The Source

Newsletter of the NHDES Drinking Water Source Protection Program
on the web at *www.des.nh.gov*

Summer 2010

Favorable Gravel Well Analysis Updated

By Dan Sundquist, Director of Land Conservation Planning, Society for the Protection of NH Forests

In 1999, DES released a two-volume publication titled "A Guide to Identifying Potentially Favorable Areas to Protect Future Municipal Wells in Stratified-Drift Aquifers." This long title represented a new frontier at the time in groundwater protection planning in New Hampshire, and was an outgrowth of DES's Comprehensive State Groundwater Protection Program.

Ten years later in 2009, DES awarded a Local Source Water Protection grant to the Society for the Protection of New Hampshire Forests to review the original methodology and generate a new statewide favorable gravel well analysis (FGWA) using updated GIS data. The approach described in the guide and used in the current update is referred to as a FGWA since it focuses on identifying areas within sand and gravel aquifers that hold the potential for high-yield municipal water supply wells.

The FGWA method uses GIS technology to overlay on each mapped stratified-drift aquifer a series of prescribed buffer distances based on the presence of hydrological features, roads and highways, contamination sources, and a suite of urban features such as transmission lines, pipelines, railroads, and others. These buffers represent areas not suitable for new water supply development due to DES's requirement for new wells to be set back from various land uses, leaving the remaining aquifer area after buffering to be evaluated for potential well yield using USGS transmissivity data.

Using new roads data available from NHDOT and hydrographic data from USGS, the update of the FGWA is the most accurate assessment made yet. Scarcity is the takeaway message one can conclude from the statistical results. For instance:

- The total area of all mapped stratified-drift aquifers in New Hampshire is only about 805,000 acres, or 14 percent of the state's land area.
- Only about 85,000 acres, or 11 percent, of that aquifer area is suitable for wells pumping 75 gallons per minute or more (the minimum volume for a large community well).
- Only about 20 percent of the 85,000 acres is permanently protected from development.

Adding to the scarcity of available future well sites, many of the remaining high-yield zones in our aquifers are in rural or remote areas away from the rapidly urbanizing southeastern quarter of the state.

A detailed technical report with summary statistics and recommendations for enhancements to the FGWA will be available soon from DES and the Society for the Protection of New Hamsphire Forests. Planners and others interested in the status of our groundwater resources will also be able to query the FGWA database and view online mapping of remaining favorable well site areas at community scale.

2011 Source Water Protection Grant Applications Now Available

The application for the 2011 round of Local Source Water Protection grants is now available on DES's website at www.des.nh.gov/organization/divisions/water/dwgb/dwspp/lswp_grants.htm. The deadline to apply is November 1, 2010. The grants are available to public water suppliers, municipalities, regional planning agencies, non-profit organizations, educational institutions, conservation districts, and state agencies. Postcards announcing the availability were mailed out in June. Grantees can receive up to $20,000 to protect public drinking water sources through improved watershed planning, delineation of protection areas, assessment of threats to water supply sources, implementation, source security, and conservation. For more information, contact Johnna McKenna at (603) 271-7017 or johnna.mckenna@des.nh.gov.

SPOTLIGHT ON SEABROOK

Town Wins Award for Water Conservation Effort

To open the 2010 Drinking Water Source Protection Workshop on April 30, DES Commissioner Thomas Burack presented the Seabrook Water and Sewer Advisory Committee and its chair, Sue Foote, a Source Water Protection Award for their work in achieving water conservation. In 2003, Seabrook residents connected to the town's water system enjoyed an unlimited amount of water for a relatively low annual fee, but the water system was on the brink of a water supply emergency. A ban on outdoor watering was a standard practice in Seabrook to keep the town's wells and tanks from going dry. For a brief period, Seabrook had to use an emergency water supply to meet the expanded summertime water supply needs. Foote and the committee assessed the condition of Seabrook's available water supply and successfully garnered broad public support to fund water meters and other water system improvements. They convinced Seabrook residents to drop their historically strong opposition to the installation of residential water meters and take the long view in weighing the costs and benefits associated with installing water meters.

Passage of a town warrant article to install meters has resulted in the identification and repair of countless leaks, and the termination of numerous water misuses in the system. These misuses include residents who continuously ran water during winter to prevent freezing pipes (rather than winterizing the pipes), and those who continuously ran water into swimming pools with repairable cracks. As a result of the metering, the town has experienced a dramatic reduction in the number of occupied units using 60,000 gallons (a billing threshold) or more per year and is saving thousands of gallons of water a day, protecting the environment and preserving available water supply for future use. Congratulations, Seabrook!

Virtual Watershed Website Unveiled

The N.H. Geological Survey, a bureau of DES, has recently released a prototype web application that provides access to new data on water resources in the Piscataqua/Coastal watershed. The initial release of this "virtual watershed" allows decision makers to easily view and query newly developed datasets that characterize the surface and groundwater resources of the Seacoast Region. The NHGS virtual watershed is an outgrowth of the cooperative Seacoast Groundwater Availability Project.

The 10-meter resolution digital elevation (terrain) model that NHGS initially developed for the watershed provided the foundation for the water resources data. Other new datasets include potential groundwater recharge during an "average" year, depth to bedrock, saturated thickness of overburden materials, percent impervious land cover in surface water catchments, water balance index values (comparing net water withdrawals to baseflow in streams as an indicator of relative "stress" on available water resources), and high and low yield well clusters. Given the accuracy and spatial limitations of the source data, all of the new datasets are subject to varying degrees of error and must be regarded as "best estimates" of actual conditions.

Different modeling approaches were employed in creating these datasets, taking full advantage of GIS technology to analyze existing data sources, such as the New Hampshire Water Well Inventory, registered water use, surficial geologic maps, and the N.H. Hydrography Dataset.

Virtual, *continued on page 4*

The Source, the quarterly newsletter of the DES Drinking Water Source Protection Program, is published by the N.H. Dept. of Environmental Services.

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive
PO Box 95
Concord, NH
03302-0095
(603) 271-3503

Commissioner	Thomas S. Burack
Asst. Commissioner	Michael J. Walls
Division Director	Harry T. Stewart
Bureau Administrator	Sarah Pillsbury
Program Manager	Paul Susca
Editors	Pierce Rigrod
	Holly Green

To subscribe, contact Pierce Rigrod at (603) 271-0688 or pierce.rigrod@des.nh.gov
www.des.nh.gov
Printed on Recycled Paper

Regulatory Tools to Beat the Peak

The previous two New Hampshire summers have been extraordinarily wet and cool. In fact, New Hampshire received an average of 9.47 inches and 7.09 inches of precipitation in July 2008 and 2009, respectively. This represents a respective 239 percent and 180 percent increase over the historical monthly average precipitation levels based on data collected over the last 115 years of record (data from Northeast Regional Climate Center). Yet, over this same time period water demand continued to increase, requiring suppliers to implement water use restrictions despite the unusually high precipitation.

Enormous quantities of energy, chemicals and human labor are consumed to deliver water that is safe for human consumption only to have it inefficiently applied to lawns, crops or other landscapes. New model ordinances are available to municipalities, village districts, and water systems in order to stay ahead of the peak water use curve.

- Water Efficient Landscape Model Ordinance: New homes are using more water proportionally than their older counterparts despite an increase in the efficiency of water using fixtures and appliances. The increase is strongly correlated with the prevalence of inground irrigation systems for watering lawns and landscapes. The ordinance is designed to address new residential and commercial development and includes provisions for maximum lawn size, adequate soil depth, drought-tolerant landscape plantings, and efficiency measures for in-ground irrigation systems.
- Lawn Watering Restriction Model Ordinance for Towns and Village Districts: Minor droughts can have serious consequences in New Hampshire due to the nature of our geology and relative lack of storage. During the 2000-2003 drought, local and state authorities found there was no clear mechanism to restrict lawn watering despite the fact that many residential wells were going dry. As a result, RSA 41:11-d enables the governing body of a town or village district to restrict all residential lawn watering, regardless of the source, during a state- or federally-declared drought. The ordinance defines the entities that may declare a drought scenario and is structured to be increasingly stringent based on the discretion of town officials.
- Water Use Restriction Model Ordinance for Water Systems: The ordinance was written specifically for town officials and water commissioners under their authority to regulate public water systems (RSA 38:26). The model ordinance primarily restricts landscape irrigation and recommends other possible restrictions such as pool filling and car washing.

For more information, visit the DES Water Conservation program website at www.des.nh.gov (choose "Water Conservation" from the A to Z List) or call Derek Bennett at (603) 271-6685.

Updated Outreach and Education Priorities for Source Water Protection

Wrapping up a revision of the program's five-year strategy, DES's Drinking Water Source Protection Program updated its outreach and education plan in April. Both the Surface Water and Private Well working groups completed their planning in September 2009, with DES deferring the groundwater portion of the strategy to the Groundwater Commission. Highlights of the outreach and education plan include a new "source water protection message" (see below) and several new outreach topics related to water quantity issues. The outreach plan and other strategy documents can be viewed at www.des.nh.gov by selecting "Source Water Protection Strategy" from the A to Z List.

NHDES Source Water Protection Message

Ensuring safe drinking water supplies requires keeping drinking water *sources* (wells and surface waters) as clean as possible, because in the long run it is less expensive and more protective of public health to prevent contamination than it is to treat water to meet health standards. New contaminants of concern continue to emerge that can require more costly treatment of source waters if they have not been adequately protected. Municipalities and water suppliers have a key role in managing land uses that affect drinking water quality. DES's primary role is to provide technical and financial assistance and to enforce state regulations that serve to protect the state's sources of drinking water. However, effective protection relies on the combined efforts of the state, water suppliers, municipalities, businesses, institutions, and individuals whose activities have the potential to affect source water quality.

Two Awards Presented at Drinking Water Source Protection Workshop

Each year at the Drinking Water Source Protection Workshop, DES recognizes a water system, municipality, organization, or person for exemplary efforts to protect drinking water sources. This year, DES presented two awards – one for protecting source water quality and one for source sustainability. "Source sustainability" means preserving the yield or capacity of existing and future drinking water sources, for example, preserving groundwater recharge or watershed yield and ensuring that existing sources will continue to be adequate to sustain a water system through water use efficiency and other water conservation measures.

The 2010 Source Water Protection Award for water quality protection went to Lakes Region Planning Commission and former senior planner Erica Anderson for their work on aquifer protection in the towns of Belmont, Northfield and Tilton. This year, the three towns adopted aquifer protection ordinances developed by local groups coordinated and assisted by Erica. As a result of the ordinances, the Tri-Town Aquifer, which supplies water to five community water systems in the three towns, will be protected from land uses that would pose an increased threat of groundwater contamination.

With the first Source Water Sustainability Award, DES honored the Seabrook Water and Sewer Advisory Committee and its chair, Sue Foote, for their work in achieving water conservation. Sue and the committee successfully garnered broad public support to fund water meters, leak detection efforts and other water system improvements. More information concerning Seabrook's efforts is detailed within the *Spotlight On Seabrook* article on page 2.

Virtual, *continued from page 2*

NHGS is actively seeking feedback on the content and functionality of the virtual watershed, but is also interested in receiving comments about its look and feel. The insight of local planning officials and other end-users of the data will help to shape the future evolution of the web application to better support local water management initiatives. Content within this online application will be expanded in the near future to include "dry" year estimates of potential groundwater recharge and volumes of groundwater storage in surface water catchments.

The virtual watershed can be accessed at www2.des.state.nh.us/ags_apps/NHGS_Web_App/. For more information, contact Rick Chormann at frederick.chormann@des.nh.gov or Greg Barker at greg.barker@des.nh.gov.

DRINKING WATER SOURCE PROTECTION PROGRAM
29 HAZEN DRIVE, CONCORD, NH 03301

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

PRSRT STD
U.S. Postage
Concord, NH
PAID
Permit #1478