New York Ocean and Great Lakes Ecosystem Conservation Council

Transitioning the Ocean and Great Lakes to a Sustainable Future:

IMPLEMENTATION OF ECOSYSTEM-BASED MANAGEMENT IN NEW YORK STATE

South Shore, Long Island, New York

Staff Report to the Council

September 19, 2007

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I. Background

The U.S. and Pew Ocean Commissions documented that our nation's oceans are in trouble, and recommended ecosystem-based management (EBM) to improve the protection and restoration of coastal ecosystems. Following the recommendations of these two national commissions, over 200 scientists signed a statement stating that, "Solutions based on an integrated ecosystem approach hold the greatest promise for delivering desired results." With this consensus on the need for EBM, many states and regions have begun considering how to integrate existing management into an ecosystem approach.

New York State took leadership with the New York Ocean and Great Lakes Ecosystem Conservation Act (OGLECA: See Appendix A for full text). This statute requires ecosystem-based management of New York's coastal ecosystems, and establishes the New York Ocean and Great Lakes Ecosystem Conservation Council (OGLECC) to coordinate coastal management in New York to achieve the following policy and principles:

> *The policy of the state of New York shall be to conserve, maintain and restore coastal ecosystems so that they are healthy, productive and resilient and able to deliver the resources people want and need.*
>
> *The governance of coastal ecosystems shall be guided by the following principles:*
>
> - *Activities in and uses of coastal ecosystems are sustainable;*
> - *Ecological health and integrity is maintained;*
> - *Ecosystems' interconnections among land, air and water are recognized;*
> - *Understanding of coastal ecosystems is enhanced;*
> - *Decisions are informed by good science;*
> - *When risks are uncertain, caution is applied; and*
> - *Broad public participation occurs in planning and decision making.*

OGLECC is chaired by the Commissioner of Environmental Conservation, Pete Grannis, and consists of the following eight additional members: the Commissioners of Agriculture and Markets, Patrick Hooker; Economic Development, Daniel Gundersen; General Services, John Egan; Parks, Recreation and Historic Preservation, Carol Ash; and Transportation, Astrid Glynn; the Secretary of State, Lorraine Cortés-Vázquez ; the President of the New York State Energy Research and Development Authority, Paul Tonko; and the Interim Chancellor of the State University of New York, John Clark. The Deputy Secretary of State for Coastal Resources, George Stafford, serves as Executive Director of the Council.

The Nine Council Agencies are:

- Department of Environmental Conservation (DEC)
- Department of Agriculture and Markets (Ag and Markets)
- Economic State Development (ESD)
- Office of General Services (OGS)
- Office of Parks, Recreation, and Historic Preservation (OPRHP)
- Department of Transportation (DOT)
- Department of State (DOS)
- NYS Energy Research and Development Authority (NYSERDA)
- State University of New York (SUNY)

The Council is charged with the following responsibilities in OGLECA:

- *Promote understanding, protection, restoration and enhancement of New York's ocean and Great Lakes ecosystems while promoting sustainable and competitive economic development and job creation;*
- *Ensure community needs and aspirations are accommodated, recognizing the interdependent goals of community well-being, environmental quality and economic viability;*
- *Define and implement an adaptive approach building upon existing laws and programs to advance activities that affect coastal ecosystems in order to ensure the coexistence of healthy ecosystems with human activities;*
- *Integrate and coordinate ecosystem-based management with existing laws and programs;*
- *Develop guidelines for agency programs and activities that affect coastal ecosystems to advance the policy and principles of the Act;*
- *Encourage scientific research and information sharing that will inform ecosystem-based management decisions and enhance ecosystem management capabilities;*
- *Use New York's private and public academic, research and non-profit institutions more effectively in developing and advancing coastal ecosystem-based management; and*
- *Facilitate regional coordination and cooperation to address complex coastal resource issues which cross political and jurisdictional boundaries.*

The Council is required by OGLECA to deliver a report to the Governor and Legislature by November 1, 2008 with the following components:

- *Demonstrate improvements that can be accomplished in eastern Lake Ontario and Long Island Great South Bay through ecosystem-based management in cooperation with resource managers, local governments, industry, conservation and community-based organizations, and academic and research institutions;*
- *Define executive and legislative actions necessary to integrate ecosystem-based management with existing programs needed to advance the coastal ecosystem principles;*
- *Include a plan, schedule, and funding opportunities for implementation of executive actions necessary to advance the policy and principles;*
- *Create an ocean and coastal resources atlas to make information available to the public and decision makers;*
- *Establish a research agenda that identifies priority issues in need of further research to enhance ecosystem-based management;*
- *Recommend actions to preserve, restore and protect submerged aquatic vegetation populations and meadows; and*
- *Identify opportunities for regional ecosystem-based management with neighboring states and the federal government.*

Efforts are underway to achieve the directive described above. This report documents progress to date (Section III) and recommendations on how the Council should move forward (Section IV). Section II clarifies the definition of EBM and New York State's approach to it.

II. Ecosystem-based Management in New York State

In Governor Eliot Spitzer's 2007 State of the State address, he called for, "...structural reform at every level of government to make it more flexible and adaptive to change." A core principle of ecosystem-based management (EBM) is transitioning the regulatory environment to be one which is adaptive and responsive to change.

EBM would evolve the current regulatory system and governance structure which is largely sector-based, (e.g. air, water, transportation, agriculture) and sometimes conflicted (independent regulatory and economic growth goals), toward a system which will: lead to decisions based on a holistic understanding of ecosystems; be adaptive and responsive to change; promote coordination and cooperation among sectors; balance competing uses; and inspire compromise.

EBM is different from current management approaches that focus on a particular issue or on a single ecological component such as a single endangered species or isolated water quality parameters. By focusing on interacting systems, EBM requires participation of many state agencies and requires the integration of knowledge from individuals with local experience as well as experts in biological, social and economic fields. EBM is a tool that can cut across programmatic and geographic jurisdictions with the components of EBM providing a language that allows for improved communication among citizens, scientists, the private sector and government officials.

The 2005 Scientific Consensus Statement on Ecosystem-based management provided the following definitions of EBM and ecosystems:

> *Ecosystem-based management is an integrated approach to management that considers the entire ecosystem, including humans.*
>
> *An ecosystem is a dynamic complex of plants, animals (including humans), microbes and physical environmental features that interact with one another.*

Council staff are proposing the following six components be used to apply EBM in New York State. Many existing programs incorporate some of these components; however, EBM is achieved through *integration* of all six components:

1. Place-based focus;
2. Scientific foundation for decision-making;
3. Measurable objectives to direct and evaluate performance;
4. Adaptive management to respond to new knowledge;
5. Recognition of interconnections within and among ecosystems; and,
6. Involvement of stakeholders.

Place-based approaches to managing activities are different from issue-based or species-based management practices where decisions are often made for multiple locations from the perspective of interests surrounding a single issue or species. Place-based approaches focus on activities in specific geographic areas while also noting the impacts that result beyond that place. Shifting from a focus on a single species or sector to integrating the interests and activities affecting a place and its surrounds is part of EBM.

Using current **scientific understanding of ecosystems** and advancing scientific investigation priorities are keystones of EBM. EBM incorporates what has been learned about ecosystems from years of scientific inquiry and monitoring. This management approach also considers social, cultural and economic trends and

forecasts as essential knowledge for decision-making about ecosystems. How might conditions twenty years hence shape human activities, their wants and needs, differently than today? These information requirements need to be met in order to support program management needs. As these needs become known, a research agenda can support scientifically informed decision-making. EBM relies on the accessibility and translation of science for decision-makers, policy makers and resource managers. It is important that appropriate mechanisms be available to support timely adjustments to current management activities given new scientific understandings in a changing social, economic and cultural environment.

The **identification of measurable objectives** is necessary for successful EBM. Measurable objectives provide a basis for gauging the impact of activities on the health of an ecosystem and the ability to provide valuable ecosystem services. EBM objectives for a geographic area need to provide measures for tracking progress towards ecological, economic, and human well-being goals. Quantifiable objectives assist in determining directions for action and allow for evaluating program success. The process for identifying objectives should be collaborative and inclusive both within government agencies and across a broad base of stakeholders.

Adaptive management is essential for long-term success of EBM. It is built on the foundation of three principal elements: monitor, evaluate, and adapt. These elements form a feedback loop for all aspects of EBM. Information from the monitoring of ecological, economic and social conditions helps gauge the success of accomplishing EBM objectives. Given the complexity of ecosystems it is challenging to predict with certainty whether a particular course of action will achieve stated objectives and meet goals. Adaptive management allows for learning and requires applying knowledge in decisions to provide for continuous adjustments to accomplish goals.

Recognizing and understanding the **complex interactions within and among ecosystems** is part of advancing EBM. Ecosystems provide services humans need: food, medicine, nutrient cycling, water purification, the protection of shores from erosion and storm damage, moderation of climate and weather, and recreation, among others. Improving or maintaining these ecosystems requires a comprehensive approach that considers social and economic matters in addition to understanding the complexities within the local ecology. While the identification of a small number of objectives is important to maintain focus, a continual reflection on the impacts of actions to many species within an ecosystem and the functions within that system allows for more informed decision-making.

The **involvement of a broad base of stakeholders** is a central foundation to EBM. Incorporating a process for robust, sustained stakeholder involvement to develop and implement ecosystem-based management is a key to ensuring that decisions affecting ecological systems are made with transparency and a full consideration of the public's perspectives. Stakeholders early involvement and ongoing participation is necessary for identifying the functions of the ecosystem that provide human value, such as recreation, commercial fishing, or forest products. Recognizing and including local knowledge to build a richer understanding of the relationship between the ecosystem and humans in a defined place is the goal for a good stakeholder process.

III. Progress to Date

Council staff at the Department of State (DOS) Division of Coastal Resources and staff from the other involved Council agencies have initiated the following activities to achieve the required deliverables for the November 2008 report and build the necessary structure for the Council to fulfill its responsibilities:

A. Council Structure

Council Staff

In addition to the Executive Director, DOS has committed the time of three existing staff in the Division of Coastal Resources (Greg Capobianco, Peter Walsh, and Jeff Herter) to launching this initiative. Leah Akins was brought on full-time as staff to the Council in April 2007. DOS was provided funds for eight positions in FY '07-'08 to staff the Council and is working with Department of Civil Service to fill those positions as soon as possible.

Committees

The Council will consider at this meeting the formation of the following advisory committees and working groups: Stakeholder Advisory Group, Science Advisory Group, Ocean Working Group, and Great Lakes Working Group. The following two groups have been formed and meet regularly:

- An Agency Steering Committee, composed of Council member designees, was formed to guide Council staff's work and facilitate the Council agencies participation. The Agency Steering Committee meetings have initiated productive interaction among Council staff and the agencies.

- A Technical Working Group, composed of Geographic Information System (GIS) contacts in the nine agencies, was formed to guide the development of the New York Ocean and Great Lakes Atlas.

B. Framework and Recommendations

Council staff worked with the Agency Steering Committee and a consultant to develop the proposed framework and an initial set of recommendations found in Section IV of this document.

C. Demonstration Projects

As required by the Act, Two demonstration projects have been initiated, one in the Great South Bay on Long Island and the other at Sandy Creeks Watershed on the eastern shore of Lake Ontario (See Appendix B for maps of demonstration areas). Council staff, in partnership with The Nature Conservancy (TNC), is developing EBM plans for both areas and implementing restoration activities. The New York State Tug Hill Commission and South Shore Estuary Reserve Council are the partners working closely on-the-ground with TNC to implement these projects. The Agency Steering Committee held a meeting focused on the two demonstration projects to identify how each agency could be better involved and assist in the implementation activities.

Sandy Creeks Watershed

Planning. A framework for an EBM plan is being done first, because biological and socio-economic data needs to be compiled in this region before a full EBM plan could be initiated. The development of this

framework is underway and expected to be completed by early 2008. This framework will contain recommendations for the development of a full EBM plan for the project area.

Implementation Activities. The following activities are ongoing in order to demonstrate improvements as required by the Act.

- *Invasive Species Control*. Swallowwort and purple loosestrife are modifying the habitat of both near-shore wetlands and upland areas. During Summer 2006, over 160 acres of swallowwort were treated and 25 landowners were contacted to build awareness on swallowwort issues. Scientifically tested bio-control is being used to control purple loosestrife. Over 45,000 beetles were released in nine wetlands and 1,800 root weevils were released in Spring 2006.

- *Forestry Workshops*. Two workshops were held to teach foresters, loggers and forest landowners best management practices (BMPs) for wetlands and streams in the forests of the watershed. The first workshop introduced the range of possible BMPs, and a second workshop focused on providing tools to implement BMPs. Attendees built five portable skidder bridges that are now being used to cross streams during harvesting.

- *Dam removal*. An environmental impact assessment is underway to determine impacts of removing the Monitor Mills Dam on South Sandy Creeks that currently is a barrier to fish migration from Lake Ontario.

Great South Bay

Planning. TNC is developing an EBM plan for the Great South Bay in cooperation with the South Shore Estuary Reserve Council. TNC's Conservation by Design methodology is being used to identify ecosystem representatives and develop measurable objectives and recommended actions. The first summary draft of this plan is expected in Fall 2007.

Implementation activities. The following activities are ongoing in order to demonstrate improvements as required by the Act.

- *Hard Clams*. To date, the TNC has stocked over 2.1 million adult clams in the Great South Bay. For this project, 190,000 hard clams were transplanted. Over 200,000 seed clams were grown and cared for by high school students and released in spawner sanctuaries. Monitoring work has shown that spawning and growth of clams was successful in 2006.

- *Eel Grass*. Over 35,000 eelgrass seeds were harvested from nearby beds and were planted last fall. Growth and viability of the restored eelgrass are currently being monitored to inform future restoration activities.

D. EBM Implementation Projects by Council Agencies

The following Council agencies have initiated implementation projects as part of the Council's EBM Initiative:

Department of Environmental Conservation (DEC) is:

- Designing a pilot marine fishery observer program by conducting sea sampling aboard commercial trawl and gill net vessels and implementing a Vessel Trip Reporting system

- Maintaining the Atlantic Ocean continental shelf trawl survey to continue collecting baseline data
- Initiating studies of winter flounder and other keystone fisheries species in the Great South Bay demonstration area
- Developing a passive acoustic monitoring program focused initially on endangered marine mammals and sea turtles
- Developing an offshore lower food web assessment and action plan focusing on the nearshore waters of eastern Lake Ontario
- Integrating existing data sets to assess the ecological relationships among marine species inhabiting estuaries and determine critical habitats of important marine species

Department of Agriculture and Markets is:

- Installing vegetated conservation buffers on five farms in the Sandy Creeks demonstration area
- Quantifying agricultural green house gas emissions and sink opportunities at two pilot farms in the Sandy Creeks demonstration area

Empire State Development (ESD) is:

- Developing a business plan to take advantage of low-cost electricity and thermal energy generated from a landfill gas to energy project in the Sandy Creeks demonstration area and help create new jobs

Office of General Services (OGS) is:

- Digitizing underwater grant and lease information in GIS format including infrastructure, navigation uses, and locations of proposed activities on underwater lands
- Studying and analyzing Public Trust Doctrine in New York State waters to improve capacity to make determinations on various underwater land proposals

Office of Parks, Recreation, and Historic Preservation (OPRHP) is:

- Developing educational and interpretative materials for high visitation beaches including four kiosks to promote ocean literacy and sea turtle conservation
- Supporting sea turtle research focusing on life history needs including forage base preferences and profiles in New York's nearshore Atlantic waters

Department of Transportation (DOT) is:

- Developing a spatial overlay map that will provide enhanced decision-making capacity for the project siting and mitigation, focusing first on the demonstration areas

Department of State (DOS) is:

- Institutionalizing regional approaches as a foundation for ecosystem-based management
- Increasing development opportunities in existing communities with under-utilized infrastructure
- Incorporating progressive green building provisions in the State's energy and building construction codes
- Increasing capacity of local governments to advance ecosystem-based management principles and encourage inter-municipal projects.

State University of New York (SUNY) is:

- Developing an innovative ecosystem-based model for the Great South Bay demo area for use in evaluating and guiding future restoration efforts

E. Ocean and Great Lakes Atlas

Data Collection

The Act requires the Council to "create an ocean and coastal resources atlas to make information available to the public and decision makers." Council staff are developing an Ocean and Great Lakes Atlas composed of a digital data repository, data catalog and web-based mapping application, with assistance from a Council interagency technical advisory group. The Atlas will allow the public to access data collected and will assist local, regional and state decision makers by making data on ecosystems, including biological, chemical, cultural, and socio-economic information, available in one location.

Council staff and contractors have commenced the data collection effort contacting over 300 organizations and compiling over 200 datasets. A relational database was created that provides records for each dataset collected and numerous fields describing the data collected. The data collected was assessed and areas where data was missing and/or insufficient were identified in a data gaps analysis.

Atlas Development and Infrastructure

Council staff and consultants are working with the Office of Cyber Security and Critical Infrastructure Coordination (CSCIC) on the Atlas development and infrastructure. CSCIC graciously donated the code so that the application development would have a jumping-off point. Improvements and functionalities are now being built into the Atlas.

To make data available to the public and decision makers through a web-based mapping application, adequate data storage and web server capacity and a well maintained conduit must be provided. Council staff are working with a technical team to outline specifications to deliver the Atlas over the web. Process of acquiring specified software and hardware and expansion of web hosting services has been initiated.

F. Research and Monitoring Agenda

A research agenda that identifies priority issues in need of further research to enhance EBM is a required component of the November 2008 report to the Governor and Legislature. Council staff, in partnership with New York Sea Grant, tested a process for development of the research agenda in the Council's two EBM demonstration areas. Sea Grant convened a workshop in each demonstration area to prioritize research projects needed to address information needs as submitted by area resource managers. Sea Grant developed a report that documents the process used and information needs and research priorities identified in each workshop (See Supporting Documents).

In their role as science and research experts on the Council, the State University of New York will lead the development of the research agenda under the guidance of the Science Advisory Group. The process used in the demonstration areas will be evaluated and adapted based on lessons learned from this pilot. The Agency

Steering Committee has recommended that this agenda include state-wide monitoring priorities and encompass a plan for developing a New York Ocean and Great Lakes Observing System.

G. Stakeholder Engagement

Dialogues

To engage a broad community of stakeholders in the Council's work, Council staff, partnered with the State University of New York College of Environmental Science and Forestry, to host a series of five dialogues around the state in September and October 2006. These dialogues were very successful with over 500 people attending and engaging in productive interactions on how to achieve the vision of the Act. Council staff released a report of the dialogues to the public in January 2007 (See Supporting Documents). The public input is organized into three main themes in the report: Knowledge, Process and Partnerships, and Incentives.

Ocean and Great Lakes Communities of Practice

The high demand of stakeholder participation in EBM calls for innovative approaches to engaging stakeholders. Council staff researched different means of reaching out to interested parties and recommends that a web application called Communities of Practice (CoP) be used along with traditional methods to engage the widest possible community of stakeholders. CoP is a web-based interface that uses a variety of tools (discussion groups, data sharing, public comment) to facilitate and encourage stakeholder involvement. CoP will be used to complement regular stakeholder meetings and allow greater involvement than would be possible through in-person gatherings.

Website

Council staff have developed a website for the Council at http://www.nyoglecc.org/ Additional pages and functions will be added to this site following the Council's first meeting.

IV. Proposed Framework

A framework and recommendations to the Council on how to achieve the charge of the Act are described in this section. This framework and recommendations build on the responsibilities of the Council as defined in the Act, most notably the Council "shall define and implement an adaptive approach building upon existing laws and programs to advance activities that affect coastal ecosystems in order to ensure the coexistence of healthy ecosystems with human activities." More than 200 existing State programs and laws have been identified and this number increases significantly when coupled with local, municipal statutes. This Council responsibility sets the context for how the Council initiates its work to conserve, maintain and restore coastal ecosystems. The Act defines coastal ecosystems as the "resources of coastal waters and their watersheds." The following discussions are organized recognizing the distinct roles for the Council, individual State agencies, and existing place-based programs working to improve ecosystem health at the local level. It also recognizes the critical relationships among these core entities.

Adequately addressing the relationship between statewide and ecosystem issues relies on an *on-going iterative process*, focused on learning and improvement of agency and place-based program actions over time. The Council can initiate its activities by reviewing the current status of agency and program experience in employing the six EBM components. From this, the Council can establish expectations of State agencies and existing place-based programs with regard to statewide goals and objectives, and further application of EBM. Agencies and the place-based programs then take actions aligned with goals and objectives that pertain to specific ecosystems. The effects of these actions are monitored and reported; learning takes place about the related outcomes, and learning is applied to new actions. Over a longer period, the Council can update its expectations for EBM; place-based goals and objectives may change as well. The iterative process happens at the management level for specific ecosystem efforts and statewide where the implications of lessons learned warrant generalized applicability.

A. The Work of the Council

The Act creates the Council as the accountability mechanism for achieving the desired results – healthy, productive, and resilient coastal ecosystems – for the benefit of residents of New York. Within the iterative process suggested by this framework, the Council is established as the governing body for the work of advancing EBM. The Council would function similar to a board of directors guiding a corporation. The Council's role is to pass on leadership, support learning and give oversight to the application of the EBM components by state agencies and place-based programs. Among the Council's primary functions are the following:

- Guide program and agency efforts in setting ecosystem goals and management expectations;
- Learn from place-based program and agency experiences through a review process about how EBM components are applied and their results;
- Provide guidance and marshal the necessary support to strengthen ecosystem-based practices;
- Translate lessons learned from place-based and agency efforts for use elsewhere in the state in order to achieve the goals of healthy, productive, and resilient ecosystems; and,
- Monitor and report on progress toward statewide Council goals and objectives as well as progress against place-based and agency ecological goals and objectives.

One of the functions of the Council will be to promote the overall value of EBM as an improved means for influencing decisions affecting ecological conditions. This will be accomplished through a combination of reporting progress in the decision-making of state agencies as well as the development of materials that show the connection between a strong quality of life and strong ecological health. While this is not always seen as an important research topic related to ecological studies, the connection between human uses and ecological health is going to be critical to engaging private sector participation and maintaining support for government participation in EBM.

Providing guidance and support while capturing lessons learned from a range of practices statewide will position the Council to improve its ability to be accountable for the results desired by the Act.

B. The Work of Individual State Agencies

Nine state agencies comprise the Council. These agencies represent the State's interests in transportation, energy, agriculture, economic development, recreation, education, and stewardship for New York's lands and waters. As each State agency seeks to pursue individual department results and responsibilities through their respective State and local-based programs, each agency also has two roles with respect to furthering the purposes of the Act.

One role is to support the activities of the place-based programs around the State. Place-based programs are defined as those existing (and future) programs focused on the current condition of an ecosystem and the direction for its improvement. These include the coastal, ecosystem-based programs and the upland, watershed basin programs. Within these programs, each agency can consider the value it adds by supporting the implementation of the six EBM components.

Another role for State agencies is to use products from place-based programs and the principles from the Act in agency planning and project decision-making. Collectively, the agencies have multitudes of programs that impact ecological health or how people interact with ecosystems. These agency programs include, but are not limited to, the State's Open Space Plan, the Department of Transportation's Environmental Initiative, the Comprehensive Wildlife Conservation Strategy, the Environmental Protection Fund, Brownfield Opportunity Areas Program, Empire State Development Programs, Agricultural Environmental Management Program, the State's Coastal Management Program, Local Waterfront Revitalization Programs, Office of Parks, Recreation, and Historic Preservation's Statewide Comprehensive Action Plan and many others including programs in NYS Energy Research and Development Authority, State University of New York, and the Office of General Services. Each agency is charged by the Act and through the Council, to integrate and coordinate EBM practices into their programs to advance the policy and principles of the Act. The agencies have the following opportunities, building on their existing programs and practices, to advance EBM in New York.

Broadening Stakeholder Involvement

As the place-based programs move toward fully integrating EBM, agencies will need their constituent groups to participate in existing and future State programs, including agency planning, program development, and decision-making practices. While current agencies have various mechanisms to involve stakeholders, a more comprehensive approach is required for EBM, broadening the range of stakeholders to be involved. State agencies can integrate the participation of other placed-based programs in the development of EBM programs, including Metropolitan Planning Organizations, regional economic development councils, and Local Waterfront Revitalization Programs.

A greater level of stakeholder participation in EBM can lead to place-based programs that better accommodate human uses as well as agency programs that better reflect statewide ecological goals and objectives. Mutual involvement in program development can reduce conflicts in the implementation of agency projects and facilitate the implementation of EBM programs.

Improving Scientific Foundation of EBM

EBM presents the agencies with the opportunity to identify the research needed to inform how practices and programs could shift or be modified to advance EBM principles and support place-based programs. The research and information needs of agencies relative to EBM can encompass a broad range of concerns beyond ecologically related scientific research. Improving the scientific foundation of EBM is critical to its successful implementation in New York State.

Adapting Regulatory Programs

Two components of EBM - place-based and adaptive management – will, among other things, require a review of regulatory programs to accommodate these components of EBM. While the place-based programs are responsible for developing the management program for a given ecosystem, the regulatory means to implement these programs are, for the most part, statewide programs. These statewide programs will need to be examined and adjusted to take account of different objectives that may be developed for each region or ecosystem.

Adaptive management will require agencies to consider how regulations can be adjusted to reflect new information without necessarily employing the often lengthy and complex process of regulatory amendments. The incorporation of place-based considerations and adaptive management into State regulatory programs will present applicants with more specific information about what is expected. This can and should increase the predictability and may reduce the timeframe of regulatory decision-making.

Reflecting EBM Principles in Agency Decision-Making

State agencies will need to identify ways to incorporate EBM principles into their existing programs and activities. As the Act requires, guidelines will be prepared to assist the agencies in this process. Since the Council will rely, in great part, on the work of the place-based programs to advance EBM, this process should also identify the ways agencies will advance the implementation of the place-based programs, particularly the meeting of established measurable objectives.

A host of opportunities for integrating EBM principles into the work of the State agencies exist. For example, strengthening green building standards, reducing energy consumption, incorporating "Smart Growth" principles into EBM, and expanding the use of "Green Guides" to allow for sustainable development and infrastructure improvements can all contribute to the agencies' ability to make better decisions and advance EBM.

Coordinating Grants

Agencies can advance EBM by increasing the level of coordination of their financial assistance programs, which can support or effect place-based programs. The multiple grant programs within the Environmental Protection Fund are an obvious place to start. Administering agencies should consult early regarding annual grant priorities, review criteria, and selection processes and how these might be adjusted to advance EBM principles and the work of the place-based programs. Increased coordination of federal grants, such as Agricultural Environmental Management funds, can provide value by leveraging or matching these funds with state funds. Integrated grants management among state agencies will be a key to effectively advancing EBM.

Expanding Knowledge Available to Agency Staff

EBM requires decision-making informed by science as well as other relevant knowledge. Agencies can improve their expertise by adding staff or training existing staff to have a better understanding of both ecological processes and the development needs of the State. State agencies have an opportunity to increase their capacity to facilitate accessibility and availability of scientific research in order to meet the needs of state programs and management priorities. Agencies can also expand their range of knowledge by considering the seconding of staff between Council agencies to share program knowledge and facilitate program alignment.

EBM will produce better information about ecosystems, the likely effects of activities on resources, and how uses of the ecosystem can be sustained. This information, particularly that resulting from scientific research more directly based on the management needs of each agency, can help assure that the design and siting of projects results in activities that are sustainable. The increased knowledge that EBM will produce can improve agencies'

ability to respond to the effects of climate change and sea level rise through early recognition of where and how ecosystems will be affected and identification of appropriate responses.

C. The Work of Place-based Programs and Partners

The Peconic Estuary Program, Long Island Sound Study, New York Harbor Estuary Program, Hudson River Estuary Program, South Shore Estuary Reserve Program, the Great Lakes Basin Advisory Council, and the Tug Hill Commission are examples of existing place-based programs for particular areas with a range of stakeholders, including state and federal agencies and others concerned at the local level. These programs develop and implement management plans for improving ecosystem health and its related human uses. Today these programs incorporate some of the components of EBM but full integration of these components is needed. Similar to the Council's accountability for statewide healthy, productive and resilient ecosystems, place-based program managers are accountable for the same results at the ecosystem level.

From the perspective of the Council, the focus of each program's work should be to evolve management practices to be aligned with EBM components. While some of these components are in practice in most programs today, opportunities exist to integrate *all* six EBM components into existing programs.

Hence, the actions necessary for existing and future place-based programs to advance EBM are similar to that of the State agencies but with a local, place-based focus.

In addition, the following actions are unique to place-based programs that focus on ecosystem health:

- Establishing specific ecological objectives that the program seeks to produce in the defined ecosystem;
- Bringing in scientific expertise to monitor ecosystem changes;
- Sharing programmatic and scientific expertise about the local ecosystem with the State agencies for use in their programming; and,
- Adapting management practices as new information is learned from on-going review of the impacts of changing uses of and management practices within the defined ecosystem.

V. Recommendations

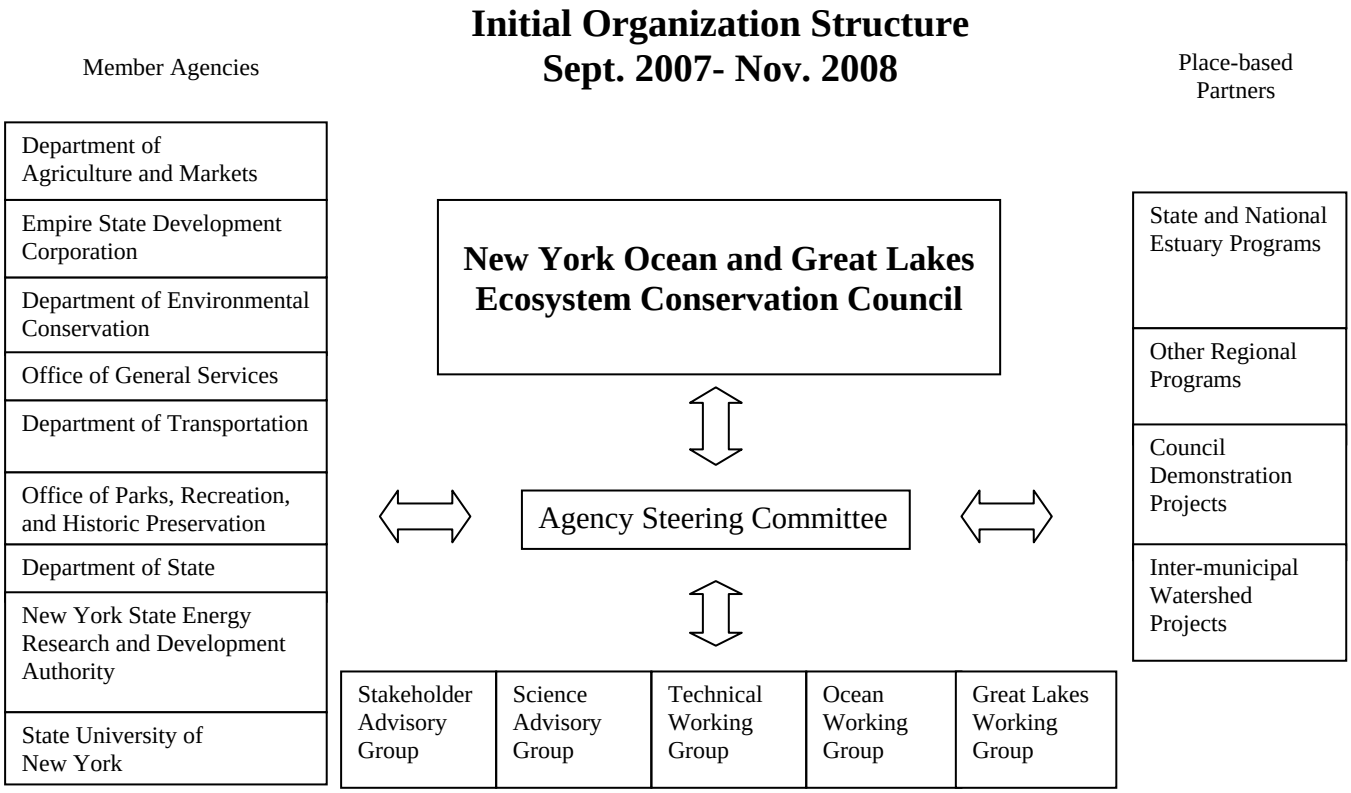
The following recommendations are offered to produce both learning and action through the interactions among the Council, programs and individual State agency efforts. All start up efforts, such as the creation of this Council, experience the tension between planning and action. Planning without implementation activities will delay critical actions that are necessary to limit the degradation of some ecosystems, drive up the costs of restorations and risk disenfranchising involved stakeholders. Implementation without thoughtful planning may leave out significant input from stakeholders and limit the ability to monitor changes and adapt practices based on new knowledge. Both planning and implementation require significant financial and human resources. Pursuing this iterative learning and action cycle within a framework will aid the Council in achieving the depth and integrity of effort needed to produce real and sustainable progress in the coming decades.

The recommendations address the structure of the Council, how the work of the agency and ecosystem-based programs can be strengthened to advance EBM, and are followed by how the Council can support the development of EBM components. These recommendations highlight areas and issues where actions can commence immediately while building the infrastructure to support longer-term efforts as experience and knowledge are gained through advancing EBM across New York State. The recommendations are intended to build on the strengths of current programs directed towards improving ecosystems and to offer support for their incorporation of comprehensive EBM practices.

A. Council Structure

1. Complete creation of the Council's organization structure.

As a coordinating body, the Council will need an organization structure to facilitate its capacity to provide guidance and support for EBM relative to statewide objectives and the six components of EBM. The following is proposed:



Council staff will interact with all groups on chart. Federal and regional boxes will be added once the most effective means for interaction have been identified in November 2008 report to the Governor and the Legislature.

2. Articulate State-wide and Place-based Goals to inform development of measurable objectives.

The requirement for measurable objectives is universal among examples of EBM. For purposes of EBM, objectives are established among stakeholders for an individual ecosystem. These objectives need to be measurable and related to both ecological conditions and human uses. This recommendation seeks to provide context to that ecosystem goal and objective setting work. Clarity about the State's priorities can provide guidance to the place-based programs. The ecological objectives of place-based programs can provide guidance to Council-sponsored demonstration programs. It is recommended that the Council request each member agency to develop:

State-wide EBM Goals: Goal statements incorporating EBM principles that provide direction and purpose to decision-making at the state-wide level in the following areas: energy, climate change, transportation, open space, agriculture, water quality, invasive species, and sustainable resources use

Place-based EBM Goals: Goal statements incorporating EBM principles that provide direction and purpose to decision-making on the local and regional level and provide context to setting place-based objectives.

3. Develop Guidelines to align agency programs with EBM principles.

Currently the primary responsibility for regulations and programs that potentially affect the State's ecosystems are distributed across the nine agencies represented by the Council. In this context, the term program includes any law, budget initiative, or discretionary activity of the Council agencies that relates to EBM. The creation of the Council provides the opportunity for its member agencies, as well as other relevant agencies, to work more closely together. It is recommended that the Council request each member agency to develop:

EBM Guidelines: Strategic blueprints on how state agencies can incorporate EBM into their early decision-making and day-to-day activities of their programs regarding: permit/regulatory decisions; grant or loan funding programs; direct agency actions; capital investment/improvement programs; and place-based programs

The Guidelines would provide the mechanism for agency programs to accomplish the following:

- Broaden relevant stakeholder involvement in agency programs and assure that the agency and its constituent groups actively participate in the development of EBM.
- Align relevant agency programs through a review of regulatory processes and authorities to identify how regulations can be adjusted to reflect place-based considerations and be modified to accommodate adaptive management practices as new information is available.
- Identify methods to advance the principles of the Act and the measurable objectives of Council-recognized EBM programs as early as possible into agency decision-making regarding operations, planning, and project development.
- Improve grant coordination among State agencies beginning with the Environmental Protection Fund.
- Improve agency expertise by adding staff or training existing staff to have a better understanding of both ecological processes and the development needs of the State.

B. Build on Existing Foundation of Regional and Basin Programs

The implementation of EBM requires the delineation of ecosystems in New York. The Great Lakes and estuaries are a focus of current management planning and thus, are a practical starting point for strengthening EBM in New York State. Building on their progress will support the work of the Council in expanding the scope of EBM to watersheds and to the Ocean. To allow for complete coverage of the state, watersheds provide statewide geographic boundaries for EBM. The Department of Environmental Conservation's preliminary work in developing a Comprehensive Wildlife Conservation Strategy (CWCS) for New York State uses watershed basins to provide complete coverage to the State's land area. The combination of existing aquatic management programs and the land-based CWCS basins provide a starting point for place-based management.

4. Use place-based programs as a starting point for improving and expanding the application of EBM practices.

EBM is place-based. Management programs for the Great Lakes, Lake Champlain and estuaries have taken many of the steps to implement components of EBM. Specifically there are seven place-based programs with watersheds draining to the ocean and Great Lakes: Peconic Estuary Program, Long Island Sound Study, New York Harbor Estuary Program, Hudson River Estuary Program, South Shore Estuary Reserve Program, Great Lakes Basin Advisory Council, and the Tug Hill Commission. The Council can assist these regional entities in advancing EBM by:

- Providing technical and financial support to advance EBM practices in the programs.

- Set up an ongoing, iterative process to assess progress in accomplishing EBM and accommodate adaptive management. For EBM, adaptive management is both the review of changing ecological conditions to consider new strategies for improvement and in the review of government participation in the development and use of the six components.

5. Use basin boundaries to *support additional watershed-based EBM.*

Watersheds are becoming a standard place-based geographic unit to address ecosystem health because their geographic boundaries can be clearly delineated. The Department of Environmental Conservation has established watershed basins for its early work in the Comprehensive Wildlife Conservation Strategy (CWCS: See Appendix C for map of basins). Under this approach, every location in the State is a part of at least one watershed basin.

The management programs for these basins, with support from the Council will develop similar strengths in the application of the components of EBM. As this progress occurs, the Council should review the integration of the basin management programs with the activities in State agencies and the ecosystem-based programs. To assist in these efforts, it is recommended that the Council:

- Charge the seven place-based programs and the CWCS implementation groups (11 major basins) with integrating or coordinating their efforts.
- Collaborate with the CWCS implementation groups in their watershed planning efforts.
- The basin management programs should integrate other regional entities into the process (e.g., Metropolitan Planning Organizations, regional economic development councils, etc.) to achieve local participation and engage municipal governments in focused EBM activities relevant to their locale and watershed.

6. Establish an Ocean Working Group.

Both the Pew Oceans Commission and the U.S. Commission on Ocean Policy have documented the urgent need for a new approach to ocean management. Given the ocean's value to New York and its critical status, New York State needs to focus management support for decisions affecting the State's ocean health.

This recommendation suggests the formation of an Ocean Working Group to serve through the completion of the required November 2008 report. Its members would be representatives of the nine Council agencies.

The Ocean Working Group would be the responsible for building a comprehensive EBM strategy for improving ocean health and building knowledge of ocean ecosystems. The strategy should include the establishment of mechanisms to bring issues of ocean health to state agencies, the private sector and non-profit organizations.

The Ocean Working Group would consider the following tasks in developing their near term work plan to be completed by Summer 2008:

- Establishing geographic boundaries
- Identifying important partners and organizations
- Summarizing current ocean management activities
- Developing a list of current issues that affect the ocean waters
- Evaluate existing ocean governance structure and make recommendations for needed changes
- Coordinating with the Mid-Atlantic Coastal Ocean Observing Regional Association (MACOORA)
- Setting ecological objectives as a first step in establishing a strategic plan for improving ocean ecological health
- Establishing a work plan for carrying out the longer-term tasks including:
    - Develop a reporting schedule to the Council based on existing and proposed monitoring
    - Identifying data needs to fully support progress towards ecological objectives

- Coordinating and communicating research findings
- Identifying critical areas
- Collaborating with proposed NOAA Ocean Governance Councils
- Evaluating opportunities for regional ocean governance initiatives

7. Establish a Great Lakes Working Group.

There are a number of responsible entities working to improve conditions in each of the Great Lakes. Their efforts are significant, long-standing and have contributed both to an improved understanding of the Lakes' problems and potential solutions. Groups working on behalf of each lake have some measurable goals and objectives that provide clarity to the direction of their efforts and the context for their monitoring and reporting programs. However, these goals and objectives are rarely used by multiple state agencies and are seldom reflected in State policies.

This recommendation proposes that the Council assemble a Great Lakes Working Group to serve through the completion of the required November 2008 report. Its members would be representatives of the nine Council agencies.

The Great Lakes Working Group would review the current mechanisms that are in place to manage activities affecting the Great Lakes. The components of EBM are one way to carry out this review, i.e., review current ecological objectives; stakeholder processes; scientific research; linkages between human activities, ecological endpoints and human use; and practices of adaptive management. This review will serve as a basis for modifying or undertaking specific state activities and working with the existing multi-jurisdictional management programs for the Lakes.

The Working Group would interact with the Great Lakes Basin Advisory Council, the Great Lakes Research Consortium, the Great Lakes Fishery Commission, and the Lakewide Area Management Plan process for Lakes Ontario and Erie and identify the necessary steps to efficiently and effectively incorporate New York's Great Lakes priorities.

The Great Lakes Working Group would consider the following tasks in developing their near term work plan:

- Summarizing current management activities
- Identifying missing partners and organizations
- Evaluating the linkages between State policies and Great Lakes restoration strategies
- Compiling and maintaining a list of existing Great Lakes research
- Developing a list of current issues that affect Lake Ontario and Lake Erie waters
- Establishing a work plan for ensuring that existing management agencies improve their efforts to:
    - Set ecological objectives
    - Develop a reporting schedule based on existing monitoring
    - Identify data needs to fully support progress towards ecological objectives
    - Establish an outreach strategy and coordinating and communicating research findings
    - Identify the opportunities for NY State agencies to coordinate their activities in a way as to support the accomplishment of ecological objectives, fill data gaps and expand citizen understanding of ecological issues

8. Strengthen the Council's two demonstration programs (Great South Bay and Eastern Lake Ontario – Sandy Creeks).

Demonstration projects build the State's knowledge and capacity to advance ecosystem-based management. These demonstration projects promise to improve understanding of the central role of science, stakeholder

participation, adaptive management, ecosystem-based approaches to planning, regulation, program delivery and funding, as well as providing a vehicle for bringing state agencies together around the actual application of EBM.

The Council can assist the current demonstration programs by monitoring their progress to fill identified gaps in practice or data, and assess and recommend steps to improve coordination and alignment of municipal, state, and federal programs to ensure that ecosystem-based management goals are achieved. It should reach out to municipal governments and appropriate New York State agencies in each demonstration project to learn the incentives and barriers to implement EBM at the local level.

9. Develop a strategy to incorporate EBM into inter-municipal and municipal land use planning and implementation.

New York has many tools that provide a basis for strengthening municipal land use planning. These include the Coastal Management Program's Local Waterfront Revitalization Program (LWRP), inter-municipal watershed management programs, municipal comprehensive plans, open space plans and the funding of waterfront redevelopment, and other economic development initiatives. A number of strategies are possible:

- Using Council-supported demonstration programs (Great South Bay and Sandy Creeks) to develop a process for advancing inter-municipal and local EBM planning efforts
- Reviewing "Smart Growth" and other states' growth management efforts to develop a strategy for strengthening EBM in municipal land use planning
- Examining existing municipal government support tools used by others and adapt for EBM including creating incentives for municipalities to embrace EBM
- Using the Ecosystem-based Learning Network (see recommendation #10) as an opportunity to engage municipal officials and coordinating efforts with existing local government training programs
- Targeting state funds for local application of EBM practices

C. Strengthening EBM Components

10. Establish an "EBM Learning Network" to provide professional development to build capacity of the Council, agencies, partners and stakeholders to carry out EBM.

Participants in EBM activities will bring different levels of knowledge and skill to the work. Many will need basic knowledge about EBM principles and components while others will have more targeted informational needs. Thus, the envisioned EBM Learning Network would be created to address a broad range of topics, offering participants a wide variety of mechanisms to increase information and hone skills. The Council may consider requiring key agency and place-based program staff to receive EBM-related training. Curriculum and practices could include:

- Developing sustainable practices for ecological health
- Setting goals, objectives, performance measures, and priorities in an EBM context
- Establishing policy linkages between ecology and economy to promote smart growth
- Engaging stakeholders and developing collaborative decision-making
- Municipal land use planning and EBM
- Lessons learned from EBM demonstrations

Delivery mechanisms could include Public Service Workshop curricula, fellowship programs for faculty/post-graduate students to obtain practical experience implementing EBM within agencies/municipalities, or developing "Train-the-Trainer" tools, materials and educational grant criteria to assist public/private educators.

11. Continue to develop, maintain and improve EBM-related data and the Ocean and Great Lakes Atlas of Digital Data (OGLADD).

Data and information is critical to supporting the science-based, monitoring and adaptive management components of ecosystem-based management. It is recommended that the Council use the Federal Geographic Data Committee (FGDC) standards and work with the NYS GIS Coordinating Body for collecting EBM data. Efforts to improve data will also include supporting the digitization and sharing of extant non-digital geographic data sets and creation of spatial datasets where only numerical data exist and maintaining and updating the OGLADD. The Council can work with state, regional and local governments to ensure EBM-related digital data development standards are followed and incorporated when digital data is created for municipal comprehensive plans, economic development plans, State unit management plans, environmental permit applications, etc.

12. Design, fund and implement measurement and monitoring systems to document statewide, regional and local EBM progress.

Having a well-designed system that pulls together and provides consistent data to track changes in ecological conditions is an essential part of EBM. Much of this exists now but can be improved by:

- Building on existing data collection programs to include additional monitoring parameters and multi-program funding mechanisms to fill monitoring gaps
- Establishing process benchmarks and performance measures
- Developing accessible, robust web-based mapping indicator and analytical tools to support EBM implementation and measurement

13. Develop, support and expand the research agenda.

EBM is a science-based approach that relies on understanding the interconnections and complexities of ecological systems. It is recommended the Council create a Science Advisory Group to build the research agenda that focuses on applied science and is trans-disciplinary in nature. The process can include soliciting research needs from program managers based on information needs encountered in ongoing decision-making activities. Developing the agenda will engage New York's public and private academic, research, foundation, and non-profit institutions to develop, support, and implement EBM while expanding the network of educational and research institutions to involve new partners in generating ideas and sharing in EBM knowledge. The Science Advisory Group should use the National Ocean Research Priorities Plan to inform the development of the New York research.

14. Advance stakeholder engagement statewide by designing stakeholder involvement processes and continued outreach.

Stakeholders are key actors within the ecosystem and their early involvement and ongoing participation is necessary for identifying the functions of the ecosystem that provide human value, such as recreation, commercial fishing, or forest products. They are also important to the establishment of ecological objectives. They can facilitate broad support by affected individuals when activities require government action or public investment. Not all stakeholders have the same level of interest, skill and knowledge. It is recommended that the Council, through the formation of a Stakeholder Advisory Group.

As progress is achieved, additional place-based stakeholder groups can be formed to assure that local stakeholders are able to fully participate in the development of goals and objectives for a defined ecosystem. These groups can be formed to increase the understanding of EBM as a general approach for ensuring that ecological services are sustained, how human activities impact New York State's ecosystems assets and contribute to on-going

ecosystem challenges, and to learn about the State's progress in achieving ecological goals and objectives. Vehicles for engaging stakeholders include:

- Providing information through the Council's website including activities and progress with links to other efforts aimed at advancing ecosystem-based management (e.g., www.ebmtools.org)
- Offering educational opportunities through the "EBM Learning Network". (See recommendation 10.)
- Establishing an EBM "Communities of Practice". Communities of Practice is a group(s) formed to share their expertise and collaboratively deliberate on issues and questions to reach consensus and provide the Council with new information that can help refine policies and direction of the Council's work.

15. Develop a funding plan to advance implementation of critical EBM goals.

It is recommended that the Council in cooperation with the Environmental Facilities Corporation (EFC) develop options to include in the November 2008 report to the Governor and Legislature. EFC and the Council share a mission to protect the State's valuable natural resources, and EFC has significant expertise in developing, launching, and maintaining programs intended to provide low cost capital and technical assistance for environmental projects. Potential opportunities include:

- *Revolving Loan Fund: Sustainable Fisheries Fund* to offer loans to New York fishing communities and other related groups to assist them in transitioning to more environmentally and economically sustainable fishing practices.
- *Revolving Loan Fund: Sustainable Forestry Fund* to offer loans to timber operations and related groups to assist them in transitioning to more environmentally and economically sustainable timber harvesting practices.
- *Linked Deposit Program: On-Site Waste Water Treatment/Disposal* to provide private borrowers with below market loans from commercial lending institutions for the purpose of replacing or upgrading on-site wastewater treatment and disposal facilities.
- *Linked Deposit Program: Agricultural Non-point Source Mitigation* to provide private borrowers with below market loans from commercial lending institutions for the purpose of installing, replacing, or upgrading farm infrastructure and equipment intended to mitigate non-point source run-off from farm operations.
- *Pollution Credit: Nitrogen Credit Exchange Program* to establish a nitrogen credit market via the institution of a cap on the total nitrogen that may discharged each year by wastewater treatment plants within a defined geographic area.

Appendices

Appendix A: New York Ocean and Great Lakes Ecosystem Conservation Act
Appendix B: Maps of Great South Bay and Sandy Creeks Demonstration Projects
Appendix C: Map of New York Watershed Basins