

Neversink River East Branch

MANAGEMENT UNIT 11

Summary of Post-Flood Recommendations

Intervention Level	Passive restoration of the bank erosion site between Station 42170 and Station 41990. (BEMS NEB11_41800) Full restoration of the bank erosion site between Station 41280 and Station 41170. (BEMS NEB11_41100)
Stream Morphology	No change.
Riparian Vegetation	No change.
Infrastructure	No change.
Aquatic Habitat	No change.
Flood Related Threats	No change.
Water Quality	None.
Further Assessment	No change.

Stream Channel and Floodplain Current Conditions

The following description of stream morphology is the result of a survey conducted in December, 2011. “Left” and “right” references are oriented looking downstream, photos are also oriented looking downstream unless otherwise noted. Stationing references, however, proceed upstream, in feet, from an origin (Station 0) at the confluence with the Neversink Reservoir. Italicized terms are defined in the glossary.

Erosion along the right bank begins at Station 42170, continuing approximately 184 feet to Station 41990 (BEMS NEB11_41800). Assisted restoration was recommended for this site based on conditions documented in 2010 including active undercutting of mature vegetation on the bank as well as the close proximity of a log home to the eroding bank. A side bar had formed along the left bank directly across from the erosion at Station 42020, further increasing pressure on the eroding bank. This depositional area consisted of primarily cobble sized materials and was approximately 50 feet long.

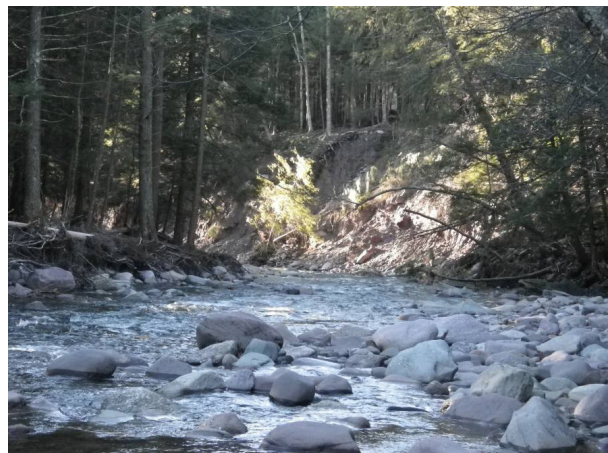
Subsequent flooding has led to several channel adjustments in this reach, including removal of a side bar across from this eroding bank segment and formation of a depositional bench at the toe of undercut bank. This bench should prevent further undercutting during high flow events, and it is likely that it will self-vegetate. This vegetation could further reduce the erosive forces on this stream bank during future high flow events. Therefore, it is possible for this bank to stabilize without treatment (*passive restoration*). It is recommended that this site be monitored for changes in condition.



Eroding bank segment on the right bank. Note newly formed cobble bankfull stage bench at the toe of the slope. (IMGP1555)

In 2010 a cobble side bar was documented beginning at Station 41780 and continuing 195 feet to Station 41450. (See B84 on Page 6 for pre-flood condition) This bar degraded significantly during the high flow events since July, 2010, providing further evidence of the impact of the flood on the channel form through this section of the East Branch Neversink River.

The main channel takes a sharp turn to the left at Station 41420 and continues in a relatively straight alignment for the remainder of EBMU11. A large failure on the right bank begins at Station 41280, continuing downstream over 100-feet downstream until Station 41170 (BEMS NEB11_41100). (See A165, 166 on Pages 6 and 7 for pre-flood condition)



Looking downstream at main channel. (IMGP1561)

The cause of this mass failure is a combination of processes, including poor drainage on the top of the high terrace, hydraulic erosion at the toe of the bank and rotational slumping near the top. In 2010 large sod mats with trees still rooted in them slid or fell from the top of the 50-foot high bank down to the toe, causing obstructions to stream flow. Since 2010, most of the trees and sod mats have been swept downstream, no longer providing a source of stability or erosion protection to the exposed glacial till in the bank. The large exposure of glacial till in this bank is a potential source of fine sediment and turbidity when entrained under higher flows.



Slope failure on the right bank. (IMG1565)

This failure has become more severe as a result of the additional hydraulic erosion during recent high flow events, suggesting that it will continue to erode and fail during significant flood events. Therefore, *full restoration* is recommended for this site in order to alleviate hydraulic pressure on the bank and improve bank stability. This restoration effort could include installation of a *bankfull* stage bench at the toe of the slope, an increased radius of curvature, and removal of mature trees at the top of the bank that could fall and obstruct flow in the main channel. Furthermore, both in-stream structures like rock vanes and the use of bioengineering techniques to vegetate the exposed slope could help reduce erosive forces on the bank during high flow events.

EBMU11 ends at Station 40080, just downstream of where a private bridge owned by Frost Valley YMCA crosses the stream channel. This bridge was documented in good functional and structural condition in 2010, however, during the TS Irene flood event, the stacked rock abutment on the right bank was destroyed. Prior to the abutment failure, the abutments encroached on the bankfull channel on both sides of the stream. The bridge was reconstructed after TS Irene, and still impedes floodplain flow.