

## **2.6 Wetlands and Floodplains**

*Primarily authored by the Schoharie County Soil and Water Conservation District*

Wetlands are lands that are wet part or most of the year and include swamps, bogs, fens, salt marshes, and mangrove swamps. The land along rivers can also be classified as wetlands if they are flooded part of the year. Wetlands provide productive fish and wildlife habitat, with many species of waterfowl living and breeding within them. Destroying these areas endangers fish and wildlife populations. Wetlands are also purifiers that trap sediment and other pollutants. They act as sponges as well, holding back rain waters and reducing flooding and increasing groundwater recharge (Chiras, 2002).

Today, half of all coastal and inland wetlands have been drained or filled. The greatest losses of wetlands have occurred in California (91%), Ohio (90%), and Iowa (89%). Fortunately, the loss of wetlands has slowed dramatically in recent years. New laws prohibit further draining and filling. The federal government requires losses to be mitigated. That is, if wetlands must be lost due to development, steps must be taken to create new wetlands or prevent losses elsewhere.

Despite these changes, wetlands continue to be lost to development. Losses are particularly high in less developed nations, but the United States and Canada still experience unacceptably high losses. Further wetland drainage here or abroad must be viewed with caution. The impacts on wildlife and fish, stream flow, and water quality often far outweigh the benefits realized by converting them to other uses (Chiras, 2002).

Although wetlands serve a vital function to stream health by filtering out excess nutrients, they should not be considered the end all to assure optimum water quality. We must also make efforts to reduce the inputs of potential pollutants such as nitrogen, phosphorus, and other ubiquitous pollutants. The notion that BMPs, created wetlands, and other after-the-fact approaches will alone be sufficient is not supported by science or common sense (Cretaz, 2007).

### **Federally Designated Wetlands**

The National Wetlands Inventory (NWI) of the U.S. Fish & Wildlife Service produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats (USFWS, 2006). According to the NWI maps there are at least 170 federally designated

wetlands within the Manor Kill watershed totaling ~267.3 acres (Figure 2.6.1). Wetland types in the Manor Kill include Palustrine (97%) and Riverine (3%). The palustrine wetland system includes all nontidal wetlands dominated by trees, shrubs, emergent's, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 ppt. Wetlands lacking such vegetation are also included if they exhibit all of the following characteristics: are less than 8 hectares (20 acres); do not have an active wave-formed or bedrock shoreline feature; have at low water depth less than 2 meters (6.6 feet) in the deepest part of the basin; and have a salinity due to ocean-derived salts of less than 0.5 ppt.

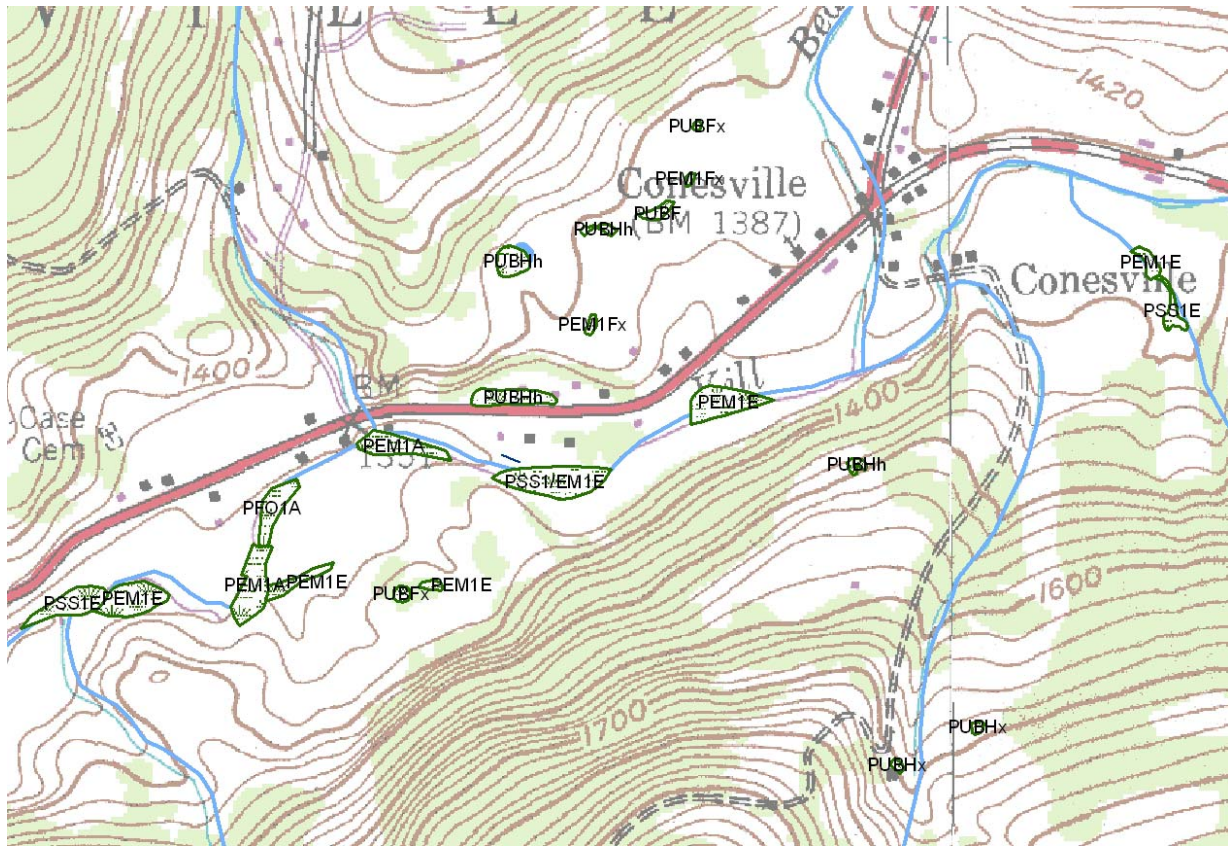


Figure 2.6.1. Example of Federally mapped wetlands around Conesville town center.

The riverine system includes all wetlands and deep water habitats contained in natural or artificial channels periodically, or continuously containing flowing water that forms a connecting link between the two bodies of standing water. Upland islands or palustrine wetlands may occur

in the channel, but they are not part of the riverine System. Upland systems include all areas not defined as wetland or deep water habitats (USFWS1, 2006).

Currently the dominant wetland type in the Manor Kill watershed is Palustrine, Emergent (35%) (Table 2.6.1). Palustrine wetlands are vegetated wetlands including the small, shallow, permanent or intermittent water bodies often called ponds. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers. Palustrine forested wetlands are characterized by woody vegetation that is 6 meters tall or taller. Palustrine emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years, and the wetlands are usually dominated by perennial plants. Palustrine unconsolidated bottom wetlands includes all wetlands and deep water habitats with at least 25% cover of particles smaller than stones (less than 6-7 cm), and a vegetative cover less than 30%. Riverine wetlands are confined within a channel and lack persistent emergent or woody vegetation. Riverine lower perennial wetlands have low velocity flows and fine substrates (USFWS1, 2006).

**Table 2.6.1. National Wetland Inventory Classifications within the Manor Kill**

NWI Code	NWI Wetland Classification	Acres	Percent of Total
PEM	Palustrine, Emergent	93.04	35%
PFO	Palustrine, Forested	49.62	19%
PSS	Palustrine, Scrub-Shrub	65.82	25%
PUB	Palustrine, Unconsolidated Bottom	48.73	18%
R2	Riverine, Lower Perennial	10.09	3%
	Total	267.3	100%

Federally designated wetlands are protected under the Clean Water Act, a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States (USEPA, 2003). Section 404 of the Clean Water Act established a program to regulate the discharge of dredged and fill materials into waters of the United States, including wetlands. Activities in waters of the United States that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry (USEPA1, 2003).

### **New York State Designated Wetlands**

The Freshwater Wetlands Act (FWA), Article 24 of the Environmental Conservation Law, provides NYS DEC and the Adirondack Park Agency (APA) with the authority to regulate freshwater wetlands in the state. The NYS Legislature passed the Freshwater Wetlands Act in 1975 in response to uncontrolled losses of wetlands and problems resulting from those losses, such as increased flooding. The FWA contains the following Declaration of Policy:

"It is declared to be the public policy of the state to preserve, protect and conserve freshwater wetlands and the benefits derived there from, to prevent the despoliation and destruction of freshwater wetlands, and to regulate use and development of such wetlands to secure the natural benefits of freshwater wetland, consistent with the general welfare and beneficial economic, social, and agricultural development of the state (ECL Article 24-0103)."

The FWA protects those wetlands larger than 12.4 acres (5 hectares) in size, and certain smaller wetlands of unusual local importance. The law requires DEC and APA to map those wetlands that are protected by the FWA. In addition, the law requires DEC and APA to classify wetlands. Outside the Adirondack Park, DEC classifies wetlands according to 6NYCRR Part 664, Wetlands Mapping and Classification Regulations from Class 1, wetlands which provide the most benefits, to Class IV, wetlands which provide the fewest benefits. Around every regulated wetland is a regulated adjacent area of 100 feet, which serves as a buffer area for the wetland from adjacent land uses (NYS DEC, 2003).

According to DEC maps, there are nine NYS DEC designated wetlands in the Manor Kill watershed covering 152.2 acres. Of these wetlands, 44.4% are Class 2, 44.4% are Class 3, and 11.1% are Class 4. Most of these wetlands reside in the town of Conesville.

Both Federal and NYS Designated Wetlands maps are available at County Soil & Water Conservation District Offices. It must be cautioned that these maps should only be used as guidance of wetland locations and boundaries. It is the responsibility of property owners to determine if wetland areas will be disturbed by proposed projects. Smaller wetlands which meet federal criteria may not have been mapped but are still protected by federal regulations. The NYS DEC offers wetland delineation services to landowners when they need more precise information, such as when they are planning to conduct work near a NYSDEC designated wetland area.

### **Floodplains**

Floodplains are low lying areas along a stream that are subject to periodic flooding. Floodplains are formed by a river or stream, in the present climate, and receive water overflow whenever water level exceeds the tops of the banks, or bankfull discharge. Unfortunately, however, floodplains have been taken over by humans. The flatness of the land, their natural beauty, and the availability of the river/stream has attracted people since the beginning of time. Today more than 2,000 cities in the United States are located at least partially, on floodplains. Most of these cities experience flooding every 2 to 3 years. The U.S. Army Corps of Engineers, the Bureau of Reclamation, and the SCS have spent more than \$15 billion on structural flood control projects (dams, levees, sea walls, etc.) since 1925. However, despite this enormous expenditure of tax money, property damage from flooding continues to rise. Annual costs increase considerably, from \$3 billion in the early 1980s to more than \$10 billion by 2000. More and more experts now believe that nonstructural flood controls like watershed protection and flood plain zoning are the most effective and economical strategies (Chiras 2002).

A floodplain is streamside land that gets periodically inundated by floodwaters. Floodplains are important because they temporarily store floodwaters, improve water quality, and provide important habitat for wildlife. Natural floodplains help reduce the heights of floods. During periods of high water, floodplains serve as natural sponges, storing and slowly releasing

floodwaters. The floodplain provides additional "storage," reducing the velocity of the river and increasing the capacity of the river channel to move floodwaters downstream. Natural floodplains also help improve water quality. As water courses through the floodplain, plants serve as natural filters, trapping sediments and capturing pollutants (American Rivers, 2003)

One of the largest problems facing floodplain management is the disconnection of a stream from its floodplain. Management practices such as channelization, straightening, development, and loss of riparian vegetation may lead to stream channel incision or downcutting. As the stream incises it will lower the streambed elevation, no longer allowing floodwaters to spill out onto the floodplain. As a result flood velocity will increase causing stream bank degradation until a new floodplain is created at the lower streambed elevation. Building homes within the floodplain is incompatible with proper floodplain function. Many people want to live by streams but as they develop the floodplain, they often increase stream degradation by undertaking stream management activities to protect their property from flooding.

The Federal Emergency Management Agency (FEMA) performs hydrologic and hydraulic studies to produce Flood Insurance Rate Maps (FIRM), which identify flood-prone areas (FEMA, 2003). These studies analyze the data from local streamflow gages to predict how frequently different floods will occur, and to determine the magnitude of the benchmark "100-year flood". This is the flow that has a statistical probability of recurring once every 100 years, but because it is a statistical prediction, based on historical record, "100-year floods" could be seen more or less frequently than every hundred years, especially if changes in climate or land use occur. An engineering model is then used to map the predicted boundaries of the 100-year flood on the floodplain. Towns then use these maps to help determine areas where the risk of flooding is high enough to warrant special precautions or review of land development. Towns are required to pass a floodplain protection ordinance that sets certain limits on building in the 100 year floodplain in order to participate in the National Flood Insurance Program.

### **Digital Flood Mapping Project**

The NYSDEC Bureau of Program Resources and Flood Protection has developed new digitized floodplain maps, using topographic information derived from an airborne laser imaging technology called LIDAR (Light Detection and Ranging). LIDAR data, together with updated

computer HEC models and digital aerial photography, enable engineers to produce extremely detailed and accurate maps. Modeling with this new data allows for flood contour lines indicating various depths of water under 100-year and other flood conditions. FEMA's new hardcopy Flood Insurance Rate Maps (FIRMs) are a vast improvement over their predecessors. One of the most obvious improvements is the inclusion of base map imagery utilizing the 2004 orthoimagery from New York's statewide orthoimagery program. A New York State Floodplain Management Map (NYSFMM) series has also been developed to provide floodplain managers, municipal planners, and other professionals with a tool for mitigation and planning. In addition to the information found on a FIRM, the NYSFMMs also contain department-set survey reference marks and flood depth contours (NYS DEC, 2006).

The new FIRM hardcopy maps are available for viewing at County Soil & Water Conservation District Offices and most town halls (Figure 2.6.2). Using GIS mapping software, Schoharie County Soil & Water Conservation District (SWCD) is able to overlay tax parcel boundaries with digital floodplain boundaries to assess if a property falls within a flood zone. This service is available to all interested. Floodplain maps of each management unit can be found in Section 4, Management Unit Summary and Recommendations.

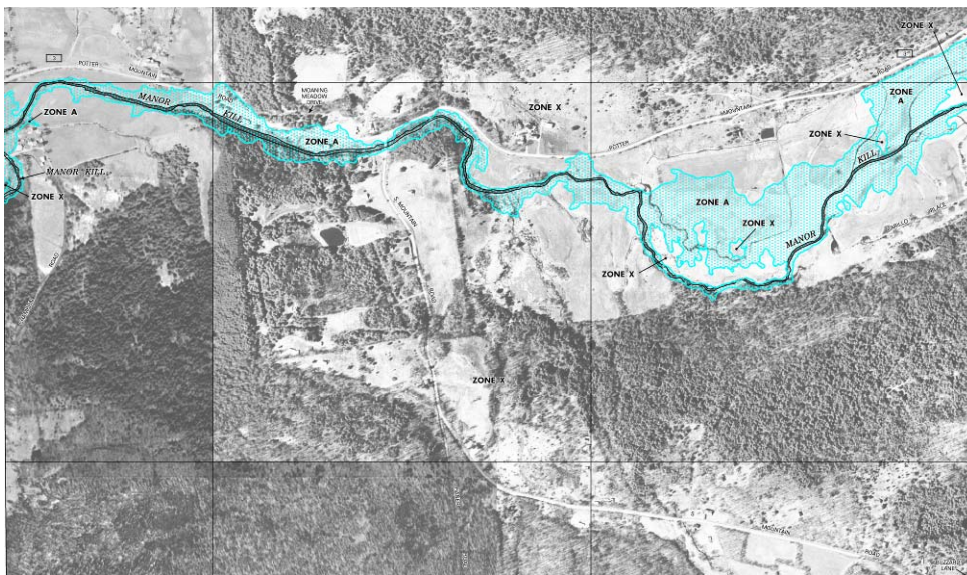


Figure 2.6.2. FIRM Map of Manor Kill Illustrating Areas at risk in 100 year flood event

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