EMCON
1921 Ringwood Avenue • San Jose, California 95131-1721 • (408) 453-7300 • Fax (408) 437-9526

Reviewed 5/31/95 BChan

May 26, 1995
Project 0805-120.03

Mr. Barney Chan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Re: Response to Augeas Corporation letters and report

Dear Mr. Chan:

EMCON, on behalf of ARCO Products Company (ARCO), has prepared this letter to address comments made by Augeas Corporation (Augeas) concerning the ARCO facility at 10600 MacArthur Boulevard, Oakland, California. The comments were made in Augeas's letters addressed to the Alameda County Health Care Services Agency (ACHCSA) dated December 19, 1994, and January 16, 1995, and a *Report of Subsurface Investigation* dated December 15, 1994, for Young's Cleaners, at 10700 MacArthur Boulevard (Drake site/former truck manufacturing facility).

Augeas's comments as stated in its letters concerning ARCO are presented below in italic type, followed by EMCON's responses.

ARCO has stated to the ACHCSA that the perchloroethylene [PCE] discovered in wells at or near its site was likely released from the Young's Dry Cleaners located at Foothill Square Shopping Center, which ARCO asserted was [the] *closest known dry cleaning facility. Augeas Corporation believes, however, that ARCO did not identify the dry cleaning operation closest to this site.*

Based on the dates of operation of the Payless Dry Cleaners, and its location in relation to the previously detected PCE contamination, the Payless Cleaners operation is far more likely source of the PCE at the ARCO site, rather than the Young's Cleaners operation which is located approximately 300 feet away from the ARCO site.

- ARCO has believed and still believes that the PCE detected in groundwater in several of the deeper ARCO wells is from an off-site source (Young's Cleaners or possibly the former truck manufacturing facility). At the time of past correspondence with ACHCSA, ARCO did not know that the 10600 MacArthur Boulevard site was formerly a Payless Cleaners franchise drop-off store.

- A Payless Cleaners drop-off store operated at 10600 MacArthur Boulevard during a portion of the 1960s. No dry cleaning was performed at this facility during this period. A Payless Dry Cleaning plant on 60th Street in Oakland was the cleaning facility for the Payless Cleaners franchise stores operating in the East Bay area. The Payless Cleaners at 10600 MacArthur Boulevard was a franchise store that would receive clothes from customers and transport the clothes to the main dry cleaning plant on 60th Street for cleaning.

- ARCO should not proceed with further assessment work associated with PCE. With the recent knowledge that a significant release of PCE has occurred at Young's Dry Cleaners and has not been fully defined, and considering the potential that a release may be associated with the former truck manufacturing facility, further assessment of PCE in the deep water-bearing zone by ARCO is not warranted.

- No PCE has been detected in the ARCO soil-vapor extraction (SVE) system. The ARCO on-site SVE wells are screened in the upper vadose zone, where PCE has not been detected. Based on the 30-foot radius of influence recorded for the 8 on-site SVE wells, and the spatial coverage accounted for by these wells, if a PCE source area were located on the ARCO site sufficient to produce the concentrations identified in the deep groundwater monitoring wells, PCE would be expected to be seen in the influent vapor samples collected from the on-site SVE wells.

- PCE has not been detected in vadose-zone soil on the 10600 MacArthur Boulevard site. PCE was not identified in chromatographs from several soil samples collected at 10600 MacArthur Boulevard.

The presence of multiple chemicals in the contaminant plume make it difficult to operate a thermal or catalytic oxidation unit to treat extracted vapors. It appears that the SVE system has not been designed for treatment of chlorinated hydrocarbons, such as PCE. Additionally, it does not appear that the system has been permitted for discharge of chlorinated hydrocarbons to the atmosphere.

- In operating an SVE system at 10600 MacArthur Boulevard, ARCO has been and is in full compliance with the Bay Area Air Quality Management District (BAAQMD). The 500 cubic foot per minute (cfm) catalytic oxidizer has been permitted to destroy petroleum hydrocarbons, such as gasoline. During startup of the SVE system, RESNA Industries Inc. (RESNA) collected samples from the influent vapor stream and analyzed them for chlorinated hydrocarbons, including

PCE; none were detected. Since that time, EMCON has sampled the effluent vapor stream for chlorinated hydrocarbons and has not detected any, including PCE. The results of the initial source testing were reported to the BAAQMD in a RESNA startup report, and to the ACHCSA in the RESNA *Additional Subsurface Investigation and Interim Remediation Report* (January 29, 1993).

The site history, contamination types and levels and current land uses indicate excavation as the most efficient remediation method.

- Excavation **is not** the most efficient remediation method. Gasoline has been detected on the former truck manufacturing facility at depths between 18 and 29 feet below grade (fbg). Gasoline is present at or near the depth of the first water-bearing zone (18 to 24 fbg). ARCO has stated this in several reports. Soil samples collected from 6 to 16.5 fbg **did not** contain any gasoline. The gasoline appears to have migrated along the capillary fringe or along the first water-bearing zone, or perhaps both. Based on this, removing the overburden soil (0 to 18 feet) to reach a groundwater or capillary-fringe gasoline plume is not the most efficient method for gasoline cleanup. ARCO believes that continued SVE and air-sparging is the most efficient method for gasoline cleanup.

Based on the facts presented below, we respectfully request Alameda County Health Care Services (ACHCS) to direct ARCO to define the extent of perchloroethylene (PCE) contamination resulting from . . . its former waste oil tank; and to complete the remedial investigation of the petroleum hydrocarbons release from its fuel tanks located at 10600 MacArthur Boulevard.

- ARCO assessed and remediated the release of oil from a former waste-oil tank. ARCO analyzed soil samples for PCE beneath the former waste-oil tank and all samples were nondetectable for PCE *(Letter Report - Removal of Waste-Oil Tank and Soil Sampling at ARCO Station 276*, Pacific Environmental Group, April 25, 1989).

7 • ARCO has defined the extent of gasoline impact to soil and groundwater on and offsite. ARCO has been actively remediating both on- and off-site soils and groundwater with an SVE system. As a result of SVE operation, free-phase product has decreased in on-site well MW-2 and off-site well MW-7, which are screened in the first water-bearing zone.

Reported groundwater flow direction. Examples (a) through (e) are given reporting various flow directions in the deeper water bearing zone across the ARCO site.

- ARCO does not find any discrepancies with the flow direction data (a through e) presented by Augeas. However, Augeas only presents isolated groundwater monitoring events involving a small area within the regional groundwater flow direction. Regional flow direction in this area of Oakland is typically from east to west (Oakland Foothills to the Bay, as presented in the March 28, 1995, meeting). Flow directions identified at the ARCO facility in the deeper water-bearing zone have ranged from westerly to northeasterly.

- All wells on the former truck manufacturing facility, as well as those on the ARCO site, should be surveyed to the same benchmark and joint sampling events should be performed. Additionally, wells should be checked to determine whether they are screened in the same water-bearing zone as two distinct zones have been detected. ARCO believes that measuring wells screened in the same aquifer across both sites would provide a more accurate picture of the groundwater flow direction.

- Additional wells are needed on the former truck manufacturing facility to determine a groundwater flow direction across that site in both the shallow, perched water-bearing zone and the deeper water-bearing zone.

- In addition, with joint groundwater chemistry from the same water-bearing zones, the ACHCSA would be able to identify the groundwater flow direction based on contaminant concentrations.

Ground Water Monitoring Reports for MW-4 and RW-1. ARCO's ground water monitoring reports indicate concentrations of PCE in MW-4, the well located near the former ARCO waste oil tank, have remained fairly constant. PCE concentrations have increased in RW-1 over time, consistent with ground water flow direction to the north.

- For a comparison of PCE concentrations from wells MW-4, RW-1, and MW-6 sampled on the same date, please see the following table. The specific dates and wells Augeas **chose** to report are in bold.

Date	MW-4	RW-1	MW-6
7/31/90	**1600**	NS	NS
10/30/90	3600	NS	NS
1/30/91	**4900**	NS	NS
4/30/91	2200	NS	NS
8/6/91	**1700**	NS	NS
9/4/91	2000	NS	NS
11/6/91	1000	**980**	NS
3/10/92	**2300**	400	NS
6/30/92	1800	1100	2400
9/9/92	1300	1500	NA
11/20/92	1700	NS	NA
11/24/92	NS	**1500**	NA
2/12/93	**1800**	620	4200
5/12/93	1500	500	3500
8/18/93	1800	470	3000
11/10/93	1800	**1500**	3900
2/4/94	**1900**	**2200**	2900
5/2/94	1700	45	2000
8/3/94	1200	350	1400
12/6/94	2200	340	2000

NS = not sampled; RW-1 installed 10/30/91, MW-6 installed 6/16/92.
NA = not analyzed; Well MW-6 was paved over.

- PCE concentrations have been consistently higher in off-site well MW-6. Please refer to *ARCO 276 Third Quarter 1994 Quarterly Groundwater Monitoring Report* (EMCON 1994) for PCE concentrations in all ARCO wells.

- Augeas's presentation of the above data was incomplete and misleading.

Gasoline Contamination at Foothill Square as a Result of Release from ARCO Tanks, 1988. Contamination of the Foothill Square Shopping Center soils in close proximity to the ARCO service station was reported to the ACHCS approximately 7 years ago. Soil samples have been collected from borings on Foothill Square by several different consultants since that time further defining the extent of soil contamination at depths ranging from 14 feet to 51 feet below grade.

- The soil samples collected by independent consultants (Kaldveer Associates [Kaldveer] and Western Geologic Resources [WGR]) and ARCO's consultants have identified total petroleum hydrocarbons as gasoline (TPHG) and benzene, toluene, ethylbenzene, and xylenes (BTEX) in discrete soil samples collected on the former truck manufacturing facility at depths ranging from 18 to 36.5 fbg. The first-encountered water-bearing zone has ranged from 16.5 to 35.5 fbg. The typical range for first-encountered water is 18 to 25 fbg. As reported in the Kaldveer report, only one soil sample collected at 16 fbg has contained gasoline, and that sample was composited before analysis with a sample collected at 21 fbg. Thus, the 16-foot sample may have been impacted by the 21-foot sample.

- Based on the above soil sampling results, ARCO signed an access agreement with Drake Builders and installed an off-site SVE system in the parking lot of Foothill Square. The SVE system has been in operation since 1990.

Kaldveer investigation included . . . The grab water sample collected from EB-1 contained Total Petroleum Hydrocarbons (TPH) as gasoline at [concentrations of] *8360 ppm. In addition, varying concentrations of pesticides and PCB's were detected, however, the laboratory could not provide second-column confirmation, suggesting that the data might not be valid.*

- Although ARCO has documented a release of gasoline from its former underground storage tanks (UST's), the past use of the 10700 MacArthur Boulevard property as a truck manufacturing facility may have resulted in the release of gasoline and the commingling of two gasoline-hydrocarbon plumes.

- As stated in the Kaldveer report, "Fageol Motors Company [Peterbilt Motors Co.] located at the same location as Foothill Square . . . At this type of facility, use of hydrocarbons, paints, solvents, PCB's and metals could have resulted in soil and groundwater contamination. A review of aerial photographs show areas of drum storage, tanks and possible waste disposal."

- Analytical results for groundwater samples collected from off-site monitoring wells have identified compounds associated with heavy-end petroleum hydrocarbons, not with gasoline.

The above-referenced data from 1989 was used by ARCO as a basis for the development of a proposed soil vapor remediation system for the Foothill Square Shopping Center site prepared by Pacific Environmental Group (PEG) on behalf of ARCO as documented in PEG correspondence dated January 3, 1990. Unfortunately, a soil vapor recovery system was never implemented by ARCO at that early date for their remediation of gasoline contaminated soil on the Foothill Square Shopping Center site. If that remediation had been commenced in 1989 or 1990, it would likely have been completed by now. ARCO's failure to perform such remediation in a timely manner now prevents the current sale of the immediately adjacent portion of Foothill Square to McDonalds's Corporation for use as a restaurant.

- ARCO has sent reports to Drake Builders documenting the installation of 26 SVE probes in the immediately adjacent portion of Foothill Square (Drake site/former truck manufacturing facility). As stated to Augeas in several meetings held between ARCO and Augeas since 1993, the proposed SVE system was to enhance the **current operating off-site SVE system**.

The following excerpts are from the Augeas *Report of Subsurface Investigation* (December 15, 1994) for Young's Cleaners, 10700 MacArthur Boulevard.

The soil and ground water beneath the site has been impacted with PCE at concentrations in excess of State action levels.

The vertical and horizontal distribution of PCE in soil and ground water at the subject site suggest that much of the contamination originated from disposal of PCE into the sanitary sewer system through floor drain during operation of the coin operated dry cleaning units. Some of the contamination could also have entered the sewer lateral which connects to toilets at the facility.

The lateral and vertical extent of PCE contamination in the soil and ground water have been approximately defined, and they appear to be limited to the areas outlined in Figure 4, "Proposed Soil Excavation Area".

- Based on the results presented in the Augeas report, the lateral and vertical extents of PCE contamination in soil and groundwater **have not been defined**.

- Groundwater samples collected in the vicinity of the sewer lines associated with Young's Cleaners indicated PCE contamination. The second water-bearing zone in the source area has not been sampled for PCE.

- Soil results indicate that the lateral extent of PCE in the shallow soil is not defined in soil borings and wells in front of the cleaners.

In addition, as presented in the March 28, 1995, meeting at ACHCSA's office, several potential source areas for PCE contamination may be present on the Drake site, as presented on Sanborn Maps of the former truck manufacturing facility.

If you have questions, please call me at (408) 453-7300.

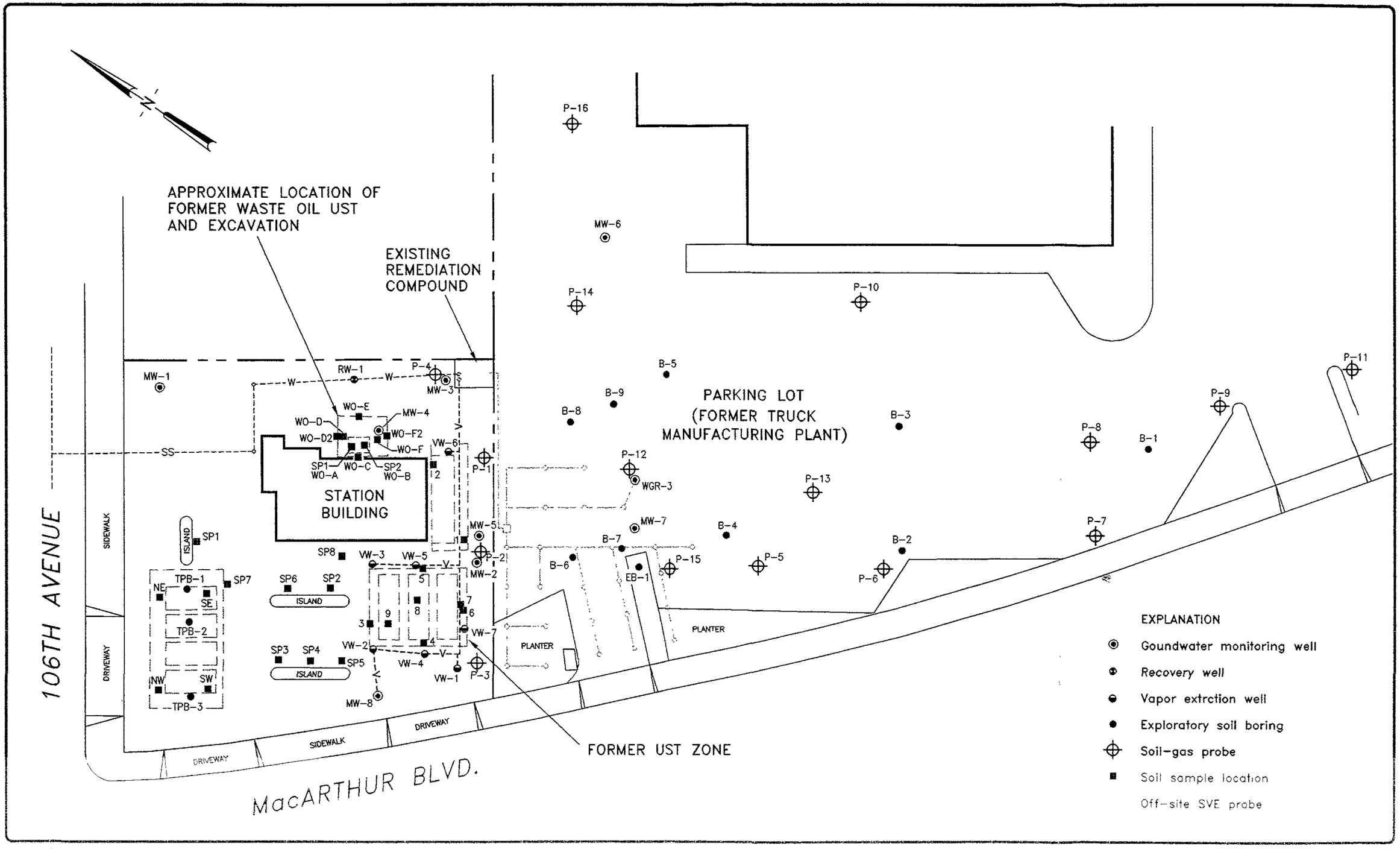
Sincerely,

EMCON

John C. Young FOR
Senior Project Geologist

Attachments: Presentation overheads (13 Figures) from March 28, 1995, ACHCSA meeting

cc: Michael Whelan, ARCO
Beth Dorris, ARCO
Sum Arigala, RWQCB



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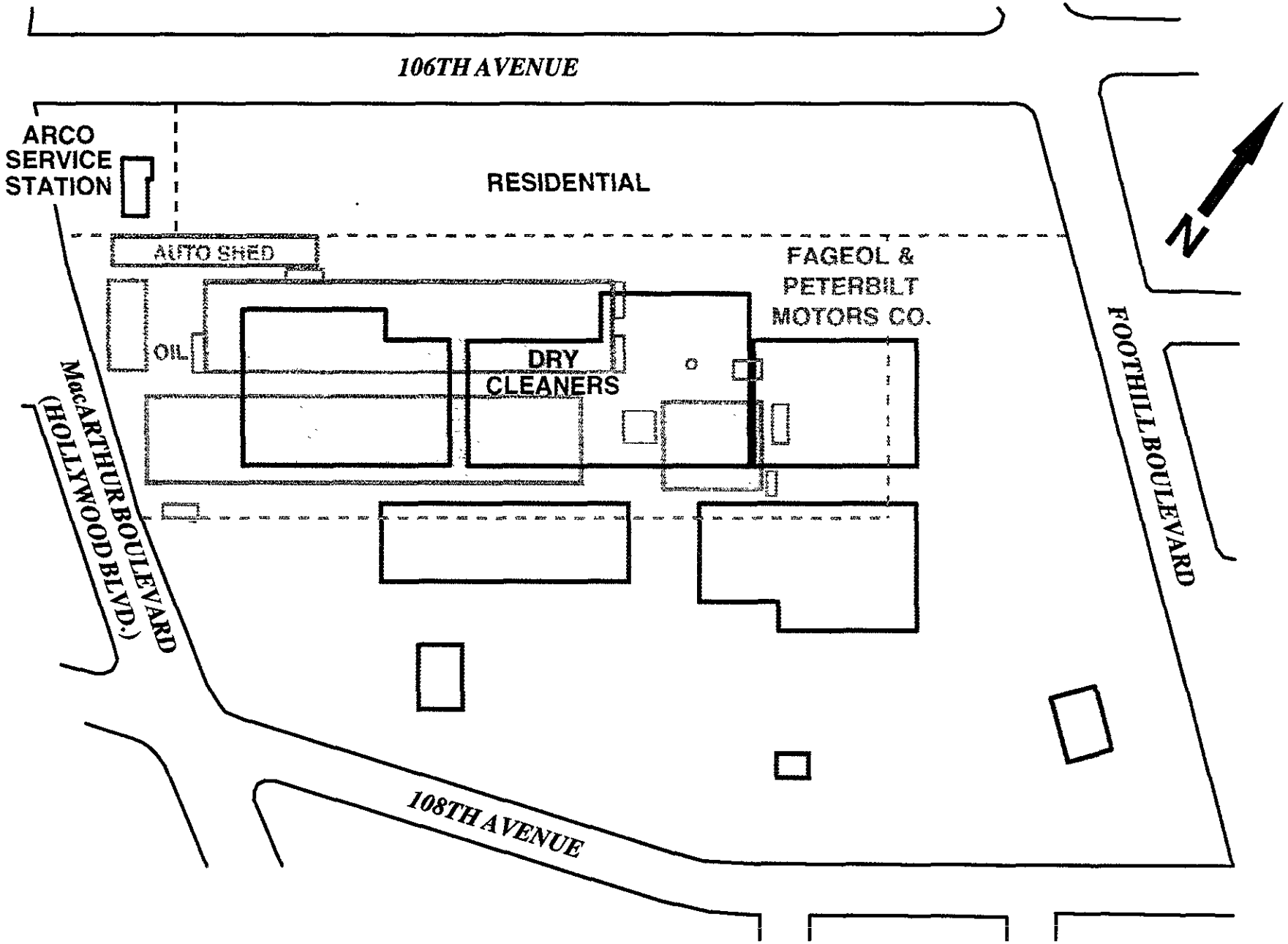
SCALE: 0 30 60 FEET

PROJECT NO.



1926, 1951, & 1969 COMBINED SITE MAP

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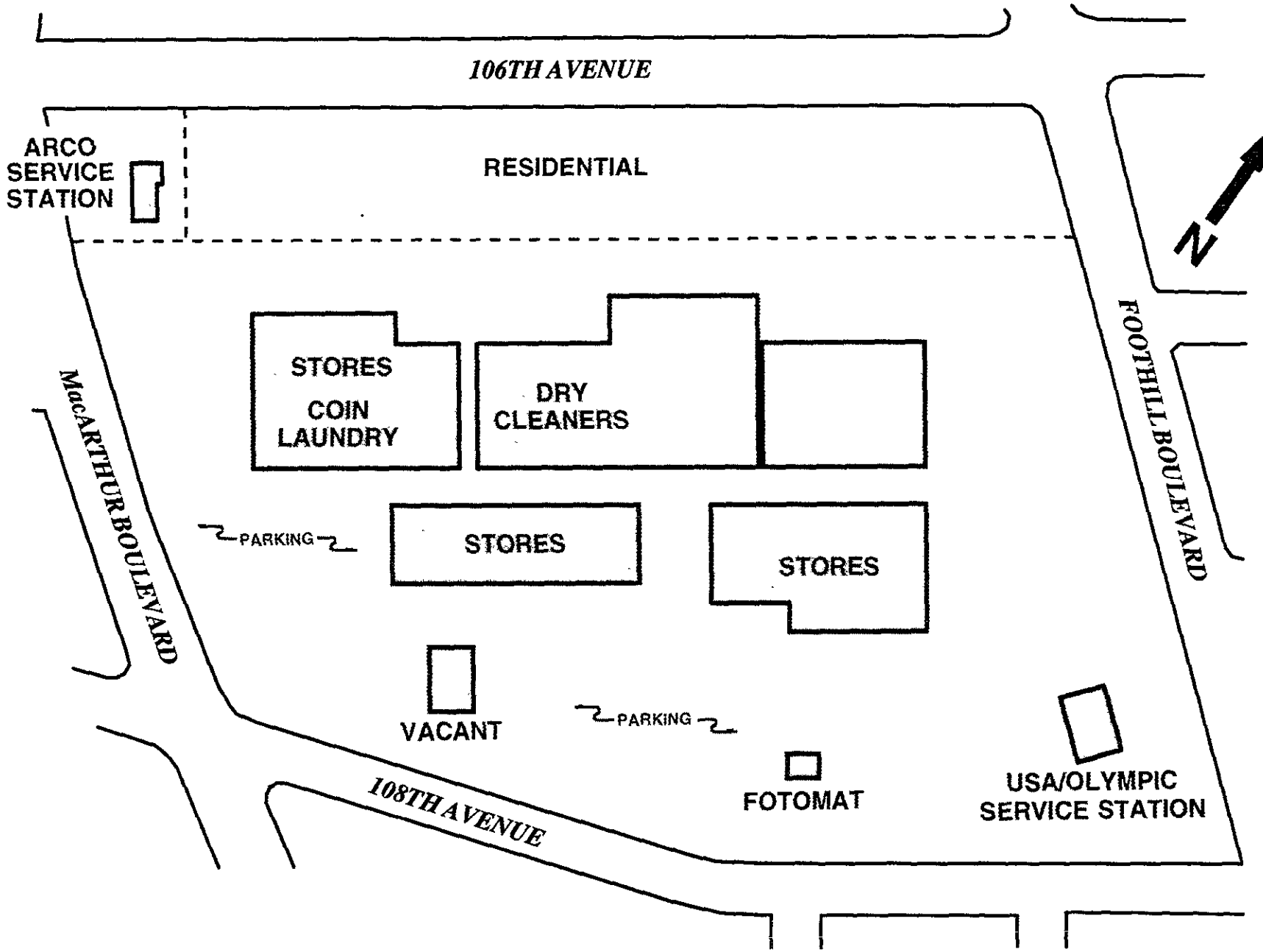

1969 SITE MAP

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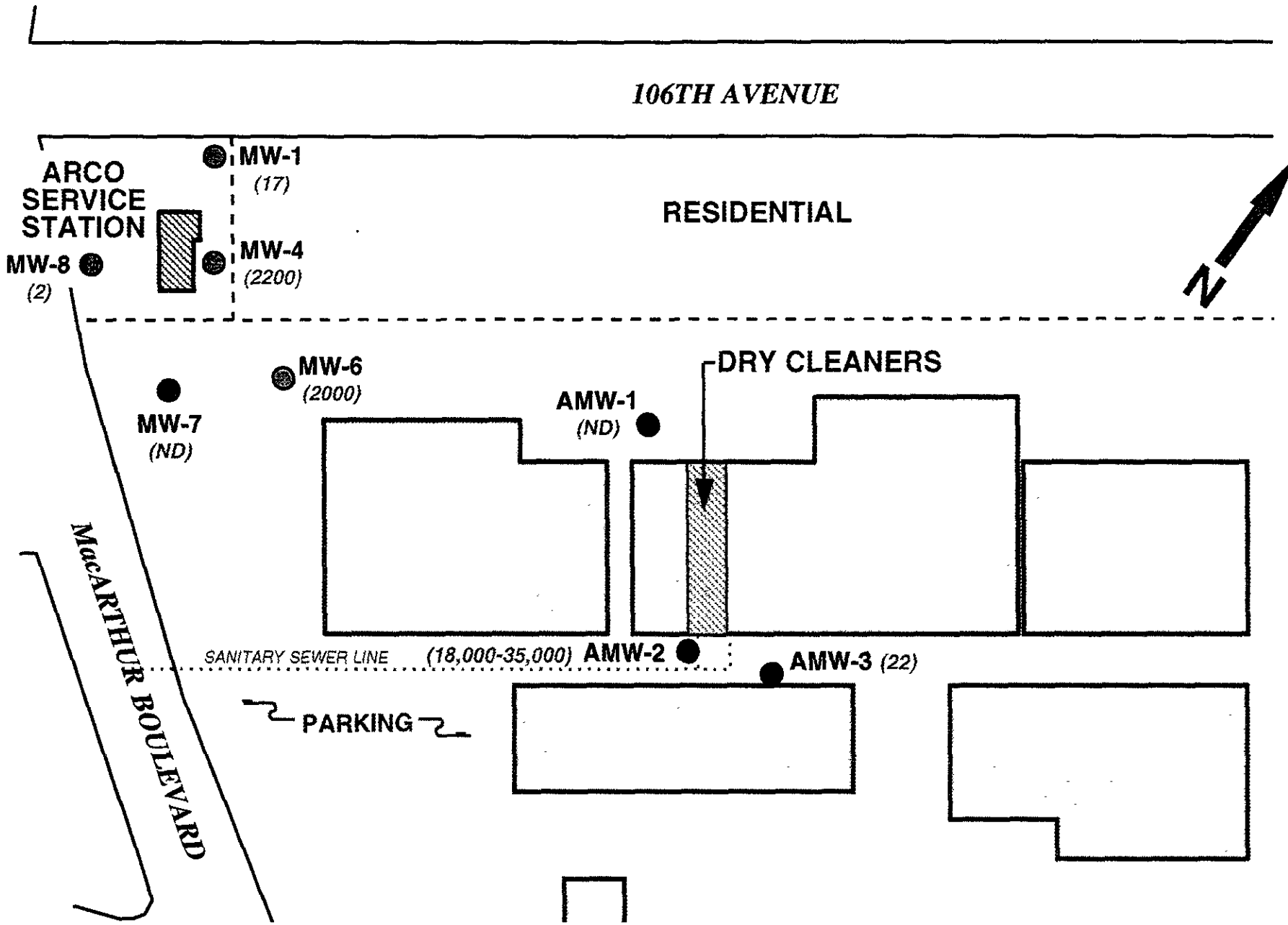
E561



CURRENT SITE MAP AND PCE CONCENTRATIONS
FOURTH QUARTER 1994

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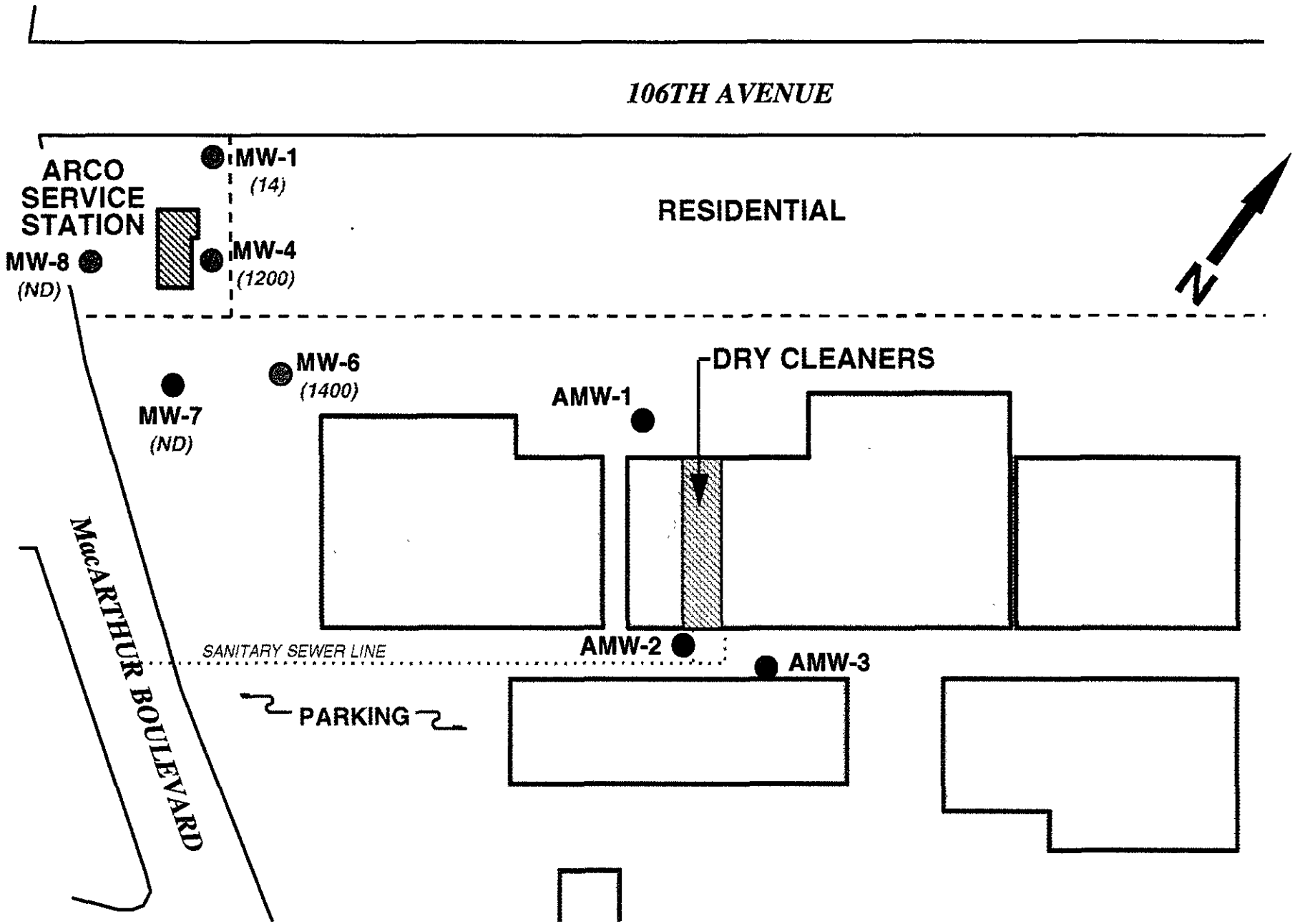

CURRENT SITE MAP AND PCE CONCENTRATIONS
THIRD QUARTER 1994

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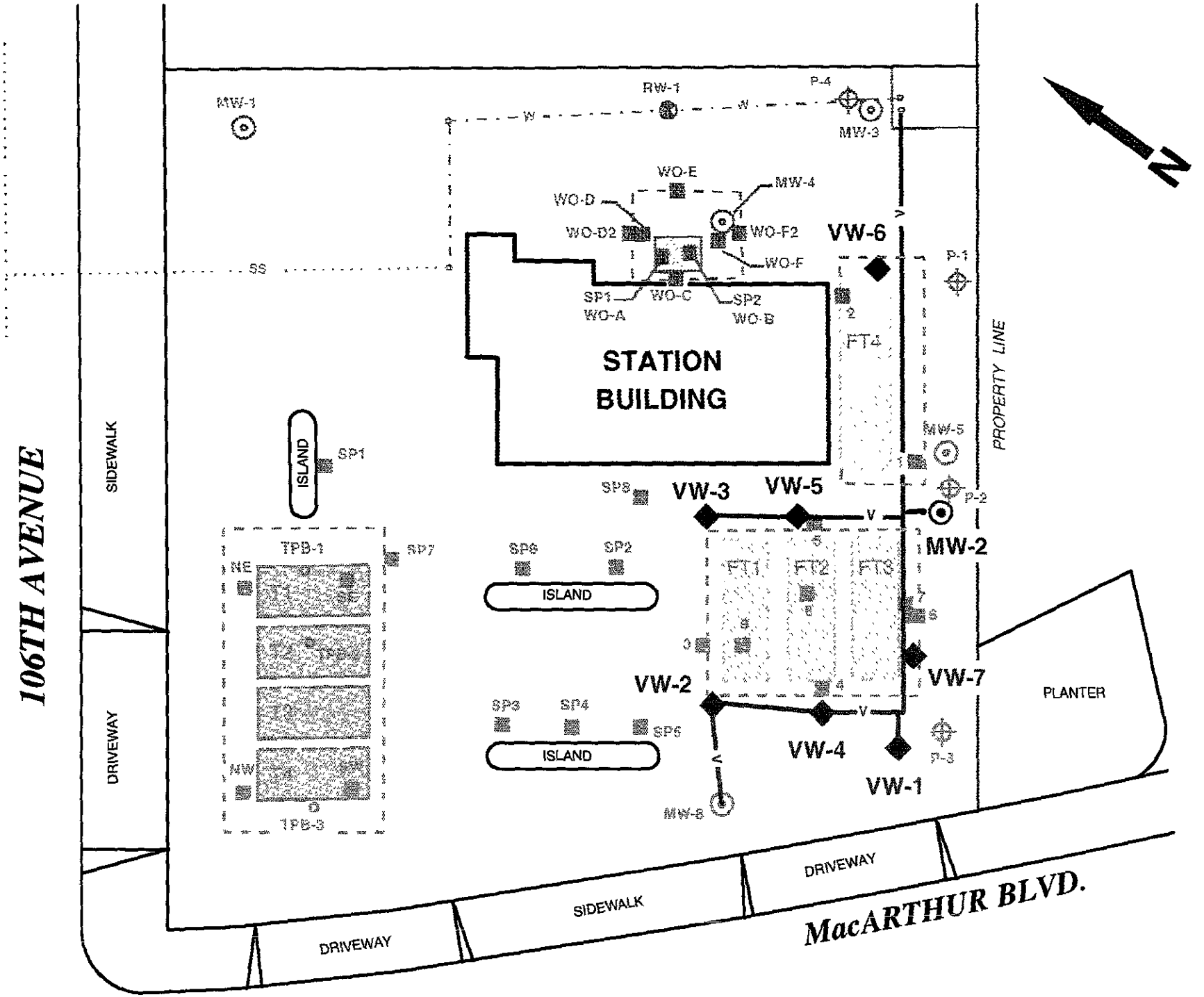
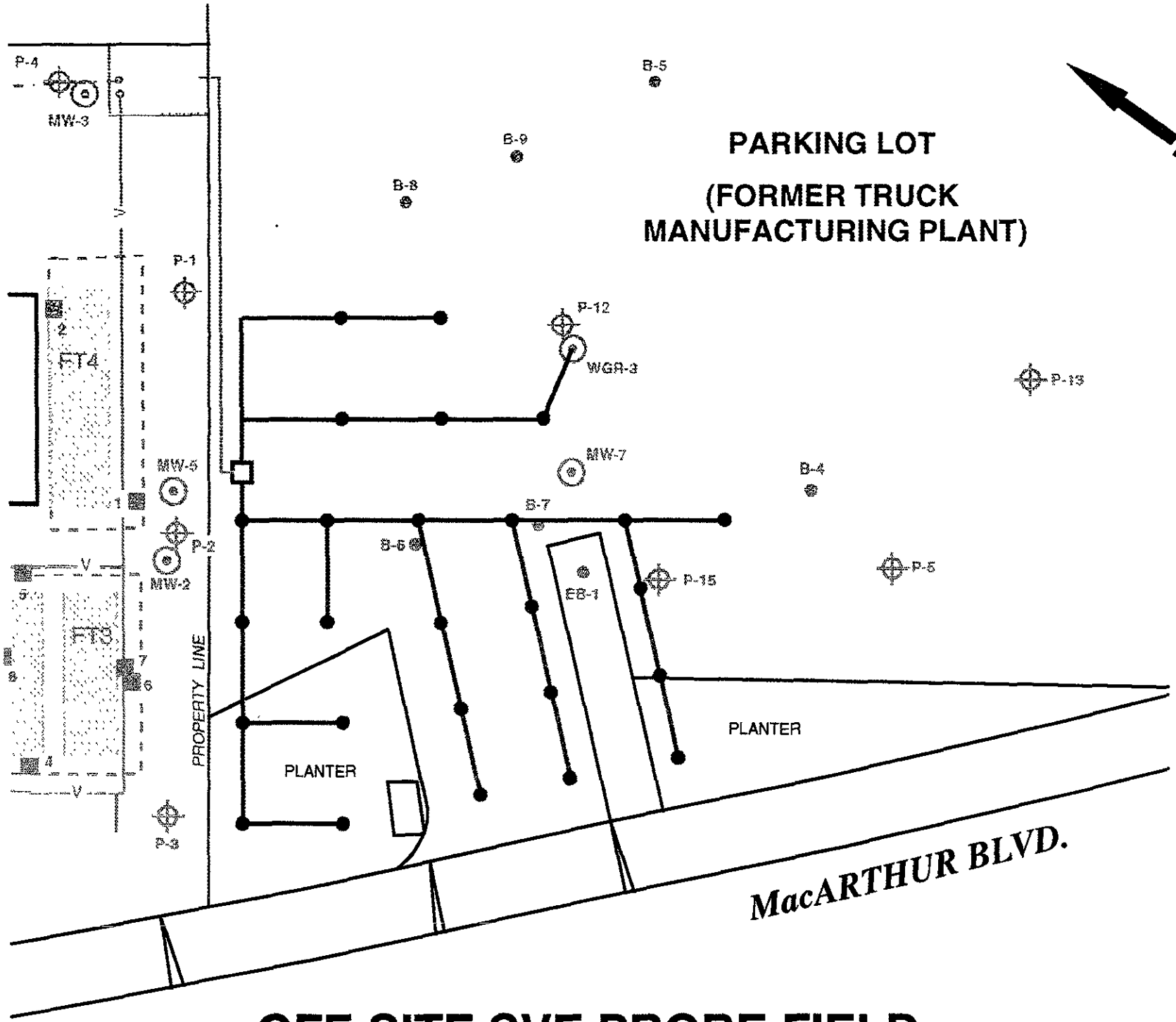
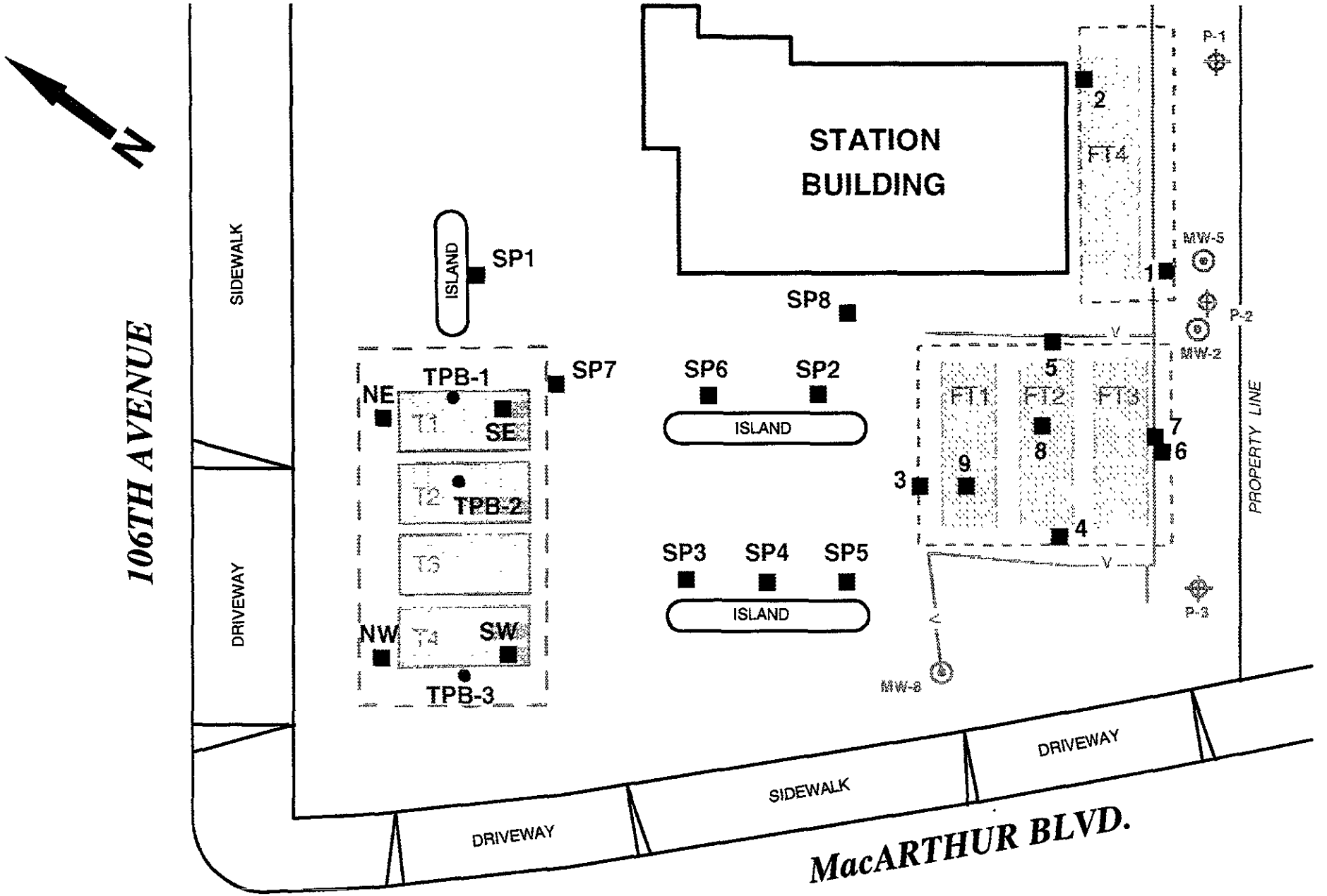


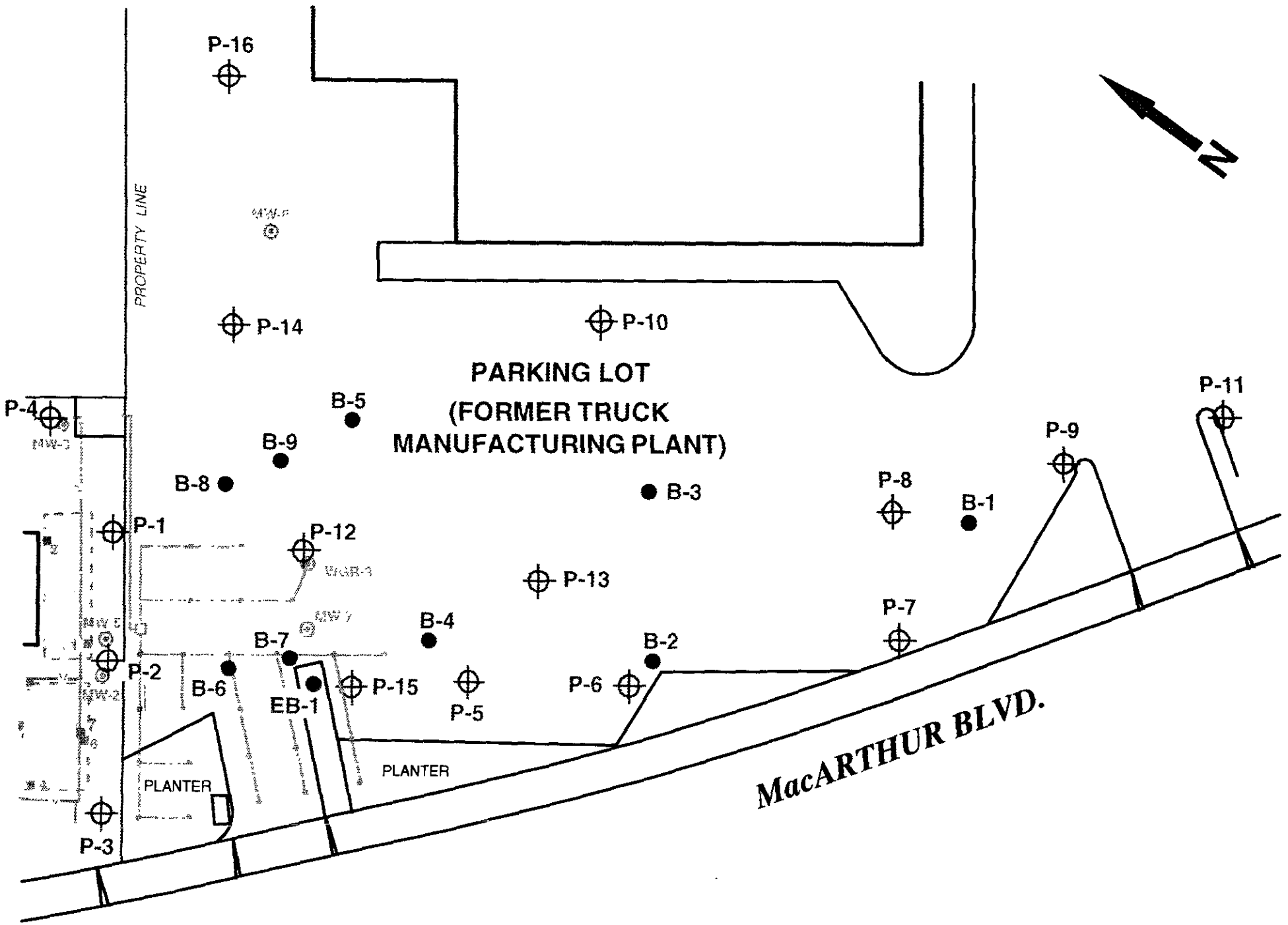
ON SITE SVE WELL FIELD



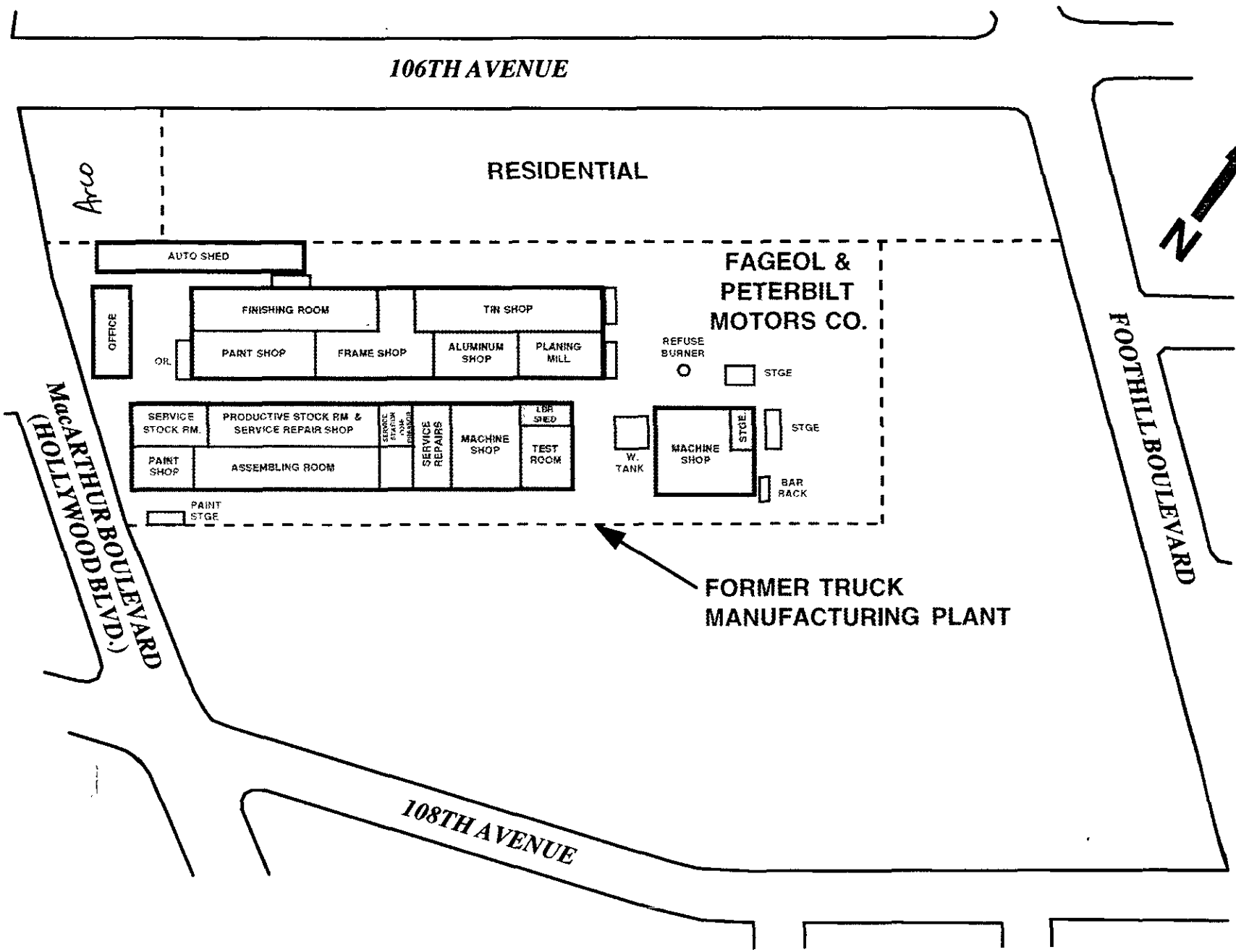
OFF-SITE SVE PROBE FIELD



UST REMOVAL AND REPLACEMENT



INITIAL OFF-SITE INVESTIGATION



HISTORICAL (1926 & 1951) SITE MAP

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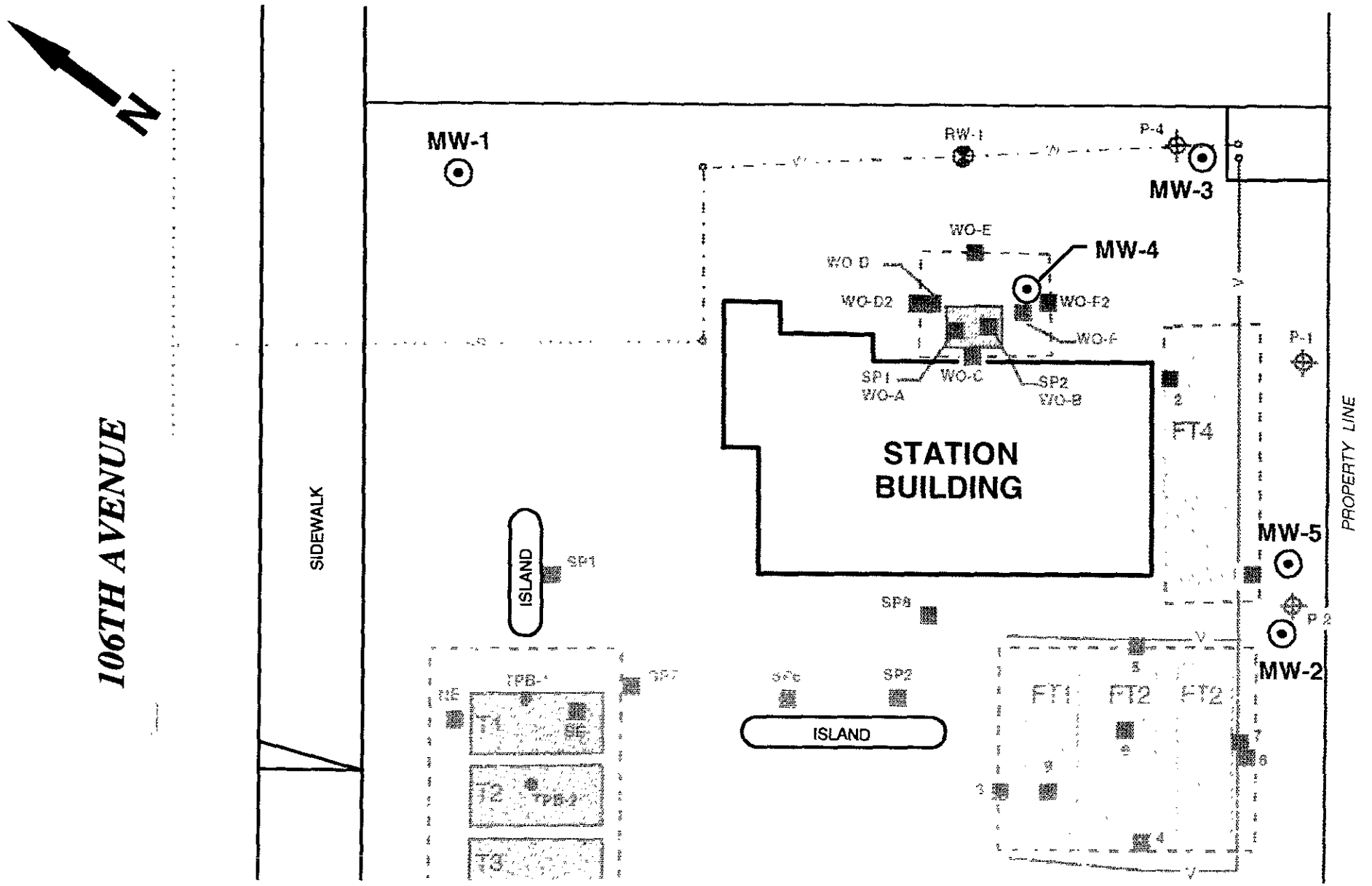
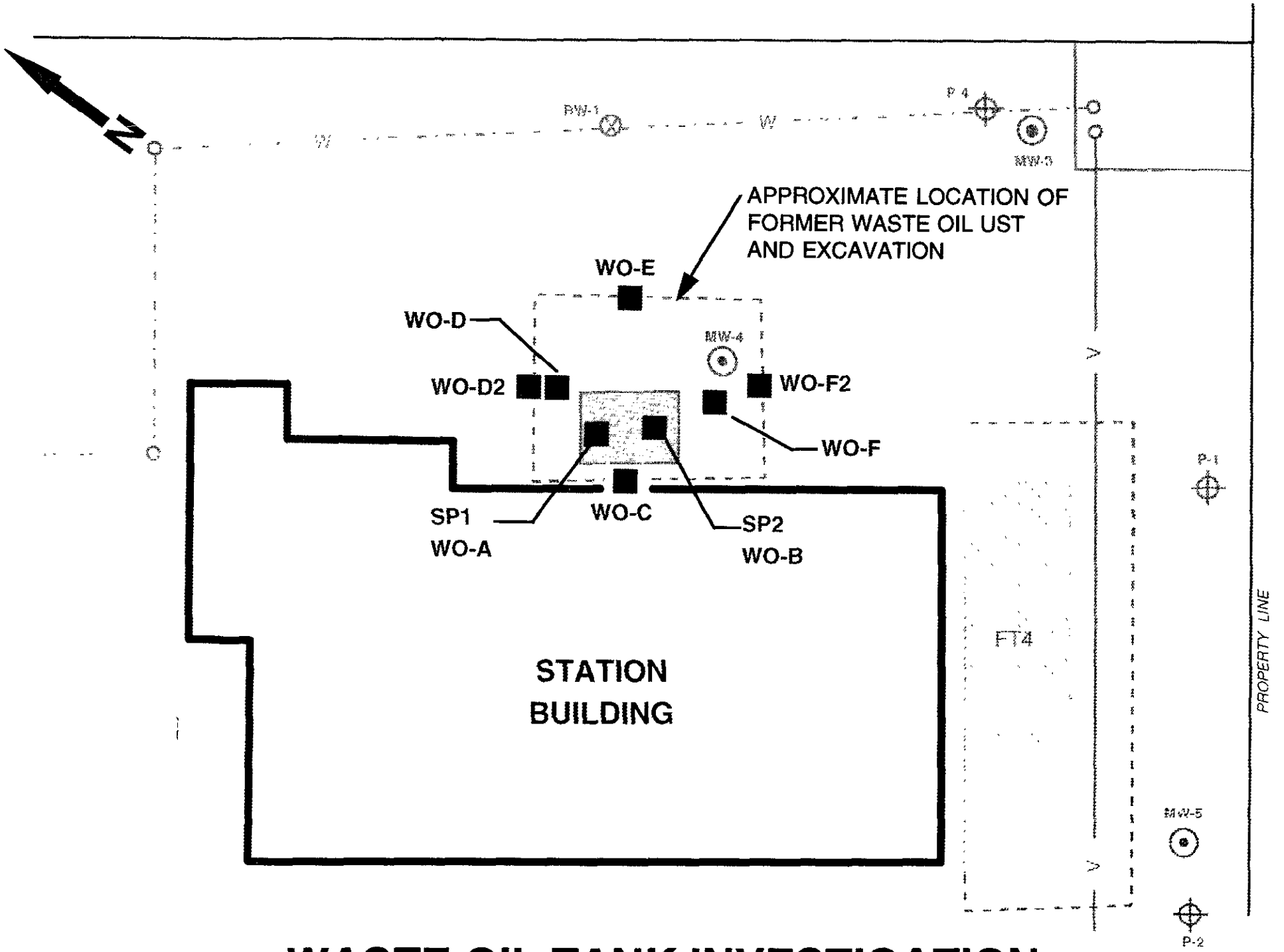
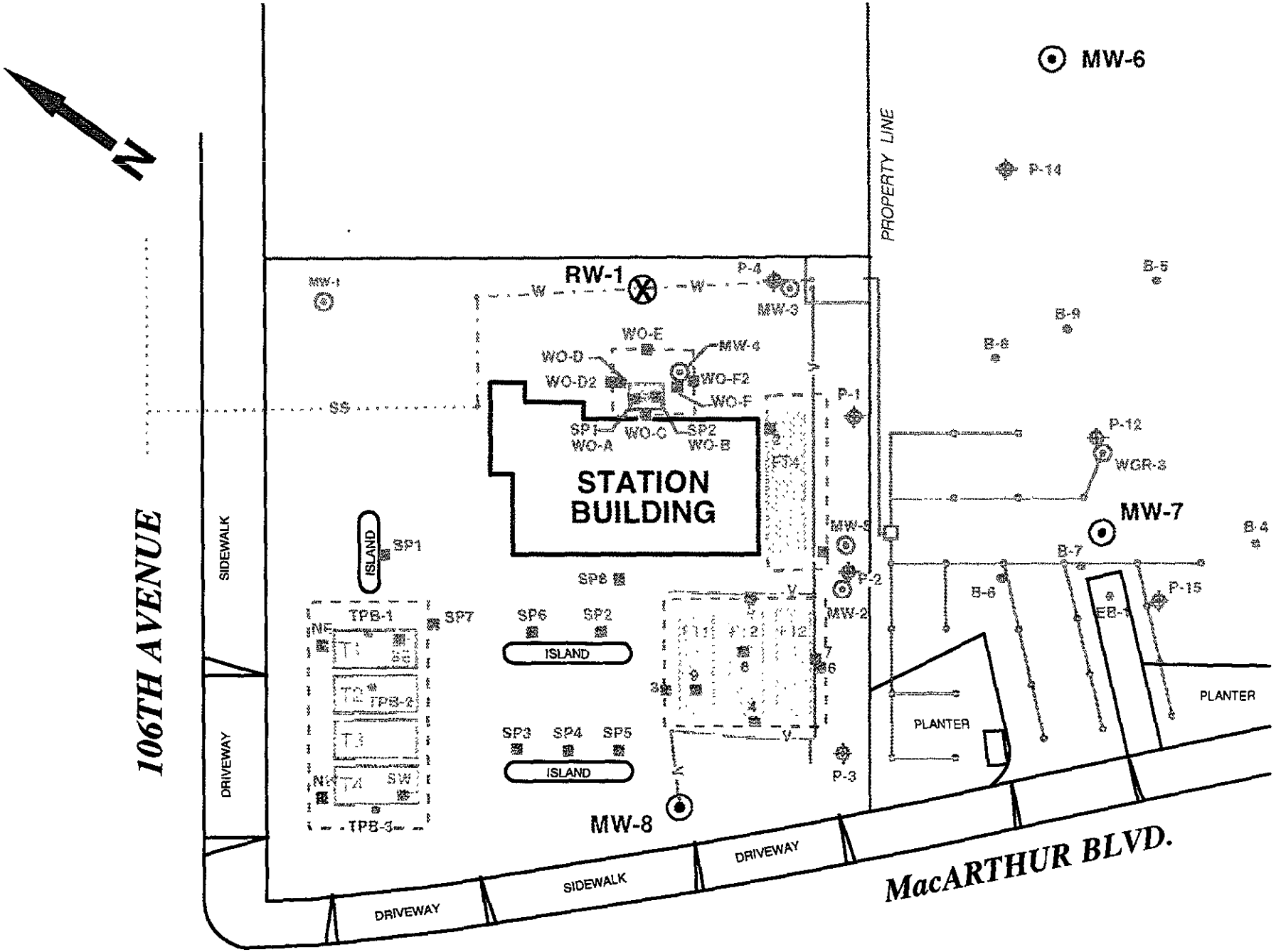


INITIAL ON-SITE INVESTIGATION



WASTE OIL TANK INVESTIGATION



ADDITIONAL WELL INVESTIGATION AND PUMPING TEST