Riparian Corridor Management Plan
East Kill
Rappleyea Property – Jewett, NY

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Catskill Streams Buffer Initiative

Introduction

Maintaining healthy and intact riparian areas is a high priority of the Catskill Streams Buffer Initiative, as is improving the condition of degraded riparian buffers. Through the protection and enhancement of the riparian corridor we are protecting water quality, protecting and increasing habitat diversity and offering some level of stabilization for streambanks through natural biological means. Well vegetated riparian buffers filter upland pollutants, provide rooting mass for bank stability, and lower stream water temperatures. Numerous streams in the Catskills have been walked with detailed mapping of the vegetation conducted within the riparian corridors documenting various stream conditions, need for supplemental vegetation, presence of invasive species, and other conditions impacting the health of the riparian area. While 75% of the West of Hudson Watershed is forested, it is apparent that some riparian areas lack this protective cover.

The overall goal of the Catskill Streams Buffer Initiative is to inform and assist landowners in better stewardship of their riparian (streamside) area through protection, enhancement, management, or restoration. The New York City Department of Environmental Protection and its partners (County Soil & Water Conservation Districts and Cornell Cooperative Extension) will assist private, riparian landowners throughout the West of Hudson Watershed by providing:

1) Riparian Corridor Management Plans to create awareness about riparian management issues specific to individual properties
2) Best management practice design and/or prescriptive measures and installation to encourage positive riparian stewardship and
3) Educational materials and activities as needed by landowners to understand the critical role of their buffer and how to maintain it in optimal functioning condition.

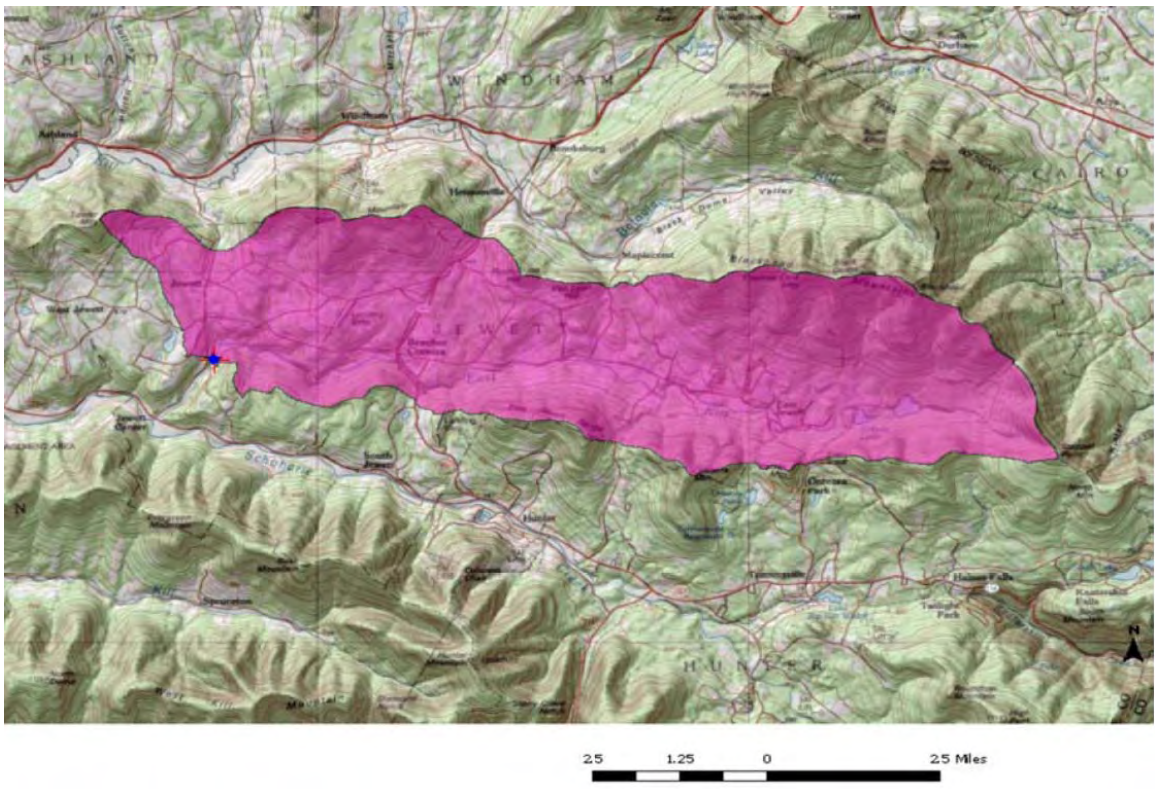
Any watershed landowner with property within the mapped buffer area can receive technical assistance and a Riparian Corridor Management Plan.

Aerial view of Rappleyea property between Route 17 and Mill Hollow Road

Site Visit Description / Existing Conditions

Audry Rappleyea owns 19.38 acres between Route 17 and Mill Hollow Road on the East Kill in Jewett, NY. The East Kill is a C (TS) stream suitable for trout spawning.[1] Several site visits were conducted to evaluate localized erosion occurring on the parcel approximately 750 ft. upstream of the Mill Hollow Road Bridge. The drainage area for this location is 35.45 mi^2 including runoff from portions of Cave Mountain, the Blackhead Mountains, and Onteora Mountain. Approximately 94.2% of the drainage area is covered by forest. According to the current floodplain maps, the project area is located within the 100-year floodplain. In the area where erosion is occurring on Rappleyea's property, no deep rooted woody vegetation was visible next to the stream. The ground cover is primarily herbaceous in the project area as the site was previously used as a hay meadow.

The soil type within the project area is identified as Barbour loam (Ba) which consists of very deep, well drained soils formed in alluvial deposits derived from acid, reddish sandstone, siltstone and shale. Mean annual air temperature is 45 to 50 degrees F., and mean annual precipitation is 47.6 inches. Depth to high water table is 3 to 6 feet with occasional flooding. Native trees found in this flood plain soil type are maple, oak, and white pine. [2]



USGS StreamStats map showing Drainage Area for Rappleyea property

[1] All waters of New York State are provided a class and standard designation based on existing or expected best usage of each water or waterway segment. Classification C is for waters supporting fisheries and is suitable for non - contact activities. Classification TS designates trout spawning waters.

[2] National Cooperative Soil Survey
Official Series Description – 1999

Historic Conditions

Greene County Soil and Water Conservation District (GCSWCD) completed the East Kill Stream Management Plan in 2007. The Rappleyea parcel is located in Management Unit 10. Within this Management Unit, 42% of the predominant vegetation type within the 300 foot mapped riparian buffer zone is forested, 21.4% is shrubland, 33% is herbaceous and 3.6% is impervious.

As seen from the historical stream channel alignments (below), the stream channel has experienced some lateral migration over the years. Lateral migration is the movement of a channel across its floodplain, which results in extensive bank erosion. The outside banks of meander bends tend to move laterally across the valley floor and down the valley. Generally, the planform of the channel alignment has not changed significantly over the years along this management unit; the channel has remained fairly stable.

Historic stream channel alignments with 2006 aerial photograph

As of 2006, according to available NYS DEC records dating back to 1996, there have been no stream disturbance permits issued in this management unit.

The East Kill Stream Management Plan recommends that management efforts in this unit should focus on establishing a riparian buffer in appropriate locations by 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. Increasing the buffer width to at least 100 feet will increase the buffer's functionality and protect the stream from nearby land uses.

Landowner Issues / Concerns

Mr. Rappleyea has expressed concern about erosion occurring on his property. The landowner states that the main channel shifted during the floods of 1996. As a result, bank erosion became more noticeable and several large maple trees were washed away. He has estimated that approximately 135 feet by 27 feet of land has been lost to erosion.

A 2006 Stream Feature Inventory documented channel divergence that had formed a secondary channel around an island of herbaceous and shrubby vegetation and an accumulation of gravel deposits and woody debris. Fallen woody debris appeared to have caused localized scour upstream and downstream of the debris, exacerbating the erosion along the right bank.

2009 site visit photo of willows on established gravel bar

Landowner Goals

1) Reduce erosion and stabilize streambanks
2) Minimize flood damage
3) Replace trees
4) Improve fish habitat
5) Maintain property for family recreation and hay production

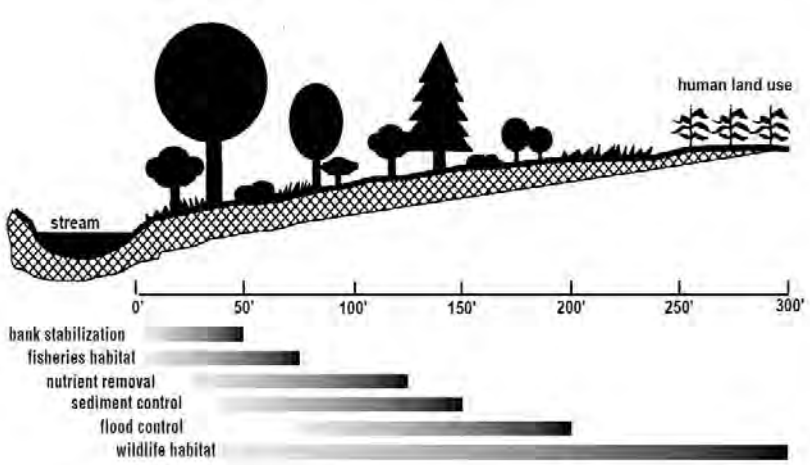
Mr. Rappleyea does not participate in any other watershed programs at this time.

Recommendations – Best Management Practices (BMPs)

1) Apply to CSBI for funding support to install one or more of the practices below.

2) Establish a riparian buffer of deep rooted woody vegetation to maintain bank stability**.** Planting and maintaining a healthy buffer of native trees and shrubs along streambanks and floodplains is one of the most cost effective and self-sustaining methods for landowners to protect streamside property**.** Planting additional native species already present on the property such as willow and alder can help restore the riparian buffer to

stabilize the streambanks. Native species are recommended due to their adaptation to our regional climate and soil conditions and because they typically require less maintenance than exotic species following planting and establishment.



3) Use vegetative treatments such as dormant posts and stakes to address minor localized erosion. Bioengineering, the use of live vegetation to stabilize soils associated with streambanks, can be used at this location. Dormant cuttings from appropriate species, such as willows and dogwoods, quickly establish vegetation on the banks. Live posts and stakes are cut from living willow shrubs when the shrub is dormant (usually during the fall). The stakes, ranging from one to several feet long, are hammered or pushed into the stream bank where they will grow quickly and provide necessary bank stabilization where it is needed most. A dormant post detail drawing is attached. Onsite willows can be used for this treatment.

4) Use live fascines. Live fascines are a standard bio-engineering technique which involves the bundling and planting of dormant plant cuttings. The plant bundles sprout and develop a root mass that will hold the soil in place and protect the streambank from erosion. Onsite willows can be harvested and used for this treatment. A live fascine detail drawing is attached.

5) Maintain root systems that hold soil in place by not mowing right to the stream edge. Degrading buffer zones can be improved by not mowing in the buffer zone. Keeping a buffer zone of trees and shrubs, especially in the first 50 to 100 feet, along streambanks helps to minimize erosion and protect property, filter pollutants, and increase habitat value.

6) Woody debris is essential to fish habitat. Remove only the woody debris that causes significant obstruction to stream flow.

7) Continue to monitor reach stability through normal observations. Take photographs from the same location each year to photo document erosion.

Resources and References

East Kill Stream Management Plan
http://www.catskillstreams.org/East_Kill_Stream_Management_Plan.html

East Kill Management Unit 10
http://www.catskillstreams.org/pdfs/EKSMP/30_MU10.pdf

Catskill Streams Buffer Initiative
http://www.catskillstreams.org/pdfs/CSBI_application.pdf

Riparian Buffers
http://www.catskillstreams.org/stewardship_streamside_rb.html

Introduction to Riparian Buffers Fact Sheet
http://northjerseyrcd.org/upload/uploads/Intro.pdf

Large Woody Debris Removal
http://www.ncwater.org/Financial_Assistance/Minimum%20Criteria%20-%20Incremental%20Effects%20of%20LWD%20Removal%201992.pdf

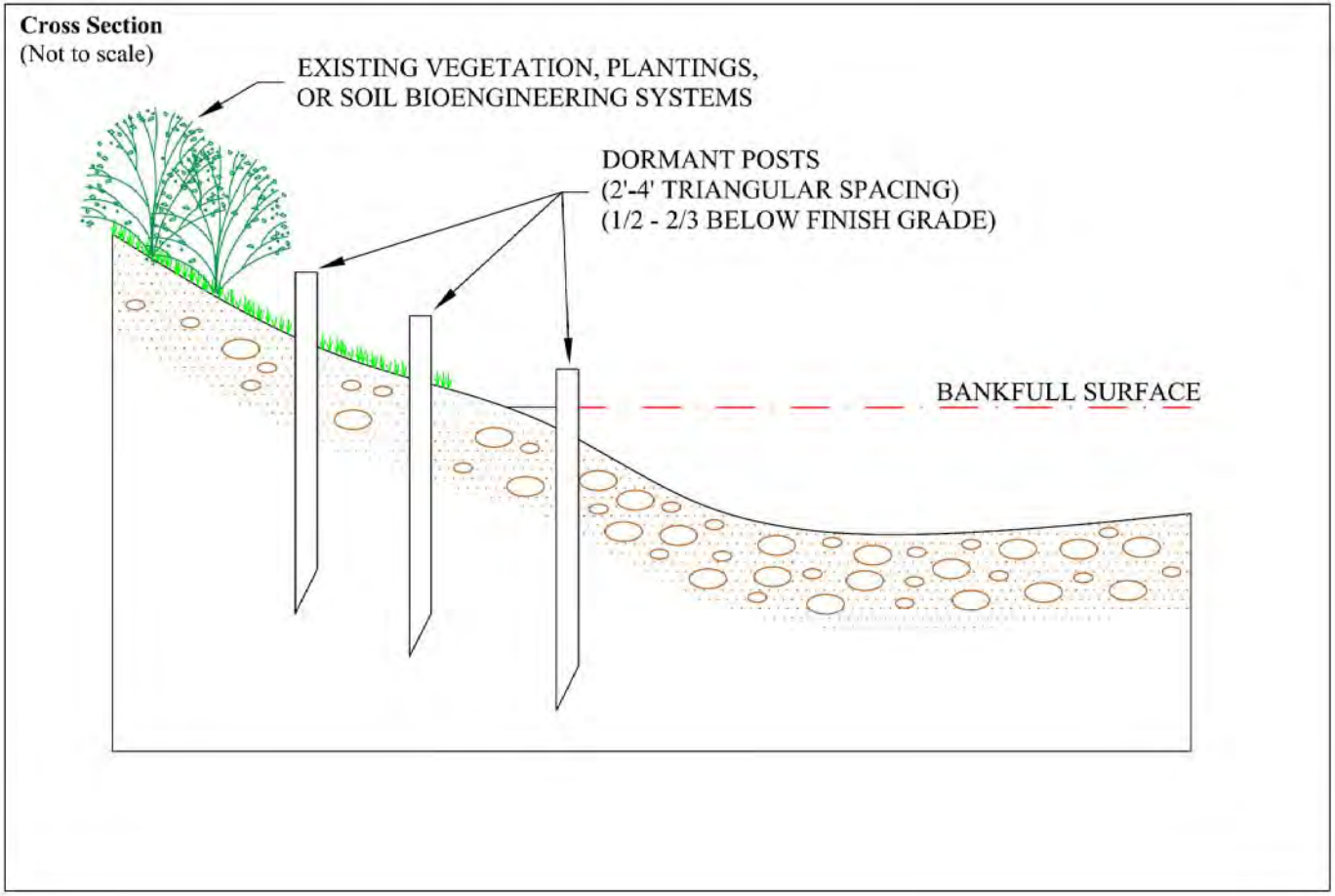
DEC Environmental Resource Mapper
http://www.dec.ny.gov/animals/38801.html

Fascines
Ohio Stream Management Guide
http://www.dnr.state.oh.us/Portals/7/pubs/fs_st/stfs14.pdf

Japanese Knotweed Information
http://www.catskillstreams.org/pdfs/Knotweed%20webpage%20text%20&%20links.pdf

Soils
National Cooperative Soil Survey
Official Series Description Series, 1999
http://soils.usda.gov/technical/classification/osd/index.html

DORMANT POST DETAIL (VS-03a)



LIVE FASCINE DETAIL (VS-01)