Naval Weapons Industrial Reserve Plant Bethpage

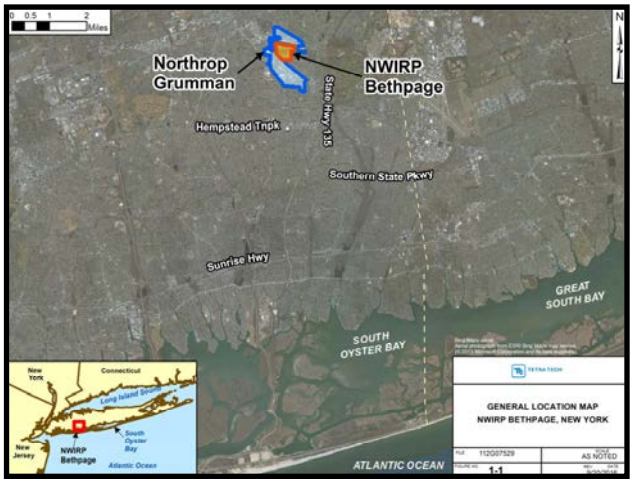
Preliminary Assessment/Site Inspection for Radium in Groundwater Investigation

April 2019

Recent groundwater sampling results did not identify a radium release from historic operations on the former Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage. As of December 2018, the Navy has completed three of five planned sampling events to evaluate radium concentrations in Bethpage groundwater over an approximate one-year period. A Preliminary Assessment/Site Inspection (PA/SI) is the first investigation step in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. The Navy is working with the ***New York State Department of Environmental Conservation (NYSDEC)*** in developing sampling plans, interpreting results, and making decisions on actions if needed to address radium and other environmental contaminants at NWIRP Bethpage.

Background

NWIRP Bethpage was a 109-acre government-owned, contractor-operated facility. 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 1996. NWIRP's primary mission was the research prototyping, testing, design engineering, fabrication, and primary assembly of military aircraft.



Radium-based paint was likely present at NWIRP Bethpage in luminous dials on aircraft instruments. Concerns have been raised by community members that historic operations on NWIRP Bethpage could have resulted in the release of radium to the environment, which led to this investigation. The Navy initiated the PA/SI to evaluate any potential radium release.

If radium was released from past operations at the NWIRP, it could move away from the release area with the flow of groundwater. Typically, the highest concentrations in groundwater are found near the release area with decreasing levels as you move away.

Radium

- Radium is a naturally occurring radioactive element generally present at low levels in all soil, water, and rocks. It is produced from the decay of two other common, radioactive elements - uranium and thorium.
- ***The U.S. Environmental Protection Agency (EPA) has established a safe maximum level for radium in drinking water of 5 picocuries per liter (5 pCi/L)***. A picocurie per liter is a measurement of radiation in one liter of water. For a public water supply system to exceed this standard requires that the average value of four quarterly samples be greater than 5 pCi/L.
- The amount of radium in groundwater varies greatly around the country depending on local geology. Many areas have naturally occurring radium in their groundwater above the EPA's safe drinking water level.
- Historic uses of radium which are typically no longer in practice include: treatment for rheumatism and mental disorders and as a general tonic; component in luminous paints for watch dials, clocks, glow in the dark buttons, and military instruments; and in radiation treatment of cancer.
- Because of better understanding of health risks for people from exposure to radium, it has only very limited uses today in medical equipment, gauges, and calibrators, and in lightning rods.

In other words, if a release occurred, we would expect to see a grouping of adjacent or nearby monitoring wells showing higher than normal radium concentrations in the groundwater on the NWIRP Bethpage property.

Sampling Results

The Navy sampled approximately 50 monitoring wells located on the NWIRP Bethpage during each sampling event conducted in May/April, September, and December 2018 (see figure). The results of the 157 samples continue to indicate that ***the radium is likely from a natural source, and it is unlikely that a release of radium has occurred.*** The following is a summary of the results:

1. ***The majority of samples (94%) were below the EPA safe maximum level*** of 5 pCi/L with an overall average of 2.1 pCi/L.

2. Ten individual samples (at seven wells) exceeded the EPA safe maximum level. Other available evidence indicates these values are **not a result of a former release and are more likely a result of natural variability.**

    - Sampling results from seven wells exceed the EPA safe maximum level during one or more of the three quarterly sampling events (see figure). These values range from 5.1 to 9.5 pCi/L.

3. Based on a review of the data, the results for individual wells vary. Although individual samples at seven wells exceed the EPA safe maximum level, when the radium results from each well are averaged, only three of the well locations still exceed this level.

4. The average sample results for each monitoring well located along the southern edge did not exceed the EPA safe maximum level. This is the area where groundwater flows away from the site.

Next Steps

- The Navy is awaiting results from the fourth sampling event completed in March 2019. Additional sampling is planned for June 2019.
- The results of all sampling events will be compiled into a draft PA/SI report for regulatory review and shared with the public during NWIRP Bethpage Restoration Advisory Board meetings.
- Information on RAB meetings is available on the website listed in the box below.

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 Environmental Restoration Program (ERP) is available online at **http://go.usa.gov/DyXF**

For more information on the NWIRP Bethpage ERP, please contact: Public Affairs Officer, NAVFAC Mid-Atlantic, 9742 Maryland Ave, Norfolk VA 23511-3095