

cleanup date

U.S. DEPARTMENT OF ENERGY/BROOKHAVEN NATIONAL LABORATORY/ASSOCIATED UNIVERSITIES INC.

THE OFFICE OF ENVIRONMENTAL RESTORATION — Vol.2/No.2/JULY 1997

OER focus shifts to remediation

A message from Bill Gunther, Manager, Office of Environmental Restoration

In the last 18 months, the Office of Environmental Restoration has continued to move the Superfund cleanup program at BNL from assessment and investigation to active remediation. That process continues this summer with several important remediation projects going on simultaneously.

These projects embody the three cleanup philosophies that are central to our mission at BNL: 1) removing sources of contamination, 2) preventing the spread of contamination, and 3) remediating existing areas of contamination (groundwater plumes, for example). These projects represent the culmination of several soil and groundwater investigations that stretch back to 1991 (when OER was created) and earlier.

Waste pit remediation

Our biggest project this summer consists of removing waste from 51 former waste pits (see story, this page). These pits, known as the

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A backhoe removes a drum from one of the pits during a 1994 test excavation.

Waste pit cleanup begins at landfills

In one of the Lab's largest cleanup projects to date, the U.S. Department of Energy and Brookhaven National Laboratory began the excavation and remediation of 51 former waste pits last month.

The Chemical/Animal Pits were used from the late 1950s to 1966 for the disposal of chemical containers, glassware and animal carcasses, while the Glass Holes were used from 1966 to 1981 for the disposal of laboratory glassware and containers. The contents of the pits have been determined to represent a source of contamination for area soils and groundwater.

Containers, pits vary

Located in the Lab's southeast quadrant, the pits contain bottles, drums and other small chemical containers that once held or may now hold various laboratory

chemicals, including acids and bases, solvents and metals. The pits excavated so far range in size from about 10 to 20 feet wide and 12 to 30 feet deep.

The remediation of these holes is being done as a "fast-track" removal action under the Lab's Superfund program, and is expected to be completed by this fall.

Excavation selected

After considering several cleanup options, the Department of Energy, U.S. Environmental Protection Agency (EPA) and N.Y.S. Department of Environmental Conservation (NYSDEC) agreed on bulk excavation of the pit contents as the alternative that would be most protective of public health and the environment.

By excavating the waste, BNL and DOE will eliminate the source of contamination, remove contami-

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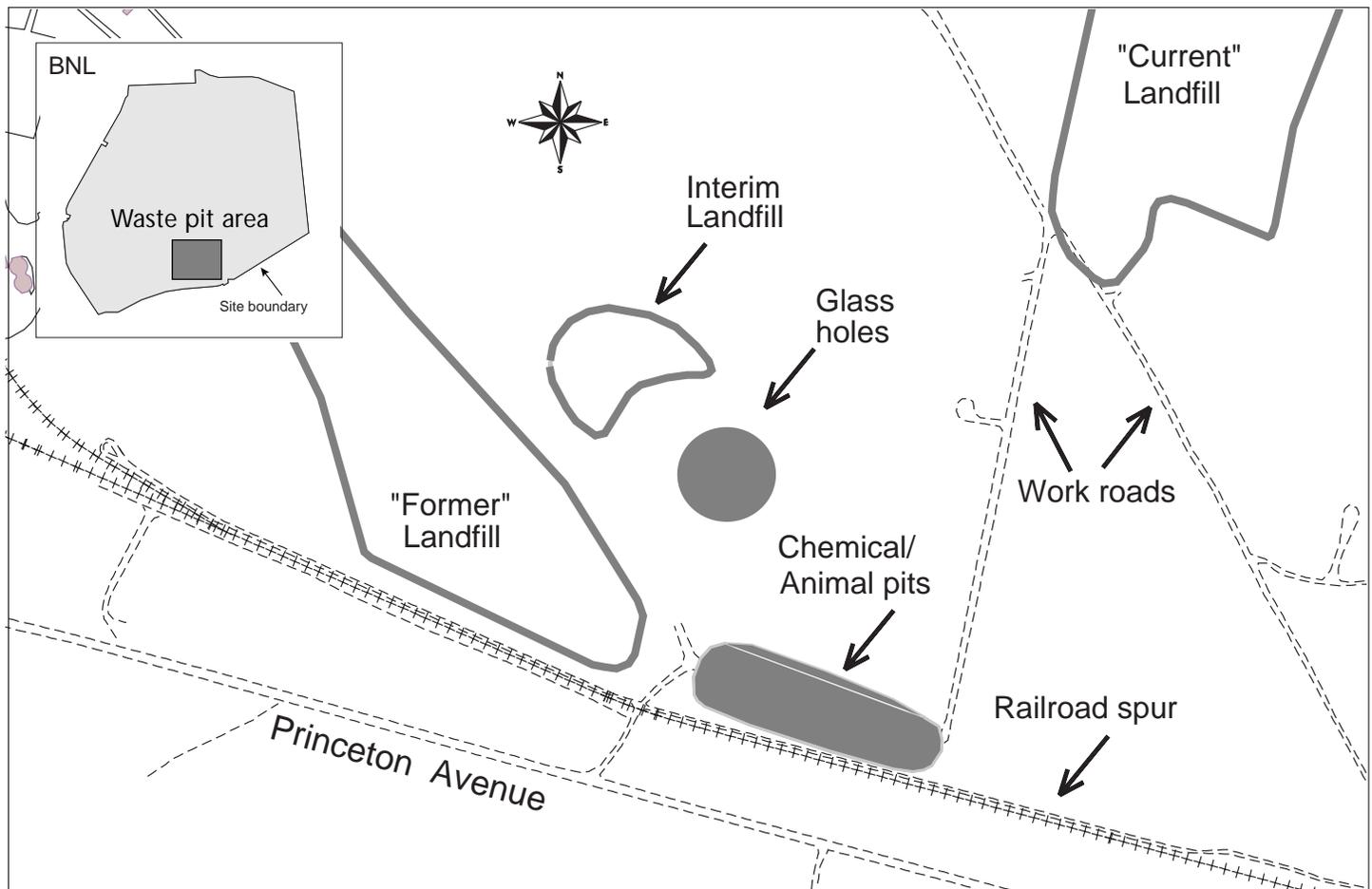
inside

Cleanup construction begins

See Page 3

Fall meeting planned

See Page 7



The pits are located just east of the Lab's "Former" landfill.

Waste pits...

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nated soil, and eliminate the threat of additional groundwater contamination.

Safety concerns

Contractors and Lab personnel are currently in the process of excavating the pits one-by-one. Since the pits contain unknown chemicals and other contaminants, a rigorous safety protocol has been implemented to protect workers and Lab employees.

As a significant amount of the wastes disposed of in the pits is

contained in glass bottles, care is being taken to prevent liquid escaping from bottles broken during excavation from reaching underlying soils.

Excavated material is taken to a processing area, where any intact bottles and other containers are separated from the debris and soil. The bottles and containers are sorted, characterized, drummed and disposed of in accordance with waste disposal regulations.

Goals followed

Soils found to exceed radioactive cleanup goals (established by BNL and DOE and concurred upon by EPA and NYSDEC) are being

temporarily stored at the Hazardous Waste Management Facility on-site, and will eventually be remediated along with other site-wide contaminated soils. Excavation materials that are determined to be hazardous or mixed waste would be disposed of off-site at a permitted facility.

Once excavation is complete and sampling shows that soil cleanup levels have been met, the pits will be filled with clean soil.

For more information, see the Chemical/Animal Pits and Glass Holes Final Evaluation of Alternatives Report, available for review at the Lab's four information repositories (for locations, see page 11). ■

cleanupupdate

A bi-monthly newsletter from the Office of Environmental Restoration at Brookhaven National Laboratory, *cleanup*update is part of an on-going effort to inform people about environmental restoration issues and activities at the Lab. If you are not on the Office of Environmental Restoration mailing list and would like to be, or if you have any questions about the cleanup, please contact:

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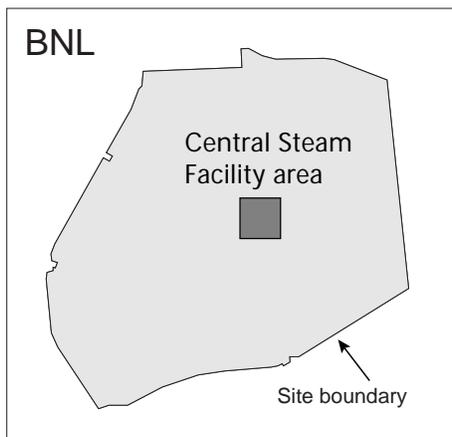
Remediation system construction begins near Central Steam Facility

Construction began in June on a remediation system for contaminated soils and groundwater located in the central portion of the Lab site.

Some soils and groundwater in Operable Unit IV contain volatile and semi-volatile organic compounds from a 1977 spill. Approximately 25,000 gallons of Number 6 fuel oil and mineral spirits were released through a ruptured line attached to a storage tank located southeast of Brookhaven National Laboratory's Central Steam Facility.

The proposed remediation strategy, agreed upon by the three parties overseeing the Lab's cleanup (U.S. Department of Energy, U.S. Environmental Protection Agency and N.Y.S. Department of Environmental Conservation), was documented back in March of 1996 in the "Operable Unit IV Record of Decision."

The Record of Decision, the first to be reached at BNL, followed an extensive investigation of the area, consideration of several remediation alternatives and a public comment period. The system has



been in the design phase for the past year.

Combining technologies
The remediation system combines two technologies to remove contaminants from the soil and groundwater. Air sparging and soil vapor extraction work together, forcing pressurized air into the groundwater to bubble these volatile compounds out of the water and soil and carry them upward. Powerful vacuum pumps recover the resulting vapors and pipe them to a treatment facility.

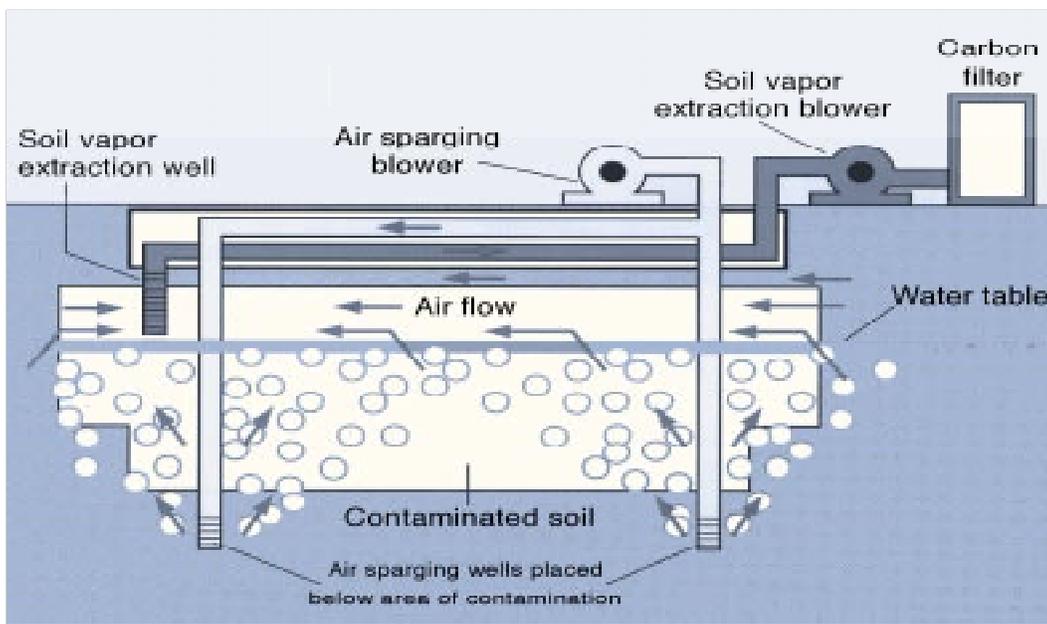
The combination of the two

technologies has been proven to be very effective at other, non-BNL sites, removing as much as 98 percent of the contamination.

The system will include 48 air sparging and 23 soil vapor extraction wells. Construction is expected to be completed by November 1997, and the system is expected to operate for a minimum of two years.

Operable Unit IV also contains radiologically contaminated soils at a sump and a sump outfall area that received wastes from the Reclamation Facility (Building 650). Building 650 formerly served as BNL's decontamination area for clothing and heavy equipment. While the final remediation of these soils will be conducted as part of other activities, monitoring of the area will continue under Operable Unit IV.

For more information, see the *Operable Unit IV Remedial Design Specifications and Drawings for the Air Sparge/Soil Vapor Extraction System*, which will be available for review in July at the Lab's four information repositories (for locations, see page 11). ■



Air sparging and soil vapor extraction work together to remove volatile organic compounds from soil and groundwater. This diagram shows compressed air being pumped into the soil through air sparging wells located below the contamination. As the bubbles of air travel upwards, they capture the contamination and ferry it towards the surface, where vacuum extraction wells remove the resulting vapors from the soil. The contaminants are then removed by a carbon filter and the clean air is discharged.

Cleanup of sewage tanks complete; report available

This spring, the Office of Environmental Restoration completed the remediation of two World War II-era waste settling tanks at the Lab's Sewage Treatment Plant.

Located in the northeast quadrant of the site, the Imhoff tanks were used between 1947 and 1967 for the separation of sewage solids from wastewater. After the tanks were abandoned in 1967, all access pipes leading in and out of the tanks were filled with concrete. In 1992 a roof was built over the tanks to minimize the accumulation of rain water.

In 1995 and 1996, 64,000 gallons of sludge containing some low levels of radioactive material were removed from the tanks, then shipped to an off-site, permitted waste disposal site. The remaining concrete structure was demolished in March 1997, and the area was backfilled with clean soil. The piping was removed from the tanks and is now being checked for contamination.

The Operable Unit V Imhoff Tanks Closeout Report, documenting the final work on this project, will be included in the more comprehensive Operable Unit V Remedial Investigation Report, expected to be available this fall at the Lab's information repositories (for locations, see page 11).

Incorporating more data should complete 2 reports

The completion of investigations of two areas of Brookhaven National Laboratory has been delayed while additional data are being collected and analyzed.

The Operable Unit III Remedial Investigation Report, focusing on groundwater contamination originating from the central portion of the Lab site, was originally scheduled to be available for public review and comment this spring. It has been delayed in order to incorporate data relating to the recently-discovered HFBR tritium plume and an underground collection tank (see story, page 5). The report is now expected to be released in early 1998.

The Operable Unit V Remedial Investigation Report, which focuses on the Peconic River and contamination in the area around the Lab's Sewage Treatment Plant, was originally scheduled to be available for public

review and comment last fall. It has been delayed until late summer to address a N.Y.S. Department of Environmental Conservation request for a bioaccumulation study of Peconic River fish, and a Peconic Estuary Program request for a river sediment study to help explain why metals found in river sediments are detected at lower than expected levels in fish collected at the same locations.

The two reports had been submitted for review to the regulatory agencies overseeing the Lab cleanup (U.S. Department of Energy, U.S. Environmental Protection Agency, and N.Y.S. Department of Environmental Conservation), but once these additional issues were raised, the decision was made to collect more data and revise and re-submit the reports.

DOE 'Accelerating Cleanup' draft ready for comment

On June 12, 1997 Al Alm, U.S. Department of Energy Assistant Secretary for Environmental Management, released for public comment a discussion draft of *Accelerating Cleanup: Focus on 2006*, a report proposing strategies to clean up as many contaminated Department of Energy sites as possible by 2006, including Brookhaven National Laboratory.

The national planning process is designed to accelerate cleanup, reduce overall costs and maintain DOE's commitment to meet federal and state regulations and compliance agreements. The discussion draft evaluates cleanup goals under two scenarios based on annual funding of \$5.5 and \$6.0 billion. Cost estimates to complete the cleanup range from \$110 to \$117 billion.

DOE has established a formal process to gather public comment on the discussion draft, including site-specific workshops and national and regional televideo conferences. The 90-day public comment period for the plan ends on September 9, 1997.

Submit written comments to: Gene Schmitt, U. S. Department of Energy, P.O.B. 44818, Washington, D.C. 20026-4481, or Caroline Polanish, DOE Site Manager/Environmental Management, P.O.B. 5000, Upton, NY 11973. For copies of the draft, call: Center for Environmental Management Information, 1-800-736-3282 or e-mail FocusOn2006@EM.DOE.GOV. Access the discussion draft on the "web" at <http://www.em.doe.gov/acc2006/>.

Strontium found near underground tank

While the investigation and remediation of the High Flux Beam Reactor tritium plume has been a major focus of the U.S. Department of Energy and Brookhaven National Laboratory since January, recent attention has shifted to an underground collection tank associated with the former Brookhaven Graphite Research Reactor (BGRR).

The tank was identified in December 1996 during preliminary review of past operations at the BGRR, in preparation for future remediation activities in the area. The tank was built to collect drainage from pipes connected to the fan house for the BGRR, which was shut down in 1968, as well as the base of the High Flux Beam Reactor stack.

Approximately 750 gallons of water were removed from the concrete-walled tank on March 12, 1997, and analysis of the water in the tank showed significantly elevated levels of tritium and strontium-90, radium-226 and cesium-137.

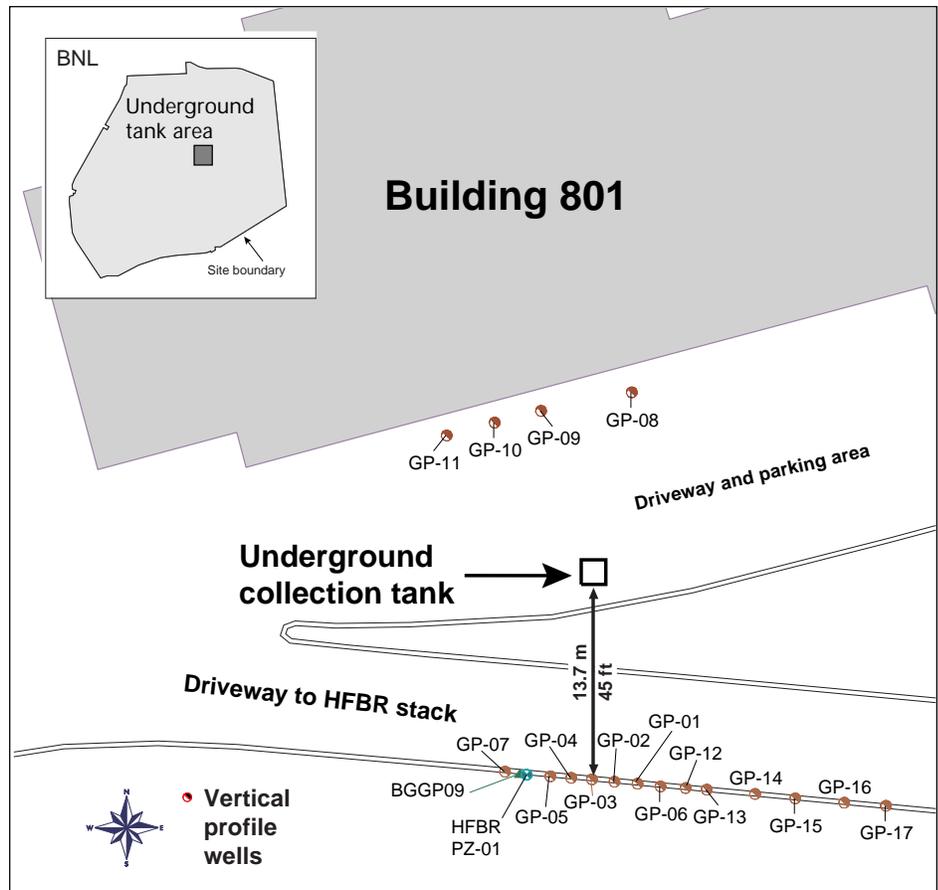
Monitoring well results

Results from 13 temporary monitoring wells installed approximately 45 feet south of the tank show tritium in groundwater at concentrations up to 14,700 picocuries/liter (pCi/L), below the drinking water standard of 20,000 pCi/L. Strontium-90 has also been detected at concentrations as high as 566 pCi/L, approximately 70 times the drinking water standard of 8 pCi/L.

The contaminants appear to have leaked from a non-watertight seal located approximately five feet above the bottom of the collection tank. The tank is now being monitored on a daily basis, and there is no continuing source of contamination.

Although the strontium-90 levels are well above the drinking water

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A strontium concentration of 566 picocuries/liter was detected by a monitoring well installed 45 feet south of the tank.

Tritium pumping system operating since May 12

The tritium plume pump-and-recharge system continues to operate as expected, extracting 120 gallons per minute of tritiated groundwater downgradient of the High Flux Beam Reactor.

Recent sampling has confirmed that water being discharged into the recharge basin contains tritium concentrations of less than 2,000 picocuries/liter (pCi/L), one-tenth the U.S. Environmental Protection Agency's drinking water standard of 20,000 pCi/L.

During processing, volatile organic compounds also found in groundwater in the area of the extraction wells are being removed by a carbon filtration system, and no trace of these contaminants has been detected in the water following treatment.

In addition, an aquifer pumping test conducted from May 7-9, 1997 has confirmed that the higher concentrations of tritium close to the HFBR are not being influenced by the pumping system.

In response to a request from the Suffolk County Department of Health Services, air monitors will be installed in the area of the recharge basin to check tritium evaporation levels. ■

BNL's third system

New pump/treat system removes contamination from sole source aquifer

The Lab's third groundwater treatment system is now operational.

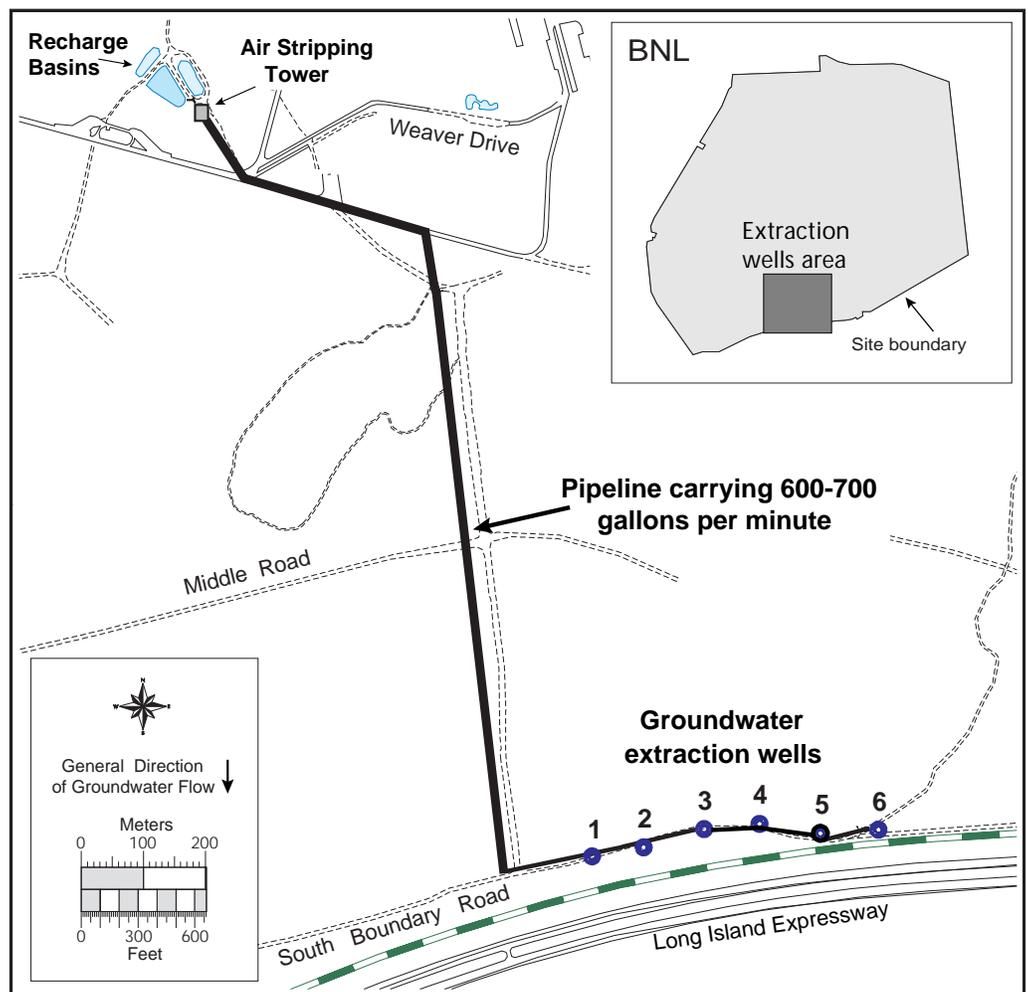
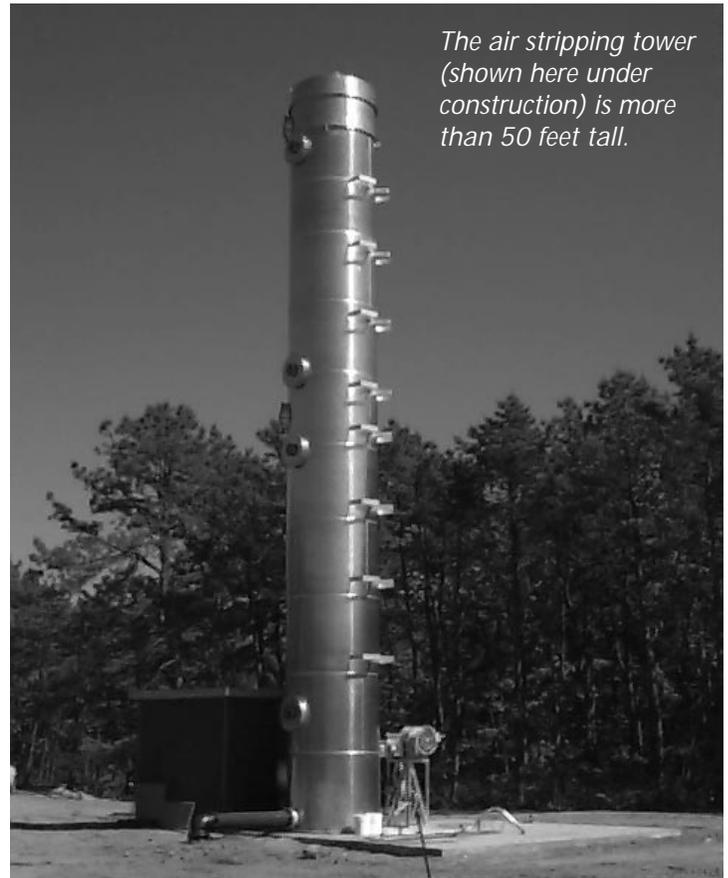
Construction of the Operable Unit III pump-and-treat system was completed in June, and the system is now working at full capacity. Pump-and-treat works by extracting contaminated groundwater and pumping it to an "air stripping" facility, where a powerful blower separates volatile organic compounds (VOCs) from the water. The clean water is recharged (returned to the ground) and the VOCs are released into the air at concentrations below state and federal emission standards.

The system was constructed to treat a plume of VOCs moving south from unidentified sources (still under investigation) in the developed central portion of the Lab site. It is currently processing approximately 600 gallons of water per minute. After the VOC's are removed, the clean water is discharged into a new recharge basin located approximately one mile north of the site boundary.

The extraction system is located approximately 3,000 feet to the west of another system (operational since December 1996), constructed to remediate a plume originating from the Lab's Current Landfill (now closed and capped) and the Hazardous Waste Management Facility. The third system, constructed

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The pump-and-treat system includes six extraction wells at BNL's southern boundary (lower right). Contaminated water is extracted from the aquifer and pumped approximately one mile north to the treatment facility. After treatment, the clean water is recharged (returned to the ground), and the contaminants are released into the air at levels below state and federal emissions standards.



Public meeting expected this fall regarding radioactive soils cleanup

This fall, the U.S. Department of Energy (DOE) and Brookhaven National Laboratory (BNL) plan to hold a public meeting and poster sessions to inform BNL employees and the public about contamination involving, and proposed cleanup strategies for, radiologically contaminated soils located at the Lab.

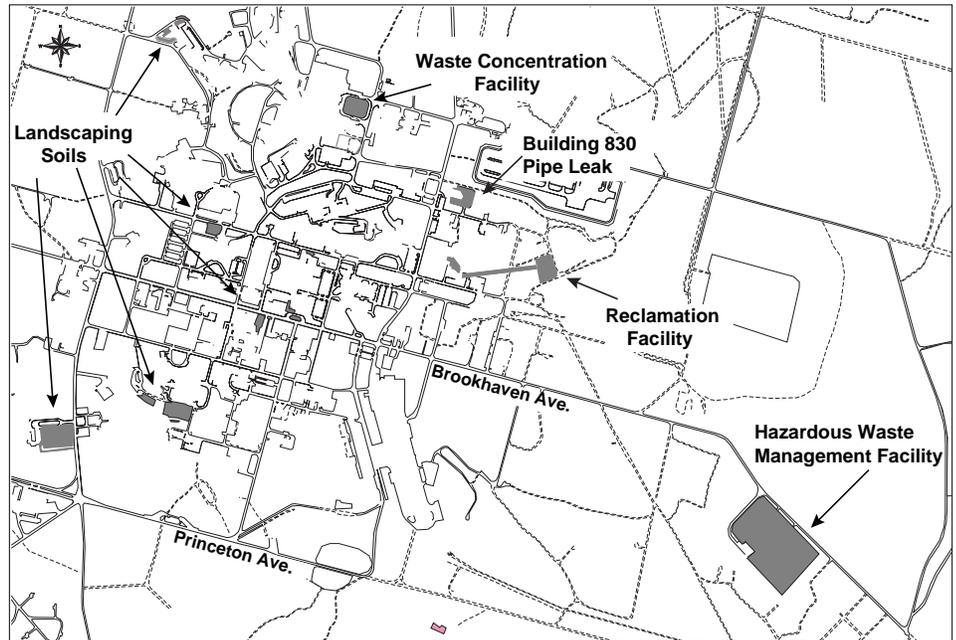
The meetings will be held during a comment period on two documents that relate to the contamination and its proposed remediation. The "Operable Unit I (OU I) Proposed Plan," and "Feasibility Study Report for OU I/Site-Wide Radiological Soils" follow a remedial investigation that was completed in June 1996. The two reports identify and compare alternatives for remediation of the area, and this starts the decision-making phase of the Superfund process for this project.

Soils identified

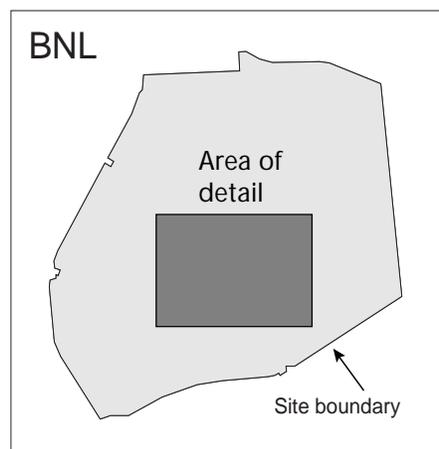
The majority of radiologically contaminated soils on site are in the Hazardous Waste Management Facility. This area has been the central receiving, storage and processing area for BNL's hazardous and radioactive waste since 1947. It will be the principal focus of remediation activity. Most of the soils in the Hazardous Waste Management Facility contain low levels of radiological contamination, primarily cesium-137.

The Hazardous Waste Management Facility will be replaced later this year by a new, state-of-the-art waste handling facility in the northeast part of the Lab's central portion.

Other contaminated soils containing low levels of cesium-137



Radioactive soils are found primarily at the Hazardous Waste Management Facility (above, lower right). Other sitewide soils are shown shaded in grey.



have been found near the center of the site, a developed area consisting of buildings, roads and parking lots. These soils were probably contaminated in the mid- to late-1960s, and later mistakenly used as landscaping fill in several locations around the site. BNL's health professionals do not consider these soils to present a hazard to the health of Lab employees or the public. Also,

since cesium-137 binds to soil particles, it does not migrate in groundwater.

Low levels of contamination have also been found at the Waste Concentration Facility, where several liquid radioactive waste storage tanks were removed in the fall of 1994, and in a wooded sump outfall area outside Building 650, where radioactive clothing and equipment were decontaminated.

The Building 650 sump was included in an interim action under Operable Unit IV that included fencing and monitoring of the area, but the final remediation of these soils will be included in the Operable Unit I plan.

Options considered

The Proposed Plan and Feasibility Study describe a variety of possible remediation alternatives for Operable Unit I and site-wide

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Message...

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Chemical/Animal Pits and Glass Holes, were used from the late-1950s to 1981 for the disposal of chemical containers, drums, laboratory glassware and animal carcasses. Our investigations determined that the pits were a source of contamination of area soil and groundwater, so the contents are currently being excavated, sorted, and disposed of off-site.

Chemicals removed

To prevent the spread of contamination and remove existing contamination, several projects are under way. Two pump-and-treat systems are now operational, extracting more than 1,300 gallons per minute of contaminated groundwater from the Lab's southern boundary. The water is being treated to remove the contamination, and the cleaned water is then returned to the

aquifer. These systems are all expected to run for several years, working around-the-clock to clean the aquifer. A third system, constructed to prevent further southward migration of the tritium plume associated with the Lab's High Flux Beam Reactor, has been operating since May.

OER has also begun construction on a cleanup system in the central part of the Lab known as Operable Unit IV (see story, page 3). Soil and groundwater in this area contain remnants of fuel oil and solvents from a 1977 spill. Two technologies are being combined to remediate the area. Air sparging and soil vapor extraction work together, forcing pressurized air into the groundwater to bubble these volatile compounds out of the water and into the soil. Once in the soil, powerful vacuum pumps recover the resulting vapors and pipe them to a treatment facility. The combination of these two tech-

nologies is expected to be quite successful in this area.

More work ahead

While these projects represent a large percentage of the cleanup work being done at the Lab, they are not the first. Several important projects have been accomplished in the past few years, including the capping of two landfills, the removal of nine radioactive waste storage tanks, and remediation of more than 30 cesspools.

They are not the last, either. Investigations in three other areas of the Lab are still under way, and as we move into 1998, several more remediation efforts will begin. These include the cleanup of radioactive soils at the Hazardous Waste Management Facility and other areas of the site. The Superfund cleanup at BNL is a long, involved process, but it certainly is encouraging to see remediation taking place at the pace and scale it is right now. ■

Soils meeting...

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radiological soils, including:

- Soil excavation and off-site disposal;

- The use of a "cap" over the hazardous waste facility to isolate the contaminated soil, preventing precipitation from leaching contaminants into groundwater;

- In-situ vitrification, the process of applying a strong electrical current to melt soil, rock and any adjacent waste products into a stable, glass-like form, preventing precipitation from leaching contaminants into groundwater; and,

- Soil washing, which involves using mechanical and chemical processes to remove radiological contamination from soils.

The reports also address several areas that have already undergone

or are currently undergoing remediation. These include the Former and Current landfills (capped in 1995 and 1996, respectively), the Interim Landfill (to be capped this year), and 51 waste pits known as the Chemical/Animal Pits and Glass Holes (currently being excavated; see story, page 1).

Because these areas were known sources of contamination, their cleanup was carried out as a short-term removal action.

Groundwater addressed

While groundwater in this area is discussed in these documents, remediation was addressed as a separate removal action last year. The removal action involved construction and implementation of a pump-and-treat system at the Lab's southern boundary to remove contaminants from groundwater in the area.

The public meeting is part of a

comment period on the Proposed Plan and Feasibility Study that will take place in late summer/early fall 1997.

Remedy finalized

After all public comments are reviewed and considered, a final remedy for the area will be chosen by the members of the interagency agreement (DOE, EPA, and NYSDEC) and documented in a "Record of Decision."

The Record of Decision includes a "Responsiveness Summary" summarizing DOE's responses to the public's questions and comments. Following that step, actual design and remediation will begin.

The Proposed Plan and Feasibility Study will be available this fall at the Lab's four information repositories (for locations, see page 11). ■

BNL's second 'Record of Decision' undergoing final regulator review

The second Record of Decision (ROD) at Brookhaven National Laboratory is in the process of being reviewed by the three agencies overseeing the Lab's Superfund cleanup.

The ROD is a major step in the Superfund process, signifying that all three agencies (U.S. Department of Energy, U.S. Environmental Protection Agency, and N.Y.S. Department of Environmental Conservation) have agreed on a remediation strategy.

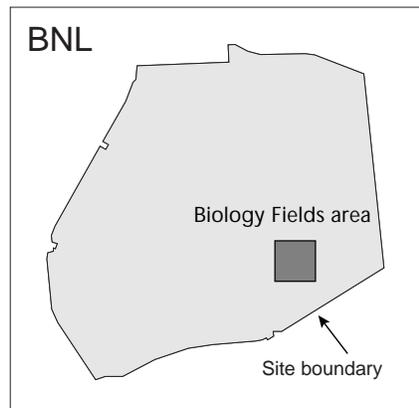
The ROD for Operable Unit VI addresses groundwater contamination in an undeveloped area of Manorville, just south of the Lab's southern boundary. The contamination is from a common pesticide known as ethylene dibromide (EDB), used around 1970 at the Lab's Biology Fields.

Remedy outlined

Following an extensive investigation, BNL and DOE identified a preferred remediation alternative for the contamination. The alternative, which is the basis of the ROD agreement, includes:

- Providing public water service for all developed properties in the vicinity of EDB contaminant migration;
- Allowing natural attenuation (dilution and degradation) of EDB in the aquifer;
- Implementation of a groundwater monitoring program to track the migration of the EDB; and,
- A provision for extending the hookup area if groundwater monitoring data indicates that new areas of the aquifer have been impacted.

A public comment period, including a series of poster



sessions and a public meeting, was held last fall to provide the community with information and seek input on the remediation alternatives.

Concerns recognized

Following the comment period, a "Responsiveness Summary" is prepared to summarize DOE's responses to questions and concerns raised during the comment period.

As described in the Responsiveness Summary, which is part of the ROD, most residents supported public water hookups, natural attenuation of the EDB, and long-term monitoring.

However, disagreement existed over the proposed extent of DOE's public water hookup area, and in response to concerns expressed by the Town of Brookhaven, elected officials, and citizens, DOE agreed in March 1997 to extend hookups to areas outside of the contaminant migration area.

Migration tracked

The EDB is expected to slowly migrate southward over the next 20 years, diluting and degrading until it reaches non-detectable levels. Many of the public water hookups, meanwhile, have already been completed, with the remainder expected to be done by the end of 1997. Installation of monitoring wells is expected to start this summer.

The ROD will be the second to be signed at BNL. The Operable Unit IV Record of Decision was reached in March 1996.

The Record of Decision, including the Responsiveness Summary, will be available for review later this year at the Lab's four information repositories (for locations, see page 11). ■

contacts

U.S. Department of Energy contact for public participation at BNL:

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U.S. Department of Energy, Chicago Operations Office
Environmental Programs Group, 9800 Cass Street, Argonne IL 60439

DOE contacts for environmental restoration activities at BNL:

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U.S. Department of Energy, Brookhaven Group
Building 464, Upton NY 11973

Strontium...

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standard, the strontium is not expected to have traveled far from the tank area due to its relatively slow movement in groundwater (approximately 25 feet/year). The tank itself is located approximately a mile-and-a-half north of the site's southern boundary. At a rate of 25 feet/year, it would take this contamination more than 300 years to reach the site boundary. None of the Lab's water supply wells have been impacted.

More monitoring planned

This contamination is unrelated to the tritium plume south of the High Flux Beam Reactor. Contamination in this area will be addressed under the ongoing Operable Unit III investigation. DOE and BNL are currently installing more monitoring wells to determine the southern extent of the contamination.

The HFBR tritium plume pumping system, meanwhile, has been operating since May 12, after

BNL agreed to a Suffolk County request for the installation of an additional six monitoring wells to further delineate the extent of the HFBR plume.

The results from the sampling of those wells, located on the Lab site approximately one mile north of the Lab's southern boundary, are now available. Only one of the wells showed tritium concentrations above the drinking water standard, at a peak of 35,000 pCi/L. The results helped BNL to confirm the southern extent of tritium at concentrations above the drinking water standard. Other wells helped to confirm the east/west extent of the plume.

Other important results have been obtained from samples taken from five monitoring wells in the vicinity of the tritium extraction wells. Radiological analysis of these samples showed only the low levels of tritium associated with the HFBR plume, along with the background levels normally observed that are associated with naturally occurring radioactive materials in the soil. ■

Pump/treat...

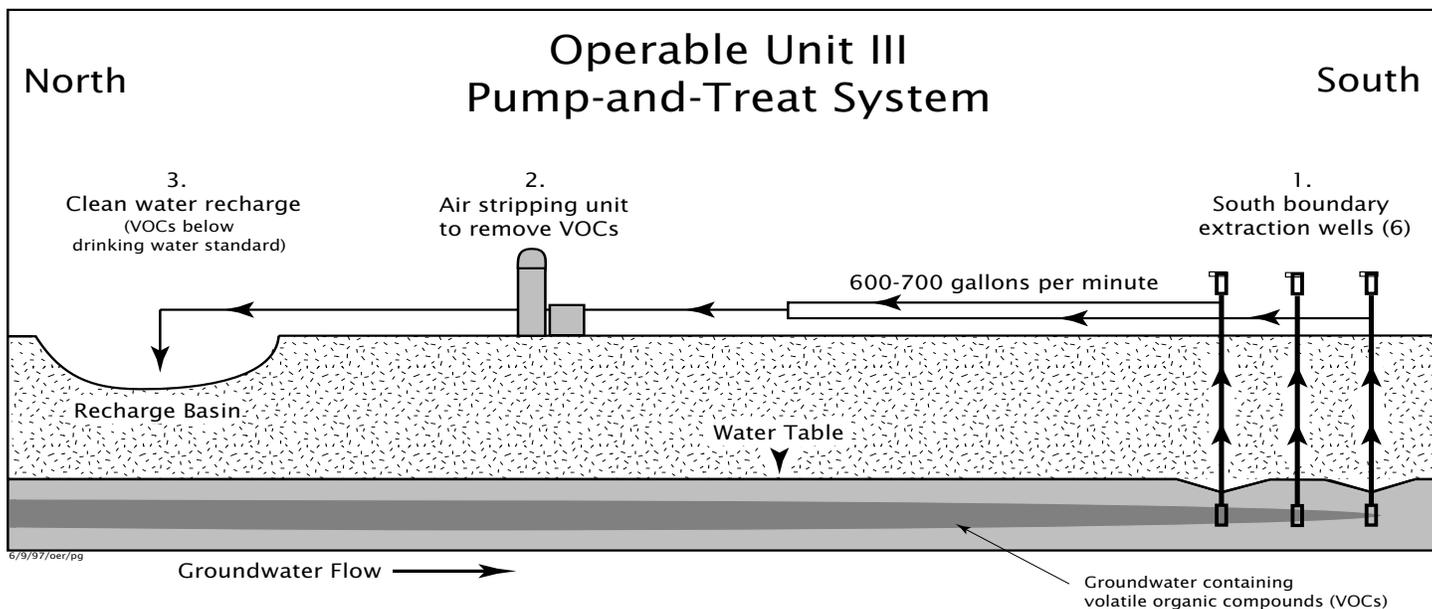
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to prevent further southward migration of the tritium plume associated with the Lab's High Flux Beam Reactor, has been operating since May. While the new system is expected to operate for several years, an approximate operating period will be determined in the OU III Feasibility Study, due out in spring 1998.

Groundwater monitoring wells at the basins and site boundary will be sampled and analyzed regularly to evaluate system performance and ensure compliance

with emission permits issued by the N.Y.S. Department of Environmental Conservation. Overseeing all monitoring will be the N.Y.S. Department of Environmental Conservation, U.S. Environmental Protection Agency and U.S. Department of Energy.

For more information on the system, see the Action Memorandum for Operable Unit III Groundwater Removal Action or the Operable Unit III Groundwater Removal Action Pre-Design Report, available for review at the Lab's four information repositories (for locations, see page 11). ■



1. Groundwater containing volatile organic compounds (VOCs) is removed from the aquifer by six extraction wells.
2. A pipeline carries the water north to an "air stripping" facility, where a powerful blower separates VOCs from the water.
3. The clean water is then recharged and the VOCs are released into the air at concentrations below state and federal emission standards.

Last March, the U.S. Department of Energy offered approximately 450 Manorville home and business owners free connection to public drinking water, and those hookups are now well under way.

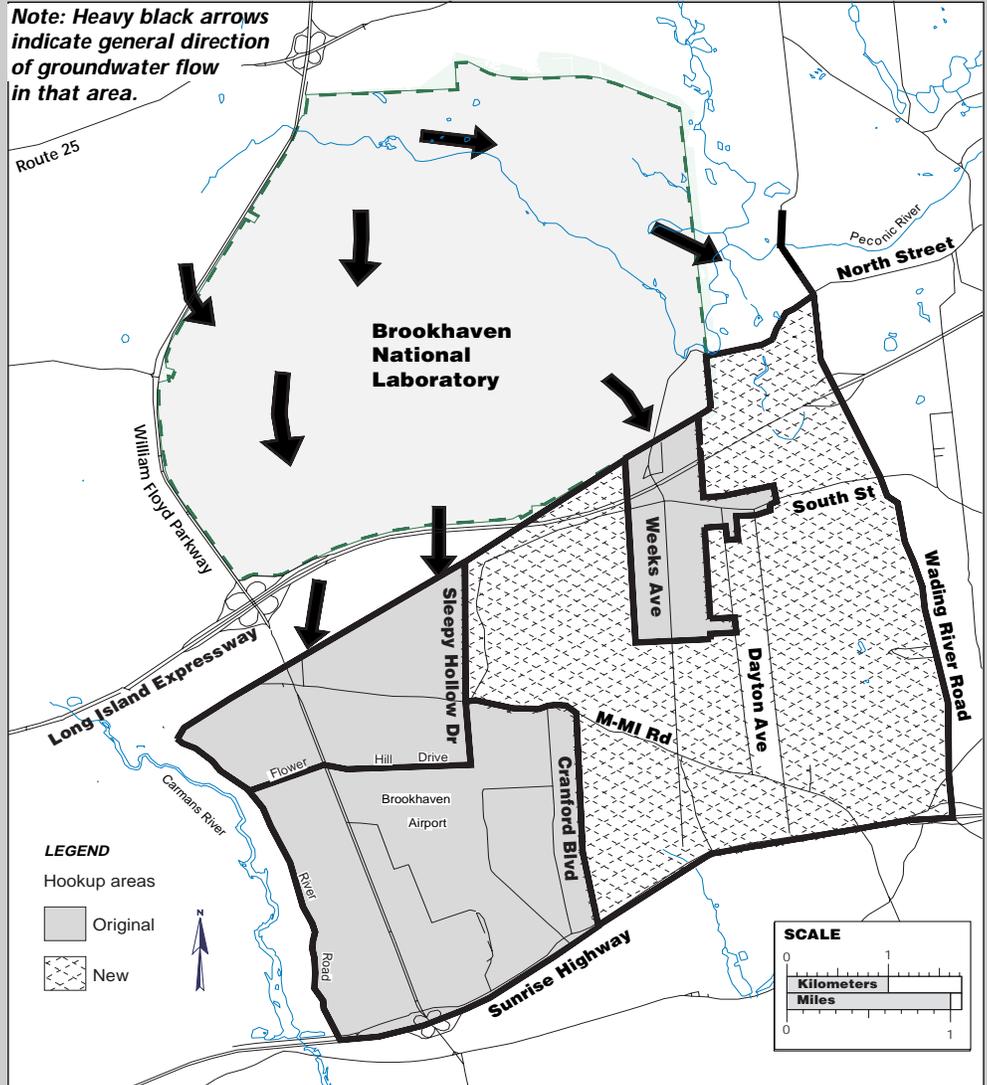
As of June 12, 1997, the Suffolk County Water Authority had completed an estimated 236 private property connections and approximately one-sixth of the water main installations in the new hookup area. A total of 74,000 feet of main will be installed.

Meanwhile, yard restoration work in E. Yaphank and N. Shirley is continuing, and road restoration work is taking place in the Weeks Avenue section of Manorville, where hookups were completed last fall.

There have been no additional hookups in these areas, although applications are still trickling in from residents who have not yet been connected.

All of the hookups are expected to be completed by the end of 1997, although some restoration work may be delayed until spring of 1998, depending on weather conditions. ■

Note: Heavy black arrows indicate general direction of groundwater flow in that area.



About 1,300 homes are being connected to public water.

Questions or concerns?

Anyone with questions or concerns regarding quality of work should contact the Suffolk County Water Authority at 516-288-1034. General questions or issues regarding the performance of the Water Authority should be directed to Rich Freeman of the U.S. Department of Energy at 1-800-369-6976.

Libraries — All reports from BNL's Office of Environmental Restoration are available at:

Longwood Public Library
800 Middle Country Road
Middle Island NY 11953
516-924-6400
e-mail:
helpdesk@suffolk.lib.ny.us

Mastics-Moriches-Shirley
Community Library
301 William Floyd Parkway
Shirley NY 11967
516-399-1511
www.li.net/~sc

BNL Research Library
Building 477A
Brookhaven Avenue
Upton NY 11973
516-344-3483
www: <http://www.bnl.gov>

U.S. EPA Region II Library
Administrative Records Room
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