



The Basin Bulletin

Newsletter of the Raritan Basin Watershed Management Project

Raritan Project Reaches Major Milestone!

By Dan Van Abs, NJWSA

August 22, 2001 marked the successful end of the Raritan Project's first phase. On that day, over 30 members of the Characterization Committee heard presentations from NJWSA staff about the last three technical reports:

- *Ground Water in the Raritan River Basin*
- *Surface Water Quality and Pollutant Loadings in the Raritan River Basin*
- *Landscape of the Raritan River Basin*

Deborah Newcomb, Tom Stanuikynas and Amy Shallcross of the NJWSA Watershed staff presented key results from the studies. In the *Ground Water* report, written by Deborah Newcomb, GIS analyses by Caroline Phillipuk of the Upper Raritan Watershed Association indicate that many subwatersheds lost ground water recharge between 1986 and 1995 due to land development. In some cases, the losses were over 20 and even 25 percent, a major loss in just ten years. The report also gives the first estimates of septic system carrying capacity for each subwatershed of the Basin, from a low (averaged across the subwatershed) of one septic system per 1.6 acres to a high of one septic system per 11 acres. These are the highest densities that should be allowed for septic systems; local conditions may justify lower densities.

The *Surface Water Quality and Pollutant Loadings* report, written by Denise Zambrowski, formerly of NJWSA, summarizes extensive analyses by Robert Reiser of the U.S. Geological Survey and by NJDEP on pollutant concentrations, trends, seasonal relations and land use relations. Phosphorus (a major plant nutrient) and fecal coliform bacteria (an indicator of disease-causing bacteria) are the most common problems in the Basin; other problems such as pesticides, pH and water temperature exist in some areas. Road salting causes the major trends of concern; chloride, sodium and total dissolved solids concentrations are increasing in many parts of the Basin. The relative contributions of permitted wastewater treatment plants (point sources) and non-point sources, such as stormwater runoff, are also quantified for the first time. In many parts of the Basin, the primary source of pollutant loadings is from non-point sources, especially during medium and high stream flows; however, point sources are major contributors of some pollutants, especially during periods of low flow.

The *Landscape* report, written by Deborah Newcomb and Tom Stanuikynas, looks at a wide variety of issues, such as historic development and transportation patterns, sewer service areas, the relationship between these and the State Development & Redevelopment Plan's Policy Map, soil suitability for agriculture and development, and habitat for threatened and endangered species. Many interesting points come from this voluminous report. Contrary to historic patterns, more development is occurring far from major roads, resulting in great stress on rural roads and their surrounding landscapes. Sewer service areas exist in agricultural and environmentally sensitive areas (Planning Areas 4 and 5 in the State Plan), but historic towns and village comprise parts of those areas. Development is moving into areas with soils that have many limitations for development, which can have significant water quality and flow impacts. Critical habitats for threatened and endangered species are rare in the Lower Raritan Watershed Management Area, but fairly common in the Upper Raritan (North & South Branch) area. Caroline Phillipuk and Tom Stanuikynas developed all the GIS maps and analyses for this report.

These three reports join their predecessors (*Settings, Water Budget, Water Supply Availability, Surface Waters and Riparian Areas*) to form the technical foundation for planning efforts of the Raritan Basin Council, Technical Advisory Committee, and the three WMA Committees. NJWSA is now working on a public Characterization & Assessment Report that will summarize the most important results of the seven technical reports. This report will most likely be available early in 2002.

What's Inside?

- **Raritan River Timeline—p.2**
- Millstone PL-556 Project Update - p.3
- **Committee Updates—p. 4-5**
- Breaking News -p. 6
- **Update on the Raritan Basin Council—p.6**
- URWA 319 grant—p.6
- **Calendar of Fall Events -p. 7**
- Americorp in the Basin—p. 8

EDUCATION FORUM

HISTORY OF THE RARITAN RIVER—A TIMELINE

by Jillian Sico, NJDEP and Tom Stanuikynas, NJWSA

- 4000 B.C.The Lenape Native Americans settle in the Raritan River region.
- 900 A.D.The Lenape begin to grow crops and form settlements along the Raritan.
- 1524.....Giovanni da Verrazzano sails up the coast of New Jersey near the Raritan Bay.
- 1609.....Henry Hudson, sailing under the Dutch flag, landed at Sandy Hook.
- EARLY 1600S...Dutch settlers in the New York area begin to trade with the Lenape.
- 1633.....Thousands of Lenni-Lenape people died from European-brought diseases.
- 1664The English take control of all lands between the Delaware and Hudson Rivers.
- 1666Settlements at Woodbridge and Piscataway were established.
- 1670–1720.....Puritans, Quakers & Baptists come to New Jersey to escape religious persecution, forming villages in the Raritan.
- 1686Perth Amboy becomes the capital of East Jersey.
- 1718.....Perth Amboy is royally proclaimed by England to be the first city in New Jersey.
- 1756.....The College of New Jersey relocates to Princeton.
- 1766.....Queen’s College, now known as Rutgers University, is chartered in New Brunswick.
- 1777.....The British attack American troops in the Battle of Bound Brook.
- 1778-79.....George Washington camps in Middlebrook for the winter, a small town next to the Raritan.
- 1831.....The Camden & Amboy Railroad, one of the first railway lines in America, makes a successful run.
- 1834.....The Delaware & Raritan Canal opens between Trenton and New Brunswick.
- 1863.....A Civil War volunteer regiment from areas surrounding the Raritan River fights in the Battle of Chancellorville.
- 1876.....Thomas Edison sets up a laboratory in Menlo Park, where he invents over 400 items.
- 1880.....The population of New Jersey reaches one million persons.
- 1942.....Camp Kilmer, a stationing for army troops going overseas in World War II, is built in New Brunswick.
- AFTER WWII.....The “baby boom” pushes people out of cities and into newly suburban areas such as Old Bridge, Woodbridge, Edison, and Sayreville.
- 1951-53.....The New Jersey Turnpike is opened to the public.
- 1954.....Construction of the Garden State Parkway, which crosses the Raritan River, is completed.
- 1999.....Hurricane Floyd causes the Raritan River to flood, devastating the town of Bound Brook.
- 2000.....The population within the Raritan Basin alone is approximately 1.2 million persons.

UPDATE: Millstone River Watershed PL-566 Project

By Greg Westfall

Since early last year, when the Millstone River PL566 Steering Committee was formed, a planning effort to reduce flood damages and address other objectives has been ongoing. The Steering Committee was formed following a request from several Congressmen to the Natural Resources Conservation Service (NRCS) to determine the level of local interest in developing a watershed plan to reduce flood damages following the Hurricane Floyd flooding on September 17, 1999. The Steering Committee is made up of representatives of the five counties (Hunterdon, Mercer, Monmouth, Middlesex, Monmouth and Somerset) and a number of the 26 municipalities which drain into the watershed. Also, the New Jersey Water Supply Authority, New Jersey Department of Environmental Protection, Federal Emergency Management Agency, Army Corps of Engineers and other representatives.

Last year the Steering Committee identified seven objectives, namely:

- Flood Damage Reduction
- Agricultural Enhancement
- Open Space Protection
- Water Quality Protection
- Ground Water Recharge Protection
- Increase Recreational Opportunities
- Enhance Fish and Wildlife Habitat

The Steering Committee has identified and prioritized flood damage priority areas within the watershed. NRCS has been gathering flood damage information within the high priority flood damage area between Millstone and Princeton Boroughs. Elevations of the first floor, basement low opening and adjacent ground of any structure that appears to be in the flood zone have been obtained. These elevations have been tied into known elevation benchmarks. Known benchmark information has been provided to NRCS by Somerset County Engineering,

New Jersey Water Supply Authority, New Jersey Coastal and Geodetic Survey, U.S. Geological Survey and others. To date, over 100 structures have been surveyed. A summary of the results to date by geographic location is in the table below.

The individual structure elevation information will be used by NRCS to develop and analyze various flood damage mitigation alternatives. Alternatives must meet several tests. The primary test that must be met is that for every dollar spent to mitigate flood damage there must be at least a dollar of avoided damages or benefits. This information will also be used by Somerset County to improve its Flood Information System by providing detailed elevation data for specific structures within the flood plain. This information will be incorporated into the Flood Inundation Maps and database presently being developed by the County and may ultimately form the basis for a direct flood warning notification system. Also, an individual profile sheet, which will be made available to individual property owners only, is being developed. The sheet will provide flood elevations under various storm frequencies, the elevation of the first floor and other areas, a photo of the structure and other flood information.

A watershed plan identifying several alternatives to reduce flood damages will be developed by late 2002. In addition to the flood damage reduction objective, the watershed plan will also address several of the other objectives identified by the Steering Committee. Following its completion, the Steering Committee and project sponsors will select an alternative that best meets their needs with implementation to follow.

For further information on project planning check out the Raritan Basin website at http://www.raritanbasin.org/nrcs_millstone.htm or contact Daniel Van Abs, Public Participation Coordinator for the Steering Committee (732-356-9344 X22) or Greg Westfall, Water Resource Planner, USDA NRCS (732-246-1171 X165).

Summary of Flooding by Location and Storm Frequency

Location	Number of Structures Surveyed	Number of First Floors Flooded Under Various Storm Frequencies			
		Hurricane	100 year	50 year	10 year
Millstone Borough	42	34	30	19	6
East Millstone	19	8	2		
Blackwells Mills	25	18	16	8	
Griggstown	5	5	5	5	1
Griggstown Lock Thru Rocky Hill	21	9	3	2	
Total	112	74	56	34	7

COMMITTEE UPDATES

N & S Branch Raritan WMA Committee

The North & South Branch Raritan Watershed Management Area (WMA) Committee first met in March 2001 to design an organizational structure for the planning phase of the Raritan Basin Project. During the first several meetings, the WMA Committee organized and selected its leadership, adopted operating principles and communication guidelines, and drafted criteria for an effective watershed management plan. Dave Peifer, Geoff Knapp and Bob Colburn serve as the Committee's Chair and Vice-Chairs, respectively. During the July 2001 meeting, the WMA Committee established an Education & Outreach work group and agreed to form several other work groups in October. These work groups include:

- Headwaters & Stream Management
- Land Use & Open Space
- Stormwater Management & Hydrology

Additional work groups will be established at a later time as needed. Some of the suggested work groups focus on Water Supply, Water Quality Monitoring/Modeling, Funding & Grants, Best Practice and Regulatory Programs.

The work groups will be responsible for developing goals, objectives and strategies for the watershed management plan, as well as identifying and developing ideas for immediate implementation. The WMA Committee and work group meetings are all open to the public. To join one (or more) of the work groups, please contact Debbie Newcomb at dnewcomb@raritanbasin.org or (732) 356-9344 x24.

Millstone WMA Committee

The Millstone WMA is ready to begin work on developing their part of the Raritan Basin Watershed Management Plan. After organizing in the spring and agreeing on sub-committees in July, we formed the sub-committees on October 9. During this meeting, Amy Shallcross presented a brief history of the project – “How did we get here?” Then, the Millstone WMA chairs, George Hawkins, Mary Beth Koza, and Heidi McLaughlin, presented the “sales pitch” for joining the six sub-committees: Watershed Open Space and Riparian Area Preservation; Water Supply Management; TMDL Allocation and Implementation; Education and Outreach; Nonpoint Source Management; and Stormwater, Flows, and Flooding. The last two of these sub-committees will be shared with the Natural Resource Conservation Service's PL-566 Millstone Watershed Management and Flood Control Project (see p. 3) to avoid duplication of effort. The sub-committees convened briefly during this meeting to choose a first meeting date and a chair. For their first meeting, the sub-committees will focus on identifying additional members, developing a problem statement and setting objectives for their first six months of work. The sub-committee chairs, along with the WMA chairs, form the steering committee for the Millstone WMA. All meetings are open to the public.

For more information contact Amy Shallcross at ashallcross@raritanbasin.org or 732/356-9344 x 26.



Lower Raritan WMA Committee

As the Characterization & Assessment of the Raritan Basin Project moved toward completion in the spring of 2001, the Lower Raritan WMA Committee met to design an organizational structure for the planning phase of the Project. Participants agreed to form a Steering Committee and seven sub-committees.

The Steering Committee includes representatives from the 4 counties – Middlesex, Monmouth, Somerset and Union; one municipal representative from each watershed (5); one representative from each Watershed Association or organization (6); the sub-committee chairpersons (7); and representatives to the Raritan Basin Council (2). Michael Rogers of the Monroe Township Municipal Utilities Authority was selected to chair the Steering Committee; Alan Godber and Jeannine Der Bedrosian were selected as Vice-Chairs. The Steering Committee is responsible for overall coordination of the watershed planning process, in cooperation with Kathy Hale, NJWSA staff.

The following sub-committees were formed in the Lower Raritan WMA:

- Education & Outreach (Rich Weidman, Chair)
- Stormwater & Flood Management (Richard Pollard, Chair)
- Water Restoration (William Kruse, Chair)
- Land Use Planning, Wastewater and Water Supply (Hetal Mistry, Chair)
- Land Management and Open Space (Charles Bruno, Chair)
- Water Quality Monitoring and Monitoring (Alan Godber, Chair)
- Legal, Institutional and Implementation (Karen O'Neill, Chair)


The sub-committees are responsible for developing goals, objectives and strategies for the watershed management plan, as well as identifying and developing ideas for immediate implementation. Agendas and minutes for each of the sub-committees can be found on the Raritan Basin Project website at <http://www.raritanbasin.org>.

The E&O committee has produced a brochure titled "Welcome to Your Watershed" for distribution at public events. Copies are available through NJWSA.

Several committees developed the idea of holding a municipal forum, which has been scheduled for December 5, 2001. This event will enable municipalities to share their experiences, both good and bad, in water resource management issues. Please contact NJWSA if you are interested in attending.

Participation in each of the sub-committees is open to all interested persons. Please review the agendas and minutes to see which sub-committee you would like to participate in. To join a sub-committee (or more than 1!), please contact Kathy Hale at khale@raritanbasin.org or (732)356-9344, x28.

TAC Update



The Technical Advisory Committee for the Raritan Basin Project was formed in May and have been meeting monthly except for August. The TAC now has a Vice Chair, Robert Tucker, Ph.D., formerly of Rutgers University and the NJDEP-Division of Science & Research. Efforts are still underway to name a TAC Chair. The TAC has 25 members representing various types of expertise in watershed management. In June, Robert Reiser of USGS presented the results of their analyses of water quality status and pollutant loadings in the Raritan River Basin. At the October 23 meeting, the TAC approved the results of the Basin Issues Prioritization and Validation. These results will be forwarded to the Raritan Basin Council and WMA Committees. Currently, the TAC is reviewing the technical reports from the characterization and assessment and began a discussion about what technical issues the TAC would involve itself in addition to the TMDL process.

For more information contact Amy Shallcross at ashallcross@raritanbasin.org or 732/356-9344 x 26.

RBC Update

HOLIDAY GREETINGS!

On behalf of The Raritan Basin Council, I hope this newsletter finds you in good spirits, between eating too much and spending too much! If you've been attending our meetings, or regularly visiting our very active and informative website, you know what a busy and productive fall the Council has had. Again I must congratulate the Council members on their commitment to the process, and the New Jersey Water Supply Authority for facilitating all our efforts throughout the Basin.

The current drought conditions throughout the area underscore the importance of all our efforts, and the need for collaborative partnerships in successfully implementing programming throughout the Basin. The Education & Outreach Committees, at the Basin-wide level and in the Watershed Management Areas (WMA's) will be taking more active roles in the coming months. Through internal and grant-funded programming, educational forums will be available, and we hope many of you will take advantage of these opportunities. Watch your mailbox and our website for more information!

All the Best to you this Holiday Season, and we'll see you in 2002! Happy New Year!

Nick Polanin, Council Chair

BREAKING NEWS

Kathy Hale has started with the Raritan Project as a watershed protection specialist. She will be the staff lead for the Lower Raritan WMA. Prior to joining NJWSA, Kathy worked as a technical specialist with the North Jersey District Water Supply Commission on the Passaic River Basin Watershed Management Project.

Christine Hirt started as the new Raritan Bureau Education & Outreach Coordinator on November 5th. She was the Watershed Ambassador with the Hackensack Riverkeeper during the 2000-01 year. Before joining the NJDEP, Christine was employed by the Bergen County Department of Health Services, the contract entity for WMA 5.

Jennifer Gurdak is staying with the Raritan Bureau, NJDEP, but has become the area manager for WMA 7, The Metropolitan Watershed Management Area.



NJDEP & NJWSA staff with Michael Pollock and Tara Mak of the SBWA near High Bridge.

Section 319 Grant Awarded to the Upper Raritan Watershed Association

The Upper Raritan Watershed Association is pleased to announce that they have been selected to receive a NJDEP Section 319 Nonpoint Source grant for "Design and Implementation of Nonpoint Source Pollution Control Measures in the Peapack Brook Subwatershed". The first phase of this three-year project will be a GIS assessment of the Peapack Brook subwatershed. After using this tool to help define the problems that the subwatershed is facing, URWA will work with several partners in order to correct the problems. Some of the projects that have already been identified are monitoring the water quality of Peapack Brook through chemical and biological sampling, planting trees along the banks of the brook, restoring eroded stream banks and community outreach and education about nonpoint source pollution. If you would like more information about this project, contact Susan Endres at (908) 234-1852.

Agricultural View on Riparian Buffers

By Ed Wengryn, NJ Farm Bureau

Land in or dedicated to agricultural production is one of the largest land uses in the state as well as the Raritan Basin. Much of that land is near or adjacent to the streams and rivers in our basin. That link between water and land has always been important to the agricultural community. Historically, stream water was the main source of water for animals and irrigating plants. Today with the increasing encroachment of development most existing agricultural land is needed for production. Finding a balance between production ground and land needed for water quality improvement is the goal of the position paper prepared by Raritan Watershed Agricultural Committee.

The key goal of the Riparian Buffers on Agricultural Land position paper is to promote the use of site specific best management practices on agricultural lands to improve water quality. The paper focuses on the use of streamside grass filter strips and forested buffers to provide water quality benefits. The use of other best management practices on agricultural lands is also encouraged to further improve the effectiveness of streamside buffers. Key to the success of buffer implementation is support from federal and state programs to assist farmers with implementation of best management practices and an expanded educational effort to agricultural producers and growers about the benefits of these practices.

Over the next year watershed management area subcommittees in the North & South Branch Raritan, Millstone, and Lower Raritan will be looking at the issues related to the riparian lands in their watersheds. It is the hope of the agricultural community that the comments and concerns raised in the issue paper will serve as a starting point for addressing land use and riparian issues.

The full position paper is available on the www.raritanbasin.org website. Follow the link from the homepage under Council and Committees to the Raritan Agricultural section.



View of the Millstone River at Kingston

For More Information on meeting dates and times, please contact Sally Kean at
732/356-9344 x23 or
skean@raritanbasin.org

FOR A COMPLETE LIST-
ING OF TRAINING OP-
PORTUNITIES, PLEASE
VISIT THE WEBSITE @
[WWW.RARITANBASIN.
ORG/EDUCATION.HTM](http://WWW.RARITANBASIN.ORG/EDUCATION.HTM)

NJ Watershed Ambassadors & You – Perfect Together *By Beth Sawickie*

The New Jersey Watershed Ambassadors Program (NJWAP) is an AmeriCorps program that was started in 2000 to increase public education about NJ's watersheds. Within the Raritan Basin there are three Watershed Ambassadors each placed with host agencies for one year. There are a total of twenty Watershed Ambassadors throughout the State. We recently completed intensive training at Parvin State Park. Our goals include increasing public awareness about watersheds and watershed management and engaging citizens in RATS (River Assessment Teams) and BATS (Biological Assessment Teams) in their watershed. The Ambassadors are a FREE resource for presentations, RATS & BATS training and educational activities.

Why are we here? Most of NJ's companies are in compliance with environmental regulations but our water is still being polluted. Where is this pollution coming from you might ask? From you, me, your neighbor down the street and even your dog. Non Point Source (NPS) pollution has been found to be one of the greatest causes of pollution within NJ. NPS includes oil leaking from a car, pesticide and fertilizer run-off from lawns, salt from roadways, animal waste and soil from construction sites. The NJ Watershed Ambassadors are here to help citizens to understand where NPS pollution comes from and how they can limit it.

The Ambassadors are always looking for volunteers to assist with RATS and BATS. RATS stands for River Assessment Teams and involves walking a stretch of a stream or river and doing a visual assessment of it. We look for stormwater

outfall pipes, erosion of the stream bank and other unique land uses in the watershed. BATS stands for Biological Assessment Teams and involves sampling and identifying macroinvertebrates that live in the water. The variety and quantity of the macroinvertebrates that are found in the water are one indicator of water quality. All of the data collected is passed on to the DEP who will use it to spot trends, hot spots and supplement existing data.

We are also trained in an environmental curriculum programs including NJ WATERS and Project WET. These programs provide fun, hands on activities for grades K-12 and meet NJ Core Curriculum Standards.

We are a FREE resource available to everyone in NJ. Pick up the phone or send an e-mail and contact your local NJ Watershed Ambassador !

<http://www.state.nj.us/dep/watershedmgt/ambassadors>

N & S Branch Raritan

Annie Pizza
908-234-1852 a-pizza@hotmail.com

Lower Raritan

Beth Sawickie
732-745-3863 beths@dacafe.com

Millstone

Brian Rappaport
609-737-3735 brappaport@thewatershed.org

The Raritan Project
c/o NJ Water Supply Authority
PO Box 287
South Bound Brook, NJ 08880



To receive copies of this newsletter, please contact Sally Kean at skean@raritanbasin.org or call 732/356-9344 ext. 23.