



Naval Industrial Reserve Ordnance Plant (NIROP) Superfund Site

This Minnesota Pollution Control Agency (MPCA) fact sheet about the Naval Industrial Reserve Ordnance Plant (NIROP) Superfund Site (the NIROP Site), located in Fridley, Anoka County, Minnesota:

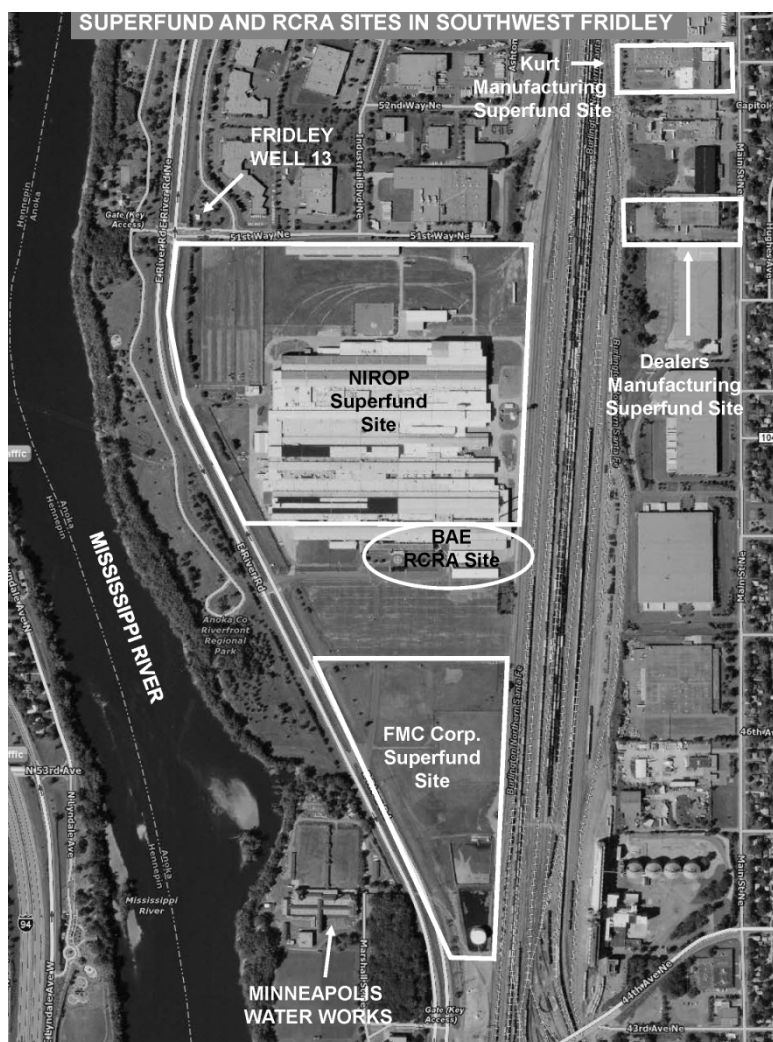
- summarizes historical and investigation activities conducted at the site during the remedial investigation,
- discusses the risks to human health and the environment that may be present at the site, and
- indicates the current status of the site.

Where is the site?

The NIROP Site is in Fridley, about 0.6 mile south of Interstate Highway 694 at the intersection of 51st Way Northeast and East River Road. The site is bounded on the north by commercial/industrial property, on the east by the Burlington Northern Railroad switchyard, and on the south by the FMC Superfund Site. To the west are Anoka County Regional Park and the Mississippi River (which is about 700 feet west of the NIROP Site).

The site is in an area zoned as industrial and it has a long industrial history. There are no residential properties within 0.25 mile of the site. The NIROP Site comprises 83 acres of the approximately 140 acres of the former Northern Pump Company property (see map on this page).

The remedial goal for the site is to meet the drinking water standards in the groundwater and to ensure that human health and the environment are protected until the drinking water standards are met. In August 1991, the first four groundwater extraction wells were installed at the NIROP Site and groundwater extraction started in September 1991.



What is the site's background?

In 1940-41, the Northern Pump Company, a privately owned business that produced industrial pumping equipment, constructed a manufacturing plant on what is now the NIROP Site. With the onset of World War II, the plant was converted to a government-owned, contractor-operated (GOCO) facility whose mission was to produce naval guns for the expanding war effort. As a GOCO facility, the property was owned by the government and operated first by Northern Ordnance, Inc., a subsidiary of Northern Pump Company, and later by FMC Corporation.

In 1947, the U.S. Navy purchased the 36.6-acre NIROP building and the land north of the building (known as the "North 40"). In 1964, FMC Corporation purchased the southern portion of the 140-acre property from Northern Ordnance, Inc. The northern portion of the manufacturing buildings and the North 40 became the NIROP Superfund Site in 1989. In 2004, the Navy sold its interest in the building and adjacent land to United Defense LP. In 2005, the building and adjacent land were sold to ELT Minneapolis LLC, and in 2013 Fridley Land LLC purchased the building and adjacent land.

As part of manufacturing operations at the site, chlorinated solvents, a subset of volatile organic compounds (VOCs), were used as degreasers for metal parts. The primary solvent used was trichloroethylene (TCE). Smaller quantities of tetrachloroethylene (PCE) and trichloroethane (TCA) were used also.

In the early 1970s, paint sludge and spent liquid solvents were disposed of in pits and trenches in the North 40 area. During the long history of industrial operation at the NIROP Site, TCE was leaked, spilled or disposed of on site. The former East Plating Shop area inside the building is a known source area.

What's the cleanup history of this Superfund site?

In December 1980, the MPCA sampled three production wells (FMC-1, NIROP-2 and NIROP-3) at the NIROP Site and found elevated concentrations of TCE [35 to 200 micrograms per liter ($\mu\text{g/L}$)] in the groundwater. As a result, use of these wells was stopped, and in April 1981, the NIROP production wells were shut down. In December 1981, TCE was detected for the first time at the Minneapolis Water Works intake point at a concentration of 1.2 $\mu\text{g/L}$ or parts per billion (ppb).

In 1983, the Navy conducted an investigation of soils in the North 40 and removed 1,200 cubic yards of contaminated soil and 43 drums of waste material.

In 1984, the MPCA issued a Request for Response Action to the Navy. As a result, the Navy initiated a Remedial Investigation and Feasibility Study. From 1987-1988, the Navy conducted additional investigations. Widespread groundwater contamination was identified at the NIROP Site and at Anoka County Regional Park, located west of East River Road, along the Mississippi River. In May 1989, a public meeting was held in Fridley to present the findings of the investigation.

In November 1989, the NIROP Site was listed on the U.S. Environmental Protection Agency (EPA) National Priorities List, the federal Superfund list. Federal Superfund law requires annual monitoring reports and Five-Year Reviews to be submitted to the EPA and the MPCA for review and/or approval.

In September 1990, the EPA signed a Record of Decision (ROD) for groundwater remediation at the NIROP Site. The remedy selected was to pump contaminated groundwater and treat it to remove the VOCs, then discharge the cleaned water into the Mississippi River. The goal was to contain the contamination within the boundaries of the property.

In March 1991, a Federal Facilities Agreement (FFA) between the EPA, the Navy, and the MPCA was signed. The FFA is the legally binding document that guides the remedial activities at the NIROP Site. Under the FFA, the EPA has the final authority on remedial decisions at the site.

Since the groundwater extraction system was installed:

- In 1992, the Navy conducted further soil investigations and found an additional 31 drums. The drums and an additional 900 cubic yards of soil were removed and disposed of at a permitted facility.
- From 1994-1997, the Navy conducted a series of investigations inside the building to identify any potential source areas under the building slab. Sixty-eight Areas of Concern (AOCs) were identified inside the building.
- In May 1995, two additional extraction wells were installed southwest of the building to better contain the groundwater plume.
- In 1996, a third round of investigations was conducted at the North 40, and 23 drums, 12 smaller containers, and 100 cubic yards of soil were removed and disposed at a permitted facility.
- From 1997-1998, the groundwater-treatment system was upgraded.
- In 1999, the Navy submitted the Remedial Investigation report for soils under the building.
- From 2000-2001, four additional extraction wells were installed along the southwest corner of the building. Three extraction wells along the east and north ends of the building were abandoned because the VOC concentrations had declined significantly. In addition, production wells NIROP-2 and NIROP-3 were abandoned.
- From 2001-2002, due to high concentrations of VOCs in the groundwater at the Anoka County Regional Park, the Navy conducted a pilot study that injected vegetable oil into the groundwater to promote the biological breakdown of the VOCs. Over the years, the concentrations of VOCs in the park have declined by several orders of magnitude, partly due to the vegetable oil injection and partly due to the improved capture of the plume by the extraction wells.
- In September 2003, the EPA signed the ROD for the contaminated soils. The focus of the ROD is to minimize the exposure to humans via air and soil. The remedy is institutional controls that prohibit disturbing the concrete floor in areas of the building where high levels of VOCs are believed to be present in the soil.
- In 2007, the U.S. Geological Survey (USGS) issued its report on the effectiveness of the extraction wells. The complexity of the geology and, therefore, the groundwater flow at the NIROP Site and Anoka County Regional Park were recognized.
- In 2011, in response to the deterioration of the main extraction well (AT 3A), the Navy installed three new extraction wells and upgraded the groundwater-extraction system.

Summary of site risks

The contaminants of concern at the site are primarily TCE and its degradation products (1,2-dichloroethylene and vinyl chloride) in soil and groundwater. PCE and TCA have also been found in low concentrations.

Potential risk receptors include:

1. **City of Minneapolis Water Works drinking water intake**, which is less than one mile downstream from the NIROP Site. No PCE, TCE or its degradation products has been detected at the water intake since the late 1980s.
2. **Fridley municipal well #13** is upgradient and northwest of the NIROP Site. This well is used only for backup during periods of peak demand. TCE was detected at 1.0 µg/L or ppb in 1995.
3. The **Mississippi River** is about 700 feet west and downgradient of the NIROP Site. The highest TCE level in the monitoring wells closest to the river in 2011 was 110 µg/L or ppb. The Class 2Bd surface water standard for TCE is 25 µg/L or ppb.

4. **Vapor intrusion in nearby properties:** The closest residential property is upgradient and 0.25 mile east of the NIROP Site. The other buildings nearby are commercial properties. No vapor investigations have been performed to date because all the monitoring wells on the northern edge of the NIROP Site and in the commercial property north of 51st Way Northeast have had groundwater TCE concentrations lower than the groundwater vapor intrusion screening value of 20 µg/L.

Current activities

The Navy is conducting an investigation to delineate potential source areas under the building. The two phases of investigation were completed in December 2013 and January 2015 and an evaluation of the results is anticipated during the first half of 2015.

The Navy is developing an area-wide groundwater and contaminant flow model which may prove useful in evaluating the containment system effectiveness and for system optimization. This modeling effort is being performed by the USGS and is due to be completed in summer 2015.

In August 2014, the EPA delisted Operable Unit 2 (OU2) from the National Priorities List (the Federal Superfund List). OU2 includes the soils above the water table within the site except for the unsaturated soils underlying the former Plating Shop area.

The NIROP Site is part of a larger property that was enrolled into the MPCA's Voluntary Investigation and Cleanup (VIC) Program in March 2012 by a private developer who plans to redevelop the area as the Northern Stacks industrial park. The redevelopment will include further investigations under the oversight of the VIC Program to determine environmental issues that must be addressed to safely redevelop the site for new commercial/industrial uses.

Where can I get more information?

For more information about the Naval Industrial Reserve Ordnance Plant Superfund Site or its remediation, contact:

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To view the documents in the MPCA's administrative record that contain more details on the cleanup activities at this site, call the MPCA at 651-296-6300 or toll free at 800-657-3864.