

Neversink River East Branch

MANAGEMENT UNIT 13

Summary of Post-Flood Recommendations

Intervention Level	Full restoration of the stream reaches impacted by emergency recovery work from Station 47200 in Management Unit 14 through Station 46200 in Management Unit 13. Passive restoration of the bank erosion site between Station 44630 and Station 44590. (BEMS NEB13_44500)
Stream Morphology	Conduct a detailed survey of the multi-channel section of the river beginning at Station 45300 and continuing to the end of EBMU13
Riparian Vegetation	No change.
Infrastructure	No change.
Aquatic Habitat	No change.
Flood Related Threats	No change.
Water Quality	Evaluate threats of Denning Road runoff near Station 43800.
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.

This management unit begins at Station 46900 with the continuation of the erosion of the right bank from EBMU14 for approximately 60 feet to Station 46850 (BEMS NEB13_46800). Two additional eroding bank segments were documented on this channel during the 2010 survey including BEMS NEB13_46700 and BEMS NEB13_46300, a portion of which was documented as a source of fine sediment in the form of lacustrine clay in 2010. (See Picture A78 on page 6 for pre-flood condition) While original recommendations for this bank erosion site minimally included *assisted restoration* with riparian planting techniques to restore the forest connectivity and stabilize the bank, the channel conditions have since

changed so extensively that a more expansive project is recommended to address these problem areas. As detailed in the EBMU14 Post-Flood Addendum, this side channel and related eroding bank segments could be addressed in a *full restoration* of this segment of the river.

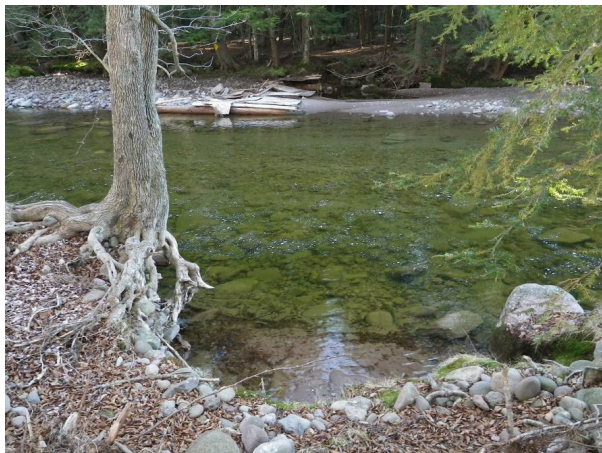
At Station 46130 the main channel converges with the side channel from the left that diverged in EBMU14 at Station 47025. A 700-foot excavated channel now conveys the majority of flow down the left channel that was previously a dry aggradational reach. If this condition remains unchanged following the September 18, 2012 flood, this channel could be shaped and re-aligned to improve sediment transport dynamics as a component of the *full restoration* discussed above and detailed in the EBMU14 Post-Flood Addendum (see Photo A100 on Page 8 for pre-flood condition)

Two timber dams were previously located downstream of the convergence at Station 46110 and Station 45760. Both dams have since been destroyed (See Pictures B34 and B46 on Pages 8 and 9 for pre-flood condition). Remnants of the upstream dam were documented on the left bank in December, 2011.

During the 2010 survey it was noted that the channel maintains good connectivity with the right floodplain through the remainder of this management unit. Furthermore, debris deposition indicated that the floodplain was inundated enough under high flows that the transportation of large woody materials is possible. True to this original interpretation, new woody material was released and existing materials were relocated throughout the channel and floodplains during flooding that has occurred since the summer of 2010. Significant changes in channel alignment and sediment transport patterns occurred throughout this management unit. Consistent with the evidence of previous natural channel shifts in this area, the main channel has since occupied the right floodplain. The majority of the flow in the river at this location is now conveyed in multiple threads through densely forested floodplain. This section is bounded to the left by an old stone berm which begins at Station 45300 and continues through the end of EBMU13.



Side channel post-repair efforts, facing upstream. (IMG1509)



Remnants of a timber dam destroyed in flooding since 2010, facing the left bank. (IMG1512)



New braided main channel alignment through densely developed forested floodplain. (IMG1519)

Due to this adjusted alignment of the main channel, a significant portion of the flow now joins Flat Brook upstream of the previous confluence and runs adjacent to Denning Road. Prior to recent floods, there was a very narrow riparian buffer between Flat brook and Denning Road, which retreated significantly with increased hydraulic erosion due to increased flow in the adjacent channel. It appears that a stacked stone revetment that is currently in good structural and functional condition was constructed to stabilize this eroding portion of Denning Road after a recent flood. This location also marks where Denning Road begins to encroach on the East Branch and the effects of human development become visible on stream morphology.

Recommendations for this braided channel section include monitoring for any change in condition and a detailed assessment of the channel morphology to better understand sediment transport dynamics and potential future risks to infrastructure in the area. This site should be further evaluated as a threat to water quality as it is likely that Flat Brook contributes chlorides (salt) and petroleum by-products from road runoff to the Neversink, and potentially fine sediment from lacustrine deposits on the left side of the valley floor.



Recently constructed stacked rock revetment adjacent to Denning Road. (IMGP1523)



Small channel that conveys runoff from Denning Road to the river. (IMGP1530)

EBMU13 ends at the former confluence of the main channel and Flat Brook at Station 43650.