

# Onondaga Lake Cleanup Takes Shape

**Substantial Progress Achieved as Dredging and Capping Continue**

## Cleanup Achieved Through Green Practices

Green practices including the use of biofuels, recycled materials, and other sustainable solutions are key elements of Honeywell's Onondaga Lake remediation.

- B20 biodiesel replaces about 2 million gallons of standard diesel fuel
- Green electric booster pumps and hydraulic dredging help reduce greenhouse gas (GHG) emissions, the equivalent of removing 12,700 cars from the highway for one year
- About 2,300 cubic yards of "green" concrete have been used for the new water treatment plant
- Honeywell Wind Turbines will provide supplemental renewable energy
- Solar panels are providing 30 percent of electric power for the Pump Station in Camillus and 100 percent renewable power for air monitoring equipment

**Shrub willows growing as an alternative cover system for Honeywell property off of Airport Road can reduce greenhouse gas emissions.**

**Two hundred solar panels are providing electric power to operate the Pump Station in Camillus.**

The Onondaga Lake cleanup is taking shape. Hundreds of Central New York scientists, engineers, and skilled craft laborers are working with Honeywell, achieving significant progress implementing lake improvement plans under the jurisdiction of the New York State Department of Environmental Conservation (DEC). Significant upgrades made by Onondaga County to its municipal wastewater treatment system plus the construction by Honeywell of the underground barrier wall, which intercepts contaminated groundwater from old industrial sites, have improved lake water quality to the best it has been in decades.

The Onondaga Lake Cleanup Plan, which was issued by DEC and the U.S. Environmental Protection Agency (EPA) in 2005, consists of four projects:

- Preventing the migration of contaminants into the lake from old industrial sites
- Removing material from the bottom of the lake, permanently containing it at an approved site, and capping designated portions of the lake bottom
- Creating sustainable habitat along the lake's shoreline and tributaries to encourage wildlife growth and expanding opportunities for local recreation
- Implementing a long-term operation, maintenance, and monitoring program to ensure the effectiveness of the remedy

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# Transformation of Geddes Brook and Nine Mile Creek in Progress; Major Source of Mercury Contamination Cleaned Up

Honeywell has cleaned up the former LCP Chemicals site, a former Allied Chemical property that was a major source of the mercury contamination to Onondaga Lake. Local experts helped design nearby wetlands to re-establish native species and wildlife. More than 20 native species are planted on the site, including trembling aspen, woolgrass, green ash, and pussy willow, which support a diverse array of the wildlife.

Work is well under way to remediate and transform 17 acres at Geddes Brook and 30 acres at Nine Mile Creek into diverse new habitats for wildlife. The projects will become part of a green corridor connecting habitat from Onondaga Lake to upland sites. Contaminated soil has been removed and 100,000 native shrubs, flowers, and trees are being planted. The projects will improve the ecosystem, and protect and enhance habitat and wildlife. Volunteers helped with the plantings while learning from habitat experts during the *Onondaga Lake Conservation Corps*, a partnership among the Montezuma Audubon Center, the Onondaga Audubon Society, Parsons, and Honeywell. *The Conservation Corps* is an opportunity for volunteers to become environmental stewards helping to enhance the sustainability of Onondaga Lake.

**Re-established wetland habitats at the former LCP site provide shelter, cover, and food to support fish and wildlife.**

**The largest of three hydraulic dredges (left) that will remove about 2 million cubic yards of material from the lake bottom. The cutter head (right) breaks up the lake bottom material before it is transferred into the pipeline.**

# Dredging and Capping Under Way

## Substantial Efforts Undertaken to Minimize Odors

Onondaga Lake cleanup operations are under way 24 hours a day, 6-7 days a week (except for the winter months). Hydraulic dredges will remove about 2 million cubic yards of material from the bottom of the lake by the end of 2015. Through a double-walled pipeline, the lake material is transported to a lined consolidation area in the Town of Camillus, where it is pumped into geotextile tubes for drying and safe isolation long term. About 450 acres of the lake are being capped to provide a new habitat layer, prevent erosion, and isolate remaining contaminants.

The cleanup, one of the largest remediation projects in the country, was designed to significantly reduce potential odors. Extensive efforts, including the use of heavy-duty plastic geotextile tubes to hold the material removed from the lake, the transport of lake material through the double-walled pipeline, a system to capture and treat vapors from the Wastewater Treatment Plant, and sediment thickeners, have been incorporated into the design and operation to protect worker and public health.

**Sections of double-walled pipe connect to form the four-mile-long pipeline that transports dredged lake material.**

- Dredging and capping are conducted from barges on the lake. The dredges have state-of-the-art electronic systems, including global positioning systems (GPS), computerized tracking software, and automated control systems.
- During dredging, metal teeth on the dredge, called the “cutter head,” rotate to loosen the lake material and break it into smaller pieces that are hydraulically suctioned into the dredge and pumped through the dredge into the pipeline.
- The dredged material is then transported through a four-mile double-walled pipeline through non-residential areas to the lined consolidation area. A 22-inch pipe serves as secondary containment, or an added safety measure, to the 16-inch pipe. This prevents lake material from being exposed to the open environment during transport.
- Green electric booster pumps help manage the flow of material, and sensors determine if there are any leaks or losses in pressure. Potential issues may result in temporary shut off of the pipeline until the problem is resolved.

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# Daily Air Monitoring Results Submitted to State Agencies

Throughout the project, the air quality is continuously monitored at the perimeter of the work zone to ensure that the air quality remains below government criteria.

A comprehensive, state-of-the-art air monitoring system was developed in a coordinated effort with DEC, the New York State Department of Health (DOH), and EPA, and is in place. Air monitoring data is submitted to DEC, DOH, and EPA on a daily basis. In addition, Honeywell has an air monitoring team that investigates air quality at the work site and in the community. According to the DEC, "total VOC levels detected at the perimeter monitoring locations do not represent a public health hazard."

To further improve odor reduction, additional controls have been implemented:

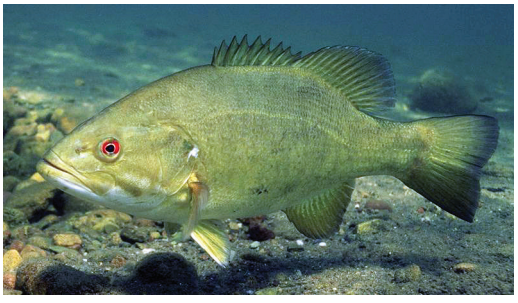
- Installed an odor control misting system
- Temporarily shut down one of two temporary water basins
- Significantly reduced temporary standing water in the active water basin
- Installed a cover system for active work areas in the water basin
- Enhanced the capture of vapors from the thickeners by installing a stand-alone carbon filtration system
- Cover geotextile bags with plastic when they are full

Air and odor monitoring results are available at **www.lakecleanup.com.**

## Capping Improves Lake Habitat and Fish Spawning

In locations where dredging occurs and adjacent areas, a new lake bottom "cap" will be added to permanently isolate any remaining contaminants. Extensive modeling and testing by national experts were part of the design process.

The top portion of the cap will function as a habitat layer where fish and other organisms will interact with the new, clean lake bottom. This habitat layer will aim to improve lake habitat and fish spawning.



**"Dredging and Capping"** *continued*

- At the lined consolidation area, designed to protect health and the environment, the dredged material is pumped into industrial-strength geotextile tubes made from permeable materials that offer effective odor control as well as a significant reduction in the size of the consolidation area. A high-strength plastic liner and a natural clay layer serve as the bottom of the consolidation area to safely seal the material inside. Geotextile tubes undergo extensive quality testing to ensure their effectiveness.
- Water leaving the geotextile tubing is collected, treated on-site, and then sent to the Metropolitan Syracuse Wastewater Treatment Plant and treated again to meet DEC standards before being returned to the lake.
- Once the lake cleanup is complete, the geotextile tubes will be covered to ensure long-term isolation. Layers of clean soil will be added and vegetation will be planted on top.

**Gravel being placed on top of a high-strength liner at the consolidation area. Geotextile tubes are set on top of the gravel.**

**Dredged material is piped to the consolidation area.**

# Community Health and Safety Remains Top Priority

## Former Commissioner of Onondaga County Emergency Management Named Advisor for Emergency Preparedness

Protecting the health and safety of workers and the community is an important part of every stage of the work to restore Onondaga Lake. Engineers, risk assessors, construction managers, quality control professionals, and state and federal agencies have worked with Honeywell to develop comprehensive Community Health and Safety Plans.

In addition to implementing prevention measures that are intended to eliminate or minimize any spills of dredge material, fuel, and other fluids, measures have also been implemented to minimize potential risks to recreational boaters. All appropriate federal and state navigation laws are followed including the U.S. Coast Guard rules for navigation. During nighttime operations, all vessels and on-water equipment are well-lit to improve visibility.

Continuing its commitment to bring the best nationally recognized experts into the project, Honeywell asked a former commissioner of Onondaga County Emergency Management to join its team of local professionals from Parsons, O'Brien & Gere, and Anchor QEA, who have been developing health and safety plans for the project.


**Honeywell's Health & Safety Leadership Team**

**Public input was incorporated into the enhancement plans for the Geddes lakeshore.**

# Community Input Since 2004; Public Dialogue Critical to Sustaining Successful Lake Cleanup

Since 2004, DEC and Honeywell have held a series of public meetings to outline the remediation plans. Public input was incorporated into the design, including the use of geotextile tubes to hold material removed from the lake bottom. Honeywell and DEC also created a working group with local habitat, conservation, and community organizations to gather opinions and perspectives on the draft Habitat Restoration Plan. Community input also has helped shape the Geddes lakeshore and is providing a vision for the southwest lakeshore.

To keep the public informed and involved in the cleanup, DEC established a Citizen Participation Plan for the lake cleanup in 2009. The agency then solicited applications from interested community members to participate in regularly scheduled working group meetings. The Onondaga Lake Community Participation Working Group meets monthly with a focus on creating opportunities for the community to offer input and receive information throughout the cleanup.

# Investigations / Consent Decree

On January 4, 2007, Honeywell entered into a Consent Decree with DEC to implement the Onondaga Lake remediation plan. The plan is a result of 12 years and about 100,000 hours of intensive effort by more than 100 local engineers and scientists working with nationally recognized experts from various universities, research institutions, and specialty engineering firms, and with input from community stakeholders. It was developed in cooperation with DEC, EPA, and federal, state, county, town, and village leaders, and is designed to:

- Protect human health and the environment
- Meet performance criteria established by DEC and EPA
- Improve the habitat for fish and wildlife
- Improve recreational opportunities and expand public access to the lake

Individuals interested in more information, or signing up for our newsletter, please visit **www.lakecleanup.com** or contact Honeywell at **315.552.9784**.

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