasoline  
 TPH D Total petroleum hydrocarbon as diesel  
 TPH M Total petroleum hydrocarbon as motor oil  
 ppm Parts per million  
 \* Product is not typical gasoline  
 < Less than reporting limits

TABLE 2

SOIL BORING SAMPLE DATA  
 5714 SAN PABLO AVENUE  
 OAKLAND, CALIFORNIA

METALS  
 TOTAL THRESHOLD LIMIT CONCENTRATION (TTLC)  
 JANUARY 21, 1993

Soil Sample	Cadmium (ppm)	Chromium (ppm)	Lead (ppm)	Zinc (ppm)	Nickel (ppm)
SB-4	<0.2	34	5.4	500	27
SB-5	<0.2	30	5.8	140	24
SB-6	<0.2	49	7.0	95	40
RL	0.2	0.5	1.0	1.0	20
TTLC	500	2,500	1,000	5,000	2,000

NA Not Analyzed

ppm Parts per million

RL Reporting limit

< Less than reporting limits

TTLC California EPA Department of Health Services Total Threshold Limit Concentrations

TABLE 5

GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE  
5214 SAN PABLO AVENUE  
OAKLAND, CALIFORNIA

Date	Direction	Magnitude	Monitoring Well Used
12-17-92	S 5 E	0.1344	1, 3, 5
01-08-93	S 2 E	0.0994	1, 3, 5
02-02-93	S 17 W <sup>3</sup>	0.0583	1, 3, 5
03-22-93	S 6 W	0.0773	1, 3, 5

S 5 E 5 degrees south of west

TABLE 6

VERIFICATION SAMPLE DATA  
5714 SAN PABLO AVENUE  
OAKLAND, CALIFORNIA

TOTAL PETROLEUM HYDROCARBONS

Soil Sample	Depth (feet)	Date	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	TPH G (ppm)	TPH D (ppm)	TPH M (ppm)	Oil & Grease (ppm)
TS10	6	01-21-93	<.0050	<.0050	<.0050	<.0050	<.50	<10	<10	<50
TS11	6	01-21-93	<.0050	<.0050	<.0050	<.0050	<.50	<10	<10	<50
TS12	6	01-21-93	<.0050	<.0050	<.0050	<.0050	<.50	<10	<10	<50

*Handwritten notes:*  
2/10/93  
2010  
ND  
ND  
ND

TPH G Total petroleum hydrocarbon as gasoline  
TPH D Total petroleum hydrocarbon as diesel  
TPH M Total petroleum hydrocarbon as motor oil  
ppm Parts per million  
NA Not analyzed  
< Less than reporting limits

TABLE 7

VERIFICATION SAMPLE DATA  
5714 SAN PABLO AVENUE  
OAKLAND, CALIFORNIA

METALS  
TOTAL THRESHOLD LIMIT CONCENTRATION (TTLC)

Soil Sample	Cadmium (ppm)	Chromium (ppm)	Lead (ppm)	Zinc (ppm)	Nickel (ppm)
TS10	<0.2	32	6.9	110	41
TS11	<0.2	38	18	93	36
TS12	<0.2	40	5.6	67	44
TTLC	— 500	2,500	1,000	5,000	2,000

NA Not Analyzed  
ppm Parts per million  
RL Reporting limit  
< Less than reporting limits  
TTLC California EPA Department of Health Services Total Threshold Limit Concentrations

*Handwritten note:* (2/10/93) S-13 PNAS = 54.93 ppm total

TABLE 8

STOCKPILE CHARACTERIZATION SAMPLE DATA  
 5714 SAN PABLO AVENUE  
 OAKLAND, CALIFORNIA

TOTAL PETROLEUM HYDROCARBONS

Soil Sample	Date	Benzene (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylenes (ppm)	TPH G (ppm)	TPH D (ppm)	TPH M (ppm)
CS15-1,2,3,4	01-21-93	.0079	.090	.059	.36	2.6	<10	96

*PNA'S total*  
*96 ppm*

TPH G Total petroleum hydrocarbon as gasoline

TPH D Total petroleum hydrocarbon as diesel

ppm Parts per million

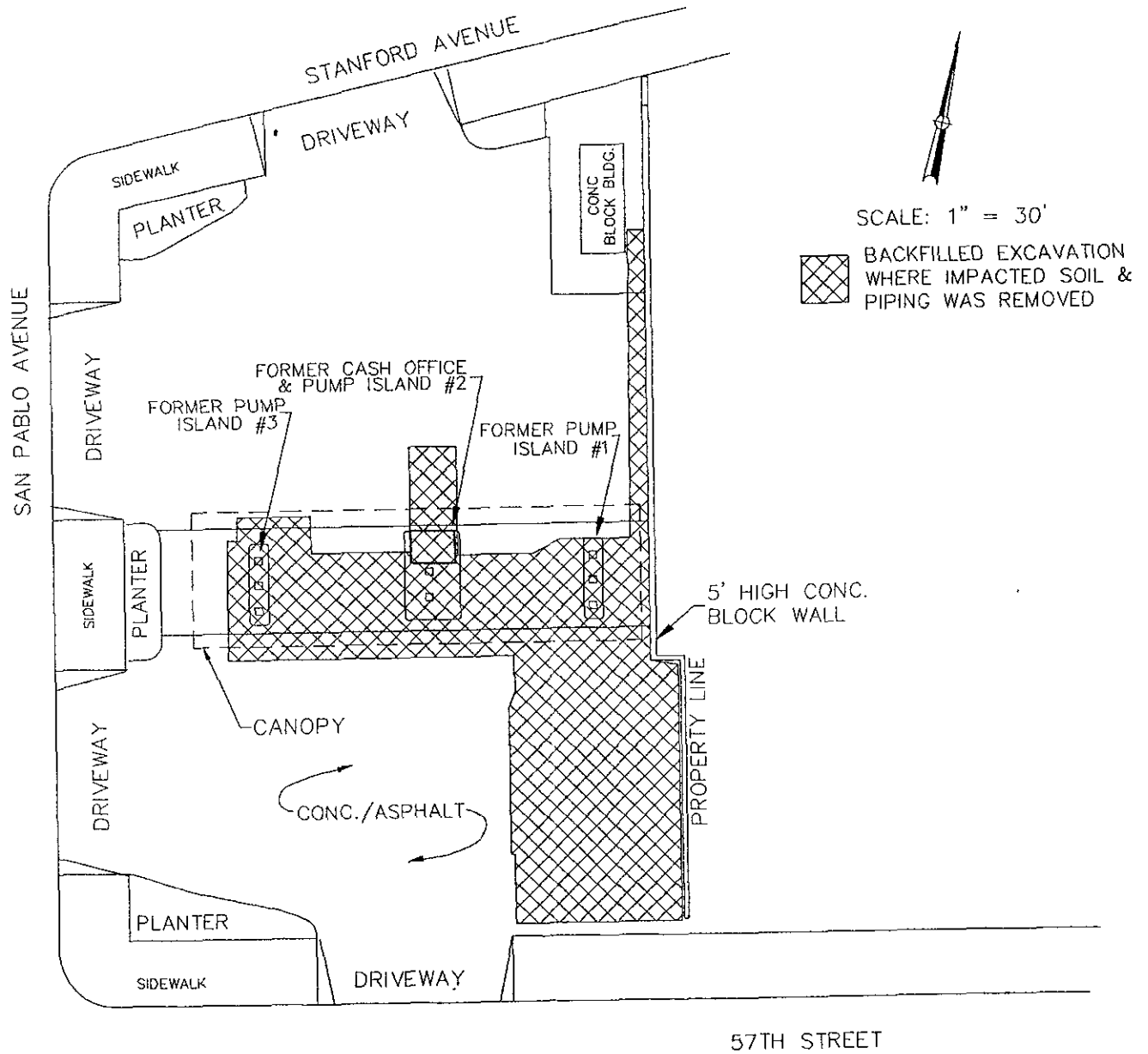
\* Increased reporting limit due to interference from other petroleum hydrocarbons

< Less than reporting limit

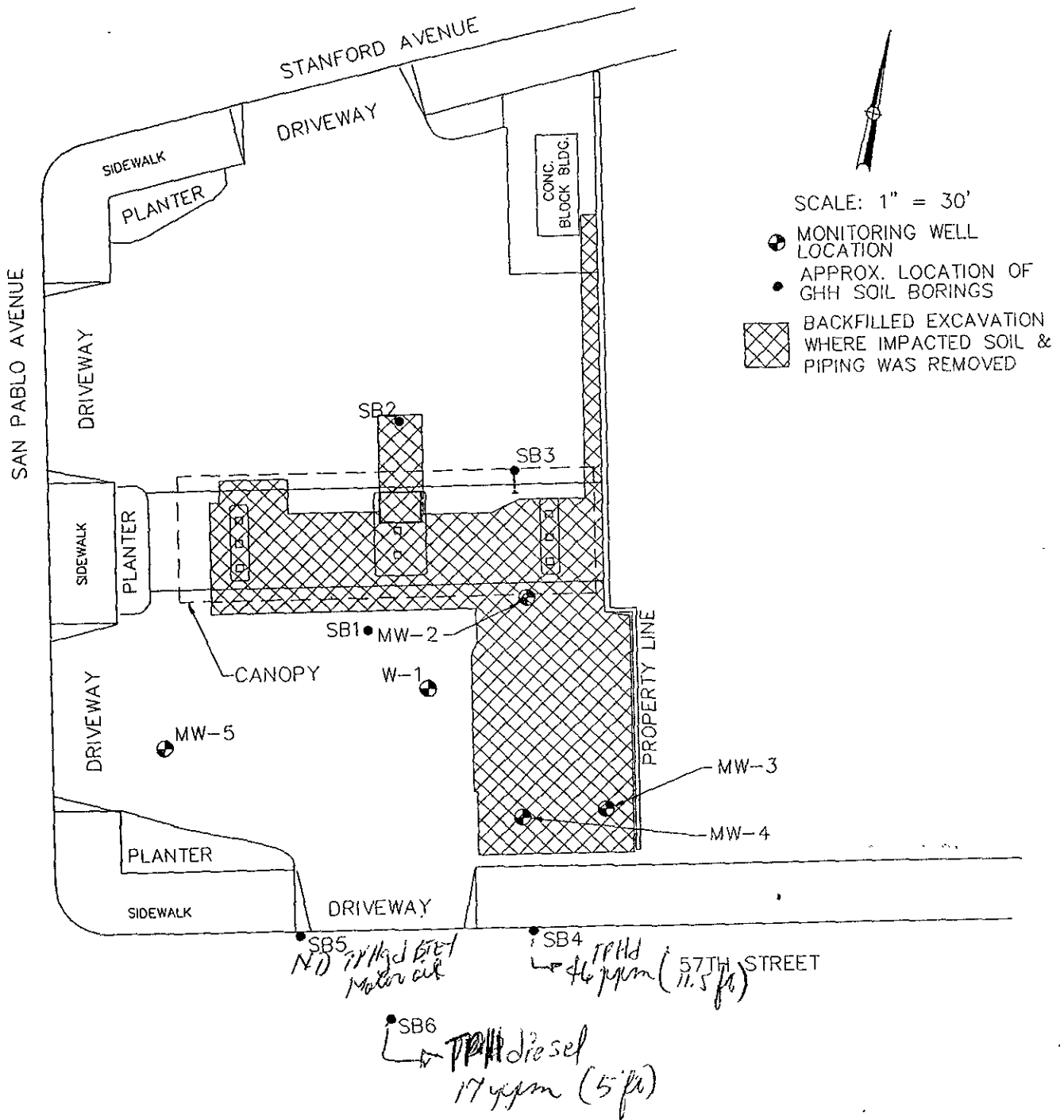
NA Not analyzed

*(3/2/15) TSK-1, 2, 3, 4 = ND for 8270*

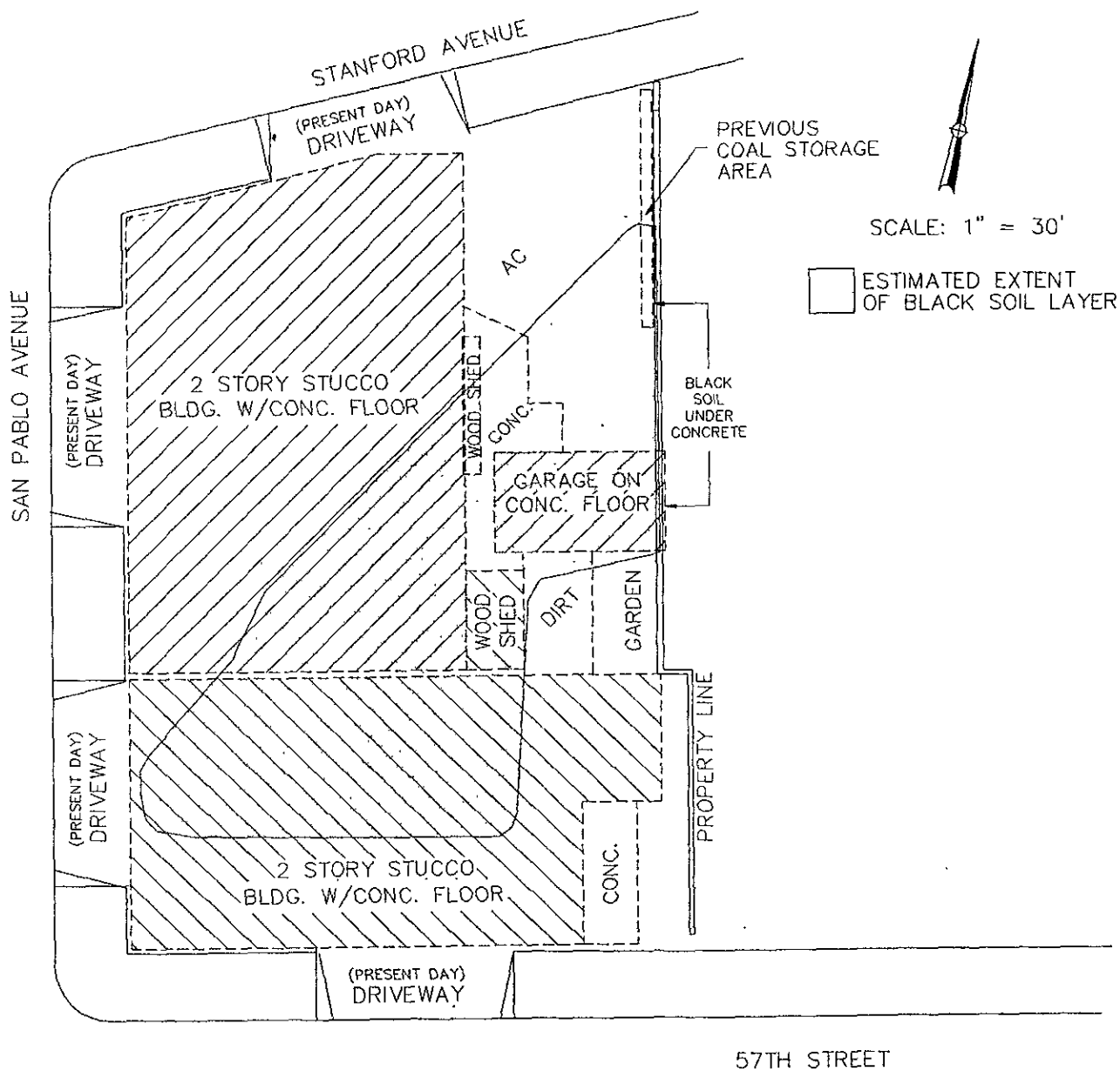
**FIGURE 2**  
**5714 SAN PABLO AVENUE**  
**SITE PLAN**



**FIGURE 3**  
**5714 SAN PABLO AVENUE**  
**MONITORING WELL & SOIL**  
**BORING LOCATION MAP**



**FIGURE 4**  
**5714 SAN PABLO AVENUE**  
**PRE-1969 STRUCTURES**

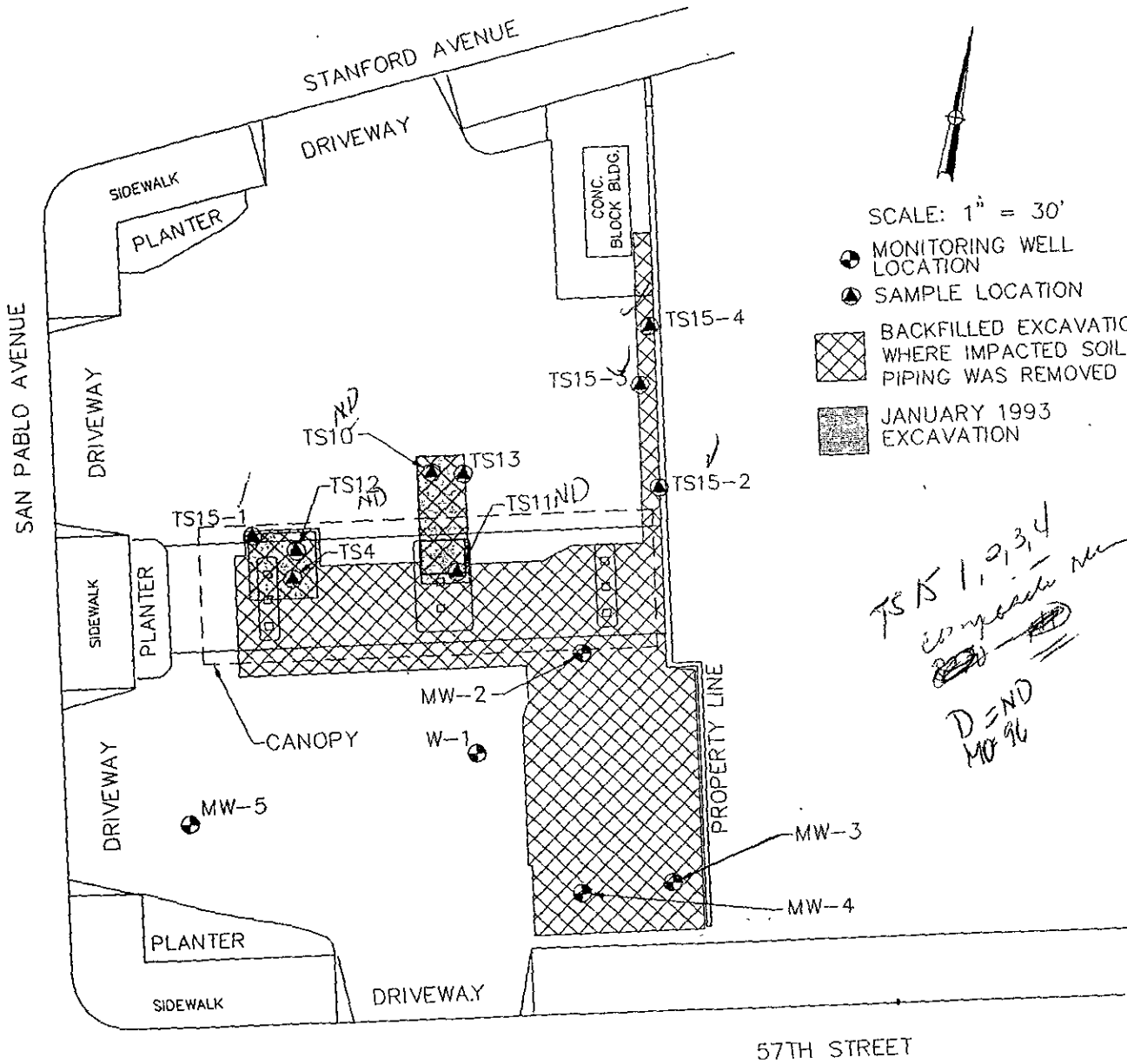


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FIGURE J  
 14 SAN PABLO AVENUE  
 EXCAVATION & VERIFICATION  
 SAMPLE LOCATION MAP



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**FIGURE 6**  
**5714 SAN PABLO AVENUE**  
**GROUNDWATER GRADIENT**  
**DIRECTION MAP**

