

**New York City Department of Environmental Protection
Bureau of Water Supply**

Wetlands Protection Strategy Update

December 31, 2012

Prepared in accordance with the Filtration Avoidance Determination

INTRODUCTION

Wetlands are important for maintaining the high quality of surface waters in the New York City Water Supply System. According to the most recent National Wetlands Inventory (NWI), they occupy approximately 9,565 acres, or 1 percent of the West of Hudson (WOH) watershed, and 15,355 acres, or 6 percent of the East of Hudson (EOH) watershed and provide a suite of functions that extend well beyond their boundaries. Wetlands intercept and detain peak stormwater runoff and stream flow to help abate flood flows and control erosion. They improve water quality by filtering sediments and removing nutrients and pollutants through biotic and abiotic processes. Wetlands can also recharge groundwater and maintain baseflow in watershed streams. In addition to these direct benefits to the water supply, wetlands also provide fish and wildlife habitat and provide opportunities for recreation, aesthetic appreciation, and education.

Recognizing these important functions and values, the New York City Department of Environmental Protection (DEP) developed a Wetlands Protection Strategy in 1996, which was subsequently updated pursuant to the 2002 and 2007 FADs. This document updates DEP's Wetlands Protection Strategy pursuant to Section 2.3.8 of the City's 2011 Long-Term Watershed Protection Program. This revised strategy builds upon past accomplishments to advance future goals. It continues to include wetland mapping and monitoring to inform numerous regulatory and voluntary protection programs. DEP will explore methodology for advancing wetland mapping and characterization in the watershed to benefit wetlands protection using current technology and information. The specific elements of DEP's Wetlands Protection Strategy are as follows:

- I. Wetlands Mapping and Monitoring
 - a. Wetlands Mapping - LiDAR research pilot
 - b. Reference Wetlands Monitoring – Reference Wetland Standards
- II. Regulatory Reviews
 - a. Federal, State, and local wetland permit applications
 - b. State Environmental Quality Review (SEQRA)
 - c. Watershed Rules and Regulations
- III. Partnership Programs
 - a. Land Acquisition
 - b. Stream Management
 - c. Watershed Agricultural Council (WAC) Programs
 - d. DEP Forest Management Program
 - e. Outreach and Education

The National Wetlands Inventory and Reference Wetlands Monitoring Programs are geared towards attaining data on the extent, distribution, and characteristics of wetlands in the watershed. This information benefits the review of projects under the Watershed Rules and Regulations, the State Environmental Quality Review Act, and federal, State, and local wetland regulations. Voluntary partnership programs that also benefit wetlands protection include Land Acquisition, Stream Management, Watershed Agricultural Program, and Forest Management Programs. DEP also reviews and provides input on any proposed policy or regulatory changes potentially impacting wetland protection through any of the above-listed mechanisms and

engages in public education and outreach to advance knowledge on the wetland characteristics, functions, and protection. Each of these elements is described in detail below.

WETLANDS MAPPING AND MONITORING

The goal of DEP's wetlands mapping and monitoring programs is to provide current baseline information on the status, trends, and characteristics of watershed wetlands in support of regulatory and voluntary protection programs. DEP will explore methods to improve wetlands detection and mapping through advances in remote sensing technology and will also summarize existing field data to provide reference standards for watershed wetlands.

Wetlands Mapping

DEP has maintained current spatial information on the extent and characteristics of wetlands within the watershed through a long-standing partnership with the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Program. NWI data benefits the implementation of multiple programs and provides a baseline for the watershed-wide wetland trends and functional analyses, such as those previously completed through DEP's longstanding partnership with USFWS.

The NWI was first completed for the watershed in 1996 using 1:58,000 scale photography and was updated in 2005 using 2003 and 2004 1:40,000 scale aerial photography. Field delineations conducted for DEP's reference wetland monitoring and forest management programs have revealed that the NWI underestimates the extent of wetlands that are small, seasonally saturated, or under forest canopy. The 2009 Light Detection and Ranging (LiDAR) and aerial photography collection improved the resolution, accuracy, and completeness of hydrography, topography, land cover, and land use data throughout the watershed. Next, DEP will explore the utility of the 2009 LiDAR and photography collection along with derived topography and hydrography datasets towards improving wetlands detection, mapping, and connectivity assessment. A methodology for applying these datasets to wetland detection and mapping protocols will be developed and tested in pilot areas. Any achieved gains in wetland mapping accuracy will be considered in a cost-benefit analysis to determine the feasibility of scaling the advanced mapping methodology watershed-wide.

Improvement in detection rates would potentially increase the accuracy of wetlands maps by identifying wetlands that were previously unmapped due to their small size, surrounding cover types, landscape setting, hydrologic regime or other factors. This would provide a more accurate assessment of the status, types, and distribution of wetlands throughout the watershed that would benefit the implementation of numerous protection and management programs. Further, increased resolution of wetland connectivity would enable a more accurate assessment of wetland function and potential federal regulatory status.

Reference Wetlands Monitoring

The objective of DEP's wetland monitoring program is to capture baseline conditions of various wetland types throughout the watershed. The program was initiated as a pilot in 1999 at six wetlands EOH, and was expanded in 2004 to include 22 WOH wetlands. Soils, vegetation, and water quality data were collected at these sites between 1999 and 2005. Water table levels have been collected from automated monitoring wells in the WOH sites from 2004 to present.

DEP will assimilate data collected to date into a set of reference wetland standards. Reference standards provide multiple benefits, enabling DEP to ascertain the range of conditions exhibited by natural wetlands and to establish benchmarks for wetland assessment and mitigation site design. This will assist DEP in its review of federal, State and municipal wetland permit, and other land use applications. Reference wetlands monitoring also provides ‘ground-truth’ information that benefits wetlands mapping efforts, such as the LiDAR pilot study. These sites also provide opportunities for education and for long and short term research, enabling the assessment of wetland impacts from land use changes and other long term trends such as climate change. As part of this analysis, DEP will evaluate the current reference data set to determine potential future modifications to the monitoring protocols that would benefit the program goals.

REGULATORY REVIEWS

DEP will continue its review of federal, State, and municipal wetland permit applications in the watershed, as well as proposals subject to review under the State Environmental Quality Review Act (SEQRA) and the New York City Watershed Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and Its Sources (WR&Rs). As the extent of jurisdiction varies among regulatory authorities, reviewing applications pending before multiple agencies enables DEP to assess a broad range of regulated activities and wetland types. All reviews are coordinated internally to ensure an interdisciplinary review of wetland, water quality, and regulatory issues.

DEP relies upon the GIS data sources such as the NWI, the New York State Department of Environmental Conservation (DEC) Freshwater Wetlands maps, and aerial photography to review the proposed activities. DEP assesses proposals to determine potential wetland and water quality impacts, and to determine if authorization is required pursuant to the WR&Rs. In cases where a proposal may adversely impact wetlands or water quality, DEP issues comments suggesting design alternatives and practices to avoid, minimize, and mitigate the impacts. In cases where impacts are unavoidable, DEP reviews the extent, location, type, and design of proposed mitigation to ensure that impacts are appropriately offset in the watershed.

DEP also reviews proposed changes to regulations, rules, and other documents promulgated by federal, State, and municipal agencies and provide comment when there is significant potential to impact wetland regulation in the watershed.

United States Army Corps of Engineers Permit Reviews

DEP reviews Individual Permit Applications submitted to the United States Army Corps of Engineers (ACOE) pursuant to Section 404 of the Clean Water Act, which regulates discharges of dredged or fill material into Waters of the United States. There is generally no size threshold for federally regulated activities, though smaller discharges are authorized by the Nationwide Permit Program. The reach of the CWA generally does not currently include isolated wetlands, and detailed analysis is required to determine jurisdiction of intermittently connected waters and their adjacent wetlands. DEP receives notification of federal wetland permit applications in the watershed through the public notification process.

DEP also reviews proposed changes to rules and regulations related to the administration of the Clean Water Act and issues comments where there is significant potential to impact federal wetland regulation in the watershed. DEP will continue to review proposed changes to the Nationwide Permit Program (NWP) and associated regional conditions upon the regular five year renewal cycle. Waters in the EOH watershed have been designated as Critical Resource Waters through the NWP review and renewal process; thereby limiting the use of certain Nationwide permits EOH.

DEP has also reviewed proposed guidance and rulemaking and issued extensive comments in regards to the reach of federal jurisdiction over non-navigable waters. DEP will continue to keep abreast of this, and other issues that affect implementation of Section 404 of the CWA in the watershed.

New York State Department of Environmental Conservation Wetland Permit Reviews

Through a Memorandum of Understanding (MOU) with the DEC, DEC forwards certain Freshwater Wetland and Stream Disturbance permit applications to DEP for “Major” projects in the watershed. Addendum A of the MOU, which was updated in 2010, stipulates a limited number of “Minor” activities for which applications will be sent to DEP for review. DEP also checks the Environmental Notice Bulletin for pending State wetland permit applications for projects in the watershed. When such an application is found, DEP contacts DEC to request a copy of the application for review.

Unlike federal wetland regulation, State wetland regulation under Article 24 is limited to wetlands 12.4 acres in size or larger, except in limited cases where a wetland has been demonstrated to be of ‘Unusual Local Importance’. DEC also regulates a 100 foot adjacent area extending from the wetlands edge. Regulated wetland areas are shown on DEC’s Freshwater Wetlands Maps, which were updated for the watershed based on 2004 NWI data. These map updates increased the extent of regulated Freshwater Wetlands in the watershed by nearly 7,000 acres, and all wetlands adjacent to reservoirs in the EOH watershed were designated as State regulated wetlands of ‘Unusual Local Importance’. More recently, DEP has reviewed and commented on DEC’s proposal to issue a freshwater wetland adjacent area general permit. DEP will continue to work with DEC to ensure the protection of State-regulated wetlands and buffer areas in the watershed.

Municipal Application Reviews

Several municipalities in the EOH watershed voluntarily forward local wetland applications for DEP review. In addition, Connecticut State law requires that applicants in the CT portions of the New York City Watershed forward to DEP a notice that a local wetland permit application has been submitted. Thus, DEP reviews a number of local wetland permit applications pending before various EOH municipalities. Currently, only one WOH municipality has enacted wetland regulations.

While the scope of regulated activities and areas varies among municipalities, local ordinances often afford the most protection. Many municipalities regulate wetlands smaller than the State’s 12.4 acre threshold, and are not constrained by the jurisdiction limits of federal

regulations that potentially exclude isolate and intermittently connected wetlands from regulation. DEP will continue to review and comment on municipal wetland permit applications.

State Environmental Quality Review Act

New York State Environmental Quality Review Act (SEQRA) provides DEP with a mechanism, separate from the City's WR&Rs, to become involved early in the process to review and comment on projects that may impact water quality. This provides DEP with a mechanism to review proposed activities over which DEP would otherwise not have a review and comment opportunity. DEP strives to become involved early in the SEQRA process and remain involved until the Lead Agency's negative declaration or DEP issuance of findings after the acceptance of the EIS by the Lead Agency. During the environmental review process, DEP exercises its status as an involved or interested agency to address a broad range of wetland protection and management issues. Utilizing information generated in the Wetland Mapping and Research Programs, along with other site-specific information, DEP conducts a thorough assessment of potential wetland impacts. When appropriate, DEP will advocate for a positive declaration and further environmental review if deemed necessary to prevent degradation of on-site wetlands.

DEP Application Reviews

The WR&R provide an important level of wetland protection by prohibiting activities such as the installation of wastewater and subsurface sewage treatment systems and the construction of certain impervious surfaces within limiting distances to wetlands that are included in New York State Freshwater Wetland Maps in the watershed. The regulations also require stormwater pollution prevention plans for certain projects to prevent the discharge of untreated stormwater from new developments into watercourses and DEC mapped wetlands.

PARTNERSHIP PROGRAMS

DEP will continue to partner with local, regional and national resource agencies through the following programs to benefit wetlands protection, research, and education.

Land Acquisition Program

DEP's Land Acquisition Program (LAP) seeks to preserve water quality in the future by protecting vacant land in environmentally sensitive areas within the watershed through fee acquisition and conservation easements. The presence of wetlands greater than five acres in size is one of the many criteria used by DEP to target vacant parcels for acquisition. DEP has acquired numerous wetlands that are smaller than 12.4 acres, and therefore unregulated by DEC. DEP also has protected through acquisition and easements many wetlands such as vernal pools that may be lacking federal protection as well. The Watershed Agricultural Council has also purchased conservation easements on many farms which contain wetland resources.

DEP conservation easements prohibit mowing, keeping livestock in, or surface disturbance of wetlands unless prior written approval is given for activities that impact only a small percentage of the wetland acreage on the property. DEP has also developed A

Landowner's Guide to Good Forestry Practices on a DEP Conservation Easement that detail best management practices for timber harvesting in wetlands and wetland buffer areas and address watercourse and riparian buffer protection on conservation easements. DEP also reviews proposed forest management projects on conservation easements. Conservation easements are routinely monitored to ensure that potential impacts to wetlands and riparian areas are avoided. Enforcement actions are taken as required. In many cases activities that violate the DEP easement also violate DEC regulations, so that enforcement efforts benefit from DEC assistance.

The table in Appendix A indicates the extent of wetlands under contract or closed by DEP as of December 7, 2012, including fee lands, conservation easements, and farm easements. In EOH and WOH combined, DEP has acquired and protected over 2,715 acres of wetlands, based on NWI and DEC data sources.



Photo 1. An aquatic bed/emergent wetland protected through a 2012 conservation easement EOH in the town of Kent.

Stream Management Program

The mission of DEP's Stream Management Program (SMP) is to restore stream system stability and ecosystem integrity by encouraging long-term stewardship of streams and floodplains in the Catskill and Delaware watersheds. DEP has partnered with County Soil and Water Conservation Districts, Cornell Cooperative Extension of Ulster County, and local stakeholders to develop and implement stream management plans for 13 Catskill and Delaware streams and rivers. Stream management plans provide opportunities for wetland education, protection, restoration, or enhancement. They characterize wetland resources, based on the NWI or through additional field survey. Stream management plans describe the roles that wetlands

play for water quality, habitat, and flood mitigation, include wetlands on stream corridor maps, and identify priority stream restoration areas that often include wetlands.

The SMP has also implemented the Catskill Stream Buffer Initiative (CSBI) whose primary goal is to inform and assist landowners in better stewardship of privately-owned, primarily non-agricultural riparian areas, which often include wetlands. DEP and its partners (County Soil & Water Conservation Districts) assist private, riparian landowners by providing 1) Riparian Corridor Management Plans (RCMPs) to create awareness about riparian management issues specific for individual properties, 2) best management practice design and installation, and 3) educational materials and actions needed by landowners to understand the critical role of stream buffers on their property and how to maintain buffers in optimal functioning condition. Through partnership with Soil and Water Conservation Districts, the CSBI has successfully implemented a comprehensive program to provide Catskill native plant materials to benefit multiple stream, wetland, and riparian buffer restoration or enhancement projects.



Photo 2. An emergent riparian headwater wetland restored as part of the Sugar Maples Stream Restoration Project in the town of Windham.

WAC Programs

Whole Farm Plans

The Watershed Agricultural Program is a voluntary partnership between watershed farmers and DEP that develops and implements pollution prevention plans (whole farm plans) to manage nonpoint sources of agricultural pollution. Wetland areas are identified in the development of farm plans, and best management practices (BMPs) are recommended for their protection. Under the administrative leadership of the Watershed Agricultural Council (WAC), whole farm plans have been developed for 80,533 acres including 185 of the 205 active large farms and 101 small farms in the WOH watershed. A total of 65 whole farm plans have been approved for 6,587 acres of EOH farms.

The Conservation Reserve Enhancement Program

DEP partners with the New York State Department of Agriculture and Markets and the U.S. Department of Agriculture (USDA) to implement the Conservation Reserve Enhancement Program (CREP) in the watershed. The CREP allows watershed farmers to retire environmentally-sensitive riparian cropland from production and helps establish streamside buffers by annual rental payments and cost-sharing for the implementation of BMPs. Over 2,051 acres of riparian buffers containing over 190 acres of NWI wetlands have been established by CREP in the watershed.

Watershed Forestry Program

The Watershed Forestry Program is a partnership between DEP, the U.S. Forest Service, and the upstate forestry community to maintain well managed forests within the watershed. Administered by WAC, the forestry program provides funding to watershed landowners for developing long-term forest management plans written by trained professional foresters. It provides training to foresters, loggers, and landowners to implement BMP's to properly manage sensitive areas such as wetlands and riparian buffers to protect water quality. To date, more than 1,050 forest management plans have been completed covering more than 193,000 watershed acres.

DEP Forest Management Program

The City has significant forest land holdings and continues to acquire forest lands for the protection of the water supply. A comprehensive watershed forest management plan was completed in 2011 through partnership with the U.S. Forest Service. The plan sets forth the management goals, strategies and guidelines to direct the long-term management of the watershed forest resources for the enhancement and protection of the water supply. The forest management plan includes conservation practices (CPs) to ensure that sensitive natural resources, including wetlands, are appropriately protected during forest management operations. The CPs treat wetlands generally as exclusion zones, where no disturbance is planned under normal circumstances, and place limits on the tree removal and equipment operation in wetland buffer zones. DEP's interdisciplinary review of proposed forest management projects includes DEP wetland scientists who routinely flag and map wetlands on-site and make recommendations to avoid wetland disturbance.



Photo 3. Wetland located within a proposed forest management project area in the Ashokan Basin. Pink flagging demarcates wetland boundary delineation.

Public Outreach and Education

In addition to the multiple outreach opportunities provided by the above-listed partnership programs, DEP will continue to present various aspects of the Wetlands Program at numerous public forums and professional symposia, and through distribution of its educational pamphlet ‘*Wetlands in the Watersheds of the New York City Water Supply System*’. Findings from mapping and monitoring projects, such as the LiDAR pilot, will be presented at technical symposia and shared with peer reviewers and agency partners. The Wetlands Program also trains a number of student interns to assist on various wetland mapping and monitoring projects.

Appendix A. Wetlands Acquired or Protected by the NYC Land Acquisition Program (LAP) in the Catskill/Delaware and Croton Systems as of December 7, 2012*

<i>Description</i>	<i>Acres</i>	<i>% of Total Watershed Acreage</i>	<i>% of Total Land Acquired</i>	<i>% of Total Wetland Type in System</i>
For Catskill/Delaware (Ashokan, Schoharie, Rondout, Neversink, Pepacton, Cannonsville, West Branch, Boyd Corners, Kensico basins):				
Total Acreage of Entire Watershed	1,049,465			
Total Acreage of Wetlands (both NWI and DEC-regulated) in Entire Watershed (excluding Inundated Aquatic Habitats**)	15,200	1.45%		
Total Acreage of Inundated Aquatic Habitats in Entire Watershed	28,339	2.70%		
Total Acreage of Wetlands and Inundated Aquatic Habitats in Entire Watershed	43,539	4.15%		
Total Lands Under Contract or Closed by NYCDEP as of 12/07/12†*:	126,442	12.05%		
<i>Within those total lands under contract or closed:</i>				
Total Acreage of Wetlands (both NWI and DEC-regulated, excluding Inundated Aquatic Habitats**)	2,617		2.07%	17.22%
Total Acreage of Inundated Aquatic Habitats**	185		0.15%	0.65%
Total Acreage of Wetlands and Inundated Aquatic Habitats**	2,802		2.22%	6.44%
For Croton:				
Total Acreage of Entire Watershed	212,577			
Total Acreage of Wetlands (both NWI and DEC-regulated) in Entire Watershed (excluding Inundated Aquatic Habitats**)	20,038	9.43%		
Total Acreage of Inundated Aquatic Habitats in Entire Watershed	10,809	5.08%		
Total Acreage of Wetlands and Inundated Aquatic Habitats in Entire Watershed	30,846	14.51%		
Total lands under contract or closed by NYCDEP as of 12/07/12†*:	2,000	0.94%		
<i>Within those total lands under contract or closed :</i>				
Total Acreage of Wetlands (both NWI and DEC-regulated, excluding Inundated Aquatic Habitats**)	98		4.88%	0.49%
Total Acreage of Inundated Aquatic Habitats**	2		0.08%	0.02%
Total Acreage of Wetlands and Inundated Aquatic Habitats**	99		4.96%	0.32%
* Source: WLCP GIS, December 7, 2012. Note: Acres are calculated directly from areas of GIS polygons and therefore may not match exactly other acreage totals submitted by DEP.				
** Categories considered "Inundated Aquatic Habitats" include reservoirs or large lakes (L1), unconsolidated bottom (L2UB), riverbeds (RUB & RRB) or streambeds (RSB), but exclude uplands (U), and unconsolidated shore (L2US). Categories considered wetlands exclude the Inundated Aquatic Habitats classes as well as all upland (U), and unconsolidated shore (L2US).				
† Includes fee, conservation easements, and farm easements. Excludes non-LAP and pre-MOA land.				
Statistics produced by T. Spies, BWS WPP GIS, 12/7/12				