

EXPLORING EARTH'S MYSTERIES
...PROTECTING ITS FUTURE

Live-Fire Range

Facility Environmental Monitoring Report

Calendar Year 2002



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Brookhaven National Laboratory Live-Fire Range

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Summary of Results

Analysis of groundwater samples collected at the Live-Fire Range during CY 2002 indicates that range operations have not impacted groundwater quality. Groundwater analyses indicate that all metals (including lead) are at concentrations that are consistent with established background levels. These findings have been consistent since the groundwater surveillance program at the Live-Fire Range began in 2000. It is recommended that the routine groundwater surveillance program for the range be suspended. The wells will be maintained for the collection of routine water level measurements, which are used to assess site wide groundwater flow patterns, and for potential future water quality sampling.

Background

The BNL Live-Fire Range consists of a six-position, 100-yard, bermed outdoor small arms and grenade range. The primary use of the current facility is to allow members of the BNL Police Group to practice and qualify in the use of firearms and to gain experience in the use of smoke and CS gas grenades. Federal law enforcement agencies and the Brookhaven Employees Recreation Association (BERA) also occasionally use the range.

The present BNL Live-Fire Range was constructed in 1986 and is immediately north of the BNL Sewage Treatment Plant. The eastern half of the range is within 200 feet of the Peconic River (Figure 1). BNL utilized this same location as a practice range from 1963 until the present facility was constructed in 1986. The small arms and grenade ranges are co-located, side-by-side, and have a combined area of 87,516 square feet. The bullet stop (i.e., rear berm) of the live fire range is an earthen berm, and is screened for lead on an annual basis. The bullets are known to have a typical penetration depth of approximately two to three inches into the berm. The soil of the rear berm is screened to a depth of approximately one foot. The lead shot recovered during the screening process and the spent brass cartridges are disposed of as scrap metal, off-site via a commercial waste handler. The grenade range is essentially an open field surrounded by earthen berms.

Environmental Monitoring Program

In accordance with DOE Order 5400.1 (Environmental Protection), BNL has established a groundwater monitoring program at the Live-Fire Range to evaluate potential impacts to environmental quality. The primary contaminant of concern is lead. The environmental monitoring program for the Live-Fire Range is described in the *BNL Environmental Monitoring Plan* (BNL, 2000; BNL, 2002).

Monitoring Results

As with previous years, all metals concentrations (including lead) were below the applicable New York State Ambient Water Quality Standards during 2002, and are consistent with established background levels (Table 1).

Future Monitoring Actions

It is recommended that:

- BNL should terminate active monitoring. Wells should be maintained for routine water level measurements, which are used to evaluate site wide groundwater flow directions, and for potential future sampling.

References

BNL, 2000. *Brookhaven National Laboratory, Environmental Monitoring Plan 2000* (March 31, 2000).

BNL, 2002. *Brookhaven National Laboratory Environmental Monitoring Plan, CY 2002 Update* (January 2002). BNL-52584 Update.

Table 1. Live-Fire Range Metals Analytical Results for CY 2002. Only primary contaminants are shown here. See database for complete set of metals analyses data.

| Well | Sample Period | Ag | Al | Cd | Cr | Cu | Fe | Hg | Mn | Na | Pb | Zn |
|------------------|---------------|--------|---------|--------|--------|--------|--------|---------|-------|-----|---------|--------|
| -----(mg/L)----- | | | | | | | | | | | | |
| 039-91 | March | <0.001 | 0.011 | <0.001 | <0.001 | <0.002 | <0.075 | <0.0001 | 0.017 | 2.2 | <0.0013 | <0.004 |
| 039-92 | March | <0.001 | 0.027 | <0.001 | <0.001 | <0.002 | <0.075 | <0.0001 | 0.017 | 1.7 | <0.0013 | <0.004 |
| Typical MDL | | 0.001 | 0.002 | 0.001 | 0.001 | 0.002 | 0.075 | 0.0002 | 0.002 | 1.0 | 0.001 | 0.004 |
| NYSAWQS | | 0.05 | 0.2 (a) | 0.01 | 0.05 | 0.2 | 0.3 | 0.0007 | 0.3 | 20 | 0.025 | 2.0 |

MDL = Minimum Detection Limit

NYSAWQS = New York State Ambient Water Quality Standard

(a) Drinking Water Standard – Secondary MCL for aesthetic quality.

(b) NYSDEC Guidance Value.

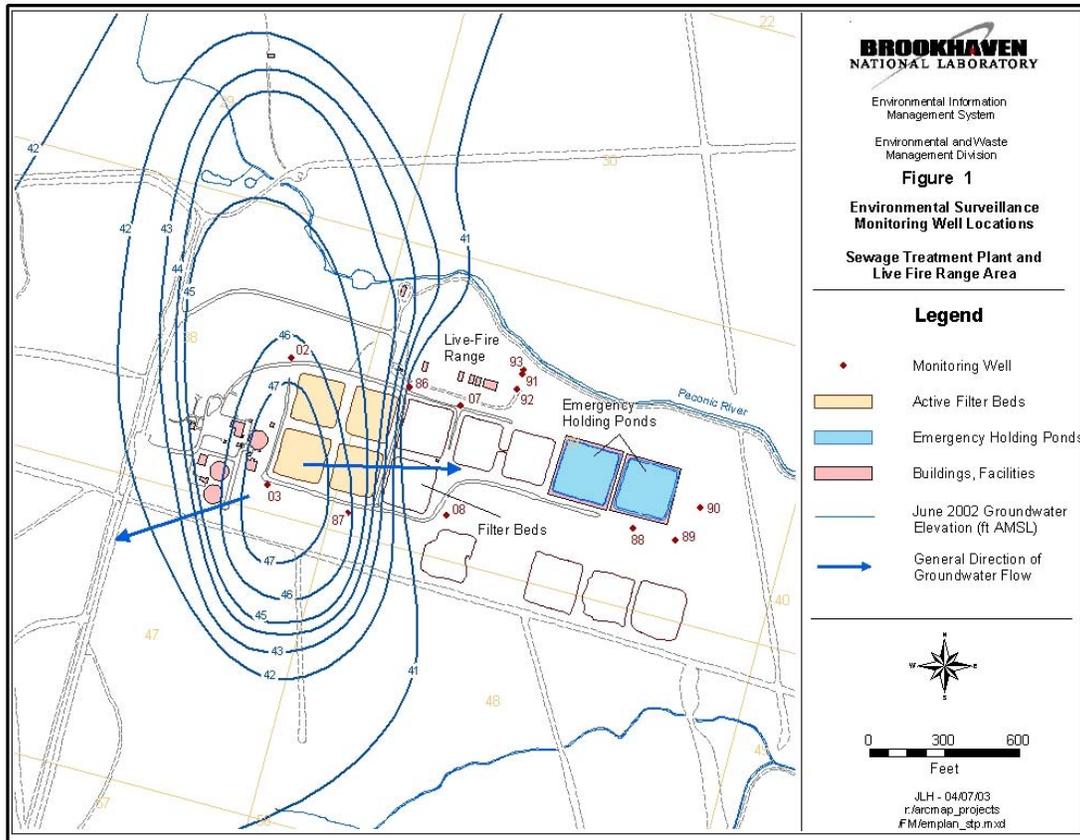


Figure 1. Monitoring Well Locations Near the Live-Fire Range at BNL.