Final
Phase I Environmental Baseline Survey

of
Naval Weapons Industrial Reserve Plant
Bethpage, New York

Northern Division
Naval Facilities Engineering Command
Contract Number N62472-90-D-1298
Contract Task Order 0283

Volume I -Text

January 1998

CF Braun
Engineering Corporation

COMMENT RESPONSE DOCUMENT
DRAFT PHASE I ENVIRONMENTAL BASELINE SURVEY
OF NWIRP BETHPAGE
JANUARY 1998

General Note on the revisions leading to the Final version of the Phase I EBS:
The Draft version of the document will be revised to incorporate responses to the following comments as well as to include additional relevant information received by C.F. Braun since completion of the Draft in October 1997. However, investigative and remedial activities performed by Grumman and reported in documents made available to C.F. Braun after October 1997 will not be reported in this Final Phase I EBS document. A separate Phase II EBS will be prepared later in 1998, after Grumman has finished its Phase II Environmental Site Assessments (ESAs), which updates the environmental status of the installation. This document will also report regulatory agency correspondence received by Grumman since October 1997.

A. COMMENTS FROM NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, Dated December 1, 1997

1. **Comment:** *On Page 3-29, under "Remedial Action Work", it is not correct that "No further PCB-related remedial work remains at either Sites 1 or 2". This section should be updated to reflect the results of the July 1996 Pre-Excavation Sampling Results Report, and discuss the Navy's approach to perform soil vapor extraction at Site 1 and then to address the PCB contamination.*

   Response: The subsection on Page 3-29 titled "Remedial Action Work" will be retitled "Recent Activity". The section will be revised to state that PCB-contaminated soils were excavated from the sludge drying beds at Site 2 in 1996 to below an action level of 10 parts per million (ppm), and that no further PCB-related remedial work remains at **Site 2**. The section will indicate that PCB contamination has also been discovered at Site 1 and will be addressed as part of the future remediation of that site.

2. **Comment:** *Similarly, on Page 10-17, the description of Category 5 areas should mention that additional action will be necessary to address PCB contamination in Site 1 soils.*

   Response: A sentence will be added to Line 6 of the second paragraph on Page 10-17 stating that a comprehensive cleanup effort will be undertaken to address contamination by VOCs, SVOCs, metals, and PCBs at Site 1.

B. COMMENTS FROM NASSAU COUNTY DEPARTMENT OF HEALTH, Dated November 24, 1997

1. **Comment:** *Page 3-19: A tank associated with painting operations at Plant 20 was located during Health Department Underground Injection Control inspections. This tank should be added to Table 3-3.*

   Response: Table 3-3 lists only underground storage tanks. The paint waste tank in question is a process tank, even though it is underground. Process tanks are discussed individually for each area of the installation containing them in Chapters 6, 7, and 8 of the document. The tank will thus be noted in Chapter 7, which addresses Plant 20, but it will not be listed in Table 3-3.

2. **Comment:** *Leaching pools associated with interior floor drains were found at Plant 28 during Health Department UIC inspections. Silver and lead were detected in bottom sediments. This information should be included in Table 5-2.*

   Response: This information will be added to Table 5-2 (under "Spills and Other Notes") for Plant 28. Section 5.3, the section of General Conclusions for the adjacent property review, already states that groundwater contamination under NWIRP Bethpage may be the cumulative result of operations of both onsite NWIRP facilities and operations of other facilities on current or former Grumman-owned land (which includes Plant 28). This statement will not be changed, except that the word "chromium" will be changed to "metals".

C. COMMENTS FROM US ENVIRONMENTAL PROTECTION AGENCY, Dated December 18, 1997

General Comments

1. **Comment:** *Each contract and deed entered into for the transfer of property by the United States must contain the appropriate notifications regarding hazardous substances, covenants regarding remedial action, and clauses for access to property as required by CERCLA 120(h)(3) and (4).*

   Response: This statement will be added to the bottom of Section 1.0, in a new paragraph inserted at the end of the first paragraph on Page 1-2.

2. **Comment:** *The identification as "uncontaminated" of any property that is not part of a facility on the NPL requires state concurrence under CERCLA 120(h)(4).*

   Response: This statement will be added to the new paragraph on Page 1-2, as well as at the end of the discussion for Category 1 in Section 1.4.

3. **Comment:** *Any ongoing remedies (e.g. see specific comments 1 and 2 below) that will not reach final cleanup standards before property transfer will require a demonstration to EPA that the remedies are operating properly and successfully as required by CERCLA 120(h)(3).*

   Response: This statement will be added to the new paragraph on Page 1-2, as well as at the end of the discussions for Categories 5 and 6 in Section 1.4.

4. **Comment:** *Any specific remedial action that is not taken before property transfer will require that a deferral of the requirement of CERCLA 120(a)(ii)(1) (that all remedial action necessary to protect human health and the environment) be approved by the Governor per CERCLA 120(h)(3)(C).*

   Response: This statement will be added to the new paragraph on Page 1-2, as well as at the end of the discussions for Categories 5 and 6 in Section 1.4.

Specific Comments

1. **Comment:** *Site 1 Soil Contamination: Table 9-1 (Page 9-5) provides an incomplete description of the contamination at the Former Drum Marshalling Area (Site 1) because it does not mention the PCB contamination remaining in the soil at this area. Please note that in the May of 1995, there had been an attempt to excavate all PCBs greater than 10 ppm, but not all the PCBs were removed during that effort because the contamination was more wide-spread and, in some instances, at depths greater than expected. In a related issue, as described in the February 12, 1997 letter from the Navy to NYSDEC, Navy is delaying remediation of the remaining PCBs until after the Air Sparging/ Soil Vapor Extraction (AS/SVE) is completed to remove very high levels of VOCs. Mr. George Heitzman of the NWIRP-Bethpage site, is actively involved with both the PCB and VOC issues at NWIRP-Bethpage.*

   Response: As noted in the response (above) to NYSDEC's Comment 1, a revised section will be inserted on Page 3-29 to discuss the PCB contamination remaining at IR Site 1.

2. **Comment:** *Site 2 groundwater contamination: Table 9-1 (Page 9-6) does not mention that some of the groundwater contamination is thought to have originated at the Recharge Basins (Site 3). Please note that Page 1-15 of the Feasibility Study Report, prepared in March 1994, acknowledges that "the recharge basins probably act as a secondary source of groundwater contamination." However, we do not expect this omission from Table 9-1 to present an environmental problem because remediation of site-wide groundwater contamination is being proposed, as discussed in the draft Regional Groundwater Feasibility Study, Naval Weapons Industrial Reserve Plant (NWIRP), Bethpage, New York, dated July 1997.*

Response: The RI for NWIRP Bethpage completed in 1992, which provided the baseline for development of the March 1994 FS, states that the recharge basins may have served to direct contaminated stormwater to the underlying groundwater, but that the basins themselves do not pose a direct threat to the aquifer. This information was presented in the first sentence of the fifth paragraph on Page 6-69 of the Draft Phase I EBS. For the Final Phase I EBS, this statement will be repeated in Table 9-1 on Page 9-6 (for the recharge basins), but the table will still not present the recharge basins as a review item, and the Category 3 rating for the basins will remain the same.

3. **Comment:** *Section 3.2.1 (Page 3-10) acknowledges the RCRA Permit issued by EPA in 1984, but does not acknowledge the March 1992 amendment to the RCRA Permit nor the NYSDEC Part 373 Hazardous Waste Permit that was issued on March 25, 1992. Both the EPA HSWA Permit and the NYSDEC Part 373 Permit contained conditions for conducting RCRA facility investigations at NWIRP Bethpage. These permits provide the regulatory instrument under which most of the remedial investigation and site cleanup activities are being done at the NWIRP Bethpage facility.*

Response: The waste management discussions presented in Chapter 3 of the Draft Phase I EBS were based primarily on Grumman's 1988 application to NYSDEC for a Part 373 permits to operate a Hazardous Waste Management Facility (the drum storage pad identified as Building 03-37). It was felt that this application, which describes waste management at the installation during its years of highest production, would provide the best basis for identifying possible areas of environmental concern. Key changes in the 1992 RCRA permit amendment and Part 373 Permit will be acknowledged in the final version of Chapter 3. The final version of Chapter 3 will also discuss the 1996 Part 373 permit application, which provides information on waste handling during the period of decommissioning and cleanup of NWIRP Bethpage.

D. COMMENTS FROM LARRY LESKOVJAN OF NORTHROP GRUMMAN, in letter dated December 19, 1997 to Jim Colter of NAVFAC Northern Division

Note: These comments were written as brief notes in the margin of a copy of the Phase I EBS text, and they were not numbered. They are paraphrased as brief restatements below. The numbers are based on their order in the text.

1. **Comment:** *Page 3-2, third paragraph: What was the source of the data "507,623 tons of chromium contaminated wastewater"?*

   Response: The data is from Grumman's 1988 application to NYSDEC for a Part 373 Permit for NWIRP Bethpage. A citation will be added to the text.

2. **Comment:** *Page 3-3, second paragraph: What was the source of the data "1,170 tons of waste"?*

   Response: The data is from Grumman's 1988 application to NYSDEC for a Part 373 Permit for NWIRP Bethpage. A citation will be added to the text.

3. **Comment:** *Page 3-3, bottom of second paragraph: The waste concentrates, after being held in transfer tanks for 1-2 days, were then transferred to the IWTF or off-site, as noted below for NaOH.*

   Response: This information will be inserted as noted.

4. **Comment:** *Page 3-3, bottom of third paragraph: Insert "contaminated NaOH" after "sulfide".*

   Response: This information will be inserted as noted.

5. **Comment:** *Page 3-4, third sentence of first paragraph: Statement that both IWTFs remain in operation is incorrect.*

   Response: The sentence will be changed to read that the Plant 03 IWTF remains in service to support cleanup activities.

6. **Comment:** *Page 3-4, third paragraph: What was the source of the data "290,000 pounds of waste"?*

   Response: The data is from Grumman's 1988 application to NYSDEC for a Part 373 Permit for NWIRP Bethpage. A citation will be added to the text.

7. **Comment:** *What was the source of the data in Table 3-1?*

   Response: Table 3-1 is adapted from Table 8 in Grumman's application to NYSDEC in 1988 for a Part 373 Permit to Operate a Hazardous Waste Management Facility. A citation will be added as a footnote to Table 3-1.

8. **Comment:** *Page 3-8, under "Containers": What was the context in which the cited memo (February 3, 1994 regarding removal of 55-gallon drums)?*

   Response: C.F. Braun is presently attempting to contact someone at Grumman familiar with the memo to discuss its context. Any information obtained will be added to the text.

9. **Comment:** *Page 3-8, first sentence under "Oil and Water Waste": insert after "cleaning of", "mainly from changing oil in machinery".*

   Response: This information will be inserted as noted.

10. **Comment:** *Page 3-9, under "Miscellaneous Waste and Solid Waste", what is the point of the sentence regarding beryllium?*

    Comment: This sentence was inserted in response to a comment made by the Naval Air Systems Command. The comment, in a memo dated September 24, 1997, asked whether beryllium was ever used in the manufacture of aircraft brakes in Plant 03.

11. **Comment:** *Page 3-9, bottom paragraph: the sentence starting "But because of its proximity..." is too speculative.*

    Response: Because there is no available information indicating that Grumman ever used this offsite landfill, the sentence will be removed.

12. **Comment:** *Provide updated information on later versions of HSWA and Part 373 permits.*

    Response: Updated information will be provided in a revised Chapter 3.

13. **Comment:** *Typo: "175-20" should be "17S-20".*

    Response: This typo will be fixed.

14. **Comment:** *Page 3-24, third paragraph: insert "and some floor drainage from Building 03-01" after "stormwater".*

    Response: This information will be inserted as noted.

15. **Comment:** *Page 3-33: Only the east end of the roof of Building 03-01 was reported to support asbestos-containing roofing material.*

    Response: This sentence will be changed accordingly.

16. **Comment:** *Hydraulic Press Area: If the hydraulic presses were not installed until the mid 1980s, why do we note that PCBs were associated with hydraulic oils manufactured prior to 1977?*

    Response: The sentence mentioning the fact that hydraulic oils manufactured prior to 1977 may contain PCBs will be removed.

17. **Comment:** *Page 6-27: If we state on Page 1-17 that no areas can be rated Category 3 based on Phase I EBS methodology, why did we rate the exterior tank area south of the Former Autoclave Area as Category 3?*

    Response: Grumman had completed Phase II sampling of this exterior area and provided the results to the Navy prior to completion of the Draft Phase I EBS. In accordance with the Navy's instructions for completing the Draft, sampling results reported for this area were used as the basis for assignment of a Category 3 rating. The statement on Page 1-17 will be clarified to state that Category 3 can only be assigned where records containing quantitative sampling results are available.

    It should be noted that the final version of the Phase I EBS will **not** report additional Phase II sampling results provided to the Navy by Grumman for other areas on NWIRP Bethpage since publication of the Draft.

18. **Comment:** *Page 6-40: If we state on Page 1-17 that no areas can be rated Category 3 based on Phase I EBS methodology, why did we rate the Flow Coat/Chem Mill Etch Area as Category 3?*

    Response: See response to Comment 17.

19. **Comment:** *Chem Mill Clean Area: the excavation pit for removal of chromium contaminated soil caused by the acid spill is not 30 feet deep.*

Response: The depth of the excavation pit will not be specified. The depth data is not needed to support the EBS rating for this area; the Category 5 rating can not be changed to Category 4 until NYSDEC approves the finished soil removal project and the additional concern over the corroded concrete observed in the pit that formerly housed the chem mill clean process pits is adequately addressed.

20. **Comment:** *Page 6-48, notation asking "what pit" in margin next to sentence noting the chem mill clean process tank pit as a concern.*

Response: This is the pit shown in Figure 6-2 of the Draft Phase I EBS as (formerly) housing process tanks 956, 957, 958, 959, 960, and 961. This is the principal pit in the Chem Mill Clean Area, thus additional explanation in the text as to its location is not necessary.

21. **Comment:** *Page 6-72, third paragraph (Building 10-01): Where is the corrosion observed in Room 39?*

Response: Damaged floor tiles and corroded concrete was observed in a roughly 10 square foot area adjacent to tone of the shelves used to store chemical reagents in this room. These observations were field checked again during C.F. Braun's supplemental site visit in December 1997. An expanded discussion will be added to this section of text to present observations made during the December visit.

22. **Comment:** *Comment of "No" made next to mention of the floor corrosion in Room 39 of Building 10-01.*

Response: C.F. Braun personnel, while revisiting NWIRP Bethpage in December 1997 to perform updated research, reinspected Room 39 and reverified the floor damage. No changes to text is necessary.

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Engineering Corporation

FINAL REPORT
PHASE I
ENVIRONMENTAL BASELINE SURVEY
FOR
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
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Environmental Branch Code 18
Naval Facilities Engineering Command
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CONTRACT NO. N62472-90-D-1298
CONTRACT TASK ORDER 0283

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ACRONYMS

ACM	Asbestos-Containing Materials
AST	Aboveground Storage Tank
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
DCE	Dichloroethylene
EBS	Environmental Baseline Survey
EDR	Environmental Data Resources, Inc.
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
EVTs	Elbows, Valves, and Tees
HSWA	Hazardous and Solid Waste Amendment
IAS	Initial Assessment Study
IR	Installation Restoration
IRP	
IWTF	Industrial Waste Treatment Facility
LQG	Large Quality Generators
NACIP	Navy Assessment and Control of Installation Pollutants
NOV	Notice of Violation
NPL	National Priorities List
NWIRP	Naval Weapons Industrial Reserve Plant at Bethpage
NYSDEC	New York State Department of Environmental Conservation
PA	Preliminary Assessment
PAH	Polynuleic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethane
PPM	Parts Per Million
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
RI/FS	Remedial Investigation/Feasibility Study
SCA	Servo Corporation of American
SPDES	State Pollutant Discharge elimination System
SQG	Small Quantity Generators
TCE	Trichloroethene
TSD	Treatment, Storage, and Disposal
UST	Underground Storage Tank
VSI	Visual Site Inspection

VOC	Volatile Organic Compound
1,1-DCEA	1,1-Dichloroethane
1,1,1-TCEA	1,1,1-Trichloroethane
1,2-DCE	1,2-Dichloroethene

1.0 INTRODUCTION

This Phase I Environmental Baseline Survey (EBS) documents the results of a Phase I environmental site assessment conducted by the United States Navy for the Naval Weapons Industrial Reserve Plant at Bethpage (NWIRP Bethpage) in Nassau County, New York (Figure 1-1). NWIRP Bethpage comprises approximately 109.5 acres of land and several buildings owned by the Navy as inholdings within a roughly 605-acre manufacturing and administrative complex owned and operated by the Northrop Grumman Corporation (Grumman; formerly the Grumman Aerospace Corporation). The mission of the Grumman Bethpage complex, established in 1933, has included research prototyping, testing, design engineering, fabrication, and primary assembly of various military aircraft. Most of the Navy buildings were constructed by the Navy during World War II and subsequently leased to Grumman. Grumman has managed and operated NWIRP Bethpage as part of its overall Bethpage complex throughout the lease period (NEESA, 1986).

Operations throughout the Grumman Bethpage complex, including NWIRP Bethpage, have been conducted in clusters of affiliated buildings and other facilities termed "plants." NWIRP Bethpage includes the following (Figure 1-1):

- A main 105-acre parcel of land containing a 707,303-square-foot aircraft manufacturing building and support facilities (Plant 03), a series of warehouses (Plant 17), and a 24,311-square-foot quality control laboratory and support facilities (Plant 10). The parcel is bounded to the south by the Long Island Railroad, to the west by a tract of Grumman-owned ballfields, to the north by Grumman-owned Plants 14 and 15, and to the east by Grumman-owned Plant 24 and a private residential neighborhood.[1]

- A separate 4.5-acre parcel of land containing a vehicle service garage and support facilities (Plant 20). This parcel is located on the east side of South Oyster Bay Road, approximately 500 feet north of the main 105-acre parcel.

[1] Within the last year, Grumman has sold several parcels of real estate within its Bethpage complex. The Phase I EBS, however, will continue to refer to all real estate formerly within the Grumman Bethpage Complex (except for Navy real estate) as being owned by Grumman.

- A research and engineering building plus support facilities (Plant 05) located in that part of the Grumman complex south of the Long Island Railroad. Although these buildings are owned by the Navy, they occupy land owned by Grumman.

The Navy plans to transfer all real property at NWIRP Bethpage out of Federal ownership as soon as any necessary environmental cleanup is completed and suitable recipients can be identified. This Phase I EBS is prepared in compliance with Section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended (42 USC 9620h), which requires Federal agencies to disclose information as to the storage, release, or disposal of hazardous substances or petroleum products on real property prior to sale, lease, or transfer.

Each contract and deed entered into for the transfer of property from the United States Government must contain appropriate notifications regarding the presence of hazardous substances, covenants regarding remedial action, and clauses for Government access to the property, as required by CERCLA 120 (h) (3) and (4). According to CERCLA 120 (h) (4), the identification of any property in this EBS as "uncontaminated" will require New York State concurrence. Any ongoing remedies that will not reach final cleanup standards before property transfer will require a demonstration to the U.S. Environmental Protection Agency (EPA) that the remedies are operating properly and successfully, as required by CERCLA 120 (h) (3). Any specific remedial action that is not taken before property transfer in accordance with CERCLA 120 (h) (3) (B) (i) will require a deferral approval by the Governor of New York State.

1.1 PURPOSE OF EBS/RELATION TO OTHER ENVIRONMENTAL DOCUMENTATION

The Phase I EBS documents the Navy's assessment of the environmental condition of real property on NWIRP Bethpage. Several other environmental investigations are ongoing or were recently completed for NWIRP Bethpage, each with unique objectives. These include:

- The Navy's Installation Restoration (IR) Program. This program addresses sources of contamination at Navy installations resulting from activities prior to the implementation of modern environmental practices in the 1980s. Initiated at NWIRP Bethpage in the mid 1980s, environmental investigation and remediation activities under the IR Program still continue. The Navy will retain those units of real property still subject to the IR Program until all program-related activities are satisfactorily completed. The IR Program is discussed in more detail in Section 3.4.

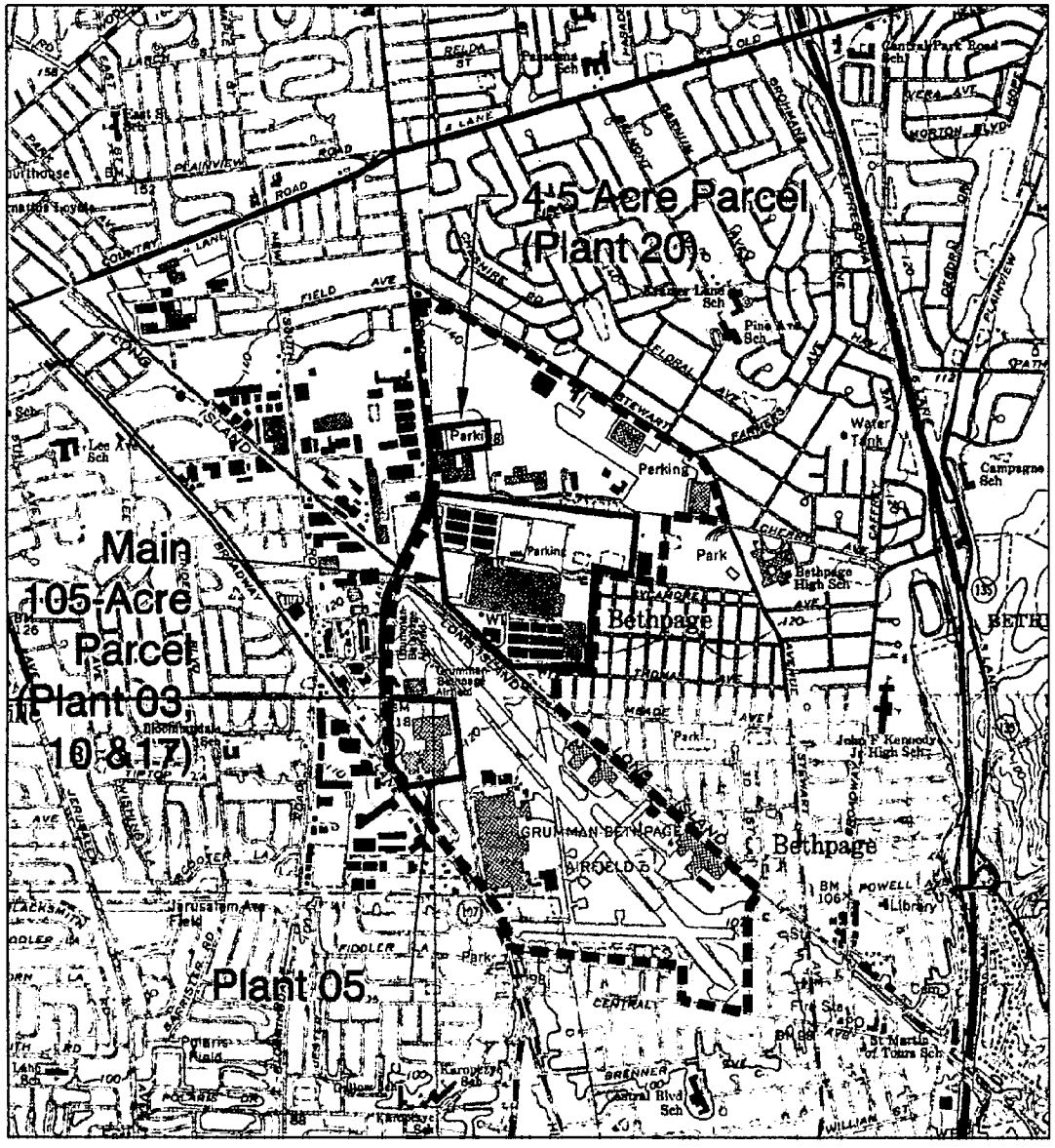

Figure 1-1

Site Location Map

Phase I EBS
NWIRP Bethpage, New York

Legend

- NWIRP Bethpage Boundary
- Grumman Bethpage Complex Boundary

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- Grumman's Phase I Environmental Site Assessments (ESAs). Grumman has prepared a series of Phase I ESAs for those portions of the Bethpage complex that it intends to vacate, including most of NWIRP Bethpage. Grumman has prepared Phase I ESAs for Plants 03, 10 and 17 (together comprising all of the main 105-acre parcel) (Radian, 1997a-c) and Plant 20 (Radian, 1997d), but Grumman has no documentation that addresses Plant 05. These reports identified specific areas of environmental concern based on records searches, site inspections, and interviews with site personnel.

- Grumman is presently conducting a program of environmental sampling based on the recommendations of its internal Phase I ESAs. Results will be reported in a series of Phase II ESAs. Since publication of the Draft Phase I EBS in October 1997, Grumman has released the results of several Phase II ESA sampling activities. These results will not be reported in this Final version of the Phase I EBS; they will be the subject of a future Phase II EBS document.

The Navy's Phase I EBS is intended to serve as a unified environmental document that assesses the current environmental status of all Navy-owned real property at NWIRP Bethpage using all available information. It thus draws heavily from documents produced under the IR Program and from the Grumman Phase I ESAs. It is expected that many of the recommendations for further investigation made by the Phase I EBS will have already been adequately pursued once the ongoing IR and Grumman Phase II ESA investigations are completed. Other investigation activities recommended by the Phase I EBS will be conducted as part of a future Phase II EBS by the Navy.

1.2 DESCRIPTION AND HISTORY OF NWIRP BETHPAGE

The 650-acre Grumman Bethpage complex is an industrial and administrative campus that, in addition to its Navy mission and related manufacturing and development activities, served as the corporate headquarters of the Grumman Aerospace Corporation. The campus is bisected by the Long Island Railroad into two tracts: a northern tract, which contains the two Navy-owned parcels, several Grumman-owned plants, and offices that served as the corporate headquarters of Grumman until 1994; and a southern tract, which contains a small airfield with a roughly 6,000-foot paved runway, Plant 05, and several additional Grumman plants.

The complex is completely surrounded by dense suburban development. It is bounded to the north by Stewart Avenue, to the west by South Oyster Bay Road, and to the south by State Highway 107 (Hicksville-Massapequa Road). Land north and east of the complex is zoned residential for lots of

under 10,000 square feet (Town of Oyster Bay, 1993) and comprises neighborhoods of single family homes dating mostly from the 1950s. Land west and south of the complex is zoned light industrial and comprises a dense mixture of small commercial and light industrial establishments. Some of the light industrial development west of South Oyster Bay Road is owned by Grumman.

Development of the southern tract by Grumman commenced in 1933. Immediately prior to World War II, the complex included two manufacturing facilities (Plants 01 and 02) and two runways (initially grass, but paved by the end of the decade). The surrounding landscape, including the two Navy-owned parcels, was a rural mixture of cropland, pastures, and woodland. Development of the northern tract, including the Navy-owned parcels, proceeded rapidly after 1941 and by 1945 encompassed most of Plant 03, including the main aircraft manufacturing building (Building 03-01), two warehouse complexes (Plant 17), a quality assurance laboratory (Plant 10), and a vehicle service facility (Plant 20). Plant 05 was also developed during this period of wartime growth.

South Oyster Bay Road on the western perimeter of the Grumman complex was realigned in the 1950s to accommodate a northwest extension of the main Grumman runway. Other development on the Grumman complex, including the Navy parcels, was mostly incremental following World War II until the 1980s. Extensions were added to Building 03-01 to accommodate chem mill and heat treat operations, and several new storage and support facilities were constructed. Grumman developed several smaller plants on its land facing Stewart Avenue. Many buildings that originally discharged wastewater to septic facilities were hooked into local sanitary sewers in the 1970s, a trend that continued into the 1980s and 1990s.

The landscape surrounding the Grumman complex rapidly changed from rural to high density suburban during the 1950s. By 1960, there were very few vacant lots, and the Grumman complex was the most conspicuous break in an otherwise nearly continuous expanse of residential and commercial development.

A rapid period of renovation and expansion ensued through the 1980s. A bermed and covered waste storage pad (Building 03-37) was built north of Building 03-01 to replace open waste drum marshaling areas formerly located on unpaved land east of Building 03-01. An industrial waste treatment plant (Building 03-34) was completed in 1984 near the northeastern corner of the main Navy parcel. Many of the industrial processes in Building 03-01 were modernized and reconfigured, and some were moved to new locations within the building. A large office building (Building 03-40) was constructed on the west side of Building 03-01. On Grumman property, construction of additional specialty plants and a new office complex continued on the land near Stewart Avenue.

1.3 PHASE I EBS METHODOLOGY

The Phase I EBS has been prepared using ASTM PS 37 - 95, Provisional Standard Practice for Conducting Environmental Baseline Surveys (ASTM, 1995), as a guide. The Provisional Standard Practice incorporates practices initially developed in Standard E1527-94, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM, 1994). These standards describe practices used to identify recognized environmental conditions in connection with real property. The practices include a review of records pertaining to the subject real property (Section 1.3.1), visual site reconnaissance of the real property and adjacent properties (Section 1.3.2), and interviews with persons knowledgeable of the property (Section 1.3.3). ASTM PS 37 - 95 specifically notes that while many elements of EBS preparation follow due diligence practices initially developed as part of Standard E1527-94, EBS preparation does not constitute appropriate inquiry necessary to establish an "innocent landowner defense" under CERCLA.

1.3.1 Records Review

The records review included an environmental database review, an investigation into prior uses of the real property before Federal acquisition, an aerial photograph investigation, a review of local government records, and a review of Grumman's internal records.

Environmental Database Review: Environmental Data Resources, Inc. (EDR), which specializes in computerized scans of environmental databases, completed an Environmental Database Review of NWIRP Bethpage and adjacent properties. Databases searched by EDR are listed in Table 1-1. The executive summary of EDR's report (dated April 28, 1997) is provided in Appendix A, and the remainder of the report is provided in Appendix D.

Prior Use Investigation: Deeds of transfer and other real estate acquisition records kept at the Naval Facility Engineering Command, Northern Division offices in Lester, Pennsylvania were reviewed to identify owners of NWIRP Bethpage land prior to transfer to Federal ownership. These records were investigated for evidence that the land could have been used for commercial or industrial purposes prior to transfer, and thus likely to have experienced storage, handling, or release of hazardous materials or petroleum products. Results from this review are provided in Appendix B. A formal real estate title search was not performed. A title search was not considered necessary to achieve a due diligence review, considering the paucity of commercial or industrial activity in the vicinity of the site prior to World War II.

TABLE 1-1

LIST OF ENVIRONMENTAL DATABASES REVIEWED
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE NEW YORK

Database		Source
CERCLIS:	Comprehensive Environmental Response, Compensation, and Liability Information System	EPA/NTIS
ERNS:	Emergency Response Notification System	EPA
NPL:	National Priority List	EPA
RCRIS:	Resource Conservation and Recovery Information System	EPA/NTIS
CORRACTS:	Corrective Action Report	EPA
FINDS:	Facility Index System	EPA/NTIS
HMIRS:	Hazardous Materials Information Reporting System	USDOT
MLTS:	Material Licensing Tracking System	NRC
NPLLIENS:	Federal Superfund Liens	EPA
PADS:	PCB Activity Database System	EPA
RAATS:	RCRA Administrative Action Tracking System	EPA
ROD:	Records of Decision	NTIS
TRIS:	Toxic Chemical Release Inventory System	EPA/NTIS
TSCA:	Toxic Substances Control Act	EPA/NTIS
LUST:	Spills Information Database	NYDEC
SHWS:	Inactive Hazardous Waste Disposal Sites in New York State	NYDEC
SWF/LS:	Facility Register	NYDEC
UST:	Petroleum Bulk Storage Database	NYDEC

TABLE 1-1
LIST OF ENVIRONMENTAL DATABASES REVIEWED
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE, NEW YORK
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Database	Source
Former Manufactured Gas (Coal Gas) Sites	Real Property Scan, Inc.
Area Radon Information	EPA
NFRAP: No Further Remedial Action Planned	EPA/NTIS
FRDS: Federal Reporting Data System	EPA
Oil/Gas Pipelines/Electrical Transmission Lines	USGS
Sensitive Receptors	EDR
USGS Water Wells	USGS
Flood Zone Data	FEMA
Epicenters (World earthquake epicenters, Richter 5 or greater)	NOAA
New York Public Water Wells	NYDH

Aerial Photograph Review: A sequence of aerial photographs of NWIRP Bethpage dating from before Grumman and Federal land acquisition to 1985 were reviewed for evidence of land disturbance, outdoor drum storage, dead trees, or other evidence of potential contamination visible from aerial photography. Specific dates of the inspected photographs include 1939 and 1941 (before development and Navy or Grumman ownership), 1945, 1950, 1957, 1963, 1969, 1978, 1983, and 1985. Except for the 1985 photograph, all of these photographs were wall-mounted in frames in the front lobby of the Plant 01 office building used by Grumman's environmental management department. The photographs were taken down and reviewed closely, but they could not be removed from their frames for stereoscopic analysis (stereopairs were not available).

Review of Local Government Records: The Nassau County Department of Health in Mineola, New York and the New York State Department of Environmental Conservation in Stony Brook, New York were consulted under the Freedom of Information Act for public records pertaining to environmental conditions at the site. This records review was completed in May 1997.

Review of Grumman Records: Records maintained by Grumman's environmental management office were reviewed. These records included external correspondence with state and county environmental agencies, internal correspondence within Grumman concerning environmental activities, storage tank records, current and expired copies of environmental permits, and correspondence and compliance documentation concerning those permits. Only records available as of the October 1997 draft of the Phase I EBS are reported herein.

1.3.2 Site Reconnaissance

A team of four environmental professionals visited NWIRP Bethpage and the surrounding area between May 5 and May 16, 1997. The team physically inspected each unit of real property listed in Table 1-2 and prepared their field observations on the field data form shown in Appendix C. A separate data sheet was completed for each listed real property unit. Coverage of each building also included any directly associated exterior areas, including exterior work areas, parking lots, leach fields, and landscaped areas. Individual shops within the two large buildings (Buildings 03-01 and 05-01) were inspected separately, and observations were recorded on separate data form copies.

For buildings, the team entered each interior room, walked the building exterior, and took photographs as necessary to support their observations. The reconnaissance did not include looking under floors, above ceilings, or behind walls. Land areas were walked in a manner allowing complete visual

TABLE 1-2

**LIST OF REAL PROPERTY UNITS INSPECTED
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE, NEW YORK**

Grumman Building Number	Navy Building Number	Description
		MAIN NAVY 105-ACRE PARCEL (PLANTS 03, 10, and 17)
03-01	3	MANUFACTURING-WEST OF WALL 16
		Plant 03 Cafeteria
		Heat Treat Area A
		Hydraulic Press Area
		Heat Treat Area B
		Arts & Engraving Area
		Heat Oven Area
		Facilities Maintenance Area
		Old Alodine/Plating/Paint Booth Area
		Machining Area West of Wall 16
03-01	3	MANUFACTURING - EAST OF WALL 16
		Shipping and Receiving Area
		Alodine/Sulfuric Acid Anodize Area
		Former Autoclave Area
		Honeycomb Pretreatment Area
		Chromic Acid Anodize Area
		Southcentral Machining Area
		Magneform Area
		Southeastern Machining Area
		Identification, Packaging, and Paint Booth Area
		Northcentral Machining Area
		First Aid/North-Central Office Area
		Shot Peen/Old Chem Mill Area
		Flow Coat/Chem Mill Etch Area
		Sulfuric Acid Anodize Area
		Northeastern Machining Area
		Chem Mill Clean Area

TABLE 1-2
LIST OF REAL PROPERTY UNITS INSPECTED
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE, NEW YORK
PAGE 2 OF 4

Grumman Building Number	Navy Building Number	Description
03-01, continued	3, continued	Zyglo Area
		Waste Holding Tanks East of Hydraulic Press Area
		AREA NORTH OF BUILDING 03-01
03-02	43	Well House No. 8
03-03	42	Well House No. 9
03-04	44	Well House No. 10
03-09	45	Well House No. 11
03-11	46	Well House No. 14
03-39	N/A	Methanol Storage Building
03-41	N/A	Storage Shed
03-52	N/A	Wellwater Treatment Building
		AREA EAST OF BUILDING 03-01
N/A	N/A	Former Drum Marshalling Areas and Plant 03 Leachfield
03-13	34	Sanitation Office
03-14	N/A	Facility Maintenance Storage
03-15	N/A	Facility Maintenance Garage
03-31 & 03-32	130	Bottle Gas Storage/ Chemical Storage Building
03-33	N/A	Transportation Building
03-38	N/A	Storage Building
03-17	132	Equipment Repair Shop Storage Building
03-45	N/A	Storage Shed
03-51	N/A	Storage Shed
		NORTHEAST PART OF NAVY PARCEL
03-07	N/A	Salvage Building
03-08	N/A	Salvage Shed
N/A	N/A	Salvage Storage Area
03-12 & 03-47	128	Well House No. 15
03-34	133	Industrial Waste Treatment Facility
03-37	N/A	Drum Storage Pad
03-43	N/A	Storage Building
03-49	N/A	Sand Shed

TABLE 1-2
LIST OF REAL PROPERTY UNITS INSPECTED
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE, NEW YORK
PAGE 3 OF 4

Grumman Building Number	Navy Building Number	Description
N/A	N/A	Recharge Basins and Former Sludge Drying Beds
N/A	N/A	Cemetery
N/A	N/A	Wooded Area
		PLANT 10 AREA
10-01	10	Laboratory
10-02	N/A	Storage Building
10-04	31	Scale House
03-40	N/A	GAC PROM
03-35	N/A	Maintenance Building
		NORTH WAREHOUSE AREA
17N-1	8	Warehouse 8
17N-2	6	Warehouse 6
17N-3	4	Warehouse 4
17N-4	9	Warehouse 9
17N-5	7	Warehouse 7
17N-6	5	Warehouse 5
17N-9	127	Well House
		SOUTH WAREHOUSE AREA
17S-11	17	Warehouse 3I
17S-12	18	Warehouse 3J
17S-13	19	Warehouse 3K
17S-14	14	Warehouse 2E
17S-15	15	Warehouse 2F
17S-16	16	Warehouse 2G
17S-17	11	Warehouse 1A
17S-18	12	Warehouse 1B
17S-19	13	Warehouse 1C
17S-20	20	Warehouses D/H/L/M/N
17S-22	26	Pump House
17S-33	N/A	Boiler House
17S-36	47	Water Lift Station

TABLE 1-2
LIST OF REAL PROPERTY UNITS INSPECTED
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE, NEW YORK
PAGE 4 OF 4

Grumman Building Number	Navy Building Number	Description
		PLANT 20
20-01	2	Garage
20-03	N/A	Transportation Service Building
20-04	N/A	Transportation Shed
		NAVY-OWNED BUILDINGS IN PLANT 05
05-01	150	PLANT 5 ENGINEERING MANUFACTURING BLDG
		Shuttle Wing Hangar
		OAO Hangar
		SBMS File Storage Area
		Facilities Maintenance
		Transportation and Distribution Area
		Alodine and Paint Area
		Heat Treat and Heat Oven Area
		Storage Area by Heat Treat Area
		Structural Test Hangars
		Retirees Area
		Old Model Shop
		ATDC Area
		Old Pattern Shop
		EA6B Program Area
		East Side Offices
		Cafeteria
		High Bay 1 Area
		Former Plant 05 Leachfield
		REMAINDER OF NAVY-OWNED PLANT 05 BUILDINGS
05-05	159	Fire Pump Station
05-08	160	Sewage Pump Station
05-11	162	Sewage Pump Station
25-03	163	Gas Repair Depot
25-05	161	Pump House (Well No. 5)
25-11	164	Pump House (Well No. 6)

inspection of the surface. The pattern of walking ensured that no exterior surface area was obscured by dense vegetation, walls, or other visual obstructions. Logs of completed Visual Site Inspection (VSI) Forms and ground photographs taken by the inspectors were compiled as part of the project record supporting this report.

Visual Reconnaissance Survey of Adjacent Properties: The teams completed a windshield survey of all adjacent properties and other lands within 0.25 mile of the perimeter of Navy-owned property. The teams drove each public roadway within this area, making notes as to land uses visible from the road. Notes were recorded on copies of Nassau County tax maps. The inspectors entered properties by automobile to the extent that the public is allowed during normal business hours without official business with the property owners. The inspectors did not physically enter any buildings, fenced areas, or areas subject to security measures.

Supplemental Investigation: Two inspectors returned to NWIRP Bethpage on December 15 and 16, 1997 to reinspect several specific questionable areas and to review additional records made available by Grumman. New information obtained during this supplemental investigation has been added to this final version of the Phase I EBS. An exception is information provided by Grumman from ongoing environmental sampling activities and other closing activities. This information will be reported in a separate Phase II EBS report.

1.3.3 Interviews

The teams of environmental professionals conducted interviews with current and former Navy and Grumman personnel, contractor personnel working onsite, and local government officials familiar with NWIRP Bethpage to obtain information of past and present operations and conditions with the potential to affect the environmental condition of the real property. Most interviews were conducted at NWIRP Bethpage during the period in May that the teams were onsite to complete the visual site reconnaissance. Because most of the industrial shops had already been shut down prior to the site inspection, few people were available for interview. Table 1-3 lists each person interviewed in support of the Phase I EBS.

TABLE 1-3

**LIST OF INTERVIEW SUBJECTS
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE, NEW YORK**

Name	Affiliation	Area Addressed	Date
Adler, Allen	Grumman: Building Manager for North Warehouses	Plant 17: North Warehouses	5/5/97
Bertolino, Vinny	NAVFAC[1]: Engineering Technician	General	Several
Bidell, Doug	Grumman: Building Manager for Plant 05	Plant 05	5/14/97
Cook, Kevin	Grumman: Lab Manager	Plant 10	5/8/97
Dudoff, Joe	Grumman: Former Building Manager for Plant 03	Building 03-01	5/6/97
Dunne, Richard	Grumman: Public Affairs Officer	Building 05-01	6/26/97
Frangella, Louis	Grumman: Equipment Operator	Building 03-07 and Salvage Storage Area	5/8/97
Furst, Al	Grumman: Laborer	Building 03-01	5/6/97
Hill, Mark	Grumman: Environmental Engineer	General	Several
Ingram, Bob	NAVFAC[1]: Engineering Technician	General	5/7/97
Jew, Tommy	Grumman: Building Manager for South Warehouses	Plant 17: South Warehouses	5/7/97
Koubek, Doug	Grumman: Shop Manager for Test Hangars	Plant 05: Structural Test Hangars	5/13/97
Loper, R.C.	Grumman: Retiree	Plant 05	5/12/97
McCormick, Jim	Augusiewicz Excavating: Demolition Contractor	Buildings 03-15, 03-51, and vicinity	5/8/97
Noonan, Butch	Grumman: Property Disposal Manager	Building 03-07 and Salvage Storage Area	5/8/97
Ohlmann, John	Grumman: Environmental Engineer	General	Several
Selva, John	Grumman: Environmental Engineer	General	Several
Simes, Doug	Grumman: Equipment Operator	Building 03-37	5/8/97
Taormina, Al	J. A. Jones: Facility Manager for NWIRP Bethpage	General	Several
Walker, John	Grumman: Painter	Building 03-01	5/6/97
Walter, G.	Grumman: Building Manager	Building 03-33	5/8/97

1 Naval Facilities Engineering Command

1.4 ENVIRONMENTAL CATEGORIES USED TO RATE REAL PROPERTY ON NWIRP BETHPAGE

After review of all assembled data from visual site inspection, records review, and interviews, each building and area of land on NWIRP Bethpage has been assigned to one of the following seven categories:

Category 1. Areas Where No Storage, Release, Disposal, or Migration of Hazardous Substances or Petroleum Products Has Occurred

This category is intended for buildings and land areas where there is no evidence that hazardous substances or petroleum products have ever been stored, handled, disposed of, spilled, or released; and no evidence that the building or land area could ever have received hazardous substances or petroleum products migrating from other areas. Most buildings on NWIRP Bethpage that appeared to have been used only for administrative or security purposes were assigned to Category 1. Assignment of Category 1 to an area indicates that that area meets the definition of "uncontaminated" under CERCLA 120 (h) (4). The "uncontaminated" designation must be approved by the state (in New York State by the New York State Department of Environmental Conservation).

Category 2. Areas Where Only Storage of Hazardous Substances or Petroleum Products Has Occurred

This category is intended for buildings and land areas where hazardous substances or petroleum products have been stored, but where there is no evidence of any release, disposal, or migration from adjacent areas. Buildings or land areas on NWIRP Bethpage for which there was evidence of current or former process tanks, underground storage tanks (USTs), aboveground storage tanks (ASTs), or drums or other industrial containers were assigned to Category 2 as long as there was no evidence of release or disposal. Industrial process areas where large quantities of liquid chemicals or petroleum products were used but that appeared to be in good structural condition were generally rated in Category 2 unless there were records or other evidence of uncontrolled releases. Information on the types and quantities of hazardous materials stored in these areas, and when such storage took place, must be disclosed at the time of transfer.

Category 3. Areas of Contamination Below Action Levels

This category is intended for buildings and land areas where release, disposal, or migration of hazardous substances or petroleum products has occurred, but at concentrations not requiring removal or remedial action to protect human health or the environment. Because the procedures for a Phase I EBS (ASTM, 1995) do not include sampling quantification efforts, no areas could be assigned to Category 3 based only on the field observations made in support of the Phase I EBS. Information on such low level contamination must be disclosed at the time of transfer.

Category 4. Areas of Known Contamination Where Remedial or Removal Actions Have Been Taken

This category is intended for buildings and land areas where release, disposal, or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken. No areas on NWIRP Bethpage were rated in this category. Information on the remedial (or removal) action taken must be disclosed at the time of transfer.

Category 5. Areas of Known Contamination Where Remedial or Removal Actions Are Underway

This category is intended for buildings and land areas where storage, release, disposal, or migration of hazardous substances or petroleum products has occurred and removal or remedial actions are underway, but all required remedial actions have not yet been taken. Such areas can not be transferred until the remedial (or removal) action is complete or a deferral is issued by the Governor of the State of New York. Any ongoing remedies that will not reach final cleanup standards before property transfer will require a demonstration to the EPA that the remedies are operating properly and successfully as required by CERCLA 120 (h) (3).

Category 6. Areas of Known Contamination Where No Remedial or Removal Actions Have Yet Been Initiated

This category is intended for buildings and land areas where release, disposal, or migration of hazardous substances or petroleum products is known to have occurred but required response actions have not yet been implemented. No areas on NWIRP Bethpage were rated in this category. Such areas can not be transferred until a remedial (or removal) action is initiated and completed, or until a deferral is issued by the Governor of the State of New York. Any specific remedial action that will not

be taken before property transfer will require a demonstration to the EPA that the remedies are operating properly and successfully as required by CERCLA 120 (h) (3).

Category 7. Areas Requiring Further Investigation

This category is intended for buildings and land areas for which additional data must be obtained before assignment to one of the other categories is possible. Such areas can not be transferred until the necessary data is obtained and any necessary remedial (or removal) actions are completed or a deferral is issued by the Governor of the State of New York.

1.5 ORGANIZATION OF THE PHASE I ENVIRONMENTAL BASELINE SURVEY

The Phase I EBS report is divided into 12 chapters and 4 appendices, as follows:

- Chapter 1 has introduced and described the purpose and scope of the Phase I EBS and the methodology used in its preparation.
- Chapter 2 characterizes the environmental setting of NWIRP Bethpage, including its geography, geology, hydrogeology, hydrology, and ecology.
- Chapter 3 summarizes the history of how hazardous substances and wastes have been managed on NWIRP Bethpage. It provides general information on regulatory issues; the Installation Restoration Program (IRP); the status of past and present USTs and ASTs; hazardous and solid waste management practices; and the status of polychlorinated biphenyls (PCBs), radon, lead, pesticides, and asbestos.
- Chapter 4 summarizes a review of present and historical aerial photographs of NWIRP Bethpage from before Federal acquisition until the present.
- Chapter 5 summarizes information on adjacent and nearby properties which could potentially affect environmental conditions at NWIRP Bethpage.
- Chapter 6 describes the environmental condition of individual units of real property within the main Navy 105-Acre Parcel (Plants 03, 10, and 17), presenting and justifying the Phase I EBS condition ratings.

- Chapter 7 describes the environmental condition of individual units of real property within the smaller Navy-owned parcel (Plant 20), presenting and justifying the Phase I EBS condition ratings.

- Chapter 8 describes the environmental condition of individual units of real property within Plant 05, presenting and justifying the Phase I EBS condition ratings.

- Chapter 9 summarizes key observations made while completing the Phase I EBS. It tabulates areas requiring further investigation before definitive conclusions can be made as to their environmental condition.

- Chapter 10 presents the Phase I EBS conclusions.

- Chapter 11 is a list of references cited in the Phase I EBS.

- Chapter 12 is a list of the environmental professionals who prepared the Phase I EBS.

Appendix A is the executive summary of the "Area Report" prepared by EDR outlining the results of its environmental database review for NWIRP Bethpage and adjacent properties. Appendix B is a report outlining the findings of a review of Navy deed records for NWIRP Bethpage maintained at Naval Facility Engineering Command, Northern Division offices in Lester, Pennsylvania. Appendix C presents the forms used to record field notes collected during visual site inspections conducted as part of the Phase I EBS. Appendix D is the full text of the EDR "Area Report." The content of these appendices has not changed since the publication of the Draft Phase I EBS in October 1997.

2.0 ENVIRONMENTAL SETTING

This chapter summarizes the climate and meteorology (Section 2.1), topography (Section 2.2), geology (Section 2.3), hydrogeology (Section 2.4), soils (Section 2.5), surface water hydrology (Section 2.6), and vegetation and ecology (Section 2.7) of the NWIRP Bethpage, as necessary to support the objectives of the Phase I EBS.

2.1 CLIMATE AND METEOROLOGY

The combined influence of prevailing westerly winds and the proximity of the Atlantic Ocean produces a modified continental climate on Long Island. Temperature extremes are mitigated by the Atlantic Ocean and by Long Island Sound. The climate is fairly humid. In winter, the annual average temperature is 33°F and in the summer the average temperature is 72°F. The total annual precipitation is 42 inches. Of this amount, 21 inches usually falls from April through September. The average seasonal snowfall is 27 inches, and the average relative humidity in mid-afternoon is about 55 percent (SCS, 1987).

2.2 TOPOGRAPHY

The topography around NWIRP Bethpage is relatively flat, with an approximate elevation of 120 feet above mean sea level. Most natural physical features such as hills, depressions, and streams have been reshaped or eliminated because of high-density urban development. The northwest corner of the Navy 105-Acre Parcel has the highest elevation on NWIRP Bethpage (approximately 140 feet above mean sea level [msl]) while the lowest elevation is in the southeastern part of the parcel (approximately 100 feet above msl) (USGS, 1967a,b and USGS, 1969a,b).

2.3 GEOLOGY

NWIRP Bethpage and the surrounding area are underlain by approximately 1,100 feet of unconsolidated sediments that unconformably overlie crystalline bedrock. The unconsolidated sediments consist of four distinct geologic units that, in descending order, are the Upper Glacial Formation, the Magothy Formation, the Raritan Clay Member of the Raritan Formation, and the Lloyd Sand Member of the Raritan Formation. The crystalline bedrock consists primarily of metamorphic and igneous rocks including schist, gneiss, and granite. The regional dip of the bedrock is to the

south-southeast. All of the geologic units dip in this direction, although to varying degrees (Isbister, 1966).

NWIRP Bethpage lies on a featureless glacial outwash plain that slopes gently to the south. This region of Long Island was subjected to several episodes of glaciation during the Pleistocene Period that resulted in the deposition of two terminal moraines. The younger Harbor Hill moraine trends roughly east-west along Long Island's northern shore, approximately 10 miles north of NWIRP Bethpage. The older Ronkonkoma moraine lies several miles north of NWIRP Bethpage. It trends east-west and roughly bisects Long Island. As the glaciers retreated, large volumes of sediment were transported downgradient by meltwater-supplied streams and deposited either in intermorainal areas or, south of the Ronkonkoma moraine, on large subdued glacial outwash plains. NWIRP Bethpage lies on such an outwash plain (Isbister, 1966; McClymonds and Franke, 1972).

The Upper Glacial Formation (commonly referred to as glacial deposits) forms the surface deposits on NWIRP Bethpage. These glacial deposits consist chiefly of coarse sands and gravels. The deposits are generally about 30 to 45 feet deep, but local variations in thickness are common due to irregular and undulating contact with the underlying Magothy Formation. Recent intrusive field investigation defined the contact between the formations as the horizon where gravel becomes very rare to absent, and variegated finer sands, silts, and clays prevail.

The Magothy Formation consists of sands, silts, and clays. The formation is generally composed of alternating sequences where one of these lithologies is dominant but the others are present to varying degrees. Stratigraphic intervals containing only one of these lithologically distinct end-members are rare (HNUS, 1992a). The basal Magothy reportedly consists of a highly permeable and productive gravel.

2.4 HYDROGEOLOGY

The Upper Glacial and Magothy Formations comprise the aquifer of concern at NWIRP Bethpage. Regionally, these formations are regarded as forming a common, interconnected aquifer as the coarse nature of each unit near their contact and the lack of any regionally confining clay unit allow for the unrestricted flow of groundwater between the formations.

The water table beneath NWIRP Bethpage has been found only within the Magothy Formation. A published report indicates that the water table to the south and west (and possibly beneath part of NWIRP Bethpage) occurs within the glacial deposits, although this boundary was based on limited

data and was considered approximate. Static water elevations from monitoring wells on NWIRP Bethpage collected at regular intervals from August 1991 to September 1992 indicate that although the water table exhibits a seasonal fluctuation, it does not rise to the Upper Glacial Formation.

The Upper Glacial aquifer is no longer considered an important source of potable water in the immediate area because of its poor quality. It is now pumped only for minor industrial use. In other parts of Long Island, however, this aquifer is still a major source of potable water. The Upper Glacial aquifer is generally a high-yielding unit with favorable hydraulic characteristics. The glacial deposits are characterized by a moderate to high primary porosity and permeability.

Although the water beneath NWIRP Bethpage occurs below the glacial deposits, these deposits are hydrogeologically important because their high permeability allows for the rapid recharge of the underlying Magothy Formation by precipitation. In addition, the large quantities of groundwater withdrawn daily from the Magothy Formation by NWIRP Bethpage operations passes back to the Magothy Formation through the glacial deposits via a series of onsite recharge basins.

The Magothy Formation is the major source of public water in Nassau County. The most productive water-bearing zones are the discontinuous lenses of sand and gravel that occur within the generally siltier matrix. The major water-bearing zone is the basal gravel. Results of pumping tests conducted on site of the Magothy Formation indicate that the horizontal hydraulic conductivity of the Magothy Formation beneath the NWIRP is about 100 feet/day and the vertical hydraulic conductivity ranges from a high of 10.27 feet/day to a low of 3.98 feet/day (Smolensky and Feldman, 1988; HNUS, 1994). Because of the extreme lateral and vertical lithologic heterogeneity of the Magothy, any hydraulic values obtained will be strongly dependent on both the geographic location of the test and the stratigraphic (vertical) section covered by the test.

The Magothy Formation is commonly regarded as functioning as an unconfined aquifer at shallow depths and as a confined aquifer at deeper depths. The degree of confinement within the Magothy aquifer is reported to increase with depth due to the cumulative effect of the silts and clays.

Long Island is bisected by an east-west-trending regional groundwater divide. NWIRP Bethpage lies to the south of this divide. Groundwater beneath NWIRP Bethpage, therefore, flows in a generally southward direction, toward the Atlantic Ocean. Most published data indicate that the regional flow is to the south or slightly to the southeast (HNUS, 1993). Site-specific data generated during remedial investigations at NWIRP indicate a strong southwestward component of groundwater flow beneath the facility (HNUS, 1993). It should be noted that recharge basins have the potential to

greatly influence water elevations and hence local groundwater flow patterns. It is therefore likely that the recharge basins on and off the site exert great influence on the groundwater flow regime of the facility.

Regional studies of groundwater flow on Long Island reveal that the vertical gradients are very low. The steepest gradients typically occur below the recharge zone near the center of the island, and decrease from both a northerly and southerly direction (Isbister, 1966; Smolensky and Feldman, 1988).

2.5 SOILS

NWIRP Bethpage lies within two soil associations: the Urban Land-Hempstead association and the Urban Land-Riverhead association. The Hempstead series consists of very deep, well-drained soils on outwash plains. The soils are formed in a loamy mantle overlying stratified sand and gravel. The Hempstead soils characteristically have a thick, dark surface layer. The Riverhead series consists of very deep, well-drained soils that are formed in glacial outwash deposits. The soils are on crests and side slopes of low morainic hills and on the tops and sides of outwash plains and terraces (SCS, 1987). Because most of NWIRP Bethpage is developed, most surface soils have been graded and compacted, even where they still support lawns instead of impervious cover.

2.6 SURFACE WATER HYDROLOGY

There are no streams or floodplains on NWIRP Bethpage and, other than the man-made recharge basins, no ponds or lakes. The closest stream is Massapequa Creek, located approximately 3.3 miles to the southeast. It receives no drainage from NWIRP Bethpage. All of NWIRP Bethpage is located outside the 500-year floodplain (HNUS, 1992a).

Most of NWIRP Bethpage is covered by buildings, parking lots, roadways, and other impermeable surfaces, and it is completely surrounded by high-density urban development. The effect of this development on groundwater and surface water drainage has been significant. Prior to development, the naturally occurring soils were highly permeable and allowed for rapid infiltration of storm and snow melt water. Groundwater recharge is presently facilitated by several recharge basins which are incorporated into the stormwater drainage system. These basins allow rainwater to percolate into the ground rather than drain into the local streams (NEESA, 1986).

2.7 VEGETATION AND ECOLOGY

Nearly all of NWIRP Bethpage is developed and lacks natural terrestrial or aquatic habitats. Small landscaped areas of mowed lawn and ornamental trees and shrubs are scattered through NWIRP Bethpage and adjoining areas of Grumman-owned land. The predominantly urban habitat of NWIRP Bethpage can only support wildlife adapted to developed surroundings and human activity. Typical species include cottontail rabbit (*Sylvilagus* sp.), squirrel (Family *Sciuridae*), raccoon (*Procyon lotor*), field mouse (*Microtus* sp.), Norway rat (*Rattus norvegicus*), and domestic cats and dogs. Typical avifauna of such urban settings include the robin (*Turdus migratorius*), blue jay (*Cyanocitta cristata*), starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), mourning dove (*Zenaidura macroura carolinensis*), and pigeons (Family *Columbidae*) (NEESA, 1986).

A narrow strip of deciduous forest occurs along the northern boundary of the Navy 105-acre parcel, north of the Industrial Waste Treatment Plant (Building 03-34) and part of the Salvage Storage Area. This strip is roughly 100 feet wide and 800 feet long (less than 2 acres total). The forest cover is dominated by mature oaks (primarily *Quercus coccinea* and related species) ranging between 6 and 18 inches in diameter at breast height (trunk diameter at a height of 4.5 feet) and over 50 feet in height. The oak canopy is undergrown by a dense layer of greenbrier (*Smilax* sp.). Pines are absent, except for one pitch pine (*Pinus rigida*). Old aerial photographs suggest that this forest is a remnant of a grazed woodlot that covered parts of NWIRP Bethpage and adjoining land prior to World War II. Although it appears to be typical of the upland deciduous forest cover once common in Nassau County, its small size and urban surroundings limit its value to most terrestrial wildlife.

Files maintained by the New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program show several sightings of rare, threatened, and endangered plant species on what is now NWIRP Bethpage, prior to Federal acquisition (Albert, 1997). These species are listed in Table 2-1. However, none of these species likely survived the intensive development of NWIRP Bethpage and environs in the 1940s. The only natural vegetation remaining is the narrow strip of deciduous forest discussed above. But construction of a ditch through this forest in the 1940s and subsequent encroachment by a dense undergrowth of greenbrier have rendered this area unsuitable for the delicate species listed in Table 2-1. Thus it may be concluded that there is little likelihood that any rare, threatened, or endangered species occur on or adjoining NWIRP Bethpage.

There are no hydric soils (SCS, 1987) or wetlands on or adjoining NWIRP Bethpage, although National Wetland Inventory maps designate the recharge basins as waters of the United States (USFWS,

TABLE 2-1

RARE, THREATENED, AND ENDANGERED SPECIES REPORTED TO OCCUR PRIOR TO 1940 ON WHAT IS NOW NWIRP BETHPAGE[1] NWIRP, BETHPAGE, NEW YORK

Scientific Name	Common Name	Status	Date Last Seen
105-ACRE PARCEL			
Aster concolor	Silvery Aster	State Endangered	1928
Platanthera ciliaris	Orange Fringed Orchid	State Threatened	1896
Scleria pauciflora	Fewflower nutrush	State Threatened	1921
4.5-ACRE PARCEL	(PLANT 20)		
Aster concolor	Silvery Aster	State Endangered	1928
Platanthera ciliaris	Orange Fringed Orchid	State Threatened	1896
Helianthemum dumosum	Bushy Rockrose	State Threatened	1907
AREA OF PLANT 05			
Agalinis acuta	Sandplain gerardia	Federal and State Endangered	1951[2]
Aster concolor	Silvery Aster	State Endangered	1928
Scleria pauciflora	Fewflower nutrush	State Threatened	1921
Platanthera ciliaris	Orange Fringed Orchid	State Threatened	1896

1 All reported species are vascular plants; no animal species or special status plant communities.

2 This could reflect imprecision in mapping species sightings. All land at Plant 05 was paved as of 1951; thus this plant could not have occurred there. The sighting probably took place on still undeveloped land just outside the Grumman Bethpage complex, perhaps across South Oyster Bay Road from Plant 05. But all of this outside land has since been developed, and the plant does not likely occur in the vicinity of Plant 05 today.

Various Dates). Filling of the recharge basins would qualify under Nationwide Permit No. 26 under Section 404 of the Clean Water Act. Notification of the U.S. Army Corps of Engineers would be required if over 1 acre of recharge basin were filled. Because of the steep and unnatural configuration of the recharge basins, their great depth when filled, and fluctuating water levels in response to short-term rainfall conditions, the recharge basins do not provide quality aquatic habitat. Their small size and lack of surface connection to other waterways limit their suitability for fish, and the lack of any shallow fringe limits the primary productivity essential to aquatic food chains.

3

3.0 HAZARDOUS SUBSTANCES/WASTE MANAGEMENT PRACTICES

This chapter presents an overview of the storage and handling of hazardous substances and the generation and disposal of hazardous waste on NWIRP Bethpage. Section 3.1 is an overview of each category of waste generated and how that waste has historically been handled. Section 3.2 is an overview of environmental and waste management permits held by Grumman for operations on NWIRP Bethpage. Section 3.3 discusses storage tanks and process tanks on NWIRP Bethpage. Section 3.4 summarizes activities performed to date on NWIRP Bethpage under the Navy's IR Program. Section 3.5 discusses several miscellaneous issues related to hazardous substances and waste management on NWIRP Bethpage.

3.1 HAZARDOUS WASTE MANAGEMENT OVERVIEW

Operations at NWIRP Bethpage used various solvents, paints, greases, and other substances typical of aircraft manufacturing and assembly processes. NWIRP Bethpage also generated the wastes typical of those processes. This section identifies specific waste streams generated on NWIRP Bethpage and describes the processes that generated them. The discussion of each waste stream includes information on its hazardous characteristics, how it was generated, how it was stored, and how it was treated and disposed of.

The Grumman Bethpage Complex has undergone major operational changes since the issuance of the Draft Phase I EBS in October 1997. Grumman has phased out all of its manufacturing process operations at the complex and has begun to deactivate the facilities. Activities continuing at the complex include engineering, administrative, research and development and testing operations, as well as decommissioning of former manufacturing operations. Information in the Draft Phase I EBS has been expanded to address the various wastes generated by decommissioning and cleanup operations.

The information presented below for years of active production is based primarily on Grumman's Part 373 permit applications to NYSDEC in 1988 and 1992 (Dvirka and Bartilucci, 1988 and 1992) and on an Initial Assessment Study completed by the Navy in 1986 (NEESA, 1986). Information on current decommissioning and consolidation activities are based on a 1997 Part 373 permit application (Dvirka and Bartilucci, 1997).

Grumman operated NWIRP Bethpage as an integrated component in its overall operations at the Grumman Bethpage complex. It is thus neither possible nor desirable to consider waste generation and management practices at NWIRP Bethpage independently of the overall Grumman complex. Although data tailored only to NWIRP Bethpage are presented where available, other data may refer to the entire Grumman complex.

Chromium Wastewater (D007)

The following production processes conducted at NWIRP Bethpage generated chromium-contaminated rinsewaters (no chromium wastewater is still being generated):

- Chemical conversion coating of aluminum
- Deoxidizing of aluminum surfaces
- Anodizing of aluminum
- Painting and paint stripping of aluminum aircraft structures
- Sealing process for aluminum parts
- Chemical milling of aluminum and titanium
- Alkaline cleaning of aluminum and titanium
- Photographic processing
- Penetrant inspection
- Electron beam welding--clean and descale line
- Spot-weld cleaning line
- Hard coating of aluminum parts
- Heat treating of aluminum parts

Some of these processes did not directly generate chromium wastewater, but their waste streams became mixed with chromium wastewater while being discharged to the treatment process.

Prior to 1984, a fraction of dilute rinsewater from the processes listed above were transported by tank truck to an old industrial waste treatment facility (IWTF) in Grumman Plant 02, which is off Navy property. Another fraction was discharged directly to the recharge basins northeast of Building 03-01 (NEESA, 1986).

Since 1984, all chromium-contaminated wastewater was pretreated at the new Plant 03 IWTF (Building 03-34) prior to discharge to sanitary sewers. Pretreatment involved reduction and removal of chromium and other heavy metals, destruction of phenol, precipitation out of heavy metals, and final

pH adjustment. Grumman's Part 373 permit applications for 1988 and 1992 indicate that the Grumman Bethpage complex generated approximately 507,623 tons of chromium-contaminated wastewater annually in recent production years (Dvirka and Bartilucci, 1988 and 1992), although data on the percentage directly attributable to operations within the Navy-owned sections are not available.

The Plant 03 IWTF discharged the pretreated wastewater to the Nassau County Sewer District No. 3 under the authority of its industrial waste pretreatment program permit, which conveyed a mixture of pretreated industrial wastewater and domestic wastewater to the Publicly Owned Treatment Works (POTW) at Cedar Creek, Seaford, New York. As a result, the discharges were exempt from permitting requirements. However, the sludge generated by the wastewater treatment was not exempt from regulation. It was conditioned with lime and polymers, vacuum dewatered, and then manifested off-site by a licensed vendor.

A reclamation system for concentrated chromic acid was located in Building 03-01 until operations ceased there in 1996. It served the Chromic Acid Anodize Process Area. In the early 1970s, Grumman undertook an intensive program for evaluating ways of extending process tank baths. The goal of this program was to minimize generation of chemical waste. A dealuminizer was installed in a chromic acid anodize line. By means of an ion exchanger, the concentration of dissolved aluminum was maintained at low levels. This eliminated the need to dump the concentrated chromic acid tank due to excessive aluminum concentration, thereby extending the life of the baths. Regeneration wastes from these ion exchanges were treated in the IWTFs. According to a Grumman office memo dated March 27, 1984, the use of the ion-exchanger was discontinued at that time (Grumman, 1984). New equipment that uses wellwater has since been used to provide for once-through rinsewater overflow mode with pumpage of waste to holding tanks.

Waste Concentrates (D002)

Grumman's Part 373 permit applications for 1988 and 1992 indicate that approximately 1,170 tons of waste were generated annually in recent operational years at the Grumman Bethpage complex (Dvirka and Bartilucci, 1988 and 1992). No waste concentrates are still being generated. Separate data for the Navy-owned portion only are not available. Several processes generated concentrated wastes through the contamination or depletion of processing baths. The contaminated process baths were either disposed of by industrial waste scavengers or treated on site. These included sodium hydroxide, hydrofluoric acid, deoxidizer, alodine, nitric acid desmut and nitric-hydrofluoric acid descale. These wastes were generated at various locations throughout the facility. The waste concentrates were normally pumped directly from the process tanks into local transfer tanks

specifically designed to resist the corrosive effects of the wastes. The waste concentrates, after being held in the transfer tanks for a period of 1 or 2 days, were then transferred to one of Grumman's two IWTFs or offsite.

The composition of the waste concentrates were monitored regularly to ensure that the process baths meet military specifications. This internal quality control ensured consistency in the process bath and, consequently, in the waste concentrate awaiting treatment and disposal. Waste sodium hydroxide generated by certain processes included significant concentrations of sulfides. This sulfide-contaminated sodium hydroxide was removed by a licensed vendor for reutilization.

Prior to connection of the IWTFs to the Nassau County Sewer System in 1984, concentrated waste was trucked off-site by contractors for ultimate treatment and disposal (NEESA, 1986). However, in a letter dated July 21, 1994, Grumman acknowledged that in 1976 and 1979 rinsewater flows from rinsing operations for the sulfuric acid anodize tank, the alkaline cleaner tanks, and the desmut tanks were discharged to the recharge basins (Grumman, 1994a).

Industrial Waste Treatment Facility Treatment Sludge (F019)

Grumman's Part 373 permit applications for 1988 and 1992 indicate that approximately 800 tons per year of sludge were produced in recent production years at the IWTFs at Plant 02 (on Grumman-owned property) and Plant 03 (Building 03-34) (Dvirka and Bartilucci, 1988 and 1992). The chemical composition of sludge generated at the Plant 03 IWTF (Building 03-37) is detailed in Table 3-1. The Plant 03 IWTF remains in operation, although the quantity of sludge has diminished substantially as operations have been phased out. The sludge was vacuum-dewatered prior to off-site shipment and disposal by a licensed vendor. The sludge was conditioned with lime and perelectrolyte and dewatered on a vacuum filter precoated with diatomaceous earth. The vacuum filter was capable of dewatering the sludge to a concentration of approximately 23 to 25 percent dry solids. The dewatered sludge was collected in large roll-off containers at the IWTFs and then transported by an industrial waste hauler to a secure landfill site with appropriate Federal, state and local permits.

Before the 1980s, the sludge had been dried in onsite sludge-drying beds located just east of where the IWTF (Building 03-34) is presently situated. The former site of these beds has been intensively investigated under the Navy's IR Program and was the subject of a recent action to remove surface soil contaminated by PCBs.

TABLE 3-1

WASTE ANALYSIS
INDUSTRIAL WASTE TREATMENT FACILITY (IWTF) SLUDGE
GENERATED AT PLANT 03 IWTF (BUILDING 03-37)

Parameter	Range of Concentrations (mg/kg)
Aluminum	22,500 - 63,200
Arsenic	<0.5 - 39.0
Cadmium	250 - 450
Chromium (total)	21,500 - 115,000
Chromium	<0.5 - 26.0
Copper	1,460 - 2,100
Iron	42,500 - 49,000
Lead	<0.5 - 220
Manganese	240 - 260
Molybdenum	<5.0 - 57.5
Nickel	80 - 120
Selenium	<1.0 - <5.0
Silver	20.0 - 35.5
Titanium	3,200 - 4,100
Cyanide (Complex)	74.7 - 300

Source: Dvirka and Bartilucci, 1988 and 1992

Waste Halogenated Solvents (F001, F002, D001, D004, D006, D007, D008)

Grumman's Part 373 permit applications for 1988 and 1992 indicate that approximately 290,000 pounds of waste halogenated solvents were generated during active production years at various locations throughout the Grumman Bethpage complex (Dvirka and Bartilucci, 1988 and 1992). Separate data for the Navy-owned facilities only are not available. Within Navy-owned facilities, the largest source of waste halogenated solvent was vapor degreaser operations in Building 03-01. These operations used trichloroethylene and Freon 113 as a cleaning agent to remove oil, grease and dirt from aircraft parts. Periodically, the degreaser solutions had to be disposed of due to an excessive accumulation of dirt and contaminants. When this occurred, the contents of the degreaser tank were pumped into 55-gallon drums for offsite removal.

Several collection stations were located close to the points of waste solvent generation during the active production years. At these locations, 55-gallon drums were labeled indicating the type of waste to be placed there. Various types of halogenated solvents were collected, including tetrachloroethylene, trichloroethylene, perchloroethylene, methylene chloride, 1,1,1-trichloroethane, and freon 113. When a collection drum was full, it was sealed, labeled, dated, and moved to a "Mini Drum Marshalling Area" on Grumman-owned property for up to 10 days, or to the Drum Storage Pad (Building 03-37) for long-term storage, prior to offsite shipment. Current waste halogenated solvents are still collected in 20-50 gallon steel drums and transported to the Main Drum Marshalling Area. This waste stream is either recycled or incinerated by private contractors.

The Drum Storage Pad went into active use in 1982. It is bermed, and in 1983 a roof was installed over the concrete pad. Prior to 1982, three exterior drum marshalling areas were used: two located east of Building 03-01 and a third north of Building 03-01.

Currently, halogenated solvents are generated during cleaning operations or as a result of the ongoing cleanup and decommissioning activities. The waste steam consists of various halogenated solvents including oxysol 100, methylene chloride, tetrachloroethylene, and 1,1,1 trichloroethane.

Waste Freon (F001, (F002)

Waste freon is presently generated from the draining of machines and equipment or as a result of the ongoing consolidation activities. This waste stream consist of Freon TF, Freon TMS, and Freon TMC waste only. The freon waste is collected in metal, polyethylene, polypropylene containers up to 55

gallon capacity and transported to the Drum Storage Pad (Building 03-37). The waste is then disposed of by private contractors who either recycle or incinerate the waste.

Waste Non-Halogenated Solvents (F002, F003, F005, D006, D007, D008)

Grumman's Part 373 permit applications for 1988 and 1992 indicate that approximately 200,000 pounds of waste non-halogenated solvents were produced annually during active production years at the Grumman Bethpage complex. Separate data for the Navy-owned portion only are not available. The wastes consisted primarily of ketone-based solvents (ignitable) used in the various painting operations. Within the Navy-owned areas, the painting operations were located in Buildings 03-01 and 05-01.

These wastes also contained variable quantities of paint pigments. Several collection stations for these solvents were located throughout the manufacturing facilities close to the sources of waste generation. When full, the drums from the collection stations were labeled, dated, sealed and sent to the Drum Storage Pad (Building 03-37) for storage. They were eventually picked up by licensed vendors for off-site disposal. Prior to construction of the Drum Storage Pad in 1982, the drums were sent to one of the exterior former drum marshalling areas east and north of Building 03-01 to await pickup.

Currently, non-halogenated waste solvents are generated from cleaning, painting, and laboratory operations or as a result of the consolidation activities. The waste stream consists of alcohols, toluene, mineral spirits, and varsol. In several cases, halogenated solvents are present because of mixture during operations.

Cadmium Rinse Wastewater (D006)

Small amounts of cadmium rinse wastewater were produced during active production years in Buildings 03-01 and 05-01 from the rinsing of manufactured parts which required a bench brush-on cadmium coating. After the brush-on coating was complete, the area or part was rinsed with water. The rinsewater was collected in drums for off-site transportation and disposal by an approved facility. It is reported that from the 1950s to the 1970s, cadmium wastes containing cyanide were stored at the former drum marshalling areas east and north of Building 03-01 (NEESA, 1986).

The cadmium coating consisted of cadmium (approximately 9 percent) and triethanolamine sulfate chelate (approximately 30 percent), with the balance comprised of water. The concentration of

cadmium is the basis for listing this toxic waste stream as a hazardous waste with an EPA number of D006.

Paint Trays; Paint Filters; Liquid Paint Waste; and Paint Chips, Dust, and Sludge (D006, D007)

Paint trays were used in the paint booths in Buildings 03-01 and 05-01 during active production years to facilitate the spray painting of aircraft parts. Over time, the paint trays became coated with paint as a result of overspray. They were then taken out of service and stored prior to disposal. Analytical tests have determined that the paints on the trays could contain chromium, a hazardous component.

Many of the paint booths were equipped with a dry filter exhaust ventilation system. Over time, the filters became clogged with paint particles removed from the exhaust stream. When the ventilation system experienced an excessive pressure drop, the filter media had to be replaced. The filters were then subjected to a leaching test and, if necessary based on the results, manifested for off-site disposal in a secure hazardous waste landfill.

Paint sludge was also the result of overspray during painting operation. Excess paint and water were collected in the troughs located underneath the water curtain in each wet paint tunnel. The water was drawn off and transported to either IWTF (Plant 02 or 03) depending on the location of the paint tunnel. The remaining residue/sludge was collected in 55-gallon drums and transported to the Drum Storage Pad (03-37) for storage prior to off-site disposal by a licensed vendor. Prior to construction of Building 03-37 in 1982, the drums were stored in the former drum marshalling areas east and north of Building 03-01.

Liquid paint waste (including paint waste in lab packs) is presently being generated as a result of painting operations that are part of cleanup activities. This waste stream consists of various liquid paint waste including epoxy, polyurethane, inks, lacquers, thinners, methyl ethyl ketone, isopropyl alcohol, toluene, acetone, and mineral spirits. The liquid paint waste is collected in 20 or 25 gallon drums and transported to the Drum Storage Pad (Building 03-37) for storage. The waste is later on picked up by licensed contractors for ultimate treatment and disposal.

Paint dust, chips, and sludge are contained within the debris and residues resulting from cleaning operations occurring in the paint tunnels. Paint dust and chips are produced by stripping the paint tunnel walls and floors of excess paint that had collected from overspray during painting operations. This debris is swept into 55-gallon drums and stored at the Drum Storage Pad

(Building 03-37). Some paint dust, chips, and sludge continues to be generated as paint booths and paint tunnels are being cleaned out and removed.

Descale Salt Waste (D003)

Descale salt waste was produced during years of active production by a descale process which uses salts comprised of a caustic potash chemical. The raw material consisted of potassium hydroxide (65 percent), potassium chloride (5 percent) and potassium nitrate (30 percent).

The descale salt waste was predominantly a sludge which was removed from the process tank. The descale process tank maintained the contents at approximately 450°F in a molten state. When removed, the sludge was put into drums to cool and solidify. The solidified waste was then transported to the Drum Storage Pad (Building 03-37) for offsite disposal. Under the Grumman Waste minimization program, some of the sludge was utilized at the Plant 02 IWTF for pH adjustment of wastewater.

Prior to construction Building 03-37 in 1982, the solidified sludge was stored in drums at the former outdoor drum marshalling areas east and north of Building 03-01.

Containers

Steel 55-gallon drums were used during years of active production for storing a variety of wastes at collection/accumulation points throughout manufacturing and laboratory areas of NWIRP Bethpage. It has been Grumman policy to remove and properly dispose of any containers in any 90-day accumulation areas prior to 90 days regardless of the amount in the container (Ohlmann, 1994a). Other containers used included 85-gallon overpack drums, large roll-off containers, and pelletized corrugated boxes. These containers were U.S. Department of Transportation (USDOT) approved and had to be used by licensed disposal vendors for transportation and storage. When the containers were full, they were labeled, sealed, and transported to the Drum Storage Pad (Building 03-37) to await off-site disposal.

Waste Oil, Fuel and Water Waste

Oil and water waste was generated during production years primarily from the cleaning of (mainly from changing oil in) heavy machinery. It consisted of waste lubricants from cooling and milling operations (such as in Buildings 03-01, 17-20, and 05-01), waste oil from automobiles (especially

Plant 20), and miscellaneous oils used at various locations. These oils likely contained various halogenated and non-halogenated solvents, alcohols, and heavy metals, due to contaminated residue in the machinery prior to cleaning operations. Water may also have been present in these wastes due to the utilization of water soluble cutting oils. In recent years, these wastes were collected in drums and transported to the Drum Storage Pad (03-37). Some may have been transferred to a 5,000-gallon AST located within that area and later disposed of by fuel blending, incineration, or recycling by private disposal contractors. Prior to the construction of Building 03-37, the drums were stored at the former outdoor drum marshalling areas located east and north of Plant 03.

Currently, waste oils and fuels are being generated when machines or equipment are drained of oil and products such as hydraulic oil, lubricating motor oil, compressor oil, diesel fuel, gasoline, and cutting oil. Table 3-2 presents a typical characterization of waste oil and waste fuel currently being generated at NWIRP Bethpage.

Oil and Fuel Contaminated Debris

Oil and fuel contaminated debris is currently being generated when machines and equipment are drained of oil and fuel products as part of the decommissioning process. It consists of various debris, including filters, wood, speedi-dry, paper, absorbent pads, pigs and mats that are contaminated with oil and/or fuel. As with the waste oil and fuel waste stream described above, the debris may be contaminated with various halogenated solvents, non-halogenated solvents, alcohol's and heavy metals. This waste stream is classified as hazardous because it may exhibit the hazardous characteristic of toxicity, or because it may contain listed hazardous waste solvents.

Photo Waste

The amount of photo waste generated and stored at the Grumman Bethpage complex has varied with production rates at the complex and at other satellite Grumman facilities on Long Island that ship in their wastes. Within the Navy-owned areas, the largest quantities of photo waste were generated in the Arts and Engraving Area in the western part of Building 03-01. Photo waste is usually high in silver and must go through a silver recovery system before the remaining effluent can be treated in an IWTF or shipped out for disposal offsite. Prior to shipment off-site, the effluent was analyzed to determine if it could be treated at the IWTF and then discharged into the Nassau County Sewer System.

TABLE 3-2
WASTE ANALYSIS
WASTE OILS, FUELS AND WASTE WATER

Contaminant	Range of Concentrations
Oil	0-100%
Water	0-100%
Acetone	<1%
Tetrachloroethylene	<1%
Butyl Alcohol	<1%
Methylene Chloride	<1%
Methyl Ethyl Ketone	<1%
Toluene	<1%
Methyl Isobutyl Ketone	<1%
1,1,1 Trichloroethane	<1%
Trichloroethylene	<1%
Freon 113	<1%
Trichlorofloromethane	<1%
Xylene	<1%
Methanol	<1%

Source: Dvirka and Bartilucci, 1997

Acid and Caustic Waste (D002, D007, D008, U134)

This waste stream consists of waste generated from laboratory operations and as a result of the ongoing decommissioning activities. Typical acids used include: hydrochloric, hydrofluoric, nitric, sulfuric, perchloric and acetic acid. Typical caustics used include: ammonia, hydroxide, sodium, hydroxide and potassium chloride. This waste is collected in plastic or glass containers and transported to the Drum Storage Pad (Building 03-37).

Miscellaneous Waste and Solid Waste

Miscellaneous waste generated at the Grumman Bethpage complex in active production years consisted of lab packs, off-specification raw materials, and general solid waste. There is no available evidence that beryllium, commonly used in the manufacture of aircraft brakes, was ever used at the Bethpage facility. Currently, low levels of miscellaneous wastes, as well as solid waste (including wet batteries, waste fluorescent lamps, and aerosol cans), is being generated as part of decommissioning activities and is collected in steel drums and transported to Building 03-37, where it is later picked up by private contractors.

Lab packs include spent lab materials, outdated and spent lab reagents, and general reagents used in laboratories. These materials are packed into 55-gallon drums, sealed, and labeled to await off-site shipment. If the identity of the waste can not be determined, the on-site laboratory in Building 10-01 or an outside New York State certified laboratory is contracted to perform the chemical analyses necessary to determine the components of the waste.

Off-specification raw materials include chemicals regularly identified throughout the various manufacturing areas. The list of off-specification chemicals includes metal finishes, solvents, paints, and adhesives. These materials are collected in containers of varying sizes ranging from 0.5-pint containers to 55-gallon drums. The smaller containers are sealed in lab packs and handled in the same manner as discussed above. The 55-gallon drums are brought to the Drum Storage Pad (Building 03-37) for storage prior to off-site shipment and disposal.

Other miscellaneous waste include rags and wipers generated from painting cleaning operations during the decommissioning process and various solid wastes generated from manufacturing operations. These solid wastes have been soaked in oil, fuel, grease paint, solvents, acids, caustic and alodine solution. The waste stream may contain various halogenated solvents, non-halogenated solvents, alcohols and heavy metals. The waste is classified as hazardous because it could be toxic or could

contain listed hazardous waste solvents. Solid wastes at NWIRP Bethpage are separated for recycling purposes. Any nonrecyclable, burnable wastes are removed offsite. Similarly, all nonrecyclable, nonburnable waste is removed from the site by contractors. Garbage disposed of in barrels and dumpsters is also hauled off-site. Materials separated and sold for recycling include aluminum, steel, iron, titanium, plastic, film, copper, and wire.

It is reported that these current solid waste disposal practices are considered representative of practices dating from the early 1950s when the area northwest of the site experienced a developmental surge. The reported recovery of film for recycling did not begin until about 1967 (NEESA, 1986).

3.2 ENVIRONMENTAL AND WASTE MANAGEMENT PERMITS

The following section discusses specific environmental permits held by Grumman and the Navy for operations at NWIRP Bethpage.

3.2.1 Resource Conservation and Recovery Act and Part 373 Permit

The Resource Conservation and Recovery Act (RCRA) of 1976 requires that the Navy and Grumman possess a Federal Hazardous and Solid Waste Amendment (HSWA) permit and a New York State Part 373 Hazardous Waste Management permit for the treatment, storage, and disposal of hazardous substances at NWIRP Bethpage. The HSWA permit in conjunction with the Part 373 permit constitutes the RCRA permit for the facility.

Grumman was granted an approved Part B hazardous waste storage permit by the EPA in compliance with the requirements of RCRA. This permit, issued on February 29, 1984, satisfies the Federal requirements for operating a hazardous waste storage/treatment facility pursuant to 40 CFR Parts 264 and 270. In addition, Grumman has complied with both federal and state regulations by filing a hazardous waste activity form, submitting a Part A application for an interim Hazardous Waste Permit to the EPA, and sending an application to NYSDEC for approval to operate a Solid Waste Management Facility. Grumman has submitted applications for and received permit renewals in 1988 and 1992 (Dvirka and Bartilucci, 1988 and 1992). Grumman recently submitted another application to renew their Part 373 permit (Dvirka and Bartilucci, 1997).

3.2.2 State Pollutant Discharge Elimination Systems Permit

Grumman has a State Pollutant Discharge Elimination System (SPDES) Permit for 10 outfalls on its Bethpage facility. The permit was issued in compliance with Title 8 of Article 17 of the Comprehensive Law of New York State and in compliance with the Clean Water Act (CWA), as amended. Outfalls 001, 002, and 003 have been abandoned, and no discharges are now permitted through them. Outfall 008 is discharge of sanitary wastes to a series of abandoned septic tanks and pools. Discharges are no longer permitted. The remainder of the outfalls discharge noncontact cooling water and stormwater. Of all the outfalls, only 004, 006 and 010 were within the scope of this EBS. Outfall 004 discharges process wastewater from Plant 03, Outfall 006 discharges non-contact cooling water and stormwater from Plant 05, and Outfall 010 discharges from the IWTF (Building 03-34).

According to a letter from Grumman Corporation to NYSDEC, dated June 21, 1984, the new Pretreatment Facility was operational and connected to the municipal system on January 1, 1984. As of that date, all process wastewater from Outfall 004 is treated at the new facility and discharged to the municipal sewer system. Because of these changes, Grumman asked the state to modify the SPDES permit for Outfall 004.

The Nassau County Department of Health periodically inspects and tests the outfall effluent. The results are reviewed to ensure that the effluent limitations comply with the SPDES permit. A review of available Grumman records indicated that effluent parameters were exceeded in Outfall 004 in the past, but proper corrective actions were taken.

3.2.3 Air Permits

Within the scope of this EBS, a records search and review of Grumman records indicated that Buildings 03-01, 05-01, 17S-20, 175-01, 10-01, and 20-01 house emissions sources that require permits. As of 1992, there were a total of 72 individual emissions sources permitted on NWIRP Bethpage, including 58 in Building 03-01, 7 in Building 05-01, 3 in Building 17S-20, 2 in Building 17N-01, 1 in Building 10-01, and 1 in Building 20-01. Detailed information on each source is provided in Table 3-3.

A review of Grumman's files indicated that a notice of violation (NOV) was issued on July 24, 1984 for violation of Section 113(a)(1) of the Clean Air Act. On June 7, 1984 EPA inspectors conducted an air compliance inspection at Grumman, including a review of its permit file. The inspection

TABLE 3-3

PERMITTED AIR EMISSION POINTS[1]
NWIRP, BETHPAGE, NEW YORK

Grumman Number	Navy Number	Emission Point	Process Description	Location
03-01	3	0307B	Paint Tunnel 6	ID, Packaging, and Paint Booth Area
03-01	3	0309A	Tank 958-Nitric acid	Chem Mill Clean Area
03-01	3	03024	Alkaline metals cleaning tank	Heat Treat Area A
03-01	3	03027	Spray coating stress relief process	Heat Treat Area A
03-01	3	03028	Rotoblast-aluminum oxide exhaust	Heat Treat Area A
03-01	3	03029	Vacublast-aluminum oxide exhaust	Heat Treat Area A
03-01	3	03032	Hooded metal spinning process	Machining Area West of Wall 16
03-01	3	03033	Hooded metal spinning process	Old Alodine/Plating/Paint Booth Area
03-01	3	03041	Tank 213-sodium hydroxide	Old Alodine/Plating/Paint Booth Area
03-01	3	03042	Acid cleaning/steel etching exhaust	Old Alodine/Plating/Paint Booth Area
03-01	3	03043	Tank 210- degreaser exhaust	Old Alodine/Plating/Paint Booth Area
03-01	3	03044	Deoxidizer tank-exhaust	Old Alodine/Plating/Paint Booth Area
03-01	3	03046	Plating process tanks	Old Alodine/Plating/Paint Booth Area
03-01	3	03099	Tank 956 - Ridoline 53	Chem Mill Clean Area
03-01	3	03162	Dirt blasting	Old Alodine/Plating/Paint Booth Area
03-01	3	03163	Spray booth metal dust	Old Alodine/Plating/Paint Booth Area
03-01	3	03164	Metal dust	Old Alodine/Plating/Paint Booth Area
03-01	3	03171	Nitric acid desmutting-chemmill used to clean scrap metals	Chem Mill Etch Area
03-01	3	03172	Tank 1127 - Titanium etch	Chem Mill Etch Area
03-01	3	03173	Tank 1125 - Aluminum etch	Chem Mill Etch Area
03-01	3	03174	Nitric acid desmutting-chem mill used to clean scrap metal	Chem Mill Etch Area
03-01	3	03175	Sodium hydroxide tank-chem mill used to clean scrap metal	Chem Mill Etch Area
03-01	3	03176	Tank 1120 - Aluminum etch	Chem Mill Etch Area
03-01	3	03195	Tank 1137 - Degreaser	Chromic Acid Anodize Area

TABLE 3-3
PERMITTED AIR EMISSION POINTS[1]
NWIRP, BETHPAGE, NEW YORK
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Grumman Number	Navy Number	Emission Point	Process Description	Location
03-01	3	03191	Tank 1138 - Aluminum cleaning	Chromic Acid Anodize Area
03-01	3	03192	Tank 1140 - Caustic	Chromic Acid Anodize Area
03-01	3	03193	Tank 1141 - Deoxidizer	Chromic Acid Anodize Area
03-01	3	03194	Tank 1144 - Chromic anodize	Chromic Acid Anodize Area
03-01	3	03201	Paint prep hood	Arts and Engraving Area
03-01	3	03202	Paint prep hood	Arts and Engraving Area
03-01	3	03203	Potting hood	Arts and Engraving Area
03-01	3	03204	Potting hood	Arts and Engraving Area
03-01	3	03205	Sanding hood	Arts and Engraving Area
03-01	3	03206	Sanding hood	Arts and Engraving Area
03-01	3	03211	Paint mixing bench	Arts and Engraving Area
03-01	3	03212	Silk screen washer	Arts and Engraving Area
03-01	3	03213	Paint spray booth	Arts and Engraving Area
03-01	3	03231	Edge light air brush	Arts and Engraving Area
03-01	3	03241	Edge light etching	Arts and Engraving Area
03-01	3	03253	Photo etch processor	Arts and Engraving Area
03-01	3	03261	Silk screen processor	Arts and Engraving Area
03-01	3	03262	Vacuum plate exhaust	Arts and Engraving Area
03-01	3	03263	Vacuum plate exhaust	Arts and Engraving Area
03-01	3	03264	Vacuum plate exhaust	Arts and Engraving Area
03-01	3	03265	Vacuum plate exhaust	Arts and Engraving Area
03-01	3	03266	Vacuum plate exhaust	Arts and Engraving Area
03-01	3	03267	Silk screen printer	Arts and Engraving Area
03-01	3	0326A	Drying booth exhaust	Arts and Engraving Area
03-01	3	0326B	Drying booth exhaust	Arts and Engraving Area
03-01	3	03272	Flash welding	Machining Area West of Wall 16
03-01	3	03273	Induction welding	Machining Area West of Wall 16

TABLE 3-3
PERMITTED AIR EMISSION POINTS[1]
NWIRP, BETHPAGE, NEW YORK
PAGE 3 OF 3

Grumman Number	Navy Number	Emission Point	Process Description	Location
03-01	3	03282	Tank 1222 - alkaline cleaner	Alodine/Sulfuric Acid Anodize Area
03-01	3	03283	Tank 1224 - deoxidizer	Alodine/Sulfuric Acid Anodize Area
03-01	3	03284	Tank 1225 - deoxidizer	Alodine/Sulfuric Acid Anodize Area
03-01	3	03301	Prime coat oven	ID, Packaging, and Paint Booth Area
03-01	3	0330F	Automated paint	ID, Packaging, and Paint Booth Area
03-01	3	03311	Flow coating	Chem Mill Etch Area
03-01	3	03321	Well water stripping tower	Outside Building 03-01 near Northeastern Machining Area
05-01	150	05011	Woodworking machines	Old Model Shop
05-01	150	05031	Paint spray tunnel-lower wet. No status currently because NYSDEC plan not approved	Alodine Room and Paint Area
05-01	150	05032	Paint spray tunnel-upper dry. No status currently because NYSDEC plan not approved	Alodine Room and Paint Area
05-01	150	05033	Alodine process line	Alodine Room and Paint Area
05-01	150	05041	Woodworking machines	Old Model Shop
05-01	150	05055	Composite grinding	High Bay Area
05-01	150	05071	Paint spray booth. No permit issued because NYSDEC plan not approved	High Bay Area
10-01	10	10011	Paint spray booth. No current status because NYSDEC plan not approved.	Room 36
17S-20	20	17011	Plate cutter	Warehouse H Portion
17S-20	20	17012	Plate cutter	Warehouse H Portion
17S-20	20	17013	Woodworking machines	Warehouse L Portion
17N-1	20	17014	Sealant hood	Interior
17N-1	20	17015	Sealant hood	Interior
20-01	2	20011	Auto body paint shop	Interior

1 Sources: Grumman, 1993; Weber, 1997

revealed that surface coating processes conducted by Grumman consisted of the application of coatings determined to be Extreme Performance Coatings designed for Harsh Exposure or Extreme Performance Environmental Conditions. These coatings are subject to a limitation of 3.5 pounds of organic solvent (minus water) per gallon of coating at application, constituting a violation of state and Federal regulations. The NOV required that Grumman present evidence bearing on the finding and nature of the violation, and discuss any action to achieve compliance. No information was available showing Grumman's response to the NOV, if any.

The permitted emission points and a description of the permitted activity are listed on Table 3-3.

3.3 UNDERGROUND/ABOVEGROUND STORAGE TANKS

Section 3.3.1 discusses underground storage tanks, Section 3.3.2 discusses aboveground storage tanks, and Section 3.3.3 discusses industrial process tanks on NWIRP Bethpage. It should be noted that because of the ongoing closure of many of the facilities at NWIRP Bethpage, some of the tanks are scheduled for closure or have already been decommissioned. These sections discuss the status of tanks on NWIRP Bethpage as of the May 1997 visual site inspection for this EBS.

3.3.1 Underground Storage Tanks

The information provided in Table 3-4 lists Grumman tank number, building affiliation, design capacity of the tank, material contained or stored, the date it was installed, and any pertinent information relevant to the tank (including its removal date, if applicable). Grumman has a schedule for performing tank tightness tests on all active USTs on NWIRP Bethpage and adjacent Grumman-owned property. Most the tanks have been fully upgraded with appropriate leak detection systems and internal and external protection, and some have been equipped with leak alarm systems.

3.3.2 Aboveground Storage Tanks

Table 3-5 lists aboveground storage tanks on NWIRP Bethpage. The table lists Grumman tank number, building affiliation, contents, size, and date of installation.

3.3.3 Process Tanks

The manufacturing processes conducted throughout NWIRP Bethpage required numerous process tanks to hold various solvents and other industrial chemicals. These tanks were either dip tanks used

TABLE 3-4

1997 INVENTORY OF CURRENT AND FORMER UNDERGROUND STORAGE TANKS
NWIRP, BETHPAGE, NEW YORK

Grumman No.	Navy No.	Building Name	Tank Number	Volume (gallons)	Product	Status	Date Installed	Comment
03-01	3	Manufacturing	03-01-1	25000	No. 4 Fuel Oil	Not Active	N/A	Last used between 1979 and 1985
03-01	3	Manufacturing	03-01-2	25000	No. 4 Fuel Oil	Not Active	N/A	Last used between 1979 and 1985
03-01	3	Manufacturing	03-01-3	25000	No. 4 Fuel Oil	Not Active	N/A	Last used between 1979 and 1985
03-01	3	Manufacturing	03-01-4	550	Diesel	Active	1977	Outdoor steel UST. Tested 8/16/96
03-01	3	Manufacturing	03-01-5	8000	No. 2 Fuel Oil	Not Active	N/A	Last used between 1979 and 1985
03-01	3	Manufacturing	03-01-6	2500	Waste Oil	Active	1980	Fiberglass plastic UST. Tested 8/15/95
03-01	3	Manufacturing	03-01-7	4000	No. 2	Not Active	1968	Outdoor steel UST. No available information on location.
03-01	3	Manufacturing	03-01-8	6000	Empty	Not Active	1974	Steel UST last used in 1984. No available information on location.
03-03	42	Well House #9	03-03-1	550	Diesel	Active	1974	Steel UST in Pump House No. 9. Tested in 8/15/96

TABLE 3-4
1997 INVENTORY OF CURRENT AND FORMER UNDERGROUND STORAGE TANKS
NWIRP, BETHPAGE, NEW YORK
PAGE 2 OF 5

Grumman No.	Navy No.	Building Name	Tank Number	Volume (gallons)	Product	Status	Date Installed	Comment
03-07	21	Old Salvage Operations Building	03-07-1	2000	No. 2 Fuel Oil	Not Active	N/A	Last used before 1988. Building razed, tank not affiliated with current Building 03-07.
03-13	34	Sanitation Office	03-13-1	2000	Gasoline	Not Active	1944	Steel UST last used in 1981
03-13	34	Sanitation Office	03-13-2	1000	Gasoline	Not Active	1944	Steel UST last used in 1981
03-13	34	Sanitation Office	03-13-3	2000	Diesel	Not Active	1965	Steel UST removed in 1991
03-34	133	Industrial Waste Treatment Facility	03-34-2	550	Diesel	Active	1982	Outdoor fiberglass UST. Tested 8/11/95
03-34	133	Industrial Waste Treatment Facility	03-34-3	2000	No. 2 Fuel oil	Not Active	1982	Outdoor fiberglass UST. Removed in 1993
03-34	133	Industrial Waste Treatment Facility	03-34-4	4000	Waste Oil	Active	1982	Outdoor fiberglassUST. Scheduled to be tested 12/31/97
05-01	150	Engineering/ Manufacturing	05-01-1	1000	Diesel	Active	1944	Steel UST for generator Tested 8/22/96
05-05	159	Fire Pump Station	05-05-1	275	Diesel	Not Active	1944	Old fire pump tank abandoned in place in 1985

TABLE 3-4
1997 INVENTORY OF CURRENT AND FORMER UNDERGROUND STORAGE TANKS
NWIRP, BETHPAGE, NEW YORK
PAGE 3 OF 5

Grumman No.	Navy No.	Building Name	Tank Number	Volume (gallons)	Product	Status	Date Installed	Comment
17-20	20	Warehouse D/H/L/M/N	17-20-1	3000	No. 2	Not Active	1944	Removed in concurrence with NYSDEC regulations in 1991
17-20	20	Warehouse D/H/L/M/N	17-20-2	10000	No. 2 Fuel Oil	Active	1991	Double wall steel UST with fiberglass coating
17-22	26	Pump House	17-22-1	10000	No. 2	Not Active	1944	Steel UST for fire pump house-boiler and removed in 1991
17-22	26	Pump House	17-22-2	2500	No. 2	Not Active	1944	Steel UST for fire pump house generator and removed in 1987
20-01	2	Garage	20-01-1	6000	Diesel	Active	1977	Fiberglass UST used for refueling. Tested 12/95
20-01	2	Garage	20-01-2	6000	Gasline	Active	1977	Fiberglass UST. Tested 6/27/96
20-01	2	Garage	20-01-3	4000	Gasoline	Active	1977	Fiberglass plastic UST. Tested 06/03/96
20-01	2	Garage	20-01-4	6000	Gasoline	Not Active	1975	Steel UST removed in 1990
20-01	2	Garage	20-01-5	5000	No. 2	Not Active	1943	Steel UST abandoned in place in 1991
20-01	2	Garage	20-01-6	275	No. 2	N/A	1943	Steel UST
20-01	2	Garage	20-01-7	2000	Used oil	Not Active	1968	Steel UST removed in 1995
20-01	2	Garage	20-01-8	550	Used Oil	Not Active	1968	Steel UST removed but date unknown

TABLE 3-4
1997 INVENTORY OF CURRENT AND FORMER UNDERGROUND STORAGE TANKS
NWIRP, BETHPAGE, NEW YORK
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Grumman No.	Navy No.	Building Name	Tank Number	Volume (gallons)	Product	Status	Date Installed	Comment
20-01	2	Garage	20-01-9	550	Used Oil	Not Active	1968	Steel UST removed in 1992
20-01	2	Garage	20-01-10	550	Diesel	Not Active	1964	Steel UST removed in 1992
20-01	2	Garage	20-01-10A	550	Diesel	Not Active	N/A	Steel UST removed 1992
20-01	2	Garage	20-01-11	20000	Gasoline	Active	1979	Fiberglass UST used for refueling purposes. Tested 12/19/94
20-01	2	Garage	20-01-12	20000	Gasoline	Active	1979	Fiberglass UST used for refueling purposes. Tested 12/22/94
20-01	2	Garage	20-01-13	10000	Diesel	Active	1979	Fiberglass UST used for refueling purposes. Tested 12/15/94
20-01	2	Garage	20-01-14	6000	No. 2	Active	1979	Fiberglass UST used in the fuel-depot boiler. Tested 9/7/94
20-01	2	Garage	20-01-15	1000	No.2	Not Active	1985	Fiberglass UST. Removed 10/17/96
20-01	2	Garage	20-01-16	550	Motor Oil	Not Active	1985	Fiberglass UST. Removed 8/29/90
20-01	2	Garage	20-01-17	1000	Waste Oil	Not Active	1985	Fiberglass UST. Removed 8/29/90
20-01	2	Garage	20-01-18	N/A	N/A	N/A	N/A	Invalid tank registration number.
20-01	2	Garage	20-01-19	550	Waste oil	Active	1982	Fiberglass UST. Tested 5/17/96

TABLE 3-4
1997 INVENTORY OF CURRENT AND FORMER UNDERGROUND STORAGE TANKS
NWIRP, BETHPAGE, NEW YORK
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Grumman No.	Navy No.	Building Name	Tank Number	Volume (gallons)	Product	Status	Date Installed	Comment
20-01	2	Garage	20-01-20	275	Motor Oil	Not Active	1968	Steel UST removed; date unknown
20-01	2	Garage	20-01-21	275	Motor Oil	Not Active	1968	Steel UST removed; date unknown
20-01	2	Garage	20-01-22	500	Waste oil	Not Active	1992	Steel UST removed; date unknown
20-01	2	Garage	20-01-23	500	Motor oil	Not Active	1992	Steel UST removed; date unknown
20-01	2	Garage	20-01-26	15000	Diesel	N/A	1996	Proposed UST to be installed
20-01	2	Garage	20-01-27	8000	Diesel	N/A	1996	Proposed UST to be installed
20-01	2	Garage	20-01-28	15000	Gasoline	N/A	1996	Proposed UST to be installed
25-05	161	Pump House	25-05-1	275	Gasoline	Not Active	N/A	Removed 1990
25-05	161	Pump House	25-05-2	275	Diesel	Active	1990	Fully upgraded double-wall tank

Sources: Grumman, 1997; Ohlmann, 1986a; Ohlmann, 1994b; Grumman, 1985a

TABLE 3-5

1997 INVENTORY OF CURRENT AND FORMER ABOVEGROUND STORAGE TANKS[1]
NWIRP, BETHPAGE, NEW YORK

Grumman Number	Navy Number	Building Name	Tank Number	Volume (gallons)	Product	Date Installed	Comments
03-01	3	Manufacturing	03-01-7	275	Diesel	1977	Active steel AST. Located inside Building 03-01 in Facilities Maintenance Area
03-01	3	Manufacturing	03-01-8	275	Diesel	1943	Active steel AST. Located inside Building 03-01 in Facilities Maintenance Area
03-01	3	Manufacturing	03-01-9	275	Diesel	N/A	Active steel AST. Located inside Building 03-01 in Facilities Maintenance Area
03-07	21	Old Salvage Operations Building	03-07-2	275	No. 2 Fuel oil	1943	Removed before 1988. Building razed, tank not affiliated with current Building 03-07
03-07	21	Old Salvage Operations Building	03-07-3	275	No. 2 Fuel oil	1943	Removed before 1988. Building razed, tank not affiliated with current Building 03-07
03-13	34	Sanitation Office	03-13-4	20000	Waste Oil	N/A	Reinforced concrete, removed before 1985
03-13	34	Sanitation Office	03-13-5	2000	Waste Oil	N/A	Steel, removed before 1985
03-13	34	Sanitation Office	03-13-6	1500	Waste Oil	N/A	Steel, removed before 1985
03-13	34	Sanitation Office	03-13-7	500	Waste Oil	N/A	Steel, removed before 1985
03-13	34	Sanitation Office	03-13-8	500	Waste Oil	N/A	Steel, removed before 1985
03-13	34	Sanitation Office	03-13-9	500	Waste Oil	N/A	Steel, removed before 1985
03-13	34	Sanitation Office	03-13-15A	275	No. 2 Fuel oil	1994	Active steel AST used in boiler room

TABLE 3-5
1997 INVENTORY OF CURRENT AND FORMER ABOVEGROUND STORAGE TANKS[1]
NWIRP, BETHPAGE, NEW YORK
PAGE 2 OF 2

Grumman Number	Navy Number	Building Name	Tank Number	Volume (gallons)	Product	Date Installed	Comments
03-13	34	Sanitation Office	03-13-15B	275	No. 2 Fuel oil	1994	Active steel AST used in boiler room
03-34	133	Industrial Waste Treatment Facility	03-34-5	2000	No. 2 Fuel oil	1993	Tank conditions not known
05-05	159	Fire Pump Station	05-05-1	275	Diesel	N/A	AST used for generator in pump house
17-22	26	Pump House	17-22-3	275	Diesel	N/A	AST used for generator in pump house
20-01	2	Garage	20-01-6	275	No. 2 fuel oil	1943	Active steel AST used to fuel steam jenny
20-01	2	Garage	20-01-8	275	Motor oil	N/A	No other details available
20-01	2	Garage	20-01-20	275	Motor oil	N/A	No other details available
20-01	2	Garage	20-01-21	275	Motor oil	N/A	No other details available
20-01	2	Garage	20-03-22	550	Waste oil	N/A	Tank contained waste oil from tire shop
20-01	2	Garage	20-01-24	650	Motor Oil	1996	Indoor steel AST
20-01	2	Garage	20-01-25	300	Diesel	1996	Outdoor steel active AST
20-01	2	Garage	20-01-T	550	Diesel	N/A	AST stored diesel for generator
20-01	2	Garage	20-02-2	275	No. 2 Fuel oil	1961	Active steel AST used in the boiler room
20-01	2	Garage	20-02-3	275	No. 2 Fuel oil	1961	Active steel AST used in the boiler room
25-03	163	Gas Repair Depot	25-03-1	275	No. 2 Fuel Oil	N/A	Active AST

1 Sources: Grumman, 1985a and Ohlmann, 1994b

to immerse metal aircraft parts or reservoir tanks used to supply solutions needed in industrial processes. Areas in Building 03-01 where clusters of process tanks were used include the old alodine area, old plating room, alodine/sulfuric acid anodize area, chromic acid anodize area, old and new chem mill areas, and the heat treat areas. Similar process tanks were also located in the smaller-scale alodine and heat treat areas of Building 05-01. Process tanks used in the pretreatment of industrial wastewater are located in the IWTF (Building 03-34). Tables of process tanks are provided individually in Chapters 6 and 8 for these process areas. These tables provide information on the volume, contents, history, and status of each process tank based on site observations and a tank inventory maintained by Grumman (Grumman, 1997).

3.4 INSTALLATION RESTORATION PROGRAM

The Navy implemented the Navy Assessment and Control of Installation Pollutants (NACIP) in 1980 to identify and evaluate past hazardous material disposal sites on Naval installations and to control the migration of hazardous material from such sites. The NACIP represented the Navy's program for complying CERCLA. The NACIP was renamed the Installation Restoration Program in 1987. Under the IR Program, sites are addressed in a phased approach involving increasingly more detailed investigation that progressively eliminates sites revealed not to be of significant concern and culminates in the control or elimination of contamination where necessary (NEESA, 1986):

Stage 1: Preliminary Assessment (PA): Identifies disposal sites and other areas that could potentially be contaminated by hazardous materials. Formerly referred to as Initial Assessment Study (IAS).

Stage 2: Site Investigation (SI): Investigation conducted to confirm whether potential contamination identified in the PA is significant. Formerly referred to as Confirmation Study.

Stage 3: Remedial Investigation/Feasibility Study (RI/FS): Characterizes the nature and extent of contamination (RI) and develops alternatives for remediation of the site (FS). Formerly performed as part of Confirmation Study.

Stage 4: Remedial Action: Results in the control or cleanup of contamination at sites characterized by the RI/FS. Formerly referred to as Remedial Measures.

Initial Assessment Study (NEESA, 1986): An IAS was completed for NWIRP Bethpage in 1986. It identified three areas as potentially contaminated (Figure 3-1) and recommended further investigation of those areas in a Confirmation Study. They include:

- Site 7 (renumbered as Site 1): Former Drum Marshalling Areas
- Site 8 (renumbered as Site 2): Recharge Basins
- Site 9 (renumbered as Site 3): Salvage Storage Area

The renumbering reflects the fact that the IAS also addressed NWIRP Calverton, another Navy installation on Long Island that was leased to Grumman until 1996. The areas designated as Sites 1 through 6 in the IAS are located at this other installation. The NWIRP Bethpage sites were designated as Sites 7 through 9 in the IAS but were referred to as Sites 1 through 3 in subsequent IR reports.

The Former Drum Marshalling Areas (Site 1) were located on unpaved ground east of the Plant 03 manufacturing building (Building 03-01) (Figure 3-1). This unpaved area was also a former leachfield used to treat sanitary wastewater generated in Building 03-01. From the early 1950s through 1978, drums of waste containing cadmium, arsenic, and halogenated and nonhalogenated solvents were stored on a roughly 100-foot by 100-foot unpaved pad designated in the IAS as Former Drum Marshalling Area No. 2. From 1978 until 1982, the drummed waste was marshalled on a new 100-foot by 100-foot concrete pad immediately south of the original site (designated in the IAS as Former Drum Marshalling Area No. 1), but the pad lacked a cover or a berm to trap spilled or leaked liquid. Starting in 1982, waste drum marshalling activities were moved to a new covered and bermed pad located north of Building 03-01 (Building 03-37).

The Recharge Basins (Site 2) are located near the northeastern corner of the Navy 105-Acre Parcel (Figure 3-1). Although they presently collect only stormwater and some floor drainage from Building 03-01, some of the production lines in Building 03-01 discharged industrial wastewater to the recharge basins prior to 1984. This site also includes a series of former sludge-drying beds where sludge from the older industrial wastewater treatment plant at the Grumman-owned Plant 02 was applied to bare soil. The IAS noted that water reaching the recharge basins could have contained chromium, aluminum, nitric acid, and sulfuric acid.

The Salvage Storage Area (Site 3) originally occupied a large exterior area bounded to the east by the Recharge Basins, to the south by a service road, to the west by the North Warehouses, and to the north by a strip of deciduous forest (Figure 3-1). Metal fixtures used in aircraft assembly, tools, and metallic wastes were stored on unpaved ground here from the early 1950s through

1969. Aluminum and titanium shavings and cutting oils were reported as contacting the ground during this period. Additionally, drummed waste (including waste oils and waste halogenated and nonhalogenated solvents) was marshalled on bare ground in the north-central part of this area (designated in the IAS as Former Drum Marshalling Area #3). The present Salvage Storage Area represents only part of the former area, much of which was paved after 1970 to provide additional parking capacity.

Site Investigation (HNUS, 1992b): Surface and subsurface soil samples were collected from the three sites in 1991 and analyzed for full-scan organic and inorganic parameters, and temporary monitoring well groundwater samples from the sites were analyzed for volatile organic compounds (VOCs). Contamination was confirmed for each of the sites as follows:

Site 1: Halogenated solvents (tetrachloroethane [PCE] and trichloroethene [TCE]), PCBs, the insecticide DDT, cadmium, chromium, mercury, lead, and cyanide were detected in surface soil samples. PCE, TCE, arsenic, and cyanide were detected in subsurface soil samples. The following halogenated solvents were detected in the groundwater samples: PCE, TCE, 1,1,1-trichloroethane (1,1,1-TCEA), 1,2-dichloroethene (1,2-DCE), and 1,1-dichloroethane (1,1-DCEA).

Site 2: PCBs and lead were detected in surface soil samples. TCE, PCBs, chromium, and lead were detected in subsurface soil samples. PCE and chromium were detected in basin sediment samples. TCE was detected in groundwater samples.

Site 3: PCBs, arsenic, chromium, lead, nickel, and vanadium were detected in surface soil samples. PCE and lead were detected in subsurface soil samples. TCE, 1,2-DCE, and PCE were detected in groundwater samples.

An additional round of groundwater sampling was conducted in 1991 and revealed similar patterns of contamination (HNUS, 1992b).

Remedial Investigation (HNUS, 1992a): An RI completed in 1992 investigated the nature and extent of contamination at the three sites. Soil metals and other non-VOC soil contaminants detected in soils

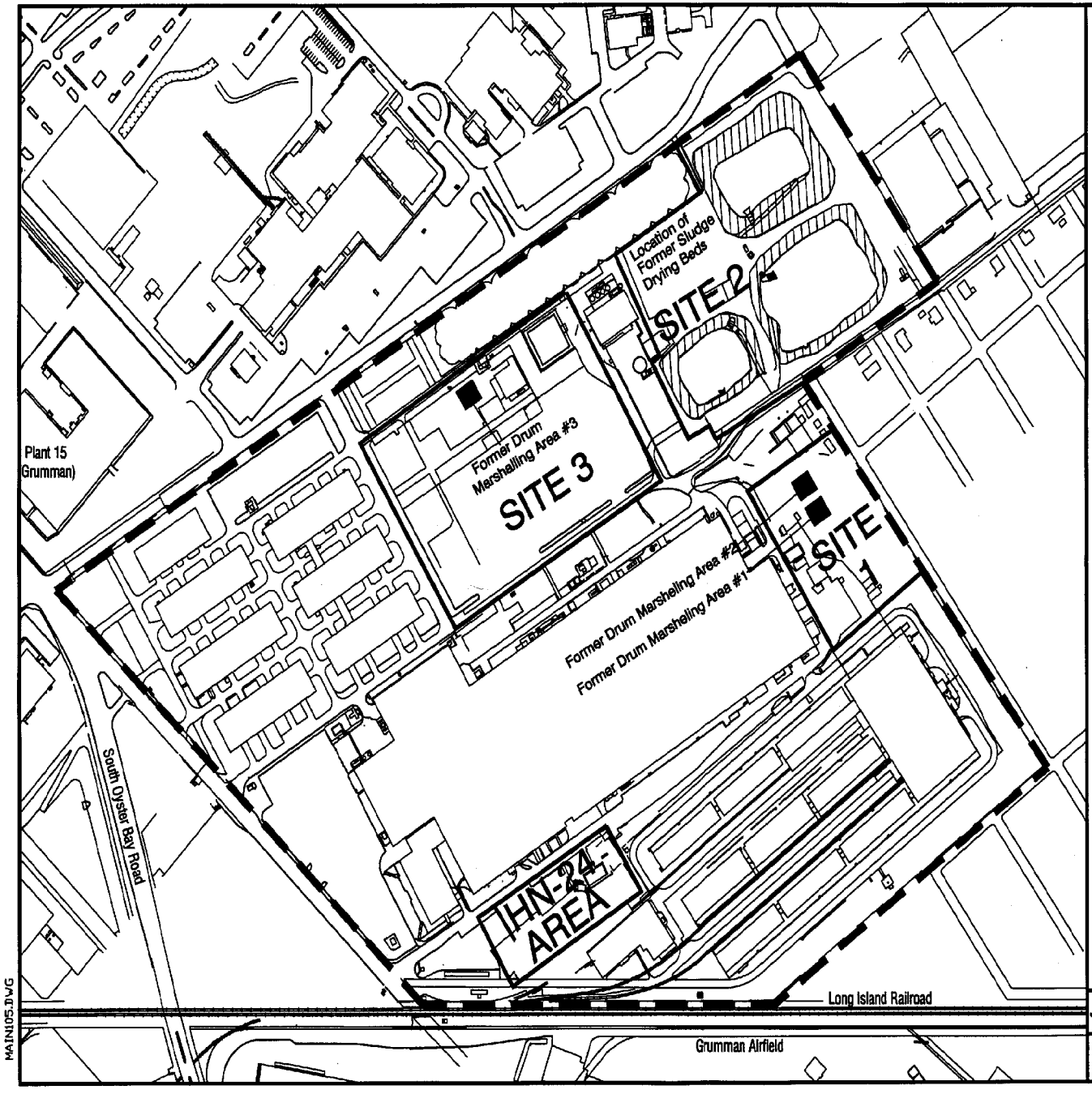

Figure 3-1

Installation Restoration Program Sites

Phase I EBS
NWIRP Bethpage, New York

Legend

Navy 105 Acre Parcel Boundary

Installation Restoration Program Site Boundary

Site 1: Former Drum Marshelling Area (Includes Former Plant 03 Leach Fields)
Site 2: Recharge Basins
Site 3: Salvage Storage Area

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at each of the three sites were concluded not to pose a significant risk to site employees or nearby residents. Other RI findings are summarized as follows:

Site 1: Soil gas and soil samples indicated that a source area of VOC contamination (primarily the halogenated solvents PCE and TCE) exists near the two former drum marshalling locations. The RI concluded that soils at these locations were likely sources of groundwater contamination. PCBs were identified as tentatively identified compounds (TICs) in the soil samples. A Phase 2 RI was recommended to investigate the overall extent of VOC contamination in the groundwater and to quantify the extent of possible PCB contamination of soils.

Site 2: Elevated VOC concentrations were found in soil gas, soil, and surface water samples taken from the recharge basins, but the basins did not appear to represent a likely source of groundwater contamination. Rather, the RI suggested that the basins receive and redistribute groundwater already contaminated from other sources. PCBs were identified as TICs in the soil samples, and a Phase 2 RI was recommended to further investigate PCBs.

Site 3: Soil gas and soil samples taken throughout Site 3 suggested a possible VOC contamination source (again, primarily halogenated solvents) in the southeast part of this site, adjacent to Site 2. But the plume was described as not nearly as distinct or as significant as that associated with the two former drum marshalling locations at Site 1. The RI suggested that the origin of this contamination cannot be confidently traced to former activities at Site 3. Investigation of other potential chlorinated solvent sources in the vicinity of Plant 03 was recommended for a Phase 2 RI.

Phase 2 Remedial Investigation (HNUS, 1993): The 1992 RI included several recommendations for further investigation prior to initiation of an FS. These included further investigation of various sumps and tanks in and around Building 03-01, further investigation of the PCB contamination found in surface soils at all three RI sites, and computer modeling of groundwater flow patterns. The RI also recommended installing groundwater monitoring wells at several off-site locations. All of these recommendations were pursued in a Phase 2 RI published the following year.

The Phase 2 RI investigations reported that PCB contamination of surface soils was widespread but low (less than 10 mg/kg) throughout Sites 1 and 2, except for high PCB concentrations found at two localized areas within Site 1. In response to these high detections, an interim removal action was initiated to protect human health. PCBs were found not to be of significant concern at Site 3.

A soil gas survey was conducted as part of the Phase 2 RI at several locations under the floor and around the exterior of Building 03-01 to investigate other potential sources of the halogenated solvent contamination observed at Site 1. VOC contamination was observed in soils under the Honeycomb Pretreatment Area and Flow-Coat/Chem Mill Etch Areas of Building 03-01, but not in soil under the former TCE storage tanks outside the northeast corner of the building. Based on these findings, it was concluded that the Site 1 contamination could have resulted either from these operations or from the former drum marshalling activities.

The Phase 2 RI also investigated an area of TCE contamination in groundwater under the parking lot northwest of Building 10-01 (the Quality Control Laboratory south of Building 03-01). Designated by the Phase 2 RI as the "HN-24 Area", this was the site used to store coal formerly used to heat Building 03-01. The Phase 2 RI concluded that this contamination appeared to be associated with a dense layer of clay approximately 135 feet below ground surface, but it could not identify any specific sources.

Data from a number of monitoring wells established in a residential neighborhood east of Site 1 indicated that shallow groundwater contamination generally by VOCs extended less than 100 feet beyond the NWIRP Bethpage perimeter. But it also indicated that intermediate depth groundwater contamination could extend over a broader area bounded roughly by Stewart Avenue and the Long Island Railroad.

Feasibility Study (HNUS, 1994): An FS completed in 1994 evaluated alternative approaches and technologies for remediating contaminated soils and groundwater associated with Sites 1, 2, and 3. It provides the technical basis for current and proposed remediation activities at those sites.

Recent Activity: PCB-contaminated soils were excavated from the sludge-drying beds at Site 2 in 1996 to below an action level of 10 parts per million (ppm) (CF Braun, 1996). No further PCB-related remedial work remains at Site 2. A pilot project using air sparging to remediate VOCs is underway at Site 1 at this time. Further sampling activity conducted at Site 1 in 1996 in preparation for the final remedial action revealed the presence of high concentrations of PCBs not detected by the earlier investigations (Foster Wheeler, 1996). This PCB contamination will be addressed as part of the future remedial action at this site.

3.5 MISCELLANEOUS ISSUES

The following section addresses several additional issues relevant to an assessment of environmental condition of real property.

3.5.1 PCB Transformers

Until the early 1980s, oil containing PCBs was used in transformers and other electrical equipment at various locations throughout NWIRP Bethpage. In the mid-1980s, Grumman developed a schedule to replace or retrofill all PCB-contaminated transformers on site. Prior to implementation of this schedule, oil from PCB transformers was collected in 55-gallon containers and stored on wooden pallets in the Materials Storage Shed at Grumman-owned Plant 02. According to on-site personnel, no PCB transformers remain at NWIRP Bethpage (Taormina, 1997).

3.5.2 Radon

No radon testing has been initiated at NWIRP Bethpage. According to officials with the Nassau County Department of Health, radon testing is not necessary anywhere in the county because of the nature of the underlying soils (glacial moraine).

3.5.3 Lead-Based Paint

None of the buildings or other painted structures on NWIRP Bethpage have been tested for lead-based paint. Most of the structures in the site were built prior to 1978, when the Department of Defense instituted a ban on the use of lead-based paint (defined as having 0.06 percent lead by weight). It is assumed that all facilities constructed prior to this ban are likely to contain one or more coats of lead-based paint.

3.5.4 Lead in Drinking Water

Drinking water for the Grumman Bethpage complex is obtained from the county system. Lead in the county water supply was not investigated, but it is not considered to be an environmental concern.

3.5.5 Pesticides

Pesticides and herbicides have been stored at an on-site pesticide shop for lawn maintenance since 1971, the year Grumman started applying the chemicals themselves. Mixing was done in an outside area. Prior to 1970, the management and application of lawn care chemicals was contracted to local vendors. An inventory of pesticides stored on-site in 1990 is provided in Table 3-6. The list describes the brand name of the pesticide, its active ingredients, and the quantity at the time the list was prepared.

3.5.6 Asbestos

Grumman completed asbestos surveys in 1997 for Building 03-01 (including Building 03-40), the IWTP (Building 03-37) and adjoining facilities, Building 10-01, the North Warehouse Complex, the South Warehouse Complex, and Building 20-01. The surveys did not cover any Plant 05 facilities or many of the small, freestanding buildings in the Main Navy 105-acre parcel. The surveys identified the locations and quantities of asbestos-containing material (ACM) and provided information on where that material was damaged, and thus capable of releasing significant quantities of asbestos fibers posing a threat to human health.

The survey for Building 03-01 reported that asbestos-containing building materials exist throughout the building (Karl & Associates, 1997). These building materials include air cell pipe insulation; elbows, valves, and tees (EVTs); vinyl floor tile; floor tile mastic; boiler and duct thermal insulation; cork ventilation duct insulation sealant; and chemical holding tank insulation paper. Types of asbestos identified in these materials include chrysotile and amosite asbestos. From 5 to 20 percent of the asbestos-containing building materials in most locations were described as damaged, requiring removal or repair to prevent asbestos fiber release. Additionally, much of the eastern part of the roof of Building 03-01 was reported to support asbestos-containing roofing material, although none was reported to be in poor condition (Karl & Associates, 1997).

Approximately 560 square feet of asbestos-containing floor tile was found in the new office building attached to the west side of Building 03-01 (Building 03-40). This tile was described as being in good condition. An additional 1,900 square feet of floor tile in the office building was not sampled to avoid cosmetic damage to a building remaining in active use. However, this tile was described as being in excellent condition and thus representing no potential hazard to human health.

TABLE 3-6

JANUARY 1990 PESTICIDE STORAGE INVENTORY[1]
NWIRP, BETHPAGE, NEW YORK

Brand Name	Active Ingredients	Quantity
ORTHENE	Acephate(O,S-Dimethyl) Acetylphoramidothioate	25 lbs
SEVIN 50-WP	Carbaryl (1-Naphthyl) Methycarbamate	21 lbs
MALTHION 25-WP	Malathion (0,0-Dimethyl) Dithiophate of Diethyl Mercaptosuccinate	None[(2)]
OFTANOL	1-Methylethyl 2((1-Methylethyl) Amino) Phosphinothioyl Oxybenzoate	None[(2)]
THIODAN-WP	Endosulfan (Hexachloronexandromethano - 2,4,3 Benzodioxathiepin Oxine)	1 lb
DURSBAN 2E	Chlorpyrifos (0,0-Diethyl 0-(3,5,6-Trichloro-2-Pyridyl Phosphorothioate) Aromatic Petroleum Derivative Solvent	7 gals
DURSBAN 4E	Chlorpyrifos (0,0-Diethyl-(3,5,6-Trichloro-2-Pyridyl) Phosphorothioate) Xylene Range Aromatic	4 gals
CYTHION 5E	Malathion (0,0-Dimethyl Dithiophosphate of Diethyl Mercaptosuccinate) Xylene Range Aromatic Solvent	9 gals
BORER SPRAY	Gamma Isomer of Benzene Hexachloride from Lindane Cyclohexanone Xylene	5 gals
KELTHANE (mite spray)	1,1 Bis (p-Chlorophenyl), 2-Trichloroethanol Xylene	13 gals
VAPOR GARD	Di-1-p-Menthane	40 gals
WHITE GRUB	Dimethyl (2,2,2,-trichloro-1-hydroxyethyl phosphonate)	83 lbs
ROUNDUP	Isopropylamine Salt	6 gals
AMITROL-T	Amitrol 3-Amino 1,2,4-Triazole	20 gals
BASAGRAN	Sodium Salt of Bentazon	7 gals
DESTROY PLUS (total)	Isopropylamino 6-Methoxy-s-Triazine, 1500 CTYL ester of 2-4-Dichlorophenoxyacetic acid	None[(2)]
TURF HERBICIDE	Dimethylamine salt, Proplonic acid, Dimethylamine salt of dicamba	7.5 gals
TREFLAN 5G	Trifluralin, Trifluoro-2,6 dinitro-n-n dipropyl-p-toluidine	10 bags
CASRON G4	Dichlobenil	None[(2)]
BETAMEC 4LF	Benzene sulfonamide	30 gals

TABLE 3-6
JANUARY 1990 PESTICIDE STORAGE INVENTORY[1]
NWIRP, BETHPAGE, NEW YORK
PAGE 2 OF 2

Brand Name	Active Ingredients	Quantity
LIMIT	N-[(acetylamino) methyl]-2-chloro-n (2,6-diethylphenyl acetamide)	7 gals
TEAM	N-butyl-n-ethyl-a,a,a-trifluoro-2,6-dinitro-p-toluidine, Trifluoro a,a,a-trifluoro-2,6-dinitro N,N-diproyl-p-toluidine	8 lbs
SPIKE	Tebuthiuron N[5-(1,1-dimethylethyl) 1,3, 4,-thiadiazol 2-y1] N,N-dimethylurea	14 cans
DYRENE	4,6-Dichloro-N-(2 Chlorophenyl)-1,3,5; Triazin-2-amine	64 bags
TERSAN LSR	Manganese ethyloenebisdisithiocarbamic	41 bags
TERSAN-1991	Benomyl (Methyl 1-butylcarbamyl), 2-benzimidazolecarbamate	56 bags
BENLATE	Benomyl (Methyl 1-butylcarbamyl)	38 bags
BORDO-MIX	Copper	9 bags

1 Source: Grumman, 1990.
2 Indicates that none was present at the specific time of inventory in January 1990, but that the pesticide was a normal component of the stock at that time.

The survey for the IWTF (Building 03-34) reported the presence of approximately 2 square feet of asbestos-containing expansion joints in the generator room and approximately 430 square feet of asbestos-containing floor tile (Karl & Associates, 1997). Asbestos was also found in the roof flashing. All of these materials were reported to be in good condition. The survey also extended to the Salvage Building (Building 03-07), the Drum Storage Pad (Building 03-37), and the Sand Shed (Building 03-49). No asbestos-containing materials were found in any of these smaller buildings.

The survey for Building 10-01 reported the presence of asbestos-containing air cell pipe insulation and EVTs throughout most rooms in the building (Karl & Associates, 1997). Damaged pipe insulation and EVTs were noted in several of the rooms. A few rooms were noted having asbestos-containing floor tile, but the floor tile is described as being in good condition and thus representing no potential hazard to human health.

The survey for the North Warehouse Complex reported the presence of ACM in each warehouse, except for Warehouse #5 (Building 17N-06) (Karl & Associates, 1997). Asbestos-containing pipe insulation and EVTs were noted in each warehouse other than Warehouse #5. Most of these materials were described as being in good condition, although small quantities in several locations were reported as damaged. Furthermore, several open ends in the pipe insulation were noted. These open ends are capable of releasing significant quantities of asbestos fibers even if not damaged.

Additionally, approximately 1,100 square feet of asbestos-containing fireboard was reported on the ceiling of Warehouse #8 (Building 17N-01), of which 15 square feet are described as damaged by water staining. Approximately 1,100 square feet of asbestos-containing floor tile was found under a carpet in an office in the southwest corner of Warehouse #6. Although the condition of this floor tile could not be assessed by the contractor, no action was recommended until the carpet is actually removed. Until then, the contractor assessed the potential for fiber release from damaged tiles to be very low.

The survey for the South Warehouse Complex also reported the presence of ACM in each warehouse, including the large warehouse building on the east side (Building 17-20) (Karl & Associates, 1997). Asbestos-containing air cell pipe insulation, EVTs, corrugated air cell insulation, and white board insulation were noted in each structure. Areas of asbestos-containing floor tiles were also noted in several of the buildings. Most of these materials were described as being in good condition, although small quantities in several locations were reported as damaged.

The survey for Plant 20 reported the presence of asbestos-containing pipe insulation and EVTs in the garage building (Building 20-01), as well as asbestos-containing roofing materials on the roof (Karl & Associates, 1997). Areas of asbestos-containing floor tiles and boiler breeching were also noted inside the building. Several damaged segments of the pipe insulation were noted, as were several open ends. The EVTs were in sufficiently deteriorated condition that the survey recommended that they be removed or encapsulated. The floor tiles, boiler breeching, and roofing materials were described as being in fair to good condition.

The surveys recommended removing, repairing, or encapsulating all asbestos-containing materials identified as damaged or in poor condition. The surveys did not recommend taking action at this time regarding other asbestos-containing material, but they did recommend monitoring these materials for future deterioration so that appropriate action can be taken whenever needed.

3.5.7 Coal Storage

Between 1942 and 1967, coal was stored in a large open pile covering approximately 0.5 acre immediately north of Building 10-01. The coal, transported to the pile by train via a siding of the Long Island Railroad, was used to fuel boilers at Plants 02 (Grumman-owned), 03, and 05. An overhead conveyor transported coal from the pile to a silo located just outside the boiler room of Building 03-01 (James Stewart & Co., 1943a). The coal had to be trucked to Plants 02 and 05. The coal storage area has not been used since the startup of a steam plant on Grumman property in 1967. The site is now covered by a parking lot and lawn. The coal storage area has not been considered a waste storage area because fuel-grade coal contains little soluble sulfur or other impurities (NEESA, 1986).

4

stormwater was managed at this time is thus unclear. The future sites of the IWTF (Building 03-34) and the present Drum Storage Pad (Building 03-37), both constructed in the 1980s, appear grassy in the photograph. The land that is now the Salvage Storage Area appears grassy in the photograph, and a rectangular building is located just east of the roadway on the west side of the North Warehouse complex. It is not clear from the photograph whether the Salvage Storage Area was in active use at that time.

A number of trucks appear in the photograph to be parked on an area of bare soil immediately north of Warehouses 8 and 9. Their purpose is not evident.

Plants 20 and 05 also appear in much their present forms in the photograph. Plant 20 appears as an isolated building with a small, outdoor, paved service area. It is surrounded by cropland. Plant 05 lacks additions that would later house the Shuttle Wing Hangar, North Structural Test Hangar, and High Bays.

Although rapid development took place within the Grumman Bethpage complex between 1942 and 1945, the surrounding area appears to have changed little and still appears to be predominantly rural with no industrial development in the 1945 photograph. Land between the 105-Acre Parcel and Stewart Avenue still appears in that photograph to be a mixture of pasture and deciduous woodland.

4.3 1950s AERIAL PHOTOGRAPHS

Vertical, or nearly vertical, photographs dated 1950 and 1957 showing all of the Grumman Bethpage complex are available. Little new construction appears to have taken place between 1945 and 1950. Additions to Building 05-01 containing what are now the Shuttle Wing Hangar and the North Structural Test Hangar appear to have been constructed between 1950 and 1957. The recharge basins in the northeast part of the 105-Acre Parcel, which did not appear to have been constructed as of the 1945 photograph, appear newly constructed in the 1950 photograph.

An area of disturbed earth appears in the 1950 photograph approximately 200 feet northeast of Warehouse 9 (Building 17N-04), roughly where Grumman-owned Plant 14 is now. A ditch is visible leading southeast and then east from this disturbed area, entering the 105-Acre Parcel northeast of the Salvage Storage Area. Continuing eastward through the deciduous woodland north of the Recharge Basins, the ditch exits the Navy parcel near the northeast corner and continues eastward to another disturbed area located at the present site of a Town of Oyster Bay Community Park. Old site plan drawings maintained by Grumman show that the disturbed area at the present site of Plant 14

was a shooting range. The disturbed area where the park is now located appears in the photograph to be a landfill.

Both photographs show a number of trucks or trailers that appear to be parked on an area of bare soil or gravel east of Plant 20, in the eastern part of the 4.5-Acre Parcel. Trucks or trailers also appear to continue to be parked on an area of bare soil north of Warehouses 8 and 9. Both photographs also show a large coal pile immediately north of Building 10-01, in area that is now grass and parking lot.

4.4 1960s AERIAL PHOTOGRAPHS

Vertical, or nearly vertical, photographs dated 1963 and 1969 showing all of the Grumman Bethpage complex are available. New construction on NWIRP Bethpage during this period was generally limited. The two additions on the east side of Building 03-01 that housed the Chem Mill and Sulfuric Acid Anodize operations first appear in the 1969 photograph, as does the addition that housed Heat Treat Area A and the Hydraulic Press Area. The area that would later be the Heat Treat Area B addition and the GAC PROM (Building 03-40) was still occupied by a parking lot. The surrounding area appeared similar to its present condition with dense residential development north and east of NWIRP Bethpage and a dense mix of commercial and light industrial development along South Oyster Bay Road and Route 107.

Substantial development of Grumman's land between the 105-Acre Parcel and Stewart Avenue took place during this period. The disturbed area identified on old drawings as a shooting range is occupied by Plant 14 on the 1963 photograph. The ditch dead ends at the north perimeter of the 105-Acre Parcel. The ditch still leads eastward in the 1963 photograph to the disturbed area where the park is now. But by 1969, that disturbed area had been reclaimed into the park, and the ditch dead ended near the northeastern corner of the 105-Acre Parcel.

Trucks or trailers still appear in the 1963 photograph to be parked on a patch of bare soil or gravel just east of Plant 20 in the eastern part of the 4.5-Acre Parcel. But that parking area appears to have been paved as of 1969. However, the area of truck parking north of Warehouses 8 and 9 appears to have remained unpaved in both photographs. The coal pile north of Building 10-01 remains evident in both photographs.

4.0 AERIAL PHOTOGRAPH REVIEW

A historical sequence of aerial photographs showing NWIRP Bethpage and adjacent properties was examined for visible evidence of potential environmental concerns. Most of these photographs were displayed on the wall of the foyer at Grumman's environmental offices in Plant 01. Aerial photographs are an important tool for identifying potential environmental problems associated with past uses of exterior areas. Although they are of little value for investigating past environmental conditions inside buildings, they are useful in identifying potential sources of contamination that existed prior to construction of the buildings.

4.1 PRE-1942 AERIAL PHOTOGRAPHS (PRIOR TO INITIAL DEVELOPMENT OF NWIRP BETHPAGE)

No aerial photographs are available showing the area prior to initial development of the Grumman Bethpage complex in 1933. The earliest available photographs are dated 1939 and 1941. They show development of Grumman-owned aircraft manufacturing facilities south of the Long Island Railroad. Grumman-owned Plant 01 is the only industrial facility in the 1939 photograph. Grumman-owned Plant 02 shows in the 1941 photograph, constructed on what appeared to have been cropland south of Plant 01 in the 1939 photograph. A series of grass runways are visible in the 1941 photograph, wedged in between Plants 01 and 02 roughly where the abandoned paved runways are now. The present location of Plant 05 appears to be cropland in both photographs, without any structures or surface disturbances.

Both photographs are obliques and focus primarily on areas south of the Long Island Railroad. Areas north of the railroad, including the two Navy-owned parcels, thus appear poorly in the distant background. The western part of the 105-Acre Parcel appears in both photographs to be pasture or a hayfield. The eastern part of the 105-Acre Parcel in both photographs appears to be a thinned deciduous woodlot or wooded pasture. The northeasternmost part of the parcel, where the recharge basins are now located, appears to be denser deciduous forest cover. The 4.5-Acre Parcel that presently supports Plant 20 appears to be cropland in both photographs. There are no structures or soil disturbances visible anywhere within what is now the Navy-owned parcels.

The surrounding landscape is completely rural in both photographs. Grumman Plants 01 and 02 are the only industrial facilities visible anywhere in the photographs. Two-lane country roads follow the

present alignments of Stewart Avenue, State Route 107, and South Oyster Bay Road (except that the latter passes just east of the future site of Plant 05, instead of its present alignment to the west). Land west of South Oyster Bay Road and south of Route 107 is mostly cropland and small farms. Land north of Stewart Avenue is not visible in either photograph. What is now Grumman-owned land south of Stewart Avenue appears to be a mixture of pasture and deciduous forest. A grid of dirt roads with a few isolated houses is visible east of the 105-Acre Parcel; this is the precursor of the residential neighborhood presently located there.

4.2 1945 AERIAL PHOTOGRAPH

The two Navy parcels (the 105-Acre Parcel containing Plants 03, 10, and 17; and the 4.5-Acre Parcel containing Plant 20) appear to be developed in much their present form in a photograph dated 1945. World War II was a period of intense development at the Grumman Bethpage complex during which most structures and facilities were initially constructed on the Navy-owned parcels and the Grumman-owned land south of the Long Island Railroad. The only part of the complex that remained substantially undeveloped following World War II was the Grumman-owned land close to Stewart Avenue and certain tracts of Grumman-owned land west of South Oyster Bay Road.

Like the earlier photographs, the 1945 photograph is oblique rather than vertical, but it focuses on the Navy-owned areas north of the Long Island Railroad as well as the Grumman-owned areas to the south. Building 03-01 appears in the photograph, but without the additions that would later house the Heat Treat Areas, Hydraulic Press Area, Chem Mill operation, and Sulfuric Acid Anodize operation. The sites of these additions appear to be lawn, parking lot, or exterior pavement. The Quality Control Laboratory (Building 10-01) and the North and South Warehouse complexes (Plant 17) appear in their present configuration.

The open area east of Building 03-01, where records indicated that a leach field existed to treat Building 03-01 wastewater, appears grassy. A cluster of trailers is visible in part of the grassy area. Although drums could not be specifically resolved in this area on the photograph, the trailers may be associated with the former Drum Marshalling Area that existed in this area until 1978 (NEESA, 1986). The Sanitation Office (Building 03-13) appears in its present form in the photograph, with a concrete settling tank pad to its south and another similar settling tank pad to its west. There is no longer any evidence of the western pad, but the southern pad (although now abandoned) remains.

The recharge basins in the northeastern part of the 105-Acre Parcel, as well as the recharge basin on Grumman-owned land south of the South Warehouses, are not discernible in the photograph. How

4.5 1970s AERIAL PHOTOGRAPHS

A vertical, or nearly vertical, photograph dated 1978 showing all of the Grumman Bethpage complex is available. The 1970s do not appear to have been a period of significant construction or expansion on the Grumman Bethpage complex. The coal pile no longer appears in the 1978 photograph.

4.6 1980s AERIAL PHOTOGRAPHS

Vertical, or nearly vertical, photographs dated 1983 and 1985 showing all of the Grumman Bethpage complex are available. The current Drum Storage Pad (Building 03-37) and the Industrial Wastewater Treatment Facility (Plant 03-34) appear in the 1983 photograph. The former site of the coal pile has been converted into lawns and parking lot, as at present. The area of truck parking north of Warehouses 8 and 9, which still appeared unpaved in the 1978 photograph, appears to be paved as at present in the 1983 photograph.

The 1985 photograph is particularly valuable because it shows the complex during a period of growth initiated in the mid-1980s in response to the increased Federal defense contracting of that era. The 1985 photograph shows the GAC PROM (Building 03-40) and the Heat Treat Area B addition to Building 03-01 under construction.

4.7 CONCLUSIONS

The following areas of potential environmental concern have been identified on the basis of the aerial photograph review (Figure 4-1):

- A ditch that crosses the strip of deciduous forest north of the Industrial Wastewater Treatment Facility. This ditch is presently isolated to the forested area and is partially filled with landscaping debris of no potential environmental concern. However, the 1950s aerial photographs show that ditch connected to areas of surface disturbance to the immediate north (where Grumman-owned Plant 14 is now) and roughly 0.25 mile to the east (where the Community Park is now). Grumman records show that the area to the north was a shooting range. The area to the east appears to have been a landfill, but there are no supporting records available. The shooting range could have contributed lead-contaminated runoff to the ditch, and the suspected former landfill could have contributed runoff contaminated by uncharacterized substances.

- The eastern part of the 4.5-Acre Plant 20 Parcel. Although presently paved, aerial photographs from the 1950s and 1960s show a number of trucks or trailers parked on unpaved soil at this location. Because Plant 20 is a vehicle service facility, some of these trucks could have been broken down and leaking oil to the soil as they awaited repair.

- The exterior paved areas north of Warehouses 8 and 9. Aerial photographs from the 1950s, 1960s, and 1970s show a number of trucks or trailers parked on unpaved soils at this location. Although vehicle parking on unpaved soil is not by itself a serious environmental concern, the activities carried out by the vehicles at this location are uncertain. If they were involved in loading or unloading waste, small incremental leaks and spills could have contaminated the soil.

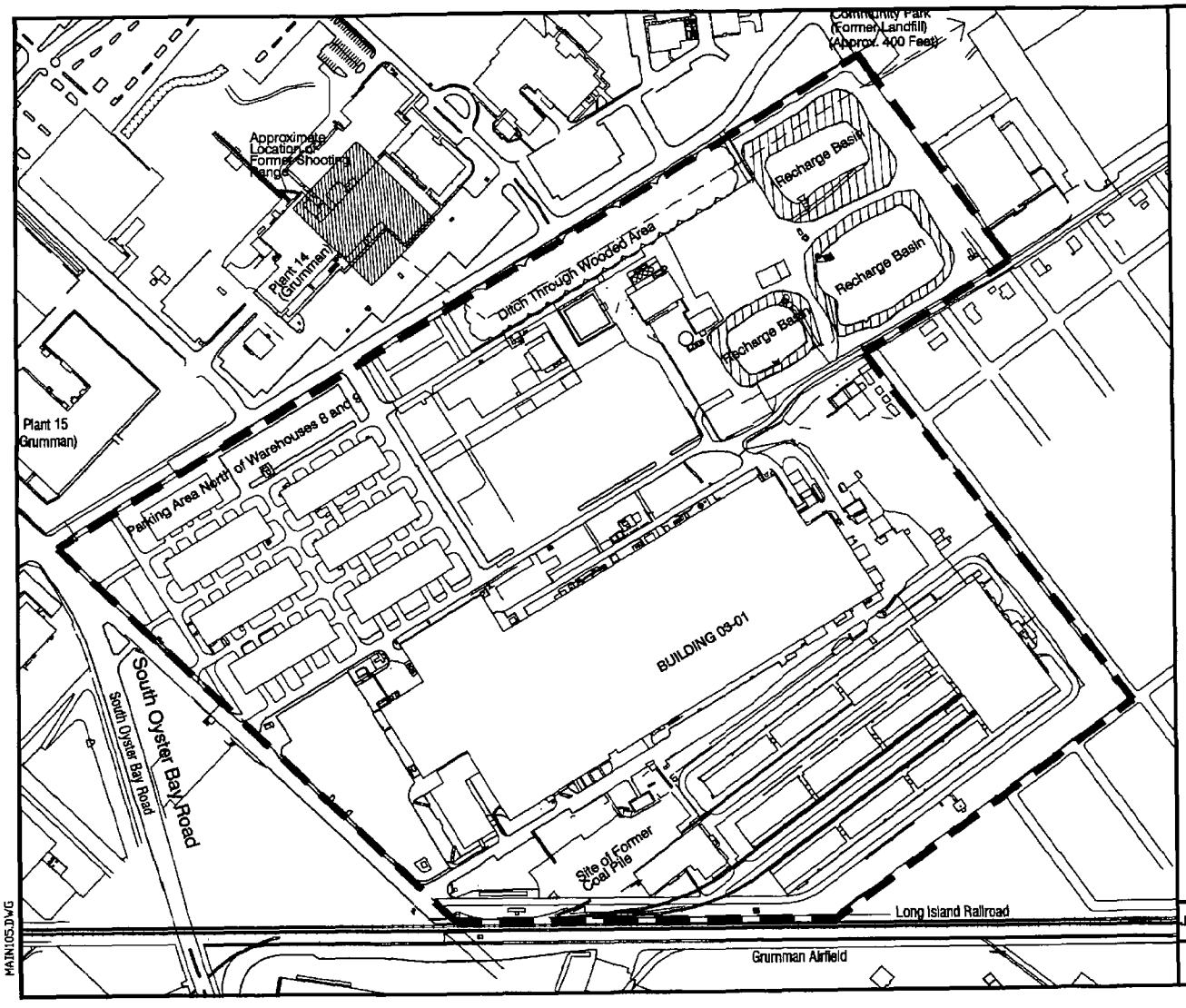


Figure 4-1

Areas of Potential Environmental Concern Identified From Aerial Photographs

Phase I EBS
NWIRP Bethpage, New York

Legend

Navy 105 Acre Parcel Boundary

0 100 200 300 400
SCALE IN FEET

January 29, 1998	REV 2	PROJECT: CTO 283

CF Braun Engineering Corporation

5.0 ADJACENT PROPERTIES

Properties adjacent to, or within close proximity to, NWIRP Bethpage were investigated to determine how they may have affected the environmental condition of the Navy property. Section 5.1 summarizes information from a computerized database search of available environmental records for properties within a 1-mile radius of the NWIRP Bethpage perimeter. Section 5.2 describes the findings of a visual site reconnaissance of properties adjoining and within 0.25 mile of the NWIRP Bethpage perimeter. For purposes of defining the search radius for these efforts, the NWIRP Bethpage perimeter was drawn to encircle the 105-acre parcel, the 4.5-acre parcel (Plant 20), Plant 05, and narrow areas of intervening Grumman property.

5.1 RECORDS SEARCH

A review of environmental records for real property near NWIRP Bethpage was conducted in accordance with ASTM PS 37-95, which specifies a minimum search distance of 1 mile from the subject property boundaries. A search of Federal and state information systems was made by EDR for properties within a 1-mile radius of NWIRP Bethpage. The Executive Summary of that report, dated April 28, 1997, is presented in Appendix A, and the remainder of the report is in Appendix D. Specific databases searched by EDR are listed in Table 5-1. Properties identified during the search are listed in the tables in Appendix A and mapped in Figure 5-1. The 3-digit code numbers used to identify properties marked in Figure 5-1 refer to the property identification numbers assigned in the tables in Appendix A.

5.1.1 Federal ASTM Records

The following information is from federally administered environmental databases that must be searched to complete a Phase I EBS following ASTM PS 37-95.

National Priorities List Sites

The National Priorities List (NPL) includes over 1,200 sites identified by the EPA for priority cleanup under the Federal Superfund Program, authorized under CERCLA. The database review identified one NPL site within the 1-mile search distance surrounding NWIRP Bethpage. This site is the RUCO Polymer Corporation facility on New South Road, located approximately 850 feet from the western

TABLE 5-1

**ENVIRONMENTAL DATABASE SEARCH RESULTS
BASEWIDE PHASE I EBS OF NWIRP BETHPAGE[1]
NWIRP, BETHPAGE, NEW YORK**

Database	Description	Source	Number of Sites Within 1 Mile of NWIRP Bethpage
FEDERAL	ASTM[2] RECORDS		
NPL	National Priorities List	USEPA[3]	0
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System	USEPA/NTIS[4]	2
ERNS	Emergency Response Notification System	USEPA/NTIS[4]	1
RCRIS-TSD	Resource Conservation and Recovery Information System	USEPA/NTIS[4]	2-TSD 46-LQG 61-SQG
STATE	(NEW YORK) ASTM	RECORDS	
SHWS	State Hazardous Waste Sites	NYSDEC[5]	2
LUST	Leaking Underground Storage Tank incident reports	NYSDEC[5]	131
UST	Registered Underground Storage Tanks	NYSDEC[5]	20
SWF/LF	Solid Waste Facilities/Landfill Sites	NYSDEC[5]	0
FEDERAL	NON-ASTM RECORDS		
CONSENT	Superfund (CERCLA) Consent Decrees	USEPA[3] Regional Offices	0
CORRACTS	Corrective Action Report	USEPA[3]	3
Delisted NPL	Delisted NPL Sites	USEPA[3]	0
FINDS	Facility Index System	USEPA/NTIS[4]	105
HMIRS	Hazardous Materials Information Reporting System	USEPA/NTIS[4]	0
MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	0
NPL LIENS	Federal Superfund Liens	USEPA[3]	0
PADS	PCB Activity Database System	USEPA[3]	3
RAATS	RCRA Administrative Action Tracking System	USEPA[3]	0
ROD	Records of Decision	NTIS[4]	1
TRIS	Toxic Chemical Release Inventory System	USEPA/NTIS[4]	2
TSCA	Toxic Substances Control Act	USEPA/NTIS[4]	0
STATE	(NEW YORK) NON-ASTM	RECORDS	
AST	Registered Aboveground Storage Tanks	NYSDEC[5]	36
SPILLS	Spills Information Database	NYSDEC[5]	211

TABLE 5-1
ENVIRONMENTAL DATABASE SEARCH RESULTS
BASEWIDE PHASE I EBS OF NWIRP BETHPAGE[1]
NWIRP, BETHPAGE, NEW YORK
PAGE 2 OF 2

1 Source: EDR, 1997
2 American Society of Testing and Materials - ASTM Records are records which must be searched to minimally comply with ASTM PS 37 - 95, which is itself based on a more general standard, ASTM 1527 - 94.
3 United States Environmental Protection Agency
4 USEPA - National Technical Information System
5 New York State Department of Environmental Conservation

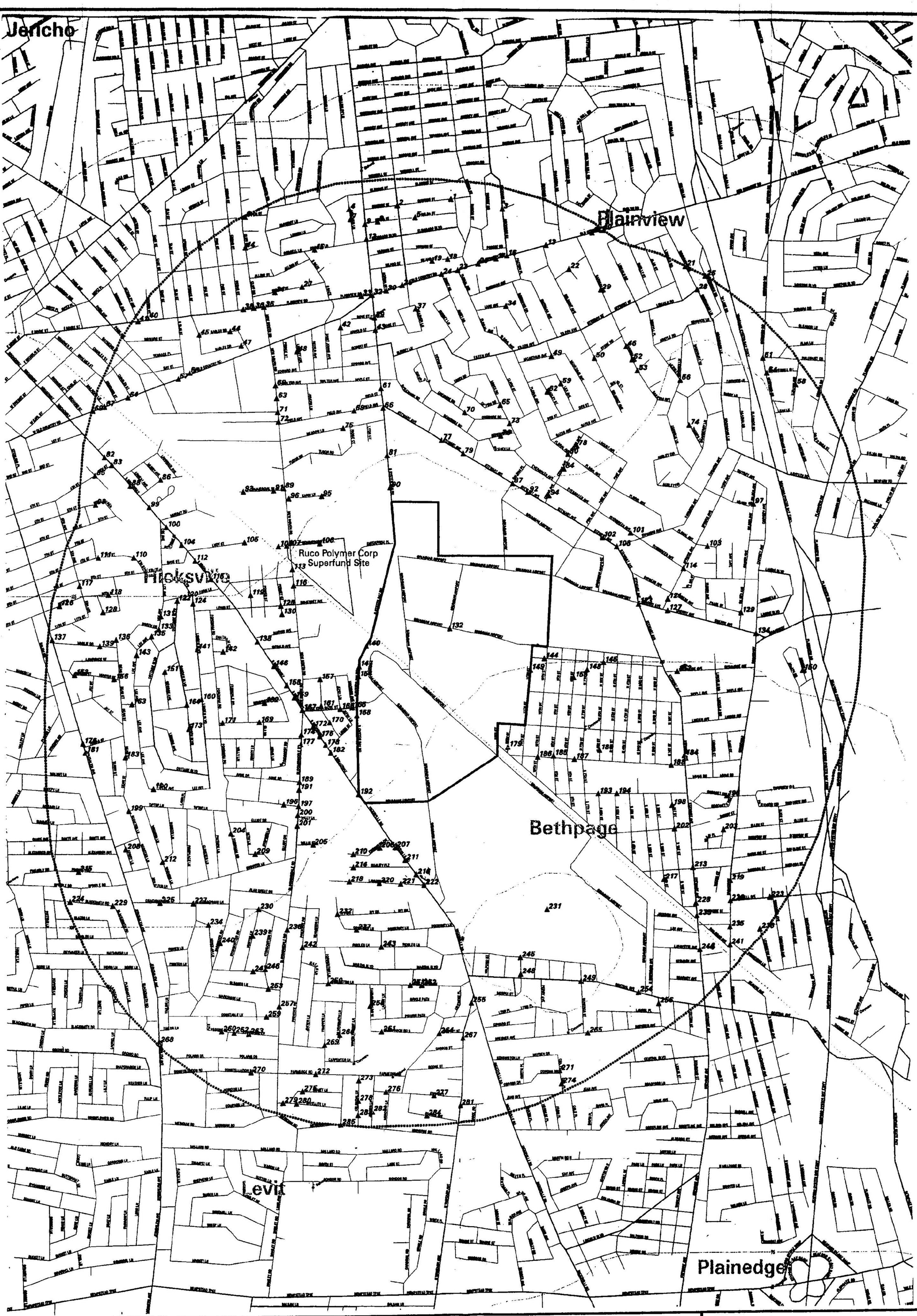
edge of the Navy 105-acre parcel. Owned by the Hooker Chemicals and Plastics Corporation, the site is an active plastics manufacturing facility encompassing approximately 17 acres of land with industrial buildings, storage tanks, exterior pavement, and recharge basins. This site was listed on the NPL in 1986. Combined RI/FS reports were completed in 1990 and 1994. The site currently remains under investigation to assess the extent of further action required (EDR, 1997).

Contamination of soil and groundwater at the site by chlorinated organics and other industrial solvents has been reported (EDR, 1997). Remedial investigation activities completed as of 1993 showed that the recharge basin sediments were contaminated with phthalates, polyaromatic halogens (PAHs), toluene, and 1,2-DCE. Soils were found to be contaminated by TCE, PCE, ethylbenzene, toluene, PAHs, phenols, phthalates, and PCBs. Groundwater was found to be contaminated by PCE, TCE, DCE, and vinyl chloride (HNUS, 1993).

Because the RUCO site is located several hundred feet away and not adjoining NWIRP Bethpage, the sediment and soil contamination has not likely affected the environmental condition of any property on NWIRP Bethpage. However, because the RUCO site lies upgradient with regard to groundwater flow (HNUS, 1993), groundwater contamination originating at RUCO could have affected groundwater under NWIRP Bethpage. Some of the contaminants of concern at the RUCO site, such as phthalates, toluene, and vinyl chloride, are not known to have been used in large quantities at NWIRP Bethpage. Thus detection of these contaminants in groundwater under NWIRP Bethpage could be attributable to RUCO.

CERCLIS Sites

The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), also maintained by EPA as part of its administration of CERCLA, includes both NPL sites and sites which are undergoing screening and assessment for possible inclusion in the NPL. The database review identified two CERCLIS sites within the 1-mile search radius of NWIRP Bethpage. One is the RUCO Polymer site, which is on the NPL and discussed above. The other is the Servo Corporation of America (SCA) Site, an electronics manufacturing facility located at 111 New South Road, approximately 0.5 mile northwest of Plant 20. The database indicated that a preliminary assessment was completed for the SCA site in 1987 and a screening site inspection in 1991. EDR also noted a Spills Information Database record of a 25-gallon petroleum spill that took place at SCA in May 1987, but did not indicate whether this was the basis for the CERCLA investigation (EDR, 1997).



Legend

NWIRP Bethpage Boundary

One-Mile Radius Around NWIRP Bethpage

Numbers on map correspond to identifications used in Appendices A and D.

N

1/4 1/8 0 1/4 1/2

SCALE IN MILES

Source: EDR, 1997

Figure 5-1

Adjacent Properties-Sites Identified In Environmental Databases For 1-Mile Radius of NWIRP Bethpage

Phase I EBS
NWIRP Bethpage, New York

August 13, 1997	REV 0	PROJECT: CTO 283

CF Braun Engineering Corporation

According to Walter Jentsen of SCA, the New South Road facility was sold to Cablevision in 1994. As a condition of that sale, SCA was required to clean out sediments containing heavy metals from a recharge basin on the property. Associated sampling demonstrated that the recharge basin effectively isolated the contamination from outside environmental media, and SCA received a clean bill of health from the NYSDEC documenting that the cleanup was complete. The sale was allowed to proceed (Jentsen, 1997). This site thus has no potential to affect the environmental condition of property at NWIRP Bethpage.

Emergency Response Notification System

The Emergency Response Notification System (ERNS) records and stores information on reported releases of oil and hazardous substances. The source of the database is EPA. The database review identified only one ERNS site within the 1-mile radius of NWIRP Bethpage. Located at 40 Island Street, approximately 0.7 mile north of Plant 20, it is in a strip of commercial and light industrial development associated with Old Country Road, an arterial road connecting Hicksville and Plainview and passing approximately 0.5 mile north of Stewart Avenue and the Grumman Bethpage complex. The database contains no information on the date, quantity, or character of the release or on the response action (EDR, 1997). However, considering the distance (0.7 mile) of this site from NWIRP Bethpage, further pursuit of this information was not considered necessary to address the environmental condition of any NWIRP Bethpage property.

Resource Conservation and Recovery Information System

The Resource Conservation and Recovery Information System (RCRIS) includes selective information on sites which generate, transport, store, treat, and/or dispose of hazardous waste, as defined by RCRA. RCRIS distinguishes between treatment, storage, and disposal (TSD) sites; large quantity generators (LQGs) of hazardous waste; and small quantity generators (SQGs) of hazardous waste. LQGs are defined as entities that generate at least 1,000 kg of hazardous waste per month (or at least 10 kg of acutely hazardous waste per month), and SQGs are entities that generate less than 1,000 kg of hazardous waste per month.

The database review identified two TSD facilities within the 1-mile radius of NWIRP Bethpage. These include the Long Island Lighting Company Hicksville Operations Center at 175 East Old Country Road, approximately 0.8 mile northwest of Plant 20, and the Grumman Bethpage complex itself. TSD facilities are located both within NWIRP Bethpage (Building 03-34, the Industrial Waste Treatment Facility) and within those parts of the complex owned by Grumman independently of the Navy. The

database review also identified 41 LQGs and 61 SQGs within the 1-mile radius of NWIRP Bethpage (see tables in Appendix A). The LQGs include Grumman, Servo, the Long Island Lighting Company Hicksville Operations Center, several commercial gasoline stations, several commercial dry cleaners (which generate waste containing chlorinated solvents that are used as cleaning agents), several commercial photography and craft shops (which generate photographic waste containing silver and various solvents), and a commercial exterminating company. RUCO Polymer is not included, but the Occidental Chemical Corporation site at 1 New South Road, which is owned by RUCO, is included. This site is located approximately 0.7 mile northwest of Plant 20 and approximately 0.7 mile north of the RUCO site (EDR, 1997).

5.1.2 State ASTM Records

The following information is from environmental databases administered by New York State that must be searched to complete a Phase I EBS following ASTM PS 37-95.

State Hazardous Waste Sites

State hazardous waste site records are state equivalents of CERCLIS and identify priority sites identified for cleanup using state funds (state equivalent of the NPL) as well as sites where cleanup will be funded by potentially responsible parties. New York State's database is termed Inactive Hazardous Waste Disposal Sites and is maintained by NYSDEC. The database review identified two SHWS facilities within the 1-mile radius of NWIRP Bethpage. These include RUCO Polymer and the Grumman Bethpage complex, including but not limited to NWIRP Bethpage (EDR, 1997). RUCO Polymer is discussed in Section 5.1.1. The fact that it appears on NYSDEC's list as well as the NPL indicates that some state funds may also be used in the cleanup.

NWIRP Bethpage is virtually surrounded by Grumman-owned property that has also been used to conduct aircraft manufacturing, testing, and development activities. These Grumman-owned portions of the Bethpage complex are considered as another "adjacent property" which must be assessed for its potential to affect the environmental condition of NWIRP Bethpage. As with NWIRP Bethpage, Grumman has divided its own Bethpage property into individual clusters of affiliated buildings and land termed "plants." Individual Grumman plants within its Bethpage property but outside of NWIRP Bethpage are listed in Table 5-2. The list is not consecutive, because Grumman has also assigned plant numbers to other facilities not at Bethpage.

TABLE 5-2
DESCRIPTION AND AVAILABLE ENVIRONMENTAL RECORD DATA
FOR GRUMMAN-OWNED PROPERTIES IN GRUMMAN BETHPAGE COMPLEX
NWIRP, BETHPAGE, NEW YORK

Grumman Plant	Location	Function	Spills and Other Notes[1]
Plant 01	Approximately 250 feet south-southeast of southeast corner of Navy 105-Acre Parcel	Aircraft manufacturing, design, and development	Tightness test failure of No. 2 fuel oil UST in 1993; two tightness test failures of jet fuel USTs in 1987; 175-gal spill of paint/chrome contaminated wastewater on east side of main building in 1984
Plant 02	Directly east and southeast of Plant 05 and approx 1,000 feet south of Building 10-01 and the South Warehouses	Aircraft manufacturing, design, and development	Leak of nonfuel substance at paint hangar in 1990;300-gal waste oil leak into recharge basin in 1985; 55-gal paint stripper spill from process pump in 1985; other fuel leaks and tightness test failures
Plant 04	Approximately 800 feet south of southeastern corner of Navy 105-acre Parcel	General purpose aircraft hangar	Waste oil leak in 1993; tightness test failure of #2 fuel oil UST in 1989; 30-gal diesel fuel spill in 1985
Plant 12	Approximately 1,000 feet east of parking lot on east side of Building 03-01.	Instrument calibration technical support	Tightness test failure for #2 fuel oil UST in 1993; waste oil spill onto ground in 1992; 10-gal fuel oil spill onto ground in 1983
Plant 14	Directly north of Salvage Storage Area and northwest of North Warehouses	Aerospace systems research and development	Waste oil spill due to equipment failure in 1992
Plant 15	Directly north of North Warehouses	Aerospace systems research and development	#2 fuel oil spill in 1994; UST tightness test failure in 1989 - no information on contents
Plant 18	Directly west of North Warehouses	Security and administrative, razed in 1980s	No records directly attributable to Plant 18
Plant 21	Approximately 500 feet northwest of North Warehouses, on northwest corner of Enterprise Place and S. Oyster Bay Road	Administrative	No records directly attributable to Plant 21
Plant 24	Directly east of Recharge Basins in northeastern corner of Navy 105-Acre Parcel	Shipping and receiving	Tightness test failure for waste oil UST in 1993

TABLE 5-2
DESCRIPTION AND AVAILABLE ENVIRONMENTAL RECORD DATA
FOR GRUMMAN-OWNED PROPERTIES IN GRUMMAN BETHPAGE COMPLEX
NWIRP, BETHPAGE, NEW YORK
PAGE 2 OF 2

Grumman Plant	Location	Function	Spills and Other Notes[1]
Plant 25	Directly north of Plant 05 and approximately 900 feet south of southwestern corner of Navy 105-Acre Parcel	Administrative	No records directly attributable to Plant 25
Plant 26	Approximately 400 feet north of Industrial Wastewater Treatment Plant (Building 03-34) and Drum Storage Pad (Building 03-37)	Aerospace systems research and development	No records directly attributable to Plant 26
Plant 28	Directly west of North Warehouses, west of S. Oyster Bay Road	Administrative	Tightness test failure for #2 fuel oil UST was reported in 1994. The Nassau County Department of Health found leaching pools associated with interior floor drains in Plant 28 during Underground Injection Control (UIC) inspections. Silver and lead were detected in bottom sediment samples collected by the Department (NCDH, 1997).
Plant 30	Facing Stewart Avenue, approximately 700 feet northeast of northeast corner of Navy 105-Acre Parcel	Aerospace systems design and program management, recently excessed to Briarcliff College	Spill of #2 fuel oil due to equipment failure in 1994; waste oil spill due to equipment failure in 1991; fire in dumpster with uncharacterized contents in 1984
Plant 31	Directly north of northeastern corner of Navy 105-Acre Parcel	Aerospace systems development	No records directly attributable to Plant 31
Plant 35	Facing Stewart Avenue, approximately 1,000 feet north of northeastern corner of Navy 105-Acre Parcel	Administrative, recently excessed to Briarcliff College	No records directly attributable to Plant 35
Plant 37	Approximately 700 feet west of North Warehouses, on Enterprise Place and adjoining RUCO Polymer site	Storage, excessed to HLA Corporation	No records directly attributable to Plant 37
Plant 39	Approximately 1,000 feet west of Plant 20, directly north of RUCO Polymer site	Aerospace systems research and development	No records directly attributable to Plant 37
Plant 111	Facing Stewart Avenue, approximately 1,800 feet north of North Warehouses	Former Grumman headquarters building, recently excessed to Cablevision	Tightness test failure for #2 fuel oil UST in 1990

1 Source is spill records maintained by NY State Department of Environmental Conservation in Stony Brook, New York. Records cover spills and tank leaks going back to around 1979.

Most of the industrial activities performed at these Grumman facilities, and thus most of the substances handled at these facilities, are similar to those at NWIRP Bethpage. As for NWIRP Bethpage, shows records from NYSDEC of spills and tank leaks involving fuels, paint waste, and other materials associated with aircraft manufacture. This is especially true for Plants 01 and 02, which comprise large manufacturing facilities similar to Building 03-01 but south of the Long Island Railroad. But many of the research and development facilities north of the Navy 105-Acre Parcel also handled many of the same solvents and materials, although in much smaller quantities. Because of the similarity of activities at the Grumman facilities to those at NWIRP Bethpage, it may not be possible to attribute groundwater contamination under NWIRP Bethpage to one particular source.

Leaking Underground Storage Tanks

Leaking Underground Storage Tank (LUST) records are state inventories of reported leakage incidences from USTs. NYSDEC maintains these records as part of its Spills Information Database. The database review identified 131 sites within the 1-mile radius of NWIRP Bethpage where there are records of leaking UST incidents (see tables in Appendix A). These include large industrial sites such as Grumman and RUCO Polymer and several gasoline stations. Many of the records are, however, of residences and other nonindustrial structures where heating oil tanks have failed (EDR, 1997). The large number of reported incidences suggests that groundwater under NWIRP Bethpage may show cumulative contamination from petroleum products (or breakdown products) from several leaking underground tanks in the general vicinity.

Underground Storage Tanks

USTs must be registered with the applicable state agency responsible for administering the UST provision of Subtitle I of RCRA. In New York, that agency is the NYSDEC. There are 20 sites within the 1-mile radius of NWIRP Bethpage where USTs are registered with NYSDEC. These sites are all commercial and industrial (EDR, 1997). Not all USTs meet NYSDEC's regulatory criteria for requiring registry; hence the fact that many smaller USTs, especially residential heating oil tanks, are not registered with NYSDEC even though leakage incidents have caused them to be listed by NYSDEC as LUSTs.

Solid Waste Facilities/Landfill Sites

Solid Waste Facilities/Landfill Sites (SWF/LF) records are state records of solid waste disposal facilities and landfills. The NYSDEC maintains a registry of such facilities in New York. The database does not include records of any such facilities in the 1-mile radius of NWIRP Bethpage.

5.1.3 Federal and State Non-ASTM Records

Database search results for the Federal and state non-ASTM records in Table 5-1 are summarized in Appendix A. Of particular importance is the NYSDEC's Spills Information Database, which inventories recorded spills of petroleum products and hazardous substances. This database included records of 211 spills within the 1-mile radius of NWIRP Bethpage. Nearly all of these records are small petroleum spills, caused by equipment failures or traffic accidents (EDR, 1997). Considered with the large number of LUST reports for this same area, these findings further support the possibility that any petroleum or petroleum breakdown products found in the groundwater could be the cumulative result of several sources, both on and near NWIRP Bethpage.

5.2 VISUAL SITE RECONNAISSANCE OF ADJACENT PROPERTIES

A windshield survey of properties within 0.25 mile of the NWIRP Bethpage perimeter was conducted in May 1997 as part of the Phase I EBS. Its purpose was to visually characterize the active uses of properties close to the perimeter and, together with the environmental records review presented above in Section 5.1, determine how any of these properties could be affecting the environmental condition of property on NWIRP Bethpage. Although the inspectors were prepared to briefly interview persons encountered during the windshield survey, no knowledgeable persons were met who were willing to share environmental information about the adjacent properties. Entry within structures or onto the grounds (except publicly accessible parking lots) of any property outside of NWIRP Bethpage was out of the scope of the windshield survey.

Industrial land use within the area of the windshield survey includes the remainder of the Grumman Bethpage complex and certain areas east of South Oyster Bay Road and south of State Route 107. Heavy industry is limited to NWIRP Bethpage and certain Grumman-owned facilities south of the Long Island Railroad, such as Plants 01 and 02 (Table 5-2). Grumman-owned facilities north of the Navy 105-Acre Parcel are a mixture of research and development buildings and administrative offices. A dense mixture of small light industrial and commercial establishments extends west of NWIRP Bethpage from South Oyster Bay Road across New South Road. A similar dense mixture of light

industrial and commercial development lines both sides of State Route 107 (Broadway and Hicksville Road) as it passes south of Plant 05.

The windshield survey did not identify specific environmental concerns potentially capable of affecting NWIRP Bethpage beyond those indicated in records. Table 5-3 lists specific properties within the areas covered by the windshield survey for which environmental records exist, and presents any notes made for those properties during the windshield survey. The windshield survey also encompassed all Grumman-owned facilities within the Bethpage complex. Nothing was observed that appeared to have the potential to affect the environmental condition of NWIRP Bethpage, beyond information contained in available records.

5.3 GENERAL CONCLUSIONS

NWIRP Bethpage is located within a densely developed area of Long Island containing several light manufacturing operations. An NPL site is located within 0.25 mile of the perimeter, and there are numerous records of minor spills and tank failures that have released small quantities of petroleum to the coarse-textured regional soils. The occurrence of petroleum and various organic breakdown products of petroleum in groundwater under NWIRP Bethpage may represent cumulative contamination from sources both on and off of NWIRP Bethpage. The fact that NWIRP Bethpage is also close to similar aircraft manufacturing facilities owned by Grumman indicates that groundwater contamination by chlorinated solvents, chromium, and paint waste could also be the cumulative result of sources on NWIRP Bethpage and sources at Grumman-owned manufacturing facilities such as Plants 01 and 02.

TABLE 5-3

ENVIRONMENTAL DATABASE SITES WITHIN 0.25-MILE VISUAL SITE RECONNAISSANCE AREA NWIRP, BETHPAGE, NEW YORK

Map Number[1]	Name	Address	Records[2]	Noted in VSR[3]	Notes[4]
0	RUCO Polymer	New South Road	NPL, CERCLIS, SHWS, LUST, Spills, ROD, CORRACTS, RCRIS-SQG	Yes	Also known as Hooker Chemical Site. No environmental problems evident from visual reconnaissance only.
66	L&D Service Station (formerly Getty)	723 S. Oyster Bay Road	LUST, RCRIS-SQG, FINDS, AST	Yes	Also noted in old records as Getty Petroleum. UST leak occurred during tank test 3/17/88; cleanup 4/20/88. Registered 180-gal waste oil double wall AST. No visible environmental problems.
66	Behrouz Behzadpour	600 S. Oyster Bay Road	Spills	No	Residence. 1-gal petroleum spill 12/28/94. Corrective action taken.
77	Frankie D's Service Station	1234 Stewart Avenue	RCRIS-SQG, AST	Yes	Registered 250-gal #2 fuel oil double wall AST. No visible environmental problems.
87	Traffic accident scene	Stewart Avenue at Balsam Place	Spills	No	10-gal petroleum spill during traffic accident outside of Grumman badging office on Stewart Ave 12/18/91. Cleanup 12/19/91.
90	Grand Prix Performance	777 S. Oyster Bay Road	RCRIS-SQG, AST	No	Registered 275-gal motor oil AST with diking and pad.
95	Dexter Magnetic Materials	400 Karin Lane	RCRIS-SQG, FINDS	Yes	No visible environmental problems
96	Bonanza Fabric Company	35 Karin Lane	LUST	Yes	Leak 4/6/88, cleanup 5/16/88. No visible environmental problems.
102	Eagle Insurance Co.	999 Stewart Avenue	LUST	No	No details on LUST incident.
106	Long Island Lighting Co.	60 Commerce Place	Spills	No	5-gal petroleum spill on 1/15/92 due to equipment failure. Cleanup 1/21/92.
107	Forest Chem Industries	70 Commerce Place	Spills	No	Petroleum spill 10/10/89, cleanup 12/17/90.
108	Shell Gas Station	Stewart Ave, at Farmers Ave.	LUST, FINDS, RCRIS-LQG	Yes	LUST incident a tank test failure 1/29/88, cleanup 4/6/88. No visible environmental problems.

TABLE 5-3
ENVIRONMENTAL DATABASE SITES WITHIN 0.25-MILE VISUAL SITE RECONNAISSANCE AREA
NWIRP, BETHPAGE, NEW YORK
PAGE 2 OF 6

Map Number[1]	Name	Address	Records[2]	Noted in VSR[3]	Notes[4]
109	2 Commerce Street, Bayonne, New Jersey	2 Commerce Street	Spills	No	Appears to be a record error - discusses petroleum spill effects on Kill Van Kull, a waterbody not on Long Island.
113	Variety Petrol (P&G Fuel)	317 New South Road	LUST	No	LUST incident a tank overfill 2/13/95. Corrective action taken.
113	Sid Harvey Refrigeration, Heating, and Air Conditioning	317 New South Road	Spills	Yes	2-gal petroleum spill 10/2/90, cleanup 10/9/90. No visible environmental problems.
113	ERM Northeast	335 New South Road	LUST	No	LUST incident a tank test failure 9/16/92, cleanup 12/8/93.
113	Commercial Building #2	327 New South Road	AST	No	Registered 1,500-gal #2 fuel oil double-wall AST.
115	Salvati Foods	595 S. Broadway.	UST	Yes	Registered #2 fuel oil UST, no details on containment. No visible environmental problems. Address in records different than observed location.
116	Hicksville Department of Public Works	New South Road at Morris Street	RCRIS-LQG, FINDS	Yes	No visible environmental problems.
123	Bethpage Metro	900 Stewart Avenue	LUST, AST	No	LUST incident a tank test failure 12/31/87, cleanup 1/14/88. Registered 275-gal waste oil AST without secondary containment.
123	Bethpage VFSD	Stewart Avenue at Cherry Street	LUST, RCRIS-LQG, FINDS	Yes	LUST incident a tank test failure 8/1/87, cleanup 12/10/87. No visible environmental problems.
144	Residence	205 Sycamore Avenue	Spills	No	Residence. 1-gal petroleum spill due to equipment failure 8/17/95, cleanup 8/18/95.
145	Romano Residence	160 Sycamore Avenue	Spills	No	Residence. 5-gal petroleum spill due to equipment failure 11/29/92, cleanup 12/10/92.

TABLE 5-3
ENVIRONMENTAL DATABASE SITES WITHIN 0.25-MILE VISUAL SITE RECONNAISSANCE AREA
NWIRP, BETHPAGE, NEW YORK
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Map Number[1]	Name	Address	Records[2]	Noted in VSR[3]	Notes[4]
148	Masi Residence	265 Seventh Street	Spills	No	Residence. Petroleum spill due to vandalism 8/4/88, cleanup 11/25/88.
149	Edward Coleman Residence	252 North Eleventh Street	Spills	No	Residence. 6-gal petroleum spill due to equipment failure 4/23/94, cleanup 4/25/94.
155	Fame Trucking, Inc.	246 Eighth Street	RCRIS-SQG, FINDS	No	None. Residential area - likely a home business.
157	Blue Flame	3 Washington Parkway	LUST, AST	Yes	No visible environmental problems. Several unlabeled empty 55-gallon drums observed from road. One LUST incident a tank failure 8/28/87, cleanup 12/24/90; other dated 5/13/93, corrective action taken but no other details.
158	Coral Graphics Services	840 South Broadway	RCRIS-LQG, FINDS	Yes	No visible environmental problems.
161	DC Femia Auto Collision	44 Washington Parkway	FINDS, RCRIS-SQG	Yes	No visible environmental problems.
161	John Grace & Co.	34 Washington Parkway	FINDS, RCRIS-SQG	No	None.
165	Blue Flame	17 Hazel Street	RCRIS-LQG	Yes	No visible environmental problems.
166	Werner Truck Company	39 Jefry Street	Spills	No	30-gal petroleum spill due to equipment failure 9/23/92, cleanup complete 9/23/92.
166	National Metal Spraying	40 Jefry Street	RCRIS-SQG, FINDS	No	None.
168	New York Telephone	920 S. Oyster Bay Road, Room 300	RCRIS-LQG, FINDS	No	None.
170	Pride Utilities, Inc.	70 Washington Parkway	RCRIS-SQG	Yes	No visible environmental problems.
172	General Electric	939 South Broadway	Spills	No	20-gal. petroleum spill due to equipment failure, cleanup 12/31/88.

TABLE 5-3
ENVIRONMENTAL DATABASE SITES WITHIN 0.25-MILE VISUAL SITE RECONNAISSANCE AREA
NWIRP, BETHPAGE, NEW YORK
PAGE 4 OF 6

Map Number[1]	Name	Address	Records[2]	Noted in VSR[3]	Notes[4]
172	TBG Cogen Partners	939 South Broadway	Spills, AST	Yes	No visible environmental problems. Map location incorrect; actual location is immediately south of Plant 05. Two registered gasoline ASTs in vaults. 32-gal petroleum spill due to equipment failure 8/7/92, cleanup 3/18/93.
174	Photo Works	25 Bloomingdale Road	RCRIS-LQG	No	None.
175	C&D Type Setters	960 South Broadway	RCRIS-LQG, FINDS	No	None.
177	Mr. Navanhoff	37 Bloomingdale Road	Spills	No	Residence. 5-gal petroleum spill due to equipment failure, cleanup 9/20/97.
178	Avis Car Rental	980 South Broadway	LUST	No	LUST incident a tank failure 2/21/89, cleanup 2/21/89.
179	Al Andriano Residence	159 Twelfth Street	LUST	No	LUST incident a tank failure 2/23/93, cleanup 2/24/93.
180	Madan or Rajan Residence	169 Sixth Street	Spills	No	Residence. 4-gal petroleum spill due to equipment failure 4/9/90, cleanup 4/17/90.
180	Contractor (?)	173 North Sixth Street	Spills	No	46-gal petroleum spill due to human error 12/17/93, cleanup 2/23/95.
182	Texaco	1000 South Broadway	RCRIS-LQG	No	None.
185	Reliance	167 Ninth Street	Spills	No	1-gal petroleum spill 11/17/95, cleanup 11/17/95.
186	McManus Residence	159 Tenth Street	Spills	No	Residence. Petroleum spill dated 11/17/95, cleanup 11/17/95.
187	Sanz Residence	75 Meade Avenue	Spills	No	Residence. 7-gal petroleum spill due to equipment failure 5/15/92, cleanup 6/24/92.
189	Continental Collision	77B Bloomingdale Road	RCRIS-SQG, FINDS	No	None.
189	Seal-It	75 Bloomingdale Street	LUST, RCRIS-SQG	No	LUST incident dated 3/26/92, cleanup 1/14/93.

TABLE 5-3
ENVIRONMENTAL DATABASE SITES WITHIN 0.25-MILE VISUAL SITE RECONNAISSANCE AREA
NWIRP, BETHPAGE, NEW YORK
PAGE 5 OF 6

Map Number[1]	Name	Address	Records[2]	Noted in VSR[3]	Notes[4]
192	Two Guys Auto Repair	Hicksville Road and Broadway	AST	No	Two registered ASTs: 250-gal waste oil tank and 275-gal motor oil tank, both without secondary containment.
192	Gulf Service Station	Hicksville Road and Broadway	LUST	No	Two Guys Auto Repair and the Gulf Station appear to be located on same property. LUST incident dated 10/28/88; cleanup 12/7/88, no other details.
197	Jamoco Heating and Cooling	105 Bloomingdale Road	FINDS	No	None.
200	Cascade Water Service	113 Bloomingdale Road	FINDS	No	None.
201	Sunoco	125 Bloomingdale Road	RCRIS-LQG, FINDS	No	None.
205	Dynamic Painting Company	7 Willis Court	RCRIS-SQG, FINDS	No	None.
206	None Listed	127 Engineers Road	Spills	No	Petroleum spill due to abandoned drums 2/24/86, cleanup 2/22/88.
206	Renaissance Design & Building, Inc.	91 Engineers Road	RCRIS-SQG FINDS	No	None.
206	Shorewood Packaging	55 Engineers Road	Spills	No	Spill date 4/10/90, cleanup 4/12/90.
207	Traffic accident scene	625 Hicksville Road	Spills	No	10-gal petroleum spill due to traffic accident 6/18/93, cleanup 6/10/94.
207	American Lithotech	631 Hicksville Road	RCRIS-LQG, FINDS	No	None.
210	Hicksville Post Office	260 Engineers Road	RCRIS-LQG, FINDS	No	None.
211	Boces Nassau Tech Bethpage	610 Hicksville Road	RCRIS-SQG, FINDS	No	None.
214	Absolute Photo, Inc.	184 Quality Plaza	RCRIS-LQG	No	None.

TABLE 5-3
ENVIRONMENTAL DATABASE SITES WITHIN 0.25-MILE VISUAL SITE RECONNAISSANCE AREA
NWIRP, BETHPAGE, NEW YORK
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Map Number[1]	Name	Address	Records[2]	Noted in VSR[3]	Notes[4]
216	JC Precision Automotive	590 Hicksville Road	AST	No	Registered 275-gal waste oil AST without secondary containment.
218	Phoenix Laboratories, Inc.	175 Lauman Lane	RCRIS-SQG, FINDS	Yes	No visible environmental problems.
218	Progressive Circuits, Inc.	180R Lauman Lane	RCRIS-SQG, FINDS	No	None.
220	Maytell Construction Company	146 Lauman Lane	Spills	No	2-gal petroleum spill due to equipment failure 1/17/91, cleanup 8/4/92.
221	Slomins, Inc.	125 Lauman Lane	LUST, RCRIS-LQG, UST, FINDS	Yes	2 LUST incidents: tank overfill 2/5/90, cleanup 2/5/90; tank test failure 4/17/91, cleanup 3/2/92; and tank test failure 7/10/95 with no cleanup details. No visible environmental problems.
222	Greco Brothers Bulk Terminal	Lauman Lane at Hicksville Road	UST, AST	Yes	Two registered USTs in service: a 20,000-gal kerosene tank and a 1,000-gal kerosene tank. One registered AST in service: fuel oil, no details on size (visual inspection suggests 100,000-gal plus). Four registered USTs that have been removed. No visible environmental problems.

1 Refers to map location numbers in Figure 5-1.
2 See text of Section 5.1 for explanation of record type abbreviations.
3 Visual site reconnaissance (windshield survey) completed for Phase I EBS in May 1997.
4 Notes on spills, LUST incidents, and tank records are based on data in EDR, 1997. Other notes from notes taken during VSR.

6.0 ENVIRONMENTAL BASELINE SURVEY OF MAIN 105-ACRE PARCEL

The following chapter presents the observations made by the EBS team for each individual unit of real property on the Main 105-Acre Parcel and the conclusions as to the environmental condition of each of these units of real property. Information collected for each real property unit from the site visit, interviews, and records review is presented in an "Observations" section, followed by a "Conclusions" section that states which environmental condition rating has been assigned to the property and presents the rationale for the assignment. Many of the areas discussed below are presently undergoing investigation and remediation by Grumman. Only that information available to the preparers of the Phase I EBS as of the October 1997 draft is reported herein. The results of the ongoing investigation and remediation activities will be reported in a future Phase II EBS.

6.1 DESCRIPTION AND SUMMARY

This 105-Acre Parcel includes Plant 03, an aircraft manufacturing and assembly complex; Plant 10, a quality control laboratory; and Plant 17, two complexes of warehouses used to support operations in Plant 03. The principal manufacturing facility within the parcel is Building 03-01, a 707,303-square-foot manufacturing building divided into distinct shops that each serve a unique function. It is located near the center of the parcel (Figure 6-1). One of the warehouses complexes, the North Warehouse Area, is located northwest of Building 03-01, in the northwestern corner of the parcel. Plant 10 and the other warehouse complex (the South Warehouse Area) are located south of Building 03-01, close to the Long Island Railroad, which forms the southern boundary of the parcel. A scrapyard (Salvage Storage Area), a bermed and covered Drum Storage Pad (Building 03-37), an Industrial Wastewater Treatment Building (Building 03-34), a series of recharge basins, and an old cemetery predating establishment of NWIRP Bethpage occupy the northeastern quadrant of the parcel. Miscellaneous well-houses and storage and maintenance sheds are scattered throughout the parcel.

Because of the large number of operationally distinct shops within Building 03-01, each shop was individually evaluated and rated for the Phase I EBS. Section 6.2 discusses those shops west of a central firewall in Building 03-01, and Section 6.3 discusses the shops east of the firewall. Section 6.4 discusses a series of well houses and sheds located immediately north of Building 03-01. Section 6.5 addresses a series of sheds located in an area east of Building 03-01 that served as the Plant 03 leachfield until the 1980s. Section 6.6 discusses the Drum Storage Pad, Industrial Wastewater Treatment Plant, and other buildings and exterior land areas northeast of Building 03-01. Section 6.7

takes up Plant 10 and other areas west and southwest of Building 03-01. Sections 6.8 and 6.9 discuss the North and South Warehouse Areas, respectively.

6.2 PLANT 03 - BUILDING 03-01: WESTERN PART

The following section addresses shops in the western part of Building 03-01, west of a brick firewall termed Wall 16.

6.2.1 Plant 03 Cafeteria

Observations: The Plant 03 Cafeteria is located in the southwest corner of Building 03-01 (Figure 6-2). North of the Cafeteria is the Arts and Engraving Area. To the south, outside of the building, is a narrow lawn. The Cafeteria includes a serving area, cold storage area, kitchen, and butchery. A heating, ventilation, and air conditioning (HVAC) unit is located on a second floor above the kitchen. The cafeteria closed in 1996.

In recent years of operation, cafeteria seating was provided in an exterior building located just outside the southwestern corner of Building 03-01 (Grumman, 1985). This building was razed in 1996 when cafeteria service closed. In the early years of Building 03-01 operations, cafeteria seating occupied part of what is now the Arts and Engraving Area (Taormina, 1997). The cafeteria kitchen has served this function since construction of Building 03-01.

The cafeteria floor is linoleum tile over concrete. Several floor drains were formerly connected to the Plant 03 leachfield east of Building 03-01 and are presently connected to the sanitary sewer. A 1943 drawing shows a series of grease traps in the kitchen area. It also shows a drywell located east of the grease traps (James E. Stewart & Co., 1943b).

During the May 1997 VSI, contractors were in the process of removing kitchen equipment. Severely corroded floor concrete was observed at the former location of a large cold storage freezer in the kitchen. The material causing the corrosion is not known, but most likely it was a strong acid or alkali. According to Grumman personnel interviewed during the VSI, asbestos flooring in the dining area and kitchen were removed several years ago during a renovation project.

Conclusions: The Plant 03 Cafeteria was rated in Category 7 because of the severely corroded concrete at the former freezer location. Although the material responsible for the corrosion is not known, the severity of the corrosion indicates that it may have reached underlying soils. The exterior

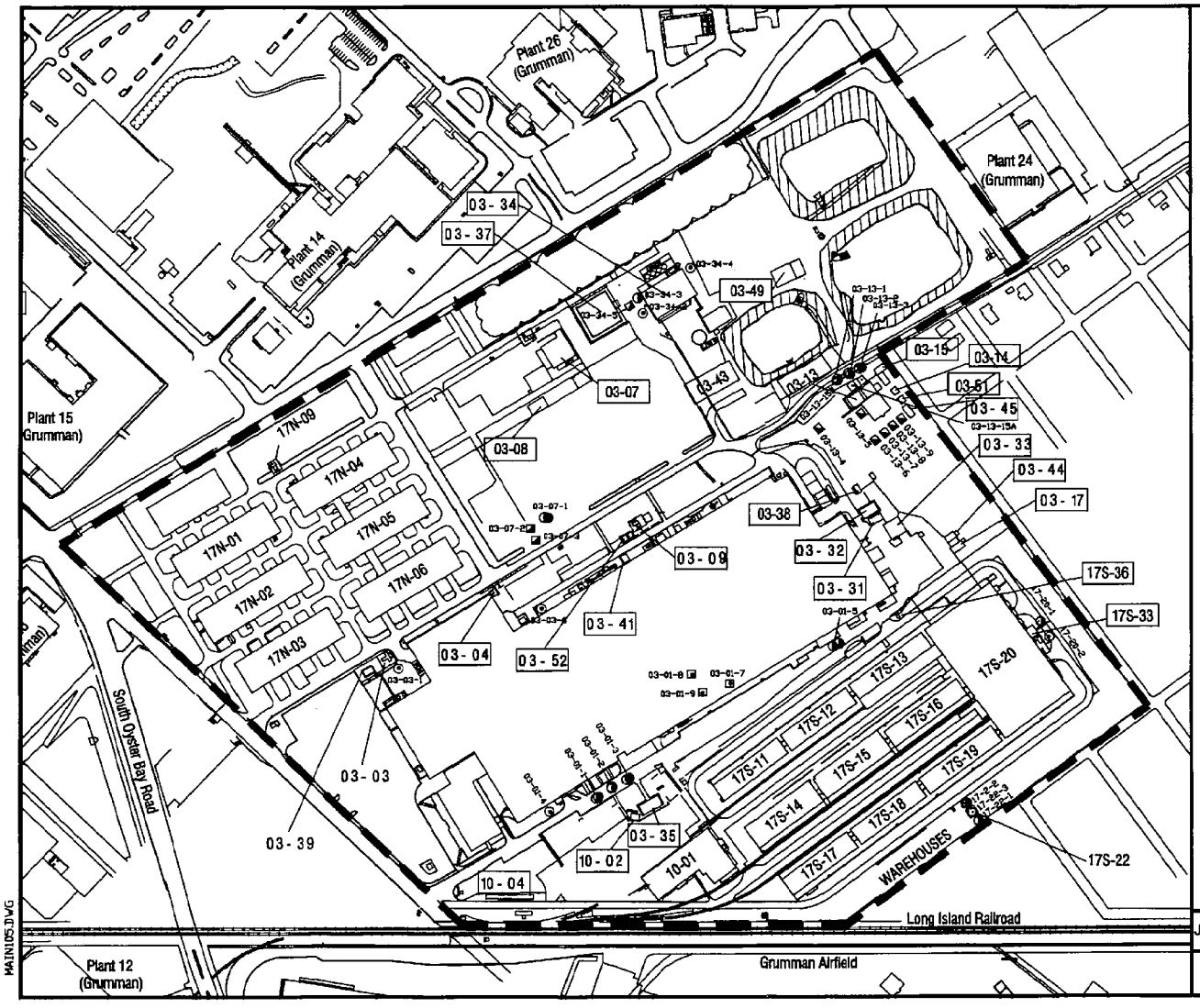


Figure 6-1

Main Navy 105-Acre Parcel Building Numbers

Phase I EBS
NWIRP Bethpage, New York

Legend

Parcel Boundary

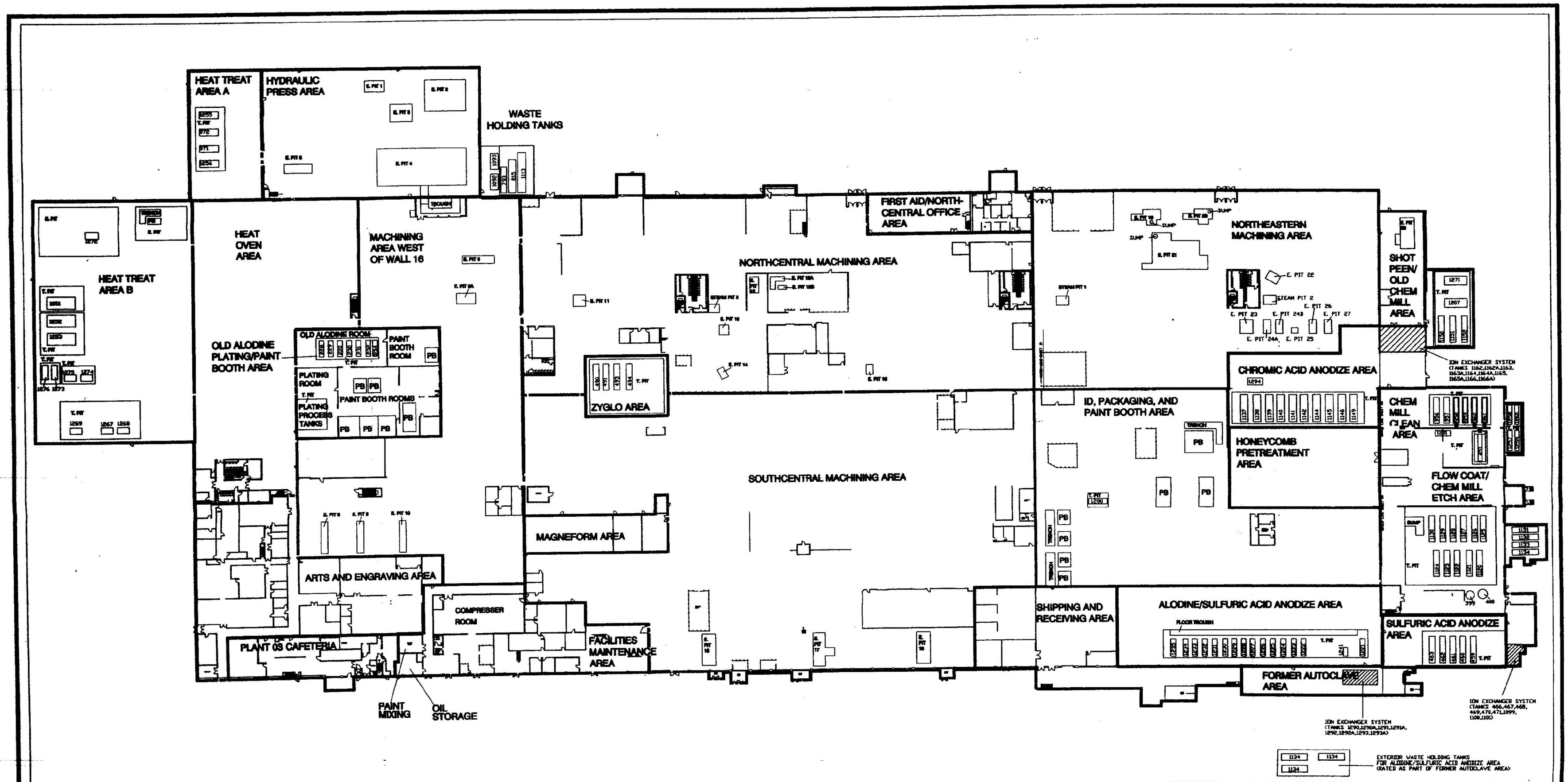
Building Numbers Correspond to Table 1-2

- ⊙ – Active UST
- ◑ – Inactive or Removed UST
- ◪ – Active AST
- ⊡ – Inactive or Removed AST

0 100 200 300 400
SCALE IN FEET

January 29, 1998	REV 2	PROJECT: CTO 283

CF Braun Engineering Corporation



Legend

E. Pit - Equipment Pit
T. Pit - Tank Pit (Process Tanks)
Numbered Rectangles and Circles are Process Tanks

0 25 50 100 150
SCALE IN FEET

August 13, 1997	REV 0	PROJECT: CTO 283

CF Braun Engineering Corporation

Figure 6-2

Plant 3 - Building 03-01 Interior Plan

Phase I EBS
NWIRP Bethpage, New York

drywell south of Building 03-01 near the cafeteria was not identified as a concern because of low industrial activity in this area. No other environmental concerns were noted.

6.2.2 Heat Treat Area A

Observations: Heat Treat Area A, sometimes referred to as the Old Heat Treat Area, occupies the western room of a 10,500-square-foot metal frame addition constructed in the 1960s outside of the northwestern corner of Building 03-01 (Figure 6-2). As of the May 1997 VSI, the heat treat facilities remained intact but not active. The area contained two large overhead furnaces used in heating various aircraft parts and four holding tanks used as cooling, quenching, cleaning, and rinsing tanks. The locations of these tanks are depicted in Figure 6-2. Operations involved heating metal aircraft parts in the overhead furnaces and then lowering the parts down into the tanks for cooling and rinsing. The four process tanks included:

- Tank 1256 (Cold Water Quench): This tank is made of concrete material and can hold approximately 58,433 gallons of water. It was empty during the VSI. Installed on July 24, 1986, its dimensions are 12 feet by 31 feet by 22 feet deep. A chain-driven device was used to raise and lower aircraft parts in and out of a large overhead furnace located directly above the tank. Residue and stains remained on the walls and bottom of tank as of the VSI. The integrity of the tank could not be visually assessed.

- Tank 971 (Alkali Tank): This Pennwalt A-38 tank can hold approximately 24,000 gallons of alkali solution. It was empty during the VSI. The alkali solution was used to clean parts after they had been quenched in Tank 1256. White dust-like residue was observed on the bottom and sides of the tank. The tank dimensions are 27 feet x 9 feet x 14 feet deep. The date of installation is unknown. The condition of the concrete floor beneath the tank could not be evaluated.

- Tank 972 (Water Rinse Tank): Tank 972 is identical to Tank 971. After aircraft parts were cleaned in Tank 971, they were rinsed in water inside this tank. Both Tanks 971 and 972 are located within a larger concrete pit. White dusty residue was observed at the bottom of this pit.

- Tank 1255 (Water Quench Tank): Tank 1255 is similar to Tank 1256 with respect to size, volume and date of installation. Another furnace used for heating parts is located overhead. A hydraulic rack lowered or raised aircraft parts in and out of the

tank. The tank was empty during the VSI, and no stains were observed on either the walls or bottom of the tank.

The concrete floor throughout Heat Treat Area A was stained but appeared to be in good condition with no visible evidence of cracks or deterioration. An exterior oil sump was observed outside the west wall of this area. Piping from the hydraulic lift used for the rack appeared to empty into this oil sump.

Conclusions: Heat Treat Area A was rated in Category 7 because the condition of the concrete floor in the oil sump located outside the west wall is not known. An alkali solution was used in Tank 971 to clean aircraft parts; the condition of the tank and the concrete beneath it could not be visually evaluated during the VSI.

6.2.3 Hydraulic Press Area

Observations: The Hydraulic Press Area is located in the same metal frame addition as Heat Treat Area A. It occupies the eastern room of the addition (Figure 6-2). This room housed five stretch hydraulic presses used to bend and shape metal aircraft parts. The presses were installed in the mid-1980s (Taormina, 1997). The metal handling processes required large amounts of hydraulic oil. In metal-working operations, the oils were used in grinding, lubricating, and cutting.

As of the May 1997 VSI, four of the presses had been removed, leaving empty floor pits. The single remaining press was fenced in preparation for removal. The area also contained an empty pit formerly accommodating a freezer used to chill parts to very low temperatures. Information on each pit in this area is provided in Table 6-1, and the pit locations are shown on Figure 6-2. No closure documents or inspection reports are available for the equipment or pits.

The floor of the Hydraulic Press Area is wood block overlying concrete. Metal chips were observed to be embedded between the wood blocks.

A review of a Grumman 1943 engineering drawing (James Stewart & Co., 1943c) revealed that an exterior Anodizing Leaching Chamber and a drywell were formerly on a lawn north of Building 03-01, where the Hydraulic Press Area is now located. The leaching chamber and drywell were associated with the Old Alodine/Plating/Paint Booth area discussed in Section 6.2.8. No closure documents were available for the leaching chamber and drywell.

TABLE 6-1

EQUIPMENT PITS
HYDRAULIC PRESS AREA, BUILDING 03-01[1]

Pit No.	Column No.	Sump	Concern	Description
1	OC9	No	No	Freezer pit with insulated walls, measures 20'x 30'x 16'
2	OC11-14	Yes	Yes	Pit has dimensions of 45'x 30'x 20'. Within pit is a sump that contained an oily liquid during VSI. Integrity of concrete pit could not be visually assessed during VSI because of the oily liquid. The oily liquid was, at the time, being pumped into awaiting 55-gallon drums.
3	OB10-11	Yes	Yes	Integrity of concrete pit could not be visually assessed during VSI. Pit dimensions are 24'x 18'x 5', and the pit includes two small sumps.
4	OB10-14	Yes	Yes	Integrity of concrete pit could not be visually assessed during VSI. Pit measures 33' x 90'x 30' with visible signs of oil stains on the floor of pit.
5	OB5-6	No	No	Shallow trench-like pit with signs of minor oil stains.

1 Source: Grumman, 1997; Radian, 1997a, site observations in May 1997

Conclusions: The Hydraulic Press Area was rated in Category 7. No closure documents were available for the leaching chamber or the drywell formerly located where the Hydraulic Press Area was later built. Furthermore, the condition of the sumps in equipment pits in this area could not be determined because their bottoms were covered with a layer of oily residue. The area has a long history of handling oils. If concrete in any of the sumps is cracked or deteriorated, the oil may have contacted underlying soil.

6.2.4 Heat Treat Area B

Observations: This area is also called the New Heat Treat Area. It was built in 1984-85 as an addition to the west side of Building 03-01 over an asphalt parking lot. A total of 11 process tanks in this area were used for quenching, cleaning, and rinsing processes. Details on these process tanks are provided in Table 6-2, and their locations are shown in Figure 6-2.

Tank 1251 (degreaser tank) was empty during the VSI. It is contained within a concrete pit. The other degreaser tank (Tank 1272) is located together with four tempering furnaces and cooling structures inside a large concrete pit approximately 25 feet deep. Positioned above Tank 1272 were two gantry furnaces on rails. The pit had a drainage trench, which was wet and stained during the VSI. Four 55-gallon drums containing oil were observed inside the pit during the VSI.

Tanks 1252 (alkali cleaner) and Tank 1253 (cold water rinse) are both contained inside one concrete pit. Tanks 1276 (salt bath) and 1273 (cold water rinse) are also located in a separate concrete pit covered by steel plating which acted as a platform. The interior of the pit could not be inspected. Just northeast of this pit was a dry sump with debris and rust-colored stains on its walls and bottom. The condition of the sump could not be determined during the VSI because of the dirt accumulated on the bottom.

The quenching tanks (1267, 1268, 1269, 1274 and 1275) were also contained in pits which acted as secondary containment systems. Tanks 1267, 1268, and 1269 were within one pit, and Tanks 1274 and 1275 were in another concrete pit. Two floor drains tied to a 12-inch PVC main are located south of the pit that contained tanks 1274 and 1275 (Radian, 1997a). The quench tanks are mounted on rails to allow positioning under the furnaces as required. It was not possible during the VSI to enter any of the pits for a closer inspection, since they are considered confined space areas. Grease and oil stains were observed between the rails.

TABLE 6-2

PROCESS TANKS
HEAT TREAT AREA B, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Tank No.	Volume (gal)	Content	Comments
1251	365	TCE	Stainless steel tank installed 1985, used for removing excess grease from parts prior to cleaning
1252	38,430	Alkaline	Stainless steel tank installed in 1985, and used for cleaning aircraft parts
1253	38,430	Cold water rinse	Stainless steel tank installed in 1980 and for rinsing aircraft parts
1267	5,300	Glycol	Steel tank installed in 1987 used for quenching
1268	5,300	Water	Steel tank installed in 1987 and used for quenching hot aircraft parts from the furnaces
1269	4,390	Liquid nitrogen	Steel double-walled tank installed in 1987 and used for quenching hot aircraft parts
1272	770	TCE	Stainless steel tank installed in 1987 and used for degreasing operations
1273	2,958	Cold water	Stainless steel tank installed 1988 and used as a salt water bath for rinsing parts
1274	1,525	20% ethylene glycol	Steel tank with epoxy coating installed in 1988 and used for quenching
1275	1,525	Cold water rinse	Steel tank with epoxy coating installed 1988 and used for quenching
1276	1,960	Molten salt	Stainless steel tank installed in 1988 used for quenching

1 Source: Grumman Tank Inventory (Grumman, 1997)

Records reviewed indicate that PCE was used as degreasing agent in Tanks 1251 and 1272 before Grumman switched to TCE. It is not known when the switch was made. As of the VSI, Tanks 1252 and 1253 were being used for decontaminating equipment being removed for sale.

A sump was observed in the pit containing Tanks 1252 and 1253. This sump contained liquid, and thus its concrete bottom could not be seen during the VSI.

During the site visit, oil and liquid stains were observed inside the concrete pit of the degreaser tank (Tank 1272). Both tanks were empty during the inspection. A trench and a floor drain are located directly behind Tank 1273, but the outlet is unknown (Radian, 1997a). The integrity of the concrete pit appeared to be in good condition with no cracks.

A sand blast and paint booth is located to the northeast corner of Heat Treat Area B. Rust-colored dust was observed on the floor around this paint booth during the VSI. A small air compressor and a pressure vessel were observed to the west of the sand blast booth. The pressure vessel served as an air reservoir for the sand blast booth. The concrete floor appeared to be in good condition with no signs of cracks or repairs. No environmental concerns were noted in the sand blast booth.

A transformer with dielectric oil containing PCBs was formerly located at Heat Treat Area B. Grumman records indicate that the dielectric oil contained 37,000 parts per million (ppm) PCBs (Faraday, 1985). The transformer was recommended for retrofilling by 1988 to reduce the concentration of PCBs. There is no available evidence that this transformer ever leaked or spilled dielectric oil.

Conclusions: Heat Treat Area B was rated in Category 7. The condition of several sumps in tanks pits in this area could not be evaluated during the VSI because they either contained debris or liquid. Acidic and alkaline solutions handled in the process tanks could have caused corrosion of the concrete in the pits and thereby reached the underlying soil. The rating also reflects the fact that information was not available on the destination of a floor drain in a trench near Tank 1273.

6.2.5 Arts and Engraving Area

Observations: The Arts and Engraving Area was shared by an Arts and Engraving Department and a Printed Circuit Department. Operations in the area were initiated in 1962 (NEESA, 1986). Before that time the area was used for cafeteria seating (Taormina, 1997). The area is located north of the

Plant 03 Cafeteria and south of the Heat Oven Area and Old Alodine/Plating/Paint Booth Area. A machining area (Machining Area West Column 16) is located to the east of this area.

Arts and engraving activities carried out in this area included silk screening, photocopying, painting, tone spraying, photography facilities, and darkrooms. The Printed Circuit Department used this area to manufacture printed circuit boards for insertion of electronic components on aircraft. As of the May 1997 VSI, activities by both Departments in this area had ceased, and all equipment and furniture had been removed. Flooring in the area consisted of linoleum tile over a concrete floor. No floor drains, sinks, or equipment pits were observed in the area.

An inventory of process tanks used in the printed circuit board operations are give in Table 6-3. An inventory of process tanks used for arts and engraving operations is given in Table 6-4. All of these tanks were relatively small and thus not readily mappable on Figure 6-2. A room in this area also contained two small paint booths, also substantially smaller than the other paint booths in Building 03-01 and too small to show on Figure 6-2.

Heavy stains were noted during the VSI on the linoleum flooring at the former location of a vat containing chemicals used in photo development. No cracks or floor drains were observed in the room where the stains were observed.

Conclusions: The Arts and Engraving Area was rated in Category 2. It contained several process tanks used to store small quantities of hazardous chemicals associated with the printed circuit board and arts and engraving operations. Although there were a number of floor stains suggesting that small amounts of liquid had spilled to the floor, there was no evidence that the liquid could have reached underlying soil.

6.2.6 Heat Oven Area

Observations: The Heat Oven Area is located in the northwestern part of Building 03-01, just inside from the metal frame additions housing Heat Treat Areas A and B (Figure 6-2). It is located north and west of the rooms housing the Old Alodine/Plating/Paint Booth Area. Included in this area for purposes of the EBS is a cluster of restrooms, offices, and a lobby leading into (Building 03-40). This lobby used to be the main administrative entrance to Building 03-01 before the Plant 03 PROM was added in the 1980s.

TABLE 6-3

PROCESS TANKS USED IN PRINTED CIRCUIT BOARD OPERATIONS ARTS AND ENGRAVING AREA, BUILDING 03-01[1] NWIRP, BETHPAGE, NEW YORK

Tank	Vol (gal)	Contents	Comments
0840	37	Hydrochloric acid	Carbon steel tank with PVC karoseal lining.
0841	37	Water	Stainless steel tank used for rinsing.
0842	37	Flow coat	Stainless steel tank that contained a photographic solution.
0843	37	Ferric chloride	Stainless steel tank that contained an etching agent.
0844	37	Dye solution	Stainless steel tank that contained photographic resist dye.
0845	37	Water	Stainless steel tank used for rinsing.
0846	37	Sodium dichromate and sulfuric acid	Karoseal lined stainless steel tank that stored a cleaning agent.
0847	37	Water	Stainless steel tank used for rinsing.
0848	55	TCE	Stainless steel tank used for degreasing.
0849	37	Water	Stainless steel tank used for rinsing.
0850	30	Gold solution	Karoseal lined stainless steel tank used for plating.
0854	37	Oxalic acid	Stainless steel tank
0855	37	Water	Stainless steel tank used for rinsing.
0856	37	Water	Stainless steel tank used for rinsing.

1 Source: Grumman Tank Inventory (Grumman, 1997)

TABLE 6-4

PROCESS TANKS USED IN ARTS AND ENGRAVING OPERATIONS
ARTS AND ENGRAVING AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Tank	Vol (gal)	Contents	Comments
1082	N/A[2]	Processor	Plastic bottle container for storing development solution; installed in 1975.
1080	N/A[2]	Water	Stainless steel tank used for rinsing; installed in 1975.
1081	N/A[2]	Caustic soap	Stainless steel tank used for cleaning; installed in 1975.
1083	N/A[2]	Process solution	Plastic bottle container for storing fixer solutions.
1084	N/A[2]	Deionized water	None
1085	N/A[2]	Water	Stainless steel tank used for rinsing; installed in 1975.
1086	N/A[2]	Toner solution	Stainless steel tank installed in 1975.
1087	N/A[2]	Sealer solution	Stainless steel tank; installed in 1975.
1246	16	Duragraphic developer	Carbon steel tank lined with karoseal; installed in 1971. The developer consisted of TCE and TCA.
1247	N/A[2]	Dryer	Tank installed in 1985.
1248	13	Duragraphic etchant	Tank installed in 1985. The etchant consisted of NaOH.
1249	38	Water	Tank installed in 1985.
1250	38	Duragraphic stripper	Tank stored stripping solution; installed in 1985. The stripper consist of methyl alcohol and methylene chloride.

1 Source: Grumman Tank Inventory (Grumman, 1997)

2 Not Available

As of the May 1997 VSI, five ovens were present in this area. Three of the ovens were intact and the other two were being dismantled. Much of the open floor space was being used as a temporary storage area for scrap metal. Grumman personnel familiar with operations in this area indicated that only dry metal was heated in these ovens, not metal dipped in solvents. Grumman records indicate that this area was used as a router room prior to 1985.

Conclusions: The Heat Oven Area was rated in Category 1. No environmental concerns were identified.

6.2.7 Facilities Maintenance Area

Observations: The Facilities Maintenance Area is in the southcentral part of Building 03-01. It is located along the southern wall of Building 03-01, between the Plant 03 Cafeteria and the Southcentral Machining Area (Figure 6-2). The Facilities Maintenance Area includes a small repair shop area and offices used by shop foremen. Adjacent to the facilities maintenance shop and offices is a compressor room. A small storage shed, designated on some site plan maps as Building 03-46, on the south side of Building 03-01 at the Facilities Maintenance Area was also addressed as part of this area.

The area was still in active use as of the May 1997 VSI. The small repair shop was relatively neat and organized. Although oil stains were observed on the floor of the compressor room, the floor concrete throughout the area appeared to be in good condition with no signs of cracks or other deterioration. However, oily liquid accumulations were observed in a sump inside the compressor room. Booms were placed around the sump to stop migration of oil to other areas.

An old Grumman drawing shows that coal boilers used to be located where the Facilities Maintenance Area is now. The coal was stored on the ground adjacent to Building 10-01. The drawing shows that a coal silo used to be located just outside of the building wall south of this area, and that a piping system came from a tank farm located approximately 65 feet south of the building (James Stewart & Co., 1943a).

Grumman's inventory of process tanks indicates that two process tanks (Tanks 11 and 322) were formerly located in the Facilities Maintenance Area (Grumman, 1997). Tank 11 was a 4,000-gallon tank that stored TCE. The tank material and date of installation were known but the inventory revealed that the tank was scrapped in 1989. No other information on the tank was available for

review. Tank 322 was a 1,500-gallon coolant sump for waste storage. No dates of installation or tank construction material were revealed in the inventory.

Contractor personnel involved in decommissioning Building 03-01 identified an undocumented UST on the lawn outside the building just south of the compressor room (Taormina, 1997). There are no available records containing information on the history, purpose, or closure of that UST.

An oil storage room and paint mixing room are located on the west side of the Facilities Maintenance Area, just east of the Plant 03 Cafeteria. Approximately thirty 55-gallon drums containing hydraulic and motor oil and oil stains were observed on the concrete floor of these rooms. Another 55-gallon drum of waste oil was observed in the hallway just west of these rooms. All the drums were properly labeled. A spill report (NYSDEC Spill No. 92-06477) indicated that a dispensing valve from a 55-gallon drum was improperly closed in 1992, causing 15 gallons of oil to spill inside the Oil Storage Room. The spill was on a concrete floor but reached soil via a floor drain. The report concluded that one drum of soil was removed by contractors.

Conclusions: The Facilities Maintenance Area was rated in Category 7 because of the undocumented UST and the lack of documentation on the 4,000-gallon TCE process tank and the 1,500 gallon coolant sump.

6.2.8 Old Alodine/Plating/Paint Booth Area

Observations: This cluster of walled rooms is located in the west-central portion of Building 03-01 between Columns D5 and D12 to the north and to the south H5 and H12 (Figure 6-2). The rooms each have concrete floors and are separated by brick walls. Operations in the area were initiated in 1943 (NEESA, 1986). The old alodine process line operated from the 1940s to late 1980s (Taormina, 1997). The plating and paint booth remained in operation until 1996, when the decommissioning of Building 03-01 began.

The alodine process involves the chemical conversion coating of aluminum using chromate baths. The coatings are used to promote adhesion of paint and impart corrosion resistance. The aluminum parts were cleaned using an alkali and nitric acid deoxidizer solution. An inventory of process tanks employed in the Old Alodine Area operations is given in Table 6-5.

TABLE 6-5

OLD ALODINE LINE PROCESS TANKS
OLD ALODINE/PLATING/PAINT BOOTH AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Tanks	Vol (gal)	Contents	Comments
52	55	Brush alodine	Steel 55-gallon drum
210	55	Degreaser TCE	Steel 55-gallon drum
211	N/A[2]	N/A[2]	This tank was salvaged in 1970
212	360	Muriatic pickle	Steel tank lined with karoseal and installed in 1962
213	600	Alkaline derusting	Steel tank installed in 1962. Tank also housed tanks 1211 (cold rinse) and tank 1212 (sodium hydroxide) (Donohue, 1985)
214	250	Water	Steel tank installed in 1962 and used for hot rinsing. Bypass valve was observed to be leaking in 1985 (Donohue, 1985)
215	400	Water	Steel installed in 1962 used for rinsing
216	400	Kelite spray white	Steel tank installed in 1973
217 218	400	Cadmium solution	Steel tanks used for cadmium plating
219	200	Preservation oil	
220	109	Ammonium nitrate	Steel tank used for cadmium stripping
235	N/A[2]	Acid (type unknown)	Steel tank used for acid regeneration. Tank was scrapped; date unknown
236	N/A[2]	Sodium hydroxide	Steel tank used for alkali regeneration. Tank was scrapped; date unknown
237 238 239	75	unknown	Saran-lined steel tanks used for ion exchange processes
307 308	2,140	Chromated acids	PVC-lined tanks used for holding acid wastes
1094 1096	32	Acid and base	Karoseal-lined steel tanks used for ion exchange; installed in 1975
1160 1161	55	Alodine 1000	Polyethylene-lined steel drums
1062	770	Condensate	Steel tank used to hold condensates and removed in 1996
1095	32	Base	Karoseal-lined steel drum installed in 1975 and used for ion exchange
1098	N/A[2]	Acid	PVC-lined steel tank installed in 1975 and used for acid regeneration
932	55	Alodine stripper	Steel drum
520	4,670	Deoxidizer (Chromated nitric acid)	Stainless steel tank installed in 1985
1113	6,100	Waste holding	Stainless steel tank used to hold waste from alodine and plating processes

1 Source: Grumman Tank Inventory (Grumman, 1997)
2 Not Available

As of the May 1997 VSI the tanks in the Old Alodine Room had been removed and the piping had been removed or cut off. The floor pit that formerly housed the tanks was empty. The concrete floor of the tank pit was severely corroded. The corrosion was severe enough to expose soil beneath the concrete. A sump full of liquid was observed in the tank pit, and a trench in the pit contained standing liquid. The condition of the concrete in the bottom of the sump and trench could not be assessed because of the standing liquid.

A review of a Grumman 1943 engineering drawing (James Stewart & Co., 1943c) revealed that wastes which accumulated in sumps in the Old Alodine Area discharged into a leaching chamber and drywell located to the north in what is now the Hydraulic Press Area. No closure documentation was available for the leaching chamber and drywell.

The Plating Room was still intact as of the May 1997 VSI. A series of empty dip tanks remained in a concrete containment area. An inventory of tanks used in this operation is given in Table 6-6. The main operation conducted here was cadmium plating by electro-deposition from a cyanide plating bath. The cyanide waste that generated by this process was trucked to an outside treatment facility where the cyanide was oxidized using chlorine. This operation closed in 1974. A vacuum deposition process replaced the electroplating process after the cyanide facility was closed. Grumman's 1997 Phase I report indicated that prior to the construction of the cyanide treatment facility, wastes from the plating activities may have been discharged to a leaching well located in the Old Alodine Room (Radian 1997a).

The concrete floor of the containment area had a thick rust-colored accumulation of mud. The surface floor was stained, and certain areas were corroded. A sump located in the southeast corner of the containment area contained a liquid accumulation. Another trench was observed that drained the containment area into the tank pit that formerly housed the process tanks in the Alodine Room.

There are a total of six paint booths in the Paint Booth Room. Four of the paint booths line the southern wall of the room, and the other two are located in the northern half of the room. All were still intact but not in operation as of the May 1997 VSI. Paint crusts and paint residues were observed on the floor and water troughs of the booths. Hairline fractures were also observed on the concrete floor in the paint booth room. A floor drain was observed in the paint booth located to the northwest of the room, but its outlet could not be immediately identified.

TABLE 6-6

PROCESS TANKS IN PLATING ROOM
OLD ALODINE/PLATING/PAINT BOOTH AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Tank	Vol (gals)	Content	Comments
131	763	Hydrogen sulfide	Steel tank use for rinsing. Removed in 1995
113	100	Hydrochloric acid	Steel tank
140	160	Hydrofluoric acid	PVC-lined carbon steel tank
141	800	Enthox (chromium oxide)	Steel tank
143	800	Plating activator (sulfuric acid)	Steel tank used for plating
144	800	Cyanide	Steel tank
224	200	Caustic soda, Sodium nitrate	Steel tank
227	900	Unknown	Steel tank
228	4,860	Ridolene 53 (non-etch cleaner)	Carbon steel tank used for cleaning installed in 1953
229, 230, 232	4,860	Water	Carbon steel tanks installed in 1953 and used for rinsing
231	4,860	Alodine 600	Carbon steel tank installed in 1963
261, 262	763	Water	Steel tanks that contained hot and cold water respectively and used for rinsing. Tanks installed in 1980.
407	165	Muriatic acid	Polyethylene-lined steel tank
740	185	Chromic acid, Phosphoric acid	Carbon steel tank
780	748	Unichrome #80	No additional information available
799	55	Nitric acid	Drum installed in 1986
815	3,300	Waste holding	Steel tank installed in early 1997. Located outside Building 03-01 and used for alodine and plating waste holding.
989	165	Sodium hydroxide	Polyethylene-lined steel tank
1209	112	Dilute nitric acid	High-density polyethylene-lined steel tank installed in 1983
1210	93	Dilute hydrochloric acid	High-density polyethylene-lined steel tank installed in 1983
1211	112	Water	Carbon steel tank used for rinsing; installed in 1983
1212	112	Dilute sodium hydroxide	High-density polyethylene-lined steel tank installed in 1983

1 Source: Grumman Tank Inventory (Grumman, 1997)

Grumman's spill records revealed that on September 4, 1992 a fork lift speared a drum of methylethyl ketone, causing approximately 30 gallons to spill on the concrete floor. The spill product completely evaporated, and no solid wastes were generated (Selva, 1992).

A review of Grumman's process tank inventory indicated that tank 0793, located to the north and outside Building 03-01, received waste water from the paint booths. The tank is used to transfer waste water from paint booth water wash curtains to transfer trucks which then transports the water to the IWTF. The 3,600-gallon carbon steel tank was installed in 1960 (Grumman, 1997). A review of a Grumman spill report dated November 5, 1984 indicated that a drain pipe to tank 0793 leaked approximately 100 gallons of waste water on a concrete pad (Ohlmann, 1984a). The report also indicated that the spill was contained and treated with sodium bicarbonate and hydrosulfide and later trucked to the IWTF. Results of soil samples collected in the area and analyzed for chromium showed low-level results. An overnight rainstorm required Grumman personnel to sample stormwater in the area; however, the results revealed that no chromium was present.

Conclusions: The Old Alodine/Plating/Paint Booth Area was rated in Category 7 because of severe evidence of corrosion found on the concrete floor and containment of both the Old Alodine and Plating areas and fractures observed in the floor of the Paint Booth Room. Furthermore, the condition of several sumps and trenches in the area could not be determined because of accumulated debris, sludge and liquid contained in them. The rating also reflects the fact that information was available on the destination of a floor drain in the paint booth room.

6.2.9 Machining Area West of Wall 16

Observations: This is the only machining area west of the major firewall dividing Building 03-01. It occupies an area bounded by the firewall to the east; by the Heat Oven Area, Old Alodine/Plating/Paint Booth Area, and Arts and Engraving Area to the west; the Hydraulic Press Area to the north; and the Facilities Maintenance Area to the south (Figure 6-2). The flooring consists of wood blocks over concrete. Rearrangement and modernization plan maps of Building 03-01 in Grumman's records indicate that this area has always been used as a machine shop.

Operations in this area included cutting, grinding, milling, pressing, processing metal aircraft parts, and handling hydraulic oils. By the May 1997 VSI, all of the machining equipment had been removed and sold to the public, leaving empty pits. These empty pits are described in Table 6-7 and mapped in Figure 6-2.

TABLE 6-7

EQUIPMENT PITS
MACHINING AREA WEST OF WALL 16, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Pit No.	Column No.	Sump	Concern	Description
6	B14	Yes	No	Pit measures 45' x 9' x 2'. Pit was steam washed clean prior to the VSI and the concrete floor appeared to be good condition with no signs of cracks.
6A	D13	No	No	Pit measures 15' x 10' x 4' and appeared to be in good condition.
7	H15	No	No	Pit measures 12' x 18' x 2' and had been steam cleaned. It appeared to be in clean and in good condition during the VSI. But the Grumman 1997 Phase I ESA noted that stains were visible.
8	K6	Yes	No	Pit measures 24' x 6' x 4' and had been steam cleaned. It appeared to be in clean and in good condition during the VSI. The Grumman 1997 Phase I ESA noted that stains were visible. Grumman sampled concrete and underlying soil at this pit and concluded no further action was necessary. No VOCs, or PCBs were detected. TPHs were detected at low levels (240 ppm) in the concrete but not the underlying soil. Several inorganics were detected in the concrete and soil below NYSDEC soil cleanup objectives (Leskovjan, 1997).
9	K8	Yes	No	Pit measures 10' x 30' x 4'. It appeared to be in clean and in good condition during the VSI. But the Grumman 1997 Phase I ESA noted that stains were visible.
10	K10	Yes	No	Pit measures 36' x 12' x 4'. It appeared to be in clean and in good condition during the VSI. But the Grumman 1997 Phase I ESA noted that stains were visible.

1 Source: Grumman, 1997; Radian, 1997a; Site observations in May 1997

Oil stains and metal chips were observed embedded in an oily residue between the wood blocks over much of the floor in this area during the VSI. The condition of the concrete beneath the wood blocks could not be visually assessed. Several patches were observed in places on the floor, suggesting that past renovation activities had taken place in this area. These may have included past removal of old equipment and filling of old pits. No information is available as to whether these old pits provided a pathway for contamination of underlying soil before they were filled.

The entire area had been swept clean prior to the VSI, and all of the pits had been steam cleaned with pressure washers. Renovation work was in progress which involved replacement of damaged and heavily stained wood blocks. It was not possible to enter any of the pits for a closer visual evaluation of their integrity, as they were considered to be confined space areas.

A vacant room located immediately south of the plating room (see Old Alodine/Plating/Paint Booth Area in Figure 6-1) is shown on old drawings to have been formerly occupied by a heat treat process in the 1940's (Seelye and Stevenson, 1941a). This heat treat area is shown as having two quench tanks and two other tanks labeled as salt pots. Operation of this former heat treat area likely ceased in the mid 1960s with the construction of Heat Treat Area A. In recent years, the area has been vacant with a smooth concrete floor. If any pits were present as shown in the 1941 drawings, they have since been filled. Their were no available records showing closure of these pits.

Conclusions: This machining area was rated in Category 7. There is the possibility that additional machining pits were once present in this area and were filled several years ago, as evidenced by several floor patches during the VSI. If so, such older pits likely accumulated oil from the floor, and if in poor condition could have served as a pathway for contaminating underlying soil. Further more, no records were available describing operation of the former heat treat area south of the plating room, and there were no documents regarding closure of pits shown in the 1941 drawing.

6.3 PLANT 03 - BUILDING 03-01: EASTERN PART

The following section addresses shops in the eastern part of Building 03-01, east of a brick firewall termed Wall 16.

6.3.1 Shipping and Receiving Area

Observations: The Shipping and Receiving Area is located in the southcentral part of Building 03-01 between Columns LL22 and LL25 and NN22 to NN25. The Alodine/Sulfuric Acid Anodize Area

adjoins this area to the east, separated by a wall. The Southcentral Machining Area adjoins it to the west, also separated by a wall (Figure 6-2). Doors from this area open outside onto a concrete loading dock on the south side of the building.

The area consists of several small rooms separated by walls. As of the May 1997 VSI, these rooms were being used to store pallets of new wood blocks for patching wood block floors elsewhere in Building 03-01. Canisters of 5-gallon sealants used in the floor-patching activities were also stored in the rooms. Several placards were observed on the walls, which suggested that the area was recently used to store chemicals.

One of the rooms was used to store polyethylene glycol, a material formerly used in operations in the Honeycomb Pretreatment Area. The solid polyethylene glycol was removed from the finished part with hot water and recycled. Four process tanks were associated with this process (Tanks 0693, 0695, 0696, and 0949). All of the tanks were made of steel. Tanks 0693, 0695 and 0696 were 1,000-gallon tanks that stored water used for either hot or cold rinsing. Tank 0949, which was a 75-gallon tank, stored polyethylene glycol and was removed from service in 1984. All had been removed several years prior to the VSI, most likely during the mid-1980s. Stains and cracks were observed on the concrete floor of this room during the VSI.

Conclusions: The Shipping and Receiving Area was rated in Category 7 because of the cracks observed in the surface concrete floor of the Polyethylene Glycol Storage Room. These cracks could have served as a pathway allowing polyethylene glycol on the floor to reach underlying soil.

6.3.2 Alodine/Sulfuric Acid Anodize Area

Observations: This area occupied the southeastern corner of Building 03-01 between Columns MM31 to MM42 to the north and NN31 to NN42 to the south (Figure 6-2). The anodizing process conducted here was established in 1985 to replace that formerly conducted in the Old Alodine Room. A series of dip tanks were aligned in an 11-foot-deep rectangular pit measuring 200 feet by 50 feet (Table 6-8).

As of the May 1997 VSI, the tanks had been removed and the pit was empty. A trench along the north side of the pit was filled with cloudy water. The pit had been steam-cleaned and appeared to be in good condition, although there was faint evidence of hairline cracks.

TABLE 6-8

PROCESS TANKS
ALODINE/SULFURIC ACID ANODIZE AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Tank	Vol (gals)	Contents	Comments
1221	2500	TCE	Steel tank installed in 1985 used for degreasing
1222	8800	Ridolene 57	Stainless steel tank installed in 1985
1223 1226 1229 1231 1233	17400	Water	Double stainless steel tanks used for rinsing installed in 1985
1224,1225	8800	Amchem/nitric acid	Stainless steel tanks installed in 1985
1227	8800	Spare	Stainless steel tank installed in 1985 and used for backup
1228	8800	Alodine 600	Stainless steel tank installed in 1985
1230	8800	Sulfuric acid	Stainless steel tank installed in 1985
1232	8800	Sodium dichromate (hot seal)	Stainless steel tank installed in 1985
1234, 1235	N/A[2]	Dryer	Stainless steel tanks used as dryer and installed in 1985
1236, 1237, 1238	8800	Wastes	Stainless steel tanks installed in 1985 to hold wastes[3]
1241	2000	Condensate	Stainless steel tank installed in 1985 and as a rinse and surge tank
1290, 1292	N/A[2]	Water (demineralizer-anion)	Carbon steel tanks installed in 1988[4]
1290A 1292A	N/A[2]	Caustic soda (demineralizer)	Carbon steel tanks installed in 1988[4]
1291 1293	N/A[2]	Sulfuric acid (demineralizer-cation)	Carbon steel tanks with PVC liner installed in 1988[4]
1291A 1293A	N/A[2]	Sulfuric acid	Carbon steel tanks lined with PVC; installed in 1988[4]

1 Source: Grumman Tank Inventory (Grumman, 1997)

2 Not Available

3 These three tanks are located in the exterior Alodine Waste Tank pad located approximately 50 feet south of the Former Autoclave Area. Although affiliated with the Alodine/Sulfuric Acid Anodize process, they have been rated as part of the Former Autoclave Area.

4 These eight tanks are part of an ion exchange system formerly located in the Former Autoclave Area. Although affiliated with the Alodine/Sulfuric Acid Anodize process, they have been rated as part of the Former Autoclave Area.

Chemical waste from the anodizing operation conducted in this pit was transferred via underground piping to a cluster of three waste holding tanks (Tanks 1236, 1237, and 1238) located in an exterior paved area approximately 50 feet south of the Former Autoclave Area. Although these tanks were affiliated with operations conducted in the Alodine/Sulfuric Acid Anodize Area, their environmental condition was considered as part of the Former Autoclave Area (see Section 6.3.3).

Conclusions: The Alodine/Sulfuric Acid Anodize area was rated in Category 2. There is no physical or documented evidence for further investigation, even though corrosive material was handled in the area. Grumman submitted data from concrete chip samples taken from the pit, and from soil samples taken from under the pit, to the NYSDEC. In a letter dated August 22, 1997 the NYSDEC approved filling the pit (Farkas, 1997). No further action will be necessary.

6.3.3 Former Autoclave Area

Observations: The Former Autoclave Area is located just south of the Alodine/Sulfuric Acid Anodize Area on a former exterior loading dock on the south side of Building 03-01 covered with metal frame walls and a roof (Figure 6-2). Aircraft parts were steam heated in autoclaves using strong pressure. It is reported that PCB-containing oil was used as a heat transfer medium in the operation of the autoclaves (Taormina, 1997). It has been reported that this autoclave leaked oil while it was in operation (Radian, 1997a).

More recently, the covered area has been used to store drums of chemicals awaiting use in the Alodine/Sulfuric Acid Anodize Area process line. It also housed a series of ion exchanger tanks supporting operations in the Alodine/Sulfuric Acid Anodize Area (Tanks 1290, 1290A, 1291, 1291A, 1292, 1292A, 1293, and 1293A).

The covered area was mostly empty during the May 1997 VSI. The ion exchanger tanks had been removed. Several 55-gallon drums labeled as hazardous waste were observed. Cracks and stains were observed on the concrete floor.

Three exterior waste holding tanks (1236, 1237, and 1238), labeled on Grumman site plans as the Alodine Waste Tanks, are located in an area approximately 50 feet south of the Former Autoclave Area. The tanks are housed on raised concrete footings in a concrete pit located in a paved area south of a paved service road running parallel to the south side of Building 03-01. The tanks collected waste liquids from the Alodine/Sulfuric Acid Anodize Area via an underground piping system. The

tanks were being dismantled at the time of the VSI. A greenish to gray colored solution, of unknown composition, was observed in the concrete pit under the tanks.

A review of Grumman's spill records indicate that on December 8, 1987, a sulfuric acid spill occurred on the surface pavement of the Former Autoclave Area (Spill No. 877733). According to the spill report (Ohlmann, 1987a), a truck bypass valve was inadvertently left open by the contractor on a discharge line to the exterior waste holding tanks (Tanks 1236, 1237, and 1238). Approximately, 25 gallons of sulfuric acid spilled on the paved surface. The report further stated that the spill was neutralized with sodium bicarbonate and cleaned up, but some material entered a storm drain. The storm drain is tied to the Recharge Basins.

Another sulfuric acid spill (No. 870037) occurred in the Former Autoclave Area on April 2, 1987. The spill was due to a PVC pipe break while acid was being transferred from a drum to a process tank inside Building 03-01 through an outdoor pipe connection using a pump. Approximately 8 gallons of acid were spilled, of which 2 or 3 gallons entered a storm drain that discharged into the Recharge Basins.

Conclusions: The Former Autoclave Area was rated in Category 7. Cracks were observed in the floor concrete in this area, which has a history of use for storing drums of hazardous chemicals. No further action will be necessary concerning the former location of these exterior waste handling tanks. Grumman submitted to the NYSDEC data from concrete chip samples, and from underlying soil samples, from the secondary containment area surrounding the exterior Alodine Waste Tanks located south of the Former Autoclave Area. In a letter dated August 22, 1997, the NYSDEC approved filling the abandoned secondary containment system (Farkas, 1997). Because of their spatial isolation, these tanks have been separately rated in Category 3, even though the rest of the Former Autoclave Area remains rated in Category 7.

6.3.4 Honeycomb Pretreatment Area

Observations: The area is located to the east of Building 03-01 between Columns GG34 to GG42 to the north and HH34 to HH42 to the south. The paint booths are to the west and the Chem Mill Flowcoat is to the east. The Chromic Anodize Area is located to the north, behind a wall (Figure 6-2).

The honeycomb process produced light-weight, high-strength laminates using a honeycomb-shaped internal support. The area operated from 1963 to 1983. The pit formerly housing the honeycomb pretreatment process was subsequently filled and covered with concrete. A 1993 Navy investigation

conducted under the IR Program detected 5,000 µg/L of PCE in soil gas from under this area (HNUS, 1993). The purpose of that investigation was to identify potential sources of contaminated groundwater found at the former Plant 03 leachfield and former drum marshalling areas east of the building. The report concluded that the Honeycomb Pretreatment Area was not a potential source of that contamination, and no further action was taken.

All process tanks and equipment had been removed from this area before the May 1997 VSI. The concrete floor was found to be clean and free of debris during the VSI. An inventory of process tanks formerly used in the honeycomb process is provided in Table 6-9.

Conclusions: The Honeycomb Pretreatment Area was rated in Category 7 because of the data reported from the IR program. Further investigation is necessary to determine whether soils and groundwater under the floor of this area are so contaminated as to require remediation.

6.3.5 Chromic Acid Anodize Area

Observations: The Chromic Acid Anodize Area consists of a large, 12-foot-deep, rectangular process tank pit measuring 120 feet by 50 feet. The pit is located between Columns EE34 to EE42 to the north and GG34 to GG42 to the south. The Northeastern Machining Area is located north of the pit. The Honeycomb Pretreatment Area is located south of the pit, separated by a brick wall.

The pit housed a row of dip tanks that contained various chemicals used for metal plating (Table 6-10 and Figure 6-2). All had been removed prior to the May 1997 VSI. A trench along the north side of the pit collected runoff from the tanks. It sloped to the west and drained into a sump. Stains and cracks were observed in the bottom of the pit and trench during the VSI. A sump containing standing liquid was observed in the northeast corner of the pit.

The Chromic Acid Anodize Area includes a chemical staging room and ion exchanger northeast of the anodizing process line tanks, in the southern part of a metal frame addition housing the shot peen operation. The chemical staging room was used as a holding place for chemicals used in the anodizing process. The ion exchange system (Tanks 1162-1166 and 1162A-1166A) produced deionized water for rinsing and recycled chromic acid solution by removing aluminum from solution.

TABLE 6-9

PROCESS TANKS
HONEYCOMB PRETREATMENT AREA, BUILDING 03-01[1,2]
NWIRP, BETHPAGE, NEW YORK

Tank	Vol (gal)	Content	Comments
0080	6,480	Therminol	Steel tank used as a holding tank and scrapped in 1985.
0441	N/A[3]	Degreaser still	No other information.
0922	N/A[3]	Caustic soda	Polyethylene-lined tank installed in 1977.
0949	75	Polyethylene glycol	Steel tank scrapped in 1984.
1078	473	Sulfuric acid & sodium dichromate	Lead-lined carbon steel tank installed in 1974.

1 Source: Grumman Tank Inventory (Grumman, 1997)
2 All of these tanks were removed by 1985.
3 Not Available

TABLE 6-10

PROCESS TANKS
CHROMIC ACID ANODIZE AREA, BUILDING 03-01[1,2]
NWIRP, BETHPAGE, NEW YORK

Tanks	Vol (gals)	Content	Comments
1137	N/A	TCE	Stainless steel tank installed in 1980 and used for degreasing.
1138	9,200	Alkali clean (Ridolene-57)	Stainless steel tank installed in 1980. Ridolene is made up of 50% sodium metasilicate, 20% sodium pyrophosphate, and 20% non-ionic surface agent.
1140	9,200	Alum etch	Stainless steel tank installed in 1985. The etch is made up of 26% sodium hydroxide and 70% sodium carbonate.
1141	9,200	Deoxidizer (25% ferric sulfate, 3% potassium bifluoride and 25% nitric acid)	Stainless steel tank installed in 1985.
1143	9,200	Acid strip	Stainless steel tank installed in 1985.
1144	9,200	Chromic acid	Stainless steel tank installed in 1985.
1145 1139 1142 1148	17,400	Water	Stainless steel tanks used for rinsing; installed in 1985.
1146	9,200	Hot seal (chromic acid)	Stainless steel tank installed in 1985.
1147	180	Anodize seal water	Stainless steel tank installed in 1980.
1149	9,200	Empty (used as dryer)	Stainless steel tank used as dryer and installed in 1980.
1150 1151 1152	9,200	Waste holding	Stainless steel tanks used for holding alkali waste; installed in 1980.
1155	70	N/A[3]	Stainless steel tank installed in 1979.
1162 1164 1166	50	Chromic acid cation	Carbon steel drums lined with PVC; installed in 1981.
1162A 1164A 1166A	N/A	Sulfuric acid	Carbon steel tanks lined with PVC and installed in 1988.
1163 1165	N/A	Water anion	Carbon steel tanks lined with PVC; installed in 1981.
1165A 1163A	N/A	Caustic soda (demineralizer)	Carbon steel tanks installed in 1988.
1294	2,400	Water	Concrete tank with stainless steel liner installed in 1988.

1 Source: Grumman Tank Inventory (Grumman, 1997)
2 All process tanks had been removed from this area prior to May 1997.
3 Not Available

The chemical staging room was empty during the VSI, and the ion exchange system had been removed. The pit that formerly housed the ion exchange system tanks was empty. Cracks, stains and evidence of corrosion were observed in the pit during the VSI. The Grumman 1997 Phase I report revealed that there were leaks in the cation heat exchanger and the circulating pump in the pit area. They also noted a wet sump in the southeastern part of the ion exchange pit (Radian, 1997a).

Evaluated together with the Chromic Acid Anodize Area is an exterior metal frame shed that covered three waste holding tanks that were used to collect liquid waste from the chromic acid anodize process (Tanks 1150, 1151, and 1152). On the north side of the shed are a TCE storage tank (Tank 1271) and a PCE storage tank (Tank 1207). All of these tanks were housed in concrete pits which provided secondary containment. All had been removed prior to the VSI.

According to Grumman records, one of the waste holding tanks (Tank 1050) overflowed on June 28, 1984 and puddled liquid onto the concrete in an adjacent area, with some water reaching an adjacent area of exposed soil. Soil samples taken from that area and analyzed for hexachromium and total chromium showed results less that 0.01 ppm. The puddled water was treated with hydrosulfite and bicarbonate (Ohlmann, 1984b). No estimate on the volume that overflowed was given in the report.

Conclusions: The Chromic Acid Anodize area was rated in Category 7 because cracks, stains, and corrosion were observed in the concrete tank pit and ion exchange area. These cracks may have allowed exposed underlying soils to runoff from the tanks.

No further action will be necessary concerning the former exterior waste holding tanks and PCE/TCE storage tanks. Grumman submitted to the NYSDEC data from concrete chip samples, and from underlying soil samples, from the secondary containment areas that surrounded these tanks. In a letter dated August 22, 1997, the NYSDEC approved filling these abandoned secondary containment systems (Farkas, 1997).

6.3.6 Southcentral Machining Area

Observations: This machining area is located in between Columns GG16 to GG25 to the north and NN16 to NN25 to the south. In addition to the machining shop, the area includes a welding shop and a duct department. It is directly contiguous to the Northcentral Machining Area, without any separating wall or partition. The distinction between these two similar and contiguous machining areas is thus arbitrary and serves only to permit separate evaluation of two large areas in the central

part of Building 03-01. Machining equipment pits in this area are described in Table 6-11 and shown on Figure 6-2.

As of the May 1997 VSI, the work stations and benches had been removed from the shop floor. Patches were evident on the wood block floor in areas were the work stations had been removed. Three metal work machines were still in place; and oily sludge, metal shavings and debris were observed. These machines were contained in Pits 16, 17, and 18. Sumps in two of the pits (Pits 16 and 18) contained an oily liquid. The condition of the concrete beneath the pits could not be assessed because the machines were still in place, and the condition of the sumps could not be assessed because of the oily liquid.

Operations in the duct department included cleaning sheet metal and forming ducts. The metal ducts were then prepared and sent to the welding area. A review of Grumman's process tanks inventory indicated that three tanks were removed from the welding area and sent to NWIRP Calverton, another Grumman facility on Long Island. Tank 0245 stored acid for deoxidizing, Tank 0246 stored water for rinsing, and Tank 0247 was used for drying. No evidence of welding or duct work was available at the time of the site visit, as all the equipment had been removed. The area contained freshly replaced wood blocks.

Conclusions: The Southcentral Machine Area was rated in Category 7. The oily liquid in Pits 16 and 18 prevented visual observation of the pit condition during the VSI. If cracks or other deterioration exist in these pits, the oily liquid may have reached underlying soil. A further concern is the possibility that additional machining pits were once present in this area and were filled several years ago, as evidenced by several floor patches observed during the VSI. If so, such older pits likely accumulated oil from the floor and if in poor condition could have served as a pathway for contaminating underlying soil because of the observed pool of oil and debris in the concrete equipment pits and sumps. The integrity of the concrete in the pits and sumps could not be evaluated because of the oil and debris.

Additionally, concerns have also been raised over the possible former presence of a paint booth in the southwestern part of this area, between the Magneform Area and the Facilities Maintenance area (Taormina, personal communication).

TABLE 6-11

FLOOR PITS
SOUTHCENTRAL MACHINING AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Pit No.	Column	Sump	Concern	Description
16	MM9	Yes	Yes	Pit measures 16' x 30' x 5'. Oily liquid was observed in sump and equipment was still in place. Not possible to visually assess concrete integrity beneath equipment and standing liquid.
17	MM13	No	No	Pit measures 16' x 45' x 4'. Pit was clean and in good condition with no visible cracks or other deterioration.
18	MM19	Yes	Yes	Pit measures 16' x 30' x 5'. Oily liquid metal shavings, and debris were observed in sump, and equipment was still in place. Not possible to visually assess concrete integrity beneath equipment and standing liquid.

1 Source: Grumman, 1997; Radian, 1997a; site observations in May 1997

6.3.7 Magneform Area

Observations: The Magneform Area is an enclosed room located west of the Southcentral Machining Area. Operations involved metal shaping using a magnetic field. The room remained intact as of the May 1997 VSI, housing various machines used to bend aircraft metal sheets using a magnetic field. Equipment observed during the site visit included a drill press, an industrial freezer, and a parts washer. The room had a concrete floor overlain by wood blocks and covered by linoleum.

Machine Shops surround the Magneform Area to the north, west, and east. To the south is the Facilities Maintenance Area. The Magneform Area used to be part of the Southcentral Machining Area until the late 1970s, when it was enclosed and adapted to the magneform function.

The operations in the room appeared to be very neat. No oil stains were observed on the floor. However, several patches on the floor indicated either that equipment had been removed and pits filled, or that the floor had been disturbed. The condition of pits housing the drill press and other equipment associated with magneform operations could not be evaluated, since the equipment remained in place.

Conclusions: The Magneform Area was rated in Category 7 because it used to be part of the Southcentral Machining Area. No information is available on the location or closure of any former machining equipment pits, if there were any.

6.3.8 Identification, Packaging, and Paint Booth Area

Observations: This area is located between Columns GG25 to GG34 and Columns LL25 to LL34 (Figure 6-2). Identification and packaging operations were conducted in an open area equipped with racks to hold various aircraft parts which were ready for labeling and packaging. The racks had been removed as of the May 1997 VSI, and the area had been swept clean.

The paint booth operations in this area started in 1943 (NEESA, 1986) and were undergoing removal as of the VSI. There are a total of seven paint booths, each identified by PB in Figure 6-2. Four of the paint booths are automated paint booths linked by a conveyor system. Priming and topcoat painting operations were performed in these automated paint booths.

Each of the paint booths has a water curtain and a metal trough. The floor of each booth has a metal grate extending approximately 8 feet from the water curtain trough toward the front of the

booth. The metal grates were found to be heavily coated with paint during the VSI, and rust spots were observed in the trough. A trench runs directly behind the booths. Standing grayish-green water was observed in the trench. The condition of the concrete below the trench could not be evaluated because of the presence of the standing water.

Two sludge dewatering presses were housed in 6-foot-deep floor trenches located immediately west of the line of paint booths. Liquid waste was pumped into waste holding tanks and sent to the IWTF (Building 03-34), and solid waste was drummed and sent to the Drum Storage Pad (Building 03-37) for off-site disposal. A Kolene oven used for paint stripping was present adjacent to two of the paint booths at Column JJ28. The stripper operated at a temperature between 315°C and 537°C and was used to strip paint from racks and hangers (Radian, 1997a). Paint stains were visible in the vicinity of the oven, and a dry sump is located in the northwest corner of the oven. The concrete floor throughout this area appeared to be in good condition, but it is not known if any past renovation or soil disturbance activities have taken place in this area.

A small pit was observed on the north side of one of the paint booths. This pit housed Tank 1280, a salt bath used in paint stripping operations at the Kolene oven.

Two of the paint booths, located near Columns HH32 and HH33, are actually paint tunnels. Grumman diagrams have labeled these booths as Tunnel No. 2 and Tunnel No. 6, respectively. Priming and topcoat painting operations were performed in these paint tunnels. Water curtains are located to the rear of the paint tunnels. One tunnel has a floor drain that empties into a sump in the other tunnel.

PB 16, located at Columns GG33 to GG34, had a metal grate floor and water curtain. A trench with standing colored water was observed to the back of the booth. At the time of the site visit, workers suited in Level B protection were steam-cleaning and dismantling the booths. A review of an old engineering drawing (Seelye and Stevenson, 1942a) showed a historic paint tunnel just immediately south of PB 16 at columns HH33-HH34. No evidence of this paint tunnel was observed at the time of this site inspection. No documents were available as to closure of these historic paint tunnels.

Conclusions: This area was rated in Category 7. Colored standing water was observed in the trenches behind the booths the sumps. The condition of the concrete underneath the trenches and sumps could not be determined because of the standing water. Contaminants associated with paints and paint-striping operations could have reached soils below the concrete if any of the trenches were

corroded or cracked. Also, no closure documents were available for the historic paint tunnel south of PB 16.

No further action will be necessary regarding the pit that formerly housed Tank 1280 (paint stripping liquids). Grumman submitted to the NYSDEC data from concrete chip samples, and from underlying soil samples, from the pit. In a letter dated August 22, 1997, the NYSDEC approved filling the pit (Farkas, 1997).

6.3.9 Northcentral Machining Area

Observations: This Machine Shop is located in the northcentral part of Building 03-01 between Columns A16 to AA25 and G16 to G25 (Figure 6-2). This area adjoins other machine shop areas to the south and east. Offices and a clinic that was used for first aid for Plant 03 personnel is located to the northeast.

This machine shop is similar to other machine shops in Building 03-01. Its floor is concrete overlain by wood blocks. The shop contained equipment for grinding, pressing, cutting, deburring, and general handling of metal sheets used in aircraft manufacture. As of the May 1997 VSI, all of the equipment had been removed and only empty floor pits remained.

Extensive oil stains were observed on the wood block floor, and metal shavings embedded in oil were observed between the wood blocks. Seven empty equipment pits were observed during the site inspection. Some of these pits may have accumulated lubricants and cutting oils that were spilled on the shop floor. Table 6-12 lists and describes each of the floor pits in this area.

It was not possible to physically enter any of the pits for a closer inspection because they were considered to be confined space areas. Furthermore, many of the pits still contained pools of standing oil. Thus the integrity of the concrete in the pits could not always be evaluated.

Conclusions: The Northcentral Machine Shop was rated in Category 7 for the same reasons as the other machine shops in Building 03-01. Additional machining pits may have once been present in this area and were filled several years ago. If so, such older pits likely accumulated oil from the floor and if in poor condition could have served as a pathway for contaminating underlying soil. Additionally, the integrity of the concrete in several pits and sumps could not be evaluated because of the oil and debris.

TABLE 6-12

FLOOR PITS
NORTHCENTRAL MACHINING AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Pit No.	Column No.	Sump	Concern	Description
11	CC3	No	Yes	Pit measures 6' x 4' x 4'. Oily liquid was observed in pit during VSI. Integrity of concrete under the liquid could not be visually assessed.
12	CC11	Yes	No	Pit measures 30' x 18' x 3'. Oil and sediment were observed in sump during VSI. Grumman sampled concrete and underlying soil at bottom of the pit and concluded that no further action is necessary. PCB, and TPHs were not detected. VOCs and metals were not detected above action levels (Leskovjan, 1997).
12A	CC12	No	No	L-shaped pit measures 30' x 2' x 2. It was clean during the VSI and appeared to be in good condition.
12B	CC13	No	No	Pit measures 1' x 4' x 1. It was clean during the VSI and appeared to be in good condition.
13	DD10	No	No	Pit measures 14' x 10' x 6'. It was empty during the VSI. Some staining was observed in the pit, but the concrete appeared to be good condition.
14	EE10	Yes	Yes	Pit measures 12' x 16' x 2'. Oily liquid was observed during the VSI. Integrity of concrete under the liquid could not be visually assessed.
15	EE17	Yes	Yes	Pit measures 8' x 10' x 8'. Oily liquid was observed in a sump in the pit. Integrity of concrete under the liquid in the sump could not be visually assessed.

1 Source: Grumman, 1997; Radian, 1997a, site observations in May 1997

6.3.10 First Aid/Northcentral Office Area

Observations: The clinic is located between Columns AA22 to AA25 (Figure 6-2). As of the May 1997 VSI, the office had been shut down. Most medical equipment had been removed, but some office furniture remained. The area appeared to be in good condition and well maintained with no signs of accumulated debris, stains or cracks on the floor. The clinic handled all of Plant 03 medical emergency cases. Wastes from the clinic included used swabs, bandages, syringes, and cleaning agents. The wastes were bagged and handled by a medical waste hauling contractor for proper disposal. Immediately west of the clinic was office space that had also been cleaned out.

Conclusions: The First Aid Clinic Area was rated in Category 1. No environmental concerns were noted either for the clinic or for the adjoining office space.

6.3.11 Shot Peen/Old Chem Mill Area

Observations: This area is located in the northern part of a metal frame addition at the northeast corner of Building 03-01, east of the Northeast Machining Area (Figure 6-2). The addition was constructed and chem mill operations initiated in 1955 (NEESA, 1986). These operations ceased around 1980, and the addition was converted into a shot peen unit. The southern part of the addition is a separate room which housed the ion exchange system for the Chromic Acid Anodize Area (see Section 6.3.5, above).

The shot peen operation had ceased prior to the May 1997 VSI, and the area was being used by Grumman environmental contractors as a staging area for samples and equipment.

When chem mill operations took place, this area housed several process tanks used for etching operations. The tanks were removed by 1980, and the pits were filled. No closure reports were available documenting the condition of the pits and whether underlying soils were contaminated. However, site personnel reported that there was a history of leaks and spills from the process tanks, and that some of the tanks were corroded (Taormina, 1997). Because of the long history of handling acids and alkaline solutions, extensive corrosion necessitated replacement of the metal roof of the addition (Taormina, 1997). An inventory of the process tanks associated with the old chem mill operations is provided in Table 6-13.

TABLE 6-13

PROCESS TANKS
OLD CHEM MILL OPERATION, BUILDING 03-01[1,2]
NWIRP, BETHPAGE, NEW YORK

Tank No.	Vol. (gal)	Contents	Comments
0073	5,745	Deoxidizer	Tank decommissioned and scrapped in 1980.
0074	5,745	Alkaline etch Turco #7	Tank scrapped in 1980
0075	5,745	Cold dip rinse	Tank scrapped in 1980
0076	5,745	Hot and Cold spray rinse	Tank scrapped; date unknown
0077	5,745	Alkaline etch	Tank installed in 1967 and scrapped in 1980
0078	5,745	Alkaline etch	Tank installed in 1967 and scrapped in 1980
0079	5,745	Cold dip rinse	Tank installed in 1967 and scrapped in 1980
0081	5,700	Acid waste holding	Outdoors tank scrapped in 1985
0083	5,700	Alkali waste holding	Outdoors tank scrapped in 1985
0084	5,700	Alkali waste holding	Outdoors tank scrapped in 1985
0302	125	Still bottom for TCE	Outdoor tank scrapped in 1980
0399	4,418	Caustic soda	Active fiberglass indoor tank installed in 1980
0400	4,418	Caustic soda	Active fiberglass indoor tank installed 1980
0711	3,240	Waste hydrofluoric acid	Outdoor pentone lining tank scrapped in 1980
0713	240	Waste hydrofluoric acid	Outdoor polyurethane tank scrapped in 1980
0782	575	Water rinse	Indoor fiberglass tank removed in 1980
0783	575	Nitric acid	Indoor fiberglass tank removed in 1980
0784	575	Caustic	Indoor carbon steel tank removed in 1980
0920	5,760	TCE	Indoor stainless steel tank used to store TCE for vapor degreasing; removed in 1980
0926	2,850	Mineral oil	Active steel tank. No dates available
0969	5,760	Nitric acid	Stainless steel tank removed in 1980
0970	5,760	Hydrofluoric acid	Steel tank with karoseal lining removed in 1980
1049	6,600	Hydrofluoric acid	Carbon steel tank with karoseal lining installed in 1973. Outdoor tank located to the north of the shed and removed in 1985
1050	20,350	Hydrofluoric acid	Concrete holding pit epoxy-lined tank abandoned in 1985.
1111	N/A	Tap water rinse	No further information

1 Source: Grumman, 1997
2 Area subsequently housed a shot peen operation.

A floor pit for machining equipment is located in the northern part of the room that housed the shot peen operation (Equipment Pit 28 on Figure 6-2). The equipment had been removed prior to the VSI. The pit measures 33 feet x 15 feet with an average depth of 14 foot, with distinctly shallower and deeper parts. The deeper part of the pit contained dirt with oil stains. The shallower part was clean with only minimal stains.

Conclusions: The Shot Peen/Old Chem Mill Area was rated in Category 7. There is no documentation as to the condition of the concrete pit that formerly housed the chem mill process tanks before that pit was filled. Evidence suggests that liquids from those tanks frequently spilled into the pit. If the pit concrete was cracked or deteriorated before it was filled, these liquids could have contacted underlying soil.

Additionally, the existing pit in the northern part of the room is a concern. Oily stains in the pit suggest that it had a history of accumulating oily material from the shop floor, and the layer of accumulated dirt in the pit during the VSI prevented a visual assessment of its integrity. If cracked or deteriorated, soils under the pit may have been exposed to oil from the shop floor.

6.3.12 Flow Coat/Chem Mill Etch Area

Observations: This area is located in a metal frame addition on the southeast side of Building 03-01. This area includes a Flow Coat process line and a Chem Mill Etch process line (Figure 6-2).

The Flow Coat process line contained two process tanks, Tank 451 and Tank 1201. Both contained maskant used to coat aircraft parts by dipping or flowcoating. Once coated with maskant, the aircraft parts were ready for etching in the Chem Mill Etch process line located immediately to the south. The masking agent (a rubber-like material) was then dissolved by use of PCE. Toluene was originally used but was discontinued because of excessive VOC violations (Ohlmann, 1986b). Both maskant tanks had been removed prior to the May 1997 VSI.

A vapor phase carbon absorption system was installed in the exhaust system to capture PCE. The PCE was steam-stripped from the carbon beds and recycled back to the manufacturer for reprocessing. Two large ovens located to the west of the former flow coat tank were used to dry parts after maskant application.

The concrete floor in the area of the former tanks appeared to be severely corroded. The area was clean and free of debris. No floor drains were observed in the area. A Phase II RFI completed by the Navy in 1993 reported soil gas concentrations under this area of 570 µg/l for PCE and 5 µg/l for TCE (HNUS, 1993).

Just south of the Flow Coat process line is the Chem Mill Etch process line. At this location, aluminum aircraft parts were placed in a caustic soda solution, and titanium parts were placed in hydrofluoric acid. The process line comprised a series of tanks in a concrete pit, as inventoried in Table 6-14.

The process tanks were being removed as of the May 1997 VSI. They were observed to be on a platform within a secondary containment pit. All contained solution during the site visit. Tanks 399 and 400 may have been moved from the Old Chem Mill Area and the numbers retained. The secondary containment pit contained pipes, sumps and pumps. Some areas of the pit were wet, and corroded concrete was observed on the containment pit bottom, directly under the tanks.

Just outside the eastern wall of the addition, near the Chem Mill Etch process line, were four tanks (Tanks 1131, 1132, 1133, and 1134) used to hold wastes from the etching process. Wastes from these tanks was sent to the IWTF (Building 03-34) for treatment and disposal. Records indicate that approximately 2 to 4 gallons of hydrofluoric acid spilled and reached the pavement on December 20, 1989. The spill was contained and neutralized with sodium bicarbonate (Ohlmann, 1989).

Conclusions: The Flow Coat/Chem Mill Etch Area was rated in Category 3. Severely corroded concrete was observed on the floor of the containment pit under the Chem Mill Etch process tanks. Grumman submitted data from concrete chip samples taken from the pit, and from soil samples taken from under the pit, to the NYSDEC. In a letter dated August 22, 1997 the NYSDEC approved filling the pit (Farkas, 1997). No further action will be necessary.

6.3.13 Sulfuric Acid Anodize Area

Observations: The Sulfuric Acid Anodize Area is located in the same metal frame addition as the Flow Coat/Chem Mill Etch Area (Figure 6-2). Operations included a coating or anodizing process designed to produce a heavy stable film of metal oxide on the metal surface of aircraft parts for corrosion protection. Operations in the area were initiated in 1969 (NEESA, 1986).

TABLE 6-14

**PROCESS TANKS, CHEM MILL ETCH PROCESS LINE
FLOW COAT/CHEM MILL ETCH AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK**

Tank	Vol (gal)	Contents	Comments
399	4,418	Caustic soda	Indoor fiberglass tank installed in 1980
400	4,418	Caustic soda	Indoor fiberglass tank installed in 1980
1120	9,743	Aluminum Etch (hot) caustic	Active stainless steel tank installed in 1979
1121	9,743	Aluminum Etch (hot) caustic	Active stainless steel tank installed in 1979
1122	18,273	Double cold water rinse	Active stainless steel tank installed in 1979 and used to rinse parts from the caustic tank
1123	9,743	Desmut nitric acid	Active stainless steel tank installed in 1979
1124	18,273	Double cold water rinse	Active stainless steel tank installed in 1979 and used to rinse parts from the nitric acid tank
1125	9,743	Aluminum Etch caustic	Active stainless steel tank installed in 1979
1126	18,273	Double cold water rinse	Active stainless steel tank installed in 1979 and used for rinsing parts from caustic etch tank
1127	9,743	Hydrofluoric acid	Active stainless steel tank with PVC lining installed in 1979 and used for titanium etch
1128	18,273	Double cold water rinse	Active stainless steel tank installed in 1979 used for rinsing parts from hydrofluoric acid etch
1129	9,743	Desmut nitric acid	Active stainless steel tank installed 1979
1130	18,273	Double cold water rinse	Active stainless steel tank installed in 1979
1131	9,743	Caustic waste	Carbon steel tank installed 1979
1132	9,743	Caustic waste	Stainless steel tank installed 1979
1133	9,743	Hydrofluoric and nitric acid waste	Stainless steel tank lined with PVC installed in 1979
1134	9,743	Nitric acid waste	Stainless steel tank installed in 1979

1 Source: Grumman, 1997

The area contained a series of process tanks housed with a concrete secondary containment pit (Table 6-15). The tanks had been removed as of the May 1997 VSI. The area also contained an ion exchange system that was discontinued in 1984. A Grumman 1984 equipment condition report warned that the ion exchange equipment was reaching the limits of its useful life and that it would require increasingly larger maintenance efforts. The associated pumps were found at that time to be in poor condition. The ion exchange equipment was subsequently taken out of service. Rinsewater previously treated in the ion exchange equipment was then directed to the IWTF (Building 03-34).

The containment pit was empty at the time of the site visit. The concrete floor of the pit was observed to be severely corroded. A trench runs along the northern end of the pit, and the pit contained a sump at its eastern end. Liquid was present in both the trench and sump.

A Grumman equipment condition report dated 1984 reported that the concrete floor of the containment pit was deteriorated under the tanks, where acid drippage had led to deterioration (Cofman, 1984). The report also stated that the pit was rebuilt due to past significant acid damage.

Records indicate that a spill of sulfuric acid (50% concentration) occurred outside the Sulfuric Acid Anodize Area on April 2, 1987. The incident occurred while the acid was being transferred from a drum to an inside process tank. The spill resulted from a PVC pipe break, and approximately 8 gallons of acid was spilled onto the ground (Ohlmann, 1987b). The report further stated that approximately 2 or 3 gallons reached a nearby storm drain. The storm drains are connected to the Recharge Basins located to the northeast of Building 03-01.

Conclusions: The Sulfuric Acid Anodize Area was rated in Category 7 because of corroded concrete in the containment pit that formerly housed the sulfuric acid process tanks. Additionally, the trench and sump in that pit contained an unknown liquid, and the presence of the liquid prevented evaluation of the condition of the concrete in those features.

6.3.14 Northeastern Machining Area

Observations: The Northeastern Machining Area is located in the northeastern part of Building 03-01, east of the Northcentral Machining Area, west of the Shot Peen/Old Chem Mill Area, and north of the Chromic Acid Anodize Area (Figure 6-2). Included in this shop were a deburring area, a material drop area, a staging area, and a process area.

TABLE 6-15

PROCESS TANKS
SULFURIC ACID ANODIZE AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Tank	Vol (gal)	Content	Comments
455	6,450	Non-etch alkali	Steel tank installed in 1969.
456	6,380	Non-etch alkali	Steel tank installed in 1969
457	6,120	Chromated deoxydizer	Stainless steel tank installed in 1969
458	6,380	Rinse	Stainless steel tank installed in 1969 and used for rinsing
459	6,885	Sulfuric acid	Stainless steel tank installed in 1969 used for anodizing
460	6,380	Water rinse	Stainless steel tank installed in 1960 and used for rinsing
461	6,120	Sodium dichromate	Stainless steel tank installed in 1988
462	6,120	Demineralized water	Stainless steel tank installed in 1969
463	N/A[2]	Dryer	Carbon steel tank installed in 1969
466, 467, 468 and 469	N/A[2]	Ion exchange (cation and anion)	Resin coated stainless steel tanks
470	55	Sulfuric acid regenerant	Steel 55-gallon drum
471	55	Caustic soda regenerant	Steel 55-gallon drum
1099	N/A[2]	Ion exchanger (strong base)	HRS IRA 400 resin lined with karoseal; installed in 1975
1100	N/A[2]	Ion exchanger (strong base)	HRS IRA 400 resin lined with karoseal; installed 1975
1101	N/A[2]	Ion exchanger; activated carbon	HRS lined with karoseal; installed in 1975

1 Source: Grumman, 1997
2 Not Available

Most of the machines and other equipment had been removed from the floor pits in this area prior to the May 1997 VSI, and the floor had been cleaned. Metal chips were embedded in an oily residue which remained over the wood blocks throughout much of this area.

A few hydraulic presses remained intact inside their floor pits, and they provided an indication of the overall condition of this area prior to removal and cleanup. Pools of oil were observed underneath the remaining hydraulic presses. Adsorbent material had been placed around some of the oil pools to prevent migration.

Ten equipment pits that housed machining equipment were observed in this area (Table 6-16). Some of these pits may have accumulated lubricants and cutting oils which were used in the operations in the shop. The observed pits all showed significant evidence of oil stains on their walls and concrete bottoms. Some of the sumps still contained oil that was being pumped into 55-gallon drums.

It was not possible to enter the pits for a closer visual inspection during the VSI because they were considered confined space areas. Also, at the time of the VSI, all of the pit areas were cordoned with yellow tape for safety purposes. The inspection were performed by observing behind the tape line. Therefore their integrity is not known.

Two steam pits (labeled on Figure 6-2 as Steam Pits 1 and 2) also occur in this area. Available evidence suggests that they contained only steam, not oil, and thus are not an environmental concern.

A capped pipe observed to be sticking out of the floor between Columns AA29 and 30. It appeared to possibly be a fill port for a UST. Grumman records do not, however, indicate that a storage tank ever existed in this part of the building.

Two air compressors and an unlabelled drum were observed with significant oil stains in their immediate vicinity at column AA39. A review of old engineering drawings indicated that there was an old paint tunnel at Column CC33 (Seelye and Stevenson, 1942a). At the time of the site visit, there were no indications of the historic presence of a paint tunnel. The area was open and covered by wood blocks.

Conclusions: The Northeastern Machine Shop was rated in Category 7 for the same reasons as the other machine shops in Building 03-01. The rating also reflects the fact that a crack and open joint were observed in Equipment Pits 21 and 23, respectively. The integrity of the concrete in the other

TABLE 6-16

EQUIPMENT PITS
NORTHEASTERN MACHINE AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Pit No.	Column No.	Sump	Concern	Description
19	AA30-31	Yes	Yes	Pit measures 24' x 3' x 4'. Heavy oil stains, 3 feet of oily liquid observed in sump. Integrity of concrete in pit could not be assessed during VSI.
20	AA32-34	Yes	Yes	Pit measures 30' x 5' x 4'. Heavy oils stains on bottom of pit, sump contained an oily liquid and a colored liquid. Integrity of concrete in pit and sump could not be assessed during VSI.
21	BB31-33	Yes	Yes	Pit measures 60' x 10' x 6'. The pit had not been cleaned as of the VSI, and substantial stains were observed on the bottom and walls of the pit. There also appeared to be some evidence a crack on the concrete bottom. Sump has some oil in it.
22	C37	Yes	Yes	Pit measures 10'x 12' x 3.5'. Oil stains were observed in pit.
23	DD35	No	Yes	Pit measures 12' x 12' x 1'. Open joints were reported by Grumman 1997 Phase I report.
24A	DD37	No	Yes	Pit measures 10' x 2.5' x 1'. Grumman reported oil stains with sorbent materials.
24B	DD37	No	Yes	Pit measures 10' x 2.5' x 1'. Grumman reported oil stains with sorbent materials.
25	DD38	No	Yes	Pit measures 3' x 2' x 1'. Oil stains were observed.
26	DD39	No	Yes	Pit measures 2.5' x 10' x 1'. Oil stains were observed.
27	DD40	No	No	Pit measures 2.5' x 10' x 1'. Standing oil was observed during VSI. Grumman sampled concrete and underlying soil at the bottom of the pit and concluded that no further action is necessary. VOCs and PCBs were not detected. TPHs were detected at low levels (<100 ppm) in the concrete but not in the underlying soil. Metals were not detected above NYSDEC soil cleanup objectives (Leskovjan, 1997).

1 Source: Grumman, 1997; Radian, 1997a, site observations in May 1997

equipment pits and sumps is also questionable because standing oil prevented an inspection of their concrete bottoms and walls. PCBs were associated with old lubricating and hydraulic oils until their ban for use in the United States in 1977 (Hazardous Waste Consultant, 1992). The rating also reflects the observation of what may be an undocumented UST.

Additionally, the area of the historic paint booth is of concern because of contaminants associated with paints may have migrated beneath the floor and contacted underlying soils.

6.3.15 Chem Mill Clean Area

Observations: The Chem Mill Clean Area is located in the northern part of the same metal frame addition to the east side of Building 03-01 that houses the Flow Coat/Chem Mill Etch Area (Figure 6-2). The Chem Mill Clean process consisted of cleaning aluminum and titanium aircraft parts using an alkaline solution and chromated nitric acid as a deoxidizer. Eight process tanks were utilized in this process (Table 6-17). All had been removed prior to the May 1997 VSI.

A trench ran the west to east length of the area. A deep pit occurs at one place within the trough. The pit formerly housed equipment used to control emissions from the process tanks, but that equipment had been removed as of the VSI. A standing accumulation of rusty-colored water was in the trench during the VSI. Corrosion was observed in the walls of the trench during the VSI, and the condition of the concrete bottom of the trench and pit could not be evaluated due to the standing water.

Spill records indicate that Tank 958 has a history of leaks. In November 1992 a documented leak from this tank occurred at an elbow in the piping that connects the tank to a nearby transfer pump. It is reported that acid deteriorated the concrete floor and entered the soil below. Subsurface soils were excavated to a limit so as not to affect the stability of nearby process tanks.

At the time of the VSI, a soil remediation project by Grumman was in progress just outside to the east of the Chem Mill Clean Area. A pit was being excavated to remediate chromium-contaminated soil which was the result of an acid spill.

Conclusions: The Chem Mill Clean Area was rated in Category 5 because of the ongoing soil remediation project to the east. Another concern, not the subject of any current remediation effort, is

TABLE 6-17

PROCESS TANKS
CHEM MILL CLEAN AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Tank No.	Vol (gal)	Contents	Comments
956	6,100	Ridolene (alkali cleaner)	Date of installation is unknown. No other information about the tank is known.
957	6,100	Tap water rinse	No other information
958	6,100	Deoxidizer (chromated nitric acid)	No other information
959	6,100	Tap water rinse	No other information
960	N/A[2]	Dryer	Tank used as a dryer.
961	N/A[2]	Dryers	Tank used as a dryer.
962	6,000	Acid waste	Outdoor tank made of carbon steel with karoseal lining. Installed in 1966 and removed in 1986. Was then replaced by Tanks 1258 and 1260.
963	6,000	Alkali waste	Outdoor tank made of carbon steel with karoseal lining. Installed in 1966 and removed in 1986. Was then replaced by Tanks 1257 and 1259.

1 Source: Grumman tank inventory, 1997
2 Not Available

the severely corroded concrete that was observed in the concrete pit that housed the chem mill clean process tanks. This damaged concrete may have allowed underlying soils to be exposed to the acid and alkali solutions used in the tanks.

6.3.16 Zyglo Area

Observations: The Zyglo Area between Columns E2 to E7 to the north and F2 to F7 to the south. It is surrounded to the north by the Northcentral Machining Area and to the south by the Southcentral Machining Area. The Zyglo Area operations consisted of submerging metal aircraft parts in an ultraviolet visible dye (zyglo), rinsing, followed by inspection under UV light for defects. These operations started in 1970 (NEESA, 1986).

A series of four dip tanks were housed in a single concrete pit (Table 6-18). The tanks remained in the pit as of the May 1997 VSI but were being dismantled and prepared for removal. The area around the pit was sealed off by Grumman contractors responsible for removing the tanks, preventing an up-close visual inspection of the integrity of the concrete in the pit. Cleanup crews working in the pit at that time were suited in Level B protection with respirators.

Chemical waste from the zyglo operation was piped under the floor of Building 03-01 to two buried waste holding tanks (Tanks 1092 and 1093) located in an exterior area just east of the Hydraulic Press Area. These and other waste holding tanks are addressed in Section 6.3.17.

According to a Grumman memorandum, wastewater from the zyglo operations was piped or trucked to the Plant 02 Industrial Wastewater Treatment Facility (Acid House). At the Acid House, the zyglo wastewater contaminants was adsorbed onto bentonite in treatment vats, forming a sludge. The sludge was then dewatered and landfilled offsite (Cofman, 1977).

Conclusions: The Zyglo Inspection Area was rated in Category 7. The integrity of the pit that housed the zyglo process tanks could not be evaluated during the VSI because of a shallow accumulation of liquid, and because cleanup crew were busy dismantling the tanks at the time. If the concrete had deteriorated, the ultraviolet penetrant could have contacted underlying soil.

6.3.17 Waste Holding Tanks East of Hydraulic Press Area

Observations: This exterior area, located just outside the north wall of Building 03-01 immediately west of the metal frame addition housing the Hydraulic Press Area, included waste holding tanks

TABLE 6-18

PROCESS TANKS
ZYGLO AREA, BUILDING 03-01[1]
NWIRP, BETHPAGE, NEW YORK

Tank	Vol (gal)	Content	Comments
0490	2700	Magnaflux penetrant	Steel tank installed in 1970
0491	7200	Magnaflux in water	Steel tank installed in 1970
0493	6750	Magnaflux developer	Carbon steel tank installed in 1970
0494	N/A[2]	empty	Carbon steel tank installed in 1970 and used as a dryer
1092 1093	5000	Wastewater	Buried steel tank installed in 1975 and used for holding zyglo waste water. Located outside of Building 03-01 just east of Hydraulic Press Area.

1 Source: Grumman, 1997
2 Not Available

associated with operations in the Old Alodine/Plating/Paint Booth Area and the Zyglo Area. Tanks 1092 and 1093, shown on Figure 6-2, were underground tanks that held liquid waste generated by the penetrant inspection process conducted in the Zyglo Area. Both tanks were removed in compliance with NYSDEC guidance in June 1997. Samples were analyzed for VOCs, SVOCs, and metals; and concentrations of all analytes were found to be below NYSDEC action levels (EDER, 1977).

Tanks 793 and 815 contained liquid waste generated by the old alodine process and the plating process, and Tank 1113 held liquid waste generated by the paint booths in the Old Alodine/Plating/Paint Booth Area. Tanks 793, 815, and 1113 were located on a concrete containment berm. They had been removed prior to the May 1997 VSI. No visible evidence of leakage from these tanks was noted.

Conclusions: This area was rated in Category 3. Very low levels of some analytes were detected in soil samples taken during the removal of Tanks 1092 and 1093, but all concentrations were below NYSDEC action levels. No environmental concerns were identified for other process tanks known to formerly be housed in this area.

6.4 PLANT 03 - AREA NORTH OF BUILDING 03-01

The following section addresses a series of sheds and well houses located in an exterior area immediately north of Building 03-01.

6.4.1 Building 03-02: Well House No. 8

Observations: Well House No. 8 is a one-story cinder block building of approximately 250 square feet. It is located just southeast of the intersection of two paved Grumman access roads, approximately 100 feet south of the southwestern corner of Warehouse 4 (Building 17N-03) (Figure 6-1). The building houses an electric pump that supplies groundwater to Building 03-01 and other Plant 03 buildings for use as industrial water. During the May 1997 VSI, the building appeared to be well maintained with a fresh coat of paint and no accumulated debris.

Conclusions: Well House No. 8 was rated in Category 1. No environmental concerns were noted.

6.4.2 Building 03-03: Well House No. 9

Observations: Well House No. 9 is a one-story cinder block building of approximately 374 square feet. The building is located approximately 50 feet west of an addition to Building 03-01 housing Heat Treat Area B and approximately 100 feet north of an addition housing Heat Treat Area A (Figure 6-1). The Methanol Storage Building (Building 03-39) is approximately 50 feet to the west, and a paved access road is located to the north. North of this road is the southeastern corner of Warehouse 4 (Building 17N-03).

The building houses a diesel pump that supplies groundwater to Building 03-01 and other Plant 03 buildings for use as industrial water. The subgrade of the pump house housed water pipings. The pump is powered by a diesel generator located inside the pump house. The diesel fuel is stored in a UST (03-03-1). Records indicate that the UST is constructed of steel, was installed in 1974, and was last tightness-tested in 1996 (Grumman, 1997).

During the May 1997 VSI, the building appeared to be well maintained with no signs of accumulated debris. The concrete floor also appeared to be in good condition with no signs of cracks or deterioration.

Conclusions: Well House No. 9 was rated in Category 2. Diesel fuel to power the pump is stored in an associated UST. This UST passed a tightness test in 1996, and there is no available evidence that it ever leaked or was overfilled.

6.4.3 Building 03-04: Well House No. 10

Observations: Well House No. 10 is a one-story cinder block building of approximately 250 square feet located just outside of the northeast corner of an addition to Building 03-01 housing Heat Treat Area A and the Hydraulic Press Area (Figure 6-1). The building houses an electric pump that supplies groundwater to Building 03-01 and other Plant 03 buildings for use as industrial water. During the May 1997 VSI, it appeared to be well maintained with a fresh coat of paint and no accumulated debris.

Conclusions: Well House No. 10 was rated in Category 1. No environmental concerns were noted.

6.4.4 Building 03-09: Well House No. 11

Observations: Well House No. 11 is a one-story cinder block building of approximately 172 square feet located just outside the north side of Northcentral Machine Shop Area of Building 03-01 (Figure 6-1). The building houses an electric pump that supplies groundwater to Building 03-01 and other Plant 03 buildings for use as industrial water. During the May 1997 VSI, it appeared to be well maintained with a fresh coat of paint and no accumulated debris.

Conclusions: Well House No. 11 was rated in Category 1. No environmental concerns were noted.

6.4.5 Building 03-11: Well House No. 14

Observations: Well House No. 14 is a one-story cinder brick building of approximately 172 square feet. It is surrounded by the parking lot west of the GAC PROM office building (Building 03-40) (Figure 6-1). The building houses an electric pump that supplies groundwater to Building 03-01 and other Plant 03 buildings for use as industrial water. During the May 1997 VSI, it appeared to be well maintained with a fresh coat of paint and no accumulated debris.

Conclusions: Well House No. 14 was rated in Category 1. No environmental concerns were noted.

6.4.6 Building 03-39: Methanol Storage Building

Observations: The Methanol Storage Building is a small cinder block and concrete shelter covering an (approximately) 1,000-gallon aboveground tank for storing methanol used in operations in Building 03-01. The tank is set in a deep concrete pit which provides secondary containment. The building is located approximately 100 feet west of an addition to Building 03-01 housing Heat Treat Area B and approximately 100 feet north of an addition that houses Heat Treat Area A. Although not inventoried as an AST or as a process tank in Grumman's tank inventory (Grumman, 1997), the methanol tank should be considered an AST.

The floor appeared to be in good condition during the May 1997 VSI. There was no visual evidence or available records of spills or leaks from the tank.

Most of the exterior land between Building 03-39 and the additions to Building 03-01 is paved with asphalt. This asphalt area includes several oil-filled electrical transformers (non-PCB) and a dust collector. There was no visible evidence or available records of leakage from the transformers.

Conclusions: Building 03-39 and the asphalt area were rated in Category 2. Methanol was stored in the AST in the building, and oil is stored in the transformers. There is no evidence of leakage of either substance.

6.4.7 Building 03-41: Storage Shed

Observations: Building 03-41 appears on recent Grumman site plan maps as a small shed immediately north of the central part of Building 03-01, close to Buildings 03-09 and 03-52, but it had been razed prior to the May 1997 VSI. The only available record was Grumman's Phase I ESA, which expressed concern over an oil-filled floor trench. When inspected as part of that assessment, the shed was being used to store metal debris (Radian, 1997a).

Conclusions: Building 03-41 was rated in Category 1. No environmental concerns could be identified based on research efforts in support of the EBS. However, if an oil-filled trench was previously located there as noted in Grumman's Phase I ESA (Radian, 1977a), and it was in a deteriorated condition, underlying soils and groundwater could have been contaminated.

6.4.8 Building 03-52: Wellwater Treatment Building

Observations: The Wellwater Treatment Building is a sheet metal shed of approximately 400 square feet on concrete slab. The shed is located north of Building 03-01 (Figure 6-1). The primary function of the structure was to treat wellwater for industrial use in Building 03-01. The interior of the shed contains an air stripper, electric pumps, and various mechanical controls. During the May 1997 VSI, the shed appeared to be well maintained with no signs of debris accumulation or deterioration.

Conclusions: The Wellwater Treatment Building was rated in Category 1. No environmental concerns were noted.

6.5 PLANT 03 - AREA EAST OF BUILDING 03-01

The following section addresses a former leachfield and a series of sheds and other structures located in an exterior area east of Building 03-01. The leachfield encompasses nearly all of this area. Most of the other buildings addressed in this section are located on top of the leachfield. An overall environmental condition rating has been assigned to the leachfield, and separate ratings have been independently assigned to each overlying building based solely on activities directly associated with that building.

6.5.1 Former Drum Marshalling Areas and Plant 03 Leachfield

Observations: Until Building 03-01 was tied into the local sanitary sewer in 1983, sanitary wastewater from the building was discharged to a leachfield occupying most of the open land between the eastern wall of Building 03-01 and the eastern property boundary (see extent of Site 1 on Figure 3-1). The wastewater was first piped to settling tanks at the northern edge of the leachfield, close to a sanitation office building (Building 03-13). After solids were settled out of the water by gravity, the water was passed to a series of leachpools extending southward over the remainder of the open land. The leachfield has been abandoned since 1983.

Located over part of the leachfield from the early 1950s until 1978 was a roughly 100-foot by 100-foot waste drum marshalling area where drums of chemical waste generated in Building 03-01 were stored to await offsite disposal. Drums of waste containing cadmium, arsenic, and halogenated and nonhalogenated solvents were stored on unpaved ground overlying the leachfield. A newer 100-foot by 100-foot concrete pad was constructed, also over the leachfield, just south of the old area in 1978 and used until 1982. Although the paved pad offered some protection against leaks from the drums, it was not bermed. Starting in 1982, waste drum marshalling activities were moved to a new covered and bermed pad located north of Building 03-01 (Building 03-37).

The leachfield and former drum marshalling areas have been investigated together as Site 1 under the IR Program. Soil and groundwater contamination by halogenated and nonhalogenated solvents, inorganics, PCBs, and pesticides was reported and characterized in subsequent SI and RI documents (HNUS, 1992a,b; HNUS, 1993). A pilot-scale air sparging program was conducted from April to September 1997 as part of the IR Program to treat contaminated soils and groundwater. A comprehensive action is planned under the IR Program to address contamination, including PCB contamination, throughout this area.

Conclusions: The land area encompassing the former Plant 03 Leachfield and former drum marshalling areas was rated in Category 5. The rating reflects the fact that a pilot air sparging program is underway as part of the IR Program to treat contaminated soils and groundwater. The rating can not be changed until all actions planned for this site under the IR Program are completed and approved by the NYSDEC.

6.5.2 Building 03-13: Sanitation Office

Observations: The Sanitation Office is a steel frame building of 3,100 square feet on a concrete slab. It is located approximately 250 feet northeast of Building 03-01, at the northern end of the Plant 03 Leachfield and just south of the Recharge Basins (Figure 6-1). Since connection of Building 03-01 to the local sanitary sewer system, the building has been used by Grumman's Grounds and Roads Department for light repairs of vehicles and equipment.

The building is divided into two sections. The eastern section is a facility maintenance garage where vehicles were serviced and kept. The western section was used as office space and has locker rooms and restrooms. Records indicate that small quantities of oil, paints, herbicides, and pesticides were stored in the garage (Radian, 1997a). Oily spots were observed on the concrete garage floor during the May 1997 VSI, but the floor appeared to be in good condition, with no signs of cracks. No floor drains were observed.

An elevated concrete pad measuring approximately 50 feet by 50 feet is located immediately south of the building. The pad contains a series of settling tanks. Until Building 03-01 was connected to the local sanitary sewer system, these settling tanks held waste water to settle out solids before discharge to the leachfield. The settling tanks are concrete with reinforced concrete covers. The manholes over the settling tanks were lifted during the May 1997 VSI, and standing water was observed in the tanks even though they had long been abandoned.

Two 275-gallon steel ASTs (03-13-15A and 03-13-15B) are located just outside the garage area. Installed in 1994, they are currently used to store No. 2 fuel oil for boilers located in the utility rooms of the building. There was no visible evidence during the VSI, or available records, indicating that these ASTs had ever leaked.

A UST (03-13-15) was located south of the building from 1965 until 1991. It stored No. 2 fuel oil for the boilers until being replaced by the ASTs described above. Spill records indicate that the UST was overfilled in April 11, 1991. No spill volume was reported. The same records indicate that 1,400 gallons of product was lost during a routine inventory inspection on April 15, 1991. This loss of product was reported to NYSDEC on April 16, 1991 and the remaining product was pumped into drums (Selva, 1991).

The UST was excavated on April 17, 1991 under the direction of NYSDEC Inspector Walter Parrish. Prior to removal of UST 03-13-15, another adjoining abandoned UST was removed. Approximately

6 gallons of water was pumped from this adjoining tank and drummed for approved offsite disposal. Three monitoring wells were recommended for installation in the area of the excavation, but no monitoring wells were noted during the VSI. The report further noted that 25 cubic yards of soil were removed (the limit of the backhoe's capabilities) and later backfilled (Selva, 1991). It appears that the soil remediation was not completed because of the limited capabilities of the equipment. There are no available records of any further correspondence between Grumman and NYSDEC concerning this UST.

Conclusions: The Sanitation Office was rated in Category 7. The interior of the settling tanks could not be inspected during the VSI for cracks and evidence of corrosion because of standing liquid. Because the tanks have a history of receiving rinsewater from industrial areas in Building 03-01, any cracks or other deterioration could have exposed underlying soil to contaminants in that rinsewater. Additionally, records suggest that soil remediation activities at the location of former UST 03-13-15 were cut short due to the limited capabilities of the backhoe.

6.5.3 Building 03-14: Facility Maintenance Storage

Observations: Building 03-14 appears as a small shed immediately east of Building 03-13 on recent Grumman site plan maps, but it had been razed as of the May 1997 VSI. No building appears at the location on the most recent available aerial photograph (1985), suggesting that the building existed for only a few years and was relatively new when demolished. No slab was noted during the VSI. No records were available that contained information specific to this building. No one was available to interview during the site visit who had knowledge specifically of this building.

Conclusions: Building 03-14 was rated in Category 1 based on the lack of any information specific to this building. No environmental concerns were identified.

6.5.4 Building 03-15: Facility Maintenance Garage

Observations: The Facilities Maintenance Garage was a wooden structure measuring approximately 1,975 square feet on a concrete slab. It was located less than 50 feet east of Building 03-13 just inside of the NWIRP Bethpage perimeter fence (Figure 6-1). The building remained standing as of the May 1997 VSI but has since been razed. A residential neighborhood is located outside of the perimeter fence. The Recharge Basins are located to the north. Other storage sheds were located to the south as of May 1997, but they too have since been razed.

The primary use of the building was for vehicle and small engine repairs. The structure had an office area and a repair garage. The office area had a wood block floor over concrete, and the garage area had a concrete floor. The garage was used for vehicle and small engine repairs. No storage tanks have been associated with the building (McCormick, 1997).

The office was found to be very messy during the VSI, with an accumulation of garbage, some office furniture, and work benches. Containers with small quantities oil, lubricants, and paints remained in the garage. Narrow cracks were observed in the concrete floor. Absorbent material was scattered over the floor, indicating that a spill had been recently addressed.

An old drawing in Grumman's files shows that a sewage sludge drying bed was located at the future site of this building in the 1940s (Seelye and Stevenson, 1941b). There is no information available as to when and how these sludge drying beds were closed.

Conclusions: The Facility Maintenance Garage was rated in Category 7. Cracks were observed in the garage floor which could have allowed motor oil and gasoline to reach the underlying soil. The fact that absorbent material was observed on the floor during the VSI suggests that spills have taken place onto this floor. Additionally, the entrance to the building was flush with the ground surface outside, thereby allowing any spilled liquids to reach surface soils if not controlled immediately. The rating also reflects the evidence of sludge drying beds at the site of this building in the 1940s. PCB contamination was found in surface soil at the former site of other PCB beds on NWIRP Bethpage that were investigated under the IR Program.

6.5.5 Buildings 03-31 and 03-32: Bottle Gas Storage/Chemical Storage Building

Observations: The Bottle Gas and Chemical Storage Buildings comprise a metal frame single structure divided by a breezeway (Figure 6-1). This structure is located approximately 50 feet east of the addition to Building 03-01 housing the Chem Mill Clean Area, Chem Mill Etch Area, and Sulfuric Acid Anodize Area (Figures 6-1 and 6-2). The breezeway divides the structure into a north room (Bottle Gas Storage) and a south room (Chemical Storage). The structure sits over a single concrete slab. The Bottle Gas Storage room was used to store gas cylinders used in Building 03-01. The Chemical Storage Room was used to store assorted chemicals such as acids, alkalis, salts, deoxidizers, and cleaning agents.

Both rooms had been emptied as of the May 1997 VSI. No chemical drums or gas bottles were observed in either. However, the combined building was being used at that time as a staging area for

a pilot air sparging operation conducted under the Navy's IR Program to treat groundwater at IR Site 1, located to the east and north. Floor trenches leading into a sump were observed in both rooms. The trenches and sump contained an oily sludge. A hole several inches wide was found to have rusted through a metal wall at floor level in the Chemical Storage Room.

Conclusions: The building was rated in Category 7, primarily because of the floor-level hole in the metal wall of the Chemical Storage room. If that hole was caused by corrosive chemicals, those chemicals likely reached exterior surface soils just outside the wall. If the hole was caused by something else, it could have allowed rinsewater from the Chemical Storage Room to reach those soils. Additionally, the condition of concrete in the floor trenches and sumps in both rooms could not be evaluated during the VSI because of the oily sludge. If deteriorated, material that accumulated in the trenches and sumps could have reached underlying soils.

6.5.6 Building 03-33: Transportation Building

Observations: The Transportation Building is a metal frame structure of approximately 2,546 square feet on a concrete slab. It is approximately 75 feet east of the addition to Building 03-01 housing the Chem Mill Clean Area, Chem Mill Etch Area, and Sulfuric Acid Anodize Area (Figures 6-1 and 6-2). An open gravelly area is located to the south, and Buildings 03-31 and 03-32 are located to the north (Figure 6-1). This structure has served as a garage for machinery such as forklifts, tractors, and cranes used in Building 03-01. It includes a small office area and the garage room.

The building was in active use as of the May 1997 VSI. The concrete floor was found to be clean and well maintained with few oil stains and no cracks. The facility has been used as a garage since its initial construction in 1983. No storage tanks have been associated with the building, and there are no records of spills.

Conclusions: The Transportation Garage was rated in Category 1. No environmental concerns were noted.

6.5.7 Building 03-38: Storage Building

Observations: This metal frame storage building is located on a concrete pad approximately 130 feet east of an addition to Building 03-01 that formerly housed the Old Chem Mill operation and, more recently, a shot peen operation (Figures 6-1 and 6-2). Buildings 03-32 and 03-31 are located less than 40 feet to the south. The building has two overhead doors leading into approximately

572 square feet of interior space. Its primary use was for storing hazardous waste in drums. The drums would later be transferred to the Main Drum Marshalling Area for eventual disposal off-site.

No hazardous waste drums were observed during the site visit. A grated trench with two sumps on each end runs the length of the structure. Liquid was observed in both sumps during the May 1997 VSI. The origin of the liquid could not be determined. The concrete floor appeared to be in good condition with no cracks or other deterioration.

Conclusions: Building 03-38 was rated in Category 7. Liquid observed in the sumps prevented an evaluation of the condition of the concrete during the VSI. The origin of the liquid could not be determined.

6.5.8 Building 03-17: Equipment Repair Shop

Observations: Building 03-17 is a metal frame building on a concrete slab that served as a small shop and storage area for grounds maintenance. Lawn mowing and landscaping equipment used to be stored in the building (Taormina, 1997), but it was empty during the May 1997 VSI. Grumman's Phase I ESA indicated that several pesticides had been stored in the building, including MCPP, 2,4-D, dicamba, betasan, amitrol, prometon, orthane, malathion, captan, and barbaryl. Table 3-4 lists other pesticides recorded in earlier inventories to have been stored at NWIRP Bethpage; all of these may at one time have been stored in this building. No records are available as to the destination of a floor drain in the building (Radian, 1997a).

A small storage building (Building 03-44) formerly stood immediately north of Building 03-17, but it had been razed prior to the May 1997 VSI. This storage building also was used to store lawn mowing and landscaping equipment and pesticides (Taormina, 1997).

Conclusions: This building was rated in Category 7 because the destination of the floor drain is not known. This floor drain may represent a pathway for spilled or leaked pesticides to an unknown external destination.

6.5.9 Building 03-45: Storage Shed

Observations: Building 03-45 was a two-room plywood and sheet metal storage shed located just inside the eastern perimeter fence of NWIRP Bethpage, approximately 100 feet south of Building 03-15 (Figure 6-1). Although it remained standing as of the May 1997 VSI, it has since been razed. The

floor of the northern room was concrete, that of the southern room gravel. The walls appeared to be somewhat deteriorated, but the concrete floor of the northern room appeared in good condition. Stains were not noted on the gravel floor of the southern room. The shed does not appear in an 1985 aerial photograph, suggesting that it never had a long history of use.

A sign inside the northern (concrete-floored) room read "Pesticide Storage Area." Although an inventory of pesticides specifically stored in this building is not available, general information from Grumman records on pesticides stored overall at NWIRP Bethpage is provided in Table 3-4. Circular ring-like stains observed on the concrete in the room suggested recent storage of 55-gallon drums.

Conclusions: Building 03-45 was rated in Category 7. Although there was no available evidence of pesticide leaks or spills, the poor condition of the building walls suggests that any pesticides that came in contact with the interior floor would readily have reached exposed soils just outside the building.

6.5.10 Building 03-51: Storage Shed

Observations: Building 03-51 was a small plywood shed located just inside the eastern perimeter fence of NWIRP Bethpage, approximately 75 feet south of Building 03-15, just north of Building 03-45 (Figure 6-1). The shed was found to be in a dilapidated condition during the May 1997 VSI, with deteriorated plywood walls and floor. It appears to have been used to store miscellaneous tools and materials used in landscape maintenance. Rakes and other gardening tools were observed inside the shed during the VSI. A can of paint and an electrical extension cord were observed just outside the door to the shed. The shed has since been razed. The shed does not appear in an 1985 aerial photograph, suggesting that it never had a long history of use.

Conclusions: The Storage Shed was rated in Category 1. It appears to have been used only to store solid items such as landscaping tools. No environmental concerns were noted.

6.6 PLANT 03 - NORTHEAST PART OF NAVY PARCEL

The following section addresses a series of sheds and exterior land areas in the northeast part of the 105-Acre Parcel.

6.6.1 Building 03-07: Salvage Building

Observations: The Salvage Building is a metal frame building on a concrete slab measuring approximately 6,670 square feet. The building is located east of the Salvage Yard, an exterior area of bare soil used to store miscellaneous solid debris, and north of a large asphalt area used for exterior storage of aircraft parts and equipment. The Drum Storage Pad (Building 03-37) is located approximately 50 feet east of the building (Figure 6-1).

The building was constructed in 1982-1983 and is used as a recycling center for paper and other recyclable metals. It replaced an earlier Salvage Building (also numbered Building 03-07 until being razed) which was located approximately 400 feet to the southwest (Building 17N-06). The present building consists of an open space with an office, boiler room, and restroom. The building is heated by No. 2 fuel-oil boilers. Fuel for the boiler is stored in a UST (03-07-1) located under the pavement south of the building. The 4,000-gallon fiberglass tank passed a tightness test in 1996 (Grumman, 1997).

A 2,000-gallon fuel oil UST (also identified as Tank 03-07-1) was removed or abandoned in place at the location of the older Building 03-07 when that older building was razed in the 1980s. No closure documentation is available for this UST.

Conclusions: The Salvage Building was rated in Category 2 because of the fuel oil UST. This UST recently passed a tightness test, and there is no evidence of spills or leaks. The former location of the older Building 03-07, located approximately 400 feet to the southwest, was rated in Category 7 because no closure documentation is available for the UST formerly located at the demolished building.

6.6.2 Building 03-08: Salvage Shed and Salvage Yard

Observations: Approximately 50 feet southwest of the Salvage Building is the Salvage Shed (Building 03-08), a smaller metal frame structure also associated with the salvage operations (Figure 6-1). The shed, which measures approximately 600 square feet, is used as a center for holding titanium and aluminum contaminated turnings. A grated floor trench for collecting spills is located at the entrance of the shed. The trench is connected to a sump, which is periodically emptied by Grumman personnel. When interviewed, Grumman personnel stated that during heavy rainfalls the trench would occasionally overflow onto adjoining unpaved soils (Noonan, 1997). During the May 1997 VSI, the trench contained a dark-colored solution with a sheen.

Conclusions: The Salvage Shed was rated in Category 7. Standing dark-colored liquid of unknown composition was observed in the floor trench. The dark liquid prevented a detailed inspection of the condition of the trench during the VSI. If the concrete in the trench is cracked, contaminants in the liquid may have contacted underlying soils.

6.6.3 Salvage Storage Area

Observations: Outside of the Salvage Building and Salvage Shed is the Salvage Storage Area, an unpaved area used for storage of aircraft engines, parts, scrap, and other metals. Metal fixtures used in aircraft assembly, tools, and metallic wastes were stored in this area from the early 1950s through 1969. Aluminum and titanium shavings and cutting oils were reported to have contacted the ground during this period. Additionally, drummed waste (including waste oils and waste halogenated and nonhalogenated solvents) was marshaled on bare ground in the northcentral part of this area (designated as Former Drum Marshalling Area #3). The present Salvage Storage Area represents only part of its previous extent, much of which was paved since 1970 to provide additional parking capacity (NEESA, 1986).

During the May 1997 VSI, several aircraft parts and empty 55-gallon drums were observed on the ground in the Salvage Storage Area. It was not apparent whether the drums contained drained jet fuel and other oils. The surface soil showed evidence of oil stains in several locations due to oil dripping or runoff from the scrapped parts.

Grumman records reviewed as part of the EBS indicate that a fire took place in the Salvage Storage Area in 1984 due to the use of a welding torch. A response letter from the Nassau County Department of Health to Grumman dated February 28, 1984 indicated the need for better operations management in the area. Another document indicated that metal scrap containing water-soluble cutting oil was placed in containers and stored in this area. These containers allowed the oil to leak out to the ground.

The Salvage Storage Yard has been investigated as Site 3 under the Navy's IR Program. An RI concluded that surface soils in this area do not represent a significant direct carcinogenic or noncarcinogenic risk to workers or off-site residents (HNUS, 1992a). A Phase 2 RI concluded that PCBs in this area were not a significant concern (HNUS, 1993). No further action has been recommended for this area under the IR Program.

Conclusions: The Salvage Storage Area was rated in Category 3. Although documents produced under the Navy's IR Program indicate that surface soils in this area have been contaminated, the contamination did not support recommendations for further action.

6.6.4 Building 03-12: Well House No. 15

Observations: Well House No. 15 is a one-story cinder block building located approximately 50 feet northwest of Building 03-07 (Figure 6-1). The building houses an electric pump that supplies groundwater to Building 03-01 and other Plant 03 buildings for use as industrial water. During the May 1997 VSI, the building appeared to be well maintained, with a fresh coat of paint and no accumulated debris.

Conclusions: Well House No. 15 was rated in Category 1. No environmental concerns were noted.

6.6.5 Building 03-34: Industrial Waste Treatment Facility

Observations: The IWTF is located approximately 400 feet north of the northeast corner of Building 03-01, between the Salvage Storage Area and the Recharge Basins (Figure 6-1). Constructed in 1984, the metal frame building comprises three stories constructed over a concrete slab. The IWTF is capable of treating up to 250,000 gallons per day of wastewater containing metals, hexavalent chromium, and phenols. It is also designed to treat concentrates containing hydrofluoric acid, sulfuric acid, nitric acid, phosphoric acid, high concentrated hexavalent chromium, and alkaline cleaners (NEESA, 1986). With the recent shutdown of operations in Building 03-01, activity at the IWTF has substantially decreased. Currently, it is treating wastewater generated by other Grumman-owned plants within the Bethpage complex.

Until recently, most of the wastewater treated at the IWTF was piped directly from various manufacturing processes in Building 03-01. Concentrated wastes from Building 03-01 were trucked to the outdoor holding tanks to await delivery to the IWTF. Once pretreated at the IWTF, the wastewater was discharged to local sanitary sewers. Sludge from the operations was conditioned with lime and polymers before dewatering in a process tank designated as T-305. The conditioned sludge was then transferred to the filters, and the sludge cake was stored in roll-off containers for off-site disposal.

Prior to initial operation of the IWTF in 1984, Building 03-01 sent concentrated industrial wastewater to a licensed vendor for disposal. Dilute rinse waters were discharged to the groundwater recharge

basins located in the northeast corner of the Navy parcel. Other wastes such as zyglo waste and metal finishing chemicals were transferred off-site by Grumman for chromate treatment (NEESA, 1986).

The IWTF remained active, although substantially under capacity, as of the May 1997 VSI. The first floor consisted of an office area, a quality assurance laboratory, a dry chemical and drum storage area, a compressor room, a generator room, process tanks, and assorted pumps and feed tanks. A concrete trench was observed to the south of the concrete floor. Grumman personnel interviewed during the VSI stated that the trench is used to direct spilled material on the floor back to the holding tanks outside the building. A lime hopper used to control pH of wastes was also observed in the first floor.

The second floor of the IWTF contained a chemical storage area, a filter system, rotary drum filter press, and a conveyor belt system which delivers sludge to the sludge storage room on the first floor. A generator room used as backup for outages was also observed in the second floor. Floor drains were observed in both the first and second floors. Grumman personnel stated that the drains are tied to the equalization tank of the IWTF.

The third floor contained the flash mix tank (a process tank designated as T-303). Nitric acid containers were observed on top of the tank. The floor also housed a small laboratory next to the manager's office. The overall housekeeping appeared to be good with no signs of accumulated debris or significant floor stains. All aboveground tanks had extensive secondary containment systems, thereby minimizing the potential for releases to the environment. Yearly inspection records reviewed at the facility did not indicate any releases to the environment.

Outside of Building 03-34 are remnants of an old sanitary treatment plant constructed in 1970. These remnants include an equalization tank, a reduction tank, and a holding tank. These tanks were incorporated into the design of the IWTF. To the north of Building 03-34 are six holding tanks (T-310, 311, 313, 320, 324, and 330). A lime storage silo is also located east of these holding tanks.

A review of Grumman's spill records revealed that on November 2, 1984, an acid spill occurred outside of Building 03-34. While a 3,000-gallon capacity vacuum truck was emptying its contents into a holding tank, the vacuum line failed, spilling approximately 500 gallons of an acid solution (25% nitric acid and 2% hydrofluoric acid) (Ohlmann, 1984c). Some of the spilled solution reached

surface soils, and some entered an adjacent manhole. Test results from soil samples showed no detectable levels of nitrates or fluorides. Samples taken from the manhole showed a fluoride level of 21.3 ppm and a nitrate level of 80 ppm.

Process tanks used in industrial wastewater treatment at the IWTF are listed in Table 6-19. Four storage tanks have been associated with the IWTF, including Tanks 03-34-2 (diesel fuel UST), 03-34-3 (No. 2 fuel oil UST), 03-34-4 (waste oil UST), and 03-34-5 (No. 2 fuel oil AST) (Tables 3-2 and 3-3). All of the USTs are made of fiberglass. Tank 03-34-2 passed a tightness test in 1995. Tank 03-34-3 was removed in 1993 under Nassau County direction. Tank 03-34-4 is scheduled for tightness testing in early 1998 (Selva, 1998).

Conclusions: The IWTF was rated in Category 7 because of the UST requiring a tightness test. Otherwise, it would have been rated Category 2. The IWTF is a new structure of modern construction in good condition which has handled and treated wastewater from various processes in Building 03-01. There is no physical or documented evidence of any wastewater releases from this facility.

6.6.6 Building 03-37: Drum Storage Pad

Observations: The Drum Storage Pad is a 120-foot-square bermed concrete pad covered by a metal roof (Figure 6-1). The pad is operated in compliance with Grumman's RCRA and Part 373 permits (discussed in Section 3.2.1). Construction of the pad was initiated in 1981, and it became active in 1982 as an exterior bermed concrete pad. It replaced an unbermed pad formerly located over the old Plant 03 leachfield east of Building 03-01 (Former Drum Marshalling Area #1). A roof was added to the bermed concrete pad in 1983.

The pad was in use as of the May 1997 VSI. During the site visit, several 55-gallon drums of liquid waste were observed on the slab. According to Grumman personnel interviewed during the VSI, the slab comprises 6-inch-thick reinforced concrete edged by a 6-inch-high concrete berm that serves as a containment system. The slab slopes slightly southward, so that any free liquid drains into a trench along the southern edge. The trench drains to a subsurface collection drum or sump at the southeast corner of the slab. The sump has a vinyl lining. There are no records or other evidence of overflows of this sump, although the potential for overflows exists because the sump lacks an outlet.

TABLE 6-19

PROCESS TANKS
INDUSTRIAL WASTEWATER TREATMENT FACILITY, BUILDING 03-34[1,2]
NWIRP, BETHPAGE, NEW YORK

Tank No.	Vol (gal)	Content	Comments
T-301	65,000	Wastes	Outdoors concrete belowground equalization tank.
T-302	40,000	Wastes	Outdoors concrete belowground holding tank.
T-303	3,800	Wastes	Indoors concrete aboveground flash mix tank.
T-304	65,000	Wastes	Outdoors concrete belowground flocculation tank.
T-305	103,000	Wastes	Outdoor concrete belowground tank used for mixing lime and polymers with wastes.
T-306	11,770	Sludge	Indoor belowground sludge pump.
T-307, T-308, T-309	16,000	Nitric acid	Indoor fiberglass tanks used for batch treatment.
T-310	20,600	Waste acid	Outdoors aboveground tank. Material of construction is unknown.
T-311	12,690	Waste acid/caustic	Outdoors aboveground tank. Material of construction is unknown.
T-312	20,000	Nitric acid	Indoors aboveground tank used to hold nitric acid waste.
T-313	10,000	Sulfuric acid	Outdoors aboveground tank used as holding tank.
T-314	N/A[3]	Nitric acid	Reclaimed nitric acid. No other information available.
T-315	N/A[3]	Wastes	Vaporizer bottoms. No other information available.
T-316	16,000	Petroleum waste	Fiberglass indoors aboveground tank.
T-317	4,000	Clarifier effluent	Steel indoor aboveground tank.
T-318	40	Oily waste	No additional information.
T-319	4,000	Waste oil	Fiberglass outdoors belowground tank with a monitoring well to detect leaks.
T-320	7,000	Hydrogen peroxide	Outdoors aboveground.
T-323	980	Carbonation tank	Steel indoor aboveground tank.
T-328	11,800	Slurry	Indoors belowground concrete tank.
T-329	8,000	Sodium hydroxide	Fiberglass outdoors aboveground tank.
T-330	11,800	Waste hydrofluoric acid	Steel outdoors aboveground tank.
T-331	11,800	Fluoride sludge	Concrete indoors belowground tank.
T-332 T-333	5,800	Clarifier supernatant	Outdoor aboveground tanks. Discharge from this tanks goes to the county sewer system.
F-303	21,800	Iron feed tank	No additional information.
F-306	175	Polymer feed tank	No additional information.
F-308	175	Miscellaneous feed tank	No additional information.

1 Source: Grumman, 1997
2 All tanks were installed in 1984.
3 Not Available

Conclusions: The Drum Storage Pad was rated in Category 2. The facility was constructed with secondary containment to comply with environmental requirements established under RCRA and by NYSDEC, and it has been operated in accordance with environmental permits. There is no evidence of any overflows of the berm or sump.

6.6.7 Building 03-43: Storage Building

Observations: Building 03-43 is a one-story cinder block building located northeast of Building 03-01 (Figure 6-1). Although labeled as a storage building, it is the screen building for the IWTF (Building 03-34). An electric pump in this building pumps water destined for the IWTF into that facility for pretreatment. During the May 1997 VSI, the building appeared to have been just recently painted (the odor of fresh paint was present) and to be well maintained with no accumulated debris.

Conclusions: Building 03-43 was rated in Category 7. As the screen building for the IWTF, all water delivered over the years to the IWTF passed through this building. There is no available evidence directly suggesting that spills or other releases of contaminated wastewater have occurred at the building; however, the probability is high.

6.6.8 Building 03-49: Sand Shed

Observations: Building 03-49 is a one-room, 3,120-square-foot cinder block shed constructed on a concrete slab. It is used to store sand and road salt for treating roadways in winter as well as fertilizer, scrap wood, and other landscaping materials (but not pesticides). A large, open door on the east wall allows entry by front-end loaders and other equipment used to spread salt and sand. It leads out to an asphalt surface and to a service roadway.

The building remained in active use as of the May 1997 VSI. Housekeeping was poor, with broken bags of fertilizer and a large pool of standing water in the center of the floor. Sand was also piled on the asphalt outside the building. Some of the fertilizer bags were sitting in a shallow pool of oily material that appeared to be roofing tar. The condition of the concrete floor, block walls, and the joint between the floor and walls appeared good, however, with no apparent cracking or other deterioration.

Conclusions: Building 03-49 was rated in Category 1. The road salt, fertilizer, and other materials stored in the building are not hazardous. There is no evidence that other materials were ever stored in the building.

6.6.9 Recharge Basins and Sludge Drying Beds

Observations: The northeast corner of the Navy 105-Acre Parcel is occupied by three roughly square recharge basins (Figure 6-1). The basins are isolated manmade depressions roughly 50 to 60 feet in depth with no outlets to other surface waters. At the time of the May 1997 VSI, the side slopes to the basins were sparsely vegetated with grasses, forbs, and small shrubs, and the basin bottoms contained a few inches of standing water.

Two of the basins were constructed by 1953, and the third was constructed in 1966. The recharge basins were constructed to receive stormwater from storm drains throughout the west and south exterior paved areas around Building 03-01, the north and south warehouse complexes, Plant 10, and the Salvage Storage Area. They also receive stormwater from storm drains around Grumman-owned Plant 14, which is north of the Navy 105-Acre Parcel (Grumman, 1979). The basins serve to accumulate the stormwater and allow it to slowly leach down through the coarse underlying soils to the aquifer.

Prior to construction of the IWTP (Building 03-34) in January 1984, the recharge basins also received nonchromated rinse waters from several areas in Building 03-01. Some of these rinse waters are thought to have come in direct contact with fabricated aircraft parts and thus to be contaminated with aluminum, nitric acid, phosphoric acid, and sulfuric acid (NEESA, 1986).

An area immediately west of the basins was formerly used as sludge-drying beds where sludge from the older industrial wastewater treatment plant at the Grumman-owned Plant 02 was applied to bare soil. These sludge-drying beds are addressed jointly with the recharge basins, as both features have been addressed as a single site (Site 2) in the Navy's IR Program.

An RI concluded that the recharge basins serve to direct contaminated stormwater to the underlying aquifer but that they themselves do not pose a direct threat to the aquifer (HNUS, 1992a). The RI did recommend, however, that surface soils and sediments in the sludge beds be investigated for PCBs. A subsequent Phase 2 RI conducted in 1993 reported that surface soils in the sludge beds were contaminated by PCBs. In response, the location of the former sludge beds was excavated until soil PCB concentrations were less than 10 ppm (CF Braun, 1996).

Conclusions: The former location of the sludge-drying beds was rated in Category 5. PCB-contaminated surface soils have been excavated (CF Braun, 1996). The Navy is awaiting concurrence

from NYSDEC that no further action is required. The Navy expects that concurrence will be received (Brayack, 1997).

The recharge basins were rated in Category 3. Although low levels of contamination were reported in the sediments and surface soils inside the basins, no further action was found to be necessary.

6.6.10 Cemetery

Observations: The cemetery is a grassy area northeast of Building 03-01 measuring approximately 175 feet by 60 feet containing around 60 tombstones dating from the mid-1800s to the early 1900s. It is surrounded by a low chainlink fence and kept regularly mowed. The cemetery is typical of the small private cemeteries common on farms throughout the East Coast. It has been regularly maintained by Grumman since initial construction of NWIRP Bethpage on the surrounding land early in the 1940s.

Conclusions: The cemetery was rated in Category 1. It has been a cemetery since the 19th century, well before any industrial development took place in the surrounding area. No environmental concerns were identified.

6.6.11 Wooded Area

Observations: The only wooded area on NWIRP Bethpage is a narrow strip of deciduous forest north of the IWTP (Building 03-34). This strip measures approximately 100 feet wide and 800 feet long (less than 2 acres total). The forest cover is dominated by mature oaks (primarily *Quercus coccinea* and related species) undergrown by a dense layer of greenbrier (*Smilax* sp.). Pines are absent, except for one pitch pine (*Pinus rigida*). Old aerial photographs suggest that this forest is a remnant of a grazed woodlot that covered parts of NWIRP Bethpage and adjoining land prior to World War II.

A dry, roughly 5-foot-deep ditch runs west to east through the forested strip. As of the May 1997 VSI, the ditch did not have any outlet and was partially filled with landscaping debris. There were no drums or other debris of potential environmental concern in the ditch, and no stressed vegetation, stained soil, or other visual evidence of environmental concerns.

However, as noted in Chapter 4, aerial photographs from the 1950s show that ditch connected to areas of surface disturbance to the immediate north (where Grumman-owned Plant 14 is now) and roughly 0.25 mile to the east (where the Community Park is now). Grumman records show that the

area to the north was a shooting range. The area to the east appears to have been a landfill, but there are no supporting records available.

Conclusions: The ditch through the wooded area was rated in Category 7 because of aerial photographic evidence that it once led to a shooting range and a landfill (see Chapter 4). The shooting range could have contributed lead-contaminated runoff to the ditch, and the suspected former landfill could have contributed runoff contaminated by uncharacterized substances. The remainder of the wooded area was rated in Category 1. No other environmental concerns have been identified in the wooded area, outside of the ditch.

6.7 PLANT 10 AND NEARBY AREAS

The following section addresses those buildings designated as Plant 10, along with other buildings located in an exterior area southwest of Building 03-01.

6.7.1 Building 10-01: Laboratory

Observations: Building 10-01 is an analytical and physical laboratory located approximately 300 feet south of the southwestern part of Building 03-01 (Figure 6-1). The building was constructed in the early 1940s as an inspection and receiving warehouse and was also used for manufacturing aluminum canoes. It was converted into a calibration laboratory in the 1960s and has since served as a quality assurance laboratory. The laboratory remains active and is currently used to perform a variety of physical and environmental quality testing for Northrop Grumman and outside clients.

The one and one-half story structure of steel frame and concrete block construction covers approximately 24,900 square feet. The flooring throughout the facility is concrete or wood block over concrete. The ground floor comprises 21 individual laboratories and associated offices, computer rooms, supply rooms, and restrooms (Figure 6-3). The upper level is a crawl space housing piping, vent ducts, and air filtration units associated with the laboratories. Heating is provided by steam generated at the central steam plant, and the offices are cooled by individual air conditioning units.

The laboratory was fully operational during the May 1997 VSI. A floor drain was observed in the wet chemistry lab (Room 6 in Figure 6-3). Laboratory personnel interviewed during the VSI stated that the floor drain occasionally backed up and flooded the room after heavy rains. The linoleum flooring in the room has undergone several renovations because of the flooding.

Neutron generation equipment is housed in a 7-foot-deep floor pit in the chemical evaluation laboratory (Room 49). The pit had been securely sealed for 10 years; thus inspection of the condition of the pit was not possible. Grumman personnel interviewed during the site visit did not consider the pit to be of environmental concern due to chemical contaminants or radiation.

A hydraulic press is housed in a 4-foot-deep floor pit in the Physical Testing Laboratory (Room 35). Oil mixed with debris was observed in the pit during the site visit. It was not possible to evaluate the condition of the pit at that time due to the standing oil and other debris in the pit.

The Paint Lab (Room 36) housed a paint booth (dry collector type). The booth is used only for paint spraying of various test panels. The quantity of paints and solvents handled in the room is minimal. No floor drains were observed. The concrete floor appeared to be in good condition with no signs of cracks.

Stained, degraded linoleum over corroded concrete was observed at one location in Room 39 (the Chemical Storage Room), which suggests a history of spilled or leaked corrosive materials. A patched area of concrete floor was observed in adjoining Room 38, presently an office. Grumman personnel interviewed during the site visit stated that a mercury spill had occurred in Room 38, but they could not provide any cleanup documentation.

The Machine Shop (Room 48) contained a wood block floor coated with debris, metal shavings, and oil stains. Oil pools were observed under the hydraulic presses and other metal handling equipment in this shop. The condition of the concrete under the wood block floor was not apparent due to the overlying wood blocks. In addition to the oil handled in the machine shop, small quantities of solvents such as TCE and MEK were used in the shop for cleaning and degreasing. No floor drains were observed.

Review of a Grumman drawing of Building 10-01 dated 1943 indicated that three dry wells are associated with the building. The drywells are located to the west of the main laboratory office area, to the northeast of the building, and to the west of the building. The dry wells are connected to the building by an underground piping system. It appears as if sanitary and laboratory wastewater from floor drains and sinks in the building were discharged through the piping system to the dry wells before the building was connected to the local sanitary sewer system in 1993. The condition of the piping system could not be visually evaluated. According to the Grumman Phase I 1997 report, the flooding in Room 6 suggests that the dry well to which the floor drain was connected was not properly abandoned when the building was connected to the sanitary sewer (Radian, 1997b).

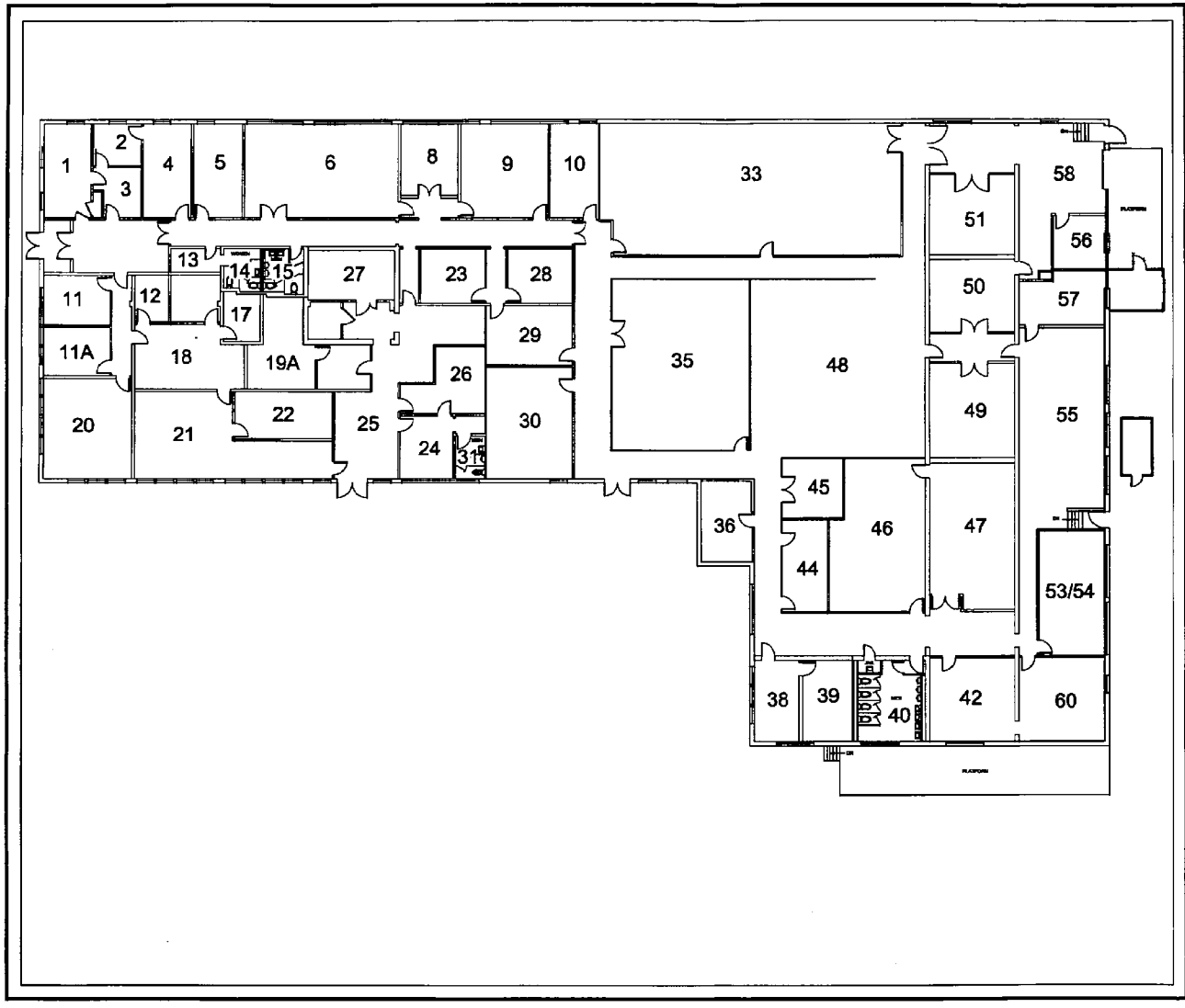


Figure 6-3

Building 10-01 Interior Plan

Legend

1-PLANT DIRECTOR'S OFFICE
2-STATIONARY STOCK/STORAGE
3-SECRETARY OFFICE
4-DEPUTY DIRECTOR'S OFFICE
5-ADHESIVES/SEALANT TEST LAB. - CHEM. LAB.
6-WET CHEMISTRY SECTION - CHEM. LAB.
8-MASS SPEC. ROOM
9-VACUUM FUSION LAB. SECTION - CHEM. LAB.
10-ADVANCED DEVELOPMENT/N.D.T. MANAGER'S OFFICE
11-ADMIN. OFFICE
11A-PLANNING OFFICE
12-CHEMISTRY LAB. SUPERVISOR'S OFFICE
13-LADIES' ROOM
14-LADIES' ROOM
15-MEN'S ROOM
16-LEAD ENGINEERS OFFICE - CHEM. LAB.
17-SPECTOGRAPHIC PLATE ROOM - CHEM. LAB.
18-X-RAY DIFFRACTION - CHEM.
19-DARK ROOM/READING ROOM - NDT LAB.
19A-DARK ROOM
20-LAB. OPERATIONS' OFFICE
21-INFARED ANALYSIS - CHEM. LAB.
21A-CHEMISTRY LAB. OFFICE
22-EMISSION SPECTROGRAPH - CHEM. LAB.
23-PROCESS CONTROL OFFICE
24-NONDESTRUCTIVE TEST OFFICE
24A-X-RAY EXPOSURE - NDT LAB.
24B-NDT LAB.
25-PENET. & MAG. PARTICLE INSP. RM.
26-OFFICE
27-320KV X-RAY MACHINE - NDT LAB.
28-DIRECTOR/STAFF OFFICE
29-DIRECT READING, SPECTROGRAPH
30-GAS CHROMOTOGRAPHY - CHEM. LAB.
31-MEN'S ROOM
33-NONDESTRUCTIVE TEST LAB.
34-LOBBY
35-PHYSICAL TEST I.
36-PAINT LAB. - CHEM. LAB. AB. - MET. LAB.
38-COMPUTER DEVELOPMENT ROOM - CHEM. LAB.
39-CHEMICAL STORAGE ROOM
40-MEN'S ROOM
41-MAINTENANCE SUPPLY ROOM
42-MIMICROELECTRONIC FAILURE ANALYSIS LAB. - QUALITY ENG'G
44-STORE ROOM (CHEM./MACH. SHOP)
45-HEAT TREATING MET. LAB.
46-ETCHING-MOUNTING SEC. - MET. LAB.
47-MET. LAB. OFFICE
48-MACHINE SHOP
49-CHEMICAL EVALUATION
50-HYDRAULIC FAILURE ANALYSIS LAB. - QUALITY ENG'G
51-UTILITIES (ELECTRICAL)
53/54-MICROELECTRONICS FAILURE ANALYSIS LAB. - Q.E. SECTON
55-REC. INSP. SECTION/MAT.
56-MAINTENANCE SUPPLY ROOM
57-STAFF
58-RECEIVING PLANTFORM
60-QUALITY ENG'G OFFICE

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SCALE IN FEET

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No USTs are associated with Building 10-01. A small, steel oil-quench process tank with an 80-gallon capacity was observed in the Heat Treat room (Room 45). No other process tanks were observed during the site inspection. However, Grumman's process tank inventory list indicates the presence of two tanks (Tanks 0007 and 0008). No other information was available about these tanks.

Wastes from the laboratories in Building 10-01 was at one time collected in drums and stored on a loading dock northeast of the building. This loading dock had no containment system. A trench with dark gray colored water was observed at its eastern end. Grumman personnel reported that waste from the various laboratories is currently placed in approved drums and transferred to the Drum Storage Pad (Building 03-37) for offsite disposal. Some of the waste is also stored temporarily in a waste storage area on the south side of the building. Labpacks are properly packed by an outside vendor and transported off-site for disposal.

Conclusions: Building 10-01 was rated in Category 7 for the following reasons: (1) the former neutron generating pit in Room 49, (2) the equipment pit in Room 35, (3) the backup and flooding of the floor drain in Room 6, (4) the unknown condition of piping to drywells and leaching chambers throughout the building, (5) the unknown condition of subsurface soils around the dry wells, (6) observed floor damage in Room 39, and (7) lack of cleanup documentation for the mercury spill in Room 38.

6.7.2 Building 10-02: Storage Building

Observations: The Storage Building is a steel frame and concrete block building constructed approximately 150 feet north of Building 10-01 in the mid-1940s (Figure 6-1). At the time of the May 1997 VSI, the structure was used as an office with a restroom. The inspectors could not gain access to the structure and thus had to inspect its interior through windows. It appeared to be well maintained with no signs of stains, corrosion or any environmental concerns. The building was formerly associated with an old coal pile located just north of Building 10-01. The former location of the coal pile is currently an asphalt parking lot. A utility pit was observed at the southwestern corner of the structure. The pit, which is connected to the building by underground piping, was dry when inspected.

A Grumman 1943 drawing shows that an underground fuel tank farm was formerly located just south of the building (James Stewart & Co., 1943a). The drawing shows that the tank farm supplied fuel for the Boiler Room in the southern part of Building 03-01. The former location of the underground

fuel tank farm is presently covered with asphalt. There was no physical evidence of USTs during the site visit. No closure documents were available for the tank farm.

Conclusions: Building 10-02 was rated in Category 7. The rating reflects the lack of documentation concerning the underground fuel tank farm formerly located just south of the building. No environmental concerns were identified for the building itself.

6.7.3 Building 10-04: Scale House

Observations: The Scale House is an abandoned wooden structure constructed in the mid-1940s approximately 250 feet northwest of Building 10-01, close to the Long Island Railroad. It appears to have once been used as a weigh station for trucks unloading coal at a former coal pile once located just north of Building 10-01. Two scales were observed during the site visit. A manhole was observed inside the Scale House which housed hydraulic lines that fed the scales. The condition of the hydraulic lines was not apparent, but the building appeared to be in good condition with no evidence of potential environmental concerns.

Addressed together with the Scale House is a 72-square-foot wooden guard booth located approximately 200 feet to the west (Building 03-XA). This guard booth, abandoned and in poor condition as of the May 1997 VSI, was formerly used to control access to the scale. It still houses a digital meter formerly used in the operation of the truck scale.

Conclusions: The Scale House was rated in Category 1. No potential environmental concerns were identified either with the Scale House or the Guard Booth (Building 03-XA).

6.7.4 Building 03-40: GAC PROM

Observations: Building 03-40 is a three-story, 64,973-square-foot office building attached to the west wall of Building 03-01 by a short connecting corridor. The building was constructed over part of the parking lot west of Building 03-01 in 1985. The term PROM stands for "Portable Relocatable Office Module" and refers to the fact that the building was designed to be movable, although it still occupies its original location. The building occupies a deep excavation such that the ground floor is below the ground surface. Main entry from the parking lot is via the second floor. The ground floor is surrounded by a narrow gravel walkway and steep earthen slopes that lead to ground level. Storm drains in the gravel lead to the recharge basins.

All parts of the building are used for offices, conference rooms, and other administrative uses. The building was in use as of the May 1997 VSI. Part of the ground floor was empty; it appeared to have formerly housed a mainframe computer.

Conclusions: Building 03-40 was rated in Category 1. No environmental concerns were identified in any part of the building or for prior uses of the site before the building was constructed.

6.7.5 Building 03-35: Maintenance Building

Observations: The Maintenance Building is a metal frame and brick structure located immediately east of Building 10-02, approximately 150 feet south of Building 03-01 and approximately 150 feet north of Building 10-01 (Figure 6-1). The building has always been used for as storage space for equipment and tools used by the maintenance foremen in Building 03-01. During the May 1997 VSI, plumbing pipes and fixtures, electrical cables, and miscellaneous tools were observed in the building. The interior of the building was divided into cages for laborers, electricians, and plumbers. The overall housekeeping appeared to be good, with no accumulation of debris. The concrete floor had no floor drains and appeared to be in good condition with no cracks or stains.

Conclusions: The Maintenance Building was rated in Category 1. No environmental concerns were identified.

6.8 PLANT 17 - NORTH WAREHOUSE COMPLEX

The following section addresses the North Warehouse complex located northwest of Building 03-01. The complex consists of six brick structures constructed in 1942 (Warehouse 4 through Warehouse 9). Asphalt and concrete paved roads separate the warehouses. To the north of the warehouses is an asphalt-paved parking lot associated with Grumman-owned Plants 14 and 15 (Figure 6-1).

Heating in the warehouses is steam piped from Building 03-01, which receives steam from the central steam plant at Grumman-owned Plant 02. Some areas in the warehouses also used small electrical heating units in the office areas. The offices were cooled by individual units mounted on windows in the office areas. The remainder of the warehouse space was cooled by opening the doors. A review of Grumman's records indicated there are no USTs or ASTs in Plant 17 North Warehouses. Transformers were observed in Warehouses 7 and 9. The transformers are dry-type transformers that are not a potential environmental concern.

6.8.1 Building 17N-1: Warehouse 8

Observations: Warehouse 8 is a one-story structure of 28,087 square feet constructed of steel frame and brick. It was used primarily for the storage of chemicals. The warehouse also had a small adhesive laboratory.

The warehouse is partitioned into two rooms (west and east). As of the May 1997 VSI, the west room was vacant except for a few isolated chemical storage drums. The east room still contained a diverse inventory of chemicals, including adhesives, sealants, paints, primers, polyamides, epoxys, and acids. The east room also has tall metal racks which held boxes of various chemicals. Two refrigerated chemical storage areas are in the east room. Both were empty and had been turned off before the VSI.

An adhesive laboratory is located in the southeastern part of the warehouse. All equipment in the lab had been removed before the site visit. The lab appeared to be well maintained with no significant floor stains.

The large, open area in the center of the warehouse was occupied by chemicals stored in drums, boxes, bottles and cans. All the chemical containers were stored on wooden pallets, but the pallets were not surrounded by any secondary containment. The flooring in this area was stained in several locations, suggesting a history of spills and leaks.

A documented spill took place on July 18, 1989. Seven leaking lacquer thinner drums were discovered by workmen unloading other drums into the warehouse. The area was effectively treated with an absorbent before the leaked liquid could contaminate exterior areas (Agee, 1989).

Significant oil staining was observed on the floor around an air compressor in the northeastern part of the warehouse. The stain extended to a mortared seam separating a concrete block wall from the concrete floor slab.

A Grumman drawing dated 1943 that was reviewed for the EBS revealed three septic tanks and leaching chambers directly southwest of the warehouse in an area that is now landscaped. No closure documents were available for these septic facilities.

Conclusions: Warehouse 8 was rated in Category 7. Oil stains from the air compressor were observed at a seam between the concrete floor and block wall. If any oil seeped through the wall via

this seam, it could have contaminated the exterior soil. Additionally, no closure documentation was available for the exterior septic tanks and leaching chambers southwest of the warehouse.

6.8.2 Building 17N-2: Warehouse 6

Observations: Warehouse 6 is a one-story structure of 32,769 square feet constructed of steel frame and brick. The structure was used to store aircraft parts and mechanical components used in aircraft manufacturing. By the May 1997 VSI, all that remained were metal storage racks. An office area occupies the southwest end of the warehouse. A sump that appeared to be associated with steam pipes was observed near the southeast corner of the warehouse. The sump was dry and appeared to be good condition with no visible stains.

To the east of the warehouse is a pit area with a metal grate floor cover. Grumman's Phase I ESA describes this pit as a collection pit but provides no other information (Radian, 1997c). However, no evidence of manufacturing or chemical storage was observed during the VSI, and no stains were observed on the concrete floor and walls. No sinks, floor drains, or vents were observed in the warehouse.

Conclusions: Warehouse 6 was rated in Category 1. No information is available as to the suspected collection pit, but the apparent lack of heavy manufacturing activity in the building suggests that the pit has never represented a significant source of hazardous substances.

6.8.3 Building 17N-3: Warehouse 4

Observations: Warehouse 4 is a one-story structure of 32,151 square feet constructed of steel frame and brick. An office area occupies the eastern end of the warehouse. The structure was used to store aircraft parts and molds. By the May 1997 VSI, all that remained were tools used by the foremen, aluminum sheet metal, and metal storage racks.

No evidence of manufacturing or chemical storage was observed during the VSI. No stains were observed on the concrete floor and walls. No sinks, floor drains, or vents were observed. A Grumman 1943 drawing indicated a drywell was located in what is now a landscaped area to the southwest of the warehouse. No other information on the drywell was available.

To the north of the warehouse are two storage sheds. Old office furniture was stored in the sheds during the VSI. An area with a concrete foundation is located immediately northeast of the

warehouse. This area, designated on some site plan drawings as Building 17N-XA, was used as a storage area for oil barrels (Taormina, 1997). No oil stains or stressed vegetation were observed at this former storage area, and there was no other evidence of spills or leaks there.

Conclusions: Warehouse 4 was rated in Category 1. The lack of information on the closure of the drywell was not identified as a concern because of the low level of industrial activity that took place in the vicinity of this drywell. No other environmental concerns were identified.

6.8.4 Building 17N-4: Warehouse 9

Observations: Warehouse 9 is a one-story structure of 33,306 square feet constructed of steel frame and brick. It was used primarily for storage of aircraft parts, but some light metal fabrication and machining work also took place in the building. It stored equipment, forklifts, tools, aircraft parts, metal forming and shaping machines, and woodworking machines. The stored equipment was supported on wooden pallets throughout the building.

A sump containing steam pipes is located near the southwest corner of the building. A dry-type transformer was observed outside the building on its northwest side. This transformer is not of potential environmental concern because it does not contain dielectric oil. A metal routing machine was formerly located along the central portion of the south wall. The building's floor contains trenches which were formerly used to collect cutting oil and metal shavings. Several cracks were observed in the trenches during the site visit. A cluster of machining equipment pits are located between Columns C11 to C13 in the central part of the warehouse. The pits were empty and dry during the site visit and appeared to be in good condition without cracks or other deterioration.

Conclusions: Warehouse 9 was rated in Category 7 because of the cracks observed in the floor trenches used to collect cutting oil and metal shavings from machining operations in the warehouse. The machining equipment pits, however, are not of potential environmental concern.

6.8.5 Building 17N-5:Warehouse 7

Observations: Warehouse 7 is a one-story structure of 34,312 square feet constructed of steel frame and brick. Miscellaneous aircraft parts were stored in the warehouse, and some metal fabrication activities were carried out there. In the northwest corner are storage areas, restrooms, and offices. A dry-type electrical transformer was observed in a storage area in the building. Two other dry-type

transformers were observed in the southern part of the warehouse. The middle part of the warehouse contains several partitioned areas used to store metal racks.

Covered metal frame corridors, designated together on Grumman site plans as Building 17N-XD "Two Connecting Corridors," link Warehouse 7 to Warehouse 9 to the north and Warehouse 5 to the south. These corridors are walkways only and have not been used for storage or manufacturing.

To the east of the warehouse is machinery for wood and metal work activity. Machining presses and band wood saws were observed in this area. Some oil stains was observed in the area. The concrete floor appeared to be in good condition with no floor drains and no signs of cracks.

Conclusions: Warehouse 7 was rated in Category 1. No environmental concerns were identified either for the warehouse itself or the connecting corridors.

6.8.6 Building 17N-6: Warehouse 5

Observations: Warehouse 5 is a one-story structure of 33,277 square feet constructed of steel frame and brick. A steam pit occupies the southwestern corner of the structure. The structure was used to store sheet metal components for aircraft manufacturing. By the May 1997 VSI, all that remained were metal storage racks.

No evidence of manufacturing or chemical storage was observed during the VSI, and no stains were observed on the concrete floor and walls. No sinks, floor drains, or vents were observed. Grumman's Phase I ESA revealed that a septic tank and leaching chambers were located immediately northwest of the warehouse. This area is currently landscaped, and the former septic facilities were not evident during the site visit (Radian, 1997c).

Conclusions: Warehouse 5 was rated in Category 7 because there is no closure documentation for the septic tank and leaching chambers reported by Grumman northwest of the warehouse. No other environmental concerns were identified.

6.8.7 Building 17N-09: Well House

Observations: The Well House is located to the northwest of Warehouse 9 (Building 17-04), adjacent to a parking lot (Figure 6-1). The 8-foot by 10-foot steel frame and cinder block structure is surrounded by a barbed-wire fence. The building contains electrical equipment for pumping water

from wells to supply industrial water to Grumman facilities. The concrete floor appeared to be in good condition during the VSI, with no cracks, stains, or debris. No storage of chemicals or hazardous wastes was observed.

Conclusions: Building 17N-09 was rated in Category 1. No environmental concerns were identified.

6.9 PLANT 17 - SOUTH WAREHOUSE AREA

The following section addresses the South Warehouse complex located to the south of Building 03-01. The complex consists of nine freestanding warehouses (Buildings 17S-11 through 17S-19) and one large warehouse divided internally into five sections (Building 17S-20). Buildings 17S-11 through 17S-19 are steel frame warehouse structures on concrete pads that are similar in design and usage history. Building 17S-20 is more complex and includes light machining operations and hazardous material storage as well as warehouse space. The area also includes a few pumphouse and storage shed structures.

6.9.1 Building 17S-11: Warehouse 3I

Observations: Typical of the free-standing warehouses in the South Warehouse Complex, Building 17S-11 is a steel frame structure on an elevated concrete slab with concrete loading docks on its north and south sides. The east and west endwalls are brick, and the north and south walls are a series of steel overhead doors that open out onto the loading docks. The interior comprises a large central storage room with a small office on one side. The building was nearly empty during the May 1997 VSI, except for a few metal parts. A 55-gallon drum of pressurization fluid was observed near the entrance to the building. The concrete floor appeared to be in good condition throughout, including on the loading docks.

Conclusions: Building 17S-11 was rated in Category 1. The drum of pressurization fluid observed in the building during the site visit appears to have been only incidentally present, not indicative of regular petroleum product storage in the warehouse.

6.9.2 Building 17S-12: Warehouse 3J

Observations: Typical of the free-standing warehouses in the South Warehouse Complex, Building 17S-12 is a steel frame structure on an elevated concrete slab with concrete loading docks on its north and south sides. The east and west endwalls are brick, and the north and south walls are a

series of steel overhead doors that open out onto the loading docks. The interior is divided into a lumber storage area at the building's west end, a central storage area for metal parts, and an office area at the building's east end. Substantial amounts of lumber and metal parts remained warehoused in the building during the May 1997 VSI. The concrete floor appeared to be in good condition throughout, including on the loading docks.

Conclusions: Building 17S-12 was rated in Category 1. No environmental concerns were identified.

6.9.3 Building 17S-13: Warehouse 3K

Observations: Building 17S-13 is similar to Buildings 17S-11 and 17S-12, except that the southern loading dock was been enclosed by metal frame walls to create a long but narrow sideroom. The sideroom leads directly into Building 17S-20 to the east. The central storage room is divided into two large areas by a central wall. The building was mostly empty during the May 1997 VSI. A sign explaining how to handle chemical spills was posted on the central wall, although no chemicals were stored inside the building. The concrete floor appeared to be in good condition throughout, including on the loading docks.

Conclusions: Building 17S-13 was rated in Category 2. The sign on the central wall suggests that substantial quantities of industrial chemicals were handled in the warehouse, but there is no evidence of releases.

6.9.4 Building 17S-14: Warehouse 2E

Observations: Building 17S-14 is similar to Buildings 17S-11 and 17S-12, except that the northern loading dock was been enclosed by metal frame walls to create a row of small offices. Part of the enclosed loading dock also houses a shoproom. Pattern marks on the linoleum floor inside this shoproom outline the former locations of workbenches. The central storage area was nearly empty during the May 1997 VSI, except for a few pieces of metal scrap. The concrete floor appeared to be in good condition throughout the building, although some of concrete on the loading dock on the south side of the building was cracked.

Conclusions: Building 17S-14 was rated in Category 1. Although concrete comprising the south loading dock was cracked, available evidence suggests that only solid material was handled and stored in the warehouse.

6.9.5 Building 17S-15: Warehouse 2F

Observations: Building 17S-15 is very similar to Buildings 17S-14. Like Building 17S-14, the northern loading dock was been enclosed by metal frame walls to create a row of small offices and a shoproom. Also, pattern marks on the linoleum floor inside the shoproom outline the former locations of workbenches. The central storage area was empty during the May 1997 VSI. The concrete floor appeared to be in good condition throughout the building, including on the loading dock on the south side of the building.

Conclusions: Building 17S-15 was rated in Category 1. No environmental concerns were identified.

6.9.6 Building 17S-16: Warehouse 2G

Observations: Typical of the free-standing warehouses in the South Warehouse Complex, Building 17S-16 is a steel frame structure on an elevated concrete slab with concrete loading docks on its north and south sides. The east and west endwalls are brick, and the north and south walls are a series of steel overhead doors that open out onto the loading docks. The interior comprises a large central storage room with office space at the east side of the building and a caged storage area at the west side. The office space includes a small publications library. Large PCB-free, oil-containing electrical transformers are located at the west end. The building was nearly empty during the May 1997 VSI, except for a few piles of scrap metal in the central storage area. The concrete floor appeared to be in good condition throughout, including on the loading docks.

Conclusions: Building 17S-16 was rated in Category 2 because of the dielectric oil in the electrical transformers. No environmental concerns were identified.

6.9.7 Building 17S-17: Warehouse 1A

Observations: Typical of the free-standing warehouses in the South Warehouse Complex, Building 17S-17 is a steel frame structure on an elevated concrete slab with concrete loading docks on its north and south sides. The east and west endwalls are brick, and the north and south walls are a series of steel overhead doors that open out onto the loading docks. The interior comprises a large central storage room. The building was nearly empty during the May 1997 VSI, although what appeared to be the shell of a missile was observed in the west end of the building. Several other crates and metal parts remained stored in the warehouse. The concrete floor appeared to be in good condition throughout, including on the loading docks.

Conclusions: Building 17S-17 was rated in Category 1. No environmental concerns were identified.

6.9.8 Building 17S-18: Warehouse 1B

Observations: Typical of the free-standing warehouses in the South Warehouse Complex, Building 17S-18 is a steel frame structure on an elevated concrete slab with concrete loading docks on its north and south sides. The east and west endwalls are brick, and the north and south walls are a series of steel overhead doors that open out onto the loading docks. The interior comprises a large central storage room. Several metal parts remained in the warehouse as of the May 1997 VSI. Additionally, what appeared to be two missile shells were observed on the north loading dock during the site visit. The concrete floor appeared to be in good condition throughout, including on the loading docks.

Conclusions: Building 17S-18 was rated in Category 1. No environmental concerns were identified.

6.9.9 Building 17S-19: Warehouse 1C

Observations: Typical of the free-standing warehouses in the South Warehouse Complex, Building 17S-19 is a steel frame structure on an elevated concrete slab with concrete loading docks on its north and south sides. The east and west endwalls are brick, and the north and south walls are a series of steel overhead doors that open out onto the loading docks. The interior comprises a large central storage room. Several pieces of office furniture remained in the warehouse as of the May 1997 VSI. The concrete floor appeared to be in good condition throughout, including on the loading docks.

Conclusions: Building 17S-19 was rated in Category 1. No environmental concerns were identified.

6.9.10 Building 17S-20: Warehouses D/H/L/M/N

Observations: Building 17S-20 is similar in construction to the other south warehouses but considerably larger. It comprises five parallel storage areas that are combined under a single roof. Even though the five storage areas are not distinctly separated by partitions or walls, Grumman refers to them individually as Warehouses D, H, L, M, and N.

This large warehouse was mostly empty as of the May 1997 VSI, although a large quantity of office furniture was still in storage. The concrete floor was in good condition throughout. A small machining operation was housed in a concrete floor pit near Columns B14 and B16, in the "N" section of the building. The machining equipment was still in place during the site visit. An oily liquid was observed in the pit under the equipment.

A review of an old engineering drawing (Seelye and Stevenson, 1942) revealed the previous existence of an old leach chamber field east of Building 17S-20. The drawing revealed that the leachfield drained a toilet located to the north east of Building 12S-20. Currently, the area of the former leachfield is paved with gravel and is used as parking space. No closure documents for the leachfield are available.

Conclusions: Building 17S-20 was rated in Category 7 because of the machining operation in the N Section of the warehouse. An oily liquid was observed inside the pit housing the machining operation. It was not possible to visually evaluate the condition of the concrete pit due to the liquid. If there are cracks, the oily liquid could have contacted underlying soil. Furthermore, the former leachfield located east of Building 17S-20 will need to be evaluated, since no closure documents were available.

6.9.11 Building 17S-22: Pump House

Observations: Building 17S-22 is a small, one-room brick structure located roughly 100 feet south of Building 17S-19. A large aboveground water tank adjoins the building, which houses a diesel-powered water pump. A 275-gallon AST (Tank 17-22-2) storing diesel fuel is located inside the building. The tank appeared clean and well maintained during the May 1997 VSI. There was no evidence of leaks or spills from this AST. This tank replaced an earlier diesel fuel UST (Tank 17-22-1). There is no closure documentation the earlier UST.

Conclusions: Building 17S-22 was rated in Category 7 due to the lack of closure documentation for the UST. No other environmental concerns were identified.

6.9.12 Building 17S-25: Storage Shed

Observations: This one-room metal storage shed measuring approximately 1,975 square feet is located on the west side of the M section of Building 17S-20. It opens directly into that section of

Building 17S-20 and thus is essentially an extension. It was generally empty and clean during the VSI.

Conclusions: Building 17S-25 was rated in Category 1. No environmental concerns were identified.

6.9.13 Buildings 17S-32 and 17S-33: Boiler Houses

Observations: These are small, one-room brick buildings located on the east side of Building 17S-20. They house boilers used in heating Building 17S-20. They appeared neat and in good condition during the May 1997 VSI.

Conclusions: Buildings 17S-32 and 17S-33 was rated in Category 1. No environmental concerns were identified.

6.9.14 Building 17S-36: Water Lift Station

Observations: Building 17S-36 is a small, one-room plywood shed on a concrete pad north of Building 17S-20. It houses an electric pump used in water distribution. No environmental concerns were noted during the May 1997 VSI.

Conclusions: Building 17S-36 was rated in Category 1. No environmental concerns were identified.

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7.0 ENVIRONMENTAL BASELINE SURVEY OF PLANT 20

This chapter presents the observations made by the EBS team for each individual unit of real property within the 4.5-Acre Parcel of Navy-owned land comprising Plant 20. Information collected for each real property unit within the parcel from the site visit, interviews, and records review is presented in an "Observations" section, followed by a "Conclusions" section that states which environmental condition rating has been assigned to the property and presents the rationale for the assignment.

7.1 DESCRIPTION AND SUMMARY

Plant 20 is Grumman's vehicle maintenance facility and includes a vehicle service garage (Building 20-01) and vehicle wash facility (Building 20-04). Building 20-03 is a small shed associated with Building 20-04 that is addressed jointly with Building 20-04. Building 20-02 was a former shed located near the northeastern corner of the 4.5-Acre Parcel that was razed in the 1980s. Except for a narrow lawn adjoining South Oyster Bay Road, the entire 4.5-Acre Parcel outside of the buildings is paved.

The 4.5-Acre Parcel is bounded to the west by South Oyster Bay Road, by Grumman-owned Plant 15 to the south, and by Grumman-owned Plant 14 to the east and southeast (Figure 7-1). The Bethpage Federal Credit Union is just north of the parcel, and Grumman's former headquarters building (Plant 111) is located to the northeast. Privately owned commercial and light industrial property is located across South Oyster Bay Road from the parcel.

7.2 BUILDING 20-01

Observations: Building 20-01, the principal Plant 20 structure, is a brick and steel frame building on a concrete slab. The building measures approximately 220 feet long by 80 feet wide. The majority of the building is a garage used for the storage, maintenance, and repair of trucks and other vehicles used in Grumman's operations. Seven overhead doors allow vehicular entry. Smaller rooms serve as administrative and storage areas associated with the garage.

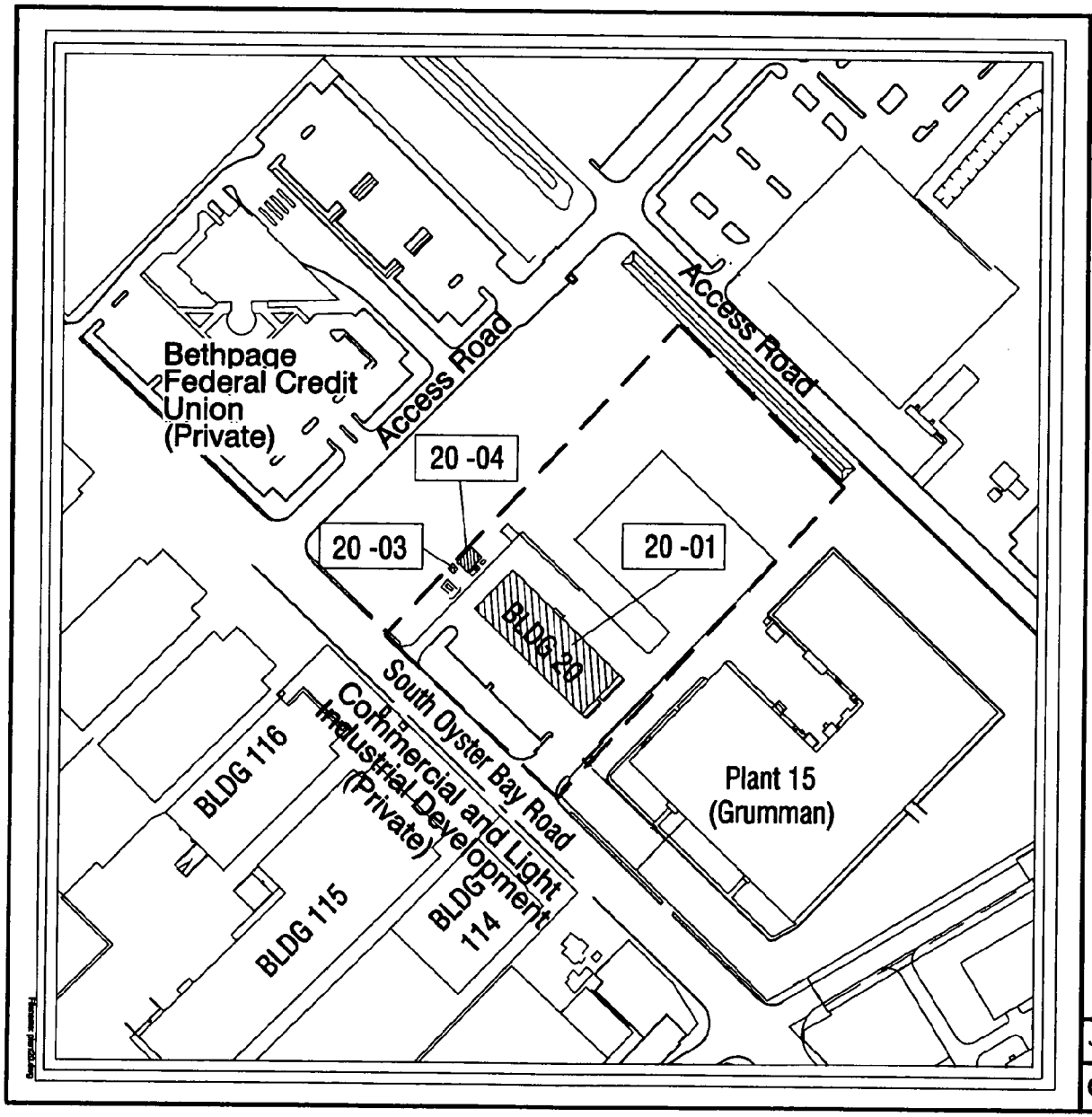

Figure 7-1

4.5 - Acre Parcel (Plant 20) Building Numbers

Phase I EBS
NWIRP Bethpage, New York

Legend

Building Numbers
Correspond to Table 1-2

Parcel Perimeter

Building Addressed in Phase I EBS

N

0 200 400 600 800

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CF Braun Engineering Corporation

The garage remained in active use at the time of the May 1997 VSI. Several trucks and other vehicles were parked inside the garage. The concrete floor was stained with oil at several locations but appeared to be in good shape without visible cracks or other deterioration.

A paint shop and interior vehicle wash rack were located in rooms in the northwestern part of the garage. The paint room was taken out of service in 1995 (Radian, 1997d). Construction drawings indicate that drains in the paint shop and wash rack room led to settling tanks and leach pools in a leachfield approximately 70 feet east of the building (Seelye and Stevenson, 1944). An abandoned process tank associated with painting operations in Building 20-01 was also located during Underground Injection Control (UIC) inspections by NCDH (NCDH, 1997). Sinks and floor drains elsewhere in the garage formerly led to the leachfield (Seelye and Stevenson, 1944) but are presently connected to the local sanitary sewer. The leachfield is presently undergoing formal closure under the UIC Program administered by the Nassau County Department of Health (Dvirka and Bartilucci, 1996).

Several USTs and ASTs that store gasoline, oil, and fuel oil are located at the garage (see Tables 3-2 and 3-3 in Chapter 3). All of the active USTs have been tightness tested within the last 2 years and are scheduled to be upgraded by 1998 (Radian, 1997d). Several tanks have also been removed. Closure documentation is not available for the removed tanks.

A tank test failure recorded as a leaking UST (LUST) incident took place on July 20, 1992. Grumman was noted as a Willing Responsible Party that took appropriate corrective action (Record 92 in EDR, 1997). A 6,000-gallon diesel fuel UST failed a tightness test in June 1993 and was found to have leaked a significant quantity of fuel to the underlying soil. A consultant to Grumman investigated soils under the tank and concluded that natural attenuation would adequately address the contamination and that no further action was needed (Geraghty & Miller, 1996). Grumman has not yet received confirmation from NYSDEC accepting these conclusions.

There is a history of other small spills associated with the fuel tanks at Plant 20. Internal Grumman records indicate that 15 gallons of gasoline spilled on November 16, 1984 and ran off into a dirt area along the southern perimeter of the 4.5-Acre Parcel. The NYSDEC inspected the site on November 21, 1984, and no further action was recommended (Ohlmann, 1984d). A 5-gallon diesel fuel spill at one of the diesel fuel pumps took place on May 20, 1993. The spill was reported to NYSDEC and was controlled through the use of absorbents (Selva, 1993).

As noted in Chapter 4, aerial photographs indicate that Plant 20 was constructed on cropland between 1941 and 1945. Activity around the shop in the 1945 photo appeared to be limited to the paved area immediately outside the garage, but photos from the 1950s and 1960s show several trucks or trailers parked on unpaved ground. This unpaved parking area included the leachfield and other land extending from the garage to the eastern perimeter of the 4.5-Acre Parcel.

Conclusions: The garage building and exterior pavement east of the building were rated in Category 5. This rating reflects the fact that the leachfield east of the building is undergoing official closure under Nassau County's UIC Program. Additionally, NYSDEC must officially approve Grumman's approach to allow natural attenuation to gradually eliminate petroleum contamination in soils under Tank 20-01-1.

The fact that trucks and heavy equipment were once parked on bare soil at the leachfield area must also be addressed. Although unpaved parking lots *per se* are not normally an environmental concern, the fact that many of the vehicles parked there were awaiting repair suggests that leakage of fuel or oil was highly possible. Furthermore, official closure documentation is not available for several removed USTs at the building. Grumman has also identified several areas of concern inside the garage building (Radian, 1997d) and plans to investigate them, but these concerns were not evident during the site inspection for the EBS.

7.3 REMAINDER OF 4.5-ACRE PARCEL

Observations: A vehicle wash facility (Building 20-04) and associated storage shed (Building 20-03) are located just north of the garage. The steel frame wash facility is constructed over a bermed concrete pad. The facility was still active as of the May 1997 EBS site visit, and appeared to be very clean and in excellent condition. A floor drain at the center of the bermed floor led to an oil-water separator, from which oil was delivered to a 550-gallon fiberglass UST and water was delivered to the sanitary sewer. The storage building housed a steam jenny, fueled using No. 2 fuel oil stored in an adjacent AST (Tank 20-01-6).

Conclusions: Buildings 20-04 and 20-03 were rated in Category 2 based on waste oil storage in the UST adjoining Building 20-04 and the fuel oil stored in the AST. The UST was tightness tested within the last 2 years, and there is no evidence of releases from either tank. No other environmental concerns were identified for either building or for any other area inside the 4.5-Acre Parcel.

8.0 ENVIRONMENTAL BASELINE SURVEY OF PLANT 05

Chapter 8 presents the observations made by the EBS team for each individual unit of real property at Plant 05 and the conclusions as to the environmental condition of each of these units. Information collected for each real property unit from the site visit, interviews, and records review is presented in an "Observations" section, followed by a "Conclusions" section that states which environmental condition rating has been assigned to the property and presents the rationale for the assignment.

8.1 DESCRIPTION AND SUMMARY

Plant 05 is an aerospace systems research, engineering, and development facility located northeast of the intersection of South Oyster Bay Road and State Route 107 (Hicksville-Massapequa Road) (Figure 8-1). The land occupied by Plant 05 is owned by Grumman, but the Navy has constructed and owns a series of buildings on that land. The principal Navy-owned structure at Plant 05 is a 300,000-square-foot building (Building 05-01) that houses a series of hangars, laboratories, and small-scale manufacturing facilities on the ground floor and offices and administrative facilities on the upper floors. Other Navy-owned buildings at Plant 05 include small water pumphouses and storage sheds, most under 1,000 square feet in area. All of the land surrounding the Navy-owned buildings at Plant 05 is paved or small lawns.

A few of the Navy-owned pumphouses and storage sheds at Plant 05 are assigned building numbers affiliated with Grumman's Plant 25. The principal Plant 25 building is a Grumman-owned administrative building immediately north of Plant 05. The Navy-owned buildings are discussed as part of Plant 05 even if their number affiliates them with Plant 25. There are also a few sheds and trailers affiliated with Plant 05 that are owned by Grumman. Because these are Grumman-owned buildings occupying Grumman-owned land, they are not addressed within the scope of the Phase I EBS.

Most of Plant 05, including Building 05-01, lies within 1,000 feet of Grumman-owned Plant 02, a large aircraft manufacturing facility similar in size and activity to Building 03-01.

Section 8.2 addresses Building 05-01, and Section 8.3 discusses the other Navy-owned buildings associated with Plant 05.

8.2 PLANT 05 - BUILDING 05-01

Building 05-01 encompasses approximately 300,000 square feet housing a series of hangars, laboratories, and small-scale manufacturing facilities on the ground floor and offices and administrative facilities on the upper floors. Because the upper floors have a history of office and administrative use only, with no potential environmental impact, they are not addressed further. The ground floor is compartmentalized into distinct hangars, shops, and other areas of associated activity (Figure 8-2). Each is discussed individually below.

8.2.1 Shuttle Wing Hangar

Observations: The Shuttle Wing Hangar is located in the southwestern part of Building 05-01 (Figure 8-2). Its name derives from its use in development of the Space Shuttle. A sliding door on the north wall allows for entry by aircraft and other large vehicles. The concrete floor is underlain by a series of parallel utility trenches topped by metal grates. A compressor room immediately south of the hangar houses heating and air conditioning utilities, and small rooms along the south wall of the hangar house administrative activities.

The hangar was mostly empty during the May 1997 VSI. Parts of it were being used for temporary storage of file cabinets and other administrative items. The only evidence of its former mission was a cylindrical black structure that appeared to bear the shape of a small spacecraft. The concrete floor was in good structural condition and appeared very clean and free of stains. Paint was in good condition throughout. The utility trenches were dry during the inspection but contained metal shavings.

The compressor room south of the hangar was clean during the VSI. An internal environmental audit prepared by Grumman in 1993 reported that absorbent (Speedi-dry) contaminated with oil was present on the floor (Grumman, 1993). The floor was cleaned in response to this audit. Because the concrete floor and sidewalls are structurally sound without cracks or other visible deterioration, there is little potential that oil could have migrated outside to adjoining or underlying soils.

Conclusions: The Shuttle Wing Hangar was rated in Category 1. Although small quantities of oil likely leaked onto the floor from aircraft and spacecraft undergoing assembly and servicing in the

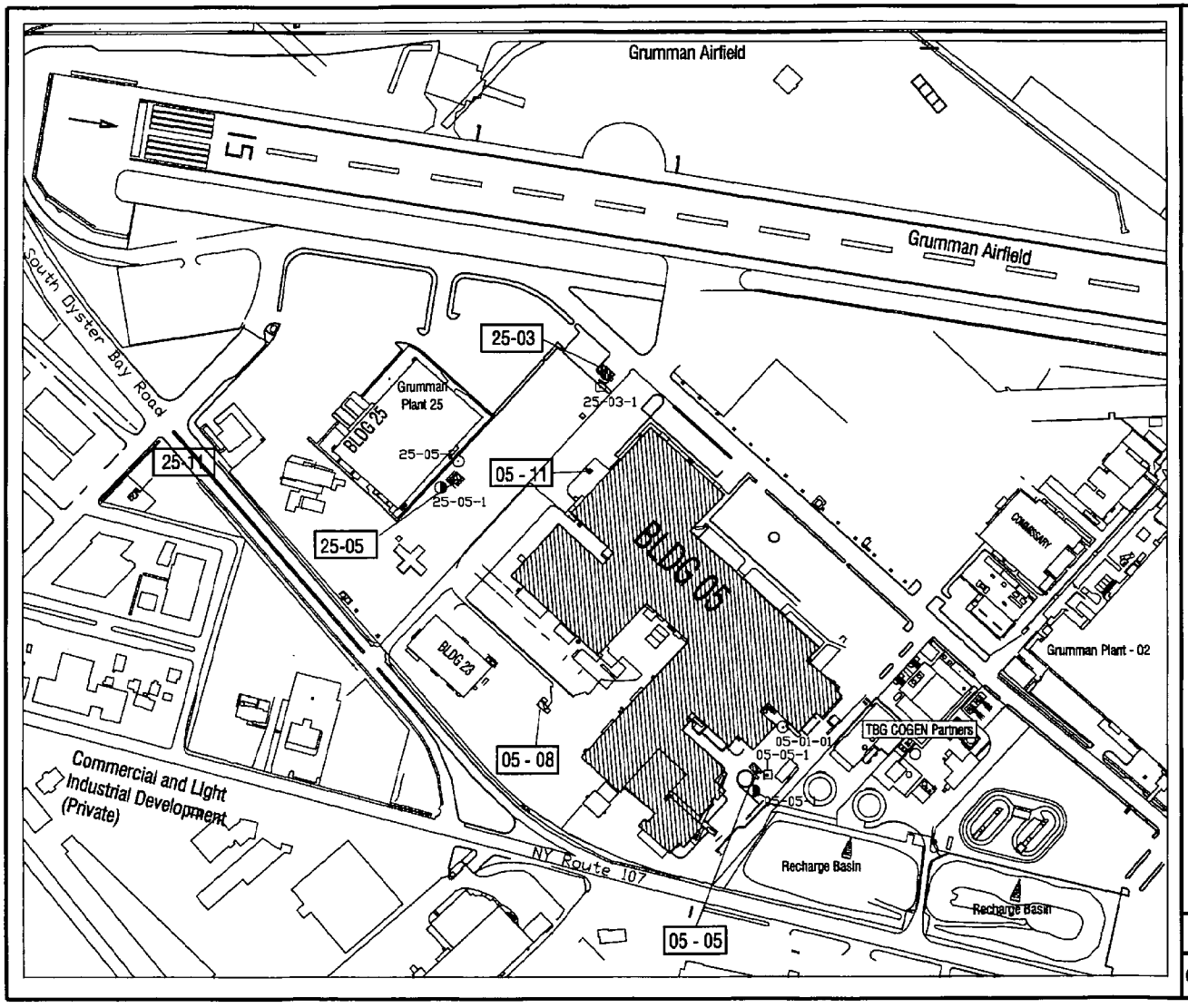

Figure 8-1

Plant 05 and Vicinity Building Numbers

Phase I EBS
NWIRP Bethpage, New York

Legend

Building Numbers Correspond to Table 1 - 2.

Hatched Buildings are Owned by the Navy and all Non Hatched Buildings are Owned by Grumman or they are Privately Owned.

- ◑ - Inactive or Removed UST
- ⊙ - Active UST
- ◪ - Inactive or Removed AST
- ⊡ - Active AST

0 100 200 400 600

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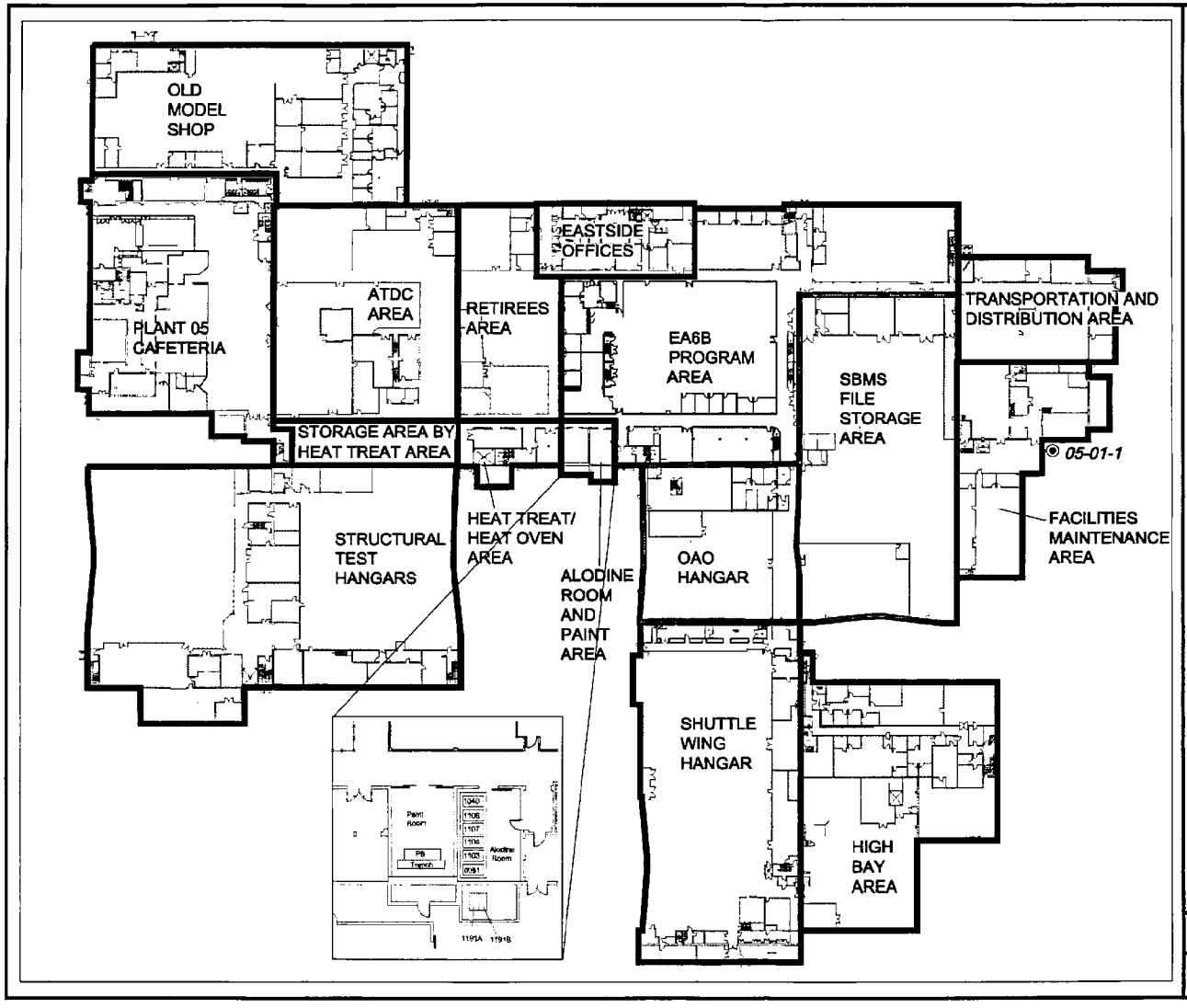

Figure 8-2

Building 05-01
Interior Plan

Phase I EBS
NWIRP Bethpage, New York

Legend

◉ UST (Active)

N

0 25 50 100 150
SCALE IN FEET

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hangar, the floor appears to be in good structural condition. Although it was not possible to completely inspect the entire network of utility trenches under the floor, the trenches appeared to be clean and without apparent structural defect where they were randomly inspected. It thus appears unlikely that oil, or rinsewater containing oil, reached soils under or exterior to the hangar.

8.2.2 OAO Hangar

Observations: The OAO Hangar is located immediately east of the Shuttle Wing Hangar (Figure 8-2). A sliding door on the north wall allows for entry by aircraft and other large vehicles. The floor of the hangar is concrete. Unlike the Shuttle Wing Hangar, there are no floor troughs. The rear of the hangar is separated by a short partition and is covered with linoleum. Floor drains in the rear of the hangar lead to the municipal sewer system. Initial construction drawings for Building 05-01 show that this space was originally designed as a hangar (James Stewart & Co., 1944a). Thus, it has not likely been used for other purposes during its history.

The hangar was still in active use as of the May 1997 VSI. It contained two aircraft fuselages undergoing mechanical work. The overall housekeeping was good. There was an oily stain under one of the fuselages that had been covered by absorbent (Speedi-dry). However, the floor did not appear to be cracked or deteriorated, and there appeared to be little potential for oily spills to reach underlying soils.

Of greater concern were areas of observed buckling in the linoleum covering the floor in the corridor to the rear of the hangar. Floor plans from the early 1960's show several small shops associated with the hangar, including a parts cleaning room and a bonding and soldering room, in the area of this corridor (Grumman, 1961). The buckling could have been caused by accumulations of oil or organic solvents under the linoleum. Removal of the linoleum will be necessary to determine whether the floor is cracked, and thus whether the material causing the buckling could have contaminated underlying soil.

Conclusions: The OAO Hangar was rated in Category 7 because of the uncertainty over what is causing the buckled linoleum in the corridor and the question as to whether the floor under that linoleum is cracked or deteriorated. If the floor is sound, there is little potential that the material responsible for the buckling has contacted underlying soils. If it is not sound, however, then that material could have contaminated underlying soils. There are no other environmental concerns associated with the OAO Hangar.

8.2.3 SBMS File Storage Area

Observations: This is a large open room originally constructed as an assembly hangar but presently used for general storage (Figure 8-2). Old drawings for Building 05-01 label the room as an assembly area (James Stewart & Co., 1944a). The floor is concrete throughout. Large sliding doors typical of a hangar occupy the west wall, but they have been partially blocked by partitions erected to create a separate administrative room. Offices and administrative rooms are also located along the east wall of the open room.

The room was used for assembly of several aircraft, including the Lunar Module and the X-29 aircraft, but was later converted into office space and then storage space. Utility floor trenches similar to those in the Shuttle Wing Hangar remain in the western part of the open room. There are also two concrete patches in the floor near the southwestern corner of the room. These patches may be remnants of footings for a large atmospheric chamber reported to have occupied that area at the time the Lunar Module was assembled there. According to a Grumman employee familiar with Building 05-01 at that time, there were no machine pits or other floor features in this room that accumulated oil (Bidell, 1997).

This area appears not to have been used as a hangar for at least the past decade. The sliding doors in the west wall lead outside, but only to a narrow alley bordering two high bays added to the south side of the Shuttle Wing Hangar in the 1980s. No aircraft could have entered through the sliding doors since construction of the high bays.

At the time of inspection, the open room was filled with several rows of file cabinets, cardboard boxes containing files, and office furniture. The floor was clean and appeared to be structurally sound with no cracks or concrete deterioration.

Conclusions: The SBMS File Storage Area was rated in Category 1. There are no areas of environmental concern in the area.

8.2.4 Facilities Maintenance Area

Observations: This is the general maintenance shop for Plant 05. The shop occupies a small addition on the south side of the SBMS File Storage Area (Figure 8-2). This wing includes a shop room filled with small workbenches, small machining stations, and other miscellaneous maintenance equipment. The floor is wood block. The shop room is bordered to the north by small offices and a

break area used by facilities maintenance personnel. Primary entry to the shop room is via an overhead door on the south side that leads to a wide paved area. The office area can also be accessed by a door on the east side, but the wing cannot be accessed directly from interior rooms in Building 05-01.

The Facilities Maintenance shop was in active use at the time of the Phase I EBS inspection. Housekeeping was good, although the shop was somewhat cluttered with machinery. A 55-gallon drum labeled "waste oil" was located at the southwestern corner of the shop room. Housekeeping around the waste oil drum was good, and there was no visual evidence of leakage or of oily residue on the wood blocks around the drum.

Also evaluated together with the Facilities Maintenance shop were two utility rooms in a separate wing to the north. These rooms house electrical, heating, and air conditioning equipment servicing Building 05-01. An active UST (Tank 05-01-1) containing diesel fuel is located just outside the south wall to these rooms. This tank passed a tightness test in 1996. A cluster of large electrical transformers, located just exterior to the south wall, contain a large quantity of PCB-free dielectric oil.

These two mechanical rooms were in active use as of the Phase I EBS inspection. Housekeeping was good, and the concrete floor appeared clean and sound. The UST passed a tightness test in 1996, and there is no documented evidence of leaks. There is no visual or documented evidence of leakage of dielectric oil from the transformers.

Conclusions: The Facilities Maintenance Area and nearby mechanical rooms were rated in Category 2. Waste oil storage drums are located throughout the subject area, as are a diesel fuel UST (Tank 05-01-1) and large electrical transformers containing a substantial quantity of dielectric oil. But there was no visual or documented evidence of any leaks, spills, or other releases from these storage containers. The overall housekeeping was good throughout, as was the structural condition of floors and walls. Although it was not possible to evaluate the structural integrity of the concrete under the wood blocks in the Facilities Maintenance shop, the overall small scale of the maintenance operation suggests that there is little potential for large spills to have occurred on the wood blocks.

8.2.5 Transportation and Distribution Area

Observations: Located in the southeastern corner of Building 05-01, immediately east of the mechanical rooms addressed as part of the Facilities Maintenance Area (Figure 8-2), this area serves as the shipping and receiving station for Plant 05 operations. The area includes a loading dock and overhead door, office, and an equipment storage cage. The floor is concrete throughout.

The Transportation and Distribution Area was in active use at the time of the Phase I EBS inspection. Housekeeping was good, and the floor was clean with no stains. The floor concrete appeared sound throughout with no cracks or other deterioration. Two forklifts were present, apparently used to lift heavy incoming shipments.

Conclusions: The Transportation and Distribution Area were rated in Category 1. There are no environmental concerns at this location. The entire area was clean, with no visible floor stains or floor deterioration. There is no evidence that hazardous materials were ever stored here, although, as would be expected for any shipping and receiving area, packages containing small volumes of hazardous substances may have been briefly handled on occasion.

8.2.6 Alodine Room and Paint Area

Observations: This area consists of two small rooms that were used for plating and painting metal parts used in the manufacture of aircraft and spacecraft (Figure 8-2). The Alodine Room was similar in function to the alodine/sulfuric acid anodize area in Building 03-01. The Paint Room contained a small paint booth similar to those found in several locations in Building 03-01. However, each room housed substantially smaller operations than their counterparts in Building 03-01. Each was geared only to small-scale production of aircraft models used in design and testing, in contrast to the large-scale manufacturing in Building 03-01.

The Alodine Room housed a row of dip tanks elevated over a concrete catch basin. Liquid released from the tanks fell into the catch basin and was piped into a waste transfer tank located just outside the Plating Room in an open courtyard accessible to disposal trucks. Table 8-1 lists each process tank presently located in the Alodine Room as well as tanks documented to have been removed from the room. The Alodine Room was out of service but the process tanks remained in place as of the May 1997 VSI. They have since been removed (Dunne, 1997). The concrete floor of the containment area under the tanks appeared to be severely corroded.

TABLE 8-1

PROCESS TANKS IN ALODINE ROOM IN BUILDING 05-01[1]
NWIRP, BETHPAGE, NEW YORK

Tank Number	Volume (gal)	Contents	Notes
0051	180	Ridolene 53	Stainless steel tank installed 4/6/76. Listed in 4/97 inventory as abandoned. Observed as empty during site visit.
0189	140	Sulfuric Acid Pickle	Listed in 4/97 inventory as removed. No other details.
0332	N/A	Ammonium Nitrate	Installed 8/20/68. Listed in 4/97 inventory as abandoned. Not observed during site visit.
0526	N/A	Water; Spray Rinse	Listed in 4/97 inventory as removed. No other details.
0529	120	Stripper-Alkali-Chromate	Listed in 4/97 inventory as removed. No other details.
0623	N/A	Unichrome Wax Stopoff Compound	Listed in 4/97 inventory as removed. No other details.
0625	N/A	Waste Holding - Chromate	Koroseal construction. Listed in 4/97 inventory as removed. No other details.
0992	N/A	Chromic Acid Chrome Plate	Listed in 4/97 inventory as removed. No other details.
1040	27	Dryer	Stainless steel tank installed 4/6/76. Listed in 4/97 inventory as abandoned. Observed as empty during site visit.
1103	185	Water Spray Rinse (Alkaline)	Reinforced fiberglass lined tank installed 3/26/76. Listed in 4/97 inventory as in service. Observed as empty during site visit. Labeled as Tank 1090 water rinse, but no Tank 1090 in inventory.
1104	185	Amchem 7-17 (Deoxidizer)	Stainless steel tank installed 4/6/76. Listed in 4/97 inventory as abandoned. Observed as empty during site visit.
1105	185	Water Spray Rinse (Deoxidizer)	Polyethylene tank installed in 3/26/76. Listed in 4/97 inventory as removed.
1106	185	Alodine 600 Aqueous	Reinforced fiberglass lined tank installed in 1976. Listed in 4/97 inventory as abandoned. Observed as empty during site visit.
1107	185	Water Spray Rinse (Alodine)	Reinforced fiberglass lined tank installed in 1976. Listed in 4/97 inventory as abandoned. Observed as empty during site visit.

TABLE 8-1
PROCESS TANKS IN ALODINE ROOM IN BUILDING 05-01
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Tank Number	Volume (gal)	Contents	Notes
1190	170	Spray Rinse	Stainless steel tank installed in 1976. Listed in 4/97 inventory as abandoned. Observed as empty during site visit.
1191	1800	Waste Alodine	Stainless steel tank installed 12/15/81. Listed in 4/97 inventory as abandoned. Located outside building adjacent to Plating Room. Observed during site visit to be 2 tanks: 1191A, labeled alodine line rinse; and 1191B, labeled glycol rinse.

Source: Grumman inventory of process tanks dated 4/22/97 (Grumman, 1997) and observations made during May 1997 site visit for Phase I EBS.

The Paint Room was still in active use as of the May 1997 VSI. At that time it was being used by Grumman retirees to paint model aircraft. A steel water bath behind the paint booth contained rinsewater contaminated with yellow paint. The water bath adjoined the south wall of the room. Yellow stains were observed on the floor of a narrow storage room behind the south wall, suggesting that paint-contaminated rinsewater from the bath may have escaped. Although the floor of the storage appeared sound, it abutted an exterior wall. The possibility that rinsewater may have escaped the building and reached exterior soils cannot be ruled out.

Construction drawings for Building 05-01 show that the paint booth room was originally designed for that purpose (James Stewart & Co., 1944a). The plating room is labeled on the construction drawings as a plexiglass room. If plexiglass were once manufactured in the room, it likely contained dip tanks of organic solvents and water much like those in the room now, although different solvents may have been used.

Conclusions: The Alodine Room and Paint Room were rated in Category 7, primarily based on the deteriorated and corroded concrete under the dip tanks in the Alodine Room. The liquids that caused the observed concrete corrosion may have reached underlying soil through fissures in the deteriorated concrete. Based on the materials documented to have been stored in the dip tanks in this area, these soils may be have become contaminated by chlorinated solvents (such as alodine and ridoline) or by chromium. The rating also reflects the possibility that rinsewater contaminated with paint may have overflowed the water bath in the Paint Room and reached exterior soils in the courtyard of Building 05-01.

8.2.7 Heat Treat/Heat Oven Area

Observations: This area includes a small-scale heat treat area and a room used to house a drying oven (Figure 8-2). The heat treat area included a single overhead oven used to heat metal sheets treated with solvents. It is a small-scale version of Heat Treat Areas A and B in Building 03-01, with a single smaller oven. A pit under the oven housed a pump. It is not clear whether this pit is a quench pit shown under this area in old drawings (Grumman, 1955).

The drying oven room contained a single drying oven used to dry metal not treated with solvents. It too is a small-scale version of the Heat Oven Area in Building 03-01, with a single smaller oven.

The heat treat oven was in place as of the May 1997 VSI. Oil stains were noted in the underlying pit, but a close inspection was not possible because of the position of the oven over the pit. It was

not possible to assess the structural condition of the concrete in the pit at that time. Two dip tanks remained in place but were empty: Process Tank 1239, an 898-gallon steel tank used to hold Aqua Quench No. 251; and Process Tank 1240, an 898-gallon rinsewater tank. Both tanks were installed in 1984 and were listed as abandoned in Grumman's tank inventory dated 4/22/97 (Grumman, 1997). No other process tanks are inventoried for this area.

The heat treat oven was removed sometime after the May inspection, and the pit was reinspected in December 1997. A flashlight was used to observe the interior of the pit through an opening in the overlying floor. The pit appeared to be approximately 5 feet deep. The spatial extent of the pit could not be determined without creating a way to enter it. The pump had been removed. Oily stains were evident on the bottom of the pit. The bottom appeared to be somewhat deteriorated, but it was not possible to tell if the deterioration was the rusting of a steel bottom or the corrosion of a concrete bottom.

The drying oven room was empty at the time of May inspection. The linoleum floor had been cleaned. The only remaining evidence of the oven was a rectangular "footprint" mark on the linoleum where the oven used to stand.

Construction drawings for Building 05-01 show that the heat treat area was originally designed as a router room and that the drying oven room was originally designed as a pilot's ready room with a toilet and closet (James Stewart & Co., 1944a). There are no serious environmental concerns associated with these prior uses.

Conclusions: This area was rated in Category 7 because of the potential for contamination of soils under the pit by the material responsible for the oily stains. Regardless of whether the observed deterioration is rusted steel or corroded concrete, it appears to have provided a potential pathway by which the liquid could have reached the soil. No environmental concerns were identified for the small drying oven room, where there is no evidence that liquids were stored or handled.

8.2.8 Storage Area by Heat Treat Area

Observations: This is a concrete-floored open area located immediately north of the Heat Treat Area (Figure 8-2). It is separated from the Structural Test Hangars to the west by a wall, but it opens directly to the wood block floor of the ATDC Area to the east. As of the May 1997 VSI, the area was being used for general storage of miscellaneous manufacturing equipment. The floor

was clean, free of major stains, and in good condition without apparent cracking or deterioration. Grumman drawings, however, indicate that the area used to be part of a large machine shop that also included the ATDC Area and Old Model Shop (James Stewart & Co., 1944a). Floor patches observed during the site inspection may correspond to former floor pits that housed machining equipment.

Conclusions: This area was rated in Category 7 because there is no documentation as to the condition of the suspected floor pits as of the time they were filled in. If these pits housed machining equipment and were in poor structural condition, hydraulic oil from the equipment could have contacted underlying soil.

8.2.9 Structural Test Hangars

Observations: The Structural Test Hangars are two aircraft hangars located on the northwest corner of Building 05-01 (Figure 8-2). Both are of metal frame construction with a concrete floor. The floors of both are crossed by a network of utility floor trenches. The southernmost of the two hangars, termed the South Test Hangar, was constructed as an original part of Building 05-01. The other hangar, termed the North Test Hangar, was added in the 1950s (Seelye, Stevenson, Value, and Knecht, 1951). Large sliding doors on the north wall of the North Test Hangar and the south wall of the South Test Hangar allow aircraft to access the hangars from the concrete outside. Several small rooms containing offices, laboratories, and storage areas are located between the two hangars and along the west wall of the hangars.

The South Test Hangar was mostly empty at the time of the May 1997 VSI, but an aircraft was undergoing fatigue testing in the North Test Hangar. The floor of the former was clean and free of significant stains, but the floor of the latter had several oily stains. Labeled waste oil drums were present in the hangars. Both floors were in good structural condition without apparent cracks or deterioration. The lab rooms also appeared neat, although several oil stains were observed in a hydraulics laboratory room. But the floor of this room was also in good structural condition.

An environmental audit of Plant 05 completed in 1993 noted a 4-foot by 5-foot process tank containing glycerine solution in the Structural Test Hangars (Tank 139125). The audit recommended that the tank be removed because it had not been used in the preceding year (Grumman, 1993). There is no other available information concerning this tank.

Approximately 40 gallons of diesel fuel spilled from the tank of a tractor trailer parked on the concrete just outside the sliding door to the North Hangar on March 13, 1993 (NYSDEC Spill No. 92-13848). Records indicate that the spill was effectively contained on the concrete (Grumman 1994b).

Conclusions: The Structural Test Hangars were rated in Category 2. The presence of waste oil drums and oily floor stains in the active hangar suggest that large quantities of oil were handled in the hangars and labs, and that oil frequently spilled onto the floors. However, the floors appeared to be in good structural condition, and there thus appears to be little likelihood that the oil ever escaped to soils or groundwater.

8.2.10 Retirees Area

Observations: This is an area of wood block floor located south of the ATDC Area, roughly in the center of Building 05-01 (Figure 8-2). It is presently being used by a group of Grumman retirees voluntarily working on an aircraft model as a hobby. The retirees conduct small-scale machining and assembly operations. The continued operation of the paint booth adjacent to the Alodine Room (Section 8.2.6) is attributable to the retiree activity. The area appeared to be neat and well managed during the May 1997 VSI. Old drawings indicate that the area was originally used for aircraft controls fabrication and fabrication of aircraft tail surfaces (James Stewart & Co., 1944a), and Grumman retirees casually indicated that the area used to be a machine shop.

Conclusions: The Retirees Area was rated in Category 7. The rating is not associated with the present hobby activity but is rather based on uncertainties associated with the area's prior use as a large-scale machine shop. Information on the former location and condition of any machine pits was not available.

8.2.11 Old Model Shop

Observations: This shop occupies the northeastern corner of Building 05-01 (Figure 8-2). A large, open room with wood block floors was used as a machining shop for construction of small aircraft models used in design and testing. A smaller room was used as a recreation room, but was originally part of the machine shop (James Stewart & Co., 1944a). As of the May 1997 VSI, machining equipment had been removed from the shop and the area was used for storing office furniture and file cabinets. A small paint booth remained in the northwestern corner of the

room. The wood block floor was oil-stained in places, and patches of new wood blocks had recently been installed in the floor.

Conclusions: The Old Model Shop was rated in Category 7, primarily due to a lack of information on activities formerly conducted in this area when it was a machine shop. The reasons for floor patching are not clear. If the patches correspond to former machining pits, there is no information available as to the condition of those pits.

8.2.12 ATDC Area

Observations: The ATDC Area is a machining shop floor located south of the Plant 05 Cafeteria. Parts of the shop floor are wood block, other parts concrete. The area remained in active use as of the May 1997 VSI. Various large and small pieces of machinery used for metal cutting and other machining operations were positioned on the floor. The shop also included a staging area for 55-gallon waste oil drums. Several oily stains were observed on the concrete and wood blocks, and areas of the concrete floor were cracked.

Construction drawings for Building 05-01 show that this area was originally designed as a machine shop (James Stewart & Co., 1944a). Thus it has likely been used continuously as a machine shop since its construction. However, several patches were also observed in both the concrete and wood block areas of the floor, suggesting that the shop has been reconfigured over its lifetime. Some of these patches may correspond to floor pits that once housed larger machinery. Revisions, dated October 1969, to a floor plan of the ATDC Area initially prepared in 1957 show where several machines had been removed (Grumman, 1957).

Conclusions: The ATDC Area was rated in Category 7, primarily based on the observations of oily stains and cracked floor concrete. These cracks may have allowed hydraulic and cutting oils, or rinsewater containing these oils, to reach underlying soil. The rating also reflects uncertainty as to the history of the floor patches. If they were machine pits, there is no information as to their condition prior to filling.

8.2.13 EA6B Program Area

Observations: This cluster of carpeted offices and administrative spaces is located in the east-central part of Building 05-01. Grumman retirees speaking anonymously with the EBS staff indicated that this area was used as a machine shop prior to 1990. This statement is supported by

construction drawings for Building 05-01 which show that the area was originally designed as shops for assembly of aircraft engines, fuselage, wings, and cowling (James Stewart & Co., 1944a). There is no available information on the use of these shops or the condition of their floors before they were covered and the space remodeled into offices.

Conclusions: This area was rated in Category 7 due to the lack of information on the condition of the shop floors in this area before they were converted to office floors. If like other machine shops in Building 05-01, they likely housed various pieces of machinery that could have leaked hydraulic or cutting oil onto the floor or into concrete floor pits. If that floor or those pits were cracked or deteriorated, these oils could have reached underlying soils.

8.2.14 East Side Offices

Observations: A series of small rooms along the east-central wall of Building 05-01 (Figure 8-2) are used for offices and other administrative functions. One of these rooms is a small first-aid station. These offices were originally designed as offices (James Stewart & Co., 1944a).

Conclusions: These offices, including the first-aid station, were rated in Category 1. There is no evidence that these rooms were ever used for other functions.

8.2.15 Plant 05 Cafeteria

Observations: This cafeteria is the main dining facility for Grumman employees working in Plants 05 and 25. It remained in active use as of the May 1997 VSI. The cafeteria included a kitchen serving hot meals prepared on-site and a large seating area open to customers and other employees who bring their meals. The cafeteria appeared to be clean and well managed. Construction drawings show that this area was originally designed as a cafeteria (James Stewart & Co., 1944a). Thus it has likely been used continuously as a cafeteria and for no other purpose since construction. The drawings also show an exterior grease trap located on a concrete slab just outside the west wall of the kitchen (James Stewart & Co., 1943b and 1944a). There is no documentation of overflows or other environmental problems associated with this grease trap.

Conclusions: The Plant 05 Cafeteria was rated in Category 1. There is no evidence of any environmental concerns associated with the cafeteria and no evidence that the location was ever used for any other purpose.

8.2.16 High Bay Area

Observations: The High Bay Area comprises two hangars and associated offices and support facilities in an addition constructed in the 1980s over parking space on the south side of the Shuttle Wing Hangar. Several rooms in this addition were labeled as secret and could not be inspected for the EBS. The area remains in active use. The concrete floors of those areas that could be inspected were clean, free of significant stains, and in good structural condition, with no apparent cracks or other deterioration.

Conclusions: This area was rated in Category 7 because the areas labeled as secret could not be inspected by the personnel performing the EBS.

8.2.17 Former Leachfield Under Parking Lot West of Building 05-01

Observations: Sanitary and industrial wastewater from Building 05-01 used to be discharged into a series of leach pools under what is now a parking lot between South Oyster Bay Road and the Structural Test Hangars. This parking lot is currently bounded by the Structural Test Hangars to the east, South Oyster Bay Road to the west, and the Shuttle Wing Hangar to the south. Drawings show that a settling tank pad was constructed approximately 180 feet directly west of the South Structural Test Hangars of Building 05-01, and that 64 leaching pools were constructed in a roughly 250-foot by 250-foot area west of the settling tanks (James Stewart & Co., 1944b).

The western half of the leachfield was encroached upon by the realignment of South Oyster Bay Road in the 1950s (see Chapter 4). Close to half of the original leachpools stood in the way of the realignment and had to be replaced. In response, Grumman expanded the leachfield to the north into the area where Grumman-owned Building 23-01 now stands. The settling tank pad was not moved. The new leachfield included 108 leach pools, a combination of original leachpools west of the settling tanks, and new leachpools north of the settling tanks (Grumman, 1954).

The leachfield was abandoned in the 1970s when Building 05-01 was connected to the Nassau County sewer system. No evidence of the settling tank pad remained as of the May 1997 VSI. There was no documentation available to the EBS team indicating whether the leachpools had been cleaned out or removed. Except where Building 23-01 now stands, the area of the former leachfield appeared to be a normal parking lot.

Conclusions: The area of the former leachfield for Plant 05 was rated in Category 7. There is no available documentation indicating whether the abandoned leachpools have ever been cleaned out and the underlying soils found to be uncontaminated. These soils could have been contaminated by a variety of contaminants in industrial wastewater generated in Building 05-01, such as petroleum spilled in hangars, cutting and hydraulic oils from machine shops, chromium from former plating operations, paint, and halogenated and nonhalogenated solvents from the alodine line or from various laboratories.

8.3 PLANT 05 - OTHER NAVY-OWNED BUILDINGS

In addition to Building 05-01, the Navy also owns a number of wellhouses, storage sheds, and other small buildings at Plant 05. Like Building 05-01, these smaller Navy-owned Plant 05 buildings occupy Grumman-owned land. Thus the scope of the EBS covers the buildings but not the land surrounding them. Each of these Navy-owned buildings is addressed individually below.

8.3.1 Building 05-05: Fire Pump Station

Observations: Building 05-05 is a one-room brick building that houses a diesel-powered water pump. Grumman records indicate that diesel fuel to power the pump was originally stored in a 275-gallon UST adjacent to the building. This UST was abandoned in place in 1985 and replaced in 1986 by a new 275-gallon AST which remains in service (Tank 05-05-1) (Grumman, 1997). There is no evidence of releases from the existing AST, but there is no closure documentation available for the abandoned UST.

Conclusions: Building 05-05 was rated in Category 7 because soils under the abandoned-in-place UST have never been sampled and analyzed for petroleum contamination. There are no other environmental concerns associated with this building.

8.3.2 Building 05-08: Sewage Pump Station

Observations: Building 05-08 is a one-room brick building containing three electrically powered water pumps. The concrete floor is in good condition with no visible stains or corrosion. What appeared to possibly be a fill pipe for an abandoned UST was observed just outside of the east wall. But there is no mention in Grumman's tank inventory of any UST presently or formerly at this location (Grumman, 1997).

Conclusions: Building 05-08 was rated in Category 7 because of the observation of what could be a fill stand for an undocumented UST. There are no other environmental concerns associated with this building.

8.3.3 Building 05-11: Sewage Pump Station

Observations: Building 05-11 is a one-room brick building containing an electrically powered water pump. The concrete floor is in good condition with no visible stains or corrosion. There are no storage tanks associated with this pump station.

Conclusions: Building 05-11 was rated in Category 1. There are no environmental concerns associated with this building.

8.3.4 Building 25-03: Gas Repair Depot

Observations: Building 25-03 is a brick administrative building containing five small office rooms and a restroom. A 275-gallon AST storing No. 2 fuel oil is located just outside the west wall of the building. There is no evidence of any releases from this tank.

Conclusions: Building 25-03 was rated in Category 2. Fuel oil is stored in an AST associated with the building, but there is no evidence of any releases. There are no environmental concerns associated with this building.

8.3.5 Building 25-05: Pump House (Well No. 5)

Observations: Building 25-05 is a one-room brick building that houses a diesel-powered water pump. Three electrical transformers, each containing 15 gallons of PCB-free dielectric oil (Grumman, 1994b), are located just outside the south wall of the building. At the time of inspection, the building appeared to be in poor condition, with roof damage and mortar missing from places in the brick wall. But there were no stains or other evidence of releases noted around the transformers.

An active diesel fuel UST (Tank 25-05-2) is located just outside of the north wall. Because the new tank is double-walled, it was last tested in 1990 and is not scheduled for the next test until the year 2000 (Grumman, 1997). Grumman tank records indicate that gasoline to fuel the pump used to be stored in a steel 275-gallon UST (Tank 25-05-1) that was removed in August 1990

under NYSDEC supervision. Although the tank was observed to be corroded at the time of removal, no soil contamination was found (Selva, personal communication).

Observations: Building 25-05 was rated in Category 2 because of current and past storage tanks. There are no environmental concerns associated with these tanks. Recent tightness testing of the current UST is not necessary, as it is double-walled. There are no other environmental concerns associated with this building.

8.3.6 Building 25-11: Pump House (Well No. 6)

Observations: Building 25-11 is a one-room brick building that houses a water pump. The building is surrounded by a chainlink fence and located in a grassy vacant lot on the southwest corner of Hazel Street and South Oyster Bay Road. Three large electrical transformers were observed on the west side of the building. The pump is apparently powered electrically, as no storage tanks were observed at the building, and Grumman tank records do not indicate that there have ever been ASTs or USTs associated with this building (Grumman, 1997).

Conclusions: Building 25-11 was rated in Category 2 because of dielectric oil storage in the large electrical transformers. There are no environmental concerns associated with this building.

9.0 SUMMARY OF PHASE I EBS REVIEW ITEMS

Table 9-1 lists specific review items identified as potential environmental concerns by the records review, interviews, and visual site inspection conducted for NWIRP Bethpage in support of the Phase I EBS. These review items are associated with those units of real property on NWIRP Bethpage that were rated in Categories 5, 6, or 7. It is expected that many of these review items will be adequately addressed as part of continuing efforts under the Navy's IR Program or as part of ongoing cleanup efforts conducted by Grumman. Other items will be addressed in the Final Phase I EBS report or, if necessary, in a subsequent Phase II EBS.

TABLE 9-1
SUMMARY OF PHASE I REVIEW ITEMS
PHASE I EBS OF NWIRP BETHPAGE
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Area of Real Property	Phase I Review Item
Plant 03	Building 03-01: Western Part (For more details, see Chapter 6, Section 6.2)
Plant 03 Cafeteria	Severely corroded concrete at former freezer location. Causative agent unknown, likely a strong acid or base.
Heat Treat Area A	Condition of concrete in sump containing oily liquid could not be visually inspected during VSI. Condition of concrete under Tank 971 (contained alkali) could not be visually inspected during VSI.
Hydraulic Press Area	No closure documentation available for leaching chamber and drywell at this location before Hydraulic Press Area constructed. Condition of concrete in three equipment pits (Pits 2, 3, and 4) containing an oily residue could not be visually inspected during VSI.
Heat Treat Area B	Destination of floor drain under Tank 1273 not known. Condition of concrete in pits under several process tanks could not be visually inspected during VSI because the tanks were still in place.
Arts and Engraving Area	No review items identified.
Heat Oven Area	No review items identified.
Facilities Maintenance Area	4,000-gallon TCE tank scrapped in 1989, no additional information available. Undocumented UST on exterior lawn just outside of this area.
Old Alodine/Plating/Paint Booth Area	Severe corrosion of concrete in pit under old alodine line process tanks (tanks contained several strong acids and bases). Severe corrosion of concrete in pit under plating tanks (tanks contained several strong acids and bases). Destination of floor drain in paint booth room not known. Condition of concrete in sump containing an uncharacterized liquid in plating room could not be visually inspected during VSI.
Machining Area West of Wall 16	Several patched areas in the woodblock floor suggest that old floor pits may have been filled in this area; no information available on these suspected former floor pits.
Plant 03	Building 03-01: Eastern Part (For more details, see Chapter 6, Section 6.3)
Shipping and Receiving Area	Cracks observed in concrete floor of room formerly used to store drums of polyethylene glycol.
Alodine/Sulfuric Acid Anodize Area	No review items identified.

TABLE 9-1
SUMMARY OF PHASE I REVIEW ITEMS
PHASE I EBS OF NWIRP BETHPAGE
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Area of Real Property	Phase I Review Item
Former Autoclave Area	Cracks observed in concrete floor in area formerly used to store hazardous chemicals used in Alodine/Sulfuric Acid anodize process.
Honeycomb Pretreatment Area	Sampling conducted under IR Program identified elevated PCE concentrations in soil gas under this area.
Chromic Acid Anodize Area	Severely corroded concrete in pit that housed chromic acid anodize process tanks.
Southcentral Machining Area	Oily liquid observed in two pits containing machining equipment (Pits 16 and 18); condition of concrete in these pits could not be visually inspected during the VSI because of the liquid and the machines. Historic paint booth reported by Grumman to have existed in southerwestern part of this area.
Magneform Area	Prior history as part of Southcentral Machining Area (see reasoning provided for Southcentral Machining Area).
ID, Packaging, and Paint Booth Area	Colored water (probably paint) observed in trenches behind paint booths; condition of concrete in these trenches could not be visually inspected during the VSI because of the liquid.
Northcentral Machining Area	Oily liquid observed in four pits containing machining equipment (Pits 11, 12, 14, and 15); condition of concrete in these pits could not be visually inspected during the VSI because of the liquid and the machines.
First Aid/Northcentral Office Area	No review items identified.
Shot Peen/Old Chem Mill Area	No information available as to condition of filled pit that formerly housed chem mill process tanks before area converted to a shot peen operation. Layer of oily dirt observed in equipment pit (Pit 28); presence of dirt prevented visual inspection of the condition of concrete in the pit.
Flow Coat/Chem Mill Etch Area	No review items identified.
Sulfuric Acid Anodize Area	Severely corroded concrete in floor of pit housing the sulfuric acid anodize process tanks. Unknown liquid observed in a sump in this tank pit; presence of liquid prevented visual inspection of the condition of concrete in the sump.
Northeastern Machining Area	Oily liquid observed in several pits containing machining equipment; condition of concrete in these pits could not be visually assessed during the VSI because of the liquid and the machines. Old drawings show the former location of two paint booths in this area.

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SUMMARY OF PHASE I REVIEW ITEMS
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Area of Real Property	Phase I Review Item
Chem Mill Clean Area	Ongoing soil remediation project to the immediate east. Severely corroded concrete in floor of pit housing the sulfuric acid anodize process tanks.
Zyglo Area	Standing pool of liquid in pit that housed zyglo process tanks; condition of the pit could not be visually inspected because of the liquid.
Waste Holding Tanks East of Hydraulic Press Area	No review items identified.
Plant 03	Area North of Building 03-01 (For more details, see Chapter 6, Section 6.4)
Building 03-02: Well House #8	No review items identified.
Building 03-03: Well House #9	No review items identified.
Building 03-04: Well House #10	No review items identified.
Building 03-09: Well House #11	No review items identified.
Building 03-11: Well House #14	No review items identified.
Building 03-39: Methanol Storage Building	No review items identified.
Building 03-41: Storage Shed	No review items identified.
Building 03-52: Wellwater Treatment Building	No review items identified.
Plant 03	Area East of Building 03-01 (For more details, see Chapter 6, Section 6.5)
Plant 03 Leachfield (and Former Drum Marshalling Areas)	Soil and groundwater contamination characterized under IR Program; air sparging operation presently underway on pilot basis to remediate contaminated groundwater.
Building 03-13: Sanitation Office	Standing water observed in old settling tanks associated with former Plant 03 leachfield; condition of concrete in tanks under the water could not be visually assessed. Records indicate that cleanup effort for a removed UST (Tank 03-13-15) was not completed.
Building 03-14: Facility Maintenance Storage	No review items identified.
Building 03-15: Facility Maintenance Garage	Cracks observed in concrete floor of garage; absorbent material observed on floor during VSI suggests that this floor has a history of substantial oil spillage. Site of building may have previously been used as a sewage sludge drying bed.
Buildings 03-31 and 03-32: Bottle Gas Storage/Chemical Storage Building	Hole observed in metal frame wall and joint with concrete floor; appears to be the result of a corrosive substance.
Building 03-33: Transportation Building	No review items identified.
Building 03-38: Storage Building	Uncharacterized liquid observed in concrete sumps; the liquid prevented visual inspection of the condition of these sumps.
Building 03-17: Equipment Repair Shop	No information available on destination of floor drain.
Building 03-45: Storage Shed	Poor overall condition of wooden building used to store pesticides.
Building 03-51: Storage Shed	No review items identified.

TABLE 9-1
SUMMARY OF PHASE I REVIEW ITEMS
PHASE I EBS OF NWIRP BETHPAGE
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Area of Real Property	Phase I Review Item
Plant 03	Northeast Part of Navy Parcel (For more details, see Chapter 6, Section 6.6)
Building 03-07: Salvage Building	No review items identified.
Former Location of Old Building 03-07	No closure documentation for UST (Tank 03-07-1).
Salvage Storage Area	No review items identified. IR program concluded no further action necessary in response to low levels of contamination found in this area.
Building 03-12: Well House No. 15	No review items identified.
Building 03-34: Industrial Waste Treatment Facility (IWTF)	Tightness test for UST (Tank 03-34-4) not scheduled until later this year.
Building 03-37: Drum Storage Pad	No review items identified. Fully permitted, bermed facility.
Building 03-43: Storage Building	High volume of wastewater passed through this screen building for IWTF.
Building 03-49: Sand Shed	No review items identified. Available evidence suggests only nonhazardous storage.
Recharge Basins	No review items identified. FS completed in March 1994 stated that the basins could act as a secondary source of groundwater contamination, but that they do not represent a significant direct threat to the aquifers. No further action was recommended.
Sludge Drying Beds	PCBs and other contaminants found in surface soil at this site formerly used for application of industrial sludge to bare soil; contaminated soil excavated and report submitted to regulatory agencies.
Cemetery	No review items identified.
Wooded Area	Aerial photographs from 1950s and 1960s show that the ditch through this wooded area formerly led to what appears to be a landfill at the present site of the Bethpage Community Park and to what appears to have been a shooting range at the present site of Grumman Plant 14.
Plant 10	(For more details, see Chapter 6, Section 6.7)
Building 10-01: Laboratory	No information on condition of neutron generation equipment pit in Room 49 before it was filled. Pool of oily liquid observed in hydraulic equipment pad in Room 35; could not visually assess condition of concrete under the liquid. Anecdotal statement about flooding caused by backup of floor drain in Room 6. Corroded concrete floor in Chemical Storage Room (Room 39). Unknown condition of piping leading from several laboratories to drywells, and potential for contamination of soils and groundwater under drywells by laboratory chemicals. Lack of cleanup documentation for mercury spill in Room 38.

TABLE 9-1
SUMMARY OF PHASE I REVIEW ITEMS
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE, NEW YORK
PAGE 5 OF 7

Area of Real Property	Phase I Review Item
Building 10-02: Storage Building	Lack of documentation on underground fuel tank farm previously located at present site of Building 10-02.
Building 10-04	No review items identified (includes Building 03-XA).
Building 03-40: GAC PROM	No review items identified.
Building 03-35: Maintenance Building	No review items identified.
Plant 17	North Warehouse Complex (For more details, see Chapter 6, Section 6.8)
Building 17N-01: Warehouse 8	Heavy oil stains at a seam between the concrete floor and an exterior wall.
Building 17N-02: Warehouse 6	No review items identified.
Building 17N-03: Warehouse 4	No review items identified.
Building 17N-04: Warehouse 9	Cracks in concrete floor trenches that collected cutting oil from floor around machining operations conducted in this warehouse.
Building 17N-05: Warehouse 7	No review items identified.
Building 17N-06: Warehouse 5	No closure documentation for septic tank and leaching chambers northwest of the warehouse.
Building 17N-09: Well House	No review items identified.
Plant 17	South Warehouse Area (For more details, see Chapter 6, Section 6.9)
Building 17S-11: Warehouse 3I	No review items identified.
Building 17S-12: Warehouse 3J	No review items identified.
Building 17S-13: Warehouse 3K	No review items identified.
Building 17S-14: Warehouse 2E	No review items identified.
Building 17S-15: Warehouse 2F	No review items identified.
Building 17S-16: Warehouse 2G	No review items identified.
Building 17S-17: Warehouse 1A	No review items identified.
Building 17S-18: Warehouse 1B	No review items identified.
Building 17S-19: Warehouse 1C	No review items identified.
Building 17S-20: Warehouses D/H/L/M/N	Oily liquid observed inside pit housing machining operation; could not visually assess condition of concrete under the liquid. Former leach field located immediately east of building.
Building 17S-22: Pump House	No review items identified.
Building 17S-25: Storage Shed	No review items identified.
Buildings 17S-32 and 17S-33: Boiler Houses	No review items identified.
Building 17S-36: Water Lift Station	No review items identified.

TABLE 9-1
SUMMARY OF PHASE I REVIEW ITEMS
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE, NEW YORK
PAGE 6 OF 7

Area of Real Property	Phase I Review Item
Plant 20	South Warehouse Area (For more details, see Chapter 7)
Building 20-01: Garage	Leachfield under paved area to east of building undergoing closure under Nassau County's UIC Program. NYSDEC has not officially approve Grumman's plan to allow contaminated soils under a removed UST (Tank 20-01-1) to dissipate through natural attenuation. Aerial photographs show a number of trucks and other vehicles waiting repair parked on bare soil east of the garage. Closure documentation not available for several USTs associated with the garage.
Building 20-03: Transportation Service Building	No review items identified.
Building 20-04: Transportation Shed (Car Wash)	No review items identified.
Plant 05	Building 05-01 (For more details, see Chapter 8, Section 8.2)
Shuttle Wing Hangar	No review items identified.
OAO Hangar	Buckled linoleum floor in corridor on south side of hangar. Cause unknown.
SBMS File Storage Area	No review items identified.
Facilities Maintenance	No review items identified.
Transportation and Distribution Area	No review items identified.
Alodine Room and Paint Area	Severely corroded concrete in pit under process tanks in Alodine Room. Concrete stains that suggest that rinsewater containing paint may have overflowed and escaped to exterior area south of Paint Room.
Heat Treat/Heat Oven Area	Oil stains and rust or corrosion observed in bottom of pit under this area.
Storage Area by Heat Treat Area	Patches in the concrete floor suggest that machining pits may have been filled; no information available on the condition of these machining pits.
Structural Test Hangars	No review items identified.
Retirees Area	Prior history of area as a machining shop; no information on location or condition of machining equipment pits.
Old Model Shop	Patches in the floor suggest that old machining pits may have been filled; no information available on the condition of these pits prior to filling.
ATDC Area	Cracked concrete floor with oily stains in part of area.
EA6B Program Area	Prior history of area as a machining shop; no information on location or condition of machining equipment pits.
East Side Offices	No review items identified.
Plant 05 Cafeteria	No review items identified.
High Bay Area	Area closed off and posted as secret could not be inspected.

TABLE 9-1
SUMMARY OF PHASE I REVIEW ITEMS
PHASE I EBS OF NWIRP BETHPAGE
NWIRP, BETHPAGE, NEW YORK
PAGE 7 OF 7

Area of Real Property	Phase I Review Item
Former Plant 05 Leachfield	No documentation available as to cleanout and closure of leachpools that formerly serviced Building 05-01 and other buildings in the vicinity.
Plant 05	Other Navy Buildings (For more details, see Chapter 8, Section 8.3)
Building 05-05: Fire Pump Station	Lack of closure documentation for abandoned UST.
Building 05-08: Sewage Pump Station	Observation of what could possibly be a fill stand for an undocumented UST.
Building 05-11: Sewage Pump Station	No review items identified.
Building 25-03: Gas Repair Depot	No review items identified.
Building 25-05: Pump House (Well #5)	No review items identified.
Building 25-11: Pump House (Well #6)	No review items identified.

10.0 SUMMARY OF ENVIRONMENTAL CONDITIONS AT NWIRP BETHPAGE

This chapter summarizes the Phase I EBS findings for NWIRP Bethpage through the assignment of environmental condition rating categories to each unit of real property investigated. The system of rating categories was outlined in Section 1.4. The assignment of ratings is displayed graphically in Figures 10-1 through 10-5 as follows:

- Interior of Building 03-01: Figure 10-1
- Remainder of Navy 105-Acre Parcel, including the remainder of Plant 03, Plant 10, and Plant 17: Figure 10-2
- Plant 20: Figure 10-3
- Interior of Building 05-01: Figure 10-4
- Other Plant 05 Buildings: Figure 10-5

10.1 REAL PROPERTY ON NWIRP BETHPAGE RATED IN CATEGORY 1 (WHITE)

Category 1: Areas Where No Storage, Release, Disposal, or Migration of Hazardous Substances or Petroleum Products Has Occurred. Units of real property rated in Category 1 are suitable for transfer without further investigation or other action.

This category was assigned to areas where available evidence suggests that hazardous substances or petroleum products have not been stored, handled, spilled, or released. Areas with storage tanks, process tanks, or with documented evidence of releases of hazardous substances or petroleum products were not rated in Category 1.

Only a few areas in Building 03-01 and Building 05-01 were rated in Category 1. These include a few administrative areas as well as some shop areas where aircraft and solid aircraft parts were handled, but where large quantities of oil, fuel, or industrial chemicals were not handled. Available evidence

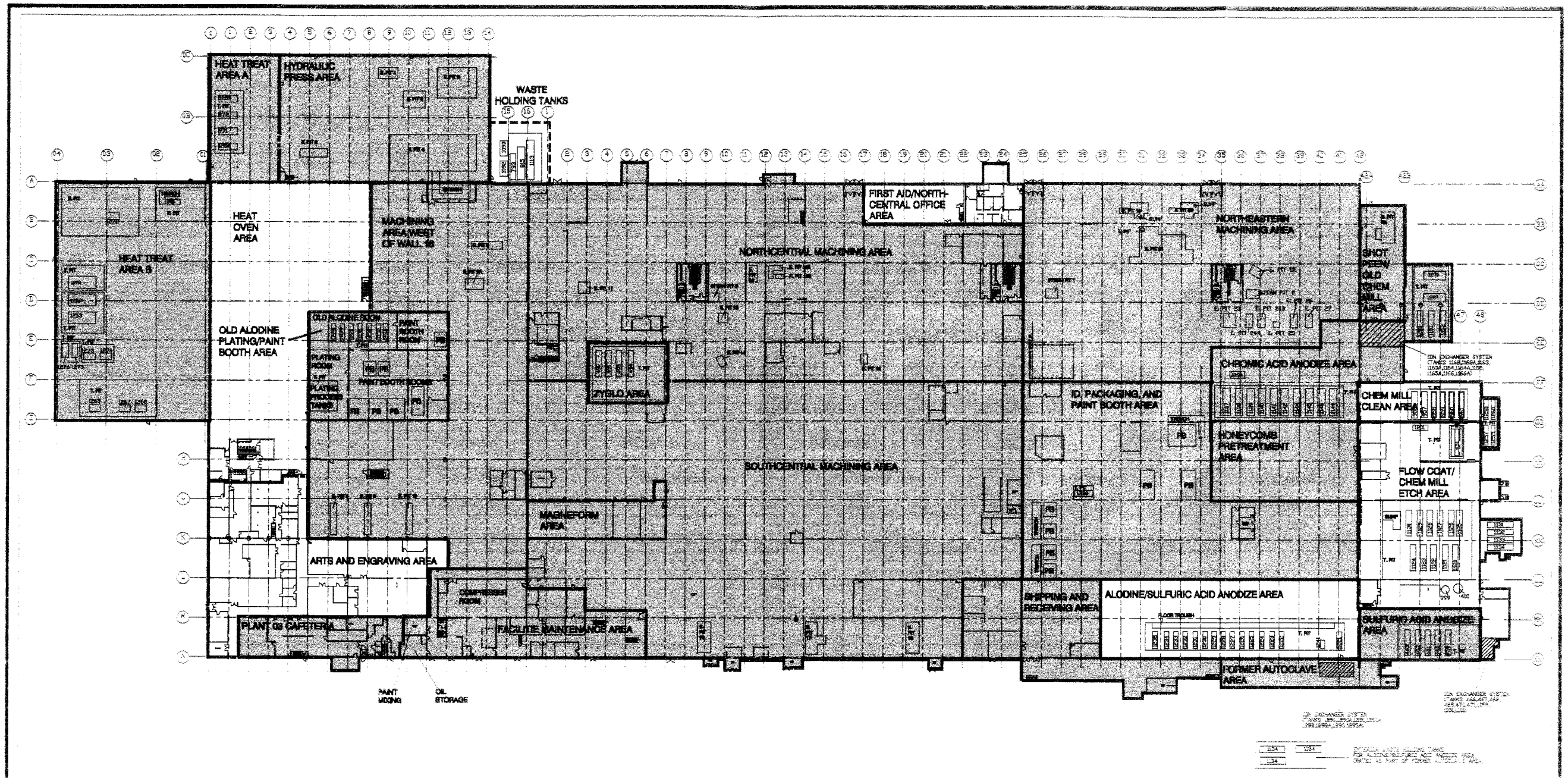
indicates that these areas have not contained storage tanks for petroleum products or process tanks containing industrial chemicals. Specific areas include:

- The Heat Oven Area in Building 03-01 (handled dry metal aircraft parts only).
- The First Aid/Northcentral Office Area in Building 03-01 (administrative use only).
- The East Side Offices in Building 05-01 (administrative use only).
- The Plant 05 Cafeteria (cafeteria use only).
- The Shuttle Wing Hangar in Building 05-01 (assembly shop for aircraft and spacecraft; significant quantities of hazardous substances or petroleum products were not handled in this area).
- The SBMS File Storage Area in Building 05-01 (currently administrative, previously an assembly shop for aircraft and spacecraft that did not handle significant quantities of hazardous substances or petroleum products).
- The Transportation and Distribution Area in Building 05-01 (offices and a general purpose loading dock only).

The upper office and administrative floors in Building 05-01 were also rated in Category 1.

Several small buildings were rated in Category 1. These primarily include wellhouses with electric (rather than diesel) powered pumps and small storage sheds used to store nonhazardous materials such as landscaping and maintenance tools. Pumphouses rated in Category 1 include the following:

- Building 03-02 (Well House No. 8)
- Building 03-04 (Well House No. 10)
- Building 03-09 (Well House No. 11)
- Building 03-11 (Well House No. 14)
- Building 03-12 (Well House No. 15)
- Building 17N-09 (Well House)
- Building 17S-36 (Water Lift Station)
- Building 05-11 (Sewage Pump Station)



Legend

1 - No Storage, Release or Disposal of Hazardous Substances or Petroleum Products

2 - Storage of Hazardous Substances or Petroleum Products, No Known Releases

3 - Known Releases of Hazardous Substances or Petroleum Products Below Action Levels

4 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response Completed

5 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response in Progress

6 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, No Response Initiated

7 - Additional Evaluation Required

SCALE IN FEET

January 29, 1998 | REV 2 | PROJECT: OTC 011

CF Braun Engineering Corporation

Figure 10-1
Environmental Condition of Property Ratings Map
Interior of Building 03-01
Phase I EBS
NWIRP Bethpage, New York

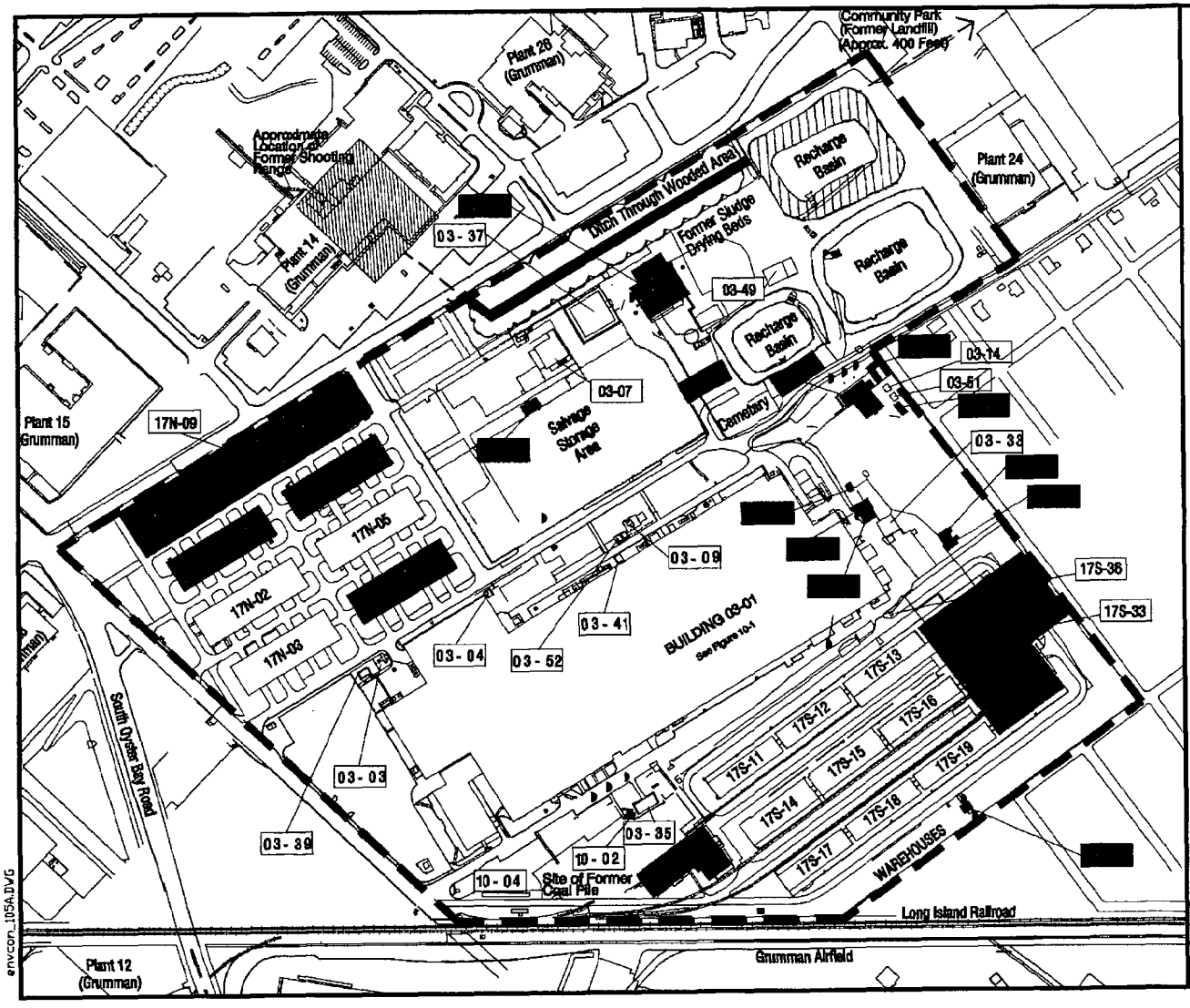


Figure 10-2

Environmental Condition of Property Rating Map Main Navy 105 Acre Parcel

Phase I EBS
NWIRP Bethpage, New York

Legend

- 1 - No Storage, Release or Disposal of Hazardous Substances or Petroleum Products
- 2 - Storage of Hazardous Substances or Petroleum Products, No Known Releases
- 3 - Known Releases of Hazardous Substances or Petroleum Products Below Action Levels
- 4 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response Completed
- 5- Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response In Progress
- 6- Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, No Response Initiated
- 7 - Additional Evaluation Required

N

0 100 200 400 800

SCALE IN FEET

January 29, 1996	REV 2	PROJECT: CTO 253

CF Braun Engineering Corporation

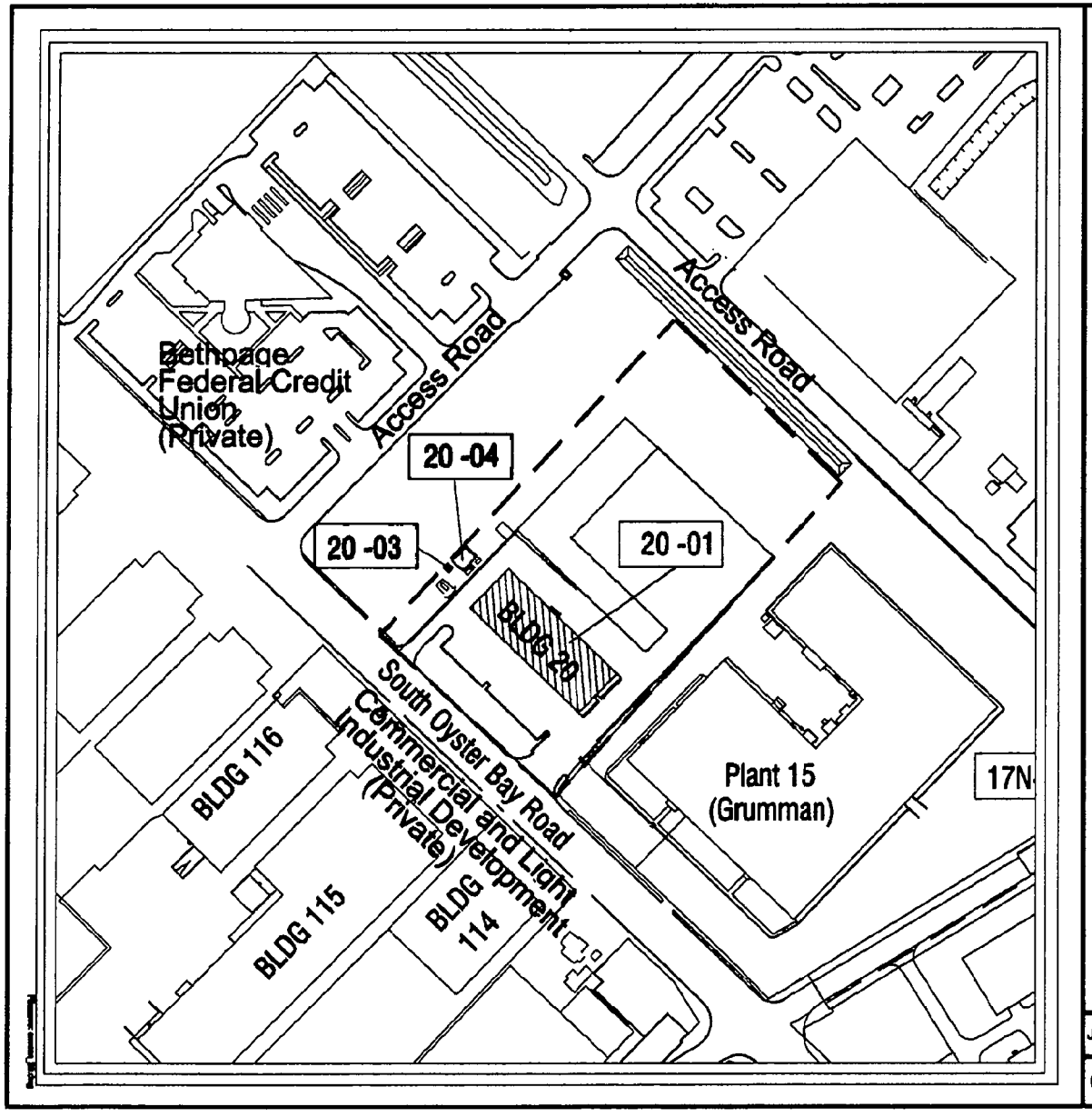


Figure 10-3

Environmental Condition of Property Rating Map
4.5 Acre Parcel (Plant 20)

Phase I EBS
NWIRP Bethpage, New York

Legend

1 - No Storage, Release or Disposal of Hazardous Substances or Petroleum Products

2 - Storage of Hazardous Substances or Petroleum Products, No Known Releases

3 - Known Releases of Hazardous Substances or Petroleum Products Below Action Levels

4 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response Completed

5- Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response In Progress

6- Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, No Response Initiated

7 - Additional Evaluation Required

0 200 400 600 800

SCALE IN FEET

January 29, 1998	REV 2	PROJECT: CTO 283

CF Braun Engineering Corporation

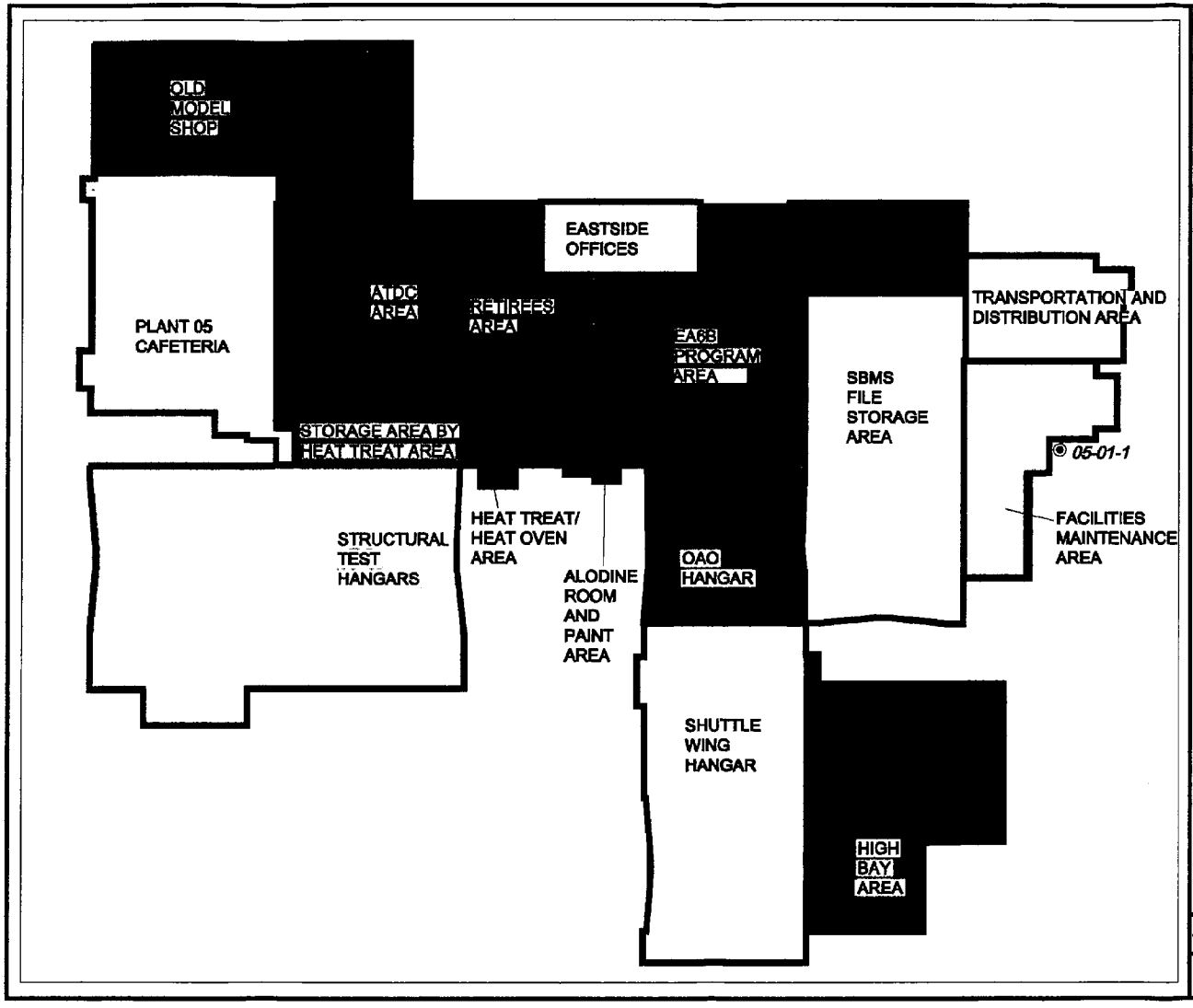


Figure 10-4

Environmental Condition of Property Rating Map
Interior of Building 05-01

Phase I EBS
NWIRP Bethpage, New York

Legend

- 1 - No Storage, Release or Disposal of Hazardous Substances or Petroleum Products
- 2 - Storage of Hazardous Substances or Petroleum Products, No Known Releases
- 3 - Known Releases of Hazardous Substances or Petroleum Products Below Action Levels
- 4 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response Completed
- 5- Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response In Progress
- 6- Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, No Response Initiated
- 7 - Additional Evaluation Required

N

0 25 50 100 150
SCALE IN FEET

January 29, 1998	REV 2	PROJECT: CTO 283

CF Braun Engineering Corporation

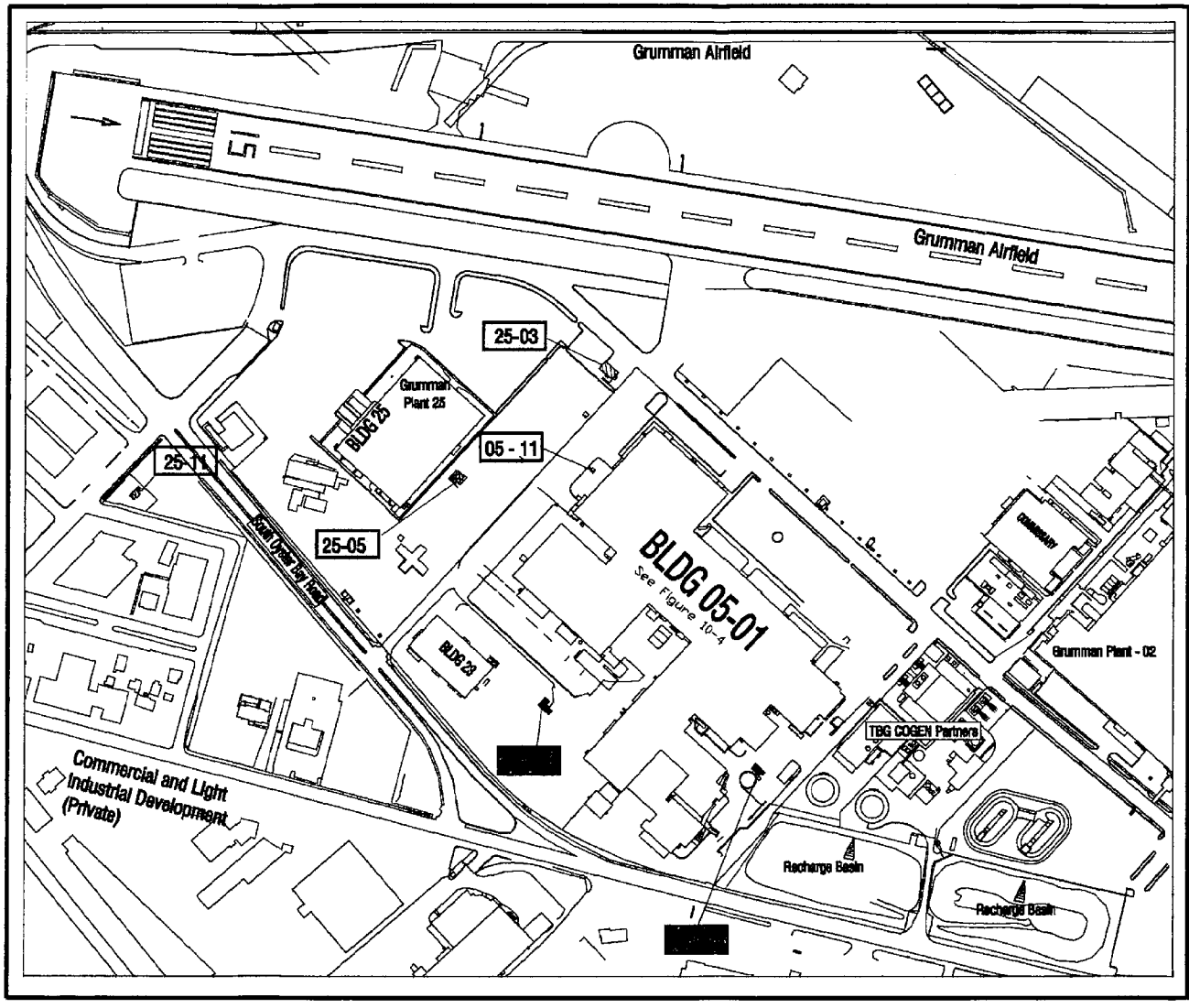


Figure 10-5

Environmental Condition of Property Rating Map Plant 5 and Vicinity

Phase I EBS
NWIRP Bethpage, New York

Legend

- 1 - No Storage, Release or Disposal of Hazardous Substances or Petroleum Products
- 2 - Storage of Hazardous Substances or Petroleum Products, No Known Releases
- 3 - Known Releases of Hazardous Substances or Petroleum Products Below Action Levels
- 4 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response Completed
- 5- Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response In Progress
- 6- Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, No Response Initiated
- 7 - Additional Evaluation Required

Note: The former plant 05 leachfield located under the parking lot between Building 05-01 and South Oyster Bay Road, is rated in Category 7 but not shown on this map.

N

0 100 200 400 600

SCALE IN FEET

January 29, 1998	REV 2	PROJECT: CTO 283

CF Braun Engineering Corporation

A Wellwater Treatment Building north of Building 03-01 (Building 03-52) was also rated in Category 1. This building contains electrical pumps and an air stripper. Pumphouses with diesel powered pumps, or pumphouses with large electrical transformers, were rated in Categories 2 or 7, as appropriate.

Storage buildings rated in Category 1 include the following:

- Building 03-41 (Storage Shed)
- Building 03-14 (Facility Maintenance Storage)
- Building 03-51 (Storage Shed)
- Building 03-49 (Sand Shed)
- Building 17S-25 (Storage Shed)

The housekeeping was poor at the Sand Shed (Building 03-49), and roadsalt and fertilizer appear to have contacted soil outside of the shed. But, the shed was rated Category 1 because roadsalt and fertilizer are not hazardous substances.

Several of the warehouses in the North and South Warehouse Complexes were rated in Category 1. They include:

- Building 17N-2 (Warehouse 6)
- Building 17N-3 (Warehouse 4)
- Building 17N-5 (Warehouse 7)
- Building 17S-11 (Warehouse 3I)
- Building 17S-12 (Warehouse 3J)
- Building 17S-14 (Warehouse 2E)
- Building 17S-15 (Warehouse 2F)
- Building 17S-17 (Warehouse 1A)
- Building 17S-18 (Warehouse 1B)
- Building 17S-19 (Warehouse 1C)

The largest warehouse in the South Warehouse Complex (Building 17-20) was not rated in Category 1 because of a machining pit in the building, but two small attached buildings that housed boilers for the warehouse (Buildings 17S-32 and 17S-33) were rated in Category 1.

Other small buildings rated in Category 1 include:

- Building 03-40 (GAC PROM)
- Building 10-04 (Scale House)
- Building 03-33 (Transportation Building)
- Building 03-35 (Maintenance Building)

Building 03-40 is a new office building constructed over a parking lot in 1985. It has been used for administrative purposes only. Building 10-04 is a scale house in the southwestern part of the Navy parcel. It was used to weigh trucks that shipped in coal for use in Building 03-01 when the old coal boilers were in operation. Rated together with the scale house is a small wooden guard booth (Building 03-XA). Building 03-33 is a garage used to service Grumman maintenance vehicles used at Plant 03. It was rated in Category 1 even though small quantities of oil and gasoline may have leaked onto the floor. The building is of modern construction with a sound concrete floor, and it has had no associated storage tanks.

Most exterior land areas such as lawns and parking lots were assigned to Category 1, with exceptions such as the former Plant 03 leachfield, the former sludge drying beds, the recharge basins, and the Salvage Storage Area. The wooded area north of the Industrial Waste Treatment Plant was rated in Category 1, except for a pronounced ditch through the area which was rated in Category 7. The old cemetery north of Building 03-01 was also rated in Category 1.

10.2 REAL PROPERTY ON NWIRP BETHPAGE RATED CATEGORY 2 (BLUE)

Category 2: Areas Where Only Storage of Hazardous Substances or Petroleum Products Has Occurred. Units of real property rated in Category 2 will be transferred without further investigation or other action. The Navy will disclose relevant information to the recipient(s) of the properties.

This category was assigned to areas where available evidence suggests that hazardous substances or petroleum products have been stored or handled in more than minimal quantities, but where there is no available evidence that spills or releases have occurred.

Areas inside Buildings 03-01 and 05-01 that were rated in Category 2 include:

- The Arts and Engraving Area in Building 03-01.
- The Alodine/Sulfuric Acid Anodize Area in Building 03-01.

- The Facilities Maintenance Area in Building 05-01.
- The Structural Test Hangars in Building 05-01.

The Arts and Engraving Area in Building 03-01 housed several process tanks used in printed circuit board manufacture and arts and photography operations, and the Alodine/Sulfuric Acid Anodize Area in Building 03-01 housed process tanks used in chemical treatment of aircraft parts. Although leakage or spills from these process tanks likely occurred in both areas, the concrete floors in both areas (including pits that housed the process tanks) appeared to be sound. Thus no pathway appeared to exist whereby spilled liquids could contact soil and other environmental media under the floor or outside of the building.

The Facilities Maintenance Area in Building 05-01 was rated in Category 2 because a waste oil drum was used to collect waste oil from maintenance equipment. Waste oil drums were also used to collect waste oil from aircraft undergoing stress tests in the Structural Test Hangars, and oily floor stains were observed. In both instances there was no available evidence of leakage or other releases from the waste oil drums.

The Drum Storage Pad (Building 03-37) was rated in Category 2. The pad is used to store drums of hazardous waste generated in Plant 03. This bermed concrete storage pad was constructed in 1982 and appeared to be in good condition during the VSI. It thus did not appear to provide a pathway for contamination of surrounding environmental media.

Several small buildings were rated in Category 2 because they included storage tanks. Building 03-03 (Well House No. 9) included a diesel fuel UST used to provided fuel for a diesel-powered water pump. Building 03-07 (Salvage Building) included a No. 2 fuel oil UST. Both USTs had recently passed tightness tests. Building 25-03 (Gas Repair Depot) included an AST that stored No. 2 fuel oil. Building 03-39 (Methanol Storage Building) included an aboveground tank that stored methanol, a hazardous substance, for use in Building 03-01. Two small buildings at Plant 20, Buildings 20-03 and 20-04, included an associated fuel oil AST (Building 20-3) and waste oil UST (Building 20-04). Building 25-05 (Pump House Well No. 5) included an active double-walled fiberglass UST that supplied diesel fuel to the pump. There was no available evidence of leaks from any of these storage tanks.

Two of the warehouses in the South Warehouse Complex were rated in Category 2 because they housed large electrical transformers containing dielectric oil. They include Warehouse 3K (Building 17S-13) and Warehouse 2G (Building 17S-16). Building 25-11 (Pump House Well No. 6) located in the vicinity of Plant 05 was also rated in Category 2 because it housed large electrical transformers

containing dielectric oil. There was no available evidence of releases from these electrical transformers.

10.3 REAL PROPERTY ON NWIRP BETHPAGE RATED CATEGORY 3 (LIGHT GREEN)

Category 3: Areas of Contamination Below Action Levels. Units of real property rated in Category 3 will be transferred without further investigation or other action. The Navy will disclose relevant information to the recipient(s) of the properties.

Four areas on NWIRP Bethpage were rated in Category 3. They are the Salvage Storage Area (including fixture boneyard), located east of the North Warehouse Complex and west of the Drum Storage Pad; the recharge basins located in the northwestern part of the Navy 105-Acre Parcel; the Flow Coat/Chem Mill Etch Area in Building 03-01, and the exterior pad outside of the Hydraulic Press Area that held several waste tanks associated with Zyglo penetrant testing and other activities in Building 03-01. Low levels of contamination were identified in the first two areas based on sampling efforts conducted as part of the Navy's IR Program. But reports issued under the IR Program did not recommend further action in response to the contamination. Only low levels of contamination below NYSDEC action levels were identified in concrete chips and soil samples taken from pits in the Flow Coat/Chem Mill Etch Area. The NYSDEC approved filling those pits prior to issuance of the Draft Phase I EBS in October, 1997 (Farkas, 1997). The underground Zyglo waste tanks were removed under NYSDEC supervision in June 1997.

10.4 REAL PROPERTY ON NWIRP BETHPAGE RATED CATEGORY 4 (DARK GREEN)

Category 4. Areas of Known Contamination Where Remedial or Removal Actions Have Been Taken. Units of real property rated in Category 4 will be transferred without further investigation or other action. The Navy will disclose relevant information to the recipient(s) of the properties.

No areas on NWIRP Bethpage were rated in Category 4.

10.5 REAL PROPERTY ON NWIRP BETHPAGE RATED CATEGORY 5 (YELLOW)

Category 5. Areas of Known Contamination Where Remedial or Removal Actions Are Underway. Units of real property rated in Category 5 will not be transferred until the necessary remedial or removal actions are determined to be complete in accordance with all applicable regulations. The Navy will disclose relevant information to the recipient(s) of the properties.

Four areas on NWIRP Bethpage were rated in Category 5. PCB-contaminated surface soils were excavated from the site of the former sludge-drying beds in the northwestern part of the 105-Acre Parcel in 1996 as part of the IR Program. The Navy is still awaiting concurrence from NYSDEC that no further action is necessary. The Former Drum Marshalling Areas and Plant 03 Leachfield east of Building 03-01 were rated in Category 5 because the Navy has initiated a pilot project for remediating contaminated groundwater using air sparging. A comprehensive remedial effort will be undertaken in this area, following completion of the pilot project, to clean up remaining contamination from VOCs, SVOCs, metals, and PCBs.

The Chem Mill Clean Area in Building 03-01 was rated in Category 5 because Grumman had initiated a soil cleanup action immediately outside of the east wall of this area. This action had not yet been approved as complete by NYSDEC as of October 1997. The garage and exterior areas in Plant 20 were rated in Category 5 because the leachfield east of the building was undergoing closure under Nassau County's UIC Program as of October 1997.

10.6 REAL PROPERTY ON NWIRP BETHPAGE RATED CATEGORY 6 (RED)

Category 6. Areas of Known Contamination Where No Remedial or Removal Actions Have Yet Been Initiated. Units of real property rated in Category 6 will not be transferred until the necessary remedial or removal actions are determined to be complete in accordance with all applicable regulations. The Navy will disclose relevant information to the recipient(s) of the properties.

No areas on NWIRP Bethpage were rated in Category 6.

10.7 REAL PROPERTY ON NWIRP BETHPAGE RATED CATEGORY 7 (GRAY)

Category 7: Areas Requiring Further Investigation. Units of real property rated in Category 7 will not be transferred until the necessary investigation is completed, along with any remedial or removal actions identified as necessary. The Navy will disclose relevant information to the recipient(s) of the properties.

This category was assigned to areas where available evidence was not adequate to determine whether hazardous substances or petroleum products have been spilled or released to soils, groundwater, or other environmental media. For an area to be assigned to this category, available evidence had to indicate that hazardous materials or petroleum products were stored or handled at the

area, and that a pathway potentially existed whereby these substances could have reached environmental media.

Most of the areas in Buildings 03-01 and 05-01 that were rated in Category 7 were machining areas or areas where the concrete in pits under process tanks was severely corroded. Machining areas in Building 03-01 that were rated in Category 7 include:

- The Machining Area West of Wall 16
- The Southcentral Machining Area
- The Northcentral Machining Area
- The Northeastern Machining Area
- The Magneform Area

All of these machining areas had woodblock floors over concrete. Floor pits in these areas housed machining equipment. The equipment had been removed from most of the machining areas prior to the May 1997 VSI, but it remained in a few of the areas (e.g. the Northeastern Machining Area). Substantial pools of cutting oil covered parts of the floor in these latter areas, and an oily residue remained on the floor. An oily liquid was also observed in the pits where machining equipment remained.

Additionally, the floors in many of the machining areas appeared to be patched, and no information was available as to the origin of the patches. The patches could correspond to old machining equipment pits that have been filled. If so, those pits likely accumulated oily liquid during machining operations, and if cracked or deteriorated could have represented a pathway for contamination of underlying soil.

The following machining areas in Building 05-01 were rated in Category 7 for the same reasons as the machining areas in Building 03-01:

- The ATDC Area
- The Old Model Shop

Several other areas in Building 05-01 were rated in Category 7 because they were formerly machining areas. These areas have been remodeled into administrative operations that represent no potential

environmental concern, but no information is available as to the condition of the shop floors and machining equipment pits prior to the conversion. These areas include:

- The Storage Area by the Heat Treat Area
- The Retirees Area
- The EA6B Program Area

The Magneform Area in Building 03-01 was likewise rated in Category 7. It did not itself represent a potential environmental concern, but it was remodeled from part of the Southcentral Machining Area.

Areas where severely corroded concrete was observed in floor pits that formerly housed process tanks include:

- The Old Alodine/Plating/Paint Booth Area in Building 03-01
- The Chromic Acid Anodize Area in Building 03-01
- The Sulfuric Acid Anodize Area in Building 03-01
- The Alodine Room and Paint Area in Building 05-01

The tanks that were formerly housed in all of these areas contained strong acids or bases capable of corroding concrete. Although the concrete was not visibly corroded through to bare soil in any of these locations, the corrosion had eliminated several inches of surface concrete and left a sandy-textured surface. The depth to which the concrete had deteriorated was not apparent. In each case, the deteriorated material appeared highly likely to have provided a pathway whereby the corrosive acids and bases could have seeped through interstices in the concrete and reached the soil below.

One area in Building 03-01, the Shot Peen/Old Chem Mill Area, was rated in Category 7 because it formerly contained a concrete floor pit that housed process tanks used in the old chem mill operation (similar to the Chem Mill Etch process). This pit was filled with concrete when the area was remodeled in the mid-1980s to establish the shot peen operation. There is no available information on the condition of the concrete in the pit before it was filled. But based on the corrosion observed in the pit housing the Chem Mill Etch process tanks, the expectation is that the old pit was similarly corroded.

Several areas in Building 03-01 were rated in Category 7 because the condition of floor pits could not be visually evaluated because of standing liquid in the pit. These areas include:

- Heat Treat Area A
- The Hydraulic Press Area
- Heat Treat Area B
- The Identification, Packaging, and Paint Booth Area
- The Zyglo Area

The liquids were typically oily black or colored. The presence of the liquid prevented a visual assessment of the condition of the pits. Any cracks or corrosion in the pits could provide a pathway allowing contamination of underlying soils by the liquid. It may possible to rule out further investigation of these areas once the pits are dried and cleaned, if subsequent visual inspection reveals that the pits are in sound condition. Building 17S-20 in the South Warehouse Complex, which includes a small machining pit that contained an oily liquid, was rated in Category 7 for the same reasons.

Other areas in Buildings 03-01 and 05-01 were rated in Category 7 for miscellaneous reasons. They include:

- The Plant 03 Cafeteria in Building 03-01 (corroded concrete under a former freezer location).
- The Facilities Maintenance Area in Building 03-01 (lack of information on the former location of an exterior UST.
- The Shipping and Receiving Area in Building 03-01 (cracked concrete floor in room previously used to store polyethylene glycol).
- The Former Autoclave Area in Building 03-01 (cracked concrete floor in area used to store hazardous chemicals).
- The Honeycomb Pretreatment Area in Building 03-01 (information from an earlier study under the Navy's IR Program suggests that further investigation is necessary).

- The Heat Treat/Heat Oven Area in Building 05-01, because the bottom of an oil stained pit under the former location of the heat treat oven appeared to be rusted or corroded.

- The OAO Hangar in Building 05-01 (buckled linoleum in part of the hangar).

- The High Bay Area in the southern part of Building 05-01 (rooms posted as secret could not be inspected by the preparers of the EBS).

- The former Plant 05 leachfield, located under the parking lot west of Building 05-01.

Building 03-15 (Facility Maintenance Garage) was rated in Category 7 because the garage floor was cracked and oil-stained. This rating also reflects evidence of a sludge bed formerly located at the site of this building before the building was constructed. Two other small buildings were rated in Category 7 because they were in poor structural condition and have been used to hazardous chemicals. They are Building 03-45 (a shed used to store pesticides) and Buildings 03-31 and 03-32 (a building used to store bottled gas and miscellaneous chemicals).

Some small buildings were rated in Category 7 because they included sumps or pits containing uncharacterized liquids. These include Building 03-13, where a liquid was observed in abandoned settling tanks; Building 03-38, a shed formerly used to store hazardous chemicals and where a liquid was observed in two concrete sumps; and Building 03-08, a storage shed where an oily liquid was observed in a floor trench. The presence of the liquid in these pits, sumps, and trenches prevented a visual assessment of their condition. Any cracks or corrosion in these features could provide a pathway allowing contamination of underlying soils by the liquid. It may possible to rule out further investigation of these areas once the pits are dried and cleaned, if subsequent visual inspection reveals that the pits are in sound condition.

Several other small buildings were rated in Category 7 for miscellaneous reasons. They include:

- Building 03-17 (Equipment Repair Shop), because the destination of a floor drain could not be determined.

- Building 03-34 (IWTF), because an active UST had not recently been subjected to a tightness test. This tank is scheduled for testing early in 1998, and if it passes there will be no other environmental concerns associated with the IWTF.

- Building 03-43 (Storage Building), because it served as the screen building for industrial wastewater sent to the IWTF from Building 03-01.

- Building 10-01 (Laboratory), because of a floor corrosion in a laboratory room, a backed-up floor drain, and lack of information of the condition of piping leading from laboratory rooms to drywells.

- Building 10-02 (Storage Building), because an underground fuel tank farm used to be located at the site.

- Building 17N-1 (Warehouse 8), because heavy oil stains were observed at a seam between the concrete floor and an exterior masonry wall.

- Building 17N-4 (Warehouse 9), because cracks were observed in oil-stained floor trenches at the former site of a machining operation

- Building 17N-6 (Warehouse 5), because their was no available information on the closure of an associated septic system.

- Building 17S-22 (Pump House), because of the lack of closure documentation for an associated UST.

- Building 05-08 (Sewage Pump Station), because what appeared to possibly be a fill stand for an undocumented UST.

- Building 05-05 (Fire Pump Station) because an associated UST lacked recent tightness test documentation.

Two land areas were also rated in Category 7. These include the former location of the old Salvage Building (old Building 03-07), where closure documentation is not available for removed USTs; and a ditch through the wooded area north of the IWTF, which aerial photographs showed leading to potential offsite sources of contamination.

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