East Kill Management Unit 3

Town of Jewett – Vista Ridge Road Bridge (Station 67789) to Station 62465

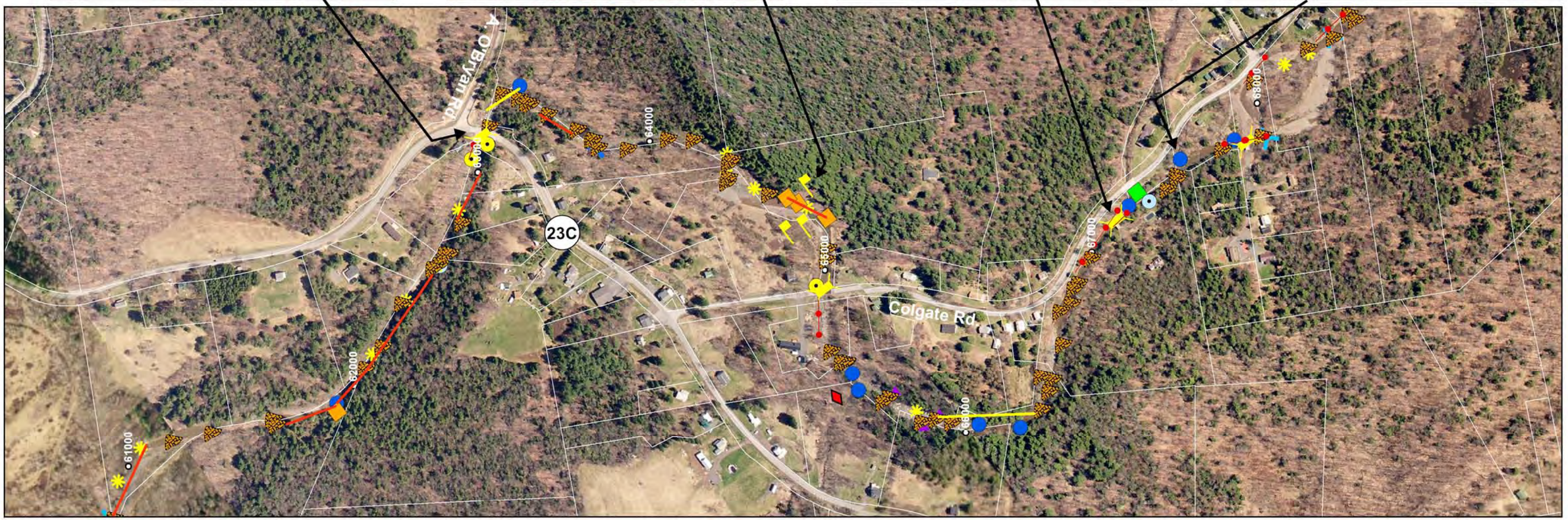
This management unit begins at Vista Ridge Road Bridge, continuing approximately 5,324 ft. to an area downstream of the State Route 23C Bridge (#3363580) in the Town of Jewett.

Management Unit 3 location
see Figure 4.0.1 for more detailed map

Stream Feature Statistics

6.0% of stream banks experiencing erosion
5.6% of stream banks have been stabilized
0% of stream banks have been bermed
178 feet of clay exposures
14.31 acres of inadequate vegetation
3,827 feet of road within 300ft. of stream

Summary of Recommendations Management Unit 3	
Intervention Level	Assisted Self-Recovery
Stream Morphology	No recommendations at this time
Riparian Vegetation	Monitor for introduction of Japanese knotweed and eradicate new introductions. Increase width of riparian buffer in appropriate locations.
Infrastructure	Interplant rip-rap installations
Aquatic Habitat	Watershed Aquatic Habitat Study
Flood Related Threats	No recommendations at this time
Water Quality	Removal of dump site
Further Assessment	Continue monitoring of Bank Erosion Monitoring Site Consider hydraulic analysis of bridge openings



Legend

- Bank erosion
- Bank Erosion Monitoring Site (BEMS)
- 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

East Kill Management Unit 3
Stream Feature Inventory

N E S W

Scale = 1:4800

0 250 500 1,000 Feet

Stream flow

Figure 4.3.1 Management Unit 3 - 2006 aerial photography with stream feature inventory

Historic Conditions

Historic stream channel alignments overlayed with 2006 aerial photograph

As seen from the historical stream channel alignments (above), the *planform* of the channel alignment has not changed significantly over the years along this management unit; the channel has remained fairly stable.

As of 2006, according to available NYS DEC records dating back to 1996, there have been two stream disturbance permits issued in this management unit. Following the 1996 flood, a permit (Station 67055) was issued for removal of tree and brush debris, the excavation of sand and gravel to restore stream flows to pre-flood conditions, and for the installation or repair of rock rip-rap along the stream bank. In 1996, a second stream disturbance permit was issued for stabilization of the streambank near State Route 23C and Alfred O'Bryan Road using rock or other materials.

Stream Channel and Floodplain Current Conditions (2006)

Revetment, Berms and Erosion

The 2006 stream feature inventory revealed that 6.0% (637 ft) of the stream banks exhibited signs of active erosion along the 10,647 ft of total channel length in the unit (Figure

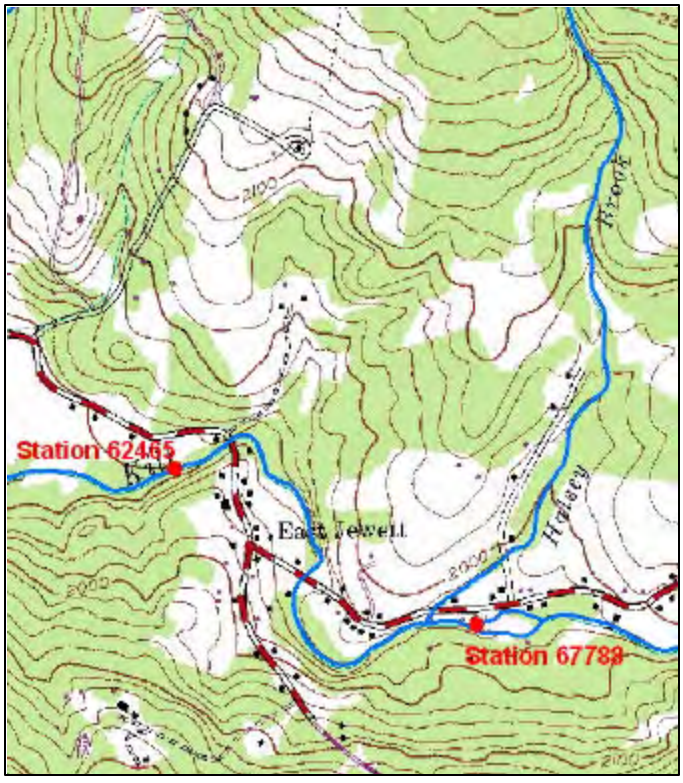
4.1.1). *Revetment* had been installed on 5.6% (592 ft.) of the stream banks. No berms were identified in this management unit at the time of the stream feature inventory.

Stream Channel Conditions (2006)

The following description of stream channel conditions references insets in foldout, Figure 4.3.1. Stream stationing presented on this map is measured in feet and begins at the confluence with the Schoharie Creek at Jewett. "Left" and "right" stream bank 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 #3 began at the Vista Ridge Road Bridge. The drainage area ranged from 7.73 mi^2 at the top of the management unit to 10.15 mi^2 at the bottom of the unit. The valley slope was 1.53%.

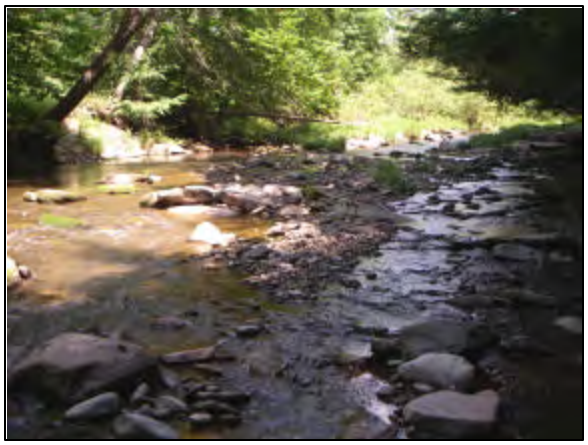
Valley *morphology* in this management unit was laterally controlled at the top of the unit by a narrow valley floor and was influenced by the encroachment of State Route 23C. As the stream flowed away from Route 23C, valley morphology was relatively unconfined with a broad glacial and *alluvial* valley flat. Generally, stream conditions in this management unit were somewhat unstable. There were four eroding banks documented in this management unit, including two mass failures. Management efforts



1980 USGS topographic map – Hunter Quadrangle contour interval 20ft

in this unit should focus on preservation of existing wetlands and forested areas and improvements to the riparian buffer by planting *herbaceous* areas and revetted stream banks with native trees and shrubs.

This management unit began as the stream flowed under Vista Ridge Road Bridge (Station 67789). There was a 0.3 acre palustrine wetland (Station 67873 - 67764) that extended from management unit #2 into management unit #3 along the right stream bank. This wetland was classified as PUBHh (see Section 2.6 for detailed wetland type descriptions). 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. There was a small unnamed tributary (Station 67742) flowing through the wetland and entering the East Kill along the right bank, just downstream from the bridge.



Transverse bar, Stations 67473 – 67400 looking upstream

Downstream, along approximately 200 feet of the left bank, there was a vegetated *point bar*, or sediment deposition located on the inside of the meander bend. Across from the downstream end of the point bar, another small unnamed tributary (Station 67525, Figure 4.3.1 Inset D) entered from the right bank, contributing colder water to the East Kill at the time of the assessment. Downstream of the tributary there was a *transverse bar* (Station 67473 – 67400), a diagonal accumulation of sediment across the channel, that stretched for approximately 73 feet. Along the left bank, there was a water intake pipe associated with the nearby residence.

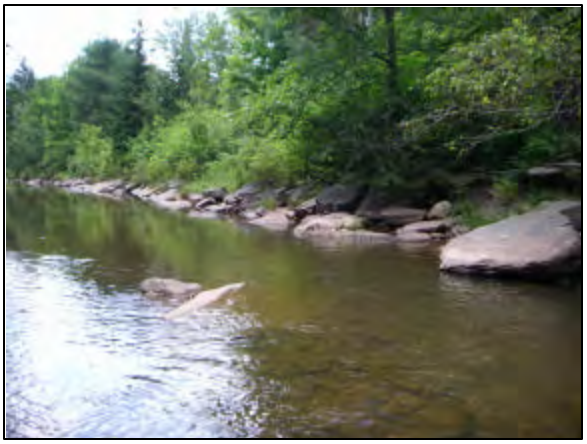
Continuing downstream, along the right bank there was a recommended planting site. At the time of the assessment, there was a thin line of trees with mown lawn to the top edge of the stream bank. Recommendations for this site (Station 67300) include augmentation of the existing buffer with the planting of additional native trees and shrubs along the top of the streambank and the adjacent upland area. Buffer width should be increased by the greatest amount agreeable to the landowners, but increasing the buffer width by at least 100 feet will increase buffer functionality, such as filtering nutrients and pollutants, if present, and protecting the stream from nearby land uses.

Planting site at Station 67300 looking upstream

Just downstream of the recommended planting site, Halsey Brook (Station 67236) flowed under Colgate Road and entered the East Kill from the right bank. This tributary drains Thomas Cole and Black Dome Mountains before it reaches the flatter topography of the valley floor where it enters the East Kill. The New York State Department of Environmental Conservation classifies streams and rivers based on their "best use" (NYSDEC, 1994). This tributary was classified C(ts) by the NYS DEC, indicating that the best uses for this stream are supporting fisheries, including trout spawning, and other non-contact activities.

Halsey Brook at Station 67236 looking upstream

Continuing downstream, there was a private bridge (Station 67160, Figure 4.3.1 Inset C) with concrete abutments and rip-rap protecting the abutment on both sides of the bridge; the bridge and its associated rock rip-rap were all in good structural and functional condition. The span of the bridge appeared to be adequate for conveying higher flows. The rip-rap (Stations 67193 – 66890) along the right bank started just upstream of the bridge and

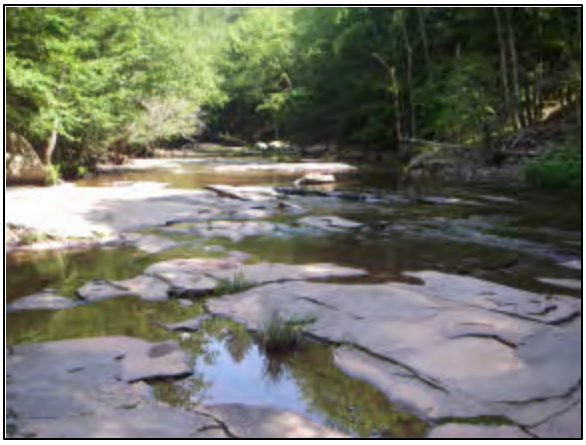


Rip-rap along right bank, Stations 67193 - 66890

continued downstream, stabilizing a total of approximately 303 feet of stream bank. Following the 1996 flood, the NYS Department of Environmental Conservation (DEC) issued an emergency stream disturbance permit (Station 67055) for flood repairs along 300 feet of stream channel. The permit included woody debris removal, repair of rock rip-rap, and for excavation of sand and gravel to restore stream flows to pre-flood conditions. Although this rip-rap was in good condition at the time of the assessment, interplanting the rip-rap and reinforcing the toe of this streambank with native shrub and sedge species is recommended. This planting will help to strengthen the revetment, while enhancing aquatic habitat. The riparian buffer beyond the rip-rap installation was thin, with some mature trees and mown roadside vegetation. The risk to bank stability and to infrastructure can be minimized by augmenting the buffer with plantings of native tree and shrub species.

As the stream gently meandered to the left, there was an abundance of aggradational areas, starting at station 66965 and continuing for approximately 635 feet. These depositional areas included: three point bars, a transverse bar, center bar, and one area with full channel aggradation. This reach of stream served as a sediment storage area.

As the stream meandered to the right, there was bedrock (66300) along the left stream bank and bed, gradually covering the full bed of the stream channel, for approximately 381 feet. The bedrock provided lateral control along the upstream portion of the bedrock by limiting stream bank erosion; it provided grade control for the channel by preventing *degradation* or

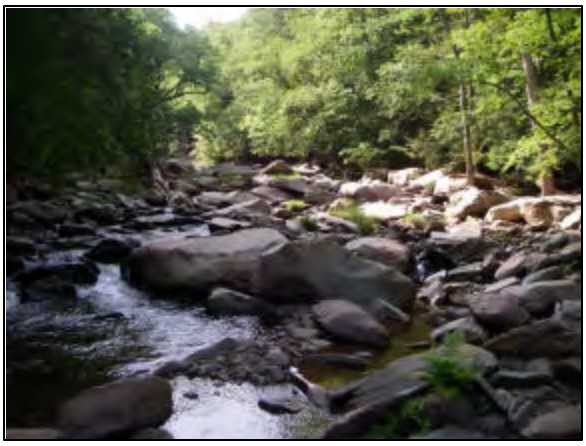


Bedrock at Station 66300

downcutting of the stream, **t**he process by which streambeds and floodplains are lowered in elevation by eroding downward into the stream bed over time.

Along the left bank, 2 small unnamed intermittent tributaries (Stations 66226 and 66059) drained a steep slope, and both had entrenched conditions and were depositing an accumulation of sediment at the outfall. The second of these tributaries was compromising some of the younger woody vegetation along the slope causing woody debris accumulation within the tributary.

Downstream of the bedrock, there was a *step pool complex* (65856) that stretched for approximately 210 feet with large boulders and multiple locations of excessive sediment deposition throughout. A step pool sequence is a series of short drops interspaced with pools. This type of morphology is a common feature of high gradient streams, the steps provide grade control and the pools dissipate energy.



Step pool complex, Stations 65856 – 65646 looking upstream

Continuing downstream, there were two small unnamed intermittent tributaries (Stations 65536 and 65469) observed along the left stream bank; there was no flow from either tributary at the time of the assessment. The channel of the second of these tributaries passed through a large dump site (Station 65506) on the left bank. Approximately 105 feet upland from the East Kill, there were piles of scrap metal, an old car, household waste and miscellaneous objects thrown over the hillside slope. This dump site posed a water quality threat to the East Kill, particularly when there is flow in the tributary channel that passes through it. It is

Dump site at Station 65506

recommended that the dump site be cleared to eliminate the potential safety and pollution hazards associated with the dumped material.

Colgate Road Bridge at Station 65078

Further downstream, there was excessive sediment deposition along the right stream bank and within the stream channel including, a point bar and center bar. As the stream approached the Colgate Road Bridge (# 3302990, Station 65078), the left stream bank was reinforced with rip-rap that was in good structural and functional condition, and there were shrub and herbaceous species growing along the revetted bank. The riparian buffer beyond the rip-rap installation was sparse, with some mature trees and mown lawn. The risk to bank stability and to infrastructure can be minimized by augmenting the buffer with plantings of native tree and shrub species. There was sediment deposition upstream and downstream of the bridge. 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. If this bridge is replaced in the future, it is recommended that a hydraulic analysis be conducted in order to determine the appropriate bridge width that will provide the capacity to convey flood flows through the opening.

Just downstream of the bridge, there was a 15 inch piped outfall (Station 65063) sticking four feet out from the left stream bank. This outfall appeared to provide drainage for the nearby residential land use and Colgate Road. Though outfall protection was absent, there did not appear to be any recent erosion associated with the piped outfall; there was no flow at the time of the assessment.

Piped outfall at Station 65063

As the stream turned sharply to the left, the

Mass failure, BEMS #06EK1667
Stations 64820-64640

right stream bank was affected by a *mass failure* (Station 64820 to Station 64640, Figure 4.3.1 Inset B), a large slope failure associated with downcutting stream channels and undermined support of steep slopes. Stream bank erosion often occurs on the outside of meander bends where the stream velocity is greatest during high flows. Along this section of stream, the thalweg flowed up against the toe of the bank undermining the steep slope, resulting in an erosion area of approximately 12,567 ft^2, exposing mixed till (Stations 64820-64640) along the bed and bank and compromising mature trees along the bank. During high flows and times of active erosion, a significant amount of clay may enter the stream from this bank. Fine sediment inputs into a stream can be a serious water quality concern because they increase *turbidity*, degrade fish habitat, and can act as a transport mechanism for other pollutants and pathogens. To study erosion along this reach, this stream bank has been monumented as a Bank Erosion Monitoring Site (BEMS # 06EK1667, Station 64731). A cross-section and long profile survey were conducted to collect baseline data. In the future, this cross-section can be resurveyed to calculate the bank's erosion rate. It is recommended that monitoring of this site continue.

Clay exposure near Station 64820

Woody debris & sediment deposition at Station 64372

Throughout the stream reach downstream of the mass failure, there was an accumulation of woody debris and excessive aggradation. Opposite the mass failure, and continuing downstream there

was continuous sediment deposition (Stations 64910 – 64400) resulting in a point bar (that changed to a side bar and back to a point bar) that stretched for approximately 510 feet along the left bank. Sediment was also deposited along the right bank downstream of the mass failure, forming a side bar (Stations 64541 – 64373) with some herbaceous vegetation and abundant woody debris accumulation. Just before the stream turned sharply to the right, there was a large woody debris pile (Station 64372) and a significant drop off from the sediment bars, with a drop of approximately five feet from the top of the aggradational areas to the stream channel.

Flood chute at Station 63779

As the stream gently meandered, there continued to be significant sediment deposition (Stations 64339-63200) along the channel bed and both stream banks including, point, side, center and transverse bars. This pattern of deposition continued for approximately 1,139 feet until the bridge (#3363580) at Route 23C. Along the left bank, a flood chute (Station 63779) converged with the main channel; at the time of the assessment, the *divergence*, or location where the secondary channel split from the main channel, was not observed. The flood chute may be contributing to the excessive sediment deposition along this reach of the stream.

Downstream of the flood chute, there was some erosion along the left stream bank (Stations 63672 – 63516). Although the erosion appeared to be relatively minor, there was a house located at the top of the bank; therefore, if the bank continues to erode, it may pose a threat to the nearby residence. It is recommended that the riparian buffer along this bank be maintained and enhanced with plantings of native shrub and tree species; reinforcing the toe

Erosion at Stations 63672 - 63516

of the bank by planting sedge species is also recommended.

Continuing downstream, a small unnamed intermittent tributary (Station 63400) entered along the right bank. At the time of the assessment, it appeared as though a portion of this tributary may have functioned as a flood chute, although no channel divergence was observed upstream. The channel of this tributary seemed to lose its ability to transport sediment; flow was subsurface along the upstream portion of the tributary, and there was excessive sediment deposition at its confluence with the East Kill, likely contributing to the aggradation along this reach of the East Kill. This is a common feature of confluence areas, which often contain extensive sediment bars, function as important sediment storage areas, and are typically among the most dynamic and changeable areas in the stream system.

Tributary at Station 63400

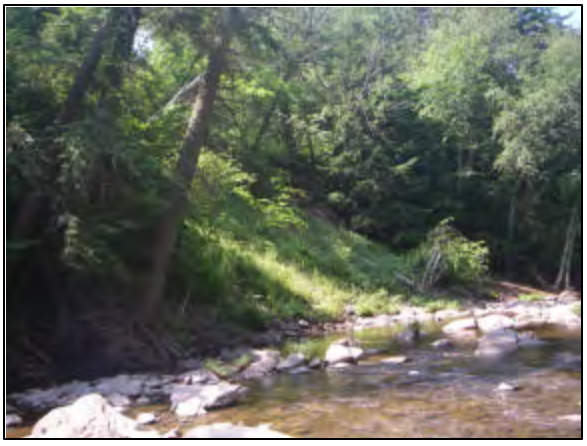
Starting at the downstream end of the left bank erosion (Stations 63672 – 63516) and continuing along the left bank downstream to the bridge, there was a substantial point bar (Stations 63543- 63207, Figure 4.3.1 Inset A) with some herbaceous vegetation. Downstream of the tributary, as the stream meandered sharply to the left, there was bedrock (Stations 63400-63554) opposite the point bar, along the right channel bed for approximately 154 feet. The bedrock provided partial grade control along the stream channel by preventing downcutting. Channel flow through this stretch of the stream was affected by the encroachment of Alfred O'Bryan Road, which served to disconnect the channel from its floodplain and constrict stream flow. While the bridge opening at Route 23C (#3363580, Station 63149, Figure 4.3.1 Inset A) seemed to provide an adequate span for low flows, it appeared

Route 23C Bridge at Station 63149

that higher flows would backwater, reducing stream velocity, which resulted in upstream aggradation. If this bridge is replaced in the future, it is recommended that a hydraulic analysis be conducted in order to determine the appropriate bridge width that will provide the capacity to convey flood flows through the opening.

Just downstream of the bridge, roadway drainage was directed through a piped outfall and entered the stream from the left; there was good outfall protection and revetment surrounding the pipe, and the drainageway appeared to receive intermittent flow. The right stream bank was reinforced with a stacked rock wall (Station 63100 - 63035) that was in fair structural and functional condition. Following the 1996 flood, NYS DEC issued an emergency stream disturbance permit (Station 63076) for flood repairs along 65 feet of stream bank, which involved repairing the stacked rock wall. There was a narrow strip of trees at the top of the bank along the rock wall, with mown lawn from a house to the edge of this thin buffer. Widening the buffer width, by planting native shrubs and trees, is recommended. There was a small piped outfall along the right stream bank at the end of the rock wall (Station 63035); flow was intermittent and there was no flow at the time of the assessment.

Rock wall at Stations 63100 - 63035

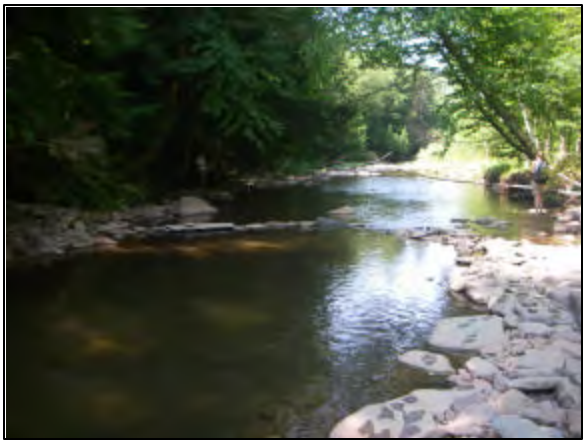


Erosion at Stations 63000 - 62786

Continuing downstream, the left bank had experienced hydraulic erosion and mass failure (Station 63000 to Station 62786) along approximately 214 feet of stream channel. This resulted in an erosion area of approximately 4,273 ft^2 that had compromised mature trees along the bank. There was a seep on the face of the bank, which may exacerbate the erosion at this site. Although

this bank was a significant erosion site, it appeared to be slowly recovering, with herbaceous vegetation, including grasses and ferns, becoming established on the face of the bank. However, without deep-rooted shrub and tree species, it is likely that this bank will continue to erode during future high flows. At the top of the bank, there was mown lawn to the edge. This erosion site may be a good candidate for remediation using vegetative toe and bank protection. Recommendations for this site (Station 72223) include planting native trees and shrubs along the streambank and the upland area. Buffer width should be increased by the greatest amount agreeable to the landowners. Prior to proceeding with any work, this site would require a more detailed site assessment.

Near the downstream end of the erosion, there was a handmade dam obstructing the channel (Station 62834). The dam was constructed of stream cobbles and caused a pool to form upstream of the obstruction.



Handmade dam at Station 62834

Continuing downstream there were multiple locations of excessive sediment deposition including, two side bars and a center bar. These aggradational areas were well vegetated with sedges and willows, which stabilizes the stream bed and bank, and provides fish and wildlife habitat. On the downstream end of the center bar there was an accumulation of woody debris along the left bank. At the time of the assessment, the debris did not appear to have a significant impact on the stream channel. Entering along the left stream bank, there was a water intake pipe at station 62593. The intake pipe started at the top of the high bank and was associated with a nearby residence.

Erosion at Stations 62550 - 61817

Near the end of management unit # 3 there was some minor erosion and scour

(Stations 62550 – 61817) along the left stream bank for approximately 87 feet that continued into management unit # 4 for an additional 558 feet. Along a portion of the eroding bank, some mature trees had been compromised and were hanging over the stream channel.

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).

Sediment transport in this unit was influenced by valley morphology. The unconfined valley form and topography suggest that this unit was a sediment storage zone. This unit has experienced wide-spread sediment transport deficiencies. Bed load transported by the main stem channel and the additional sediment deposited at tributary confluences along this reach of the East Kill, exceeds the transport capacity of management unit # 3, resulting in channel aggradation and lateral migration. Sediment storage areas can benefit the general health of the stream system by limiting bed load delivered to downstream reaches during large storm events. Sediment sinks such as this throughout the watershed should be preserved where adjacent land uses permit. Mature riparian vegetation is important in such settings to limit the extent of lateral channel migration and bank erosion.

The ability of the channel to convey sediment was also affected by two private bridges and the Route 23C bridge. These bridges appeared to contribute to backwater conditions and upstream channel aggradation. Installation of floodplain drainage under bridge approaches may reduce the backwater conditions and improve sediment transport continuity.

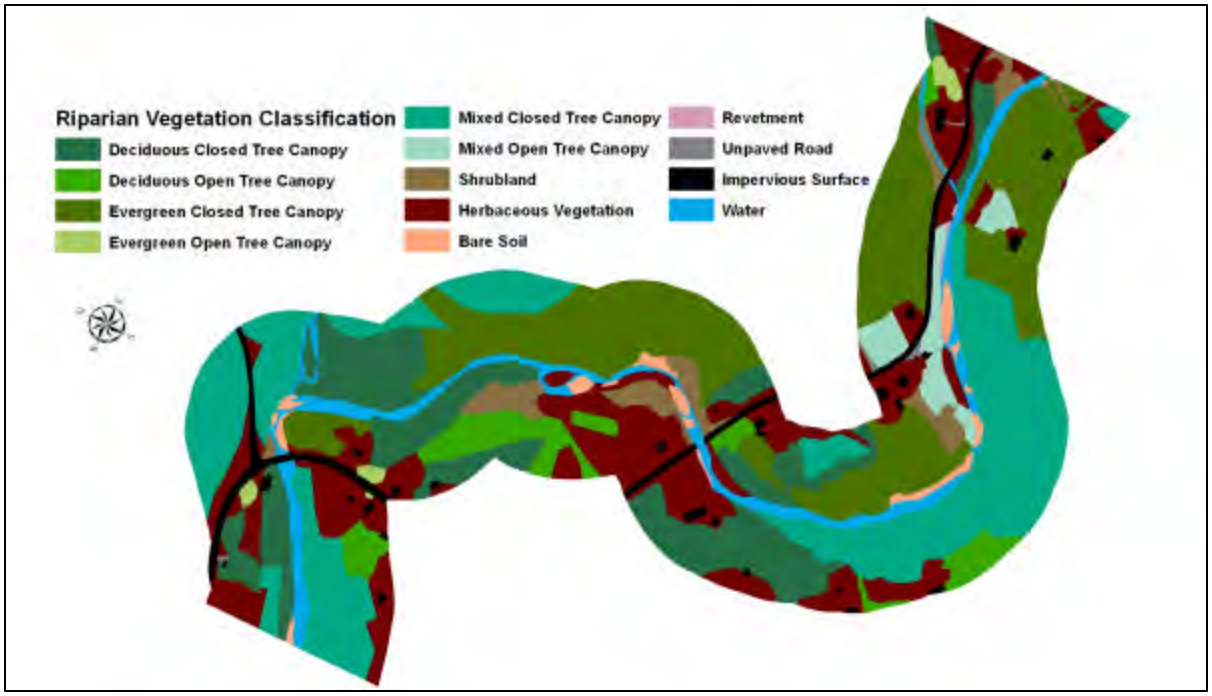
Riparian Vegetation

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. One suitable riparian improvement planting site was documented within this management unit. There were also several locations within this unit that would benefit from interplanting of revetted embankments and enhancing riparian buffer width.

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 stream banks. The result can include rapid stream bank erosion and increased surface runoff leading to a loss of valuable topsoil. Japanese knotweed locations were documented as part of the stream feature inventory conducted during the summer of 2006 (Riparian Vegetation Mapping, Appendix B). The first appearance of Japanese knotweed on the East Kill mainstem does not occur until management unit #7. The best means for controlling knotweed is prevention of its spread, therefore, efforts should be made to ensure that all fill brought into the area is clean and does not have fragments of knotweed or other invasive plants. If Japanese knotweed sprouts or small stands are observed, they should be eradicated immediately to avoid further spread within this unit and downstream management units. Periodic monitoring for knotweed introductions in this unit is recommended.

An analysis of vegetation was conducted using aerial photography from 2001 and field inventories (see below map and Riparian Vegetation Mapping, Appendix B). In this management unit, the predominant vegetation type within the 300 foot riparian buffer was



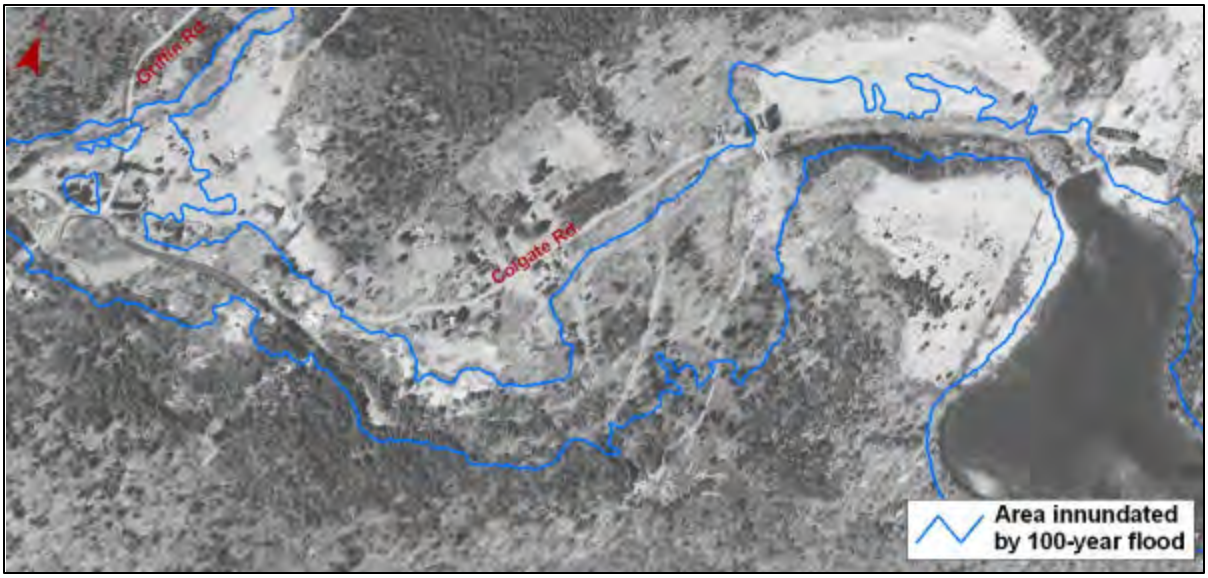
Riparian vegetation classification map based on aerial photography from 2001

forested (73 %) followed by herbaceous (18%). *Impervious* area (3.5 %) within this unit's buffer was primarily the local and private roadways, and residential structures. 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 stream bank 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 East Kill on the basis of recent surveys. The new FIRM hardcopy maps are available for viewing at the Greene County Soil & Water Conservation District Office and the Jewett Municipal Building. The FIRM maps shown in this plan are in draft form and are currently under review. Finalization and adoption is expected by the end of 2007.

According to the current floodplain maps (below), five existing structures in this unit appeared to be situated within the estimated 100-year floodplain. The 100-year floodplain is



100-year floodplain boundary map

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 much of both stream banks. 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 East Kill 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 East Kill. Fine sediment inputs into a stream increase

turbidity and can act as a transport mechanism for other pollutants and pathogens. There were two significant 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 the East Kill. The cumulative impact of oil, grease, sediment, salt, litter and other unseen pollutants found in road runoff can significantly degrade water quality. There were three stormwater culverts in this management unit in 2006.

Nutrient loading from failing 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. There were a few buildings located in close proximity to the stream channel in this management unit. These building owners 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 2.12). Through December 2005, five homeowners within the drainage area of this management unit had made use of these programs to replace or repair a septic system.

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