

A Call to Action

Crystal Clear

National Park Service
U.S. Department of the Interior

Delaware Water Gap
National Recreation Area
Upper Delaware Scenic & Recreational River



Installing Four Continuous Water Quality Monitors Near Delaware River Basin Marcellus Shale Development



The Barryville Install on the Delaware River (New York).
NPS PHOTO

National Park Service Delaware River parks collaborated with the U.S. Geological Survey (USGS) Water Science Centers in New York, Pennsylvania, and New Jersey on a USGS/NPS Water Quality Partnership technical assistance proposal to install four continuous water quality monitors near Delaware River Basin Marcellus Shale development. This project was selected for funding in 2012.

Three of the four installations, co-located with USGS gages on the Delaware River at Lordville, New York; the Delaware River above the Lackawaxen River near Barryville, New York; and the Lackawaxen River at Rowland, Pennsylvania, were completed in 2012. All have satellite telemetry and provide real-time data for core water quality parameters at these locations year-round. The more technically challenging installation on the Delaware River at Montague, New Jersey, is in the process of being completed and will have the same capabilities when it comes online in 2014.

Background

The Delaware River's superb water quality and natural resources are of primary importance to Upper Delaware Scenic & Recreational River and Delaware Water Gap National Recreation Area. As the last major river on the Atlantic Coast undammed the length of its main stem (330 miles), the Delaware provides important historic spawning and rearing habitat for sea-run migratory fish as found on few other rivers of this size in the United States. Migratory fish runs in the Delaware still comprise a vital part of biogeochemical cycles and provide an important link between river and marine ecosystems.

The Delaware River Basin is at the intersection of the Marcellus Shale formation, the largest (at 95,000 square miles) natural gas field in the United States, and 197 miles of the non-tidal Delaware River, the longest reach of the Special Protection Waters (SPW) in the United States. The SPW regulations protect the water quality of the river within the park units from "measurable change except towards natural conditions." Assessing whether "measurable change" occurs requires frequent or continuous monitoring, which will be provided by the newly installed multi-probe datasondes.

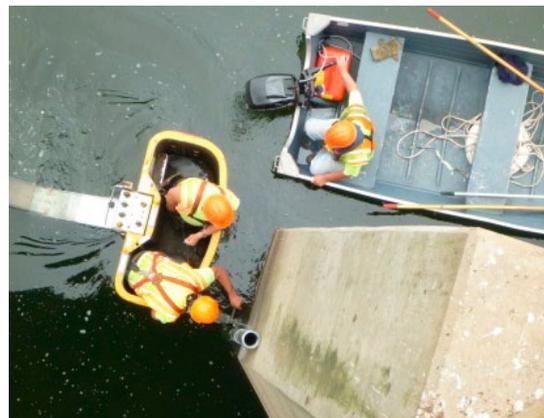
Status

With the help of USGS staff, installation of three of the four water quality monitors was completed in 2012. The New York State Department of Transportation assisted with the Lordville installation. These stations all consist of data loggers and telemetry transmission electronics, satellite antennas, solar panels, regulators and batteries, equipment housing and deployment pipe, and multiprobe data-sondes. With satellite telemetry, the stations

now provide real-time data for core water quality parameters of dissolved oxygen, pH, specific conductance, temperature, turbidity, and depth at these locations year-round.

Station operation is guided by USGS's Techniques and Methods 1-D3 publication, *Guidelines and Standard Procedures for Continuous Water-Quality Monitors: Station Operation, Record Computation, and Data Reporting*. Park staff manages data using *Aquarius* software accessible through the NPS Water Resources Division's license.

New York State Department of Transportation staff install deployment pipe for a continuous water quality monitor on the Lordville Bridge on the Delaware River. NPS/DON HAMILTON



The more technically challenging installation on the Delaware River at Montague, New Jersey, is in the process of being completed and will be managed by NPS Eastern Rivers and Mountains Inventory and Monitoring Network staff.



More Information

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www.nps.gov/upde

Barryville Water Quality Data
<http://amazon.nws.noaa.gov/cgi-bin/hads/interactiveDisplays/displayMetaData.pl?table=dc&nwsli=BRQN6>

Rowland Water Quality Data
<http://amazon.nws.noaa.gov/cgi-bin/hads/interactiveDisplays/displayMetaData.pl?table=dc&nwsli=ROQP1>

Lordville Water Quality Data
http://amazon.nws.noaa.gov/nex-hads2/jsp/interactiveDisplays/createChartTopFrame.jsp?nesdis_id=FA40643E&nwsli=LDQN6&pe_code=TW