New York City Department of Environmental Protection
Bureau of Water Supply

Stream Management Program
Request for Approval for Water Quality Stream Project: Panther Kill (Ashokan Basin)

October 2021

Prepared in accordance with Section 4.6 of the NYSDOH 2017 Filtration Avoidance Determination

Prepared by: DEP, Bureau of Water Supply

Introduction

Stream restoration projects are a core component of the New York City Department of Environmental Protection (DEP) Stream Management Program (SMP); they have a primary purpose of improving water quality, especially by reducing erosion into fine sediments that contribute to turbidity.

The 2017 Filtration Avoidance Determination (FAD) requires the SMP to design and complete construction of at least 24 Stream Projects that have a principal benefit of water quality protection or improvement by December 31, 2027; at least eight of these 24 projects shall be in the Ashokan watershed. By November 30 of each year, DEP is required to propose new Water Quality Stream Projects (WQSPs) for approval by New York State Department of Health (NYSDOH) pursuant to the FAD.

To date, 14 WQSPs have been approved towards fulfillment of the 24 required Stream Projects having a principal benefit of water quality protection or improvement (Table 1). As of October 2021, four projects are completed, three additional projects will be completed by the end of 2021 (Batavia Kill at Red Falls Project 1, Warner Creek Sites 1 and 2) and seven are in the design phase.

Table 1. Status of WQSPs towards fulfillment of the 2017 FAD requirement.

Project Name	**Status**	**Length (feet)**	**Basin**
Batavia Kill at Kastanis	Completed	3,800	Schoharie
Bush Kill at Watson Hollow	Completed	250	Ashokan
Batavia Kill at Red Falls Project 1	Approved	1,606	Schoharie
Batavia Kill at Red Falls Project 2	Approved	585	Schoharie
West Branch Neversink River at Clothes Pool	Completed	850	Neversink
Hillslope Stabilization at Bull Run	Approved	300	Pepacton
East Kill at Colgate Lake Road	Completed	700	Schoharie
Warner Creek Site 1	Approved	540	Ashokan
Warner Creek Site 2	Approved	560	Ashokan
Stony Clove Above Jansen Road	Approved	1,600	Ashokan
West Kill Above Wolff Road	Approved	1,000	Schoharie
East Branch of the Neversink River at Ladleton	Approved	1,200	Neversink
West Branch of the Delaware River at Riverhaven Farm	Approved	2,350	Cannonsville
West Branch of the Delaware River at Birdsong Farm	Approved	2,000	Cannonsville

Through this report, DEP formally requests NYSDOH approval for one additional project to be counted towards the 2017 FAD requirement: the Panther Kill Stream Restoration in the Ashokan Basin.

Project Description: Panther Kill Stream Restoration

The Panther Kill is located in the Town of Shandaken and is the largest tributary contributing to Woodland Creek, a major tributary, in the Ashokan Reservoir Basin. It drains the northeast slope of Panther Mountain and flows largely through private property along Panther Kill Road to the confluence with Woodland Creek. The Woodland Creek sub-basin is one of the leading contributors of fine sediment contributing to turbidity in the Ashokan Basin. In 2010, the Ashokan Watershed Stream Management Program (AWSMP) identified this Panther Kill reach (Figures 2 and 3) as the most significant Panther Kill source of fine sediment loading to the Woodland Valley Creek. Following Tropical Storms Irene and Lee in 2011, the USDA Natural Resources Conservation Service (NRCS) considered cost sharing treatment of the reach under the Emergency Watershed Protection Program based on the sediment loading and water quality concerns to the New York City water supply. Though ultimately not selected for federal cost share at that time, conditions have continued to deteriorate and the SMP now recommends this site for a FAD-approved WQSP.

The proposed Panther Kill stream restoration project will treat approximately 700 feet of stream in erosional contact with clay-rich glacial till and lacustrine clay. This reach exhibits active incision into lacustrine clay, over steepening of stream banks, chronic slope failure due to headcut migration, and an overly tight radius of curvature. Hydraulic erosion into the clay-rich sediment creates significant turbidity during higher flows that remain elevated long after flows recede. Following significant flooding on December 25, 2020, this site has been the leading source of turbidity in the Woodland Creek sub-basin. In addition to anticipated water quality benefit, the reach is a high priority for restoration to address chronic channel instability and large wood recruitment that are threatening downstream road-stream crossings.

Treatment strategies for the Panther Kill restoration project reach will likely include minor changes in channel alignment with installation of grade control structures, construction of a bankfull bench along the base of the hillslope, hillslope grading with revegetation, and elevating the stream channel to pre-incision stage for restored floodplain access. The project is scheduled for construction in 2022.

Figure 1. Location of the Panther Kill Stream Restoration site within the Ashokan Basin.

Figure 2. Looking downstream at the primary failure and fine sediment sources.

Figure 3. Looking upstream at the failure and the trees collapsing from the failing banks.