Naval Weapons Industrial Reserve Plant Bethpage

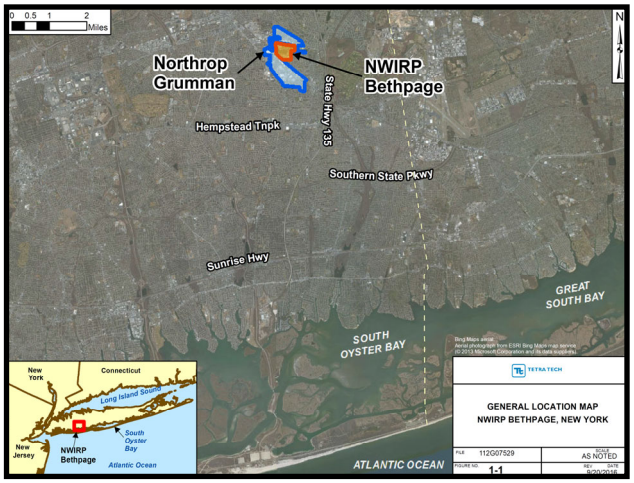
Radium in Groundwater Investigation

November 2018

Recent groundwater sampling results did not identify a radium release from historic operations on the former Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage. This sampling event was the first of five planned by the U.S. Navy to evaluate radium concentrations in Bethpage groundwater over an approximate one-year period. 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

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. The 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.

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.

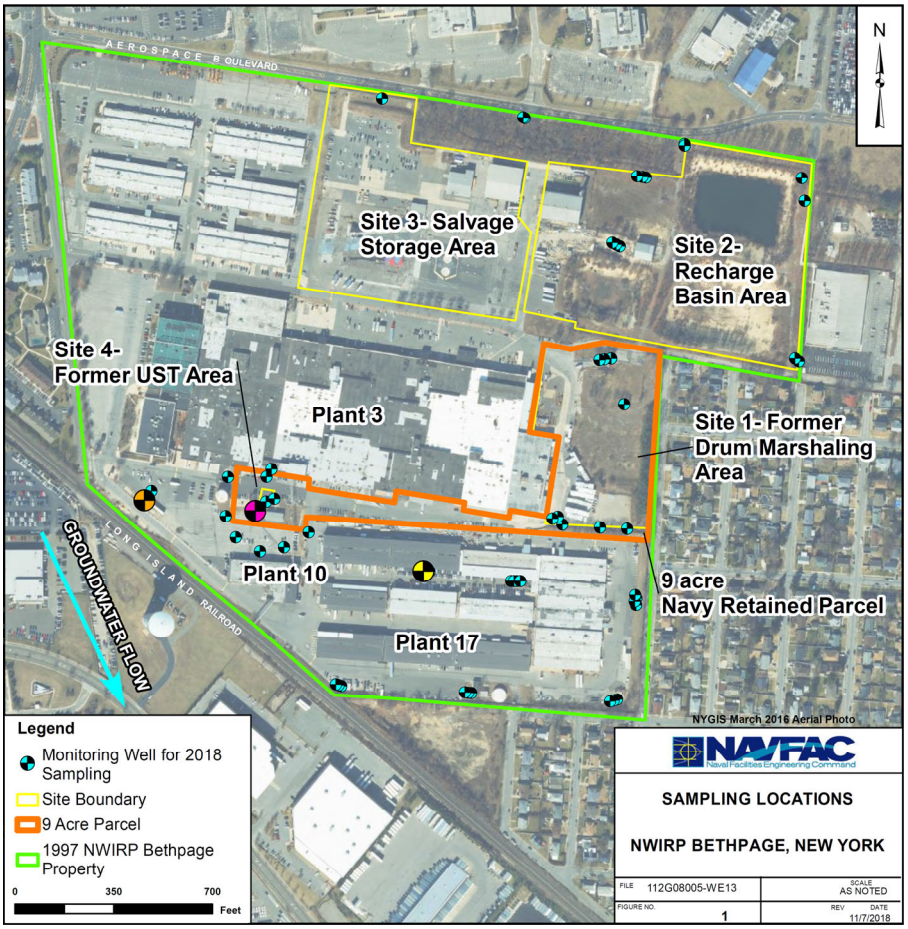
Radium

- Radium is a naturally occurring radioactive element that is 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 exceeds 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.

Groundwater Sampling Results

The Navy sampled 53 monitoring wells located on the NWIRP Bethpage in April and May 2018 (see figure to the right) and found 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 (50 out of 53) were below the EPA safe maximum drinking water level*** of 5 pico-Curies per liter of water (5 pCi/L) with an overall average of 2.2 pCi/L.
2. Three samples exceeded the EPA maximum, but other available evidence indicates these values are not a result of a former release and are more likely a result of natural variability.
   - ***pink well—9.3 pCi/L.*** Samples from nearby wells, including wells as close as 105 feet away were all below 5 pCi/L. With a release we would expect elevated levels to be repeated in nearby wells.
   - ***orange well—6.7 pCi/L***. A sample from this well in 2016 was less than the 5 pCi/L limit, indicating natural variability of radium levels.
   - ***yellow well— 5.1 pCi/L***. This result is marginally above the limit.
   - Additional sampling will determine if these result are repeated.
3. The Navy also sampled wells along the property line in the area where groundwater flows away from the NWIRP. None of the exceedances were found in these perimeter wells giving more evidence that a release did not occur elsewhere on the property.

Next Steps

The Navy is awaiting results from a second sampling event completed in September 2018. Additional sampling is planned for December 2018, March 2019, and June 2019. The results of all sampling events will be compiled into a draft Report for regulatory review and shared with the public during NWIRP Bethpage Restoration Advisory Board (RAB) 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

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