OLD POL FACILITY
SITE ASSESSMENT REPORT

109th TACTICAL AIRLIFT GROUP
NEW YORK AIR NATIONAL GUARD
SCHENECTADY COUNTY AIRPORT
SCOTIA, NEW YORK

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Prepared for

National Guard Bureau
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Prepared by

PEER Consultants, P.C.
575 Oak Ridge Turnpike
Oak Ridge, Tennessee 37830

with

HAZWRAP Support Contractor Office
Oak Ridge, Tennessee 37831
Operated by
Martin Marietta Energy Systems, Inc.
for the U.S. Department of Energy

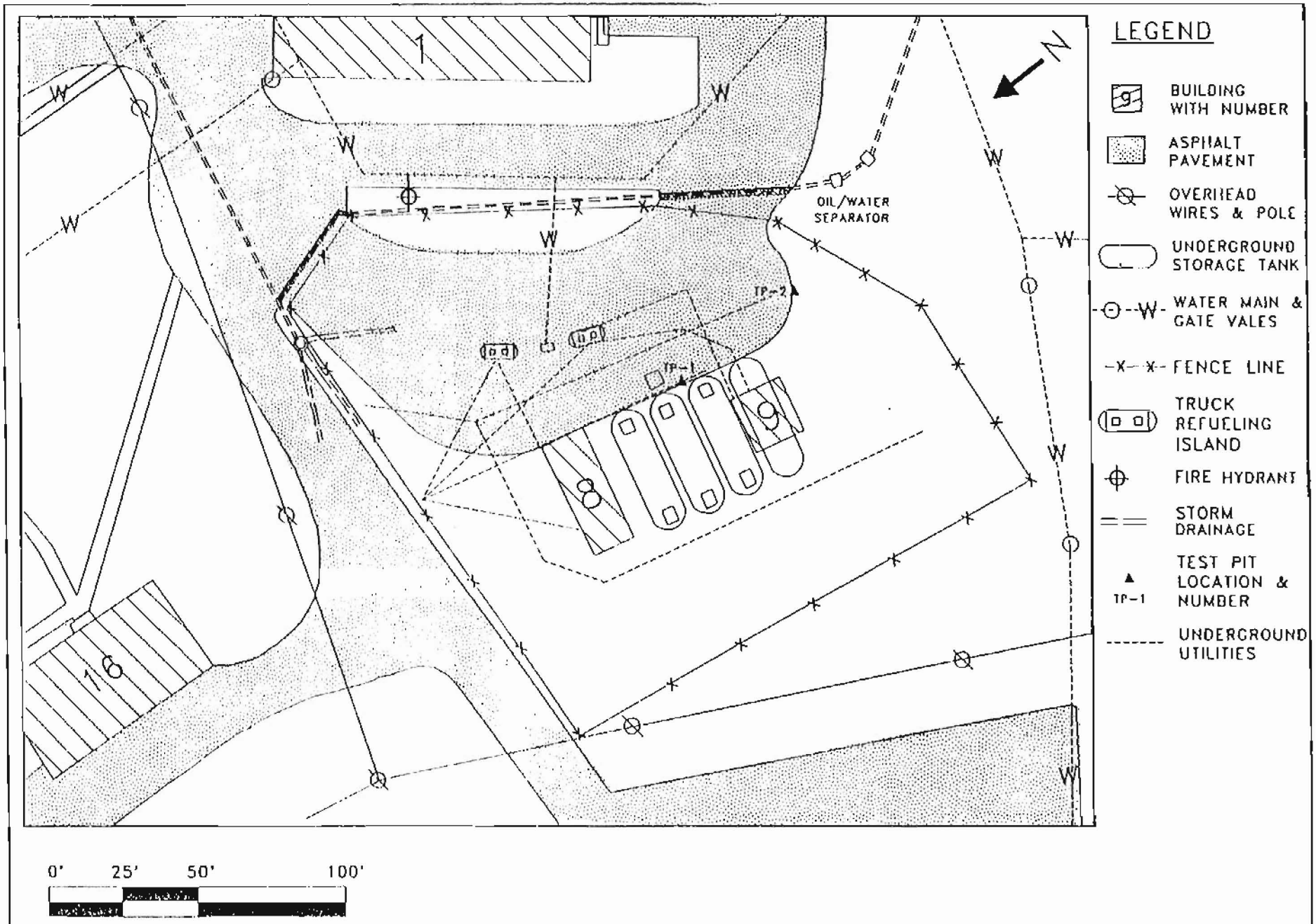

Figure 1.3 Stratton Air National Guard Base
Old POL Facility

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1, (Building 10) (Figure 1.2). The facility consists of four 25,000-gallon underground storage tanks (USTs) (USTs Nos. 801 through 804), two pump houses (Buildings 8 and 9), and two refueling islands (Figure 1.3). The area surrounding the refueling island is paved with asphalt, and the area over three of the tanks is covered with gravel. The fourth tank is located beneath one of the pumphouses. The facility perimeter is enclosed with a chain-link fence. A storm drain, with two grated catchbasins, is located along the eastern boundary and collects most of the surface runoff generated from the facility. The storm sewer is routed through an oil/water separator (Figure 1.3) and discharges to an unnamed tributary to the Mohawk River through a State Pollution Discharge Elimination System (SPDES) Permit (SPDES Number - NY-002 3442, Outfall Number 002).

1.3 SITE HISTORY

In January 1991, two test pits were excavated by the Standard Engineering Corporation at the Old POL Facility to obtain basic geotechnical information. Test Pit No. 1 (TP-1) was located in front of Building 9 within the tank pit, and Test Pit No. 2 was approximately 25 ft to the southeast (Figure 1.3).

Test Pit No. 1 was excavated to a depth of approximately 6 ft below ground surface (BGS), and a strong odor of petroleum was observed at that depth. Water entered into the pit, and a petroleum sheen was observed. Test Pit No. 2 (TP-2) was excavated to a depth of 5 ft BGS; only a slight petroleum odor was detected, and no water was noted. A grab sample of the water was collected from TP-1 and submitted for analysis for volatile organic compounds (VOCs) (EPA Method 503.1). Analytical results are provided in Appendix A.

According to the NYANG, tightness testing of the tanks and lines was last conducted in May 1988, and results indicated that the tanks and lines were tight. Use of the Old POL Facility was discontinued when a New POL Facility was brought into service in November 1989. However, because of modifications to correct a leakage problem of the New POL Facility, the Old POL Facility was put back in service from January through April 1990.

An interview with the Base Fuels Management Supervisor (February 6, 1991) indicated that one large spill of aviation gasoline (AVGAS) had occurred in the late 1950s or early 1960s, and that cleanup activities associated with it were limited to immediate response actions to mitigate fire hazards. Small quantity spillage (1 to 2 gal) was also reported as occurring periodically during routine operations. Until the early 1980s, accumulated water in the tanks (believed by the NYANG to result from condensation and fuel contamination) was pumped from them, approximately twice a year, and discharged in the graveled area between Buildings 8 and 9. After the early 1980s, the accumulated water in the tanks was pumped to the adjacent storm sewer which is connected to an oil/water separator.

1.4 ENVIRONMENTAL SETTING (FROM HMTC 1989)

1.4.1 Meteorology

The climate of Schenectady County is humid and continental, although it is tempered somewhat by oceanic influences. Winters are generally long and cold with below zero temperatures occurring on about 10 to 20 days. Summers are warm with temperatures of 90°F or higher on an average of 8 to 12 days per year.

1.4.3 Groundwater

Due to the low permeability and water bearing capacity of the fill deposits at the Base, the unconsolidated materials are not classified as an aquifer (Kantrowitz and Snavely 1982). While the water table surface will generally correspond with the topography of the land surface, perched water table conditions are likely seasonally during periods of extended precipitation. The local direction of groundwater flow in the unconsolidated materials most likely follows the slope of the land surface southeast toward the Mohawk River.

Yields from wells installed in the fill materials are likely to be less than 5 gpm (Kantrowitz and Snavely, 1982). All of the bedrock formations in the Schenectady area are poor sources of water with well yields generally less than 5 gpm (Kantrowitz and Snavely 1982). These rocks are relatively impermeable, but a weathered or fractured zone generally occurs in the upper few feet of the bedrock. The frequency and size of joints and fractures decreases with depth due to the pressure of overlying rock.

The water supply in the town of Glenville is provided by municipal sources which obtain water from 4 wells located approximately five miles west of the Base. The wells are between 50- and 60-ft deep. One private residence with a 76-ft deep drinking water well is located approximately 1050 ft from the eastern boundary of the Base. Three residences within 1600 ft of the Base's eastern boundary previously used private drinking water wells, but recently have been supplied with municipal water. These three wells are now used for gardening and lawn maintenance.

The annual precipitation in the Schenectady area averages 36.2 in. Mean annual lake evaporation in the Schenectady area is 27 in. and net precipitation, therefore, is 9.2 in. per year. Maximum rainfall intensity, based on a 1-year, 24-hour rainfall, is 2.25 in. Total seasonal snowfall averages 60 to 65 in. and snow cover is typical from mid-December to early March.

1.4.2 Geology

The Base is located in east-central New York within the Mohawk Valley section of the Hudson-Mohawk Lowlands physiographic province. The general topography resulted from glacial and alluvial erosion of the southward-dipping outcrop belt of Ordovician rocks below the stronger Silurian and Devonian limestones.

The geology at the Base consists of a veneer of unconsolidated deposits overlying bedrock. The bedrock units beneath the Base are 200- to 3500-ft thick, generally with gentle south to southwest dips. The Ordovician Schenectady Formation and Canajoharie Shale underlie the Base. The Schenectady Formation is a thick, black to gray shale alternating with coarse-grained sandstone lenses, graywackes, and siltstones. The Canajoharie Formation is a soft, very thick, black, carbonaceous, slightly calcareous shale with interbeds of sandstone or chert.

Glacial till overlies the bedrock of the Base and the surrounding area. The till consists of a heterogeneous mixture of silty or sandy clay with some resistant igneous and metamorphic cobbles and boulders. The unweathered till is usually gray to dark gray, compact, tough, stony, silty to sandy clay with some cobbles and boulders. Thin (1 to 3 ft) sand or gravelly lenses are randomly scattered through the till over limited areas.

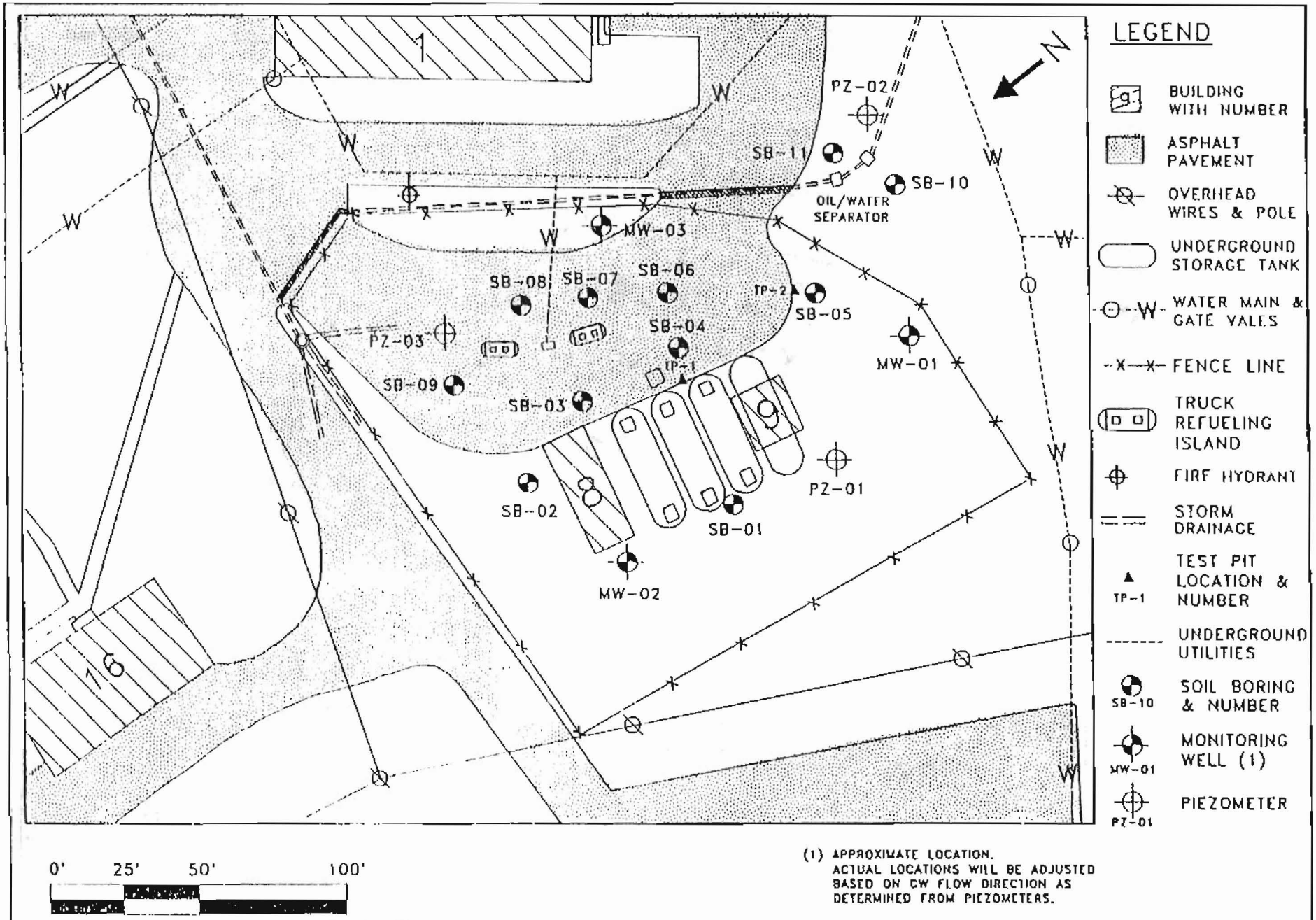

Figure 2.1 Old POL Facility
Proposed Sampling Locations

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2.0 SITE ASSESSMENT ACTIVITIES

To meet the SA objective, a SA Work Plan (WP) was prepared and implemented. The major elements of the SA (WP) included installation of soil borings, piezometers, and monitoring wells. The location of the proposed sampling locations is shown on Figure 2.1.

During the drilling of the initial soil borings, it was determined that no shallow groundwater existed. With the concurrence of the NYSDEC, NGB, and HAZWRAP, no piezometers or shallow wells were installed. However, to provide additional data to determine the lateral and vertical extent of soil contamination, soil borings were installed at all of the proposed piezometer locations (PZ-01, PZ-01, and PZ-03) and at two of the proposed monitoring well locations (MW-01 and MW-02). The soil borings and associated samples were identified using the originally proposed piezometer or well designations in order to maintain continuity between the WP, field logbook designations, and actual field sampling operations.

In addition to these soil borings, six additional borings, which were indicated as optional in the WP, were installed. These borings (SB-12 through SB-17) were used to further define the extent of contamination.

The following sections describe the site assessment activities.

2.1 SOIL BORINGS

Soil borings were conducted to determine the lateral and vertical extent of soil contamination. Soil borings were advanced using a hollow stem auger, and continuous soil samples were collected with a 2-ft split spoon until refusal was reached. The location of the soil borings are shown on Figure 2.2. Six soil borings were advanced surrounding the tank pit (SB-01 through SB-05 and

3.0 SITE ASSESSMENT FINDINGS

3.1 PHYSICAL CHARACTERISTICS

3.1.1 Soils

Boring logs of the soil borings are contained in Appendix B. Soils identified in the vicinity of the Old POL Facility are primarily composed of clay with variable amounts of silt and fine sand. In addition to this general soil type, minor occurrences of sand with variable amounts of clay and silt exist at the POL facility. Site stratigraphy suggests that the clayey soils are glacial till with interbedded sandy alluvium. All soils terminate in a severely weathered to weathered shale at depths of 2 to 7 feet below ground surface (BGS).

Generalized geologic cross-sections are presented in Figure 3.1. The locations of the cross-sections (A-A' and B-B') are shown on Figure 3.2. The cross-sections show a composite vertical profile of site soils, including:

> 0 to 6 feet BGS: (Glacial till): Slightly silty to silty clay, brown to gray brown, firm to very stiff, low plasticity, damp, with minor erratic inclusions of severely weathered shale.
>
> 2 to 6 feet BGS: Interbedded shales and clay (glacial till): Shales: severely weathered to weathered, brown to dark gray, laminar, fissile, damp to dry. Clays: slightly silty, brown to gray, very stiff to hard, damp to dry. Individual sequences of shale and/or clay vary in thickness from 0.1 cm to 10 cm. Intact horizontal bedding and structure. No evidence of glacial redistribution.

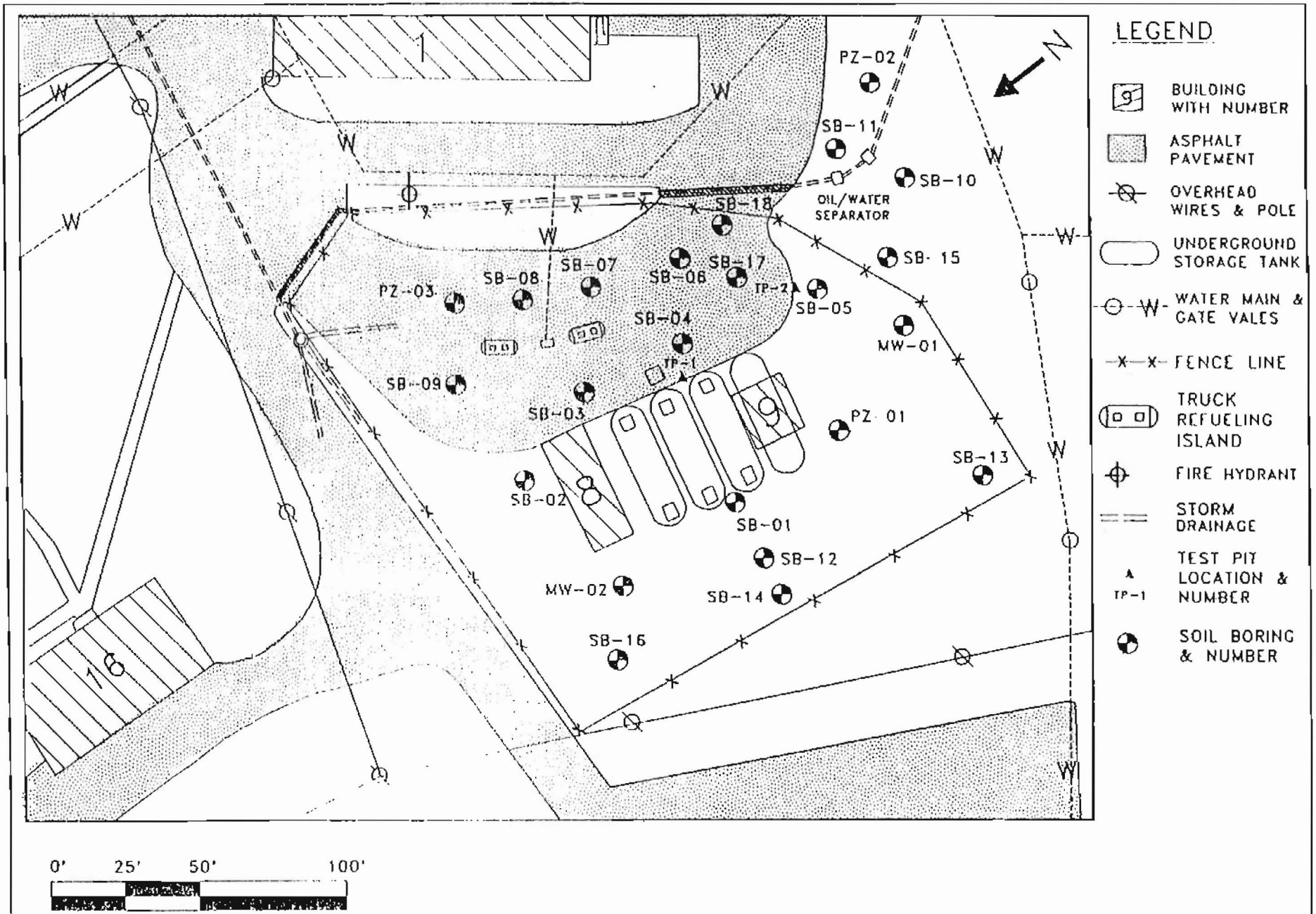

Figure 2.2 Old POL Facility Sampling Locations

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2 to 6 + feet BGS: Shale: brown to dark gray, severely weathered to weathered, laminar, fissile, dry. Typical penetration of shales was less than 1 foot.

A variation from the generalized profile was identified in borings SB-02, SB-09, SB-13, SB-15, MW-01, and PZ-01. The variation consisted of a discontinuous thin layer (0.5 to 1.0 feet thick), of clayey fine sands to fine sands. The upper limit of the sandy soils is 1 to 3 feet Below Ground Surface and lower limit 2 to 4 feet Below Ground Surface. As shown in Figure 3.1, the distribution of sandy soils extend along a major axis trending north to south and a minor axis trending east to west. The eastern limit is defined approximately by a line between borings SB-12 and SB-13 and the western limit by a line between borings SB-05 and SB-15. The northern and southern limits were not identified during site activities,

3.1.2 Hydrogeology

No aquifers were identified during the SA. The unconsolidated deposits beneath the site are not classified as an aquifer (Kantrowitz and Snavely 1982). As discussed in Section 3.1.1, site soils are underlain by shale at 2 ft to 7 ft BGS. Localized, discontinuous zones of saturated soils were identified, but were within 3 ft of shale bedrock.

The water observed to collect in test pit TP-1 during the geotechnical investigations by the Standard Engineering Corporation is believed to be limited to the tank pit. TP-1 and TP-2 were advanced to approximately 6 ft and 5 ft BGS, respectively. TP-1 was located in the tank pit and TP-2 approximately 25 ft east-southeast of the tank pit. Both excavations were allowed to remain open. During the period that the pits were open, water was observed percolating into TP-1. However, no water was observed in TP-2. The presence of water in

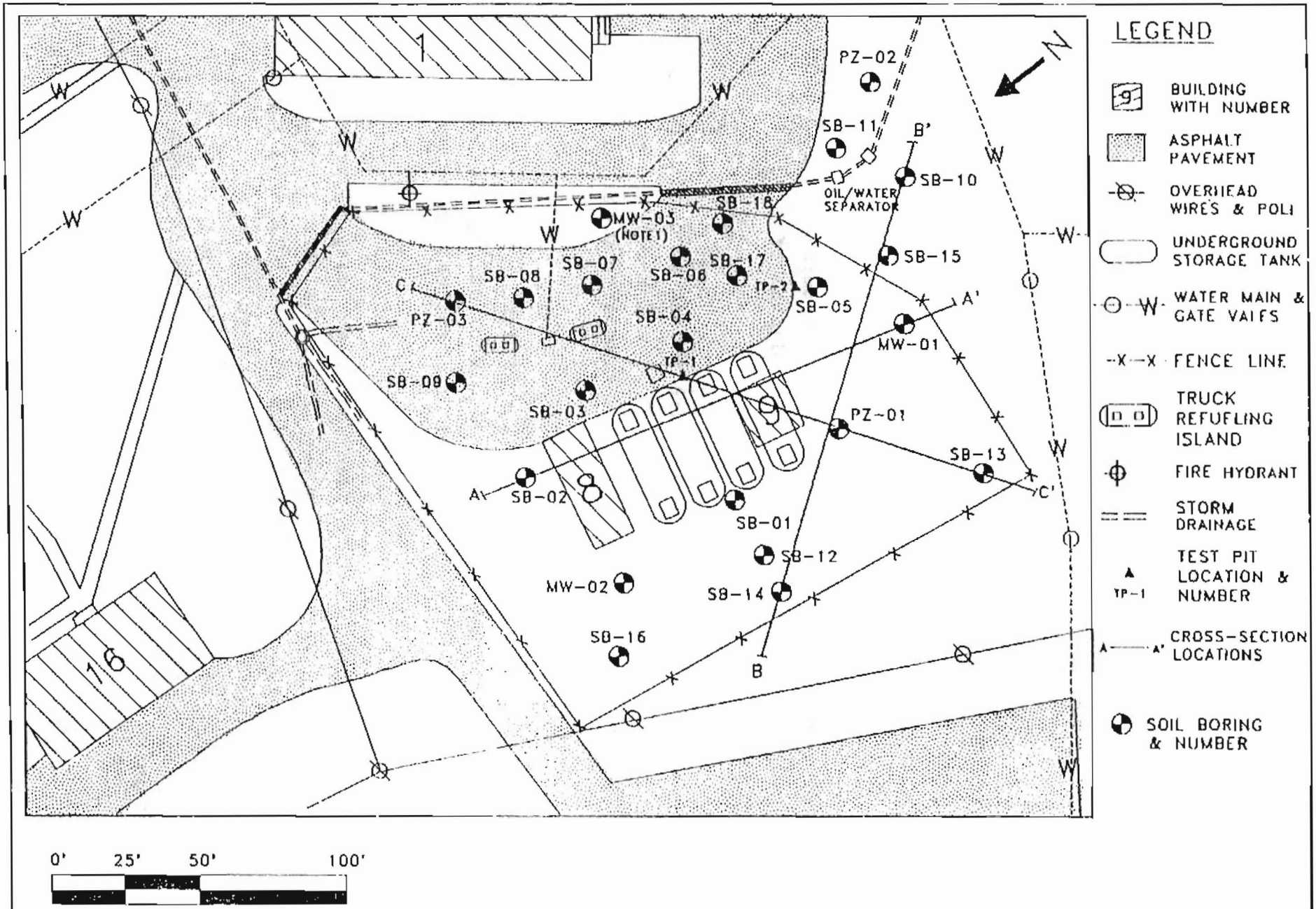

Figure 3.2 Location of Cross Sections

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Table 3.1. Analytical Results for the Old POL Facility
Stratton Air National Guard Base

Sample ID	Depth (ft)	HNu (ppm)	BTEX	Date of Collection
SB-01-00	0-2	ND	ND	03/19/91
SB-02-00	0-2	ND	ND	03/20/91
SB-02-02	2-4	ND	ND	03/20/91
SB-02-04	4-6	ND	ND	03/20/91
SB-03-01[1]	1-3	ND	2800	03/21/91
SB-03-03[1]	3-3.5	1	1200	03/21/91
SB-04-01[1]	1-3	5	75	03/21/91
SB-04-03[1]	3-5	170	6500	03/21/91
SB-05-00	0-2	ND	ND	03/19/91
SB-05-02	2-4	ND	ND	03/19/91
SB-05-04	4-6	20	ND	03/19/91
SB-06-00[2]	---	---	---	---
SB-07-00	0-2	ND	ND	03/19/91
SB-07-02	2-3	ND	38	03/19/91
SB-08-00	0-2	ND	ND	03/19/91
SB-08-02	2-3	ND	ND	03/19/91
SB-09-00	0-2	ND	ND	03/20/91
SB-10-00	0-2	ND	ND	03/20/91
SB-10-02	2-4	ND	ND	03/20/91
SB-11-00[1]	0-2	ND	360	03/21/91
SB-11-02[1]	2-4	ND	120	03/21/91
SB-11-04[1]	4-6	ND	110	03/21/91
SB-12-00	0-2	150	ND	03/19/91
SB-12-02	2-4	2	ND	03/19/91
SB-12-04	4-6	10	ND	03/19/91
SB-12-06	6-6.4	NA		03/19/91
SB-13-00	0-2	ND	43	03/20/91
SB-13-02	2-4	ND	ND	03/20/91
SB-13-04	4-6	ND	ND	03/20/91
SB-13-06	6-7	ND	ND	03/20/91
SB-14-00	0-2	ND	ND	03/20/91
SB-14-02	2-4	ND	ND	03/20/91
SB-14-04	4-6	ND	ND	03/20/91
SB-14-06	6-7	ND	ND	03/20/91

TP-1 and the absence of water in TP-2 provides additional indications that water is not horizontally mobile within the upper soils, and may not be horizontally mobile at depths equal to the depth of the tank pit.

The only soil types exhibiting significant water bearing capacity and transmissive properties were the discontinuous sandy soils. Considering the limited vertical and areal distribution of the sands and local stratigraphy, the sands represent an intermittently saturated, locally bounded strata.

3.2 NATURE AND EXTENT OF CONTAMINATION

3.2.1 Analytical Results

A total of 56 soil samples were collected from 22 soil borings and submitted for analysis. The analytical results from the soil samples are summarized in Table 3.1. The detailed laboratory reports are provided in Appendix C. Of these 22 soil borings, 18 were conducted adjacent to the tanks and truck refueling island, within the fenced area. The remaining four borings were advanced near the oil/water separator. Benzene, toluene, ethyl benzene, and xylene (BTEX) were detected in 8 of the soil borings.

The highest BTEX levels detected were from soil borings drilled between the tank pit and truck refueling island (Figure 3.3) (2800 µg/kg BTEX in the 1- to 3-ft interval in SB-03 and 6500 µg/kg BTEX in the 3- to 5-ft interval in SB-04). BTEX was also detected in SB-07 and SB-17 in this area.

BTEX contamination was also detected in two borings near the perimeter of the site (MW-01 and SB-13) and in two of the borings surrounding the oil/water separator (SB-11 and PZ-02).

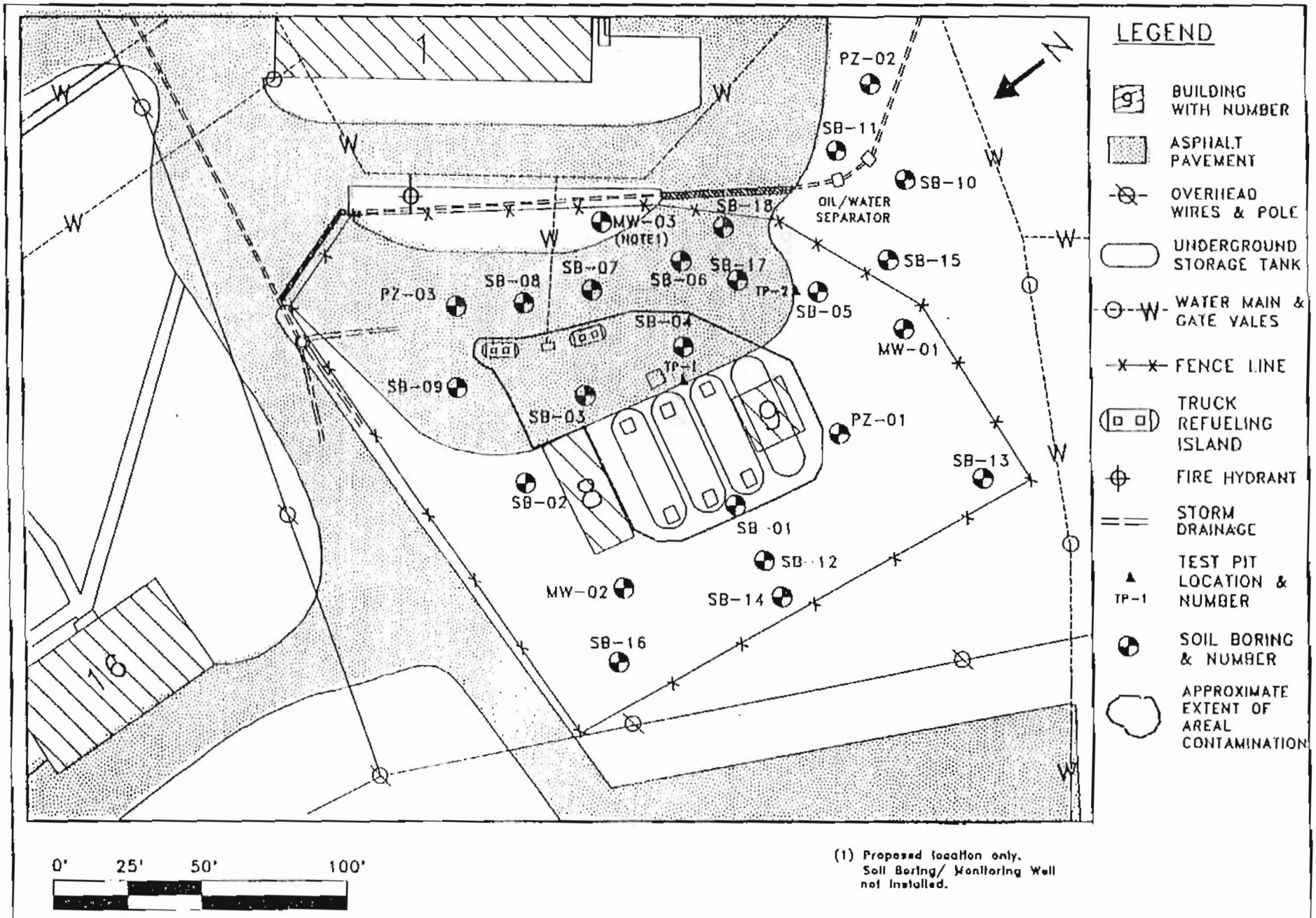

Figure 3.3 Old POL Facility
Areal Extent of Contamination

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Table 3.1. Analytical Results for the Old POL Facility Stratton Air National Guard Base

Sample ID	Depth (ft)	HNu (ppm)	BTEX	Date of Collection
SB-15-00	0-2	ND	ND	03/20/91
SB-15-02	2-4	ND	ND	03/20/91
SB-15-04	4-6	ND	ND	03/20/91
SB-16-00	0-2	ND	ND	03/20/91
SB-16-02	2-4	ND	ND	03/20/91
SB-16-04	4-6	ND	ND	03/20/91
SB-17-01[3]	1-3	---	---	---
SB-17-03[1]	3-5		440	03/21/91
SB-18-00[1]	1-3	ND	ND	03/21/91
SB-18-02[1]	3-5	ND	ND	03/21/91
PZ-01-00	0-2	50	ND	03/19/91
PZ-01-02	2-4	3	ND	03/19/91
PZ-01-04	4-6	25	ND	03/19/91
PZ-02-00[1]	0-2	ND	100	03/21/91
PZ-02-02[1]	2-4	ND	150	03/21/91
PZ-02-04[1]	4-5	ND	180	03/21/91
PZ-03-00	0-2	ND	ND	03/19/91
PZ-03-02	2-3	ND	ND	03/19/91
MW-01-00[1]	0-2	ND	42	03/21/91
MW-01-02[1]	2-4	1	48	03/21/91
MW-01-04[1]	4-6	30	ND	03/21/91
MW-02-00	0-2	60	140	03/20/91
MW-02-02	2-4	4	ND	03/20/91
MW-02-04	4-5	3	ND	03/20/91
MW-03-00[4]	---	---	---	---
RNS-01	---	---	ND	03/20/91

ND = Not detected.
Detection limit = 25 µg/kg.
1 = The GC column used for these samples could not chromotographically separate the chlorobenzene and m-xylene. See Section 3.2.3 for further discussion.
2 = Boring terminated without sample collection.
3 = Sample not collected.
4 = Boring not drilled.
NA = Not analyzed. Insufficient sample.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

Analysis of SA data suggest that soil contamination in the areas surrounding the Old POL Facility is limited to a few, localized occurrences of BTEX. No aquifers were identified during the SA. Furthermore, the extent and migration of those contaminants is limited by physical site characteristics and natural attenuation mechanisms. Due to the limited extent and low migration rate of contamination, it may be concluded that hazards associated with contamination in the areas surrounding the Old POL Facility are also limited.

4.2 RECOMMENDATIONS

NYSDEC has not developed specific standards for soil cleanup criteria, and currently reviews cleanup criteria on a site-by-site basis. However, based on the relatively low levels of soil contamination detected during the SA, immediate actions directed toward the remediation of the soils in the areas surrounding the Old POL Facility are not indicated.

Because of the finding of contamination in the tank pit by Standard Engineering Corporation, it is recommended that plans and specifications for removal and closure of the USTs, associated facilities and the adjacent contaminated soil be developed.

Because the Old POL Facility is no longer in operation, the oil/water separator is not required for treatment of surface water runoff. Because the oil/water separator is a potential source of soil contamination, it should be removed when the USTs are excavated. Based on the low levels of BTEX in soil samples

detected near the fence line and oil/water separator are not indicated on this figure.

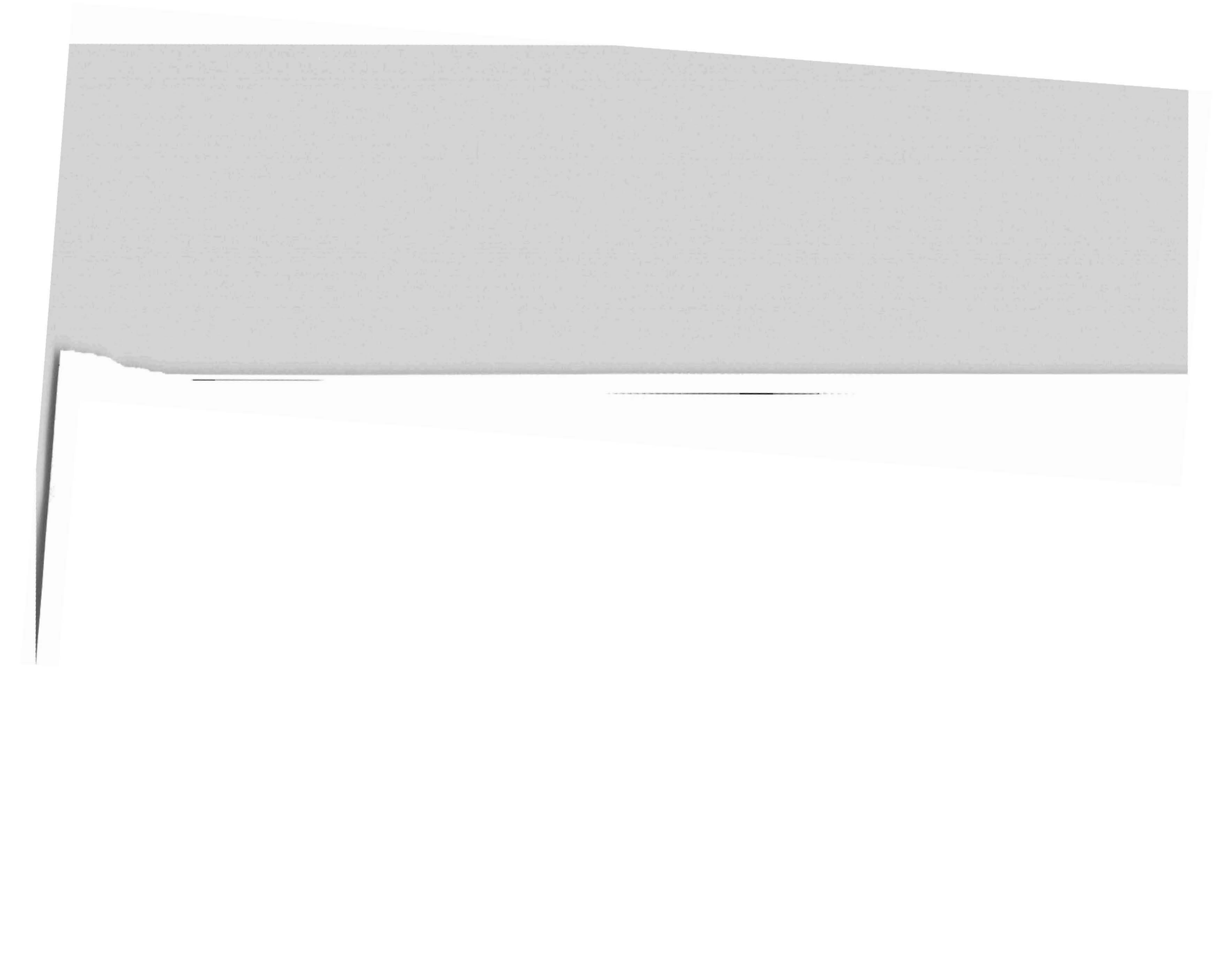
3.2.3 QA/QC Results

All samples were analyzed within the EPA prescribed holding times for the requested analytical method (SW-8020) and sample chain-of-custody was maintained. The reports of the rinsate sample analysis indicates that no BTEX was present above the detection limit of the analysis.

3.3 CONTAMINANT FATE AND TRANSPORT

Jet fuel (JP-4) consists of a blend of naphtha, kerosene, and gasoline and can exhibit a wide variability in composition. The migration and decomposition of the fuel is dependent on the specific constituents. In the environment, the various JP-4 constituents may be subject to sorption by soils, volatilization to the atmosphere and soil vapor, dissolution and transport in ground water, and biodegradation and photooxidation (Little 1987).

Observed contamination levels, the erratic distribution of contamination, and the extent of that low level contamination, coupled with physical characteristics of the site, indicate that mobilization of site contamination is restricted. The low permeability soils covering the site reduce the penetration of surface spills to significant depths. Due to this shallow penetration, the volatilization and biodegradation of such spills is promoted.



obtained near the oil/water separator, it is possible that no remedial action will be necessary for contaminated soils in this area.

Based on low levels of BTEX in soil samples from Borings MW-01 and SB-13 and the limited vertical extent to which it was detected (0 to 4 ft), no remedial action is warranted at these locations.