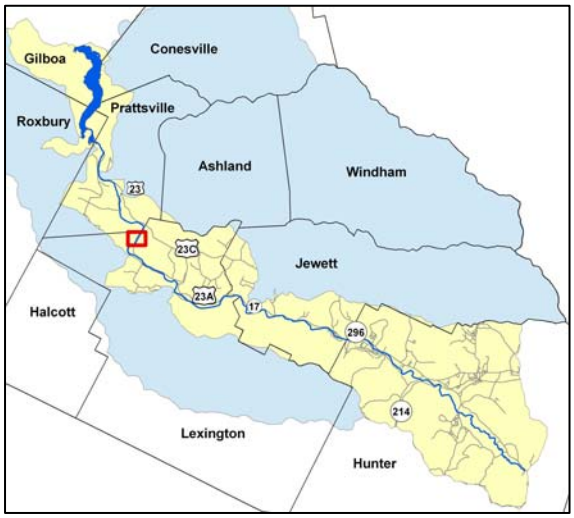
Schoharie Creek Management Unit 15

Town of Lexington – Station 34336 to Station 31388

This management unit began at Station 34336, and continued approximately 2,948 ft to Station 31388 in the Town of Lexington.

Stream Feature Statistics

2.1% of streambanks experiencing erosion
4.5% of streambanks have been stabilized
0% of streambanks have been bermed
596 feet of clay exposures
13 acres of inadequate vegetation
7,960 feet of road within 300ft of stream
0 structures located in 100-year floodplain



Management Unit 15 location
see Figure 4.0.1 for more detailed map

Summary of Recommendations Management Unit 15	
Intervention Level	Assisted Self-Recovery
Stream Morphology	No recommendations at this time
Riparian Vegetation	Plantings for assisted self-recovery of eroding banks at Stations 34050 & 33800 and interplanting of rip-rap at Stations 34360 & 34000
Infrastructure	Installation of stormwater outfall protection at Station 32800
Aquatic Habitat	Watershed Aquatic Habitat Study
Flood Related Threats	No recommendations at this time
Water Quality	No recommendations at this time
Further Assessment	No recommendations at this time

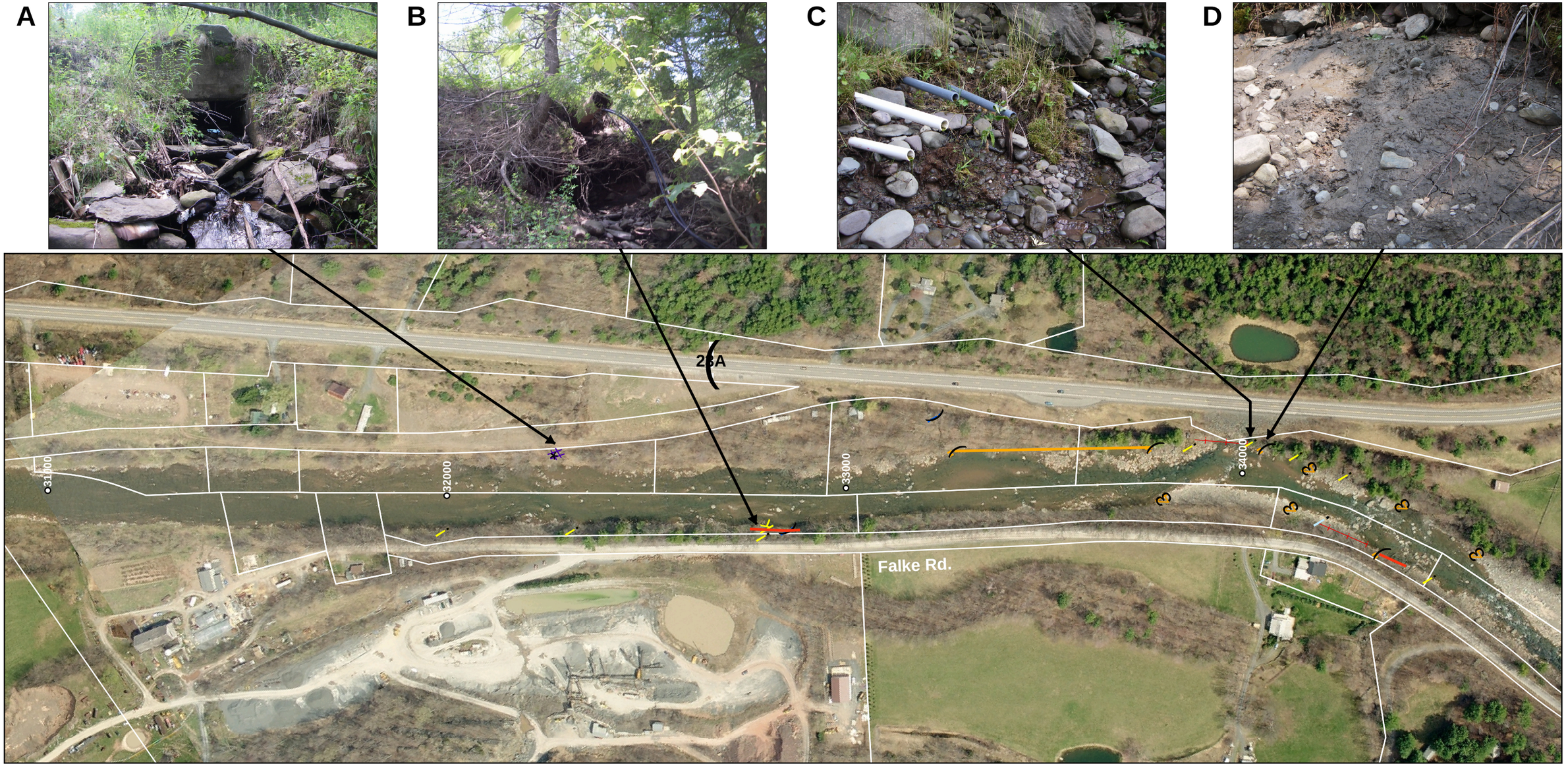
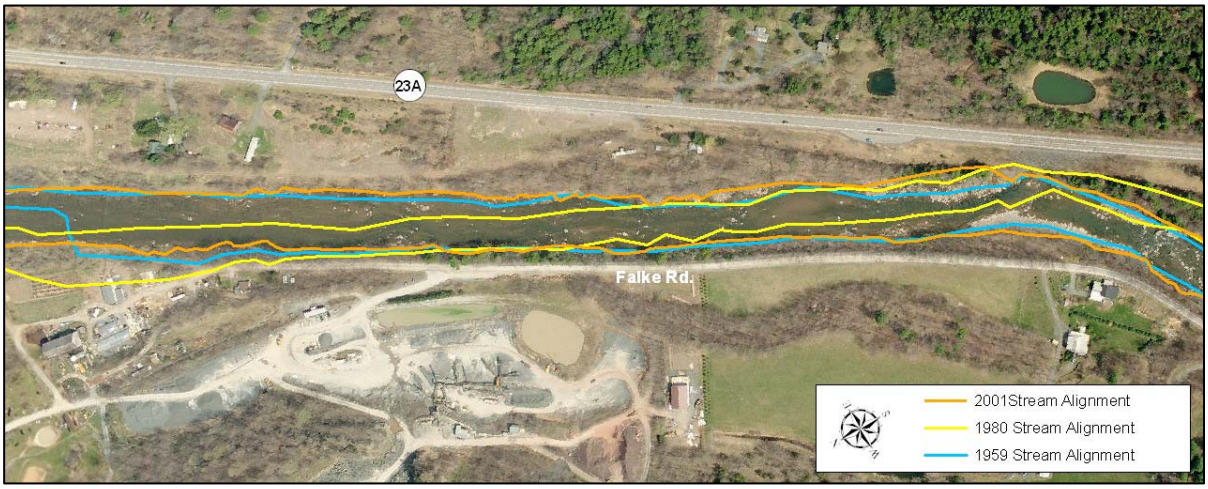


Figure 4.15.1 Management Unit 15 - 2006 aerial photography with stream feature inventory

Historic Conditions

As seen from the historical stream alignments (below), the *planform* of the channel has remained fairly stable since 1959. As of 2006, according to available NYSDEC records dating back to 1996, no stream disturbance permits have been issued in this management unit.



Historic stream channel alignments overlayed with 2006 aerial photograph

Stream Channel and Floodplain Current Conditions (2006)

Revetment, Berms and Erosion

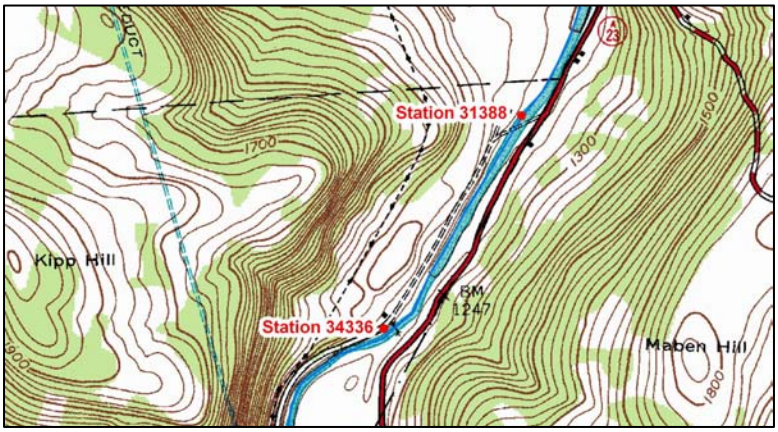
The 2006 stream feature inventory revealed that 2.1% (126 ft) of the streambanks exhibited signs of active erosion along the 5,896 ft of total channel length in the unit (Figure 4.15.1). The total surface area of active erosion totaled approximately 3,283 ft^2. *Revetment* had been installed on 4.5% (265 ft) of the streambanks. No *berms* were identified in this management unit at the time of the stream feature inventory.

Stream Channel Conditions (2006)

The following description of stream channel conditions references insets in foldout Figure 4.15.1. Stream stationing presented on this map is measured in feet and begins at the Schoharie Reservoir. "Left" and "right" streambank references are oriented looking downstream, photos are also oriented looking downstream unless otherwise noted. Italicized

terms are defined in the glossary. This characterization is the result of an assessment conducted in 2006.

Management unit #15 began at Station 34336. The drainage area ranged from 147.4 mi^2 at the top of the management unit to 147.86 mi^2 at the bottom of the unit. The valley slope was 0.51%.



1980 USGS topographic map - Prattsville Quadrangle contour interval 20ft

Valley *morphology* of this management unit was extremely confined by valley form, infrastructure and encroachment. Generally, stream conditions in this management unit were stable. Management efforts in this unit should focus on reestablishing a stable toe at scoured banks and plantings at revetment sites to improve longevity and increase overhead cover.

Wetland boundary approximately delineated by NWI (Station 34336-31388)

The entire stream channel within this management unit was designated as a wetland. This wetland was approximately 6.6 acres in size and classified as riverine lower perennial, signifying it was contained in the natural channel and characterized by a low gradient and slow water velocity (R2UBH, Station 34336-31388) (see Section 2.6 for detailed wetland type descriptions). A small 0.3 acre palustrine wetland with emergent vegetation was located along the left streambank at the upstream end of the management unit (PEM1E,

Station 34336-34200). Wetlands are important features in the landscape that provide numerous beneficial functions including protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters, and maintaining surface water flow during dry periods.

Rip-rap at Station 34360

At the upstream end of the management unit, rip-rap had been installed along 132 ft of the left stream embankment (Station 34360). While rip-rap and other hard controls may provide temporary relief from erosion, they are expensive to install, degrade habitat, and require ongoing maintenance or may transfer erosion problems to upstream or downstream areas. Alternate stabilization techniques should be explored for streambanks whenever possible. Interplanting of this rip-rap, by inserting native tree and shrub plantings into the soil between the rocks, would increase bank protection and its long-term effectiveness. These plantings could also improve the aquatic habitat by providing shade, resulting in cooler water temperatures.

Rip-rap at Station 34050

On the opposite bank, the County Route 23A road embankment had scoured along 100 ft of the right streambank exposing the underlying *lacustrine* clay (Inset D, Station 34050). Fine sediment inputs into a stream increase *turbidity* and can act as a transport mechanism for other pollutants and pathogens. Sixteen small 1" drainage pipes outlet stormwater at the toe of the bank exacerbating this scour (Inset C). To provide protection against further toe erosion, sedges and willows could be planted along the toe of the streambank. The rip-rap, which had been installed on the upper embankment, should be interplanted with native tree and shrubs to increase its longevity (Station 34000).

Immediately downstream, the bank toe continued to scour exposing another 114 ft of clay and silt along both the streambank and bed (Station 33800). To increase bank stability and improve aquatic habitat, native shrubs and sedges should be planted along the streambank and toe. At the top of the streambank there was a NYSDEC public fishing access with a parking area. These access points allow the public to wade and walk along the streambed and banks for the purpose of fishing. Structured access should be provided from this parking area to avoid fishermen inadvertently increasing the erosion problem while accessing the stream.

Clay exposure at Station 33800

Bank erosion at Station 32900

Downstream, 126 ft of the hillslope on the left streambank was eroding resulting in the loss of mature vegetation from the face of the streambank (Station 32900). Stormwater from the outlet at the top of this bank appeared to be causing most of the erosion at this site (Inset B, Station 32800). Outlet protection, such as a rock lined channel, should be installed to dissipate flow and prevent erosion. To minimize erosion, stormwater outfalls should be designed to outlet near the base of the streambank, set back from the active stream channel, and enter the stream at a low angle. The streambanks from here to the downstream end of the management unit appeared stable.

Sediment Transport

Streams move sediment as well as water. Channel and floodplain conditions determine whether the reach aggrades, degrades, or remains in balance over time. If more sediment enters than leaves, the reach aggrades. If more leaves than enters, the stream degrades (See Section 3.1 for more details on Stream Processes).

Evidenced by lack of significant aggradation or mass failure of streambanks, this unit appeared to be conveying its sediment load effectively. No significant sediment sources were identified within the unit.

Riparian Vegetation

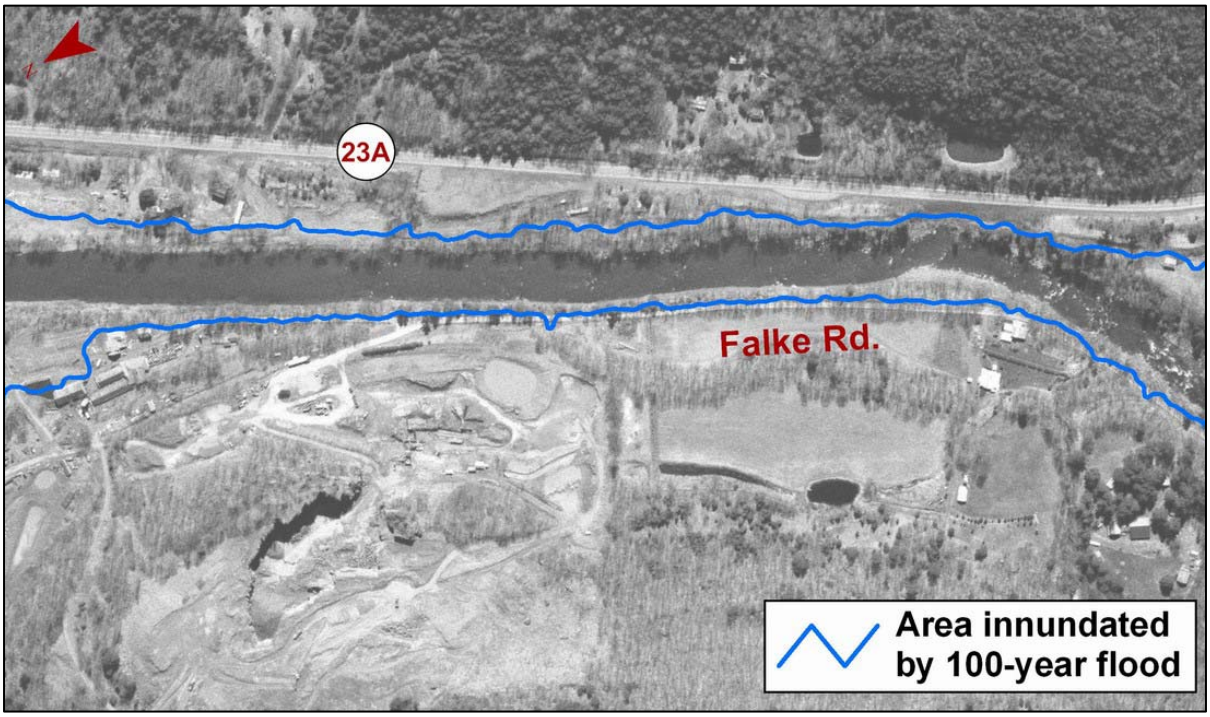
One of the most cost-effective and self-sustaining methods for landowners to protect streamside property is to maintain or replant a healthy buffer of trees and shrubs along the banks and floodplains, especially within the first 50 to 100 ft of the stream. A dense mat of roots under trees and shrubs binds the soil together, making it much less susceptible to erosion. Mowed lawn (grass) does not provide adequate erosion protection on stream banks because it typically has a very shallow rooting system and cannot reduce erosive forces by slowing water velocity as well as trees and shrubs. One innovative solution is the interplanting of revetment with native trees and shrubs which can significantly increase the working life of existing rock rip-rap, while providing additional benefits to water, habitat, and aesthetic quality. *Riparian*, or streamside, forest can buffer and filter contaminants coming from upland sources, shallow groundwater or overbank flows, and slow the velocity of floodwaters causing sediment to drop out while allowing for *groundwater recharge*. Riparian plantings can include a great variety of flowering trees, shrubs, and sedges native to the Catskills. Native species are adapted to our regional climate and soil conditions and typically require less maintenance following planting and establishment. Three suitable riparian improvement planting sites were documented within this management unit.

Some plant species that are not native can create difficulties for stream management, particularly if they are invasive. Japanese knotweed (*Fallopia japonica*), for example, has become a widespread problem in recent years. Knotweed shades out other species with its dense canopy structure (many large, overlapping leaves), but stands are sparse at ground level, with much bare space between narrow stems, and without adequate root structure to hold the soil of streambanks. The results can include rapid streambank erosion and increased surface runoff leading to a loss of valuable topsoil. In total, eight Japanese knotweed occurrences along an estimated length of 192 ft were documented in this management unit. Japanese knotweed locations were documented as part of the stream feature inventory conducted during the summer of 2006 (Riparian Vegetation Mapping, Appendix B).

An analysis of vegetation was conducted using aerial photography from 2001 and field inventories (Riparian Vegetation Mapping, Appendix B). In this management unit, the predominant vegetation type within the 300 ft riparian buffer was forested (42%) followed by herbaceous (22%). Areas of herbaceous (non-woody) cover may present opportunities to improve the riparian buffer with tree plantings in order to promote a more mature vegetative community along the streambank and in the floodplain. *Impervious* area (15%) within this unit's buffer was primarily the local roadways, private residences and associated driveways.

Flood Threats

As part of its National Flood Insurance Program (NFIP), the Federal Emergency Management Agency (FEMA) performs hydrologic and hydraulic studies to produce Flood Insurance Rate Maps (FIRM), which identify areas prone to flooding. The NYS DEC Bureau of Program Resources and Flood Protection has developed new floodplain maps for the Schoharie Creek on the basis of recent surveys. The new FIRM hardcopy maps are available for viewing at County Soil & Water Conservation District Offices and most town



100-year floodplain boundary map

halls. The FIRM maps shown in this plan are in draft form and currently under review. Finalization and adoption is expected by the end of 2007.

According to the current floodplain maps (above), no existing structures in this unit appeared to be situated within the estimated 100-year floodplain. The 100-year floodplain is that area predicted to be inundated by floods of a magnitude that is expected to occur once in any 100-year period, on the basis of a statistical analysis of local flood record. Most communities regulate the type of development that can occur in areas subject to these flood risks.

Aquatic Habitat

Generally, habitat quality appeared to be good throughout this management unit. Canopy cover was adequate along most streambanks, but could be enhanced with additional plantings in the riparian zone and within revetments. Minimal woody debris was observed within the stream channel. Woody debris provides critical habitat for fish and insects, and adds essential organic matter that benefits organisms downstream.

It is recommended that an aquatic habitat study be conducted on the Schoharie Creek with particular attention paid to springs, tributaries and other potential thermal refuge for cold water fish, particularly trout. Once identified, efforts should be made to protect these thermal refugia locations in order to sustain a cold water fishery throughout the summer.

Water Quality

Clay/silt exposures and sediment from stream bank and channel erosion pose a potential threat to water quality in the Schoharie Creek. Fine sediment inputs into a stream increase *turbidity* and can act as a transport mechanism for other pollutants and pathogens. There were two clay exposures in this management unit.

Stormwater runoff can also have a considerable impact on water quality. When it rains, water falls on roadways and parking areas before flowing untreated directly into Schoharie Creek. The cumulative impact of oil, grease, sediment, salt, litter and other unseen pollutants found in road runoff can significantly degrade water quality. There were eight stormwater culverts in this management unit in 2006.

Nutrient loading from failing, or poorly functioning, septic systems is another potential source of water pollution. Leaking septic systems can contaminate water with nutrients and pathogens making it unhealthy for drinking, swimming, or wading. Homeowners with septic systems should inspect their systems annually to make sure they are functioning properly. Servicing frequency varies per household and is determined by household size, tank size, and presence of a garbage disposal. Pumping the septic system out every three to five years is recommended for a three-bedroom house with a 1,000-gallon tank; smaller tanks should be pumped more often. To assist watershed landowners with septic system issues, technical and financial assistance is available through two Catskill Watershed Corporation (CWC) programs, the Septic Rehab and Replacement program and the Septic Maintenance program (See Section 2.12). Through December 2005, two homeowners within the drainage area of this management unit had made use of these programs to replace or repair a septic system.

References

NYSDEC, 1994. New York State Department of Environmental Conservation. Water Quality Regulations: Surface Water and Groundwater Classifications and Standards, NYS Codes, rules and regulations, Title 6, Chapter 10, Parts 700-705.