

## SECTION 1 WATER QUALITY AND QUANTITY

**GOAL: Keep the water clean and plentiful - It's priceless.**

- Protect and enhance local water quality, protect drinking water, and reduce pollution loads to the Chesapeake Bay by reducing the release of toxic substances, nutrients, and other pollutants.
- Promote groundwater recharge and water conservation.

### CHALLENGE

The Susquehanna-Chemung Watershed is blessed with ample supplies of high-quality water. The challenge in most of the watershed is not to clean up the water, but simply to keep clean water clean. Yet this is not an easy task. The very abundance of clean water leads to it being taken for granted. Although preventing problems is much cheaper than fixing them, it is difficult to allocate limited resources to protecting healthy waters. Most grant programs are focused on improving water quality by reducing the sources of pollution, with priority given to those waters most in need of improvement.



Otsego Lake (courtesy of SUNY Oneonta Biological Field Station).

Because streams collect water, sediment, and pollutants from the surrounding landscape, land use activities anywhere in the watershed can impact the quality and quantity of the water that reaches streams, rivers, and lakes. Groundwater supplies are also susceptible to surface activities because they are replenished by infiltration of rainfall and snowmelt. The health of these water resources is thus tied to the health of the landscape. This means that responsibility for protecting and improving water supplies is shared by everyone in the watershed. Citizens and businesses need to recognize that water is a valuable asset, understand the potential effects of their activities (septic system maintenance, lawn care, etc.), and assume responsibility for minimizing adverse impacts.

The vast majority of surface and groundwater sources in the watershed exhibit good water quality. However, there are also localized problems and concerns, most of which are considered to be minor impacts. NYS classifies about 7% of the watershed's river miles as "priority waterbodies" that do not fully support appropriate uses (NYS DEC, 2007; NYS DEC, 2009). The water quality impacts on lakes are somewhat greater, with eight lakes classified as "impaired" (NYS DEC, 2010).<sup>1</sup> Polluted water can affect public and private drinking water supplies, particularly the surface water intakes for Binghamton and Elmira, which are downstream of most of the watershed. Although there are various causes for water quality problems, the most frequently cited sources are atmospheric deposition, agricultural activities, and streambank erosion, with inadequate on-site wastewater treatment systems (septic systems) contributing to excess aquatic weed growth in lakes.

Downstream from the Susquehanna-Chemung Watershed, the Chesapeake Bay has poor water quality and is unable to support a healthy ecosystem. To address this, the US Environmental Protection Agency (EPA) has developed a Total Maximum Daily Load (TMDL) restoration plan that requires all jurisdictions in the watershed – including New York – to reduce the amount of nitrogen, phosphorus, and sediment that reach the Bay. Although water quality leaving NYS is generally good, the TMDL requires additional pollution reduction. In other words, keeping clean water clean is not good enough. New York is faced with the challenge of making clean water even cleaner. The potential costs for New York to comply with the TMDL are enormous. These

<sup>1</sup> The NYS Department of Environmental Conservation is currently developing a numeric water quality standard for phosphorus (to replace the narrative standard for nutrients), which could result in additional designations of impaired waters and revised discharge limits for wastewater treatment plants and other permitted discharges.

costs would be borne by sewage treatment plants (and thus residential, commercial, and industrial rate payers), farmers, and local stormwater management programs. Because NY is so far from the Chesapeake Bay, these costs would not be offset by economic benefits from improved water quality in the Bay.

Most of the water in the basin is unseen water beneath our feet. River valleys throughout the Susquehanna-Chemung Watershed are underlain by shallow productive sand and gravel aquifers that play a critical role in supplying drinking water and maintaining the region's economic viability. When groundwater in these aquifers or in upland areas becomes polluted, the process of cleaning up the contamination can be technically difficult and extremely expensive. The cost-effective approach to managing groundwater resources is thus to prevent contamination. The most common groundwater problems result from on-site wastewater treatment systems that are either not functioning properly or are located too close to private water supplies or surface waters. Septic systems can be significant sources of nutrient pollution in lakes, contributing to excessive weed growth. In addition, the watershed contains a number of villages and hamlets with small lots that do not support the recommended separation distances between wastewater treatment system components and private wells.<sup>2</sup> The NYS Department of Health (NYS DOH) recommends municipal water supplies and/or municipal sewer service in these areas. Additional threats to groundwater resources arise from hazardous waste sites, pesticide application, animal feeding operations, fertilizer use, chemical spills, abandoned or improperly plugged oil and gas wells, and industrial discharges (NYS DEC, 2007; NYS DEC, 2009). Of particular concern at this time is the prospect of extensive natural gas development. Expansion of this industry increases the potential for groundwater contamination from surface spills, injected fluids, or flow back water.

Normally there are ample surface water and groundwater resources available to support a variety of uses throughout the watershed. However, the resource is not limitless and droughts do occur. The Susquehanna River Basin Commission (SRBC) is charged with managing the resource to avoid shortages and conflicts. SRBC review and approval are required for major surface and groundwater withdrawals. The Commission also regulates the consumptive use of water, which is defined to be "the loss of water due to a variety of processes by which the water is not returned to the waters of the basin undiminished in quantity" (SRBC, Dec. 2008). Consumptive uses that meet the regulatory threshold must either be discontinued or mitigated during low flow conditions. Although discontinuation or local mitigation is preferred, most project sponsors pay a "consumptive use fee," which is used for large-scale water storage projects. The demand for water is expected to increase significantly with expanded natural gas extraction using new production techniques (high volume hydraulic fracturing) that utilize large volumes of water.

New York State has a history of support for voluntary water resource protection activities, as well as strong environmental regulations. The NYS DOH Source Water Assessment Program has mapped drinking water supply watersheds and identified potential sources of contamination that may impact public drinking water sources. Public water suppliers prepare Annual Water Quality Reports with information about the quality of water delivered by their system. Many local governments have wellhead protection programs and engage in other activities to protect and preserve water resources. Those counties with active Water Quality Coordinating Committees (WQCCs) have developed strategies identifying local priorities and implementation tasks. However, funding for many of these efforts has become tighter in recent years. Some organizations have had to transition from trying to do more with less to accepting the necessity of doing less with less. This leads to difficult decisions about priorities. It also leads to a shift of financial responsibility to local and/or private sources. For example, the stricter permit standards necessitated by the Chesapeake Bay TMDL are not accompanied by sufficient financial resources to cover the increased costs required for sewage treatment plants to comply. Financial constraints and staff reductions have also resulted in focusing of limited state resources on enforcement of permit programs, with less attention to training, education, and technical assistance. This is unfortunate, because long term water resource protection and improvement requires responsible stewardship by well-informed individuals throughout the watershed.

***"Water is the most critical resource issue of our lifetime and our children's lifetime.***

***The health of our waters is the principal measure of how we live on the land."***

***- Luna Leopold***

---

<sup>2</sup> Current NYS DOH standards require minimum separation distances ranging from 100 to 200 feet, depending on the circumstances.

## RECOMMENDATIONS

The following recommendations promote efforts to protect and restore water in the region's rivers, streams, lakes, wetlands, and aquifers. Other sections of this Action Plan contain additional recommendations for reducing impacts from construction activities, contaminated runoff, stream disturbances, roads, agriculture, forest management, and other activities. The "Waterbody Inventory and Priority Waterbody List" (NYS DEC, 2007; NYS DEC, 2009), "Watershed Restoration and Protection Action Strategy" (WRAPS; NYS DEC and others, 2001), county water quality strategies, and local watershed plans provide additional detail for targeting implementation efforts to both curb emerging issues and restore problem areas.

**Organizational Capacity: Expand the capacity of local, regional, and state organizations to conduct monitoring programs, provide technical assistance, and enforce regulations that facilitate water resource protection and restoration.**

- 1a. Build strong local partnerships by re-invigorating county Water Quality Coordinating Committees (WQCCs) and attracting additional participants (from state agencies, federal agencies, county departments, municipalities, watershed groups, recreational organizations, academic institutions, and other organizations). Provide annual state funding to support ongoing committee activities (planning, training, outreach, monitoring, etc.) and grant funding for committee projects.

Immediate action: Regional planning boards provide ongoing support for each county WQCC.

5-year target: Provide annual mini-grant funding to county WQCCs to enable baseline funding with minimal administrative expenses. Ranking criteria for state water quality grants support projects that are identified in county Water Quality Strategies.

Long-range target: Provide each county with the assistance needed to maintain an active WQCC that develops and periodically updates a county Water Quality Strategy. Provide the committees and member organizations with the financial resources needed to implement strategy recommendations.

*Measure: Number of active WQCCs. Number of grants to WQCCs.*

- 1b. Expand citizen stewardship by supporting lake and watershed associations that work toward improved local management of water resources. These organizations provide valuable links between private citizens, municipal governments, and agency representatives; and can facilitate education and public involvement activities that foster a citizen based watershed ethic.

Immediate action: Engage citizens and encourage formation of watershed-based organizations to facilitate local stewardship of water resources. Provide assistance as needed with: organization, planning, public workshops, implementation projects, and financial support.

5-year target: Establish or re-invigorate lake associations and other watershed-based organizations.

*Measure: Number of newly formed watershed-based organizations. Number of watershed organizations receiving assistance from county, regional, or state organizations.*

- 1c. Enhance the ability of lakeshore property owners to protect and improve water quality in their lakes by offering training opportunities and educational material (such as information sheets and "Home\*A\*Syst, An Environmental Risk-Assessment Guide for the Home") for existing lake association members.

Immediate action: Provide existing lake associations with handouts about lake-friendly home management topics for distribution to members.

5-year target: Work with lake associations to conduct training sessions for lake front property owners based on topics in the Home\*A\*Syst handbook or other resources.

*Measure: Number of lake associations that distributed handouts. Number of training sessions.*

- 1d. Increase NYS Department of Environmental Conservation (NYS DEC) staff to expand the Department's capacity for: (1) regulatory oversight for natural gas development and other permit programs, (2) training, technical assistance, and public education about stormwater management (for both the construction

industry and regulated MS4s), floodplain management, stream remediation, post-flood stream work, water conservation, etc., (3) implementation of monitoring and assessment programs, (4) development of nutrient criteria (acceptable nutrient thresholds for NYS waters), (5) participation in county WQCCs, and (6) other assistance.

5-year target: NYS DEC procures funding, hires staff, and strengthens water resource programs for monitoring, training, technical assistance, and public education, as well as regulatory programs.

5-year target: NYS DEC develops and implements protective water quality standards for nutrients.

*Measure: Number of new staff. NYS numeric nutrient standards developed.*

- 1e. Increase NYS Department of Health (NYS DOH) and county health department staff to expand the capacity for: (1) public education about water supply issues, (2) private water supply sampling, (3) training and technical assistance regarding onsite wastewater treatment systems, (4) technical assistance to local governments for drinking water protection (source water assessment, wellhead protection, existing water quality issues, emerging issues, etc.), (5) participation in county WQCCs, and (6) other assistance.

5-year target: NYS DOH procures funding and expands services for monitoring, training, public education, and technical assistance, while maintaining support for public water supplies and enforcement of drinking water standards.

*Measure: Number of new staff.*

**Monitoring and Planning: Monitor water quality, stream flows, and groundwater levels. Document this information and develop local watershed management plans.**

- 1f. Seek funding to maintain existing water quality monitoring and research programs and expand these efforts. Identify gaps in data and knowledge, targeting new monitoring efforts to fill those needs. The existing NYS DEC Routine Statewide Monitoring and Assessment Program includes: Rotating Integrated Basin Studies (RIBS) of rivers and streams, Lake Classification and Inventory (LCI), and groundwater sampling program. Existing SRBC monitoring programs include: Subbasin Surveys (conducted about every 6 years), Small Watershed Studies (additional investigation following each Subbasin Survey), Interstate Stream Assessment (annually since 1985), Chesapeake Bay Program Sediment and Nutrient Monitoring (includes 5 sites in NY), Large River Assessment (includes 5 Susquehanna River sites in NY), Remote Monitoring Network (real-time data collection at headwater locations; currently includes 9 stations in NY), and Early Warning System for Binghamton and Elmira public water supplies (continuous monitoring of key parameters upstream of water intakes).

Immediate action: Restore the 5-year cycle for NYS DEC's Routine Statewide Monitoring and Assessment Programs and updated Waterbody Inventory and Priority Waterbody Lists (WI/PWL).

Immediate action: Maintain and improve SRBC water quality monitoring and assessment programs. Coordinate with local partners on Subbasin Surveys for the Chemung Subbasin (2012 and 2013) and Upper Susquehanna Subbasin (2013 and 2014), tailoring each Year-2 project to address local monitoring needs. Evaluate potential expansion of monitoring efforts, such as monitoring and assessments for bacteria and emerging contaminants of concern.

5-year target: Additional lake associations begin or resume monitoring of lake conditions through the Citizen Statewide Lake Assessment Program (CSLAP).

5-year target: Provide technical assistance for volunteer stream monitoring programs by citizen groups and/or students (which provide water quality screening and educational benefits).

5-year target: Provide local input to the WI/PWL from county Water Quality Coordinating Committees, Soil and Water Conservation Districts, watershed organizations, researchers, and others.

*Measure: Years since last RIBS, LCI, groundwater sampling, and WI/PWL for Susquehanna and Chemung Watersheds. Number of SRBC monitoring reports. Number of CSLAP reports. Number*

*of volunteer stream monitoring programs that received technical assistance. Number of local organizations contributing WI/PWL information.*

- 1g. Secure permanent funding for the federally operated river and stream gauges that are needed for water resource planning and management. (The magnitude and frequency of stream flows are critical data for evaluating both water quality and water quantity issues.)

Immediate action: Provide local letters and other support for ongoing efforts to secure a permanent funding source for the gauge network.

*Measure: Number of letters and expressions of support.*

- 1h. Expand the groundwater observation well network to provide better geographic coverage, more frequent measurements, and faster reporting time so that it can be used to monitor aquifer responses to rainfall events and droughts and provides the data needed for timely water management decisions.

Long-range target: Procure funding to improve the observation well network and provide real-time monitoring capability.

*Measure: Number of observation wells and frequency of measurements.*

- 1i. Develop scientifically based watershed management plans that present strategies for addressing both land management and water management issues that impact local water resources.

Immediate action: In watersheds with water resource concerns or problems (lake management issues, erosion, flooding, poor water quality, etc.), engage residents in collecting data to document the extent of problems and identify non-impacted areas for protection.

5-year target: Compile and analyze citizen-collected data and other information for priority watersheds and develop local watershed management plans. Engage watershed residents and property owners in implementing the plan and reducing the impacts of their activities.

*Measure: Number of groups collecting data. Number of new plans.*

**Improved Sewage Disposal:** Reduce contamination from sewage disposal by promoting improved management of on-site wastewater treatment systems (OWTS), expanding municipal sewer service to priority areas, and funding upgrades to existing sewage treatment plants. (Additional recommendations regarding municipal wastewater treatment infrastructure are in Recommendation 2g.)

- 1j. Improve the performance of on-site wastewater treatment systems (septic systems) by providing public education, training, and technical assistance throughout the watershed. (About half of the residential population in the watershed is served by about 120,000 on-site systems. Although the steps required for proper functioning of these systems are relatively simple and inexpensive, failure to maintain septic systems is a common problem.)

Immediate action: Encourage increased municipal involvement in OWTS issues in order to promote increased compliance with state standards. Conduct workshops for municipal code enforcement officials and planning boards about system siting and operation. Promote attendance by holding workshops in the local area, minimizing the cost, and offering continuing education credits.

Immediate action: Conduct education program(s) for lake shore property owners and others about how onsite systems work, proper maintenance, and proper use.

5-year target: Expand the efforts of public health departments to provide homeowners and contractors with information about the installation and maintenance of septic systems. Include information about the long-term cost savings from proper maintenance, which reduces the potential need for costly replacement projects.

*Measure: Number of workshops and educational programs.*

- 1k. Conduct studies to determine the magnitude and extent of failing on-site systems, targeting areas with small lots, proximity to lakes, or other reasons for concern.
- Immediate action: Provide assistance for lake associations to inventory sanitary systems and/or conduct dye testing.
- 5-year target: Conducts well water testing in an area where small lot sizes preclude adequate separation distances between septic systems and wells.
- Measure: Number of inventories or studies.*
- 1l. Encourage municipalities and/or counties to conduct on-site wastewater system inspections and to develop management strategies. Because it is difficult (in a largely rural and economically challenged region) to tell people that they need to spend money on septic system improvements, consider funding incentives for septic system improvements and maintenance.
- Immediate action: Share information throughout the watershed about existing programs for identifying failing onsite systems through routine inspections (such as the Lamoka-Waneta Lakes septic inspection program, the Otsego Lake septic system management plan, and the Schuyler County Watershed Protection Law) for consideration in other areas.
- 5-year target: Promote development of wastewater regulations and system inspection requirements. Procure funding for inspection and enforcement.
- 5-year target: Procure funding to continue the Schuyler County program to cost-share replacement of failing or antiquated septic system components. Share information about this initiative to serve as a model in other areas. Explore other kinds of incentive programs to promote upgrading of existing systems.
- 5-year target: Explore the concept of forming septic maintenance districts as a means to improve efficiency and consistency of operation of on-site waste treatment systems.
- Measure: Number of new OWTS inspection or maintenance programs. Number of OWTS cost-share programs and amount of funding.*
- 1m. Promote development of new public wastewater treatment facilities in areas with clusters of sub-standard onsite systems and/or direct discharges, including those identified in the WRAPS (NYS DEC and others, 2001) that have not yet been addressed and additional high risk communities identified by health departments.
- Immediate action: Targeting priority areas, provide technical and financial assistance with development and upgrading of public sewer systems.
- Immediate action: Conduct workshops for municipal leaders on financing for wastewater treatment projects.
- Long-range target: Provide public wastewater treatment services in all areas where improved septic system design and management are not adequate for preventing contamination of surface water or water supply wells from septic systems.
- Measure: Number of workshops. Number of new or expanded public systems.*
- Protect Drinking Water Supplies: Support human health by protecting public and private drinking water supplies with source water protection programs and public education.** (Additional recommendations regarding municipal water infrastructure are in Recommendation 2f.)
- 1o. Support the development of source water and wellhead protection programs for public water supplies (that build on the source water assessments conducted by NYS DOH). Because local communities generally lack the technical expertise to develop plans and regulations, experienced technical staff is needed to guide these protection efforts.

Immediate action: Initiate a campaign to educate the public and municipal leaders about the need for source water protection and strategies for developing successful programs.

Immediate action: Inventory existing source water and wellhead protection plans and regulations. Assess the potential contamination risks for public water supplies that lack such programs.

5-year target: Secure funding to provide assistance and support for development and implementation of source water and wellhead protection plans. Assistance to local governments and public water systems can include: grants, workshops, guidance documents, technical assistance, and establishment of spill detection and early warning systems.

Long-range target: Implement programs for all public water systems in the watershed to protect water supplies from contamination. Periodically review and update these plans.

*Measure: Number of workshops or other educational efforts. Number of source water and wellhead protection plans/regulations. Number of local governments receiving assistance.*

- 1p. Educate the public about protecting private drinking water supplies.

Immediate action: Distribute educational material about source water protection for individual drinking water systems (such as the Drinking Water Well Management chapter from the Home\*A\*Syst handbook).

*Measure: Number of events, locations, or publications in which information was distributed.*

- 1q. Develop regulations and non-regulatory programs designed to protect critical aquifers from contamination. This supplements wellhead protection programs, which only provide for protection of public supply wells and only within the immediate vicinity of the wells.

5-year target: Secure resources to enable additional technical assistance to local governments.

*Measure: Number of local governments receiving assistance.*

**Atmospheric Deposition: Reduce atmospheric deposition of mercury, nitrogen, and other pollutants, which originate from sources within and outside of the watershed.**

- 1r. Prevent public exposure to mercury from fish consumption by (1) temporary use of fish consumption advisories (specifying the types and quantities of fish that can safely be consumed) and (2) long-term reductions in mercury emissions. (Mercury reaches waterbodies primarily through atmospheric deposition and is concentrated in fish. It poses a threat to humans who consume contaminated fish.)

Immediate action: Conduct additional monitoring of mercury levels in fish. Publicize information about fish consumption advisories and the risks of consuming contaminated fish. NOTE: These advisories are intended to be temporary until pollution can be reduced to levels that allow for safe fish consumption.

Long-range target: Promote implementation of the “Northeast Regional Mercury Total Maximum Daily Load,” which outlines a strategy for reducing mercury concentrations in fish based primarily on reducing atmospheric releases of mercury. This will require reductions from mercury sources within the Northeast region, in states outside of the region, and from global sources.

*Measure: Number of waterbodies in which mercury levels in fish were measured. Number of fish consumption advisories due to mercury. Number of letters and expressions of support for programs that curb mercury emissions.*

- 1s. Reduce atmospheric deposition of nitrogen (which accounts for about 1/3 of the Chesapeake Bay’s nitrogen loading) by managing atmospheric releases throughout the “air-shed” of the Chesapeake Bay (which is significantly different than the watershed). Nitrogen from atmospheric deposition is included in the New York pollution allocation for the Chesapeake Bay TMDL, even though it is largely from sources outside of NYS.

**Immediate action:** Promote federal policies to curb nitrogen emissions that impact water quality in New York and the Chesapeake Bay. This could be accomplished by nationwide reductions in the permitted levels of nitrogen oxides from power plants, motor vehicles, farms, and other sources. Nitrogen allocations in the Chesapeake Bay TMDL could be revised to encompass all areas in the “air-shed.”

**5-year target:** Continue efforts to reduce atmospheric nitrogen pollution from sources in New York State, document the benefits of reducing atmospheric deposition (for credit in the Chesapeake Bay Watershed Model), and support research on nitrogen transport (to improve the Model).

*Measure: Number of letters and expressions of support for programs that curb nitrogen emissions. Number of studies. Change in the amount of New York’s nitrogen load to the Chesapeake Bay that is from atmospheric deposition (as calculated by the Chesapeake Bay Program).*

**Management of Hazardous Materials: Reduce water pollution originating from landfills, unsafe disposal practices, and chemical spills.**

- 1t. Assist with proper disposal of hazardous materials in order to reduce the storage and improper disposal of hazardous substances by households, farmers, public institutions, and businesses.

**Immediate action:** Continue and expand county programs for periodic collection and disposal of hazardous materials.

**Long-range target:** Remediate all hazardous waste disposal sites in the watershed.

*Measure: Number of collection events. Number of sites remediated.*

- 1u. Minimize contamination of surface and groundwater supplies from hazardous material spills by implementing spill prevention practices, encouraging reporting of spills, and maintaining spill response capabilities.

**Immediate action:** Provide the public and municipal personnel with information about reporting spills (such as the “Reporting Polluting Discharges” information sheets developed for Chemung, Schuyler, and Steuben Counties).

**Immediate action:** Provide emergency personnel with the resources needed to attend training, purchase equipment, and maintain access to information resources for effective spill response efforts.

**Immediate action:** Provide training in spill prevention and response to natural gas industry employees.

*Measure: Number of information sheets developed/distributed. Number of training sessions. Number of projects or major purchases that support spill response.*

**Downstream Water Quality: Reduce the pollution loads delivered to the Chesapeake Bay from the New York part of the watershed to the extent that this can be accomplished without major economic impacts. Quantify load reductions for incorporation into the Chesapeake Bay Watershed Model.<sup>3</sup>**

- 1v. In order to improve the basis for future planning and implementation efforts, continue to work with EPA to refine the Chesapeake Bay Watershed Model and provide accurate input data for the NY portion of the watershed.

**Immediate action:** The Upper Susquehanna Coalition (USC) Scientific Support Group provides support for funding and coordination of research on the export of nutrients from headwater streams, legacy sediment, tree planting, green infrastructure, stormwater management, septic programs, and other topics that are relevant to evaluating and reducing the nutrient and sediment loads transported from New York to the Chesapeake Bay.

<sup>3</sup> NYS DEC Chesapeake Bay Watershed Program information: <http://www.dec.ny.gov/lands/33279.html>

5-year target: Work with the EPA to adjust New York's pollution load allocations in the Chesapeake Bay TMDL so that they are fair and achievable. New York should be given "credit" for maintaining clean water to dilute downstream pollutants. Document New York's strategy for achieving the required reductions in the updated Watershed Implementation Plan.

*Measure: Number of studies. Number of letters, documents, and other efforts related to the NYS portion of the Chesapeake Bay TMDL.*

- 1w. Secure funding (from federal, state, and local sources) to implement cost-effective management practices that improve local water quality and support the Chesapeake Bay restoration effort.

Immediate action: Implement wastewater treatment upgrades, improved stormwater management, and agricultural Best Management Practices (BMPs) as funding permits. Document these activities for reporting to the Chesapeake Bay Program.

*Measure: Nitrogen, phosphorus, and sediment loads entering the Chesapeake Bay from New York, as calculated by the Chesapeake Bay Program.*

**Abundant Water:** Maintain abundant surface and groundwater supplies through conservation, local mitigation, drought management, flow standard guidance, water budgets, etc. Water availability should be adequate for immediate and future needs, even during droughts. Recommendations related to Land Use and Runoff (Sections 3 and 6) support this objective by protecting groundwater recharge areas.

- 1x. Conduct research on the hydrologic systems that support municipal and industrial water use, including water budget analysis, identification of critical aquifer recharge areas, and aquifer mapping. The Corning Area has been designated by SRBC as a Potentially Stressed Area where additional analysis and management may be warranted. Proposals for increased water use in small headwater basins may also trigger the need for assessment of local water availability.

5-year target: Provide local governments with technical support to identify critical groundwater recharge areas and develop strategies for safeguarding recharge functions.

Long-range target: Conduct local and regional water budget assessments (analysis of anticipated demand and expected base flow levels) in areas with existing or anticipated high water use in order to determine water availability and establish sustainable limits for water use.

Long-range target: In areas with development pressure, conduct aquifer assessment and mapping to provide improved understanding of the underground water resource.

*Measure: Number of local governments receiving technical support. Number of studies.*

- 1y. Promote sustainable use of water for domestic, industrial, municipal, commercial, agricultural, and recreational activities.

Immediate action: Encourage public use of water conservation practices by distributing educational information (in water bills and through other means).

Immediate action: Encourage and incentivize water conservation by water suppliers, industry, and other major water users through regulatory requirements (for NYS water supply permits and SRBC approvals for water withdrawals and consumptive use).

5-year target: Develop and conduct educational programs about sustainable water use targeted to specific audiences, including: local governments; major water users; consultants; and environmental, conservation, and citizen organizations. Develop tools these groups can use to make informed water use decisions.

Long-range target: Identify opportunities for water reuse and conservation (such as the Elmira Country Club proposal to solve a runoff issues while reducing the need for potable water for watering greens) and implement as resources permit.

*Measure: Number of educational projects. Number of water conservation incentives in permit programs. Number of water re-use and conservation projects.*

- 1z. Coordinate and implement low-flow water management activities, including SRBC regulation of water withdrawals and municipal land use controls.

Immediate action: Support sustainable use of water through enhancement of SRBC regulatory programs for surface water withdrawals, groundwater withdrawals and consumptive water use. The project review process and conditions for project approval are intended to prevent water withdrawal rates that exceed the sustainable capacity of the waterbody or groundwater source. Continue low flow monitoring and use these data, along with the results of the Susquehanna Ecosystem Flows Study, to establish passby flow requirements for surface water withdrawals.

Immediate action: Support NY participation in Susquehanna River Basin Commission (SRBC) multiagency committees that provide coordination of water resource data collection, planning, monitoring, and management procedures.

5-year target: Support coordinated implementation of recommendations in the “Groundwater Management Plan for the Susquehanna River Basin” (SRBC, 2005). Update this plan.

5-year target: Encourage and assist local governments with incorporation of groundwater management concepts into planning and land use control.

*Measure: Changes to SRBC permit programs. Amount of NY participation in SRBC committees and groundwater management implementation. Number of local governments receiving assistance.*

- 1aa. Provide for local and regional mitigation of water that is used consumptively and thus removed from the local system. Mitigation projects enable water storage and “compensation releases” during low flow conditions to support in-stream needs. This low flow augmentation should occur as close to the location of the consumptive use withdrawals as possible.

Immediate action: Encourage local mitigation of consumptive use or termination of withdrawals during low flow conditions, which is preferable to the large-scale water storage projects that have been funded through SRBC’s consumptive use mitigation program.

Long-range target: Support implementation of recommendations in the SRBC “Consumptive Use Mitigation Plan” (SRBC, March 2008), which presents a strategy for identifying and developing projects that will compensate for the impacts of consumptive water use during droughts. Implementation requires additional analyses, including the use of in-stream flow assessments to assure that mitigation occurs where it is needed and at appropriate levels.

*Measure: Number of local projects to mitigate consumptive water use. Amount of progress on implementing the “Consumptive Use Mitigation Plan.”*

- 1bb. Periodically review and update state and watershed drought management plans. The “Susquehanna River Basin Drought Coordination Plan” (SRBC, 2000) specifies the roles and authorities for declaring, managing, and monitoring drought conditions.

5-year target: Review periodically and revise drought plans as warranted. SRBC plan is slated to be updated in the near term.

*Measure: Number of drought plans reviewed/revised.*

- 1cc. Conduct local and/or regional drought contingency planning for public water supply systems.

Immediate action: Provide information and technical assistance for developing and updating plans.

*Measure: Number of local governments receiving assistance.*