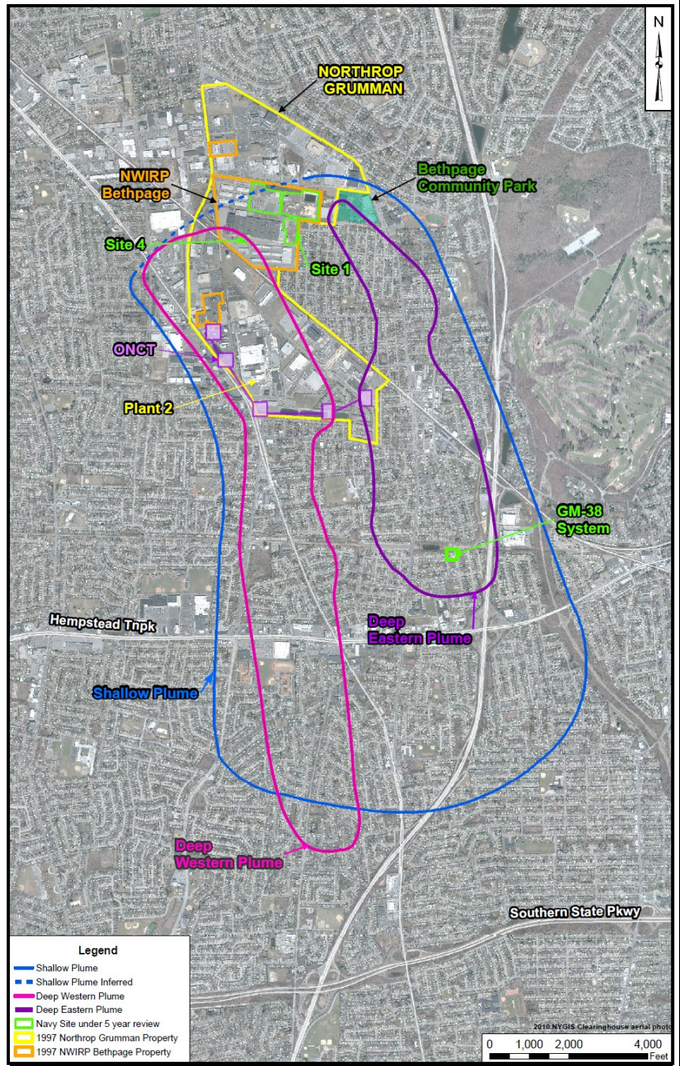
To address the OU2 contamination, a conceptual site model was developed which identifies the VOCs as being found in four groundwater areas that vary by location, depth, and constituent. The groundwater areas include the shallow plume, the deep eastern plume, the GM-38 hotspot, and the deep western plume.

In April 2003, the Navy, with concurrence from NYSDEC, issued its ROD under CERCLA for the OU2 groundwater cleanup. The selected remedy included:

- Institutional Controls to restrict groundwater use at the former NWIRP
- Groundwater Remedial Program to treat off-property hotspot groundwater
- Public Water Supply Protection Program to protect the drinking water supply

An additional Navy fact sheet provides details of the history and cleanup actions for the NWIRP Bethpage OU2 groundwater contamination. The fact sheet includes a discussion of the findings of the 2012 Evaluation of Alternatives which identifies and evaluates options to improve or optimize current cleanup actions for the off-site groundwater contamination.



OU2 Groundwater Plumes

PUBLIC INVOLVEMENT

The Navy hosts Restoration Advisory Board (RAB) meetings twice a year for NWIRP Bethpage. Since 1999, 33 RABs have been held. The RAB is a forum for exchange of information between the Navy and the local community on the NWIRP Bethpage ERP activities. The RAB includes community members, water districts, Navy representatives, and representatives from NYSDEC, NYSDOH and NCDOH. The NWIRP Bethpage RAB meetings are open to the public, and the Navy is currently looking for additional community members interested in joining the RAB.

FOR MORE INFORMATION

Copies of all official environmental program documents are available for review at an information repository located at Bethpage Public Library, 47 Powell Avenue, Bethpage, NY 11714, (516) 931-3907.

Additional information on the NWIRP Bethpage ERP is available online at http://go.usa.gov/DyXF

For more information on the NWIRP Bethpage Environmental Restoration Program, please contact: Public Affairs Officer, NAVFAC Mid-Atlantic, 9742 Maryland Ave, Norfolk VA 23511-3095 or thomas.kreidel@navy.mil.

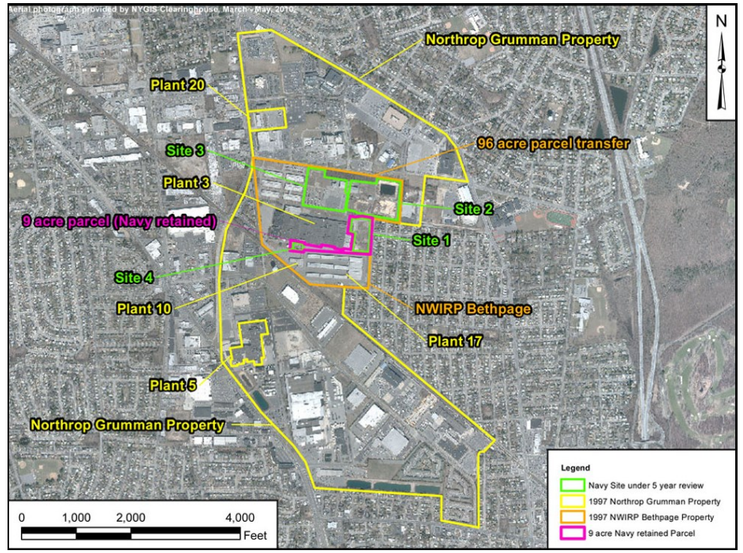
Naval Weapons Industrial Reserve Plant Bethpage (Former Grumman Plant)

Environmental Restoration Program

Sites Status Fact Sheet April 2014

INTRODUCTION

Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage was a 109-acre government-owned, contractor-operated facility under the jurisdiction of the Naval Air Systems Command (NAVAIR) and its predecessor commands. It was operated by Northrop Grumman (NG) and its predecessors, including Grumman Aircraft Engineering Corporation ([Grumman] and its successor Northrop Grumman [NG]) from 1942 until manufacturing operations ceased in 1996. The NWIRP's primary mission was the research prototyping, testing, design engineering, fabrication, and primary assembly of military aircraft.



In 1998, NG returned the NWIRP Bethpage land to Department of the Navy (Navy) control. By February 2008, the Navy transferred most of the property to Nassau County for economic redevelopment and the Navy retained a 9-acre portion to complete environmental investigation and cleanup activities under the Navy's ***Environmental Restoration Program (ERP)***.

The Navy's ERP conducts its environmental cleanup work for the former NWIRP under the ***Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)***, the Resource Conservation and Recovery Act, and the Defense Environmental Restoration Program . The Navy is the lead agency for the CERCLA cleanup. ***The New York State Department of Environmental Conservation (NYSDEC)***, with assistance from the ***New York State Department of Health (NYSDOH)***, is the lead state agency providing regulatory support for the Navy. In addition, the United States Geological Survey contributes technical support on groundwater issues.

The NWIRP Bethpage ERP includes four sites on the former NWIRP property and corresponding groundwater contamination, some of which has moved off Navy property. The four ER sites are described below in this fact sheet. Many NWIRP Bethpage ERP documents and summary information reference Operable Units (OUs). OUs are assigned when a cleanup strategy has been selected by the Navy in a ***Record of Decision (ROD)***. The environmental cleanup activities and decisions for sites 1-3 are addressed under the Operable Unit 1 ***Record of Decision (ROD)*** while Site 4 will be addressed under a separate OU. A separate fact sheet will cover groundwater contamination referred to as ***Operable Unit 2 (OU2)***.

SITE 1—FORMER DRUM MARSHALING AREA

Site 1 originally consisted of two pads that were used to store drums containing waste materials from operations at Plant No. 3 and potentially other sources at the facility. The waste drums reportedly contained chlorinated and non-chlorinated solvents, and liquid cadmium and chromium wastes. Electrical transformers containing ***polychlorinated biphenyls (PCBs)*** and PCB-filled production equipment were also stored at the site. In addition, underlying most of Site 1 is

approximately 120 abandoned leaching wells that, until about 1968 received sewage discharge from Plant No. 3. The leaching wells are currently filled with soil.


Former Drum Marshalling Area—Current Photo

Volatile Organic Compounds (VOCs) **in soil and shallow groundwater:** VOCs are a group of chemicals that evaporate easily into the air. VOCs were used historically as solvents and degreasers at NWIRP Bethpage. The 1995 Navy/NYSDEC ROD documents cleanup plans and requirements for remediating VOCs at Site 1. In accordance with the ROD, a system to extract VOCs from the soil and shallow groundwater was used from 1998 until 2002 and successfully removed approximately 4,520 pounds of VOCs. Consequently, VOC concentrations in shallow groundwater underlying Site 1 were reduced by approximately 95%. These reductions achieved the cleanup goals, and the system and all Site 1 structures were demolished and removed in 2009.

PCBs, *Polycyclic Aromatic Hydrocarbons (PAHs)*, and metals in soil: The 1995 ROD included cleanup plans to address PCB contamination in the soil at Site 1. The cleanup plans were based on estimates that the PCB contamination extends down 7 feet deep and 1,400 cubic yards of soil would require cleanup action. Data obtained after the ROD indicates the original estimate of PCB contamination was incorrect. Post-ROD data indicates PCB contamination at Site 1 goes down approximately 65 feet deep below the ground surface and extends 15 feet into the groundwater. Additionally, PAHs and metals were also found in the soil. Currently, an estimated 78,100 cubic yards of soil needs cleanup action at Site 1, and the Navy is evaluating options for addressing this contamination. A ROD amendment or new ROD formalizing Navy plans to address PCB-, PAH-, and metal-contaminated soil and residual VOC-contaminated soil (if any) will be completed by 2016.

VOCs in soil vapor:
Because VOCs evaporate easily, they can move out of contaminated soil and groundwater and into overlying buildings in a process known as ***vapor intrusion (VI)***. The Navy conducted a VI investigation for Site 1 in 2008 after NYSDOH issued finalized guidance for evaluating soil vapor intrusion into residential homes. Sampling results confirmed the presence of VOCs in the soil gas (space between soil particles) at the property line, approximately 70 feet from off-site homes.

From January through April 2009, additional soil vapor intrusion samples were collected in the residential neighborhood located east and adjacent to Site 1. A total of 18 homes were evaluated during the investigation activities which found VI in several of the 18 homes sampled. As an interim measure, air purification units were placed into 15 homes to treat any potential vapors that may have entered the homes. In addition, six sub-slab depressurization systems were installed in offsite residences in May 2009 to prevent further VI from occurring.

Between October and December 2009 a fence line soil vapor extraction containment system was installed on Navy property with the goal of preventing further off-property migration of VOC-contaminated vapors and removing existing off-property VOC-contaminated vapors to the extent practical. Operation of the system started in late December 2009 and continues.

Based on an evaluation and successful operation of the soil vapor extraction containment system, the Navy determined that the air purifying units and sub-slab depressurization systems in the residential houses could be removed. NYSDOH and NYSDEC concurred with this evaluation in July 2011, and the air purifying units and sub-slab depressurization systems were removed in January 2012. The effectiveness of the containment system is continuing to be monitored, with operation and monitoring continuing until at least 2016.

SITE 2—RECHARGE BASINS

The Site 2 recharge basins are deep, man-made impoundments which were originally designed to prevent flooding by allowing storm water run-off, cooling water from air conditioning units, and rinse waters from NG's operations to collect and slowly soak down through the soil into the groundwater. The Recharge Basins site is located in the northeast corner of the Navy's former property and is enclosed by fencing. Sludge drying beds were also present on the northwest portion of the site. Sludge from NG's Plant 2 industrial waste treatment facility was reported to have been dewatered in these beds before being disposed off-site by NG.


Recharge Basin— Current Photo

Investigations in the early 1990s found PCBs in the soil, and in 1996 over 7,000 tons of PCB-contaminated soils were removed. Additionally, a soil and gravel cover was completed in 2001 to meet the cleanup goals finalized in the 1995 ROD. In 2008, the Site was transferred to Nassau County with legal land use controls in place requiring the maintenance of the cap and placing restrictions on how the property can be used in the future. The three recharge basins continue to receive storm water runoff from NWIRP Bethpage and former NG property to the north.

SITE 3—SALVAGE STORAGE AREA

The Salvage Storage Area is located north of Plant No. 3 and west of Site 2. It historically consisted of a parking area, salvage storage area, and three warehouses. Fixtures, tools, and metallic wastes including aluminum and titanium scraps and shavings were stored on the site from the early 1950s through 1969. While in storage, cutting oils dripped from some of these materials. Currently, the site is partially covered with asphalt.


Former Salvage Storage Area—Current Photo

Environmental investigations found low levels of VOCs in the soil. A cover was placed over the site consistent with cleanup plans documented in the 1995 ROD, and access was restricted to the site through fencing and security. Site 3 was transferred to Nassau County in 2008. Legal restrictions limiting the future use of the site were included in the transfer documents.

SITE 4—FORMER UNDERGROUND STORAGE TANKS (USTs)

Site 4 is located south of Plant No. 3 and west of Site 1. USTs containing number 6 Fuel Oil, a tar like substance,were reportedly removed sometime between 1980 and 1984. Environmental concerns for this area were first identified based on soil and groundwater investigations conducted in 1997 and 1999. Petroleum products were found in the soil near the water table and free petroleum product was found in the groundwater.

Two studies of cleanup options for the soil and groundwater at Site 4 have been conducted. From 2004 to 2006, a closed-loop bioreactor (CLB) pilot-scale system study was conducted that used microbes to degrade the petroleum The system was shut down in the spring of 2006 since the system provided limited effectiveness and additional action would be required. Subsurface soil samples and groundwater samples were collected in 2010 and 2011 to further delineate the PAH and petroleum contamination. A Feasibility Study (FS) which compares different cleanup options for the site was prepared in 2013. The Navy is currently preparing a Proposed Remedial Action Plan for public comment that should be available in spring 2014.

OU2 GROUNDWATER

The VOCs in the groundwater resulted from the historic storage and/or disposal practices of NG in operating the facilities at the former NWIRP and adjacent former NG-owned properties. Over the last several decades, VOC-contaminated groundwater that originated from these facilities moved off-property to the south and generally downward as a result of natural and pumping induced groundwater flow. The Navy estimates the VOC contamination covers approximately 3,000 acres, but it is not distributed evenly throughout the area. Instead of a single, continuous plume, there are multiple widely dispersed plumes or "fingers", meaning VOCs are present in the groundwater at different concentrations and different depths in different areas of OU2. Because of the size, depth, and variable distribution of VOCs, mapping, management, and cleanup the groundwater are very challenging. Additionally, because of the history of commercial and industrial activity in the area, other sources, including the Bethpage Community Park OU3 Site, the Hooker Ruco Superfund Site, Bethpage Landfill Site, and potentially dry cleaners and gasoline stations, are likely or potentially contributing contamination to OU2.