



Peconic River

C L E A N U P

Dear Community Member,

Cleaning up the Peconic River and keeping it clean is important to Brookhaven National Laboratory (BNL). Recently, we sent information to you about the results of Peconic River testing conducted by BNL. A report on these results has just been released and is available in the libraries listed on page 6. This booklet summarizes the recommended cleanup plan for Peconic River sediments and our sewage treatment plant, as recommended by the U.S. Department of Energy (DOE) and BNL.

We encourage you to review this information and comment on the proposed cleanup. You may send your comments to the address on page 7, or e-mail them to ou5@bnl.gov. During the comment period, which extends from February 15 to March 15, 2000, several meetings will be held (see box at right) where you can learn more.

The *Operable Unit V Feasibility Study Report* and the *Operable Unit V Proposed Plan* are available at the locations noted on page 6 and provide additional details about the alternatives considered for cleanup.

Your comments can make a difference in the final cleanup decision. For example, comments received from the public and regulators on the recent Operable Unit III Proposed Groundwater Cleanup Plan prompted DOE and BNL to alter the final cleanup plan.

Thank you for your interest and participation in determining the appropriate cleanup for this valuable natural resource.

Sincerely,

John J. Meersman, Manager
Environmental Restoration Division
Brookhaven National Laboratory



Representatives from the N.Y. State Department of Environmental Conservation and BNL collect samples of Peconic River fish for testing. The test results showed that these fish are safe to eat.

Public Meeting

(no reservation needed)

Berkner Hall, BNL
March 2, 2000
7:00 - 9:00 p.m.

Roundtable Meetings

(reservation requested)

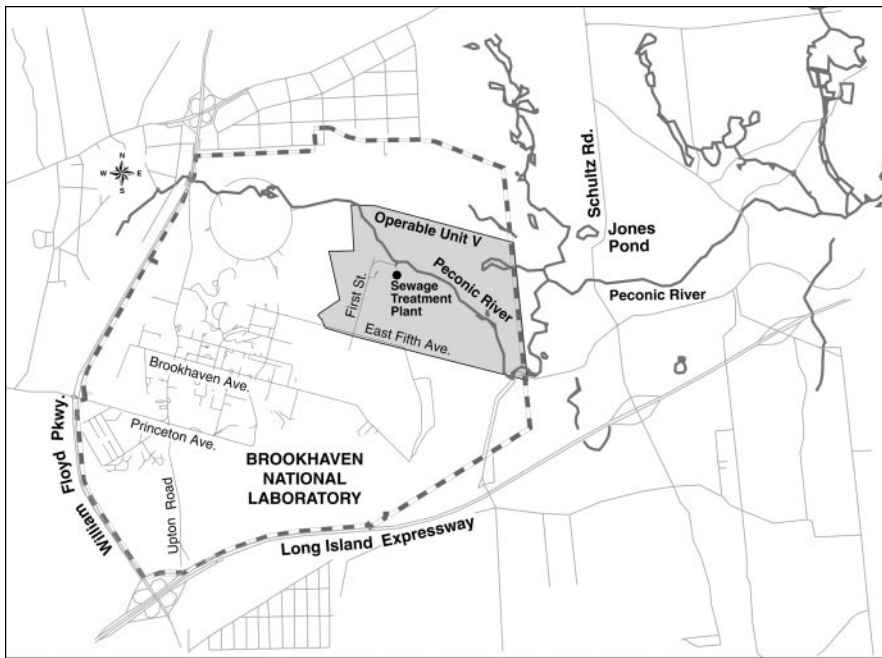
Berkner Hall, BNL
February 23, 2000
7:00 - 9:00 p.m.

Riverhead High School
Riverhead, NY
February 29, 2000
7:00 - 9:00 p.m.

To attend a roundtable meeting, please call Kathy Gurski at (631) 344-7459 and make a reservation.

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Operable Unit V is the name for an eastern-central section of Lab property. It includes the Lab's sewage treatment plant and the Peconic River.

WHAT IS OPERABLE UNIT V?

Brookhaven National Laboratory (BNL) is conducting an environmental cleanup under the requirements of the federal Comprehensive Environmental Response, Compensation and Liability Act of 1980, commonly known as the Superfund law.

During initial environmental studies, the BNL site was subdivided geographically into seven Operable Units. Operable Unit V (OU V) is the administrative name given to an area in the eastern-central portion of BNL (see map above). This area includes the Lab's sewage treatment plant, an active facility used to process sewage from the Lab's facilities. Operable Unit V also includes areas of the Peconic River impacted by past Laboratory operations, as well as sewer pipes and groundwater beneath the eastern portion of the Lab.

The *Operable Unit V Feasibility Study Report* describes the cleanup alternatives that were evaluated in detail for these areas. The proposed cleanup plan is described in the *Operable Unit V Proposed Plan*. The Proposed Plan also summarizes the results of characterization studies and risk assessments that have been completed. In addition, it describes cleanup actions that have already been implemented as part of the final remedy.

WHAT AREAS WERE INVESTIGATED?

Peconic River

The Peconic River receives discharges from the Lab's sewage treatment plant. The principle contaminants that have been released to the sewage treatment plant include metals, solvents, and radionuclides. Peconic River sediments were investigated on Lab property and as far off site as the

lent in areas where more sediments are deposited by the river and decrease with distance downriver.

Sewage Treatment Plant

The sewage treatment plant (STP) now used by BNL was built in stages by the U.S. Army between 1940 and 1944, and was upgraded by the Laboratory in 1967. Additional work begun in 1997 upgraded the plant from primary (one-stage) to tertiary (three-stage) treatment. The treatment process now includes aeration, denitrification to remove organic materials and ultraviolet disinfection.

The sewage treatment plant processes up to 1.25 million gallons of wastewater per day. Treated effluent is discharged into the Peconic River, north of the treatment facility. Discharges from this plant are regulated by the New York State Department of Environmental Conservation, and are routinely monitored for compliance.

The main areas of concern within the STP are the sand filter beds and berms. The sand filter beds are located east of the main sewage treatment facility (see photo at right). There are eight beds, each covering about one acre and containing three feet of sand on top of gravel and tile collection pipes. Wastewater is sent through the sand beds for filtering prior to release. The four easternmost beds are no longer used.

In the past, the Lab removed some soils from the sand filter beds after acci-

Cesium and plutonium levels in Peconic River sediments are well below those that could pose a risk to the public's health or to aquatic life.

Route 105 bridge at the mouth of Flanders Bay.

During the remedial investigation, elevated levels of heavy metals (such as mercury, copper, and silver), organic chemicals (such as polychlorinated biphenyls, or PCBs), and low levels of pesticides (such as DDD, a product of DDT degradation) and radionuclides were detected in Peconic River sediment. Most of the contaminants were found in the top six inches. As expected, contaminants are more preva-

dental releases of contaminants into the beds occurred. The contaminated material from the sand filter beds was piled onto adjacent areas known as sand filter berms. Thus, the soils with higher levels of contamination are located within these bermed areas.

Soils within the sand filter beds and berms contain elevated levels of mercury, silver, chromium and lead. Elevated levels of cesium-137 are found in a few isolated areas, primarily in the sand filter

berms. Soil contamination is concentrated in the top six inches.

Sewer Pipes

Some sanitary sewer lines at the Lab were installed as early as 1917, when the property was in use by the U.S. Army for Camp Upton. These old lines were repaired and upgraded by the Army in 1942. The Army constructed them from various materials, including vitrified clay, cast iron and reinforced concrete.

In 1987, BNL investigated these lines and discovered that they were leaking. The

sewer line leading to the STP is not a source of significant contamination to the surrounding soils. As part of a more recent investigation, sludge was collected from the bottom of manholes along the retired and capped sewer line and analyzed for radionuclides. The results identified elevated activities of two radionuclides, notably americium-241 and cesium-137.

Groundwater

Low levels of volatile organic compounds (VOCs), primarily trichloroethene, were detected in the groundwater of

plant indicate that there are no continuing sources of VOC contamination.

The elevated levels of VOCs in groundwater off Laboratory property are found at depths (200 feet) below the depths of most residential wells. Homes and businesses in the Operable Unit V area were offered public water hookups in 1997 to protect against possible exposure to groundwater contaminants.

Tritium has been detected in groundwater from on-site monitoring wells and off-site monitoring and residential wells. The highest level found off Laboratory



BNL's sewage treatment plant contains eight sand filter beds and surrounding sand berms. Isolated areas will be excavated to remove contamination.

Laboratory replaced the sewer pipes leading to the sewage treatment plant with a new line in January 1993. The old pipes were capped and left in place.

In 1995, the Laboratory sampled soils surrounding the areas where leaks were identified along the retired and capped sewer line during the Operable Unit V investigation. The results of the investigation identified only a few areas with low concentrations of inorganic constituents. This indicates that the

Operable Unit V. These VOCs are found at the site boundary east of the Lab's sewage treatment plant and beyond the Lab's eastern boundary. The highest level found on site in 1999 is 17 parts per billion (ppb). The maximum off-site level is 8.2 ppb, which is above the drinking water standard of 5 ppb.

The elevated levels of VOCs originated from discontinued past disposal practices that resulted in releases of VOCs to the Lab's sewage treatment plant. Investigations of soil and groundwater at the sewage treatment

property in 1999 is 822 pico-Curies per liter, 4 percent of the drinking water standard of 20,000 picoCuries per liter. The most recent maximum detection for OU V on site is 2,057 picoCuries per liter.

ARE THERE HUMAN HEALTH RISKS?

The Operable Unit V Proposed Plan summarizes both chemical and



In early 1999, community members observed Peconic River sampling activities.

radiological human health risks that could result from contamination if the proposed remedial action were not taken.

Sources of potential chemical risk include VOC contamination of ground-water and heavy metal contamination of soils and sediment. Current and future human health risks from chemical contaminants are within the current EPA guidance for acceptable risk range.

The radiological risk to the current on-site industrial worker and the hypothetical future resident living near the sewage treatment plant using reasonable exposure conditions are well within the current EPA guidance for acceptable risk range.

The radionuclides detected in sediments may contribute from zero to a six millirem dose per year to an off-site resident. These are relative to EPA guidance for an allowable dose of up to 15 millirem per year above background. The average annual dose to people on Long Island from background sources such as cosmic rays and naturally occurring radionuclides in soils is about 300 millirem per year. The primary sources of radiological dose received are from cesium-137 in soils and sediments, which result in current and future health risks well within the current EPA guidance for acceptable risk range.

ARE THERE ECOLOGICAL RISKS?

The proposed plan also summarizes both chemical and radiological risks to wildlife from Operable Unit V contaminants.

Sources of chemical risk to wildlife include heavy metals, PCBs and DDD. The most significant chemical risks to aquatic wildlife are

sewage treatment plant as a removal action. A removal action is an accelerated cleanup response to a known or potential contamination source.

From 1943 to 1967, the sewage treatment plant employed the two Imhoff Tanks for separation of solids from wastewater. In 1967, the Imhoff Tanks were decommissioned (the inlet and outlet pipes were filled with concrete). The function of the tanks was replaced by a primary clarifier. The tanks were covered with a roof in the spring of 1992 to prevent collection of rainwater.

Sampling conducted during the Operable Unit V remedial investigation indicated that the sludge and liquid remaining in the tanks contained low levels of radionuclides, organic chemicals and heavy metals. In 1995, BNL removed the sludge from the tanks.

A powder was added to the sludge to absorb water. The dried sludge was then packed into secure containers and transported to an off-site disposal facility.

The Laboratory completed demolishing the Imhoff Tank concrete structures in March 1997.

Pollution prevention

BNL has an active pollution prevention/waste minimization program to

DOE and BNL propose that contaminated Peconic River sediments be excavated, dried, and disposed of off site.

due to the presence of copper, mercury and silver in river sediments. On-site fish have accumulated mercury, PCBs and DDD. These fish could pose a health hazard to wildlife preying solely on them. Contaminant levels in off-site fish are well below those that pose a hazard to wildlife.

Levels of radionuclides in river sediments are very low and do not present a radiological health risk to the aquatic community.

WHAT HAS THE LAB ALREADY DONE?

Removal actions

In 1996, BNL cleaned and demolished two Imhoff tanks at the Laboratory's

minimize environmental impacts associated with Lab operations. The program strives to reduce the generation of wastes at the source, thereby minimizing the amount of wastes requiring disposal.

Many of the projects that are part of the Lab's pollution prevention program specifically address sources of sewer contaminants. By implementing a source reduction program, the Lab is minimizing contributions of contaminants to the BNL sanitary sewer and ultimately to the Peconic River.

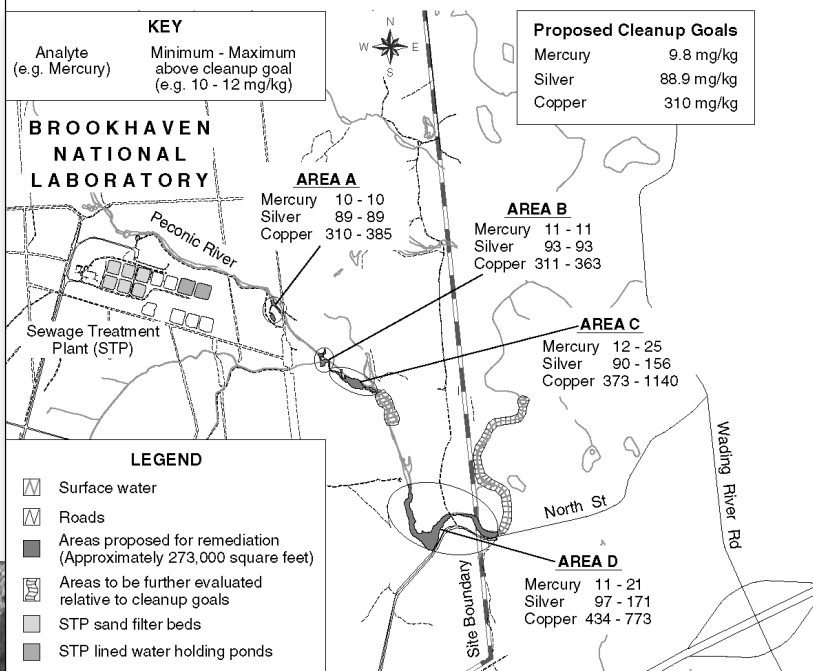
Between 1993 and 1998, BNL cut its hazardous waste output by 72 percent and significantly reduced other types of waste. This 72-percent drop represents

a reduction in the amount of waste generated by all of the Laboratory's routine operations, from photo processing, to the washing of precision-made parts, to the making of sophisticated computer circuit boards.

WHAT IS THE PROPOSED REMEDY?

Peconic River

The map above shows the areas that are proposed for cleanup. Five alternatives for addressing Peconic River sediment were evaluated in the feasibility study:



Peconic River areas proposed for remediation.

Alternative 1

Take no action, although monitoring would continue. This alternative is required to be evaluated for comparison with the other alternatives.

Alternative 2

Excavate all sediment with contaminant levels higher than cleanup goals (Areas A, B, C, D and E). Dry and dispose off site.

Alternative 3

Excavate the two areas of the Peconic River (A and D) that would have the least impact on wetlands. Dry the sediment and dispose off site. Place a silt curtain in Area D to collect contaminated sediment that may migrate from Areas B and C. Routinely monitor Area D and remediate contamination as necessary.

Alternative 4

As in alternative 2, excavate all sediment with contaminant levels higher than cleanup goals. Dry, and consider for beneficial reuse either on or off site. Potential uses have not yet been identified.

Alternative 5

As in alternative 2, excavate all sediment with contaminant levels higher than cleanup goals. Place in drying beds and prepare for planting by adding fertilizers and

lime. Grow plants in the prepared sediment to absorb the contaminants. Harvest these plants every six to nine weeks and dispose of them off site. (This type of treatment is referred to as "phytoremediation"). Reuse the treated sediments.

Based on an evaluation of the alternatives, DOE believes that the alternative for sediment cleanup that represents the best balance of EPA's remedy selection criteria is Alternative 2: Excavation of contaminated Peconic River sediments/dewatering in drying beds/off-site disposal.

The map above shows the general areas that may require sediment excavation. The proposed remedy involves excavating Peconic River sediment containing copper, mercury, and silver at concentrations above cleanup goals. The levels of heavy metals in the Peconic River sediments will define the areas requiring remediation. The PCB's, DDD, and low level radionuclides are largely co-located with the elevated metals and will be cleaned up during remediation of the metals.

The locations and amounts of sediment to be removed from the river will be determined during the design-engineering phase of the OU V remedy. The primary objective of the design phase will be to further delineate the range of contaminant concentrations that are greater



than the cleanup goals. This additional information will be used to develop a remediation plan that will more accurately identify those areas where contaminant levels are above the cleanup goals. The exact locations and amounts of sediment to be removed from these areas will be determined by field screening and confirmatory sampling during excavation.

The wetlands that are disrupted during remediation will be reconstructed.

Sewage Treatment Plant

DOE and BNL propose that soils at the Lab's sewage treatment plant containing levels of contaminants above cleanup goals be excavated and shipped to a licensed off-site disposal facility. Excavated areas would be backfilled with clean soil and regraded.

Sewer Pipes

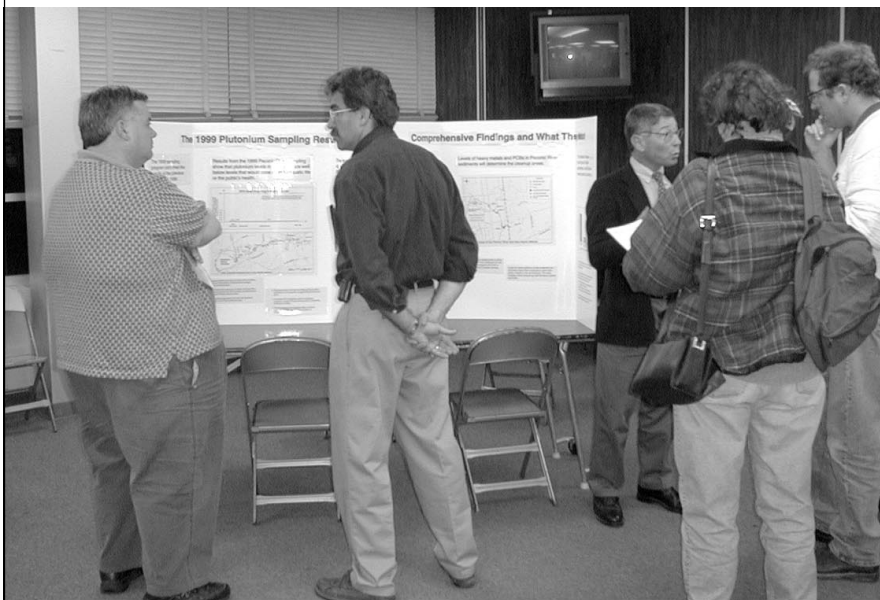
The current status of the sewer line (retired and capped at both ends) is such that no exposure pathway exists which could potentially pose a risk to workers and the public. No further action relative to the sewer pipes is needed.

Groundwater

To be sure that the health of the residents located downgradient of OU V is protected, homes and businesses in the OU V area were offered public water in 1997. Investigations of soil and groundwater at the STP indicate that there are no continuing sources of VOC contamination, and VOC concentrations in groundwater are decreasing. Outpost monitoring wells have been placed along the predicted path of the groundwater and additional groundwater monitoring data will be collected. If future monitoring data suggest a need for a groundwater remedy, the OU V remedy will be modified.

Removal actions

DOE and BNL propose that the completed cleanup of the Imhoff Tanks be considered the final cleanup action for that area.



In October 1999, BNL offered several opportunities for community members to learn about the results of plutonium sampling, including this meeting at Riverhead High School.

HOW CAN I PARTICIPATE?

Several meetings will be held to give the public an opportunity to ask questions and learn more about Operable Unit V (see page 1). Public comments will be accepted during the comment period from February 15 to March 15, 2000. You may mail your comments to the address on page 7, or e-mail them to ou5@bnl.gov.

After considering all comments, a final remediation decision will be made by DOE, with the concurrence of the U.S. Environmental Protection Agency and the New York State Department of Environmental Conservation. This decision will be documented in the *Operable Unit V Record of Decision*. Following the signing of the Record of Decision, the selected cleanup remedy will be designed and implemented.

WHERE CAN I GET MORE INFORMATION?

The Executive Summary of the *Operable Unit V Feasibility Study Report*, and the entire *Operable Unit V Proposed Plan*, are available electronically at <http://www.oer.dir.bnl.gov/ou5doc.html>. Copies of the Feasibility Study, Executive Summary and the Proposed Plan are available by calling (631) 344-7459. The Feasibility Study Report and the Proposed Plan are available for review at the libraries listed below. You are also invited to call Ken White, Brookhaven National Laboratory, at (631) 344-4423, or John Carter, U.S. Department of Energy, at (631) 344-5195.

Documents are available at:

Longwood Public Library
800 Middle Country Rd.
Middle Island, NY
(631) 924-6400

BNL Research Library
Building 477A
Upton, NY
(631) 344-3483

Mastics-Moriches-Shirley Public Library
301 William Floyd Parkway
Shirley, NY
(631) 399-1511

U.S. EPA, Region II Library
290 Broadway
New York, NY
(212) 637-4296

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