



# Naval Weapons Industrial Reserve Plant Bethpage

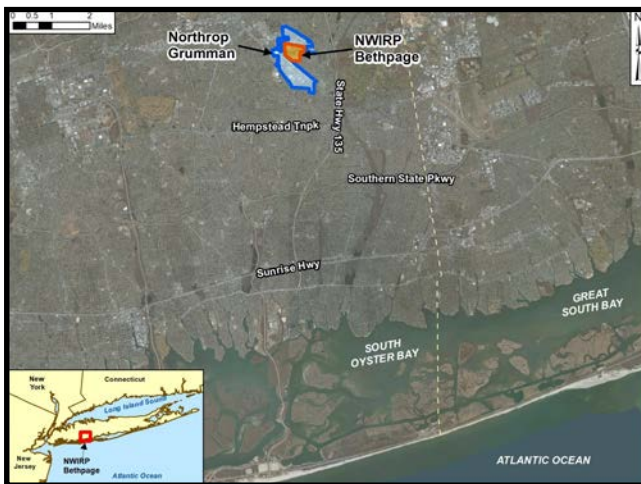
## Preliminary Assessment/Site Inspection for Radium

November 2019

**Recent groundwater sampling results did not identify a radium release from historic operations on the former Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage.** The Navy is working with the New York State Department of Environmental Conservation (NYSDEC) in interpreting results and making decisions on actions, if needed, to address radium and other environmental contaminants at NWIRP Bethpage. As of June 2019, the Navy has completed all 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.

### 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) from 1942 until 1996. NWIRP's primary mission was the research, testing, design engineering, fabrication, and primary assembly of military aircraft.



General Location Map

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.

### 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.

If radium was released to groundwater 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. 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 and March and June 2019 (see figure). The results of the 261 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 1.9 pCi/L.
2. Sixteen individual samples (at eight 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 eight wells exceed the EPA safe maximum level during one or more of the five 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 reported concentration of radium in individual wells varies in each sample. This variance results from the test method and associated uncertainty in the concentration. Although individual one-time samples at eight wells exceed the EPA safe maximum level, when the radium results from each well are averaged per EPA regulations, only four of the well locations still exceed this level, and these exceedances are only slightly greater than the MCL.
4. To consider potential off-property impact of the radium from these four wells and the site overall, the average sample result for each monitoring well located along the southern (down steam) edge was evaluated. These southern edge wells represent



### Radium Results (2018-2019)

the groundwater where it flows away from the site. None of average groundwater results from these southern wells exceeded the EPA safe maximum level.

### Next Steps

- The results of the sampling events will be compiled into a draft PA/SI report for regulatory review. The final PA/SI will include recommendations consistent with CERCLA guidance.

### 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, 9324 Virginia Ave, Norfolk VA 23511-3095  
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