

Section 7 – West Branch of the Delaware River Stream Segments and Management Units

7.1	INTRODUCTION	3
	SEGMENT 1 - MAP 1	
7.2	SEGMENT 1 - VILLAGE OF STAMFORD.....	7
7.2.1	MANAGEMENT UNIT 1	12
7.2.2	MANAGEMENT UNIT 2	13
7.2.3	MANAGEMENT UNIT 3	14
7.2.4	MANAGEMENT UNIT 4	15
	MAPS 1 – 6 MANAGEMENT UNIT 4	
	SEGMENT 2 – MAP 1	
	SEGMENT 2 – MAP 2	
7.3	SEGMENT 2 – TOWNS OF STAMFORD AND KORTRIGHT	16
7.3.1	MANAGEMENT UNIT 5	21
7.3.2	MANAGEMENT UNIT 6	22
7.3.3	MANAGEMENT UNIT 7	23
	MAPS 1 – 6 MANAGEMENT UNIT 7	
7.3.4	MANAGEMENT UNIT 8	24
7.3.5	MANAGEMENT UNIT 9	24
7.3.6	MANAGEMENT UNIT 10	26
7.3.7	MANAGEMENT UNIT 11	27
7.3.8	MANAGEMENT UNIT 12	28
7.3.9	MANAGEMENT UNIT 13	29
	SEGMENT 3 – MAP 1	
	SEGMENT 3 – MAP 2	
7.4	SEGMENT 3 – TOWN AND VILLAGE OF DELHI	30
7.4.1	MANAGEMENT UNIT 14	34
7.4.2	MANAGEMENT UNIT 15	35
7.4.3	MANAGEMENT UNIT 16	36
7.4.4	MANAGEMENT UNIT 17	38
	MAPS 1 – 6 MANAGEMENT UNIT 17	
7.4.5	MANAGEMENT UNIT 18	40
7.4.6	MANAGEMENT UNIT 19	41
	SEGMENT 4 – MAP 1	
	SEGMENT 4 – MAP 2	
7.5	SEGMENT 4 – TOWN OF HAMDEN.....	42
7.5.1	MANAGEMENT UNIT 20	45
7.5.2	MANAGEMENT UNIT 21	46
7.5.3	MANAGEMENT UNIT 22	47
	MAPS 1 – 6 MANAGEMENT UNIT 22	
7.5.4	MANAGEMENT UNIT 23	48
7.5.5	MANAGEMENT UNIT 24	49
	SEGMENT 5 – MAP 1	
	SEGMENT 5 – MAP 2	
7.6	SEGMENT 5 – TOWN AND VILLAGE OF WALTON	50

7.6.1	MANAGEMENT UNIT 25	54
7.6.2	MANAGEMENT UNIT 26	55
	MAPS 1 – 6 MANAGEMENT UNIT 26	
7.6.3	MANAGEMENT UNIT 27	56
7.6.4	MANAGEMENT UNIT 28	57
7.6.5	MANAGEMENT UNIT 29	58

7. West Branch of the Delaware River Stream Segments and Management Units

7.1 Introduction

This section of the plan presents the observations of the condition of the West Branch of the Delaware River made during the walkover assessment that was conducted in the summers of 2002-2004. During the assessment, teams walked the entire length of the main stem from Lake Utsayantha to the Cannonsville Reservoir inventorying and mapping stream features, man-made structures, and conditions influencing the stream's function. The purpose of this assessment was to inventory and characterize the condition of the river, identify and describe problem areas, and where possible, provide an indication of the source(s) of the problem(s). This assessment is the Stream Corridor Management Program's first look at the river as a whole. The best use of the assessment is to document where the problems are located and the extent of the problem. Other surveys employed after the walkover assessment have been analyzed and were used to clearly identify a stream's departure from the *stable* condition and capture the information needed for designing a solution.

The following is a list of conditions that were measured or estimated:

- Eroding bank lengths and heights
- *Cross-section* dimensions including *bankfull* elevation, *bankfull width*, *bankfull depth*, and floodprone zone width and depth
- Bed material size distribution at cross-sections
- Bed and bankfull slope through cross-sections

The following is a list of some of the features that were mapped:

- Stream alignment including the start of *pools* and *riffles*
- Eroding banks
- Eroding beds (or *head-cuts*)
- Depositional bars – point, side, transverse (or diagonal), center bars
- Debris or log jams
- *Culvert* outfalls
- *Revetment* types – *berms*, walls, riprap, dumped stone, log cribbing
- Cross-section locations
- Grade control features – including bedrock outcrops and dams
- *Japanese knotweed* colony locations
- Bridges and their abutments
- *Clay exposures* in the banks
- Spring seeps
- Tributaries

These features were mapped with a handheld *Global Positioning System (GPS)* unit with a 3-5 meter accuracy and in addition to GPS database entries, notes were written on 1:100 scale copies of the 2000 Emerge digital orthophotographs for the Cannonsville

basin. Photographs were taken of significant features including eroding banks, bars, bridges, etc. The information from this assessment was compiled within a series of Arcview *Geographic Information Systems (GIS)* software shapefiles, which will be maintained by Delaware County Soil and Water Conservation District (DCSWCD) and New York City Department of Environmental Protection (NYCDEP). Inquiries as to the content or availability of this information can be directed to the DCSWCD Project Coordinator or NYCDEP Project Manager.

Characterization of the river is broken into two levels of specificity; a more general description of a larger area or “**segment**” description and a more detailed description of a smaller reach or “**management unit**” description. There are several management units within each segment. Segment descriptions are divided by municipal boundaries. This delineation enables readers to consider the condition and relevant issues regarding the river within the context of local decision making and local history. To some extent, the river within the five different segments may have a character that is physically unique to that town. For example the river through Segment 1, Village of Stamford, is a steeper, narrower, headwaters stream that is physically different than the river in Segment 2, Town of Stamford and Kortright, where the river transitions to a mid-valley stream with its broader *floodplains* and lower slope. But, for the most part, the segment division is made for purposes of reporting to individual communities. A map showing stream type, management unit limits, cross-section locations and bank pin locations within a segment is provided at the beginning of each segment description.

The management unit boundaries are much more specific to stream characteristics that change or evolve from one unit to the next. As rivers are complex systems, the use of a management unit description which focuses more on the stream “*reach*” scale, is an attempt to describe the processes occurring within smaller part of the stream. The problems within a management unit may be related and therefore might be addressed by a common action or set of actions. For example, a sequence of three failing banks within a management unit might be addressed through a restoration project and a concerted *riparian* buffer enhancement effort. The solution will require knowledge of system-wide processes, but the application of a solution will be made for a specific reach of the river.

A set of sample maps for a representative management unit is provided for each segment. Hardcopy of the management units maps are available upon request for the entire mainstem from the Soil and Water District office. Due to the size of the *watershed* and the number of maps required for the entire watershed, a complete set is not included in the hardcopy version of the plan. Digital versions contain copies of all the management unit maps and can be obtained from the Soil and Water District office.

In the management unit descriptions any description of process where a situation exists is to call attention to the obvious relationship. For example, you might read that a center bar is directing flow toward an eroding stream bank and that it is suggested that the center bar may have formed because the stream is too wide. From a walkover assessment we cannot state what caused the over-wide condition or without a series of cross-section surveys that the reach is actually over-wide. We can only identify that there are bars and

eroding banks present as indicators of an *unstable* condition. Therefore, this plan recommends that an additional survey should be conducted before attempting certain remedial actions. Taking action without understanding the cause and effect is a recipe for more problems when working with rivers and streams.

Having made a warning about taking action, it is important to differentiate that some action will improve conditions with little potential for negative impact. Riparian forest buffers play an important role in protecting stream banks and improving water quality. Efforts to expand the size of the riparian forest buffer will not only help the individual landowner, but also the entire river system. It is important to give the river room to move and adjust and a buffer provides that room while knitting together the stream bank.

In this description, the river in a management unit will be rated as to its *stability*. A management unit may be rated as: unstable, moderately stable, moderately stable with unstable reaches, or stable. At this stage, this description is largely based upon the extent of the eroding banks and other indicators of *instability*. The actual level of instability can only be determined with additional survey. The Stream Corridor Management Program will continue to refine this assessment to enable further definition of priorities for remedial action. For other terms and concepts used within these descriptions, see **Section 5.9.**, Introduction to Stream Processes.

