

CITY OF EMERYVILLE



MARYANN LESHIN  
Projects Coordinator

2/14/94

SP 337  
2/14/94

RE: 4800 San Pablo Ave.

Susan:

Here are copies of the two reports prepared on the above property.

I'll see you on 2/23 at 9:00 am at Regional Water Bd's office in Oakland.

Thanks very much -

Maryann



# HydroSolutions of California, Inc.

5917 Moss Creek Circle • Suite 2  
Fair Oaks, California 95628 • (916) 967-1222 • FAX (916) 967-1223

November 17, 1993

Maryann Leshin  
Project Coordinator  
City of Emeryville Redevelopment Agency  
2200 Powell Street, Suite 1200  
Emeryville, California 94608

SUBJECT: SOIL-GAS SURVEY  
4800 SAN PABLO AVENUE  
EMERYVILLE, CALIFORNIA

RRSP: 93286-01-03

Dear Maryann:

HydroSolutions of California, Inc. (HSCI) is pleased to submit this letter report summarizing the results of an aerial photo review and soil-gas survey. The intent of these working tasks is, ultimately, to evaluate (quickly and at a relatively low cost) the existence of total petroleum hydrocarbons (TPH) in the subsurface. The strategy consists of three steps: 1) evaluate the 4-6 foot depth of sediment for presence of organic vapors in soil-gas, 2) examine old aerial photos with respect to the location of underground storage tanks and dispenser islands and 3) based on soil-gas survey and aerial photos results, choose boring locations which, potentially, have a high likelihood of encountering petroleum contamination.

Reporting will be discussed in three parts:

Aerial Photo and Map Review  
Soil-gas Survey  
Conclusions & Recommendations

## AERIAL PHOTO AND MAP REVIEW

Two sources of historical geographic coverage of the subject property were identified; 1) UC Berkeley Map library and 2) Sanborn Maps. Map and photo coverage range between 1911 to 1969. Based on 1950 and 1969 map/photos, two stands and gas & oil (denoted as a rectangle) were identified in the Sanborn maps. Based on the surrounding buildings in the aerial photograph and Sanborn map dated 1950, the rectangle indicated on the subject

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HAZMAT  
94 FEB 17 PM 3:56

Page 2 of 4  
RRSP: 93286-01-03  
November 17, 1993

property may be the structure which currently exists at the subject property. Underground storage tanks (UGST) are not located on these maps however the dispenser islands are likely to be illustrated as, "stands". Copies of one aerial photograph from 1950 and a Sanborn map from 1911, 1950 and 1969 are enclosed.

#### **SOIL-GAS SURVEY**

A soil-gas survey was chosen as a quick, relatively inexpensive means to evaluate the presence of organic vapor (OV) in the shallow subsurface. A brief discussion of the rationale of a soil-gas survey followed by a description of the field process and data results will be addressed.

Hypothetically, a high volume spill of gasoline/diesel results initially in a downward movement through the unsaturated zone, eventually reaching the water table. A lense of petroleum usually forms on the water table. The organic fluid lense then begins to move under the force of gravity and spread on the water table. The petroleum lense (referred to as plume) will continue to spread until it disappears. Simultaneously, dissolved petroleum in groundwater will continue to flow down-gradient with the groundwater flow. Gases from the spreading petroleum move upward through the soil column above the path of the spreading petroleum plume. Evaluation of the existence of this upward migrated petroleum in gas form is the objective of a soil-gas survey.

A limitation of soil-gas data interpretation is the apparent image of the soil-gas plume in shallow areas may become disjointed and misrepresent actual conditions of petroleum at depth. Specifically, changing geology laterally and with depth, natural biodegradation and chemical degradation may each cause a surveyor to misinterpret contamination locations at depth. Layers of sands and clays may result in organic vapors located at a deep sand zone to not migrate beyond a clay lense located immediately above the sand. If the soil probes are placed in the shallow clay zone, the underlying contaminated sand would not be identified. In addition, as vertical upward migration occurs, the contaminant may come in contact with bacteria and fungi which can metabolize petroleum as a food source. Sediment which may be encountered by soil-gas potentially may be absorbed or may react with the petroleum.

The soil-gas survey was conducted in two steps: 1) vertical profiles of organic vapors were completed at probes 9 and 20 and 2) probes located along 20 foot lateral spacings, approximately, were inserted to a 4-4.5 foot depth and sampled.

Prior to initiating sample collection and field analysis, the photoionization detector (Hnu Meter HW101) was calibrated with isobutylene (54 ppm). Samples of atmospheric air were collected through the vacuum pump and into sample bags which would be utilized for the survey. Nondetectable organic vapors were noted. Soil-gas probes were then purged, one at a time, for approximately 15 seconds, sampled and an organic vapor reading recorded.

Subsequent to removing all probes, a bentonite slurry was poured into each probe boring. No debris was generated during the execution of this field work.

An 8.5 foot depth probe (9) and 10.5 foot depth probe (20) were utilized to profile the subsurface for organic vapor. Vertical profiling of soil probes 9 and 20 did not identify any OV horizons therefore the survey was completed at the 4-4.5 foot depth. Product lines are typically located 2-2.5 feet below grade. All organic vapor (OV) readings were less than 2.3 ppm. No indications of gasoline odors were noted.

#### CONCLUSIONS & RECOMMENDATIONS

Information obtained from the above maps and aerial photographs were compared with the current asphalt and concrete patches noted on-site. Concrete patches are illustrated in figure 2 as unnamed rectangles. The three north trending concrete slabs are broken in the center (3-4 foot wide break) which may represent the location of an old dispenser island. Furthermore, the area surrounding soil probe 14 appears to have been patched with concrete. Probe 14 penetrated the subsurface easily to a 2.5 foot depth and required very little vacuum to collect a soil-gas sample. These conditions may indicate a sand backfill existing in this area.

Insertion of probe 3 encountered an impermeable layer which prevented penetration beyond the 5.0 foot depth. This area also appears to be patched with asphalt which may represent an old tank excavation.

Probe 22 penetrated the groundsurface very easily and required very little vacuum to collect a soil-gas sample. The groundsurface in this area was concrete. A large portion of the concrete had previously been damaged.

Page 4 of 4  
RRSP: 93286-01-03  
November 17, 1993

Based on the low to nondetectable organic vapors noted at the 4-4.5 foot depth, low concentrations of OV in the vertical profile of probes 9 and 20, indications of "stand" and "gas & oil" on Sanborn maps from 1950 and 1969 and the limitations of soil-gas surveys, HSCI suggests completing a limited drilling program in areas which suggest historic underground storage tank system locations. Proposed boring locations are illustrated in figure 3.

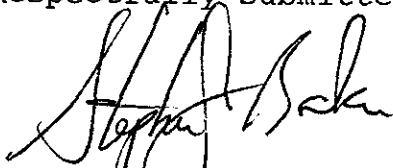
Recommended drilling depth is up to 25 feet (10-15 foot depth in the dispenser areas and a 25 foot depth at possible tank locations). Soil samples must be collected from the unsaturated zone and shallowmost aquifer.

HSCI recommends soil samples be analyzed for the following constituents:

Total petroleum hydrocarbons, EPA Method 8015;  
Total petroleum hydrocarbons, Modified EPA Method 418.1; and  
Benzene, toluene, xylene, and ethylbenzene, EPA Method 8020/602.

If you have questions regarding any of the enclosed information or recommendations, please contact me. Thank you for the opportunity to support your subsurface pollution concerns.

Respectfully submitted,



Stephen J. Baker  
Project Manager

Attachments:

Figure 1. Site Map  
Figure 2. Soil-gas Probe Locations  
Figure 3. Proposed Boring Locations  
Three Sanborn Maps of the Subject Property  
One Aerial Photograph of the Subject Property



⊙ SUBJECT PROPERTY

Reproduced from USGS 7.5 Minute Series V895 (topographic)

Title: <b>SUBJECT PROPERTY LOCATION MAP</b>		Project No.: 93286-01	<b>FIGURE</b>  1
HydroSolutions of California, Inc. 11470 Swerton Road, Suite 4 Reno, California 95742 (916) 852-0188		Site: 4800 San Pablo Avenue Emeryville, California	
Scale: 1 inch=2,000 feet		Date: 11-16-93	

NOTES:

Soil-gas survey completed  
November 15, 1993.

Probe are denoted as dots.

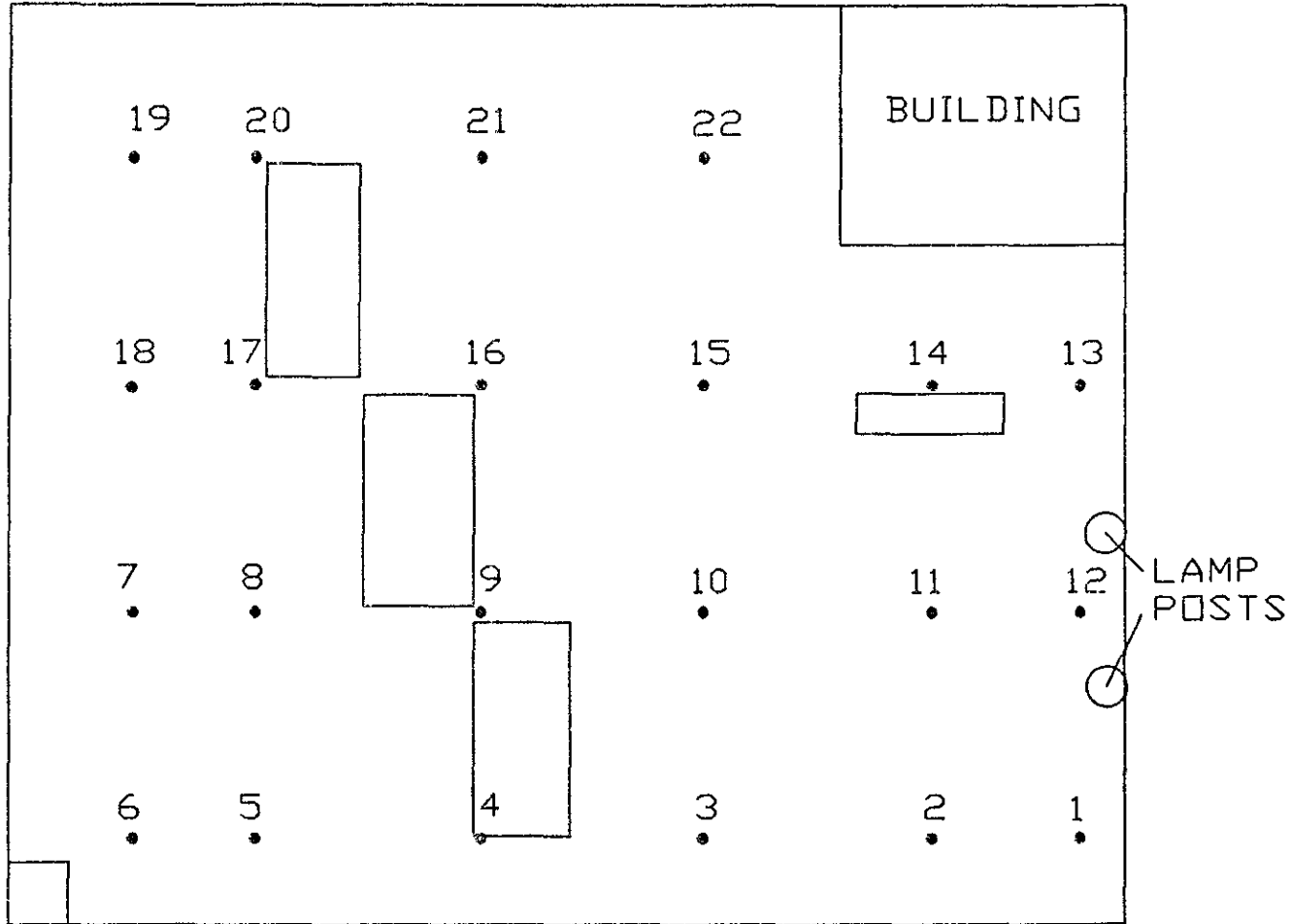
Soil probes 9 and 20 were  
sampled every two feet to a  
depth of 8.5 feet and 10.5 feet,  
respectively.

Soil-gas samples were collected  
in 3 liter bags and analyzed  
for organic vapors (OV).

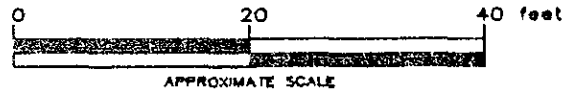
Organic vapors analysis  
completed with an Hnu  
photoionization detector  
calibrated with isobutylene.  
Calibration was completed  
immediately prior to collection  
of soil-gas.

All soil-gas samples contained  
2.2ppmv or less organic vapor.  
No indications of petroleum  
were noted in the field.

SAN PABLO AVENUE



48TH STREET



HydroSolutions of California, Inc.

11470 Sunrise Gold Circle, Suite 4  
Rancho Cordova, California 95742  
(916) 832-0188

Title

SOIL-GAS PROBE LOCATIONS

Site

4800 SAN PABLO AVENUE  
EMERYVILLE, CALIFORNIA

Project Number

93286-01

Date

11-16-93

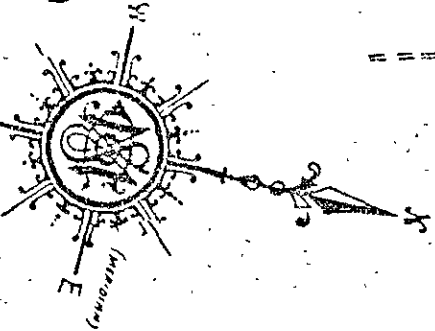
Scale

AS SHOWN

FIGURE

2

(FA)

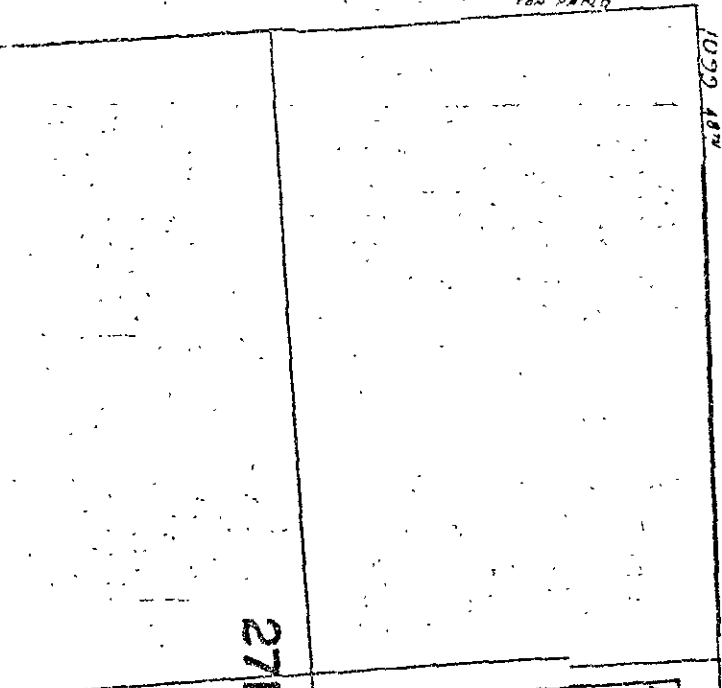
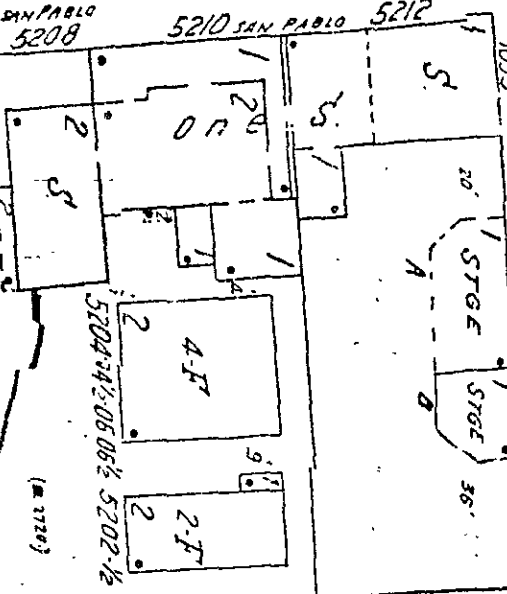
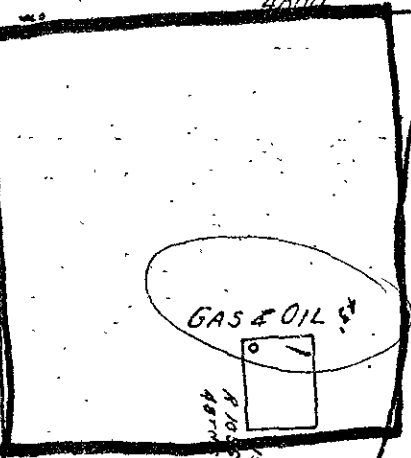


SAN PABLO

AV.

(35)

6" W PIPE

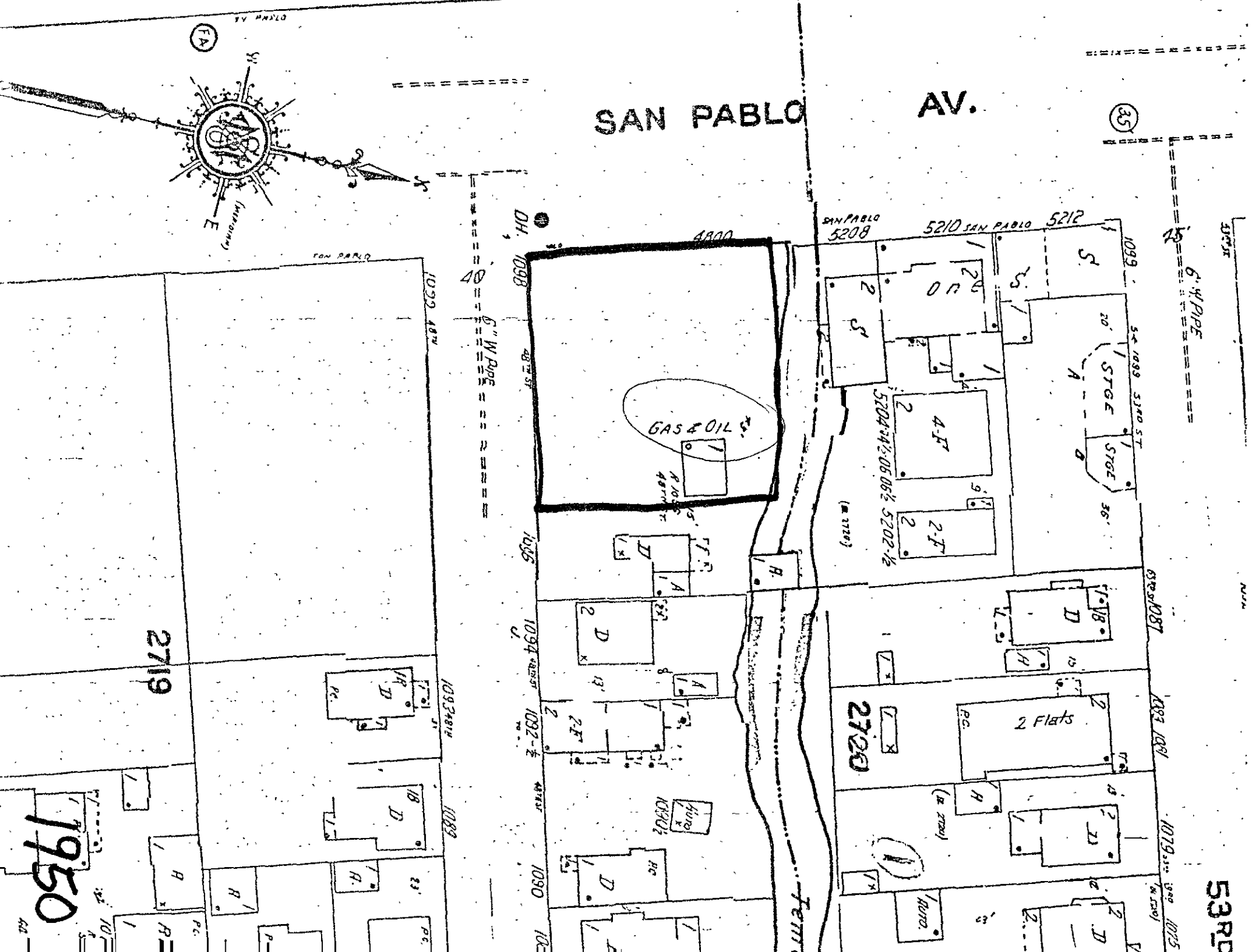


2719

2720

1950

53 RD





35

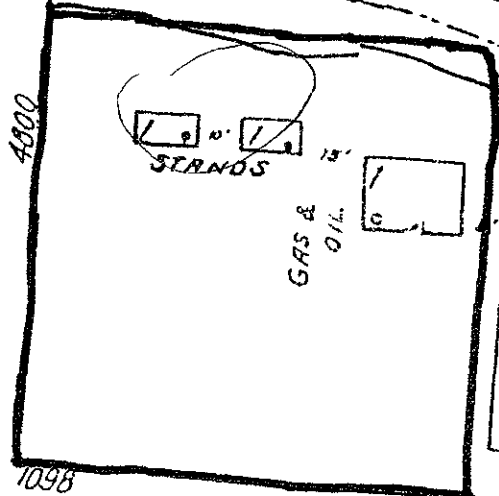
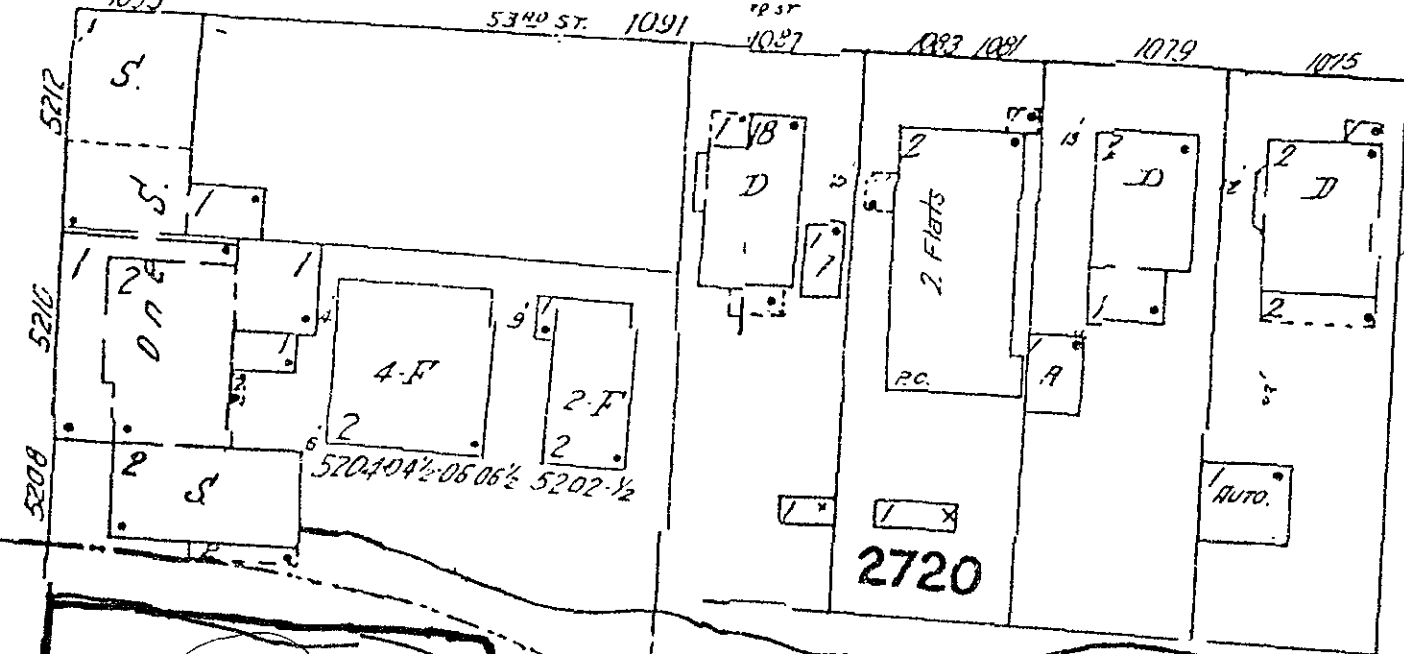
53RD

AV.

PABLO

6" W. PIPE

1092 1088 1084 1080 1076 1072  
1049 53RD ST. 1091 1087 1083 1081 1079 1075



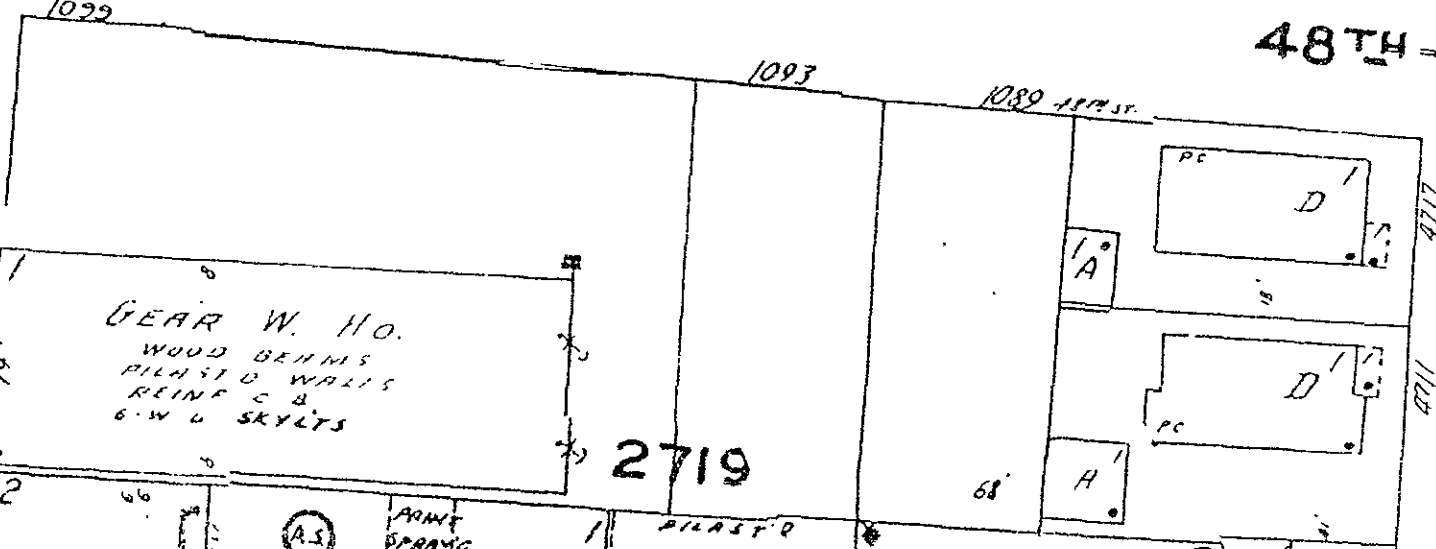
Terrace

DH. 1098

6" W PIPE

1094 94 1/2 48" ST  
1092 48TH ST. 1090 1088 1086

48TH



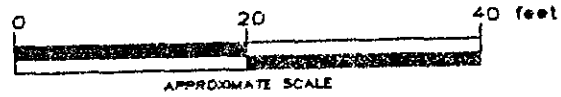
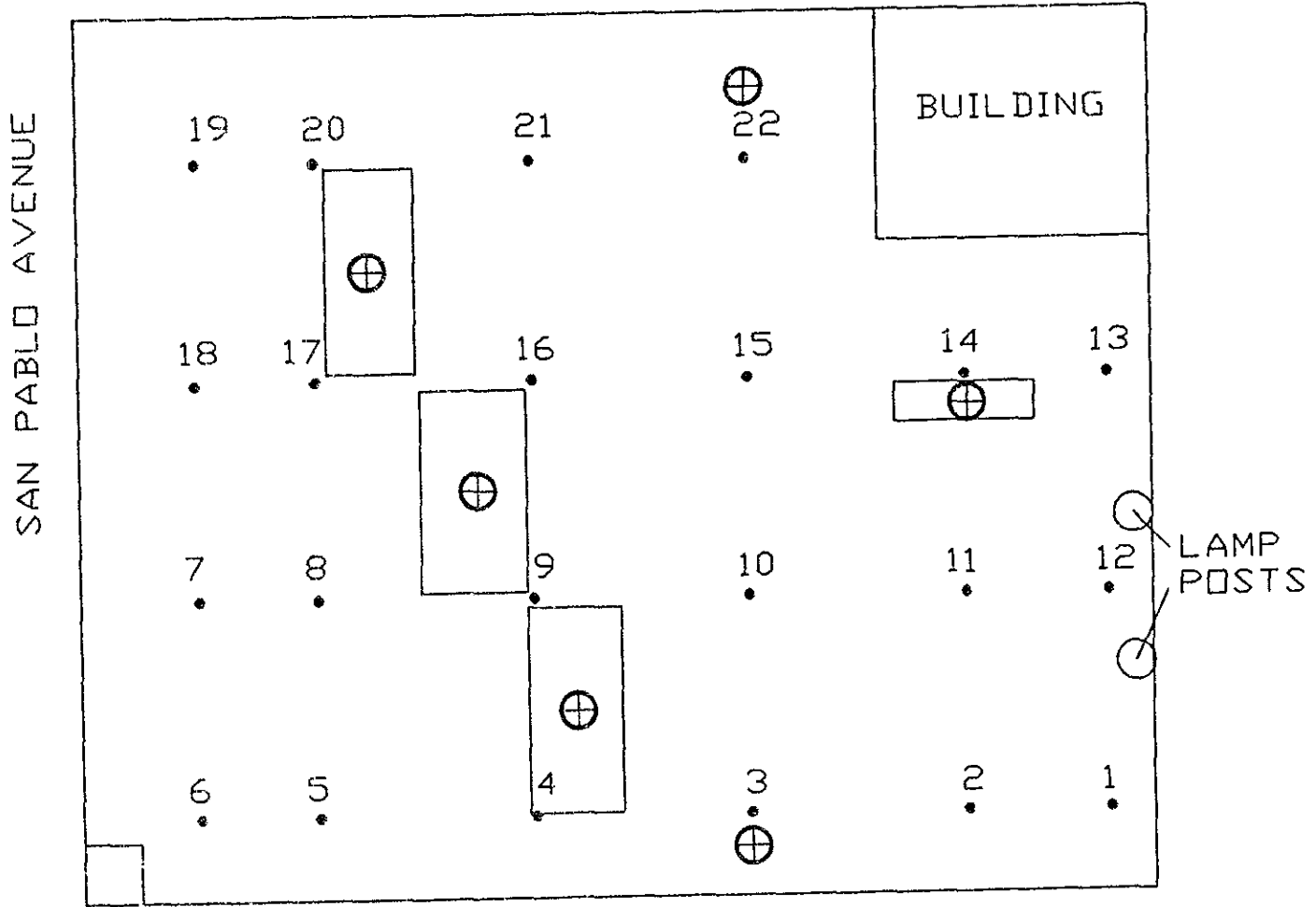
INDUSTRIAL MACH'Y. SALES & SERVICE

1969

NOTES:

Probe are denoted as dots.

⊕ Proposed boring



HydroSolutions of California, Inc.

11470 Suncoast Dale Circle, Suite 4  
Rancho Cordova, California 95742  
(916) 852-0185

Title  
**PROPOSED BORING MAP**

Site  
4800 SAN PABLO AVENUE  
EMERYVILLE, CALIFORNIA

Project Number  
93285-01

Date  
11-15-93

Scale  
AS SHOWN

FIGURE

3

53RD ST.

1093

1094

6" W PIPE

45'

1091

1089-87

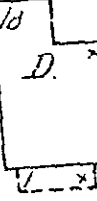
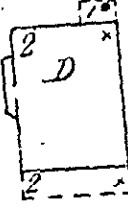
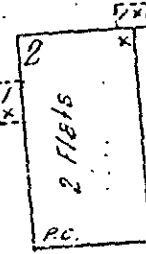
1085

1083  
1081

1079

1075

1093



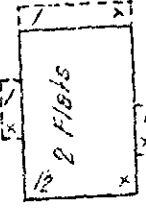
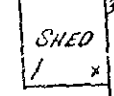
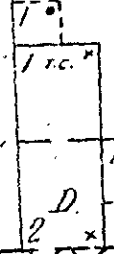
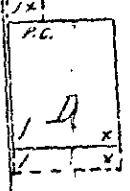
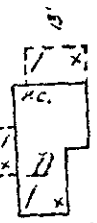
2720



HAY

2

Fennel



1098

1096  
K.

1094  
J.

1092

1090

1088

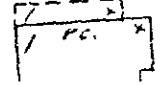
1086-84

2" W PIPE

48TH

1099

2719



1911

6117

