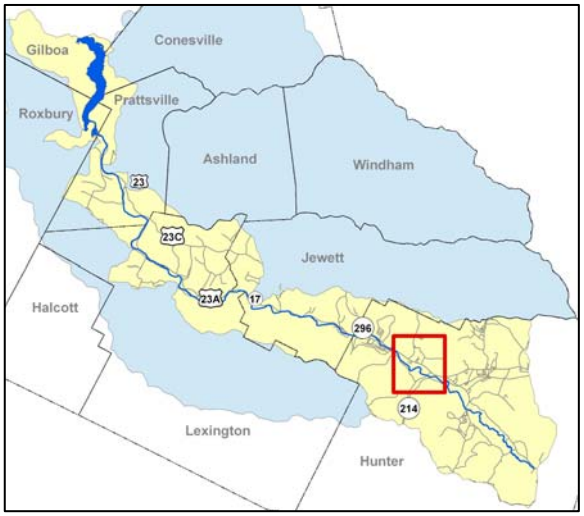
Schoharie Creek Management Unit 5

Town of Hunter - Station 124311 to Klein Ave. (Station 108605)

This management unit begins at Station 124311, continuing approximately 15,705 ft. downstream to Klein Ave. in the Town of Hunter.

2006 Stream Feature Statistics

7.8% of streambanks experiencing erosion
13.7% of streambanks have been stabilized
0% of streambanks have been bermed
22 feet of clay exposures
46% acres of inadequate vegetation
7,818 feet of road within 300ft. of stream
25 structures located in 100-year floodplain



Management Unit 5 location
see figure 4.0.1 for more detailed map

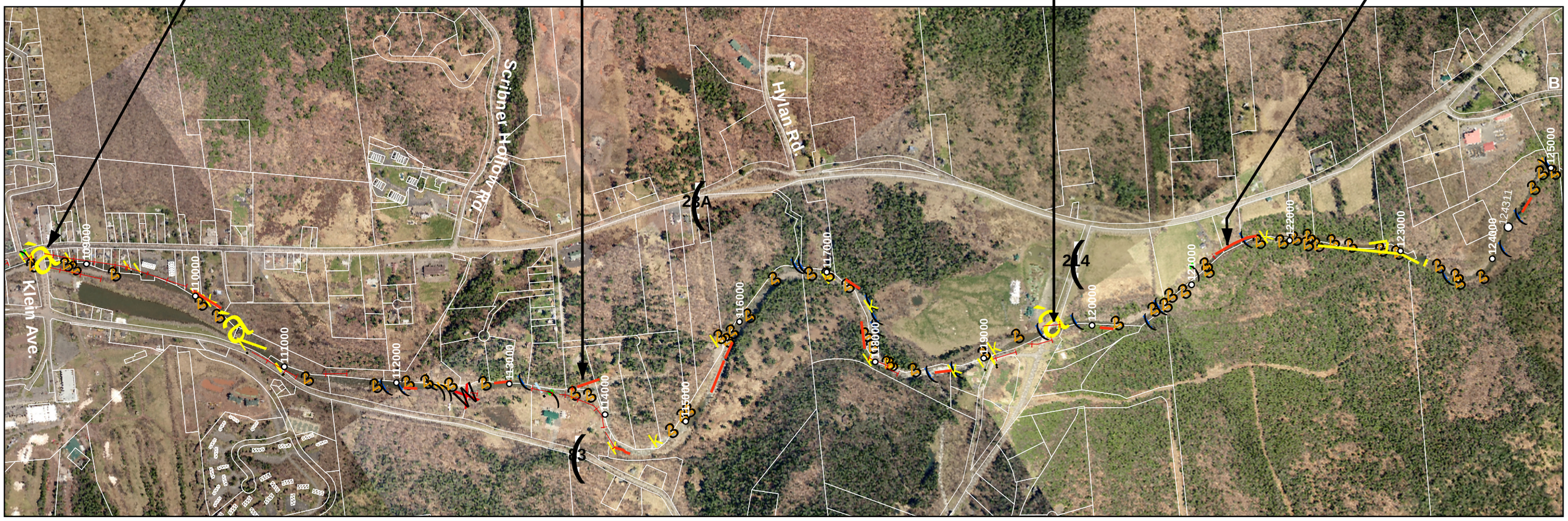
Summary of Recommendations Management Unit 5	
Intervention Level	Preservation, Passive, Self-Assisted Recovery
Stream Morphology	No recommendations at this time
Riparian Vegetation	Planting of herbaceous areas at Stations 121100 & 113400 and interplanting of rip-rap at Stations 119600, 119300, & 111140
Infrastructure	No recommendations at this time
Aquatic Habitat	Watershed Aquatic Habitat Study
Flood Related Threats	No recommendations at this time
Water Quality	Potential water quality impacts of stormwater inputs at NYS Route 214 drainage ditch, Station 119600, should be evaluated.
Further Assessment	Assessment of possible sewage leak from piped outfall at Station 118960 Community-Wide Stormwater Infrastructure Assessment & Planning

A

B

C

D



Legend

- Bank Erosion
- Bank Erosion Monitoring Site (BEMS)
- Berm
- Bridge
- Bedrock
- Crossing
- Culvert
- Dam
- Deposition
- Dump Site
- Clay Exposure
- Clay Exposure
- Gage
- Obstruction
- Planting Site
- Piped Outfall
- Revetment
- 1000ft Stream Stationing
- Tax Parcel
- Tributary
- Utility
- Water Intake

Schoharie Creek
Management Unit 5
Stream Feature Inventory

Scale = 1:10500

0 500 1,000 2,000 Feet

Stream flow

Figure 4.5.1 Management Unit 5 - 2006 aerial photography with stream feature inventory

Historic Conditions

As seen from the historical stream channel alignments, the channel alignment has not changed significantly since 1959.

Historic stream channel alignments overlayed with 2006 aerial photograph

According to available NYS DEC records, between 1996 and 2006 there had been four stream disturbance permits issued in this management unit. Three of these permits were issued after the 1996 flood for the following reasons: the Town of Hunter to excavate 260yd^3 of sand and gravel along 800ft of stream in order to restore stream flows to the pre-flood channel near Station 117600; the Village of Hunter to install or repair 455ft of rock rip-rap or other permanent streambank stabilization measures along the left streambank park path at Dolan's Lake; and a private landowner near Station 113700 to excavate 4,000yd^3 of gravel along 500ft. to restore stream flows to the pre-flood channel, remove debris, and to install or repair of rock rip-rap or other permanent streambank stabilization measures. In 2004, the Greene County Department of Highways was issued a permit for the replacement of the County Route 83 (at Klein Ave.) bridge over the Schoharie Creek and Shanty Hollow Brook. The existing Truss Bridge was rehabilitated as a pedestrian walkway and the main highway bridge was replaced. This work was completed by 2006.

Stream Channel and Floodplain Current Conditions (2006)

Revetment, Berms and Erosion

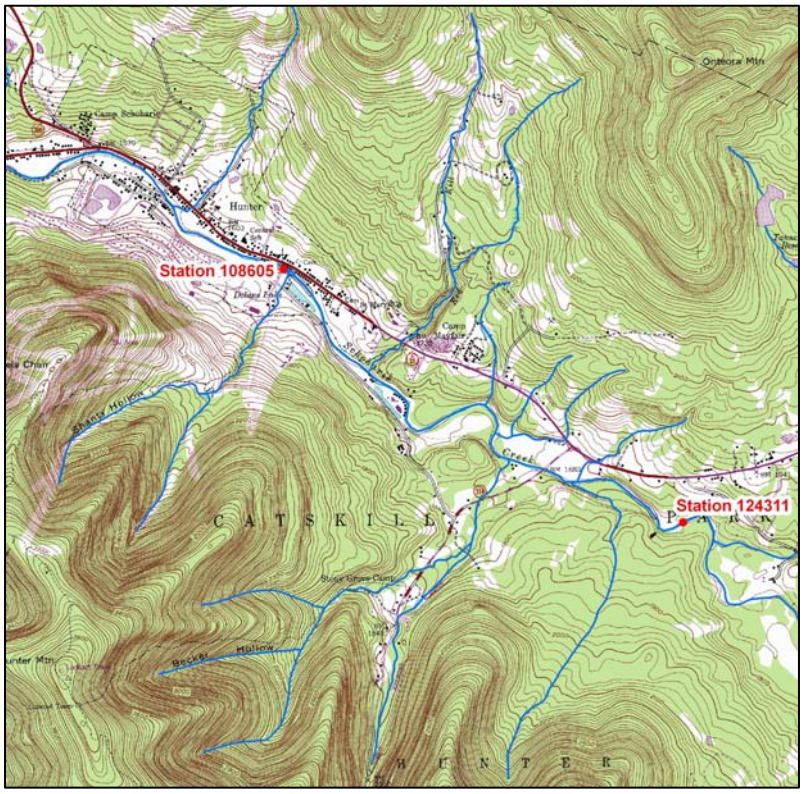
The 2006 stream feature inventory revealed that 7.1% (2,029 ft) of the streambanks exhibited signs of active erosion along 28,598 ft of total channel length (Fig. 4.5.1). The total surface area of active erosion totaled approximately 19,343 ft^2. *Revetment* had been

installed on 1% (285 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 4.5.1. 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.

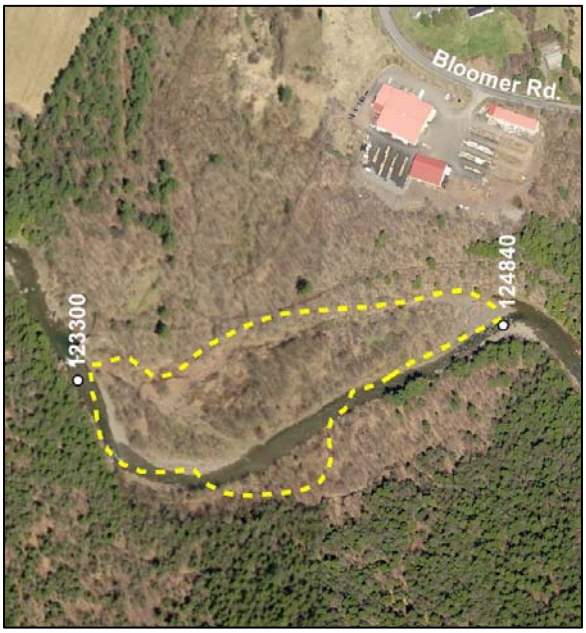
Management unit #5 begins at Station 124311. The drainage area ranged from 27.04 mi^2 at the top of the management unit to 38.25 mi^2 at the bottom of the unit. The valley slope was 0.61%.



1980 USGS topographic map - Hunter Quadrangle contour interval 20ft

Valley *morphology* in this management unit was confined by infrastructure, residential encroachment, and valley form. Drainage area increased significantly due to the large number of tributaries throughout the management unit. This unit was characterized by widespread instabilities evident from the high percentage of armored and eroding banks. Management efforts in this unit should focus on preservation of existing forested areas as well as enhancement of the *riparian* buffer in recommended locations and stormwater management.

As the start of the management unit there was a large 8 acre palustrine wetland (Station 124840-123300). 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. This wetland was classified as palustrine, forested broad-leaved deciduous, temporarily flooded (PFO1A) (see Section 2.6 for detailed wetland type descriptions).



Wetland boundary approximately delineated by NWI (Stations 124840-123300)

Old dam at Station 123240

At the downstream end of this wetland was an old compromised dam (Station 123240). The remains of this structure extended into the active stream channel causing a backwater effect during high flow events, resulting in some upstream aggradation. The concrete sill across the stream remains in-tact providing grade control and forming a large deep pool below.

As the stream meandered downstream the *thalweg*, or deepest part of the stream channel, flowed up against the right streambank causing the first significant bank erosion in the management unit (Inset D, Station 121700). This mass failure had resulted in an erosion area of approximately 8,408 ft^2, exposing areas of mixed till as well as compromising mature trees at the top of the bank. Streambank erosion often occurs on the outside of meander bends where the stream velocity is greatest during high flows. This erosion site may be a good candidate for

remediation using vegetative toe and bank protection, but may self recover with time. Prior to proceeding with any work, this site would require a more detailed site assessment.

Downstream the land use on the right streambank changed from forested to agricultural, with herbaceous vegetation and several mature trees in the riparian zone. A vigorous buffer with mature trees is important at this site because it may also filter nutrients and pollutants, if any, from the adjacent agricultural fields. Recommendations for this site include augmentation of existing buffer with the planting of additional native trees and shrubs along the streambank and the upland area (Station 121100). Buffer width should be increased by the greatest amount agreeable to the landowners. Increasing the buffer width to at least 100 feet will increase the buffer functionality.

Planting site at Station 121100

Tributary at Station 120500 - looking upstream

On the right streambank an unnamed tributary entered the Schoharie Creek (Station 120650). This tributary drains the lower slopes of Onteora Mountain before crossing under Route 23A, flowing through pastures before entering the Schoharie Creek. The New York State Department of Environmental Conservation classifies streams and rivers based on their "best use" (NYSDEC, 1994). The headwaters of this tributary was classified C(ts) by the NYS DEC, indicating that the best uses for this stream are supporting fisheries and other non-contact activities, including trout spawning. On the left streambank was another class C(ts) tributary (Station 120500). This unnamed tributary originates on the steep mountainous slopes of Plateau Mountain before reaching the Schoharie Creek where the topography flattens. As a result of this change in stream slope,

the tributary loses its ability to transport sediment gathered from the mountain slopes, and begins to deposit sediment.

The increase in water and sediment loading from these tributaries, combined with entrenchment of the Schoharie, may have contributed to the streambank erosion directly downstream of the Schoharie's confluence with the two tributaries. An area of approximate 7,099ft^2 of the left streambank was experiencing erosion (Station 120200). The hillslope had been undermined by toe erosion, resulting in the mass wasting of the bank. This erosion had left the face of the stream bank unvegetated and highly susceptible to future erosion.

Bank erosion at Station 120200

Downstream, the stream passed under the NYS Route 214 bridge (Inset C, Station 119600) (BIN 1041310). This bridge may constrict the floodplain at very high flows, but appeared to pass most flows effectively. Flood damage to bridges is typically caused by inadequate hydraulic capacity of the bridge, misaligned piers and/or abutments, or accumulation of debris. As bridges are replaced over time, these issues should be evaluated and adjusted if necessary to lessen the probability of flood damage by providing a more effective conveyance channel that promotes water and sediment flow through the bridge opening. Rip-rap was installed on both the upstream and downstream streambanks to provide scour protection. While rip-rap and other hard controls may provide temporary relief from erosion, they are expensive to

NYS Route 214 bridge at Station 119600

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. Two stands of Japanese knotweed (*Fallopia japonica*) had established in the rip-rap along the right streambank upstream and downstream from the bridge. Japanese knotweed is an invasive non-native species which does not provide adequate erosion protection due to its very shallow rooting system and also grows rapidly to crowd out more beneficial streamside vegetation. Removal of these Japanese Knotweed plants are recommended to prevent the spread if this invasive species (See Section 2.7 Riparian Vegetation), and native shrub and sedge species should be interplanted through this rip-rap to help strengthen the revetment, while enhancing aquatic habitat.

Japanese Knotweed at Station 119600

Stormwater drainage ditch at Station 119550

Approximately 50ft downstream from this bridge, a stormwater drainage ditch entered the Schoharie Creek on the right streambank (Station 119550). As shown in the photo to the left, during rainfall events *turbid* water flows into the Creek from this ditch. Turbidity is basically cloudiness of a body of water caused by the suspension of organic and inorganic particles. Turbidity can be a significant problem as these particles absorb and transport contaminants, and make the disinfection for water supply process more difficult. In addition to public health risks, turbidity also impacts ecological integrity in the streams and reservoirs. Potential water quality impacts of stormwater inputs at this site should be evaluated. This evaluation could be achieved as part of an initiative to conduct a detailed and comprehensive assessment of existing community stormwater

infrastructure with the goal of identifying and prioritizing potential areas for installation of stormwater *best management practices* (BMP's).

Along the right streambank, there was a 3.5 acre palustrine wetland with scrub-shrub vegetation (Station 119450-118100) (PSS1C). Rip-rap had been installed on the left streambank (Station 119300). This rip-rap was in good functioning and structural condition, but interplanting with native shrub and sedge species would help strengthen the revetment, while enhancing aquatic habitat.

Wetland boundary approximately delineated by NWI (Stations 119450-118100)

Two piped outfalls discharged stormwater runoff near the downstream end of this rip-rap (Station 119070). These outfalls were in good condition and showed no signs of erosion. Another piped outfall was identified downstream on the left streambank (Station 118960). The discharge had a strong odor and white filamentous algae was present, indicating a possible sewage leak. Further assessment is recommended to asses the possible water quality threat at this site.

Tributary confluence at Station 118700 looking upstream

The next unnamed tributary entered the Schoharie Creek at two locations on the left streambank (Stations 118700 & 118500). This tributary begins in the Stony Clove Notch, the valley in between Plateau and Hunter Mountains. The headwaters was classified B by the NYS DEC which indicates a best usage for swimming and other contact recreation until the last 2,670ft where the classification changed to C(ts), or a best use of supporting fisheries and other non-contact activities, including trout spawning. The confluence at station 118700, most likely created during a flood event, was choked with gravel. The second confluence of this

tributary, which also showed signs of high sediment load, was at Station 11870. The left streambank between these two confluences was undercut. This type of bank generally provides good cover for macroinvertebrates and fish and is resistant to erosion. However, if the bank becomes seriously undercut it might be vulnerable to collapse.

As stream's *sinuosity* increased downstream, the erosive forces on the outside bank also increased causing the mass wasting of the left streambank (Station 117860). This erosion wiped out many large trees from the streamside and exposed a 9,686ft^2 area of clay and silt. Woody debris and larger rocks deposited at the streambank toe may provide some erosion protection. On the opposite streambank another large unnamed tributary, which drains the lower slopes of Onteora Mountain before crossing under Route 23A, joins the Schoharie Creek (Station 117600). This tributary was classified C by the NYS DEC, indicating its best uses were for its fisheries and other non-contact activities.

Bank erosion at Station 117860

Bank erosion at Station 117320

As the stream continued to meander the erosive forces were transferred to the right streambank triggering another mass failure (Station 11730). The stream flowed directly against the valley wall, increasing the *shear stress*, or force of flowing water, on the stream bank during high flow events and had severely eroded the toe exposing a 9,123ft^2 area of soil with some clay in the substrate.

At the next downstream bend another unnamed tributary entered the Schoharie Creek from two outfalls (Stations 116700 & 116770). Similar the previous tributary, this

stream also drains the lower slopes of Onteora Mountain before crossing under Route 23A and joining the Schoharie Creek. This tributary was classified C by the NYS DEC.

Downstream the valley widened and the stream channel became wide and shallow. On the right streambank a flood chute had been cut by flood flows, evident from historical aerial photos, this occurred prior to 1959 (Station 115800). A 0.9 acre wetland classified as riverine lower perennial with an unconsolidated shore, signifying it is contained in the natural channel and characterized by a low gradient and slow water velocity, was located on this flood chute (Station 115900-115500) (R2USC). On the left streambank at station 115800 the streambank was experiencing minor toe scour along 303ft, resulting in an erosion area of approximately 884 ft^2. This erosion site was a good candidate for remediation using vegetative toe and bank protection, but may self recover with time. At the next meander bend there were two wetlands. A small 0.4 acre wetland classified as riverine lower perennial (Station 114950-114700) (R2USC) and a 0.9 acre palustrine wetland dominated by scrub-shrub vegetation (Station 114500-114000) (PSS1A).

Wetland boundary approximately delineated by NWI (Stations beginning at 115900 & 114950 & 114500)

As commercial development of the left streambank began revetment had been placed on the bank (Station 114300-113200). This entire property is located within the 100-year flood boundary, or the area which has a 1% chance of being inundated in any given year. The 1959 historical aerial photographs show this bank was once lined with buildings which were probably subjected to frequent flooding. In 2006, only three structures were located on the property and were set back from the streambank. To resolve flooding issues, the best solution at this site would be to relocate these structures outside the 100-year floodplain to allow the stream to utilize its floodplain without causing property damage. However this option seems unlikely. An alternative measure which may help

Planting site at Station (114300-113200)
2006 aerial photograph with 100-year flood boundary represented by blue line

decrease flooding would be to increase the quality of the stream buffer. Plantings of native trees and shrubs in the riparian zone would help to slow the flow of run-off from the floodplain and allow sediment and its attached pollutants, if any, to settle out before reaching the stream. The increased vegetation would also slow flood waters and trap large woody debris. The right streambank was also eroding. As the stream took a sharp turn, the thalweg flowed directly into the right streambank resulting in the largest mass failure in this management unit (Inset B, Station 113700). This erosion had exposed an estimated area of 14,585ft^2 with some clay in the substrate, and led to the loss of many mature trees. Although the house on this residential property is not threatened the loss of land is a concern. Restoration of this streambank would require an in-depth survey and design.

Also located within the 100-year floodplain was a small dump including an old metal tank (Station 112700). This material should be transferred from within the floodplain to the municipal waste disposal site to avoid its risk of being washed downstream.

Downstream, Red Kill entered the Schoharie on the right streambank (Station 112400). This tributary drains the slopes of the East Jewett Range and Onteora Mountain before it reaches the flatter topography of the valley floor where it flowed into the Schoharie Creek. As a result of this change in stream slope, the tributary lost its ability to transport sediment gathered from the mountain slopes, and began to deposit sediment at its mouth and into the more gently sloped Schoharie Creek. This is a common feature of confluence areas, which often contain extensive sediment bars and function as important sediment storage areas. These areas are typically among the most dynamic and changeable areas in the stream system. This tributary was classified by the NYS DEC as C(ts) indicating it supported fisheries and other non-contact activities, including trout spawning. On the opposite bank two small *lacustrine* clay exposures (Station 112400) and minor scour (Station 112200) were documented. A 7 acre wetland within the stream channel, classified as riverine lower perennial, stretched from here to the end of this management unit (Station 112400-108605) (R2UBH).

Red Kill Creek tributary at Station 112400 looking upstream

Wetland boundary approximately delineated by NWI (Station 112400-108605)

Rip-rap had been installed on the County Route 83 embankment on the left streambank (Station 111140). Some vegetation was growing within this rip-rap, however this site's stability and habitat value would benefit from additional plantings of native trees and shrubs. Two piped outfalls were located along this rip-rap (Station 110600). Stormwater runoff from these outfalls discharged onto the rip-rap rocks, reducing the risk of bank erosion, but heating the water in the summer.

Rip-rap at Station 111140

As the stream approached a pedestrian foot bridge a grade control structure, constructed by placing large stream boulders diagonally across the stream channel, funneled part of the stream flow into Dolan's Lake (Station 110775-110500). This lake was originally constructed by Michael B. Dolan, a resident of Hunter, for his ice business. Dolan's Lake recreation area now offers public swimming, fishing and picnic facilities. The foot bridge (Station 110470) may constrict the floodplain at very high flows as evidenced by some upstream deposition, but appeared to pass most flows effectively.

Foot bridge at Station 110470

The remaining 1,865ft of this management unit has historically suffered extensive damage during flood events. This reach was highly confined by infrastructure, residential encroachment, and valley form (Station 110470-108605). Erosion began on the right streambank (Station 110240) and had exposed an estimated area of 3,521ft^2 and threatened an old barn. This erosion site may be a good candidate for remediation using vegetative toe and bank protection. Reshaping these streambanks by grading may be necessary prior to planting. This work should be preceded by a more detailed site assessment.

Downstream, the Melody Woods condominium complex on the right streambank had experienced repetitive damage during high flow events (Station 109900-109350). This complex was substantially damaged by the flood of April 1987, and in October 1995 a severe flood resulted in damage to the site which made the structures extremely vulnerable to future floods. Months later, in January 1996, a mid-winter rain on snow event produced a flood of a 100-year magnitude, and the streambank failures became extreme, threatening the immediate safety of the condominium complex and adjoining properties.

Melody Woods Complex after 1996 flood event (Station 109900-109350)

At the request of local municipal leaders, the Greene County Soil & Water Conservation District (GCSWCD) took on the task of coordinating a mitigation strategy to protect these properties. In the fall of 1996, GCSWCD prepared an application on behalf of the Village of Hunter under FEMA's Hazard Mitigation Grant Program and was successful in obtaining over $480,000 in federal mitigation dollars.

The condominium complex restoration site presented a number of stability problems, with eroded banks as high as 27ft, deep silty clay soils under the glacial outwash materials that the buildings were constructed on, and a severe weight load at the top of the slope due to the buildings. On the lower project reach, the flood undercut retaining walls which had been in place for many previous floods and it eroded mature vegetation which had been providing stability to the streambank. The down cutting action of the channel into the clay materials resulted in the failure of the adjoining streambanks and upper slopes. As a result of the flood, a 1500' reach of the Schoharie was at severe risk in future floods.

The District enlisted the assistance of the NYS Natural Resource Conservation Service to design the project and to provide on-site inspection, while the District undertook all permitting, contracting and overall coordination tasks. With over 56 landowners, 2 state

agencies, 3 federal agencies and a number of local municipal units, the project was extremely complex and risky. In 1997, construction was completed on a steel sheet piling and stacked rock rip-rap wall designed to protect the site from 100-year floods. Due to the hard work and diligent effort of the many project partners, the project was completed under budget and on schedule in the fall of 1997. Since that time, the site has experienced several floods with no additional damage to the buildings.

Melody Woods Complex 2006
(Station 109900-109350)

Immediately downstream from this project, the right streambank had been stabilized with a stacked rock wall extending to the Klein Avenue bridge at the end of this management unit (Station 109350-108605). The left streambank along the Dolan's Lake recreation area had been stabilized with rip-rap (Station 109150-108605).

At the downstream end of this management unit the stream passed under the bridge at Klein Ave (Inset A, Station 108605). Gravel deposits upstream and downstream of the bridges were noted. Deposits such as these are commonly caused by inadequate sizing of the bridge opening. An undersized bridge opening causes water to back up upstream of the bridge, reducing stream velocity, which results in sediment deposition. While bankfull flows may flow freely through this bridge, higher flows may backwater, resulting in the upstream aggradation.

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).

This management unit was characterized by generally aggrading conditions suggesting that this unit is a sediment storage zone, supplied by both tributaries and adjacent upland sources.

Riparian Vegetation

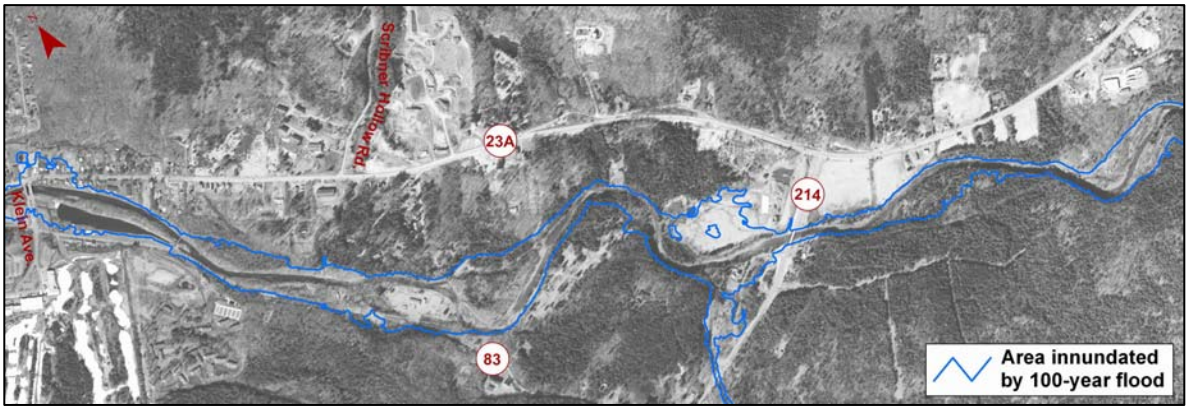
One of the most cost-effective and self-sustaining methods for landowners to protect streamside property is to maintain or replant a healthy buffer of trees and shrubs along the banks and floodplain, especially within the first 50 to 100 feet of the stream. A dense mat of roots under trees and shrubs bind 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 and 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. Two suitable riparian buffer improvement planting sites were documented within this management unit (Stations 121100 & 113400).

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, 111 Japanese knotweed occurrences along an estimated length of 1,928ft were documented in this management unit during the stream feature inventory. 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 is forested (63 %) followed by herbaceous (17 %). *Impervious* area (6 %) within this unit's buffer is primarily the local roadways, private residences and associated driveways. Areas of herbaceous (non-woody) cover may present opportunities to improve the riparian buffer with tree plantings, to promote a more mature vegetative community along the streambank and in the floodplain.

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 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.



100-year floodplain boundary map

According to the 2006 floodplain maps (above), twenty-four 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 throughout most of the management unit. Woody debris within the stream channel was observed throughout the unit. This woody debris was providing critical habitat for fish and insects, and added essential organic matter that will benefit 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, and many of the bank erosion sites had some clay substrate.

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 five stormwater culverts in this management unit.

Nutrient loading from failing septic systems can be another potential source of water pollution, though no evidence of this was noted in this unit during the 2006 stream feature inventory. Leaking septic systems can contaminate water with nutrients and pathogens making it unhealthy for drinking, swimming, or wading. There were several houses located in close proximity to the stream channel in this management unit. These homeowners

should inspect their septic 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 2.11). Through December 2005, eleven homeowners within the drainage area of this management unit had made use of these programs to replace or repair a septic system.

Homes in the Village of Hunter within this management may have public sewer. In 2006, the Village of Hunter completed work on a new sewage treatment infrastructure project. The project facilitated the construction of approximately 11 miles of sewer collection lines and associated structures within the Village of Hunter. The system will convey wastewater to a treatment plant designed to treat 326,000 gallons of domestic wastewater per day. In addition to wastewater collected from the new sewer lines, a number of existing wastewater collection systems were consolidated into the Village wastewater collection and treatment system (NYSDEC, 2002).

References

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