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## Section VI

# STREAM REACH SUMMARY AND RECOMMENDATIONS

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The GCSWCD has long been aware of numerous areas of instability along the Batavia Kill corridor, and that the dynamic nature of the stream could be relied upon to cause flooding, erosion, damage to infrastructure and negative impacts to fisheries. With the initiation of the Batavia Kill Pilot project in 1997, the GCSWCD had the resources necessary to take a comprehensive look at the entire watershed, as well as a closer examination of each section of the stream corridor. Intensive monitoring of problem areas over a five year



period was the basis for development of the stream corridor recommendations set forth in the following sections. This SMP integrates data on the historic and current physical channel characteristics of the stream system and its watershed, with observations made by trained stream managers over a total of 13 years.

### 1. STREAM CORRIDOR DELINEATION

In order to effectively communicate the current physical condition and recommendations for the stream corridor, the mainstem of the Batavia Kill was divided into distinct management segments, with each further subdivided into smaller stream reaches. Numerous criteria were evaluated in the process of delineating these management areas. This format is intended to facilitate planning on scales ranging from regional to site specific. At the broadest scale, the GCSWCD delineated the 21 mile length of the stream corridor into five (5) management segments. The management segments were determined using remotely sensed data dating back as far as 1959, as well as recent field collected data (**Map VI-1**). The physical criteria used during the broad scale delineation of management segments included:

- Rosgen Level I classification
- Infrastructure location and density
- Valley morphology
- Valley & stream channel confinement
- Channel deposition characteristics
- Channel alignment trends
- Landmark features



Each of the 5 management segments were further divided into smaller units. This division resulted in a total of 21 Management Reaches (**Map VI-1**). The GCSWCD used supplemental information from field data collected from 1997 through 2000 to delineate these smaller reaches. The variables used to segregate the management segments into reaches include:

1. General stability
2. Rosgen Level II classification
3. Stream bank erosion inventory
4. Vertical and lateral controls
5. Geological influences
6. Channel processes
7. Channel evolutionary stage
8. Risk to infrastructure
9. Anthropogenic control-vertical and lateral
10. General riparian vegetation classification

At both the broader management segment scale, and smaller reach scale, delineation of subunits of the stream corridor was generated to provide the artificial boundaries necessary for effective communication in this SMP. These boundaries should be considered dynamic, and subject to modification as additional data is collected or changes in stream stability are observed.

## **2. REACH SUMMARY & RECOMMENDATIONS FORMAT**

In the following sections, the GCSWCD has used a descriptive narrative with photographs to describe the current state at the reach level. Many of the reach summaries describe only the major points that the GCSWCD has determined about each reach. While the GCSWCD has compiled extensive data on many of the reaches, it was not presented in this report in the interest of space. As each reach is the subject of management activities of one form or another, the GCSWCD will use or share the data to fine tune strategies for protection and/or restoration. As needed, management strategies can be refined based on additional assessments, used in combination with future chemical and biological inventories.

At the end of each management reach section, the GCSWCD has summarized the overall conditions of the stream reach, and set forth specific recommendations. The recommendations are divided into seven categories, characterizing the reach's physical health, weaknesses and enhancement opportunities. Impaired physical characteristics, or physical characteristics having secondary effects influencing chemical and biological qualities of the Batavia Kill were addressed in the following categories.

- Stream morphology (physical condition)
- Riparian conditions

- Water quality
- Infrastructure
- Habitat
- Future Assessments

Watershed scale recommendations, intended to complement these reach specific recommendations, are included in **Section IX: General Recommendations**.

### 3. INTERVENTION LEVEL

The GCSWCD recognized the need to develop a broad characterization of each reach to reflect the severity of the problems in the reach, and the level of intervention that would be needed to achieve a stable, self sustaining stream system. The “intervention level” the GCSWCD assigned to each reach provides that broad representation of the current state of reach, and the level of intervention needed to bring that reach to greater stability and function. Assigning an “intervention level recognizes that, in nature, when a stream reach becomes unstable, it will recover on its own over time. But the length of time may not be acceptable to those watershed stakeholders who live, work or participate in recreation activities near the stream.

The four categories used to describe the level of intervention were based on review of similar classifications methods published by other stream managers, as well as a general knowledge of the stream conditions on the Batavia Kill. The delineation of intervention levels range from Preservation and Passive, categories derived by GCSWCD, to Assisted Self Recovery and Full Restoration which were modified from Fischenich and Allen (2000). The following are definitions of the levels of intervention used for categorizing the Batavia Kill:

**Preservation:** The reach is characterized as being moderately to highly stable, is functioning effectively. Stream management activities should focus on maintaining and protecting the current character of the reach and contributing drainage area.

**Passive:** The reach is limited by some impaired constituent, but assessments indicate that natural processes will most likely repair form and function without assistance. Passive intervention may include mitigation of some factor(s) which is directly or indirectly impacting reach stability.

**Assisted Self Recovery:** The reach is attempting to recover, but doing so slowly and uncertainly. Management strategies may facilitate natural processes already occurring , and may include more active intervention such as riparian planting, minor bank grading or the construction of isolated structures. This does not include significant changes in planform or channel morphology.

**Full Restoration:** The reach requires the natural rebuilding of stream function and capacity are occurring beyond a desirable time frame. “This approach requires not only an understanding of the stream corridor’s condition but also the full potential of design to balance the restoration of dynamic equilibrium with the needs of society.”(Fischenich and Allen, 2000)

Since the Batavia Kill is a dynamic system, reach assessments and recommendations based on a fixed point in time have limited value without some form of continued monitoring. On-going and future changes in the watershed, as well as the stream corridor, make it imperative that the GCSWCD continue to observe and refine recommendations on a regular basis. The recommendations set forth in this SMP are to be used as guidelines, with specific actions subject to more detailed site assessment and analysis. As the efforts of the GCSWCD and NYCDEP proceed, the availability of additional data will allow refinements to assessment of baseline and current state conditions, which will in turn provide a better understanding of stream corridor impacts, and potential stream response to future activities.