U.S. Geological Survey New York Water Science Center – http://ny.usgs.gov

Message from Rafael W. Rodriguez, Director, New York Water Science Center

The President has released his budget for fiscal year 2007, which starts October 1, 2006. You will see that funding for the Cooperative Water Program (CWP) has been reduced. The CWP is the primary source of USGS funds for programs in New York, including surface- and ground-water monitoring as well as hydrologic investigations. At the same time, the President's budget shows an increase in the National Streamflow Information Program (NSIP), which may help offset the CWP reduction. NSIP is still well below the funding required to fully implement the program – as recommended by the National Research Council and others.

The New York Water Science Center has just had an unprecedented number of employees retire as a part of a recent retirement incentive program. Eleven employees from all four of our offices in New York retired as of February 3rd. This was a loss of over 350 years of experience. While this will add some challenges over the short term, we were fully prepared for this and see it as an opportunity to energize some of our programs while reshaping others for the long term. We appreciate those of our staff that are helping to fill the gaps left by these retirees. For example, Stephen Terracciano has agreed to be Acting Chief for the Coram Long Island office.

I am always interested in hearing from you. Please feel free to contact me about these or any other issues or program opportunities you may wish to discuss. I can be reached at (518) 285-5659 or rrodrigu@usgs.gov.

New York Native Named as Acting Director of the U.S. Geological Survey

Department of Interior Secretary Gale Norton has named Dr. P. Patrick Leahy as acting director of the U.S. Geological Survey. Leahy took over from Dr. Charles G. Groat, who resigned to accept an appointment at the University of Texas at Austin. In naming Leahy, Norton said "Pat is a consummate professional with a wealth of scientific expertise and administrative experience on a broad range of issues."

Born in Troy, NY in 1947, Leahy started to work for the USGS at its Albany office in the summer of 1967, while a student. He took his first full-time position at USGS in 1974 and has been with the agency ever since. Leahy holds undergraduate and graduate degrees in geology (1968) and geophysics (1970) from Boston College. He received his doctorate in geology (1979) from Rensselaer Polytechnic Institute, where he specialized in regional ground-water studies and hydraulics.

Leahy served as the associate director for Geology of the USGS before being named acting director. Leahy has authored or co-authored more than 50 publications on an array of Earth-science topics. He has received the USGS Meritorious Service Award and in 2003 was recognized as a Meritorious Senior Executive by President Bush. To become the permanent director of the USGS, Leahy must be nominated by President Bush and confirmed by the Senate.

Selected Projects – For information on all our active projects, visit our project summary web page.

Russian soils help show effects from acid rain

A recent paper by Greg Lawrence and others published in the journal, Environmental Science and Technology focuses on the interrelated problems of acid rain and climate change. Increased tree growth in northern latitudes has been expected from climate warming over the past century, but this study found that tree growth in Northwest Russia has actually decreased as a result of acid rain effects on soils. Dr. Lawrence, lead author, and research scientist in the New York Water Science Center, worked with an international team of scientists in this study, which included analysis of the only archived soil samples in the world that predated the acid rain era. The Russian study supports other research by the New York Water Science Center, which suggests similar changes in soils of the Adirondack and Catskill Mountains. The paper is one of several products from a National Science Foundation grant to the State University of New York in which the USGS participated. The complete text of the paper can be found on our publication page or by simply clicking on the title in the following citation:

Lawrence, G.B., Lapenis, A.G., Dan Berggren, Aparin, B.F., Smith, K.T., Shortle, W.C., Bailey, S.W., Varlyguin, D.L., and Boris Babikov, 2005, Climate dependency of tree growth suppressed by acidic deposition effects on soils in northwest Russia: Environmental Science and Technology, v. 39, no. 7, pp. 2004-2010.

USGS Provides Coastal Flood Alerts

The coastal areas of southeastern New York are vulnerable to tidal flooding. Timely evacuation of people from flood-threatened areas in advance of approaching hurricanes and nor'easters requires adequate warning time.

Figure 1. – Coastal floodwaters inundating homes and streets in Freeport, NY. Source: Nora Sudars, Village of Freeport

To begin addressing this need, the U.S. Geological Survey (USGS), in cooperation with the Town of Hempstead, Village of Freeport, and New York State Department of Environmental Conservation, is operating a network of real-time, tide-elevation and meteorological stations in the coastal areas of Long Island and New York City. Data from this monitoring network are transmitted to USGS offices every hour when tide levels are below the National Weather Service (NWS) minor coastal-flood elevation. When tide levels rise above this threshold, the tidal station issues a synthesized-speech message via telephone to warn emergency-management officials and NWS forecasters, and increases the frequency of data transmissions to 6-minute intervals. Real-time tide-elevation data at New York sites are available at http://waterdata.usgs.gov/ny/nwis/current?type=tidal. For more information, contact: Christopher Schubert at (631) 736-0783 x120 or schubert@usgs.gov.

The Effects of Salty Ground Water on Onondaga Lake in Central New York

The USGS, in cooperation with the Onondaga County Soil and Water Conservation District and the Onondaga Lake Partnership is characterizing the valley-fill aquifer system in the Onondaga Trough that drains towards Onondaga Lake. The USGS project will estimate the direction and rate of ground-water flow to and beneath Onondaga Lake and the sources of salinity discharging to the lake. Onondaga Lake has been identified as one of the Nation's most contaminated lakes as a result of discharges from industrial, sewage, and storm-water sources. Remediation of polluted surface-water discharges is planned, but the migration of poor quality (brine laden) ground water also affects the quality of lake water and may affect the remediation plans. A ground-water-flow model will be used to simulate the ground-water system in the glacial aquifers discharging to the lake. The numerical model will help qualify the conceptual model of the hydrologic system and quantify the ground-water contributions to the lake, thereby aiding local, state, and federal agencies in the remediation of the lake. For more information, contact: Bill Kappel at (607) 266-0217 x3013 or wkappel@usgs.gov

Figure 2. – Infrared image of Syracuse NY and Onondaga Lake. (Source: Onondaga Lake Partnership)

Hydrologic Conditions

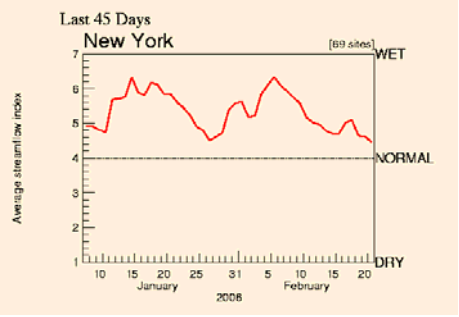

Figure 3. – Graph of index streamflow for NY, since January 2006, based on 69 sites with more than 30-years of record.

Surface Water in New York, August 2005 to January 2006

Streamflow in August either remained in the normal range or decreased into the normal or dry ranges at most stations in New York. Streamflow in September varied across the state from wet in the north and west to dry or very dry in the southeast and Long Island. Streamflow in October increased at all stations and was either in the normal or wet ranges. Streamflow at all stations remained in the normal or wet ranges in November through January. Precipitation for the six-month period varied around the state from slightly above normal to much above normal, except for the south-west corner, where it was slightly below normal. The figure at left shows that streamflow conditions since January 2006 have been wetter than normal. Our web page displays real time and historic data; visit the surface-water-watch page for hydrologic conditions across the country; and the Center's monthly summary of hydrologic conditions in the State.

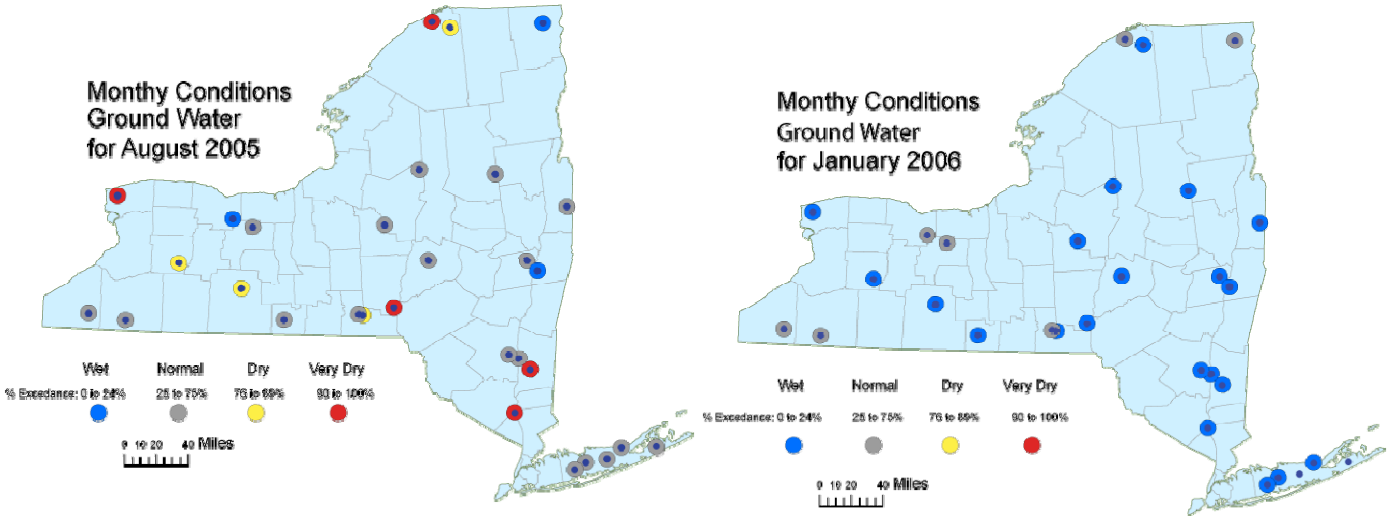

Figure 4. – Maps showing drought monitoring network wells that have 10 or more years of record and their associated percent exceedance for August 2005 and January 2006. Note many additional network wells exist with less than 10 years of record.

Ground Water in New York, August 2005 to January 2006

Water levels in August and September 2005 generally ranged from normal to very low (dry) although a few wells had higher than normal water levels (see fig. 4, August 2005 conditions). Precipitation and ground-water recharge in October resulted in high water levels and very wet conditions which have continued through January 2006 and record high water levels were recorded at a few wells during this period. Our web page displays real time and historic ground-water data for these and other wells as well as a monthly summary of hydrologic conditions. Another useful resource for data on hydrologic conditions in New York and the rest of the country is the USGS ground-water watch page.

Changes to the network – In cooperation with the Suffolk County Department of Health Services, the USGS has added 28 new monitoring wells to its network in Suffolk County. In addition, in Cooperation with the Nassau County Department of Public Works the USGS has added continuous-streamflow monitoring at Bellmore Creek at Bellmore (01310000) in Nassau County. Finally, a modeling project on the Manhasset Neck Peninsula in Northern Nassau County is winding down so the 22 observation wells associated with that project will be removed from the network. If you are interested in providing funding to help support these or other sites in the network, please contact Ward Freeman, wfreeman@usgs.gov.

New Reports from the New York Water Science Center –Listed below are some of the reports written by scientists in the USGS New York WSC in 2005. A complete list of New York WSC publications can by found on our publication search page.

- Abbene, I.J., Fisher, S.C., and Terracciano, S.A., 2005, Concentrations of insecticides in selected surface water bodies in Suffolk County, New York, before and after mosquito spraying, 2002-04: U.S. Geological Survey Open-File Report 2005-1384, 14 p., online only.
- Baldigo, B.P., Murdoch, P.S., and Burns, D.A., 2005, Stream acidification and mortality of brook trout (Salvelinus fontinalis) in response to timber harvest in Catskill Mountain watersheds, New York, USA: Canadian Journal of Fisheries and Aquatic Sciences, v. 62, no. 5, p. 1168-1183.
- Brooks, L.T., 2005, Flood of September 18-19, 2004 in the Upper Delaware River Basin, New York: U.S. Geological Survey Open-File Report 2005-1166, 123 p.
- Burns, D.A. and Murdoch, P.S., 2005, Effects of a clearcut on the net rates of nitrification and N mineralization in a northern hardwood forest, Catskill Mountains, New York, USA: Biogeochemistry, v. 72, no. 1, p. 123-146.
- Burns, D.A., Vitvar, Tomas, McDonnell, J.J., Hassett, James, Duncan, Jonathan, Kendall, Carol, 2005, Effects of suburban development on runoff generation in the Croton River basin, New York, USA: Journal of Hydrology, v. 311, no. 4, p. 266-281.
- Busciolano, R.J., 2005, Statistical analysis of long-term hydrologic records for selection of drought-monitoring sites on Long Island, New York: U.S. Geological Survey Scientific Investigations Report 2004-5152, 47 p., online only.

- Butch, G.K., Murray, P.M., Brooks, L.T., McGrath, Kenneth, Edwards, D.D., 2005, Water resources data, New York, water year 2004, volume 1, eastern New York excluding Long Island: U.S. Geological Survey Water-Data Report NY-04-1, 581 p.
- Coon, W.F., and Johnson, M.S., 2005, Effects of land-use changes and stormflow-detention basins on flooding and nonpoint-source pollution, in Irondequoit Creek Basin, Monroe and Ontario Counties, New York -- Application of a precipitation-runoff model: U.S. Geological Survey Scientific Investigations Report 2005-5070, 67 p.
- Hetcher-Aguila, K.K., 2005, Ground-water quality in the Chemung River Basin, New York, 2003: U.S. Geological Survey Open-File Report 2004-1329, 19 p. online only.
- Hornlein, J.F., Szabo, C.O., Zajd, H.J., and Welsh, M.J., 2005, Water resources data, New York, water year 2004, volume 3, western New York: U.S. Geological Survey Water-Data Report NY-04-3, 345 p.
- Kappel, W.M. and Miller, T.S., 2005, Hydrogeology of the Valley-Fill Aquifer in the Onondaga Trough, Onondaga County, New York: U.S. Geological Survey Scientific Investigations Report 2005-5007, 13 p.
- Lawrence, G.B., Lapenis, A.G., Dan Berggren, Aparin, B.F., Smith, K.T., Shortle, W.C., Bailey, S.W., Varlyguin, D.L., and Boris Babikov, 2005, Climate dependency of tree growth suppressed by acidic deposition effects on soils in northwest Russia: Environmental Science and Technology, v. 39, no. 7, pp. 2004-2010.
- Lumia, D.S. and Linsey, K.S., 2005, New York Water-Use Program and Data, 2000: U.S. Geological Survey Open-File Report 2005-1352, 8 p.
- Mulvihill, C.I., Ernst, A.G., and Baldigo, B.P., 2005, Regionalized equations for bankfull discharge and channel characteristics of streams in New York State -- Hydrologic region 6 in the southern tier of New York: U.S. Geological Survey Scientific Investigations Report 2005-5100, 14 p.
- Murdoch, P.S., McHale, M.R., Mast, M.A., and Clow, D.W., 2005, The U.S. Geological Survey Hydrologic Benchmark Network: U.S. Geological Survey Fact Sheet 2005-3135, 6 p.
- Spinello, A.G., Busciolano, R.J., Pena-Cruz, G.P., and Winowitch, R.B., 2005, Water resources data, New York, water year 2004, volume 2, Long Island: U.S. Geological Survey Water-Data Report NY-04-2, 286 p.
- Wall, G.R., Ingleston, H.H., and Litten, Simon, 2005, Calculating mercury loading to the tidal Hudson River, New York, using rating curve and surrogate methodologies: Water, Air, and Soil Pollution, v. 165, p. 233-248.
- Westergard, B.E., Mulvihill, C.I., Ernst, A.G., and Baldigo, B.P., 2005, Regionalized equations for bankfull-discharge and channel characteristics of streams in New York State: Hydrologic Region 5 in Central New York: U.S. Geological Survey Scientific Investigations Report 2004-5247, 16 p., online only.

The USGS Water Resources Discipline (WRD) has the principal responsibility within the Federal Government to provide the hydrologic information and interpretation needed by others to achieve the best use and management of the Nation's water resources. WRD actively promotes the use of its information products by decision makers to:

- Minimize loss of life and property as a result of water-related natural hazards, such as floods, droughts, and land movement.
- Effectively manage ground-water and surface-water resources for domestic, agricultural, commercial, industrial, recreational, and ecological uses.
- Protect and enhance water resources for human health, aquatic health, and environmental quality.
- Contribute to wise physical and economic development of the Nation's resources for the benefit of present and future generations.

If you have an environmental or resource-management issue in which you would like to partner with the USGS to investigate, please contact any of our senior management staff (listed below). Projects are supported primarily through the Cooperative Water Program. This is a program through which any State, County, or local agency may work with the USGS to fund and conduct a monitoring or investigation project.

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