

# Neversink River East Branch

## MANAGEMENT UNIT 4

### Summary of Post-Flood Recommendations

<b>Intervention Level</b>	Assisted Restoration of the bank erosion site between Station 12600 and Station 12430 (BEMS ID# NEB4_12500).
<b>Stream Morphology</b>	No change.
<b>Riparian Vegetation</b>	No change.
<b>Infrastructure</b>	No change.
<b>Aquatic Habitat</b>	No change.
<b>Flood Related Threats</b>	No change.
<b>Water Quality</b>	None.
<b>Further Assessment</b>	Include reach downstream from Station 10500 in comprehensive Local Flood Hazard Mitigation Analysis of downstream MUs.

### 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.

A sediment depositional area is located along the right bank directly in front of the berm beginning at Station 12750 and continuing downstream until Station 12500. This side bar consists of cobble sized materials and appears to be frequently inundated during higher flows, as evidenced by the lack of vegetation or debris on it. A bank failure was documented along the left bank beginning at Station 12600, continuing approximately 170 feet until Station 12430 (BEMS ID# NEB4\_12500).



*Eroding bank segment on the left bank. (IMG1715)*

Prior to recent flooding, large boulders and sedges had accumulated at the toe of this slope so it was anticipated that this site would remain stable. However, hydraulic erosion due to high near-bank velocities during recent flood events has extended this eroding bank segment and led to slumping from high elevations on the slope. Therefore, *assisted restoration* is recommended for this site including installation of a bankfull stage bench at the toe of the slope and use of bioengineering techniques to stabilize the slope.

Continuing downstream, a woody debris obstruction causes flow to split into two separate channels at Station 11900. Hydraulic erosion is evident along the right bank in two locations in the right channel. Post-flood recommendations for these sites remain consistent with the pre-flood assessment: *full restoration* for BEMS ID # NEB4\_11500 and *assisted restoration* for BEMS ID # NEB4\_10700. (See page 7 for additional discussion)

Continuing downstream, the next 500-foot stream reach is characterized by further large woody debris deposition. 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. This led to some shifts in channel alignment and sediment transport patterns throughout this management unit.

The right and left channels converge to form one main channel at Station 10500. The valley floor narrows slightly approaching the end of EBMU4, where the two bridges impede floodplain flow and raised water surface elevations upstream during Irene. The stream maintains a narrow floodplain on both sides of the channel through this reach, occupied by seven seasonal and full-time residences. The streamflows during Tropical Storm Irene breached the berm on the left bank and some of these residences were flooded. Millraces on the back side of the berm also convey flows off the left valley wall, but there is no evident outlet for this drainageway, which apparently terminates into Denning Road opposite the Denning Town Hall.

A rip-rap revetment that was documented in 2010 extending 60-feet upstream of the right bridge abutment was destroyed during recent flood events, leaving the right bridge abutment flanked and vulnerable to structural failure during future high flow events. It is recommended that this area be included in a comprehensive Local Flood Hazard Mitigation Analysis to investigate hydraulics and sediment transport in the stream corridor, from Station 10500 through the Halls Mills covered bridge on the mainstem of the Neversink River. The purpose of the analysis would be to develop options for reducing flooding threats to this relatively dense population center of the Neversink Valley. Otherwise, the recommendations for the eroding bank segments through the end of MU4 remain unchanged.