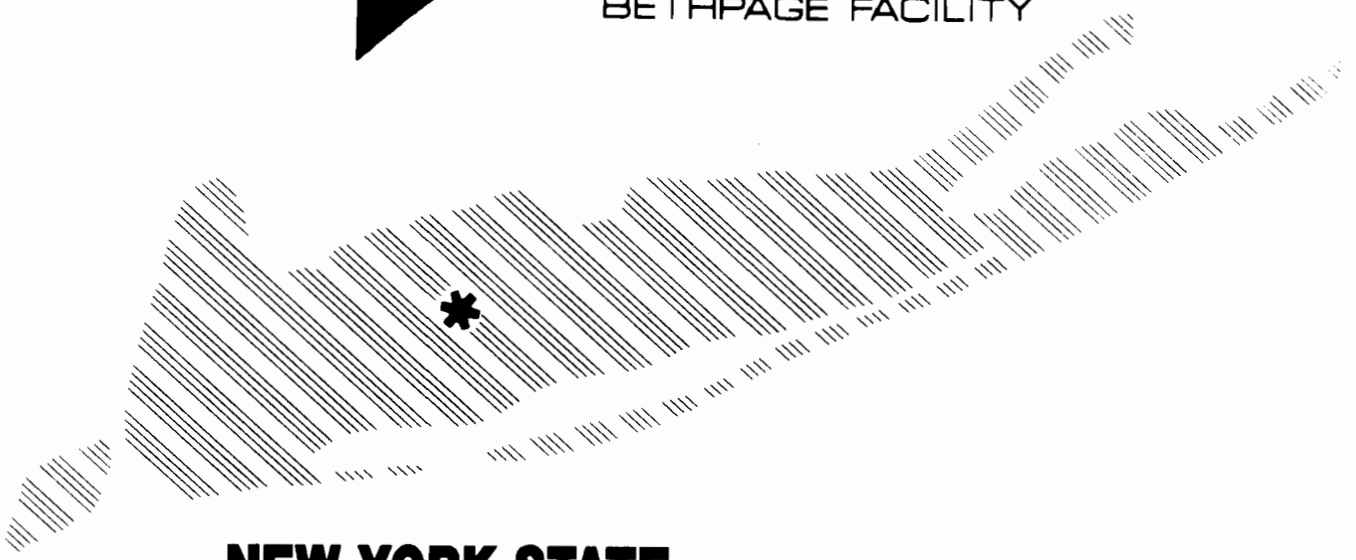
1-30-003A

GRUMMAN AEROSPACE CORPORATION
BETHPAGE FACILITY



NEW YORK STATE SITE REGISTRY DELISTING PETITION PLANTS 4 AND 25 BETHPAGE, NEW YORK

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK

Dvirka and Bartilucci
Consulting Engineers

SEPTEMBER 1995

Grumman Aerospace Corporation
Bethpage, New York 11714-3582

September 5, 1995

Michael D. Zagata, Commissioner
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, NY 12233-7010

Re: New York State Site Registry Delisting Petition
Plants 4 and 25
Bethpage, New York

Dear Commissioner Zagata:

I am pleased to submit for your review three copies of the enclosed document, entitled "New York State Site Registry Delisting Petition, Plants 4 and 25, Bethpage, New York."

The report, prepared by our consultants, Dvirka and Bartilucci Consulting Engineers, documents the past and present use of the site based on a review of available records, and a narrative review of chronological aerial photographs of the area from 1950 through 1988. In addition, a presentation of soil and groundwater sampling results is provided along with a comparison to appropriate standards.

The information presented in this report will assist the New York State Department of Environmental Conservation (NYSDEC) in determining the nature of the use of the site over the past 40 years and to evaluate the merits of the delisting petition. Based on the review of available information and the environmental data, we believe that the property is eligible for removal from the NYSDEC Site Registry of Inactive Hazardous Waste Disposal Sites, and as such, as appropriate modification to the boundaries of Site 1-30-003A is warranted.

If you have any comments and/or questions regarding this matter, do not hesitate to contact me at (516)575-2385.

Very truly yours,

J. Ohlmann

John Ohlmann, P.E.,
Consultant for
Grumman Aerospace Corporation

JO/ss
Enclosure
cc w/encl.: Robert Marino (NYSDEC)
♠1167/JO6195.MDZ

GRUMMAN AEROSPACE CORPORATION

NEW YORK STATE
SITE REGISTRY DELISTING PETITION
PLANTS 4 AND 25
BETHPAGE, NEW YORK

PREPARED BY
DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
SYOSSET, NEW YORK

SEPTEMBER 1995

GRUMMAN AEROSPACE CORPORATION

NEW YORK STATE
SITE REGISTRY DELISTING PETITION
PLANTS 4 AND 25
BETHPAGE, NEW YORK

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Section 1

1.0 INTRODUCTION

Grumman Aerospace Corporation has directed the preparation of this report as part of an effort to satisfy the requirements for delisting Plants 4 and 25, hereafter referred to as "the site," from the New York State Site Registry of Inactive Hazardous Waste Disposal Sites (Site Code 1-30-003A). The site is located southwest of the LIRR and east of the South Oyster Bay Road Extension in Bethpage, New York. Information presented in this report has been compiled based upon site inspections undertaken on September 9 and 29, 1994; an evaluation of available aerial photographs (1950-1988); various files and records obtained from the Grumman Aerospace Corporation, Paumanock Development Corporation, the Nassau County Department of Health (NCDOH) and the Town of Oyster Bay; along with interviews of various Grumman personnel. The purpose of this report is to determine and document the historical use of the site and surrounding areas.

Section 2 of this document presents an evaluation of the history, present use and existing conditions at the site, and the likelihood of potential adverse impacts from the federal Superfund site known as Hooker/Chemical Ruco Polymer. Section 3 presents an evaluation of analytical sampling data characterizing groundwater quality in the vicinity of the site. The conclusions of the site assessment are presented in Section 4. A location map is included in Appendix A, a current "Site Plan" is included in Appendix B, and aerial photographs of the site from 1950 through 1988 have been included in Appendix C. In addition, relevant documentation obtained through file searches at Grumman Aerospace Corporation, the NCDOH and the Town of Oyster Bay is included in Appendix D.

Correspondence from the New York State Department of Environmental Conservation (NYSDEC) to Grumman Aerospace Corporation provided a list of the "Delisting Petition Information" required for the Grumman properties. In order to facilitate the review of this document, the 14 items requested in the NYSDEC correspondence are listed in Table 1-1 with an appropriate response, or a cross reference to the location of such information in this document. The information supplied in this document is of sufficient detail to enable the NYSDEC to determine the nature of the past and present operations of the site, and assess the potential for any on-site contamination.

Table 1-1

DELISTING PETITION INFORMATION

	Requirement	Response
1.	Site Name	Grumman, Bethpage
	Owner	Grumman Aerospace Corporation
2.	Site Number	1-30-003A
3.	Site Location	South Side of LIRR and East of the South Oyster Bay Road Extension Bethpage, Nassau County, New York
4.	Size	Approximately 55 Acres
5.	Boundaries	See Appendices A, B and C
6.	Nature of Operation	See Section 2.1 and 2.2
	Hazardous Waste Disposal	See Section 4
7.	History of Site	See Section 2.1
8.	History of Site Investigation	See Section 2.1
9.	Waste	See Section 2.2
10.	Affected Resources	See Sections 2.2, 3 and 4
11.	Demographic Information	See Section 2.2
12.	Geographic Information	See Section 2.2
13.	Cleanup Actions	See Section 4
14.	Basis for Delisting	See Section 4

Section 2

2.0 SITE EVALUATION

Location: Southwest of LIRR and East of South Oyster Bay Road Extension, Bethpage, New York 11801

Section: 46

Block/Lot: 323/16A (portion of)
323/17E (portion of)
323/19
323/83 (portion of)
323/84B (portion of)
323/88 (portion of)
323/223 (portion of)
503/3 (portion of)

Zoning: Industrial H

Plot Size: Approximately 55 acres

Land Use(s): Prior: Final Aircraft Assembly/Hangar Storage/ Communications Flight Tower/ Flight Operations Office
Current: Records Storage/Simulated Flight Conditions (Wind Tunnel)

Grumman-Owned Bldgs: Plant 4, Fire Pump House, Sewage Pump House, Plant 25, Records Center and Wind Tunnel

Building Area:

Plant 4*:	≈	110,000 sq. ft.
Fire Pump House*:	≈	4,000 sq.ft.
Sewage Pump House*:	≈	400 sq.ft.
Plant 25:	≈	60,000 sq. ft.
Record Center:	≈	3,000 sq. ft.
Wind Tunnel:	≈	4,800 sq. ft.
Total:	≈	177,800 sq. ft.

*Razed in December 1994.

2.1 Site History

As indicated by a review of the earliest available aerial photograph of the site taken in 1950 (see Appendix C), the site was comprised of open fields in the area of Plant 25, with the exception of the Wind Tunnel in the southwest corner of this portion of the site. A runway and taxiways were already in existence at this time, as was Plant 4 (Hangars 1 through 5). A water tank and parking area were evident northwest of Plant 4. Other portions of the site east of Plant 5 were either paved or open space.

By 1957, parking areas were evident southeast of the Wind Tunnel with some of the adjacent open space being utilized for ballfields. A trailer was also evident adjacent to the south side of the Wind Tunnel. The portion of the site east of Plant 5 was in use as a parking area. It

appears that a taxiway (south of the runway) was extended to the full length of the runway at this time. The remainder of the site (area of Plant 4) did not change during this time.

Between 1957 and 1962, the Records Center building was constructed west of the Wind Tunnel, with additional parking areas east of the Wind Tunnel. Hangar 6 was also added to Plant 4 during this time frame, with the remainder of the site not undergoing any apparent changes.

Between 1962 and 1969, Plant 25 was constructed directly east of the Wind Tunnel with a subsequent reconfiguration of the parking area to cover the remainder of this portion of the site. The southern taxiway that ran parallel to the runway was no longer evident. Parking areas were further expanded east of Plant 5 and northwest of Plant 4 during this time.

Between 1969 and 1972, much of the site remained the same with the exception of the addition of trailers south of the Wind Tunnel. No major changes to the site were evident between 1972 and 1988.

In December 1994, Plant 4 (Hangars 1 through 6), the Fire Pump House and associated water tank, and the Sewage Pump House were razed.

Based upon a review of a Remedial Investigation (RI) Report prepared by Geraghty and Miller in 1994, the date of initial occupancy of Plant 4 was 1943. Based upon a review of Nassau County property record cards, it appears that Grumman Aircraft Engineering Corporation acquired Plant 4 (Section 46, Block 323, Lot 19) from the US government in 1947. It was not apparent from the property record cards when Grumman Aerospace Corporation first acquired the property associated with Plant 25 (Section 46, Block 323, Lot 223), due to the fact that the current lot was previously part of larger lots that were subsequently subdivided. However, it appears that Grumman leased a portion of this area in 1948, and in 1950 the federal government gave a release and waiver of deed to Grumman. Plant 25 was subsequently constructed in 1962.

Plant 4, comprised of six hangers, had historically been utilized predominantly for final aircraft assembly and storage. Aircraft were also cleaned, refueled (by trucks) and deiced in the courtyard area of Plant 4. Hangar 6 was added to Plant 4 between 1957 and 1962. According to Grumman personnel, the Records Center building, built between 1957 and 1962, has historically been and continues to be utilized solely for storage of records. The Wind Tunnel has been and continues to be utilized for the simulation of flight conditions.

Several on-site independent sanitary disposal systems were utilized prior to connection to the Nassau County sewer system. A review of Grumman utility maps and site plans indicated the following:

- Sewage pump house, 24 "filled" leaching pools and emergency overflow pools northwest of Hangar 5
- 2 "filled" leaching pools west of the Records Center
- 2 "filled" leaching pools south of the trailer south of the Wind Tunnel
- Plant 25 was originally connected to a sewage pump station that discharged to an off-site leaching field to the west of Plant 5

Based upon a review of a 1978 Grumman letter on file with the NCDOH, Plant 4 previously utilized small amounts of toluene, xylene, methyl ethyl ketone (MEK), and 1,1,1-trichloroethane in the parts crib, paint area, tool crib and stock room. NCDOH inspection records indicated that Plant 4 was a maintenance hangar for the repair and service of aircraft, with waste oils and solvents stored outside the building in drums. Based upon a review of NCDOH records, a tank removal (Tank #04-03-1) was carried out by Tyree Brothers in 1993, with no contamination detected in the excavation and no perforations noted in the tank.

A 1982 application for a RCRA Part B permit (Volume 1) prepared by Dvirka and Bartilucci Consulting Engineers for Grumman Aerospace Corporation detailed how hazardous waste generated from various plant operations were collected and stored on-site prior to disposal. In general, collection stations were set up in close proximity to the points of waste generation.

Collection drums were identified with a label indicating the type of waste to be placed in each. Once filled, the drums were closed, labeled and dated, and moved to either a mini marshalling area, or to the Main Marshalling area for long-term storage prior to disposal. A map prepared and submitted with the permit indicated that Plant 4 had a collection station located along the south wall for both waste halogenated and nonhalogenated solvents. Plant 25 did not have any waste collection stations. No mini marshalling areas were located on the sites of Plant 4 or 25, and the Main Marshalling area was located to the north.

1988 NCDOH records for a Toxic or Hazardous Materials Storage Facility Permit indicates that the following materials were permitted to be stored outside Plant 4 at a secured location identified as S41 (along the south wall):

- waste halogenated solvents
- lubrication oil
- varsol, organic solvent
- CEE BEE C50
- methyl butyl ketone
- freon
- 1,1,1-trichloroethane
- hydraulic oil
- isopropyl alcohol
- mineral spirits
- monoethanolamine

Other materials stored to the west of S41 at location S42 included the following:

- "Dub-L-Shield" (acrylic anti-corrosion solution)
- calcium chloride

NCDOH records indicated that Plant 25 did not have a designated outside storage area for hazardous materials.

Based upon a review of the Remedial Investigation (RI) Report prepared by Geraghty & Miller, soil-gas sampling was conducted in 1991 and 1992 with a portable gas chromatograph at various locations throughout the Bethpage facility to identify areas that might require further investigation (i.e., soil and/or groundwater sampling). One soil-gas sampling point was located in the vicinity of Plant 4 (SG-5F). Trichloroethene was detected at a concentration of 1.0 ppmv in soil-gas sample SG-5F. Soil-gas sampling was not performed in the vicinity of Plant 25.

As part of the RI, soil samples were also collected at various locations throughout the Grumman facility in 1992 to identify the presence of volatile organic compounds. Based upon a review of the sample location map, it appears that one soil sample (B-6) was collected adjacent to the soil-gas sample SG-5. Volatile organic compounds were not detected in sample B-6.

2.2 General Site Description

The site is currently owned by Grumman Aerospace Corporation. The remaining on-site structures have public water and are connected to the Nassau County sewer system. Based upon interviews with Grumman personnel and a review of Grumman and various agency storage tank records, the operational and regulatory status of on-site storage tanks are summarized in Table 2-1. At the time of the September 29, 1994 site inspection, Plant 4 was predominately vacant and in the process of being demolished. Plant 4 was subsequently razed in December 1994. Plant 25 is still in use for office space. The entire site is zoned industrial H and comprises approximately 55 acres. The site is surrounded by high density residential development to the east, with industrial development to the north, west and south. The site plan is presented in Appendix B.

Table 2-1

ON-SITE STORAGE TANK SUMMARY

Tank Number	Location	Volume	Contents	Operational Status	Tightness Testing	Remarks
04-01-1	UST	1,000	No. 2	Removed 5/22/89	--	--
04-01-2/Generator	AST	275	Diesel	Active	NR (aboveground tank)	--
04-01-3/Generator	AST	275	Diesel	Active	NR (aboveground tank)	--
04-03-1/Flight Emerg. Boiler	UST	2,000	No. 2	Removed 9/7/93	--	--
04-04-1	N/A	N/A	Diesel	Removed 4/30/93	--	--
04-04-2/Fire Pump House	AST	275	Diesel	Removed 1994	NR (aboveground tank)	--
04-04-2/Fire Pump House	UST	275	Gasoline	Removed 1/19/95	Passed 6/22/92	Remedial Activities Undertaken (see Section 3.2 of this document)
04-04-3/Fire Pump House	UST	275	Gasoline	Removed 1/19/95	Passed 7/6/92	Remedial Activities Undertaken (see Section 3.2 of this document)

Table 2-1 (continued)

ON-SITE STORAGE TANK SUMMARY

Tank Number	Location	Volume	Contents	Operational Status	Tightness Testing	Remarks
25-01	UST	20,000	No. 6	Removed 1986	--	--
25-01-1/Boiler	UST	10,000	No. 6	Active	--	Initial Test Required by 12/31/96 As Per 6NYCRR Part 613.5
25-01-2/Boiler	UST	10,000	No. 6	Active	--	Initial Test Required by 12/31/96 As Per 6NYCRR Part 613.5
25-01-3/Generator	UST	550	Diesel	Active	Passed 6/9/93	Test Required by 6/9/98 As Per 6NYCRR Part 613.5
25-02	UST	20,000	No. 6	Removed 1986	--	--
25-03-1/Guard House Boiler	AST	275	No. 2	Active	NR (above-ground tank)	--

Table 2-1 (continued)

ON-SITE STORAGE TANK SUMMARY

Tank Number	Location	Volume	Contents	Operational Status	Tightness Testing	Remarks
25-04	UST	2,000	No. 2	Removed 1986	--	--
25-05-1	N/A	N/A	N/A	Removed 8/9/90	--	--
25-05-2/Well No. 5 Pump	UST	550	Diesel	Active	NR (double-walled FRP tank)	--
25-08-1/Record Center Boiler	UST	2,000	No. 2	Active	NR (double-walled FRP tank)	--

Notes:

N/A - Not Available

NR - Not Required

The Soil Conservation Service classifies the majority of the site as Urban Land with a small portion of the site as Udipsamments, nearly level. Urban Land is defined as an area with at least 85 percent asphalt, concrete or other impervious building material, with most of the remaining small areas of soil being well drained Riverhead, Hempstead or Enfiled soils, or excessively drained Udipsamments. Udipsamments are defined as manmade fills or borrow areas, which are mostly grass covered. Slopes range from 0 to 3 percent and the soils are very deep, and excessively drained to well drained. Based on a review of available information, the depth from ground surface to the upper glacial aquifer is approximately 68 feet.

As previously mentioned, Plant 4 was mostly vacant at the time of the site inspection and was in the process of being demolished. Based upon interviews with representatives of GAC, all on-site chemicals were properly removed and relocated or disposed of prior to demolition. Plant 4 previously comprised approximately 110,000 square feet and included the following areas:

Hangar 1

- 1st Floor
  - southeastern half of Hanger 1, as well as Hangars 2, 3 and 4, have been used for miscellaneous furniture storage for past 3 years
  - Retirees Club also used hangar over past 2 years to restore aircraft (Grumman Restoration Team)
  - office areas
  - floor drain in entrance to office area

- 2nd Floor
  - office areas

- 3rd Floor
  - communication equipment
  - restrooms
  - bench top electronics repair area

- 4th Floor
  - "Flight Control Tower"
  - Communications equipment

Hangar 2

- Final assembly
- Flight operations
- Mezzanine area

Hangar 3

- Flight operations office
- Restroom
- Storage of corporate aircraft

Hangar 4

- Final assembly
- Flight operations
- Paint chip debris noted on flooring (from demolition activities)

Hangar 5

- Paint chip debris noted on flooring (from demolition activities)
- Compressed air lines
- Air handler
- Mezzanines (caged storage area)
- Final assembly and aircraft storage

Hangar 6

- Final assembly area for E-2 and C-2 aircraft
  - assembly
  - touch up painting
- Storage facility for corporate aircraft (G-3, Barron)

- Flight test area

- Aircraft maintenance, refueling, cleaning, brush alodine

Administration Wing (northern portions of Hangars 2, 4 and 6)

- Equipment room
  - miscellaneous parts storage
  - one 55-gallon drum - compressor oil
  - two 55-gallon "oil" drums
  - restroom
  - floor drain

- Mezzanine area
  - 275-gallon capacity diesel tank - fuel lines lead to two pump foundations on 1st level
  - hot water heater
  - hot water tank

- Air compressor room
  - air compressor
  - diesel 275-gallon capacity tank
  - transformers

- Elevator room
  - slop sink
  - floor drains
  - elevator (prior testing showed no PCB oil usage, based upon interviews with GAC representative)

- Oil storage closet (for elevator)

- Office space

- Air handler room
  - condensate floor drains

- Telephone room

- Mezzanine level
  - air handling room
  - sinks
  - office space

Fire Pump House (off the northwest corner of Hangar 5)

- 4' x 4' sump with water lines leading to Hangar Administration Building
- Condensate floor drains
- Two generators/pumps
- Foundation for possible prior third generator/pump
- Water tank

Sewage Pump House (to the northwest of the Fire Pump House)

- Lift station

Courtyard

- Prior refueling of aircraft (with trucks) and aircraft de-icing
- Transformer pad (no transformer)
- Tire storage shed (sealed floor drains)
- Storage shed
  - 3 "acrylic coating" drums
  - sealed floor drain
- Battery storage shed for nickel-cadmium batteries
  - eye wash station

Plant 25 has been, and continues to be, predominantly utilized for transient administrative purposes. The building includes the following areas:

Lower Level

- Photographic service area
  - photo lab
  - bleaches collected in 55-gallon drums, which are disposed of by others
  - fixers are discharged to a 250-gallon polyethylene storage tank
  - electrolytic silver collector (silver is reclaimed by Navy)
  - permitted sewer discharge

- floor drains (washwater)
- slop sinks
- sealed floor drains
- dark room

- Boiler room
  - air handlers
  - air conditioner
  - chillers
  - condensate floor drains
  - compressors/generators
  - eye wash station
  - 200-pound drums of trichloromonofluoromethane
  - 55-gallon drum propylene glycol (heat transfer fluid)
  - 30-gallon drum "Freon 11" (trichloromonofluoromethane)
  - slop sink
  - restroom
  - 5-gallon buckets (centrifugal refrigeration oil, lube oil, hydraulic oil)
  - 55-gallon drum (diesel fuel for generator)
  - loading bay with floor drain

- Elevator room
  - 55-gallon drums/5-gallon buckets (oils for elevator)
  - 55-gallon drum (hydraulic oil)
  - 5-gallon bucket ("27 oil")
  - maintenance performed by "Dover Elevator"

<u>1st Floor</u>

- Office space (restricted area)

<u>2nd Floor</u>

- Office area

- Vending area

- Air handler room
  - centrifugal fans
  - condensate drains

<u>3rd Floor</u>

- Air handler room
  - centrifugal fans

- condensate drains

- Computer room

The Wind Tunnel is a "quonset-style building located off the western side of Plant 25 and has a building area of approximately 4,800 square feet. Within the building, machinery is utilized which simulates flight conditions for aircraft. Trailers are located to the south of the tunnel.

The Records Center is located to the northwest of the Wind Tunnel and has a building area of approximately 3,000 square feet. The Records Center has historically and continues to be utilized predominantly for the storage of records.

2.3 Hooker Chemical Site

An element related to the delisting of the site is the proximity of the property to the Hooker Chemical/Ruco Polymer NPL site. This site has been on the federal Superfund list since 1984 and remains active. The site has been the subject of monitoring and investigations intended to identify the extent of contamination and hazard resulting from previous waste disposal practices at this site. A Remedial Investigation and Feasibility Study (RI/FS) has been conducted, with the associated field work completed in February 1990. The RI/FS identified two operable units at the Hooker Chemical Site requiring remedial action.

Operable Unit 1 has necessitated the remediation of soil and groundwater contaminated by volatile organic compounds (VOCs) used in the various manufacturing processes employed by the facilities on-site. Based upon communication with the EPA, the RI report was approved on December 7, 1992. The associated Feasibility Study was subsequently completed and a Record of Decision on a Proposed Remedial Action Plan was signed on January 28, 1994. Based upon recent communications with the EPA, a unilateral administrative order has been issued and a draft Work Plan is currently being reviewed by the EPA. Until the EPA releases all details concerning Operable Unit 1, it is not possible to fully characterize the extent of potential off-site impacts.

Operable Unit 2 pertains to a relatively small area of soil contaminated by PCBs resulting from releases of the heat transfer fluid Therminol. The migration of PCBs resulted from on-site runoff and on-site truck traffic. However, the extent of contaminated soil was contained entirely on the Hooker Chemical/Ruco Polymer Site. No off-site contamination was identified from Operable Unit 2. Remedial action involving Operable Unit 2 has been completed.

Until such time as the EPA finalizes its review of all investigation findings and releases all details concerning Operable Unit 1, it is not possible to fully characterize the extent of any potential off-site impacts. However, the Plant 4 and 25 site is located over 1,600 feet to the southeast of the Hooker Chemical/Ruco Polymer Site, and is likely removed from any significant adverse conditions which may be present.

Section 3

3.0 ANALYTICAL SAMPLING DATA

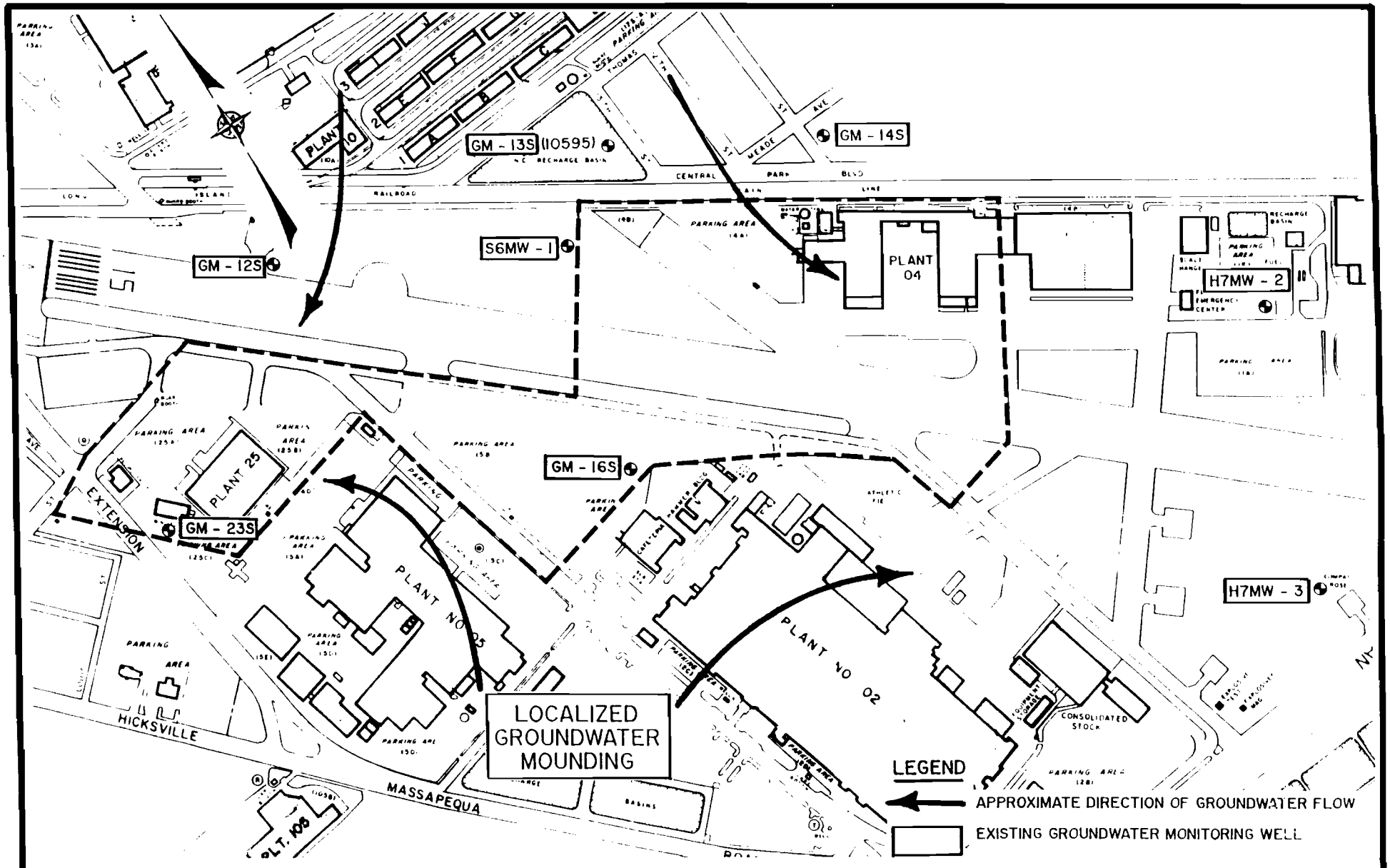
This section provides a discussion of analytical sampling results obtained from soil and groundwater samples, as compared to appropriate cleanup objectives and drinking water standards.

3.1 Groundwater

Based upon a review of available monitoring well location maps, four upgradient monitoring wells (S6MW-1, GM-12S, GM-13S and GM-14S) and four downgradient monitoring wells (GM-16S, GM-23S, H7MW-2 and H7MW-3) were identified. Existing analytical sampling data from these wells were utilized to characterize groundwater quality in the vicinity of the site. Figure 3-1 presents the locations of these monitoring wells. The results of the volatile organic and priority pollutant metal analyses are compared to the New York State Department of Health (NYSDOH) drinking water standards in Tables 3-1 and 3-2, respectively.

As indicated in Table 3-1, several volatile organic constituents (i.e., trichloroethene, 111-trichloroethane, 1,2-dichloroethene and tetrachloroethene) were detected at concentrations above the NYSDOH drinking water standards in upgradient monitoring wells S6MW-1, GM-12S and GM-13S. However, since these monitoring wells are located upgradient of the site, the volatile organics detected in these wells are not attributable to the site. As indicated in Table 3-1, volatile organic constituents were not detected above NYSDOH drinking water standards in the groundwater monitoring wells located downgradient of the site.

As indicated in Table 3-2, several priority pollutant metals were detected in the groundwater samples obtained from the monitoring wells associated with the site. The only priority pollutant metal detected above the NYSDOH drinking water standard was lead in sample GM-13S. However, it should be noted that this sample could not be obtained at a turbidity of less than 50 NTUs. As a result, an additional filtered groundwater sample was collected from this location in an effort to remove soil particles prior to laboratory analysis. As indicated in Table 3-



SOURCE: GAC GENERAL PLAN, WATER TABLE CONTOUR MAP (AUGUST 18, 1993)

APPROXIMATE SCALE: 1" = 500'

GRUMMAN AEROSPACE CORPORATION
BETHPAGE FACILITY
PLANT 4 AND 25

WELL LOCATION MAP

FIGURE 3 - 1

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

TABLE 3-1
GRUMMAN AEROSPACE CORPORATION
PLANTS 4 AND 25
GROUNDWATER SAMPLING
VOLATILE ORGANICS

LOCATION	UPGRADIENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	
SAMPLE ID	S6MW-1	GM-12S	GM-13S	GM-14S	GM-16S	GM-23S	H7MW-2	H7MW-3	NYSDOH
DATE COLLECTED	08/31/92	08/27/93	08/27/93	08/26/93	08/26/93	08/23/93	03/23/93	03/23/93	DRINKING WATER
DILUTION FACTOR	1	1	1	1	1	1	1	1	STANDARD
VOLATILE ORGANICS (ug/l)									
Chloromethane	U	U	U	U	U	U	U	U	5
Bromomethane	U	U	U	U	U	U	U	U	5
Vinyl Chloride	U	U	U	U	U	U	U	U	2
Chloroethane	U	U	U	U	U	U	U	U	5
Methylene Chloride	U	1 J	U	U	U	U	1 B	2 B	5
Acetone	U	U	U	U	U	U	8 B	33 B	----
Carbon Disulfide	U	U	U	U	U	U	U	U	----
1,1-Dichloroethene	U	U	2 J	U	U	U	U	U	5
1,1-Dichloroethane	U	U	5	U	U	U	U	U	5
1,2-Dichloroethene (total)	1 J	U	11	U	U	U	U	U	5
Chloroform	U	U	U	U	U	U	U	U	100**
1,2-Dichloroethane	U	U	U	U	U	U	U	U	5
2-Butanone	U	U	U	U	U	U	U	1	----
1,1,1-Trichloroethane	U	U	26	U	U	U	2	U	5
Carbon Tetrachloride	U	U	U	U	U	U	U	U	5
Bromodichloromethane	U	U	U	U	U	U	U	U	5
1,2-Dichloropropane	U	U	U	U	U	U	U	U	5
cis-1,3-Dichloropropene	U	U	U	U	U	U	U	U	5
Trichloroethene	42	20	37	U	U	U	U	3	5
Dibromochloromethane	U	U	U	U	U	U	U	U	100**
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	5
Benzene	U	U	U	U	U	U	U	U	5
Trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	5
Bromoform	U	U	U	U	U	U	U	U	100**
4-Metyl-2-pentanone	U	U	U	U	U	U	U	U	----
2-Hexanone	U	U	U	U	U	U	U	U	----
Tetrachloroethene	U	U	110	2 J	U	U	U	U	5
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	5
Toluene	U	U	U	U	U	U	U	2	5
Chlorobenzene	U	U	U	U	U	U	U	U	5
Ethylbenzene	U	U	U	U	U	U	U	U	5
Styrene	U	U	U	U	U	U	U	U	5
Xylene (total)	U	U	U	U	U	U	U	U	5

QUALIFIERS:
U: Analyzed for but not detected
B: Compound found in the blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated

NOTE:
**: Applies to the sum of trihalomethanes
----: Not established
: Value exceeds drinking water standard

TABLE 3-2
GRUMMAN AEROSPACE CORPORATION
PLANTS 4 AND 25
GROUNDWATER SAMPLING
PRIORITY POLLUTANT METALS

LOCATION	UPGRADIENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	UPGRADIENT	NYSDOH
SAMPLE ID	S6MW-1	S6MW-1 F	GM-13S	GM-13S F	GM-14S	GM-14S F	DRINKING WATER
DATE COLLECTED	8/31/92	8/31/92	8/27/93	8/27/93	8/26/93	8/26/93	STANDARDS
UNITS	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
PARAMETER							
Antimony	U	U	U	U	U	U	----
Arsenic	23.8	25	10.3	U	2.5 B	U	50
Beryllium	U	U	3.8 B	U	2 B	U	----
Cadmium	U	U	4.3 B	U	3 B	U	5
Chromium	15.0	6.1 B	31.8	U	44.6	U	100
Copper	37.2	37.2	838	11.4 B	84.1	U	1000
Lead	11.7	4.1	**128**	1.7 B	46.5	U	50
Mercury	0.45	0.34	0.24	U	U	U	2
Nickel	U	U	132	U	51.3	U	----
Selenium	U	U	U	U	U	U	10
Silver	U	U	U	U	U	U	50
Thallium	U	U	U	U	1.5 B	U	----
Zinc	16.3 B	13.5 B	171	98.6	137	U	5000

QUALIFIERS:
U: Analyzed for but not detected
B: Value less than contract required detection limits but greater than instrument detection limits.

NOTES
F: Filtered sample
----: Not established
:Value exceeds standard

TABLE 3-2 (continued)
GRUMMAN AEROSPACE CORPORATION
PLANTS 4 AND 25
GROUNDWATER SAMPLING
PRIORITY POLLUTANT METALS

LOCATION	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	DOWNGRADIENT	NYSDOH
SAMPLE ID	GM-16S	GM-16S F	GM-23S	GM-23S F	H7MW-2	H7MW-3	DRINKING WATER
DATE COLLECTED	8/26/93	8/26/93	8/23/93	8/23/93	3/23/93	3/23/93	STANDARDS
UNITS	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
PARAMETER							
Antimony	U	U	U	U	U	65.5	----
Arsenic	3.3 B	U	U	U	U	U	50
Beryllium	U	U	U	U	U	U	----
Cadmium	U	U	U	U	U	U	5
Chromium	14.1	U	8.0 B	U	U	7.3 B	100
Copper	29.4	U	7.5 B	U	9.9 B	9.9 B	1000
Lead	10.9	U	2.9 B	U	U	U	50
Mercury	U	U	U	U	U	U	2
Nickel	U	U	U	U	U	U	----
Selenium	U	U	U	U	U	U	10
Silver	U	U	U	U	U	17.7	50
Thallium	U	U	U	U	U	U	----
Zinc	56.4	U	10.8 B	U	19.6 B	6.5 B	5000

QUALIFIERS:
U: Analyzed for but not detected
B: Value less than contract required detection limits but greater than instrument detection limits.

NOTES
F: Filtered sample
----: Not established
: Value exceeds standard

2, lead was not detected above the method detection limit in the filtered sample from GM-13S. It is also important to note that GM-13S is located adjacent to an off-site storm water recharge basin. As a result, storm water runoff may cause localized adverse impacts to groundwater quality in the vicinity of this well. The presence of lead in storm water runoff is not inconsistent with studies that have been conducted by the United States Environmental Protection Agency in support of its National Urban Runoff Program. Furthermore, and perhaps most importantly, since GM-13S is located upgradient of the site, the concentration of lead detected in this well is not attributable to the site.

3.2 Soil

In association with the demolition of Plant 4, GAC directed the removal of two underground storage tanks, as well as a soil boring program undertaken adjacent to the footprint of the removed structures. This section presents a summary of these activities, and associated analytical results.

Tank Removal Program

As part of the demolition of Plant 4, GAC directed the closure and removal of Tank Nos. 04-04-2 and 04-04-3.

On January 19, 1995, the soil above the tanks was excavated and the top of the tanks were noted to be approximately 2 feet below grade. Stained soil was encountered at approximately 1-2 feet below grade and elevated headspace measurements were detected. GAC notified NYSDEC that contamination was identified. The notification was assigned Spill # 94-13982. Fill lines and vent piping were then disconnected from both USTs. It was noted that the fill pipe on Tank No. 04-04-2 was cracked adjacent to the top of the tank and visible staining on the tank was evident. GAC personnel informed D&B personnel that the cracked fill port was likely caused by trucks driving over the fill port during the recent demolition of Plant 4 and the former Fire Pump House.

During the excavation of the USTs, soil samples from various locations and depths from the excavation were collected for headspace analysis. Headspace volatile organic compound (VOC) measurements were performed on soil samples utilizing either a photoionization detector (PID) or a flame ionization detector (FID). Upon removal of the USTs from the ground, visibly stained soils were observed along the side walls of the excavation and elevated headspace measurements were detected. The NYSDEC representative informed GAC personnel that the extent of contaminated soil should be delineated and removed. Visual inspection of both tanks by D&B and NYSDEC personnel revealed no perforations of the tank walls or severe corrosion. Although visual staining was evident on Tank No. 04-04-2, it appeared that the staining was associated with leakage from the fill pipe.

Excavation continued to a depth of approximately 7.5 feet below grade. This was the maximum vertical length the contractor's backhoe could extend. Based upon headspace measurements and visible staining, the NYSDEC representative determined that further removal and screening of contaminated soil with either photoionization or flame ionization detectors was required. The visibly stained soil that had been excavated was stockpiled on plastic sheeting. The excavation was barricaded and secured with caution tape. The stockpiled soil was covered with plastic sheeting.

On January 25, 1995, additional excavation was undertaken in the area where the USTs were removed. A backhoe with an extension was utilized to continue the excavation of contaminated soil. Excavation continued to an approximate depth of 13 feet below grade. Additional soil samples for headspace measurements were collected as described earlier in this section. Headspace measurements and screening of stockpiled soil did not indicate any readings of volatile organic vapors from a depth of approximately 11 feet to 13 feet below grade. As a result, the NYSDEC representative determined that the extent of contamination had been removed. A total of approximately 25 cubic yards of visibly stained soil was excavated. The contaminated soil was subsequently removed by Allied Environmental Services for reclamation at Soil Remediation of Philadelphia, Incorporated.

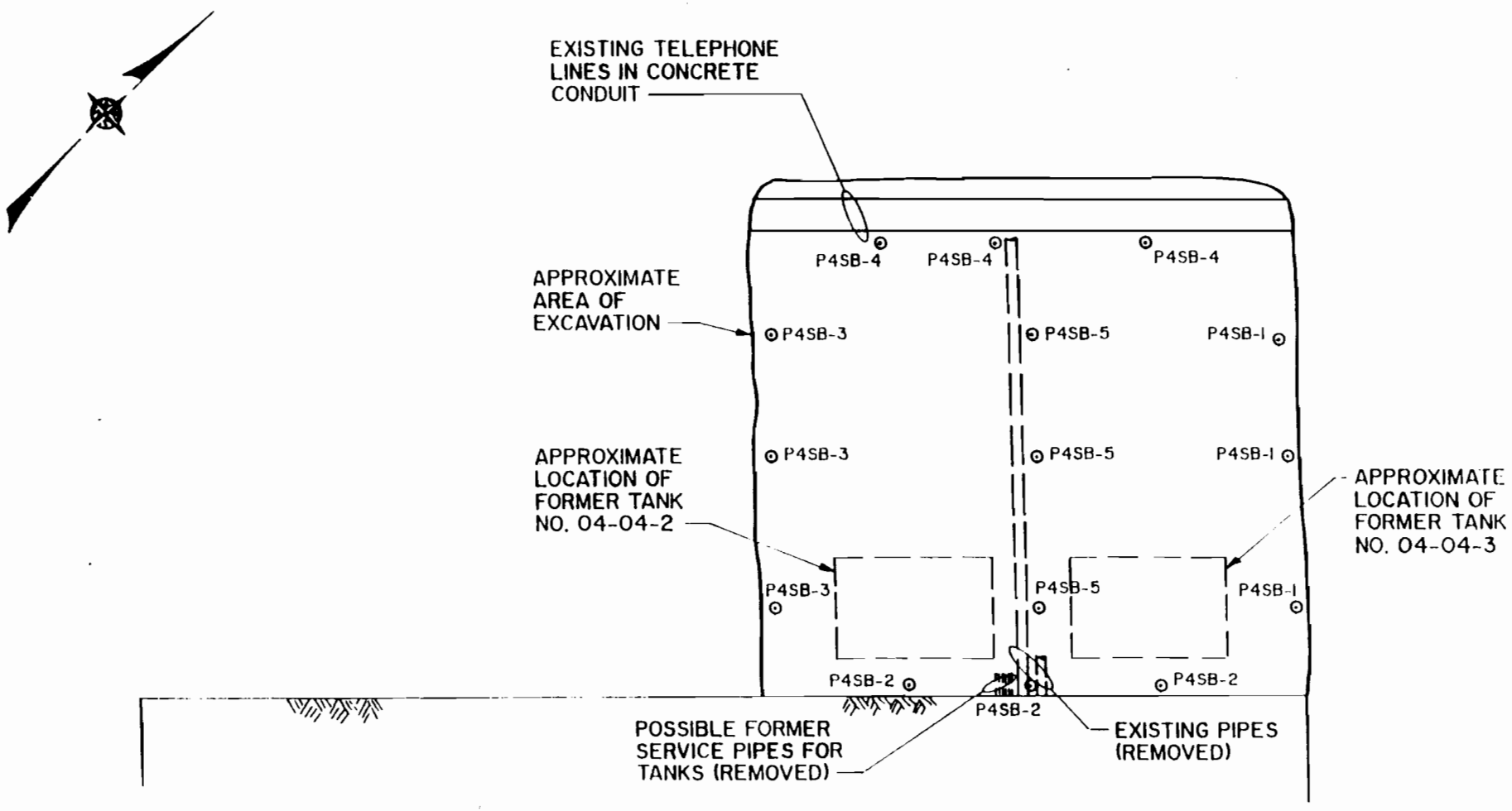
Prior to backfilling the excavation, endpoint sample locations were selected by NYSDEC and soil samples were collected by D&B personnel (see Figure 3-2). Four samples (P4SB-1, P4SB-2, P4SB-3, and P4SB-4) were collected as separate composites from the north, south, east and west sidewalls of the excavation at a depth of approximately 9 feet below grade. One additional sample, P4SB-5, was collected as a composite sample from the bottom of the excavation pit at approximately 13 feet below grade. The bottom of the USTs were approximately 5 feet below grade. The soil samples were collected from the center of the bucket of the backhoe, and all samples were collected no less than 6 inches below the exposed surface of soil being sampled. Samples were transferred into laboratory supplied jars utilizing disposable sterile polyethylene scoops. Upon completion of endpoint soil sampling, the excavation was backfilled and compacted with clean sand.

Analytical results are compared to NYSDEC recommended soil cleanup objectives, as referenced in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) No. 4046, and TCLP alternative guidance values (Ca) and human health guidance values (Ch), as referenced in the NYSDEC STARS Memo No. 1. Soil samples were analyzed for select volatile organic compounds (VOCs) utilizing EPA Method 8021. Table 3-3 presents the analytical sampling results for VOCs. As indicated in Table 3-3, volatile organic compounds were not detected above the method detection limits in soil samples P4SB-1, P4SB-4 and P4SB-5. Methyl t-butylether was detected in soil samples P4SB-2 and P4SB-3 at concentrations below the referenced cleanup objectives and guidance values.

As a result, further investigatory and/or remedial activities were not warranted.

Soil Boring Program

As part of the demolition of Plant 4, GAC directed the undertaking of a soil boring program adjacent to the underground piping associated with the fire pump house in support of the decommissioning/removal of this piping system and associated valves, hydrants and vaults. The soil boring program was undertaken by Geraghty & Miller, Inc. in August of 1994. A total of 28



FORMER FIRE PUMP HOUSE FOUNDATION

LEGEND

⊙ P4SB-1 APPROXIMATE END POINT SAMPLE LOCATION AND NUMBER

NOTES:

P4SB-1 THROUGH P4SB-4 ARE COMPOSITE SAMPLES OF THE FOUR SIDE WALLS

P4SB-5 IS A COMPOSITE SAMPLE OF THE BOTTOM OF THE PIT

FIGURE NOT TO SCALE

GRUMMAN AEROSPACE CORPORATION
PLANT 04

END POINT SAMPLE LOCATION MAP

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 3 - 2

TABLE 3-3
GRUMMAN AEROSPACE CORPORATION
TANK Nos 04-04-2 AND 04-04-3
TANK EXCAVATION END POINT SAMPLING

SAMPLE ID	P4SB-1	P4SB-2	P4SB-3	P4SB-4	P4SB-5	STARS TCLP ALTERNATIVE GUIDANCE VALUE	STARS HUMAN HEALTH GUIDANCE VALUE	NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVE
SAMPLE DEPTH	9FT	9 FT	9 FT	9 FT	15 FT			
DATE SAMPLED	1/25/95	1/25/95	1/25/95	1/25/95	1/25/95			
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
COMPOUNDS								
Benzene	U	U	U	U	U	14	24000	60
Ethylbenzene	U	U	U	U	U	100	8000000	5500
Toluene	U	U	U	U	U	100	20000000	1500
O - Xylene	U	U	U	U	U	100	200000000	-------
M+ P Xylene	U	U	U	U	U	100	200000000	-------
Xylene	U	U	U	U	U	100	200000000	1200
Isopropylbenzene	U	U	U	U	U	100	------	------
n - Propylbenzene	U	U	U	U	U	100	------	------
p - Isopropyltoluene	U	U	U	U	U	100	------	------
1,2,4 - Trimethylbenzene	U	U	U	U	U	100	------	------
1,3,5 - Trimethylbenzene	U	U	U	U	U	100	------	------
n - Butylbenzene	U	U	U	U	U	100	------	------
sec - Butylbenzene	U	U	U	U	U	100	------	------
Naphthalene	U	U	U	U	U	200	300000	1300
Methyl t - Butylether	U	8	22	U	U	1000	-----	-----
Tert - Butylbenzene	U	U	U	U	U	-----	-----	-----

QUALIFIERS:
U : Analyzed for but not detected

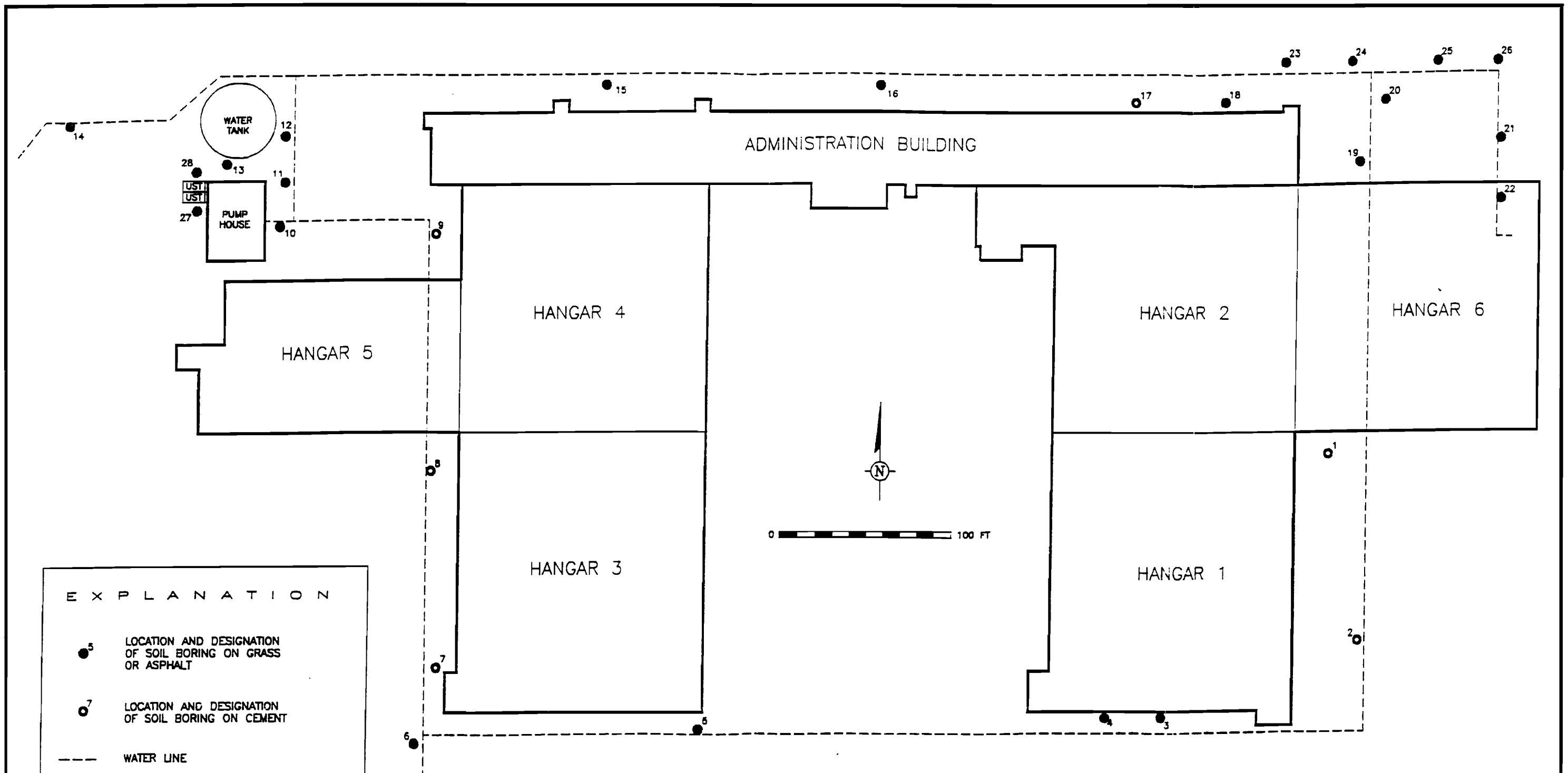
NOTES :
-----: Not Established
ug/kg : Parts per billion
TCLP : Toxicity Characteristic Leaching Procedure
STARS: Spill Technology And Remediation Series

borings were installed to depths of up to 8 feet below grade. Soil boring locations are presented on Figure 3-3. All collected soil samples were analyzed for total petroleum hydrocarbons (TPHCs). Those samples exhibiting elevated concentrations of TPHCs were analyzed for fuel-related constituents. A select number of samples were also analyzed for total VOCs, TCLP VOCs, total metals and TCLP metals. Analytical results are presented in Tables 3-4 through 3-8.

As indicated in Table 3-4, samples analyzed for volatile organics did not exhibit any concentrations above the method detection limits.

As indicated in Table 3-5, samples analyzed for Toxic Characteristic Leaching Procedure (TCLP) volatile organics did not exhibit any concentrations above the TCLP regulatory levels. However, benzene and methyl ethyl ketone (MEK) were detected at concentrations above the method detection limits. Benzene was detected at concentrations of 2 ug/l in sample P4-B26 (0 to 4 feet) and 3 ug/l in sample P4-B28 (0 to 4 feet), well below the TCLP regulatory level of 500 ug/l. As a result, the detected concentrations of benzene was not considered a potential environmental concern that warranted additional investigation. MEK was detected at a concentration of 29 ug/l in sample P4-B28 (0 to 4 feet). Although the detected concentration of MEK was well below the TCLP regulatory level of 200,000 ug/l, confirmation sampling was conducted in March 1995. The confirmation sampling consisted of advancing a soil boring (P4-B28II) immediately adjacent to the location of sample P4-B28 and collecting soil samples from the 2 to 2.5-foot and 4 to 4.5-foot intervals for laboratory analysis of MEK utilizing the TCLP method. As indicated in Table 3-5, MEK was not detected at concentrations above the method detection limits in samples P4-B28II (2 to 2.5 feet) and P4-B28II (4 to 4.5 feet). As a result, additional investigation did not appear to be warranted.

As indicated in Table 3-6, other than chromium in sample P4-B11 (4 to 8 feet) and arsenic in samples P4-B14 (0 to 4 feet) and P4-B28 (0 to 4 feet), inorganic constituents were not detected at concentrations above the NYSDEC recommended soil cleanup objectives. Chromium was detected at a concentration of 14 mg/kg in sample P4-B11 (4 to 8 feet), above the NYSDEC recommended soil cleanup objective of 10 mg/kg (or site background). However, the detected



EXPLANATION

- ●5 LOCATION AND DESIGNATION OF SOIL BORING ON GRASS OR ASPHALT
- o7 LOCATION AND DESIGNATION OF SOIL BORING ON CEMENT
- ——— WATER LINE
- UST UNDERGROUND STORAGE TANK

SOURCE: GERAGHTY & MILLER

GRUMMAN AEROSPACE CORPORATION
BETHPAGE FACILITY
PLANT 4

SOIL BORINGS IN THE VICINITY OF PLANT 4

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Consulting Engineers
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FIGURE 3–3

TABLE 3-4
GRUMMAN AEROSPACE CORPORATION
PLANT 4
SOIL SAMPLING
VOLATILE ORGANICS

SAMPLE ID	P4-B1	P4-B4	P4-B7	P4-B11	P4-B14	P4-B20	NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVE (ug/kg)
SAMPLE DEPTH	0-4 FT	4-8 FT	0-4 FT	4-8 FT	0-4 FT	0-4 FT	
DATE COLLECTED	08/04/94	08/04/94	08/04/94	08/04/94	08/04/94	08/05/94	
DILUTION FACTOR	1	1	1	1	1	1	
VOLATILE ORGANICS (ug/kg)							
Chloromethane	U	U	U	U	U	U	---
Vinyl chloride	U	U	U	U	U	U	200
Dichlorodifluoromethane	NA	NA	NA	NA	NA	U	---
Bromomethane	U	U	U	U	U	U	---
Chloroethane	U	U	U	U	U	U	1900
Trichlorofluoromethane	U	U	U	U	U	U	---
1,1-Dichloroethene	U	U	U	U	U	U	400
Methylene chloride	U	U	U	U	U	U	100
1,2-Dichloroethene (total)	U	U	U	U	U	U	200
1,1-Dichloroethane	U	U	U	U	U	U	2700
Chloroform	U	U	U	U	U	U	300
1,1,1-Trichloroethane	U	U	U	U	U	U	800
Carbon tetrachloride	U	U	U	U	U	U	600
Benzene	U	U	U	U	U	U	60
1,2-Dichloroethane	U	U	U	U	U	U	100
Trichloroethene	U	U	U	U	U	U	700
1,2-Dichloropropane	U	U	U	U	U	U	---
Bromodichloromethane	U	U	U	U	U	U	---
2-Chloroethylvinylether	U	U	U	U	U	U	---
trans-1,3-Dichloropropene	U	U	U	U	U	U	---
Toluene	U	U	U	U	U	U	1500
cis-1,3-Dichloropropene	U	U	U	U	U	U	---
1,1,2-Trichloroethane	U	U	U	U	U	U	---
Tetrachloroethene	U	U	U	U	U	U	1400
Chlorodibromomethane	U	U	U	U	U	U	---
Chlorobenzene	U	U	U	U	U	U	1700
Ethylbenzene	U	U	U	U	U	U	5500
Xylene (total)	U	U	U	U	U	U	1200
Bromoform	U	U	U	U	U	U	---
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	1000
2-Hexanone	U	U	U	U	U	U	---
1,2-Dichlorobenzene	U	U	U	U	U	U	---
1,4-Dichlorobenzene	U	U	U	U	U	U	---
1,3-Dichlorobenzene	U	U	U	U	U	U	---
TOTAL VOCs	0	0	0	0	0	0	10000

QUALIFIERS:
U: Analyzed for but not detected
J: Compound found at a concentration below the detection limit, result estimated
NA: Not analyzed

NOTES
---: Not established
: Value exceeds recommended cleanup objective

TABLE 3-4 (continued)
GRUMMAN AEROSPACE CORPORATION
PLANT 4
SOIL SAMPLING
VOLATILE ORGANICS

SAMPLE ID	P4-B22	P4-B23	P4-B26	P4-B28	FB	FB	NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVE (ug/kg)
SAMPLE DEPTH	4-8 FT	0-4 FT	0-4 FT	0-4 FT	NA	NA	
DATE COLLECTED	08/05/94	08/05/94	08/05/94	08/05/94	08/04/94	08/05/94	
DILUTION FACTOR	1	1	1	1	1	1	
VOLATILE ORGANICS (ug/kg)							
Chloromethane	U	U	U	U	U	U	----
Vinyl chloride	U	U	U	U	U	U	200
Dichlorodifluoromethane	NA	U	U	U	NA	U	----
Bromomethane	U	U	U	U	U	U	----
Chloroethane	U	U	U	U	U	U	1900
Trichlorofluoromethane	U	U	U	U	U	U	----
1,1-Dichloroethene	U	U	U	U	U	U	400
Methylene chloride	U	U	U	U	U	U	100
1,2-Dichloroethene (total)	U	U	U	U	U	U	200
1,1-Dichloroethane	U	U	U	U	U	U	2700
Chloroform	U	U	U	U	U	U	300
1,1,1-Trichloroethane	U	U	U	U	U	U	800
Carbon tetrachloride	U	U	U	U	U	U	600
Benzene	U	U	U	U	U	U	60
1,2-Dichloroethane	U	U	U	U	U	U	100
Trichloroethene	U	U	U	U	U	U	700
1,2-Dichloropropane	U	U	U	U	U	U	----
Bromodichloromethane	U	U	U	U	U	U	----
2-Chloroethylvinylether	U	U	U	U	U	U	----
trans-1,3-Dichloropropene	U	U	U	U	U	U	----
Toluene	U	U	U	U	U	U	1500
cis-1,3-Dichloropropene	U	U	U	U	U	U	----
1,1,2-Trichloroethane	U	U	U	U	U	U	----
Tetrachloroethene	U	U	U	U	U	U	1400
Chlorodibromomethane	U	U	U	U	U	U	----
Chlorobenzene	U	U	U	U	U	U	1700
Ethylbenzene	U	U	U	U	U	U	5500
Xylene (total)	U	U	U	U	U	U	1200
Bromoform	U	U	U	U	U	U	----
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	1000
2-Hexanone	U	U	U	U	U	U	----
1,2-Dichlorobenzene	U	U	U	U	U	U	----
1,4-Dichlorobenzene	U	U	U	U	U	U	----
1,3-Dichlorobenzene	U	U	U	U	U	U	----
TOTAL VOCs	0	0	0	0	0	0	10000

QUALIFIERS:
U: Analyzed for but not detected
J: Compound found at a concentration below the detection limit, result estimated
NA: Not analyzed

NOTES
—: Not established
: Value exceeds recommended cleanup objective

TABLE 3-5
GRUMMAN AEROSPACE CORPORATION
PLANT 4
SOIL SAMPLING
TOXICITY CHARACTERISTIC LEACHING PROCEDURE
VOLATILE ORGANICS

SAMPLE ID	P4-B1	P4-B26	P4-B28	P4-B28 II	P4-B28 II	FB	TCLP
SAMPLE DEPTH	0-4 FT	0-4 FT	0-4 FT	2-2.5 FT	4-4.5 FT	N/A	REGULATORY
DATE COLLECTED	08/04/94	08/05/94	08/05/94	03/01/95	03/01/95	03/01/95	LEVEL
DILUTION FACTOR	1	1	1	1	1	1	(ug/l)
VOLATILE ORGANICS (ug/l)							
Carbon Tetrachloride	U	U	U	NA	NA	NA	500
Chlorobenzene	U	U	U	NA	NA	NA	100,000
Chloroform	U	U	U	NA	NA	NA	6,000
1,4-Dichlorobenzene	U	U	U	NA	NA	NA	7,500
1,2-Dichloroethane	U	U	U	NA	NA	NA	500
1,1-Dichloroethene	U	U	U	NA	NA	NA	700
Methyl ethyl ketone	U	U	29	U	U	U	200,000
Tetrachloroethene	U	U	U	NA	NA	NA	700
Trichloroethene	U	U	U	NA	NA	NA	500
Vinyl Chloride	U	U	U	NA	NA	NA	200
Benzene	U	2	3	NA	NA	NA	500

QUALIFIERS:
U: Analyzed for but not detected
J: Compound found at a concentration below the detection limit, result estimated

NOTES
---: Not established
: Value exceeds recommended cleanup objective

TABLE 3-6
GRUMMAN AEROSPACE CORPORATION
PLANT 4
SOIL SAMPLING
INORGANIC CONSTITUENTS

SAMPLE ID	P4-B1	P4-B4	P4-B7	P4-B11	P4-B14	P4-B14 II	P4-B14 II	NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES	EASTERN USA BACKGROUND
SAMPLE DEPTH	0-4 FT	4-8 FT	0-4 FT	4-8 FT	0-4 FT	2.5-3 FT	4-4.5 FT		
DATE COLLECTED	08/04/94	08/04/94	08/04/94	08/04/94	08/04/94	03/01/95	03/01/95		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PARAMETER									
Arsenic	0.51	0.85	2.1	0.44	16	4.7	1.0	7.5 or SB	3-12
Barium	7.6	15	15	4.8	32	NA	NA	300 or SB	0-1.75
Cadmium	U	U	U	0.010	0.23	NA	NA	1.0 or SB	0.1-1
Chromium	0.02	3.6	3.0	14	7.2	NA	NA	10 or SB	1.5-40
Lead	1.5	2.4	3.9	1.1	130	NA	NA	SB	200-500*
Mercury	0.022	0.013	0.017	0.0054	0.038	NA	NA	0.1	0.001-0.2
Selenium	U	0.075	U	U	0.10	NA	NA	2 or SB	0.1-3.9
Silver	0.14	0.08	0.09	U	0.09	NA	NA	SB	NA

QUALIFIERS:
U: Analyzed for but not detected
B: Value less than contract required detection limits but greater than instrument detection limits.

NOTES
*Average background level in metropolitan or suburban areas or near highways
: Result exceeds recommended cleanup objective
SB: Site background
NA: Not Available

TABLE 3-6 (continued)
GRUMMAN AEROSPACE CORPORATION
PLANT 4
SOIL SAMPLING
INORGANIC CONSTITUENTS

SAMPLE ID	P4-B20	P4-B22	P4-B23	P4-B26	P4-B28	FB	FB	NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES	EASTERN USA BACKGROUND
SAMPLE DEPTH	0-4 FT	4-8 FT	0-4 FT	0-4 FT	0-4 FT	N/A	N/A		
DATE COLLECTED	08/05/94	08/05/94	08/05/94	08/05/94	08/04/94	08/04/94	08/05/94		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
PARAMETER									
Arsenic	1.3	0.13	0.57	0.94	8.7	U	U	7.5 or SB	3-12
Barium	4.7	5.3	3.2	5.2	12	U	U	300 or SB	0-1.75
Cadmium	U	U	U	U	0.020	U	U	1.0 or SB	0.1-1
Chromium	1.7	7.8	1.6	4.1	4.0	U	U	10 or SB	1.5-40
Lead	1.0	0.93	2.0	2.3	4.3	U	U	SB	200-500*
Mercury	0.055	0.0066	0.005	0.0092	0.036	U	U	0.1	0.001-0.2
Selenium	U	0.05	U	U	0.40	U	U	2 or SB	0.1-3.9
Silver	U	U	U	0.14	U	U	U	SB	NA

QUALIFIERS:
U: Analyzed for but not detected
B: Value less than contract required detection limits but greater than instrument detection limits.

NOTES
*Average background level in metropolitan or suburban areas or near highways
: Result exceeds recommended cleanup objective
SB: Site background
NA: Not Available

TABLE 3-7
GRUMMAN AEROSPACE CORPORATION
PLANT 4
SOIL SAMPLING
TOXICITY CHARACTERISTIC LEACHING PROCEDURE
METALS

SAMPLE ID	P4-B1	P4-B26	P4-B28	TCLP
SAMPLE DEPTH	0-4 FT	0-4 FT	0-4 FT	REGULATORY
DATE COLLECTED	08/04/94	08/05/94	08/05/94	LEVEL
UNITS	(ug/l)	(ug/l)	(ug/l)	(ug/l)
PARAMETER				
Arsenic	U	U	U	5,000
Barium	0.22	U	0.32	100,000
Cadmium	U	U	U	1,000
Chromium	U	U	U	5,000
Lead	U	0.063	U	5,000
Mercury	U	U	U	200
Selenium	U	U	U	1,000
Silver	U	U	U	5,000

QUALIFIERS:
U: Analyzed for but not detected
B: Value less than contract required detection limits but greater than instrument detection limits.

NOTES
SB: Site background
NA: Not Available

TABLE 3-8
GRUMMAN AEROSPACE CORPORATION
PLANT 4
SOIL SAMPLING
TOTAL PETROLEUM HYDROCARBONS AND FUEL RELATED CONSTITUENTS

SAMPLE ID	P4-B1	P4-B2	P4-B3	P4-B4	P4-B5	P4-B6
SAMPLE DEPTH	0-4 FT	4-8 FT	0-4 FT	4-8 FT	0-4 FT	0-4 FT
DATE COLLECTED	08/04/94	08/04/94	08/04/94	08/04/94	08/04/94	08/04/94
TOTAL PETROLEUM HYDROCARBONS (mg/kg)	U	U	U	U	U	3900
Gasoline (ug/kg)	NA	NA	NA	NA	NA	U
Lubricating Oil (ug/kg)	NA	NA	NA	NA	NA	U
Kerosene (ug/kg)	NA	NA	NA	NA	NA	U
Fuel Oil (ug/kg)	NA	NA	NA	NA	NA	170

SAMPLE ID	P4-B6 II	P4-B6 II	P4-B7	P4-B8	P4-B9	P4-B10
SAMPLE DEPTH	2-2.5 FT	4-4.5 FT	0-4 FT	4-8 FT	0-4 FT	0-4 FT
DATE COLLECTED	03/01/95	03/01/95	08/04/94	08/04/94	08/04/94	08/04/94
TOTAL PETROLEUM HYDROCARBONS (mg/kg)	13	34	U	U	U	U
Gasoline (ug/kg)	NA	NA	NA	NA	NA	NA
Lubricating Oil (ug/kg)	NA	NA	NA	NA	NA	NA
Kerosene (ug/kg)	NA	NA	NA	NA	NA	NA
Fuel Oil (ug/kg)	NA	NA	NA	NA	NA	NA

SAMPLE ID	P4-B11	P4-B13	P4-B14	P4-B14 II	P4-B14 II	P4-B15
SAMPLE DEPTH	4-8 FT	0-4 FT	0-4 FT	2.5-3 FT	4-4.5 FT	4-8 FT
DATE COLLECTED	08/04/94	08/04/94	08/04/94	03/01/95	03/01/95	08/05/94
TOTAL PETROLEUM HYDROCARBONS (mg/kg)	U	U	260	U	63	U
Gasoline (ug/kg)	NA	NA	U	NA	U	NA
Lubricating Oil (ug/kg)	NA	NA	U	NA	U	NA
Kerosene (ug/kg)	NA	NA	U	NA	U	NA
Fuel Oil (ug/kg)	NA	NA	U	NA	U	NA

QUALIFIERS:
U: Analyzed for but not detected
NA: Not analyzed
*: Results for FB are in mg/l

TABLE 3-8 (continued)
GRUMMAN AEROSPACE CORPORATION
PLANT 4
SOIL SAMPLING
TOTAL PETROLEUM HYDROCARBONS AND FUEL RELATED CONSTITUENTS

SAMPLE ID	P4-B16	P4-B17	P4-B18	P4-B19	P4-B20	P4-B21
SAMPLE DEPTH	4-8 FT	4-8 FT	0-4 FT	0-4 FT	0-4 FT	0-4 FT
DATE COLLECTED	08/05/94	08/05/94	08/05/94	08/05/94	08/05/94	08/05/94
TOTAL PETROLEUM HYDROCARBONS (mg/kg)	U	U	U	U	U	U
Gasoline (ug/kg)	NA	NA	NA	NA	NA	NA
Lubricating Oil (ug/kg)	NA	NA	NA	NA	NA	NA
Kerosene (ug/kg)	NA	NA	NA	NA	NA	NA
Fuel Oil (ug/kg)	NA	NA	NA	NA	NA	NA

SAMPLE ID	P4-B22	P4-B23	P4-B24	P4-B25	P4-B26	P4-B27
SAMPLE DEPTH	4-8 FT	0-4 FT	4-8 FT	4-8 FT	0-4 FT	4-8 FT
DATE COLLECTED	08/05/94	08/05/94	08/05/94	08/05/94	08/05/94	08/05/94
TOTAL PETROLEUM HYDROCARBONS (mg/kg)	U	U	U	U	U	U
Gasoline (ug/kg)	NA	NA	NA	NA	NA	NA
Lubricating Oil (ug/kg)	NA	NA	NA	NA	NA	NA
Kerosene (ug/kg)	NA	NA	NA	NA	NA	NA
Fuel Oil (ug/kg)	NA	NA	NA	NA	NA	NA

SAMPLE ID	P4-B28	P4-B28 II	P4-B28 II	FB
SAMPLE DEPTH	0-4 FT	2-2.5 FT	4-4.5 FT	N/A
DATE COLLECTED	08/05/94	03/01/95	03/01/95	03/01/95
TOTAL PETROLEUM HYDROCARBONS (mg/kg)	U	U	U	U
Gasoline (ug/kg)	NA	NA	NA	NA
Lubricating Oil (ug/kg)	NA	NA	NA	NA
Kerosene (ug/kg)	NA	NA	NA	NA
Fuel Oil (ug/kg)	NA	NA	NA	NA

QUALIFIERS:
U: Analyzed for but not detected
NA: Not analyzed
*: Results for FB are in mg/l

concentration of chromium was below the published typical "eastern USA background" level, as defined by the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) No. 4046. Similarly, arsenic was detected in sample P4-B28 (0 to 4 feet) at a concentration of 8.7 mg/kg, above the NYSDEC recommended soil cleanup objective of 7.5 mg/kg (or site background) but below the published typical "eastern USA background" level which ranges up to 12 mg/kg. As a result, the detected concentrations of chromium in sample P4-B11 (4 to 8 feet) and arsenic in sample P4-B28 (0 to 4 feet) did not appear to warrant additional investigation. Arsenic was detected at a concentration of 15 mg/kg in sample P4-B14 (0 to 4 feet), above the NYSDEC recommended soil cleanup objective of 7.5 mg/kg (or site background) and above the published typical "eastern USA background" level which ranges up to 12 mg/kg. As a result, confirmation sampling was conducted in March 1995. The confirmation sampling consisted of advancing a soil boring (P4-B14II) immediately adjacent to the location of sample P4-B14 and collecting soil samples from the 2.5 to 3-foot and 4 to 4.5-foot intervals for laboratory analysis of arsenic. As indicated in Table 3-6, arsenic was not detected above the NYSDEC recommended soil cleanup objective in samples P4-B14II (2.5 to 3 feet) and P4-B14II (4 to 4.5 feet). As a result, additional investigation did not appear to be warranted.

As indicated in Table 3-7, samples analyzed for TCLP metals did not exhibit any concentrations above the TCLP regulatory levels.

As indicated in Table 3-8, other than samples P4-B6 (0 to 4 feet) and P4-B14 (0 to 4 feet), total petroleum hydrocarbons (TPHCs) were not detected above the method detection limits in any of the analyzed samples. TPHCs were detected at concentrations of 3,900 mg/kg and 260 mg/kg in samples P4-B6 (0 to 4 feet) and P4-B14 (0 to 4 feet), respectively. These samples were subsequently analyzed for fuel-related constituents. "Fuel oil (weathered No. 6") was detected at a concentration of 170 ug/kg in sample P4-B6 (0 to 4 feet). Fuel-related constituents were not detected above the method detection limit in sample P4-B14 (0 to 4 feet). Confirmation sampling was conducted on both of these sample locations in March 1995. The confirmation sampling consisted of advancing soil borings (P4-B6II and P4-B14II) immediately adjacent to the location of samples P4-B6 and P4-B14 and collecting soil samples for laboratory analysis of TPHCs and,

if warranted, fuel-related constituents. As indicated in Table 3-8, TPHCs were detected at relatively low concentrations of 13 mg/kg and 34 mg/kg in samples P4-B6II (2 to 2.5 feet) and P4-B6II (4 to 4.5 feet), respectively. TPHCs were not detected above the method detection limit in sample P4-B14II (2.5 to 3 feet) and were detected at a relatively low concentration of 63 mg/kg in sample P4-B14II (4 to 4.5 feet). Based upon a review of May 11, 1995 correspondence from Geraghty and Miller to Grumman Aerospace Corporation, asphalt was noted to be present in these boreholes and may be attributable to the low concentrations of TPHCs. Samples exhibiting concentrations of TPHCs below 50 mg/kg were not analyzed for fuel related constituents. As indicated in Table 3-8, sample P4-B14II (4 to 4.5 feet), which exhibited TPHCs at a concentration of 63 mg/kg, did not exhibit any fuel-related constituents above the method detection limits. In conclusion, the second round of sampling did not confirm the elevated concentrations of TPHCs in samples P4-B6 and P4-B14, nor did the second round of sampling confirm the detected concentration of "fuel oil" in sample P4-B6. As a result, additional investigation did not appear to be warranted with regard to sample locations P4-B6 and P4-B14.

Section 4

4.0 CONCLUSIONS

Based upon the September 9 and September 29, 1994 site inspections and a review of local agency and Grumman files, other than the release associated with Tank Nos. 04-04-02 and 04-04-03, it does not appear that on-site operations have resulted in any chemical and/or fuel spills on-site. As discussed in Section 3.2, this release was remediated under the direction of the New York State Department of Environmental Conservation. Although elevated concentrations of TPHCs and "fuel oil" were detected in sample P4-B6, subsequent sampling in this area did not confirm the initial analytical results. In addition, an evaluation of groundwater sampling results revealed that volatile organics and priority pollutant metals were not detected above the referenced NYSDOH drinking water standards in downgradient monitoring wells.

As a result, based upon the above referenced findings, we believe that the information presented in this document is sufficient to support the delisting of the site under New York State regulations and, as such, an appropriate modification to the boundaries of Site 1-30-003A is warranted.

Section 5

5.0 REFERENCES

Dvirka and Bartilucci Consulting Engineers; "Application for an RCRA Part B Permit, Grumman Aerospace Corporation - Vol. 1"; August 1982.

Dvirka and Bartilucci Consulting Engineers; "Sterling Center - Draft Generic Environmental Impact Statement - Volume 1A"; June 1990.

Dvirka and Bartilucci Consulting Engineers; "Underground Storage Tank Site Assessment, Tank Nos. 04-04-2 and 04-04-3, Bethpage, New York"; May 1995.

EBASCO, Final Work Plan RI/FS Hooker Chemical/Ruco Polymer Superfund Site, EPA Contract 68-01-7250, Work Assignment No. 186-2443, September 1988.

Geraghty & Miller; Analytical Sampling Data, August 1994 and March 1995.

Geraghty & Miller; "Remedial Investigation Report, Grumman Aerospace Corporation, Bethpage, New York - Volume 1"; May 1994.

Legette, Brashear & Graham, Final Field Operations Plan, August 1989.

Legette, Brashear & Graham, Focused Feasibility Study for Remediation of Soils Containing Arochlor 1248 for Occidental Chemical Corp., June 1990.

LKB Aerial Photographs: April 11, 1950; January 20, 1955; January 24, 1957; March 23, 1962; April 11, 1969; April 18, 1972; March 8, 1988.

United States Department of Agriculture, Soil Conservation Service, Soil Survey of Nassau County, New York, February 1987.

USEPA, Declaration for Record of Decision, Hooker Chemical/Ruco Polymer Site, Hicksville, Nassau County, New York, September 1990.

USEPA - Region 2, Proposed Plan Superfund Update Hooker Chemical/Ruco Polymer Site, Hicksville, New York, July 1990.

USEPA - Region II, Record of Decision (Operable Unit 1), Hooker Chemical/Ruco Polymer Site, Town of Oyster Bay, Nassau County, New York, January 1994.

Appendix A

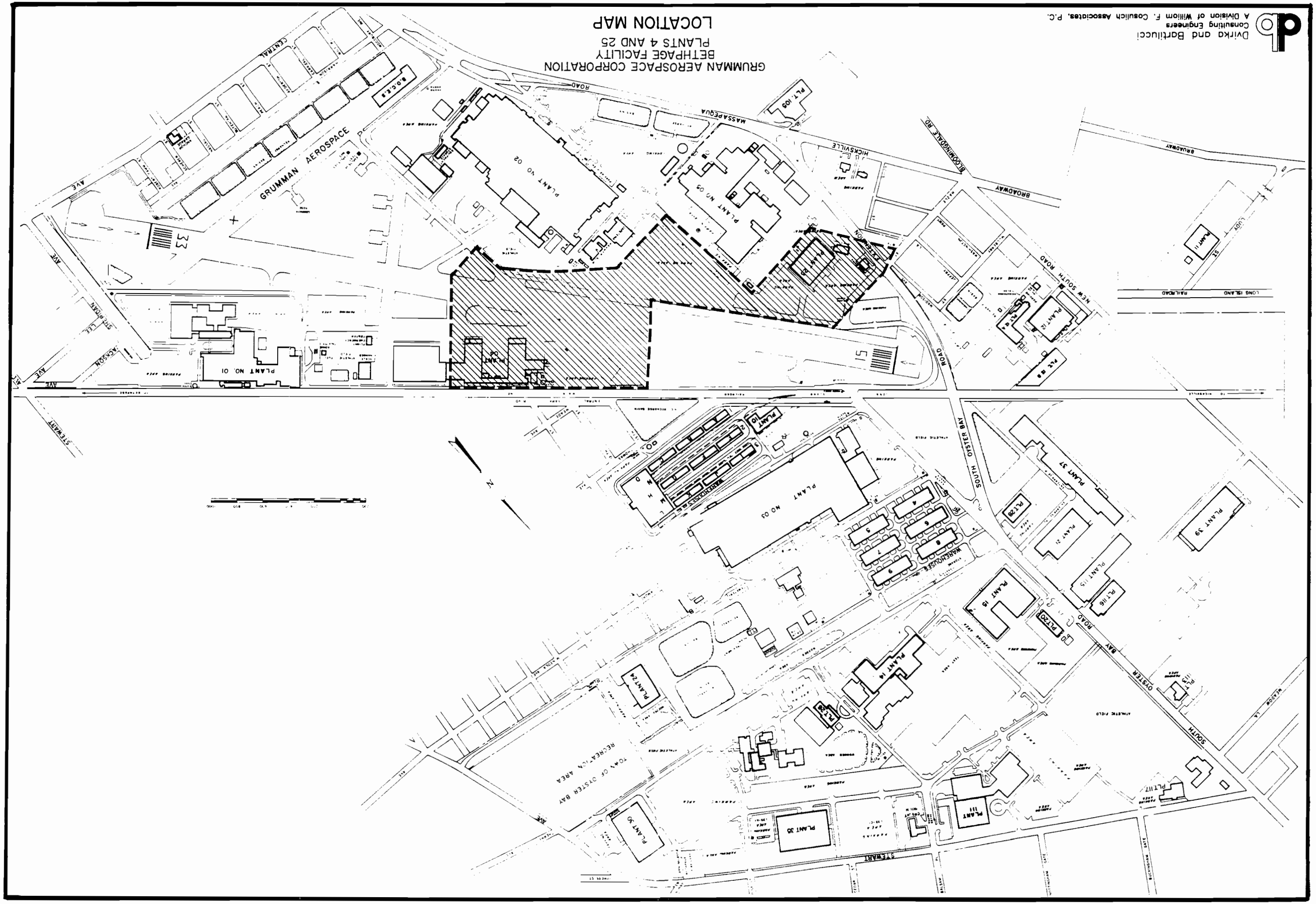
APPENDIX A

LOCATION MAP

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

LOCATION MAP

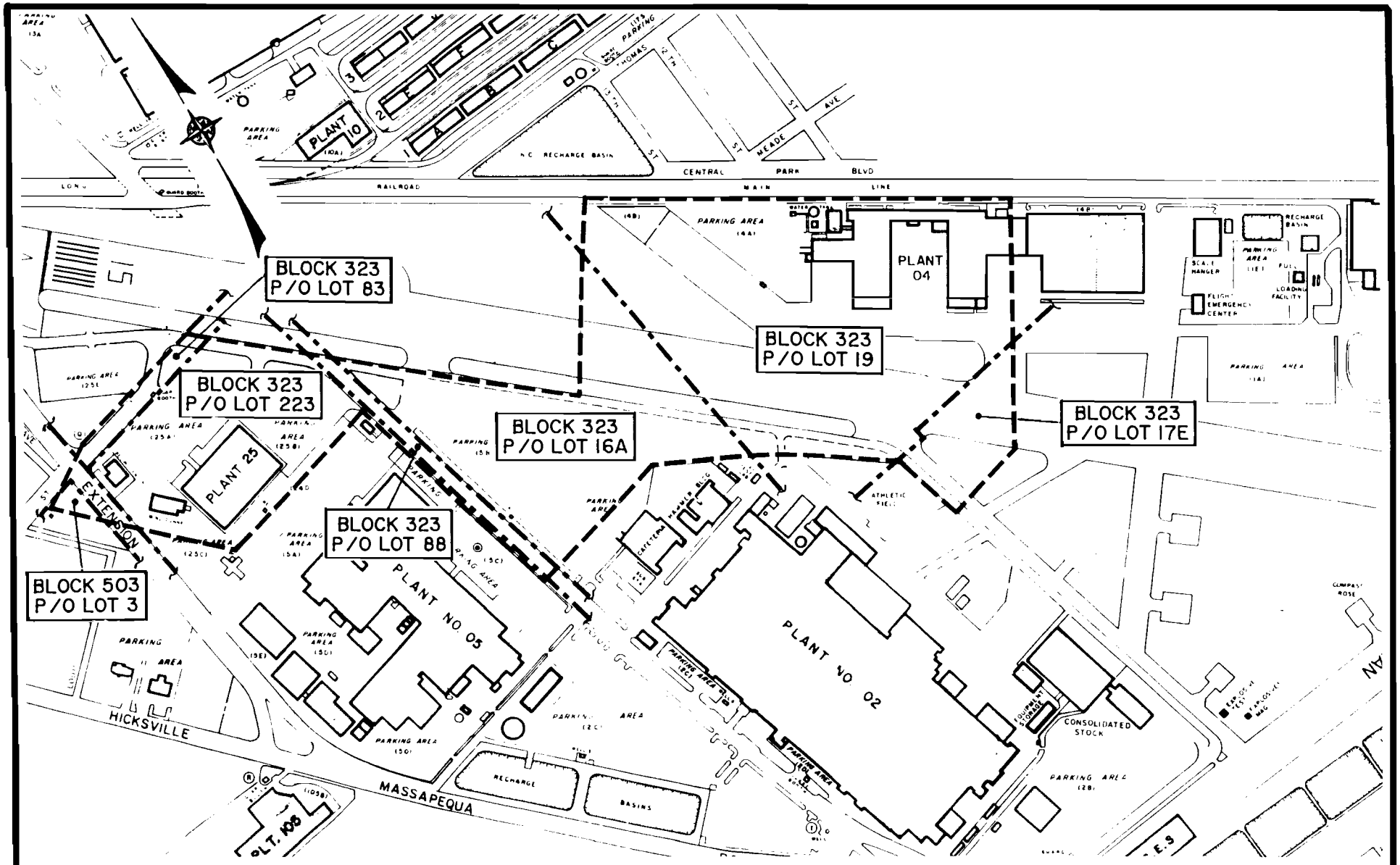
GRUMMAN AEROSPACE CORPORATION
BETHPAGE FACILITY
PLANTS 4 AND 25



Appendix B

APPENDIX B

SITE PLAN



SOURCE: GAC GENERAL PLAN

APPROXIMATE SCALE: 1" = 500'

GRUMMAN AEROSPACE CORPORATION
BETHPAGE FACILITY
PLANT 4 AND 25

SITE PLAN

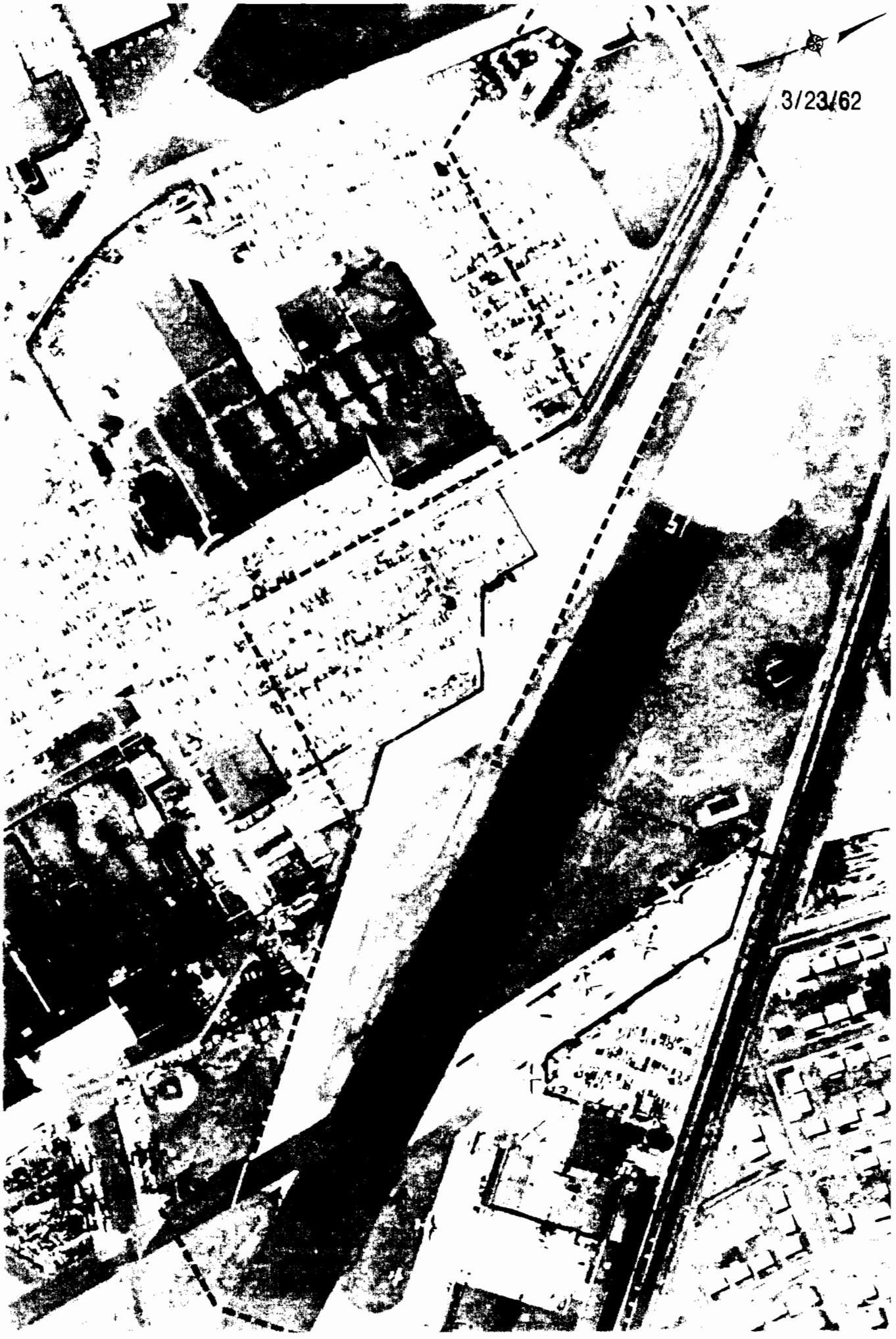
Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

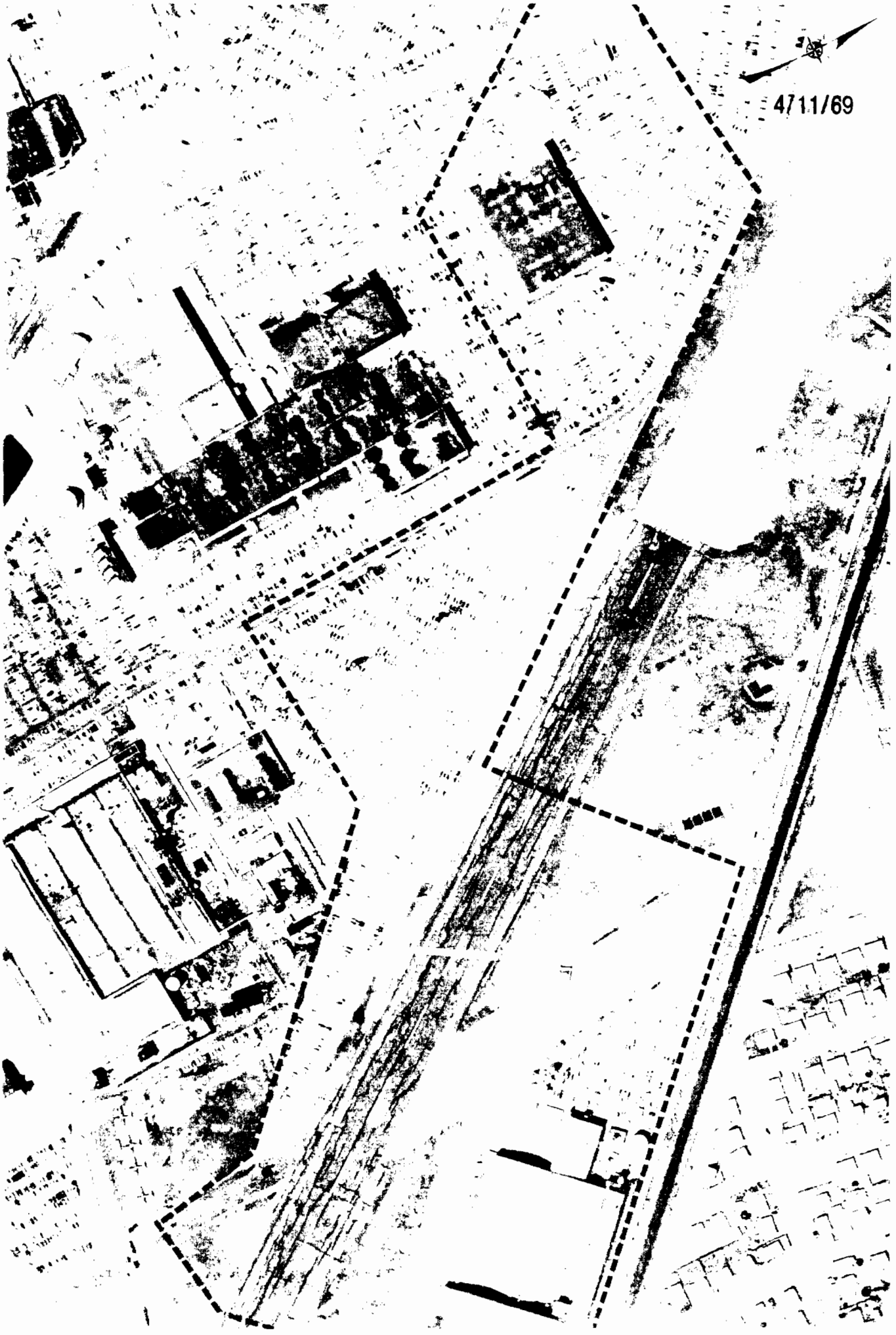
Appendix C

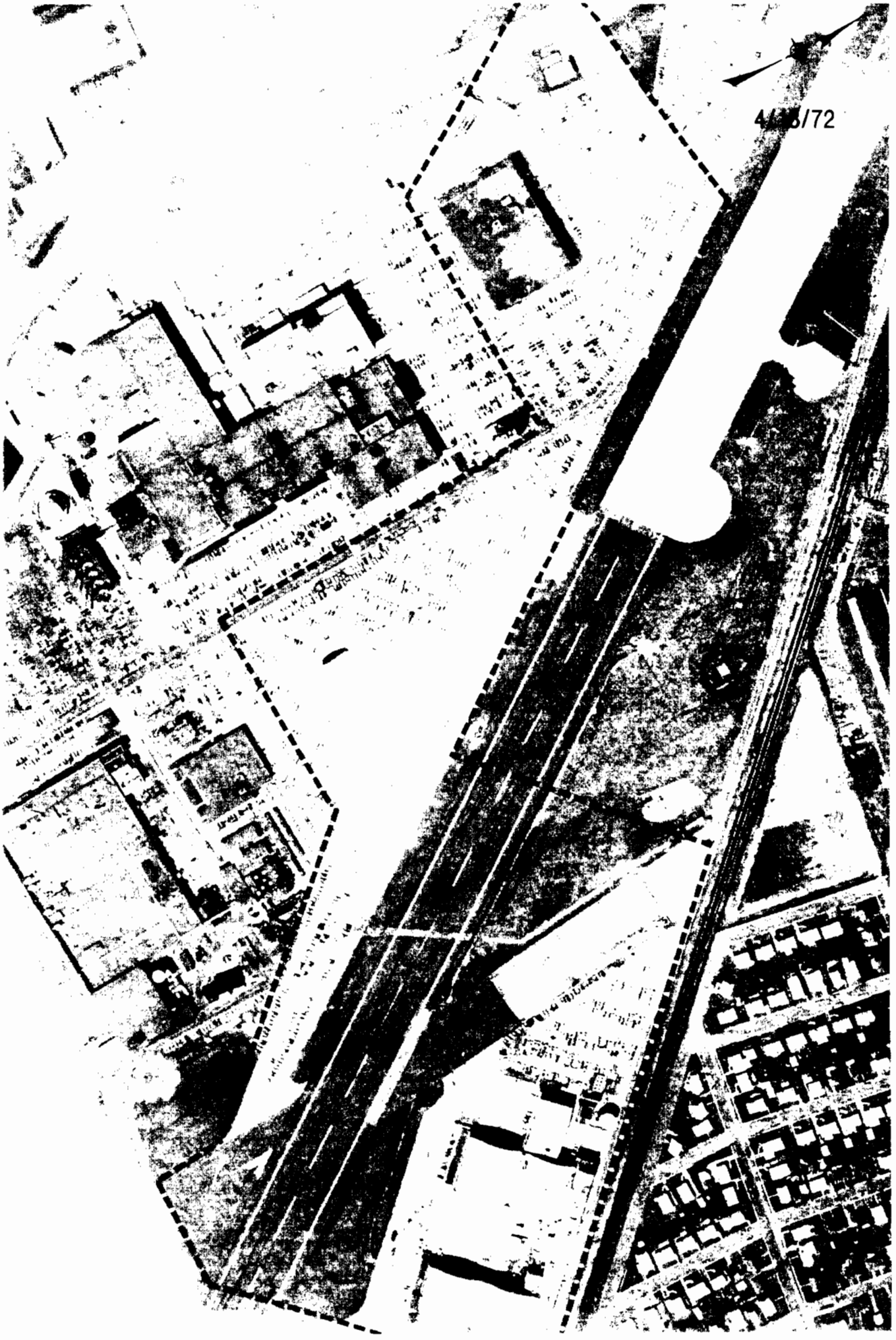
APPENDIX C

AERIAL PHOTOGRAPHS (1950-1988)

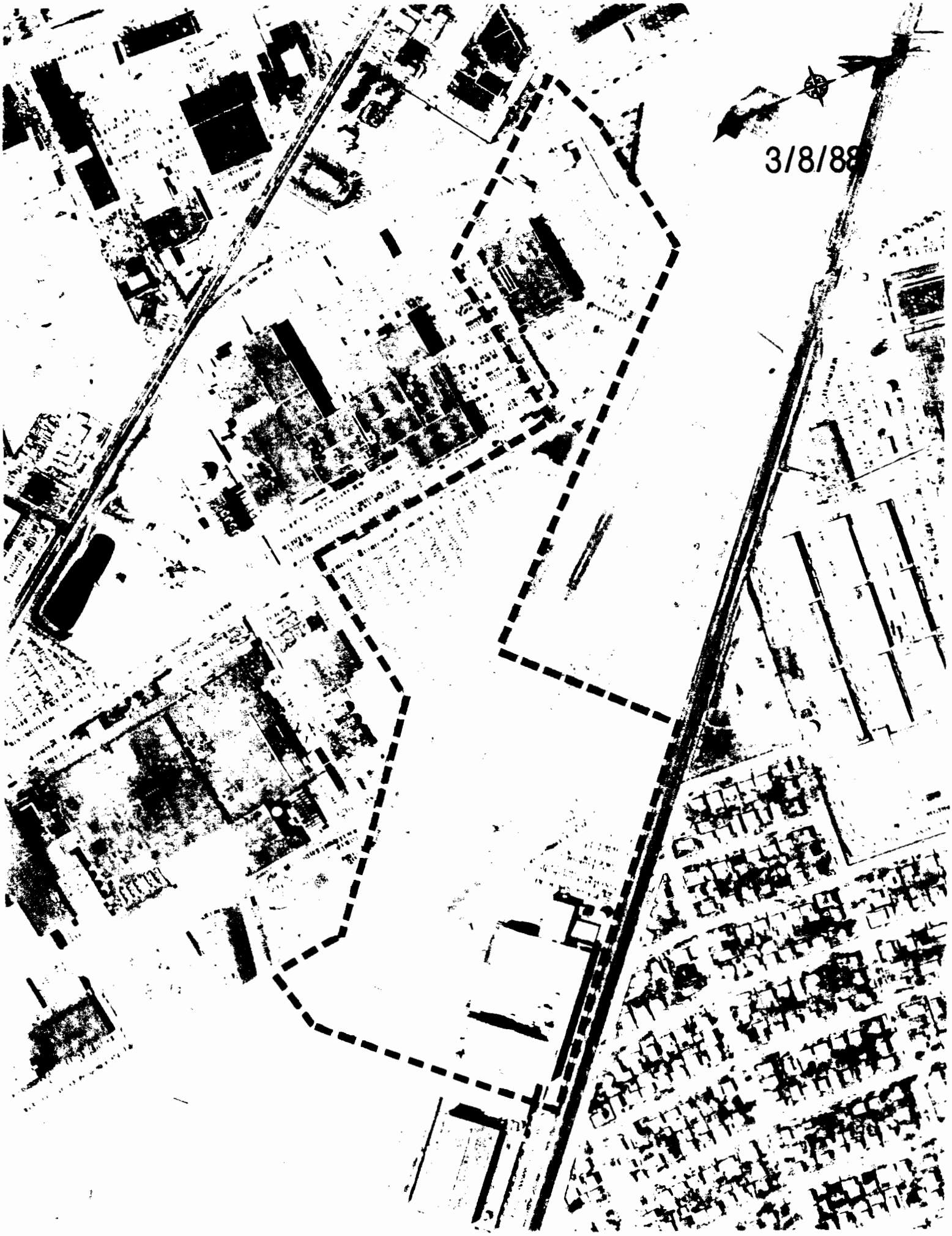

1/24/57


3/23/62


4/11/69


4/13/72

3/24/76


3/8/88

Appendix D

APPENDIX D

SUPPLEMENTAL INFORMATION

GRUMMAN

BETHPAGE NEW YORK 11714

FDP 714
November 29, 1978

N.Y. State Dept. of
Environmental Conservation
50 Wolf Road
Albany, New York

Attention: Salvatore Pagano
Director, Bureau of Industrial Programs

Subject: Special Report - Modified State Pollution Elimination
Discharge Permit N.Y. 0096792

Enclosures: 1) Report of Sources Discharging Specific Organic Chemicals
2) Plant Layout Drawings ML 2-1 and ML 3-1

Dear Sal:

Enclosed is the special report identifying specific sources discharging organic chemicals as required by our subject permit modification.

Should you need further information, please contact the writer at 516-575-2385.

Very truly yours,

GRUMMAN AEROSPACE CORPORATION

J. Ohlmann

John Ohlmann
Assistant Director
Environmental Control
Facilities Engineering Dept.
Mail Station BO 8-30

JO:jt

cc: Marvin B. Fleisher
Chief, Industrial Wastewater Section
Bureau of Wastewater Management
Nassau County Department of Health
240 Old Country Road
Mineola, New York 11501

Gerry Robin, P.E.
Regional/O & M Engineer
N.Y. State Dept. of Environmental Conservation
Region I Headquarters
Building 40 SUNY, Stony Brook, N.Y. 11790

Department 038/039	Fuselage Assy./Center Section	FF-34
Department 087	Honeycomb Prefit	EE-30
Department 025	Final Assy.	LL-21
Department 161	Stockroom	HH-22

G. Tetrachloroethylene (Perchloroethylene)

Used only one place in Grumman - Department 014, Chem Mill HH-44

III. Use of 7 Organic Chemicals in Plants 1, 4, 5, 10 and 12

These plants are not major users of the 7 organic chemicals.

A. Toluene

Plant 1	Department 011	Paint Shop
	Department 999, 998	Parts Cribs
Plant 4	Department 998, 999	Parts Cribs
Plant 5	Department 999, 998	Parts Cribs
Plant 10	Department 850	Inspection
Plant 12	Department 441	Welding Engg.
	Department 442	Chem. Engineering
	Department 306	Maintenance

B. Xylene

Plant 1	Department 998	Parts Crib
	Department 011	Paint
Plant 4	Department 011	Paint
Plant 5	Department 998	Parts Crib
Plant 10	Department 851	Inspection
Plant 12	Department 306	Maintenance

C. Methyl Ethyl Ketone

Plant 1	Department 998, 999, 161	Parts Crib & Stockroom
Plant 4	Department 998, 161	Parts Cribs
	Department 011	Paint
Plant 5	Department 998, 999	Parts Crib & Stockroom
	Department 2029	
Plant 12	Department 441	Welding Engineering
	Department 442	Chem. Engineering
Plant 10	Department 851	Inspection

D. Trichloroethylene

None used in Plants 1, 4, 5, 10 and 12. Used only in degreasers.

E. 1,1,1 Trichloroethane

Plant 1	Department 161, 998	Stockroom & Parts Crib
	Department 024	Steel Parts Assembly
Plant 4	Department 161	Tool Crib
	Department 998	Stockroom
Plant 5	Department 161	Stockroom
	Department 396	Aero Test
Plant 12	Department 306/305	Maintenance
	Department 801	Measurement Standards Lab

F. Trichlorotrifluoroethane

Plant 5	Department 161	Stockroom

(no plant distribution available)

(1)

OK FL

ENVIRONMENTAL HEALTH
Continuation Sheet
Nassau County Health Department

Owner or Agent :
Address:

Inspector

DATE | COMMENTS

TO: L. SAMA
FROM: J. Schechter
Subject: Inspection of Grumman Aerospace Corporation
Bethpage, N.Y. 11714
NY 0096792

3/7/79

ON 3/7/79 at 9:30 AM an inspection was conducted at the above site. Those attending included:
John Ohlmann, ASST. DIR. Environmental Control, GAC
Bob Wheeler, chem-engr, GAC
L. SAMA, NCDH
J. Schechter, NCDH

The following processes and practices were noted:

PLANT # 2 - [outfall 005 w/ composite sampler]

1. Spot welding cleaning operation for aluminum - No treatment of waste water rinse - discharges directly to 005 (caustic cleaner + acid deoxidizer)
2. Aluminum hardcoat + allodine process - Dichromate hardcoat followed by allodine operation Discharge to Treatment room or directly to 005
3. Paint spray - water curtain operation - discharges to TMT. Room
4. NON contact cooling water - vapor degreaser units + diffusion pumps

EH 109a 1/68

(8)

ENVIRONMENTAL HEALTH
Continuation Sheet
Nassau County Health Department

Owner or Agent :
Address:

Inspector

DATE

COMMENTS

PLANT 4

Maintenance hanger for repair of aircraft + service.
Waste oils + solvents stored outside b/dg. in drums

Oil STORAGE
>400000 gallons of oil - This facility is considered a major oil facility + is NYSDOT certified w/ SPCC plan - All storage is underground.

PLANT # 3
Several operations + Processes producing waste located AT This site:

1. Sanitary waste TO STP B
2. Discharges TO outfall 004 - composite sampler located ~~[illegible]~~ AT BASIN 20 which distributes load to Basins 21+22
   * Question: organic sampling AT 004 according TO permit NOTES Location of sample AT pipe leaving basin. Is composite sampler AT inflow or outflow of basin 20 ?
3. Heat Treat salt baths + water rinse
4. Chrome plating of steel + Vacuum plating of cadium onto steel

EH 109a 1/68

Field Investigation
Article XI Facility
Nassau County Department of Health

☐ Initial System Test ☒ Tank Removal
☐ Tank Only ☐ Installation
☐ System Retest ☐ Periodic Year:
☐ New Installation ☒ Abandonment

Date of Job 9.2.93 Time _____ Facility ID# 0001
Date Received 8.25.93 Time _____ Confirmation# 245 H93 R02
Contractor Tyree - Rosalie Spill# _____
Telephone # 249 - 3150

Establishment Name Grumman - Mail Stop (D 08-GHQ)
Address Plant #4 - Flight Emergency Center Bldg 84-03-1
Town Bethpage Telephone # _____
Cross Street: Stewart One
No. of Tanks 1 Type of Test _____

Tank #							
System Test							
Tank Test							
Size							
Product							
Leak Rate							
Pass/Fail							
Fee							
Fee Paid							
Retest Needed							

Tank (Removal)

Tank #	401						
Visible Hole	No						
# Holes	None						
Size	2,000						
Location	#2 tank						
Photo	No						

Excavation: ✓ Clean __ Contaminated Soil __ Free floating oil

Soil Removed (Y/N) N Amount _____

Installation: Tank size _____ Approved plans __ Yes __ No

Notes: Tank should be out by 10:30
NCDH attended. No holes in tank. No contamination detected in excavation. A Brussel

Inspector Alan Brussel Supervisor _____

Employee Number 114 Date 9.7.93

☐ Continued on Reverse Side
☑ Computer Entry
☑ Data Book Entry

1 - Piping 2 - Tank
3 - Fitting 4 - Other

EH907 6/91