

**Non-tidal Passaic River Basin Water Quality Trading Project**  
*Summary of ongoing restoration projects funded through Section 319(h) grants.*

Congress amended the federal Clean Water Act (CWA) in 1987 to establish the Section 319 (h) Nonpoint Source Management Program that authorizes the U.S. Environmental Protection Agency (EPA) to grant money to states, territories and Indian tribes to address nonpoint source pollution (NPS). The NJDEP Statewide Nonpoint Source Pollution Management Program administers the federal Section 319(h) grant programs. Section 319(h) grant funds are to be used to implement programs and projects designed to reduce nonpoint source pollution (NJDEP, Division of Watershed Management).

A water quality trading program in the non-tidal Passaic River Basin will mostly involve trading between point sources. However, trading opportunities with nonpoint sources should also be examined. Other water quality trading programs have successfully facilitated trading with nonpoint sources (e.g. Piasa Creek Watershed Project, Illinois and Southern Minnesota Sugar Beet Cooperative; Breetz *et al.*, 2004).

A number of nonpoint source management projects in the non-tidal Passaic River watershed have received Section 319(h) grants, and have been completed or are underway. At this time, the Passaic water quality trading program does not have a definite policy on the eligibility of projects that have received Section 319(h) grants to participate in trading. If NPS projects that have received Section 319(h) grants are eligible to trade, this document will serve to scout out potential trading opportunities with NPS control projects. If such projects are not eligible to trade, this document will serve

to screen out NPS projects with no potential to trade. Another possibility involves Section 319(h) funded NPS control projects that are complete, but have room for enhancement or implementation given additional funds. Trading would offer such projects the resources to further reduce NPS pollution.

The document does not give detailed results or status of each project. It is a preliminary tool to identify potential NPS trading partners. If there is future interest to trade with a NPS project listed here, more information would be gathered at that time regarding the scale of NPS pollution and level of mitigation achieved by the project.

The document does not identify every project in the watershed that has ever received Section 319(h) grants. It only identifies projects where there is possibility for trading since a) the project is still happening, or b) the project left recommendations for further implementation which a future NPS trade could fund. (Projects are grouped by Watershed Management Area (WMA)). Based on these criteria, the following projects show highest potential for trading:

- Preakness Brook Restoration, Protection, and Regional Stormwater Management Plan
- WMA 3 Watershed Restoration Master Plan and Stream Bank Implementation
- Riparian Restoration for Ramapo Reservation Lake, Mahwah Township
- Regional Stormwater Management Plan for Troy Brook
- Watershed Management Area #6 Riparian Forest Buffer Protection Program
- Numerous projects with the Ten Towns Great Swamp Watershed Management Committee

### **WMA 3**

**Recipient:** West Milford Township

**Fiscal Year (FY):** 2004

**Project Title:** Posts Brook Regional Stormwater Management Plan

**Grant amount:** \$144,872

**Description:** Stormwater management plan for Posts Brook watershed in West Milford Township. Posts Brook runs 1.2 miles in West Milford before crossing the township line into Bloomingdale Boro. Posts Brook is a natural tributary to the Wanaque Reservoir.

**Information source:** NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** Fund the recommended stormwater BMPs that come out of the final Stormwater Management Plan.

**Recipient:** West Milford Township and Greenwood Lake Commission

**Fiscal Year:** 2004

**Project Title:** Lake Characterization and Restoration Plan for Greenwood Lake

**Grant amount:** \$152,330

**Description:** The NJ 2002 Integrated List of Waterbodies identified Greenwood Lake as being eutrophic.

This 319 (h) project aimed to:

- Identify stormwater/surface runoff hot spots in need of restoration and/or protection
- Develop the stormwater component of the Lake Characterization and Restoration Plan
- Install a series of BMPs and retrofits in West Milford
- Conduct BMP monitoring in order to assess BMP/retrofit performance. BMP monitoring would analyze TP, TN, and TSS before and after BMP/retrofit installation.

**Information source:**

NJDEP (2004). "Amendment to the Northeast Water Quality Management Plan - Total Maximum Daily Load for Phosphorus to Address Greenwood Lake in the Northeast Water Region".

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** Fund additional stormwater BMPs/retrofits

**Recipient:** Pequannock River Coalition

**Fiscal Year:** 2003

**Project Title:** Pequannock River Thermal Mitigation, Monitoring and Assessment

**Grant amount:** \$23,105

**Description:** The NJ 2004 Integrated List of Waterbodies listed eleven segments in the Pequannock River Watershed as being impaired for temperature.

This 319 (h) project aimed to:

- Conduct GIS/GPS survey of Upper Pequannock River Watershed to identify location of beaver dams, ponds and tree removal. (Beaver dams impound flows, and tree removal to build the dams removes canopy, consequently elevating stream temperatures).
- Install willow and red-osier dogwood cuttings to help re-establish the riparian tree canopy.
- Conduct a temperature and flow study for 11 significant tributaries to the lower Pequannock for comparison with the mainstem Pequannock to determine the influence of these tributaries on the Pequannock.
- Perform GIS mapping of stormwater outfalls, since stormwater discharges typically have elevated temperatures.

**Information source:**

NJDEP (2004). "Amendment to the Northeast Water Quality Management Plan - Total Maximum Daily Load to Address Temperature in the Pequannock River Northeast Water Region".

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** Fund re-establishment of riparian tree canopy, or BMPs for stormwater discharges.

**Recipient:** Hudson-Essex-Passaic SCD on behalf of Ramapo River Interstate Partnership

**Fiscal Year:** 2001

**Project Title:** WMA 3 Watershed Restoration Master Plan and Stream Bank Implementation

**Grant amount:** \$268,750

**Description:**

This 319 (h) project aimed to:

- Assess surface water quality throughout the Watershed
- Monitor ambient conditions at impaired locations over time by quantitative chemical, physical, and biological indicators.
- Promote BMPs to improve water quality for the impaired waterways within the watershed and to prevent from further degradation the existing water quality within the Watershed.
- Promote greater public understanding of the Watershed and use volunteer teams to help carry out stream visual assessments.
- Encourage the use of computerized mapping utilizing geographic information systems (GIS).
- Develop a **Watershed Restoration Master Plan** that identifies riparian corridor conditions and potential NPS pollution sources. The plan would rank these sites, provide a root cause analysis for each site, and provide recommendations for correcting the observed problems. The plan would include a section on recommended BMPs for WMA 3 and provide costs associated with

implementation of these BMPs. The plan would guide restoration efforts to best address NPS pollution in the watershed.

- Support overall goal of attaining 50% non-impaired waterbodies by 2005.

**Information source:**

NJDEP (2001). "Grant Agreement between Hudson-Essex-Passaic Soil Conservation Soil Conservation District and The State of New Jersey by and for the Department of Environmental Protection; Grant Identifier: RP01-107".

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

Hudson Essex Passaic Soil Conservation District, Ramapo River Interstate Partnership, and TRC Omni Environmental Corporation (2003). "Watershed Management Area 3 Restoration Master Plan".

**Trading opportunity:** A point source could use the Watershed Restoration Master Plan to identify high priority stream bank restoration areas and fund the recommend BMPs.

**Recipient:** Ramapo College Foundation

**Fiscal Year:** 2001

**Project Title:** Riparian Restoration for Ramapo Reservation Lake, Mahwah Township

**Grant amount:** \$64,500

**Description:** The Ramapo River was listed as moderately impaired on the NJ 1998 Integrated List of Waterbodies. The Ramapo Reservation provides recreational benefits as a public park for hiking and fishing. The riparian buffer at the lake had become heavily damaged, reducing removal of nonpoint source pollutants.

The project objectives were:

- Riparian wetland design
- Implementation of riparian restoration
- Long-term monitoring
- Public Education

**Information source:**

NJDEP (2000). "Agreement between Ramapo College Foundation and The State of New Jersey by and for the Department of Environmental Protection; Grant Identifier: RP01-115".

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** The Ramapo River is still listed on the most recent NJ 2004 Integrated List of Waterbodies as being impaired for phosphorus. If long-term monitoring at Ramapo Reservation Lake indicates that further improvements to lake water quality are achievable, funding of additional buffer restoration should be explored as a trading option.

## WMA 4

**Recipient:** William Paterson University

**Fiscal Year:** 2005

**Project Title:** Preakness Brook Restoration, Protection, and Regional Stormwater Management Plan

**Grant amount:** \$408,586

**Description:** “The planning area for the Preakness Brook Watershed Restoration, Protection and Regional Stormwater Management Plan is the 11 square mile watershed of the approximately nine mile Preakness Brook. This watershed is found almost exclusively within Wayne Township, Passaic County, with only seven percent of its contributing area in Totowa Borough. Preakness Brook, a Trout Production (TP) waterbody in its Category One (C1) designated reaches, enters the impaired Passaic River from the north, directly upstream of Little Falls Township. As described in the 2003 Total Maximum Daily Load (TMDL) report by NJDEP entitled "Total Maximum Daily Loads for Fecal Coliform to Address 32 Streams in the Northeast Water Region", the Brook has an established TMDL load allocation (LA) for fecal coliform which mandates a 93% load reduction. In addition, Preakness Brook has been placed on Sublist 5 of the New Jersey 2004 Integrated Water Quality Monitoring and Assessment Report as impaired for benthic macroinvertebrates. This project will develop a Watershed Restoration and Protection Plan that will utilize the additional watershed management tools afforded by the development of a Regional Stormwater Management Plan component to achieve and preserve the load reductions recommended in the NJDEP fecal coliform TMDL, restore macroinvertebrate health, and protect the C1 stream segment. This project will determine the courses of action necessary to restore and protect water quality, through the identification and location of specific nonpoint source abatement measures. The plan, one of the first of such "next level" watershed-based planning documents developed for the State of New Jersey, will serve as a blueprint for achieving the stated water quality, quantity, and recharge objectives of the plan”.

**Information source:**

“SFY 2005 Section 319(H) Funded Projects,” *NJDEP, Division of Watershed Management*. Available at

[http://www.state.nj.us/dep/watershedmgt/319grant\\_sfy2005\\_projects.htm](http://www.state.nj.us/dep/watershedmgt/319grant_sfy2005_projects.htm). Accessed in March 2006.

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** The project will recommend various nonpoint source abatement measures. If specific measures would reduce phosphorus, a point source could fund the implementation to purchase credits. Also note that the Wayne Township STP is the second largest WWTP in the trading area, and is a potential trading party for this 319(h) project, set almost entirely in Wayne Township.

## WMA 6

**Recipient:** Rutgers, The State University

**Fiscal Year:** 2003

**Project Title:** Regional Stormwater Management Plan for Troy Brook

**Grant amount:** \$213,400

**Description:** Troy Brook is in the Whippany River watershed, which has the first TMDL in NJ for fecal coliform. The majority of the Troy Brook watershed is highly impervious and prone to flooding. This 319(h) project aims to develop an effective Regional Stormwater Management Plan (RSMP) for the Troy Brook that addresses both water quality and quantity problems. The RSMP characterizes and assesses the watershed through data collection and modeling. The RSMP addresses issues such as mitigation of increased volume and rates of runoff due to new and existing development, and the impact of these increases on the waterways. The RSMP addresses reduced stream baseflow due to increased impervious areas, nonpoint source pollution, and the benefit of stream corridor restoration. Management measures, and monitoring and evaluation techniques are recommended. The RSMP details BMP recommendations to improve water quality.

**Information source:**

“Regional Stormwater Management Plan for Troy Brook, Morris County, New Jersey,” *Rutgers Cooperative Research & Extension, Water Resources Program*. Available at <http://www.water.rutgers.edu/Projects/Troy/Troy.htm>. Accessed in March 2006.

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** Point sources needing to buy credits could fund implementation of recommended BMPs listed in the RSMP that reduce nonpoint source phosphorus loading. Also note that the Parsippany-Troy Hills WWTP, the largest plant in the trading area, and 3 other WWTPs are located in the Whippany River watershed. All 4 WWTPs in the Whippany River watershed could be considered potential trading parties to the Troy Brook watershed.

**Recipient:** Rockaway River Watershed Cabinet (RRWC)

**Fiscal Year:** 2005

**Project Title:** Hurd Park Goose Management and Shoreline Restoration Project

**Grant amount:** \$201,000

**Description:** “In support of the "Total Maximum Daily Load (TMDL) for Fecal Coliform to Address 32 Streams in the Northeast Water Region" (established March

2003), the RRWC will implement a goose management and stream restoration project at Hurd Park, Dover Town. Hurd Park, located on the Jackson Brook just upstream of the NJDEP sampling site on the Rockaway River at Blackwell Street, [which] has been identified as a potential source of fecal coliform in the TMDL for the Rockaway River, which mandates a 92% Reduction in fecal coliform loading”.

“Hurd Park is a municipal park... that contains a large resident goose population throughout much of the year and little or no riparian buffers... Efforts are needed to control the goose population, stabilize streambanks, and create an adequate riparian buffer with native vegetation”.

“To address the known fecal coliform impairment just downstream of the park, the RRWC will partner with Dover Town to:

- Develop and implement a sampling plan to determine fecal coliform concentrations in Jackson Brook and monitor improvements after the successful completion of the project,
- Prepare and implement a goose management plan for the park,
- Work with the community to develop a landscape plan for the park that will provide for the installation of continuous vegetative buffers along the streams in the park (approximately 3,000 feet of shoreline will be stabilized and 1.5 acres of buffer installed), and
- Remove invasive exotic plant species and install desired vegetative buffers”.

**Information source:**

“SFY 2005 Section 319(H) Funded Projects,” *NJDEP, Division of Watershed Management*. Available at [http://www.state.nj.us/dep/watershedmgt/319grant\\_sfy2005\\_projects.htm](http://www.state.nj.us/dep/watershedmgt/319grant_sfy2005_projects.htm). Accessed in March 2006.

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** If the project can demonstrate reductions in phosphorus loading to the stream, and further measures not covered by the 319(h) grant are still needed, then a point source needing to buy credits might consider funding any future needs of this project that reduce phosphorus loading.

**Recipient:** Morris County Planning Department

**Fiscal Year:** 2002

**Project Title:** Beaver Brook/Hibernia Brook Stormwater Management Plan



**Grant amount:** \$74,840

**Description:** Beaver Brook and Hibernia Brook are tributaries to the Rockaway River. In contrast to their more pristine headwaters areas, Beaver Brook and Hibernia Brook run through urbanized areas before joining the Rockaway River. Stormwater from the urbanized areas adversely affects Beaver Brook and Hibernia Brook. This project aimed to develop a stormwater management plan for the Beaver Brook/Hibernia Brook area.

**Information source:**

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** Interested point sources could fund recommended stormwater BMPs that are listed in the final Stormwater Management Plan which also reduce phosphorus loading.

**Recipient:** Whippany River Watershed Action Committee

**Fiscal Year:** 2001

**Project Title:** Continuation of a streambank restoration (Phase II Burnham Park, Atno Brook) previously funded to address fecal impairment.

**Grant amount:** \$31,480

**Description:** Two impoundments, East and West Lakes, are located along Atno Brook (a tributary to the Whippany River) in Burnham Park, Morristown. Several water quality problems existed in the lakes, including high levels of nutrients, fecal coliforms, and BOD. The project aimed to reduce NPS pollutants – fecal coliform and sediment – by restoring lakeside shoreline. Water quality monitoring was performed.

**Information source:**

NJDEP (2000). “Grant Agreement between Whippany River Watershed Action Committee and The State of New Jersey by and for the Department of Environmental Protection; Grant Identifier: RP-01-081”.

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** If water quality problems due to NPS pollutants still exist in the lakes, an interested point source could fund further measures to reduce phosphorus levels.

**Recipient:** Passaic River Coalition

**Fiscal Year:** 2000

**Project Title:** Watershed Management Area #6 Riparian Forest Buffer Protection Program

**Grant amount:** \$50,000

**Description:** The project created a municipal based program to educate and implement a stream corridor protection program to enhance riparian forest buffers in WMA #6. This program was modeled after the Chesapeake Bay Project.

**Information source:**

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** An interested point source could follow up on stream corridors identified by the project that need further protection and fund restoration measures that would reduce phosphorus loading.

**Recipient:** Passaic River Coalition – Upper Passaic River Riparian Conservation Committee

**Fiscal Year:** 2000

**Project Title:** Protection of Water Resources from NPS Pollution in the Upper Passaic River Watershed from Bernards to Chatham and Millburn

**Grant amount:** \$40,000

**Description:** The project proposed to protect the water resources from NPS pollution in this watershed by the continuation of a riparian conservation project (Conservation Master Plan or CMP) begun in 1998 through identification of recharge areas and protection of upland areas. The project aimed to improve understanding of the interrelationships between stormwater infiltration, ground water quality, and surface water quality.

**Information source:**

NJDEP (1999). “Grant Agreement between Passaic River Coalition and The State of New Jersey by and for the Department of Environmental Protection; Grant Identifier: RP00-082”.

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** An interested point source could follow up on upland areas identified by the project, and fragile areas identified by the CMP, that need further protection and fund restoration measures that would reduce phosphorus loading.

**Recipient:** Rockaway River Watershed Cabinet

**Fiscal year:** 2000

**Project title:** Stream Corridor Improvement Program

**Grant amount:** \$100,000

**Description:** An analysis of stream corridors along the Rockaway River was identified in the Visions and Strategies report prepared by the Friends of Rockaway River. Stream bank restoration had already been started and this project was a continuation.

**Information source:**

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** If further stream bank restoration would lead to reduced phosphorus loadings, an interested point source could fund those efforts to purchase credits.

**Recipient:** Ten Towns Great Swamp Watershed Management Committee

**Project titles:** many (see Description)

**Grant amount:** over one million dollars in grants and federal appropriations since formation of the Committee in 1995. Grants have come from NJDEP, USEPA, US Fish and Wildlife Service, and other sources.

**Description:** The Great Swamp watershed (57 sq. mi.) is located in the Upper Passaic River Watershed. Stormwater runoff and soil erosion from development in the Great Swamp watershed has increased the amount of nonpoint source pollution entering the Great Swamp. The Ten Towns Committee published a Great Swamp Watershed Management Plan in 1997. Of relevance to our trading project, the plan includes sections on riparian stream buffers, stormwater management, and implementation of BMPs. The plan also specifically mentions water quality trading as a feasible means to reduce NPS pollution.

The Ten Town Committee has numerous accomplishments, such as:

- Established water quality monitoring program with assistance from a volunteer "stream team."
- Completed individual riparian corridor buffer analysis for each Ten Towns municipality.
- Best management practices (BMPs)/demonstration projects
  - Retrofitted stormwater detention basin
  - State-of-the-art grass swale filtration system
  - Stormwater bioretention system
  - Developed seven stream corridor buffer projects, three projects completed in 2001.
- Established macroinvertebrate water quality monitoring program (2000). Program continues on an annual basis.
- Completed detailed environmental assessment of Great Swamp streams.
  - Loantaka Brook (completed 2000)
  - Black Brook (completed 2001)
  - Great Brook (completed 2001)
  - Primrose Brook (completed 2004)
  - Passaic River (planned 2006)
- Prepared Retrofit Detention Basin and Stormwater Outfall Inventories for the Great Swamp Watershed.
- Completed design for stream corridor and bioretention Demonstration Project at Bayne Park/Christ the King Church complex. Construction to begin in 2004.
- Completed St. James Church Detention Basin Retrofit Demonstration Project.
- Completed Shrine of St. Joseph Bioretention Demonstration Project (June 2004).

**Information source:**

"Accomplishments 1995-2004," *Ten Towns Great Swamp Watershed Management Committee*. Available at <http://www.tentowns.org/10t/accomp00.htm>. Accessed in March 2006.

NJDEP (1999). “Grant Agreement between Ten Towns Great Swamp Watershed Management Committee and The State of New Jersey by and for the Department of Environmental Protection; Grant Identifier: RP00-124”.

NJDEP (1999). “Grant Agreement between Ten Towns Great Swamp Watershed Management Committee and The State of New Jersey by and for the Department of Environmental Protection; Grant Identifier: RP00-126”.

NJDEP (2003) “Addendum: Grant Agreement RP98-097”.

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** Interested point sources should **strongly** consider contacting the Ten Towns Committee for trading opportunities. The Ten Towns Committee has been very active with numerous projects to reduce NPS pollution. At the same time, it appears funding for their activities is becoming more difficult to obtain. The Ten Towns Committee is also open to water quality trading, as stated in their Great Swamp Watershed Management Plan. The Ten Towns Committee might be willing to engage point sources in trading projects.

**Recipient:** Whippany River Watershed Action Committee – Mountain Lakes Township

**Fiscal Year:** 2000

**Project title:** Restoration of the Whippany River Watershed through implementation of BMPs by Municipal Department of Public Works

**Grant amount:** \$17,500

**Description:** This project targeted identified NPS problems in the Whippany River watershed such as bacteria phosphorous and sedimentation. DPW personnel and municipal officials from Mountain Lakes Township were engaged to implement solutions.

**Information source:**

NJDEP Statewide NPS Management Program staff, personal communication, May 2005.

**Trading opportunity:** If further BMPs can be implemented in Mountain Lakes Township to reduce phosphorus loading, an interested point source could fund those BMPs to purchase credits.

## ADDITIONAL REFERENCES

“Breetz HL, Fisher-Vanden K, Garzon L, Jacobs, H, Kroetz K, Terry R; Dartmouth College (2004). ‘Water Quality Trading and Offset Initiatives in the US: A Comprehensive Survey’. Available at <http://www.dartmouth.edu/%7Ekfv/waterqualitytradingdatabase.pdf>. Accessed in March 2005.

“Section 319(h) NPS Grant Program,” *NJDEP, Division of Watershed Management*. Available at ([http://www.state.nj.us/dep/watershedmgt/nps\\_program.htm](http://www.state.nj.us/dep/watershedmgt/nps_program.htm)). Accessed in March 2006.